Section 3.1
Air Quality and Meteorology

SECTION SUMMARY

This section describes existing air quality and meteorology within the Port, discloses potential impacts on air quality and human health associated with operation of the Revised Project, and considers whether any feasible and enforceable mitigation for impacts of at-berth emissions is available.

Section 3.1, Air Quality and Meteorology, provides the following:

- a description of existing air quality in the Port area;
- a discussion on the methodology used to analyze impacts on air quality from air emissions of the Revised Project;
- an impact analysis of the continued operation of the Revised Project for future years through 2045;
- a description of any additional or revised mitigation measures proposed to reduce potential impacts, as applicable, including reverting MM AQ-9 and MM AQ-10 to the 2008 EIS/EIR versions;
- a description, for informational purposes, under the FEIR mitigated scenario, of impacts of the period of non-compliance (2008 – 2014) and the additional period of non-compliance (2015 – 2023), when some mitigation measures imposed in the 2008 EIS/EIR continued to be wholly or partially not implemented, and impacts of future years if the full suite of 2008 measures were implemented); and
- a comparison of those mitigation measures and residual impacts to the suite of original mitigation measures in the 2008 EIS/EIR and the 2019 FEIR.

Key Points of Section 3.1:

The Revised Project includes two air quality operational mitigation measures, MM AQ-9 Alternative Maritime Power and MM AQ-10 Vessel Speed Reduction Program, that were originally included in the 2008 EIS/EIR but were modified in the 2019 SEIR. The Revised Project includes the original 2008 MM AQ-9 and 2008 MM AQ-10, updated per the Writ and Court's May 2, 2025, ruling (May 2005 Ruling). These measures would mitigate air quality impacts, and their effectiveness is quantified in the analysis. The Revised Project also includes a new air quality mitigation measure, MM AQ-31, At-Berth Regulations.

These mitigation measures are used in the Revised Project emissions analysis, with the assumption that they would take effect in 2026. All other air quality mitigation and lease measures considered in the 2019 SEIR are assumed to be in effect no later than 2024 (the effective date depends on the measure, as some were in effect as early as 2008 while others were only partially implemented during the period 2008 – 2023).

The Revised Project would result in the following significant and unavoidable impacts:

- Revised Project emissions of carbon monoxide (CO) would be significant in analysis years 2026, 2036, and 2045. Emissions of nitrogen oxides (NOx) would be significant in analysis years 2026 and 2036. Emissions of volatile organic compounds (VOC) would be significant in analysis years 2026, 2036, and 2045. Emissions of all other criteria pollutants would be less than significant in future years.
- Revised Project ambient concentrations would be significant for federal 1-hour NO_2 in 2026; 24-hour PM_{10} in 2026, 2036, and 2045; and annual PM_{10} in 2026, 2036, and 2045. Impacts of federal 1-hour NO_2 in 2036 and 2045, state and annual NO_2 in all years, and SO_2, CO, and 24-hour $PM_{2.5}$ in all analysis years would be less than significant.
- Cancer risks of the Revised Project relative to the floating Future Baseline would be significant for occupational receptors. Cancer risks relative to the static baseline would be less than significant. Chronic and acute non-cancer health impacts and cancer burden would be less than significant.

For informational purposes, Revised Project emissions and offsite ambient air pollutant concentrations in the two periods of non-compliance exceeded SCAQMD significance thresholds in several past years.

- Emissions of carbon monoxide (CO) exceeded the threshold in analysis years 2014, 2018, 2021, 2022, and 2023. Emissions of nitrogen oxides (NOx) exceeded the threshold in 2014 and 2020 through 2023. Emissions of volatile organic compounds (VOC) exceeded the threshold in 2014 and 2021 through 2023. Emissions of particulate matter less than 10 micrometers in diameter (PM_{10}) exceeded thresholds in analysis year 2022.
- Offsite ambient concentrations of NO_2 exceeded the federal 1-hour standard in 2012, 2014, 2018, and 2020 through 2023 and the state 1-hour and annual standards in 2014 and 2021 through 2023. Offsite ambient PM_{10} concentrations exceeded the 24-hour average standard in 2012, 2014, and 2020 through 2023 and the annual average standard in 2014 and 2020 through 2023. Offsite ambient $PM_{2.5}$ concentrations exceeded the 24-hour average standard in 2022 and 2023. No other exceedances of air quality standards for offsite concentrations occurred in the periods of non-compliance.

3.1.1 Introduction

Emissions from operation of the Revised Project would affect air quality in the immediate area of the Revised Project and the surrounding region. This section includes a description of the affected air quality environment and predicted impacts of the Revised Project, and considers whether feasible mitigation measures related in addition to alternative maritime power (AMP) are available to reduce at-berth emissions.

As described in Chapter 2, the Approved Project analyzed in the 2008 EIS/EIR included a number of mitigation measures (summarized in Table 1-1 of Chapter 1) intended to address air emissions of the Berths 97-109 CS Container Terminal. Some of those measures were not fully implemented for various reasons. The 2019 SEIR modified some of those measures, determined certain measures to be infeasible, and incorporated new information of substantial importance based on changed circumstances surrounding the Approved Project. The Revised Project analyzed in this Draft RSEIR consists of continued operation of the CS Terminal under the 2019 SEIR's measures with the exception of two that, per the Writ (see Section 1.2), have been reverted to the measures included in the 2008 EIS/EIR: MM AQ-9 (Alternative Maritime Power) and MM AQ-10 (Vessel Speed Reduction Program), as updated per the Writ and May 2025 Ruling.

As illustrated in Table 3.1-1, air quality impacts are analyzed in this Draft RSEIR in three basic scenarios: 1) the Revised Project scenario, disclosing impacts of the Revised Project from 2026 to the end of the lease period in 2045, as required by the Writ; 2) the periods of non-compliance (2008 – 2023), when some of the mitigation measures imposed in the 2008 EIS/EIR continued to be wholly or partially not implemented, provided for information only, as required by the Writ; and 3) the Final Environmental Impact Report (FEIR) scenario, assuming timely implementation of all of the 2008 EIS/EIR mitigations from 2009 to 2045, provided for information only.

Table 3.1-1. Draft RSEIR Air Quality Analysis Scenarios

Scenario	Study Years	Description
Revised Project	2026 - 2045	As required by the Writ, Draft RSEIR mitigation measures except with MM AQ-9 and MM AQ-10 per 2008 EIS/EIR
Revised Project - Periods of Non-Compliance	2008 - 2023	2008 EIS/EIR mitigation measures except MM AQ-17 (Railyard CHE) and MM AQ-20 (LNG Drayage Trucks) (information only)
FEIR Mitigated	2008 - 2045	All 2008 EIS/EIR mitigation measures, including those subsequently determined to be infeasible or unnecessary (information only)

For purposes of the emissions estimates, the calculations in this Draft RSEIR assume the following:

- The effective date of the proposed lease amendment incorporating the proposed new mitigations in this Draft RSEIR is 2026.
- The periods of non-compliance include years 2008 – 2014 that were previously studied and which have been recalculated using current methodologies, and years 2015 – 2023 which have been added to the analysis as required by the Writ.

- The periods of non-compliance (2008-2023) are based on actual data and activity that occurred during the calendar year for which data was collected and made publicly available.
- Actual data for calendar years 2024 and 2025 is not presented for the period of non-compliance because a complete data set using information and data collected from the Port's Emissions Inventories had not been published and released at the time of this analysis.

Due to changes since 2008 in the procedures and assumptions used to calculate emissions and in atmospheric dispersion modeling procedures used to estimate resulting pollutant concentrations and consequent health impacts (which together constitute the air quality impacts of the project), it is not possible to directly compare air quality impacts presented in the 2008 EIS/EIR for the Approved Project with impacts calculated in this Draft RSEIR for the Revised Project, nor is it possible to reproduce the outdated methods, models, and procedures used to analyze air quality impacts in the 2008 EIS/EIR. Therefore, this Draft RSEIR presents an evaluation of air quality impacts for the scenarios described above using current, state-of-the-art emission estimation, air quality modeling, and health risk assessment procedures, including the 2015 OEHHA HRA Guidelines.

3.1.2 Environmental Setting

The Revised Project 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.

3.1.2.1 Meteorological Conditions

The SCAB's Mediterranean climate is characterized by warm, rainless summers and mild, wet winters. Seasonal variation in the position and strength of the Eastern Pacific High (a persistent area of high atmospheric pressure over the Pacific Ocean) is a key factor in the weather of the area. The Eastern Pacific High effectively shelters Southern California from the effects of polar storm systems, and large-scale atmospheric subsidence associated with the Eastern Pacific High produces an elevated temperature inversion along the West Coast. The inversion limits vertical mixing, trapping air pollutants in the lower atmosphere. The mountain ranges surrounding the Los Angeles Basin constrain the horizontal movement of air and inhibit the dispersion of air pollutants out of the region. During the fall and winter months, stagnant atmospheric conditions also often result in elevated pollutant concentrations in the SCAB. These factors, combined with the air pollution sources of more than 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, which has its highest concentrations 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 within the region that prevails 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 blowing from the southwest. These breezes transport air pollutants inland away from the coast in the afternoon hours for most of the year. In addition, 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, that often blow air pollutants out of the SCAB.

Locally, 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 northern side of the Palos Verdes 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.

3.1.2.2 Existing Air Quality

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 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 (“criteria” because they are regulated by scientifically based criteria related to human health and/or environmental factors). These pollutants can harm human health and cause property damage. The limits based on human health are called the primary standards. Another set of limits intended to prevent environmental and property damage is called the secondary standards. 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.

The criteria pollutants of greatest concern in this air quality assessment are ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter less than 10 micrometers in diameter (PM_{10}), and fine particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$). Nitrogen oxides (NO_x**)** and sulfur oxides (SO_x) refer to generic groups of compounds that include NO_2 and SO_2, respectively. These oxides are produced during combustion. Because members of these compound groups typically change rapidly from one form to another, emissions from combustion sources such as diesel engines are often stated in terms of total NO_x and total SO_x emissions, rather than being listed by individual compound.

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 3.1-2.

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 volatile organic compounds (VOC) and NO_x, which react to form ozone in the presence of sunlight through a complex series of photochemical reactions. As a result, ozone levels typically peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty of predicting photochemical pollutant concentrations, ozone impacts are indirectly addressed in this study by comparing Revised Project-generated emissions of VOC and NO_x to daily emission thresholds set by the South Coast Air Quality Management District (SCAQMD). These emission thresholds are discussed in Section 3.1.4.3.

Table 3.1-2. Adverse Effects Associated with Criteria Pollutants

Pollutant[d]	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) Bronchoconstriction 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, 2017).
Notes:
a More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in USEPA (2019a).
b Lead is not a pollutant of concern for the Revised Project.

Pollutant[d]	Adverse Effects

c Sulfate is not a pollutant of concern for the Revised Project. SCAQMD has not established an emissions threshold for sulfates, nor does it require dispersion modeling against the localized significance thresholds.
d CAAQS have also been established for H_2S, vinyl chloride, and visibility reducing particles but they are not shown in this table because they are not pollutants of concern for the Revised Project.

Generally, concentrations of photochemical pollutants, such as ozone, are highest during the summer and coincide with the season of maximum solar insolation. Concentrations of inert pollutants, such as CO, tend to be the greatest during the winter and are a product of light wind conditions and surface-based temperature inversions that are frequent during that time of year and that 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 Revised Project-related emission sources would be diesel-powered, diesel particulate matter (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 (TAC) by CARB. As a result, DPM is evaluated both as a criteria pollutant (as a component of PM_{10} and $PM_{2.5}$) and, in the health risk assessment, as a TAC.

Regional Air Quality

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 exceed 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, $PM_{2.5}$ (24-hour standard), and lead (lead is not emitted by the Revised Project because its operations or construction would not use leaded fuels or handle lead-containing materials; accordingly, lead is not a pollutant of concern for this EIR). The severity of nonattainment has been classified by USEPA for several pollutants. USEPA currently classifies the SCAB as extreme nonattainment for the 8-hour ozone NAAQS and serious nonattainment for $PM_{2.5}$ (24-hour standard). The SCAB is in attainment/maintenance of the NAAQS for CO, SO_2, NO_2, and PM_{10}.

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 three years. CARB currently designates the SCAB as in nonattainment for ozone, PM_{10}, $PM_{2.5}$, and NO_2. The SCAB is in attainment of the CAAQS for CO, SO_2, lead, and sulfates, and is unclassified for hydrogen sulfide and visibility reducing particles (CARB 2022a).

Local Air Quality

LAHD has been conducting its own air quality monitoring program since February 2005. This monitoring program supports the Port's commitment to improve air quality within the San Pedro Bay Ports area under the San Pedro Bay Ports Clean Air Action Plan (CAAP; SPBP 2006, 2010, 2017) by helping to better manage and provide feedback on the Port's air quality improvement efforts. The monitoring program includes a network of four air monitoring stations that measure a comprehensive suite of air pollutants within the Port's region of influence. The program includes a number of real-time air quality measurements: O_3, SO_2, NO_2, CO, two sizes of particulate matter (PM_{10} and $PM_{2.}$), polycyclic aromatic hydrocarbons (PAHs), and ultrafine particles. As part of the program, meteorological monitoring stations operate adjacent to each air monitoring station, to help interpret the air quality data and for use in other Port programs. Each meteorological monitoring station collects wind speed, wind direction, and temperature data. In addition, one station also collects solar radiation, relative humidity, and barometric pressure data.

The monitoring stations are located within the Port's region of influence at: 1) Saints Peter and Paul School (Wilmington Community Station), 2) Berth 47 in the Outer Harbor (Coastal Boundary Station), 3) Terminal Island Water Reclamation Plant (TITP) (Source-Dominated Station), and 4) Harbor Boulevard near 3rd Street, adjacent to the San Pedro Waterfront Promenade (San Pedro Community Station). Meteorological data from the Wilmington Community Station was considered the most representative meteorological station for the Project site in accordance with the Bay-wide Sphere of Influence analysis (LAHD 2010) and was used in this air quality analysis to model criteria pollutant impacts and human health risks and associated with the Revised Project.

Table 3.1-3 shows the highest pollutant concentrations recorded at the Wilmington Community Center for 2020 through 2022, the most recent complete 3-year period of data available.

Table 3.1-3. Maximum Pollutant Concentrations (ppm) Measured at the Wilmington Community Monitoring Station (SPPS)

Pollutant	Averaging Period	National Standard	State Standard	Highest Monitored Concentration		
				2020 [e]	**2021[e]**	**2022[e]**
Ozone (ppm)	1-hour	--	0.09	0.077	0.089	0.072
	8-hour National [a]	0.070	--	0.061	0.059	0.058
	8-hour State	--	0.07	0.062	**0.077**	0.059
CO (ppm)	1-hour	35	20	2.7	3.0	7.7
	8-hour	9	9.0	1.6	2.0	2.2
NO_2 (ppm)	1-hour National [b]	0.100	--	0.059	0.054	0.055
	1-hour State	--	0.18	0.068	0.071	0.060
	Annual	0.053	0.030	0.008	0.013	0.014
SO_2 (ppm)	1-hour National [c]	0.075	--	0.018	0.016	0.011
	1-hour State	--	0.25	0.024	0.021	0.01
	24-hour	--	0.04	0.008	0.003	0.007
PM_{10} (µg/m^3)	24-hour	150	50	**54.3**	**70.6**	44.6
	Annual	--	20	**22.4**	**27.2**	**24.7**
$PM_{2.5}$ (µg/m^3)	24-hour [d]	35	--	22.6	25.9	22
	Annual	12	12	6.4	7.8	6.2

Sources: POLA (2020, 2021, 2022).

Notes:
Exceedances of the standards are shown in **bold**/*italic*. All reported values represent the highest recorded concentration during the year unless otherwise noted.
[a] The monitored concentrations reported for the national 8-hour ozone standard represent the 3-year average (including the reported year and the prior 2 years) of the fourth-highest 8-hour concentration.
[b] The monitored concentrations reported for the national 1-hour NO_2 standard represent the 3-year average (including the reported year and the prior 2 years) of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations.
[c] The monitored concentrations reported for the national 1-hour SO_2 standard represent the 3-year average (including the reported year and the prior 2 years) of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations.
[d] The monitored concentrations reported for the national 24-hour $PM_{2.5}$ standard represent the 3-year average (including the reported year and the prior 2 years) of the 98th percentile of the annual distribution of daily average concentrations.
[e] Year 2020 represents the period May 2019-April 2020, year 2021 represents the period May 2020-April 2021, and year 2022 represents the period May 2021-April 2022.

Toxic Air Contaminants

The California Office of Environmental Health Hazard Assessment (OEHHA) identifies and studies TAC toxicity. 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.

SCAQMD's *Multiple Air Toxics Exposure Study V* (MATES V)[1] determined that about 50 percent of the background airborne cancer risk in the SCAB is due to diesel exhaust (SCAQMD 2021), with the highest modeled air toxics risk near the ports. Other areas of elevated risk were identified near Central Los Angeles and transportation corridors and freeways. The other major contributors of cancer risks are Benzene, 1,3- Butadiene, and Carbonyls that collectively make up 25% (SCAQMD 2021). Compared to the MATES IV[2] (SCAQMD 2015) and MATES II[3] (SCAQMD 2000) studies, the MATES V study found a large decrease in carcinogenic risk, with the population-weighted risk in the basin down by 40 percent from the analysis in MATES IV and 85 percent lower than the average in MATES II. In the Port area, the MATES studies have documented substantial decreases in cancer risk to Port-area populations over the past 20 years. For example, the MATES V study (SCAQMD 2021) concluded that, "The air toxics cancer risk in the ports areas decreased by approximately 57% between MATES IV and MATES V. Overall, air toxics risk improved significantly, consistent with air toxic emissions reductions that occurred over the time period."

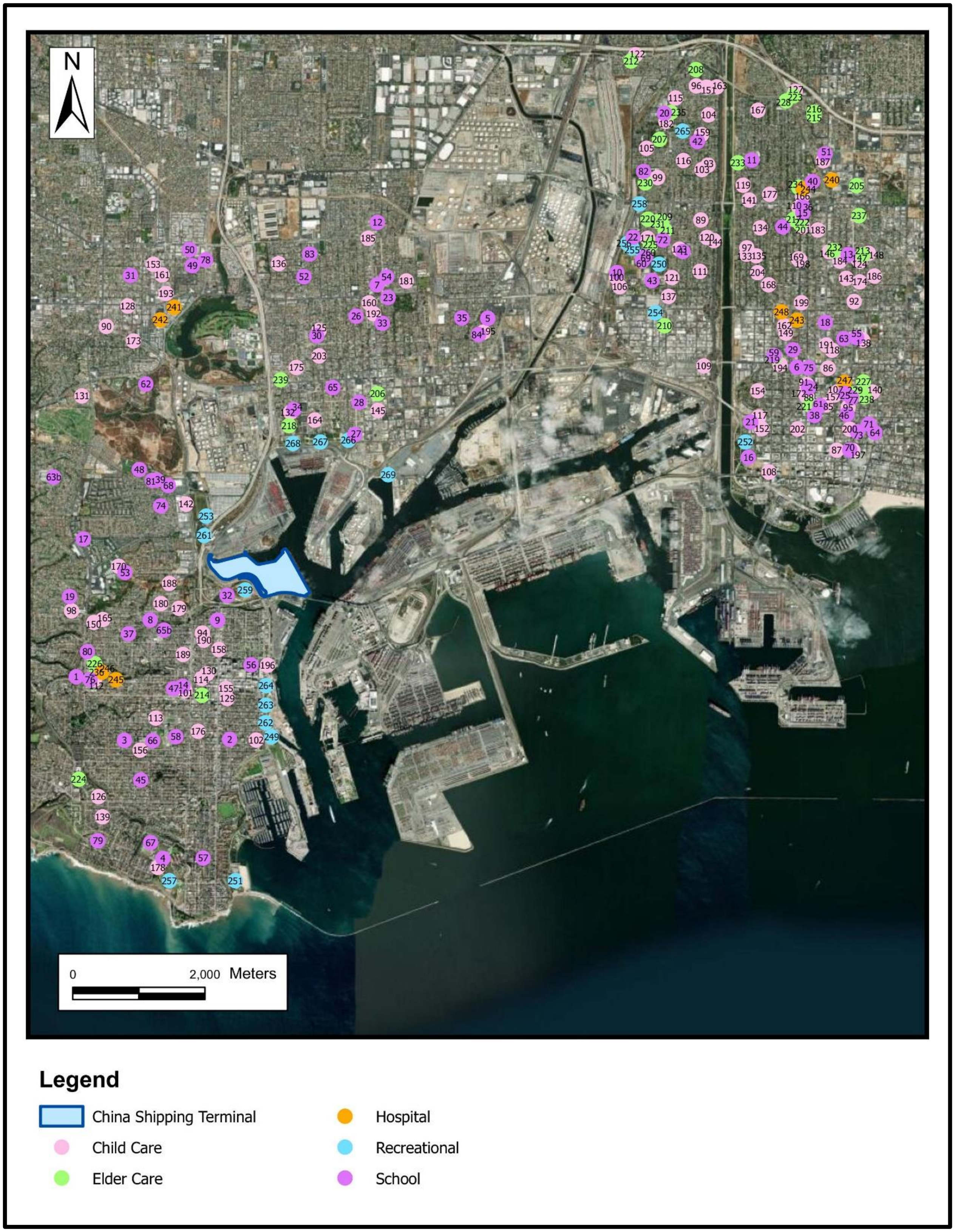
Sensitive Receptors

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 schools, daycare centers, convalescent homes, and hospitals. For health risk assessment purposes, LAHD also treats recreational areas, such as parks, marinas, and public waterfront areas, as sensitive receptors. The nearest sensitive receptors to the project site are the Knoll Hill baseball fields and the northern end of the San Pedro Waterfront promenade, about 0.1 mile southwest and south of the project site,

1 MATES V focuses on measurements during 2018 and 2019 with a comprehensive modeling analysis and emissions inventory based on 2018 data.
2 The MATE IV analysis was based on measurements during 2012-2013 and the 2012 emission inventory.
3 The MATE II analysis was based on sampling data from 1998-1999.

respectively. The nearest residents are the Samoan Sea Apartments, on N. Harbor Boulevard, about 0.6 mile south of the project site. The nearest school is the Harbor Occupational Center on North Pacific Avenue about 0.2 mile south of the project site. The nearest daycare center is the Mama's and Papa's Daycare, about 0.4 mile west of the project site. The nearest convalescent home is the Palos Verdes Villa, about 1.3 miles west of the project site. The nearest hospital is the Providence Little Company of Mary Medical Center, about 1.4 miles southwest of the project site. Figure 3.1-1 shows the locations of sensitive receptors; a table listing the name and locations of each sensitive receptor is included in Appendix B3.

Figure 3.1-1. Sensitive Receptors



3.1.3 Regulatory Setting

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, CARB is responsible for enforcing air pollution regulations. 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 SCAQMD.

The following is a summary of the key federal, state, and local air quality rules, policies, and agreements that potentially apply to all scenarios.

3.1.3.1 International Regulations

International Maritime Organization International Convention for the Prevention of Pollution from Ships Annex VI

The International Maritime Organization (IMO) International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI, which came into force in May 2005, set new international nitrogen oxides (NOX) emission limits on marine engines over 130 kilowatts (kW) installed on new vessels retroactive to the year 2000. In October 2008, IMO adopted amendments to international requirements under MARPOL Annex VI, which introduced NOX emission standards for new engines and more stringent fuel quality requirements. In April 2014, amendments to MARPOL Annex VI were adopted regarding the effective date of NOx Tier III standards (DieselNet 2022a; IMO 2008). The Annex VI North American Emission Control Area (ECA) requirements applicable to the Revised Project include:

- Limits on the sulfur content of fuel as a measure to control sulfur oxides (SOx) emissions and, indirectly, particulate (PM) emissions. For ECAs, the sulfur limits are capped at 0.1 percent effective in 2015. The Revised Project assumes full compliance with MARPOL Annex VI SOx limits.
- Ships constructed on or after January 1, 2016, shall comply with the Tier III NOx emission limits when operating within the North American ECA (IMO 2010). Tier I and Tier II limits effective 2000 and 2011 are global limits, whereas Tier III limits, effective in 2016, apply only in NOx ECAs.

3.1.3.2 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, SCAQMD, in collaboration with other agencies, such as CARB and Southern California Association of Governments (SCAG), periodically prepares an Air Quality Management Plan (AQMP) designed to bring the SCAB into attainment with federal requirements and/or to incorporate the latest technical planning information. The AQMP is then incorporated into the SIP, which is submitted by CARB to EPA for approval.

SCAQMD has prepared AQMPs in 1997, 2003, 2007, 2012, 2016, and most recently in 2022. Each iteration of the AQMP is an update of the previous AQMP. The focus of the 2007 AQMP was to demonstrate compliance with the NAAQS for PM2.5 and 8-hour ozone and other planning requirements, including compliance with the NAAQS for PM10

(SCAQMD 2007). The 2007 AQMP proposed attainment demonstration of the federal $PM_{2.5}$ standards through a focused control of SO_X, directly emitted $PM_{2.5}$, and NO_X, supplemented with VOCs by 2015. The SCAQMD did not meet the standards by the original attainment year; therefore, subsequent AQMPs address new attainment deadlines.

In December 2012, the SCAQMD Governing Board adopted the 2012 AQMP (SCAQMD 2013). The 2012 AQMP focuses on $PM_{2.5}$ control measures designed to attain the federal 24-hour $PM_{2.5}$ standard and contingency measures in case the targeted attainment date is missed. The 2012 AQMP also contains proposed actions to reduce ozone. The Final 2016 AQMP, which is a comprehensive and integrated Plan primarily focused on addressing the ozone and PM2.5 standards, was approved in March 2017 (SCAQMD 2017). The 2022 AQMP, released in December 2022, addresses requirements for meeting the 70ppb ozone standard. The 2022 AQMP focuses on NO_x control measures for residential, commercial, and large industrial combustion sources. Many of the control measures rely on research and development, demonstration, and incentives to facilitate the widespread deployment of zero-emissions (ZE) and low NO_x technologies alongside funding programs to support research, development, demonstration of such advanced technologies (SCAQMD 2022).

USEPA Emissions Standards for Marine Diesel Compression Ignition Engines—Category 1 and 2 Engines

Category 1 and Category 2 (engine displacements per cylinder less than 30 liters) engines are often the auxiliary engines on large ocean-going vessels (OGVs) as well as auxiliary and propulsion engines on harbor craft. To reduce emissions from these marine diesel engines, USEPA established 1999 emission standards for newly built engines, referred to as *Tier 2 marine engine standards*. These standards were based on the land-based standard for non-road engines. The Tier 2 standards were phased in from 2004 to 2007 (year of manufacture), depending on the engine size.

On March 14, 2008, USEPA finalized a program to reduce emissions from marine diesel Category 1 and 2 engines (73 FR 88 25098-25352). The regulations introduced Tier 3 and Tier 4 standards, which apply to both new and remanufactured diesel engines. The phase-in of Tier 3 standards extended from 2009 to 2014 for new Category 1 engines and from 2013 to 2014 for new Category 2 engines. Tier 4 standards were phased in for new Category 1 and 2 engines above 600 kW from 2014 to 2017. For remanufactured engines, standards apply only to commercial marine diesel engines above 600 kW when the engines are re-manufactured and as soon as certified systems are available.

For the Revised 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.

USEPA Emission Standards for Large Marine Diesel Engines—Category 3 Engines

Category 3 engines (greater than 30 liters) represent the main propulsion engines on OGVs and are regulated by NO_x standards for Category 3 marine propulsion engines on U.S. flagged ocean-going vessels (40 CFR Part 9 and 94; 68 FR 9745-9789). The standards went into effect for new engines built in 2004 and later and cover Tier 1 through Tier 4 engines.

In December 2009, USEPA adopted Tier 2 and Tier 3 emissions standards for newly built Category 3 engines installed on U.S. flagged vessels, as well as marine fuel sulfur limits. The Tier 2 and 3 engines standards and fuel limits are equivalent to the amendments to

MARPOL Annex VI. Tier 2 NO_X standards for newly built engines applied beginning in 2011 and require the use of engine-based controls, such as engine timing, engine cooling, and advanced electronic controls. Tier 3 standards applied beginning in 2016 in ECAs and are met with the use of high efficiency emission control technology, such as selective catalytic reduction. The Tier 2 standards are anticipated to result in a 15 to 25 percent NO_X reduction below the Tier 1 levels; Tier 3 standards are expected to achieve NO_X reductions 80 percent below the Tier 1 levels (DieselNet 2022a). In addition to the Tier 2 and Tier 3 NO_X standards, the final regulation established standards for hydrocarbon (HC) and carbon monoxide (CO).

USEPA 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 (DieselNet 2022b). 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, were phased in between 2008 to 2015. These standards apply to construction off-road land-based equipment.

USEPA Emission Standards for Locomotives

EPA has established a series of increasingly strict emission standards for new or remanufactured locomotive engines (63 FR 18997-19084). In 2008, EPA strengthened the Tier 0 through 2 standards to apply to existing locomotives and introduced more stringent Tier 3 and 4 emission requirements (73 FR 88 25098-25352).

USEPA Emission Standards for On-Road Trucks

Heavy-duty trucks are subdivided into three categories by the vehicle's GVWR: light heavy-duty engines (8,500 to 19,500 pounds), medium heavy-duty engines (19,500 to 33,000 pounds), and heavy heavy-duty engines (greater than 33,000 pounds).

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of increasingly strict emission standards for new truck engines (DieselNet 2022a). The latest U.S. federal emission standards affecting criteria pollutants from heavy-duty engines were adopted by USEPA on December 20, 2022. These standards set new limits for NO_x, PM, volatile organic compounds (VOC), and CO for heavy-duty engines starting with model year 2027 and newer.

On September 15, 2011, USEPA and Department of Transportation's National Highway Traffic Safety Administration (NHTSA) finalized regulations to reduce greenhouse gas (GHG) emissions and improve fuel efficiency of medium- and heavy-duty vehicles (USEPA 2011), including large pickup trucks and vans, semi-trucks, and all types and sizes of work trucks and buses. The regulations incorporate all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds, and the engines that power them. Under the regulations, fuel economy will be improved and GHG emissions will be reduced in model years 2014 to 2018. On August 16, 2016, USEPA and NHTSA implemented Phase 2 of the Heavy-Duty National Program to cover model years 2018 to 2027 for certain trailers and model years 2021 to 2027 for semi-trucks, large pickup trucks, vans, and all types and sizes of buses and work trucks (USEPA 2016).

USEPA 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 large engines on oceangoing vessels). For the Revised Project, this rule affects line-haul locomotives; the California Diesel Fuel Regulation (described below) (CARB 2005a) generally pre-empts 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 15 ppm sulfur content (ultra-low-sulfur diesel) starting January 1, 2010, for non-road fuel, and June 2012 for marine and locomotive fuels (USEPA 2004).

USEPA and National Highway Traffic Safety Administration Medium- and Heavy-Duty Engines and Vehicles GHG Emission Standards and Fuel Economy Standards

In 2011, USEPA, in conjunction with the Department of Transportations' National Highway Traffic Safety administration (NHTSA), established GHG emission standards and fuel efficiency standards for medium- and heavy-duty engines and vehicles. Final GHG emissions and fuel consumption standards apply to 2017 and newer model year vehicles.

USEPA and National Highway Traffic Safety Administration Light-Duty Vehicle GHG Emission Standards and Corporate Average Fuel Economy Standards

In 2010, USEPA, in conjunction with the Department of Transportation's National Highway Traffic Safety Administration (NHTSA), finalized the Light-Duty Vehicle Rule that establishes a national program consisting of greenhouse gas (GHG) emissions standards and Corporate Average Fuel Economy standards for light-duty vehicles (USEPA 2010). Light-Duty Vehicle Rule standards first apply to new cars and trucks starting with model year 2012. Although the rule is primarily designed to address GHG emissions, the fuel economy standards portion of the rule also serves to reduce criteria pollutant emissions. On August 28, 2012, USEPA and NHTSA extended the National Program of harmonized GHG and fuel economy standards to model year 2017 through 2025 passenger vehicles (USEPA 2012). The rules affect passenger vehicles (i.e., terminal workers) and other light-duty vehicles traveling to the terminal.

3.1.3.3 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 requires 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 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.

SB-1

On April 28, 2017, Governor Brown signed into law Senate Bill 1 (SB-1). Among the changes to California state law was the addition of Health and Safety Code Section 43021.

This section, in part, sets strict restrictions on the ability of the California Air Resources Board's (CARB) and other agencies to require the "…retirement, replacement, retrofitting, or repower" of commercial trucks as defined by Section 34601 of the California Vehicle Code "…until the later of the following":

(1) Thirteen years from the model year the engine and emissions control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.

(2) When the vehicle reaches the earlier of either 800,000 vehicle miles travelled or 18 years from the model year the engine and emissions control system are first certified for use in self-propelled commercial motor vehicles by the state board or other applicable state and federal agencies.

Section 43021, by its terms, restricts the ability of CARB and other agencies to mandate the retirement, replacement, or retrofit of trucks from California's public highways and roads. The stated legislative intent of SB-1 "to provide owners of self-propelled commercial motor vehicles…certainty about the useful life of engines certified by the state board and other applicable agencies to meet required environmental standards…" Nevertheless, Section 43021, by its terms, applies only to laws or regulations adopted or amended after January 1, 2017, and "does not apply to voluntary incentive or grant programs, including but not limited to, those that give preferential access to a facility to a particular vehicle or class of vehicles."

AB 2650

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. A companion piece of legislation (AB 1971) ensures that the intent of AB 2650 is not circumvented by moving trucks with appointments inside the terminal gates to wait.

CARB Heavy Duty Diesel Vehicle Idling Emission Reduction Regulation

This CARB rule has been in effect for heavy-duty diesel trucks in California since 2008. The rule requires that heavy-duty trucks be equipped with a non-programmable engine shutdown system that shuts down the engine after five minutes or optionally meet a stringent NO_x idling emission standard (CCR Title 13, Section 1956.8 and 2485). This regulation applies to trucks used during construction and operation.

CARB 1998 South Coast Locomotive Emissions Agreement

In 1998, CARB, Class I freight railroads operating in the SCAB (Burlington Northern and Santa Fe and Union Pacific Railroad), and EPA signed the 1998 Memorandum of Understanding (MOU) agreeing to a locomotive fleet average emissions program in the SCAQMD. The 1998 MOU requires that the Class I freight railroad fleet of locomotives in the SCAQMD, both line-haul (freight) and switch locomotives, achieve average emissions equivalent to the NO_x emission standard established by EPA for Tier 2 locomotives (5.5 g/bhp-hr). This emission level is equivalent, on a district-wide average, to operating only federal Tier 2 NO_x-compliant locomotives in the SCAQMD (CARB, 1998).

CARB 2005 Railroad Statewide Agreement

In 2005, CARB, Class I freight railroads operating in the SCAB, and EPA signed the 2005 MOU agreeing to programs 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 2005b).

CARB California Diesel Fuel Regulation

With this rule, CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles (CCR Title 13, Sections 2281–2285; CCR Title 17, Section 93114). Harbor craft and intrastate locomotives were originally excluded from the rule but were later included by a 2004 rule amendment (CARB, 2005a). Under this rule, diesel fuel used in motor vehicles, harbor craft, and intrastate locomotives has been limited to 15 ppm sulfur since 2007. A federal diesel rule similarly limited sulfur content in diesel fuel used in motor vehicles nationwide to 15 ppm by October 2006.

CARB General Requirements for In-Use Off-road Diesel-Fueled Fleets

In 2007, CARB adopted a rule that requires owners of off-road mobile equipment powered by diesel engines 25 hp or larger to meet or exceed the fleet average or best available control technology (BACT) requirements for NOX and PM emissions by January 1 of each year between 2014 and 2023 (CCR Title 13, Section 2449.1). The rule is structured by fleet size: large, medium, and small fleets. The regulation was adopted in April 2008 and subsequently amended to delay the turnover of Tier 1 equipment for meeting the NOX performance requirements of the regulation, and then to delay overall implementation of the equipment turnover compliance schedule in response to the economic downturn in 2008 and 2009.

In September 2013, CARB received authorization from USEPA to enforce the In-Use Off-road Diesel Vehicle Regulation, including the regulation’s performance requirements, such as turnover requirements and restrictions on adding older, dirtier Tier 0 and 1 vehicles. Enforcement of the restrictions on adding Tier 0 and 1 vehicles began January 1, 2014. Enforcement of the restrictions on adding Tier 2 vehicles began January 1, 2018, for large and medium fleets and began on January 1, 2023, for smaller fleets (CARB 2022b). Enforcement of the first fleet average requirements for large fleets (greater than 5,000 total fleet horsepower) began on July 1, 2014.

CARB approved amendments to the regulation in November 2023, which will require once it comes into effect, the fleets to phase-out use of the oldest and highest polluting off-road diesel vehicles in California; prohibit the addition of high-emitting vehicles to a fleet; and require the use of R99 or R100 renewable diesel in off-road diesel vehicles.

CARB Measures to Reduce Emissions from Goods Movement Activities

In 2006, CARB approved the Emission Reduction Plan for Ports and Goods Movement in California (CARB 2006a). 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 was a step in implementing the Goods Movement Action Plan (GMAP) developed by the California Business, Transportation, and Housing Agency (BTH) and Cal/EPA. The final GMAP was released in January 2007 and includes the following measures to address the various layers of the goods movement system throughout the state including freeways, rail, and ports.

CARB Airborne Toxic Control Measure for Diesel-Fueled Transport Refrigeration Units, Generator Sets, and Facilities Where Transport Refrigeration Units Operate

In 2011, CARB amended the 2004 rule designed to reduce the DPM emissions from in-use TRUs) and TRU generator set engines (CCR Title 13, Section 2477). Under the rule, TRU engines are required to meet in-use performance standards by installing the required level of verified diesel emission control strategy (VDECS) or using an alternative technology. Compliance may also be maintained by replacing the engine with a cleaner new or rebuilt engine. The in-use performance standards have two levels of stringency (Low Emission and Ultra Low Emission in-use performance standards) that are phased in per the compliance scheduled set forth in the rule.

CARB Regulations for Fuel Sulfur and Other Operational Requirements for OGVs within California Waters and 24 Nautical Miles of the California Baseline

In July 2008, CARB approved the Regulation for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline (CCR Title 13, 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 Marine Diesel Oil (MDO) with a maximum sulfur content of 0.5 percent or MGO with a maximum sulfur content of 1.5 percent. By August 1, 2012, these source activities were required to meet an MDO limit of 0.5 percent or MGO limit of 1.0 percent (CARB 2011a). Starting in 2009, this regulation has gradually reduced the permitted sulfur content of OGV fuels. Currently, ship main engines, auxiliary engines, and auxiliary boilers operating in California waters must use MDO or Marine Gas Oil (MGO) with a maximum sulfur content of 0.1 percent.

CARB Regulation to Reduce Emissions from Diesel Auxiliary Engines on OGVs While at Berth at a California Port (At-Berth Regulations)

In December 2007, CARB adopted a regulation to reduce emissions from diesel auxiliary engines on OGVs while at berth for container, cruise, and refrigerated cargo vessels (CCR Title 17, Section 93118.3), but the regulation did not go into effect before the publication of the 2008 EIR and were not taken into account in that analysis (2008 RDEIR, p. 3.2-20). The original regulation required container vessels, cruise ships, and refrigerated cargo vessels at the State’s largest ports to meet emission or power reduction standards while at berth, increasing to 80-percent reduction requirement for 80-percent of vessel calls.

In 2020, CARB updated and expanded the regulation to cover tankers and roll-on/roll-off vessels (CCR Title 17, Sections 93130-93130.22 [At-Berth Regulations]). The updated At-Berth Regulations took effect in 2023, with implementation for the various vessel classes through 2027. Auto carriers (roll-on/roll-off vessels) and tanker ships are required to control hoteling emissions at-berth starting in 2025 for the Ports of Los Angeles and Long Beach (CARB 2020). The regulation requires 100-percent of container vessels to control emissions (primarily via shore power), with limited exceptions (capped at 10-percent of vessel visits starting in 2025) for Vessel Incident Events (VIE) or Terminal Incident Events (TIE) that prevent the use of shore power or other emission reduction control technology. The At-Berth Regulations mandate that all AMP-capable vessels use shore power (CCR Title 17, Section 93130.7(a)). Vessels are required to use either shore power or a CARB-approved emission control strategy (CAECS) to reduce emissions, unless they have been granted a waiver by CARB under the Regulation’s Innovative Concepts provision. The At-Berth Regulations include a research exception to allow for testing of CAECS; vessels participating in such testing may be exempt from the Regulations' requirements if they have a CARB-approved test plan. This process allows for the development and approval of new technologies to reduce at-berth emissions. A remediation fund is also available for shipping lines or terminal operators who are unable to use their primary compliance strategy to remain compliant for any given vessel visit (CCR Title 17, Sections 93130.8(d), (f)-(h), 93130.10(e)-(h)).

The At-Berth Regulations do not require the use of shore power due to "safety and emergency event[s]" (CCR Title 17, Sections 93130.8(a), 93130.10(a)). The At-Berth Regulations defined a "safety and emergency event" as "an event where a responsible official reasonably determines that compliance with this Control Measure would endanger the safety of the vessel, crew, cargo, passengers, terminal, or terminal staff because of severe weather conditions, a utility event, or other extraordinary reasons beyond the control of the terminal operator or vessel operator" (CCR Title 17, Section 93130.2(70)). The At-Berth Regulations do not require the use of shore power while hoteling when a vessel is "commissioning" (CCR Title 17, Sections 93130.8(c), 93130.10(c)). This process is "undertaken by the vessel operator and terminal operator to ensure that the shore power equipment on the vessel is compatible with the shore power equipment on the terminal and that there are no safety issues for both the equipment and the personnel handling the connection." (CCR Title 17, Section 93130.2(84).)

All parties necessary to achieving emission reductions from ocean-going vessels at berth have responsibilities and requirements under the At-Berth Regulations, including, but not limited to, vessel operators, terminal operators, and ports (CCR Title 17, Section 93130.1). The At-Berth Regulations require terminal and vessel operators to submit data to CARB to demonstrate compliance with its requirements (CCR Title 17, Section 93130.9(d)). All vessels are required to complete compliance checklists for each visit, and to submit detailed reports directly to CARB within 30 days of departure (CCR Title 17, Section 93130.7(e)). Terminal operators have similar requirements, ensuring that all AMP-capable vessels connect to shore power (CCR Title 17, Section 93130.9(a)). Terminal operators are also required to complete compliance checklists for each vessel visit and submit detailed reports directly to CARB within 30 days of a vessel's departure (CCR Title 17, Section 93130.9(d)).

Per the At-Berth Regulations, the China Shipping Container Terminal was required to submit a terminal plan to CARB by December 1, 2021, on their proposed control strategy to meet the At-Berth Regulation. CARB confirmed on April 27, 2022, that the Terminal fulfilled the requirements of the At-Berth Regulations by providing shore power AMP connection at the dock (CARB 2022c).

CARB Regulation Related to Ocean Going Ship Onboard Incineration

CARB adopted this regulation in 2005 and amended it in 2006. The regulation prohibits all OGVs greater than 300 registered gross tons from conducting on-board incineration within 3 nautical miles of the California coast.

CARB Mobile Cargo-Handling Equipment at Ports and Intermodal Rail Yards

The Regulation for Mobile CHE at Ports and Intermodal Rail Yards (CCR Title 13, Section 2479) uses BACT to reduce diesel PM and NO_x emissions from mobile CHE at ports and intermodal rail yards. Since 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 CARB's CHE Inventory Model emission factors used in this study (CARB 2022d). In October 2012, the Office of Administrative Law approved amendments to the CARB regulation to provide additional flexibility for CHE owners/operators in an effort to reduce compliance costs while continuing to reduce emissions (CARB 2012).

CARB Emission Standards, Test Procedures, for Large Spark Ignition Engine Forklifts and Other Industrial Equipment

Since 2007, CARB has promulgated more stringent emissions standards for hydrocarbon and oxides of nitrogen combined ($HC + NO_x$) emissions and test procedures. The engine emission standards and test procedures were implemented in two phases. The first phase was implemented for engines built between January 2007 and December 2009. The second more stringent phase was implemented for engines built starting in January 2010. The regulation was amended in 2010 to establish fleet average emissions requirements for existing engines and in 2016 to extend and supplement existing record-keeping requirements.

CARB On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation—Truck and Bus Regulation

In December 2011, CARB amended the 2008 State-wide Truck and Bus Regulation to modernize in-use heavy-duty vehicles operating throughout the state. Under this regulation, existing heavy-duty trucks are required to be replaced with trucks meeting the latest NO_X and PM Best Available Control Technologies (BACT) or retrofitted to meet these levels.

Trucks with GVWR less than 26,000 (most construction trucks) were required to replace engines with 2010 or newer engines, or equivalent, by January 2023. Trucks with GVWR greater than 26,000 (most heavy-duty trucks) must meet PM BACT and upgrade to a 2010 or newer model year emissions equivalent engine pursuant to the compliance schedule set forth by the rule. By January 1, 2023, all model year 2007 Class 8 heavy-duty trucks were required to meet NO_X and PM BACT (i.e., USEPA 2010 and newer standards).

For purposes of this analysis, this regulation affects the drayage truck fleet mix projections for the Revised Project. The mix of model years in the truck fleet is used to determine composite truck emission factors.

CARB Heavy-Duty Trucks Inspection and Maintenance Program

Under the Clean Air Act, CARB has introduced the Clean Truck Check – Heavy-Duty Inspection and Maintenance (HD I/M) Program. The program aims to address air pollution from heavy-duty diesel vehicles over 14,000 pounds – a major source of NOx and PM2.5 emissions in the state. The program ensures vehicles are well-maintained and repaired promptly by implementing a comprehensive strategy: roadside emissions screening, improved onboard diagnostics testing, regular emissions reporting and compliance checks for related freight industries. When fully enacted by 2037, the program is expected to reduce NOx emissions by over 81 tons/day and PM by 0.7 tons/day, preventing more than 7,500 premature deaths and supporting cleaner, healthier air in California.

CARB Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft

In November 2007, CARB adopted a regulation to reduce diesel particulate matter (DPM) and NO_X emissions from new and in-use commercial harbor crafts (CHC). Under CARB's definition, commercial harbor crafts include tugboats, tow boats, ferries, excursion vessels, work boats, crew boats, and fishing vessels. The regulation implemented stringent emission limits on harbor craft auxiliary and propulsion engines. In 2010, CARB amended the regulation to add specific in-use requirements for barges, dredges, and crew/supply vessels.

The regulation requires that all in-use, newly purchased, or replacement engines meet USEPA's most stringent emission standards per a compliance schedule set forth by CARB. For harbor crafts with home ports in the SCAQMD, the compliance schedule is accelerated by two years, as compared to state-wide requirements. The compliance schedule as listed in the 2007 regulation ("2007 CHC ruling") for in-use engine replacement was supposed to begin in 2009, but was not enforced until August 2012, after USEPA approved CARB's regulation (CCR Title 13 Section 2299.5; CCR Title 17 Section 93118.5). The revised 2010 regulation required accelerated turnover to Tier 2 and 3 engines for select categories between 2009 and 2022. The CARB compliance schedule for harbor crafts is applied to determine the average model year of the tug assist fleet, ultimately shaping emission factors. In 2022, a new set of amendments were adopted to expand the applicability of the regulation to more vessel types and require cleaner upgrades and newer technology, including adoption of zero emission options where feasible and Tier 3 and Tier 4 engines with diesel particulate filters on all other harbor craft. These amendments also declared that effective January 2023, all CHC operating within regulated California Waters must comply with the renewable diesel fuel requirements as laid forth in Section 93118.5. Similarly, under the amendment, new and newly acquired engines are required to meet the most stringent marine standards (Tier 4 for most applications, and Tier 3 or cleaner for commercial fishing) based on the rule's implementation schedule that begins in 2024 (CARB 2023).

On January 6, 2025, CARB received partial authorization covering most elements of its revised 2022 Commercial Harbor Craft (CHC) Regulation amendments. However, for purposes of the current study, because emissions calculations were completed prior to USEPA's January 2025 granting of a partial waiver under the Clean Air Act, the analysis does not quantify potential reductions benefits of the 2022 CHC rule amendments.

CARB 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 2011b). Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. Equipment subject to the PERP must meet weighted fleet average PM emission requirements, per CARB's phased-in compliance schedule, based on engine size. The PERP generally would apply to construction-related dredging and barge equipment.

Other Pending CARB Rules

On January 13, 2025, CARB sent letters to the USEPA withdrawing CARB's requests for EPA's Clean Air Act (CAA) waivers allowing CARB to implement and enforce the following adopted state regulations:

- Advanced Clean Fleets – Complete Withdrawal
- In-Use Locomotive Standards - Complete Withdrawal
- Commercial Harbor Craft – Partial Withdrawal
- Transport Refrigeration Unit Engine Standards - Partial Withdrawal.

Below is key information on each of the regulations. Regulatory details and copies of the CARB EPA letters are available on CARB's website, https://www.epa.gov/state-and-local-transportation/vehicle-emissions-california-waivers-and-authorizations.

The Advanced Clean Fleets (ACF) regulation, adopted by CARB in April, 2023, contained requirements for drayage fleets, government fleets and high priority fleets. New drayage trucks registered in the State's drayage truck registry would have been required to be Zero Emissions (ZE) effective January 1, 2024. Combustion engine trucks registered in the State's drayage truck registry prior January 1, 2024 (legacy trucks) would have been gradually removed from the registry as they reached 13 years (if over 800,000 miles) or a maximum of up to 18 years (if under 800,000 miles). All drayage trucks would have been required to change over to ZE trucks by 2035. ACF also included requirements for all government fleets to purchase new ZE vehicles at a 50% rate starting in 2024 and 100% in 2027. However, in 2023 and 2024, CARB issued enforcement advisories advising it was exercising 'enforcement discretion" not to enforce certain ACF ZE sales requirements for MY 24, MY 25 and MY 26, due to lack of ZE heavy-duty truck commercial availability from engine manufacturers. California withdrew its waiver request, instead urging voluntary emissions reduction efforts by the trucking industry. Without a USEPA waiver, emissions reduction credit for on-road ZE trucks to Port terminals could not be included in the Draft RSEIR analysis.

The In-Use Locomotive regulation, approved by CARB in April, 2023, contained requirements for any locomotive operator within California. Only locomotives less than 23 years old would have been acceptable for use in California, unless operated in a ZE configuration. Switch locomotives with an original engine build date of 2030 and beyond would have been required to operate in a ZE configuration for use in California. Freight line-haul locomotives with an original engine build date of 2035 and beyond would have been required to operate in a ZE configuration for use in California. Without a USEPA waiver, emissions reduction credit for in-use locomotives with ZE configuration could not be included in the Draft RSEIR analysis.

The Commercial Harbor Craft (CHC) regulation, adopted in 2008 and amended in 2022, regulates transitioning to cleaner engines for tugboats, as well as various other vessel types not relevant to the Revised Project. The partial waiver withdrawal for CHC pertains to ZE and advanced technologies standards for emissions "standards for in-use engines and vessels (excluding commercial fishing vessels) that would apply after the expiration of the feasibility extensions." The CHC regulation still requires turnover of engines to Tier 3 or Tier 4 (with diesel particulate filters). Facility/fleet reporting and associated fees will still be required. Without a USEPA waiver, however, emissions reduction credit for CHC transitioning to higher tier levels could not be included in the Draft RSEIR analysis.

The Transport Refrigeration Unit (TRU) regulation was adopted in 2004 and has been amended several times, most recently in 2022. The partial waiver withdrawal removes "requirements for the turnover of at least 15 percent of [the] diesel-fueled truck TRU fleet to ZE TRU by December 31, 2023, and each year thereafter" within the 2022 TRU Amendments. TRU fleets will still need to comply with CARB's lower global warming emissions requirements but will not need to be phased to ZE. Port tenants will still need to report on TRU activities at their facilities. Without a USEPA waiver, emissions reduction credit for TRU fleet turnover to ZE could not be included in the Draft RSEIR analysis.

3.1.3.4 Local Rules and Regulations

SCAQMD develops Rules and Regulations to regulate sources of air pollution in the SCAB. SCAQMD's regulatory authority applies primarily to stationary sources. The emission sources associated with the Revised Project are mobile sources and as such are, for the most part, 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). However, SCAQMD's Rule 402 would apply to the Revised Project as discussed below.

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.

3.1.3.5 LAHD Emission Reduction Programs

LAHD has developed several programs designed to reduce pollution from mobile sources associated with Port operations. The following programs are pertinent to the Revised Project.

San Pedro Bay Ports Clean Air Action Plan

The Ports of Los Angeles and Long Beach, with the participation and cooperation of EPA, CARB, and SCAQMD staff, developed the San Pedro Bay Ports CAAP, a planning and policy document that guides the development and implementation of air emissions and health risk reduction activities associated with port operations while allowing port development to continue. The CAAP was updated in 2010 and 2017 to revise and strengthen the control measures established in the 2006 CAAP.

The 2006 CAAP (SPBP 2006) sought the reduction of criteria pollutant emissions to the levels that ensure port-related sources decrease their "fair share" of regional emissions to enable the SCAB to attain state and federal ambient air quality standards. The CAAP focuses primarily on reducing DPM, as well as NO_x and SO_x, through emission control measures 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, MOUs, voluntary action, grants, or incentive programs.

The 2010 CAAP Update identified updated and new emission control measures as proposed strategies that support the goals expressed as the Source-Specific Performance Standards and the Project-Specific Standards; the San Pedro Bay Standards, which establish emission and health risk reduction goals to significantly reduce the effects of cumulative port-related operations; and CAAP tracking progress (SPBP 2010).

The San Pedro Bay Standards set forth a Bay-wide health risk reduction standard and a Bay-wide mass emission reduction standard, which consist of the following reductions as compared to 2005 emissions levels:

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

The Project-Specific Standard remains as adopted in the original CAAP in 2006, requiring that new projects fall below 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 LAHD Board of Harbor Commissioners retains 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 latest CAAP Update, adopted in November 2017, re-affirms the Ports' commitment to the goals and standards of previous CAAP versions, but also introduces new goals, standards, and programs. The 2017 CAAP Update incorporates two new emission reduction targets:

- Reduce greenhouse gases (GHG) from port-related sources to 40% below 1990 levels by 2030
- Reduce GHGs from port-related sources to 80% below 1990 levels by 2050.

The 2017 update retains the reduction targets for emissions of diesel particulates, nitrogen oxides, and sulfur oxides set in the 2010 update. It also retains the health risk reduction goals set by the 2010 update, re-affirms the Ports' commitment to those goals, and further commits the Ports to working with regulators and stakeholders toward further reductions in emissions and health risks.

In addition, the 2017 CAAP Update incorporates commitments by the mayors of Los Angeles and Long Beach to move towards zero emissions at the Ports, including setting goals of zero-emissions cargo-handling equipment by 2030 and zero-emissions drayage trucks by 3035. Accordingly, the updated CAAP includes provisions for new investments in clean technology, expanded use of at-berth emission reduction technologies, and a zero-emissions drayage truck pilot program. The updated CAAP also includes a CAAP Implementation Stakeholder Advisory Group to advise the Ports on details of CAAP implementation and ongoing operational efficiency and energy conservation programs; a commitment to the nationwide Green Ports Collaborative; and a commitment to a joint effort to secure funding for necessary equipment purchases and infrastructure development.

The goals set forth as the Source-Specific Performance Standards of the CAAP address a variety of port-related emission sources—ships, trucks, trains, CHE, 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 Revised Project are discussed below.

Although LAHD has adopted a general policy that its leases will 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 Board 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.

The key CAAP measures relevant to the Revised Project are summarized below.

CAAP Measure—SPBP-OGV1, Vessel Speed Reduction Program

Under this voluntary program, which started in 2001, LAHD 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 up to 10 knots (depending on the ship's normal cruising speed) can substantially reduce emissions from the main propulsion engines of the ships. The CAAP adopted the VSRP as control measure OGV1 and expanded the program out to 40 nm from the Point Fermin Lighthouse in 2008.

CAAP Measure—SPBP-OGV2, Reduction of At-Berth OGV Emissions

This measure requires the use of shore power to reduce hoteling emissions at all container and cruise terminals. The measure also requires demonstration and application of alternative emissions reduction technologies for ships that are not viable candidates for shore power, to be facilitated through the Technology Advancement Program (TAP).

CAAP Measures — SPBP-OGV3 and 4, OGV Low Sulfur Fuel for Auxiliary Engines, Auxiliary Boilers, and Main Engines

This measure originally required the use of 0.2 percent or lower sulfur distillate fuels in the auxiliary engines, auxiliary boilers, and main engines of OGVs within 40 nm of Point Fermin and while at-berth. As of January 1, 2014, CARB's regulation surpasses these CAAP measures by requiring the use of MGO and MDO with a sulfur fuel content of 0.1 percent within 24 nm of the California coastline. The analysis assumes compliance with CARB's regulation.

CAAP Measure—SPBP-OGV5 and 6, Cleaner OGV Engines and OGV Engine Emissions Reduction Technology Improvements and Environmental Ship Index Program

Measure OGV5 seeks to maximize the early introduction and preferential deployment of vessels to the San Pedro Bay Ports with cleaner/newer engines meeting the new IMO NO_x standard for ECAs. Measure OGV6 focuses on reducing DPM and NO_x from the legacy fleet through identification and deployment of effective emission reduction technologies.

In order to advance the goals of OGV5 and 6, LAHD adopted the voluntary Environmental Ship Index (ESI) Program in May 2012. The ESI Program is an international clean ship indexing program developed through the International Association of Ports and Harbors' World Ports Climate Initiative. Operators registered under this program earn an ESI score for their vessels by using cleaner technology and practices that reduce emissions beyond the regulatory requirements set by IMO. The ESI Program rewards vessel operators for reducing NO_x, SO_x, and GHG emissions in advance of regulatory requirements. The ESI Program also rewards vessel operators for bringing their newest and cleanest vessels to the Port and demonstrating technologies on board their vessels.

CAAP Measure—SPBP-HC1, Performance Standards for Harbor Craft

This measure calls for repowering all harbor craft home-based in the San Pedro Bay to Tier 3 within five years after Tier 3 engines become available. The measure also requires the use of shore power. In addition, LAHD plans to accelerate harbor craft emission reductions through emerging technologies, such as hybrid tugs, more efficient engine configurations, and alternative fuels, through incentives or voluntary measures.

CAAP Measure—SPBP-CHE1, Performance Standards for CHE

This measure calls for phased-in CHE emission reductions beyond CARB's CHE regulation, at the time of terminal lease renewal. Since 2014, all CHE with engines greater than 750 hp are required to meet, at a minimum, the EPA Tier 4 off-road engine standards or, until equipment is replaced with Tier 4, to be equipped with the cleanest CARB VDEC.

CAAP Measure—SPBP-RL1, Pacific Harbor Line Rail Switch Engine Modernization

This measure implements the switch locomotive engine modernization and emission reduction requirements included in the operating agreements between the ports and the Pacific Harbor Line (PHL). By the end of 2011, PHL had upgraded all of its Tier 2 switcher locomotives to meet Tier 3-plus standards.

CAAP Measure—SPBP-RL2, Class 1 Line-Haul and Switcher Fleet Modernization

This measure is designed to identify emission reductions associated with the CARB Class 1 railroads MOU and the 2008 EPA locomotive engine standards. The goal of this measure is for all Class 1 locomotives entering the ports to meet emissions equivalent to Tier 3 locomotive standards by 2023.

CAAP Measure—SPBP-HDV1, Performance Standards for On-Road Heavy-Duty Vehicles; Clean Trucks Program

The Port Clean Trucks Program (CTP) is a central element of the CAAP. The CTP established a progressive ban on polluting trucks. As of January 1, 2012, all trucks that did not meet the 2007 Federal Clean Truck Emissions Standards were banned from the Port. Following full implementation in 2014, Port truck emissions were reduced by more than 90 percent for DPM, PM and SO_X, and by 71 percent for NO_X (LAHD 2014a). The analysis in this Draft RSEIR assumes full compliance with the CTP.

LAHD Sustainable Construction Guidelines

As part of LAHD’s overall environmental goals and CAAP strategies, any construction at the Port must follow the Sustainable Construction Guidelines, adopted in February 2008 (LAHD 2009). The guidelines reinforce and require sustainability measures under construction contracts, addressing a variety of emission sources that operate at the Port during construction. Examples include ships and barges used to deliver construction related materials, harbor craft, dredging equipment, haul and delivery trucks, and off-road construction equipment. In addition, the LAHD Construction Guidelines include Best Management Practices (BMP)s based on CARB-verified BACT, designed to reduce air emissions from construction sources.

3.1.4 Impacts and Mitigation Measures

This section presents a discussion of the potential air quality impacts associated with operation of the Revised Project. Since the Revised Project consists of the continued operation of the CS Container Terminal under modified mitigation measures, this Draft RSEIR does not include discussion of construction-related impacts (AQ-1 and AQ-2). Furthermore, for the reasons discussed in Section 3.1.4.3, two of the operational impact issues (AQ-5 and AQ-6) are also not considered in this Draft RSEIR. Accordingly, the air quality impacts associated with operational emissions considered in this document are:

- Impact AQ-3: Would the Revised Project result in operational emissions that exceed the SCAQMD peak day emission thresholds of significance?
- Impact AQ-4: Would operation of the Revised Project result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance?
- Impact AQ-7: Would the Revised Project expose receptors to significant levels of toxic air contaminants?
- Impact AQ-8: Would the Revised Project conflict with or obstruct implementation of an applicable AQMP?

3.1.4.1 Methodology

This section summarizes the methodologies used to assess air quality impacts under CEQA. The following types of impacts were analyzed:

- Air pollutant emissions of CO, VOC, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ within the SCAB were estimated for operation of the Revised Project. To determine their significance, the Revised Project emissions minus the 2008 Actual Baseline (see Section 3.1.4.2) emissions were compared to Significance Criterion AQ-3 identified in Section 3.1.4.4. The criteria pollutant emission calculations and assumptions are presented in Appendix B1.
- Dispersion modeling of CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ emissions was performed to estimate maximum offsite air pollutant concentrations from emission sources attributed to the Revised Project. The predicted ambient concentrations associated with operation of the Revised Project were compared to Significance Criterion AQ-4. A summary of the dispersion modeling methodology is presented in this section, while the complete dispersion modeling report is presented in Appendix B2.
- An HRA of toxic air contaminant (TAC) emissions associated with operation of the Revised Project was conducted in accordance with the methodology in OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2015). The HRA includes an evaluation of three different types of health effects: individual cancer risk, chronic non-cancer hazard index, and acute non-cancer hazard index. Maximum predicted health risk values in the communities adjacent to the project site were compared to Significance Criterion AQ-7. The HRA analyzed the Revised Project and FEIR Mitigated scenarios, calculating emissions and human exposure to those emissions during 25-, 30-, and 70-year periods (the 25-year period is for occupational cancer risk, the 30-year for residential cancer risk, and the 70-year period for lifetime cancer risk). Each scenario's exposure period starts in 2019 in order to reflect residential exposure up to 2045.

- To better apprise the public and decision makers of the Revised Project's environmental impacts, the predicted cancer risk for the Revised Project is compared to both:
    a) **A static Baseline** (the 2008 Actual Baseline in this case). The static Baseline cancer risk uses 2008 activity levels and emission factors based on actual compliance of 2008 EIR/EIS Mitigations at the time, and assumes these remain constant or "static" over 25-, 30-, and 70-year exposure periods.
    b) **A floating Future Baseline**. The floating Future Baseline cancer risk also uses 2008 activity levels, but uses emission factors, projected over 25-, 30-, and 70-year exposure periods, starting in 2008, that incorporate the effects of existing air quality regulations. The floating Future Baseline does not include effects of mitigation measures from either the Revised Project or FEIR Mitigated Scenario; rather, it includes solely the future effects of existing air quality regulations. The floating Future Baseline is only used for cancer risk impact evaluation and not used against other impacts related to ambient concentrations or emissions.

  The static Baseline represents higher emissions than the floating Future Baseline because the floating Future Baseline emission factors for port-related equipment generally decline in response to post-2008 implementation of existing air quality regulations and assumptions regarding equipment fleet turnover. The complete HRA Report is presented in Appendix B3.
- LAHD has developed a methodology for assessing mortality and morbidity in CEQA documents based on the health effects associated with changes in $PM_{2.5}$ concentrations. Because mortality and morbidity studies represent major inputs used by CARB and EPA to set CAAQS and NAAQS, project-level mortality and morbidity is presented in LAHD CEQA documents as a further elaboration of local $PM_{2.5}$ impacts, which are already addressed in Impact AQ-4. Per LAHD policy, mortality and morbidity are quantified if dispersion modeling of ambient air quality concentrations during project operation identifies a significant impact for 24-hour $PM_{2.5}$. Mortality and morbidity effects are calculated for the population living inside the 2.5 $\mu g/m^3$ project increment isopleth identified during the dispersion modeling.
- 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 pounds per day (lbs/day) and emissions from Source B equal 1.4 lbs/day, the total emissions from both sources would be 2.6 lbs/day. However, in a table, the emissions would be rounded to the nearest lbs/day, such that Source A would be reported as 1 lbs/day, Source B would be reported as 1 lbs/day, and the total emissions from both sources would be reported as 3 lbs/day. Although the rounded numbers create an apparent discrepancy in the table, the underlying addition is accurate.

Methodology for Determining Emissions

The Revised Project's operational emission sources include container ships, tugboats, on-road trucks, line-haul and switching locomotives, and CHE. Some of these sources would use diesel fuel and would generate emissions of diesel exhaust, other sources would use other fuel types including LNG, CNG, LPG, and marine fuels. All of these sources would generate exhaust emissions in the form of CO, VOC, NO_x, SO_x, and particulate matter (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. Activity and utilization assumptions used to estimate peak daily operational emissions for comparison to SCAQMD emission thresholds represent upper-bound estimates of activity levels at the terminal, would occur infrequently, and, therefore, represent a conservative set of assumptions.

Emissions were evaluated for the 2008 Actual Baseline, and study years of 2012, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2026, 2036 and 2045. Information regarding the activity and characteristics of Revised Project operational emission sources was obtained primarily from LAHD staff, WBCT staff, the traffic study conducted as part of the 2018 Draft RSEIR (Section 3.3, Ground Transportation) and Port Emissions Inventories (LAHD 2019, 2020, 2021, 2022, 2023, 2024). At the time of this analysis, Port Emissions Inventories for 2024 and 2025 have not been published and released. Development of the annual emissions inventories is based on actual activity that occurred during the calendar year and is coordinated with a technical working group and representatives from federal, state, and local air district agencies. The process requires collecting a complete data set for the calendar year, calculating activity-based emissions consistent with CARB and US EPA published methodologies, and publishing the data in an annual report. Based on publication dates found on the Port's website at https://www.portoflosangeles.org/environment/air-quality/air-emissions-inventory, annual emissions inventories are typically completed and published approximately 8-10 months after the end of each calendar year reported.

The general methodology for calculating emissions for the various emission sources during Revised Project operations is presented below. A more detailed discussion of the methodology and presentation of activity, emission factor and other input data is presented in Appendix B-1. Because the Revised Project is within the SCAB, the analysis scope is also limited to the SCAB and to the thresholds established by SCAQMD for that jurisdiction. The SCAQMD thresholds are discussed in Section 3.1.4.3. The operational emission calculations are presented in Appendix B-1.

The modified mitigation measures from the Writ (see Table 1-1) were implemented for future years for the Revised Project scenario. The first period of non-compliance (2008-2014) and the additional period of non-compliance (2018-2023) account for the actual compliance with 2008 EIS/EIR mitigation measures under the Revised Project. The mitigation measures from the 2008 EIS/EIR that were implemented have been accounted for in the analysis as part of the past non-compliance years and future years under the FEIR Mitigated scenario.

Container Ships

Container ship emissions were derived primarily from vessel call data, and with emission factors and key assumptions from the Port Emission Inventories (LAHD, 2018, 2019, 2020, 2021, 2022, 2023). The number of vessel visits by vessel size (TEU), time spent in transit, maneuvering and hoteling, usage of AMP, and speed by zone were obtained from terminal call data for the first period of non-compliance (2008-2014) and the additional period of non-compliance (2018-2023). In the 2008 Actual Baseline, activity parameters represent actual vessel calls that occurred in 2008.

Container vessels are tracked from the edge of the SCAB over-water boundary to the berth, and movements include transit to the berth or to an anchorage point, maneuvering onto the berth, and hoteling at the berth or at anchorage. Characteristics of vessel engines, including installed main and auxiliary engine power, emissions factors for main and auxiliary engines, engine load during each mode of travel, time in each of mode of travel, and fuel sulfur content were derived from the Port Emission Inventories. Vessel compliance with AMP and the VSRP were based on vessel call data for past years 2008 through 2023. For the 2008 Actual Baseline, emissions were adjusted to show actual levels of compliance with the AMP requirements of 2008 EIS/EIR mitigation measure MM AQ-9 and VSRP requirements of 2008 EIS/EIR mitigation measure MM AQ-10. Peak daily emissions reflect the peak 24-hour period of activity, and thus emissions, considering all actual vessel calls in 2008.

Future year (2026-2045) container vessel activity was obtained from the LAHD staff and BERTHA model (AECOM 2016), including the number of vessel visits annually and in a peak day, the vessel size distribution in future years, and the installed power and load of vessel engines. In general, the number of vessel visits was grown according to the forecasted growth in cargo throughput, with the same modes of activity (transit, maneuvering, hoteling, anchorage) occurring in the future as in the baseline and non-compliance years. Future year emissions incorporated the Port's revised fleet forecast for turnover of vessels to those with Tier I, II and III engines (POLA 2015) which affects NO_x emissions only. For the Revised Project, future year emissions were evaluated with application of proposed mitigation measures from this Draft RSEIR as described in Chapter 2, and for the FEIR Mitigated Scenario emissions were evaluated with application of all mitigation measures required by the 2008 EIS/EIR.

Tug Boats

During terminal operations, tugboats are used to assist container ships while maneuvering and docking inside Port breakwater. Two tugboats were assumed for each arrival/departure assist of a container ship. Tugboat transit time was assumed to equal the average of container ship transit times within the harbor, multiplied by 1.3 to account for tug movement to/from base. Tugboat main and auxiliary engine sizes and load factors were obtained from the Port Emissions Inventories. Tugboat emission factors were derived from the CARB Commercial Harborcraft Model (CARB 2021a). The applicable engine tiers were determined based on average age and size of tugboats operating in the Port, and the CARB harbor craft compliance schedule. CARB requirements for fuel sulfur content were also applied.

Cargo-Handling Equipment (CHE)

CHE includes yard tractors, rubber-tired gantry cranes (RTGs), top handlers, forklifts, off-road trucks (refueling trucks) and sweepers. The equipment at the terminal includes a mix of diesel-powered equipment and LPG-powered equipment (primarily the LPG yard tractors and some LPG forklifts). The marine terminal cranes used to lift containers on and off container ships are electric and, therefore, would have no direct emissions. Yard tractors and top handlers would operate at both the CS terminal and the CS portion of the WBICTF. Equipment inventory details and annual hours of operation were provided by WBCT and the Port Inventories (for each "past" and "non-compliance" analysis year) for each type of CHE. Emission factors for CHE were obtained from the CARB OFFROAD2021 inventory model (CARB 2021b) or directly from CARB certification data for certain equipment types (yard tractors) and combined with the activity data to develop emissions. The 2008 Actual Baseline includes actual compliance levels with 2008 EIS/EIR mitigation measures MM AQ-15 and MM AQ-17. The 2008 Actual Baseline was based on WBCT equipment lists from the annual Port Inventories for 2008, which reflected the compliance level with the 2008 EIR/EIS mitigation measures at the time. The first period of non-compliance and additional non-compliance conditions were also based on actual equipment and reflected the levels of compliance with the 2008 EIR/EIS mitigation measures during each analysis year.

CHE activity in future analysis years was derived based on projected terminal throughput. WBCT supplied a detailed list of CHE equipment operating at the terminal in 2023. Because this included recent purchases and modernized equipment that was installed between 2014 and 2023, the 2023 equipment list was used as the basis for developing future-year 2026-2045 CHE emissions. The useful life of each equipment type was tracked in accordance with CARB guidelines It was assumed that once the useful life was reached, the equipment would be replaced with a new unit of the same size. All equipment emissions were adjusted to comply with CARB regulations as described in Section 3.1.3.3. For the Revised Project, future-year CHE equipment was modified from the 2023 equipment list in accordance with the revised MM AQ-15, and MM AQ-17 language in this Draft RSEIR, and to account for future growth based on projected terminal throughput. For the FEIR Mitigated Scenario, the first and additional periods of non-compliance and future year emissions were also modified to assume full compliance with all mitigation measures required in the 2008 EIS/EIR.

On-Road Trucks

Emissions from on-road, heavy-duty diesel trucks hauling containers during Revised Project operations were calculated using emission factors generated by the CARB EMFAC2021 on-road mobile source emission factor model. In accordance with CARB's direction (CARB 2024), the analysis incorporated EMFAC2021 off-model adjustment factors that account for the emission benefits of California’s Heavy-Duty Vehicle Inspection and Maintenance Program (renamed to Clean Truck Check) and EPA’s Clean Trucks Plan. The port-wide drayage truck fleet mix for each past analysis year, including the baseline, was obtained from Port Inventories for the year in question (2008, 2012, 2014, 2018 through 2023), reflecting the regulations at the time. For example, the 2014-year fleet mix reflects the Port’s Clean Truck Program which banned all trucks that did not meet 2007 and newer on-road heavy duty truck standards by January 1, 2012. Trucks fueled with liquefied natural gas (LNG) comprise a small fraction of the fleet in past years, with 2012 being the first year for which there was any information available. Similar to diesel-fueled trucks, the emission factors for LNG trucks were obtained from the EMFAC2021 model. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways were derived from Section 13.2 of EPA’s AP-42 compilation of emission factors.

Truck activity on-site included idling at the in-gate, out-gate and on-terminal idling, as well as on-terminal driving. Truck activity off-site included truck travel along roadway links as determined through the transportation modelling (see 2018 RDSEIR, Section 3.3). In the FEIR Mitigated Scenario, truck emissions were modified to reflect assumed compliance with all mitigation measures from the 2008 EIS/EIR, which consisted of an increase percentage of LNG-fueled trucks in the drayage truck fleet and therefore assumes reductions in DPM emissions.

In the Revised Project future years, predicted truck emissions were based on fleet forecasts of trucks considering only the effects of the CTP and CARB regulations because no feasible truck mitigation measures were identified to replace MM AQ-20, which was found to be infeasible in the 2019 SEIR.

Rail

The CS Terminal generates train trips to and from the on-dock rail yard (WBICTF) as well as near- and off-dock rail yards. Containers arriving and departing via a near- or off-dock rail yard are transported between the terminal and rail yard by drayage trucks. Emissions associated with hauling containers by rail include diesel exhaust from PHL locomotives performing switching activities at the on-dock rail yard, Class I switch locomotives performing switching activities at the near- and off-dock rail yards, and line-haul locomotive emissions used during transport within the SCAB and idling at the rail yards.

Emission factors for line haul locomotives were derived from EPA emission factors. Emission factors by tier level were combined into a composite fleetwide average using the fleet mix percentages by year obtained through the CARB Locomotive Inventory (CARB 2021c). The baseline, past years and non-compliance years fleet mix for PHL switchers was obtained from LAHD staff and Port Emission Inventories. It was conservatively assumed that the PHL fleet mix will remain constant through 2045, since the 2023 fleet mix indicated the engines were composed of the cleanest available Tier 3 and Genset switcher engines, which would likely not be replaced by 2045, based on equipment longevity, unless required by regulation. Line haul and switcher engine power and load factors were derived from the Port Emission Inventories and LAHD staff. Line haul and switcher activity, both within the on-dock railyard and for off-site travel were obtained from LAHD staff, WBCT, and from the Port's TrainBuilder model.

Worker Vehicles

Emissions from worker vehicles are associated with employee commute during operation in the baseline, past years, non-compliance years and future years, and were calculated using emission factors for light-duty gasoline vehicles generated by the EMFAC2021 model for on-road mobile sources. Road dust emission factors for on-terminal and off-terminal driving were derived from Section 13.2 of EPA's AP-42.

Other Considerations

Appendix B1 contains details of the emissions calculations, including those for sources such as electricity-related emissions from AMP power consumption and worker vehicle commutes.

In general, the activity data for the non-compliance years were obtained from LAHD staff, WBCT, and the Port Emission Inventories (LAHD 2019, 2020, 2021, 2022, 2023, 2024). Future year emissions were forecasted as described above, and using a variety of models that forecast activity and emissions factors for various source categories. Future activity was primarily based on the projected TEU throughput at the terminal on an annual basis. Peak daily emissions were derived either directly from models (e.g. for container vessels), or from peaking factors that represent the peak daily throughput relative to average daily throughput. Peak daily emissions were used to derive peak hourly and 8-hour emissions as needed to evaluate various pollutant concentration thresholds.

Dispersion Modeling Methodology

The dispersion modeling methodology was based on U.S. EPA and SCAQMD modeling guidance (USEPA 2024a; SCAQMD 2024). The EPA dispersion model AERMOD, version 24142, was used to predict maximum ambient pollutant concentrations at or beyond the project site boundary. The following presents a brief summary of the dispersion modeling methodology and assumptions; the complete dispersion modeling report is included in Appendix B2.

- The analysis modeled peak 1-hour and annual NO_x emissions, peak 1-hour and 24-hour SO_x emissions, peak 1-hour and 8-hour CO emissions, peak 24-hour and annual PM_{10} emissions, and peak 24-hour $PM_{2.5}$ emissions.
- To capture temporal trends in predicted impacts, concentrations of NO_2, PM_{10} and $PM_{2.5}$ were modeled for each analysis year (2012, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2026, 2036 and 2045). Because CO and SO_2 are unlikely to exceed the ambient air quality standards in any analysis year, emissions used for modeling these two pollutants were a composite of the maximum emissions from each emission source over all analysis years. Thus, single worst-case scenarios were modeled for CO and SO_2 whereas individual analysis years were modeled for NO_2, $PM_{2.5}$ and PM_{10}.
- Valid receptors included all locations along and outside the Revised Project footprint boundary, excluding over-water non-marina receptors, project site boundary receptors bordering water, and off-site receptors located within modeled roadways and rail lines.
- Significance concentration thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds. Therefore, impacts were determined by modeling the Revised Project's emission increases relative to the Baseline. The modeled receptor with the highest predicted ambient concentration increment was compared to the corresponding significance threshold to determine significance.
- Significance concentration thresholds for NO_2, SO_2, and CO are absolute thresholds based on the ambient air quality standards. Therefore, impacts were determined by modeling the Revised Project's emission increases relative to the Baseline and adding the ambient background concentration to yield a total concentration. The modeled receptor with the highest predicted total ambient concentration (increment plus background) was compared to the corresponding significance threshold to determine significance.
- Ambient background concentrations were obtained from the Port's Wilmington Community Station. This air monitoring station is part of the Port's site-specific monitoring network and therefore captures the contributions to ambient air pollutant levels from the Port including the existing China Shipping Terminal. The three most recent years of monitoring data, 2021-2023, were used to determine the background concentrations for the modeled analysis years 2023 through 2045. For analysis years 2012 through 2022, the three years of monitoring data leading up to and including the analysis year were used to determine the background concentrations. Therefore, 2010-2012 monitoring data were used for analysis year 2012, 2012-2014 monitoring data were used for analysis year 2014, etc.
- The dispersion modeling methodology for the FEIR Mitigated scenario was the same as described above for the Revised Project.

Health Risk Assessment Methodology

To better apprise the public and decision makers of the Revised Project's environmental impacts, the predicted cancer risk for the Revised Project was compared to both a static Baseline and a floating Future Baseline. The static Baseline cancer risk used 2008 activity levels and 2008 emission factors based on actual compliance of 2008 EIR/EIS mitigation measures at the time, and assumed these remain constant or "static" over 25-, 30-, and 70-

year exposure periods. The floating Future Baseline cancer risk also used 2008 activity levels, but used emission factors, projected over 25-, 30-, and 70-year exposure periods that begin in 2008, that incorporate the future effects of existing air quality regulations. The static Baseline represents higher emissions than the floating Future Baseline because the floating Future Baseline emission factors for port-related equipment generally decline over time in response to future implementation of existing air quality regulations and assumptions regarding cleaner equipment due to equipment fleet turnover. The complete HRA Report is presented in Appendix B3.

The EPA dispersion model AERMOD, version 24142, was used to predict ambient pollutant concentrations at or beyond the project site boundary. The Hotspots Analysis and Reporting Program HARP, version 22118 (CARB 2022e), was then used to perform health risk calculations based on output from AERMOD, using assumptions and procedures described in OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015) and SCAQMD's Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (SCAQMD 2024).

The HRA evaluated four different types of health effects: individual cancer risk, population cancer burden, chronic noncancer hazard index, and acute noncancer hazard index.

- Individual cancer risk is the additional chance for a person to contract cancer after long-term exposure to Revised Project emissions. The exposure durations assumed in this HRA are 30 years for residential and sensitive receptors, and 25 years for occupational receptors.
- Population cancer burden is an estimate of the expected number of additional cancer cases in the population exposed to Revised Project-generated TAC emissions. It is the product of individual lifetime incremental cancer risk multiplied by the population exposed to that level of incremental risk, calculated at the census block level and summed over all modeled census blocks. To calculate the cancer burden, a residential lifetime exposure period of 70 years was assumed (OEHHA 2015). In accordance with SCAQMD guidance (SCAQMD 2024), cancer burden was calculated in this analysis for all census blocks with an individual lifetime residential cancer risk increment exceeding one in one million (1×10^{-6}).
- The chronic hazard index is a ratio of the annual exposure to TAC emissions 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 maximum 1-hour 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.

The main sources of TACs from Revised Project operations would be DPM emissions from container ships, tugboats, cargo handling equipment, locomotives, and trucks. For cancer risk and the chronic hazard index, CARB uses DPM as a surrogate for the total health effects associated with the combustion of diesel fuel. TAC emissions from non-diesel sources (such as alternative fuel engines) and diesel non-internal combustion sources (such as ship auxiliary boilers) also were evaluated in the HRA, although their impacts were minor in comparison to DPM.

To estimate the Revised Project's individual cancer risk impacts for residential and sensitive receptors, TAC emissions were projected for each year over a 30-year period, 2019 through 2048. To estimate occupational cancer risk impacts, TAC emissions were projected each year over a 25-year period, 2019 through 2043. To estimate individual lifetime cancer risk impacts for the calculation of population cancer burden, TAC emissions were projected each year over a 70-year period, 2019 through 2088. The population cancer burden analysis assumed exposure beyond the lease termination date for the terminal in 2045 and therefore is a conservative estimate of the Revised Project's impacts. 2019 was selected as the first year for the HRA, as it would cover the period of non-compliance, from 2019 up to the last analysis year (2045) for the individual cancer risk component of the HRA. According to OEHHA guidance, HRAs conducted under CEQA often show higher individual cancer risk during the early years of the exposure period because early-life exposures are given greater weight. OEHHA's methodology accounts for increased vulnerability in children—who have higher inhalation rates and greater sensitivity to toxic air contaminants—by applying age sensitivity factors.

The year-by-year Revised Project emission projections for the various exposure periods were interpolated between the emission estimates for 2008, 2012, 2014, 2018 through 2023, 2026, 2036, and 2045. Emissions after 2045 were assumed to remain constant at 2045 levels.

To determine significance, this HRA evaluated the incremental change in health effects associated with the Revised Project relative to the 2008 Actual Baseline. Cancer risks and population cancer burden were also evaluated relative to the floating Future Baseline. The resulting incremental health effects values were compared to the significance thresholds for health risk described in Section 3.1.4.3.

The health risk assessment methodology for the FEIR Mitigated scenario was the same as described above for the Revised Project.

Particulates: Morbidity and Mortality

Of great concern to public health are particles that are small enough to be inhaled into the deepest parts of the lung. Respirable particles (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 Revised Project would emit respirable particulates during operation. This analysis addresses potential health effects caused by respirable particulate emissions and discusses existing standards and thresholds developed by regulatory agencies to address health impacts.

LAHD has developed a methodology for assessing mortality and morbidity in CEQA documents based on the health effects associated with changes in $PM_{2.5}$ concentrations. Because mortality and morbidity studies represent major inputs used by CARB and EPA to set CAAQS and NAAQS, project-level mortality and morbidity is presented in LAHD CEQA documents as a further elaboration of local $PM_{2.5}$ impacts, which are already addressed in Impact AQ-4. Per LAHD policy, mortality and morbidity would be quantified if dispersion modeling of ambient air quality concentrations during project operation identified a significant impact for 24-hour $PM_{2.5}$. Mortality and morbidity effects would be calculated for the population living inside the 2.5 µg/m3 project increment isopleth identified during the dispersion modeling.

Health Effects of PM Emissions

Epidemiological studies substantiate the correlation between the inhalation of ambient PM and increased mortality and morbidity (CARB 2010). 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'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 3.1-4 presents the statewide PM and ozone health effects identified by CARB (CARB 2006b).

Table 3.1-4. 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 (2006).
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'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 2010). Numerous new ongoing and proposed studies 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 in space and time. 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 interrelationships with each other (e.g., PM, SO_2, NO_2, CO, ozone; CARB 2006a).

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 (e.g., CARB 2025). Studies such as these and studies that have followed since serve as the fundamental basis for PM air quality standards promulgated by SCAQMD, CARB, EPA, and the World Health Organization.

Quantifying Morbidity and Mortality

LAHD has developed a methodology for assessing morbidity and mortality in CEQA documents, which generally follows the approach used by CARB to estimate statewide health impacts from ports and goods movement in California (CARB 2006b), incorporating the methodology for mortality published by CARB (CARB 2010). 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 require information on emissions from all sources within a region (for example, the SCAB) and is therefore not considered appropriate for project-level analyses. Therefore, the methodology for project-level studies conducted for Port CEQA documents focuses on the health effects associated with changes in PM concentrations. Focusing on PM is also consistent with CARB studies of mortality and morbidity impacts from California ports (CARB 2006b, 2010).

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% of the 24-hour NAAQS and 21% 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 EPA to set CAAQS and NAAQS, project-level mortality and morbidity are presented in LAHD CEQA documents as a further elaboration of local PM impacts that are already addressed. Therefore, mortality and morbidity are 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 are quantified if dispersion modeling of ambient air quality concentrations during Revised Project operation (Impact AQ-4) identifies a significant impact for 24-hour $PM_{2.5}$. The zone of influence is the 2.5 $\mu g/m^3$ isopleth identified during the dispersion modeling.

3.1.4.2 Baseline

This Draft RSEIR uses the 2008 Actual Baseline in determining the significance of incremental changes to the mitigated impacts anticipated in the 2008 EIS/EIR, due to changes to the project (i.e. proposed modifications to 2008 EIS/EIR Mitigation measures under the Revised Project) and changed circumstances/new information (i.e. incremental increase in terminal throughput, as shown in Table 2-2, due to the revised assessment of terminal capacity presented in the 2019 Draft RSEIR). In 2008, none of the mitigation measures in the 2008 EIS/EIR had taken effect, although AMP (MM AQ-9) was being implemented at a rate of 86% of vessel calls rather than the 70% required by the measure.

Rules and regulations effective by December 31, 2007, are considered in the 2008 Actual Baseline for the source categories listed. The methodology used to quantify baseline emissions is presented in Section 3.1.4.1, Methodology. The 2008 Actual Baseline includes the following emission sources: container ships, tugboats, trucks, locomotives, cargo handling equipment (CHE), and employee vehicles. More detail on the methodology including the annual and peak day source category activity information is presented in Appendix B1.

In addition, in assessing cancer risk impacts under Impact AQ-7, this Draft RSEIR employs not only the 2008 Actual ("static") Baseline, but also a secondary analysis that compares the Revised Project to a "floating" Future Baseline.

- The static Baseline uses 2008 activity levels and 2008 emission factors based on actual compliance of 2008 EIR/EIS Mitigation measures at the time, and assumes these conditions remain constant or "static" over 25-, 30-, and 70-year exposure periods.
- The floating Future Baseline assumes actual 2008 terminal operations and throughput levels, but also incorporates the anticipated effects of reduced emissions in the analysis years (2012, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2026, 2036, and 2045) resulting from air quality regulations as they existed at the time of this analysis. The floating Future Baseline does not assume implementation of any 2008 EIS/EIR Mitigation measures that are proposed for modification under the Revised Project except to the extent that they duplicate existing regulations. This secondary analysis provides a conservative exposure scenario for the cancer risk analysis because it results in a lower baseline and higher Revised Project increment than comparison to the static 2008 Actual Baseline conditions. Therefore, comparison to both the static 2008 Baseline and the floating Future Baseline will better apprise the public and decision makers of the Revised Project's environmental impacts.

The use of both the static Baseline and floating Future Baseline for cancer risk helps to resolve the complication of evaluating the terminal during a fixed point in time (2008 Actual baseline conditions) for a health impact that is based on decades-long exposure periods. This complication does not exist for the chronic and acute hazard indices because they are based on modeled TAC concentrations of one year and one hour, respectively, both of which fit within the 2008 baseline period. Therefore, the floating Future Baseline was used only for cancer risk and population cancer burden. Other impacts such as AQ-4 and AQ-7, concerning operational emissions and concentrations related impacts, respectively, use the 2008 Actual Baseline.

In the floating Future Baseline, emission rates were linearly interpolated between the analysis years (2012, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2026, 2036, and 2045), and were held constant after the analysis surpassed the extent of existing regulations. Emissions determined for the floating Future Baseline 25-, 30-, and 70-year exposure periods were used in the floating Future Baseline cancer risk determination. This approach is consistent with the methodology developed by the Port for previous health risk analyses and with the *Neighbors for Smart Rail v. Exposition Metro Line Const. Authority* (2013) 57 Cal.4th 439, regarding CEQA baselines. Each of the 25-, 30-, and 70-year exposure periods for the floating Future Baseline started in 2008.

Table 3.1-5 summarizes the peak daily emissions within the SCAB associated with operation of the existing terminal during the 2008 baseline year. The 2008 EIS/EIR emissions analysis utilized tools and models that are out of date and cannot be replicated, as described in Appendix B1. The Baseline, 2012, and 2014 analyses for this Draft RSEIR for air quality cannot use the direct quantitative results of the 2008 EIS/EIR for most of the sources. Accordingly, use of up-to-date tools and models in this Draft RSEIR yields results that differ from those presented in the 2008 EIS/EIR and the 2019 SEIR. Peak daily emissions represent reasonable upper-bound estimates of activity levels at the terminal and would occur infrequently. The 2008 Actual Baseline peak daily emissions are compared to future Revised Project peak daily emissions to determine impact significance for the Revised Project. These comparisons are presented in Section 3.1.4.4.

Table 3.1-5. Peak Daily Baseline Emissions

Source Category	Peak Day Emissions (lb/day)					
	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SOx
2008 Actual Baseline						
Cargo Handling Equipment	27	458	275	8	8	0.2
Harbor Craft	3	11	40	2	2	0.0
Ocean Going Vessels	62	70	1,138	108	87	1,154
Worker Vehicles Offsite Driving	2	70	6	0.1	0.1	0.1
Trucks Offsite Driving	77	298	1,413	48	39	1.2
Worker Vehicles Onsite Driving	0.2	3	0.3	1	0.2	0.0
Trucks Onsite Driving/Idling	19	46	101	19	7	0.1
Rail Offsite Operations	36	117	660	23	22	0.5
Rail On Dock Operations	6	20	112	4	4	0.1
Total Emissions	**234**	**1,094**	**3,745**	**214**	**168**	**1,156**

3.1.4.3 Thresholds of Significance

The following thresholds were used to determine the significance of air quality impacts of the Revised Project. The thresholds were based on the standards established by the City of Los Angeles in the *L.A. CEQA Thresholds Guide* (City of Los Angeles 2006). The *L.A. CEQA Thresholds Guide* incorporates, by reference, the CEQA Air Quality Handbook and associated significance thresholds developed by the SCAQMD (SCAQMD 2023).

Because the Revised Project consists of the continued operation of the CS Container Terminal under modified mitigation measures, only CEQA thresholds associated with operational activities are considered in this Draft RSEIR, meaning that thresholds AQ-1 and AQ-2, for construction related impacts, are not included in the Draft RSEIR. In addition, the 2015 NOP concluded that the Revised Project would not create objectionable odors (threshold AQ-6) and that, accordingly, this issue would not be addressed in the Draft RSEIR. Those issues would also not be affected by the modest increase in terminal throughput under the Revised Project, and need not be re-visited for that reason, either. CO hotspots were considered in the 2008 EIS/EIR under AQ-5. However, information presented by SCAQMD in the 2003 AQMP indicates that CO hotpot analysis is unnecessary because hotspots are unlikely to occur. A study of the four most congested intersections in the Los Angeles region found no exceedances of ambient air quality standards for CO, indicating that hotspots did not occur. Since the study intersections for the Revised Project would experience lower traffic volumes than SCAQMD’s study intersections, even with increased throughput, a hotspot analysis is not required. Accordingly, instead of eight thresholds this analysis uses four (AQ-3, AQ-4, AQ-7 and AQ-8).

Criterion AQ-3: Would the Revised Project result in operational emissions that exceed the SCAQMD peak day emission thresholds of significance in Table 3.1-6?

For determining significance, these thresholds are compared to the net change in Revised Project operational peak daily emissions relative to Baseline peak daily emissions.

Table 3.1-6. 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 (2023)

Criterion AQ-4: Would operation of the Revised Project result in offsite ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance in Table 3.1-7?

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.

Criterion AQ-7: Would the Revised Project expose receptors to significant levels of toxic air contaminants?

The determination of significance for AQ-7 is made as follows:

- Maximum Incremental Cancer Risk is greater than or equal to 10 in 1 million.
- Cancer Burden is greater than 0.5 excess cancer cases in areas where the maximum incremental cancer risk for residential receptors is greater than 1 in one million.
- Noncancer Hazard Index is greater than or equal to 1.0 (project increment).

Table 3.1-7. SCAQMD Thresholds for Localized Ambient Air Quality Concentrations Associated with Project Operation

Air Pollutant[a]	Operation Ambient Concentration Threshold
Nitrogen Dioxide (NO_2)[b]	
1-hour average (federal)[c]	0.100 ppm (188 μg/m^3)
1-hour average (state)	0.18 ppm (339 μg/m^3)
Annual average (federal)	0.0534 ppm (100 μg/m^3)
Annual average (state)	0.030 ppm (57 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)
Particulates (PM_{10} or $PM_{2.5}$)[e]	
24-hour average (PM_{10} and $PM_{2.5}$)	2.5 μg/m^3
Annual average (PM_{10} only)	1.0 μg/m^3
1-hour average	0.04 ppm (105 μg/m^3)
Sulfate[f]	
24-hour average	25 μg/m^3
Lead[f]	
30-day average (state)	1.5 μg/m^3
Rolling 3-month average (federal)	0.15 μg/m^3

Notes:
[a] The NO_2, SO_2, and CO thresholds are absolute thresholds; the maximum predicted impact from Revised Project operations is added to the background concentration and compared to the threshold.
[b] To evaluate the Revised Project's impacts on 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] 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.
[e] The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds; the maximum predicted impact from operational activities (without adding the background concentration) is compared to these thresholds.
[f] Sulfates and lead are not of concern for this project.
Sources:
SCAQMD (2023); USEPA (2022).

Criterion AQ-8: Would the Revised Project conflict with or obstruct implementation of an applicable AQMP?

The consistency of the Revised Project with an applicable air quality plan is assessed qualitatively. A project would be considered consistent with the local AQMP and not interfere with attainment goals if the project's activities (e.g. cargo throughput, ship berths) are consistent with the projections utilized in the formulation of the AQMP, i.e., if the project's activities do not exceed the assumptions in the latest AQMP.

Other considerations include whether the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (except as provided for CO in Section 9.4 for relocating

CO hot spots; SCAQMD 2023). The analysis also includes an assessment of the Revised Project's consistency with the applicable Community Emissions Reduction Plan (CERP).

3.1.4.4 Impact Determination

Impact AQ-3: Would the Revised Project result in operational emissions that exceed an SCAQMD threshold of significance in Table 3.1-6?

Per the Writ, the Revised Project operational mitigation measures (2019 MM AQ-15, 2008 MM AQ-17 [pilot project only], 2019 MM AQ-17, 2019 LM AQ-1, 2019 LM AQ-2, 2019 LM AQ-3) are described in Section 2.5.1. These mitigation measures would reduce criteria pollutant emissions associated with project operation. The Revised Project also includes the 2008 MM AQ-9 and MM AQ-10, as updated per the Writ and May 2025 Ruling and described below.

For purposes of the emissions estimates in this Draft RSEIR, it was assumed that the effective date of a new lease amendment implementing the Revised Project is 2026. Effects of Revised Project mitigations are included in the calculations starting from 2026 because that is the earliest that the Board could be expected to adopt a lease amendment after certification of this RSEIR, which, per the Writ, is required by December 1, 2025.

MM AQ-9: **Alternative Maritime Power (AMP).** China Shipping ships calling at Berths 97-109 shall use AMP while hoteling in the Port for 100-percent of ship calls.

Additionally, all ships retrofitted for or capable of using AMP calling at Berths 97-109 shall use AMP while hoteling in the Port for 100-percent compliance of ship calls.

The following exceptions apply to this measure:

(1) When an AMP-capable berth is unavailable due to utilization by another AMP-capable ship.

(2) During any portion of a vessel visit that qualifies as a "safety and emergency event" under California Code of Regulations, Title 17, section 93130.8, subdivision (a).

(3) During any portion of a vessel visit that qualifies as "commissioning" under California Code of Regulations, Title 17, section 93130.8, subdivision (c).

(4) During any portion of a vessel visit that occurs during either a vessel-side equipment failure or a terminal-side equipment failure.

MM AQ-10: **Vessel Speed Reduction Program (VSRP).** All ships (100%) calling at Berths 97-109 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area .

The Revised Project's operational emissions are summarized below in Table 3.1-8. Table 3.1-8 presents peak daily criteria pollutant emissions associated with operation of the Revised Project after the application of mitigation measures.

MM AQ-9 requires that 100% of China Shipping ships and ships with AMP capabilities must use AMP while calling at Berths 97-109. However, to be conservative and to avoid overstating reductions associated with the Revised Project, the analysis assumes a 97% compliance level (and, thus, greater emissions). This analytical assumption is based on historical data and operational experience (see Section 2.5.1.2) and does not modify the compliance requirements of MM AQ-9. The analysis also assumes that the ships connecting to AMP while hoteling at the Port in compliance with MM AQ-9 will still have three hours of auxiliary engine use for connect and disconnect time consistent with the At-Berth regulations (CCR, Title 17, section 93130.2, subdivision (b)(58)(63)).

Similarly, for MM AQ-10, the analysis below assumes a lower level of compliance (99.6% and 99.2% for zone 4 and zone 5 respectively), based on historical data, to be conservative to avoid overstating reductions associated with the Revised Project and does not modify the compliance requirements of MM AQ-10.

Emissions were estimated for eleven study years: 2012, 2014, 2018, 2019, 2020, 2021, 2022, 2023, 2026, 2036, and 2045 (i.e., the first period of non-compliance, the additional period of non-compliance, and the future years of operation; see section 3.1.1). Peak daily emissions represent upper-bound estimates of activity levels at the terminal and as such would occur infrequently. Comparisons to the baseline emissions are presented to determine significance. The operational emissions from the Revised Project are compared to the 2008 Actual Baseline for purposes of determining the impact from the Revised Project, over the CEQA threshold.

Revised Project source characteristics, activity levels, fuel sulfur content, emission factors, and other parameters assumed in the operational emissions are discussed in detail in Section 3.1.4.1, Methodology and in Appendix B1.

Table 3.1-8. Peak Daily Operational Emissions—Revised Project (lbs/day)

Source Category	**Peak Day Emissions (lb/day)**					
2012 Actual	**VOC**	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**
Cargo Handling Equipment	99	1,013	525	16	15	0.4
Harbor Craft	3	16	27	1.0	0.9	0.0
Worker Vehicles Offsite Driving	1.2	49.2	4.2	0.1	0.1	0.1
Trucks Offsite Driving	25	162	827	31	18	1.8
Ocean Going Vessels	69	125	1,006	31	29	155
Worker Vehicles Onsite Driving	0.1	2.4	0.2	1.2	0.2	0.0
Trucks Onsite Driving/Idling	12	60	112	24	5	0.1
Rail Offsite Operations	29	117	543	19	17	0.5
Rail On Dock Operations	5	22	96	3	3	0.1
Total	**243**	**1,566**	**3,139**	**125**	**89**	**158**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2012 Emissions Minus 2008 Actual Baseline	10	472	-606	-88	-79	-998
Significance Threshold	55	550	55	150	55	150
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
2014 Actual						
Cargo Handling Equipment	218	2,152	1,130	18	17	0.8
Harbor Craft	2	13	24	0.9	0.8	0.0
Worker Vehicles Offsite Driving	0.9	39.8	3.2	0.1	0.1	0.1
Trucks Offsite Driving	39	272	1,651	47	21	4.0
Ocean Going Vessels	242	334	5,029	90	83	156

Source Category	Peak Day Emissions (lb/day)					
Worker Vehicles Onsite Driving	0.1	1.9	0.1	1.2	0.2	0.0
Trucks Onsite Driving/Idling	22	172	437	50	8	0.6
Rail Offsite Operations	28	125	564	18	17	0.5
Rail On Dock Operations	5	25	107	3	3	0.1
Total	**557**	**3,136**	**8,946**	**227**	**150**	**162**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2014 Emissions Minus 2008 Actual Baseline	324	2,041	5,201	14	-18	-994
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
2018 Actuals						
Cargo Handling Equipment	98	1,850	538	8	8	0.3
Harbor Craft	0.3	2	10	0.2	0.2	0
Worker Vehicles Offsite Driving	1.8	45.8	4.0	9.0	1.4	0
Trucks Offsite Driving	33	249	1,536	100	31	4.5
Ocean Going Vessels	76	158	1,357	26	24	63
Worker Vehicles Onsite Driving	0.0	1.5	0.1	1.5	0.2	0
Trucks Onsite Driving/Idling	8	73	133	20	3	0.2
Rail Offsite Operations	3	17	73	2	2	0.1
Rail On Dock Operations	0.7	4	16	0.4	0.4	0
Total	**221**	**2,400**	**3,666**	**168**	**71**	**68**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2018 Emissions Minus 2008 Actual Baseline	-13	1,306	-79	-46	-98	-1,108
Significance Threshold	55	550	55	150	55	150
Significant?	**No**	**Yes**	**No**	**No**	**No**	**No**
2019 Actuals						
Cargo Handling Equipment	53	253	279	8	7	0.4
Harbor Craft	0.5	2	14	0.3	0.2	0
Worker Vehicles Offsite Driving	1	35	3	8	1	0
Trucks Offsite Driving	32	257	1,498	102	31	4.7
Ocean Going Vessels	96	201	1,792	32	29	76
Worker Vehicles Onsite Driving	0.0	1.2	0.1	1.3	0.2	0
Trucks Onsite Driving/Idling	8	81	138	21	3	0.2
Rail Offsite Operations	3	14	62	2	1	0.1
Rail On Dock Operations	0.6	3	13	0.3	0.3	0
Total	**194**	**849**	**3,799**	**174**	**75**	**81**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2019 Emissions Minus 2008 Actual Baseline	-40	-245	54	-39	-94	-1,075
Significance Threshold	55	550	55	150	55	150
Significant?	**No**	**No**	**No**	**No**	**No**	**No**
2020 Actuals						

Source Category	Peak Day Emissions (lb/day)					
Cargo Handling Equipment	93	378	404	10	10	0.6
Harbor Craft	0.8	4	23	0.4	0.4	0
Worker Vehicles Offsite Driving	2	55	5	12	2	0
Trucks Offsite Driving	42	425	2,035	151	45	7
Ocean Going Vessels	95	167	4,548	43	40	135
Worker Vehicles Onsite Driving	0	2	0.1	2	0.3	0
Trucks Onsite Driving/Idling	10	112	173	30	5	0.3
Rail Offsite Operations	5	28	122	3	3	0.1
Rail On Dock Operations	1	8	34	0.8	0.8	0
Total	**250**	**1,178**	**7,344**	**252**	**105**	**143**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2020 Emissions Minus 2008 Actual Baseline	16	84	3,598	39	-63	**-1,013**
Significance Threshold	55	550	55	150	55	150
Significant?	**No**	**No**	**Yes**	**No**	**No**	**No**
2021 Actuals						
Cargo Handling Equipment	244	636	848	18	17	1.0
Harbor Craft	0.4	2	13	0.2	0.2	0
Worker Vehicles Offsite Driving	2	71	6	19	3	0
Trucks Offsite Driving	55	674	2,758	238	70	11
Ocean Going Vessels	59	114	2,549	27	25	81
Worker Vehicles Onsite Driving	0.1	2	0.1	3	0.5	0
Trucks Onsite Driving/Idling	35	415	567	47	8	1.0
Rail Offsite Operations	8	46	198	5	5	0.2
Rail On Dock Operations	2	14	58	1	1	0.1
Total	**406**	**1,974**	**6,998**	**359**	**129**	**94**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2021 Emissions Minus 2008 Actual Baseline	172	880	3,253	146	-39	-1,062
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
2022 Actuals						
Cargo Handling Equipment	285	686	923	24	23	1
Harbor Craft	0.8	4	19	0.3	0.3	0
Worker Vehicles Offsite Driving	2	63	6	19	3	0
Trucks Offsite Driving	42	756	2,330	261	75	12
Ocean Going Vessels	60	89	3,941	22	21	81
Worker Vehicles Onsite Driving	0.1	2	0.1	3	0.5	0
Trucks Onsite Driving/Idling	40	512	635	52	8	1
Rail Offsite Operations	11	63	270	6	6	0.2
Rail On Dock Operations	3	20	81	2	2	0.1
Total	**445**	**2,197**	**8,204**	**389**	**138**	**95**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156

Source Category	Peak Day Emissions (lb/day)					
Total 2022 Emissions Minus 2008 Actual Baseline	211	1,103	4,459	176	-30	-1,061
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
2023 Actuals						
Cargo Handling Equipment	275	665	791	22	21	1.0
Harbor Craft	0.8	4	19	0.3	0.3	0
Worker Vehicles Offsite Driving	1	41	4	14	2	0
Trucks Offsite Driving	11	632	994	198	56	9
Ocean Going Vessels	162	350	2,928	47	43	101
Worker Vehicles Onsite Driving	0.0	2	0.1	2	0.4	0
Trucks Onsite Driving/Idling	26	416	333	39	6	0.7
Rail Offsite Operations	5	32	136	3	3	0.1
Rail On Dock Operations	2	10	43	1.0	0.9	0
Total	**482**	**2,152**	**5,247**	**327**	**132**	**112**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2023 Emissions Minus 2008 Actual Baseline	249	1,058	1,502	113	-36	-1,044
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
2026 Revised Project						
Cargo Handling Equipment	275	1,915	665	12	12	1.0
Harbor Craft	1	7	32	0.5	0.5	0
Worker Vehicles Offsite Driving	0.5	49	2	0.3	0.1	0.2
Trucks Offsite Driving	3	120	207	35	13	4
Ocean Going Vessels	224	451	6,531	78	72	206
Worker Vehicles Onsite Driving	0.0	1	0.1	2	0.3	0
Trucks Onsite Driving/Idling	15	252	122	53	8	0.5
Rail Offsite Operations	18	115	469	11	10	0.4
Rail On Dock Operations	2	13	52	1	1	0.1
Total	**539**	**2,925**	**8,080**	**192**	**117**	**212**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2026 Emissions Minus 2008 Actual Baseline	305	1,831	4,334	-21.2	-51	-944
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
2036 Revised Project						
Cargo Handling Equipment	43	351	29	3	3	0.7
Harbor Craft	0.4	5	12	0.3	0.3	0
Worker Vehicles Offsite Driving	0.2	26	1	0.2	0.1	0.1
Trucks Offsite Driving	4	125	158	54	19	5
Ocean Going Vessels	360	737	3,318	94	86	200
Worker Vehicles Onsite Driving	0.0	1	0.0	3	0.5	0

Source Category	Peak Day Emissions (lb/day)					
Trucks Onsite Driving/Idling	24	396	101	79	12	0.7
Rail Offsite Operations	13	119	373	7	7	0.5
Rail On Dock Operations	2	15	46	0.9	0.8	0.1
Total	**446**	**1,776**	**4,038**	**240**	**129**	**207**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2036 Emissions Minus 2008 Actual Baseline	213	682	293	27	-39	-949
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**
2045 Revised Project						
Cargo Handling Equipment	46	318	19	2	2	0.6
Harbor Craft	0.4	5	12	0.3	0.3	0
Worker Vehicles Offsite Driving	0.1	25	0.9	0.2	0.1	0.1
Trucks Offsite Driving	4	131	124	54	19	4
Ocean Going Vessels	360	737	1,417	94	86	200
Worker Vehicles Onsite Driving	0.0	1	0.0	3	0.5	0
Trucks Onsite Driving/Idling	25	411	77	74	12	0.6
Rail Offsite Operations	12	208	322	5	5	0.8
Rail On Dock Operations	1	15	27	0.4	0.4	0.1
Total	**448**	**1,852**	**1,999**	**233**	**125**	**206**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2045 Emissions Minus 2008 Actual Baseline	215	758	-1,746	19	-43	-950
Significance Threshold	55	550	55	150	55	150
Significant?	**Yes**	**Yes**	**No**	**No**	**No**	**No**

Note:
Rail Offsite Operations considered for the peak day include emissions occurring only within SCAB boundaries. OGV emissions for peak day include operations up to SCAB Overwater Boundary

Impact Determination

As shown in Table 3.1-8, calculated future-year incremental peak daily $PM_{2.5}$ and SOx emissions of the Revised Project relative to the 2008 Actual Baseline are below the SCAQMD significance thresholds for averaging times in all three analysis years (2026, 2036, 2045). Incremental peak daily CO and VOC emissions in analysis years 2026 to 2045 exceed the SCAQMD thresholds. NOx thresholds are exceeded for analysis years 2026 and 2036, and PM_{10} thresholds are not exceeded for any analysis year. Accordingly, impacts of the Revised Project in future years would be significant for CO, VOCs, and NOx, but would be less than significant for $PM_{2.5}$, PM_{10}, and SO_X.

Discussion of Revised Project Emissions Trends

Emissions would vary over the life of the Revised Project due to several factors, such as regulatory requirements, activity levels, source (container ships, tugboats, trucks, locomotives, CHE, and worker vehicles) characteristics, and emission factors. The combination of these factors can result in emissions that do not always decrease or increase consistently over time.

Changes in emissions for past non-compliance years are driven by terminal activity and operational changes since 2008. For the Revised Project, terminal activity has generally increased from 2008 through 2023 (although with some periods of decreased throughput) and is projected to continue to increase until 2036 and then to remain steady through 2045 (because the terminal will have reached maximum capacity in 2036). However, the regulatory requirements described in Section 3.1.3 would serve to reduce emission factors from most project sources. In addition, as equipment ages, engine efficiency would decrease and emission factors would increase in comparison to brand-new equipment.

The main drivers of the operational emissions of the Revised Project under Impact AQ-3 in future years are the following:

Terminal throughput: Terminal throughput changes over the years. Terminal throughput would increase from just over 387,000 TEUs during 2008 to just under 1,670,000 TEUs in year 2036 and thereafter (Tables 2-1 and 2-2).

Container ships: Container ship size would increase and the number of container ship visits would increase (Table 2-2). NO_x emissions by vessels would decrease as vessels are turned over from lower tiers to Tier III vessels in accordance with the Port's fleet forecast. Vessel emissions would also be reduced as a result of MM AQ-9 (AMP) and MM AQ-10 (VSRP).

Tugboats: Tugboat activity would increase in proportion to the number of containership visits. Tugboat emission factors would decline in compliance with CARB's Regulation to Reduce Emissions from Diesel Engines on Commercial Harbor Craft.

CHE: CHE activity would increase in proportion to terminal throughput. CHE emission factors would decline in compliance with CARB's *Mobile CHE at Ports and Intermodal Rail Yards*. Each CHE type (e.g. yard tractors, rubber-tired gantry cranes, top-picks, etc.) has unique turnover schedules related to useful life and regulatory requirements. Deterioration of off-road equipment would cause emission factors to increase between turnover years. However, 2019 SEIR mitigation measures MM AQ-15 (Yard Tractors) and MM AQ-17 (Cargo-Handling Equipment) would further reduce CHE emissions by requiring more rapid turnover to cleaner equipment or electrification of some equipment. The Writ reinstated the electric yard tractor pilot project provision of 2008 EIR MM AQ-17. However, that provision is not included in the analyses in this Draft RSEIR because the speculative nature of such a project in terms of the number and type of ZE equipment that might be employed in a pilot project means its emission benefits cannot be quantified in any meaningful way.

Trucks: Truck activity would increase as terminal throughput increases. In 2026, 2036, and 2045, NO_x emission factors are predicted to decline below 2008 levels in response to the CARB's Truck and Bus Regulation, which requires that all trucks and buses meet EPA 2010 and newer standards by year 2023.

Locomotives: Locomotive activity would increase as terminal throughput increases. Line haul and switch locomotive emission factors would decline as older locomotives reach the end of their useful life and are replaced by newer, cleaner locomotives that meet EPA tiered emission standards, such as the Tier 4 standards that apply to new and remanufactured locomotives starting in 2014.

Mitigation Measures

The Writ requires that the Draft RSEIR consider additional feasible mitigation measures that could supplement MM AQ-9 for at-berth emissions. The following measure was identified as feasible and potentially providing additional reductions of at-berth emissions (see the following discussion) for this project only in order to satisfy the Writ.

MM AQ-31: At-Berth Regulations. All ships calling at Berths 97-109 shall be subject to all applicable provisions of the At-Berth Regulations (CCR Title 17, Sections 93130-93130.22), and applicable future regulations that may be promulgated by CARB regarding at-berth emissions, while hoteling in the Port.

The At-Berth Regulations are intended "to ensure that emissions from ocean-going vessels are reduced using a CARB-approved emission control strategy to control PM, NOx, and ROG emissions at berth without increasing overall GHG emissions from this Control Measure, and that every ocean-going vessel meets visible emission standards at berth and at anchor" (CCR, Title 17, Section 93130.1). The At-Berth Regulations impose many of the same requirements as MM AQ-9. However, for vessels that do not have shore power (i.e., have not been retrofitted for or capable of using AMP), the At-Berth Regulations provide additional CARB-approved emission control strategies (CAECS) to reduce emissions. Accordingly, the implementation of this measure in addition to MM AQ-9 will ensure that the at-berth emissions of those vessels not subject to, or excepted from, MM AQ-9 are reduced through compliance with the At-Berth Regulations. The effects of implementing MM AQ-31 in addition to MM AQ-9 are not separately quantified.

Residual Impacts

As shown in Table 3.1-8, peak-day emissions from the Revised Project, which includes the mitigations described above minus the 2008 Actual Baseline emissions, are below the applicable significance thresholds in all cases except for VOC, CO, and NOx emissions. Residual impacts of the Revised Project for Criterion AQ-3 are significant and unavoidable for VOC and CO during analysis years 2026 to 2045 and for NO_X in 2026 and 2036.

Feasibility of Additional Mitigation Measures for At-Berth Emissions

The Writ requires that the Draft RSEIR consider whether any other mitigation measures for at-berth emissions (in addition to AMP required by MM AQ-9 and MM AQ-31) are available, feasible, and enforceable to mitigate the impacts of emissions that cannot be mitigated through MM AQ-9. MM AQ-9 (AMP) requires 100% of AMP-capable ships calling at Berths 97-109 to connect to shore power while hoteling at the Port and MM AQ-31 (At-Berth Regulations) applies the requirements of the At-Berth Regulations to non-AMP-capable vessels. Together, MM AQ-9 (AMP) and MM AQ-31 (At-Berth Regulations) represent the maximum feasible mitigation measure for at-berth emission reduction, as explained below. Other possible mitigation for reducing at-berth emissions includes considering alternatives to shore power. Alternative technologies, at this point, consist entirely of barge-based capture and control systems. CARB has certified some of these systems as CAECS, and MM AQ-31, in requiring compliance with the At-Berth Regulations, requires 100% of non-AMP-capable ships to use CAECS or take other actions as approved by CARB to reduce emissions. Thus, separately requiring non-AMP-capable ships to use alternative technology would not be effective additional mitigation because it is already covered by MM AQ-31.

Requiring barge-based capture and control systems or similar technology instead of AMP would also not be effective mitigation. Evidence does not demonstrate that such systems would be more efficient at capturing and treating emissions than shore power. For example, AMP eliminates all at-berth emissions from auxiliary engines because those engines are shut down once AMP is connected. Barge-based capture and control systems and similar technologies, on the other hand, capture emissions from auxiliary engines and treat them to a certified control efficiency of for $PM_{2.5}$ and for NO_X (See CARB Executive Orders https://ww2.arb.ca.gov/berth-regulation-executive-orders). As a result, the evidence does not show that these other technologies would be as effective as AMP, as required by MM AQ-9 and MM AQ-31.

Another position mitigation of at-berth emissions would be to require only cleaner vessels to hotel in the Port to address emission before and after connection to shore power or other approved technology. The Port does not have the authority to impose any specific emissions reduction technology on OGVs as they are internationally flagged vessels subject only to IMO regulations. Moreover, because vessel deployment decisions are solely the responsibility of the shipping lines and involve international commerce, neither the Port nor the marine terminals have the ability to mandate the deployment of the cleanest vessels to San Pedro Bay. The Ports' most promising approach to the issue is through incentives, and they are pursuing the deployment of the cleanest cargo vessels to San Pedro Bay through Los Angeles' Environmental Ship Index and Long Beach's Green Ship Incentive Program. In addition, the Ports continue to work with vessel operators and designers and other ports to promote the use of emissions control technologies, clean fuels, and additional incentive, variable-rate strategies, 'green shipping corridors,' and deployment of dual-fuel OGVs to reduce vessel emissions.

Another approach would be to exclude non-AMP-capable vessels from the terminal. However, as with requiring only cleaner ships to call at the terminal, the Port and the terminal do not have the authority to implement such a strategy. Instead, LAHD has developed MM AQ-31, as described above, that will ensure the use of CAECS or other actions approved by CARB by non-AMP-capable vessels in compliance with the At-Berth Regulations. No other feasible operational measures within the Port's authority were identified that could result in reductions in at-berth emissions.

Emissions During the Periods of Non-Compliance (informational only)

The Writ requires disclosure of emissions of terminal operation during the period when some of the 2008 mitigation measures were not fully implemented (i.e., the first period of non-compliance, 2008-2018, and the additional period of non-compliance, 2019-2023). These emissions are compared to SCAQMD thresholds for informational purposes, not to determine the significance of impacts for the Revised Project under CEQA.

As shown in Table 3.1-8, peak daily $PM_{2.5}$ and SOx emissions of the Revised Project were below the 2008 Actual Baseline emissions (i.e., negative increments) in all non-compliance period analysis years (2012-2023). The magnitude of the difference decreases with time, largely as a result of increased terminal activity.

Emissions of VOCs exceeded the 2008 Actual Baseline emissions in all non-compliance years except 2018 and 2019. Emissions of CO exceeded the 2008 Actual Baseline emissions in all non-compliance years except 2019. Emissions of NOx exceeded the 2008 Actual Baseline emissions in all non-compliance period years. Emissions of PM_{10} exceeded the 2008 Actual Baseline emissions in all non-compliance period years except 2012, 2018, and 2019.

Comparison of Impacts of the FEIR Mitigated Scenario to the 2008 Actual Baseline (informational only)

As mentioned previously, the FEIR Mitigated Scenario is represented by peak daily operational emissions assuming that all mitigation measures included in the 2008 EIS/EIR had been fully and timely implemented, and further assuming the increase in terminal throughput as shown in Table 2-2 (hereafter referred to as the “FEIR Mitigated Scenario” in Table 3.1-9). These are compared to the 2008 Actual Baseline. Because the FEIR Mitigated Scenario represents conditions with implementation of the mitigation measures from the 2008 EIS/EIR, rather than with implementation of the modified mitigation measures proposed under the Revised Project, comparison of the FEIR Mitigated Scenario to the 2008 Actual Baseline is presented for purposes of information disclosure only; this document does not base any determination of the significance of impacts of the Revised Project under CEQA on this comparison. Therefore, the significance determinations for each analysis year of the FEIR Mitigated Scenario are not shown.

The calculated FEIR Mitigated Scenario emissions of VOCs exceed the 2008 Actual Baseline emissions during analysis years 2014, 2023, 2036, and 2045. Emissions of CO exceed the 2008 Actual Baseline emissions during all analysis years. Emissions of NOx exceed the 2008 Actual Baseline emissions during analysis years 2014, 2020, 2022, 2023 and 2026. Emissions of PM_{10} exceed the 2008 Actual Baseline emissions during analysis years 2020 through 2023. Emissions of $PM_{2.5}$ and SOx do not exceed the 2008 Actual Baseline emissions during any analysis year.

A comparison of Tables 3.1-8 and 3.1-9 shows that the calculated FEIR Mitigated Scenario emissions are lower than those of the Revised Project emissions for all pollutants during analysis years 2012-2045, except for CO in all years and PM_{10} in 2021, 2022, 2023, and 2036.

Table 3.1-9. Peak Daily Operational Emissions: FEIR Mitigated Scenario (lb/day) (informational only)

Source Category	Peak Day Emissions (lb/day)					
2012 FEIR Mitigated Scenario	**VOC**	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**	**SOx**
Cargo Handling Equipment	84	980	347	11	11	0.3
Harbor Craft	3	16	27	1.0	0.9	0.0
Worker Vehicles Offsite	1	49	4	0.1	0.1	0.1
Trucks Offsite Driving	16	938	501	28	14	0.9
Ocean Going Vessels	49	78	417	15	14	82
Worker Vehicles Onsite Driving	0.1	2	0.2	1	0.2	0.0
Trucks Onsite Driving/Idling	8	137	72	23	4	0.1
Rail Offsite Operations	29	117	543	19	17	0.5
Rail On Dock Operations	5	22	96	3	3	0.1
Total	**194**	**2,340**	**2,007**	**102**	**65**	**84**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2012 Emissions Minus 2008 Actual Baseline	-39.4	1,245	-1,739	-111.7	-103.3	-1,072
Significance Threshold	55	550	55	150	55	150
2014 FEIR Mitigated Scenario						
Cargo Handling Equipment	213	2,216	560	11	11	0.6
Harbor Craft	5	27	49	2	2	0.0
Worker Vehicles Offsite	0.9	40	3	0.1	0.1	0.1
Trucks Offsite Driving	19	2,618	708	49	18	1
Ocean Going Vessels	218	274	4,453	77	71	143
Worker Vehicles Onsite Driving	0.1	2	0.1	1	0.2	0.0

Source Category	Peak Day Emissions (lb/day)					
Trucks Onsite Driving/Idling	9	416	190	49	8	0.2
Rail Offsite Operations	28	125	564	18	17	0.5
Rail On Dock Operations	5	25	107	3	3	0.1
Total	**498**	**5,742**	**6,633**	**211**	**129**	**146**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2014 Emissions Minus 2008 Actual Baseline	264	4,647	2,888	-2.8	-38.8	-1,010
Significance Threshold	55	550	55	150	55	150
2018 FEIR Mitigated Scenario						
Cargo Handling Equipment	5	161	39	2	2	0.2
Harbor Craft	0.3	2	10	0.2	0.2	0.0
Worker Vehicles Offsite	2	46	4	9	1	0.0
Trucks Offsite Driving	10	4,061	280	106	26	0.0
Ocean Going Vessels	58	113	893	17	15	37
Worker Vehicles Onsite Driving	0.0	1	0.1	2	0.2	0.0
Trucks Onsite Driving/Idling	0.9	200	25	20	3	0.0
Rail Offsite Operations	3	17	73	2	2	0.1
Rail On Dock Operations	0.7	4	16	0.4	0.4	0.0
Total	**81**	**4,605**	**1,340**	**156**	**50**	**38**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2018 Emissions Minus 2008 Actual Baseline	-152.7	3,511	-2,405	-57.2	-118.5	-1,118
Significance Threshold	55	550	55	150	55	150
2019 FEIR Mitigated Scenario						
Cargo Handling Equipment	6	160	46	2	2	0.3
Harbor Craft	0.6	3	18	0.3	0.3	0.0
Worker Vehicles Offsite	1	35	3	8	1	0.0
Trucks Offsite Driving	11	4,180	288	110	27	0.0
Ocean Going Vessels	89	181	1,542	27	25	62
Worker Vehicles Onsite Driving	0.0	1	0.1	1	0.2	0.0
Trucks Onsite Driving/Idling	0.9	215	26	21	3	0.0
Rail Offsite Operations	3	14	62	2	1	0.1
Rail On Dock Operations	0.6	3	13	0.3	0.3	0.0
Total	**111**	**4,793**	**1,999**	**171**	**60**	**62**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2019 Emissions Minus 2008 Actual Baseline	-122.2	3,699	-1,746	-43.0	-108.1	-1,094
Significance Threshold	55	550	55	150	55	150
2020 FEIR Mitigated Scenario						
Cargo Handling Equipment	22	210	144	6	5	0.9
Harbor Craft	0.8	4	23	0.4	0.4	0.0
Worker Vehicles Offsite	2	55	5	12	2	0.0
Trucks Offsite Driving	16	6,228	430	163	40	0.0

Source Category	Peak Day Emissions (lb/day)					
Ocean Going Vessels	71	109	3,915	30	27	98
Worker Vehicles Onsite Driving	0.0	2	0.1	2	0.3	0.0
Trucks Onsite Driving/Idling	1	300	37	30	5	0.0
Rail Offsite Operations	5	28	122	3	3	0.1
Rail On Dock Operations	1	8	34	0.8	0.8	0.0
Total	**119**	**6,943**	**4,710**	**247**	**84**	**99**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2020 Emissions Minus 2008 Actual Baseline	-114.2	5,849	964	33	-84.5	-1,057
Significance Threshold	55	550	55	150	55	150
2021 FEIR Mitigated Scenario						
Cargo Handling Equipment	29	395	127	6	5	0.7
Harbor Craft	0.6	3	18	0.3	0.3	0.0
Worker Vehicles Offsite	2	71	6	19	3	0.0
Trucks Offsite Driving	25	9,925	685	261	64	0.0
Ocean Going Vessels	43	75	2,112	19	17	58
Worker Vehicles Onsite Driving	0.1	2	0.1	3	0.5	0.0
Trucks Onsite Driving/Idling	4	736	107	47	7	0.0
Rail Offsite Operations	8	46	198	5	5	0.2
Rail On Dock Operations	2	14	58	1	1	0.1
Total	**115**	**11,267**	**3,311**	**361**	**104**	**59**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2021 Emissions Minus 2008 Actual Baseline	-119.0	10,173	-434.0	148	-64.4	-1,097
Significance Threshold	55	550	55	150	55	150
2022 FEIR Mitigated Scenario						
Cargo Handling Equipment	37	432	143	7	6	0.8
Harbor Craft	0.8	4	19	0.3	0.3	0.0
Worker Vehicles Offsite	2	63	6	19	3	0.0
Trucks Offsite Driving	29	11,043	765	291	72	0.0
Ocean Going Vessels	60	83	3,834	22	20	79
Worker Vehicles Onsite Driving	0.1	2	0.1	3	0.5	0.0
Trucks Onsite Driving/Idling	5	865	126	51	8	0.0
Rail Offsite Operations	11	63	270	6	6	0.2
Rail On Dock Operations	3	20	81	2	2	0.1
Total	**147**	**12,577**	**5,245**	**402**	**118**	**80**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2022 Emissions Minus 2008 Actual Baseline	-86.8	11,483	1,500	189	-50.3	-1,076
Significance Threshold	55	550	55	150	55	150
2023 FEIR Mitigated Scenario						
Cargo Handling Equipment	40	437	142	7	6	0.8
Harbor Craft	0.8	4	19	0.3	0.3	0.0

Source Category	Peak Day Emissions (lb/day)					
Worker Vehicles Offsite	1	41	4	14	2	0.0
Trucks Offsite Driving	31	9,904	746	247	63	0.0
Ocean Going Vessels	155	330	2,697	42	39	88
Worker Vehicles Onsite Driving	0.0	2	0.1	2	0.4	0.0
Trucks Onsite Driving/Idling	3	652	87	40	6	0.0
Rail Offsite Operations	5	32	136	3	3	0.1
Rail On Dock Operations	2	10	43	1.0	0.9	0.0
Total	**238**	**11,412**	**3,873**	**356**	**121**	**89**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2023 Emissions Minus 2008 Actual Baseline	4	10,318	127	143	-47.2	-1,067
Significance Threshold	55	550	55	150	55	150
2026 FEIR Mitigated Scenario						
Cargo Handling Equipment	70	497	151	9	8	0.8
Harbor Craft	1	7	32	0.5	0.5	0.0
Worker Vehicles Offsite	0.5	49	2	0.3	0.1	0.2
Trucks Offsite Driving	5	2,241	123	48	16	0.0
Ocean Going Vessels	189	357	5,619	58	54	154
Worker Vehicles Onsite Driving	0.0	1	0.1	2	0.3	0.0
Trucks Onsite Driving/Idling	2	431	50	53	8	0.0
Rail Offsite Operations	18	115	469	11	10	0.4
Rail On Dock Operations	2	13	52	1	1	0.1
Total	**288**	**3,712**	**6,498**	**183**	**98**	**156**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2026 Emissions Minus 2008 Actual Baseline	55	2,618	2,753	-30.5	-69.9	-1,000
Significance Threshold	55	550	55	150	55	150
2036 FEIR Mitigated Scenario						
Cargo Handling Equipment	31	319	17	2	2	0.6
Harbor Craft	0.4	5	12	0.3	0.3	0.0
Worker Vehicles Offsite	0.2	26	1	0.2	0.1	0.1
Trucks Offsite Driving	3	2,231	58	71	24	0.0
Ocean Going Vessels	338	678	2,943	81	74	165
Worker Vehicles Onsite Driving	0.0	1	0.0	3	0.5	0.0
Trucks Onsite Driving/Idling	2	557	45	79	12	0.0
Rail Offsite Operations	13	119	373	7	7	0.5
Rail On Dock Operations	2	15	46	0.9	0.8	0.1
Total	**389**	**3,951**	**3,495**	**244**	**120**	**167**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2036 Emissions Minus 2008 Actual Baseline	155	2,856	-250.6	30	-48.0	-989.6
Significance Threshold	55	550	55	150	55	150
2045 FEIR Mitigated Scenario						

Source Category	Peak Day Emissions (lb/day)					
Cargo Handling Equipment	41	303	16	2	2	0.5
Harbor Craft	0.4	5	12	0.3	0.3	0.0
Worker Vehicles Offsite	0.1	25	0.9	0.2	0.1	0.1
Trucks Offsite Driving	4	2,328	51	64	22	0.0
Ocean Going Vessels	338	678	1,238	81	74	165
Worker Vehicles Onsite Driving	0.0	1	0.0	3	0.5	0.0
Trucks Onsite Driving/Idling	2	564	43	74	12	0.0
Rail Offsite Operations	12	208	322	5	5	0.8
Rail On Dock Operations	1	15	27	0.4	0.4	0.1
Total	**397**	**4,127**	**1,710**	**230**	**115**	**167**
2008 Actual Baseline	234	1,094	3,745	214	168	1,156
Total 2045 Emissions Minus 2008 Actual Baseline	164	3,033	-2,036	16	-53.2	-989.3
Significance Threshold	55	550	55	150	55	150

Notes:
Rail Offsite Operations considered for the peak day include emissions occurring only within SCAB boundaries

OGV emissions for peak day include operations up to SCAB Overwater Boundary

Table 3.1-10 summarizes the emission impacts for each scenario in each analysis year and shows the absolute difference between Revised Project incremental peak-day emissions and the FEIR Mitigated Scenario incremental peak-day emissions. The difference between the two scenarios represents the effects of partial compliance during 2012-2023 with the 2008 EIR/EIS mitigation measures. The analysis shows that in future years, the differences between the Revised Project and the FEIR Mitigated Scenario would generally decrease for VOC, NO_X, and CO, and remain generally the same for PM_{10}, $PM_{2.5}$, and SO_X compared to the differences in 2023 (the last analyzed year of partial compliance).

Table 3.1-10. Summary of Emission Impacts for Revised Project and FEIR Mitigated Scenario (informational only)

Pollutant	Year	Peak day emissions minus 2008 Actual Baseline (lbs/day)		Difference between scenarios
		Revised Project	FEIR Mitigated	
VOC	2012	10	-39	49
	2014	324	264	59
	2018	-13	-153	140
	2019	-40	-122	82
	2020	16	-114	130
	2021	172	-119	291
	2022	211	-87	298
	2023	249	4	245
	2026	305	55	251
	2036	213	155	57
	2045	215	164	51
NOx	2012	-606	-1,739	1,132

Pollutant	Year	Peak day emissions minus 2008 Actual Baseline (lbs/day)		Difference between scenarios
		Revised Project	FEIR Mitigated	
	2014	5,201	2,888	2,313
	2018	-79	-2,405	2,326
	2019	54	-1,746	1,800
	2020	3,598	964	2,634
	2021	3,253	-434	3,687
	2022	4,459	1,500	2,959
	2023	1,502	127	1,375
	2026	4,334	2,753	1,582
	2036	293	-251	544
	2045	-1,747	-2,036	289
CO	2012	472	1,245	-773
	2014	2,041	4,647	-2,606
	2018	1,306	3,511	-2,205
	2019	-245	3,699	-3,944
	2020	84	5,849	-5,765
	2021	880	10,173	-9,293
	2022	1,103	11,483	-10,380
	2023	1,058	10,318	-9,260
	2026	1,831	2,618	-787
	2036	682	2,856	-2,174
	2045	758	3,033	-2,275
PM_{10}	2012	-88	-112	24
	2014	14	-3	16
	2018	-46	-57	11
	2019	-39	-43	4
	2020	39	33	5
	2021	146	148	-2
	2022	176	189	-13
	2023	113	143	-29
	2026	-21	-30	9
	2036	27	30	-3
	2045	19	16	3
$PM_{2.5}$	2012	-79	-103	24
	2014	-18	-39	20
	2018	-98	-118	21
	2019	-94	-108	14
	2020	-63	-85	21
	2021	-39	-64	26
	2022	-30	-50	20

Pollutant	Year	Peak day emissions minus 2008 Actual Baseline (lbs/day)		Difference between scenarios
		Revised Project	FEIR Mitigated	
	2023	-36	-47	11
	2026	-51	-70	19
	2036	-39	-48	9
	2045	-43	-53	10
SOx	2012	-998	-1,072	74
	2014	-994	-1,010	16
	2018	-1,088	-1,118	30
	2019	-1,075	-1,094	19
	2020	-1,013	-1,057	44
	2021	-1,062	-1,097	35
	2022	-1,061	-1,076	15
	2023	-1,044	-1,067	23
	2026	-944	-1,000	56
	2036	-949	-990	40
	2045	-950	-989	40

Impact AQ-4: Would operation of the Revised Project result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance?

Dispersion modeling of onsite and offsite Revised Project emissions was performed to assess the impact of the Revised Project on local ambient air concentrations for each analysis year (2012, 2014, 2018 [first period of non-compliance], 2019, 2020, 2021, 2022, 2023 [additional period of non-compliance], and 2026, 2036, and 2045). A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix B2.

For NO_2, SO_2, and CO, impacts were determined by comparing the absolute Revised Project air quality concentration impacts to the SCAQMD significance thresholds. The absolute Revised Project air quality concentration impacts were calculated by modeling the Revised Project's emission increases relative to the 2008 Actual Baseline and adding the resulting concentration increments to the observed background concentrations obtained from the Wilmington Community Monitoring Station.

For PM_{10} and $PM_{2.5}$, impacts were determined by comparing incremental impacts to the SCAQMD significance thresholds. Incremental impacts were calculated by modeling the Revised Project's emission increases relative to the 2008 Actual Baseline to obtain the predicted concentration increments.

Table 3.1-11 presents the maximum off-site NO_2 concentration impacts associated with the Revised Project. Table 3.1-12 presents the maximum off-site SO_2 and CO concentration impacts associated with the Revised Project. Table 3.1-13 presents the maximum off-site incremental PM_{10} and $PM_{2.5}$ concentration impacts associated with the Revised Project. NO_2, PM_{10}, and $PM_{2.5}$ impacts were modeled separately for each analysis year. Because CO and SO_2 are unlikely to exceed the ambient air quality standards in any analysis year, emissions used for modeling these two pollutants were a composite of the maximum emissions from each emission source over all analysis years. Thus, single worst-case scenarios were modeled for CO and SO_2.

Results in Tables 3.1-11 through 3.1-13 show that impacts of the Revised Project would exceed the significance thresholds for federal 1-hour NO_2 in 2026; 24-hour PM_{10} in 2026 through 2045; and annual PM_{10} in 2026 through 2045. Impacts of SO_2, CO, and 24-hour $PM_{2.5}$ would be below the thresholds in all analysis years.

Impact Determination

Because maximum off-site ambient pollutant concentrations associated with the Revised Project would exceed SCAQMD thresholds for NO_2 (federal 1-hour) and PM_{10} (24-hour and annual), impacts would be significant.

Discussion of Revised Project Emissions Trends

The analysis showed that CHE would be the primary contributor to maximum NO_2 concentrations, and trucks (in particular, paved road dust from the movement of on-site trucks) would be the primary contributor to maximum PM_{10} concentrations. See Section 4.1 of Appendix B2 for additional details on source contributions.

Mitigation Measures

In addition to the 2019 SEIR mitigation measures applied to the Revised Project (see Table 1-1 and Section 2.5.1.1), as revised by the Writ, MM AQ-31, which would reduce at-berth emissions, is applied in this Draft RSEIR.

MM AQ-31: Compliance with At-Berth Regulations. All ships calling at Berths 97-109 must comply with all applicable At-Berth Regulations (CCR Title 17, Sections 93130-93130.22), and future regulations that may be promulgated by CARB regarding at-berth emissions, while hoteling in the Port.

As described in section 3.1.4.4, no additional mitigation measures were identified that could further reduce at-berth emissions, and hence ambient air quality concentrations.

Residual Impacts

Since no additional mitigation measures were identified to further reduce ambient air quality concentration impacts, the residual impacts remain significant and unavoidable.

Comparison of Impacts to the FEIR Mitigated Scenario to 2008 Actual Baseline (informational only)

Comparisons of FEIR Mitigated Scenario impacts to SCAQMD thresholds are provided here for informational purposes only. Dispersion modelling was conducted to evaluate ambient air quality concentration impacts that would occur under the FEIR Mitigated Scenario for comparison with the Revised Project concentration impacts presented above. The maximum off-site ambient air quality concentration impacts associated with the FEIR Mitigated Scenario are summarized in Tables 3.1-14 through 3.1-16. Modelled concentrations of federal 1-hour NO_2 exceeded the SCAQMD significance threshold for in 2014; concentrations of 24-hour and annual PM_{10} exceeded thresholds in 2014 and 2020 through 2023., Concentrations of 24-hour and annual PM_{10} would exceed thresholds in 2026, 2036, and 2045, constituting significant impacts. Concentrations of SO_2, CO, and $PM_{2.5}$ would not exceed the thresholds in any analysis year.

1 **Table 3.1-11. Maximum Off-Site Ambient NO_2 Concentrations – Revised Project**

Pollutant	Averaging Period	Analysis Year	Background Concentration (ug/m3) [c]	Maximum Modeled Project Concentration Increment (ug/m3) [a,d]	Total Concentration (ug/m3) [e]	Significance Threshold (ug/m3)	Significant?
NO_2[b]	Federal 1-hour	2012	139	120.4	259	188	**Yes**
		2014	127	318.4	445	188	**Yes**
		2018	115	122.2	237	188	**Yes**
		2019	106	63.8	170	188	No
		2020	102	104.3	206	188	**Yes**
		2021	103	303.5	406	188	**Yes**
		2022	99	336.0	435	188	**Yes**
		2023	89	210.5	299	188	**Yes**
		2026	89	143.1	232	188	**Yes**
		2036	89	29.7	119	188	No
		2045	89	24.8	114	188	No
	State 1-hour	2012	185	128.1	313	339	No
		2014	173	365.9	539	339	**Yes**
		2018	164	128.7	293	339	No
		2019	143	77.2	220	339	No
		2020	134	113.5	248	339	No
		2021	134	355.4	489	339	**Yes**
		2022	134	395.9	530	339	**Yes**
		2023	113	243.2	356	339	**Yes**
		2026	113	166.7	280	339	No
		2036	113	36.1	149	339	No
		2045	113	28.5	142	339	No
	Annual	2012	40	15.2	55	57	No
		2014	34	49.0	83	57	**Yes**
		2018	28	16.1	44	57	No
		2019	25	7.2	32	57	No
		2020	25	11.9	37	57	No
		2021	26	48.5	75	57	**Yes**
		2022	26	51.3	77	57	**Yes**
		2023	26	36.6	63	57	**Yes**

Pollutant	Averaging Period	Analysis Year	Background Concentration (ug/m3) [c]	Maximum Modeled Project Concentration Increment (ug/m3) [a,d]	Total Concentration (ug/m3) [e]	Significance Threshold (ug/m3)	Significant?
		2026	26	24.8	51	57	No
		2036	26	4.2	30	57	No
		2045	26	1.5	28	57	No

[a] Exceedances of the thresholds are indicated in bold.
[b] The federal 1-hour NO_2 modeled concentration represents the 98th percentile of the daily maximum 1-hour average concentrations. The state 1-hour NO_2 modeled concentration represents the maximum concentration.
[c] The background concentrations were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School).
[d] The Modeled Project Concentration Increment represents the modeled emission increases of the Revised Project relative to the 2008 Actual Baseline.
[e] The Total Concentration equals the Background Concentration plus the Maximum Modeled Project Concentration Increment.
.

Table 3.1-12. Maximum Off-Site Ambient SO_2 and CO Concentrations – Revised Project

Pollutant	Averaging Period	Background Concentration (ug/m^3)[b]	Maximum Modeled Project Concentration Increment (ug/m^3)[a,c]	Total Concentration (ug/m^3)[d]	Significance Threshold (ug/m^3)	Significant?
SO_2	Federal 1-hour	61	2.9	64	196	No
	State 1-hour	420	2.9	423	655	No
	24-hour	34	0.4	34	105	No
CO	1-hour	8,839	2,497	11,336	23,000	No
	8-hour	3,444	1,824	5,268	10,000	No

[a] Exceedances of the thresholds are indicated in bold.
[b] The background concentrations were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School).
[c] The Modeled Project Concentration Increment represents the modeled emission increases of the Revised Project relative to the 2008 Actual Baseline.
[d] The Total Concentration equals the Background Concentration plus the Maximum Modeled Project Concentration Increment.

Table 3.1-13. Maximum Off-Site Ambient PM_{10} and $PM_{2.5}$ Concentration Increments – Revised Project

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment (ug/m3) [a,b,c]	Significance Threshold (ug/m3)	Significant?
PM_{10}	24-hour	2012	2.6	2.5	**Yes**
		2014	7.8	2.5	**Yes**
		2018	2.1	2.5	No
		2019	2.0	2.5	No
		2020	3.3	2.5	**Yes**
		2021	8.2	2.5	**Yes**
		2022	10.0	2.5	**Yes**
		2023	6.9	2.5	**Yes**
		2026	7.3	2.5	**Yes**
		2036	11.2	2.5	**Yes**
		2045	10.3	2.5	**Yes**
	Annual	2012	0.8	1.0	No
		2014	2.4	1.0	**Yes**
		2018	0.7	1.0	No
		2019	0.7	1.0	No
		2020	1.2	1.0	**Yes**
		2021	2.8	1.0	**Yes**
		2022	3.0	1.0	**Yes**
		2023	2.1	1.0	**Yes**
		2026	2.3	1.0	**Yes**
		2036	3.5	1.0	**Yes**
		2045	3.2	1.0	**Yes**
$PM_{2.5}$	24-hour	2012	1.6	2.5	No
		2014	2.4	2.5	No
		2018	0.4	2.5	No
		2019	0.4	2.5	No
		2020	0.7	2.5	No
		2021	2.2	2.5	No
		2022	3.8	2.5	**Yes**
		2023	2.8	2.5	**Yes**
		2026	1.3	2.5	No
		2036	1.2	2.5	No
		2045	1.1	2.5	No

[a] Exceedances of the thresholds are indicated in bold.
[b] The Modeled Project Concentration Increment represents the modeled emission increases of the Revised Project relative to the 2008 Baseline.
[c] Because the thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds, background concentrations are not added to the Maximum Modeled Project Concentration Increment.

1 **Table 3.1-14. Maximum Off-Site Ambient NO_2 Concentrations – FEIR Mitigated Scenario (informational only)**

Pollutant	Averaging Period	Analysis Year	Background Concentration (ug/m3) [c]	Maximum Modeled Project Concentration Increment (ug/m3) [a,d]	Total Concentration (ug/m3) [e]	Significance Threshold (ug/m3)	Significant?
NO_2	Federal 1-hour	2012	139	48.1	187	188	No
		2014	127	139.2	266	188	Yes
		2018	115	16.1	131	188	No
		2019	106	17.6	124	188	No
		2020	102	17.6	120	188	No
		2021	103	26.2	129	188	No
		2022	99	33.2	132	188	No
		2023	89	26.7	116	188	No
		2026	89	25.0	114	188	No
		2036	89	26.1	115	188	No
		2045	89	24.8	114	188	No
	State 1-hour	2012	185	54.0	239	339	No
		2014	173	144.9	318	339	No
		2018	164	24.4	188	339	No
		2019	143	26.7	170	339	No
		2020	134	23.6	158	339	No
		2021	134	31.2	165	339	No
		2022	134	40.7	175	339	No
		2023	113	34.1	147	339	No
		2026	113	35.5	149	339	No
		2036	113	30.2	143	339	No
		2045	113	28.5	142	339	No
	Annual	2012	40	6.3	46	57	No
		2014	34	19.3	53	57	No
		2018	28	0.6	29	57	No
		2019	25	0.7	26	57	No
		2020	25	1.3	26	57	No
		2021	26	3.0	29	57	No
		2022	26	3.2	29	57	No
		2023	26	2.8	29	57	No

Pollutant	Averaging Period	Analysis Year	Background Concentration (ug/m3) [c]	Maximum Modeled Project Concentration Increment (ug/m3) [a,d]	Total Concentration (ug/m3) [e]	Significance Threshold (ug/m3)	Significant?
		2026	26	0.7	27	57	No
		2036	26	0.3	26	57	No
		2045	26	0.3	26	57	No

[a] Exceedances of the thresholds are indicated in bold.
[b] The federal 1-hour NO_2 modeled concentration represents the 98th percentile of the daily maximum 1-hour average concentrations. The state 1-hour NO_2 modeled concentration represents the maximum concentration.
[c] The background concentrations were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School).
[d] The Modeled Project Concentration Increment represents the modeled emission increases of the FEIR Mitigated scenario relative to the 2008 Actual Baseline.
[e] The Total Concentration equals the Background Concentration plus the Maximum Modeled Project Concentration Increment.
.

Table 3.1-15. Maximum Off-Site Ambient SO_2 and CO Concentrations – FEIR Mitigated Scenario (informational only)

Pollutant	Averaging Period	Background Concentration (ug/m^3)[b]	Maximum Modeled Project Concentration Increment (ug/m^3)[a,c]	Total Concentration (ug/m^3)[d]	Significance Threshold (ug/m^3)	Significant?
SO_2	Federal 1-hour	61	2.9	64	196	No
	State 1-hour	420	2.9	423	655	No
	24-hour	34	0.2	34	105	No
CO	1-hour	8,839	1,768	10,607	23,000	No
	8-hour	3,444	1,226	4,670	10,000	No

[a] Exceedances of the thresholds are indicated in bold.
[b] The background concentrations were obtained from the Wilmington Community Monitoring Station (Saints Peter and Paul School).
[c] The Modeled Project Concentration Increment represents the modeled emission increases of the FEIR Mitigated scenario relative to the 2008 Actual Baseline.
[d] The Total Concentration equals the Background Concentration plus the Maximum Modeled Project Concentration Increment.
.

Table 3.1-16. Maximum Off-Site Ambient PM_{10} and $PM_{2.5}$ Concentration Increments – FEIR Mitigated Scenario (informational only)

Pollutant	Averaging Period	Analysis Year	Maximum Modeled Project Concentration Increment (ug/m3) [a,b,c]	Significance Threshold (ug/m3)	Significant?
PM_{10}	24-hour	2012	1.5	2.5	No
		2014	6.3	2.5	**Yes**
		2018	1.9	2.5	No
		2019	2.0	2.5	No
		2020	3.2	2.5	**Yes**
		2021	7.5	2.5	**Yes**
		2022	7.7	2.5	**Yes**
		2023	5.0	2.5	**Yes**
		2026	6.7	2.5	**Yes**
		2036	11.2	2.5	**Yes**
		2045	10.3	2.5	**Yes**
	Annual	2012	0.5	1.0	No
		2014	2.0	1.0	**Yes**
		2018	0.6	1.0	No
		2019	0.7	1.0	No
		2020	1.1	1.0	**Yes**
		2021	2.6	1.0	**Yes**
		2022	2.6	1.0	**Yes**
		2023	1.7	1.0	**Yes**
		2026	2.1	1.0	**Yes**
		2036	3.5	1.0	**Yes**
		2045	3.2	1.0	**Yes**
$PM_{2.5}$	24-hour	2012	0.7	2.5	No
		2014	1.1	2.5	No
		2018	0.3	2.5	No
		2019	0.3	2.5	No
		2020	0.6	2.5	No
		2021	1.1	2.5	No
		2022	1.2	2.5	No
		2023	1.0	2.5	No
		2026	0.6	2.5	No
		2036	1.2	2.5	No
		2045	1.1	2.5	No

[a] Exceedances of the thresholds are indicated in bold.

[b] The Modeled Project Concentration Increment represents the modeled emission increases of the FEIR Mitigated scenario relative to the 2008 Actual Baseline.

[c] Because the thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds, background concentrations are not added to the Maximum Modeled Project Concentration Increment.

Impact AQ-7: Would the Revised Project expose receptors to significant levels of TACs?

The Revised Project would emit TACs that could affect public health. An HRA was conducted to address potential public health impacts generated by the Revised Project using the methodology described in Section 3.1.4.1. Results of the HRA are summarized below; impacts are shown relative to the static Baseline and, for cancer risk and population cancer burden, the floating Future Baseline. The need for an analysis based on both the static Baseline and the floating Future Baseline is discussed in detail in Section 3.1.4.2, Baseline. Details of the HRA analysis, including TAC emission calculations, dispersion modeling, and risk calculations, are presented in Appendix B-3.

Maximum health impacts associated with the Revised Project relative to the static and future floating Baselines are summarized in Table 3.1-17. The table presents estimates of individual cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed residential, occupational, and sensitive receptors.

Maximum individual cancer risks for the Revised Project relative to the static Baseline would be less than zero for all receptors, meaning the risks under the Revised Project would be less than the risks under the static Baseline. Maximum individual cancer risks for the Revised Project relative to the floating Future Baseline would exceed the 10 in a million threshold at an occupational receptor on the southern project site boundary, east of Harbor Blvd. and north of Swinford Street. Because the future floating baseline represents declining emission factors due to regulations over exposure periods, the incremental risk relative to the floating future baseline is higher than incremental risk relative to the static baseline which holds 2008 Actual Baseline emission factors constant over time and thus represents larger emissions.

The maximum individual cancer risk at a residential receptor would be 0.2 in a million, less than the 10 in a million significance threshold. The areas over which the residential cancer risks from the Revised Project relative to the floating Future Baseline would exceed 1, 10 and 100 in a million are shown by the isopleth map in Figure 3.1-2. The figure also shows the location of the maximum residential receptor, which is between Point Fermin Park and Cabrillo Beach, roughly 3 miles south of the China Shipping Terminal. At that location, vessels in transit would be the primary contributor to cancer risk. Closer to the terminal, cancer risk increments in residential areas would be lower, and in many cases less than the static and future floating Baselines (i.e., net risk reductions), due to the future effects of CARB regulations on sources such as CHE and trucks as well as fleet turnover to cleaner engines. See "Discussion of Revised Project Emissions Trends" in Section 3.1.4.4, Impact AQ-3, for more details regarding the declining trend in future emissions associated with the Revised Project.

The maximum individual cancer risk at a sensitive receptor would be 4.3 in a million, less than the 10 in a million significance threshold. The maximum predicted chronic and acute hazard indices for the Revised Project relative to the Baseline would be below the 1.0 significance thresholds for all receptors.

Table 3.1-17. Maximum Health Impacts Estimated for the Revised Project Relative to the Baseline

Health Impact	Receptor Type	Revised Project Minus Static Baseline[a,b,d]	Revised Project Minus Floating Future Baseline[a,c,d]	Significance Threshold	Significant?
Individual Cancer Risk	Residential	< 0	0.2 × 10-6 0.2 in a million	10 × 10-6 10 in a million	No
	Occupational	< 0	**12.5 × 10-6 12.5 in a million**		**Yes**
	Sensitive	< 0	4.3 × 10-6 4.3 in a million		No
Chronic Hazard Index	Residential	0.16	n/a	1.0	No
	Occupational	0.70	n/a		No
	Sensitive	0.44	n/a		No
Acute Hazard Index	Residential	0.35	n/a	1.0	No
	Occupational	0.78	n/a		No
	Sensitive	0.61	n/a		No

[a] Exceedances of the thresholds are indicated in bold.
[b] A value less than zero means that the Project health value would be less than the Baseline health value at every modeled receptor.
[c] Health risk increments relative to the floating Future Baseline are applicable only to cancer risk and cancer burden because cancer risk has a uniquely long exposure period (30 years for residential and sensitive exposure, 25 years for occupational exposure, and 70 years for population cancer burden).
[d] Each positive result shown in the table for cancer risk, chronic hazard index, and acute hazard index represents the modeled receptor location with the maximum increment. The increments at all other modelled receptors would be less than the values in the table.

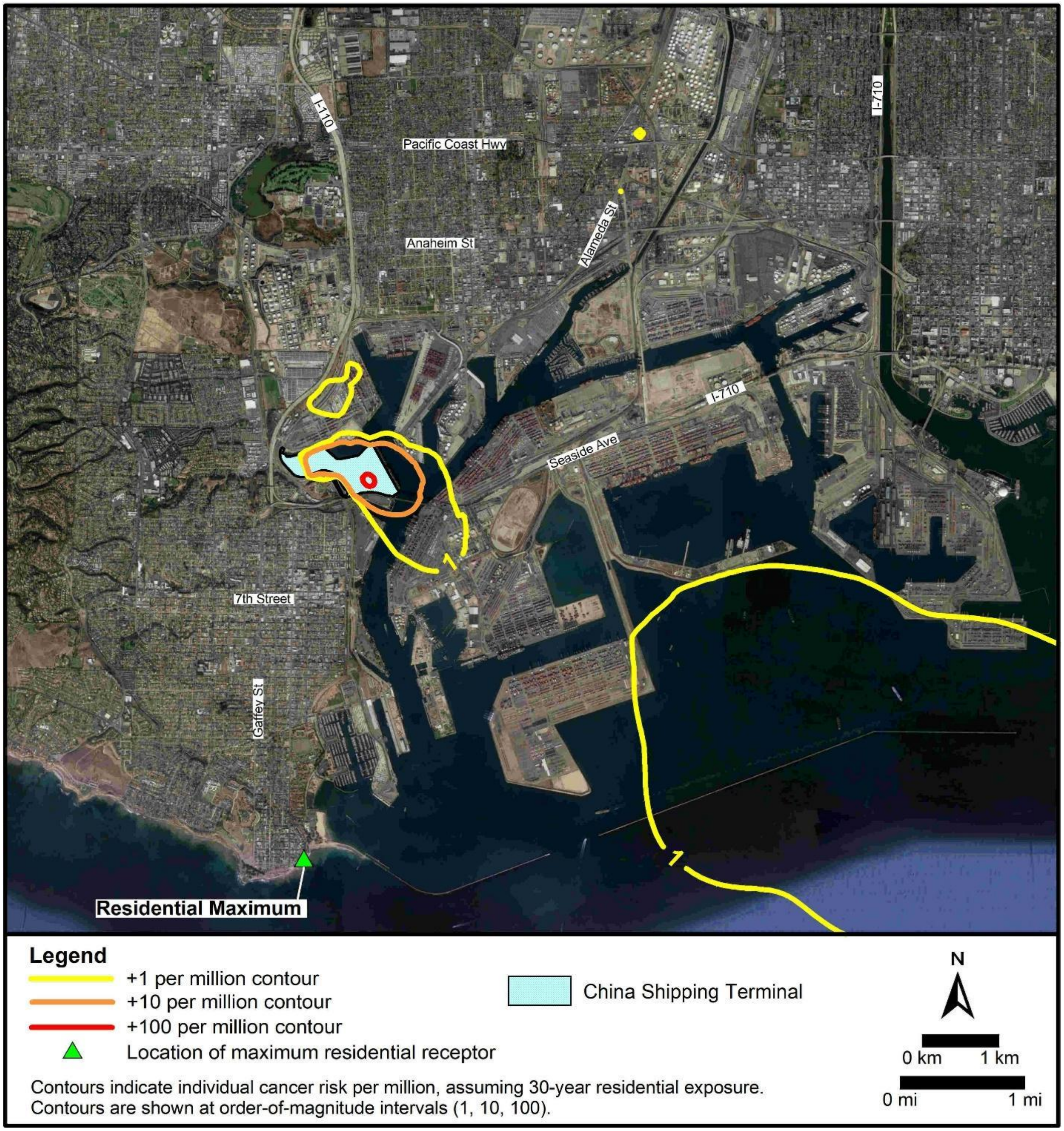
Cancer Burden

Table 3.1-18 shows that the population cancer burden associated with the Revised Project relative to both the static Baseline and the floating Future Baseline would be less than the significance threshold.

Table 3.1-18. Cancer Burden Impacts of the Revised Project

Health Impact	Revised Project Minus Static Baseline	Revised Project Minus Floating Future Baseline	Significance Threshold	Significant?
Cancer Burden	0	0.00005	0.5	No

Figure 3.1-2: Residential Cancer Risk Associated with the Revised Project Minus Floating Future Baseline



Impact Determination

Because the maximum cancer risk at an occupational receptor (12.5 in a million) would exceed the significance threshold of 10 in a million, incremental health impacts from the Revised Project for Individual Cancer Risk would be significant. CHE would be the primary contributor to cancer risk at the maximum occupational receptor location (see Table B3-8 of Appendix B3 for additional details).

Mitigation Measures

In addition to the 2019 SEIR mitigation measures applied to the Revised Project (see Table 1-1 and Section 2.5.1.1), as revised in compliance with the Writ, which would reduce at-berth emissions, is applied in this Draft RSEIR.

MM AQ-31: Compliance with At-Berth Regulations. All ships calling at Berths 97-109 must comply with all applicable At-Berth Regulations (CCR Title 17, Sections 93130-93130.22), and future regulations that may be promulgated by CARB regarding at-berth emissions, while hoteling in the Port.

As described in section 3.1.4.4, no additional mitigation measures were identified that could further reduce TAC emissions, and hence health risk impacts.

Residual Impacts

Since no additional mitigation measures were identified to further reduce TAC emissions and resulting health risks, the residual impacts would remain significant and unavoidable.

Comparison of Impacts to FEIR Mitigated Scenario to 2008 Static and Floating Future Baselines (informational only)

Using the same methods as described above, an HRA was conducted to evaluate health risks which would occur under the FEIR Mitigated Scenario for comparison with the Revised Project health risk impacts presented above. Tables 3.1-19 and 3.1-20 present results for the FEIR Mitigated Scenario which can be compared with results for the Revised Project shown in Tables 3.1-17 and 3.1-18. Maximum individual cancer risks would be lower for the FEIR Mitigated Project as compared to the Revised Project. Maximum incremental individual cancer risks would be less than 10 in a million for the FEIR Mitigated Project relative to both the static 2008 Baseline and the floating Future Mitigated Baseline. Population cancer burden and chronic and acute hazard indices would also be lower for the FEIR Mitigated Scenario.

Table 3.1-19. Maximum Health Impacts Estimated for the FEIR Mitigated Scenario Relative to the Baseline (informational only)

Health Impact	Receptor Type	FEIR Mitigated Scenario Minus Static Baseline[a,b,d]	FEIR Mitigated Scenario Minus Floating Future Baseline[a,c,d]	Significance Threshold
Individual Cancer Risk	Residential	< 0	< 0	10 × 10-6 10 in a million
	Occupational	< 0	4.5 × 10-6 4.5 in a million	
	Sensitive	< 0	< 0	
Chronic Hazard Index	Residential	0.15	n/a	1.0
	Occupational	0.62	n/a	
	Sensitive	0.30	n/a	
Acute Hazard Index	Residential	0.17	n/a	1.0
	Occupational	0.37	n/a	
	Sensitive	0.34	n/a	

[a] Exceedances of the thresholds are indicated in bold.
[b] A value less than zero means that the Project health value would be less than the Baseline health value at every modeled receptor.
[c] Health risk increments relative to the floating Future Baseline are applicable only to cancer risk and cancer burden because cancer risk has a uniquely long exposure period (30 years for residential and sensitive exposure, 25 years for occupational exposure, and 70 years for population cancer burden).
[d] Each positive result shown in the table for cancer risk, chronic hazard index, and acute hazard index represents the modeled receptor location with the maximum increment. The increments at all other modelled receptors would be less than the values in the table.

Table 3.1-20. Cancer Burden Impacts of the FEIR Mitigated Scenario (informational only)

Health Impacts	FEIR Mitigated Scenario Minus Static Baseline	FEIR Mitigated Scenario Minus Floating Future Baseline	Significance Threshold
Cancer Burden	0	0	0.5

Additional Analysis for Informational Purposes—Particulates: Morbidity and Mortality

Impact AQ-4 shows that the maximum 24-hour $PM_{2.5}$ concentration increments associated with operation of the Revised Project would exceed the significance threshold of 2.5 $\mu g/m^3$ in analysis years 2022 (3.8 ug/m^3) and 2023 (2.8 ug/m^3). Figures 3.1-3 and 3.1-4 show the areas where the $PM_{2.5}$ significance threshold would be exceeded in 2022 and 2023, respectively. The figures show that the exceedance areas would be very close to the project site boundary and would not extend over any residential areas. Therefore, because the population living inside the exceedance areas would be zero, per the methodology described in Section 3.1.4.1, no morbidity and mortality analysis was conducted.

Figure 3.1-3. Area of Significant Impact, 24-Hour PM2.5 Concentration Increment, 2022.

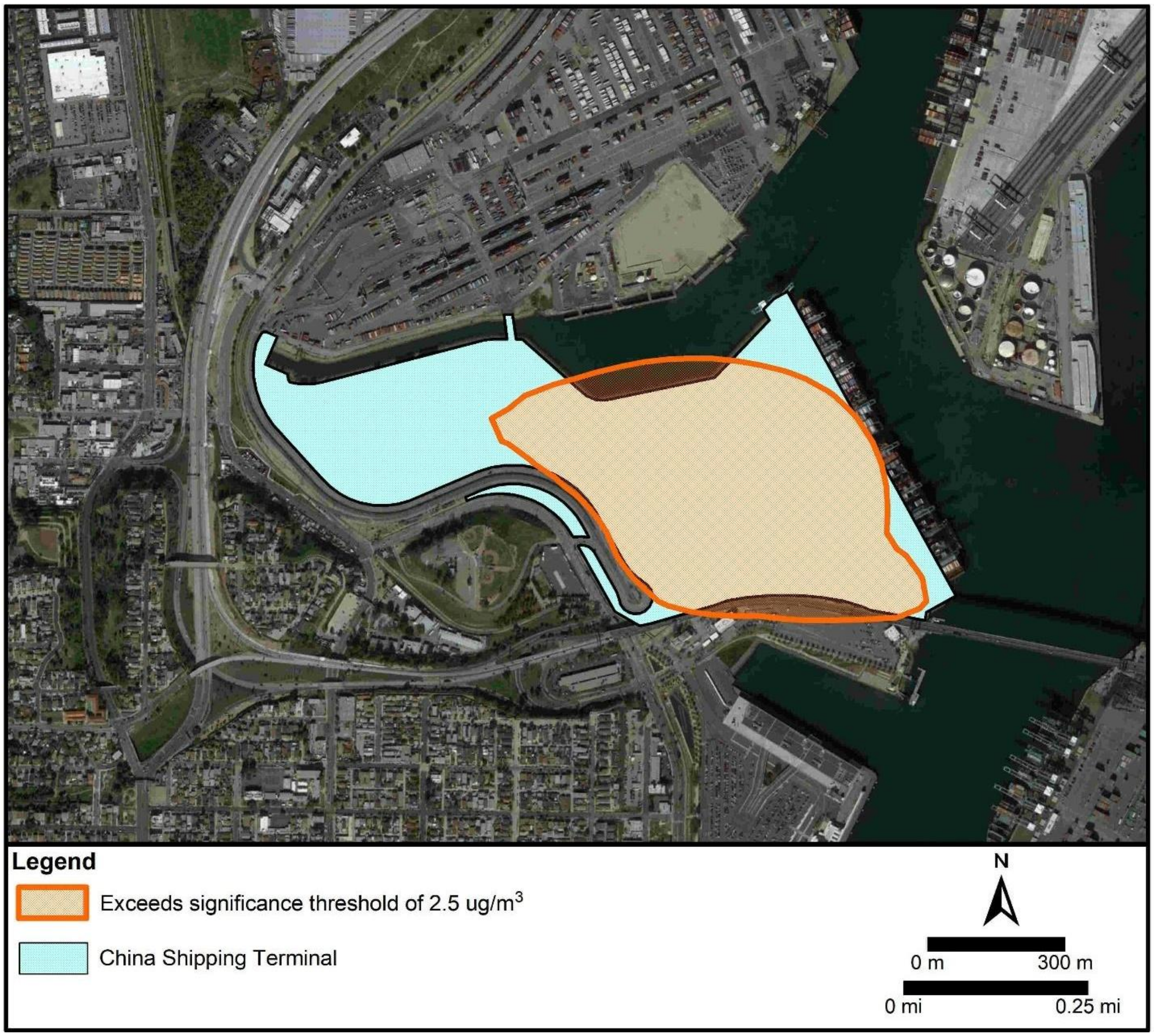
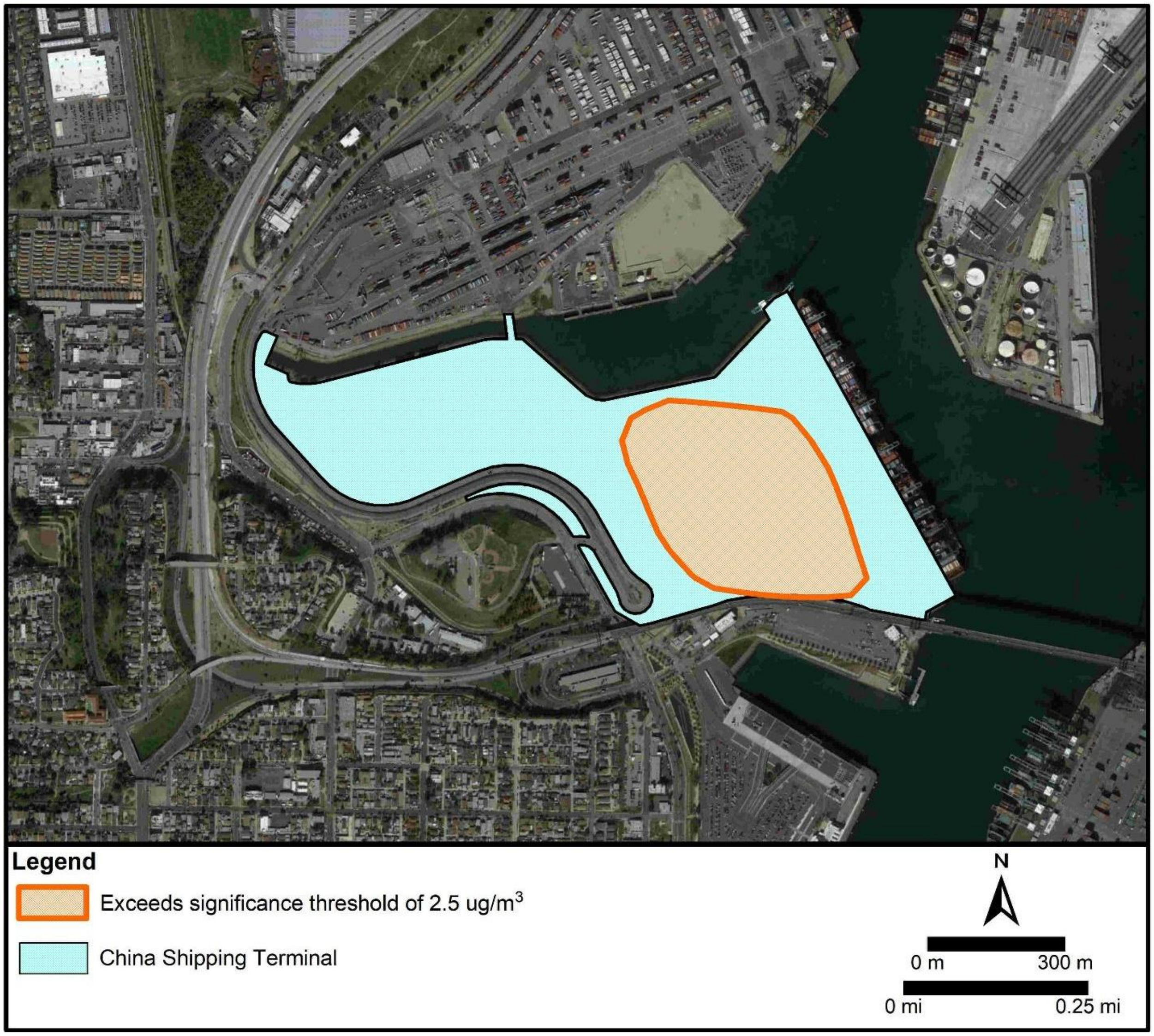


Figure 3.1-4. Area of Significant Impact, 24-Hour PM2.5 Concentration Increment, 2023



Impact AQ-8: Would the Revised Project conflict with or obstruct implementation of the applicable air quality plan?

LAHD regularly provides SCAG with its Port-wide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in each AQMP account for the emissions generated by projected future growth at the Port. Because the forecasted throughput of the Revised Project is included in the Port-wide projections provided to SCAG, the Revised Project cargo forecast and related emissions are included in the General Conformity budgets established in the Final 2022 AQMP adopted by CARB on December 2, 2022 (SCAQMD 2022). The Revised Project would be considered consistent with the local AQMP and not interfere with attainment goals given that the Revised Project's activities (e.g. cargo throughput, ship berths) are consistent with the projections utilized in the formulation of the AQMP.

Revised Project operations would produce emissions of non-attainment pollutants primarily in the form of diesel exhaust. The 2022 AQMP and former iterations propose emission reduction measures that are designed to bring the SCAB into attainment of the State and national ambient air quality standards. The 2022 AQMP, as well as the CARB Mobile Source Strategy, contains key control measures related to ports, which include the following: Emission Reductions at Commercial Marine Ports, Tier 4 Commercial Harbor Craft Standards, At-Berth Regulation Amendments, Accelerated Retirement of Older On-Road Heavy-Duty Vehicles, Pacific Rim Initiative for Maritime Emission Reductions, Emission Reductions from Incentive Programs, and Zero Emission Infrastructure for Mobile Sources.

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 SCAB. Therefore, compliance with SCAQMD regulations and control programs (see Section 3.1.3) would ensure that the Proposed Project would not conflict with or obstruct implementation of the AQMP. The Final 2022 AQMP, as well as the CARB Mobile Source Strategy, contains key control measures related to ports, which include, among many others, the following:

- Emission Reductions at Commercial Marine Ports
- Tier 4 Vessel Standards for OGVs
- Incentivize Low Emission Efficient Ship Visits
- At-Berth Regulation Amendments
- Emission Reductions at Rail Yards and Internodal Facilities
- More Stringent National Locomotive Emission Standards
- Zero-Emission Off-Road Forklift Regulation Phase 1
- Accelerated Retirement of Older On-Road Heavy-Duty Vehicles.

Some of these attainment strategies from the 2022 AQMP would become enforceable regulatory measures. Therefore, compliance with these requirements would ensure that the Revised Project would not conflict with or obstruct implementation of the AQMP.

In addition to the region-wide AQMP, the SCAQMD, in response to Assembly Bill (AB) 617, has prepared the Community Emissions Reduction Plan (CERP) for the communities nearest to the Project site, i.e., Wilmington, Carson, and West Long Beach (SCAQMD 2019). Chapter 5c of the plan addresses air quality and emissions issues associated with the ports of Los Angeles and Long Beach that affect those communities. It identifies three air quality priorities (zero- and near-zero-emissions technology, oil tanker leaks, and targeted enforcement of existing CARB regulations) and presents opportunities for action to address those priorities. The oil tanker priority is not applicable to the Revised Project, but the other two priorities are, to some extent. The plan identifies two actions that would address those priorities: Action 2 targeting ships and harbor craft and Action 3 targeting cargo-handling equipment and drayage trucks. The actions include measures such as supporting the Port’s clean air initiatives and CAAP measures, identifying and implementing demonstration and incentive programs, and supporting and enforcing CARB rules and rule development. The Revised Project is consistent with applicable provisions of the CERP because it includes the deployment of the cleanest available equipment (i.e., cleanest diesel tier CHE in the near term, ZE equipment by 2035). In terms of the vessels, the terminal would comply with CARB rules regarding vessel emissions and two mitigation measures (MM AQ-9 and MM AQ-10) would specifically apply to vessels. Accordingly, vessel activities would not conflict with goals of the CERP.

Furthermore, LAHD, in conjunction with the Port of Long Beach, implements the 2017 CAAP Update, which sets goals and implementation strategies that reduce air emissions and health risks from Port operations. Proposed mitigation measures and the operational activities of the Revised Project would also be consistent with the San Pedro Bay Ports 2017 CAAP Update goals, including feasibility demonstration of electric and other zero emission technologies, accelerating the use of the cleanest available technology for a number of sources, reduced OGV at-berth and transiting emissions (VSRP), and improving the efficiency of the terminal's operations. These measures are also consistent with the emission reduction goals of the 2022 AQMP.

CEQA Impact Determination

The Revised Project would not conflict with or obstruct implementation of the local AQMP or other local air quality program; accordingly, impacts would be less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Discussion of Health Effects Related to Pollutant Impacts

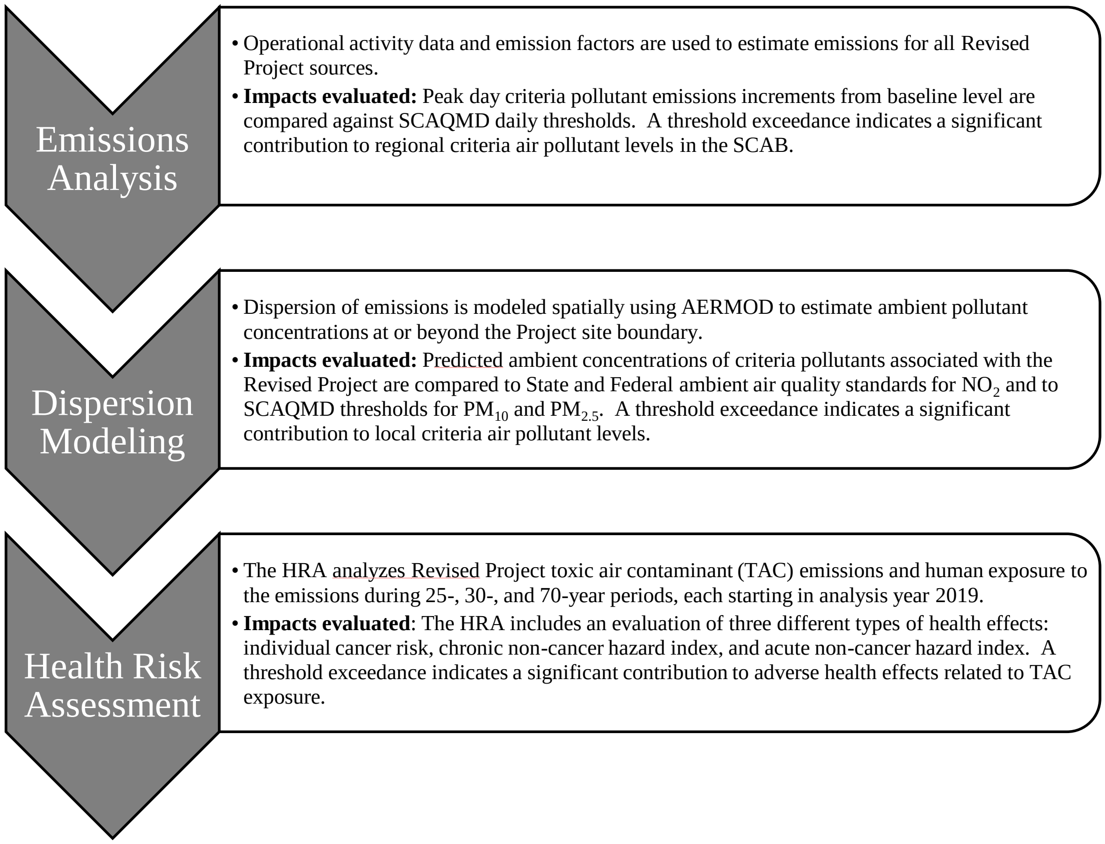
This section includes a discussion of the potential health effects of air pollutant impacts. Potential health effects are described for the Revised Project's significant operational emissions identified in Impact AQ-3 and significant ambient concentrations associated with Revised Project operations identified in Impact AQ-4. This discussion is not a new impact assessment, but rather provides supplemental information related to the significant impacts already identified in the Draft RSEIR. The discussion considers potential links between the Revised Project's emissions of priority pollutants and human health effects. Information about health effects was acquired through a review of available literature published by the SCAQMD, CARB, and USEPA.

The discussion of health effects is also guided by the stepwise process depicted in Figure 3.1-6 that is used for assessing air quality impacts in the Draft RSEIR. The first step, emissions analysis, is presented in Impact AQ-3 for Revised Project operations and is indicative of *regional* air quality impacts because the analysis determines the quantity of criteria pollutants released into the SCAB from Revised Project-related sources operating throughout the South Coast Air Basin (SCAB). The second step, dispersion modeling, is presented in Impact AQ-4 for Revised Project operations. The analysis is indicative of *local* impacts because the analysis estimates the ambient criteria pollutant concentrations to which persons would be exposed, and the highest concentrations are predicted to occur in close proximity to the Project site. Therefore, the health effects discussion considered both regional health effects (i.e., effects that could be experienced throughout the SCAB) and local health effects (i.e., effects in the vicinity of the China Shipping Terminal) related to the Revised Project operation.

The third step, health risk assessment (HRA), is presented in Impact AQ-7. The results for individual cancer risk and population cancer burden (presented in Table 3.1-21) are already direct estimates of the health effects associated with exposure to the Revised

Project's toxic air contaminant (TAC) emissions. Therefore, no further discussion of health effects related to the Revised Project's TAC emissions is necessary for the HRA.

Figure 3.1-6. Air Quality Analysis Key Elements and Progression



Regional Health Effects

This section discusses the relationship between the Revised Project's regional criteria pollutant emissions and the potential for adverse health effects to occur for persons exposed to the emitted pollutants. The Revised Project would produce significant regional emissions of VOC, CO, NO_x, and PM_{10}. Specifically,

- VOC emissions would be significant in 2026 to 2045.
- CO emissions would be significant in 2026 to 2045.
- NOx emissions would be significant in 2026 and 2036.

Emissions of PM_{10}, $PM_{2.5}$, and SOx would not exceed significance thresholds.

Accordingly, this discussion of regional health effects focuses on CO, NO_x, and ozone. CO is included because it is a criteria pollutant. NOx is included because it is a primary component of NO_2, a criteria pollutant. Ozone is included because VOC and NOx are precursors of ozone, which is a criteria pollutant that is photochemically formed in the atmosphere in the presence of sunlight (USEPA 2020).

In an *Amicus Curiae* brief submitted to the California Supreme Court in the *Sierra Club v. County of Fresno ("Friant Ranch")* case, the SCAQMD explained that it did not know of a way to accurately quantify health impacts caused by emissions produced on a scale as small as individual projects (Attachment 2 in City of Los Angeles 2019). The

SCAQMD's observations on the infeasibility of linking project-specific emissions to specific health impacts were echoed by *amicus curiae* submitted by other air pollution control authorities (see attachments 1 through 4 in City of Los Angeles 2019).

One existing tool can model changes in ozone or PM concentrations on a regional scale and use that data to calculate the number of the resulting air pollution-related deaths and illnesses). The tool consists of USEPA's CMAQ (Community Multiscale Air Quality, USEPA 2025) and BenMAP (Benefits Mapping and Analysis Program, USEPA 2019b) models used together. These models are designed to estimate health impacts over a large scale (e.g. city-wide, state-wide) and some of their data inputs are either not generally accessible or not relevant to project-level analyses (City of Los Angeles 2019). The expected changes in regional ozone concentrations associated with an individual project, such as the Revised Project, would be so low that, as City of Los Angeles (2019) points out, BenMAP would likely produce estimates of health effects that are near zero and thus would not be informative for the public.

The City of Los Angeles (2019) evaluated 11 other tools and models used in air quality and public health assessments and found that they all, for various reasons, do not connect mass emissions or pollutant concentrations with specific health effects. Accordingly, at this time neither the SCAQMD, CARB, "nor any air district currently have methodologies that would provide Lead Agencies and CEQA practitioners with a consistent, reliable, and meaningful analysis to correlate specific health impacts that may result from a proposed project's mass emissions" (City of Los Angeles 2019).

As a result of expert agencies determining that any individual project's contribution to health effects will be so small that none of the existing models can provide helpful information and the lack of a reliable methodology for linking project-level pollutant concentrations attributable to an individual project to specific health effects in the regional population, the extent to which regional adverse health effects can be identified in this section is limited to (a) discussing the Revised Project's potential impact on regional pollutant levels; and (b) generally describing the types of adverse health effects associated with exposure to the pollutants of concern.

The discussion below describes regional CO, NO_2, and ozone concentrations and standards, considers whether the Revised Project's emissions would have a substantial impact on these regional pollutant concentrations, and discusses known human health effects of exposure to these pollutants.

Carbon Monoxide (CO)

Impact on Regional CO Concentrations. The SCAB is currently designated as "in attainment" of CO concentration standards. The most stringent state and federal CO standards are 20 ppm for a 1-hour average and 9 ppm for an 8-hour average.

The highest CO concentrations recorded anywhere in the SCAB over the last 3 available years (2021-2023) were 4.3 ppm for a 1-hour average and 3.7 ppm for an 8-hour average (SCAQMD 2025). These pollutant levels are 22 and 41 percent of the 1-hour and 8-hour standards, respectively. Both maximum values occurred at a monitoring station in Compton (SCAQMD 2025).

According to the 2022 AQMP, the total CO emissions within the SCAB in the AQMP's base year of 2018 were 1,658 tons/day (SCAQMD 2022, Table 3-2). By comparison, the highest CO emissions increment associated with Revised Project operations was 1.0 ton/day, on a peak day in 2014, which is 0.06 percent of the total SCAB emissions.

Potential Health Effects. In developing the CO standards, USEPA (2010) prepared a comprehensive report on the possible health effects associated with CO exposure. The SCAQMD also reviewed CO-related health effects in Appendix I of its 2022 AQMP (SCAQMD 2022). The main conclusions of these agencies are:

> USEPA (2010) concluded that a causal relationship is likely to exist between relevant short-term CO exposures and cardiovascular morbidity, particularly in individuals with coronary artery disease. The evidence is suggestive of a causal relationship between short-term exposure to CO and respiratory morbidity as well as between short-term CO exposure and mortality. The evidence is also suggestive of a causal relationship for birth outcomes and developmental effects following long-term exposure to CO, and for central nervous system effects linked to short- and long-term exposure to CO. The evidence indicates that there is not likely to be a causal relationship between long-term exposure to CO and mortality. For respiratory morbidity following long-term exposure to CO, the evidence was inadequate to infer a causal relationship.

> SCAQMD (2022) concluded that inhaled CO interferes with oxygen transport through the formation of carboxyhemoglobin, which reduces the amount of oxygen the blood can carry to the tissues. Effects of inadequate oxygen delivery to the body tissues include reduced duration of maximal exercise performance, earlier onset of electrocardiograph changes in subjects with coronary artery disease, earlier onset of chest pain, increase in the duration of chest pain, headache, confusion and drowsiness. Some epidemiological studies have found associations between short-term ambient CO levels and increased hospital admissions and emergency department visits for ischemic heart disease, including myocardial infarction (heart attack). CO can also modify electron transport in nerve cells, resulting in behavioral, neurological, and developmental toxicological consequences. Recent studies are also showing more respiratory effects from CO exposure, such as alleviated respiratory inflammation and exacerbation of asthma. Other studies have reported associations between CO exposure during pregnancy and increases in pre-term births and cardiac-related birth defects.

Nitrogen Dioxide (NO_2)

Impact on Regional NO_2 Concentrations. The SCAB is currently designated as “in attainment” of NO_2 concentration standards. The most stringent state and federal NO_2 standards are 0.18 ppm for a 1-hour average (state 1-hour standard), 0.100 ppm for a three-year average of the 98th percentile of the annual distributions of daily maximum 1-hour average concentrations (federal 1-hour standard), and 0.030 ppm for an annual average (state standard).

The highest NO_2 concentrations recorded anywhere in the SCAB over the last 3 available years (2021-2023) were 0.095 ppm for the state 1-hour average, 0.076 ppm for the federal 1-hour average, and 0.030 ppm for an annual average (SCAQMD 2025). These pollutant levels are 53, 76, and 100 percent of the state 1-hour, federal 1-hour, and state annual standards, respectively. All the maximum values occurred at monitoring stations adjacent to the I-710 and CA-60 freeways (SCAQMD 2025).

According to the 2022 AQMP, the total NO_x emissions within the SCAB in the AQMP’s base year of 2018 were 351 tons/day. By comparison, the highest NO_x emissions increment associated with Revised Project operations was 2.6 tons/day, on a peak day in 2014, which is 0.7 percent of the total SCAB emissions.

Potential Health Effects. In developing the NO_2 standards, the USEPA (2016) and CARB (2007) have prepared comprehensive reports on the possible health effects associated with NO_2 exposure. The main conclusions of these agencies are:

USEPA (2016) concluded that a causal relationship exists between short-term NO_2 exposure and respiratory effects such as asthma attacks. There is likely to be a causal relationship between long-term NO_2 exposure and respiratory effects based on the evidence for development of asthma. For short-term and/or long-term NO_2 exposure, evidence is suggestive of, but not sufficient to imply, a causal relationship with cardiovascular effects, diabetes, mortality, adverse birth outcomes, and cancer. People with asthma, children, and older adults are at increased risk for NO_2-related health effects.

CARB (2007) concluded that, in controlled human exposure studies, asthmatics appear to be especially sensitive to NO_2. Asthmatic volunteers have experienced short-term effects at NO_2 concentrations as low as 0.26 ppm. There is evidence that a subset of asthmatics may experience increased airway reactivity at concentrations of 0.2 to 0.3 ppm for 30 minutes to 2 hours. Generally, no clinical effects are reported in non-asthmatic volunteers in conditions below 1 ppm. Epidemiological studies have shown an association between NO_2 and both hospital admissions and emergency room visits for asthma at 24-hour average concentrations ranging from 0.018 to 0.036 ppm. Less robust evidence suggests associations with mortality, hospitalization for cardiovascular disease, and low birth weight.

Ozone

Impact on Regional Ozone Concentrations. The SCAB is currently designated as in “nonattainment” of ozone concentration standards. The most stringent state and federal ozone standards are 0.09 ppm for a 1-hour average (state standard), 0.070 ppm for the three-year average of the fourth-highest 8-hour concentration each year (known as the federal 8-hour standard), and 0.070 ppm for an 8-hour average (known as the state 8-hour standard).

The highest 1-hour ozone concentration recorded in the SCAB over the last three available years (2021-2023) is 0.155 ppm, which is 1.7 times the state standard. This concentration occurred at both the Northwest San Bernardino Valley and East San Gabriel Valley monitoring stations. The standard was exceeded somewhere in the SCAB on 23 percent of days during that same three-year period (SCAQMD 2025).

The highest federal 8-hour ozone concentration recorded in the SCAB over the last three available years (2021-2023) is 0.112 ppm, which is 1.6 times the federal standard (SCAQMD 2025). This concentration occurred at the East San Bernardino Valley monitoring site. The threshold of 0.070 ppm was exceeded at one or more locations in the SCAB on 34 percent of days during that same three-year period.

The highest state 8-hour ozone concentration recorded in the SCAB over the last three available years (2021-2023) is 0.122 ppm, which is 1.7 times the state standard. This concentration occurred at the Central San Bernardino Mountains station. The standard was exceeded at one or more locations in the SCAB on 34 percent of days during that same three-year period (SCAQMD 2025).

As noted above, NOx and VOC are ozone precursors. Because ozone is generally formed some time later and downwind from its precursor emission source, ozone behaves as a regional pollutant rather than a local pollutant. For example, the highest ozone concentrations are not found in urban areas close to the concentrated sources of its precursors, but rather in suburban and rural areas downwind of these sources (USEPA 2020). The feasibility of considering potential health effects associated with ozone exposure was addressed above.

According to the 2022 AQMP, the total VOC emissions within the SCAB in the AQMP's base year of 2018 were 406 tons/day (SCAQMD 2022). By comparison, the highest VOC emissions increment associated with Revised Project operation was 0.16 ton/day, on a peak day in 2014, which comprises 0.04 percent of the total SCAB emissions. As discussed above for NO_2, the Revised Project's greatest NO_x emissions increment was 0.7 percent of the total SCAB emissions.

Potential Health Effects. In developing the ozone standards, USEPA (2020) and CARB (2005c) have prepared comprehensive reports on the possible health effects associated with ozone exposure. The main conclusions of the agencies' reports are:

> USEPA (2020) concluded that a causal relationship exists between short-term ozone exposure and respiratory effects. A causal relationship is likely to exist between short-term ozone exposure and cardiovascular effects and mortality. Evidence is suggestive of a causal relationship between short-term ozone exposure and central nervous system effects. A causal relationship is likely to exist between long-term ozone exposure and respiratory effects. Evidence is suggestive of a causal relationship between long-term ozone exposure and cardiovascular effects, reproductive and developmental effects, central nervous system effects, and mortality. There is little evidence for a relationship between long-term ozone exposure and increased risk of lung cancer. The populations and life stages that have adequate evidence for increased ozone-related health effects are individuals with certain genotypes, individuals with asthma, younger and older age groups, individuals with reduced intake of Vitamins E and C, and outdoor workers (USEPA 2024b).

> CARB (2005c) concluded that ozone exposure can result in reduced lung function, increased respiratory symptoms, increased airway hyperreactivity and increased airway inflammation, increased mortality, hospitalization for cardiopulmonary causes, emergency room visits for asthma, and restrictions in activity. In controlled human exposure studies, exercising individuals exposed for one hour to an ozone concentration as low as 0.12 ppm or for 6.6 hours to a concentration as low as 0.08 ppm experienced lung function decrements and symptoms of respiratory irritation such as cough, wheeze, and pain upon deep inhalation. The lowest ozone concentrations at which airway hyperreactivity (an increase in the tendency of the airways to constrict in reaction to exposure to irritants) has been reported are 0.18 ppm ozone following 2-hour exposure in exercising subjects, 0.40 ppm following 2-hour exposure in resting subjects, and 0.08 ppm ozone in subjects exercising for 6.6 hours. Airway inflammation has been reported following 2-hour exposures to 0.20 ppm ozone and following 6.6-hour exposure to 0.08 ppm ozone. Children may be more affected by ozone than the general population due to effects on the developing lung and to relatively higher exposure than adults. Also, asthmatics may represent a sensitive sub-population for ozone.

In summary, the Revised Project would produce emissions of VOC, CO, and NO_x that exceed SCAQMD's project significance thresholds. However, these emissions would make relatively small contributions to regional levels of CO, NO_2, and ozone. There is currently no methodology available that can accurately quantify regional health effects from CO, NO_2, and ozone exposure associated with an individual project's emissions. Therefore, the above discussion is limited to identifying the Revised Project's potential contribution to regional pollutant levels and generally describing the types of adverse health effects associated with exposure to those pollutants.

Local Health Effects

This section discusses the relationship between the Revised Project's local criteria pollutant emissions and the potential for adverse health effects to occur for persons exposed to those emissions in the vicinity of the China Shipping Terminal. The dispersion modeling results in Tables 3.1-11 and 3.1-13 show that operation of the Revised Project would result in significant local concentration impacts for NO_2 and PM_{10}. Specifically,

- Impacts of NO_2 federal 1-hour local concentrations would be significant in 2026.
- Impacts of PM_{10} 24-hour local concentrations would be significant in 2026, 2036, and 2045.
- Impacts of PM_{10} annual local concentrations would be significant in 2026, 2036, and 2045.

Local concentration impacts of $PM_{2.5}$, SO_2, and CO would be below the thresholds in all analysis years. Therefore, the criteria pollutants evaluated for local health effects are NO_2 and PM_{10}.

There is currently no methodology available that can accurately quantify local health effects from ambient NO_2 or PM_{10} concentrations associated with an individual project. Therefore, the extent to which local adverse health effects can be identified in this section is limited to generally describing the types of adverse health effects associated with exposure to NO_2 and PM_{10}.

NO_2 is an ozone precursor. However, because ozone is generally formed some time later and downwind from its precursor emission source, ozone behaves as a regional pollutant rather than a local pollutant. For example, the highest ozone concentrations are not found in urban areas close to the concentrated sources of its precursors, but rather in suburban and rural areas downwind of these sources (USEPA 2013). Therefore, the potential health effects associated with ozone exposure were addressed under Regional Health Effects.

Nitrogen Dioxide (NO_2)

The SCAB is currently designated attainment of the NO_2 concentration standards. Locally, Table 3.1-2 shows that the Wilmington Community Station, approximately 1.6 mile north of the Project site, did not exceed the federal and state NO_2 standards in any of the three most recent years (May 2021-April 2024) for which monitoring data are available.

Magnitude and Extent of Local Impact. The maximum NO_2 concentrations to which individuals in the local area would be exposed during Revised Project operation were predicted through dispersion modeling and are shown in Table 3.1-11. It should be noted that the maximum predicted NO_2 concentrations, which consist of the project concentration increments predicted by AERMOD plus the background concentrations measured at the Wilmington Community Station, are conservative (over-predicted) because the background concentrations were measured while the Revised Project was already operational. Therefore, the background concentrations already include some contributions from the Revised Project, which means the Revised Project's concentration increments are double counted to some degree.

Table 3.1-11 shows that the federal 1-hour NO_2 standard would be exceeded only in analysis year 2026. The highest total concentration in 2026 would be 232 ug/m3, which is 1.2 times the federal 1-hour standard. The area over which the federal 1-hour NO_2 standard would be exceeded in 2026 is shown in Appendix B2, Figure B2-15. The exceedance area is predicted to remain within roughly ¼ mile or less from the terminal.

Potential Health Effects. The potential health effects associated with NO_2 exposure are described above under Regional Health Effects.

Particulate Matter Less than 10 Microns (PM_{10})

The SCAB is currently classified as nonattainment for the state 24-hour and state annual PM_{10} standards and attainment for the federal 24-hour standard. Locally, Table 3.1-2 shows that the Wilmington Community Station, approximately 1.6 mile north of the Project site, exceeded the state 24-hour PM_{10} standard on one or more days in each of the last three years with available data (i.e., May 2020-April 2021 and May 2022-April 2024). The highest observed concentration of 70.6 ug/m^3 is 1.4 times the state 24-hour standard of 50 ug/m^3. The Wilmington Community Station also exceeded the state annual PM_{10} standard in all three years. The highest observed concentration of 27.2 ug/m^3 is 1.4 times the annual standard of 20 ug/m^3. The Wilmington Community Station did not exceed the federal 24-hour PM_{10} standard during the last three years of available data.

Magnitude and Extent of Local Impact. The maximum PM_{10} concentration increments to which individuals in the local area would be exposed during Revised Project operation were predicted through dispersion modeling and are shown in Table 3.1-13. Because of the region's nonattainment status, the Revised Project's PM_{10} concentration increments are compared to SCAQMD significance thresholds instead of the ambient air quality standards; an exceedance of a significance threshold is regarded as a significant localized impact in an area that already exceeds the standard.

Table 3.1-13 shows that the 24-hour PM_{10} significance threshold would be exceeded in 2026, 2036, and 2045. The highest concentration increment of 11.2 ug/m3, which is 4.5 times the significance threshold and 22 percent of the state standard (without adding the background concentration), was predicted to occur in 2036. The areas over which the 24-hour PM_{10} significance threshold would be exceeded are shown in Appendix B2, Figures B2-30 through B2-32. The exceedance areas were predicted to remain within roughly 1/3 mile or less from the China Shipping Terminal. The exceedance areas would extend over some residences as well as the northernmost portion of the San Pedro Waterfront.

Table 3.1-13 shows that the annual PM_{10} significance threshold would also be exceeded in 2026, 2036, and 2045. The highest concentration increment of 3.5 ug/m3, which is 3.5 times the significance threshold and 18 percent of the state standard (without adding the background concentration), was predicted to occur in 2036. The areas over which the state annual PM_{10} significance threshold would be exceeded are shown in Appendix B2, Figures B2-38 through B2-40. The figures show that the exceedance areas would be limited to immediately adjacent industrial and commercial land use areas as well as the northernmost portion of the San Pedro Waterfront; locations farther from the Project site would experience lower concentrations.

Potential Health Effects. The potential health effects associated with PM_{10} exposure are described above under Regional Health Effects.

In summary, operation of the Revised Project would result in significant local concentration impacts of NO_2, PM_{10}, and $PM_{2.5}$. The Revised Project's significant impact areas would extend over industrial and commercial land uses near the China Shipping terminal and, in some analysis years, over residences and portions of the San Pedro Waterfront. There is currently no methodology available that can accurately quantify local health effects from ambient NO_2 or PM_{10} concentrations associated with an individual project. Therefore, the above discussion is limited to defining the geographical area of significant local impacts, presenting the magnitude of significant local impacts and generally describing the types of adverse health effects associated with exposure to NO_2 and PM_{10}. As guidance from the City of Los Angeles (2019) concludes,

> "For local plans or projects that exceed any identified SCAQMD air quality threshold, City EIR documents typically identify and disclose generalized health effects of certain air pollutants but are currently unable to establish a reliable connection between any local plan or project and a particular health effect. … A number of factors contribute to this uncertainty, including the regional scope of air quality monitoring and planning, technological limitations for modeling at a local plan- or project-level, and the intrinsically complex nature between air pollutants and health effects in conjunction with local environmental variables."

Summary of Impact Determinations

Table 3.1-21 summarizes the CEQA impact determinations of the Revised Project related to air quality and meteorology.

Table 3.1-21. Summary of Potential Impacts on Air Quality Associated with the Revised Project

Impact	Impact Determination
AQ-3: Would the Revised Project result in operational emissions that exceed an SCAQMD threshold of significance?	Revised Project emissions of carbon monoxide (CO) and volatile organic carbon compounds (VOC) would exceed significance thresholds in all analysis years (2026, 2036, 2045); emissions of nitrogen oxides (NOx) would exceed significance thresholds in analysis years 2026 and 2036. Emissions of PM_{10}, $PM_{2.5}$, and SO_X would be less than significant.
AQ-4: Would operation of the Revised Project result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance?	Impacts of the Revised Project would be significant for federal 1-hour NO_2 in 2026, and annual and 24-hour PM_{10} in 2026 through 2045. Impacts of SO_2, CO, and $PM_{2.5}$ would be less than significant.
AQ-7: Would the Revised Project expose receptors to significant levels of TACs?	Cancer risks relative to the floating future baseline would be significant for occupational receptor types. Cancer risks relative to the floating future baseline for residential and sensitive receptors and for all receptors relative to the static baseline would be less than significant. Chronic and acute non-cancer health impacts and cancer burden would be less than significant.
AQ-8: Would the Revised Project conflict with or obstruct	The Revised Project is consistent with local AQMP. Impacts would be less than significant.

Impact	Impact Determination
implementation of an applicable AQMP?	

3.1.5 Mitigation Monitoring

Per the Writ, the mitigation monitoring program below includes the Adopted Mitigation Measures, the modified and additional mitigation measures for the Revised Project, and lease measures from the 2019 SEIR.

AQ-3: The Revised Project would result in operational-related emissions that exceed an SCAQMD threshold of significance. **AQ-4: The Revised Project operation would result in offsite ambient air pollutant concentrations that exceed a SCAQMD threshold of significance.** **AQ-7: The Revised Project operation would expose sensitive receptors to significant levels of TACs.**	
Mitigation Measure	**MM AQ-9. Alternative Maritime Power (AMP).** China Shipping ships calling at Berths 97-109 must use AMP for 100-percent of ship calls Additionally, all ships retrofitted for or capable of using AMP calling at Berths 97-109 shall use AMP while hoteling in the Port for 100-percent compliance of ship calls. The following exceptions apply to this measure: 1. When an AMP-capable berth is unavailable due to utilization by another AMP-capable ship. 2. During any portion of a vessel visit that qualifies as a “safety and emergency event” under California Code of Regulations, Title 17, section 93130.8, subdivision (a). 3. During any portion of a vessel visit that qualifies as “commissioning” under California Code of Regulations, Title 17, section 93130.8, subdivision (c). 4. During any portion of a vessel visit that occurs during either a vessel-side equipment failure or a terminal-side equipment failure.
Timing	Starting on the effective date of a new lease amendment between the Tenant and the LAHD and annually thereafter.
Methodology	LAHD shall include MM AQ-9, as revised, in the Permit amendment with tenant. Tenant shall submit bi-annual compliance forms documenting compliance to the Environmental Management Division; such documentation shall include all reports sent to CARB and any responses from CARB in compliance with the At-Berth Regulations. Vessel calls shall be monitored by the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting.
Responsible Parties	Tenant, LAHD
Residual Impacts	Significant and unavoidable
Mitigation Measure	**MM AQ-10. Vessel Speed Reduction Program (VSRP).** All ships (100%) calling at Berths 97-109 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area.
Timing	Starting on the effective date of a new lease amendment between the Tenant and the LAHD and annually thereafter.
Methodology	LAHD shall include MM AQ-10, as revised, in the Permit amendment with tenant. Environmental Management Division will independently monitor through monitoring data provided by the Marine Exchange. Biannual tenant compliance forms shall be supplied to the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting
Responsible Parties	Tenant, LAHD.

Residual Impacts	Significant and unavoidable
Mitigation Measure	**2019 MM AQ-15. Yard Tractor Emission Standards.** By January 1, 2019 all LPG yard tractors of model years 2007 or older shall be alternative fuel yard tractors that meet or exceed Tier 4 final off-road engine standards for PM and NO_x, and by January 1, 2023 all LPG yard tractors of model years 2011 or older shall be alternative fuel yard tractors that meet or exceed Tier 4 final off-road engine standards for PM and NO_x..
Timing	**During operation, as specified in the mitigation measure.**
Methodology	This mitigation measure was adopted in the 2024 amendment to Permit No. 999. Tenant shall submit bi-annual compliance forms to the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting.
Responsible Parties	Tenant, LAHD.
Residual Impacts	Significant and unavoidable
Mitigation Measure	**2008 MM AQ-17. Cargo-Handling Equipment (pilot project)**. The tenant at Berth 97-109 shall participate in a 1-year electric yard tractor [truck] pilot project. As part of the pilot project, two electric tractors will be deployed at the terminal within 1 year of lease approval. If the pilot project is successful in terms of operation, costs and availability, the tenant shall replace half of the Berth 97-109 yard tractors with electric tractors within 5 years of the feasibility determination**.**
Timing	During operation, as specified in the mitigation measure.
Methodology	This mitigation measure was adopted in the 2024 amendment to Permit No. 999. Tenant shall submit bi-annual compliance forms to the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting.
Responsible Parties	Tenant, LAHD.
Residual Impacts	Significant and unavoidable

Mitigation Measure	**2019 MM AQ-17. Cargo-Handling Equipment Emission Standards**. All yard equipment at the terminal, except for yard tractors, shall implement the following requirements: Forklifts • By January 1, 2019 all 18-ton diesel forklifts of model years 2004 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2020 all 18-ton diesel forklifts of model years 2005 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2020, all 5-ton forklifts of model years 2011 or older shall be replaced with electric units. • By January 1, 2021 all 18-ton diesel forklifts of model years 2007 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. Toppicks • By January 1, 2019 all diesel top-picks of model years 2006 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2021 all diesel top-picks of model years 2007 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2023 all diesel top-picks of model years 2014 and older shall be replaced with units that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. Rubber-Tired Gantry (RTG) Cranes • By January 1, 2021 all diesel RTG cranes of model years 2003 and older shall be replaced with diesel-electric hybrid with diesel engines that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2023 all diesel RTG cranes of model years 2004 and older shall be replaced with diesel-electric hybrid with diesel engines that meet or exceed Tier 4 final off-road engine standards for PM and NO_x. • By January 1, 2025 four RTG cranes of model years 2005 and older shall be replaced by all-electric units, and one diesel RTG crane of model year 2005 shall be diesel-electric hybrid with a diesel engine meeting Tier 4 final off-road engine standards for PM and NO_x. Sweepers Sweeper(s) shall be alternative fuel or the cleanest available by 2025. Shuttle Buses Gasoline shuttle buses shall be zero emissions by 2025.
Timing	During operation, as specified in the mitigation measure.
Methodology	This mitigation measure was adopted in the 2024 amendment to Permit No. 999. Tenant shall submit bi-annual compliance forms to the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting.
Responsible Parties	Tenant, LAHD.
Residual Impacts	Significant and unavoidable
Mitigation Measure	**New MM AQ-31: At-Berth Regulations.** All ships calling at Berths 97-109 shall be subject to all applicable provisions of the At-Berth Regulations (CCR Title 17, Sections 93130-93130.22), and applicable future regulations that may be promulgated by CARB regarding at-berth emissions, while hoteling in the Port.
Timing	During operation.

Methodology	LAHD shall include MM AQ-31 in the Permit amendment with tenant. Tenant shall submit bi-annual compliance forms documenting compliance to the Environmental Management Division; such documentation shall include all reports sent to CARB and any responses from CARB in compliance with the At-Berth Regulations. Vessel calls shall be monitored by the Environmental Management Division. Enforcement shall include oversight by the Real Estate Division. Annual staff reports shall be made available to the Board at a regularly scheduled public Board Meeting.
Responsible Parties	Tenant, LAHD.
Residual Impacts	Significant and unavoidable
Mitigation Measure	**2019 LM AQ-1. Cleanest Available Cargo-Handling Equipment.** For any measures that require the replacement, new purchase, or retrofit of cargo handling equipment, the tenant is required to notify LAHD in advance and engage in collaboration with LAHD on the cleanest available cargo handling equipment that is operationally and economically feasible and commercially available for the tenant's operations. LAHD will also assist with identification of potential sources of funding to assist with the purchase of such equipment.
Timing	During operation.
Methodology	LAHD will include this lease measure in lease agreements with tenants.
Responsible Parties	Tenant, LAHD.
Residual Impacts	Significant and unavoidable
Mitigation Measure	**2019 LM AQ-2. Priority Access for Drayage**. A priority access system shall be implemented at the CS Terminal to provide preferential access to zero- and near-zero-emission trucks.
Timing	During operation.
Methodology	This lease measure was adopted in the 2024 amendment to Permit No. 999.
Responsible Parties	Tenant, LAHD
Residual Impacts	Significant and unavoidable
Mitigation Measure	**2019 LM AQ-3. Zero Emission Equipment Demonstration and Feasibility Assessment.** Tenant shall conduct a one-year zero emission demonstration project with at least ten units of zero-emission cargo handling equipment. Upon completion of the one-year demonstration, Tenant shall submit a report to LAHD that evaluates the feasibility of permanent use of the tested equipment. Tenant shall continue to test the zero-emission equipment and provide feasibility assessments and progress reports in 2020 and 2025 to evaluate the status of zero-emission equipment technologies and infrastructure as well as operational and financial considerations, with a goal of 100% zero-emission cargo handling equipment by 2030.
Timing	During operation.
Methodology	This lease measure was adopted in the 2024 amendment to Permit No. 999.
Responsible Parties	Tenant, LAHD
Residual Impacts	Significant and unavoidable

3.1.6 Significant Unavoidable Impacts

3.1.6.1 Air Quality Impacts

Impacts of Revised Project emissions of carbon monoxide (CO) and volatile organic compounds (VOC) during analysis years 2026 to 2045 and of NO_X during 2026 and 2036 would be significant and unavoidable.

Impacts of ambient concentrations of NO_2 (federal 1-hour standard) in analysis year 2026 and of PM_{10} (annual and 24-hour averages) in 2026, 2036, and 2045 would be significant and unavoidable.

3.1.6.2 Health Impacts

Significant and unavoidable health impacts of the Revised Project, as summarized in Table 3.1-21, were predicted for individual cancer risk to be greater than 10 in a million at an occupational receptor in the immediate vicinity of the CS Container Terminal.