4.1 Air Quality and Human Health Risk

4.1.1 Air Quality

4.1.1.1 Introduction

This air quality analysis examines criteria pollutant emissions that would result from construction and operations associated with the proposed Project. Operational activities, including aircraft and ground support operations, on-airport traffic and stationary sources, and off-airport regional traffic, are evaluated at buildout of the proposed Project in 2028. The analysis also addresses emissions from construction activities (e.g., on-site and off-site construction equipment, fugitive dust, and worker vehicle trips) that would occur during the construction period, which is anticipated to occur between 2021 and early 2028; and evaluates emissions associated with the temporary closure of a runway during construction.

As further discussed under the heading “Analytical Framework” at the beginning of this chapter (Environmental Impact Analysis), the Notice of Preparation for this EIR was published on April 4, 2019. In accordance with the provisions of CEQA, 2019 is the baseline year for characterizing existing conditions in the environmental analysis. However, for certain analyses, a full year's worth of data was considered necessary and appropriate to characterize existing baseline conditions. As the technical analyses for this EIR commenced in 2019, data for 2018 were used for these analyses to define existing baseline conditions. Therefore, Project-related air pollutant emissions were compared to the air pollutant emissions associated with baseline conditions in 2018. For construction-related activities, no baseline year was used (i.e., “baseline” would be zero), because construction would not otherwise occur without the proposed Project and, therefore, increments were not calculated.

Impacts related to human health risks from inhalation of toxic air contaminant (TAC) emissions are addressed in Section 4.1.2, *Human Health Risk*. Greenhouse gas emissions are discussed separately in Section 4.4, *Greenhouse Gas Emissions*. **Appendix C** provides details on methods, assumptions, and backup data for both air quality and the human health risk assessment (HHRA).

Prior to the preparation of this EIR, an Initial Study (included in **Appendix A** of this EIR) was prepared using the CEQA Environmental Checklist Form to assess potential environmental impacts on air quality. For one of these screening criteria, the Initial Study found that the proposed Project would result in “No Impact and, thus, no further analysis of this topic in an EIR was required. Based on the Initial Study screening criteria related to air quality, the following potential impact does not require any additional analysis in this EIR:

- The potential for “other” (non-criteria pollutant) emissions (such as those leading to odors) to adversely affect a substantial number of people was evaluated in the Initial Study. The use of diesel equipment during construction would generate near-field odors. Diesel equipment emits a distinctive odor that may be considered offensive to certain individuals. The closest sensitive receptors are hotels to the north and east of the Project boundary, on the north side of Century Boulevard between Sepulveda Boulevard and Avion Drive. Because of variabilities in wind speed and direction as related to the dispersion of construction emissions and distances to nearby receptors, odors from construction-related diesel exhaust would not affect a substantial number of people. The Project site is located at LAX, which is characterized by aircraft operations, passenger processing, and vehicular movement. The proposed Project would result in airport operations consistent with existing activities at LAX and would not notably change existing odors at or in the vicinity of the Project site. Therefore, operation of the proposed Project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Impacts associated with other emissions, including odors, would be less than significant and no further analysis in this EIR is required.

The air quality impact analysis presented below includes development of emission inventories for the proposed Project (i.e., the quantities of specific pollutants, typically expressed in pounds per day [lbs/day] or tons per year [tpy]) based on emissions modeling. The analysis also includes an assessment of localized concentrations of air pollutants associated with the proposed Project (i.e., the concentrations of specific pollutants within ambient air, typically expressed in terms of micrograms per cubic meter [$\mu g/m^3$]) based on dispersion modeling. The criteria pollutant emissions inventories and localized concentrations were developed using standard industry software/models and federal-, state-, and locally-approved methodologies. Results of the emissions inventories were compared to daily emissions thresholds established by the South Coast Air Quality Management District (SCAQMD) for the South Coast Air Basin.[1] Results of the ambient concentrations modeling were compared to SCAQMD concentration thresholds.

4.1.1.1.1 Pollutants of Interest

Six criteria pollutants were evaluated for the proposed Project's construction and operational activities: ozone (O_3), using as surrogates volatile organic compounds (VOC)[2] and oxides of nitrogen (NO_X);[3] nitrogen dioxide (NO_2); carbon monoxide (CO); sulfur dioxide (SO_2); respirable particulate matter or particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}); and fine particulate matter, or particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$).

Although lead (Pb) is a criteria pollutant, it was not evaluated in this section because the proposed Project would have negligible impacts on Pb levels in the South Coast Air Basin. The Initial Study conducted for the proposed Project (included in **Appendix A**) noted that potential releases of hazardous building materials, including lead-containing surfaces, during building demolition would be minimized through adherence to existing regulations that govern demolition and removal of existing structures, and the impacts would be less than significant.[4] The only direct source of Pb emissions from airport activity is from aviation gasoline (AvGas) associated with piston-engine general aviation aircraft; however, very few, if any, piston engine aircraft fly into LAX, and AvGas is no longer stored at the fuel farm operated by LAXFUEL. However, the trace amounts of Pb identified in jet fuel are assessed in Section 4.1.2, *Human Health Risk*.

Sulfate compounds (e.g., ammonium sulfate) are generally not emitted directly into the air but are formed through various chemical reactions in the atmosphere; thus, sulfate is considered a secondary pollutant. All sulfur emitted by airport-related sources included in this analysis was assumed to be released and to remain in the atmosphere as SO_2. No sulfate inventories or concentrations were estimated for the criteria air pollutant analysis because the relative abundance of sulfates from fuel combustion is much lower than that of SO_2, and because very little sulfur is emitted from Project sources.[5] However, the trace amounts of sulfates identified in jet fuel are assessed in Section 4.1.2, *Human Health Risk*.

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1 South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

2 The emissions of volatile organic compounds (VOC) and reactive organic gases (ROG) are essentially the same for the combustion emission sources that are considered in this EIR. This EIR will typically refer to organic emissions as VOC.

3 NO_X is a generic term for a mixture of two specific oxides of nitrogen, nitric oxide (NO) and nitrogen dioxide (NO_2).

4 Section IX.b of the Initial Study (included in **Appendix A** of this EIR) discusses procedures to minimize generation of lead emissions from lead-containing surfaces (e.g., lead-based paint) during demolition activities associated with the proposed Project. As discussed therein, should lead-based paint materials be identified, standard handling and disposal practices would be implemented pursuant to federal Occupational Safety and Health Administration (OSHA) and California OSHA regulations to limit worker and environmental risks. Compliance with existing federal, state, and local regulations and routine precautions would reduce the potential for hazards to the public or the environment through the routine disposal or accidental release of hazardous building materials. Therefore, lead emissions from lead-based paint during demolition activities associated with the proposed Project would be less than significant.

5 Seinfeld, J.H. and S.N. Pandis, *Atmospheric Chemistry and Physics – From Air Pollution to Climate Change*, 1998, p. 59.

Hydrogen sulfide is not produced or used at LAX. It is typically produced by microbial processes or released from geothermal steam, wood pulping, or oil production.[6] Vinyl chloride also is not produced at LAX. It is raw organic compound used in the production of pipe, hose, wrapping, and other products fabricated from polyvinylchloride plastic.[7] Therefore, hydrogen sulfide and vinyl chloride are not evaluated in this EIR.

Following standard professional practice for project EIRs, the evaluation of O_3 was conducted by evaluating emissions of VOCs and NO_X, which are precursors in the formation of O_3. O_3 is a regional pollutant and ambient concentrations can only be predicted using regional photochemical models that account for all sources of precursors; regional photochemical O_3 modeling, under standard professional practice, is not used for project-level reviews because due to the nature of regional O_3 models, results would be speculative and not be meaningful or accurate.[8,9,10] Therefore, photochemical O_3 modeling was not conducted. However, the health effects of the Project's contributions to regional O_3 were nevertheless analyzed. See Section 4.1.1.2.6 for a detailed discussion of the methodology used to analyze the human health effects of the Project's contributions to regional O_3.

Additional information regarding the six criteria pollutants that were evaluated in the air quality analysis, and their health impacts, is presented below.

4.1.1.1.1.1 Ozone (O_3)[11]

O_3, the main component of smog, is formed from precursor pollutants rather than being directly emitted from pollutant sources. O_3 forms as a result of VOCs and NO_X reacting in the presence of sunlight. O_3 levels are typically highest in warm-weather months and in urban areas. VOCs and NO_X are termed "O_3 precursors" and their emissions are regulated in order to control the creation of O_3. O_3 damages lung tissue and reduces lung function. Scientific evidence indicates that ambient levels of O_3 not only affect people with impaired respiratory systems (e.g., asthmatics), but also healthy children and adults. O_3 can cause health effects, such as chest discomfort, coughing, nausea, respiratory tract and eye irritation, and decreased pulmonary functions.

4.1.1.1.1.2 Nitrogen Dioxide (NO_2)[12]

NO_2 is a reddish-brown to dark brown gas with an irritating odor. NO_2 forms when nitric oxide reacts with atmospheric oxygen. The primary source of NO_2 is the combustion of fuel. Significant sources of NO_2 at airports are boilers, aircraft operations, and vehicle movements. NO_2 emissions from these sources are highest during high-temperature combustion, such as aircraft takeoff mode. NO_2 may produce adverse

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6 Manahan, S.E., *Environmental Chemistry - Seventh Edition*, 2000. p. 348.

7 Manahan, S.E., *Environmental Chemistry - Seventh Edition*, 2000. p. 862.

8 South Coast Air Quality Management District, *Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and [Proposed] Brief of Amicus Curiae, Case No. S219783 in the Supreme Court of California*, April 13, 2015. Available: https://www.courts.ca.gov/documents/9-s219783-ac-south-coast-air-quality-mgt-dist-041315.pdf, accessed June 22, 2020.

9 San Joaquin Valley Unified Air Pollution Control District, *Application for Leave to File Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party in Interest and Respondent, Friant Ranch, L.P, Case No. S219783 in the Supreme Court of California*, April 13, 2015. Available: https://www.courts.ca.gov/documents/7-s219783-ac-san-joaquin-valley-unified-air-pollution-control-dist-041315.pdf, accessed June 22, 2020.

10 California Association of Environmental Professionals and American Planning Association California Chapter, *Application for Leave to File Amicus Curiae Brief in Support of Friant Ranch, L.P. on Behalf of California Association of Environmental Professionals and American Planning Association California Chapter; Proposed Amicus Curiae Brief, Case No. S219783 in the Supreme Court of California*, May 12, 2015. Available: https://www.courts.ca.gov/documents/14-s219783-ac-ca-assn-environ-prof-et-al-051215.pdf, accessed June 22, 2020.

11 U.S. Environmental Protection Agency, *Ozone Pollution – Ozone Basics*. Available: https://www.epa.gov/ozone-pollution/ozone-basics, accessed October 14, 2019.

12 U.S. Environmental Protection Agency, *Nitrogen Dioxide (NO_2) Pollution – Basic Information about NO_2*. Available: https://www.epa.gov/no2-pollution/basic-information-about-no2, accessed October 14, 2019.

health effects, such as nose and throat irritation, coughing, choking, headaches, nausea, stomach or chest pains, and lung inflammation (e.g., bronchitis, pneumonia).

4.1.1.1.1.3 Carbon Monoxide (CO)[13]

CO is an odorless, colorless gas that is toxic. It is formed by the incomplete combustion of fuels. The primary sources of this pollutant in Los Angeles County are automobiles and other sources that burn fossil fuels. Breathing air with high concentrations of CO reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity, and impaired mental abilities.

4.1.1.1.1.4 Particulate Matter (PM_{10}) and Fine Particulate Matter ($PM_{2.5}$)[14]

Particulate matter consists of solid and liquid particles of dust, soot, aerosols, and other matter small enough to remain suspended in the air for a long period of time. Particles smaller than 10 micrometers (i.e., PM_{10} and $PM_{2.5}$) represent that portion of particulate matter thought to signify the greatest hazard to public health.[15] PM_{10} and $PM_{2.5}$ can accumulate in the respiratory system and are associated with a variety of negative health effects. Exposure to particulate matter can aggravate existing respiratory conditions, increase respiratory symptoms and disease, decrease long-term lung function, and possibly cause premature death. The segments of the population that are most sensitive to the negative effects of particulate matter in the air are the elderly, individuals with cardiopulmonary disease, and children.

A portion of the particulate matter in the air comes from natural sources, such as windblown dust and pollen. Man-made sources of particulate matter include fuel combustion, automobile exhaust, field burning, cooking, tobacco smoking, factories, and vehicle movement or other man-made disturbances on unpaved areas. Fugitive dust generated by construction activities is a major source of suspended particulate matter. Secondary formation of particulate matter may occur in some cases where gases, such as sulfur oxides (SO_X) and NO_X, interact with other compounds in the air to form particulate matter.[16] In the South Coast Air Basin, both VOCs and ammonia are also considered precursors to $PM_{2.5}$.

The secondary sources of particulate matter, SO_X and NO_X, are also major precursors to acidic deposition (acid rain). Human health concerns from acid rain include effects on breathing and the respiratory system, damage to lung tissue, and premature death. Small particles can penetrate sensitive parts of the lungs and can cause or worsen respiratory disease. NO_X has the potential to change the composition of some species of vegetation in wetland and terrestrial systems, create the acidification of freshwater bodies, impair aquatic visibility, create eutrophication of estuarine and coastal waters, and increase the levels of toxins harmful to aquatic life.

4.1.1.1.1.5 Sulfur Dioxide (SO_2)[17]

Sulfur oxides are formed when fuel containing sulfur (typically, coal and oil) is burned, and during other industrial processes. The term "sulfur oxides" accounts for distinct but related compounds, primarily SO_2 and sulfur trioxide (SO_3). As a conservative assumption for this analysis, it was assumed that all SO_X are

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13 U.S. Environmental Protection Agency, *Carbon Monoxide (CO) Pollution in Outdoor Air – Basic Information about Carbon Monoxide (CO) Outdoor Air Pollution.* Available: https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution, accessed October 14, 2019.

14 U.S. Environmental Protection Agency, *Particulate Matter (PM) Pollution – Particulate Matter (PM) Basics.* Available: https://www.epa.gov/pm-pollution/particulate-matter-pm-basics, accessed October 14, 2019.

15 U.S. Environmental Protection Agency, *Particle Pollution and Your Health*, September 2003. Available: https://www3.epa.gov/airnow/particle/pm-color.pdf.

16 The term SO_X accounts for distinct but related compounds, primarily SO_2 and, to a far lesser degree, sulfur trioxide. As a conservative assumption for this analysis, it was assumed that all SO_X is emitted as SO_2; therefore, SO_X and SO_2 are considered equivalent in this document and only the latter term is used henceforth.

17 U.S. Environmental Protection Agency, *Sulfur Dioxide (SO_2) Pollution – Sulfur Dioxide Basics.* Available: https://www.epa.gov/so2-pollution/sulfur-dioxide-basics, accessed October 14, 2019.

emitted as SO_2; therefore, SO_X and SO_2 are considered equivalent in this document. Higher SO_2 concentrations are usually found in the vicinity of large industrial facilities.

The physical effects of SO_2 include temporary breathing impairment, respiratory illness, and aggravation of existing cardiovascular disease. Children and the elderly are most susceptible to the negative effects of exposure to SO_2.

4.1.1.1.2 Scope of Analysis

The air quality analysis conducted for the proposed Project addresses construction-related impacts for the peak day of proposed construction activities and operations-related impacts following completion of construction. The basic steps involved in the scope of analysis are listed below.

4.1.1.1.2.1 Construction

Construction emissions were quantified for each year of construction, which is anticipated to occur over seven years between 2021 and 2028. The associated concentrations were estimated for the peak construction emissions year for each pollutant.

The scope of the construction emissions evaluation included the following components:

- Identify construction-related emissions sources
- Develop peak daily and annual construction emissions inventories for the identified sources
- Compare Project-related regional construction emissions inventories for each year of construction with appropriate CEQA significance thresholds for construction
- Compare peak construction concentrations with appropriate SCAQMD concentration thresholds for construction
- Determine level of significance of Project impacts
- Identify construction-related mitigation measures, if required

4.1.1.1.2.2 Operations

Operational emissions were quantified for existing conditions (2018) and the first year of operation after buildout of the proposed Project (expected in 2028). The scope of the operational emissions evaluation included the following components:

- Identify operational-related emissions sources
- Develop peak daily and annual operational emissions inventories for the identified sources
- Compare Project-related emissions inventories with appropriate CEQA significance thresholds for operations
- Conduct dispersion modeling of Project-related operational emissions
- Determine level of significance of Project impacts
- Identify operations-related mitigation measures, if required

4.1.1.2 Methodology

The methodology for the air quality analysis was documented in an air quality impact analysis protocol that was presented to SCAQMD and the California Air Resources Board (CARB) prior to the initiation of the air quality modeling. The final protocol reflects comments received by SCAQMD and CARB. SCAQMD acknowledged receipt of the final protocol with the updates that addressed their comments.[18,19] CARB coordinated with SCAQMD[20] and, therefore, did not provide a separate acknowledgement of the CEQA protocol.

4.1.1.2.1 Emission Source Types – Construction

Construction-related criteria pollutant emissions were quantified for CO, VOC, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ for the proposed Project's constituent construction activities (Project components). Sources of construction emissions evaluated in the analysis include off-road and on-road construction equipment, on-road hauling, on-road delivery vehicles, and worker vehicles; fugitive dust (PM_{10} and $PM_{2.5}$) from demolition, material handling, and vehicle travel on silted roadways; and fugitive VOCs from coating, painting, and paving. Construction of several of the taxiway improvements would require each of the north airfield runways to be closed (not simultaneously) for several months in 2023 and 2024. The incremental emissions from longer aircraft taxi/idle times during the closures were included in the construction emissions inventories, as discussed in Section 4.1.1.5.1.1.

The basis for the construction emissions analysis is the construction schedule, which identifies activities and approximate durations for each Project component that together constitute the proposed Project.[21] Construction activity estimates were developed for each Project component, from which monthly emissions were quantified. Daily emissions were calculated by dividing monthly emissions by the number of workdays in the given month, based on a 5-day-per-week workweek. Construction activity was estimated at a monthly level of refinement; thus, the peak day of construction was identified as a day occurring during the month with the highest daily emissions. Annual and quarterly emissions, as applicable, were based on the monthly emissions estimates.

Emissions estimates for the proposed Project's construction activities included the application of emission reduction measures required by SCAQMD, including compliance with Rule 403[22] for fugitive dust control and use of ultra-low sulfur fuel.

As further described in Chapter 2, *Description of the Proposed Project*, construction of the proposed Project would occur over approximately seven years, projected to begin in 2021 and to end in 2028.

4.1.1.2.1.1 Off-Road Equipment

For purposes of this EIR, off-road construction equipment includes bulldozers, loaders, compactors, and other heavy-duty construction equipment that is not licensed to travel on public roadways. Off-road construction equipment types, models, horsepower, load factor, engine U.S. Environmental Protection Agency (USEPA) tier levels, and estimated maximum daily hours of operation anticipated to be used during construction of the proposed Project were developed for the proposed Project.[23] Equipment types with corresponding operating hours were matched with specific construction activities for each Project component. The proposed Project schedule assumes a single shift, 8-hour workday and a 5-day workweek during the peak month of construction. The assumptions regarding the amount of equipment and number

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[18] CDM Smith, *Los Angeles International Airport – Airfield and Terminal Modernization Project, Final CEQA Protocol for Conducting an Air Quality Impact Analysis of Criteria Air Pollutants*, June 4, 2020. This protocol is included as **Appendix C.8** of this EIR.

[19] Sun, Lijin, South Coast Air Quality Management District, Electronic Mail Message to Evelyn Quintanilla, Los Angeles World Airports, *Subject: Re: Emailing Memorandum – Response to SCAQMD Comments on CEQA AQ Protocol Final.pdf*, June 30, 2020.

[20] Benjamin, Michael, California Air Resources Board, Electronic Mail Message to David Kessler, Federal Aviation Administration, *Subject: Re: Los Angeles International Airport – Proposed Airfield and Terminal Modernization Project – Draft Air Quality Modeling Protocol*, November 14, 2019.

[21] City of Los Angeles, Los Angeles World Airports, *LAX Airfield and Terminal Modernization Program (ATMP) Air Quality Modeling Data & Assumptions*, prepared by Connico Incorporated, September 2019 (with updates October 2019).

[22] South Coast Air Quality Management District, *Rule 403 - Fugitive Dust*, amended June 3, 2005. Available: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.

[23] City of Los Angeles, Los Angeles World Airports, *LAX Airfield and Terminal Modernization Program (ATMP) Air Quality Modeling Data & Assumptions*, prepared by Connico Incorporated, September 2019 (with updates October 2019).

of construction workers reflect completion of Project construction within the planned construction duration.

Off-road diesel exhaust emission factors for CO, VOC, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ were based on CARB's OFFROAD2017 emissions model.[24] Emissions for off-road equipment were calculated by multiplying an emission factor by the horsepower, load factor, usage factor, and operational hours for each type of equipment. These calculations include appropriate reductions achieved with implementation of mandated dust control, as required by SCAQMD Rule 403 (Fugitive Dust).

4.1.1.2.1.2 On-Road On-Site Equipment

For the proposed Project, on-road on-site equipment emissions would be generated from on-site pickup trucks, water trucks, haul trucks, dump trucks, cement trucks, and other on-road vehicles that are licensed to travel on public roadways. Exhaust emissions for each construction year from on-road on-site vehicles were calculated using CARB's EMFAC2017[25,26] emission factor model. Off-model adjustment factors were applied to the emission factors generated by EMFAC2017 to account for the federal government's "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program."[27] The off-model adjustment factors are specifically applied to NO_X, total organic gases (TOG),[28] PM, and CO exhaust from gasoline fueled light-duty vehicles.[29]

On-road on-site equipment types were categorized into vehicle types corresponding to CARB vehicle classes. Emission factors from the EMFAC2017 model are expressed in grams per mile (g/mi) and account for startup, running, and idling operations. In addition, the VOC emission factors include diurnal, hot soak, running, and resting emissions, while the PM_{10} and $PM_{2.5}$ factors include tire and brake wear. The emission factors were converted to pounds per hour (lbs/hr) and applied to the hourly activity schedule.

4.1.1.2.1.3 On-Road Off-Site Equipment

On-road off-site vehicle trips include personal vehicles used by construction workers to access the construction site, as well as haul and delivery truck trips for the transport of various materials to and from the site. On-road off-site hauling activity, including miles per trip and number of trips, were developed for each Project component. On-road off-site vehicle emissions were calculated by determining total vehicle miles traveled (VMT) by each type of vehicle (see Section 4.8, *Transportation*, for a detailed description of how VMT was calculated). The emission factors obtained from EMFAC2017 as described previously (in g/mi) were applied to the VMT estimates to calculate total emissions.

4.1.1.2.1.4 Fugitive Dust

Fugitive construction dust is an additional source of PM_{10} and $PM_{2.5}$ emissions associated with construction activities. Fugitive dust includes re-suspended road dust from off- and on-road vehicles, as well as dust from grading, loading and unloading activities, and construction demolition. Fugitive dust emissions were calculated using methodologies, formulas, and values from the USEPA's Compilation of Air Pollutant Factors (AP-42), the SCAQMD's *CEQA Air Quality Handbook*, supplemental guidance documentation for the SCAQMD's *CEQA Air Quality Handbook,* and documentation associated with the

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24 California Air Resources Board, *OFFROAD2017 – ORION v1.0.1*. Available: https://www.arb.ca.gov/orion/, accessed October 16, 2019.

25 California Air Resources Board, *EMFAC2017 Web Database (v1.0.2*). Available: https://www.arb.ca.gov/emfac/2017/, accessed October 16, 2019.

26 California Air Resources Board, *EMFAC2017 Volume I - User's Guide V1.0.2*, March 1, 2018. Available: https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-i-users-guide.pdf.

27 U.S. Department of Transportation, National Highway Traffic Safety Administration, *The Safer Affordable Fuel-Efficient 'SAFE' Vehicles Rule webpage*. Available: https://www.nhtsa.gov/corporate-average-fuel-economy/safe, accessed April 6, 2020.

28 TOG contains all compounds listed as exempt in the ROG definition.

29 California Air Resources Board, *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*, November 20, 2019. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf.

California Air Pollution Control Officers Association's (CAPCOA) CalEEMod emissions estimator computer program.[30,31,32]

The proposed Project is considered to be a large operation per SCAQMD Rule 403.[33] Watering three times a day, as required by SCAQMD Rule 403 for large projects, was assumed during construction, with an estimated reduction in on-site fugitive dust emissions of 61 percent.[34]

4.1.1.2.1.5 Fugitive VOCs

A primary source of construction-related fugitive VOC emissions is asphalt paving. VOC emissions from asphalt paving operations result from evaporation of the petroleum distillate solvent, or diluent, used to liquefy asphalt cement. Based on the CAPCOA default data contained within CalEEMod, an emission factor of 2.62 pounds of VOC (from asphalt curing) per acre of asphalt material was used to determine VOC emissions from asphalt paving. Another source of construction-related fugitive VOC is architectural coatings. VOC emissions from architectural coatings result from evaporation of volatile compounds present in a coating applied to a structure's surface. Based on the CAPCOA data contained within CalEEMod, an emission factor of 0.012 pounds of VOC (from evaporation) per square foot of coated surface was used to determine VOC emissions from architectural coatings.

4.1.1.2.2 Dispersion Modeling – Construction

Air dispersion modeling is used to predict ground-level ambient air concentrations of pollutants in the vicinity of known air pollutant emission sources. Dispersion modeling of construction emissions was conducted for the proposed Project conditions in the peak year of construction emissions. The analysis was conducted using the American Meteorological Society (AMS)/EPA Regulatory Model (AERMOD) air dispersion model.[35] The peak year of construction emissions includes activities most likely to have an impact on ambient air quality, such as the new Concourse 0 and Terminal 9 along with the new roadways near the intersection of Century Boulevard and Sepulveda Boulevard just east of the LAX CTA. No additional years were analyzed for dispersion modeling.

On-site construction activities were assumed to be located in the following areas:

- On the north airfield for the Taxiway D Extension, the improved exit taxiways from Runway 6L-24R, and the Taxiway D and E improvements related to Concourse 0
- Within the Concourse 0 site east of the exiting north terminals
- On the east end of the south airfield for Taxiway C improvements associated with Terminal 9
- Within the Terminal 9 site east of the existing south terminals, on the east side of Sepulveda Boulevard

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30 U.S. Environmental Protection Agency, *AP-42, Compilation of Air Pollutant Emission Factors, Fifth Edition, Volume I, Section 13.2.1 Paved Roads*, January 2011, *Section 13.2.2 Unpaved Roads*, November 2006, and *Section 13.2.3 Heavy Construction Operations*, January 1995. Available: https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors.

31 South Coast Air Quality Management District, *CEQA Air Quality Handbook*, April 1993; South Coast Air Quality Management District, *Air Quality Analysis Handbook Supplemental Information*, June 2020. Available: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook; South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

32 California Air Pollution Control Officers Association, *California Emissions Estimator Model, Version 2016.3.2*. Available: http://www.caleemod.com/.

33 A large operation is any active operation on property which contains 50 or more acres of disturbed surface area or any earth-moving operation with a daily earth-moving or throughput volume of 3,850 cubic meters (5,000 cubic yards) or more three times during the most recent 365-day period.

34 South Coast Air Quality Management District, *Rule 403 - Fugitive Dust*, amended June 3, 2005. Available: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.

35 U.S. Environmental Protection Agency, *AERMOD Modeling System (webpage)*. Available: https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models#aermod, accessed August 23, 2020.

- Within the roadway construction areas for the landside improvements, which would be partially co-located with the Terminal 9 construction area, as well as in the east end of the CTA, and in the area east of the Concourse 0 site (approximately between Sepulveda Boulevard and Avion Drive, and between Century Boulevard and 96th Street), which is mostly outside of airport property boundaries

Area or volume sources were used to model construction areas and construction roadway travel. Specifically, the pollutant emissions estimated for the sources noted above were grouped by the source area that each was associated with, based on data in the resource-loaded construction schedule. Each construction area or site was modeled as a polygon area in AERMOD. Construction source parameters were based on the SCAQMD *Localized Significance Threshold Methodology.*[36] Construction equipment exhaust emissions were modeled with a 5-meter release height and a 1.4-meter initial vertical dimension, and construction dust (PM_{10} and $PM_{2.5}$) was modeled at ground level and a 1-meter initial vertical dimension. The results of all sources were summed for each pollutant to obtain the Project's construction activity contribution to ambient concentrations.

4.1.1.2.3 Emission Source Types – Operations

Operations-related criteria pollutant emissions were quantified for CO, VOC, NO_X, SO_2, PM_{10}, and $PM_{2.5}$ for both the existing conditions and the proposed Project's first year of operation.

Sources of operational emissions evaluated in the analysis include aircraft engines and auxiliary power units (APUs); ground support equipment (GSE); ground vehicles used to transport passengers and employees, cargo, and supplies to and from the airport; and stationary sources including water heaters, space heaters, and emergency generators.[37]

4.1.1.2.3.1 Aircraft

Information on the number and types of aircraft operations considered at LAX for existing conditions and future scenarios was developed as part of the forecasts conducted as part of the proposed Project planning effort (**Appendix B**). The aircraft activity levels for existing conditions were based on actual operations in 2018. The aircraft activity levels for future conditions were based on aircraft activity growth forecasts for LAX in 2028.[38] Aircraft activity levels were also developed during the anticipated runway closure in 2023 as part of the construction impact analysis. Aircraft activity levels were used to develop design day flight schedules (DDFS) and airport simulation model (SIMMOD) inputs for aircraft operations for existing and future conditions. The DDFS operations are based on a peak month, average day (PMAD) operating condition and were used to develop the aircraft fleet mix for each year and scenario analyzed. The SIMMOD modeling was used to estimate typical ground taxi/idle times per operation for each scenario, as well as indicate which airport terminal and runway were used by each aircraft under a given scenario. Detailed SIMMOD runs were completed for the existing conditions in 2018, 2023 with and without the temporary runway closure, and 2028 with and without the proposed Project.

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36 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

37 The air quality analysis was conducted using the DDFS for all airport operations. Future airport-wide emissions with implementation of the proposed Project were compared to existing emissions. Because this analysis encompassed all airport operations, the evaluation included some sources that would not be directly caused the proposed Project (e.g., cargo operations, passenger-related trips, and the majority of the employee trips [i.e., only a small portion of the employee trips are directly caused by the proposed Project]).

38 As detailed in Section 2.3.1.2 of Chapter 2, *Description of the Proposed Project*, future growth in aviation activity at LAX is not dependent on, or driven by, the improvements associated with the proposed Project and, therefore, the aircraft activity would not differ between the With Project and Without Project future scenarios.

The SIMMOD analyses of forecasted aircraft activity considered various weather conditions that affect the flight rules (visual or instrument). Visual flight rule conditions dominate the activity at LAX, representing roughly 96 percent of the time. Instrument flight rule conditions represent only 4 percent of the time, but produce the highest emissions from aircraft per hour, due to increased ground delay (idle) time. Therefore, an all-weather annual average operational activity was developed for input to the air quality models. The taxi/idle times were based on the weather-weighted average for all weather conditions.

The criteria pollutant emissions from aircraft were estimated using FAA's Aviation Environmental Design Tool Version 3b (AEDT 3b).[39,40] The DDFS and SIMMOD results were incorporated into AEDT 3b for each scenario. The emission estimates were summarized by several aircraft operational modes for each scenario:

- For departures:
  - Startup = engine startup at the gate, used to estimate hydrocarbon (including VOC) emissions for the first 60 seconds of engine operation (startup mode)
  - Climb Taxi = aircraft taxiing out to runway, assumes engines operating in taxi/idle mode
  - Climb Ground = aircraft takeoff ground roll, assumes engines operating in takeoff mode
  - Climb Below 1,000 = aircraft initial climb above ground level to 1,000 feet, assumes engines operating in takeoff mode
  - Climb Below Mixing Height (also referred to as climb-out) = aircraft climb from 1,000 feet to meteorological mixing height, assumes engines operating in climb-out mode (the annual average mixing height at LAX is 1,806 ft[41])
- For arrivals:
  - Descend Below Mixing Height = aircraft descending below the mixing height, assumes engines operating in approach mode until touchdown
  - Descend Ground = aircraft ground landing ground roll, includes engines in reverse thrust
  - Descend Taxi = aircraft taxiing to the gate, assumes engines operating in taxi/idle mode

As noted above, the SIMMOD results were used to estimate taxi/idle times during taxi-in (descend taxi) and taxi-out (climb taxi) operating modes. AEDT 3b calculates the time-in-mode for the other operating conditions listed above based on wind speed, aircraft type, and – for departures – distance range to destination airport (referred to as stage length[42]). Stage length for arriving aircraft is assumed to be Stage 1.

The aircraft engine emission factors for each engine in the scenario fleet mix are included in the AEDT 3b databases. The AEDT 3b emission factors are primarily based on the International Civil Aviation

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39 Federal Aviation Administration, *Aviation Environmental Design Tool (AEDT) Version 3b*, September 2019. Available: https://aedt.faa.gov/3b_information.aspx, accessed March 26, 2020.

40 An updated version of AEDT, specifically AEDT 3c, was released by the FAA on March 6, 2020; however, the environmental analysis process for this project, including modeling with AEDT 3b, was already well underway at that time. Paragraph 4-2.b. of FAA Order 1050.1F states: "*In the event a model is updated or replaced after the environmental analysis process is underway, the updated or replacement model may be used to provide additional disclosure concerning noise or air quality impacts, but use of the updated or replacement model is not required*." As such, the aircraft noise modeling and aircraft air quality modeling for the project were completed using AEDT 3b.

41 South Coast Air Quality Management District, *Draft Aircraft Emissions Inventory for South Coast Air Quality Management District*, prepared by Integra Environmental Consulting, Inc. Table 3.2.1, August 2016.

42 The stage length is a proxy for the quantity of fuel loaded on the aircraft and approximate weight of the aircraft during arrivals and departures.

Organization (ICAO) Engine Emissions Databank.[43] AEDT 3b uses the ICAO engine emission factors for each engine assigned to aircraft in each scenario to develop emission estimates for operations of the aircraft.

Because analysis of the proposed Project includes forecasts out to 2028, the ICAO Engine Emissions Databank was reviewed and aircraft engine assignments were developed using those engines that were still in production as listed in the databank.

The impact that the ICAO Committee on Aviation Environmental Protection (CAEP) emission standards have had on NO_X emission indices for aircraft engines is demonstrated in **Figure 4.1.1-1**. As shown in the figure, the trendline indicates a reduction in the NO_X emission index of approximately 2 percent per year.

4.1.1.2.3.2 GSE and APU

LAWA collects GSE data annually for the LAX *Ground Support Equipment Emissions Policy* adopted in 2015 and last updated in October 2019.[44] GSE emissions for existing conditions were calculated using the LAX-specific GSE population, approximate engine model year, and fuel type from these data in combination with CARB's OFFROAD2017 model emission factors, activity, load factor, and horsepower data. Future GSE emissions were based on growth of aircraft operations between baseline conditions and 2028 for GSE that service aircraft. Several categories of GSE that maintain the airport, such as sweepers, may grow based on changes in airport infrastructure (e.g., area of runways and taxiways, or terminal area). Because AEDT 3b uses the USEPA MOtor Vehicle Emission Simulator (MOVES)[45] emission factors instead of California OFFROAD2017 emission factors, GSE were incorporated into the AERMOD modeling analysis based on OFFROAD2017 emission factors and anticipated emission reductions associated with LAWA's Memorandum of Understanding with the SCAQMD,[46] discussed in Section 4.1.1.3.1.

Emissions of criteria pollutants from aircraft APUs were estimated using the AEDT 3b APU assignments to aircraft type. Consistent with existing passenger gates at LAX terminals and with the goals of LAWA's Sustainability Action Plan, it was assumed that the new gates at Concourse 0 and Terminal 9 would have pre-conditioned air and gate power supplied by the electrical grid. APU operating times at these gates were assumed to be 15 minutes per landing and takeoff (LTO) turnaround.[47] For parking positions that do not have gate power and pre-conditioned air (such as for remote gates and some cargo aircraft), APU operating times per LTO were assumed to be 40 minutes for narrow-body aircraft, 60 minutes for wide-body aircraft (except the Airbus 380 series), and 120 minutes for the Airbus 380 series.

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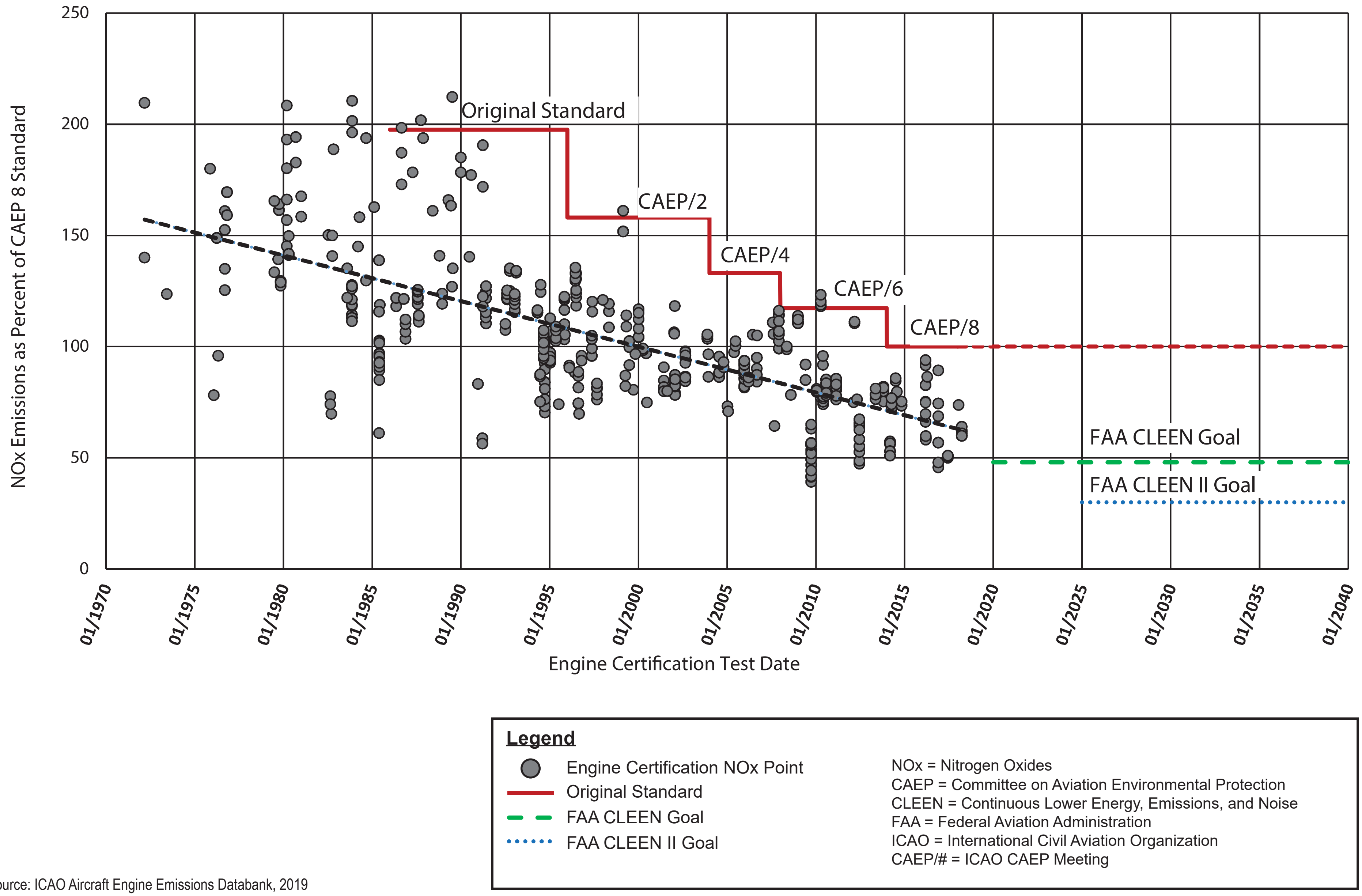
43 International Civil Aviation Organization, *ICAO Aircraft Engine Emissions Databank v. 26B (September 2019)*. Available: https://www.easa.europa.eu/easa-and-you/environment/icao-aircraft-engine-emissions-databank.

44 City of Los Angeles, Los Angeles World Airports, *Ground Support Equipment Emissions Policy*, October 22, 2019. Available: https://www.lawa.org/-/media/lawa-web/environment/files/lax_gse_emission_reduction_policy_boac.ashx.

45 The USEPA's MOtor Vehicle Emission Simulator (MOVES) is a state-of-the-science emission modeling system that estimates emissions for mobile sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics (U.S. Environmental Protection Agency, *MOVES and Other Mobile Source Emissions Models webpage*. Available: https://www.epa.gov/moves, accessed November 2, 2019).

46 *Memorandum of Understanding between the South Coast Air Quality Management District and the City of Los Angeles Department of Airports*, December 2019. Available: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/mou-la-department-of-airports.pdf?sfvrsn=6.

47 Williams, R.C., Honeywell Engines & Systems, Letter to B. Manning, U.S. EPA Office of Transportation and Air Quality, *Re: APU Emissions*, September 29, 2000.



Source: ICAO Aircraft Engine Emissions Databank, 2019
Prepared by: CDM Smith, October 2020

LAX Airfield and Terminal Modernization Project	Engine Certification NOx Emission Indices as a Percent of ICAO CAEP/8 Standard	Figure **4.1.1-1**

4.1.1.2.3.3 Ground Access Vehicles (GAV)

Ground access vehicles include on-road motor vehicle activity associated with passengers, air cargo, tenant operations, and airport employee (LAWA and tenant) travel to and from LAX. The general types of vehicles analyzed included privately-owned vehicles, government-owned vehicles, and commercially-owned/operated vehicles such as rental cars, shuttles, buses, taxicabs, transportation network companies (TNCs) like Uber and Lyft, and trucks. The vehicle fleet mix was derived from the proposed Project transportation analysis (see Section 4.8, *Transportation*, and **Appendix G** of this EIR), supplemented by information obtained from CARB's EMFAC2017 model. The EMFAC2017 model also provides pollutant emission factors for engine exhaust, evaporative emissions, tire wear, and brake wear. The transportation analysis provided the number of vehicle trips on the design day (PMAD) as well as the VMT for trips that would begin or end at the airport.

Regional emissions associated with airport-related traffic were calculated for both peak daily and peak annual periods. Emissions were estimated from the EMFAC2017 emission factors, number of trips by vehicle category, and approximate mileage for each trip. The mileage used for estimating emissions was based on all airport-related trip miles within the South Coast Air Basin.

4.1.1.2.3.4 Stationary Sources

The Project would include installation of natural gas heaters for space and water heating in the new concourse and terminal areas. In addition, standby emergency generators would be added to Concourse 0 and Terminal 9 (one generator each). CalEEMod was used to provide the space and water heating energy demand that would be supplied with natural gas heaters. Generator engine size was estimated by the Project design team. Emission factors were obtained from appropriate USEPA AP-42 sections, or from SCAQMD regulations applicable to these sources.

The emissions of criteria pollutants associated with off-airport utility plant operations necessary to support the additional on-airport electricity demand were estimated. Approximately 43 percent of the total power provided by the Los Angeles Department of Water and Power (LADWP) is generated in the South Coast Air Basin.[48] Power production in the South Coast Air Basin is primarily by natural gas-fired power plants. Emissions were calculated using USEPA's AP-42.

4.1.1.2.4 Dispersion Modeling – Operations

Air dispersion modeling is used to predict ground-level ambient air[49] concentrations of pollutants in the vicinity of known air emission sources. Concentrations of criteria air pollutants were determined at publicly-accessible areas on and off airport property and at the property line. The required air dispersion model for analysis of air quality impacts at airports is FAA's AEDT program, which uses USEPA's AERMOD for conducting the dispersion analysis. The source locations were determined from the airport layout plan, maps, aerial photos, and other information provided by LAWA for existing conditions, as well as the plans for the proposed Project. For all sources, modeling source parameters were identified, including any temporal variations in emissions.

The dispersion of emissions from aircraft operations at the airport was modeled as the area source types generated in AEDT 3b. Each aircraft operation was grouped into a combination that represent the (i) operation type (arrival or departure), (ii) starting or ending terminal (or other aircraft parking area), and (iii) runway used, based on the assignments included in the SIMMOD analysis for each scenario. The

48 Los Angeles Department of Water and Power, *2017 Power Strategic Long-Term Resource Plan*, December 2017. Available: https://www.ladwp.com/ladwp/faces/ladwp/aboutus/a-power/a-p-integratedresourceplanning?_adf.ctrl-state=k9rvf53qz_51&_afrLoop=11262527660851.

49 Ambient air is typically considered to be air in locations where the general public has unrestricted access; see 40 CFR 50.1(e), July 1, 2011.

hour-of-day temporal profile for each of the aircraft/terminal/runway combinations was developed from the SIMMOD analysis.

Pollutant emissions from GSE/APU operations were modeled using the source inputs generated by AEDT. The locations of GSE/APU sources are at the terminals and other aircraft parking areas. Pollutant emissions from GSE/APU sources vary throughout the day. The temporal pattern for aircraft was applied to GSE/APU sources at the terminals and other aircraft parking areas.

The locations of ground access sources (traffic and parking) were determined from the airport layout plan, proposed Project drawings and plans, and recent aerial photos. Roadways and parking facilities located within airport property were modeled as area sources. Roadways and parking lots outside of the airport that would be modified (added, reconfigured, or removed) by the proposed Project were also modeled. Temporal patterns (by hour-of-day, day-of-week, and month-of-year) for traffic were estimated from the traffic analysis, supplemented by data used in the aircraft SIMMOD analysis.

Emergency generators and heaters used to supply hot water and comfort space heating in the new concourse and terminal areas were modeled as point sources.

4.1.1.2.5 Other Dispersion Model Inputs

Airport-specific meteorological data were used to analyze air quality impacts. The data set used consisted of five years of hourly surface data collected at LAX for calendar years 2012 through 2016, the most recent data years available from the SCAQMD's on-airport meteorological and air quality monitoring station. This data set, provided by the SCAQMD, included ambient temperature, wind speed, wind direction, atmospheric stability, and mixing height parameters from the appropriate upper air station, and was provided “AERMOD-ready.” Because AEDT requires certain intermediate data files that are created when the meteorological data was processed, these intermediate files were also provided by the SCAQMD to be used as inputs to AEDT.[50] Receptor points are the geographic locations where the air dispersion model calculates air pollutant concentrations. These discrete receptors were used to determine air quality impacts in the vicinity of the Project site.[51] Locations of receptors were determined in a manner that would identify peak ambient air pollutant impacts associated with the proposed Project. LAX property line receptors, CTA receptors, and community receptors around LAX were included in the analysis.

Terrain data was obtained from the U.S. Geological Survey. The terrain data were used to set the base elevation for each source and each receptor incorporated into the model.

4.1.1.2.6 Photochemical Modeling; Health Impacts of Secondary Air Pollutants

4.1.1.2.6.1 Background

For project EIRs, CEQA lead agencies typically assess the significance of health impacts associated with criteria air pollutants by comparing emissions of those pollutants and their precursor compounds[52] to significance thresholds developed by the local Air Pollution Control District or Air Quality Management District. The emission thresholds developed by the air districts, which are based on ability to attain and maintain health-based ambient air quality standards, are used to indicate whether the emissions of a given criteria air pollutant from a proposed project are significant. If the emissions are significant, adverse

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[50] Sheffer, Melissa, Senior Meteorologist, South Coast Air Quality Management District, Electronic Mail Message to John Pehrson, CDM Smith, *Subject: Re: Secure File Transfer*, August 27, 2019.

[51] Discrete Cartesian receptors are identified by their x (east-west) and y (north-south) coordinates and represent a specific location of interest.

[52] Precursor compounds are directly emitted air pollutants that react in the atmosphere with other compounds to form secondary air pollutants. For example, O_3 is a criteria air pollutant but it is not directly emitted to the atmosphere. O_3 forms from emissions of NO_X and VOC in the presence of sunlight. Another criteria air pollutant – $PM_{2.5}$ – includes directly emitted particles as well as secondary particles formed in the atmosphere from emissions of NO_X, VOC, sulfur compounds, and ammonia (the precursor compounds).

health impacts can be assumed, and the general effects of the pollutant on human health are summarized (see Section 4.1.1.1.1 for a general discussion of human health impacts of different air pollutants).

Pollutants that do not undergo substantial reactions in the atmosphere are analyzed with air dispersion models (such as AERMOD). Dispersion modeling is used to determine the concentration of a given pollutant in the ambient air. The resulting concentration for a given pollutant and averaging period is compared to either ambient air quality standards or to other concentration thresholds developed by the air districts. Modeling of the criteria pollutants CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$ is often conducted for various projects subject to CEQA. As discussed previously, ozone is not directly emitted from project sources; it forms in the atmosphere from emissions of NO_X and VOC in the presence of sunlight. Therefore, analysis of ozone is typically done by comparing the emissions (in pounds per day or tons per year) of its precursor compounds, NO_X and VOC, to the CEQA emission thresholds, in this case, the SCAQMD thresholds noted in Section 4.1.1.4 below.

Similar to ozone, a portion of $PM_{2.5}$ is not directly emitted from project sources but is formed in the atmosphere from emissions of its precursor compounds NO_X, VOC, SO_X, and ammonia. Unlike ozone, a portion of $PM_{2.5}$ is directly emitted from project sources as soot or dust. Therefore, dispersion modeling is used to determine the concentration of directly emitted $PM_{2.5}$ soot and dust in the ambient air and the resulting concentrations compared to either ambient air quality standards or to other concentration thresholds developed by the air districts. In addition, analysis of secondary $PM_{2.5}$ is typically done by comparing the emissions (in pounds per day or tons per year) of its precursor compounds to the CEQA emission thresholds noted in Section 4.1.1.4 below. The Project-related sources do not emit ammonia; therefore, ammonia is not analyzed further for this Project.

In December 2018, the Supreme Court of California rendered a decision indicating that CEQA requires an EIR to contain discussions that correlate the specific human health effects that would occur as a result of a project's significant air pollutant emissions, or explain why such further evaluation is infeasible (Sierra Club v. County of Fresno (2018) 6 Cal.5th 502, 517-522, also referred to as "the Friant Ranch decision").

4.1.1.2.6.2 Recent Evaluations of Secondary Air Pollutant Health Impacts

In light of the Friant Ranch decision, at least two recent Draft EIRs have attempted to assess the number and relative magnitude of the change in human health end-point incidences[53] related to significant emissions increases of ozone and $PM_{2.5}$ precursors: the Draft Environmental Impact Report for Amendment to Norman Y. Mineta San Jose International Airport Master Plan (hereafter referred to as the SJC Master Plan Amendment Draft EIR),[54] and the Draft Environmental Impact Report for the Inglewood Basketball and Entertainment Center Project (hereinafter referred to as the IBEC Draft EIR).[55] These EIRs provide information relevant for assessing the health impacts caused by the proposed Project's increases in secondary air pollutant emissions.

The SJC Master Plan Amendment Draft EIR considers impacts from a commercial airport located in a highly populated region of California, and the IBEC Draft EIR considers impacts from a facility in the same South

53 Human health endpoints studied in the SJC Master Plan Amendment Draft EIR and IBEC Draft EIR analyses discussed in this section ranged from acute respiratory symptoms resulting in minor restricted activity days, to mortality from cardiopulmonary (heart-related) and respiratory (lung-related) medical issues. The change in the number of incidences of each health end point due to project-related significant changes in ozone and $PM_{2.5}$ precursor emissions was calculated from regional scale concentration changes using the USEPA's Benefits Mapping and Analysis Program – Community Edition (BenMAP-CE), as noted above.

54 City of San Jose, *Draft Environmental Impact Report for Amendment to Norman Y. Mineta San Jose International Airport Master Plan,* State Clearinghouse No. 2018102020, prepared by David J. Powers & Associates, Inc., November 2019. Available: https://www.sanjoseca.gov/Home/ShowDocument?id=44618.

55 City of Inglewood, *Inglewood Basketball and Entertainment Center Project Draft Environmental Impact Report,* State Clearinghouse No. 2018021056, prepared by ESA and Fehr & Peers, December 2019. Available: https://www.cityofinglewood.org/1036/Murphys-Bowl-Proposed-NBA-Arena.

Coast Air Basin as the Project - within three miles of LAX. The IBEC Draft EIR analysis provides substantially useful information regarding the type and level of health impacts that would likely be associated with the proposed Project's secondary ozone and $PM_{2.5}$ precursor emissions.

Norman Y. Mineta San Jose International Airport Master Plan Amendment EIR

In the SJC Master Plan Amendment Draft EIR, the lead agency assessed the potential impact on human health end-points (such as hospitalizations for asthma or pulmonary issues) due to changes in ozone and $PM_{2.5}$ concentrations using a photochemical grid model and a health effects model.

The Comprehensive Air Quality Model with extensions (CAMx) was the selected photochemical grid model. Essentially, CAMx estimates concentrations in a series of 4 kilometer (km) x 4 km grid cells that cover most of Northern and Central California that result from ozone- or $PM_{2.5}$-precursor emissions in those grid cells.

The USEPA's Benefits Mapping and Analysis Program, Community Edition (BenMAP-CE), was used to estimate the number of human health end-point incidences from the changes in ozone or $PM_{2.5}$ concentrations associated with project emissions.

To properly run CAMx for a region, all emissions in the modeling domain must be included. The emissions for the regional analysis were provided by the Bay Area Air Quality Management District (BAAQMD), and modified by the lead agency to update emissions to be appropriate for the time periods considered in the Draft EIR. The CAMx model was run twice, once using regional emissions without the project, and a second time with regional emissions plus project emissions. The difference between the two runs represents the project-related changes in ambient ozone or $PM_{2.5}$ concentrations.

For the SJC Master Plan Amendment Draft EIR, the project-related emissions used in the CAMx analysis included 5,643 lbs/day of $NO_{X,}$ 57 lbs/day of VOC, and 51 lbs/day of $PM_{2.5}$. The resulting maximum change in ozone concentration at the most impacted location was less than 2 parts per billion (ppb), approximately 2 percent of the baseline value. The impact to human health across the Northern California Domain represented a change of less than 0.05 percent (i.e., less than 5/100ths of one percent) for all human health end-points analyzed. The maximum change in a given end-point was approximately 15 for asthma related emergency room visits per year for people ages 18 to 99 (approximately 0.02 percent change from baseline).

The maximum change in $PM_{2.5}$ concentrations at the most impacted location was also approximately 2 percent of the baseline for the 24-hour average, and slightly less for the annual average. The impact to human health across the Northern California Domain represented a change of less than 0.01 percent (i.e., less than 1/100th of one percent) for all human health end-points analyzed. The maximum change in a given end-point was about 4 for all-cause mortality per year for people ages 30 to 99 (0.0017 percent change from baseline).

Inglewood Basketball and Entertainment Center Project Draft EIR

In the IBEC Draft EIR, the lead agency also assessed the potential impact on human health end-points (such as hospitalizations for asthma or pulmonary issues) due to changes in ozone and $PM_{2.5}$ concentrations using a photochemical grid model and a health effects model. The project analyzed in the IBEC Draft EIR is located just over 3 miles east of the LAX CTA.

The Community Multiscale Air Quality Model (CMAQ) was the selected photochemical grid model. Essentially, CMAQ estimates concentrations in two series of grid cells:

- A 6 km x 6 km grid that extends from south of the California-Mexico border to Bakersfield and from the Channel Islands to the Nevada border
- A 2 km x 2 km fine grid that covers the South Coast Air Basin

The USEPA's BenMAP-CE was used to estimate the number of human health end-point incidences from the changes in ozone or $PM_{2.5}$ concentrations associated with project emissions.

As noted above, to properly run CMAQ for a region, all emissions in the modeling domain must be included. The emissions for the regional analysis were provided by the SCAQMD and modified by the lead agency to update emissions to be appropriate for the time periods considered in the Draft EIR. The CMAQ model was run twice, once using regional emissions without the project, and a second time with regional emissions plus project emissions. The difference between the two runs represents the project-related changes in ambient ozone or $PM_{2.5}$ concentrations.

For the IBEC Project Draft EIR, the highest project-related operational emissions used in the analysis included 99 lbs/day of $NO_{X,}$ approximately 100 lbs/day of TOG, and 89 lbs/day of $PM_{2.5}$. The resulting maximum change in 8-hour ozone concentration at the most impacted location was 0.0109 ppb, approximately 0.021 percent of the baseline value. In an 800+ square mile area around the IBEC project site, concentration changes ranged from -0.0005 ppb to 0.0109 ppb. The impact of ozone concentration changes to human health across Southern California represented a change of less than 0.0003 percent (i.e., less than 3/10,000ths of one percent) for all human health end-points analyzed. The maximum change in the incidence of a given end-point was approximately 66 for minor restricted activity days per year due to acute respiratory symptoms (approximately 0.00007 percent change from baseline).

Relative to the IBEC Project emissions, the maximum change in $PM_{2.5}$ concentrations at the most impacted location was 0.0011 $\mu g/m^3$, approximately 0.0082 percent of the baseline for the 24-hour average. In an 800+ square mile area around the IBEC project site, concentration changes ranged from less than zero for most grids up to 0.011 ppb at the nearest grid. Due to the extremely low concentration changes (less than zero at a majority of the grids) for $PM_{2.5}$, the impact to human health across the South Coast Air Basin modeled by BenMAP-CE was less than zero for all human health end-points. This confirmed that the modeled $PM_{2.5}$ concentrations were within the CMAQ margin of error.

Overall, the IBEC Project Draft EIR noted that the very small differences between regional with project emissions and regional baseline emissions did not provide meaningful information on the project health impacts, and that the regional project health impact changes due to the project may be zero and within the dispersion model's margin of error. Finally, the health impact assessment conducted for the IBEC project, using the best available tools and guidance demonstrated that modeling relatively small (i.e., project-level) changes in emissions with tools developed for large scale regional emissions changes does not provide statistically significant results.

Conclusions and Approach

The findings from both the SJC Master Plan Amendment Draft EIR and the IBEC Project Draft EIR human health impact assessments indicate that the changes in emissions of ozone precursors and $PM_{2.5}$ from a single relatively large project do not "move the dial" with regard to regional human health impacts. The models available to analyze regional impacts are designed to address large, regional changes in emissions, such as those due to proposed emission control regulations that affect emissions across an entire region. Given the uncertainties in emissions, dispersion modeling, and human health concentration-response functions, the conclusion reached in these two studies was that the results to human health impacts were not statistically different than zero (i.e., no change).

The level of effort to conduct these regional dispersion and health impact assessments project-level emissions is substantial in terms of schedule and personnel hours. Given that these full-scale studies noted above found negligible changes to regional health impacts, LAWA has determined that regional dispersion and health impact assessments were not warranted, and a simplified approach for this EIR was used.

For purposes of this EIR, gross emission ratios from the emissions modeled in each of these studies were applied to the construction and operational emissions of the proposed Project. Specifically, the ratio of ozone (and $PM_{2.5}$, if $PM_{2.5}$ emissions exceed the regional emission thresholds) precursor emissions from the proposed Project to those emissions in the SJC Master Plan Amendment Draft EIR and IBEC Draft EIR will be determined. The resulting ratios were multiplied by the incremental health end point incidences determined in those two draft EIRs. The results were used to assess the relative magnitude of health impacts potentially associated with proposed Project operations.

4.1.1.2.7 Existing LAWA Policies and Proposed Project Features

LAWA has developed a number of policies that address environmental issues, including air pollutant emissions, associated with airport project construction and airport operations. Existing policies that may reduce air pollutant emissions are briefly described in Section 4.1.1.3.1 below, under the heading "LAWA Plans and Policies". In addition to complying with these policies, LAWA would incorporate a number of proposed Project design features which also address or reduce environmental impacts. A general description of these features is provided in Section 2.4.5, *Sustainability*. The detailed air pollutant emissions calculations for the existing conditions, future With Project and future Without Project scenarios incorporate those policies and Project features that would be in effect under each scenario. The policies and Project features that were included in the calculations were those with specific targets or other information that could be used to quantify air pollutant emission reductions. The existing policies and Project features that have been incorporated into the unmitigated air pollutant emission calculations include:

- Construction Emissions (these only apply to the proposed Project construction since the other analyzed scenarios – existing conditions and Without Project – do not include construction activity)
  - Watering of construction areas at least three times per day, estimated to reduce fugitive construction dust by 61 percent (Existing Policy – Design and Construction Handbook [DCH][56])
  - Use of off-road construction equipment that complies with USEPA Tier 4 Final engine emission standards (Existing Policy – DCH)
  - Use of on-road construction trucks that comply with USEPA 2010 model year emission standards (Existing Policy – DCH)
  - On-road construction truck idling time limited to five minutes per one-way trip (Existing Policy – DCH)
  - Use of an on-airport concrete batch plant for proposed Project concrete demand, reducing concrete haul truck miles traveled and associated emissions, and including emission controls on batch plant operations as required in LAWA's existing permit (Existing Policy – Permitted Batch Plants)
  - Use of Low-VOC coating and paving material (Existing Policy – DCH)
- Operational Emissions
  - Airfield layout designed to minimize aircraft taxi and delay times (Project Feature, only applied to With Project scenario)
  - Use of hydrant fueling system – As with the existing airport, which uses an extensive hydrant fueling system, hydrant fueling would be included in the new terminal and concourse aircraft

56 City of Los Angeles, Los Angeles World Airports, *2020 Design and Construction Handbook (DCH), Version 1.0,* June 30, 2020. Available: https://www.lawa.org/en/lawa-businesses/lawa-documents-and-guidelines/lawa-design-and-construction-handbook.

parking positions, which would eliminate the need for large aircraft fueling trucks (Existing Policy and Project Feature, applied to all scenarios)

- Reductions associated with LAWA's existing GSE Policy, applied to GSE emissions for all scenarios (Existing Policy)
- Reduced aircraft APU operating times for gates and other aircraft parking positions with pre-conditioned air and gate power, applied to APU emissions for all scenarios (Existing Policy - DCH)
- Installation of Low-NO_X burners for water heating or space heating in Concourse 0 and Terminal 9 (Project Feature, applied to With Project only)
- Create Connection between LAX and Public Transit (Existing Policy and Project Feature). LAWA is currently constructing the LAX Landside Access Modernization Program that includes an Automated People Mover station adjacent to the future Airport Metro Connector (AMC), which will help support and encourage transit ridership at LAX. The Without Project scenario includes APM stations at the ITF West and in the CTA that are part of the LAX Landside Access Modernization Program. The With Project scenario adds an additional APM station at Terminal 9 that would also help support use of transit by employees and passengers.

Many other LAWA policies and Project features would potentially produce emission reductions, but sufficient information to determine the reduction quantities is not available or verifiable. Those existing policies and Project features that would apply to the Project but whose effects were not quantified are listed below, along with the rationale for not including the measures in the unmitigated air pollutant emission calculations:

- Construction Policies and Project Features
  - Utilize electric grid power for construction equipment instead of using temporary diesel or gasoline generators (Existing Policy - DCH). Availability and accessibility of grid power may not be known until detailed design.
- Operational Policies and Project Features
  - LAWA Alternative Fuel Vehicle Policy and associated incentive program (Existing Policy). The vehicles subject to this policy represent a small portion of the total airport-related traffic volumes studied in this EIR. Determining whether the policy will change the overall fleet mix of motor vehicles coming to LAX was not verifiable.
  - LAWA-Operated Light-Duty Auto and Airfield Bus programs (Existing Policy – AQIM[57]). LAWA purchased 20 electric buses and over 60 electric light duty autos for airport operations. These vehicles represent a very small portion of the total airport-related traffic volumes studied in the EIR. Determining whether the program will change the overall fleet mix of motor vehicles at LAX is not verifiable.
  - Installation of Electric Vehicle (EV) Chargers for Passengers and Employees in compliance with City code (Existing Policy -DCH, and Project Feature). Over 100 EV chargers have been installed at LAX, and the proposed Project would include installation of more chargers in the Terminal 9 parking structure in compliance with City code. Installation of EV chargers would not directly reduce emissions but would encourage use of electric vehicles for travel to and from the airport.

[57] As discussed below in Section 4.1.1.3.1, in December 2019, LAWA entered into a voluntary Memorandum of Understanding (MOU) with the SCAQMD under which LAWA developed Air Quality Improvement Measures (AQIM) to further reduce air pollutant emissions from non-aircraft sources operating at LAX.

- Achieve Leadership in Energy and Environmental Design (LEED®) Silver requirements for Concourse 0 and Terminal 9 (Existing Policy – DCH, Project Feature). LAWA would require the design and construction of Concourse 0 and Terminal 9 achieve LEED® Silver requirements, at a minimum, in accordance with LAWA's adopted the *Sustainable Design and Construction Policy*.[58] Since multiple options can be implemented to meet those requirements, specific quantification of emission reductions was not attempted.
- LAWA Employee Rideshare Program (Existing Policy). LAWA provides incentives to its employees to use alternative means to travel to the airport for work. The reduced vehicles represent a small portion of the total airport-related traffic volumes studied in the EIR. Determining whether the program changes the overall volume of motor vehicles at LAX may not be verifiable.

4.1.1.3 Existing Conditions

4.1.1.3.1 Regulatory Setting

Air quality is regulated by federal, state, and local laws. In addition to rules and standards contained in the Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), air quality in the Los Angeles region is subject to the rules and regulations established by CARB and SCAQMD, with oversight provided by the USEPA, Region IX.

4.1.1.3.1.1 Federal

The USEPA is responsible for implementation of the CAA. The first substantial version of the CAA, with enforceable requirements, was enacted in 1970 and has been amended significantly in subsequent years (1977 and 1990). Under the authority granted by the CAA, USEPA has established National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants: O_3, NO_2, CO, SO_2, PM_{10}, and $PM_{2.5}$. Primary NAAQS are developed to provide human health protection, including protecting the health of sensitive populations, such as people with asthma, children, and the elderly. Establishing the NAAQS is a lengthy process that includes science policy workshops, Integrated Science Assessments, Risk/Exposure Assessments, and Policy Assessments. The NAAQS are periodically updated to ensure they continue to provide adequate health and environmental protection.

Table 4.1.1-1 presents the NAAQS that are currently in effect for criteria air pollutants. As discussed previously, O_3 is a secondary pollutant, meaning that it is formed from reactions of "precursor" compounds under certain conditions. The primary precursor compounds that can lead to the formation of O_3 are VOCs and NO_X.

58 City of Los Angeles, Los Angeles World Airports, *LAWA Sustainable Design and Construction Policy*, September 7, 2017. Available: https://www.lawa.org/-/media/lawa-web/tenants411/file/lawa-sustainable-design-and-construction-policy.ashx.

Table 4.1.1-1
National and California Ambient Air Quality Standards (NAAQS and CAAQS)

Pollutant	Averaging Periods	CAAQS[a]	NAAQS	
			Primary	Secondary
Ozone (O_3)	8-Hour	0.070 ppm (137 µg/m^3)	0.070 ppm[c] (137 µg/m^3)	Same as Primary
	1-Hour	0.09 ppm (180 µg/m^3)	N/A	N/A
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	9 ppm[b] (10 mg/m^3)	N/A
	1-Hour	20 ppm (23 mg/m^3)	35 ppm[b] (40 mg/m^3)	N/A
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm[b] (100 µg/m^3)	Same as Primary
	1-Hour	0.18 ppm (339 µg/m^3)	0.100 ppm[d] (188 µg/m^3)	N/A
Sulfur Dioxide (SO_2)	24-Hour	0.04 ppm (105 µg/m^3)	N/A	N/A
	3-Hour	N/A	N/A	0.5 ppm[b] (1,300 µg/m^3)
	1-Hour	0.25 ppm (655 µg/m^3)	0.075 ppm[e] (196 µg/m^3)	N/A
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	N/A	N/A
	24-Hour	50 µg/m^3	150 µg/m^3 [b]	Same as Primary
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	12.0 µg/m^3 [b]	15 µg/m^3
	24-Hour	N/A	35 µg/m^3 [f]	Same as Primary
Lead (Pb)	Rolling 3-Month Average	N/A	0.15 µg/m^3 [b]	Same as Primary
	30-Day Average	1.5 µg/m^3	N/A	N/A
Visibility Reducing Particles	8-Hour	Extinction of 0.23 per kilometer	N/A	N/A
Sulfates	24-Hour	25 µg/m3	N/A	N/A

Source: California Air Resources Board, *Ambient Air Quality Standards*, May 4, 2016. Available: https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf.

Notes:

[a] California standards for O_3, CO, SO_2, NO_2, PM_{10}, $PM_{2.5}$, and visibility are not to be exceeded. California standards for Pb and sulfates are not to be equaled or exceeded.

[b] National standards for CO, SO_2 (secondary), PM_{10}, and Pb are not to be exceeded more than once per year. National annual standards for NO_2 and $PM_{2.5}$ are not to be exceeded.

[c] National standard for O_3 is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over 3 years, is equal to or less than the standard.

[d] National standard for 1-Hour NO_2 is attained when the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site do not exceed the standard.

[e] National standard for 1-Hour SO_2 is attained when the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site do not exceed the standard.

[f] National standard for 24-Hour $PM_{2.5}$ is attained when the 3-year average of the annual 98th percentile of the daily maximum concentrations at each site do not exceed the standard.

Key:

CAAQS = California Ambient Air Quality Standards; NAAQS = National Ambient Air Quality Standards; mg/m^3 = milligrams per cubic meter; N/A = Not applicable: ppm = parts per million (by volume); µg/m^3 = micrograms per cubic meter

The CAA also specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met. The 1990 amendments to the CAA identify specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones.

LAX is located in the South Coast Air Basin, which is designated as a federal nonattainment area for O_3, $PM_{2.5}$, and Pb. Nonattainment designations under the CAA for O_3 and $PM_{2.5}$ are classified into levels of severity based on the level of concentration above the standard, which is also used to set the required attainment date. The South Coast Basin is classified as an extreme nonattainment area for O_3 and a serious nonattainment area for $PM_{2.5}$. The South Coast Air Basin was redesignated to attainment/maintenance for NO_2 in 1998, for CO in 2007, and for PM_{10} in 2013. A designation of attainment/maintenance means that the pollutant is currently in attainment (i.e., meets standards) and that measures are included in the SIP to ensure that the NAAQS for that pollutant are not exceeded again (maintained). Most recently, the South Coast Air Basin was also found to attain the 1997 $PM_{2.5}$ NAAQS;[59] however, the South Coast Air Basin remains a nonattainment area for the 2006 daily and 2012 annual $PM_{2.5}$ NAAQS. The attainment status with regard to the NAAQS is presented in **Table 4.1.1-2** for each criteria pollutant.

Table 4.1.1-2
South Coast Air Basin Attainment Status

Pollutant	Federal Standards (NAAQS)[a]	California Standards (CAAQS)[b]
Ozone (O_3)	Nonattainment – Extreme	Nonattainment
Carbon Monoxide (CO)	Attainment – Maintenance	Attainment
Nitrogen Dioxide (NO_2)	Attainment – Maintenance	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Respirable Particulate Matter (PM_{10})	Attainment – Maintenance	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment – Serious[c, d]	Nonattainment
Lead (Pb)	Nonattainment	Attainment

Sources: U.S. Environmental Protection Agency, *Green Book Nonattainment Areas*. Available: https://www.epa.gov/green-book, accessed October 2019; California Air Resources Board, *Area Designations Maps/State and National*. Available: https://www.arb.ca.gov/desig/adm/adm.htm, accessed October 2019; U.S. Environmental Protection Agency, *Clean Data Determination for 1997 $PM_{2.5}$ Standards; California-South Coast; Applicability of Clean Air Act Requirements,* Federal Register, Vol. 81, No. 142, p. 48350, effective August 24, 2016.

Notes:
[a] Status as of October 23, 2019.
[b] Status as of October 23, 2019.
[c] Classified as moderate nonattainment for 1997 NAAQS, moderate nonattainment for 2012 NAAQS, and serious nonattainment for 2006 NAAQS.
[d] Although formally classified as moderate nonattainment for the 1997 NAAQS, the South Coast Air Basin received a clean data determination, having achieved attainment levels for the 1997 NAAQS as of August 24, 2016.

4.1.1.3.1.2 State

The CCAA, signed into law in 1988, requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practicable date. The CAAQS are generally as

[59] U.S. Environmental Protection Agency, *Clean Data Determination for 1997 $PM_{2.5}$ Standards; California-South Coast; Applicability of Clean Air Act Requirements*, Federal Register, Vol. 81, No. 142, pp. 48350-48356, effective August 24, 2016.

stringent as, and in several cases more stringent than, the NAAQS.[60] The currently applicable CAAQS are presented with the NAAQS in Table 4.1.1-1. The attainment status with regard to the CAAQS is presented in Table 4.1.1-2 for each criteria pollutant. CARB has jurisdiction over a number of air pollutant emission sources that operate in the State. Specifically, CARB has the authority to develop emission standards for on-road motor vehicles (with USEPA approval),[61] as well as for stationary sources and some off-road mobile sources. In turn, CARB has granted authority to the regional air pollution control and air quality management districts to develop stationary source emission standards, issue air quality permits, and enforce permit conditions.

In June 2019, CARB adopted the Zero-Emission Airport Shuttle Regulation, which will be applicable to airport shuttle operators at LAX and 12 other California airports. The rule was identified as a control measure in the South Coast 2016 Air Quality Management Plan (2016 AQMP) discussed below. Airport shuttle operators will be required to transition to 100 percent zero-emission vehicle (ZEV) technologies starting in 2027 and to complete the transition by 2035.[62]

4.1.1.3.1.3 Regional

South Coast Air Quality Management District

SCAQMD has jurisdiction over an area of 10,743 square miles consisting of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino counties, and the Riverside County portions of the Salton Sea Air Basin and Mojave Desert Air Basin. The South Coast Air Basin is a sub-region of SCAQMD's jurisdiction and covers an area of 6,745 square miles. Although air quality in this area has improved, the South Coast Air Basin requires continued diligence to meet air quality standards.

The SCAQMD adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. The most recent AQMP adopted by SCAQMD and CARB, and approved by USEPA, is the 2016 AQMP. The 2016 AQMP is briefly discussed below.

SCAQMD adopted the 2016 AQMP on March 3, 2017;[63] it was approved by USEPA in 2019.[64] It incorporates the latest scientific and technology information and planning assumptions, including those consistent with the 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)[65] measures adopted by the Southern California Association of Governments (SCAG) on April 7,

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60 The numerical value of the NO_2 and SO_2 1-hour CAAQS is less stringent than the NAAQS value; however, the form of the CAAQS is different than the form of the NAAQS. The CAAQS is attained for both pollutants when measured concentrations never exceed the CAAQS value. The 1-hour NO_2 NAAQS is attained when the 98th percentile of measured maximum 1-hour daily concentrations, averaged over three years, is less than the NAAQS. The 1-hour SO_2 NAAQS is attained when the 99th percentile of measured maximum 1-hour daily concentrations, averaged of three years, is less than the NAAQS. Therefore, the CAAQS and NAAQS are not directly comparable.

61 As part of the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule ("One National Program Rule"), promulgated by USEPA and the National Highway Traffic Safety Administration (NHTSA) in September 2019, the federal government withdrew the CAA preemption waiver that allows California to set its own tailpipe emission standards. California, along with numerous other states, cities, and counties, responded by filing a lawsuit to reverse the decision. The status of the litigation is outstanding. The SAFE Vehicles Rule Part II rulemaking, finalized on March 31, 2020, sets fuel economy and carbon dioxide standards that increase 1.5 percent in stringency each year from model years 2021 through 2026. These standards apply to light-duty vehicles and represent a substantial reduction in stringency as compared to previously established increase in stringency of 5 percent each year from model years 2021 through 2026.

62 California Air Resources Board, *Zero-Emission Airport Shuttle Regulation Factsheet*, October 2019. Available: https://ww2.arb.ca.gov/sites/default/files/2019-10/asb_reg_factsheet.pdf.

63 South Coast Air Quality Management District, *Final 2016 Air Quality Management Plan (AQMP),* March 3, 2017. Available: http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp.

64 U.S. Environmental Protection Agency, *Approval and Promulgation of Implementation Plans: California: South Coast Serious Area Plan for the 2006 $PM_{2.5}$ NAAQS – Final Rule,* 84 FR 3305, February 12, 2019. Available: https://www.govinfo.gov/content/pkg/FR-2019-02-12/pdf/2019-01922.pdf; and U.S. Environmental Protection Agency, *Approval of Air Quality Implementation Plans: California: South Coast Air Basin; 1-Hour and 8-Hour Ozone Nonattainment Area Requirements – Final Rule,* 84 FR 52005, June 17, 2019. Available: https://docs.regulations.justia.com/entries/2019-06-17/2019-12176.pdf.

65 Southern California Association of Governments, *2016-2040 Regional Transportation Plan/Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life*, adopted April 7, 2016. Available: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf.

2016, as well as updated emission inventory methodologies for various source categories. As discussed below, SCAG has released the Final 2020-2045 RTP/SCS, known as Connect SoCal. SCAQMD has initiated the process for developing the 2022 AQMP, which will provide an approach (plan) to attain the 70 ppb 8-hour ozone NAAQS adopted by USEPA in 2015. The South Coast Air Basin was designated as extreme non-attainment (see Table 4.1.1-2) of this NAAQS in 2018. LAWA will be providing aircraft/APU and potentially GSE emission inventories to SCAQMD for the 2022 AQMP.

The 2016 AQMP incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, and on-road and off-road mobile sources. The 2016 AQMP builds upon improvements in previous plans, and includes new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches. In addition, it highlights the significant amount of emission reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the federal CAA.

The 2016 AQMP's key undertaking is to bring the South Coast Air Basin into attainment with the following standards:

- 8-hour 80 parts per billion (ppb) Ozone NAAQS by 2023 (adopted in 1997)
- 8-hour 75 ppb Ozone NAAQS by 2031 (adopted in 2008)
- 1-hour 120 ppb Ozone NAAQS by 2022 (adopted in 1979)
- 24-hour 35 $\mu g/m^3$ $PM_{2.5}$ NAAQS by 2019 (adopted in 2006)
- Annual 12 $\mu g/m^3$ $PM_{2.5}$ NAAQS by 2025 (adopted in 2012)

The overall control strategy is an integrated approach relying on fair-share emission reductions from federally-, state-, and locally-regulated sources. The 2016 AQMP is composed of stationary and mobile source emission reductions from (1) traditional regulatory control measures, (2) incentive-based programs, (3) co-benefits from climate programs, (4) mobile source strategies, and (5) reductions from federally-controlled sources, which include aircraft, locomotives, and ocean-going vessels. These strategies are to be implemented in partnership with CARB and USEPA. The SCAG-approved 2016 RTP/SCS transportation programs, measures, and strategies, which are generally designed to reduce VMT, are included within baseline emissions.

LAWA provided baseline and forecasted airport emission inventories to SCAQMD for LAX, Van Nuys Airport, and Ontario International Airport (which was then under LAWA's jurisdiction), and the aircraft emissions from these inputs were included in the 2016 AQMP. The 2016 AQMP includes several future air pollution control measures to be developed and implemented by CARB. These measures include state regulations potentially requiring zero-emission GSE and zero-emission airport shuttle buses in the future.

The SCAQMD also adopts rules to implement portions of the AQMP. Several previously adopted rules are applicable to the construction of the proposed Project, as well as to stationary sources being relocated or replaced as part of the proposed Project. SCAQMD Rule 403[66] requires the implementation of best available fugitive dust control measures during active construction activities capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. SCAQMD Rule 1113[67] limits the amount of VOCs from architectural coatings in solvents, which lowers the emissions of odorous compounds. LAWA holds a Title V permit for LAWA-owned stationary sources at LAX, and the proposed Project would potentially add

66 South Coast Air Quality Management District, *Rule 403 – Fugitive Dust*, amended June 3, 2005. Available: http://www.aqmd.gov/docs/default-source/rule-book/rule-iv/rule-403.pdf?sfvrsn=4.

67 South Coast Air Quality Management District, *Rule 1113 – Architectural Coatings*, amended February 5, 2016. Available: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/r1113.pdf?sfvrsn=17.

new combustion equipment for space heating, water heating, and emergency power generation. Therefore, Regulation II – Permits[68] and Regulation XXX – Title V Permits[69] would apply to new stationary equipment associated with the proposed Project facilities. Other source-specific rules may also apply to the new stationary equipment.

Southern California Association of Governments

SCAG is the metropolitan planning organization (MPO) for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial counties and serves as a forum for the discussion of regional issues related to transportation, the economy, community development, and the environment. As the federally-designated MPO for the Southern California region, SCAG is mandated by the federal government to research and develop plans for transportation, hazardous waste management, and air quality. Pursuant to California Health and Safety Code Section 40460(b), SCAG has the responsibility for preparing and approving the portions of the AQMP relating to regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies. SCAG is also responsible under the CAA for determining conformity of federally-funded surface transportation projects, plans, and programs with the State Implementation plan, which integrates applicable air quality plans. With regard to air quality planning, SCAG's 2020-2045 RTP/SCS addresses regional development and growth forecasts. SCAG released the Proposed Final 2020-2045 RTP/SCS, known as Connect SoCal, for Regional Council adoption on May 7, 2020. On that date, the SCAG Regional Council adopted Resolution No. 20-621-1 certifying the Connect SoCal Program Environmental Impact Report (PEIR) and approving Connect SoCal for the limited purpose of transportation conformity to meet the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) June 1, 2020 submittal deadline as required by the CAA. The FHWA and FTA approved the Transportation Conformity portion of the plan on June 5, 2020.[70] The SCAG Regional Council formally adopted the Final 2020-2045 RTP/SCS on September 3, 2020.[71,72] The final adopted plan did not recommend any changes to the policies or strategies in the plan from the Proposed Final.[73]

4.1.1.3.1.4 LAWA Plans and Policies

As discussed in Section 4.1.1.2.7, LAWA has adopted a number of programs aimed at promoting sustainability in airport construction and operations. Many of these programs include requirements aimed at reducing air pollutant emissions.

LAWA's Sustainable Design and Construction Policy, adopted in September 2017, requires that new buildings and major building renovation projects at LAX be designed to achieve the U.S. Green Building Council's (USGBC) LEED® Silver certification, at a minimum, unless an exemption is provided.[74] Silver certification mandates that energy efficiency features be incorporated into new construction, which

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68 South Coast Air Quality Management District, *Regulation II – Permits*. Available: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-ii.

69 South Coast Air Quality Management District, *Regulation XXX – Title V Permits*. Available: http://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book/regulation-xxx.

70 U.S. Department of Transportation, Federal Highway Administration. *Re: Southern California Association of Governments Connect SoCal Regional Transportation Plan/Sustainable Communities Strategy, 2019 Federal Transportation Improvement Program Amendment 19-12 and associated conformity determination*. June 5, 2020. Available: http://ftip.scag.ca.gov/Documents/SCAGFF12_060520.PDF.

71 Southern California Association of Governments, *Press Release – SCAG Regional Council formally adopts Connect SoCal*. September 3, 2020. Available: http://scag.ca.gov/Documents/PR-SCAG-ConnectSoCal.pdf.

72 Southern California Association of Governments, *Connect SoCal: The 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy of the Southern California Association of Governments,* adopted September 3, 2020. Available: https://www.connectsocal.org/Documents/Adopted/0903fConnectSoCal-Plan.pdf.

73 Southern California Association of Governments, *Connect SoCal Update*, July 2, 2020. Available: https://www.connectsocal.org/Documents/Agendas/rc070220agn04.pdf.

74 City of Los Angeles, Los Angeles World Airports, *LAWA Sustainable Design and Construction Policy*, September 7, 2017. Available: https://www.lawa.org/-/media/lawa-web/tenants411/file/lawa-sustainable-design-and-construction-policy.ashx.

would reduce criteria pollutant and greenhouse gas emissions. In addition, all new construction, including the proposed terminal improvements as well as the north airfield and landside improvements that are not eligible for LEED® designation, must comply with other Sustainable Design and Construction Policy requirements, including provisions that reduce emissions during construction and operations.

In December 2019, LAWA entered into a voluntary Memorandum of Understanding (MOU) with the SCAQMD. During the negotiations with SCAQMD on the MOU, LAWA developed Air Quality Improvement Measures (AQIM) to further reduce air pollutant emissions from non-aircraft sources operating at LAX. The intent of the MOU is to provide voluntary emissions reductions that can be applied to the South Coast Ozone SIP, as updated with the 2016 South Coast AQMP.[75] One component identified in the MOU is the enhanced GSE Emission Reduction Policy,[76] with new GSE airport-wide emission factor targets to be achieved at rates faster than are required under existing off-road equipment standards by 2023 and 2031. Further, these new airport-wide emission factor targets have been formally adopted by the City of Los Angeles Board of Airport Commissioners (BOAC) as an update to the existing GSE policy and would apply to all GSE used at Concourse 0 and Terminal 9.

Also included in the SCAQMD-LAWA MOU is the allocation of $500,000 incentive funds from LAWA to its tenants for conversion of conventional fueled vehicles to cleaner technologies. These funds are allocated to the LAWA Alternative Fuel Vehicle Policy. Also, the LAX Alternative Fuel Vehicle Policy was recently strengthened to require that medium- and heavy-duty vehicles operating at LAX use clean fuels/technologies and be less than 13 years old.

In addition, as discussed in Section 4.1.1.2.7, the proposed Project would comply with LAWA's DCH,[77] which includes policies and requirements aimed at reducing environmental impacts associated with construction projects at LAX, including air pollutant and greenhouse gas emissions, among others. Key provisions in the DCH that pertain to reducing air pollutant emissions and have been incorporated into the emissions calculations to the extent feasible include the following:

- Contractors shall post a publicly-visible sign(s) with contact person and telephone number for dust complaints to ensure implementation of fugitive dust control measures. This person shall respond and take corrective action, if necessary, within 24 hours.
- Contractors shall provide vehicle tracking controls at construction staging area access road entrances to reduce entrained dust.
- Contractors shall be responsible for continuous cleanup of all construction-related dirt on approach routes to the construction site and, when requested by LAWA, contractors shall furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day for the purpose of keeping paved areas acceptably clean wherever construction is incomplete.
- During construction, contractor shall demonstrate that all unpaved ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.
- During construction, contractor shall use adequate watering techniques to alleviate accumulation of construction-generated dust and shall comply with SCAQMD Rule 403 – Fugitive Dust.
- Idling or queuing of diesel-fueled vehicles and equipment shall be limited to five minutes.

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75 *Memorandum of Understanding between the South Coast Air Quality Management District and the City of Los Angeles Department of Airports*, December 2019. Available: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/facility-based-mobile-source-measures/mou-la-department-of-airports.pdf?sfvrsn=6.

76 The MOU enhances the LAX GSE Emissions Reduction Policy originally adopted in 2015, which was the first policy of its kind in the nation. The enhanced policy has more stringent emission factor targets and extends to policy requirements to 2031.

77 City of Los Angeles, Los Angeles World Airports, *2020 Design and Construction Handbook (DCH), Version 1.0,* June 30, 2020. Available: https://www.lawa.org/en/lawa-businesses/lawa-documents-and-guidelines/lawa-design-and-construction-handbook.

- Every effort shall be made to utilize grid-based electric power at any construction site, where feasible. Grid-based power can be from a direct hookup or a tie in to electricity from power poles.
- Trucks with a gross vehicle weight rating of 14,001 pounds shall be required to comply with USEPA 2010 emissions standards or next cleanest vehicle available, as approved by LAWA. In addition, off-road diesel-powered equipment are required to meet USEPA Tier 4(final) standards or the next cleanest equipment available, as approved by LAWA, with some exceptions.
- Material and debris haul trucks shall be constructed, or contents covered, such that the material or debris does not sift, blow, leak, spill, or otherwise escape from the vehicle.
- Speed limits on unpaved construction sites shall be limited to 15 miles per hour, and haul vehicles shall maintain at least six inches of freeboard.
- Construction staging and parking of construction vehicles (including workers' vehicles) shall be prohibited on streets adjacent to schools, daycare centers, and hospitals.
- Haul routes shall be located away from residential areas.
- All new aircraft parking positions shall be installed with ground power and pre-conditioned air, where applicable, as coordinated and approved by LAWA Environmental Programs Group (EPG).
- New LAWA or tenant building construction or renovation projects shall meet one of the following:
  - LEED® Silver certification if the project meets the U.S. Green Building Code (USGBC) and LAWA LEED® Eligibility Criteria, unless exempted by LAWA's Sustainability Review Committee,
  - Los Angeles Green Building Code (LAGBC) Tier 1 requirements if not eligible for LEED® certification, or
  - LAWA Sustainable Design and Construction requirements if not eligible for LEED® certification and unable to meet LAGBC Tier 1 requirements.
- LAWA or tenant non-building projects shall meet LAWA Sustainable Design and Construction requirements if not eligible for or exempted from LEED® certification. Typical airport non-building projects include: runways, taxiways, and other airfield flatwork; roadways, bridges and tunnels; pavement rehabilitation; civil infrastructure/site utility work; exterior lighting; and landscaping.

LAWA continues to reduce its impact on air pollutant emissions in the South Coast Air Basin by continuing to convert airport vehicles to electric power. Over 60 electric Chevy Bolts have been delivered to replace conventional fuel LAWA sedans. In addition, twenty 60-foot all-electric airfield buses have been ordered to begin replacing the diesel fuel airfield bus fleet.

LAWA continues to look for additional opportunities to reduce airport emissions and improve its sustainability. LAWA'S most recent outline of emissions reduction and sustainability goals are addressed in the airport's Sustainability Action Plan (SAP), which was adopted in November 2019.[78] The SAP builds upon past LAWA emission reduction and sustainability efforts and programs, and aligns the airport with Mayor Eric Garcetti's Green New Deal. The SAP goals are aimed at organization-wide improvements and are not intended or designed to be applied on an individual project-by-project basis.[79]

Other Related Rules and Policies

In the South Coast Air Basin, the City of Los Angeles, CARB, and the SCAQMD have adopted or proposed additional rules and policies governing the use of cleaner fuels in public vehicle fleets. CARB adopted a

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78 City of Los Angeles, Los Angeles World Airports, *Sustainability Action Plan*, 2019. Available: https://cloud1lawa.app.box.com/s/63i2teszgnld5aws68xbou6yc0inl5rp.

79 City of Los Angeles, Los Angeles World Airports, *Sustainability Action Plan*, 2019. Available: https://cloud1lawa.app.box.com/s/63i2teszgnld5aws68xbou6yc0inl5rp.

Risk Reduction Plan for diesel-fueled engines and vehicles.[80] The SCAQMD adopted a series of rules that would require the use of clean fuel technologies in on-road transit buses, on-road public fleet vehicles, airport taxicabs and shuttles, trash trucks, and street sweepers.[81]

4.1.1.3.2 Environmental Setting

4.1.1.3.2.1 Climatological Conditions

LAX is located within the South Coast Air Basin, a 6,745-square-mile area encompassing all of Orange County and the urban, non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The meteorological conditions at the airport are heavily influenced by its proximity to the Pacific Ocean to the west and the mountains to the north and east. This location tends to produce a regular daily reversal of wind direction; onshore (from the west) during the day and offshore (from the east) at night. Comparatively warm, moist Pacific air masses drifting over cooler air resulting from coastal upwelling of cooler water often form a bank of fog that is generally swept inland by the prevailing westerly (i.e., from the west) winds. The "marine layer" is generally 1,500 to 2,000 feet deep, extending only a short distance inland and rising during the morning hours producing a deck of low clouds. The air above is usually relatively warm, dry, and cloudless. The prevalent temperature inversion in the South Coast Air Basin tends to prevent vertical mixing of air through more than a shallow layer.[82]

A dominating factor in California weather is the semi-permanent high-pressure area of the North Pacific Ocean. This pressure center moves northward in summer, holding storm tracks well to the north, and minimizing precipitation. Changes in the circulation pattern allow storm centers to approach California from the southwest during the winter months and large amounts of moisture are carried ashore. The Los Angeles region receives on average 10 to 15 inches of precipitation per year, of which 83 percent occurs during the months of November through March. Thunderstorms are light and infrequent, and on very rare occasions, trace amounts of snowfall have been reported at the airport.

The annual minimum mean, maximum mean, and overall mean temperatures at the airport are 56 degrees Fahrenheit (°F), 70°F, and 63°F, respectively. The prevailing wind direction at the airport is from the west-southwest with an average wind speed of roughly 6.4 knots (7.4 miles per hour [mph] or 3.3 meters per second [m/s]). Maximum recorded gusts range from 27 knots (31 mph or 13.9 m/s) in July to 56 knots (64 mph or 28.6 m/s) in March. The monthly average wind speeds range from 5.3 knots (6.1 mph or 2.7 m/s) in November to 7.6 knots (8.7 mph or 3.9 m/s) in April.[83]

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80 California Air Resources Board, Stationary Source Division, Mobile Source Control Division, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000. Available: http://www.arb.ca.gov/diesel/documents/rrpfinal.pdf.

81 South Coast Air Quality Management District, *Rule 1186.1 – Less-Polluting Sweepers*, amended January 9, 2009. Available: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1186-1-less-polluting-sweepers.pdf?sfvrsn=4; South Coast Air Quality Management District, *Rule 1191 – Clean On-Road Light- and Medium-Duty Public Fleet Vehicles*, adopted June 16, 2000. Available: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1191.pdf?sfvrsn=4; South Coast Air Quality Management District, *Rule 1192 – Clean On-Road Transit Buses*, adopted June 16, 2000. Available: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1192.pdf?sfvrsn=4; South Coast Air Quality Management District, *Rule 1193 – Clean On-Road Residential and Commercial Refuse Collection Vehicles*, amended July 9, 2010. Available: http://www.aqmd.gov/home/rules-compliance/rules/fleet-rules/refuse-collection-vehicles; South Coast Air Quality Management District, *Rule 1194 – Commercial Airport Ground Access*, amended October 20, 2000. Available: http://www.aqmd.gov/docs/default-source/rule-book/reg-xi/rule-1194.pdf?sfvrsn=4; and South Coast Air Quality Management District, *Rule 1196 – Clean On-Road Heavy-Duty Public Fleet Vehicles*, amended June 6, 2008. Available: http://www.aqmd.gov/docs/default-source/Regulations/Fleet-Rules/r1196.pdf?sfvrsn=2.

82 Ruffner, J.A., Gale Research Company, *Climates of the States: National Oceanic and Atmospheric Administration Narrative Summaries, Table, and Maps for Each State with Overview of State Climatologist Programs*, Third Edition, Volume 1: Alabama – New Mexico, 1985, pp. 83-93.

83 Western Regional Climate Center, Los Angeles International Airport (KLAX), *CA Climatological Summary*, Period of Record: Jul 1996 to Dec 2008.

4.1.1.3.2.2 Existing Ambient Air Quality

In an effort to monitor the various concentrations of air pollutants throughout the South Coast Air Basin, the SCAQMD divided the region into 38 Source Receptor Areas in which monitoring stations operate. The monitoring station that is most representative of existing air quality conditions in the Project area is the Southwest Coastal Los Angeles Monitoring Station located at 7201 W. Westchester Parkway (referred to as the LAX Hastings site), less than 0.5-mile from Runway 6L-24R (northernmost LAX runway). Criteria pollutants monitored at this station include O_3, CO, SO_2, NO_2, and PM_{10}. The nearest representative monitoring station that monitors $PM_{2.5}$ is the South Coastal Los Angeles County 1 Station, which is located 3648 N. Long Beach Boulevard (Long Beach). The most recent data available from the SCAQMD for these monitoring stations at the time of the Draft EIR preparation encompassed the years 2014 to 2018, as shown in **Table 4.1.1-3**.

Table 4.1.1-3
Ambient Air Quality Data

Pollutant[a, b]	2014	2015	2016	2017	2018
Ozone (O_3)					
Max. Concentration 1-hr period, ppm	0.114	0.096	0.087	0.086	0.074
Days over State Standard (0.09 ppm)[a, d]	1	1	0	0	0
Federal Design Value 8-hr period, ppm	0.064	0.068	0.070	0.066	0.063
Max. California Concentration 8-hr period, ppm	0.080	0.077	0.080	0.070	0.065
Days over State Standard (0.07 ppm)[d]	6	3	3	0	0
Carbon Monoxide (CO)					
Max. Concentration 1-hr period, ppm[e]	3.0	1.7	1.6	2.1	1.8
Max. Concentration 8-hr period, ppm[e]	1.9	1.4	1.3	1.6	1.5
Nitrogen Dioxide (NO_2)					
Max. Concentration 1-hr period, ppm[e]	0.087	0.087	0.082	0.072	0.060
Annual Arithmetic Mean (AAM), ppm[e]	0.012	0.011	0.010	0.009	0.009
Sulfur Dioxide (SO_2)					
Max. Concentration 1-hr period, ppm[e]	0.015	0.015	0.010	0.009	0.012
99th Percentile Concentration 1-hr period, ppm[e]	0.009	0.007	0.006	0.007	0.005
Max. Concentration 24-hr period, ppm[e]	0.003	0.003	0.004	0.002	0.002
Respirable Particulate Matter (PM_{10})[c]					
Max. Federal Concentration 24-hr period, µg/m[c, e]	46.0	42.0	43.0	46.0	45.0
Max. California Concentration 24-hr period, µg/m[c, e]	45.0	42.0	43.9	46.5	45.1
Days over State Standard (50 µg/m^3)[d]	0	0	0	0	0
Annual California Concentration, µg/m^3	22.0	21.2	21.6	19.8	20.5
Exceed State Standard? (20 µg/m^3)	**Yes**	**Yes**	**Yes**	No	**Yes**
Fine Particulate Matter ($PM_{2.5}$)[c]					
Max. Concentration in 24-hr period, µg/m^3	38.3	54.6	29.3	55.3	79.6
98th Percentile Concentration in 24-hr period, µg/m^3	35	32	24	32	32
24-Hour NAAQS Design Value, µg/m^3	30	32	31	29	30
No. of Samples Above Federal 24-Hour Standard (35 µg/m^3)[a, d]	2	3	0	4	6
Annual Federal Concentration, µg/m^3	12.1	10.7	10.3	10.9	11.3
Annual NAAQS Design Value, µg/m^3	--[f]	--[f]	--[f]	10.7	10.9
Exceed State Standard? (12 µg/m^3)	Yes	No	No	No	No

Table 4.1.1-3
Ambient Air Quality Data

Pollutant[a, b]	2014	2015	2016	2017	2018

Sources: South Coast Air Quality Management District, *Historical Data by Year*. Available: https://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year, accessed October 23, 2019. California Air Resources Board, *iADAM: Air Quality Data Statistics*. Available: https://www.arb.ca.gov/adam, accessed October 23, 2019. U.S. Environmental Protection Agency, *Air Quality Statistics Report*. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report, accessed October 23, 2019.

Notes:

[a] An exceedance is not necessarily a violation. A violation occurs when exceedances of the NAAQS and CAAQS standards occur at a greater frequency than allowed as defined in 40 CFR 50 for NAAQS and 17 CCR 70200 for CAAQS.

[b] Statistics may include data that are related to an exceptional event.

[c] Exceptional events have been excluded.

[d] Days over the standard are only shown for non-attainment pollutants.

[e] The measured concentrations meet the standards listed in Table 4.1.1-1.

[f] Insufficient data available to determine the design value.

Key:

AAM = Annual arithmetic mean; µg/m^3 = micrograms per cubic meter; ppm = parts per million (by volume).

- **Ozone** – The maximum 1-hour O_3 concentration reported during the 2014 to 2018 period was 0.114 parts per million (ppm), recorded in 2014. The maximum 1-hour O_3 concentration has declined each year since then. During the reporting period, the California 1-hour standard was exceeded twice. The maximum 8-hour O_3 concentration was 0.080 ppm recorded in 2014 and 2016. The California standard was exceeded between three and six days annually from 2014 to 2016, but was not exceeded in 2017 and 2018. The 8-hour NAAQS was not exceeded between 2014 and 2018.
- **Carbon Monoxide** – The highest 1-hour CO concentration reported was 3.0 ppm, recorded in 2014. The maximum 8-hour CO concentration reported was 1.9 ppm, also recorded in 2014. The standards were not exceeded during the five-year period.
- **Nitrogen Dioxide** – The highest 1-hour NO_2 concentration recorded was 0.087 ppm in both 2014 and 2015. The highest recorded NO_2 annual arithmetic mean was 0.012 ppm recorded in 2014. The standards were not exceeded during the five-year period.
- **Sulfur Dioxide** – The highest 1-hour SO_2 concentration recorded was 0.015 ppm in both 2014 and 2015. The maximum 99th percentile 1-hour concentration was 0.009 ppm, recorded in 2014. The highest recorded SO_2 24-hour concentration was 0.004 ppm recorded in 2016. The standards were not exceeded during the five-year period.
- **Respirable Particulate Matter (PM_{10})** – The highest reported 24-hour PM_{10} concentration was 46 µg/m^3 recorded in 2014 and 2017. During the period 2014 to 2018, the 24-hour CAAQS and NAAQS were not exceeded. The maximum annual California concentration recorded was 22.0 µg/m^3 in 2014.
- **Fine Particulate Matter ($PM_{2.5}$)** – The maximum 24-hour $PM_{2.5}$ concentration recorded was 55.3 µg/m^3 in 2017. The highest annual concentration value of 11.4 µg/m^3 was recorded in 2014. Between 2014 and 2018, annual $PM_{2.5}$ NAAQS was not exceeded. Between 0 and four 24-hour sample values exceeded the 24-Hour $PM_{2.5}$ NAAQS.

4.1.1.4 Thresholds of Significance

The proposed Project would result in a significant impact related to air quality if it would:

Threshold 4.1.1-1 Result in estimated incremental increases in construction-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. SCAQMD's construction emission thresholds are summarized in **Table 4.1.1-4**.

Threshold 4.1.1-2 Result in estimated incremental increases in operations-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. SCAQMD's operational emission thresholds are summarized in Table 4.1.1-4.

Threshold 4.1.1-3 Result in estimated incremental ambient concentrations due to construction-related emissions that would be greater than the concentration thresholds established by SCAQMD. SCAQMD's construction concentration thresholds are summarized in **Table 4.1.1-5.**

Threshold 4.1.1-4 Result in estimated incremental ambient concentrations due to operations-related emissions that would be greater than the concentration thresholds established by SCAQMD. SCAQMD's operational concentration thresholds are summarized in Table 4.1.1-5.

Table 4.1.1-4
SCAQMD CEQA Significance Thresholds for Air Pollutant Emissions in the South Coast Air Basin

Pollutant	Mass Emission Thresholds in Pounds per Day (lbs/day)	
	Construction	Operations
Carbon Monoxide (CO)	550	550
Volatile Organic Compounds (VOC)	75	55
Nitrogen Oxides (NO_X)	100	55
Sulfur Oxides (SO_X)	150	150
Respirable Particulate Matter (PM_{10})	150	150
Fine Particulate Matter ($PM_{2.5}$)	55	55

Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

Table 4.1.1-5
SCAQMD CEQA Significance Thresholds for Air Pollutant Concentrations in the South Coast Air Basin

Pollutant	Averaging Period	Project-Related Concentration Thresholds		
		Construction	Operations	Project Only or Total
CO	1-Hour (State)[a]	20 ppm (23,000 µg/m^3)	20 ppm (23,000 µg/m^3)	Total incl. Background
	8-Hour (Both)	9.0 ppm (10,000 µg/m^3)	9.0 ppm (10,000 µg/m^3)	Total incl. Background
NO_2	1-Hour (State)	0.18 ppm (339 µg/m^3)	0.18 ppm (339 µg/m^3)	Total incl. Background
	Annual (State)[a]	0.03 ppm (57 µg/m^3)	0.03 ppm (57 µg/m^3)	Total incl. Background
SO_2	1-Hour (State)[b, c]	0.25 ppm (655 µg/m^3)	0.25 ppm (655 µg/m^3)	Total incl. Background
	1-Hour (Federal)[b]	0.075 ppm (196 µg/m^3)	0.075 ppm (196 µg/m^3)	Total incl. Background
	24-Hour (State)	0.04 ppm (105 µg/m^3)	0.04 ppm (105 µg/m^3)	Total incl. Background
PM_{10}	24-Hour[d]	10.4 µg/m^3	2.5 µg/m^3	Project Only
	Annual[d]	1.0 µg/m^3	1.0 µg/m^3	Project Only
$PM_{2.5}$	24-Hour[d]	10.4 µg/m^3	2.5 µg/m^3	Project Only

Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

Notes:

[a] The concentration threshold for 1-hour CO and annual NO_2 is the CAAQS, which is more stringent than the NAAQS for these pollutants and averaging periods.

[b] To evaluate impacts of the proposed Project to ambient 1-hour SO_2 thresholds, the analysis includes both the State standard and the Federal standard. The methods to determine attainment of each standard, as well as the value of the standards are different; therefore, both were analyzed.

[c] The 3-hour secondary NAAQS for SO_2 is 0.5 ppm (1,300 µg/m^3), double the value of the 1-hour SO_2 CAAQS; therefore, the significance determination for the 1-hour SO_2 CAAQS represents the significance determination of the 3-hour SO_2 secondary NAAQS in this analysis.

[d] The concentration thresholds for PM_{10} and $PM_{2.5}$ have been developed by SCAQMD for construction or operational impacts associated only with the proposed Project.

Key:

µg/m^3 = micrograms per cubic meter; CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds.

4.1.1.4.1 Regional Emissions Thresholds

The SCAQMD has developed CEQA construction and operations thresholds of significance for air pollutant emissions from projects proposed in the South Coast Air Basin. Note that SCAQMD's primary role is focused on attaining and maintaining ambient air quality in the region that complies with federal and state ambient air quality standards through the implementation of rules, regulations, and policies that control air pollutant emissions. SCAQMD's development and use of the project-level CEQA emission thresholds was based on the plans and regulatory thresholds required to achieve the ambient air quality standards. These are considered to be regional emission thresholds because ambient air quality is the product of all air pollutant emissions in the air basin. Therefore, the SCAQMD's regional emission thresholds are set at levels that would attain the ambient air quality standards and, thus, protect human health.

Because of the cumulative nature of air quality impacts, these thresholds were also developed to meet the need to address cumulative impacts. For example, few sources emit ozone directly, as noted in Section 4.1.1.1.1 above. The relatively high ozone levels in the South Coast Air Basin are the result of numerous facilities and millions of sources, including the millions of cars and trucks, that operate daily in the region emitting NO_X and VOC which react in the presence of sunlight to form ozone. Therefore, the same thresholds are employed in evaluating both the significance of project-level impacts as well as a project's contribution to a cumulative impact.

SCAQMD's construction and operation emissions thresholds are summarized in Table 4.1.1-4. These thresholds serve to address a project's consistency with applicable SCAQMD plans (the Final 2016 AQMP), impacts to ambient air quality standards, and contributions to cumulative impacts, including cumulatively considerable net increases to any criteria pollutant for which the air basin is in nonattainment, as specified in Appendix G of the State CEQA Guidelines.

SCAQMD's construction and operation emissions thresholds are summarized in Table 4.1.1-4. These thresholds serve to address a project's consistency with applicable SCAQMD plans (the Final 2016 AQMP), impacts to ambient air quality standards, and contributions to cumulative impacts, including cumulatively considerable net increases to any criteria pollutant for which the air basin is in nonattainment, as specified in Appendix G of the State CEQA Guidelines.

Construction activity and impacts are temporary; therefore, SCAQMD has established significance emission thresholds specifically for construction. In accordance with the SCAQMD *CEQA Air Quality Handbook* and supplemental guidance documentation,[84] and as reflected in Threshold 4.1.1-1 above, a significant air quality impact would occur if the estimated incremental increase in construction-related emissions attributable to the proposed Project would be greater than the daily mass emission thresholds presented in Table 4.1.1-4.

SCAQMD has also established significance emission thresholds for operations. The thresholds are based in part on CAA Section 182(e) and Title V operating source permit program major source thresholds, which vary depending on the attainment status of the region for a given pollutant (see Table 4.1.1-2 for the South Coast Air Basin attainment status for each criteria pollutant). Emissions below these levels are generally not expected to modify regional ambient air quality levels. For example, the federal major source threshold for NO_X and VOC in an extreme nonattainment area for ozone is 10 tons per year, which SCAQMD has converted to a daily significance threshold of 55 pounds per day. The South Coast Air Basin is classified as attainment for CO, with a major source threshold of 100 tons per year, converted to 550 pounds per day. Because a portion of ambient $PM_{2.5}$ concentrations are derived for secondary formation of $PM_{2.5}$ from precursor pollutants and can remain suspended in air longer than larger particulate matter, the SCAQMD significance threshold is set at 55 pounds per day (10 tons per year),[85] well below the federal Title V major source threshold of 70 tons per year.

Therefore, in accordance with the SCAQMD CEQA Air Quality Handbook and supplemental guidance documentation,[86] and reflected in Threshold 4.1.1-2 above, a significant air quality impact would occur if the estimated incremental increase in operations-related emissions attributable to the proposed Project would be greater than the daily mass emission thresholds for operations presented in Table 4.1.1-4.

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84 South Coast Air Quality Management District, *CEQA Air Quality Handbook*, April 1993; South Coast Air Quality Management District, *Air Quality Analysis Handbook Supplemental Information*, June 2020. Available: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.

85 South Coast Air Quality Management District, *Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*, October 2006. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf?sfvrsn=2.

86 South Coast Air Quality Management District, *CEQA Air Quality Handbook*, April 1993; South Coast Air Quality Management District, *Air Quality Analysis Handbook Supplemental Information*, June 2020. Available: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook.

4.1.1.4.1.1 Scenarios Used to Determine Significance for Emissions

Construction

The analysis of construction emissions impacts includes both emissions directly associated with Project-related construction activity and indirect emissions associated with additional aircraft delay on the ground due to temporary construction-related runway closures in 2023 and 2024. The indirect emissions associated with the runway closures were added to the Project-related direct construction emissions to determine total peak emissions for those years. Construction-related emissions attributable to the proposed Project were compared to the significance thresholds for construction to determine the Project's impacts.

Operations

In order to determine the Project-related operations impacts associated with air pollutant emissions, the total emissions associated with the proposed Project that would occur in 2028 (2028 With Project) were compared to the baseline emissions in 2018 (2018 Baseline). The difference between these two conditions was used to determine the significance of Project-related emissions in 2028. (see Section 4.1.1.1, *Introduction*, for an explanation of baseline conditions used for the air quality analysis).[87]

CEQA requires that normally, a proposed project be compared to existing conditions (in this case 2018 baseline conditions) for the purpose of making a significance determination. For the proposed Project, the Project-related incremental emissions (i.e., the emissions of the proposed Project in 2028 compared to 2018 baseline conditions) would be influenced by factors that are not attributable to the Project itself. Specifically, Project-related incremental emissions contain future emissions from background growth in passengers and aircraft operations that are projected to occur with or without the Project. The incremental emissions also account for lower emission factors for motor vehicles from improved engine technology. In order to remove the influence of background growth and the differences in motor vehicle emission factors between 2018 and 2028, a second comparison is provided of emissions from the proposed Project in 2028 (2028 With Project) and emissions from the Future Without Project scenario in 2028 (2028 Without Project). The difference between these two scenarios highlights the air pollutant emissions impacts of the proposed Project compared to future emissions that are estimated to occur without the Project. This comparison is made for informational purposes only; the significance of the Project impacts is not based on this comparison.

4.1.1.4.2 Local Concentration Thresholds

The SCAQMD has developed construction and operations thresholds of significance for air pollutant concentration impacts from projects proposed in the South Coast Air Basin. These are referred to as local concentration thresholds and are summarized in Table 4.1.1-5. In accordance with the SCAQMD *CEQA Air Quality Handbook*, and as reflected in Thresholds 4.1.1-3 and 4.1.1-4 above, a significant air quality impact would occur if the estimated incremental ambient concentrations due to construction-related or operations-related emissions would be greater than the concentration thresholds presented in Table 4.1.1-5. The SCAQMD's recommended thresholds for the evaluation of local air quality impacts are based on the difference between the maximum monitored ambient pollutant concentrations in the area and the CAAQS or NAAQS. Therefore, the thresholds depend upon the concentrations of pollutants monitored locally with respect to a project site. For pollutants that already exceed the CAAQS or NAAQS (e.g., PM_{10} and $PM_{2.5}$), the thresholds are based on SCAQMD Rule 403 for construction and Rule 1303,

[87] CDM Smith, *Los Angeles International Airport – Airfield and Terminal Modernization Project, Final CEQA Protocol for Conducting an Air Quality Impact Analysis of Criteria Air Pollutants*, June 4, 2020. This protocol is included as **Appendix C.8** of this EIR.

Table A-2, for operations, as described in SCAQMD's *Final Localized Significance Threshold Methodology*.[88] Because the concentration thresholds are designed to attain or maintain the CAAQS and NAAQS, they are consequently set at levels that would protect human health.

The methodology requires that the increase in ambient air pollutant concentrations, determined using a computer-based air quality dispersion model, be compared to local concentration significance thresholds for CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. The methodology for CO, NO_2 and SO_2 requires that the project-related contributions for these pollutants be added to existing background concentrations (shown in Table 4.1.1-3) and the summation be compared to the appropriate threshold. The significance thresholds for PM_{10} and $PM_{2.5}$ represent the allowable increase in concentrations above background levels in the vicinity of the Project site that would not cause or contribute to an exceedance of the relevant ambient air quality standards. The thresholds are intended to constrain emissions to aid in the progress toward attainment and maintenance of the ambient air quality standards.[89] Because the PM_{10} and $PM_{2.5}$ thresholds are relative to the Project incremental impact, Project-related concentrations were not added to background concentrations before comparing to these thresholds.

For the purposes of this analysis, the local construction and operations emissions resulting from development of the proposed Project are assessed with respect to the thresholds in Table 4.1.1-5 using dispersion modeling (i.e., AERMOD). Details regarding the thresholds associated with each pollutant are provided below.

- **CO** - The significance thresholds for CO are the 1-hour and 8-hour CAAQS of 23 milligrams per cubic meter (mg/m^3) and 10 mg/m^3, respectively. With respect to CO, the CAAQS are at least as stringent as the NAAQS; therefore, compliance with the CAAQS indicates compliance with the NAAQS. Because the thresholds are the ambient air quality standards, the Project incremental concentrations were added to background concentrations before the comparison to the standard was made.
- **NO_2** - The local significance thresholds for 1-hour NO_2 concentrations is the 1-hour NO_2 CAAQS of 339 $\mu g/m^3$. The significance threshold for annual NO_2 concentrations is the annual NO_2 CAAQS of 57 $\mu g/m^3$, which is more stringent than the annual NO_2 NAAQS; therefore, compliance with the CAAQS also indicates compliance with the NAAQS. Because the thresholds are the ambient air quality standards, the Project incremental concentrations were added to background concentrations before the comparison to the standard was made.
- **SO_2** - The significance thresholds for 1-hour SO_2 concentrations are the 1-hour SO_2 CAAQS of 655 $\mu g/m^3$, and the 1-hour SO_2 NAAQS of 196 $\mu g/m^3$. The 1-hour SO_2 NAAQS is determined from the 3-year average of the 99^{th} percentile of the daily maximum 1-hour average and, thus, requires a different approach to determine background and Project-related concentrations than the 1-hour SO_2 CAAQS. The significance threshold for daily SO_2 concentrations is the 24-hour SO_2 CAAQS (105 $\mu g/m^3$) because the previous 24-hour SO_2 NAAQS has been revoked. The 3-hour secondary NAAQS for SO_2 is 0.5 ppm (1,300 μg/m3), which is double the value of the 1-hour SO_2 CAAQS; therefore, the significance determination for the 1-hour SO_2 CAAQS represents the significance determination of the 3-hour SO_2 secondary NAAQS in this analysis. Because the thresholds are the ambient air quality standards, the Project incremental concentrations were added to background concentrations before the comparison to the standard was made.

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88 South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

89 South Coast Air Quality Management District, *Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds*, October 2006. Available: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/particulate-matter-(pm)-2.5-significance-thresholds-and-calculation-methodology/final_pm2_5methodology.pdf?sfvrsn=2.

- **PM_{10} and $PM_{2.5}$** - The significance thresholds for PM_{10} and $PM_{2.5}$ concentrations are the CEQA thresholds developed by SCAQMD. For both PM_{10} and $PM_{2.5}$, SCAQMD developed separate daily thresholds for construction (10.4 $\mu g/m^3$) and operations (2.5 $\mu g/m^3$). SCAQMD also developed an annual threshold for PM_{10} (1.0 $\mu g/m^3$) applicable to both construction and operations. These PM_{10} and $PM_{2.5}$ thresholds are relative to the Project incremental impact; thus, as noted above, Project-related concentrations were not added to background concentrations before comparing to these thresholds.

4.1.1.4.2.1 Scenarios Used to Determine Significance for Local Concentrations

Construction

Concentrations associated with on-airport emissions attributable to proposed Project construction were compared to the significance thresholds for construction. For reasons described above, Project-related construction concentrations of PM_{10} and $PM_{2.5}$ were compared directly to the construction concentration thresholds in Table 4.1.1-5, whereas Project-related construction concentrations of CO, NO_2, and SO_2 were added to appropriate background concentrations before comparing to the construction concentration thresholds in Table 4.1.1-5.

Operations

The dispersion analysis for 2028 modeled concentrations associated with total airport operations in that year. In order to evaluate impacts associated with the proposed Project in isolation (i.e., without including impacts associated with existing airport operations), concentrations associated with the 2018 baseline conditions were subtracted from future 2028 With Project concentrations. In order to determine total concentrations in the air with implementation of the proposed Project, the resulting Project-related incremental concentrations for CO, NO_2, and SO_2 were added to ambient concentrations shown in Table 4.1.1-3. Then, total concentrations (i.e., ambient concentrations plus Project-related concentrations) were compared to the operations concentration thresholds in Table 4.1.1-5 to determine if the proposed Project would exceed the thresholds. For reasons described above regarding thresholds specific to each pollutant, operations-related concentrations of PM_{10} and $PM_{2.5}$ were compared directly to the operations concentration thresholds in Table 4.1.1-5. The level of significance for the proposed Project's impacts in 2028 is based on these comparisons.

As with the analysis of emissions, described above, in order to remove the influence of background growth and the differences in motor vehicle emission factors between 2018 and 2028, a second comparison is provided of concentrations from the proposed Project in 2028 and concentrations from the Future Without Project scenario in 2028. The difference between these two scenarios highlights the air pollutant concentration impacts of the proposed Project compared to future concentrations that are projected to occur without the Project. This comparison is made for informational purposes only (i.e., the significance of the Project impacts is not based on this comparison).

4.1.1.4.2.2 Determination of Background Concentrations

The background concentrations for criteria pollutants were determined using historical pollutant concentrations available from CARB.[90] For the purposes of determining the background concentrations of CO, NO_2, and SO_2 for comparison to the CAAQS, peak values were selected from the most recent three years of ambient air pollutant concentrations, shown in Table 4.1.1-3 above. For 1-hour SO_2 NAAQS, the background concentrations were determined from the maximum consecutive three-year average of the 99th percentile (SO_2) peak daily 1-hour values from the most recent five years of data. As noted above, the concentration thresholds for PM_{10} and $PM_{2.5}$ developed by SCAQMD are for project increments only; therefore, no background concentrations were estimated for these two pollutants.

Finally, when modeling source emissions for comparison to the 1-hour NO_2 CAAQS, a seasonal hour-of-day NO_2 background file was developed following guidance developed by CAPCOA.[91] The most recent three years of monitored 1-hour NO_2 data available (2016-2018) from the LAX Hastings site were obtained from the USEPA.[92] This approach was used to address the hourly impacts that occur in the late evening and early morning hours.

4.1.1.5 Project Impacts

4.1.1.5.1 Impact 4.1.1-1

Summary Conclusion for Impact 4.1.1-1: Construction of the proposed Project would result in estimated incremental increases in construction-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. This would be a *significant impact* for construction. Even with mitigation, this would remain a *significant and unavoidable impact* for construction.

4.1.1.5.1.1 Construction Impacts

As noted in Section 4.1.1.4.1, the analysis of construction impacts includes both direct emissions associated with Project-related construction activity and indirect emissions associated with the increased taxi and delay times that would occur from temporary construction-related runway closures in 2023 and 2024 (see **Appendix C**). The tables below present direct emissions, indirect emissions, and total emissions. The determination of significance was based on total emissions.

Table 4.1.1-6 presents the peak daily criteria pollutant emissions directly associated with construction activities for each year of construction (i.e., 2021 to 2028). The year-to-year variations between the different years are largely attributable to the differences in Project development timeframes and construction needs.

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90 California Air Resources Board, *iADAM: Air Quality Data Statistics – Top 4 Summary*. Available: http://www.arb.ca.gov/adam/topfour/topfour1.php.

91 California Air Pollution Control Officers Association, *Modeling Compliance of the Federal 1-Hour NO_2 NAAQS*, October 27, 2011, p. 14. Available: https://www.valleyair.org/busind/pto/Tox_Resources/CAPCOANO2GuidanceDocument10-27-11.pdf.

92 U.S. Environmental Protection Agency, *Air Quality System (AQS) – AirData – Download Data Files*. Available: https://aqs.epa.gov/aqsweb/airdata/download_files.html#Raw.

Table 4.1.1-6
Peak Daily Criteria Pollutant Emissions from Project Construction Activities

Year	CO (lbs/day)	VOC (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	SO_X (lbs/day)
2021	121	11	41	7	3	<1
2022	309	26	102	15	6	1
2023	479	53	157	25	10	2
2024	483	58	160	23	10	2
2025	302	67	101	11	6	1
2026	93	21	30	6	2	<1
2027	96	8	31	3	2	<1
2028	1	<1	<1	<1	<1	<1
Peak Daily Emissions	483	67	160	25	10	2
Threshold	550	75	100	150	55	150
Exceeds Threshold?	**No**	**No**	**Yes**	**No**	**No**	**No**

Source: **Appendix C** of this EIR.

Key:
CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds.

As described in Chapter 2, *Description of the Proposed Project*, construction of the airfield improvements would require the temporary closures of Runways 6L-24R and 6R-24L for approximately 4.5 months each, to safely tie-in the new runway exits to these runways. Only one of these runways would be closed in a given year. During these times, aircraft operations at LAX would occur on three runways (i.e., one runway in the north airfield and two runways in the south airfield). The temporary closure of each runway would increase the distances that aircraft would taxi, as some aircraft activity that would normally occur on the closed runway would be shifted to either the other north airfield runway, or to one of the south airfield runways (Runways 7L-25R or 7R-25L). Moreover, three-runway operations would be less efficient, resulting in a temporary increase in aircraft taxi-idle times and corresponding air pollutant emissions.

Two SIMMOD analyses of the airport, based on Design Day Flight Schedules (see **Appendix B.2**, *Operational Analyses Report*, for a description of Design Day Flight Schedules), were conducted to develop an estimate of the increased taxi idle times due to the closure of Runway 6R-24L (i.e., the inboard runway). (These analyses were conducted assuming that Runway 6R-24L would be closed in 2023. It was later determined that Runway 6R-24L would be closed in 2024. The implications of this change are discussed below.) The closure of Runway 6R-24L was selected for the analysis since its closure would require any aircraft using the north airfield to taxi in or out from Runway 6L-24R (i.e., the outboard runway), and for all heavy aircraft (e.g., Boeing 747, Airbus A380, etc.) departing from LAX north airfield terminals to taxi down to the south airfield because Runway 6L-24R is not long enough to accommodate the heavy aircraft departures during the closure of Runway 6R-24L. One SIMMOD run was used to calculate taxi and delay times with Runway 6R-24L closed in 2023, and the other run was used to calculate taxi and delay times with all runways opened (i.e., normal operations) in 2023. The incremental taxi-idle times between the two runs represented the additional delay during proposed Project construction that would occur if Runway 6R-24L were closed in 2023.

Subsequent to completion of the SIMMOD analyses, the proposed construction schedule was modified, with the closure of Runway 6R-24L occurring in 2024 instead of 2023.[93] This later year was forecasted to have approximately 1 percent more total aircraft operations than 2023, which would increase the incremental taxi-idle times relative to the closure in 2023. This increase is two-fold: (i) the taxi-idle times per aircraft operation would increase due to more operations occurring each day, which would increase the delay times per operation; and (ii) the total number of delayed operations would also increase. The increase in taxi-idle times per operation was estimated to be approximately 2.9 percent, which was combined with the increase in total operations (1 percent) to indicate a total increase in daily taxi-idle times of 3.9 percent due to the shutdown of Runway 6R-24L in 2024 compared to the shutdown in 2023. This 3.9 percent increase was added to the incremental results of the SIMMOD runs for 2023 to estimate incremental taxi-idle times for the shutdown of Runway 6R-24L in 2024.

As noted above, there would be a similar temporary closure of Runway 6L-24R in 2023 of approximately the same duration (i.e., 4.5 months). This closure would shift some aircraft activity from Runway 6L-24R to Runway 6R-24L. Because Runway 6R-24L is closer to the terminals, the taxi distances would decrease as compared to normal operations. However, as noted above, three-runway operations would be less efficient, which would increase aircraft taxi-idle times. Closure of Runway 6L-24R in 2023 would result in a temporary, incremental increase in emissions as compared to conditions without the runway closure, although the increase would be lower than that for the closure of Runway 6R-24L. Therefore, the increased emissions from the SIMMOD run associated with the closure of Runway 6R-24L in 2023 is a conservative (high) estimate of the increased emissions associated with the closure of Runway 6L-24R in 2023.

Table 4.1.1-7 provides a comparison of 2023 and 2024 air pollutant emissions with the temporary runway closures to 2023 and 2024 air pollutant emissions without the closures, as well as the incremental differences between the two conditions for each year.[94] These incremental differences represent the Project-related indirect construction emissions associated with the temporary runway closures.

93 Under the currently proposed construction schedule, Runway 6L-24R would be temporarily closed in 2023 instead of 2024.

94 As described in the Analytical Framework discussion in the Introduction to Chapter 4, the baseline conditions used in evaluating impacts associated with the temporary closure of each north runway during construction of the proposed airfield improvements reflect the activity levels at the time of those closures (i.e., 2023 and 2024), which accounts for five to six interim years of growth in aircraft operations projected to occur at LAX, which would otherwise not be accounted for if 2018 was assumed as the baseline year. In these instances, using 2018 operations activity levels as the baseline condition would be misleading and without informative value since it would not provide an accurate representation of the temporary impacts that would occur due to the runway closures. This approach is appropriate because LAX is a dynamic facility, and conditions are generally not static over time. In particular, the level of aircraft operations that exist in 2023 and 2024 will differ from those conditions that existed in 2018. It is, therefore, appropriate to adjust the baseline to reflect these anticipated conditions as of 2023 and 2024. This approach is conservative because the number of aircraft operations is expected to increase between 2018 and 2023/2024. As a result, the use of a 2023/2024 baseline involves more aircraft operations and, therefore, greater impacts than would occur if a 2018 baseline were used for this purpose.

Table 4.1.1-7
Aircraft Taxi/Idle Criteria Pollutant Emissions from Temporary Runway Closures

Pollutant	2023 – Closure of Runway 6L-24R (lbs/day)			2024 – Closure of Runway 6R-24L (lbs/day)		
	Without Closure	With Closure	Incremental Difference[a]	Without Closure	With Closure	Incremental Difference[a]
CO	25,213	28,977	3,764	26,803	30,715	3,911
VOC	2,891	3,206	315	3,037	3,364	327
NO_X	26,082	26,703	621	27,291	27,936	645
PM_{10}	147	156	10	257	267	10
$PM_{2.5}$	147	156	10	257	267	10
SO_X	2,187	2,351	165	2,343	2,514	171

Source: **Appendix C** of this EIR.

Note:
[a] Numbers may not add due to rounding.

Key:
CO = carbon monoxide; lbs/day = pounds per day; VOC = volatile organic compounds; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds.

Total emissions on the peak day for each pollutant, including both direct emissions from Project-related construction activities and incremental indirect emissions from the temporary runway closure, are presented in **Table 4.1.1-8**.

Table 4.1.1-8
Total Direct and Indirect Construction-Related Criteria Pollutant Emissions

Year	CO (lbs/day)	VOC (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	SO_X lbs/day)
Peak Daily Direct Emissions	483	67	160	25	10	2
Peak Daily Incremental Indirect Emissions[a]	3,911	327	645	10	10	171
Total Peak Daily Emissions[b,c]	4,394	385	805	34	20	173
Threshold	550	75	100	150	55	150
Significant?	**Yes**	**Yes**	**Yes**	**No**	**No**	**Yes**

Source: **Appendix C** of this EIR.

Notes:
[a] Incremental indirect emissions are associated with temporary runway closures.
[b] Numbers may not add due to Peak Daily Direct and Peak Daily Indirect emissions occurring in different years.
[c] Numbers may not add due to rounding.

Key:
CO = carbon monoxide; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds.

As shown in Table 4.1.1-6, peak daily direct construction emissions of NO_x would exceed the SCAQMD construction emission threshold; peak daily direct emissions of all other pollutants would not exceed the thresholds. However, as shown in Table 4.1.1-8, when taking into consideration both the direct emissions from construction activities and the indirect incremental emissions associated with the temporary runway closure, peak daily emission of CO, VOC, NO_X, and SO_X would exceed the SCAQMD construction emission thresholds; only the peak daily construction emissions of PM_{10} and $PM_{2.5}$ would not exceed the SCAQMD construction regional daily emission thresholds. The exceedances of CO, VOC, NO_X, and SO_X SCAQMD construction emission thresholds mean that the proposed Project's construction emissions would contribute to localized adverse health impacts of these pollutants described in Section 4.1.1.1. Note that the indirect emissions due to runway closures would only occur for two separate four-and-a-half-month periods within the entire construction schedule. For the remaining construction period, more than six years, the only significant impact would be from NO_X emissions. Nevertheless, the proposed Project's construction emissions of CO, VOC, NO_X, and SO_X would result in a ***significant impact*** related to air quality during the two runway closure periods.

Note that the ambient air quality standards set by CARB and USEPA are health-based standards, indicating that exposure to concentrations that are less than these standards would have negligible adverse health impacts. These standards for CO, NO_2, and SO_2 are used as significance thresholds as described in Section 4.1.1.4 above. The construction-related impacts to ambient concentrations of CO, NO_2, and SO_2, as well as PM_{10} and $PM_{2.5}$, are discussed in Section 4.1.1.5.3 below. In addition, the health risk assessment associated to exposure of toxic organic (including those that are also considered VOC) and particulate matter is provided in Section 4.1.2, *Human Health Risk*. Finally, a brief comparison of the proposed Project ozone precursor (NO_X and VOC) emissions relative to two recent studies of secondary ozone impacts to human health follows.

Photochemical Modeling of Secondary Air Pollutants - Construction

As discussed in Section 4.1.1.2.6, a 2018 decision by the Supreme Court of California determined that CEQA requires an EIR to contain an analysis that correlates the specific human health effects that would occur as a result of a project's significant air pollutant emissions. As further discussed in that section, two recent Draft EIRs completed photochemical modeling to evaluate changes in health end-point incidences related to significant emissions increases of O_3 and $PM_{2.5}$ precursors. The following analysis compares the results of these Draft EIRs to projected impacts from the proposed Project in order to assess health-related impacts of the proposed Project's increases in of O_3 precursors.

Norman Y. Mineta San Jose International Airport Master Plan Amendment

A comparison of the project-related emissions associated with the SJC Master Plan Amendment and the proposed Project is provided in **Table 4.1.1-9.** As shown in the table, the emissions of the ozone precursor NO_X would be approximately 7.0 times lower under the proposed Project construction peak day than the emissions modeled for the SJC Master Plan Amendment Draft EIR, while the VOC emissions associated with construction of the proposed Project would be approximately 6.8 times higher. On a mass basis of total ozone precursors (NO_X plus VOC), the proposed Project peak day construction emissions would be more than 4.8 times lower than the emissions modeled for the SJC Master Plan Amendment Draft EIR.

Table 4.1.1-9
Photochemical Modeling Pollutant Emissions

Pollutant	Emissions (lbs/day)		
	SJC Master Plan Amendment Draft EIR	IBEC Draft EIR	Proposed Project Peak Day Construction
NO_X	5,643	99	805
VOC	57	~100	385

Sources: City of San Jose, *Draft Environmental Impact Report for Amendment to Norman Y. Mineta San Jose International Airport Master Plan,* State Clearinghouse No. 2018102020, prepared by David J. Powers & Associates, Inc., November 2019. Available: https://www.sanjoseca.gov/Home/ShowDocument?id=44618; City of Inglewood, *Inglewood Basketball and Entertainment Center Project Draft Environmental Impact Report,* State Clearinghouse No. 2018021056, prepared by ESA and Fehr & Peers, December 2019. Available: https://www.cityofinglewood.org/1036/Murphys-Bowl-Proposed-NBA-Arena; **Appendix C** of this EIR.

Key:
NO_X = nitrogen oxides; VOC = volatile organic compounds

If the proposed Project emissions were applied to the SJC site, the resulting health impacts from ozone would likely be the same as, or less than, those modeled for the SJC Master Plan Amendment Draft EIR. The resulting change in health end-point incidences would be <0.05 percent (5/100ths of one percent) for secondary ozone concentrations.

Inglewood Basketball and Entertainment Center Project Draft EIR

A comparison of the project-related emissions associated with the IBEC Project and the proposed Project peak construction day is also provided in Table 4.1.1-9. As shown in the table, the emissions of ozone precursor NO_X would be approximately 8.1 times higher under the proposed Project than the emissions modeled for the IBEC Draft EIR, while emissions of ozone precursor VOC would be approximately 3.9 times higher than those modeled for the IBEC Project. On a mass basis of total ozone precursors (NO_X plus VOC), the proposed Project peak day construction emissions would be more than 6.0 times higher than the emissions modeled for the IBEC Draft EIR.

If the proposed Project emissions were applied to the IBEC site, the resulting health impacts from ozone might be 6.0 (total ozone precursor mass emission ratio) to 8.1 (NO_X mass emission ratio) times higher than the IBEC results. Applying this gross assumption to the IBEC results indicates that the impacts to human health end-points associated with the proposed Project would be approximately 0.003 percent (3/1,000ths of one percent) for all human health end-points analyzed in the IBEC Draft EIR.

Conclusion

As noted in Section 4.1.1.2.6.2, the findings from both the SJC Master Plan Amendment Draft EIR and the IBEC Project Draft EIR human health impact assessments indicate that the changes in emissions of ozone precursors from a single project do not “move the dial” with regard to regional human health impacts. The models available to analyze regional impacts are designed to address large, regional changes in emissions, such as those due to proposed emission control regulations that affect emissions across an entire region. Given the uncertainties in emissions, dispersion modeling, and human health concentration-response functions, the conclusion reached in these two studies was that the results to human health impacts were not statistically different than zero (i.e., no change). Applying gross emission ratios between the proposed Project and each of these studies similarly indicates that the impacts to regional human health due to changes in ozone precursors associated with the proposed Project would be negligible.

4.1.1.5.1.2 Mitigation Measures

As noted above, the total of direct and indirect construction emissions would be significant for CO, VOC, NO_X, and SO_X for two four-and-a-half-month periods during runway closures required to safely tie-in the Taxiway D extension to the north airfield runways. Only peak daily NO_X emissions from direct construction activities would be significant for four years of construction, including the two with the short-term runway closure periods.

Mitigation proposed to reduce significant impacts related to air pollutant emissions during construction is provided below. The mitigation measures identified would serve to reduce both criteria air pollutants (i.e., CO, VOC, NO_X, and SO_X) and GHG emissions, and are labeled accordingly.

- **MM-AQ/GHG (ATMP)-1. Rock Crushing Operations.**

  LAWA shall require Airfield and Terminal Modernization Project contractors to conduct rock-crushing operations on-site to reuse waste rock/concrete generated during construction of the Airfield and Terminal Modernization Project to the maximum extent feasible (determined based on facility capacity and capability, project schedule, costs, and regulatory conditions). Rock-crushing operations (rock-crushing, material laydown, and stockpiling) shall be located away from residential areas in all cases.

- **MM-AQ/GHG (ATMP)-2. Use of Renewable Diesel Fuel.**

  LAWA shall require Airfield and Terminal Modernization Project contractors to use renewable diesel fuel in proposed Project construction off-road equipment and on-site, on-road trucks (i.e., on-site water trucks), as feasible based on commercial renewable fuel availability. For purposes of this measure, commercially-available renewable fuel is defined as renewable fuel that is available in the regional area at a comparable price (i.e., without a substantial premium) and not incurring substantial transportation costs (i.e., higher costs associated with having to transport it to the Project site over substantially longer distances from the supplier[s] of renewable diesel fuel).

In addition to the measures above, the following mitigation measure would apply to the implementation of all construction-related mitigation measures associated with the proposed Project, including mitigation measures for construction-related air pollutant emissions.

- **MM-C (ATMP)-1. Construction Mitigation Oversight.**

  LAWA shall require Airfield and Terminal Modernization Project prime contractors to designate an individual responsible for ensuring implementation of all construction-related mitigation measures and LAWA policies/requirements.

<u>Other Measures Considered</u>

Section 4.1.1.2.7 above identifies the existing policies and Project features that have been incorporated into the unmitigated With Project construction emission calculations. To determine if additional measures were applicable, LAWA compiled and reviewed a broad array of potential measures from various sources, such as the FAA, the Airport Cooperative Research Program (ACRP), CARB, and SCAQMD. The review indicated that many of those potential measures are already being implemented at LAX under existing LAWA programs and requirements and/or would be incorporated into the proposed Project as Project features. Of the remaining measures, some were considered feasible to add as mitigation measures for the proposed Project, while others were determined to be not applicable or feasible to include as mitigation measures for the Project. **Appendix C.9** presents an overview of potential measures for the reduction of air pollutant emissions. The table indicates whether such measures are already being implemented at LAX, are proposed to be included in the Project as a design/operational feature or as a mitigation measure, or are considered to be not applicable to, or infeasible for, LAX and the proposed Project.

No additional feasible mitigation has been identified that would provide reduction of NO_X emissions from direct construction, nor has additional feasible mitigation been identified to reduce the aircraft taxi and delay emissions during the runway closure periods.

4.1.1.5.1.3 Significance of Impact After Mitigation

With implementation of Mitigation Measures MM-AQ/GHG (ATMP)-1 and 2, significant impacts associated with construction emissions would be reduced, but not to a level that would be less than significant. Specifically, even with implementation of all feasible construction-related mitigation measures, the proposed Project-related estimated incremental increases in construction-related emissions of CO, VOC, NO_X, and SO_X would exceed the daily emission thresholds established by SCAQMD. The emissions of CO, VOC, and SO_X would exceed the construction emission thresholds during the periods when one of the north runways is closed to safely tie-in the Taxiway D extension. The runway closure period would require aircraft to taxi farther to the open runways. Once these connections are completed, taxi times would drop and would be similar to Without Project taxi times. Although these runway closures would be temporary (approximately 4 to 5 months in two different years) relative to the total proposed Project construction duration, they do represent peak day total construction emissions for all pollutants. Construction emissions of NO_X would exceed the construction emission thresholds in several years that do not include the runway closures. No other feasible mitigation measures have been identified that would further reduce these impacts to air quality. Therefore, impacts to air quality from Project-related construction emissions would be ***significant and unavoidable***.

4.1.1.5.2 Impact 4.1.1-2

Summary Conclusion for Impact 4.1.1-2: Operation of the proposed Project would result in estimated incremental increases in operations-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. This would be a *significant impact* for operations. Even with mitigation, this would remain a *significant and unavoidable impact* for operations.

4.1.1.5.2.1 Operations Impacts

Based on the proposed Project construction schedule, as detailed in **Appendix C**, most of the improvements associated with the proposed Project would be completed in 2027; therefore, operational impacts associated with those improvements were analyzed for the first full year of operations, or 2028.

As noted in Section 4.1.1.4.1, the regional analysis of air quality impacts associated with operation of the proposed Project compares emissions from 2028 With Project to the 2018 baseline conditions to determine the significance of operational emissions under CEQA. Additionally, the 2028 With Project scenario was compared to the 2028 Without Project scenario for informational purposes; however, the level of significance of Project-related emissions was not determined using this comparison.

<u>Comparison of 2028 With Project and 2018 Baseline Conditions</u>

Table 4.1.1-10 compares the 2028 With Project operational emissions to 2018 baseline conditions. The incremental emissions were then compared to the significance thresholds for operations identified in Table 4.1.1-4. As shown, in 2028, operational emissions for CO and VOC would decrease compared to baseline conditions, but NO_X, SO_X, PM_{10}, and $PM_{2.5}$ operational emissions would increase.

Two specific changes regarding motor vehicle emissions occur when one compares the Future With Project scenario against baseline conditions: (i) the VMT increases due to regional growth in population and associated vehicle travel demand, and (ii) the engine exhaust emission factors (emission rates in grams per mile) decrease as older vehicles are replaced with newer ones that comply with cleaner emission standards. Note, however, that particulate matter emissions factors for paved road dust, tire wear, and brake wear do not change with time. For CO and VOC, the decrease in engine exhaust emission factors would be greater in magnitude than the increase in VMT between 2018 and 2028; therefore, the emissions of these pollutants would decrease when comparing the 2028 Future With Project conditions to 2018 baseline conditions.

Table 4.1.1-10
Operational Emissions – 2028 With Project Compared to 2018 Baseline

Scenario	CO (lbs/day)	VOC (lbs/day)	NO_X (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
2018 Baseline						
Aircraft & APU	24,618	4,358	25,176	2,249	254	254
GSE	6,583	140	955	1	26	23
Traffic & Parking	24,138	825	4,559	63	2,555	813
Stationary	0	0	0	0	0	0
2018 Baseline Totals	55,339	5,323	30,690	2,314	2,834	1,090
2028 With Project						
Aircraft & APU	31,515	4,350	31,058	2,748	291	291
GSE	4,111	46	386	1	8	7
Traffic & Parking	15,820	448	1,735	59	3,192	970
Stationary	11	62	20	0	1	1
2028 With Project Totals	51,456	4,906	33,199	2,808	3,492	1,268
Incremental Changes						
Aircraft & APU	6,897	(8)	5,882	499	37	37
GSE	(2,471)	(94)	(569)	0	(18)	(16)
Traffic & Parking	(8,319)	(377)	(2824)	(4)	638	157
Stationary	11	62	20	0	1	1
Incremental Change Totals	(3,883)	(417)	2,509	495	658	178
Threshold	550	55	55	150	150	55
Significant?	**No**	**No**	**Yes**	**Yes**	**Yes**	**Yes**

Source: **Appendix C** of this EIR.

Key:
APU = auxiliary power units; CO = carbon monoxide; GSE = ground support equipment; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds; .

A similar emissions reduction would occur with respect to GSE emissions. As a result, although there would be more GSE equipment operating hours in 2028 under the Future With Project scenario, the cleaner GSE fleet would result in a decrease in emissions in 2028 compared to 2018 for all pollutants. However, although these emissions reductions would contribute to a decrease in emissions for CO and VOC, they would not outweigh the growth in emissions from the projected increase in aircraft and APU activity in 2028 as compared to 2018. As a result, NO_X emissions would be higher under the 2028 With Project scenario than under 2018 baseline conditions.

The fuel sulfur content in motor vehicle and aircraft fuels is not expected to change between 2018 and 2028. Even so, a slight decrease in SO_X emissions from motor vehicles would occur in 2028, which is likely due to increased fuel efficiency in newer vehicles (relative to the 2018 fleet mix). However, SO_X emissions from aircraft and APUs would increase because of projected increased activity levels. Overall, SO_X emissions would be higher under the 2028 With Project scenario as compared to 2018 baseline conditions.

The reduction in motor vehicle emissions noted above would also result in reduced PM_{10} and $PM_{2.5}$ emissions. However, as noted above, emission factors for dust sources (i.e., tire wear, brake wear, and paved road dust) are expected to remain constant between 2018 and 2028, and VMT would increase between 2018 and 2028. These factors would outweigh the decrease in motor vehicle emissions; thus,

PM_{10} and $PM_{2.5}$ emissions would increase due to the growth in motor vehicle trips between 2018 and 2028.

In summary, the total incremental emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ from operation of the proposed Project (i.e., 2028 With Project emissions compared to 2018 Baseline emissions) would exceed the SCAQMD regional daily emission operational thresholds; incremental operational emissions of CO and VOC would not exceed the thresholds. The exceedances of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ SCAQMD operational emission thresholds mean that the proposed Project's operational emissions would contribute to localized adverse health impacts of these pollutants described in Section 4.1.1.1. Therefore, the proposed Project's operational emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would result in a ***significant impact*** related to air quality.

Note that the ambient air quality standards set by CARB and USEPA are health-based standards, indicating that exposure to concentrations that are less than these standards would have negligible adverse health impacts. These standards for NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are used as significance thresholds as described in Section 4.1.1.4 above. The operational impacts to ambient concentrations of NO_2, SO_2, PM_{10}, and $PM_{2.5}$ are discussed in Section 4.1.1.5.4 below. In addition, the health risk assessment associated with exposure to toxic organic and particulate matter is provided in Section 4.1.2, *Human Health Risk*. Finally, the potential effects of secondary ozone from the NO_X emissions are discussed in this section below under "Photochemical Modeling of Secondary Air Pollutants - Operations."

Comparison of 2028 With Project and 2028 Without Project

As noted in Section 4.1.1.4.1, operational emissions in 2028 With Project were compared to emissions in 2028 Without Project for informational purposes. The purpose of this comparison was to remove the influence of background growth and differences in motor vehicle emission factors between 2018 and, thereby, to highlight the air pollutant emissions impacts of the proposed Project compared to future emissions that are estimated to occur without the Project. The comparison between emissions from the 2028 With Project scenario and the 2028 Without Project scenario is provided in **Table 4.1.1-11**.

Table 4.1.1-11
Operational Emissions – 2028 With Project Compared to 2028 Without Project

Scenario	CO (lbs/day)	VOC (lbs/day)	NO_X (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
2028 Without Project						
Aircraft & APU	31,471	4,327	31,085	2,753	297	297
GSE	4,111	46	386	1	8	7
Traffic & Parking	15,557	440	1,721	58	3,135	953
Stationary	0	0	0	0	0	0
2028 Without Project Totals	51,140	4,813	33,193	2,812	3,440	1,256
2028 With Project						
Aircraft & APU	31,515	4,350	31,058	2,748	291	291
GSE	4,111	46	386	1	8	7
Traffic & Parking	15,820	448	1,735	59	3,192	970
Stationary	11	62	20	0	1	1
2028 With Project Totals	51,456	4,906	33,199	2,808	3,492	1,268
Incremental Changes						
Aircraft & APU	43	23	(27)	(5)	(6)	(6)
GSE	0	0	0	0	0	0
Traffic & Parking	262	8	14	1	57	17

Table 4.1.1-11
Operational Emissions – 2028 With Project Compared to 2028 Without Project

Scenario	CO (lbs/day)	VOC (lbs/day)	NO_X (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Stationary	11	62	20	0	1	1
Incremental Change Totals	316	93	7	(4)	52	12
Threshold	550	55	55	150	150	55
Exceeds Threshold?[a]	No	Yes	No	No	No	No

Source: **Appendix C** of this EIR.

Note:

[a] As previously discussed, the 2028 With Project scenario was compared to the 2028 Without Project scenario for informational purposes; however, the level of significance of Project-related emissions was not determined using this comparison.

Key:

APU = auxiliary power units; CO = carbon monoxide; GSE = ground support equipment; lbs/day = pounds per day; NO_X = nitrogen oxides; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_X = sulfur oxides; VOC = volatile organic compounds.

As discussed in Section 4.8, *Transportation*, there would be a slight increase in VMT in the 2028 With Project scenario compared to the 2028 Without Project scenario due to an increase in employment at LAX with the addition of Concourse 0 and Terminal 9 and operation of the proposed roadway system. This growth would result in an increase in exhaust and fugitive dust emissions from motor vehicles. Because the daily number of aircraft operations would not change between the two scenarios, aircraft takeoff, climb-out, and landing emissions, as well as GSE emissions would remain the same in each scenario. Aircraft taxi and idle emissions on the ground would change somewhat as a result of the reconfigured runway exits, taxi path, and terminal gate configurations, and the substantial decommissioning of the West Remote Gates in the With Project scenario. Slight emission decreases would also occur from operation of the APUs with implementation of the proposed Project due to the availability of pre-conditioned air and gate power at the new Terminal 9 and Concourse 0 facilities. The combined effect of these changes in emission sources would result in an increase in all pollutant emissions (i.e., CO, VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$) under the 2028 With Project scenario as compared to the 2028 Without Project scenario. The increases in traffic from additional employee travel under the With Project scenario, as well as stationary source emissions from the new terminal operations account for the majority of the increased emissions. Although this analysis is presented for informational purposes only, as shown in Table 4.1.1-11, the incremental emissions from operation of the proposed Project compared to the 2028 Without Project scenario would exceed the SCAQMD significance threshold for VOC. This increase in VOC emissions would be associated primarily with emissions generated through the day-to-day operation of the new Terminal 9 and Concourse 0 facilities.

Photochemical Modeling of Secondary Air Pollutants - Operations

As discussed in Section 4.1.1.2.6, a 2018 decision by the Supreme Court of California determined that CEQA requires an EIR to contain an analysis that correlates the specific human health effects that would occur as a result of a project's significant air pollutant emissions. As further discussed in that section, two recent Draft EIRs completed photochemical modeling to evaluate changes in health end-point incidences related to significant emissions increases of O_3 and $PM_{2.5}$ precursors. The following analysis compares the results of these Draft EIRs to projected impacts from the proposed Project in order to assess health-related impacts of the proposed Project's increases in of O_3 and $PM_{2.5}$ precursors.

Norman Y. Mineta San Jose International Airport Master Plan Amendment

A comparison of the project-related emissions associated with the SJC Master Plan Amendment and the proposed Project is provided in **Table 4.1.1-12.** As shown in the table, the emissions of ozone precursors NO_X and VOC would be substantially less under the proposed Project than the emissions modeled for the SJC Master Plan Amendment Draft EIR, while the $PM_{2.5}$ emissions associated with the proposed Project would be 3.5 times higher.

Table 4.1.1-12
Photochemical Modeling Pollutant Emissions

Pollutant	Emissions (lbs/day)		
	SJC Master Plan Amendment Draft EIR	IBEC Draft EIR	Proposed Project
NO_X	5,643	99	2,509
VOC	57	~100	(417)
$PM_{2.5}$	51	89	178

Sources: City of San Jose, *Draft Environmental Impact Report for Amendment to Norman Y. Mineta San Jose International Airport Master Plan,* State Clearinghouse No. 2018102020, prepared by David J. Powers & Associates, Inc., November 2019. Available: https://www.sanjoseca.gov/Home/ShowDocument?id=44618; City of Inglewood, *Inglewood Basketball and Entertainment Center Project Draft Environmental Impact Report,* State Clearinghouse No. 2018021056, prepared by ESA and Fehr & Peers, December 2019. Available: https://www.cityofinglewood.org/1036/Murphys-Bowl-Proposed-NBA-Arena; **Appendix C** of this EIR.

Key:
IBEC = Inglewood Basketball and Entertainment Center; lbs/day = pounds per day; NO_X = nitrogen oxides; $PM_{2.5}$ = fine particulate matter; SJC = Norman Y. Mineta San Jose International Airport; VOC = volatile organic compounds.

If the proposed Project emissions were applied to the SJC site, the resulting health impacts from ozone would likely be the same as, or less than, those modeled for the SJC Master Plan Amendment Draft EIR, and potentially 3.5 times higher from $PM_{2.5}$. The resulting change in health end-point incidences would be <0.05 percent for both ozone and $PM_{2.5}$ emissions.

Inglewood Basketball and Entertainment Center Project Draft EIR

A comparison of the project-related emissions associated with the IBEC Project and the proposed Project is provided in Table 4.1.1-12. As shown in the table, the emissions of ozone precursor NO_X would be 25 times higher under the proposed Project than the emissions modeled for the IBEC Draft EIR, while emissions of ozone precursor VOC would be substantially lower than those modeled for the IBEC Project. The $PM_{2.5}$ emissions under the proposed Project would be 2 times higher than those modeled for the IBEC Project.

If the proposed Project emissions were applied to the IBEC site, the resulting health impacts from ozone would be 25 times higher than the IBEC results, if one conservatively only considers NO_X and disregards the substantially lower incremental VOC emissions. Applying this gross assumption to the IBEC results indicates that the impacts to human health end-points associated with the proposed Project would be approximately 0.008 percent (8/1,000ths of one percent) for all human health end-points analyzed in the IBEC Draft EIR. The IBEC Project human health impacts due to $PM_{2.5}$ are likely zero (see brief discussion in Section 4.1.1.2.6.2 above and the IBEC Project EIR[95]), the $PM_{2.5}$ impacts associated with the proposed Project are also likely to be approximately zero.

95 City of Inglewood, *Inglewood Basketball and Entertainment Center Project Draft Environmental Impact Report,* State Clearinghouse No. 2018021056, prepared by ESA and Fehr & Peers, December 2019. Available: https://www.cityofinglewood.org/1036/Murphys-Bowl-Proposed-NBA-Arena.

Conclusion

As noted in Section 4.1.1.2.6.2, the findings from both the SJC Master Plan Amendment Draft EIR and the IBEC Project Draft EIR human health impact assessments indicate that the changes in emissions of ozone precursors and $PM_{2.5}$ from a single project do not "move the dial" with regard to regional human health impacts. The models available to analyze regional impacts are designed to address large, regional changes in emissions, such as those due to proposed emission control regulations that affect emissions across an entire region. Given the uncertainties in emissions, dispersion modeling, and human health concentration-response functions, the conclusion reached in these two studies was that the results to human health impacts were not statistically different than zero (i.e., no change). Applying gross emission ratios between the proposed Project and each of these studies similarly indicates that the impacts to human health due to changes in ozone and $PM_{2.5}$ precursors associated with the proposed Project would be essentially zero.

4.1.1.5.2.2 Mitigation Measures

As noted above, the proposed Project's operational emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would result in a ***significant impact*** related to air quality. Mitigation proposed to reduce significant impacts related to air pollutant operational emissions is provided below. Most of the mitigation measures identified would serve to reduce both criteria air pollutants (i.e., NO_X, SO_X, PM_{10}, and $PM_{2.5}$) and GHG emissions, and are labeled accordingly.

- **MM-AQ/GHG (ATMP)-3. Parking Cool Roof.**

  LAWA shall include in the design requirements for the Airfield and Terminal Modernization Project that a cool roof be installed at the Terminal 9 parking facility to reduce energy use and urban heat-island effects. This requirement will not apply if solar panels are instead installed at the Terminal 9 parking facility.

- **MM-AQ/GHG (ATMP)-4. EV Charging Infrastructure.**

  LAWA shall install EV charging infrastructure in the Terminal 9 parking facility beyond the minimum amount required by code. The exact number of spaces and types of parking (Electrical Vehicle Supply Equipment [EVSE] or Electric Vehicle Charging Stations [EVCS]) shall be determined during project design and shall exceed the minimum requirements for EVSE and EVCS specified in the code at the time of design by at least 5 percent.

- **MM-AQ/GHG (ATMP)-5. Electric Vehicle Purchasing.**

  LAWA shall update the Electric Vehicle Purchasing Policy to require 100 percent of LAWA's light-duty vehicle fleet to be all-electric by 2031.

- **MM-AQ/GHG (ATMP)-6. Solar Energy Technology.**

  LAWA shall implement solar energy technology, such as, but not limited to, photovoltaic solar panels, on Airfield and Terminal Modernization Project buildings and facilities where feasible based on costs, grid tie-in capability, environmental clearance, compliance with FAR Part 77, and applicable FAA requirements for land leases and funding.

In addition to these measures, MM-T (ATMP)-1, the Vehicle Miles Traveled (VMT) Reduction Program presented in detail in Section 4.8., *Transportation*, of this EIR (specifically in Section 4.8.5.4.2), provides several strategies for reducing vehicular travel which, in turn, would reduce GHG and air pollutant emissions.

Other Measures Considered

Section 4.1.1.2.7 above identifies the existing policies and Project features that have been incorporated into the unmitigated With Project operations emission calculations. To determine if additional measures were applicable, LAWA compiled and reviewed a broad array of potential measures from various sources such as the FAA, ACRP, CARB, and SCAQMD. The review indicated that many of those potential measures are already being implemented at LAX under existing LAWA programs and requirements and/or would be incorporated into the proposed Project as Project features. Of the remaining measures, some were considered feasible to add as mitigation measures for the proposed Project, while others were determined to be not applicable or feasible to include as mitigation measures for the Project. **Appendix C.9** presents an overview of potential measures for the reduction of air pollutant emissions. The table indicates whether such measures are already being implemented at LAX, are proposed to be included in the Project as a design/operational feature or as a mitigation measure, or are considered to be not applicable to, or infeasible for, LAX and the proposed Project. No additional feasible mitigation has been identified that would provide reduction of NO_X, SO_X, PM_{10}, or $PM_{2.5}$ emissions from operations.

Quantification of Air Pollutant Emissions Reductions Associated with Mitigation

While all the mitigation measures presented above would serve to reduce operations-related air pollutant emissions associated with the proposed Project, only MM-T (ATMP)-1 provides a reasonable basis to estimate the amount of emission reduction accomplished by the mitigation. The other mitigation measures are more general in nature or are dependent on specific design characteristics that would be defined during more detailed levels of planning.

MM-T (ATMP)-1 requires a reduction in daily employee VMT by the equivalent of 16,450 VMT. Based on motor vehicle emission factors applicable in 2028, this would result in a reduction of approximately 1.5 pounds per day for NO_X, 0.1 pound per day for SO_X, 5.5 pounds per day for PM_{10}, and 1.7 pounds per day for $PM_{2.5}$. Comparing the reduction results with the incremental project emissions shown in Table 4.1.1-10 indicates that the mitigation would reduce operational emissions, but not below the level of significance for any of the criteria pollutants that were determined to be significant (i.e., NO_X, SO_X, PM_{10}, and $PM_{2.5}$).

4.1.1.5.2.3 Significance of Impact After Mitigation

With implementation of Mitigation Measures MM-AQ/GHG (ATMP)-3 through 7 and MM-T (ATMP)-1, significant impacts associated with operational emissions would be reduced, but not to a level that would be less than significant. Specifically, even with implementation of all feasible operations-related mitigation measures, the Project-related estimated incremental increases in daily operations-related emissions of NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would exceed the daily emission thresholds established by SCAQMD. No other feasible mitigation measures have been identified at this time that would further reduce impacts to air quality. Therefore, impacts to air quality from Project-related operational emissions would be ***significant and unavoidable***.

4.1.1.5.3 Impact 4.1.1-3

Summary Conclusion for Impact 4.1.1-3: Construction of the proposed Project would result in estimated incremental ambient concentrations due to construction-related emissions that would be less than the concentration thresholds established by SCAQMD. This would be a *less significant impact* for construction.

4.1.1.5.3.1 Construction Impacts

As discussed in Section 4.1.1.2, the local effects (measured by air pollutant concentrations) from the on-site portion of construction emissions were evaluated at nearby sensitive receptor locations that could be affected by the proposed Project consistent with the methodologies in the SCAQMD's *Final Localized Significance Threshold Methodology*. The SCAQMD recommends that lead agencies perform project-specific air quality modeling for larger projects; therefore, Project-specific dispersion modeling was used to assess local construction impacts.

Table 4.1.1-13 summarizes the results of air dispersion modeling of the Project construction sources. As shown in Table 4.1.1-13, local construction concentrations would be less than the SCAQMD concentration thresholds for all pollutants and averaging periods. Therefore, the proposed Project's localized construction concentrations would result in a ***less than significant impact***.

Table 4.1.1-13
Project Peak Construction Concentrations (µg/m³)

Pollutant	Averaging Period[a]	Construction (µg/m³)	Background (µg/m³)	Total (µg/m³)[b]	Threshold (µg/m³)[a]	Significant?
CO	1-hr CAAQS	817	2,406	3,223	23,000	No
	8-hr CAAQS	137	1,833	1,970	10,000	No
NO_2	1-hr CAAQS	110	154	264	339	No
	Annual CAAQS	8	19	27	57	No
SO_2	1-hr CAAQS	10	31	41	655	No
	1-hr NAAQS	9	18	28	196	No
	24-hr CAAQS	2	10	13	105	No
PM_{10}	24-hr	3.2	--[c]	3.2	10.4	No
	Annual	0.8	--[c]	0.8	1.0	No
$PM_{2.5}$	24-hr	1.1	--[c]	1.1	10.4	No

Source: **Appendix C** of this EIR.

Notes:

[a] NAAQS and CAAQS often have the same averaging period, but usually have different standard values and may have different methods of determining compliance with each standard.

[b] Values may not add due to rounding.

[c] PM_{10} and $PM_{2.5}$ thresholds are Project only values; therefore, are not added to background concentrations.

Key:

µg/m³ = micrograms per cubic meter; CAAQS = California Ambient Air Quality Standard; CO = carbon monoxide; hr = hour; NAAQS = National Ambient Air Quality Standard; NO_2 = nitrogen dioxide; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_2 = sulfur dioxide.

4.1.1.5.3.2 Mitigation Measures

Because the proposed Project would result in a ***less than significant impact*** related to localized construction concentrations, no mitigation is required.

4.1.1.5.3.3 Significance of Impact After Mitigation

As indicated above, no mitigation is required to address localized construction concentrations. The proposed Project would result in a ***less than significant impact***.

4.1.1.5.4 Impact 4.1.1-4

Summary Conclusion for Impact 4.1.1-4: Operation of the proposed Project would result in estimated incremental ambient concentrations due to operations-related emissions that would be greater than the concentration thresholds established by SCAQMD. This would be a *significant impact* for operations. Even with mitigation, this would remain a *significant and unavoidable impact* for operations.

4.1.1.5.4.1 Operations Impacts

As discussed in Section 4.1.1.2, the local effects (measured by air pollutant concentrations) from the on-site portion of daily operational emissions were evaluated at nearby sensitive receptor locations that could be affected by the proposed Project consistent with the methodologies in the SCAQMD's *Final Localized Significance Threshold Methodology*. The SCAQMD recommends that lead agencies perform project-specific air quality modeling for larger projects; therefore, Project-specific dispersion modeling was used to assess local operational impacts.

Comparison of 2028 With Project and 2018 Baseline

Table 4.1.1-14 summarizes the 2028 With Project incremental increases in peak concentrations relative to 2018 baseline conditions. The incremental concentration increases were then compared to the significance thresholds for operations identified in Table 4.1.1-5. As shown in Table 4.1.1-13, the Project-related incremental change in pollutant concentrations resulting from operational activities would not exceed the local operational concentration thresholds for CO, NO_2, SO_2, and $PM_{2.5}$ at any receptor but would exceed the local operational concentration thresholds for PM_{10} at one or more receptors. The exceedances of PM_{10} concentration thresholds mean that the proposed Project's operational emissions of this pollutant would contribute to localized adverse health impacts of this pollutant described in Section 4.1.1.1. Therefore, the localized operational concentrations of PM_{10} would result in a ***significant impact*** related to air quality.

Table 4.1.1-14
Operational Concentrations – 2028 With Project Compared to 2018 Baseline

Pollutant	Averaging Period[a]	Incremental Peak (µg/m³)[b]	Background (µg/m³)	Total (µg/m³)	Threshold	Significant?
CO	1-hr CAAQS	1,248	2,406	3,654	23,000	No
	8-hr NAAQS	336	1,833	2,169	10,000	No
NO_2	1-hr CAAQS	336	Included[c]	336	339	No
	Annual CAAQS	14	19	33	57	No
SO_2	1-hr CAAQS	47	31	78	655	No
	1-hr NAAQS	30	18	48	196	No
	24-hr CAAQS	8	10	18	105	No
PM_{10}	24-hr	6.2	--[d]	6.2	2.5	**Yes**
	Annual	3.7	--[d]	3.7	1.0	**Yes**
$PM_{2.5}$	24-hr	1.7	--[d]	1.7	2.5	No

Source: See **Appendix C** of this EIR.

Notes:

[a] NAAQS and CAAQS often have the same averaging period, but usually have different standard values and may have different methods of determining compliance with each standard.

[b] The incremental peak concentration was determined by calculating the differences between the 2028 With Project and 2018 baseline scenarios at each receptor, then selecting the maximum value across all receptors.

[c] Background NO_2 concentrations were included in the AERMOD input file; thus, AERMOD directly calculated the total of Project plus background.

[d] PM_{10} and $PM_{2.5}$ thresholds are Project-only values; thus, they are not added to background concentrations.

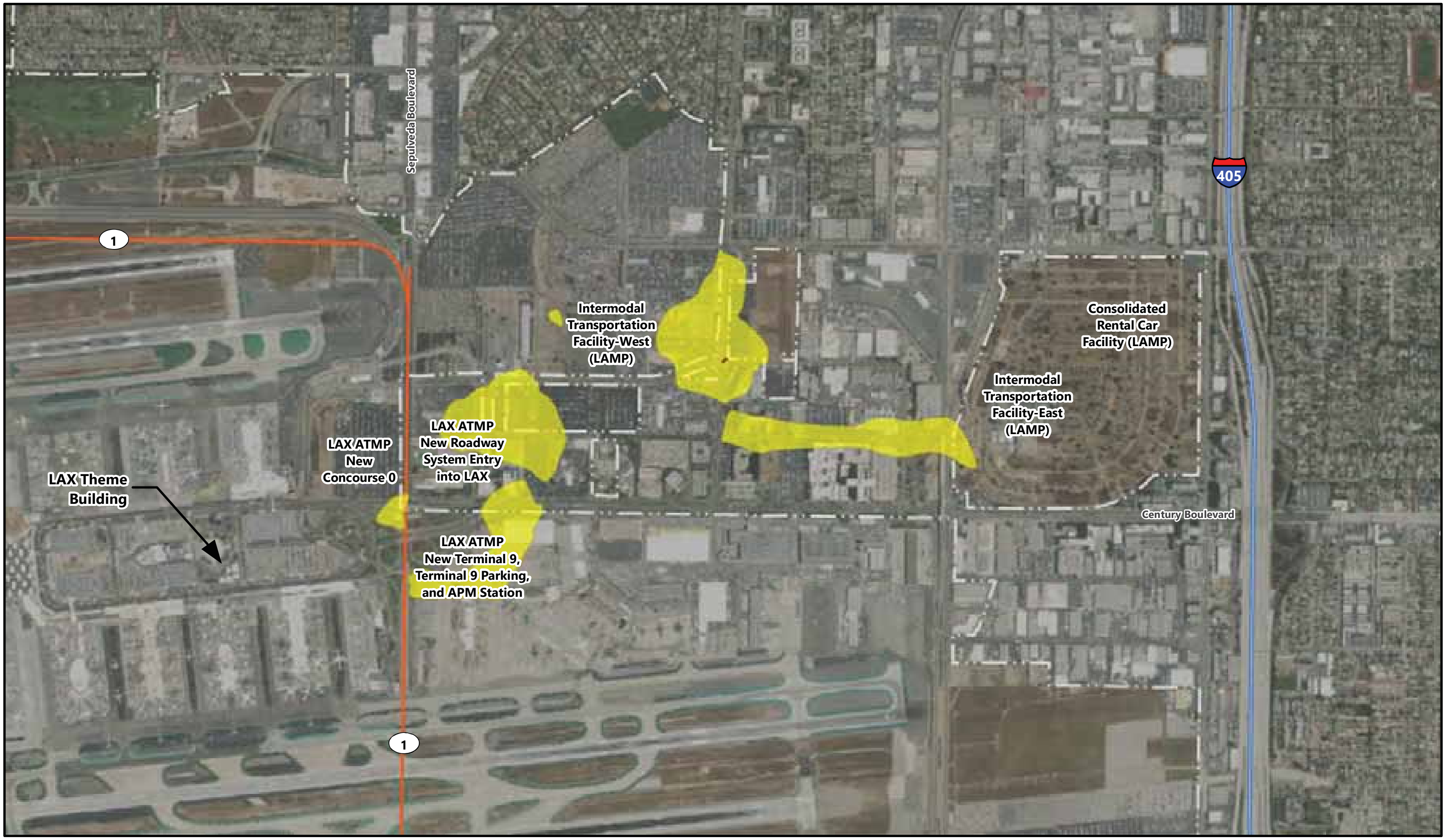
Key:

µg/m³ = micrograms per cubic meter; CAAQS = California Ambient Air Quality Standard; CO = carbon monoxide; hr = hour; NAAQS = National Ambient Air Quality Standard; NO_2 = nitrogen dioxide; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_2 = sulfur dioxide.

The geographic extent of the 24-hour PM_{10} incremental concentration exceedances in 2028 are shown on **Figure 4.1.1-2**. Two general receptor locations are above the threshold, one at the corner of 96th Street and Airport Boulevard, near the (future) ITF West facility, and the other on Aviation Boulevard just north of Century Boulevard, near the (future) ITF East, CONRAC, and Metro's Airport Metro Connector (AMC) 96th Street Transit Station. Similar locations can be seen for the Annual PM_{10} incremental concentration exceedances shown on **Figure 4.1.1-3**. These areas are in a commercial zone with the highest levels in the roadways, and not near residential areas.

Comparison of 2028 With Project and 2028 Without Project

As described in Section 4.1.1.4.2, concentrations associated with emissions in 2028 With Project were compared to concentrations in 2028 Without Project for informational purposes. The purpose of this comparison was to remove the influence of background growth and differences in motor vehicle emission factors between 2018 and, thereby, to highlight the air pollutant concentration impacts of the proposed Project compared to future concentrations that are estimated to occur without the Project. To complete the analysis, a two-step approach was used. First the future concentrations under the 2028 Without Project scenario were determined, as shown in **Table 4.1.1-15**. The results in the Total column of Table 4.1.1-15 were then compared to the 2028 With Project results in the Total column of Table 4.1.1-14 above. The changes in total concentrations for each pollutant and averaging period are summarized in **Table 4.1.1-16**.



0 0.25 0.5 Miles

Scale

Sources: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, October 2020

Prepared by: CDM Smith, October 2020

Legend

LAX Property Boundary

Project Incremental 24-Hour PM_{10} Concentrations

Peak Concentration Area ≥ 2.5 μg/m³

Peak Concentration Area ≥ 6.0 μg/m³

Interstate Highway

California State Highway

Note:

1. Areas above the 2.5 μg/m³ significance thresholds are within the yellow contours.

LAX Airfield and Terminal Modernization Project

Locations of 2028 With Project Incremental 24-Hour Concentrations Above SCAQMD CEQA Significance Threshold

Figure 4.1.1-2

Sources: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, October 2020
Prepared by: CDM Smith, October 2020

Legend

LAX Property Boundary

Project Incremental Annual PM_{10} Concentrations

Peak Concentration Area ≥ 1.0 μg/m³

Peak Concentration Area ≥ 3.5 μg/m³

Interstate Highway

California State Highway

Note:
1. Areas above the 1.0 μg/m³ significance thresholds are within the yellow contours.

LAX Airfield and Terminal Modernization Project

Locations of 2028 With Project Incremental Annual Concentrations Above SCAQMD CEQA Significance Threshold

Figure 4.1.1-3

Table 4.1.1-15
Operational Concentrations – 2028 Without Project Compared to 2018 Baseline Conditions

Pollutant	Averaging Period[a]	Incremental Peak (µg/m³)[b]	Background (µg/m³)	Total (µg/m³)	Threshold	Exceeds Threshold?[c]
CO	1-hr CAAQS	1,277	2,406	3,683	23,000	No
	8-hr NAAQS	379	1,833	2,212	10,000	No
NO_2	1-hr CAAQS	403	Included[d]	403	339	**Yes**
	Annual CAAQS	15	19	34	57	No
SO_2	1-hr CAAQS	64	31	95	655	No
	1-hr NAAQS	26	18	44	196	No
	24-hr CAAQS	10	10	20	105	No
PM_{10}	24-hr	5.4	--[e]	5.4	2.5	**Yes**
	Annual	3.8	--[e]	3.8	1.0	**Yes**
$PM_{2.5}$	24-hr	1.4	--[e]	1.4	2.5	No

Source: See **Appendix C** of this EIR.

Notes:

[a] NAAQS and CAAQS often have the same averaging period, but usually have different standard values and may have different methods of determining compliance with each standard.

[b] The incremental peak concentration was determined by calculating the differences between the 2028 Without Project and 2018 baseline conditions at each receptor, then selecting the maximum value across all receptors.

[c] The 2028 With Project scenario was compared to 2018 baseline conditions for informational purposes; however, the level of significance of Project-related emissions was not determined using this comparison

[d] Background NO_2 concentrations were included in the AERMOD input file; thus, AERMOD directly calculated the total of Project plus background.

[e] PM_{10} and $PM_{2.5}$ are not added to background concentrations.

Key:
µg/m³ = micrograms per cubic meter; CAAQS = California Ambient Air Quality Standard; CO = carbon monoxide; hr = hour; NAAQS = National Ambient Air Quality Standard; NO_2 = nitrogen dioxide; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_2 = sulfur dioxide.

Table 4.1.1-16
Operational Concentration Comparison – 2028 With Project Compared to 2028 Without Project

Pollutant	Averaging Period[a]	2028 With Project Total (µg/m³)	2028 Without Project Total (µg/m³)	Change Relative to 2028 Without Project (µg/m³)[b]	Change Relative to 2028 Without Project (%)[b]
CO	1-hr CAAQS	3,654	3,683	(29)	(0.8%)
	8-hr NAAQS	2,169	2,212	(43)	(2.0%)
NO_2	1-hr CAAQS	336	403	(67)	(19.9%)
	Annual CAAQS	33	34	(1)	(3.0%)
SO_2	1-hr CAAQS	78	95	(17)	(21.8%)
	1-hr NAAQS	48	44	4	8.3%
	24-hr CAAQS	18	20	(2)	(11.1%)
PM_{10}	24-hr	6.2	5.4	0.8	12.9%
	Annual	3.7	3.8	(0.1)	(2.7%)
$PM_{2.5}$	24-hr	1.7	1.4	0.3	17.6%

Table 4.1.1-16
Operational Concentration Comparison – 2028 With Project Compared to 2028 Without Project

Pollutant	Averaging Period[a]	2028 With Project Total ($\mu g/m^3$)	2028 Without Project Total ($\mu g/m^3$)	Change Relative to 2028 Without Project ($\mu g/m^3$)[b]	Change Relative to 2028 Without Project (%)[b]

Source: See **Appendix C** of this EIR.

Notes:

[a] NAAQS and CAAQS often have the same averaging period, but usually have different standard values and may have different methods of determining compliance with each standard.

[b] As previously discussed, the 2028 With Project scenario was compared to the 2028 Without Project scenario for informational purposes; however, the level of significance of Project-related emissions was not determined using this comparison.

Key:
$\mu g/m^3$ = micrograms per cubic meter; CAAQS = California Ambient Air Quality Standard; CO = carbon monoxide; hr = hour; NAAQS = National Ambient Air Quality Standard; NO_2 = nitrogen dioxide; PM_{10} = respirable particulate matter; $PM_{2.5}$ = fine particulate matter; SO_2 = sulfur dioxide.

The effect of the conditions under 2028 With Project relative to conditions under 2028 Without Project generally includes improvements in airfield operations due to shorter distances between the new Concourse 0 and Terminal 9 to the primary departure runways. However, the anticipated additional employees assumed under the 2028 With Project scenario would increase the landside traffic trips associated with these employees. Additionally, the redesigned roadway system under the proposed Project, and the unavailability of the Concourse 0 site for surface parking (which the site would be used for under the 2028 Without Project Scenario), would result in increased peak traffic volumes on the 96th Street/Airport Boulevard intersection. This, in turn, would increase PM_{10} and $PM_{2.5}$ impacts which are dominated by road dust generated by traffic roadway travel in the area near the ITF West site. The overall impact to the gaseous pollutants (CO, NO_2, and SO_2) would be positive with peak concentrations being generally lower under the 2028 With Project scenario.

4.1.1.5.4.2 Mitigation Measures

As noted above, the proposed Project's operational concentrations of PM_{10} would result in a ***significant impact*** related to air quality. Mitigation proposed to reduce significant impacts related to air pollutant operational emissions were summarized above in Section 4.1.1.5.2.2. The mitigation measures that would reduce operational PM_{10} emissions would also serve to reduce operational PM_{10} concentrations.

Other Measures Considered

Section 4.1.1.2.7 above identifies the existing policies and Project features that have been incorporated into the unmitigated With Project operations emission calculations. To determine if additional measures were applicable, LAWA compiled and reviewed a broad array of potential measures from various sources such as the FAA, ACRP, CARB, and SCAQMD. The review indicated that many of those potential measures are already being implemented at LAX under existing LAWA programs and requirements and/or would be incorporated into the proposed Project as Project features. Of the remaining measures, some were considered feasible to add as mitigation measures for the proposed Project, while others were determined to be not applicable or feasible to include as mitigation measures for the Project. **Appendix C.9** presents an overview of potential measures for the reduction of air pollutant emissions. The table indicates whether such measures are already being implemented at LAX, are proposed to be included in the Project as a design/operational feature or as a mitigation measure, or are considered to be not applicable to, or infeasible for, LAX and the proposed Project. No additional feasible mitigation has been identified that would provide reduction of PM_{10} emissions and concentrations from operations.

Quantification of Air Pollutant Emissions Reductions Associated with Mitigation

While all the mitigation measures presented above would serve to reduce operations-related air pollutant emissions associated with the proposed Project, only MM-T (ATMP)-1 provides a reasonable basis to estimate the amount of emission reduction accomplished by the mitigation. The other mitigation measures are more general in nature or are dependent on specific design characteristics that would be defined during more detailed levels of planning.

MM-T (ATMP)-1 requires a reduction in daily employee VMT by the equivalent of 16,450 VMT. Based on motor vehicle emission factors applicable in 2028, this would result in a reduction of approximately 5.5 pounds per day for PM_{10} (about one percent of the proposed Project incremental PM_{10} traffic emissions). Comparing the reduction results with the incremental project emissions indicates that the mitigation would reduce operational emissions, but not below the level of significance for PM_{10} concentrations.

4.1.1.5.4.3 Significance of Impact After Mitigation

With implementation of Mitigation Measures MM-AQ/GHG (ATMP)-3 through 7 and MM-T (ATMP)-1, significant impacts associated with air pollutant concentrations from operational emissions would be reduced, but not to a level that would be less than significant. Specifically, even with implementation of all feasible operations-related mitigation measures, the Project-related estimated incremental increases in operations-related concentrations of PM_{10} would exceed the significance thresholds established by SCAQMD. No other feasible mitigation measures have been identified at this time that would further reduce impacts to local operational air quality (i.e., concentrations). Therefore, impacts to air quality from Project-related operational concentrations would be ***significant and unavoidable***.

4.1.1.6 Cumulative Impacts

Cumulative impacts associated with the proposed Project, in conjunction with other development projects, are addressed below.

4.1.1.6.1 Cumulative Construction Impacts

Construction air quality impacts tend to be primarily local in nature (e.g., impacts such as fugitive dust and construction equipment emissions are mostly realized in the immediate area around a construction site), although construction-related air pollutant emissions also contribute incrementally to degradation of regional ambient air quality. Cumulative projects with the most notable potential to contribute to cumulative construction air quality impacts are those that would add to the construction-related impacts associated with the proposed Project, and that would be under construction at the same time and in the same general vicinity as the proposed Project. As such, the geographic study area for evaluation of cumulative construction air quality impacts is focused primarily on projects at LAX and the immediate surroundings. A list of other development projects at and immediately adjacent to LAX whose construction could overlap with construction of the proposed Project is provided in Table 3-1 of Chapter 3, *Overview of Project Setting.* Estimated emissions from construction of these cumulative projects are summarized in **Table 4.1.1-17**. Due to the uncertainty of the multiple project schedules, the SCAQMD construction thresholds in tons per quarter were used.

Table 4.1.1-17
Cumulative Construction Projects Peak Quarter Emissions Estimates (tons/quarter)

No.[e]	Project		CO	VOC	NO_X	SO_X	PM_{10}	$PM_{2.5}$
	Airfield and Terminal Modernization Project (Proposed Project)[a]	Direct Emissions	15.4	1.7	5.1	<0.1	0.8	0.3
		Total Direct and Indirect Emissions	197.7	17.3	36.2	7.8	1.5	0.9
1	LAX Northside Development		6.8	4.4	1.9	<0.1	1.0	0.3
2	Terminals 2 and 3 Modernization Project		5.8	2.2	3.4	<0.1	1.0	0.4
3	LAX Landside Access Modernization Program		4.7	0.3	5.0	<0.1	1.2	0.3
4	Terminal 4 Modernization Project		1.3	2.1	2.0	<0.1	1.2	0.3
5	LAX Airfield Bus Yard Facility		--- [b]	--- [b]	--- [b]	--- [b]	--- [b]	--- [b]
6	Runway 7R-25L Rehabilitation		--- [b]	--- [b]	--- [b]	--- [b]	--- [b]	--- [b]
7	Midfield Satellite Concourse (MSC) South Project		3.5	0.4	1.3	<0.1	1.0	0.2
8	Airport Metro Connector 96th Street Transit Station		2.2	2.7	2.4	<0.1	0.5	0.3
9	Terminal 6 Renovation		18.2	0.5	2.6	<0.1	0.3	0.1
10	Various Water Pipeline Projects		--- [c]	--- [c]	--- [c]	--- [c]	--- [c]	--- [c]
NA	Miscellaneous Projects and Improvements		23.9	6.4	32.3	<1	4.2	1.7
Total from Other Construction Project Emissions			66.5	19.1	50.9	<1	10.4	3.6
Total Cumulative Construction Project Emissions			**264.2**	**36.4**	**87.1**	**8.8**[d]	**11.9**	**4.5**
SCAQMD Construction Emission Significance Thresholds			24.75	2.5	2.5	6.75	6.75	2.5
Emissions Exceed SCAQMD Project-Level Threshold?			Yes	Yes	Yes	Yes	Yes	Yes

Sources: City of Los Angeles, Los Angeles World Airports, *Final Environmental Assessment Los Angeles International Airport (LAX) Receiving Station "X"*, Section 4.1 – Air Quality, June 2019; City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Northside Plan Update*, (SCH 2012041003), Section 4.2 – Air Quality, December 2014; City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Terminals 2 and 3 Modernization Project*, (SCH 2016081034), Section 4.1.1 – Air Quality, June 2017; City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Landside Access Modernization Program*, (SCH 2015021014), Section 4.2.1 – Air Quality, February 2017; City of Los Angeles, Los Angeles World Airports, *Final Negative Declaration for the Los Angeles International Airport Terminal 4 Modernization Project*, Section 4.3 – Air Quality, July 2020; City of Los Angeles, Los Angeles World Airports, *Final Environmental Impact Report for Los Angeles International Airport (LAX) Midfield Satellite Concourse*, (SCH 2013021020), Section 4.1 – Air Quality, June 2014; Los Angeles County Metropolitan Transportation Authority, *Airport Metro Connector 96th Street Transit Station Final Environmental Impact Report*, (SCH 2015021009), Section 3.1 – Air Quality, November 2016; and City of Los Angeles, Los Angeles World Airports, *Draft Initial Study / Negative Declaration - Los Angeles International Airport (LAX) Terminal 6 Renovation Project*, Section III – Air Quality, January 2020.

Notes:

a Project construction is estimated to occur from 2021 to 2028. Peak quarter emissions are presented in this table, which include direct construction emissions from on-site construction equipment and regional vehicle travel for material deliveries and worker trips, as well as indirect emission from aircraft during temporary runway closures to safely complete connections from the new taxiways to the north runways. Note that without the temporary runway closures, the SO_X emissions would be less than 0.1 ton in the peak quarter, and less than the significance thresholds for the total cumulative emissions.

b Based on the anticipated construction schedule, this project is not anticipated to result in overlapping construction emissions with the proposed Project during the estimated combined peak day, anticipated to occur in 2023.

c Various Water Pipeline Projects are accounted for in Miscellaneous Projects and Improvements.

d Note that without the temporary runway closures, the SO_X emissions would be less than 0.1 ton in the peak quarter, and less than the significance thresholds for the total cumulative emissions.

e Numbers correspond to Table 3-1 and Figure 3-1 in Chapter 3, *Overview of Project Setting*.

As shown in Table 4.1.1-17, cumulative construction emissions of CO, VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ would exceed SCAQMD's quarterly construction emission significance thresholds. Therefore, cumulative construction emissions of these pollutants would be cumulatively significant.

SCAQMD has provided guidance on an acceptable approach to addressing the cumulative impacts issue for air quality.[96] This guidance states as follows: "As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR … Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. … Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

Construction of the proposed Project would exceed the Project-specific construction emission thresholds for CO, VOC, NO_X, and SO_X, as shown in Table 4.1.1-8. As a result, based on the SCAQMD cumulative impact guidance discussed above, the contribution of the proposed Project to cumulative construction-related air pollutant emissions impacts would be ***cumulatively considerable*** for CO, VOC, NO_X, and SO_X. Although construction emissions impacts associated with other projects at LAX would be reduced through the same types of measures to be implemented for the proposed Project, mainly the requirements to utilize heavy trucks that are model year 2010 or newer and to utilize off-road equipment with Tier 4F engines, the cumulative impact would remain significant, especially relative to the amount of emissions associated with the proposed Project's temporary runway closures. The cumulative construction impact would be ***significant and unavoidable.***

4.1.1.6.2 Cumulative Operational Impacts

Operations of the proposed Project would exceed the Project-specific operations emission thresholds for NO_X, SO_X, PM_{10}, and $PM_{2.5}$, as shown in Table 4.1.1-10, and would exceed the Project-specific operational concentration thresholds for PM_{10}, as shown in Table 4.1.1-14. As a result, based on the SCAQMD cumulative impact guidance discussed above, the contribution of the proposed Project to cumulative operations-related air quality impacts would be ***cumulatively considerable*** for NO_X, SO_X, PM_{10}, and $PM_{2.5}$. The mitigation measures identified for the proposed Project would also apply to the cumulative operational impacts, and the cumulative impact would remain significant. The cumulative operational impact would be ***significant and unavoidable.***

4.1.1.7 Summary of Impact Determinations

Table 4.1.1-18 summarizes the impact determinations of the proposed Project related to air quality, as described above in the detailed discussion in Sections 4.1.1.5 and 4.1.1.6. Impact determinations are based on the significance criteria presented in Section 4.1.1.4, and the information and data sources cited throughout Section 4.1.1.

96 South Coast Air Quality Management District, *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution, Appendix D – Cumulative Impact Analysis Requirements Pursuant to CEQA*, August 2003, page D-3.

Table 4.1.1-18
Summary of Impacts and Mitigation Measures Associated with the Proposed Project Related to Air Quality

Environmental Impacts	Impact Determination	Mitigation Measures	Level of Significance After Mitigation
Impact 4.1.1-1: Construction of the proposed Project would result in estimated incremental increases in construction-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. This would be a ***significant and unavoidable impact*** for construction***.***	Construction: Significant (NO_X) Significant (CO, VOC, SO_X; short-term – approx. 4.5 months)[1] Operations: Not Applicable	Construction: MM-AQ/GHG (ATMP)-1. Rock Crushing Operations. MM-AQ/GHG (ATMP)-2. Use of Renewable Diesel Fuel. MM-C (ATMP)-1. Construction Mitigation Oversight. Operations: Not Applicable	Construction: Significant and Unavoidable (NO_X) Significant and Unavoidable (CO, VOC, SO_X; short-term – approx. 4.5 months) [1] Operations: Not Applicable
Impact 4.1.1-2: Operation of the proposed Project would result in estimated incremental increases in operations-related emissions that are greater than the daily mass emission thresholds established by SCAQMD. This would be a ***significant and unavoidable impact*** for operations***.***	Construction: Not Applicable Operations: Significant (NO_X, SO_X, PM_{10}, $PM_{2.5}$)	Construction: Not Applicable Operations: MM-AQ/GHG (ATMP)-3. Parking Cool Roof. MM-AQ/GHG (ATMP)-4. EV Charging Infrastructure. MM-AQ/GHG (ATMP)-5. Electric Vehicle Purchasing. MM-AQ/GHG (ATMP)-6. Solar Energy Technology. MM-T (ATMP)-1. Vehicle Miles Traveled (VMT) Reduction Program.	Construction: Not Applicable Operations: Significant and Unavoidable (NO_X, SO_X, PM_{10}, $PM_{2.5}$)
Impact 4.1.1-3: Construction of the proposed Project would result in estimated incremental ambient concentrations due to construction-related emissions that would be less than the concentration thresholds established by SCAQMD. This would be a ***less than significant impact*** for construction***.***	Construction: Less than Significant Operations: Not Applicable	No mitigation is required	Construction: Less than Significant Operations: Not Applicable

Table 4.1.1-18
Summary of Impacts and Mitigation Measures Associated with the Proposed Project Related to Air Quality

Environmental Impacts	Impact Determination	Mitigation Measures	Level of Significance After Mitigation
Impact 4.1.1-4: Operation of the proposed Project would result in estimated incremental ambient concentrations due to operations-related emissions that would be greater than the concentration thresholds established by SCAQMD. This would be a ***significant and unavoidable impact*** for operations.	Construction: Not Applicable Operations: Significant (PM_{10})	Construction: Not Applicable Operations: MM-AQ/GHG (ATMP)-3. Parking Cool Roof. MM-AQ/GHG (ATMP)-4. EV Charging Infrastructure. MM-AQ/GHG (ATMP)-5. Electric Vehicle Purchasing. MM-AQ/GHG (ATMP)-6. Solar Energy Technology. MM-T (ATMP)-1. Vehicle Miles Traveled (VMT) Reduction Program.	Construction: Not Applicable Operations: Significant and Unavoidable (PM_{10})

Note:
[1] Short-term impacts would result from temporary runway closures during construction.