3.2 Air Quality

This section describes and evaluates the pollutant emission and related air quality impacts that could result from implementation of the Proposed Project. The section contains: (1) a description of the existing land uses as they pertain to air emissions, as well as a description of the Adjusted Baseline Environmental Setting; (2) a summary of the federal, State, and local regulations related to air quality, including those set forth within the South Coast Air Quality Management District's (SCAQMD) Air Quality Management Plan (AQMP), and applicable C3.2-6ity of Inglewood (City) plans; and (3) an analysis of the potential impacts related to air quality associated with the implementation of the Proposed Project, as well as identification of potentially feasible measures that could mitigate significant impacts.

Comments received in response to the NOP for the EIR regarding air quality can be found in Appendix B. Any applicable issues and concerns regarding potential impacts related to air quality as a result of implementation of the Proposed Project are analyzed within this section.

The analysis included in this section was developed based on Project-specific construction and operational characteristics of the Proposed Project described in Chapter 2, Project Description, Project-specific information included in the AB 987 application,[1] and information provided by the project applicant.

3.2.1 Environmental Setting

The Project Site is located within the South Coast Air Basin (Air Basin). The Air Basin covers approximately 6,745 square miles and is bounded by the Pacific Ocean to the west and south and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east (see **Figure 3.2-1)**. The air basin includes all of Orange County; the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties; and the San Gorgonio Pass area in Riverside County.

The Air Basin has some of the worst air pollution in the country. The air pollution problems are a consequence of the combination of emissions from the nation's second largest urban area, meteorological conditions unfavorable to the dispersion of those emissions, and mountainous terrain surrounding the Air Basin that traps pollutants as they are pushed inland with the sea breeze. Southern California also has abundant sunshine, which drives the photochemical reactions that form pollutants such as ozone (O_3) and a significant portion of particulate matter with an aerodynamic diameter less than or equal to 2.5 (PM2.5).[2]

Pollutants and Related Health Effects

Criteria Air Pollutants

Elevated concentrations of certain air pollutants in the atmosphere have been recognized to cause notable health problems and consequential damage to the environment either directly or in

1 AECOM, AB 987 Application for the Inglewood Basketball and Event Center, November 2018.
2 South Coast Air Quality Management District, 2016 Air Quality Management Plan.

reaction with other pollutants. In the US, such pollutants have been identified and are regulated as part of the overall endeavor to prevent further deterioration and facilitate improvement in air quality. The following pollutants are regulated by the United States Environmental Protection Agency (US EPA) and are subject to emissions control requirements adopted by federal, State and local regulatory agencies. These pollutants are referred to as "criteria air pollutants" as a result of the specific standards, or criteria, which have been adopted for them. The National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) for each of the monitored pollutants and their effects on health are discussed below.

Ozone (O_3): Ozone is a secondary pollutant formed by the chemical reaction of volatile organic compounds (VOCs) and nitrogen oxides (NO_X) in the presence of sunlight under certain meteorological conditions, such as high temperature and stagnation episodes. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable.

According to the US EPA, ozone can cause the muscles in the airways to constrict potentially leading to wheezing and shortness of breath.[3] Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease.[4]

Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children.[5] According to the California Air Resources Board (CARB), inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath.[6]

The US EPA states that people most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers.[7] Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which

[3] US Environmental Protection Agency, Health Effects of Ozone Pollution, [HYPERLINK "https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution"], last updated October 10, 2018. Accessed January 2019.
[4] US Environmental Protection Agency, Health Effects of Ozone Pollution.
[5] US Environmental Protection Agency, Health Effects of Ozone Pollution.
[6] California Air Resources Board, Ozone & Health, Health Effects of Ozone, [HYPERLINK "https://ww2.arb.ca.gov/resources/ozone-and-health"]. Accessed January 8, 2018.
[7] US Environmental Protection Agency, Health Effects of Ozone Pollution.

increases their exposure.[8] According to CARB, studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults.[9] Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures.[10] Further research may be able to better distinguish between health effects in children and adults.[11]

A recent study indicated approximately 11.2 percent of the population in Inglewood was diagnosed with asthma and 4.7 percent with heart disease for the year of 2014, which were lower than the average levels of the Los Angeles County (12.6 percent and 5.2 percent, respectively).[12]

Volatile Organic Compounds (VOCs): VOCs are organic chemical compounds of carbon and are not "criteria" air pollutants themselves; however, in combination with NOx they form ozone, and are regulated to prevent the formation of ozone.[13] According to CARB, some VOCs are highly reactive and play a critical role in the formation of ozone, other VOCs have adverse health effects as discussed below under TACs, and in some cases, VOCs can be both highly reactive and have adverse health effects.[14] VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids, internal combustion associated with motor vehicle usage, and consumer products (e.g., architectural coatings, etc.).[15]

Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NO_X): NO_X is a term that refers to a group of compounds containing nitrogen and oxygen. As mentioned above, NOx combine with VOCs to form ozone. The health effects associated with the formation of ozone will be discussed below under TACs. The primary compounds of air quality concern include NO_2 and nitric oxide (NO). Ambient air quality standards have been promulgated for NO_2, which is a reddish-brown, reactive gas.[16]

The principal form of NO_X produced by combustion is NO, but NO reacts quickly in the atmosphere to form NO_2, creating the mixture of NO and NO_2 referred to as NO_X. Major sources of NO_X include emissions from cars, trucks and buses, power plants, and off-road equipment. The terms NO_X and NO_2 are sometimes used interchangeably. However, the term NO_X is typically

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8 US Environmental Protection Agency, Health Effects of Ozone Pollution.
9 California Air Resources Board, Ozone & Health, Health Effects of Ozone.
10 California Air Resources Board, Ozone & Health, Health Effects of Ozone.
11 California Air Resources Board, Ozone & Health, Health Effects of Ozone.
12 Southern California Association of Governments, Profile of the City of Inglewood, May 2017. Available: [HYPERLINK "https://www.scag.ca.gov/Documents/Inglewood.pdf"], accessed March 2019.
13 US Environmental Protection Agency, Technical Overview of Volatile Organic Compounds, [HYPERLINK "https://www.epa.gov/indoor-air-quality-iaq/technical-overview-volatile-organic-compounds"], last updated April 12, 2017. Accessed January 2019.
14 California Air Resources Board, Toxic Air Contaminants Monitoring, Volatile Organic Compounds, [HYPERLINK "https://www.arb.ca.gov/aaqm/toxics.htm"], last reviewed June 9, 2016. Accessed January 2018.
15 California Air Resources Board, Toxic Air Contaminants Monitoring, Volatile Organic Compounds.
16 California Air Resources Board, Nitrogen Dioxide & Health, [HYPERLINK "https://ww2.arb.ca.gov/resources/nitrogen-dioxide-and-health"]. Accessed January 2019.

used when discussing emissions, usually from combustion-related activities, and the term NO_2 is typically used when discussing ambient air quality standards. Where NO_X emissions are discussed in the context of the thresholds of significance or impact analyses, the discussions are based on the conservative assumption that all NO_X emissions would oxidize in the atmosphere to form NO_2.

According to the US EPA, short-term exposures to NO_2 can potentially aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms while longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections.[17] According to CARB, controlled human exposure studies that show that NO_2 exposure can intensify responses to allergens in allergic asthmatics.[18]

In addition, a number of epidemiological studies have demonstrated associations between NO_2 exposure and premature death, cardiopulmonary effects, decreased lung function growth in children, respiratory symptoms, emergency room visits for asthma, and intensified allergic responses.[19] Infants and children are particularly at risk from exposure to NO_2 because they have disproportionately higher exposure to NO_2 than adults due to their greater breathing rate for their body weight and their typically greater outdoor exposure duration while in adults, the greatest risk is to people who have chronic respiratory diseases, such as asthma and chronic obstructive pulmonary disease.[20]

CARB states that much of the information on distribution in air, human exposure and dose, and health effects is specifically for NO_2 and there is only limited information for NO and NO_X, as well as large uncertainty in relating health effects to NO or NO_X exposure.[21]

Carbon Monoxide (CO): CO is primarily emitted from combustion processes and motor vehicles due to the incomplete combustion of fuel, such as natural gas, gasoline, or wood, with the majority of outdoor CO emissions from mobile sources.[22]

According to the US EPA, breathing air with a high concentration of CO reduces the amount of oxygen that can be transported in the blood stream to critical organs like the heart and brain and at very high levels, which are possible indoors or in other enclosed environments, CO can cause dizziness, confusion, unconsciousness and death.[23] Very high levels of CO are not likely to occur

[17] US Environmental Protection Agency, Nitrogen Dioxide (NO_2) Pollution.
[18] California Air Resources Board, Nitrogen Dioxide & Health.
[19] California Air Resources Board, Nitrogen Dioxide & Health.
[20] California Air Resources Board, Nitrogen Dioxide & Health.
[21] California Air Resources Board, Nitrogen Dioxide & Health.
[22] California Air Resources Board, Carbon Monoxide & Health, https://ww2.arb.ca.gov/resources/carbon-monoxide-and-health. Accessed January 2019.
[23] US Environmental Protection Agency, Carbon Monoxide (CO) Pollution in Outdoor Air, [HYPERLINK "https://www.epa.gov/co-pollution/basic-information-about-carbon-monoxide-co-outdoor-air-pollution"], last updated September 8, 2016. Accessed January 2019.

outdoors; however, when CO levels are elevated outdoors, they can be of particular concern for people with some types of heart disease since these people already have a reduced ability for getting oxygenated blood to their hearts and are especially vulnerable to the effects of CO when exercising or under increased stress.[24] In these situations, short-term exposure to elevated CO may result in reduced oxygen to the heart accompanied by chest pain also known as angina.[25]

According to CARB, the most common effects of CO exposure are fatigue, headaches, confusion, and dizziness due to inadequate oxygen delivery to the brain.[26] For people with cardiovascular disease, short-term CO exposure can further reduce their body's already compromised ability to respond to the increased oxygen demands of exercise, exertion, or stress; inadequate oxygen delivery to the heart muscle leads to chest pain and decreased exercise tolerance.[27] Unborn babies, infants, elderly people, and people with anemia or with a history of heart or respiratory disease are most likely to experience health effects with exposure to elevated levels of CO.[28]

Sulfur Dioxide (SO_2): According to the US EPA, the largest source of SO_2 emissions in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities while smaller sources of SO2 emission include industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicle and heavy equipment that burn fuel with a high sulfur content.[29] In 2006, California phased-in the ultra-low-sulfur diesel regulation limiting vehicle diesel fuel to a sulfur content not exceeding 15 parts per million, down from the previous requirement of 500 parts per million, substantially reducing emissions of sulfur from diesel combustion.[30]

According to the US EPA, short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult.[31] According to CARB, health effects at levels near the State one-hour standard are those of asthma exacerbation, including bronchoconstriction accompanied by symptoms of respiratory irritation such as wheezing, shortness of breath and chest tightness, especially during exercise or physical activity and exposure at elevated levels of SO_2 (above 1 parts per million (ppm)) results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.[32] Children, the elderly, and those

24 US Environmental Protection Agency, Carbon Monoxide (CO) Pollution in Outdoor Air
25 US Environmental Protection Agency, Carbon Monoxide (CO) Pollution in Outdoor Air
26 California Air Resources Board, Carbon Monoxide & Health.
27 California Air Resources Board, Carbon Monoxide & Health.
28 California Air Resources Board, Carbon Monoxide & Health.
29 US Environmental Protection Agency, Sulfur Dioxide (SO_2) Pollution, [HYPERLINK "https://www.epa.gov/so2-pollution/sulfur-dioxide-basics"], last updated June 28, 2018. Accessed January 2019.
30 California Air Resources Board, Final Regulation Order, Amendments to the California Diesel Fuel Regulations, Amend Section 2281, Title 13, California Code of Regulations, [HYPERLINK "https://www.arb.ca.gov/regact/ulsd2003/fro2.pdf"], approved July 15, 2004. Accessed January 2019.
31 US Environmental Protection Agency, Sulfur Dioxide (SO_2) Pollution.
32 California Air Resources Board, Sulfur Dioxide & Health, [HYPERLINK "https://ww2.arb.ca.gov/resources/sulfur-dioxide-and-health"]. Accessed January 2019.

with asthma, cardiovascular disease, or chronic lung disease (such as bronchitis or emphysema) are most likely to experience the adverse effects of SO_2.[33,34]

Particulate Matter (PM10 and PM2.5): Particulate matter air pollution is a mixture of solid particles and liquid droplets found in the air.[35] Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye while other particles are so small they can only be detected using an electron microscope.[36] Particles are defined by their diameter for air quality regulatory purposes: inhalable particles with diameters that are generally 10 micrometers and smaller (PM10); inhalable particles with diameters that are 2.5 micrometers or less (PM2.5.)[37] Thus, PM2.5 comprises a portion or a subset of PM10.

Sources of PM10 emissions include dust from construction sites, landfills and agriculture, wildfires and brush/waste burning, industrial sources, and wind-blown dust from open lands.[38] Sources of PM2.5 emissions include combustion of gasoline, oil, diesel fuel, or wood.[39] PM10 and PM2.5 may be either directly emitted from sources (primary particles) or formed in the atmosphere through chemical reactions of gases (secondary particles) such as SO_2, NO_X, and certain organic compounds.[40]

According to CARB, both PM10 and PM2.5 can be inhaled, with some depositing throughout the airways; PM10 is more likely to deposit on the surfaces of the larger airways of the upper region of the lung, while PM2.5 is more likely to travel into and deposit on the surface of the deeper parts of the lung, which can induce tissue damage, and lung inflammation.[41] Short-term (up to 24 hours duration) exposure to PM10 has been associated primarily with worsening of respiratory diseases, including asthma and chronic obstructive pulmonary disease, leading to hospitalization and emergency department visits.[42] The effects of long-term (months or years) exposure to PM10 are less clear, although studies suggest a link between long-term PM10 exposure and respiratory mortality. The International Agency for Research on Cancer published a review in 2015 that concluded that particulate matter in outdoor air pollution causes lung cancer.[43]

Short-term exposure to PM2.5 has been associated with premature mortality, increased hospital admissions for heart or lung causes, acute and chronic bronchitis, asthma attacks, emergency

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33 California Air Resources Board, Sulfur Dioxide & Health.
34 US Environmental Protection Agency, Sulfur Dioxide (SO_2) Pollution.
35 US Environmental Protection Agency, Particulate Matter (PM) Pollution, [HYPERLINK "https://www.epa.gov/pm-pollution/particulate-matter-pm-basics"], last updated November 14, 2018. Accessed January 2019.
36 US Environmental Protection Agency, Particulate Matter (PM) Pollution.
37 US Environmental Protection Agency, Particulate Matter (PM) Pollution.
38 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10), [HYPERLINK "https://www.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm"], last reviewed August 10, 2017. Accessed January 2019.
39 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
40 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
41 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
42 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
43 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).

room visits, respiratory symptoms, and restricted activity days. Long-term exposure to PM2.5 has been linked to premature death, particularly in people who have chronic heart or lung diseases, and reduced lung function growth in children.[44] According to CARB, populations most likely to experience adverse health effects with exposure to PM10 and PM2.5 include older adults with chronic heart or lung disease, children, and asthmatics. Children and infants are more susceptible to harm from inhaling pollutants such as PM10 and PM2.5 compared to healthy adults because they inhale more air per pound of body weight than do adults, spend more time outdoors, and have developing immune systems.[45]

Lead (Pb): Major sources of lead emissions include ore and metals processing, piston-engine aircraft operating on leaded aviation fuel, waste incinerators, utilities, and lead-acid battery manufacturers.[46] In the past, leaded gasoline was a major source of lead emissions; however, the removal of lead from gasoline has resulted in a decrease of lead in the air by 98 percent between 1980 and 2014.[47]

Lead can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems and the cardiovascular system, and affects the oxygen carrying capacity of blood.[48] The lead effects most commonly encountered in current populations are neurological effects in children, such as behavioral problems and reduced intelligence, anemia, and liver or kidney damage.[49] Excessive lead exposure in adults can cause reproductive problems in men and women, high blood pressure, kidney disease, digestive problems, nerve disorders, memory and concentration problems, and muscle and joint pain.[50,51]

Air Toxics

Toxic Air Contaminants

Toxic air contaminants (TACs) are defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard.[52] TACs are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects. TACs are emitted by a variety of industrial processes such as petroleum refining, electric utility and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. TACs may exist as PM10 and

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44 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
45 California Air Resources Board, Inhalable Particulate Matter and Health (PM2.5 and PM10).
46 US Environmental Protection Agency, Lead Air Pollution, https://www.epa.gov/lead-air-pollution/basic-information-about-lead-air-pollution, last updated November 29, 2017. Accessed January 2019.
47 US Environmental Protection Agency, Lead Air Pollution.
48 US Environmental Protection Agency, Lead Air Pollution.
49 California Air Resources Board, Lead & Health, [HYPERLINK "https://ww2.arb.ca.gov/resources/lead-and-health"]. Accessed January 2019.
50 California Air Resources Board, Lead & Health.
51 While the SCAQMD CEQA Air Quality Handbook contains numerical indicators of significance for lead, project construction and operation would not include sources of lead emissions and would not exceed the numerical indicators for lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from commercial land use projects such as the Project. As a result, lead emissions are not further evaluated in this Draft EIR.
52 US Environmental Protection Agency, Hazardous Air Pollutants, [HYPERLINK "https://www.epa.gov/haps"], Accessed April 2019.

PM2.5 or as vapors (gases).[53] TACs include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources. The emission of a TAC does not automatically create a health hazard. Other factors, such as the amount of the TAC, its toxicity, how it is released into the air, the weather, and the terrain, all influence whether the emission could be hazardous to human health. Emissions of TACs into the air can be damaging to human health and to the environment. Human exposure to TACs at sufficient concentrations and durations can result in cancer, poisoning, and rapid onset of sickness, such as nausea or difficulty in breathing. Other less measurable effects include immunological, neurological, reproductive, developmental, and respiratory problems. TACs deposited onto soil or into lakes and streams affect ecological systems and eventually human health through consumption of contaminated food. The carcinogenic potential of TACs is a particular public health concern because many scientists currently believe that there is no "safe" level of exposure to carcinogens. Any exposure to a carcinogen poses some risk of contracting cancer.

The public's exposure to TACs is a significant public health issue in California. The Air Toxics "Hotspots" Information and Assessment Act is a State law requiring facilities to report emissions of TACs to air districts.[54] The program is designated to quantify the amounts of potentially hazardous air pollutants released, the location of the release, the concentrations to which the public is exposed, and the resulting health risks. The State Air Toxics Program (Assembly Bill 2588) identified over 200 TACs, including the 188 TACs identified in the Clean Air Act (CAA).[55]

The US EPA has assessed this expansive list and identified 21 TACs as Mobile Source Air Toxics (MSATs).[56] MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline. US EPA also extracted a subset of these 21 MSAT compounds that it now labels as the six priority MSATs: benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. While these six MSATs are considered the priority transportation toxics, US EPA stresses that the lists are subject to change and may be adjusted in future rules.[57]

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53 US Environmental Protection Agency, Hazardous Air Pollutants: Sources and Exposure, [HYPERLINK "https://www.epa.gov/haps/hazardous-air-pollutants-sources-and-exposure"], Accessed April 2019.

54 California Air Resources Board. *General Information About "Hot Spots."* [HYPERLINK "https://www.arb.ca.gov/ab2588/general.htm"]. Accessed April 2019.

55 California Air Resources Board. *AB 25188 Air Toxics "Hot Spots" Program.* [HYPERLINK "https://www.arb.ca.gov/ab2588/ab2588.htm"]. Accessed April 2019.

56 US Environmental Protection Agency. *Air Toxics Risk Assessment Reference Library, Volume 1 Technical Resource Manual.* April 2004. Page 2-1.

57 US Department of Transportation Federal Highway Administration. *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.* [HYPERLINK "https://www.fhwa.dot.gov/environMent/air_quality/air_toxics/policy_and_guidance/msat/"] Accessed April 2019.

Diesel Particulate Matter (DPM)

According to the California Almanac of Emissions and Air Quality, the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from the exhaust of diesel-fueled engines, i.e., diesel particulate matter (DPM).[58] DPM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances.

Diesel exhaust is composed of two phases, gas and particle, and both phases contribute to the health risk. The gas phase is composed of many of the urban hazardous air pollutants, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde and polycyclic aromatic hydrocarbons. The particle phase is also composed of many different types of particles by size or composition. Fine and ultra-fine diesel particulates are of the greatest health concern, and may be composed of elemental carbon with adsorbed compounds such as organic compounds, sulfate, nitrate, metals and other trace elements. Diesel exhaust is emitted from a broad range of diesel engines; the on-road diesel engines of trucks, buses and cars and the off-road diesel engines that include locomotives, marine vessels and heavy duty equipment. Although DPM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

The most common exposure to DPM is breathing air that contains diesel exhaust. The fine and ultra-fine particles are respirable (similar to PM2.5), which means that they can avoid many of the human respiratory system defense mechanisms and enter deeply into the lung. Exposure to DPM comes from both on-road and off-road engine exhaust that is either directly emitted from the engines or lingering in the atmosphere.

Diesel exhaust causes health effects from both short-term or acute exposures, and long-term chronic exposures. The type and severity of health effects depends upon several factors including the amount of chemical exposure and the duration of exposure. Individuals also react differently to different levels of exposure. There is limited information on exposure to just DPM but there is enough evidence to indicate that inhalation exposure to diesel exhaust causes acute and chronic health effects as well as having cancer-causing potential.

Because it is part of PM2.5, DPM also contributes to the same non-cancer health effects as PM2.5 exposure. These effects include premature death, hospitalizations and emergency department visits for exacerbated chronic heart and lung disease, including asthma, increased respiratory symptoms, and decreased lung function in children. Several studies suggest that exposure to DPM may also facilitate development of new allergies. Those most vulnerable to non-cancer health

[58] California Air Resources Board. *The California Almanac of Emissions and Air Quality.* [HYPERLINK "https://www.arb.ca.gov/aqd/almanac/almanac.htm"]. Accessed April 2019.

effects are children whose lungs are still developing and the elderly who often have chronic health problems.[59].

Existing Conditions

Regional Air Quality

The Air Basin's meteorological conditions, in combination with regional topography, are conducive to the formation and retention of ozone. Pollutant concentrations in the Air Basin vary with location, season, and time of day. Concentrations of ozone, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the Air Basin and adjacent desert.[60] The worst air pollution conditions throughout the Air Basin typically occur from June through September.

Attainment Status

California Health and Safety Code section 39607(e) requires CARB to establish and periodically review area designation criteria. **Table 3.2-1** provides a summary of the attainment status of the Los Angeles County portion of the Air Basin with respect to the federal and State standards. As shown in Table 3.2-1, the Air Basin is designated under federal or State ambient air quality standards as nonattainment for ozone, PM10, and fine particulate matter PM2.5. It is noteworthy to mention that air quality in the Air Basin has improved substantially over the years, primarily due to the impacts of air quality control programs at the federal, State and local levels. The ozone and PM levels have fallen significantly compared to the worst years and are expected to continue to trend downward in the future despite increases in the economy and population in the Air Basin.[61]

TABLE 3.2-1
SOUTH COAST AIR BASIN ATTAINMENT STATUS (LOS ANGELES COUNTY)

Pollutant	Federal Standards	California Standards
O_3 (1-hour standard)	N/A[a]	Non-attainment – Extreme
O_3 (8-hour standard)	Non-attainment – Extreme	Non-attainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM10	Attainment	Non-attainment
PM2.5	Non-attainment	Non-attainment
Lead	Non-attainment (Partial, Los Angeles County)[b]	Attainment
Visibility Reducing Particles	N/A	Unclassified
Sulfates	N/A	Attainment

59 California Air Resources Board. *Overview: Diesel Exhaust & Health.* [HYPERLINK "https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health"]. Accessed April 2019.
60 South Coast Air Quality Management District, 2016 Air Quality Management Plan (2017). Available: [HYPERLINK "https://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/2016-air-quality-management-plan/final-2016-aqmp/final2016aqmp.pdf?sfvrsn=15"]. Accessed January 2019.
61 South Coast Air Quality Management District, 2017. Final 2016 Air Quality Management Plan, page 1-6.

Pollutant	Federal Standards	California Standards
Hydrogen Sulfide	N/A	Unclassified
Vinyl Chloride	N/A	N/A [c]

NOTES:
N/A = not applicable
a The NAAQS for 1-hour ozone was revoked on June 15, 2005, for all areas except Early Action Compact areas.
b Partial Nonattainment designation – Los Angeles County portion of the Air Basin only for near-source monitors.
c In 1990 the California Air Resources Board identified vinyl chloride as a toxic air contaminant and determined that it does not have an identifiable threshold. Therefore, the California Air Resources Board does not monitor or make status designations for thi s pollutant.
SOURCE: US EPA, The Green Book Non-Attainment Areas for Criteria Air Pollutants, [HYPERLINK "https://www.epa.gov/green-book"]; CARB, Area Designations Maps/State and National, http://www.arb.ca.gov/desig/adm/adm.htm. Accessed April 2019.

With respect to the State-identified criteria air pollutants (sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride) present in Table 3.2-1, the Proposed Project would either not use these pollutants in the day to day operations and therefore would not have emissions of those pollutants (hydrogen sulfide, vinyl chloride, and lead), or such emissions would be accounted for as part of the pollutants estimated in this analysis (visibility reducing particles are associated with particulate matter emissions, and sulfates are associated with SO_2). In addition, CARB determined there is not sufficient scientific evidence available to support the identification of a threshold exposure level for vinyl chloride and, therefore, CARB does not monitor or make status designations for this pollutant.[62]

Types of Sources

As detailed in the AQMP, the major sources of air pollution in the Air Basin are divided into four major source classifications: point and area stationary sources, and on-road and off-road mobile sources. Point and area sources are the two major subcategories of stationary sources.[63] Point sources are permitted facilities that contain one or more emission sources at an identified location (e.g., power plants, refineries, emergency generator exhaust stacks). Area sources consist of many small emission sources (e.g., residential water heaters, architectural coatings, consumer products, restaurant charbroilers and permitted sources such as large boilers) which are distributed across the region. Mobile sources consist of two main subcategories: On-road sources (such as cars and trucks) and off-road sources (such as heavy construction equipment).

Local Area Conditions

Existing Ambient Air Quality in the Surrounding Area

In order to measure and establish ambient pollutant concentrations, the SCAQMD maintains a network of air quality monitoring stations located throughout the Air Basin. The monitoring station most representative of the Project Site is the LAX-Hastings Monitoring Station, located at 7201 West Westchester Parkway, Los Angeles (LAX-Hastings). Since PM2.5 data are not available at the LAX-Hastings station, the monitoring data collected at the station located at 3648 N Long Beach Blvd Long Beach (Long Beach North) are used for it being relatively close to and

62 California Air Toxics Board, Toxic Air Contaminant Board, Toxic Air Contaminant Identification List, Accessed March 2019.
63 South Coast Air Quality Management District, 2016 Air Quality Management Plan, page 3-32.

having similar surroundings as the Proposed Project. The most recent data available from the SCAQMD for these two monitoring stations are from years 2015 to 2017.[64] The pollutant concentration data for ozone, NO_2, CO, SO_2, PM10, and PM2.5 for these years are summarized in **Table 3.2-2**. As shown in Table 3.2-2, the CAAQS and NAAQS were exceeded in the vicinity of the Project Site for O_3, PM10, and PM2.5 between 2015 and 2017.

TABLE 3.2-2
AMBIENT AIR QUALITY IN THE PROJECT VICINITY

Pollutant/Standard [a]	2015	2016	2017
Ozone, O_3 (1-hour)			
Maximum Concentration (ppm)	0.096	0.087	0.086
Days > CAAQS (0.09 ppm)	1	0	0
Ozone, O_3 (8-hour)			
Maximum Concentration (ppm)	0.077	0.080	0.070
Days > CAAQS (0.070 ppm)	3	3	0
Days > NAAQS (0.070 ppm)	3	2	0
Nitrogen Dioxide, NO_2 (1-hour)			
Maximum Concentration (ppm)	0.087	0.082	0.072
Days > CAAQS (0.18 ppm)	0	0	0
98^{th} Percentile Concentration (ppm)	0.058	0.055	0.055
Days > NAAQS (0.100 ppm)	0	0	0
Nitrogen Dioxide, NO_2 (Annual)			
Annual Arithmetic Mean (0.030 ppm)	0.011	0.010	0.009
Carbon Monoxide, CO (1-hour)			
Maximum Concentration (ppm)	1.7	1.6	2.1
Days > CAAQS (20 ppm)	0	0	0
Days > NAAQS (35 ppm)	0	0	0
Carbon Monoxide, CO (8-hour)			
Maximum Concentration (ppm)	1.4	1.3	1.6
Days > CAAQS (9.0 ppm)	0	0	0
Days > NAAQS (9 ppm)	0	0	0
Sulfur Dioxide, SO_2 (1-hour)			
Maximum Concentration (ppm)	0.015	0.010	0.010
Days > CAAQS (0.25 ppm)	0	0	0
99^{th} Percentile Concentration (ppm)	0.007	0.006	0.007
Days > NAAQS (0.075 ppm)	0	0	0
Sulfur Dioxide, SO_2 (24-hour)			
Maximum Concentration (ppm)	0.002	0.002	0.001
Days > CAAQS (0.04 ppm)	0	0	0
Respirable Particulate Matter, PM10 (24-hour)			
Maximum Concentration ($\mu g/m^3$)	42.0	43.0	46
Samples > CAAQS (50 $\mu g/m^3$)	0	0	0
Samples > NAAQS (150 $\mu g/m^3$)	0	0	0
Respirable Particulate Matter, PM10 (Annual)			
Annual Arithmetic Mean (20 $\mu g/m^3$) [c]	21.2	21.6	19.8

64 South Coast Air Quality Management District, Historical Data by Year, (2014-2016). Available: http://www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year. Accessed January 2019.

TABLE 3.2-2
AMBIENT AIR QUALITY IN THE PROJECT VICINITY

Pollutant/Standard [a]	2015	2016	2017
Fine Particulate Matter, PM2.5 (24-hour)[c]			
Maximum Concentration (µg/m^3)	54.6	29.7	55.3
98th Percentile Concentration (µg/m^3)	32.1	23.6	32
Samples > NAAQS (35 µg/m^3)	3	0	4
Fine Particulate Matter, PM2.5 (Annual)[d]			
Annual Arithmetic Mean (12 µg/m^3) [d]	10.8	10.4	10.9

NOTE:

a ppm = parts per million; µg/m^3 = micrograms per cubic meter
b State annual average (AAM) PM10 standard is > 20 µg/m^3. Federal annual PM10 standard (AAM > 50 µg/m3) was revoked in 2006.
c The monitoring station most representative of the Project Site is the LAX-Hastings Monitoring Station, that was used to establish ambient NO_2, CO, SO_2, and PM10 levels. Since PM2.5 data are not available at the LAX-Hastings station, the monitoring data collected at the station Long Beach North monitoring station are used. The most recent data available from the SCAQMD for these two monitoring stations are from years 2015 to 2017.
d Both Federal and State standards are annual average (AAM) > 12.0 µg/m^3.

SOURCE: South Coast Air Quality Management District, Historical Data by Year, [HYPERLINK]www.aqmd.gov/home/air-quality/air-quality-data-studies/historical-data-by-year; US Environmental Protection Agency, AirData, www.epa.gov/airdata/ad_rep_mon.html. Accessed April 2019.

Existing Health Risk in the Surrounding Area

In 2015, the SCAQMD issued the Multiple Air Toxics Exposure Study (MATES IV),[65] which estimated long-term inhalation carcinogenic exposure risks from more than 30 air pollutants, including both gases and particulates, for the Air Basin. The monitoring study was accompanied by a computer modeling study in which SCAQMD estimated the risk of cancer from breathing toxic air pollution throughout the region based on emissions and weather data. The study concluded a background cancer risk of approximately 1,023 in one million and a population-weighted average risk of 997 in one million based on actual monitored data throughout the Air Basin.

These estimates used the cancer risk calculation methods adapted by the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA) in 2015. These methods utilize higher estimates of cancer potency during early life exposures and use different assumptions for breathing rates and length of residential exposures.[66] Under the updated OEHHA methodology, the relative reduction in the overall cancer risk from the MATES IV results compared to MATES III would be about 65 percent and 57 percent, respectively. Based on the online MATES IV Carcinogenic Risk Interactive Map, the background cancer risk estimate at the Project Site is 1,000 in one million.[67]

65 South Coast Air Quality Management District, Final Report – Multiple Air Toxics Exposure Study in the South Coast Air Basin, (2015), p. 2-11.
66 California Environmental Protection Agency, Office of Health Hazard Assessment, Air Toxics Hot Spots Program, Guidance Manual for Preparation of Health Risk Assessments, (2015). Available: http://oehha.ca.gov/air/crnr/notice-adoption-air-toxics-hot-spots-program-guidance-manual-preparation-health-risk-0. Accessed January 2019.
67 South Coast Air Quality Management District, Multiple Air Toxics Exposure Study, MATES IV Carcinogenic Risk Interactive Map, accessed March 2019.

According to the MATES IV, approximately 68 percent of the airborne carcinogenic risk in the Air Basin is attributed to DPM emissions, approximately 22 percent to other toxics associated with mobile sources (including benzene, butadiene, and formaldehyde), and approximately 10 percent is attributed to stationary sources (which include industries and certain other businesses, such as dry cleaners and chrome plating operations).[68] Generally, the risk from air toxics is lower near the coastline and increases inland, with higher risks concentrated near large diesel sources (e.g., freeways, airports, and ports).

Existing Project Site Emissions

The Project Site is comprised of approximately 28 acres of land. All but six of the parcels (approximately 25.2 acres) that make up the Project Site are currently vacant, undeveloped or are streets. The six developed parcels, approximately 54,098 sf (1.24 acres) all within the Arena Site, include a restaurant (on a privately-owned parcel), a hotel (on a privately-owned parcel), warehouse and light manufacturing facilities (on a privately-owned parcel), and a groundwater well and related facilities (on a City-owned parcel). Operation of these businesses result in the emission of air pollutants associated with vehicle trips to and from the Project Site, on-site combustion of natural gas for heating and cooking, and fugitive emissions of VOCs from the use of aerosol products and coatings and landscaping. However, data with respect to the exact activity level (i.e. utility consumptions, trip generation) at each business may not be obtainable, so existing emissions will be based on CalEEMod software defaults. CalEEMod was developed for the California Air Pollution Officers Associated (CAPCOA) in collaboration with the California Air Districts, which is a Statewide land use emission computer model designed to provide a uniform platform for government agencies, land us planners, and environmental professionals to quantify potential criteria air pollutant and GHG emissions from a variety of land use project. CalEEMod is considered to be an accurate and comprehensive tool for quantifying air quality and GHG impacts from land use projects throughout California.[69] CalEEMod was used to estimate the existing site emissions from vehicle trips, natural gas appliances and equipment, and fugitive VOC emissions. Mobile source emissions were estimated in CalEEMod using default trip generation rates and distances. Defaults for area sources and energy consumption were based on building land use and square footage. **Table 3.2-3** presents the regional and localized emissions from the existing development on the Project Site.

TABLE 3.2-3
EXISTING SITE EMISSIONS (POUNDS PER DAY) A

Source	VOC	NO_X	CO	SO_2	PM10	PM2.5
Existing Regional Emissions						
Area (Consumer Products, Landscaping)	99	99	99	99	99	99
Energy (Natural Gas)	99	99	99	99	99	99
Motor Vehicles	99	99	99	99	99	99

68 South Coast Air Quality Management District, Final Report – Multiple Air Toxics Exposure Study in the South Coast Air Basin, 2015, p. ES-2.
69 See: http://www.caleemod.com.

Total Regional Existing Emissions	99	99	99	99	99	99
Existing Localized Emissions						
Area (Consumer Products, Landscaping)/ Energy (Natural Gas)	--	99	99	--	99	99
Total Localized Existing Emissions	--	99	99	--	99	99

NOTES:
a Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix C.
SOURCE: ESA, 2019.

Existing Uses Relocating to Project Site

In addition to the existing Project Site businesses, there are existing off-site activities to be relocated to the Project Site which result in existing emissions of air pollutants. Off-site operational uses include the existing LA Clippers team offices, located at 1212 South Flower Street, Los Angeles, California, and the existing LA Clippers training center, located at 6854 South Centinela Avenue in Los Angeles, California. Operation of these off-site activities also result in the emission of air pollutants.

As with existing Project Site emissions, data with respect to the exact activity level (i.e. utility consumptions, trip generation) associated with each existing off-site activity may not be obtainable, so existing emissions for the relocated activity will be based on CalEEMod software defaults. CalEEMod was used to estimate the existing off-site activity emissions from vehicle trips, natural gas appliances and equipment, and fugitive VOC emissions. Mobile source emissions were estimated in CalEEMod using trip rates from the Proposed Project's Traffic Impact Assessment (TIA).[70] Defaults for area sources and energy consumption were based on building land use and square footage. **Table 3.2-4** presents the regional and localized emissions from the existing uses relocating to the Project Site.

TABLE 3.2-4
EXISTING USES RELOCATING TO PROJECT SITE (POUNDS PER DAY) [A]

Source	VOC	NO_X	CO	SO_2	PM10	PM2.5
Existing Regional Emissions						
Area (Consumer Products, Landscaping)	99	99	99	99	99	99
Energy (Natural Gas)	99	99	99	99	99	99
Motor Vehicles	99	99	99	99	99	99
Total Regional Existing Emissions	99	99	99	99	99	99
Existing Localized Emissions						
Area (Consumer Products, Landscaping)/ Energy (Natural Gas)	--	99	99	--	99	99
Total Localized Existing Emissions	--	99	99	--	99	99

NOTES:
a Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix C.

70 Fehr & Peers, IBEC Draft Transportation Impact Assessment, 2019, Provided in Appendix XX of this Draft EIR.

SOURCE: ESA, 2019.

Sensitive Receptors and Locations

Certain population groups, such as children, elderly, and acutely and chronically ill persons (especially those with cardio-respiratory diseases), are considered more sensitive to the potential effects of air pollution than others.[71] As a result, certain land uses that are occupied by these population groups, such as residences, hospitals and schools, are considered to be air quality sensitive land uses, i.e., sensitive receptors.

The Proposed Site encompasses four subareas where different features of the Proposed Project will be located: Arena Site, West Parking Garage Site, East Transportation and Hotel Site, and Well Relocation Site. The Project Site is primarily surrounded by residential and commercial uses, as shown in **Figure 3.2-2**. Land uses and the nearest air quality sensitive receptors surrounding the Project Site are described below.

Arena Site

Adjacent to the Arena Site to the north along West Century Boulevard is a non-operational structure (formerly the Airport Park View Motel) and a self-storage facility. To the east along South Doty Avenue is a warehousing and shipping company (S.E.S. International Express) and an industrial use (CDs Cabinets). To the north across West Century Boulevard is the Hollywood Park Specific Plan (HPSP) area. Residential uses and located adjacent to the Arena Site to the west, automotive body shops, commercial uses, and a religious facility are located on the west side of South Prairie Avenue. Adjacent to the Arena Site to the south is a religious facility and residential uses.

The nearest sensitive receptors to the Arena Site would be the residential uses located along the east side of South Prairie Avenue between West 102nd Street and West 103rd Street to the west (adjacent to the site) and the Southside Christian Church and residential uses along West 104th Street to the south (adjacent to the site). Typically places of worship like the Southside Christian Church are not considered air quality sensitive receptors; however, a Head Start Program (Inglewood Southside) is located on the Southside Christian Church site, where children between the ages of 3 years of age and 5 years of age attend. The Inglewood Southside Head Start Program will be treated as a school in the analyses.

West Parking Garage Site

To the north of the West Century Boulevard are commercial uses, Holly Crest Hotel, and Motel 6. Commercial uses are located immediately to the east, a religious facility and residential uses are located to the south, and a motel, religious facility, and residential uses are located to the

[71] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993.

west. The nearest sensitive receptors to the West Parking Garage Site would be residential uses to the west (adjacent to the site) and south (approximately 50 feet) of the site.

East Transportation and Hotel Site

The Hollywood Park Casino is located to the north of the East Transportation and Hotel Site, north of West Century Boulevard. To the west is an aquarium/pet store. To the south of the site are residential and commercial uses. A United Parcel Service (UPS) facility is located to the east of the East Transportation and Hotel Site. The nearest sensitive receptors would be the residential uses located approximately 50 feet to the south of the Site on the south side of West 102nd Street.

Well Relocation Site

To the north of the Well Relocation Site is an occupied warehousing and shipping company. To the east of the site are residential uses. A vacant lot and residential uses are located to the south. To the west of the site is an occupied commercial use. The nearest sensitive receptors would be the residential uses to the east and south, adjacent and approximately 60 feet from the site, respectively.

3.2.2 Adjusted Baseline Environmental Setting

As described in Chapter 3, Environmental Impacts, Settings, and Mitigation Measures, Section 3.2, Air Quality assumes the Adjusted Baseline Environmental Setting. Related to Air Quality, the changes associated with the HPSP Adjusted Baseline project, currently under development and anticipated to be operational prior to construction of the Proposed Project, include operational air emissions associated with new uses on the HPSP site.

The HPSP Adjusted Baseline project would emit air pollutants associated with vehicle trips, maintenance operations, energy consumption, etc., from all of its operational land uses. Specifically, vehicle trips associated with activities at the HPSP would begin taking place during mid-2020 when the NFL Stadium begins operations and uses are operating on the site, and would have an impact on local and regional air quality. Accordingly, the air pollutant emissions associated with this development within the HPSP area are considered as part of the HPSP Adjusted Baseline. The nearest sensitive receptors in the HPSP area under the Adjusted Baseline would be residences located approximately 950 feet north of the Project Site. No other changes to the existing environmental setting related to air quality would occur under the Adjusted Baseline.

3.2.3 Regulatory Setting

This section provides a summary of pertinent federal, State, and local statutes, regulations, plans, and policies that have been adopted that address air quality.

Federal

The 1963 Clean Air Act (CAA) was the first federal legislation regarding air pollution control and has been amended numerous times in subsequent years, with the most recent amendments occurring in 1990. At the federal level, US EPA is responsible for implementation of certain portions of the CAA including mobile source requirements.

The CAA establishes federal air quality standards and specifies future dates for achieving compliance. The CAA also mandates that the State submit and implement a State Implementation Plan (SIP) for areas not meeting these standards. SIPs must include pollution control measures that demonstrate how the National Ambient Air Quality Standards (NAAQS) 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 to meet interim milestones. The sections of the CAA that are most applicable to the Proposed Project include Title I (Nonattainment Provisions).

Title I requirements are implemented for the purpose of attaining NAAQS for the following criteria air pollutants: O_3; NO_2; CO; SO_2; PM10; and lead. The NAAQS were amended in July 1997 to include an 8-hour standard for O_3 and to adopt a NAAQS for PM2.5. The NAAQS were also amended in September 2006 to include an established methodology for calculating PM2.5 as well as revoking the annual PM10 threshold. **Table 3.2-5** shows the NAAQS currently in effect for each criteria air pollutant.

TABLE 3.2-5
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards[a]		National Standards[b]		
		Concentration[c]	**Method[d]**	**Primary[c,e]**	**Secondary[c,f]**	**Method[g]**
O_3[h]	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.070 ppm (137 µg/m3)		
NO_2[i]	1 Hour	0.18 ppm (339 µg/m3)	Gas Phase Chemi-luminescence	100 ppb (188 µg/m3)	None	Gas Phase Chemi-luminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)		53 ppb (100 µg/m3)	Same as Primary Standard	
CO	1 Hour	20 ppm (23 mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m3)	None	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10mg/m3)		9 ppm (10 mg/m3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m3)		—	—	

TABLE 3.2-5
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards[a]		National Standards[b]		
		Concentration[c]	**Method[d]**	**Primary[c,e]**	**Secondary[c,f]**	**Method[g]**
SO_2[j]	1 Hour	0.25 ppm (655 µg/m3)	Ultraviolet Fluorescence	75 ppb (196 µg/m3)	—	Ultraviolet Fluorescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m3)	
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm (for certain areas)[j]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[j]	—	
PM10[k]	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		—		
PM2.5[k]	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	12.0 µg/m3 [k]	15 µg/m3	
Lead[l,m]	30 Day Average	1.5 µg/m3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m3 (for certain areas)[m]	Same as Primary Standard	
	Rolling 3-Month Average	--		0.15 µg/m3		
Visibility Reducing Particles[n]	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates (SO_4)	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[l]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

TABLE 3.2-5
AMBIENT AIR QUALITY STANDARDS

Pollutant	Average Time	California Standards[a]		National Standards[b]		
		Concentration[c]	Method[d]	Primary[c,e]	Secondary[c,f]	Method[g]

NOTES:
a California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
b National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded m ore than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms/per cubic meter ($\mu g/m^3$) is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
c Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
d Any equivalent procedure which can be shown to the satisfaction of the California Air Resources Board to give equivalent results at or near the level of the air quality standard may be used.
e National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
f National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
g Reference method as described by the US EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the US EPA.
h On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
i To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.
j On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
k On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$.
l The California Air Resources Board has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
m The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
n In 1989, the California Air Resources Board converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

SOURCE: CARB, Ambient Air Quality Standards (10/1/15), Accessed April 2019

State

California Clean Air Act

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 practical date. The CAAQS are established to protect the health of the most sensitive groups and apply to the same criteria air pollutants as the federal Clean Air Act and also includes State-identified criteria air pollutants, which are sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride.[72]
Table 3.2-5, provided above, shows the CAAQS currently in effect for each of the federally identified criteria air pollutants as well as state recognized pollutants , such as sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride.

72 California Air Resources Board, California Ambient Air Quality Standards (CAAQS), last reviewed August 10, 2017.

Mobile Source Regulations

Mobile sources are a significant contributor to the air pollution in California. CARB has established exhaust emission standards for automobiles, which are more stringent than the federal emissions standards.

Through its Mobile Sources Program, CARB has developed programs and policies to reduce emissions from on-road heavy-duty diesel vehicles. Specifically, the On-Road Heavy-Duty Diesel Vehicle Regulation requires diesel trucks and buses that operate in the State to be upgraded to reduce emissions. By January 1, 2023, nearly all vehicles must have engines certified to 2010 model year engines or equivalent.

The Innovative Clean Transit Program sets emissions reduction standards for new public transit vehicles and requires major transit agencies to only purchase zero emission buses after 2029. The Solid Waste Collection Vehicle Regulation requires solid waste collection vehicles and heavy diesel-fueled on-road single engine cranes to be upgraded. The Rule for On-Road Heavy-Duty Diesel-Fueled Public and Utility Fleets requires fleets to install emission control devices on vehicles or purchase vehicles that run on alternative fuels or use advanced technologies to achieve emissions requirements by specified implementation dates. CARB also established an In-Use Off-Road Diesel-Fueled Fleets Regulation to impose limits on idling and require fleets to retrofit or replace older engines.

California Air Resources Board On-Road and Off-Road Vehicle Rules

In 2004, CARB adopted an Airborne Toxic Control Measure (ATCM) to limit heavy-duty diesel motor vehicle idling in order to reduce public exposure to diesel PM and other TACs. The measure applies to diesel-fueled commercial vehicles with gross vehicle weight ratings greater than 10,000 pounds that are licensed to operate on highways, regardless of where they are registered. This measure does not allow diesel-fueled commercial vehicles to idle for more than 5 minutes at any given time.

In 2008 CARB approved the Truck and Bus Regulation to reduce NO_X, PM10, and PM2.5 emissions from existing diesel vehicles operating in California. The requirements were amended in December 2010 and apply to nearly all diesel fueled trucks and busses with a gross vehicle weight rating greater than 14,000 pounds. For the largest trucks in the fleet (i.e., those with a gross vehicle weight rating greater than 26,000 pounds), there are two methods to comply with the requirements. The first method is for the fleet owner to retrofit or replace engines, starting with the oldest engine model year, to meet 2010 engine standards, or better. This is phased over eight years, starting in 2015 and would be fully implemented by 2023, meaning that all trucks operating in the State subject to this option would need to meet or exceed the 2010 engine emission standards for NO_X and PM by 2023. The second option, if chosen, requires fleet owners, starting in 2012, to retrofit a portion of their fleet with diesel particulate filters achieving at least 85 percent removal efficiency, so that by January 1, 2016, their entire fleet is equipped with diesel particulate filters. However, diesel particulate filters do not typically lower NO_X emissions.

Thus, fleet owners choosing the second method must still comply with the 2010 engine emission standards for their trucks and busses by 2020.

In addition to limiting exhaust from idling trucks, CARB promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. The regulation adopted by CARB on July 26, 2007, aims to reduce emissions by installation of diesel soot filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission controlled models. Implementation is staggered based on fleet size (which is the total of all off-road horsepower under common ownership or control), with the largest fleets to begin compliance by January 1, 2014. Each fleet must demonstrate compliance through one of two methods. The first option is to calculate and maintain fleet average emissions targets, which encourages the retirement or repowering of older equipment and rewards the introduction of newer cleaner units into the fleet. The second option is to meet the Best Available Control Technology (BACT) requirements by turning over or installing Verified Diesel Emission Control Strategies (e.g., engine retrofits) on a certain percentage of its total fleet horsepower. The compliance schedule requires that BACT turn overs or retrofits be fully implemented by 2023 in all equipment in large and medium fleets and across 100 percent of small fleets by 2028.

Sustainable Communities and Climate Protection Act of 2008 (SB 375)

Senate Bill 375 (SB 375) directs CARB to set regional targets for reducing greenhouse gas emissions from cars and light trucks.[73] As part of the transportation planning process, each region's Metropolitan Planning Organization (MPO) is responsible for preparing a Sustainable Communities Strategies (SCS) that integrates transportation, land-use, and housing policies to plan for achievement of the emissions target for their region. Specifically, SB 375 focuses on reducing vehicle miles traveled (VMT) and encouraging more compact, complete, and efficient communities. Further, SB 375 established CEQA streamlining and relevant exemptions for projects that are determined to be consistent with the land use assumptions and other relevant policies of an adopted SCS.

Assembly Bill 987 (AB 987)

AB 987 was signed by Governor Jerry Brown on September 30, 2018. The bill added section 21168.6.8 to the California Public Resources Code (PRC) and provides for expedited judicial review in the event that the adequacy of this EIR is challenged, so long as certain requirements are met. The discussion of AB 987 below is focused on the provisions of PRC section 21168.6.8 that addresses air emission, specifically criteria air pollutants and toxic air contaminants. A full description of AB 987 is provided in Chapter 1, Introduction.

AB 987 is described in this chapter under Regulatory Setting because it potentially applies to the Proposed Project and addresses issues related to air pollutant emissions. However, it is not a

[73] Office of Planning and Research, [HYPERLINK "http://opr.ca.gov/docs/SB375-Intro-Charts.pdf"], accessed March 2019.

regulatory statute, per se, in that the Proposed Project is not required to comply with the provisions of PRC 21168.6.8. Rather, AB 987 established provisions by which the project applicant for the Proposed Project may voluntarily decide to attempt to qualify under the provisions of the statute, and if certified as qualified by the Governor's Office, then it would be afforded certain benefits of expedited judicial review for any action brought to challenge the certification of this EIR or the approval of the Proposed Project. In the event that the Proposed Project does not qualify under the provisions of AB 987, the Proposed Project could still be reviewed and approved by the City, but judicial review would occur under the standard provisions of CEQA.

The provisions of PRC section 21168.6.8 are similar to the provisions of the Jobs and Economic Improvement through Environmental Leadership Act of 2011 (AB 900; PRC sections 21178 through 21189.3), as subsequently amended, which established expedited judicial review of certified Environmental Leadership Development Projects. In order to qualify for expedited judicial review under AB 987, the Proposed Project would have to achieve certain vehicle trip reduction goals and achieve a "no net new" greenhouse gas emissions standard, both of which would also result in reductions in criteria air pollutants and toxic air contaminants.[74] Further, as a condition of approval of the Proposed Project, the lead agency must require the project applicant, in consultation with the SCAQMD, to implement measures that will achieve criteria air pollutant and toxic air contaminant reductions over and above any reductions required by other laws or regulations in communities surrounding the Project Site, consistent with emission reduction measures that may be identified for those communities pursuant to Section 44391.2 of the Health and Safety Code. At a minimum, these measures must reduce NOx emissions by 400 tons and PM2.5 emission over 10 years following the commencement of construction of the Proposed Project, with a minimum reduction of 130 tons of NOx and 3 tons of PM2.5 achieved within the first year following commencement of construction. If the project applicant can demonstrate and verify to the SCAQMD that it has invested at least thirty million dollars ($30,000,000) to achieve the requirements of this subdivision, the requirements of this subdivision shall be deemed met, so long as one-half of the reductions set forth in paragraph (1) are met.

Regional

South Coast Air Quality Management District

The SCAQMD has jurisdiction over air quality planning for all of Orange County, Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The Air Basin is a subregion within SCAQMD jurisdiction. While air quality in the Air Basin has improved, the Air Basin requires continued diligence to meet the air quality standards.

Air Quality Management Plan

The SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the CAAQS and NAAQS. In December 2012, the SCAQMD adopted the 2012 AQMP which

[74] Office of the Governor, 2018. Assembly Bill 987 Signing Message. September 30.

incorporates scientific and technological information and planning assumptions, including growth projections.[75] The 2012 AQMP includes a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, and on-road and off-road mobile sources. 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 air pollutant standards within the timeframes allowed under the CAA.

The key undertaking of the 2012 AQMP is to bring the Air Basin into attainment with the NAAQS for the 24-hour PM2.5 standard. It also intensifies the scope and pace of continued air quality improvement efforts toward meeting the 2024 8-hour O_3 standard deadline with new measures designed to reduce reliance on the CAA Section 182(e)(5) long-term measures for NO_X and VOC reductions. The SCAQMD expects exposure reductions to be achieved through implementation of new and advanced control technologies as well as improvement of existing technologies.

The SCAQMD Governing Board adopted the 2016 AQMP on March 3, 2017.[76] CARB approved the 2016 AQMP on March 23, 2017. Key elements of the 2016 AQMP include implementing fair-share emissions reductions strategies at the federal, state, and local levels; establishing partnerships, funding, and incentives to accelerate deployment of zero and near-zero-emissions technologies; and taking credit from co-benefits from greenhouse gas, energy, transportation and other planning efforts.[77] The strategies included in the 2016 AQMP are intended to demonstrate attainment of the NAAQS for the national non-attainment pollutants ozone and PM2.5.[78] While the 2016 AQMP was adopted by the SCAQMD and CARB, it has not yet received US EPA approval for inclusion in the SIP. Therefore, until such time as the 2016 AQMP is approved by the US EPA, the 2012 AQMP remains the applicable AQMP; however, this analysis considers both the 2012 and 2016 AQMPs as appropriate.

South Coast Air Quality Management District CEQA Guidelines

SCAQMD's CEQA guidelines are voluntary initiatives recommended for consideration by local planning agencies. The *CEQA Air Quality Handbook* (Handbook) published by SCAQMD provides local governments with guidance for analyzing and mitigating project-specific air quality impacts.[79] The SCAQMD is currently updating some of the information and methods in the Handbook, such as the screening tables for determining the air quality significance of a project and the on-road mobile source emission factors. While this process is underway, the

[75] South Coast Air Quality Management District, 2012 Air Quality Management Plan, Accessed April 2019.
[76] South Coast Air Quality Management District, 2016 Air Quality Management Plan (AQMP). Accessed April 2019.
[77] South Coast Air Quality Management District, 2016 Air Quality Management Plan (AQMP). Available: Accessed April 2019.
[78] South Coast Air Quality Management District, [HYPERLINK "http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2" \o "NAAQS/CAAQS and Attainment Status for South Coast Air Basin"], (2016). Accessed April 2019.
[79] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993. Accessed April 2019.

SCAQMD recommends using other approved models to calculate emissions from land use projects, such as the California Emissions Estimator Model (CalEEMod) software.

The SCAQMD *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning* considers impacts to sensitive receptors from TAC-emitting facilities.[80] SCAQMD's siting distance recommendations are the same as those provided by CARB (e.g., a 500-foot siting distance for sensitive receptors proposed in proximity to freeways and high-traffic roads, and the same siting criteria for distribution centers and dry cleaning facilities).

The SCAQMD *Final Localized Significance Threshold Methodology* and *Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds* provides guidance when evaluating the localized effects of emissions in the CEQA evaluation.[81], [82] These guidance documents were promulgated by the SCAQMD Governing Board as a tool to assist lead agencies to analyzed localized impacts associated with project-specific level proposed projects. The use of localized significant thresholds (LSTs) is voluntary, to be implemented at the discretion of lead agency. The guidance documents establish mass emission rate "look up tables" as significance thresholds for projects that are five acres or less. For projects that are larger than five acres it is recommended that project-specific air quality dispersion modeling is completed to determine localized air quality.

South Coast Air Quality Management District Rules and Regulations

Several SCAQMD rules adopted to implement portions of the 2012 and 2016 AQMPs may apply to the Proposed Project. The Proposed Project may be subject to the following SCAQMD rules and regulations:

Regulation IV – Prohibitions: This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, fuel contaminants, start-up/ shutdown exemptions and breakdown events. The following is a list of rules which apply to the Proposed Project:

- ***Rule 401 – Visible Emissions***: This rule states that a person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart or of such opacity as to obscure an observer's view.
- ***Rule 402 – Nuisance:*** This rule states that a person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public,

[80] South Coast Air Quality Management District, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*. May 06, 2005. Accessed April 2019.

[81] South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, June 2003, Revised July 2008.

[82] South Coast Air Quality Management District, Final – Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, October 2006.

or which cause, or have a natural tendency to cause, injury or damage to business or property.

- ***Rule 403 – Fugitive Dust:*** This rule requires projects to prevent, reduce or mitigate fugitive dust emissions from a site. Rule 403 restricts visible fugitive dust to a project property line, restricts the net PM10 emissions to less than 50 micrograms per cubic meter (μg/m3) and restricts the tracking out of bulk materials onto public roads. Additionally, projects must utilize one or more of the best available control measures, which may include adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, using chemical stabilizers and/or ceasing all activities.

Regulation XI – Source Specific Standards: Regulation XI sets emissions standards for specific sources. The following is a list of rules which may apply to the Proposed Project:

- ***Rule 1113 – Architectural Coatings:*** This rule requires manufacturers, distributors, and end users of architectural and industrial maintenance coatings to reduce VOC emissions from the use of these coatings, primarily by placing limits on the VOC content of various coating categories.

- ***Rule 1138 – Control of Emissions from Restaurant Operations:*** This rule specifies PM and VOC emissions and odor control requirements for commercial cooking operations that use chain-driven charbroilers to cook meat.

- ***Rule 1146.2 – Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters:*** This rule requires manufacturers, distributors, retailers, refurbishers, installers, and operators of new and existing units to reduce NO_X emissions from natural gas-fired water heaters, boilers, and process heaters as defined in this rule.

- ***Rule 1186 – PM10 Emissions from Paved and Unpaved Roads, and Livestock Operations:*** This rule applies to owners and operators of paved and unpaved roads and livestock operations. The rule is intended to reduce PM10 emissions by requiring the cleanup of material deposited onto paved roads, use of certified street sweeping equipment, and treatment of high-use unpaved roads (see also Rule 403).

Regulation XIII – New Source Review (NSR): Regulation XIII sets requirements for preconstruction review required under both federal and state statutes for new and modified sources located in areas that do not meet the Clean Air Act standards ("non-attainment" areas). NSR applies to both individual permits and entire facilities. Any permit that has a net increase in emissions is required to apply BACT. Facilities with a net increase in emissions are required to offset the emission increase by use of Emission Reduction Credits (ERCs). The regulation provides for the application, eligibility, registration, use and transfer of ERCs. For low emitting facilities, the SCAQMD maintains an internal bank that can be used to provide the required offsets. In addition, certain facilities are subject to provisions that require public notice and modeling analysis to determine the downwind impact prior to permit issuance.

Regulation XIV – Toxics and Other Non-Criteria Air Pollutants: Regulation XIV sets requirements for new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants or other non-criteria air pollutants. The following is a list of rules which may apply to the Proposed Project:

- ***Rule 1401 – New Source Review of Toxic Air Contaminants:*** This rule regulates new or modified facilities to limit cancer and non-cancer health risks from facilities located within the SCAQMD jurisdiction.

- ***Rule 1402 – Control of Toxic Air Contaminants from Existing Sources:*** This rule regulates facilities that are already operating in order to limit cancer and non-cancer health risks. Rule 1402 incorporates the requirements and methodology of the AB 2588 Air Toxics "Hot Spots" program.

- ***Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities:*** This rule requires owners and operators of any demolition or renovation activity and the associated disturbance of asbestos-containing materials, any asbestos storage facility, or any active waste disposal site to implement work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.

- ***Rule 1470 – Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines:*** This rule applies to stationary compression ignition (CI) engine greater than 50 brake horsepower and sets limits on emissions and operating hours. In general, new stationary emergency standby diesel-fueled engines greater than 50 brake horsepower are not permitted to operate more than 50 hours per year for maintenance and testing.

SCAG Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

The Southern California Association of Governments (SCAG) is the Metropolitan Planning Organization for the region in which the City of Inglewood is located. In April 2016, SCAG adopted the *2016 Regional Transportation Plan/Sustainable Communities Strategy: A Plan for Mobility, Accessibility, Sustainability and a High Quality of Life* (RTP/SCS), which is an update to the previous 2012 RTP/SCS.[83]

The 2016 RTP/SCS considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address mobility needs. The 2016 RTP/SCS describes how the region can attain the GHG emission-reduction targets set by CARB by achieving an 8 percent reduction in passenger vehicle GHG emissions on a per capita basis by 2020, 18 percent reduction by 2035, and 21 percent reduction by 2040 compared to the 2005 level. Although the focus of the 2016 RTP/SCS is on GHG emission-reduction compliance with and implementation of 2016 RTP/SCS policies and strategies would also have co-benefits of reducing per capita criteria air pollutant and TAC emissions associated with reduced per capita vehicle miles traveled (VMT). Improved air quality with implementation of the 2016 RTP/SCS policies would decrease reactive organic gases (ROG) by 8 percent, CO by 9 percent, NOx by 9 percent, and PM2.5 by 5 percent. [84]

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[83] Southern California Association of Governments, 2016. *2016 Regional Transportation Plan/Sustainable Communities Strategy*. Accessed March 11, 2019. Adopted April 2016.

[84] Southern California Association of Governments, 2016. *2016 Regional Transportation Plan/Sustainable Communities Strategy*. Accessed March 11, 2019. Adopted April 2016.

SCAG's 2016 RTP/SCS builds on the land use policies that were incorporated into the 2012 RTP/SCS, and provides specific strategies for successful implementation. These strategies include development of "complete communities," defined as mixed-use districts that concentrate housing, employment, and a mix of retail and services in close proximity to each other; encouraging employment development around current and planned transit stations and neighborhood commercial centers; encouraging the implementation of a "complete streets" policy that meets the needs of all users of the streets, roads and highways including bicyclists, children, persons with disabilities, motorists, electric vehicles, movers of commercial goods, pedestrians, users of public transportation, and seniors; and supporting alternative fueled vehicles. The 2016 RTP/SCS overall land use pattern reinforces the trend of focusing new housing and employment in the region's high quality transit areas (HQTAs), which SCAG defines as areas within one-half mile of a well-serviced fixed guideway transit stop, and it includes bus transit corridors where buses pick up passengers every 15 minutes or less during peak commute hours.

In addition, the 2016 RTP/SCS includes goals and strategies to promote active transportation and improve transportation demand management (TDM). The 2016 RTP/SCS strategies support local planning and projects that serve short trips, increase access to transit, expand understanding and consideration of public health in the development of local plans and projects, and support improvements in sidewalk quality, local bike networks, and neighborhood mobility areas. The 2016 RTP/SCS proposes to better align active transportation investments with land use and transportation strategies, increase competitiveness of local agencies for federal and state funding, and to expand the potential for all people to use active transportation.

In June 2016, CARB accepted SCAG's quantification of GHG emission reductions from the 2016 RTC/SCS and the determination that the 2016 RTP/SCS would, if implemented, achieve the 2020 and 2035 GHG emission reduction targets established by CARB.[85]

The Proposed Project would not be inconsistent with the strategies and principles of the 2016 RTP/SCS that are designed to reduce VMT and criteria air pollutant and TAC emissions, including criteria air pollutants associated with on-road vehicle travel. The Proposed Project would be an infill development designed with the "complete communities" concept by integrating community design and a variety of land uses including a dense mix of recreational, entertainment, office, retail, restaurant, and hotel uses, on parcels of infill urban land accessible to and served by public transit and near existing and planned housing. Additionally, the Proposed Project meets the HQTA criteria of being within one-half mile of a fixed guideway transit stop or a bus transit corridor where buses pick up passengers at a frequency of every 15 minutes or less during peak commute hours. The Project Site is adjacent to two bus lines (the 117 line that travels east-west on West Century Boulevard, and the 212/312 lines that run north-south on South Prairie Avenue, both of which stop at the intersection of West Century Boulevard and South Prairie Avenue), and within one-half mile of a third bus route (the combined 740/40 Metro bus line that travels north-

85 California Air Resources Board, 2016. *Southern California Association of Governments' (SCAG) 2016 Sustainable Communities Strategy (SCS) ARB Acceptance of GHG Quantification Determination*, Available: [HYPERLINK "https://www.arb.ca.gov/cc/sb375/scag_executive_order_g_16_066.pdf"]. Accessed March 11, 2019. June 2016.

south on Hawthorne Boulevard/La Brea Avenue, stopping at the intersection at West Century Boulevard), all of which are bus lines that pick up passengers at intervals of 15 minute or less during peak commute hours.

As described in Section 2.5.5 Circulation, the Proposed Project would include an Event Transportation Management Plan (TMP) program designed to facilitate multi-modal travel to and from events at the Project Site in a safe and efficient manner during event days. In addition, the Proposed Project would implement a Transportation Demand Management (TDM) Program designed to reduce vehicle trips by spectators, event-day staff, and employees through the use of alternate modes of transportation including transit, shuttles, ridesharing, walking, and biking.

The Proposed Project's consistency with the 2016-2040 RTP/SCS is evaluated in more detail in Section 3.7, Greenhouse Gas Emissions.

Local

City of Inglewood General Plan

The City of Inglewood General Plan sets forth goals, objectives, and policies for the future development of the City and designates the location of desired future land uses within the City.

The following goal from the Land Use Element[86] of the City of Inglewood General Plan are relevant to air pollutant emissions.

> **Circulation Goal**: Promote and support adequate public transportation within the City and the region.

As described in Chapter 2, Project Description, the Proposed Project constitutes a large-scale development integrating commercial, office, entertainment uses that supports public transportation. The Proposed Project would include provisions that would promote the use of public transportation as a means of travel to and from the Proposed Arena, including a Transportation Hub at the East Transportation and Hotel Site, shuttle stops on South Prairie Avenue, and a shuttle system for large events that would connect the Proposed Project to nearby Metro stations. For these reasons, the Proposed Project would not be inconsistent with the General Plan Land Use Element circulation goal listed above. Ultimately, it is within the authority of the City Council to determine whether the Proposed Project is consistent with the City of Inglewood General Plan.

Inglewood Energy and Climate Action Plan

The Inglewood Energy and Climate Action Plan (ECAP) presents the City's community and municipal inventories, emission forecasts, and recommended reduction targets for emissions to

[86] City of Inglewood, Department of Community Development and Housing, 1980. Land Use Element of the Inglewood General Plan. January 1980. Amended September 14, 2016.

mitigate the City's impact on air quality and climate change.[87] Although the strategies within the ECAP are primarily directed towards GHG emission-reductions, as are discussed in further detail in Section 3.7, Greenhouse Gas Emissions, the measures in the ECAP would also achieve co-benefits of reducing criteria air pollutants and TACs. The ECAP's reduction strategies focus on actions within, or associated with activity in, the City that can result in a break from business-as-usual energy us and/or emissions. The City's GHG emission reduction targets are 15 percent below 2005 levels by 2020 and 32.5 percent below 2005 levels by 2035. The ECAP quantifies GHG reductions from five implementation strategies and actions: leading by example, increasing energy efficiency, supporting renewable energy generation, improving transportation options, and reducing consumption and waste, all of which are described in detail in the Local Regulatory Setting under Section 3.7, Greenhouse Gas Emissions. The following two of the five strategies and their related actions also have the potential for co-benefits of reducing criteria air pollutants and TACs:

Strategy 1 – Lead by Example with Municipal Government Actions

- Continue Building and Facility Energy Upgrades to reduce energy use
- Replace all City-owned street, park, and traffic lights with LED lights
- Accelerate city vehicle fleet replacement
- Continue commute trip reduction program
- Planning for electric vehicle infrastructure

Strategy 4: Improve Transportation Options and Manage Transportation Demand

- Make roadways more efficient
- Improve transit
- Improve bicycle facilities
- Make parking more efficient
- Reduce commute trips
- Encourage land use intensification and diversity

The Proposed Project would provide a dense mix of recreation, entertainment, office, retail, restaurant, community, and hotel uses on parcels of infill urban land accessible to and served by public transit and near existing and planned housing. In addition, as described above, the Proposed Project would implement a TDM Program designed to reduce vehicle trips by attendees, employees, visitors, and customers through the use of alternate modes of transportation including transit, shuttles, ridesharing, walking, and biking. As such, the Proposed Project would not be inconsistent with the ECAP as the Proposed Project would directly support implementation of the following ECAP actions:

[87] City of Inglewood, Inglewood Energy and Climate Action Plan, [HYPERLINK "https://www.cityofinglewood.org/DocumentCenter/View/148/Inglewood-Energy-and-Climate-Action-Plan-ECAP-Adopted-2013-PDF"], accessed March 2019.

- Improve transit,
- Reduce commute trips, and
- Encourage land use intensification and diversity.

3.2.4 Analysis, Impacts and Mitigation

Significance Criteria

A significant impact would occur if the Proposed Project would:

1. Conflict with or obstruct implementation of the applicable air quality plan;
2. Result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
3. Expose sensitive receptors to substantial pollutant concentrations; or
4. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Regional Criteria Air Pollutant Emissions Thresholds

The SCAQMD has established numerical emission indicators of significance for regional emissions during construction and operation. The numerical emission indicators are based on the recognition that the Air Basin is a distinct geographic area with a critical air pollution problem for which ambient air quality standards have been promulgated to protect public health.[88]

Given that construction impacts are temporary, the SCAQMD has established significance thresholds specific to construction activity. Based on the indicators in the SCAQMD CEQA Air Quality Analysis Handbook,[89] the Proposed Project would potentially cause or contribute to an exceedance of an ambient air quality standard if the following would occur:

Regional construction emissions from both direct and indirect sources would exceed any of the following SCAQMD prescribed daily emissions thresholds:[90]

- 75 pounds a day for VOC
- 100 pounds per day for NO_X
- 550 pounds per day for CO
- 150 pounds per day for SO_X
- 150 pounds per day for PM10

[88] South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993. http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). Accessed March 2019.
[89] South Coast Air Quality Management District, Air Quality Analysis Handbook. Available: [HYPERLINK "http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook"]. Accessed March 2019.
[90] South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, March 2011. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed March 2019.

- 55 pounds per day for PM2.5

The SCAQMD has also established numerical emission indicators of significance for operations. The SCAQMD has established significance thresholds in part based on Section 182(e) of the Clean Air Act which identifies 10 tons per year of VOC as a significance level for stationary source emissions in extreme non-attainment areas for ozone. The Air Basin is designated as extreme non-attainment for ozone. The SCAQMD converted this significance level to pounds per day for ozone precursor emissions (10 tons per year × 2,000 pounds per ton ÷ 365 days per year = 55 pounds per day). The numeric indicators for other pollutants are also based on federal stationary source significance levels. Based on the indicators in the SCAQMD CEQA Air Quality Handbook, the Proposed Project would potentially cause or contribute to an exceedance of an ambient air quality standard if the following would occur:

Regional operational emissions exceed any of the following SCAQMD prescribed daily emissions thresholds:[91]

- 55 pounds a day for VOC
- 55 pounds per day for NO_X
- 550 pounds per day for CO
- 150 pounds per day for SO_X
- 150 pounds per day for PM10
- 55 pounds per day for PM2.5

Localized Significance Thresholds

The SCAQMD published its Final Localized Significance Threshold Methodology in June 2003, (revised July 2008) and Final Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds in October 2006, recommending that all air quality analyses include a localized assessment of both construction and operational impacts on the air quality of nearby sensitive receptors.[92,93] LSTs represent the maximum emissions from a project site that are not expected to result in an exceedance of a NAAQS or CAAQS. LSTs are based on the ambient concentrations of that pollutant within the Source Receptor Area (SRA) where a project is located and the distance to the nearest sensitive receptor. LSTs are only applicable to the following

91 South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, (March 2011), http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed March 2019.

92 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology. Available: [HYPERLINK "http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2"]. Accessed April 2019.

93 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology. Available: [HYPERLINK "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"]. Accessed April 2019.

criteria air pollutants: NO_X, CO, PM10 and PM2.5. The Project Site is located in the central portion of SRA 3 (Southwest Los Angeles County Coastal).[94]

Because the Basin is in attainment for CO and NO_2 and ambient levels are below the air quality standards for these pollutants, a project is considered to have a significant impact if the project impacts plus ambient background concentrations exceed one or more of these standards. If ambient levels already exceed a NAAQS or CAAQS, then project impacts are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM10 and PM2.5, both of which are nonattainment pollutants in the Basin. For these latter two pollutants, the significance criteria are the pollutant concentration thresholds presented in SCAQMD Rules 403 and 1301. The Rule 403 threshold of 10.4 $\mu g/m^3$ applies to construction emissions (and may apply to operational emissions at aggregate handling facilities). The Rule 1301 threshold of 2.5 $\mu g/m^3$ applies to non-aggregate handling operational activities.

The SCAQMD recommends that sites larger than 5 acres perform air dispersion modeling to determine localized air quality.[95] Because the Project Site exceeds 5 acres, dispersion modeling was performed to determine if the pollutant concentrations from Proposed Project emissions would exceed relevant significance thresholds established by the SCAQMD.

For the evaluation of localized impacts of the Proposed Project, the SCAQMD has established air quality significance thresholds on a concentration basis. For attainment pollutants NO_2 and CO, a project is significant if, in combination with existing or future ambient concentrations, it causes or contributes to an exceedance of the standards listed in Table 3.2-5 above.

For PM2.5 and PM10, a project is significant if the emissions result in exceedance of the following incremental increase thresholds:[96,97]

- 10.4 $\mu g/m^3$ (24-hour) and 1 $\mu g/m^3$ of PM10 (Annual) for construction.
- 10.4 $\mu g/m^3$ (24-hour) of PM2.5 for construction.
- 2.5 $\mu g/m^3$ (24-hour) and 1.0 $\mu g/m^3$ (Annual) of PM10 for operations.
- 2.5 $\mu g/m^3$ (24-hour) of PM2.5 for operation.

94 South Coast Air Quality Management District, Map of Monitoring Areas. Available: [HYPERLINK "http://www.aqmd.gov/docs/default-source/default-document-library/map-of-monitoring-areas.pdf"]. Accessed April 2019.

95 South Coast Air Quality Management District, Localized Significance Thresholds. Available: [HYPERLINK "http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/localized-significance-thresholds"]. Accessed April 2019.

96 South Coast Air Quality Management District, Rule 403 Dust Control Information, Available: [HYPERLINK "https://www.aqmd.gov/home/rules-compliance/compliance/rule-403-dust-control-information"]. Accessed April 2019.

97 South Coast Air Quality Management District, Rule 1301. General, Available: [HYPERLINK "http://www.aqmd.gov/docs/default-source/rule-book/reg-xiii/rule-1301-general.pdf?sfvrsn=4"]. Accessed April 2019.

Toxic Air Contaminants Health Risk Thresholds

Based on the criteria set forth by the SCAQMD, the Proposed Project would expose air quality sensitive receptors to substantial concentrations of TACs if the Proposed Project emits carcinogenic materials or TACs that exceed the maximum incremental cancer risk of ten in one million or an acute or chronic hazard index of 1.0. Similarly, the Proposed Project would be significant if cancer burden corresponds to an increase in more than 0.5 excess cancer cases in areas where cancer risk exceeds 1 in one million.[98]

Currently, the health impact of a particular criteria pollutant is analyzed by air districts on a regional scale based on how close the area is to attaining the NAAQS, and not at the project level. Because air districts' attainment plans and supporting air model tools are regional in nature, they do not allow for analysis of the health impacts of specific projects on any given geographic location.

Methodology and Assumptions

Regional Construction Emissions Methodology

Construction of the Proposed Project has the potential to temporarily emit criteria air pollutant emissions through the use of heavy-duty construction equipment, such as excavators and forklifts, and through vehicle trips generated from workers and haul trucks traveling to and from the Project Site. In addition, fugitive dust emissions would result from demolition and various soil-handling activities. As previously described, VOC, NO_X, CO, SO_2, PM10 and PM2.5 emissions are included in this analysis. Construction emissions can vary substantially from day to day, depending on the level of activity and the specific type of construction activity. The maximum daily regional emissions were predicted values for the worst-case day and do not represent the emissions that would actually occur for every day of construction. The maximum daily regional mass emissions of pollutants were compared with the respective SCAQMD thresholds.

According to the Proposed Project's construction schedule, as presented in **Table 3.2-6**, *Modeled Construction Schedule*, construction will begin in the 3rd Quarter of 2021 and be completed in the 2nd quarter of 2024. Emission calculations assumed all construction occurs at the earliest feasible dates. If the onset of construction is delayed to a later year, construction impacts would be less than those analyzed. This would result from cleaner construction equipment and vehicle fleet mix expected pursuant to State regulations that require cleaner construction equipment to be phased-in for heavy-duty equipment.[99] As a result, should the Proposed Project commence construction on a later year than modeled in this air quality impact analysis, air quality impacts would be less than the impacts disclosed herein.

98 South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, March 2011. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed March 2019.
99 13 CCR, Section 2449.

TABLE 3.2-6
MODELED CONSTRUCTION SCHEDULE

Phase and Subphase	Start Date [a]	End Date [a]	Work Days
Arena Construction			
Demolition	7/1/2021	10/31/2021	105
Site Preparation	7/1/2021	9/30/2021	79
Drainage/Utilities/Trenching	9/1/2021	10/31/2021	52
Grading/Excavation	11/1/2021	2/28/2022	103
Foundations/Concrete Pour	12/1/2021	1/31/2023	366
Building Construction	5/1/2022	5/31/2024	653
Architectural Coatings	5/1/2022	5/31/2024	653
Paving	4/1/2023	7/31/2023	104
West Parking Garage Site			
Site Preparation	8/1/2021	10/31/2021	78
Drainage/Utilities/Trenching	8/1/2021	10/31/2021	78
Grading/Excavation	8/1/2021	10/31/2021	78
Foundations/Concrete Pour	10/1/2021	12/31/2021	79
Building Construction	10/1/2021	3/31/2023	469
Architectural Coatings	10/1/2021	3/31/2023	469
Paving	10/1/2021	3/31/2023	469
East Transportation and Hotel Site			
Site Preparation	7/1/2021	8/31/2021	53
Drainage/Utilities/Trenching	9/1/2021	10/31/2021	52
Grading/Excavation	1/1/2024	1/31/2024	27
Foundations/Concrete Pour - Transportation Hub	1/1/2024	6/30/2024	156
Building Construction - Transportation Hub	1/1/2024	6/30/2024	156
Architectural Coatings - Transportation Hub	1/1/2024	6/30/2024	156
Paving - Transportation Hub	4/1/2024	6/30/2024	78
Building Construction - Hotel Site	2/1/2024	9/20/2024	200
Paving - Hotel Site	9/21/2024	10/2/2024	10
Architectural Coatings - Hotel Site	10/3/2024	10/14/2024	10
Well Relocation Site			
Demolition	7/1/2021	8/31/2021	53
Site Preparation	7/1/2021	8/31/2021	53
Grading/Excavation	7/1/2021	9/30/2021	79
Drainage/Utilities/Trenching	7/1/2021	10/31/2021	105
Foundations/Concrete Pour	7/1/2021	2/28/2021	208
Building Construction	7/1/2021	2/28/2022	208
Paving	7/1/2021	2/28/2022	208

NOTES:
[a] The emissions were estimated assuming construction begins at the earliest possible date (2021). This provides for a conservative emissions estimate as emission factors decline in future years. Construction of the Proposed Project may commence at a later date, which would generally result in similar or reduced emissions, primarily due to vehicles meeting more stringent emissions standards. If construction starts at a later date, emissions could occur in later calendar years; however, the emissions would be similar or reduced compared to the emissions disclosed herein.

SOURCE: ESA, 2019.

Commented [EH1]: Extended to match building construction length. Need to consider interior painting as well, not just exterior

Commented [EH2]: East Site Hotel Schedule based on CalEEMod default construction schedule for 150 room hotel on 1.3 acre site. Note to team to update when additional information provided.

Construction activities would include demolition, site preparation, excavation/grading, building construction, paving, and architectural coating. Demolition activities would generate approximately 7,607 tons of demolition debris (asphalt and general construction debris). The Proposed Project would export approximately 347,214 cubic yards of soil during grading and excavation activities. Heavy-duty equipment, vendor supply trucks and concrete trucks would be used during construction of foundations, parking structures, and buildings. Landscaping and architectural coating would occur during the finishing activities.

Daily regional criteria air pollutant emissions for the different phases of construction were forecasted based on construction activities, on-road and off-road mobile sources, and fugitive dust emission factors associated with the specific construction activity.

Off-road mobile source emissions would result from the use of heavy-duty construction equipment such as bulldozers, loaders, and cranes. These off-road mobile sources emit VOC, NO_X, CO, SO_2, PM10 and PM2.5. The emissions were estimated using CalEEMod (Version 2016.3.2) software, an emissions inventory software program recommended by the SCAQMD. CalEEMod is based on outputs from the OFFROAD model and EMission FACtor (EMFAC) model, which are emissions estimation models developed by CARB and used to calculate emissions from construction activities, heavy-duty off-road equipment, and on-road vehicles. Activities parameters, such as number of equipment, horse power were estimated in CalEEMod when Project-specific information was not available.

Fugitive dust emissions (using PM10 as a surrogate) during construction activities were estimated in CalEEMod, which are based on the methods described in the US EPA AP-42 Compilation of Air Pollutant Emission Factors.[100] During the application of architectural coatings, evaporation of solvents contained in surface coatings result in VOC emissions. CalEEMod was used to calculate VOC emissions based on the building surface area and the default VOC content provided by the air district or CARB's statewide limits. Asphalt paving of parking areas are another source of VOC emissions. CalEEMod was used to calculate VOC off-gassing emissions based on the parking lot size and SCAQMD default emission factor.

On-road mobile sources also have the potential to generate temporary criteria air pollutant emissions through workers and haul trucks traveling to and from the Project Site during construction. Daily truck trips and trip lengths were based on information provided by the project applicant. Emission factors for passenger vehicles and heavy-duty truck used the regional emission factors generated from the EMFAC model, which "represents [California Air Resources Board's] current understanding of motor vehicle travel activities and their associated emission levels."[101] Mobile emission factors vary by speed where vehicles traveling at low speeds have higher emission rates, as seen in the EMFAC2014 and EMFAC2017 data. More information is

[100] US Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emissions Factors, Chapter 13: Miscellaneous Sources, https://www3.epa.gov/ttn/chief/ap42/ch13/index.html.
[101] California Air Resources Board, Mobile Source Emissions Inventory, https://www.arb.ca.gov/emfac/2017/. Accessed February 2019.

provided in Appendix XX. Therefore, Project-related construction on-road mobile sources were assumed to match the traffic speeds based on information provided in the Proposed Project's Transportation Impact Assessment (TIA) in the local study area (refer to section below, Localized Emissions and Analysis Methodology, for a discussion of the local study area).[102] On-road mobile sources outside of the local study area were assumed to travel at aggregate speeds as incorporated in the EMFAC2014 and EMFAC2017 models for the South Coast Air Basin. Although EMFAC2017 has not been approved by the US EPA, both EMFAC2014 and EMFAC2017 versions were used to present the worst-case scenarios since pollutants under both versions tend to have different emission factors. The total mobile source emissions from traveling to and from the Project Site were calculated using the trip rates, trip length, and emission factors. Typical CARB idling times were used in the emission calculations from onsite truck idling.

Regional Operational Emissions Methodology

Operation of the Proposed Project would generate criteria air pollutant emissions from Project-generated vehicle trips traveling to and from the Project Site, energy sources such as natural gas combustion, and area sources such as landscaping equipment and consumer products usage. The Proposed Project would also produce criteria air pollutant emissions from onsite diesel-fueled emergency generators, forklifts from the loading docks and generators in media vans. Operational impacts were assessed for the existing uses for the 2018 baseline year and for the full Proposed Project buildout year of 2024. Daily maximum criteria pollutant emissions were compared with the SCAQMD thresholds for operation to determine the operational impacts of the Proposed Project.

The on-road mobile sources related to the operation of the Proposed Project include passenger vehicles for workers, players and supporting staff, event attendants, customers to the commercial uses, hotel guests, media vans and trucks delivering to and from the Project Site.

VMT data, which takes into account ridership, mode, and distance on freeways and local streets was provided in the Proposed Project's TIA.[103] . To capture the effect of speed, emission factors from EMFAC2014 and EMFAC2017 were generated using speed information provided in the Proposed Project's TIA, which incorporates data from the California Department of Transportation (Caltrans) and Performance Measurement System (PeMS).[104] Criteria pollutant emission factors vary by speed where as stated above, emission factors vary by speed where vehicles traveling at low speeds have higher emission rates, as seen in the EMFAC2014 and EMFAC2017 data. More information is provided in Appendix XX. Emissions from motor vehicles traveling to and from the Project Site are also dependent on vehicle type. Thus, the

102 The number of vehicular trips associated with Proposed Project construction provided by client. Trip speed associated with Proposed Project construction and operation as well as number of vehicular trips associated with Proposed Project construction and operations, HPSP, and NFL Stadium taken from Project Transportation Impact Assessment, Fehr and Peers, 2019 (attached as Appendix X).

103 Fehr and Peers, Project Transportation Impact Assessment, 2019 (attached as Appendix X).

104 California Department of Transportation, Performance Measurement System. Available: [HYPERLINK "http://pems.dot.ca.gov/"]. Accessed May 2019.

emissions were also calculated using a representative motor vehicle fleet mix for the Proposed Project based on information provided in the TIA.[105] CARB's EMFAC2014 and EMFAC2017 were used to generate emissions factors for operational mobile sources. The model was run in the emissions mode (also referred to as the "Burden" mode) to generate South Coast Air Basin-specific vehicle fleet emission factors in units of grams per mile. The emission factors were then applied to the daily VMT to obtain daily mobile source emissions in grams per day.

The Proposed Project's operational area and energy emissions were estimated using the CalEEMod software. Area source emissions are based on natural gas (building heating and water heaters), architectural coatings, landscaping equipment, and consumer product usage rates provided in CalEEMod. Natural gas usage factors in CalEEMod are based on the California Energy Commission California Commercial End Use Survey (CEUS) data set, which provides energy demand by building type and climate zone.[106] However, since the data from the CEUS is from 2002, correction factors were incorporated into CalEEMod to account for the most recent Title 24 Building Energy Efficiency Standards that will be in applicable to the Proposed Project.[107] Default parameters were used when Project-specific data was not available.

Additionally, the Proposed Project will have up to four stationary emergency generators with an estimated total capacity rated at approximately 3,250 kilowatts (kw), to provide emergency power primarily for lighting and other emergency building systems in the event the IBEC loses power. Emergency generator emissions were calculated based on compliance with the Tier 4 emissions standards and compliance with SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines) mandated emission limits and operating hour constraints. This analysis also conservatively assumed that the emergency generators would operate up to two hours per day and 50 hours per year for testing and maintenance (per SCAQMD Rule 1470 limit). The emissions were calculated using the Tier 4 emission standards for VOC, NO_X, CO, PM10 and PM2.5, and the emission factor for SO_2 from CalEEMod.[108] The emissions from media vans, mobile generator sets and forklifts used on loading docks were calculated using emission factors for VOC, NO_X, CO, PM10 and PM2.5, and SO_2 from CalEEMod.[109]

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105 The number of vehicular trips associated with Proposed Project construction provided by client. Trip speed associated with Proposed Project construction and operation as well as number of vehicular trips associated with Proposed Project construction and operations, HPSP, and NFL Stadium taken from Project Transportation Impact Assessment, Fehr and Peers, 2019 (attached as Appendix X).

106 California Energy Commission, California Commercial End-Use Survey, http://capabilities.itron.com/CeusWeb/Chart.aspx. Accessed January 2019.

107 California Energy Commission, 2019 Building Energy Efficiency Standards, January 1, 2020.

108 California Air Pollution Control Officers Association, Appendix A, Calculation Details for CalEEMod, pg. 53. Available: [HYPERLINK "http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6"]. Accessed April 2019.

109 California Air Pollution Control Officers Association, Appendix A, Calculation Details for CalEEMod, pg. 53. Available: [HYPERLINK "http://www.aqmd.gov/docs/default-source/caleemod/02_appendix-a2016-3-2.pdf?sfvrsn=6"]. Accessed April 2019.

Regional operational air quality impacts of the Proposed Project's air emissions were assessed based on the incremental increase in emissions compared to baseline conditions.

Localized Emissions and Analysis Methodology

Localized construction and operation related to NO_X, CO, PM10 and PM2.5 emissions were estimated to determine if the Proposed Project would generate significant localized air quality impacts that could substantially affect sensitive receptors surrounding the Proposed Site.

The localized off-site emissions analysis focused on a 0.25 mile radius from the Project Site, which will be referred to in this analysis as the local study area, rather than the full trip length assumed under the regional construction and operational emission calculations.[110] The local study area was the focus of this analysis because it would result in the highest incremental increase in ambient air pollutant concentration due to capturing the emissions from Proposed Project on-site site construction and the four intersections experiencing the maximum traffic volumes surrounding the Project Site. The local study area was assumed to capture the maximum localized emissions because vehicles associated with construction and operations tend to dissipate the further they travel from the Project Site while increasing speed, thus reducing emission rates with increased distance.

Similar to the regional impact analysis, CARB's EMFAC2014 and EMFAC2017 were used to generate emissions factors for construction and operational mobile sources for the localized impact analyses. The mobile emissions associated with the Proposed Project in the local study area were calculated using the fleet mix and vehicle speed assumptions and information provided in the Proposed Project's TIA.[111] The mobile source emissions from the post-event hour were assumed to be the highest based on the expected number of vehicles on the road as well as traffic congestion and associated low vehicle speeds. Vehicles traveling at low speeds have higher emission rates, which is consistent with EMFAC2014 and EMFAC2017 data. Detailed information regarding vehicle fleet mix and emission factors by speed is provided in Appendix XX.

The Proposed Project's localized construction and operations emissions were then apportioned into the US EPA AMS/EPA Regulatory Model (AERMOD) model to generate concentrations of NO_X, CO, PM10 and PM2.5 at receptor locations surrounding the Project Site (see Section *Air Dispersion Modeling,* below, for more details). In addition, to evaluate the contribution to future localized levels of CO and NO_2 from future traffic activity associated with the HPSP Adjusted Baseline project, NFL games, and other events at The Forum, emissions were calculated generally following the methodology presented above for Proposed Project-related mobile sources assumed to operate in the local study area.

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110 In compliance with PRC § 21151.8 (a)(2).

111 The number of vehicular trips associated with Proposed Project construction provided by client. Trip speed associated with Proposed Project construction and operation as well as number of vehicular trips associated with Proposed Project construction and operations, HPSP, and NFL Stadium taken from Project Transportation Impact Assessment, Fehr and Peers, 2019 (attached as Appendix X).

The ambient pollutant concentrations of NO_X, CO, PM10 and PM2.5 surrounding the Project Site are listed in Table 3.2-2 for years 2015-2017, and were established based on measurements from the most representative SCAQMD Monitoring stations in the SRA 2 receptor area. As mentioned above, the LAX-Hastings Monitoring Station is the most representative of the air quality conditions surrounding the Project Site and was used to determine ambient levels of NO_X and CO.

As described in Section 3.2.1, since the Basin is non-attainment of the PM10 and PM2.5 standards, the SCAQMD has established incremental increase thresholds of 10.4 $\mu g/m^3$ (for construction) and 2.5 $\mu g/m^3$ (for operations), and ambient background levels are not needed.

As described in Section 3.2.1, the Project Site's ambient levels for CO and NOx are below the NAAQS and CAAQS. The Proposed Project is considered to have a significant impact if local levels of these pollutants from future Project-related emissions and other sources (HPSP, NFL games, events at The Forum, etc.) added to the ambient concentrations of CO and NO_X result in an exceedance of one or more of the CO and NO_X NAAQS and CAAQS. Details regarding the modeling methodology can be found in the Section, *Intersection Hot Spots Analysis*, below.

During construction of the Proposed Project, the highest localized air quality impacts were assumed to occur when the HPSP Adjusted Baseline project and The Forum would experience full-capacity events overlapping with construction of the Proposed Project. To estimate the highest potential impacts from the Proposed Project, construction was assumed to occur simultaneously with a major event at the NFL Stadium and a concert at The Forum on the same day, a Saturday. This occurrence is expected to observe the highest construction localized air quality impacts; however, it should be noted that construction and peak traffic from the NFL Stadium and The Forum are not expected to overlap.

During operation of the Proposed Project, the potentially highest localized air quality impacts are expected to occur when the Project Site hosts a major event (i.e., a NBA game) and the HPSP and The Forum experience full-capacity events on the same day (i.e., on a Saturday). This occurrence is expected to observe the highest operational localized air quality impacts from event attendees and normal traffic.

For pollutants with annual concentration standards, NO_2 and PM10, annual Proposed Project construction and operations were modeled concurrently with the presumed annual event schedules for the HPSP and The Forum within the Proposed Project's TIA.[112] The following analyses listed in **Table 3.2-7**, *Modeled Construction and Operational Scenarios,* were conducted for localized construction and operational impacts:

[112] Project Transportation Impact Assessment, Fehr and Peers, 2019 (attached as Appendix X).

TABLE 3.2-7
MODELED CONSTRUCTION AND OPERATIONAL SCENARIOS

Pollutant	Construction Scenarios	Operational Scenarios	Analysis Details	Threshold
NO_X[4]	Proposed Project Construction + Full-capacity NFL game at NFL Stadium and concert at The Forum	Proposed Project Major Event + Full-capacity NFL game at NFL Stadium and concert at The Forum	NO_2 1-hr ambient concentration + NO_2 1-hr concentration associated with the Proposed Project	NO_2 1-hr NAAQS/CAAQS
			NO_2 1-hr ambient concentration + NO_2 1-hr future activity concentration (Adjusted Baseline)[2] + NO_2 1-hr concentration associated with the Proposed Project	NO_2 1-hr NAAQS/CAAQS
	Annual Proposed Project construction and annual schedule of events at the HPSP, including the NFL Stadium, and The Forum	Annual Proposed Project operations and annual schedule of events at the HPSP, including the NFL Stadium, and The Forum	NO_2 annual ambient concentration + NO_2 annual concentration associated with the Proposed Project	NO_2 annual NAAQS/CAAQS
			NO_2 annual ambient concentration + NO_2 annual future activity concentration (Adjusted Baseline)[2] + NO_2 annual concentration associated with the Proposed Project	NO_2 annual NAAQS/CAAQS
CO[4]	Proposed Project Construction + Full-capacity NFL game at NFL Stadium and concert at The Forum	Proposed Project Major Event + Full-capacity NFL game at NFL Stadium and concert at The Forum	CO 1-hr ambient concentration + CO 1-hr concentration associated with the Proposed Project	CO 1-hr NAAQS/CAAQS
			CO 1-hr ambient concentration + CO 1-hr future activity concentration (Adjusted Baseline)[2] + CO 1-hr concentration associated with the Proposed Project	CO 1-hr NAAQS/CAAQS
	Proposed Project Construction + Full-capacity NFL game at NFL Stadium and concert at The Forum	Proposed Project Major Event + Full-capacity NFL game at NFL Stadium and concert at The Forum	CO 8-hr ambient concentration + CO 8-hr concentration associated with the Proposed Project	CO 8-hr NAAQS/CAAQS
			CO 8-hr ambient concentration + CO 8-hr future activity concentration (Adjusted Baseline)[2] + CO 8-hr concentration associated with the Proposed Project	CO 8-hr NAAQS/CAAQS

TABLE 3.2-7
MODELED CONSTRUCTION AND OPERATIONAL SCENARIOS

Pollutant	Construction Scenarios	Operational Scenarios	Analysis Details	Threshold
PM10	Proposed Project Construction	Proposed Project Major Event	PM10 24-hr concentration associated with the Proposed Project	PM10 24-hr SCAQMD air quality standards for construction and operation
	Annual Proposed Project construction	Annual Proposed Project operational event schedule	PM10 annual baseline + PM10 annual concentration associated with the Proposed Project	PM10 annual SCAQMD air quality standards for construction and operation
PM2.5	Proposed Project Construction	Annual Proposed Project operational event schedule	PM2.5 24-hr concentration associated with the Proposed Project	PM2.5 24-hr air quality standards for construction and operation

NOTES:
1 Three concurrent events on a Sunday: Clippers game starting at 6 p.m., an NFL game starting at 1:25pm, and a concert at The Forum starting at 7 p.m. The peak hour would be 5-6 p.m. due to outbound NFL trips, inbound NBA trips, and some inbound concert trips. It is also expected that the day of the three concurrent events can result in worst 8-hr or 24-hr air pollution.
2 Adjusted Baseline Environmental Setting: baseline plus the impacts from other venues.
3 Regular facility operation emissions are included and the same among all the scenarios.
4 Hot spot analysis will be conducted separately.

Air Dispersion Modeling

To evaluate local impacts for construction and operation of the Proposed Project, air dispersion modeling was completed using the AERMOD model with 5 years of meteorological data from the Hawthorne Airport (SCAQMD Station ID KHHR), the closest and most representative monitoring station. The AERMOD model was used to simulate the movement of Project-related air pollutants from construction and operation activities through the air and generate concentrations of those pollutants at numerous receptor locations surrounding the Project Site. Similarly, the AERMOD model was used to simulate the movement of vehicle trips associated with Adjusted Baseline Environmental Setting CO and NO_X emissions and generate air concentrations at the receptor locations surrounding the Project Site. The estimated concentrations provide conservative estimates and tend to overestimate actual impacts and therefore may not represent actual occurrences.[113] The modeled concentration values were compared to the regional and localized thresholds, as discussed above in the Section *Localized Emissions and Analysis Methodology*, as well as the health risk assessment calculations that will be discussed below.

The AERMOD model requires the placement of receptors, which represent the geographic locations where impacts from the Proposed Project's emissions were calculated. Figure X shows the receptor network used in the localized significance threshold analysis. Receptors were located

113 South Coast Air Quality Management District, Localized Significance Thresholds, (2003, revised 2008), http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds. Accessed February 2019.

outside of the Proposed Project's boundaries. A dense receptor grid was generated pursuant to Table B in the *SCAQMD Modeling Guidance for AERMOD* and the *Transportation Project-Level Carbon Monoxide Protocol (CO Protocol)* in order to adequately characterize the Proposed Project's off-site impacts.[114]

The methodology follows SCAQMD modeling guidance for AERMOD.[115] **Table 3.2-8,** *General Air Dispersion Modeling Assumptions – Localized Air Quality Assessment*, lists the general model assumptions used in the localized significance threshold assessment.

TABLE 3.2-8
GENERAL AIR DISPERSION MODELING ASSUMPTIONS – LOCALIZED AIR QUALITY ASSESSMENT

Feature	Assumption
Terrain processing	Complex terrain; elevations were obtained for the Project Site using the US EPA AERMAP terrain data pre-processor
Emission source configuration	See Table 3.2-9 and Table 3.2-10 (next two tables)
Land Use	Urban: County of Los Angeles, population of 9,818,605 provided by the SCAQMD
Coordinate System	Universal Transverse Mercator
Meteorological Data	SCAQMD Hawthorne Data for 2012-2016
NO_2 Assessment Methodology	Tier 2: ARM2 ratio. The minimum and maximum NO_2/NO_x ratios should use US EPA default values (0.5 and 0.9, respectively).
Receptor Height	0 meters, as recommended by SCAQMD methodology
Receptor Location	Receptor locations were defined outside of the Proposed Project boundaries.

Each of the emission sources that were included in the AERMOD air dispersion model consist of a particular emission source representation. The following definitions were used in defining the emission source representations referred to in Table 3.2-9 and Table 3.2-10 (next 2 tables).

- Line volume source: a series of volume sources along a path (example: vehicular traffic along a street or freeway);
- Point source: a single identifiable local source of emissions; it is approximated in the AERMOD air dispersion model as a mathematical point in the modeling region with a location and emission characteristics such as height of release, temperature, etc. (example: a stack from a standby generator or a stack from a motor vehicle such as a truck);
- Volume source: a three dimensional source of pollutants release (example: exhaust emissions from construction equipment); and

114 University of California, Davis, Transportation Project-Level Carbon Monoxide Protocol (CO Protocol). Available: [HYPERLINK "http://www.dot.ca.gov/env/air/co-protocol.html"]. Accessed April 2019.
115 South Coast Air Quality Management District, SCAQMD Modeling Guidance for AERMOD, https://www.aqmd.gov/home/air-quality/air-quality-data-studies/meteorological-data/modeling-guidance, March 2019.

- Area source: a large area where emissions are assumed to be uniformly distributed in the horizontal and vertical directions (example: parking lot).

Construction Modeling Assumptions – Local Air Quality Assessment

Table 3.2-9, *Proposed Project Localized Analysis Construction Emission Source Assumptions*, summarizes the emission source characteristics during construction. For the unmitigated scenario, it was assumed that construction equipment would be in the "on" position for 14 hours per day for all construction activities. The construction was assumed to occur six days per week. Construction worker, hauling, and vendor truck trip rates are based on assumptions provided by the client.

TABLE 3.2-9
PROPOSED PROJECT LOCALIZED ANALYSIS CONSTRUCTION EMISSION SOURCE ASSUMPTIONS

Emission Source Type	Air Dispersion Model Emission Source Description	Relevant Assumptions
On-site: Off-road Construction Equipment	Volume Source	• Stack release height: 16.4 feet • Emissions derived from the CalEEMod land use emission model • Volume sources were used to characterize the construction equipment with a volume source dimension of XX feet on a side to cover the construction area; the number of volume sources used is dependent on the size of the construction area.
On-site: Fugitive Dust	Area Source	• Release height: surface release with a one-meter initial vertical dimension • Emissions derived from the CalEEMod land use emission model • Area sources were used to characterize the fugitive dust generated from the construction equipment.
On-site: Proposed Project construction diesel truck idling	Area source	• Stack release height: X feet • Idle time: 15 minutes per truck per day (unmitigated) • Vehicle type: medium-heavy duty and heavy duty delivery trucks • Emission factor: ARB EMFAC2014 and 2017 model
Off-site: Proposed Project Construction Vehicle Traffic, Adjusted Baseline Environmental Setting Vehicle Traffic	Line volume sources	• Line source width equal to the width of the roadway plus 3 meters on both sides. • Vehicle speeds: ○ Heavy duty trucks: speed percentages based on Proposed Project TIA ○ All other vehicles: speed percentages based on Proposed Project TIA

A graphical representation of the AERMOD air dispersion model for construction sources and the Adjusted Baseline Environmental Setting sources are shown in Figure X.

Operational Model Assumptions – Local Air Quality Assessment

The Project-specific operational information used in the AERMOD air dispersion model are provided in the **Table 3.2-10,** *Proposed Project Localized Analysis Operational Emission Source Assumptions*. The facility operations were represented in the model to demonstrate worst case conditions.

TABLE 3.2-10
PROPOSED PROJECT LOCALIZED ANALYSIS OPERATIONAL EMISSION SOURCE ASSUMPTIONS

Emission Source Type	Air Dispersion Model Emission Source Description	Relevant Assumptions
On-site: Proposed Project Operations Traffic	Area Source	• Stack release height: 6 feet for all vehicles • Vehicle speed: 15 mph • Vehicle trips based on a review of the layout of the Proposed Project development phases in relation to the local roadway network. ○ Arena ▪ Arena Site Parking Lot ▪ Loading Dock and Trash Collection Area ▪ Media Parking Lot ○ West Parking Garage ○ East Transportation and Hotel Site ▪ East Parking Garage ▪ Transportation Network Drop-off ▪ Hotel Surface Parking Lot • Vehicle types: passenger cars and heavy duty delivery trucks • Emission factor: ARB EMFAC2014 and 2017 model
On-site: Proposed Project Operations diesel truck idling	Area source	• State release height: 6 feet • Idle time: 15 minutes per truck per day (unmitigated) • Vehicle type: heavy duty delivery trucks • Emission factor: ARB EMFAC2014 and 2017 model
Off-site: Proposed Project Operations Vehicle Traffic, Adjusted Baseline Environmental Setting Vehicle Traffic	Line sources	• Line source width equal to the width of the roadway plus 3 meters on both sides. • Vehicle speeds: ○ Heavy duty trucks: speed percentages based on Proposed Project TIA ○ All other vehicles: speed percentages based on Proposed Project TIA
Standby Diesel Electric Generators	Point sources	• The Proposed Project was assumed to contain emergency standby diesel generators at full build out • Rated at 3,250 kilowatts electrical output • Projected testing and maintenance assumed to be 1 hour per day and 50 hours per year • Height of emission release assumed to be X feet based on estimates of the generator's temperature, gas flow rate, and influence of building downwash on plume rise • Emissions based on US EPA Tier 4 emission standards for diesel generators

A graphical representation of the AERMOD air dispersion model for operational sources and the Adjusted Baseline Environmental Setting sources are shown in Figure X.

Intersection Hot Spot Analysis

Operation of the Proposed Project has the potential to generate traffic congestion and increase delay times at intersections within the local study area. The pollutant of primary concern when assessing the Proposed Project's impacts at local intersections is CO because elevated concentrations of this pollutant tends to accumulate near areas of heavy traffic congestion and where average vehicle speeds are low. Tailpipe emissions are of concern when assessing localized impacts of CO along paved roads.

An adverse concentration of CO, known as a "hot spot", would occur if an exceedance of the NAAQS or CAAQS were to occur. The SCAQMD does not currently have guidance for conduction intersection hot spot analysis. However, Caltrans has guidance for evaluating CO hot spots in their Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) (Caltrans, 1997). Detailed guidance discussing which modeling programs to use, calculating emission rates, receiver placement, calculating 1-hour and 8-hour concentrations, and utilizing background concentrations are provided in the Caltrans' CO Protocol.

As recommended in the CO Protocol, hot spot modeling utilized Caltrans' CALINE4 model and emission rates obtained from CARB's EMFAC2017 to determine the maximum potential pollutant concentrations generated by the Proposed Project. Hot spot modeling was conducted for the Adjusted Baseline Environmental Setting and three future scenarios with the Proposed Project.

A detailed review of the Proposed Project's TIA identified the four intersections in the vicinity of the Project site that demonstrated the worst Level of Service (LOS) and highest vehicle volumes with the Proposed Project. Logically, if these four intersections demonstrate CO concentrations below the required thresholds, all other affected intersections would also be below thresholds and thus not create hot spots. Additionally, the SCAQMD conducted CO modeling for the 2003 AQMP for the four worst-case intersections in the Air Basin: (1) Wilshire Boulevard and Veteran Avenue; (2) Sunset Boulevard and Highland Avenue; (3) La Cienega Boulevard and Century Boulevard; and (4) Long Beach Boulevard and Imperial Highway. The evidence provided in the 2003 AQMP shows that the peak modeled CO concentration due to vehicle emissions at these four intersections would not exceed the NAAQS.

As previously stated, CO emission rates increase and ground-level concentrations tend to accumulate when speeds are low. Therefore, three speed bins will be analyzed (5, 10 and 15 miles per hour) extending out for a total distance of 500 feet from each intersection. As the CO Protocol states, "The recommended length for approach and departure links is 150 meters [approximately 500 feet]." Existing background concentrations obtained from the nearest monitoring station were included within the modeling input parameters. Additionally, the CO Protocol recommends the following, "receptor locations for a 1-hour analysis should be 3 meters [approximately 10 feet]." Therefore, receptors were placed around intersections at worst-case curbside locations, approximately 10 feet from the edge of roadway, and within locations accessible to the public.

The results of the hot spot modeling were compared to the applicable NAAQS and CAAQS to determine if the operation of the Proposed Project in addition to background concentrations and mobile sources assumed to operate in the local study area (i.e., traffic generated from neighboring

NFL games and other events at The Forum) would create a hot spot at intersections within the Project study area.

Health Risk Assessment

The Proposed Project would emit TACs during construction and operation, exposure to which may result in an increase in carcinogenic and non-carcinogenic health risks on the residents and other sensitive receptors in the vicinity. A HRA was prepared to evaluate the risk of potential negative health outcomes (cancer, or other acute or chronic conditions) related to TACs exposure from airborne emissions during the Proposed Project's construction and operation. Non-cancer health risks are shorter-term in nature, and were assessed separately for construction and operation. However, the incremental increase in lifetime cancer risk is assessed over longer exposure time periods (i.e. 30-year for residential receptors). Thus, the potential effects of Project-related carcinogenic TACs included the combination of exposure to construction-related activities and those from the exposure of operation-related activities.

The HRA followed the procedure and methods provided in the *Guidance Manual for Preparation of Health Risk Assessments* issued by Office of Environmental Health Hazard Assessment (OEHHA) in 2015. as well as the methods the SCAQMD's *Risk Assessment Procedures for Rule 1401, 1401.1, and 212, version 8.1*, used in conjunction with the associated *SCAQMD Permit Application Package "N"*.[116,117,118] The procedure involved emission quantification, modeling of environmental transport, evaluation of environmental fate, identification of exposure routes, identification of exposed populations, and estimation of short-term (e.g., 1-hour maximum), 8-hour average, and long-term (annual) exposure levels. The revised 2015 OEHHA Guidance takes into account the sensitivity of children to TAC emissions, breathing rates, and time spent at home since children have higher breathing rate compared to adults and would likely spend more time at home resulting in longer exposure durations.

The TAC emissions of the Proposed Project were primarily related to MSAT emissions, including DPM, acetaldehyde, benzene, 1-3-butadiene, formaldehyde and naphthalene, from construction and operation activities. Conservatively, PM10 emissions of diesel engines were used as a surrogate for DPM emissions, as DPM is small in size and a subset of PM2.5.[119,120] For construction, the potential TAC emission sources were heavy-duty equipment used during demolition, grading and excavation, and building construction activities. For operation, the potential emission sources were on-site diesel equipment, media vans, mobile generators and

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116 Office of Environmental Health Risk Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, 2015. Accessed March 2019.

117 South Coast Air Quality Management District. September 1, 2017. Risk Assessment Procedures for Rule 1401, 1401.1, and 212, Version 8.1. Available: http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12. Accessed April 2019.

118 South Coast Air Quality Management District. Permit Application Package "N". Available: http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/attachmentn-v8-1.pdf?sfvrsn=4. Accessed April 2019.

119 Office of Environmental Health Risk Assessment, "For the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant" Part B: Health Risk Assessment for Diesel Exhaust, May 1998, [HYPERLINK "https://www.arb.ca.gov/toxics/dieseltac/part_b.pdf"]. Accessed November 2018.

120 California Air Resources Board, [HYPERLINK "https://ww3.arb.ca.gov/research/aaqs/common-pollutants/pm/pm.htm"], accessed March 2019.

forklifts used on loading docks, and passenger vehicles. Since TACs have cancer and non-cancer health effects, the impacts of being exposed to TAC emissions during construction and operation were evaluated on a short term and annual basis.

As described in detail above in Section *Localized Emissions and Analysis Methodology*, air dispersion model runs were conducted to simulate annual air concentrations at sensitive receptors for the duration of construction and for the following years of operation of the Proposed Project. Annual air concentrations were compared to OEHHA's Cancer Potency Factor (CPF) to evaluate cancer risk and Recommended Exposure Level (REL) to evaluate acute and chronic health effects. The receptor with the highest annual concentration was identified and the associated cancer risk and hazard index was calculated as described below. The maximum cancer risk is compared to the SCAQMD threshold of 10 in one million and the maximum hazard index is compared to the SCAQMD threshold for Acute and Chronic Hazard Indices (1.0). The cancer burden is compared to the SCAQMD threshold of 0.5 excess cancer cases in areas where cancer risk equals or exceeds 1 in one million.

The cancer risk values for TAC emissions consider exposure via the inhalation pathway. The potential exposure through other pathways (e.g., ingestion) requires substance and site-specific data, and the specific parameters for DPM are not known for these pathways.[121] The OEHHA Guidance recommends the incorporation of several factors to quantify the carcinogenic compound dose via the inhalation pathway. Once determined, the dose is multiplied by the compound-specific inhalation cancer potency factor to derive the cancer risk estimate. The dose takes into account the concentration at a sensitive receptor. The cancer potency factor is compound-specific. In performing health risk calculations, carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. Incremental health risks associated with exposure to carcinogenic compounds is defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). For example, the URF for DPM recommended by the Scientific Review Panel[122] is 3.0×10^{-4} per microgram per cubic meter ($\mu g/m^3$). This value corresponds to a Cancer Potency Factor (CPF) of 1.1 per milligram/kilogram (body weight) per day (mg/kg(bw)-day). The URF for DPM means that for receptors with an annual average concentration of 1 $\mu g/m^3$ in the ambient air, the probability of contracting cancer over a lifetime of exposure is 300 in one million. This approach for calculating cancer risk is intended to result in conservative (i.e., health protective) estimates of health impacts and is used for assessing risks to sensitive receptors. The estimation of health risks is calculated as follows:

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121 CARB 1998, California Air Resources Board, Report to the Air Resources Board on the Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant, Part A Exposure Assessment, Approved by the Scientific Review Panel, (1998). https://www.arb.ca.gov/toxics/dieseltac/part_a.pdf. Accessed February 2019.

122 The Scientific Review Panel is charged with evaluating the risk assessments of substances proposed for identification as toxic air contaminants by CARB, OEHHA, and the Department of Pesticide Regulation (DPR), and the review of guidelines prepared by OEHHA.

Equation 1: $Dose_{RESIDENT}$ (mg/kg/day) = $C_{AIR} \times DBR \times A \times EF \times CF$ where:

- C_{air}= concentration in air (µg/m^3)
- DBR= daily breathing rate normalized to body weight (L/kg body weight-day)
- A= inhalation absorption factor (1 for DPM, unitless)
- EF= exposure frequency (unitless) (days/365 days)
- CF= 10^{-6}, correction factor, micrograms to milligrams conversion, liters to cubic meters conversion

Equation 2: $Risk_{INH-RESIDENT}$ (in one million) = $Dose_{AIR} \times CPF \times ASF \times ED/AT \times FAH \times CCF$ where:

- $Dose_{AIR}$= daily inhalation dose (mg/kg-day)
- CPF= cancer potency factor (mg/kg-day)$^{-1}$
- ASF= age sensitivity factor (unitless)
- ED= exposure duration (years)
- AT= averaging time for lifetime cancer risk (years)
- FAH= fraction of time spent at home (unitless)
- CCF= 10^6, cancer conversion factor to represent risk in chances per million

Equation 3: $Dose_{STUDENT}$ (mg/kg/day) = $[C_{AIR} \times WAF] \times DBR \times A \times EF \times CF$ where:

- C_{air}= concentration in air (µg/m^3)
- WAF= worker adjustment factor (unitless), WAF = $(H_{residential} / H_{source})$ x $(D_{residential} / D_{source})$ = (24/8) x (7/6) = 3.5
- DBR= daily breathing rate normalized to body weight (L/kg body weight-day)
- A= inhalation absorption factor (1 for DPM, unitless)
- EF= exposure frequency (unitless) 0.46 (180 days / 365 days). Equivalent to school days per year
- CF= 10^{-6}, correction factor, micrograms to milligrams conversion, liters to cubic meters conversion

Equation 4: $Risk_{INH-STUDENT}$ (in one million) = $Dose_{AIR} \times CPF \times ASF \times ED/AT \times FAH \times CCF$ where:

- $Dose_{AIR}$= daily inhalation dose (mg/kg-day)
- CPF= cancer potency factor (mg/kg-day^{-1})
- ASF= age sensitivity factor (unitless)
- ED= exposure duration (years)
- AT= averaging time for lifetime cancer risk (years)

- CCF= 10^6, cancer conversion factor to represent risk in chances per million

A summary of the exposure parameters used under this methodology are shown in **Table 3.2-11**, *Cancer Risk Exposure Parameters*.

TABLE 3.2-11
CANCER RISK EXPOSURE PARAMETERS

	Residential				
Parameter	**3rd Trimester**	**0 < 2 years**	**2 < 16 years**	**16<30**	**School-Student**
C_{AIR} (ug/m^3)	**Based on AERMOD dispersion modeling results**				
DBR[a] (L/kg BW-day)					
A[b] (unitless)					
EF[b] (unitless)					
CF[b] (unitless)					
CPF[b] (mg/kg/day-[1])	**Pollutant Specific**				
ASF[b] (unitless)					
ED[b,c] (years)					
AT[b] (years)					
FAH[a] (unitless)					
WAF[a,c] (unitless)					
CCF[b] (unitless)					

NOTES:
a SCAQMD 2017 Risk Assessment Procedures, Permit Application N, Use in conjunction with the Risk Assessment Guideline 1401,1401.1, and 212.
b OEHHA 2015 Guidance Manual.
c WAF is based on construction emissions occurring 6 days per week for 8 hours per day. This analysis treats students at school as workers at work for an 8-hour day.
SOURCE: ESA, 2019

Age Sensitivity Factors

The estimated excess lifetime cancer risks for residential receptors (including the early-in-life exposure) were adjusted using the ASFs recommended in the California Environmental Protection Agency (Cal/EPA) OEHHA Technical Support Document and 2015 OEHHA guidance. This approach accounts for an "anticipated special sensitivity to carcinogens" of infants and children. Cancer risk estimates were weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to two years of age and by a factor of three for exposures that occur from 2 to 15 years of age. No weighting factor (i.e., an ASF equal to one, which is equivalent to no adjustment) is applied to ages 16 to 30 years.

Cancer Risk Calculation

Excess lifetime cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to carcinogens. The risk is expressed as a unitless probability, and was calculated as the number of cancer incidences per million individuals in the HRA. The cancer risk for each chemical was calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the CPF. The OEHHA-recommended CPFs are provided in **Table 3.2-12,** *MSAT Cancer Potency Factors*, below.

TABLE 3.2-12
MSAT CANCER POTENCY FACTORS

Pollutant	Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$
DPM	5.0
Acetaldehyde	140
Benzene	3.0
1,3,-Butadiene	2.0
Formaldehyde	9.0
Naphthalene	9.0

SOURCE: OEHHA 2015

For cancer risk, the SCAQMD guidance identifies a significant impact if a project would result in an incremental cancer risk that is greater than 10 per million for any receptor.

Chronic and Acute Health Impacts

Non-cancer effects of chronic (i.e., long- term) TAC exposures were evaluated using the Hazard Index (HI) approach consistent with the OEHHA guidance. The chronic HI was calculated by dividing the modeled annual average concentration by the Reference Exposure Level (REL). The REL is the concentration at or below which no adverse health effects are anticipated. The RELs for MSATs were obtained from OEHHA. The OEHHA-recommended chronic and acute RELs are provided in **Table 3.2-13,** MSAT Reference Exposure Levels, below. The SCAQMD guidance identifies a significant impact if a project would result in an incremental chronic and acute HI that is greater than 1.0.

TABLE 3.2-13
MSAT REFERENCE EXPOSURE LEVELS

Pollutant	Chronic REL ($\mu g/m^3$)	Acute REL ($\mu g/m^3$)
DPM	5.0	--
Acetaldehyde	140	470
Benzene	3.0	27
1,3,-Butadiene	2.0	660
Formaldehyde	9.0	55
Naphthalene	9.0	--

SOURCE: OEHHA, 2015

The process of assessing health risks and impacts includes a degree of uncertainty. The level of uncertainty depends on the availability of data and the extent to which assumptions must be relied upon in cases where the data are incomplete or unknown. All HRAs rely upon scientific studies to reduce the level of uncertainty; however, it is not possible to completely eliminate uncertainty from the analysis. Where assumptions are used to substitute for incomplete or unknown data, it is standard practice in performing HRAs to err on the side of health protection to avoid underestimating or underreporting the risk to the public. In general, sources of uncertainty that may lead to an overestimation or an underestimation of the risk include extrapolation of toxicity data in animals to humans and uncertainty in the exposure estimates. In addition to uncertainty, there exists "a natural range or variability in measured parameters defining the exposure scenario," and that "the greatest quantitative impact is variation among the human population in such properties as height, weight, food consumption, breathing rates, and susceptibility to chemical toxicants."[123] As mentioned previously, it is typical to err on the side of health protection by assessing risk on the most sensitive populations, such as children and the elderly, by modeling potential impacts based on high-end breathing rates, by incorporating age sensitivity factors, and by not taking into account exposure reduction measures, such as mechanical air filtration building systems.

These conservative assumptions were implemented in the analysis contained within this Draft EIR and as detailed in Appendix C.

Population-Wide Risks (Cancer Burden)

If incremental cancer risk from the Proposed Project exceeds the SCAQMD regulatory threshold of an incremental increase of 1 in one million, then an estimate determination of population level risks is required.[124] These are conservative estimates of the number of cancer cases that could occur to exposed populations. The impacts are considered significant if more than 0.5 cases are calculated for the Proposed Project.[125]

Proposed Project risks for construction and operation impacts were evaluated for a 70-year residential scenario in order to determine population-wide risks. The zone of impact is the area surrounding the Project Site that encompasses cancer risk values greater than or equal to 1 in one million and would be determined by modeling. The population-wide risks would be estimated for persons living within the zone of impact.

A census block group is a statistical area within a census tract that is assigned a population number. The 2019 population by block group was based on the 2010 census population available

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[123] Office of Environmental Health Risk Assessment, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, 2015. Accessed March 2019.

[124] South Coast Air Quality Management District. September 1, 2017. Risk Assessment Procedures for Rule 1401, 1401.1, and 212, Version 8.1. Available: http://www.aqmd.gov/docs/default-source/permitting/rule-1401-risk-assessment/riskassessproc-v8-1.pdf?sfvrsn=12. Accessed April 2019.

[125] South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, March 2011. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed March 2019.

from the U.S. Census and then cross-referenced with the calculated cancer risks.[126] When multiple grid points were located within a block group, cancer risk was calculated as the average within the block group. The total cancer burden for the Proposed Project was determined as the sum of the individual census block group cancer burdens.

Health Impact Assessment (HIA)

Currently, the health impact of a particular criteria pollutant is analyzed by air districts on a regional scale based on how close the area is to attaining the NAAQS, and not at a project-level scale. Because air districts' attainment plans and supporting air modeling tools are regional in nature, they do not allow for analysis of the health impacts of specific projects on any given geographic location., there are currently no adopted thresholds for determining the significance of health effects. However, there are project-level tools, such as AERMOD, and regional-level tools, like the US EPA's Community Multiscale Air Quality (CMAQ) model, that were implemented into a quantitative HIA, where feasible, to provide information on possible health effects.

AERMOD was used to model the incremental increase in ambient CO, NO_2, and primary PM (not PM precursors) concentrations from the Proposed Project. For pollutants other than ozone and PM, where the air dispersion modeling results showed impacts below the NAAQS and CAAQS, a qualitative HIA was performed to compliment the modeling results, As the SCAB is in nonattainment for PM10 and PM2.5, those pollutants were compared to their corresponding SCAQMD ambient air quality standards.[127]

Similarly, a qualitative HIA was performed for secondary PM precursors and where air dispersion modeling for CO and NO_2 exceeded the respective ambient air quality standard.

For ozone and PM2.5, quantitative HIAs were performed. The PM2.5 analysis used AERMOD based on the same meteorology as used in the LST analysis, described above, to predict the Proposed Project impacts on regional ambient air concentration at grid level. The ozone HIA used the CMAQ model to predict the Proposed Project impacts on the regional ambient air concentration of ozone. The ozone modeling effort included developing meteorology, emissions, a chemical transport model, and other environmental conditions using third-party models and processing tools in order to model ozone impacts in CMAQ. For meteorology, a regional model (like WRF or MM5) and a chemistry interface processors (MCIP) was used in conjunction with CMAQ. Additional emissions and initial and boundary conditions models were used with CMAQ to calculate ozone concentrations.

Next, the analyses used the US EPA's Environmental Benefits Mapping and Analysis Program - Community Edition (BenMAP-CE) model to estimate the resulting health impacts from change in

[126] United States Census Bureau. Available: [HYPERLINK "https://census.gov/"]. Accessed April 2019.
[127] South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, March 2011. http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed March 2019.

regional ambient PM2.5 and ozone concentrations. BenMAP-CE outputs included ozone- and PM- related health endpoints such as premature mortality, hospital admissions, and emergency room visits. Because there are currently no guidance or thresholds for significance determination regarding health effects, for informational purposes only, the analysis compared the BenMAP-CE results to background (or baseline) health incident rates.

Daily PM2.5 (for AERMOD) and NOx and VOC (for CMAQ) emissions profile for an annual period were established by analyzing the estimated normal operational scenarios and schedule at the Project Site and surrounding Adjusted Baseline Environmental Setting sources (i.e., the HPSP and The Forum). This analysis required comprehensive traffic data from the Proposed Project's TIA for the Proposed Project-only scenarios and Adjusted Baseline project scenarios.

Besides pollutant specific HIA discussions and/or modeling, the HIA incorporated a discussion addressing regional growth and development trends compared to decreasing criteria air pollutant levels over time. Regional and citywide trends in population, household growth, employment and vehicle miles traveled, if available, were presented as well as regional and local criteria air pollutant trends based on the SCAQMD's *Air Quality Data Tables* and US EPA's *Air Trends and Air Quality – Cities and Counties* data. In addition, a further discussion of the major air quality regulations, management programs and emission control policies leading to reduced criteria air pollutant emissions were included. Additional discussions were incorporated regarding the SCAQMD's Final 2016 Air Quality Management Plan (AQMP) that outlines the collective strategy for the South Coast Air Basin to reach the attainment standards for ozone, PM10, and fine particulate matter PM2.5 by the attainment date while accounting for regional growth, increasing development, and maintaining a healthy economy. The discussion emphasized the strategies outlined to reach attainment in the Final 2016 AQMP that encompasses partnerships at federal, State, and local levels and includes new regulations, development of incentive funding, and supporting infrastructure for early deployment of advanced control technologies for both stationary and mobile sources.