Appendix D

Air Quality and Greenhouse Gas Emissions Technical Report

ESA

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FIRESTONE BOULEVARD WIDENING PROJECT

Air Quality and Greenhouse Gas Emissions Technical Report

Prepared for
City of Norwalk
12700 Norwalk Boulevard
Norwalk, California 90650

September 2019

ESA

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Prepared for
City of Norwalk
12700 Norwalk Boulevard
Norwalk, California 90650

September 2019

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
Air Basin	South Coast Air Basin
AQMP	Air Quality Management Plan
ATCM	Air Toxics Control Measure
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California Environmental Protection Agency
CALGreen Code	California Green Building Standards Code
CAFE	Corporate Average Fuel Economy
CAPCOA	California Air Pollution Control Officer's Association
CARB	California Air Resources Board
CEC	California Energy Commission
CEUS	Commercial End-Use Survey
CEQA	California Environmental Quality Act
City	City of Norwalk
CO	carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalents
CT-EMFAC	Caltrans emissions model
DPM	Diesel Particulate Matter
EMFAC	on-road vehicle emissions factor model
GHG	Greenhouse Gas
GWP	Global Warming Potential
HFCs	Hydrofluorocarbons
hp	horsepower
HVAC	Heating, Ventilating and Air Conditioning
IPCC	Intergovernmental Panel on Climate Change
LCFS	Low Carbon Fuel Standard

LOS	Level of Service
LST	localized significance threshold
MATES IV	Multiple Air Toxics Exposure Study, May 2015
MPO	Metropolitan Planning Organization
$MTCO_2e$	Metric ton of carbon dioxide equivalent
$MMTCO_2e$	Million metric tons of carbon dioxide equivalent
NAAQS	National Ambient Air Quality Standards
NO	nitric oxide
NO_2	nitrogen dioxide
N_2O	Nitrous Oxide
NO_X	nitrogen oxides
OPR	California Office of Planning and Research
Pb	lead
PFCs	Perfluorocarbons
PM2.5	fine particulate matter
PM10	respirable particulate matter
ppm	parts per million
RTIP	Regional Transportation Improvement Program
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SF_6	Sulfur Hexafluoride
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAC	toxic air contaminant
$\mu g/m^3$	micrograms per cubic meter
µm	micrometers
USEPA	United States Environmental Protection Agency
VDECS	Verified Diesel Emission Control Strategies
VMT	Vehicle miles traveled
VOC	volatile organic compounds

EXECUTIVE SUMMARY

The City of Norwalk (City) is proposing to widen Firestone Boulevard in Norwalk, California. The City has identified the need to widen Firestone Boulevard between Hoxie Avenue/northbound (NB) Interstate 605 (I-605) Freeway Ramps to the west and Imperial Highway to the east. The Firestone Boulevard Widening Project (Project or Proposed Project) would be located partially within the State's right-of-way (ROW) at the western limits with most of the project located within the City of Norwalk.

In accordance with the requirements under the California Environmental Quality Act (CEQA), this Technical Report provides an estimate of air quality emissions for the Project and the potential impacts from associated construction and operational activities. The report includes the categories and types of emission sources resulting from the Project, the calculation procedures used in the analysis, and any assumptions or limitations.

This report summarizes the potential for the Project to conflict with an applicable air quality plan, to violate an air quality standard or threshold, to result in a cumulatively net increase of criteria pollutant emissions, to expose sensitive receptors to substantial pollutant concentrations, or to create objectionable odors affecting a substantial number of people. The findings of the analyses are as follows:

- The incremental increase in emissions from construction and operation of the Project would not exceed the regional daily emission thresholds set forth by the South Coast Air Quality Management District (SCAQMD). Thus, the Project would not result in a regional violation of applicable air quality standards or jeopardize the timely attainment of such standards in the South Coast Air Basin (the Air Basin).
- The incremental increase in onsite emissions from construction and operation of the Project would not exceed the localized significance thresholds set forth by the SCAQMD. Thus, the Project would not result in a localized violation of applicable air quality standards or expose offsite receptors to substantial levels of regulated air contaminants resulting in a less than significant impact.
- Emissions from the increase in traffic due to operation of the Project would not have a significant impact upon 1-hour or 8-hour local carbon monoxide (CO) concentrations due to mobile source emissions.
- Project would not result in significant toxic air contaminant emissions.
- Project construction and operations would not result in significant levels of odors.
- The Project would be consistent with air quality policies set forth by SCAQMD.
- The Project would result in a less than significant cumulative air quality impacts during construction and operations of the project.

The proposed Project would introduce short-term and temporary GHG emissions from construction, and long-term GHG emissions from operation. The following emission sources, associated with the Project, have been evaluated:

- *Construction* – Activities associated with construction of the Project, such as burning of fossil fuels for demolition, grading, building construction, and paving would result in temporary and incremental increases in GHG emissions.
- *Operation* – Mobile emissions would decrease with implementation of the Proposed Project due to improved LOS and decreases in delay time at intersection within the Project corridor.

The Project would be consistent with the applicable Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP)/ Sustainable Communities Strategy (SCS) policies intended to meet the regions' GHG reduction targets as assigned by the California Air Resources Board (CARB). Thus the Project's GHG emissions would be consistent with regulatory schemes intended to reduce GHG emissions. Therefore, the Project would result in less than significant GHG emissions based on applicable thresholds of significance as evaluated in this report.

SECTION 1
Introduction

The City of Norwalk (City) has identified the need to widen Firestone Boulevard between Hoxie Avenue/northbound (NB) Interstate 605 (I-605) Freeway Ramps to the west and Imperial Highway to the east. The Firestone Boulevard Widening Project (Project or Proposed Project) would be located partially within the State's Right-of-way (ROW) at the western limits with most of the project located within the City of Norwalk.

1.1 Existing Conditions

The Project Site is located in the City of Norwalk, shown in **Figure 1**, *Project Location Map*. The western limits of the Proposed Project are located within the State's ROW at the intersection of Hoxie Avenue/NB I-605 Freeway Ramps and the eastern limits are located at Imperial Highway.

The existing Firestone Boulevard serves as a vital corridor to move goods and people, supporting the Norwalk economy. It provides a necessary link between the I-5 Freeway and the I-605 Freeway. Currently, this segment of Firestone Boulevard consists of 4-lanes of traffic (2 in each direction) and a landscaped raised median, in an urbanized area of the City with businesses on both sides of the road.

Previously the Cities of Norwalk and Downey, under a joint agreement, widened Firestone Boulevard to the west from the City of Downey limits to the I-605 Freeway ramps. Los Angeles (LA) Metro and Gateway Cities Council of Governments (COG) are currently planning the improvements to the I-605 Freeway/Firestone Boulevard interchange. This project has been identified as an early action project of the larger I-605 Freeway Improvements project.

1.2 Project Description

The Firestone Boulevard Widening project would upgrade the existing section to be consistent with the wider section to the west and the planned 6-lane cross section under the I-605 freeway. This project widens the roadway east of the I-605 freeway for three (3) lanes in each direction including at an existing overpass of the Union Pacific Railroad (UPRR) line. The project will also provide multi-modal improvements with the installation of on-street (class II and class III) bicycle facilities. Other improvements that are part of the Firestone Boulevard Widening project include, but are not limited to, a bridge widening over a UPRR active line, traffic signal improvements, retaining walls, pavement reconstruction, landscape and irrigation improvements, and pedestrian (ADA) improvements.

The Project is anticipated to be constructed within existing City Right-of-way, except the westerly 200 feet of the Project's limits, which are located within the State's Right-of-Way.

SOURCE: ESRI

Firestone Blvd Widening Project

Figure 1
Project Location Map

ESA

1.3 Existing Air Quality Conditions

Regional Air Quality

Criteria Pollutants

The Project is located in the South Coast Air Basin (Air Basin). The distinctive climate of the Air Basin is determined primarily by its terrain and geographical location. Regional meteorology is dominated by a persistent high pressure area which commonly resides over the eastern Pacific Ocean. Seasonal variations in the strength and position of this pressure cell cause changes in the weather patterns of the area. Warm summers, mild winters, infrequent rainfall, moderate daytime on-shore breezes, and moderate humidity characterize local climatic conditions. This normally mild climatic condition is occasionally interrupted by periods of hot weather, winter storms, and hot easterly "Santa Ana" winds.

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and 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 (USEPA) 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. A brief description of the health effects of these criteria air pollutants are provided below.

Ozone (O_3): Ozone is a secondary pollutant formed by the chemical reaction of volatile organic compounds (VOCs) and nitrogen oxides (NO_X) under favorable 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. An elevated level of ozone irritates the lungs and breathing passages, causing coughing and pain in the chest and throat, thereby increasing susceptibility to respiratory infections and reducing the ability to exercise. Effects are more severe in people with asthma and other respiratory ailments. Long-term exposure may lead to scarring of lung tissue and may lower the lung efficiency.

Volatile Organic Compounds (VOCs): VOCs are typically formed from combustion of fuels and/or released through evaporation of organic liquids. Some VOCs are also classified by the State as toxic air contaminants (TACs). These are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons, as are architectural coatings. Emissions of VOCs themselves are not "criteria" pollutants; however, they contribute with NO_X to formation of O_3 and are regulated as O_3 precursor emissions.

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. The primary compounds of air quality concern

include NO_2 and nitric oxide (NO), which can quickly oxidize in the atmosphere to form NO_2. Ambient air quality standards have been promulgated for NO_2, which is a reddish-brown, reactive gas. The principle 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 emissions include power plants, large industrial facilities, and motor vehicles. Emissions of NO_X are a precursor to the formation of ground-level ozone. NO_2 can potentially irritate the nose and throat, aggravate lung and heart problems, and may increase susceptibility to respiratory infections, especially in people with asthma. "NO_2 is an oxidizing gas capable of damaging cells lining the respiratory tract. Exposure to NO_2 along with other traffic-related pollutants, is associated with respiratory symptoms, episodes of respiratory illness and impaired lung functioning. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children."[1] NO_2 also contributes to the formation of particulate matter (PM). The terms "NO_X" and "NO_2" are sometimes used interchangeably. However, the term "NO_X" is primarily used when discussing emissions, usually from combustion-related activities. The term "NO_2" is primarily used when discussing ambient air quality standards. More specifically, NO_2 is regulated as a criteria air pollutant under the Clean Air Act and subject to the ambient air quality standards, whereas NO_X and NO are not. In cases where the thresholds of significance or impact analyses are discussed in the context of NO_X emissions, it is based on the conservative assumption that all NO_X emissions would oxidize in the atmosphere to form NO_2.

Carbon Monoxide (CO): CO is primarily emitted from combustion processes and motor vehicles due to incomplete combustion of fuel. Elevated concentrations of CO weaken the heart's contractions, lower the amount of oxygen carried by the blood, and are especially dangerous for people with chronic heart disease. Inhalation of CO can cause nausea, dizziness, and headaches at moderate concentrations, and can be fatal at high concentrations.

Sulfur Dioxide (SO_2): Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of SO_2 aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing. High levels of particulates appear to worsen the effect of SO_2, and long-term exposures to both pollutants leads to higher rates of respiratory illness.

Particulate Matter (PM10 and PM2.5): The human body naturally prevents the entry of larger particles into the body. However, small particles including fugitive dust, with an aerodynamic diameter equal to or less than 10 microns (PM10) and even smaller particles with an aerodynamic diameter equal to or less than 2.5 microns (PM2.5), can enter the body and are trapped in the nose, throat, and upper respiratory tract. These small particulates could potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The elderly, children, and those with chronic lung or heart disease are most

[1] California Air Resources Board, "Nitrogen Dioxide – Overview," http://www.arb.ca.gov/research/aaqs/caaqs/no2-1/no2-1.htm. Accessed June 2019.

sensitive to PM10 and PM2.5. Lung impairment can persist for two to three weeks after exposure to high levels of particulate matter. Some types of particulates could become toxic after inhalation due to the presence of certain chemicals and their reaction with internal body fluids. In children, studies have shown associations between PM exposure and reduced lung function and increased respiratory symptoms and illnesses.[2]

Lead (Pb): Lead is emitted from industrial facilities and from the sanding or removal of old lead-based paint. Smelting or processing of lead is the primary source of lead emissions, which is primarily a regional pollutant. Lead affects the brain and other parts of the body's nervous system. Exposure to lead in very young children impairs the development of the nervous system, kidneys, and blood forming processes in the body.

Toxic Air Contaminants (TACs)

Toxic air contaminants (TACs) are generally defined as those contaminants that are known or suspected to cause serious health problems, but do not have a corresponding ambient air quality standard. TACs are also defined as an air pollutant that may increase a person's risk of developing cancer and/or other serious health effects; however, the emission of a toxic chemical does not automatically create a health hazard. Other factors, such as the amount of the chemical, 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. 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 and may exist as PM10 and PM2.5 or as vapors (gases). TACs include metals, other particles, gases absorbed by particles, and certain vapors from fuels and other sources.

The emission of toxic substances into the air can be damaging to human health and to the environment. Human exposure to these pollutants 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. Pollutants 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. 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 188 TACs identified in the Clean Air Act (CAA).

[2] California Air Resources Board, "Particulate Matter – Overview," http://www.arb.ca.gov/research/aaqs/caaqs/pm/pm.htm. Accessed June 2019.

USEPA has assessed this expansive list of toxics and identified 21 TACs as Mobile Source Air Toxics (MSATs). 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. USEPA also extracted a subset of the 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, USEPA stresses that the lists are subject to change and may be adjusted in future rules.

The most comprehensive study on air toxics in the Air Basin is the Multiple Air Toxics Exposure Study (MATES-IV), conducted by SCAQMD. The monitoring program measured more than 30 air pollutants, including both gases and particulates. 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. MATES-IV found that the average cancer risk at a project site from carcinogenic air pollutants is approximately 1,138 in 1 million[3], with an average regional risk of approximately 1,023 in 1 million. This risk is 65 percent lower than the monitored average in the MATES III study.[4]

Diesel Particulate Matter

According to the 2006 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). 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 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.

3 South Coast Air Quality Management District, 2015. *Mates IV Carcinogenic Risk Interactive Map*. http://www.aqmd.gov/home/library/air-quality-data-studies/health-studies/mates-iv/estimated-carcinogenic-risk. Accessed May 2017.

4 South Coast Air Quality Management District 2015. *Final MATES IV Report*. http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf?sfvrsn=7. Accessed June 2019.

The most common exposure to DPM is breathing the 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.

Acute exposure to diesel exhaust may cause irritation to the eyes, nose, throat and lungs, some neurological effects such as lightheadedness. Acute exposure may also elicit a cough or nausea as well as exacerbate asthma. Chronic exposure to diesel PM in experimental animal inhalation studies have shown a range of dose-dependent lung inflammation and cellular changes in the lung and immunological effects. Based upon human and laboratory studies, there is considerable evidence that diesel exhaust is a likely carcinogen. Human epidemiological studies demonstrate an association between diesel exhaust exposure and increased lung cancer rates in occupational settings.

DPM poses the greatest health risk among these 10 TACs mentioned. Based on receptor modeling techniques, SCAQMD estimated that DPM accounts for 90 percent of the total risk in the Air Basin. SCAQMD has analyzed DPM in their MATES Studies. From MATES III to MATES IV, DPM has shown a reduction of 70 percent in levels measured at the 10 monitoring sites.[5]

Local Air Quality

SCAQMD maintains a network of air quality monitoring stations located throughout the Air Basin to measure ambient pollutant concentrations. The Project Site is located in SCAQMD Source Receptor Area (SRA) 5; therefore, the monitoring station most representative of the Project Area is the Compton Monitoring Station. Criteria pollutants monitored at this station include CO, NO_2, PM2.5, Pb, and ozone. The Long Beach (South) Monitoring Station was used to report data for PM10. The Long Beach (Hudson) Monitoring Station was used for SO_2 monitoring data. The most recent data available from SCAQMD for these monitoring stations are from years 2013 to 2018. The pollutant concentration data for these years are summarized in **Table 1,** *Ambient Air Quality Data*.

[5] South Coast Air Quality Management District 2015. *Final MATES IV Report*. http://www.aqmd.gov/docs/default-source/air-quality/air-toxic-studies/mates-iv/mates-iv-final-draft-report-4-1-15.pdf?sfvrsn=7. Accessed June 2019.

TABLE 1
AMBIENT AIR QUALITY DATA

Pollutant/Standard	2013	2014	2015	2016	2017	2018
O_3 (1-hour)						
Maximum Concentration (ppm)	0.090	0.094	0.091	0.098	0.092	0.075
Days > CAAQS (0.09 ppm)	0	0	0	1	0	0
O_3 (8-hour)						
Maximum Concentration (ppm)	0.080	0.081	0.072	0.071	0.076	0.063
4th High 8-hour Concentration (ppm)	0.063	0.073	0.065	0.064	0.072	0.058
Days > CAAQS (0.070 ppm)	1	4	1	1	5	0
Days > NAAQS (0.070 ppm)	1	4	1	1	5	0
NO_2 (1-hour)						
Maximum Concentration (ppm)	0.070	0.068	0.074	0.064	0.099	0.068
98th Percentile Concentration (ppm)	0.062	0.060	0.059	0.058	0.067	0.056
NO_2 (Annual)						
Annual Arithmetic Mean (0.030 ppm)	0.017	0.016	0.017	0.016	0.16	0.15
CO (1-hour)						
Maximum Concentration (ppm)	5.8	5.8	4.4	4.4	5.6	4.7
CO (8-hour)						
Maximum Concentration (ppm)	3.5	3.8	3.3	3.9	4.6	3.5
SO_2 (1-hour)						
Maximum Concentration (ppm)	0.015	0.015	0.038	0.018	0.020	0.011
99th Percentile Concentration (ppm)	0.012	0.010	0.012	0.012	0.014	0.009
SO_2 (24-hour)						
Maximum Concentration (ppm)	0.004	0.003	0.005	0.004	0.003	0.002
PM10 (24-hour)						
Maximum Concentration (µg/m^3)	64	59	62	56	71	56
Samples > CAAQS (50 µg/m^3)	--	13	13	--	--	0
Samples > NAAQS (150 µg/m^3)	0	0	0	0	--	6
PM10 (Annual Average)						
Annual Arithmetic Mean (20 µg/m^3)	27	27	27	28	15	24
PM2.5 (24-hour)						
Maximum Concentration (µg/m^3)	28.5	35.8	41.3	36.3	53.4	49.4
98th Percentile Concentration (µg/m^3)	24	36	37	26	31	31
Samples > NAAQS (35 µg/m^3)	3	--	9	3	15	6
PM2.5 (Annual)						
Annual Arithmetic Mean (12 µg/m^3)	11.6	15.2	11.8	11.1	12.3	12.9
Lead						
Maximum 30-day average (µg/m^3)	0.018	0.020	0.020	0.040	0.045	0.019

ppm = parts per million; µg/m^3 = micrograms per cubic meter
"—" = not enough data was available

SOURCES: California Air Resources Board. *iAdam: Air Quality Data Statistics.* Available: https://www.arb.ca.gov/adam/index.html, Accessed September 2019.
U.S. Environmental Protection Agency. *Air Data: Air Quality Data Collected at Outdoor Monitors Across the US*. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed: September 2019.

Existing Greenhouse Gas Environment

Global Climate Change

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation and storms. Historical records indicate that global climate changes have occurred in the past due to natural phenomena; however, data indicates that the current global conditions differ from past climate changes in rate and magnitude. The current increased changes in global climate have been attributed to anthropogenic (i.e., human-caused) activities by the Intergovernmental Panel on Climate Change (IPCC).[6] Greenhouse Gas (GHG) trap long-wave radiation or heat in the atmosphere, which heats the surface of the Earth. Without human intervention, the Earth maintains an approximate balance between the GHG emissions in the atmosphere and the storage of GHGs in the oceans and terrestrial ecosystems. GHGs are the result of both natural and anthropogenic activities. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions.

The federal government and State of California recognized that anthropogenic GHG emissions are contributing to changes in the global climate, and such changes are having and will have adverse effects on the environment, the economy, and public health. While worldwide contributions of GHG emissions are expected to have widespread consequences, it is not possible to link particular changes to the environment of California or elsewhere to GHGs emitted from a particular source or location. In other words, emissions of GHGs have the potential to cause global impacts rather than local impacts. Increased concentrations of GHGs in the Earth's atmosphere have been linked to global climate change and such conditions as, rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increased frequency and magnitude of severe weather conditions. Existing climate change models also show that climate warming portends a variety of impacts on agriculture, including loss of microclimates that support specific crops, increased pressure from invasive weeds and diseases, and loss of productivity due to changes in water reliability and availability. In addition, rising temperatures and shifts in microclimates associated with global climate change are expected to increase the frequency and intensity of wildfires. California law defines GHGs to include the following compounds: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).[7]

The most common GHG that results from human activity is CO_2, which represents 76 percent of total anthropogenic GHG emissions in the atmosphere (as of 2010 data),[8] followed by CH_4 and N_2O. Scientists have established a Global Warming Potential (GWP) to gauge the potency of each GHG's ability to absorb and re-emit long-wave radiation. The GWP of a gas is determined using CO_2 as the reference gas with a GWP of 1 over 100 years. For example, a gas with a GWP of 10 is 10 times more potent than CO_2 over 100 years. The sum of each GHG multiplied by its

6 Intergovernmental Panel on Climate Change, Fifth Assessment Report: The Physical Science Basis, Summary for Policy Makers, (2013).

7 CEQA Guidelines Section 15364.5; Health and Safety Code, section 38505(g).

8 Intergovernmental Panel on Climate Change, Fifth Assessment Report: Synthesis Report, (2013).

associated GWP is referred to as carbon dioxide equivalents (CO_2e). The measurement unit of CO_2e is used to report the combined potency of GHG emissions. The IPCC updated the GWP values based on the latest science in its Fifth Assessment Report (AR5). Although GWPs have been updated in IPCC AR5, CARB uses GWPs from IPCC AR4 for its most recent GHG emissions inventory.[9] Compounds that are regulated as GHGs are discussed below.[10, 11]

- **Carbon Dioxide (CO_2):** the most abundant GHG in the atmosphere, primarily generated from fossil fuel combustion from stationary and mobile sources. CO_2 has a GWP of 1, and therefore, is the reference gas for determining the GWPs of all other GHGs.
- **Methane (CH_4):** emitted from biogenic sources (i.e., resulting from the activity of living organisms), incomplete combustion in forest fires, landfills, manure management, and leaks in natural gas pipelines. CH_4 has a GWP of 25.
- **Nitrous Oxide (N_2O):** produced by human-related sources including agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuel, adipic acid production, and nitric acid production. N_2O has a GWP of 298.
- **Hydrofluorocarbons (HFCs):** fluorinated compounds consisting of hydrogen, carbon, and fluorine, typically used as refrigerants in both stationary refrigeration and mobile air conditioning systems. HFCs have GWPs ranging from 124 to 14,800.
- **Perfluorocarbons (PFCs):** fluorinated compounds consisting of carbon and fluorine, primarily created as a byproduct of aluminum production and semiconductor manufacturing. PFCs have GWPs ranging from 7,390 to 127,200.
- **Sulfur Hexafluoride (SF_6):** fluorinated compound consisting of sulfur and fluoride, a colorless, odorless, nontoxic, nonflammable gas most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. SF6 has a GWP of 22,800.

Worldwide, man-made emissions of GHGs were approximately 49,000 million metric tons (MMT) CO_2e in 2010 including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation).[12] Emissions of CO_2 from fossil fuel use and industrial processes account for 65 percent of the total while CO_2 emissions from all sources accounts for 76 percent of the total GHG emissions. Methane emissions account for 16 percent

9 GWPs and associated CO_2e values were developed by the Intergovernmental Panel on Climate Change (IPCC), and published in its Second Assessment Report (SAR) in, 1996. Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's SAR. The IPCC updated the GWP values based on the science in its Fourth Assessment Report (AR4). CARB reports GHG emission inventories for California using the GWP values from the IPCC AR4.

10 Intergovernmental Panel on Climate Change, Second Assessment Report, Working Group I: The Science of Climate Change, (1995).

11 Intergovernmental Panel on Climate Change, Fourth Assessment Report, Working Group I Report: The Physical Science Basis, (2007).

12 Intergovernmental Panel on Climate Change, Fifth Assessment Report Synthesis Report, (2014).

and N_2O emissions for 6.2 percent. In 2015, the United States was the world's second largest emitter of CO_2 at 5,150 MMT; China was the largest emitter of CO_2 at 10,700 MMT.[13]

The California Air Resources Board (CARB) compiles GHG inventories for the State of California. Based on the 2015 GHG inventory data (i.e., the latest year for which data are available from CARB, California emitted 440.4 million metric tons of CO_2e ($MMTCO_2e$) including emissions resulting from imported electrical power, and 405 $MMTCO_2e$ excluding emissions related to imported power. Since 2007, statewide GHG emissions have followed a declining trend and 2015 emissions were 1.5 $MMTCO_2e$ lower than 2014.[14] Between 1990 and 2015, the population of California grew by approximately 9.1 million (from 29.8 to 38.9 million), which represents an increase of approximately 30 percent from 1990 population levels.[15] In addition, the California economy, measured as gross state product, grew from $773 billion in 1990 to $2.5 trillion in 2015 representing an increase of approximately three times the 1990 gross state product.[16] Despite the population and economic growth, California's net GHG emissions only grew by approximately 2 percent between 1990 and 2015. According to CARB, the declining trend coupled with the state's GHG reduction programs (such as the Renewables Portfolio Standard, Low Carbon Fuel Standard (LCFS), vehicle efficiency standards, and declining caps under the Cap and Trade Program) demonstrate that California is on track to meet the 2020 GHG reduction target codified in California Health and Safety Code (HSC), Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32).[17] **Table 2**, *State of California Greenhouse Gas Emissions,* identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., areas of carbon sequestration due to forest growth) in 1990 and 2016 (i.e., the most recent year for which data are available from CARB). As shown in the table, the transportation sector is the largest contributor to statewide GHG emissions at 39 percent in 2016.

13 PBL Netherlands Environmental Assessment Agency and the European Commission Joint Research Center, Trends in Global CO_2 Emissions 2016 Report, (2016) 20, 23. Available: http://www.pbl.nl/en/publications/trends-in-global-co2-emissions-2016-report. Accessed August 2017.

14 California Air Resources Board, California Greenhouse Gas Emission Inventory-2017 Edition. Available at https://www.arb.ca.gov/cc/inventory/data/data.htm. Accessed June 2017.

15 United States Census Bureau, 1990 Census Apportionment Results, https://www.census.gov/data/tables/1990/dec/1990-apportionment-data.html. Accessed June 2017; California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State, January 1, 2011-2017, with 2010 Benchmark, http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/. Accessed June 2017.

16 California Department of Finance, Gross State Product. Available at: http://dof.ca.gov/Forecasting/Economics/Indicators/Gross_State_Product/. Accessed June 2017. Amounts are based on current dollars as of the date of the report (May 2017).

17 California Air Resources Board, Frequently Asked Questions for the 2016 Edition California Greenhouse Gas Emission Inventory, (2016). Available: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_faq_20160617.pdf. Accessed May 2017.

TABLE 2
STATE OF CALIFORNIA GREENHOUSE GAS EMISSIONS

Category	Total 1990 Emissions using IPCC SAR ($MMTCO_2e$)	Percent of Total 1990 Emissions	Total 2016 Emissions using IPCC AR4 ($MMTCO_2e$)	Percent of Total 2016 Emissions
Transportation	150.7	35%	169.4	39%
Electric Power	110.6	26%	68.6	16%
Commercial	14.4	3%	15.2	4%
Residential	29.7	7%	24.2	6%
Industrial	103.0	24%	89.6	21%
Recycling and Waste [a]	—	—	8.8	2%
High GWP/Non-Specified [b]	1.3	<1%	19.8	5%
Agriculture/Forestry	23.6	6%	33.8	8%
Forestry Sinks	-6.7	-2%	-- [c]	--
Net Total (IPCC SAR)	**426.6**	**100%** [e]	--	--
Net Total (IPCC AR4) [d]	**431**	**100%** [e]	**429.4**	**100%** [e]

NOTES:
a Included in other categories for the 1990 emissions inventory.
b High GWP gases are not specifically called out in the 1990 emissions inventory.
c Revised methodology under development (not reported for 2012).
d California Air Resources Board (CARB) revised the State's 1990 level GHG emissions using GWPs from the Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC AR4).
e Total of individual percentages may not add up to 100% due to rounding

SOURCES:
CARB, 2017. 1990 to 2004 Inventory Data and Documentation. Available: https://www.arb.ca.gov/cc/inventory/1990level/1990data.htm. Accessed: September 2019;
CARB, 2018. California Greenhouse Gas 2000-2016 Inventory by Scoping Plan Category – Summary. Available: https://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_sum_2000-16.pdf. Accessed: September 2019.

Effects of Global Climate Change

The scientific community's understanding of the fundamental processes responsible for global climate change has improved over the past decade, and its predictive capabilities are advancing. However, there remain significant scientific uncertainties in, for example, predictions of local effects of climate change, occurrence, frequency, and magnitude of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth's climate system and inability to accurately model it, the uncertainty surrounding climate change may never be completely eliminated. Nonetheless, the IPCC, in its Fifth Assessment Report, Summary for Policy Makers, stated that, "it is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in greenhouse gas concentrations and other anthropogenic forcings together."[18] A report from the National Academy of Sciences concluded that 97 to 98 percent of the climate researchers most actively

18 Intergovernmental Panel on Climate Change, Fifth Assessment Report, Summary for Policy Makers, (2013) page 15.

publishing in the field support the tenets of the IPCC in that climate change is very likely caused by human (i.e., anthropogenic) activity.[19]

According to California Environmental Protection Agency (CalEPA), the potential impacts in California due to global climate change may include: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more large forest fires; more drought years; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Deltas and associated levee systems; and increased pest infestation.[20] Data regarding potential future climate change impacts are available from the California Natural Resources Agency (CNRA), which in 2009 published the *California Climate Adaptation Strategy*[21] as a response to the Governor's Executive Order S-13-2008. The CNRA report lists specific recommendations for state and local agencies to best adapt to the anticipated risks posed by a changing climate. In accordance with the *California Climate Adaptation Strategy*, the California Energy Commission (CEC) was directed to develop a website on climate change scenarios and impacts that would be beneficial for local decision makers.[22] The website, known as Cal-Adapt, became operational in 2011.[23] The information provided by the Cal-Adapt website represents a projection of potential future climate scenarios. The data are comprised of the average values from a variety of scenarios and models, and are meant to illustrate how the climate may change based on a variety of different potential social and economic factors. Below is a summary of some of the potential climate change effects and relevant Cal-Adapt data, reported by an array of studies that could be experienced in California as a result of global warming and climate change.

1.4 Sensitive Receptors

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. Sensitive land uses within 500 feet of the Project Site are shown in **Figure 2**, *Sensitive Receptor Locations*, and include the following:

- Multi-family residences located northwest of the Hoxie Avenue/I-605 NB Freeway Ramps and Firestone Boulevard intersection;
- Multi- and single-family residences located north of Firestone Boulevard between Elmcroft Avenue and Orr and the UPRR line;
- Single- family residences located north of Firestone Boulevard between the UPRR line and Day Road;

19 Anderegg, William R. L., J.W. Prall, J. Harold, S.H., Schneider, Expert Credibility in Climate Change, Proceedings of the National Academy of Sciences of the United States of America. 2010;107: 12107-12109.

20 California Environmental Protection Agency, Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature, (2006).

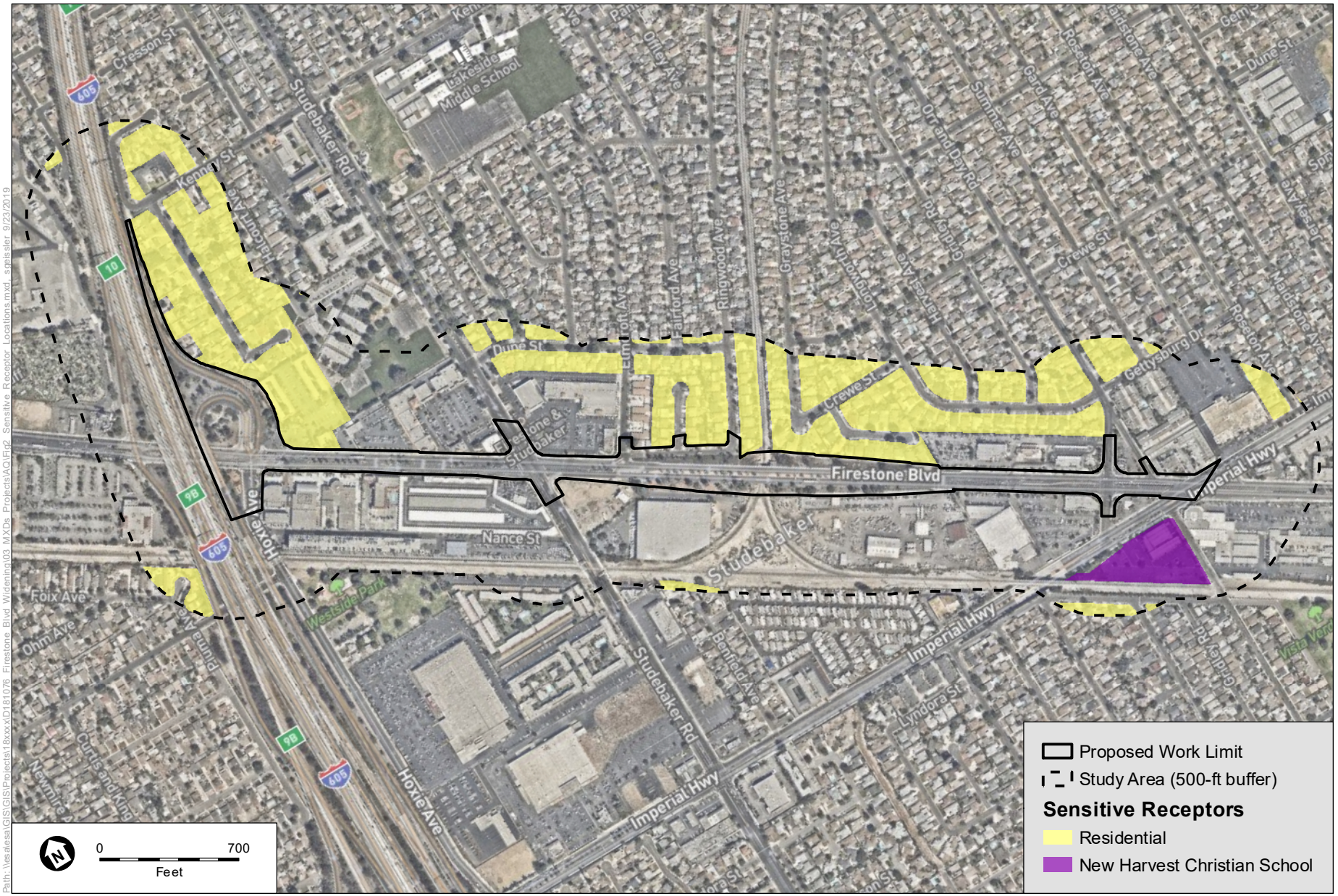
21 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, (2009).

22 California Natural Resources Agency, Climate Action Team, 2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2008, (2009).

23 The Cal-Adapt website address is: http://cal-adapt.org.

- School (New Harvest Christian School) located southwest of the intersection of Firestone Boulevard and Imperial Highway.

All other air quality sensitive receptors are located at greater distances from the Project Area, and would be less impacted by Project emissions. Therefore, impacts are quantified for the sensitive receptors listed above.



SOURCE: Mapbox 2018

Firestone Blvd Widening Project

Figure 2
Sensitive Receptor Locations

ESA

Path: \\esa\esa\GIS\GIS\Projects\18xxx\D181076 Firestone Blvd Widening\03 MXDs Projects\AQ\Fig2 Sensitive Receptor Locations.mxd spreisler 9/23/2019

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SECTION 2
Regulatory Setting

A number of statutes, regulations, plans and policies have been adopted, which address air quality concerns. The Project Area and vicinity is subject to air quality regulations developed and implemented at the federal, State, and local levels, as discussed below.

A number of plans and policies have been adopted by various agencies that address air quality concerns. Those plans and policies that are relevant to the Project are discussed below.

2.1 Federal

The Clean Air Act of 1963 (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, USEPA is responsible for implementation of certain portions of the CAA including mobile source requirements. Other portions of the CAA, such as stationary source requirements, are implemented through delegation of authority to State and local agencies.

The CAA establishes federal air quality standards, known as National Ambient Air Quality Standards (NAAQS) and specifies future dates for achieving compliance. The 1990 Amendments to the Clean Air Act identify specific emission reduction goals for areas not meeting the NAAQS. The 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. Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions) of the CAA are most applicable to the development and operations of the Project. Title I provisions were established with the goal of attaining the NAAQS for the criteria pollutants: O_3, NO_2, CO, SO_2, PM10, PM2.5 and Pb. **Table 3**, *Ambient Air Quality Standards*, shows the NAAQS currently in effect for each criteria pollutant.

TABLE 3
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)		—	—	
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		

TABLE 3
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]
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			

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 more 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*. May 4, 2016, Available: www.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed June 2019

California Health and Safety Code section 39607(e) requires CARB to establish and periodically review area designation criteria. **Table 4**, *South Coast Air Basin Attainment Status (Los Angeles County)*, 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 4, the Air Basin is designated under federal or State ambient air quality standards as nonattainment for ozone, PM10, and PM2.5. It is noteworthy 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.

With respect to the State-identified criteria air pollutants (sulfates, hydrogen sulfide, visibility reducing particles, and vinyl chloride) present in Table 3, the Proposed Project would either not use these pollutants in the day to day operations or during construction 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). Vinyl chloride is used in the process of making polyvinyl chloride (PVC) plastic and vinyl products, and is primarily emitted from industrial processes. Vinyl chloride will not be emitted directly during operations or during construction therefore there are no project emissions of vinyl chloride. In addition, California Air Resources Board (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 vinyl chloride.

TABLE 4
SOUTH COAST AIR BASIN ATTAINMENT STATUS (LOS ANGELES COUNTY)

Pollutant	Federal Standards	California Standards
O_3 (1-hour standard)	N/A[a]	Non-attainment
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
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 this pollutant.
SOURCE: USEPA, 2019, The Green Book Non-Attainment Areas for Criteria Air Pollutants, https://www.epa.gov/green-book; CARB, Area Designations Maps/State and National, http://www.arb.ca.gov/desig/adm/adm.htm. Accessed June 2019.

The CAA also specifies future dates for achieving compliance with the NAAQS and mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting the NAAQS. The SIP must include pollution control measures that demonstrate how the NAAQS would be met. The 1990 Amendments to the CAA identify specific emission reduction goals for air basins 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.

Title II of the CAA pertains to mobile sources, such as cars, trucks, buses, and planes. Reformulated gasoline, automobile pollution control devices, and vapor recovery nozzles on gas pumps are a few of the mechanisms USEPA uses to regulate mobile air emission sources. The provisions of Title II have resulted in tailpipe emission standards for vehicles, which have strengthened in recent years to improve air quality. For example, the NAAQS for NO_X emissions have lowered substantially and the specification requirements for cleaner burning gasoline are more stringent.

2.2 State

California Clean Air Act

The California Clean Air Act, signed into law in 1988, requires all areas of the State to achieve and maintain the CAAQS by the earliest practical date. The CAAQS apply to the same criteria pollutants as the federal CAA, but also include State-identified criteria pollutants, which include sulfates, visibility-reducing particles, hydrogen sulfide, and vinyl chloride. CARB has primary responsibility for ensuring the implementation of the California Clean Air Act, responding to the CAA planning requirements applicable to the state, and regulating emissions from motor vehicles and consumer products within the state. Table 2 shows the CAAQS currently in effect for each of the criteria pollutants, as well as, the other pollutants recognized by the state. As shown in Table 2, the CAAQS include more stringent standards than the NAAQS for most of the criteria air pollutants.

Health and Safety Code Section 39607(e) requires CARB to establish and periodically review area designation criteria. Table 3 provides a summary of the attainment status of the Los Angeles County portion of the Air Basin with respect to the CAAQS. The Air Basin is designated as attainment for the CAAQS for sulfates, hydrogen sulfide, and vinyl chloride.

California Air Resources Board Air Quality and Land Use Handbook

In 2015, CARB published the Air Quality and Land Use Handbook to serve as a general guide for considering impacts to sensitive receptors from facilities that emit TAC emissions. The recommendations provided therein are voluntary and do not constitute a requirement or mandate for either land use agencies or local air districts. The goal of the guidance document is to protect sensitive receptors, such as children, the elderly, acutely ill, and chronically ill persons, from exposure to TAC emissions. Some examples of CARB's siting recommendations include avoid siting sensitive receptors within:

- 500 feet of a freeway, urban road with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day;
- 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units per day, or where transport refrigeration unit operations exceed 300 hours per week); and
- 300 feet of any dry cleaning operation using perchloroethylene and 500 feet of operations with two or more machines.

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 DPM and other TACs. The ATCM 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 ATCM 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 2010 and apply to nearly all diesel-fueled trucks and busses with a gross vehicle weight rating greater than 14,000 pounds.

In addition to limiting exhaust from idling trucks, CARB recently promulgated emission standards for off-road diesel construction equipment of greater than 25 horsepower (hp) such as bulldozers, loaders, backhoes and forklifts, as well as many other self-propelled off-road diesel vehicles. This regulation 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.

2.3 Regional

South Coast Air Quality Management District (SCAQMD)

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

SCAQMD has adopted a series of AQMPs to meet the CAAQS and NAAQS. In 2012, SCAQMD adopted the 2012 AQMP, which incorporates scientific and technological information and planning assumptions, including growth projections.[24] The 2012 AQMP incorporates a comprehensive strategy aimed at controlling pollution from all sources, including stationary sources, and on-road and off-road mobile sources. The 2012 AQMP builds upon improvements in previous plans, and includes new and changing federal requirements, implementation of new technology measures, and the continued development of economically sound, flexible compliance approaches. In addition, it highlights the significant amount of emission reductions needed and the urgent need to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the federal CAA.

The 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 federal CAA Section 182(e)(5) long-term measures for NO_X and VOC reductions. SCAQMD expects exposure reductions to be achieved through

[24] South Coast Air Quality Management District, 2012 Air Quality Management Plan, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan. Accessed June 2019.

implementation of new and advanced control technologies as well as improvement of existing technologies.

In 2017, the 2016 AQMP includes 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.[25] The strategies included in the 2016 AQMP are intended to demonstrate attainment of the NAAQS for the federal non-attainment pollutants ozone and PM2.5.[26] While the 2016 AQMP was adopted by SCAQMD and CARB, it has not been approved by USEPA for inclusion in the SIP. Therefore, until such time as the 2016 AQMP is approved by USEPA, the 2012 AQMP remains the applicable AQMP.

SCAQMD Air Quality Guidance Documents

In 1993, SCAQMD published the CEQA Air Quality Handbook to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts. The CEQA Air Quality Handbook provides standards, methodologies, and procedures for conducting air quality analyses in EIRs and was used extensively in the preparation of this analysis. However, SCAQMD is currently in the process of replacing the CEQA Air Quality Handbook with the Air Quality Analysis Guidance Handbook. While this process is underway, SCAQMD recommends that lead agencies avoid using the screening tables in Chapter 6 (Determining the Air Quality Significance of a Project) of the CEQA Air Quality Handbook, because the tables were derived using an obsolete version of CARB's mobile source emission factor inventory, and the trip generation characteristics of the land uses identified in these screening tables were based on the fifth edition of the Institute of Transportation Engineer's Trip Generation Manual, instead of the most current edition. Additionally, the lead agency should avoid using the on-road mobile source emission factors in Table A9-5-J1 through A9-5-L (EMFAC7EP Emission Factors for Passenger Vehicles and Trucks, Emission Factors for Estimating Material Hauling, and Emission Factors for Oxides of Sulfur and Lead). SCAQMD instead recommends using other approved models to calculate emissions from land use projects, such as the California Emissions Estimator Model (CalEEMod) software.[27]

SCAQMD has published *the Localized Significance Threshold Methodology for CEQA Evaluations* that is intended to provide guidance in evaluating localized effects from mass emissions during construction.[28] SCAQMD adopted *Final Methodology to Calculate Particulate Matter (PM)2.5 and PM2.5 Significance Thresholds*.[29] This latter document has been incorporated by SCAQMD into its CEQA significance thresholds and Localized Significance

25 Ibid.

26 South Coast Air Quality Management District, NAAQS/CAAQS and Attainment Status for South Coast Air Basin, (2016). Available at http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2. Accessed June 2019.

27 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 June 2019.

28 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, (2008).

29 South Coast Air Quality Management District, Final Methodology to Calculate Particulate Matter (PM)2.5 and PM2.5 Significance Thresholds, (2006).

Threshold Methodology.

SCAQMD Rules and Regulations

Several SCAQMD rules adopted to implement portions of the AQMP may apply to the proposed Project. For example, SCAQMD Rule 403 requires implementation of best available fugitive dust control measures during active construction periods capable of generating fugitive dust emissions from on-site earth-moving activities, construction/demolition activities, and construction equipment travel on paved and unpaved roads. The 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 may apply to the Project:

- Rule 402 – Nuisance: Rule 402 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, or which cause, or have a natural tendency to cause, injury or damage to business or property.
- Rule 403 – Fugitive Dust: Rule 403 requires projects to prevent, reduce or mitigate fugitive dust emissions from a site. Rule 403 restricts visible fugitive dust to the project property line, restricts the net PM10 emissions to less than 50 micrograms per cubic meter ($\mu g/m^3$) and restricts the tracking out of bulk materials onto public roads. Additionally, projects must utilize one or more of the best available control measures (identified in the tables within the rule). Mitigation measures may include adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, using chemical stabilizers and/or ceasing all activities. Finally, a contingency plan may be required if so determined by USEPA.

Regulation XI – Source Specific Standards: Regulation XI sets emissions standards for different specific sources. The following is a list of rules which may apply to the 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 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 XIV – Toxics and Other Non-Criteria 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 pollutants. The following is a list of rules which may apply to the Project: 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.

Draft Guidance for GHG Emissions

In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds[30], which proposed the use of a percent emission reduction target to determine significance for commercial/residential projects that emit greater than 3,000 metric tons per year. In 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold of for stationary source/industrial projects, where SCAQMD is lead agency. However, SCAQMD has yet to adopt a GHG significance threshold and has formed a GHG Significance Threshold Working Group to further evaluate potential GHG significance thresholds.[31] The aforementioned Working Group has been inactive since 2011 and SCAQMD has not formally adopted any GHG significance thresholds.

Southern California Association of Governments

Regional Comprehensive Plan and Guide and Congestion Management Plan

Southern California Association of Governments (SCAG) is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino and Imperial Counties and addresses regional issues relating to transportation, the economy, community development and the environment. SCAG is the federally designated metropolitan planning organization (MPO) for the majority of the Southern California region and is the largest MPO in the nation. With regard to air quality planning, SCAG has prepared the RTP and Regional Transportation Improvement Program (RTIP), which address regional development and growth forecasts, form the basis for the land use and transportation control portions of the AQMP and are utilized in the preparation of the air quality forecasts and consistency analysis included in the AQMP. The RTP, RTIP, and AQMP are based on projections originating within local jurisdictions.

GHG Emission Reduction Targets

In 2011, CARB adopted the GHG emissions reduction targets under SB 375 for the SCAG region. The target is a per capita reduction of 8 percent for 2020 and 13 percent for 2035 compared to the 2005 baseline. In 2016, SCAG adopted the 2016 RTP/SCS, which is an update to the previous 2012 RTP/SCS.[32] Using growth forecasts and economic trends, the 2016 RTP/SCS provides a vision for transportation throughout the region for the next 25 years. It considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals

30 South Coast Air Quality Management District, Board Meeting, Date: December 5, 2008, Agenda No. 31, https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/C39.pdf Accessed June 2019.

31 South Coast Air Quality Management District, Greenhouse Gases CEQA Significance Thresholds, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds Accessed June 2019.

32 Southern California Association of Governments, 2016 RTP/SCS, April 2016. Available: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf. Accessed June 2019.

for the future, identifying regional transportation strategies to address mobility needs. The 2016 RTP/SCS successfully achieves and exceeds the GHG emission-reduction targets set by CARB by demonstrating an 8 percent reduction by 2020, 18 percent reduction by 2035, and 21 percent reduction by 2040 compared to the 2005 level on a per capita basis.[33] Compliance with and implementation of 2016 RTP/SCS policies and strategies would have co-benefits of reducing per capita criteria air pollutant emissions associated with reduced per capita VMT.

33 Southern California Association of Governments, 2016 RTP/SCS, April 2016. p15. Available: http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf. Accessed June 2019.

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SECTION 3
Significance Thresholds

The significance thresholds below are derived from the Environmental Checklist question in Appendix G of the *State CEQA Guidelines*. Accordingly, a significant air quality impact would occur if the Project would:

AIR-1: Conflict with or obstruct the implementation of the applicable air quality plan.

AIR-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

AIR-3: Expose sensitive receptors to substantial pollutant concentrations.

AIR-4: Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The Project would have a less than significant impact with regard to odors. According to SCAQMD, facilities that are typically associated with sources of odors include: wastewater treatment plants, landfills, waste transfers and recycling stations, composting operations, petroleum operations, food and byproduct processes, and agricultural operations. The Project is a roadway widening and would not introduce new substantial sources of odors and is not associated with any of the uses or operations as described above. As such, no further analysis of this topic is necessary.

Pursuant to the State CEQA Guidelines (Section 15064.7), a lead agency may consider using, when available, the significance criteria established by the applicable air quality management district or air pollution control district when making determinations of significance. The Project would be under the SCAQMD's jurisdiction. SCAQMD has established air quality significance thresholds in its CEQA Air Quality Handbook. These thresholds 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.[34] The potential air quality impacts of the Project are, therefore, evaluated according to the most recent thresholds adopted by SCAQMD in connection with its CEQA Air Quality Handbook, Air Quality Analysis Guidance Handbook, and subsequent SCAQMD guidance as discussed previously.[35]

[34] South Coast Air Quality Management District, CEQA Air Quality Handbook (1993) 6-2.

[35] While the SCAQMD CEQA Air Quality Handbook contains significance thresholds for lead, Project construction and operation would not include sources of lead emissions and would not exceed the established thresholds for

3.1 Construction Emissions

SCAQMD has established numerical emission indicators of significance for construction. 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.[36] Given that construction impacts are temporary and limited to the construction phase, SCAQMD has established numeric indicators of significance specific to construction activity. Based on the indicators in the SCAQMD CEQA Air Quality Handbook, the 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 regional emissions thresholds:[37]
  - 75 pounds per day for VOC;
  - 100 pounds per day for NO_X;
  - 550 pounds per day for CO;
  - 150 pounds per day for SO_2;
  - 150 pounds per day for PM10; or
  - 55 pounds per day for PM2.5.

In addition, SCAQMD has developed a methodology to assess the potential for localized emissions to cause an exceedance of applicable ambient air quality standards or ambient concentration limits. Impacts would be considered significant if the following would occur:

- Maximum daily localized emissions of NO_X and/or CO during construction are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the Project Site greater than the most stringent ambient air quality standards for NO_2 and/or CO.[38]
- Maximum daily localized emissions of PM10 and/or PM2.5 during construction are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the Project Site to exceed 10.4 $\mu g/m^3$ over 24 hours (SCAQMD Rule 403 control requirement).

As discussed previously under Methodology, SCAQMD has established screening criteria that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds and therefore not cause or contribute to an exceedance of the applicable

lead. Unleaded fuel and unleaded paints have virtually eliminated lead emissions from commercial and residential land use projects such as the Project. As a result, lead emissions are not further evaluated in this Draft EIR.

36 South Coast Air Quality Management District, CEQA Air Quality Handbook (1993) 6-2.

37 South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, (April 2019), http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. Accessed June 2019.

38 South Coast Air Quality Management District, Final Localized Significance Threshold Methodology, (2008). Available: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds. Accessed June 2019.

ambient air quality standards or ambient concentration limits without project-specific dispersion modeling. This analysis uses the screening criteria to evaluate impacts from localized emissions.

3.2 Operational Emissions

SCAQMD has established numerical emission indicators of significance for operations. 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.[39] SCAQMD has established numeric indicators of significance in part based on Section 182(e) of the CAA, which identifies 10 tons per year of VOC as a significance level for stationary source emissions in extreme non-attainment areas for ozone.[40] As shown in Table 3, the Air Basin is designated as extreme non-attainment for ozone. 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 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 regional emissions thresholds:[41]
  - 55 pounds per day for VOC;
  - 55 pounds per day for NOX;
  - 550 pounds per day for CO;
  - 150 pounds per day for SO2;
  - 150 pounds per day for PM10; or
  - 55 pounds per day for PM2.5.

In addition, SCAQMD has developed a methodology to assess the potential for localized emissions to cause an exceedance of applicable ambient air quality standards. Impacts would be considered significant if the following were to occur:

- Maximum daily localized emissions of NO_X and/or CO during operation are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the project site greater than the most stringent ambient air quality standards for NO_2 and/or CO.[42]

39 South Coast Air Quality Management District, CEQA Air Quality Handbook (1993) 6-2.

40 South Coast Air Quality Management District, CEQA Air Quality Handbook (1993) 6-1.

41 South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, (April 2019), http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. Accessed June 2019.

42 Ibid.

- Maximum daily localized emissions of PM10 and/or PM2.5 during operation are greater than the applicable localized significance thresholds, resulting in predicted ambient concentrations in the vicinity of the project site to exceed 2.5 μg/m^3 over 24 hours (SCAQMD Rule 1303 allowable change in concentration).

As discussed previously, SCAQMD has established screening criteria that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds and therefore not cause or contribute to an exceedance of the applicable ambient air quality standards or ambient concentration limits without project-specific dispersion modeling. This analysis uses SCAQMD screening criteria to evaluate impacts from localized emissions.

3.3 Carbon Monoxide Hotspots

With respect to the formation of CO hotspots, the Project would be considered significant if the following would occur:

- The Project would cause or contribute to an exceedance of the CAAQS one-hour or eight-hour CO standards of 20 or 9.0 parts per million (ppm), respectively.

3.4 Toxic Air Contaminants

Based on criteria set forth by SCAQMD, the project would expose sensitive receptors to substantial concentrations of toxic air contaminants if any of the following were to occur:[43]

- The Project would emit carcinogenic materials or TACs that exceed the maximum incremental cancer risk of ten in one million or a cancer burden greater than 0.5 excess cancer cases (in areas greater than or equal to 1 in 1 million) or an acute or chronic hazard index of 1.0.

Due to the short duration of construction, TACs are evaluated qualitatively. For operations, the impacts are analyzed qualitatively due to the limited and minimal sources of TACs associated with operation of the proposed project.

3.5 Greenhouse Gas Emissions and Reduction Plan Considerations

The significance thresholds below are derived from the Environmental Checklist questions in Appendix G of the State *CEQA Guidelines*. Accordingly, a significant impact associated with GHGs would occur if the Project were to:

- **GHG-1:** Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or

[43] South Coast Air Quality Management District, CEQA Air Quality Handbook, Chapter 6 (Determining the Air Quality Significance of a Project) and Chapter 10 (Assessing Toxic Air Pollutants), (1993); 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 June 2019.

- **GHG-2:** Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Amendments to Section 15064.4 of the CEQA Guidelines were adopted to assist lead agencies in determining the significance of the impacts of GHG emissions. Consistent with existing CEQA practice, Section 15064.4 gives lead agencies the discretion to determine whether to assess those emissions quantitatively or qualitatively. If a qualitative analysis is used, in addition to quantification, this section recommends certain qualitative factors that may be used in the determination of significance (i.e., extent to which the project may increase or reduce GHG emissions compared to the existing environment; whether the project exceeds an applicable significance threshold; and extent to which the project complies with regulations or requirements adopted to implement a reduction or mitigation of GHGs). The amendments do not establish a threshold of significance; rather, lead agencies are granted discretion to establish significance thresholds for their respective jurisdictions, including looking to thresholds developed by other public agencies, or suggested by other experts, such as the California Air Pollution Control Officers Association (CAPCOA), so long as any threshold chosen is supported by substantial evidence (see Section 15064.7(c)). The California Natural Resources Agency has also clarified that the CEQA Guidelines amendments focus on the effects of GHG emissions as cumulative impacts, and that they should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see Section 15064(h)(3)).[44]

Although GHG emissions can be quantified, as discussed under Methodology below, CARB, SCAQMD, and the City of Norwalk have not adopted project-level significance thresholds for GHG emissions that would be applicable to the Project. The Governor's Office of Planning and Research (OPR) released a technical advisory on CEQA and climate change that provided some guidance on assessing the significance of GHG emissions, and states that "lead agencies may undertake a project-by-project analysis, consistent with available guidance and current CEQA practice," and that while "climate change is ultimately a cumulative impact, not every individual project that emits GHGs must necessarily be found to contribute to a significant cumulative impact on the environment."[45] Furthermore, the technical advisory states that "CEQA authorizes reliance on previously approved plans and mitigation programs that have adequately analyzed and mitigated GHG emissions to a less than significant level as a means to avoid or substantially reduce the cumulative impact of a project."[46]

Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially

44 See generally California Natural Resources Agency, Final Statement of Reasons for Regulatory Action (December 2009), pp. 11-13, 14, 16; see also Letter from Cynthia Bryant, Director of the Office of Planning and Research to Mike Chrisman, Secretary for Natural Resources, April 13, 2009. Available at https://www.opr.ca.gov/docs/Transmittal_Letter.pdf. Accessed June 2019.

45 Governor's Office of Planning and Research, Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review, (2008).

46 Governor's Office of Planning and Research, Technical Advisory – CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review, (2008).

lessen the cumulative problem within the geographic area of the project.[47] To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency.[48] Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] plans or regulations for the reduction of greenhouse gas emissions."[49] Thus, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of non-significance for GHG emissions if a project complies with a program and/or other regulatory schemes to reduce GHG emissions.[50]

In the absence of any adopted, quantitative threshold, the Project would not have a significant effect on the environment if the Project is found to be consistent with the applicable regulatory plans and policies to reduce GHG emissions, including the emissions reduction measures discussed within CARB's Climate Change Scoping Plan, SCAG's 2016 RTP/SCS, and City of Norwalk polices established for the purpose of increasing energy efficiency and reducing GHG emissions within the City.

47 14 CCR § 15064(h)(3).

48 14 CCR § 15064(h)(3).

49 14 CCR § 15064(h)(3).

50 See, for example, San Joaquin Valley Air Pollution Control District (SJVAPCD), CEQA Determinations of Significance for Projects Subject to ARB's GHG Cap-and-Trade Regulation, APR-2025 (June 25, 2014), in which the SJVAPCD "determined that GHG emissions increases that are covered under ABR's Cap-and-Trade regulation cannot constitute significant increases under CEQA…" Furthermore, the SCAQMD has taken this position in CEQA documents it has produced as a lead agency. The SCAQMD has prepared three Negative Declarations and one Draft Environmental Impact Report that demonstrate the SCAQMD has applied its 10,000 $MTCO_2e$/yr significance threshold in such a way that GHG emissions covered by the Cap-and-Trade Program do not constitute emissions that must be measured against the threshold. See SCAQMD, Final Negative Declaration for Ultramar Inc. Wilmington Refinery Cogeneration Project, SHC No. 2012041014 (October 2014); SCAQMD Final Negative Declaration for Phillips 99 Los Angeles Refinery Carson Plant—Crude Oil Storage Capacity Project, SCH No. 2013091029 (December 2014); SCAQMD Final Mitigated Negative Declaration for Toxic Air Contaminant Reduction for Compliance with SCAQMD Rules 1420.1 and 1402 at the Exide Technologies Facility in Vernon, CA, SCH No. 2014101040 (December 2014); and SCAQMD Final Environmental Impact Report for the Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project, SCH No. 2014121014 (August 2015).

SECTION 4
Methodology

The methodology to evaluate potential impacts to regional and local air quality that may result from the construction and long-term operations of the Project is conducted as follows. Detailed modeling calculations are provided in Appendices A and B provided at the end of this report.

4.1 Consistency with Air Quality Plan

SCAQMD is required, pursuant to the CAA, to reduce emissions of criteria pollutants for which the Air Basin is in non-attainment of the NAAQS (e.g., ozone, PM10, and $PM_{2.5}$). SCAQMD's 2012 Air Quality Management Plan contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving the NAAQS. These strategies are developed, in part, based on regional growth projections prepared by SCAG. As part of its air quality planning, SCAG has prepared the Regional Comprehensive Plan and Guide and the 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy, which provide the basis for the land use and transportation components of the AQMP and are used in the preparation of the air quality forecasts and the consistency analysis included in the AQMP. Both the Regional Comprehensive Plan and AQMP are based, in part, on projections originating with county and city general plans.

The 2016 AQMP was prepared to accommodate growth, reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, return clean air to the region, and minimize the impact on the economy. Projects that are consistent with the assumptions used in the AQMP do not interfere with attainment because the growth is included in the projections utilized in the formulation of the AQMP. Thus, projects, uses, and activities that are consistent with the applicable growth projections and control strategies used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed SCAQMD's significance thresholds.

4.2 Construction Emissions

Construction of the Project has the potential to generate temporary criteria pollutant emissions through the use of heavy-duty construction equipment, such as excavators, and through vehicle trips generated from workers and haul trucks traveling to and from the Project Area. In addition, fugitive dust emissions would result from demolition and various soil-handling activities. Mobile source emissions, primarily NO_X, would result from the use of construction equipment such as dozers and loaders. Construction emissions can vary substantially from day-to-day, depending on the level of activity, the specific type of construction activity, and prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources.

Daily regional emissions during construction are forecasted by assuming a conservative estimate of construction activities (i.e., assuming all construction occurs at the earliest feasible date) and applying the mobile source and fugitive dust emissions factors. The emissions are estimated utilizing the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model (RCEM) Version 9.0.0. The results of the construction emission calculations are included in Appendix A.

Construction of the Project is estimated to require approximately three years, starting in July 2020. Sub-phases of construction would include demolition of most of the existing roadway and sidewalk, site excavation, grading, utility construction, facilities construction and paving. The maximum daily regional emissions from these activities are estimated by construction phase and compared to SCAQMD significance thresholds. The maximum daily regional emissions are predicted values for the worst-case day and do not represent the emissions that would occur for every day of Project construction.

The localized effects from the on-site portion of the construction emissions are evaluated at nearby sensitive receptor locations potentially impacted by the Project according to the SCAQMD's Localized Significance Threshold Methodology.[51] The localized significance thresholds are only applicable to NO_X, CO, PM10, and PM2.5. SCAQMD has established screening criteria for projects that disturb one acre or less that can be used to determine the maximum allowable daily emissions that would satisfy the localized significance thresholds and therefore not cause or contribute to an exceedance of the applicable ambient air quality standards without project-specific dispersion modeling. The localized analysis is based on this SCAQMD screening criteria. The screening criteria depend on: (1) the area in which the Project is located, (2) the size of the Project Area, and (3) the distance between the Project Area and the nearest sensitive receptor. The Project Site is located in SCAQMD SRA 5. The Project Area is approximately 19-acres and no more than 0.25 acre would be disturbed on a given day. The off-site air quality sensitive receptors would be located adjacent to the Project Area to the north, south, east and west. Therefore, SCAQMD localized significance threshold (LST) screening criteria applicable to a 1-acre site in SRA 5 with sensitive receptors located adjacent to the Project Site was used. The SCAQMD screening criteria increase with increasing disturbed acreage.

4.3 Operational Emissions

Operation of the Project has the potential to generate criteria pollutant emissions through vehicle trips traveling on the improved corridor. Caltrans CT-EMFAC2014 was utilized to conduct a precursor emissions burden analysis for NOx and volatile organic compounds (VOCs) (for ozone). In addition to its role in ozone formation, NO_X forms NO_2. Thus modeling NOx emissions can serve as a useful analysis surrogate for NO_2 emissions. For PM10, a comparative emissions analysis will be conducted and that will rely on modeling exhaust emissions from CT-EMFAC and road dust emissions estimates. For PM2.5 direct vehicle emissions (exhaust, tire wear, and brake wear from on-road vehicles), follow the same requirements for PM10. Non-direct

51 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 June 2019.

vehicle emissions of PM2.5 (road dust) are typically considered as well. SO_2 and lead are not typically a concern for transportation sources and therefore were not analyzed. Mobile source emissions are based on vehicle volumes estimated in the Project's *Transportation Impact Analysis* (TIA) (Kittelson & Associates, July 2019).

Operational air quality impacts are assessed based on the maximum daily emissions from operation of the Project compared to the SCAQMD daily regional significance thresholds.

4.4 Toxic Air Contaminants (TACs)

The potential for the Project to cause impacts from TACs are evaluated by conducting a screening-level analysis. The screening-level analysis consists of reviewing the Project's design plan and Project description to identify any new or modified TAC emission sources. If it is determined that the Project will introduce a new source of TACs, or modify an existing source, then downwind sensitive receptor locations are identified and a site-specific analysis is conducted.

Construction

The greatest potential for TAC emissions during Project construction would be related to diesel particulate matter emissions associated with heavy-duty equipment during demolition, grading, excavation, and building constructionactivities. Construction activities associated with the Project would be sporadic, transitory, and short term in nature.

Intermittent construction activities associated with the Project would result in short-term emissions of diesel particulate matter, which the state has identified as a TAC. During construction, the exhaust of off-road heavy-duty diesel equipment would emit diesel particulate matter during general construction activities, such as site grading, materials transport and handling, and building construction.

Diesel particulate matter poses a carcinogenic health risk that is generally measured using an exposure period of 30 years for sensitive residential receptors, according to the California Environmental Protection Agency, Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA Guidance), which was updated in 2015 with new exposure parameters including age sensitivity factors (OEHHA 2015).

Operations

During long-term operations, TACs could be emitted from delivery trucks and service vehicles utilizing the improved corridor. However, these uses are expected to be similar to existing conditions and result in minimal exposure to off-site sensitive receptors. Thus a qualitative analysis is appropriate.

4.5 Greenhouse Gas Emissions

To provide additional information to decision makers and the public, this a provides an estimate of the GHG emissions from Project construction and operation. Emissions from construction activities associated with the Project were calculated as well as mobile emissions generated from the operation of the Project.

For purposes of this analysis, it was considered reasonable, and consistent with criteria pollutant calculations, to consider GHG emissions resulting from direct Project-related activities, including, e.g., use of vehicles, electricity, and natural gas, to be new emissions. These include emissions from Project construction activities, such as demolition, hauling, construction, and construction worker trips, as well as operational emissions.

Construction

GHG emissions from construction using the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model (RCEM) Version 9.0.0. The results of the construction emission calculations are included in Appendix A. The same methodology for estimating criteria pollutants from construction was used to estimate GHG emissions.

SCAQMD's *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, recognizes that construction-related GHG emissions from projects "occur over a relatively short-term period of time" and that "they contribute a relatively small portion of the overall lifetime project GHG emissions."[52] The guidance recommends that construction project GHG emissions should be "amortized over a 30-year project lifetime, so that GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies."[53] In accordance with that SCAQMD guidance, GHG emissions from Project construction have been amortized over the 30-year lifetime of the Project.

Operations

The same methodology for calculating operational criteria pollutant emissions was used for calculating operational GHG emissions. Caltrans CT-EMFAC2014 and traffic data provided by the Project's traffic engineer was utilized to estimate mobile GHG emissions generated from the operation of the Proposed Project. As previously stated operational GHG impacts are assessed based on the Project-related incremental increase in GHG emissions compared to baseline conditions.

52 South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008. Available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2. Accessed June 2019.

53 South Coast Air Quality Management District, Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold, October 2008. Available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2. Accessed June 2019.

Comparison to Project without GHG Reduction Characteristics, Features, and Measures

In order to evaluate the efficacy of the GHG reduction characteristics, features, and measures that would be implemented as part of the Project, this analysis compares the Project's GHG emissions to the emissions that would be generated by the Project without implementation of GHG reduction characteristics, features, and measures. This approach mirrors the concepts used in CARB's Climate Change Scoping Plan, which demonstrates GHG reductions compared to a business as usual (BAU) scenario. This comparison is provided only to evaluate the Project's efficiency with respect to GHG emissions but is not a threshold of significance. As detailed in the CARB Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (FED), the updated projected 2020 emissions estimate in the absence of GHG reduction measures in the Climate Change Scoping Plan is based on statewide data from the 2006 to 2008 period and accounts for the effect of the 2007–2009 economic recession on future growth, updated estimates for future fuel and energy demand, and the reductions required by regulation that were adopted for motor vehicles and renewable energy.54 The Project's GHG emissions in comparison to the emissions that would be generated by the Project without implementation of GHG reduction characteristics, features, and measures is consistent with CARB's approach in the Scoping Plan FED. Furthermore, the specific Project Site characteristics and Project Design Features are not included as they encompass GHG reduction strategies and features that would be consistent with state, regional, and local GHG reduction plans and policies or would go above and beyond regulatory requirements. These Project Site characteristics and Project Design Features include Project GHG reductions from energy efficiency measures that would exceed the Title 24 Building Standards Code, such as LEED Certification level measures, and trip reductions from co-location of uses and availability of public transportation within a quarter-mile. The emissions are estimated using the CalEEMod software, and the model inputs are adjusted to account for the specific and defined circumstances and described above. The analysis assumes the Project without implementation of GHG reduction characteristics, features, and measures would incorporate the same land uses and building square footage as the proposed Project.

Consistency with Greenhouse Gas Reduction Plan, Policies, and Actions

The Project's GHG emissions are also evaluated by assessing the Project's consistency with applicable GHG reduction strategies and actions adopted by the State and City. As discussed previously, the City has adopted strategies and polices to reduce GHG emissions through its Green Building Program.

In the latest CEQA Guidelines amendments, in 2010, the Office and Planning and Research encourages lead agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses. The City does not have a programmatic mitigation plan to tier from, such as a Greenhouse Gas Emissions Reduction Plan as recommended in the relevant amendments to the CEQA Guidelines. In addition, the California

54 California Air Resources Board, Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (FED), Attachment D, August 19, 2011.

CAT Report provides recommendations for specific emission reduction strategies for reducing GHG emissions and reaching the targets established in AB 32 and Executive Order S-3-05. Thus, if the Project is designed in accordance with these policies and regulations, it would result in a less than significant impact, because it would be consistent with the overarching State regulations on GHG reduction (AB 32).

SECTION 5
Environmental Impacts

5.1 Consistency with Air Quality Plan (AIR-1)

Construction

SCAQMD recommends that lead agencies demonstrate that a project would not directly obstruct implementation of an applicable air quality plan and that a project be consistent with the assumptions (typically land-use related, such as resultant employment or residential units) upon which the air quality plan is based. The Project would result in an increase in short-term employment compared to existing conditions. Although the Project will require many workers over the construction process, these jobs are temporary in nature. Construction jobs under the Project would not conflict with the long-term employment projections upon which the AQMP is based.

Control strategies in the AQMP with potential applicability to short-term emissions from construction activities include strategies denoted in the AQMP as MOB-08 and MOB-10, which are intended to reduce emissions from on-road and off-road heavy-duty vehicles and equipment by accelerating replacement of older, emissions-prone engines with newer engines meeting more stringent emission standards. In accordance with such strategies, the Project would use construction contractors that are in compliance with State regulations to reduce emissions from heavy-duty equipment including the CARB ATCM that limits diesel-powered equipment and vehicle idling to no more than five minutes at a location, and the CARB In-Use Off-Road Diesel Vehicle Regulation that aims to reduce emissions through the installation of diesel particulate matter filters and encouraging the retirement, replacement, or repower of older, dirtier engines with newer emission-controlled models. Under the In-Use Off-Road Diesel Vehicle Regulation, construction equipment fleet operators are required to replace higher emitting models with lower emitting models based on a phased-in schedule with full compliance by 2023 for large and medium fleets (fleets with greater than 5,000 total equipment horsepower or with 2,501 to 5,000 horsepower, respectively) and by 2028 for small fleets (fleets with 2,500 or less total equipment horsepower). Consistent with CPA #6, the Project would utilize low-VOC coatings during construction activities to avoid excessive VOC emissions. Consistent with CPA #6, trucks and other vehicles in loading and unloading queues would be parked with engines off to reduce vehicle emissions during construction activities. Additionally, the Project would also comply with SCAQMD regulations for controlling fugitive dust pursuant to SCAQMD Rule 403.

Compliance with these requirements is consistent with and meets or exceeds the AQMP requirements for control strategies intended to reduce emissions from construction equipment and activities. Because the Project would not conflict with the control strategies intended to reduce

emissions from construction equipment, the Project would not conflict with or obstruct implementation of the AQMP, and impacts would be less than significant.

Operation

The AQMP was prepared to accommodate growth, reduce the levels of pollutants within the areas under the jurisdiction of SCAQMD, return clean air to the region, and minimize the impact on the economy. Projects that are considered consistent with the AQMP would not interfere with attainment because this growth is included in the projections used in the formulation of the AQMP.

The City of Norwalk is proposing to improve the Firestone Boulevard corridor between Hoxie Avenue/NB I-605 Freeway Ramps to the west and Imperial Highway to the east. The TIA conducted for the Proposed Project found the vehicle miles traveled (VMT) and annual average daily traffic (AADT) will remain the same from No Project to with Project conditions for all evaluated analysis years (2019 and 2040). As shown in **Table 5**, *2019 Intersection LOS*, operation of the Proposed Project would improve the LOS at two intersections in analysis year 2019. Additionally, **Table 6**, *2040 Intersection LOS*, shows that in the future analysis year 2040 operation of Proposed Project would improve the LOS at three intersections. Furthermore, all intersections in both analysis years (2019 and 2040) will experience decrease in delays at every intersection along the Project corridor. Mobile emissions generated from the Proposed Project would not worsen existing air quality, or cause an exceedance, or cause any new violations of the NAAQS and is consistent with the 2012 AQMP.

TABLE 5
2019 INTERSECTION LOS

Intersection	Peak Hour	Existing 2019		2019 Plus Project	
		Delay	LOS	Delay	LOS
Hoxie Avenue/I-605 Ramps/Firestone Boulevard	AM	189.9	F	65.0	E
	PM	56.8	E	44.4	D
Studebaker Road/Firestone Boulevard	AM	51.8	D	43.6	D
	PM	64.4	E	43.3	D
Stater Bros. Markets Driveway/Firestone Boulevard	AM	5.6	A	5.0	A
	PM	9.0	A	8.7	A
Orr and Day Road/Firestone Boulevard	AM	26.4	C	25.6	C
	PM	30.3	C	29.4	C
Firestone Boulevard/Imperial Highway	AM	41.6	D	41.0	D
	PM	47.4	D	46.8	D

NOTES:

SOURCE: KITTLESON & ASSOCIATES, TRANSPORTATION IMPACT ANALYSIS: FIRESTONE BOULEVARD WIDENING PROJECT, JULY 2019.

TABLE 6
2040 INTERSECTION LOS

Intersection	Peak Hour	2040 Baseline		2040 Plus Project	
		Delay	LOS	Delay	LOS
Hoxie Avenue/I-605 Ramps/Firestone Boulevard	AM	264.8	F	114.8	F
	PM	95.7	F	66.1	E
Studebaker Road/Firestone Boulevard	AM	92.6	F	69.7	E
	PM	95.6	F	58.2	E
Stater Bros. Markets Driveway/Firestone Boulevard	AM	6.2	A	5.2	S
	PM	10.0	B	9.4	S
Orr and Day Road/Firestone Boulevard	AM	28.4	C	27.1	C
	PM	34.6	C	32.2	C
Firestone Boulevard/Imperial Highway	AM	60.5	E	59.7	E
	PM	87.8	F	87.0	F

NOTES:

SOURCE: KITTLESON & ASSOCIATES, TRANSPORTATION IMPACT ANALYSIS: FIRESTONE BOULEVARD WIDENING PROJECT, JULY 2019.

The Project would generate indirect growth associated with construction employment. According to the SCAG, Norwalk's forecast population, household, and employment growth of 400 persons, 100 households, and 3,200 jobs is predicted between 2012 and 2040, respectively. As such, the new employees generated by the Project are within SCAG's employment growth assumptions of the City of Norwalk. As such, the Project would not generate growth beyond the range of development anticipated within the established SCAG regional forecast for the City of Norwalk. The Project would not increase or induce residential density growth not otherwise anticipated.

Therefore, the Project would not spur additional growth other than that already anticipated for the City of Norwalk and would not eliminate impediments to growth. Consequently, the Project would not foster growth inducing impacts

5.2 Cumulatively Considerable Non-Attainment Pollutants (AIR-2)

Construction Emissions

The worst-case daily construction emissions were calculated as maximum daily construction emissions (pounds per day) for each construction phase by year. The maximum daily emissions are predicted values for the worst-case emissions day and do not represent the daily emissions that would occur for every day of construction. Results of the criteria pollutant emissions

calculations are presented in **Table 7**, *Maximum Unmitigated Regional Construction Emissions*. As shown in Table 4, construction-related daily emissions for the criteria and precursor pollutants (i.e., VOC, NO_X, CO, SO_X, PM10, and PM2.5) would be below SCAQMD significance thresholds for all criteria pollutants, with the exception of NO_x. NOx emissions generated from construction of the Proposed Project would exceed the SCAQMD significance thresholds. However, as shown in **Table 8**, *Maximum Mitigated Regional Construction Emissions*, implementation of Mitigation Measures AQ-1 and AQ-2, would reduce NOx emissions generated from the construction of the Proposed Project to below the SCAQMD significance thresholds. Therefore, construction of the Proposed Project would not result in a significant impact with mitigation.

TABLE 7
MAXIMUM UNMITIGATED REGIONAL CONSTRUCTION EMISSIONS (POUNDS PER DAY)[a]

Source	VOC	NO_X	CO	SO_2	PM10[b]	PM2.5[b]
Grubbing/Land Clearing	1	13	11	<1	3	1
Grading/Excavation	7	148	59	1	8	4
Drainage/Utilities/Sub-Grade	3	31	30	<1	4	2
Paving	1	13	18	<1	1	1
Maximum Daily Construction Emissions	7	148	59	1	8	4
SCAQMD Significance Threshold	75	100	550	150	150	55
Over/(Under)	(68)	48	(491)	(149)	(142)	(51)
Exceeds Threshold?	No	Yes	No	No	No	No

NOTES:
[a] Totals may not add up exactly due to rounding in the modeling calculations. Combined rows account for overlapping emissions from the listed activities. Detailed emissions calculations are provided in Appendix A.
[b] Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

SOURCE: ESA, 2019

TABLE 8
MAXIMUM MITIGATED REGIONAL CONSTRUCTION EMISSIONS (POUNDS PER DAY)[a]

Source	VOC	NO_X	CO	SO_2	PM10[b]	PM2.5[b]
Grubbing/Land Clearing	1	2	14	<1	3	1
Grading/Excavation	4	89	70	1	6	2
Drainage/Utilities/Sub-Grade	2	5	35	<1	3	1
Paving	1	3	20	<1	<1	<1
Maximum Daily Construction Emissions	4	89	70	1	6	2
SCAQMD Significance Threshold	75	100	550	150	150	55
Over/(Under)	(71)	(11)	(480)	(149)	(144)	(53)
Exceeds Threshold?	No	No	No	No	No	No

NOTES:
[a] Totals may not add up exactly due to rounding in the modeling calculations. Combined rows account for overlapping emissions from the listed activities. Detailed emissions calculations are provided in Appendix A.
[b] Emissions include fugitive dust control measures consistent with SCAQMD Rule 403.

SOURCE: ESA, 2019

These calculations include appropriate dust control measures required to be implemented during each phase of construction, as required by SCAQMD Rule 403 (Control of Fugitive Dust). Therefore, with respect to regional emissions from construction activities, impacts would be less than significant with mitigation.

The Project would result in the emission of criteria pollutants during both construction and operation, for which, the project area is in non-attainment. The Air Basin is currently in non-attainment under federal or state standards for ozone, PM10, and PM2.5. A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or state non-attainment pollutant. The mitigated emissions from construction of the Project are not predicted to exceed any applicable SCAQMD regional or local impact threshold, and therefore, are not expected to result in concentrations that exceed the NAAQS or CAAQS. Therefore, the Project would not result in a cumulatively considerable net increase for non-attainment pollutants or ozone precursors, and would result in a less than significant impact with mitigation for construction emissions.

Operational Emissions

The purpose of the Proposed Project is to reduce congestion, improve traffic operations, accommodate travel demand due to planned and approved developments, and improve safety. An air quality analysis has been conducted to assess changes in air quality created by the operation of the Project on the surrounding area. Potential air quality impacts from the operation of the Project are primarily associated with the redistribution of vehicles on the improved corridor. Changes in

these traffic patterns along the roadway could potentially change the overall concentrations of pollutant levels from vehicle exhaust emissions throughout the Proposed Project area.

Results of the criteria pollutant emissions calculations are presented in **Table 9**, 2019 *Maximum Unmitigated Regional Operational Emissions* and **Table 10**, 2040 *Maximum Unmitigated Regional Operational Emissions*. The operational-related daily emissions for the criteria and precursor pollutants (VOC, NO_X, CO, PM10, and PM2.5) would be substantially below the SCAQMD thresholds of significance. Therefore, Project-related operational emissions would result in a less than significant impact.

TABLE 9
2019 MAXIMUM UNMITIGATED REGIONAL OPERATIONAL EMISSIONS (POUNDS PER DAY)[a]

Source	VOC	NO_X	CO	PM10	PM2.5
2019 without Project Mobile Emissions	10	30	91	3	1
2019 with Project Mobile Emissions	9	26	82	3	1
Net Project Mobile Emissions (with Project minus without Project)	(1)	(4)	(9)	0	0
SCAQMD Significance Threshold	55	55	550	150	55
Exceeds Thresholds?	No	No	No	No	No

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix B.

SOURCE: ESA, 2019

TABLE 10
2040 MAXIMUM UNMITIGATED REGIONAL OPERATIONAL EMISSIONS (POUNDS PER DAY)[a]

Source	VOC	NO_X	CO	PM10	PM2.5
2040 without Project Mobile Emissions	6	16	50	3	1
2040 with Project Mobile Emissions	5	14	43	3	1
Net Project Mobile Emissions (with Project minus without Project)	(1)	(2)	(7)	0	0
SCAQMD Significance Threshold	55	55	550	150	55
Exceeds Thresholds?	No	No	No	No	No

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix B.

SOURCE: ESA, 2019

Future operations would generate ozone precursors (i.e., VOCs and NO_X), CO, PM10, and PM2.5. Operational emissions would not exceed the SCAQMD regional or local thresholds and would not be expected to result in concentrations that exceed the NAAQS or CAAQS. Therefore, operation of the Project would not result in a cumulatively considerable net increase for non-

attainment of criteria pollutants or ozone precursors. As a result, the project would result in a less than significant impact for operational emissions.

5.3 Substantial Pollutant Concentrations (AIR-3)

Carbon Monoxide Hotspots

The potential for the Project to cause or contribute to CO hotspots is evaluated by comparing Project intersections (both intersection geometry and traffic volumes) with prior studies conducted by SCAQMD in support of their AQMPs and considering existing background CO concentrations. As discussed below, this comparison demonstrates that the Project would not cause or contribute considerably to the formation of CO hotspots, that CO concentrations at Project impacted intersections would remain well below the ambient air quality standards, and that no further CO analysis is warranted or required.

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. In the 2003 AQMP, SCAQMD notes that the intersection of Wilshire Boulevard and Veteran Avenue is the most congested intersection in Los Angeles County, with an average daily traffic volume of approximately 100,000 vehicles per day. This intersection is located near the on- and off-ramps to Interstate 405 in West Los Angeles. The evidence provided in the 2003 AQMP (Table 4-10 of Appendix V) shows that the peak modeled CO concentration due to vehicle emissions at these four intersections was 4.6 ppm (one-hour average) and 3.2 (eight-hour average) at Wilshire Boulevard and Veteran Avenue. When added to the existing background CO concentrations, the screening values would be 7.6 ppm (one-hour average) and 5 ppm (eight-hour average).

Additionally, maximum CO levels in recent years are 3 ppm (1-hour average) and 1.8 ppm (8-hour average) compared to the thresholds of 20 ppm (1-hour average) and 9.0 ppm (8-hour average). CO levels decreased dramatically in the Air Basin with the introduction of the catalytic converter in 1975. No exceedances of CO have been recorded at monitoring stations in the Air Basin for some time and the Air Basin is currently designated as a CO attainment area for both the CAAQS and NAAQS. Thus, it is not expected that CO levels at Project-impacted intersections would rise to the level of an exceedance of these standards.

As shown in **Table 11,** *2019 and 2040 with Project Traffic Volumes,* peak hour traffic volumes will not exceed 100,000 vehicles per day. Additionally, the traffic study conducted for the Proposed Project found that average daily traffic and vehicles miles traveled would not increase from without Project conditions to with Project conditions. Rather, LOS and delay would improve from without Project conditions to with Project conditions. Since operation of the Project would not substantially generate new trips, the effects on the surrounding circulation system would be negligible and would not cause existing roadway levels of service to decrease. As a result, CO concentrations are expected to be less than those estimated in the 2003 AQMP, which would not exceed the thresholds. Thus, this comparison demonstrates that the Project

would not contribute considerably to the formation of CO hotspots and no further CO analysis is required. The Project would result in less than significant impacts with respect to CO hotspots.

TABLE 11
2019 AND 2040 AVERAGE DAILY TRAFFIC VOLUMES

Roadway Segment	2019	2040
Firestone Boulevard Between Elmcroft Avenue & Orr and Day Road	23,638	29,423

SOURCE: Kittleson & Associates, Transportation Impact Analysis: Firestone Boulevard Widening Project, July 2019.

Toxic Air Contaminants

Construction

Sensitive receptors are located approximately 10 feet from the Project Site. SCAQMD recommends that construction health risk assessments be conducted for substantial sources of DPM emissions (e.g., earth-moving construction activities) in proximity to sensitive receptors and has provided guidance for analyzing mobile source diesel emissions. However, localized DPM emissions (strongly correlated with PM2.5 emissions) are less than significant and presented in Table 6. Although the localized analysis does not directly measure health risk impacts, it does provide data that can be used to evaluate the potential to cause health risk impacts. The very low level of PM2.5 emissions coupled with the short-term duration of construction activity resulted in an overall low level of DPM concentrations in the project area. Furthermore, compliance with the CARB ATCM anti-idling measure, which limits idling to no more than five minutes at any location for diesel-fueled commercial vehicles, further minimized DPM emissions in the Project area. Sensitive receptors would be exposed to emissions below thresholds, and construction TAC impacts are less than significant.

Operation

SCAQMD recommends that operational health risk assessments be conducted for substantial sources of DPM emissions (e.g., truck stops and warehouse distribution facilities) in proximity to sensitive receptors and has provided guidance for analyzing mobile source diesel emissions. The Project is not anticipated to generate a substantial number of daily truck trips. Therefore, based on the limited activity of TAC sources TAC concentrations at off-site sensitive receptors, the Project would not warrant the need for a health risk assessment associated with on-site operational activities, and potential TAC impacts are expected to be less than significant.

5.4 Greenhouse Gas Project Emissions (GHG-1)

Construction Emissions

As explained above, the emissions of GHGs associated with construction of the Project were calculated for each year of construction activity. Results of the Project's construction phase GHG

emissions calculations are presented in **Table 12**, *Project Construction Greenhouse Gas Emissions*. Although construction-related GHGs are one-time emissions, any assessment of Project emissions should include construction emissions. SCAQMD recommends that a project's construction-related GHG emissions be amortized over the project's 30-year lifetime and include these emissions as part of the project's annualized lifetime total emissions, thereby, GHG reduction measures will address construction GHG emissions as part of the operational GHG reduction strategies. As indicated in Table 12, Project construction GHG emissions during the three-year construction period would generate an estimated 10,267 metric tons of CO_2e, or 342 metric tons of CO_2e amortized over a 30-year period. A complete listing of the equipment by phase, emission factors, and calculation parameters used in this analysis is included within the emissions calculation worksheets that are provided in Appendix A of this report.

TABLE 12
PROJECT CONSTRUCTION UNMITIGATED GREENHOUSE GAS EMISSIONS

Emission Source	CO_2e (Metric Tons) [a,b]
Grubbing/Land Clearing	81
Grading/Excavation	9,409
Drainage/Utilities/Sub-Grade	620
Paving	156
Total Construction Emissions	**10,267**
Amortized Construction Emissions (30-years)	**342**

[a] Totals may not add up exactly due to rounding in the modeling calculations Detailed emissions calculations are provided in Appendix A.
[b] CO_2e emissions are calculated using the GWP values from the IPCC Fourth Assessment Report.

SOURCE: ESA 2019

Operational Emissions

As previously stated, average daily traffic and vehicle miles traveled is expected to remain the same from without Project conditions to with Project conditions. However, due to the widening, LOS and delays are expected to improve from without Project conditions to with Project conditions. Mobile emissions were modeled for Baseline 2019 without Project, 2019 with Project, Baseline 2040 without Project and 2040 with Project conditions. Results of the emissions calculations are presented in **Table 13**, *Operational Greenhouse Gas Emissions*. As indicated in Table 13, CO_2e emissions decrease from without Project conditions to with Project conditions in both the 2019 and 2040 analysis year. This increase in emissions is due to an improvement of LOS and decrease in delay times at intersection within the Project corridor under with Project conditions.

TABLE 13
OPERATIONAL GREENHOUSE GAS EMISSIONS

Emissions Sources	2019 CO_2e (Metric Tons) [a,b]	2040 CO_2e (Metric Tons) [a,b]
Baseline without Project	17	16
with Project	15	14
Net Project Mobile Emissions (with Project minus without Project)	(2)	(2)

[a] Totals may not add up exactly due to rounding in the modeling calculations. Detailed emissions calculations are provided in Appendix B.

[b] CO_2e emissions are calculated using the global warming potential values from the Intergovernmental Panel on Climate Change Fourth Assessment Report.

SOURCE: ESA 2019

Project operational-related GHG emissions would decline in future years as emissions reductions from the State's Cap-and-Trade program are fully realized. Emissions reductions from the Project's two highest GHG-emitting sources, mobile and electricity, would occur over the next decade, and beyond, ensuring that the Project's total GHG emissions would be further reduced. Emissions from electricity would decline as utility providers, including SCE, meet their Renewables Portfolio Standard obligations to provide 50 percent of their electricity from renewable electricity sources by 2030 consistent with SB 350, which would achieve additional reductions in emissions from electricity demand although the actual reduction will depend on the mix of fossil fuels that SCE will replace with renewables and the relative CO_2 intensities of those fossil fuels. Project emissions from mobile sources would also decline in future years as older vehicles are replaced with newer vehicles resulting in a greater percentage of the vehicle fleet meeting more stringent combustion emissions standards, such as the model year 2017-2025 Pavley Phase II standards. Therefore, the Project would not generate GHG emissions that may have, either directly or indirectly, a significant impact on the environment, and the impact would be less than significant.

5.5 Consistency with State Plans, Policies, or Regulations

Consistency with AB 32

In support of AB 32, the state has promulgated specific laws aimed at GHG reductions applicable to the Project. The Project will decrease congestion, improve LOS and decrease delay times at intersection within the Project corridor. Therefore, the Project would be consistent with State efforts to reduce motor vehicle emissions and congestion. The Project would generate GHG emissions due to construction and operational activities; however, its annual GHG emissions, would be generated due to development located and designed to be consistent with relevant goals and actions designed to encourage development that results in the efficient use of public and

private resources. Therefore, the Project's GHG emissions and associated impacts would be less than significant.

Project consistency with Regional and Local Trip and VMT Reduction Goals, Actions, and Recommendations

The significance of the Project's GHG emissions was first evaluated based on whether the emissions would be generated in connection with development located and designed consistent with relevant regional and local goals, actions, and recommendations designed to encourage development to reduce trips and VMTs. Transportation-related GHG emissions are the largest source of GHG emissions from the Project. This Project characteristic is consistent with the assumption in many regional plans, such as the SCAG RTP/SCS, which recognizes that the transportation sector is the largest contributor to the State's GHG emissions.

Consistent with SCAG's RTP/SCS alignment of transportation, land use, and housing strategies, the Project would accommodate projected increases in travel demand by widening the existing corridor and improving LOS and decreasing delay times at intersection within the corridor.

Consistency with Plans, Policies, Regulations, or Recommendations to Reduce GHG Emissions

The Project would also be consistent with statewide, regional and local plan, policies, regulations, and recommendations to reduce GHG emissions from development. The primary focus of many of the statewide and regional mandates, plans, policies and regulations is to address worldwide climate change. According to CAPCOA, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective."[55] Due to the complex physical, chemical and atmospheric mechanisms involved in global climate change, there is no basis for concluding that the Project's annual GHG emissions would cause a measurable change in global GHG emissions sufficient to create a significant Project level impact on global climate change. Newer construction materials and practices, energy efficiency requirements, and newer appliances tend to emit lower levels of air pollutant emissions, including GHGs, as compared to those built years ago; however, the net effect is difficult to quantify. The GHG emissions of the Project alone is not expected to cause a direct physical change in the environment. It is global GHG emissions in their aggregate that contribute to climate change, not any single source of GHG emissions alone. Because of the lack of evidence indicating that the Project's GHG emissions would cause a measurable change in global GHG emissions sufficient to create a significant project-level impact on global climate change, and the fact that the Project incorporates physical and operational Project characteristics that would ensure its consistency with City goals and actions, Project emissions are not anticipated to contribute considerably to global climate change.

55 California Air Pollution Control Officers Association, CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (2008).

The Project is also considered to be consistent with the GHG reduction goals of HSC Division 25.5 and associated GHG reduction plans such as SCAG's 2016 RTP/SCS, and it is not expected that Project development would impede their goals. In fact, as discussed above, the Project's location and development comply with the recommendations in these documents and would meet their goals.

As discussed above, the Project would be consistent with and support the goals of the 2016 RTP/SCS, which seeks improved access and mobility by placing "destinations closer together, thereby decreasing the time and cost of traveling between them."[56] According to SCAG, giving people more transportation choices and providing greater opportunities for biking and walking reduces the number of people who drive alone and encourages people to use alternative modes of travel.[57]

Furthermore, not only is the Project consistent with currently applicable GHG emission reduction strategies, but the Project also would not conflict with or impede the future statewide GHG emission reductions goals. CARB has outlined a number of potential strategies for achieving the 2030 reduction target of 40 percent below 1990 levels. These potential strategies include renewable resources for half of the State's electricity by 2030, increasing the fuel economy of vehicles and the number of zero-emission or hybrid vehicles, reducing the rate of growth in VMT, supporting and other alternative transportation options, and use of high efficiency appliances, water heaters, and HVAC systems.[58] The Project would benefit from statewide and utility-provider efforts toward increasing the portion of electricity provided from renewable resources. The Project would also benefit from statewide efforts toward increasing the fuel economy standards of vehicles.

Because the Project's location, land use characteristics, and design render it consistent with statewide and regional climate change mandates, plans, policies, and recommendations, the Project would be consistent with and would not conflict with any applicable plan, policy, regulation or recommendation to reduce GHG emissions. Therefore, impacts would be less than significant.

Consistency with Executive Orders S-3-05 and B-30-15

Executive Orders S-3-05 and B-30-15 establish goals for reducing GHG emissions. Executive Order S-3-05's goal to reduce GHG emissions to 1990 levels by 2020 was codified by the

56 Southern California Association of Governments, 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, (2016) p16, http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf. Accessed June 2019

57 Southern California Association of Governments, 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy, (2016) p14, http://scagrtpscs.net/Documents/2016/final/f2016RTPSCS.pdf. Accessed June 2019

58 Energy + Environmental Economics, Summary of the California State Agencies' PATHWAYS Project: Long-term Greenhouse Gas Reduction Scenarios, April 6, 2015. Available at: https://www.arb.ca.gov/html/fact_sheets/e3_2030scenarios.pdf. Accessed June 2019.

Legislature as AB 32. As analyzed above, the Project would be consistent with AB 32. Therefore, the Project does not conflict with the 2020 component of Executive Orders S-3-05 and B-30-15.

Executive Orders S-3-05 and B-30-15 also establish goals to reduce GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050. These goals have not yet been codified by the Legislature. However, studies have shown that, to meet the 2030 and 2050 targets, aggressive technologies in the transportation and energy sectors, including electrification and the decarbonization of fuel, will be required. In its Climate Change Scoping Plan, CARB acknowledged that the "measures needed to meet the 2050 goal are too far in the future to define in detail."[59] In the First Update, however, CARB generally described the type of activities required to achieve the 2050 target: "energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and rapid market penetration of efficiency and clean energy technologies that requires significant efforts to deploy and scale markets for the cleanest technologies immediately."[60] Due to the technological shifts required and the unknown parameters of the regulatory framework in 2030 and 2050, quantitatively analyzing the Project's impacts further relative to the 2030 and 2050 goals currently is speculative for purposes of CEQA.

Although the Project's emissions levels in 2030 and 2050 cannot yet be reliably quantified, statewide efforts are underway to facilitate the State's achievement of those goals and it is reasonable to expect the Project's emissions level to decline as the regulatory initiatives identified by CARB in the First Update are implemented, and other technological innovations occur. Stated differently, the Project's emissions total at build-out year of 2020, represents the maximum emissions inventory for the Project as California's emissions sources are being regulated (and foreseeably expected to continue to be regulated in the future) in furtherance of the State's environmental policy objectives. As such, given the reasonably anticipated decline in Project emissions once fully constructed and operational, the Project would be consistent with the Executive Orders' goals.

[59] CARB, Climate Change Scoping Plan, p. 117, December 2008
[60] CARB, First Update, p. 32, May 2014

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SECTION 6
Cumulative Impacts

The SCAQMD CEQA Air Quality Handbook states that the "Handbook is intended to provide local governments, project proponents, and consultants who prepare environmental documents with guidance for analyzing and mitigating air quality impacts of projects."[61] The SCAQMD CEQA Air Quality Handbook also states that "[f]rom an air quality perspective, the impact of a project is determined by examining the types and levels of emissions generated by the project and its impact on factors that affect air quality. As such, projects should be evaluated in terms of air pollution thresholds established by the District."[62] SCAQMD has also provided guidance on an acceptable approach to addressing the cumulative impacts issue for air quality as discussed below:[63]

> *"As Lead Agency, the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR… Projects that exceed the Project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Because the City has not adopted specific Citywide significance thresholds for air quality impacts, it is appropriate to rely on thresholds established by SCAQMD (refer to CEQA Guidelines Section 15064.7). While it may be possible to add emissions from the list of related projects and the Project, it would not provide meaningful data for evaluating cumulative impacts under CEQA because neither the City nor SCAQMD have established numerical thresholds applicable to the summation of multiple project emissions for comparison purposes. Additionally, regional emissions from a project have the potential to affect the Air Basin as a whole, and unlike other environmental issue areas, such as aesthetics or noise, it is not possible to establish a geographical radius from a specific project site where potential cumulative impacts from regional emissions would be limited. Meteorological factors, such as wind, can disperse pollutants, often times tens of miles downwind from a project site. Therefore, consistent with accepted and established SCAQMD cumulative impact evaluation methodologies, the potential for the Project to results in cumulative impacts from regional emissions is assessed based on the SCAQMD thresholds.

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61 South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993, p. iii.

62 South Coast Air Quality Management District, CEQA Air Quality Handbook, 1993, p. 6-1.

63 South Coast Air Quality Management District, Cumulative Impacts White Paper, Appendix D, http://www.aqmd.gov/docs/default-source/Agendas/Environmental-Justice/cumulative-impacts-working-group/cumulative-impacts-white-paper-appendix.pdf?sfvrsn=4, accessed June 2019.

6.1 Construction Impacts

The Project would result in emissions of criteria air pollutants during both construction and operation for which the region is in non-attainment. The Air Basin fails to meet the NAAQS for O_3 and PM2.5, and therefore is considered a federal "non-attainment" area for these pollutants. The Air Basin also does not meet the CAAQS for PM10. SCAQMD has designed significance thresholds to assist the region in attaining the applicable CAAQS and NAAQS, apply to both primary (criteria and precursor) and secondary pollutants (ozone). Although the Project Site is located in a region that is in non-attainment for ozone, PM10, and PM2.5, the emissions associated with Project construction with mitigation would not be cumulatively considerable, as the emissions would fall below SCAQMD daily regional significance thresholds, as shown above in Table 7.

With respect to the Project's short-term construction-related air quality emissions and cumulative conditions, SCAQMD has developed strategies to reduce criteria pollutant emissions outlined in the AQMP pursuant to the federal CAA mandates. Construction of the Project would comply with SCAQMD Rule 403 requirement, which focuses on reducing fugitive dust emissions and the ATCM to limit heavy duty diesel motor vehicle idling to no more than 5 minutes at any given time. In addition, the Project would utilize a construction contractor(s) that complies with required and applicable BACT and the In-Use Off-Road Diesel Vehicle Regulation. Per SCAQMD rules and mandates, as well as the CEQA requirement that significant impacts be mitigated to the extent feasible, these same requirements (i.e., Rule 403 compliance, the implementation of all feasible mitigation measures, and compliance with adopted AQMP emissions control measures) would also be imposed on construction projects in the Air Basin, which would include the cumulative projects in the Project Area. The related projects would be subject to these same requirements. Furthermore, consistent with SCAQMD guidance for cumulative impacts, regional and localized emissions would be less than SCAQMD significance thresholds as shown above in Table 4. As such, the Project's contribution to cumulatively significant construction impacts to air quality would not be cumulatively considerable and cumulative impacts would be less than significant for regional and localized criteria pollutants during construction.

6.2 Operational Impacts

The SCAQMD's approach for assessing cumulative impacts related to operations or long-term implementation is based on attainment of ambient air quality standards in accordance with the requirements of the CAA and California Clean Air Act. As discussed earlier, SCAQMD has developed a comprehensive plan, the AQMP, which addresses the region's cumulative air quality condition.

A significant impact may occur if a project would add a cumulatively considerable contribution of a federal or California non-attainment pollutant. Because the Los Angeles County portion of the Air Basin (where the Project is located) is currently in non-attainment for ozone, NO_2, PM10, and PM2.5, cumulative projects could exceed an air quality standard or contribute to an existing or projected air quality exceedance. Cumulative impacts to air quality are evaluated under two

sets of thresholds for CEQA and SCAQMD. In particular, Section 15064(h)(3) of the CEQA Guidelines provides guidance in determining the significance of cumulative impacts. Specifically, Section 15064(h)(3) states in part that:

> *A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency.*

For purposes of the cumulative air quality analysis with respect to CEQA Guidelines Section 15064(h)(3), the Project's incremental contribution to cumulative air quality impacts is determined based on compliance with the SCAQMD-adopted AQMP. The Project would not conflict with or obstruct implementation of AQMP, and would be consistent with the growth projections in the AQMP.

Nonetheless, SCAQMD no longer recommends relying solely upon consistency with the AQMP as an appropriate methodology for assessing cumulative air quality impacts. SCAQMD recommends that project-specific air quality impacts be used to determine the potential cumulative impacts to regional air quality. The Project's regional emissions would be below SCAQMD significance thresholds, as shown in Table 8 and Table 9. Therefore, the Project's incremental contribution to long-term emissions of non-attainment pollutants and ozone precursors, considered together with cumulative projects, would not be cumulatively considerable, and therefore the cumulative impact of the Project would be less than significant.

6.3 Greenhouse Gas Impacts

Worldwide man-made emissions of GHGs were approximately 49,000 $MMTCO_2e$ in 2010 including ongoing emissions from industrial and agricultural sources and emissions from land use changes (e.g., deforestation).[64] Emissions of CO_2 from fossil fuel use and industrial processes account for 65 percent of the total while CO_2 emissions from all sources accounts for 76 percent of the total GHG emissions. Methane emissions account for 16 percent and N_2O emissions for 6.2 percent. In 2013, the United States was the world's second largest emitter of carbon dioxide at 5,300 MMT (China was the largest emitter of carbon dioxide at 10,300 MMT).[65]

CARB compiles GHG inventories for the State of California. As previously stated, based on the 2015 GHG inventory data California emitted 1.5 $MMTCO_2e$ less GHG emissions compared to 2014 and has been on a declining trend since 2007. Also, the population and economic activities

64 Intergovernmental Panel on Climate Change, Fifth Assessment Report Synthesis Report, 2014.

65 PBL Netherlands Environmental Assessment Agency and the European Commission Joint Research Center, Trends in Global CO_2 Emissions 2014 Report, 2014.

have increased substantially between 1990 and 2015. Despite the population and economic growth, California's net GHG emissions only grew by approximately 2 percent. According to CARB, the declining trend coupled with the state's GHG reduction programs (such as the Renewables Portfolio Standard, LCFS, vehicle efficiency standards, and declining caps under the Cap and Trade Program) demonstrate that California is on track to meet the 2020 GHG reduction target in California HSC, Division 25.5, also known as The Global Warming Solutions Act of 2006 (AB 32).[66] As indicated previously, Table 1 identifies and quantifies statewide anthropogenic GHG emissions and sinks (e.g., carbon sequestration due to forest growth) in 1990 and 2016 (i.e., the most recent year in which data are available from CARB). As shown in Table 1, the transportation sector is the largest contributor to statewide GHG emissions at 39 percent in 2016.

CEQA requires that lead agencies consider the cumulative impacts of GHG emissions from even relatively small (on a global basis) increases in GHG emissions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and therefore significant. In the case of global climate change, the proximity of the Project to other GHG emissions generating activities is not directly relevant to the determination of a cumulative impact because climate change is a global condition. As stated above, GHG emission impacts are, by their very nature cumulative, as both the California Natural Resources Agency and CAPCOA have recognized.[67] Therefore, an analysis of a project's GHG emission impacts also serves as a cumulative impact assessment.

Although HSC Division 25.5 sets a statewide target for statewide 2020 and 2030 GHG emission levels, its implementing tools (e.g., CARB's *Climate Change Scoping Plan*) make clear that the reductions are not expected to occur uniformly from all sources or sectors. CARB has set targets specific to the transportation sector (land use-related transportation emissions), for example, and under SB 375, SCAG must incorporate these GHG-reduction goals into its Regional Transportation Plan and demonstrate that its SCS is consistent with the Regional Housing Needs Assessment. One of the goals of this process is to ensure that the efforts of State, regional and local planning agencies accommodate the contemporaneous increase in population and employment with a decrease in overall GHG emissions. For example, adopting zoning designations that reduce density in areas which are expected to experience growth in population and housing needs, is seen as inconsistent with anti-sprawl goals of sustainable planning. Although development under a reduced density scenario would result in lower GHG emissions from the use of that individual parcel of land compared to what is currently or hypothetically allowed (by creating fewer units and fewer attributable vehicle trips), total regional GHG emissions would likely fail to decrease at the desired rate or, worse, would increase if regional housing and employment needs of an area were then met with a larger number of less-intensive development projects. Therefore, it is not simply a cumulative increase in regional development

66 California Air Resources Board, Frequently Asked Questions for the 2016 Edition California Greenhouse Gas Emission Inventory, (2016). Available: https://www.arb.ca.gov/cc/inventory/pubs/reports/2000_2014/ghg_inventory_faq_20160617.pdf. Accessed June 2019.

67 California Air Pollution Control Officers Association, CEQA & Climate change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, (2008).

or the resultant GHG emissions that potentially threatens GHG reduction goals, but the configuration and design of that development.

With implementation of good planning policies, the land use sector can accommodate growth and still be consistent with statewide plans to reduce GHG emissions. To that end, various agencies are required to develop programs to guide future building and transportation development toward minimizing resource consumption and reducing resultant pollution.

As discussed above, the Project's design and location would be consistent with applicable GHG reduction strategies recommended by the State and region. In addition, the Project would support and be consistent with relevant and applicable GHG emission reduction strategies in SCAG's 2016 RTP/SCS. Furthermore, the overwhelming majority of the Project-related GHG emissions are from two highly regulated source sectors, including electricity generation and transportation fuels. These sectors are already covered entities under the Renewables Portfolio Standard and the Cap-and-Trade Program and as such would be reduced sector-wide in accordance with the GHG reduction targets of HSC Division 25.5, in addition to the previously discussed GHG emissions reductions from the Project-specific energy efficiency design features, and VMT-reducing land use characteristics of the Project. As indicated above, the CEQA Guidelines were amended in response to SB 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction program renders a cumulative impact insignificant. Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project will comply with an approved plan or mitigation program that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area of the project.[68] To qualify, such a plan or program must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency.[69] Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plan, [and] **plans or regulations for the reduction of greenhouse gas emissions**" (emphasis added).[70] Put another way, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of non-significance for GHG emissions if a project complies with the California Cap-and-Trade Program or other regulatory schemes to reduce GHG emissions.

Given that the Project would generate GHG emissions consistent with applicable reduction plans and policies, and given that GHG emission impacts are cumulative in nature, the Project's incremental contribution to cumulatively significant GHG emissions would be less than cumulatively considerable, and impacts would be less than significant.

[68] 14 CCR § 15064(h)(3).
[69] 14 CCR § 15064(h)(3).
[70] 14 CCR § 15064(h)(3).

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Appendix A
Project Emission Construction Worksheets

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Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Firestone Boulevard Widening Project_Unmitigated

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.24	10.52	13.38	3.08	0.58	2.50	1.04	0.52	0.52	0.02	2,237.07	0.59	0.05	2,266.12
Grading/Excavation	7.05	58.87	147.74	8.26	5.76	2.50	4.38	3.86	0.52	0.54	55,926.06	2.92	7.39	58,200.24
Drainage/Utilities/Sub-Grade	3.17	29.64	31.40	3.95	1.45	2.50	1.85	1.33	0.52	0.06	5,702.79	1.20	0.08	5,756.54
Paving	1.41	17.71	13.45	0.74	0.74	0.00	0.65	0.65	0.00	0.03	2,865.96	0.75	0.05	2,901.05
Maximum (pounds/day)	7.05	58.87	147.74	8.26	5.76	2.50	4.38	3.86	0.52	0.54	55,926.06	2.92	7.39	58,200.24
Total (tons/construction project)	1.77	15.48	31.39	2.11	1.27	0.84	1.08	0.91	0.18	0.11	10,902.34	0.73	1.33	11,317.22

Notes:

Project Start Year ->	2020
Project Length (months) ->	36
Total Project Area (acres) ->	17
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	280	40
Grading/Excavation	1,000	2500	3,360	8,340	880	40
Drainage/Utilities/Sub-Grade	0	0	0	0	600	40
Paving	0	0	0	0	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Firestone Boulevard Widening Project_Unmitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.05	0.42	0.53	0.12	0.02	0.10	0.04	0.02	0.02	0.00	88.59	0.02	0.00	81.41
Grading/Excavation	1.26	10.49	26.33	1.47	1.03	0.45	0.78	0.69	0.09	0.10	9,966.02	0.52	1.32	9,408.77
Drainage/Utilities/Sub-Grade	0.38	3.52	3.73	0.47	0.17	0.30	0.22	0.16	0.06	0.01	677.49	0.14	0.01	620.41
Paving	0.08	1.05	0.80	0.04	0.04	0.00	0.04	0.04	0.00	0.00	170.24	0.04	0.00	156.33
Maximum (tons/phase)	1.26	10.49	26.33	1.47	1.03	0.45	0.78	0.69	0.09	0.10	9966.02	0.52	1.32	9,408.77
Total (tons/construction project)	1.77	15.48	31.39	2.11	1.27	0.84	1.08	0.91	0.18	0.11	10902.34	0.73	1.33	10,266.92

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Firestone Boulevard Widening Project_Mitigated

Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.67	13.94	2.43	2.65	0.15	2.50	0.64	0.12	0.52	0.02	2,237.07	0.59	0.05	2,266.12
Grading/Excavation	4.09	70.30	88.51	5.81	3.31	2.50	2.13	1.61	0.52	0.54	55,926.06	2.92	7.39	58,200.24
Drainage/Utilities/Sub-Grade	1.66	34.79	4.67	2.79	0.29	2.50	0.75	0.23	0.52	0.06	5,702.79	1.20	0.08	5,756.54
Paving	0.85	19.94	2.78	0.18	0.18	0.00	0.14	0.14	0.00	0.03	2,865.96	0.75	0.05	2,901.05
Maximum (pounds/day)	4.09	70.30	88.51	5.81	3.31	2.50	2.13	1.61	0.52	0.54	55,926.06	2.92	7.39	58,200.24
Total (tons/construction project)	1.00	18.40	16.59	1.48	0.64	0.84	0.50	0.33	0.18	0.11	10,902.34	0.73	1.33	11,317.22

Notes:

Project Start Year ->	2020
Project Length (months) ->	36
Total Project Area (acres) ->	17
Maximum Area Disturbed/Day (acres) ->	0
Water Truck Used? ->	Yes

	Total Material Imported/Exported Volume (yd^3/day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
Grubbing/Land Clearing	0	0	0	0	280	40
Grading/Excavation	1,000	2500	3,360	8,340	880	40
Drainage/Utilities/Sub-Grade	0	0	0	0	600	40
Paving	0	0	0	0	480	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Firestone Boulevard Widening Project_Mitigated

Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.03	0.55	0.10	0.10	0.01	0.10	0.03	0.00	0.02	0.00	88.59	0.02	0.00	81.41
Grading/Excavation	0.73	12.53	15.77	1.04	0.59	0.45	0.38	0.29	0.09	0.10	9,966.02	0.52	1.32	9,408.77
Drainage/Utilities/Sub-Grade	0.20	4.13	0.56	0.33	0.03	0.30	0.09	0.03	0.06	0.01	677.49	0.14	0.01	620.41
Paving	0.05	1.18	0.16	0.01	0.01	0.00	0.01	0.01	0.00	0.00	170.24	0.04	0.00	156.33
Maximum (tons/phase)	0.73	12.53	15.77	1.04	0.59	0.45	0.38	0.29	0.09	0.10	9966.02	0.52	1.32	9,408.77
Total (tons/construction project)	1.00	18.40	16.59	1.48	0.64	0.84	0.50	0.33	0.18	0.11	10902.34	0.73	1.33	10,266.92

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

The CO2e emissions are reported as metric tons per phase.

Appendix B
Project Operation Construction Worksheets

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       File Name:       Los Angeles (SC) - 2019 - Annual.EC
CT-EMFAC Version:       6.0.0.18677
        Run Date:       9/11/2019 3:52:31 PM
            Area:       Los Angeles (SC)
   Analysis Year:       2019
          Season:       Annual
```

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.020	0.489
Truck 2	0.040	0.937
Non-Truck	0.940	0.012

```
     Road Length:             1 miles
          Volume:         1,027 vehicles per hour
 Number of Hours:            24 hours
Avg. Idling Time:          4.36 minutes per vehicle
Tot. Idling Time:       1,791.09        hours
```

VMT Distribution by Speed (mph):

5	4.00%
10	2.00%
15	2.00%
20	2.00%
25	10.00%
30	10.00%
35	10.00%
40	10.00%
45	50.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust Total (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	(US tons)
HC	1,615.8	1,742.4	1,826.4	-	-	5,184.6	0.006
ROG	1,266.6	1,302.1	1,952.7	-	-	4,521.4	0.005
TOG	1,816.2	1,929.8	1,952.7	-	-	5,698.7	0.006
CO	28,557.5	12,817.9	-	-	-	41,375.4	0.046
NOx	8,633.4	5,016.5	-	-	-	13,650.0	0.015
CO2	10,294,603.5	5,215,972.9	-	-	-	15,510,576.4	17.097

CH4	475.9	553.3	-	-	-	1,029.2	0.001
PM10	112.7	77.0	-	216.3	1,033.1	1,439.1	0.002
PM2.5	105.8	71.8	-	54.1	442.8	674.4	<0.001

==========END==========

File Name: Los Angeles (SC) - 2019 - Annual.EC
CT-EMFAC Version: 6.0.0.18677
Run Date: 9/11/2019 3:52:53 PM
Area: Los Angeles (SC)
Analysis Year: 2019
Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.020	0.489
Truck 2	0.040	0.937
Non-Truck	0.940	0.012

Road Length: 1 miles
Volume: 1,027 vehicles per hour
Number of Hours: 24 hours
Avg. Idling Time: 2.94 minutes per vehicle
Tot. Idling Time: 1,207.75 hours

VMT Distribution by Speed (mph):

5	4.00%
10	2.00%
15	2.00%
20	2.00%
25	10.00%
30	10.00%
35	10.00%
40	10.00%
45	50.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust Total (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	(US tons)
HC	1,615.8	1,174.9	1,826.4	-	-	4,617.1	0.005
ROG	1,266.6	878.0	1,952.7	-	-	4,097.3	0.005
TOG	1,816.2	1,301.3	1,952.7	-	-	5,070.2	0.006
CO	28,557.5	8,643.3	-	-	-	37,200.8	0.041
NOx	8,633.4	3,382.7	-	-	-	12,016.1	0.013
CO2	10,294,603.5	3,517,192.7	-	-	-	13,811,796.2	15.225

CH4	475.9	373.1	-	-	-	849.0	<0.001
PM10	112.7	52.0	-	216.3	1,033.1	1,414.0	0.002
PM2.5	105.8	48.4	-	54.1	442.8	651.0	<0.001

==========END==========

File Name: Los Angeles (SC) - 2040 - Annual.EC
CT-EMFAC Version: 6.0.0.18677
Run Date: 9/11/2019 3:55:09 PM
Area: Los Angeles (SC)
Analysis Year: 2040
Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.015	0.689
Truck 2	0.045	0.954
Non-Truck	0.940	0.014

Road Length: 1 miles
Volume: 1,226 vehicles per hour
Number of Hours: 24 hours
Avg. Idling Time: 6.5 minutes per vehicle
Tot. Idling Time: 3,187.60 hours

VMT Distribution by Speed (mph):

5	4.00%
10	2.00%
15	2.00%
20	2.00%
25	10.00%
30	10.00%
35	10.00%
40	10.00%
45	50.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust Total (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	(US tons)
HC	879.7	1,312.4	872.5	-	-	3,064.5	0.003
ROG	711.1	1,072.1	932.8	-	-	2,716.0	0.003
TOG	985.5	1,468.8	932.8	-	-	3,387.2	0.004
CO	13,330.2	9,415.1	-	-	-	22,745.3	0.025
NOx	3,487.1	3,976.2	-	-	-	7,463.3	0.008
CO2	8,255,977.5	5,961,003.4	-	-	-	14,216,980.9	15.672

CH4	236.1	338.6	-	-	-	574.7	<0.001
PM10	35.4	53.2	-	261.8	1,211.3	1,561.8	0.002
PM2.5	32.9	49.6	-	65.4	519.2	667.1	<0.001

==========END==========

File Name: Los Angeles (SC) - 2040 - Annual.EC
CT-EMFAC Version: 6.0.0.18677
Run Date: 9/11/2019 3:55:30 PM
Area: Los Angeles (SC)
Analysis Year: 2040
Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.015	0.689
Truck 2	0.045	0.954
Non-Truck	0.940	0.014

Road Length: 1 miles
Volume: 1,226 vehicles per hour
Number of Hours: 24 hours
Avg. Idling Time: 4.4 minutes per vehicle
Tot. Idling Time: 2,157.76 hours

VMT Distribution by Speed (mph):

5	4.00%
10	2.00%
15	2.00%
20	2.00%
25	10.00%
30	10.00%
35	10.00%
40	10.00%
45	50.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust Total (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	(US tons)
HC	879.7	888.4	872.5	-	-	2,640.5	0.003
ROG	711.1	725.7	932.8	-	-	2,369.6	0.003
TOG	985.5	994.3	932.8	-	-	2,912.6	0.003
CO	13,330.2	6,373.3	-	-	-	19,703.5	0.022
NOx	3,487.1	2,691.6	-	-	-	6,178.7	0.007
CO2	8,255,977.5	4,035,140.9	-	-	-	12,291,118.4	13.549

CH4	236.1	229.2	-	-	-	465.3	<0.001
PM10	35.4	36.0	-	261.8	1,211.3	1,544.6	0.002
PM2.5	32.9	33.5	-	65.4	519.2	651.1	<0.001

==========END==========