2.13 Air Quality

2.13.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion State law. These laws, and related regulations by the U.S. EPA and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM)—which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$)—and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under NEPA. In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

2.13.1.1 Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits USDOT and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S.EPA regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California) sulfur dioxide (SO_2). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of RTPs and FTIPs that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and four years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), FHWA, and FTA make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

The proposed project was submitted to stakeholders at the Transportation Conformity Working Group (TCWG) meeting on May 22, 2018, pursuant to the Interagency Consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, FHWA, Caltrans, California ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a project of air quality concern (POAQC) under 40 CFR 93.123(b)(1) regarding POAQC determination. The project is not considered a POAQC because it does not meet the definition as defined in USEPA's Transportation Conformity Guidance (see TCWG meeting notes in the Air Quality Assessment Report [November 2018]).

2.13.2 Affected Environment

An Air Quality Assessment Report (November 2018) was prepared to assess the impacts of the project on regional and local air quality. The following information summarizes the contents and findings of the Air Quality Assessment Report.

2.13.2.1 Climate and Meteorological Conditions

The project is located within the South Coast Air Basin, which is a 6,600-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto mountains to the north and east. The South Coast Air Basin includes Orange County and the non-desert parts of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area of Riverside County.

The South Coast Air Basin is characterized as having a Mediterranean climate (i.e., a semiarid environment with mild winters, warm summers, and moderate rainfall). The region generally lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild and tempered by cool sea breezes. The extent and severity of the air pollution problem in the South Coast Air Basin is a function of the area's natural physical characteristics (i.e., weather and topography), as well as man-made influences (i.e., development patterns and lifestyle).

Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the South Coast Air Basin.

Temperature inversions are common, affecting localized pollutant concentrations in the winter and enhancing ozone formation in the summer. Mountains averaging 4,000 to 6,000 feet in elevation tend to trap pollutants in the region by limiting air flow. Average temperatures in the coastal area vary from lows in the mid-50s to highs in the mid-70s in degrees Fahrenheit, with annual precipitation ranging from 8 to 12 inches. Total precipitation in the project area averages approximately 9.4 inches annually at the nearby JWA. Precipitation occurs mostly during the winter and relatively infrequently during the summer.

Wind patterns in the project area are also measured and recorded at the JWA meteorological station. Wind direction is predominantly from the southwest in the vicinity of the project, blowing onshore from the coast of the Pacific Ocean that lies 10.5 miles to the southwest of the project area. The average wind speed at the monitoring station is approximately 5.4 mph, with calm winds occurring approximately 3.4 percent of the time.

2.13.2.2 Air Quality Attainment Status

The U.S. EPA has established NAAQS for six criteria pollutants that have been linked to potential health concerns. These federal criteria pollutants include CO, NO_2, O_3, PM (PM_{10} and $PM_{2.5}$), Pb, and SO_2. In addition to the NAAQS, the State of California has established ambient air quality standards (CAAQS) for visibility-reducing particles, sulfates, hydrogen sulfide, and vinyl chloride as well as more stringent standards for the criteria pollutants. Table 2.13-1 shows the NAAQS and CAAQS in addition to the principal health effects, atmospheric effects, and typical sources of each pollutant.

Table 2.13-1 also presents the attainment status designations for the Orange County portion of the South Coast Air Basin in relation to both the NAAQS and the CAAQS. Under the NAAQS, the project area is designated Nonattainment – Extreme for O_3 and Nonattainment – Moderate for $PM_{2.5}$, while being designated Attainment – Maintenance for the remaining regulated pollutants. Emissions of atmospheric O_3 precursors (reactive organic gases and NO_X) and particulate matter are the pollutants of greatest concern in the project area. Under the State standards, the project area is designated nonattainment for O_3, PM_{10}, and $PM_{2.5}$ and is designated attainment for all other pollutants.

Table 2.13-1: State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State [a] Standard	Federal [b] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Ozone (O_3)	1 hour	0.09 ppm [c]	NA [d]	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	Nonattainment – Extreme
	8 hours	0.070 ppm	0.070 ppm (4th highest in 3 years)				
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment – Maintenance
	8 hours	9.0 ppm	9 ppm				
	8 hours (Lake Tahoe)	6 ppm	NA				
Respirable Particulate Matter (PM_{10}) [e]	24 hours	50 μg/m^3 [f]	150 μg/m^3 (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke & vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Nonattainment	Attainment – Maintenance
	Annual	20 μg/m^3	NA [e]				
Fine Particulate Matter ($PM_{2.5}$) [e]	24 hours	NA	35 μg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter—a toxic air contaminant—is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.	Nonattainment	Nonattainment – Moderate
	Annual	12 μg/m^3	12.0 μg/m^3				
	24 hours (conformity process [g])	NA	65 μg/m^3				
	Secondary Standard (annual; also for conformity process [e])	NA	15 μg/m^3 (98th percentile over 3 years)				

Pollutant	Averaging Time	State [a] Standard	Federal [b] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm	0.100 ppm [h]	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the “NOx” group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	Attainment	Attainment – Maintenance
	Annual	0.030 ppm	0.053 ppm				
Sulfur Dioxide (SO_2)	1 hour	0.25 ppm	0.075 ppm [i] (99th percentile over 3 years)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Attainment	Attainment – Unclassified
	3 hours	NA	0.5 ppm [j]				
	24 hours	0.04 ppm	0.14 ppm (for certain areas)				
	Annual	NA	0.030 ppm (for certain areas)				
Lead (Pb) [k]	Monthly	1.5 μg/m³	NA	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	Attainment	Attainment – Unclassified (Project Area)
	Calendar Quarter	NA	1.5 μg/m³ (for certain areas)				
	Rolling 3-month average	NA	0.15 μg/m³ [L]				
Sulfate	24 hours	25 μg/m³	NA	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Attainment	N/A
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	NA	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Attainment	N/A

Pollutant	Averaging Time	State [a] Standard	Federal [b] Standard	Principal Health and Atmospheric Effects	Typical Sources	State Project Area Attainment Status	Federal Project Area Attainment Status
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	NA	Reduces visibility. Produces haze. NOTE: not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other “Class I” areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	Attainment	N/A

Notes: Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

$\mu g/m^3$: micrograms per cubic meter; NA: not applicable; PM: particulate matter; ppm: parts per million; ROG: reactive organic gas; VOC: volatile organic compound

a State standards are “not to exceed” or “not to be equaled or exceeded” unless stated otherwise.

b Federal standards are “not to exceed more than once a year” or as described above.

c ppm: parts per million

d Prior to 6/2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still be in use in some areas where 8-hour ozone emission budgets have not been developed, such as the S.F. Bay Area.

e Annual PM_{10} NAAQS revoked October 2006; was 50 $\mu g/m^3$. 24-hr. $PM_{2.5}$ NAAQS tightened October 2006; was 65 $\mu g/m^3$. Annual $PM_{2.5}$ NAAQS tightened from 15 $\mu g/m^3$ to 12 $\mu g/m^3$ December 2012 and secondary annual standard set at 15 $\mu g/m^3$.

f $\mu g/m^3$: micrograms per cubic meter

g The 65 $\mu g/m^3$ $PM_{2.5}$ (24-hr) NAAQS was not revoked when the 35 $\mu g/m^3$ NAAQS was promulgated in 2006. The 15 $\mu g/m^3$ annual $PM_{2.5}$ standard was not revoked when the 12 $\mu g/m^3$ standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the “Interim” period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

h Final 1-hour NO_2 NAAQS published in the Federal Register on 2/9/2010, effective 3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.

i EPA finalized a 1-hour SO_2 standard of 75 ppb (parts per billion [thousand million]) in June 2010. Nonattainment areas have not yet been designated as of 9/2012.

j Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.

k The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

L Lead NAAQS are not considered in Transportation Conformity analysis.

Source**:** Air Resources Board.

2.13.2.3 State Implementation Plan Status

Nonattainment areas are required by the U.S. EPA to prepare SIPs that demonstrate the date by which the NAAQS may be attained based on existing ambient air quality conditions and opportunities to reduce the regional emissions inventory. Table 2.13-2 presents the status of SIPs related to the project area. As of preparation of this document, the U.S. EPA has not yet set a project area attainment date for the $PM_{2.5}$ NAAQS.

Table 2.13-2: Status of SIPs Relevant to the Project Area

Name/Description	Status
Carbon Monoxide	Attainment – Maintenance (Serious): Meets NAAQS
Lead	Attainment – Unclassified: Meets NAAQS
Nitrogen Dioxide	Attainment – Maintenance: Meets NAAQS
Ozone (8-hour)	Nonattainment (Extreme): Does not meet NAAQS
PM_{10}	Maintenance (Serious): Does not meet NAAQS
$PM_{2.5}$	Nonattainment (Moderate): Does not meet NAAQS

Source: U.S. EPA 2018.

2.13.2.4 Monitored Air Quality

The California ARB and South Coast Air Quality Management District (SCAQMD) maintain a network of air quality monitoring stations located throughout the South Coast Air Basin to characterize the air quality environment by measuring and recording pollutant concentrations in the local ambient air. The project is located in Orange County with the subject corridor transecting 7.5 miles through portions of the cities of Tustin, Santa Ana, and Orange. The ambient air quality monitoring station active in nearest proximity to the project area is the Anaheim Monitoring Station, situated approximately 6 miles west of the project corridor. Table 2.13-3 presents the most recent ambient air quality monitoring data available at the Anaheim Monitoring Station. The air quality monitoring data for the Anaheim Monitoring Station are consistent with the nonattainment designations, with instances of O_3, PM_{10}, and $PM_{2.5}$ thresholds being exceeded.

Table 2.13-3: Recent Air Pollutant Concentrations in the Project Area

Pollutant	Standard	2016	2017	2018
Ozone				
Max 1-hr concentration		0.103	0.090	0.112
No. days exceeded: State	0.09 ppm	2	0	1
Max 8-hr concentration		0.074	0.076	0.071
No. days exceeded: State	0.070 ppm	4	4	1
Federal	0.070 ppm	4	4	1
Carbon Monoxide				
Max 1-hr concentration		3.7	8.4	2.3
No. days exceeded: State Federal	20 ppm	0	0	0
Federal	35 ppm	0	0	0
Max 8-hr concentration		2.2	2.6	1.9

Pollutant	Standard	2016	2017	2018
No. days exceeded: State	9.0 ppm	0	0	0
Federal	9 ppm	0	0	0
PM_{10}				
Max 24-hr concentration:		74.0	95.7	94.0
No. days exceeded: State	50 $\mu g/m^3$	N/A	N/A	N/A
Federal	150 $\mu g/m^3$	0	0	0
State annual average concentration	20 $\mu g/m^3$	N/A	N/A	27.4
$PM_{2.5}$				
Max 24-hr concentration		44.4	31.2	63.1
No. days exceeded: Federal	35 $\mu g/m^3$	1	7	7
Max annual concentration		9.4	10.6	11.4
Exceed Standard: State	12 $\mu g/m^3$	No	No	No
Federal	12.0 $\mu g/m^3$	No	No	No
Nitrogen Dioxide				
Max 1-hr concentration		0.064	0.081	0.066
No. days exceeded: State	0.18 ppm	0	0	0
Federal	100 ppb	0	0	0
Max annual concentration		0.014	0.014	0.014

Notes: PM: particulate matter; ppb: parts per billion; ppm: parts per million.
Source: U.S. EPA 2019; SCAQMD 2019.

2.13.2.5 Sensitive Receptors

Sensitive receptors include residential areas, schools, hospitals, other health care facilities, child/day care facilities, parks, and playgrounds. Residential communities are located along the entirety of the project corridor, and other religious institutions, medical facilities, and educational centers are situated throughout the area that serve these communities. Sensitive land uses within 1,000 feet of the SR 55 corridor are depicted on Figure 2.13-1 (maps 1 through 4).

Figure 2.13-1. Map of Sensitive Land Uses Along the Northern Project Corridor (1 of 4)

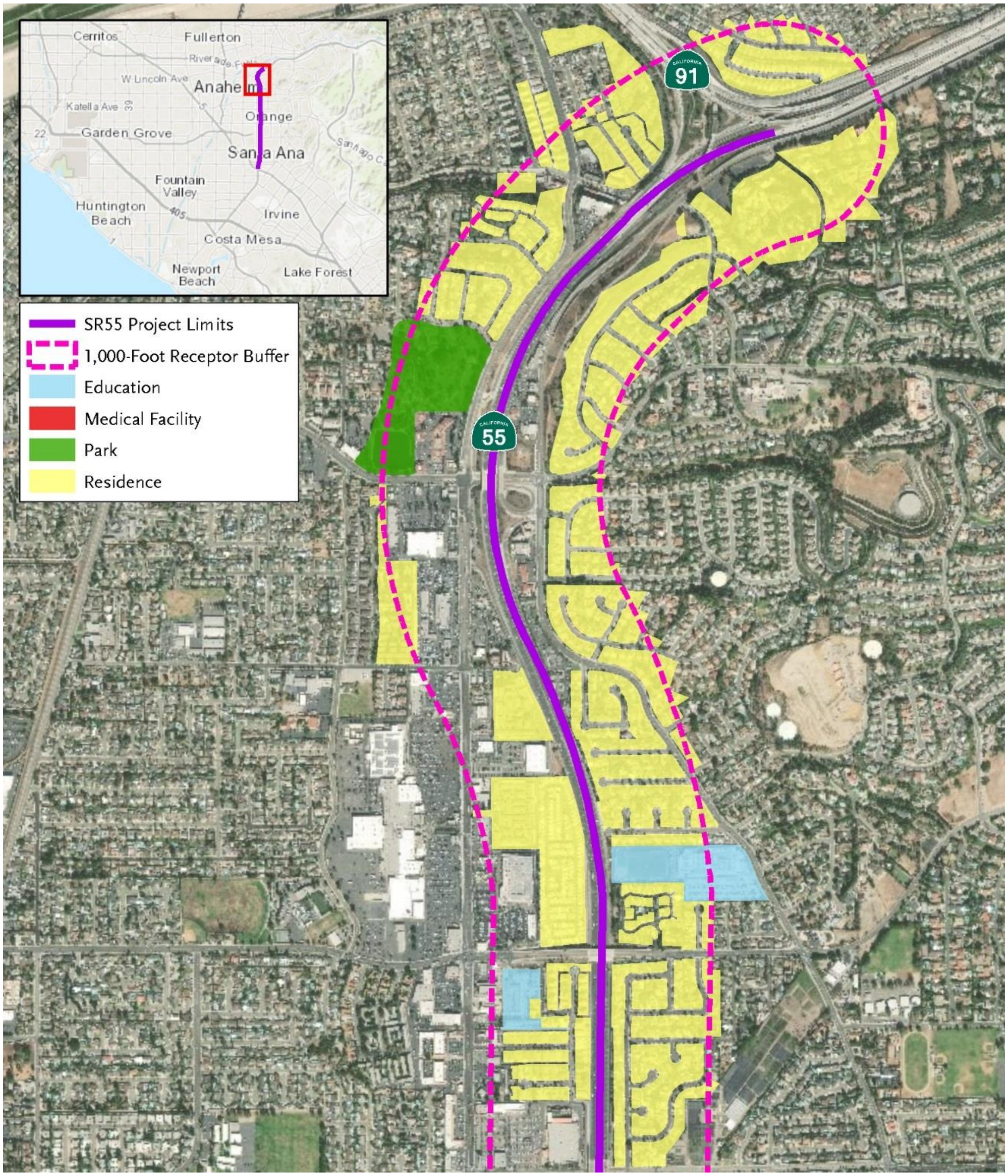


Figure 2.13-1. Map of Sensitive Land Uses Along the Mid-Northern Project Corridor (2 of 4)

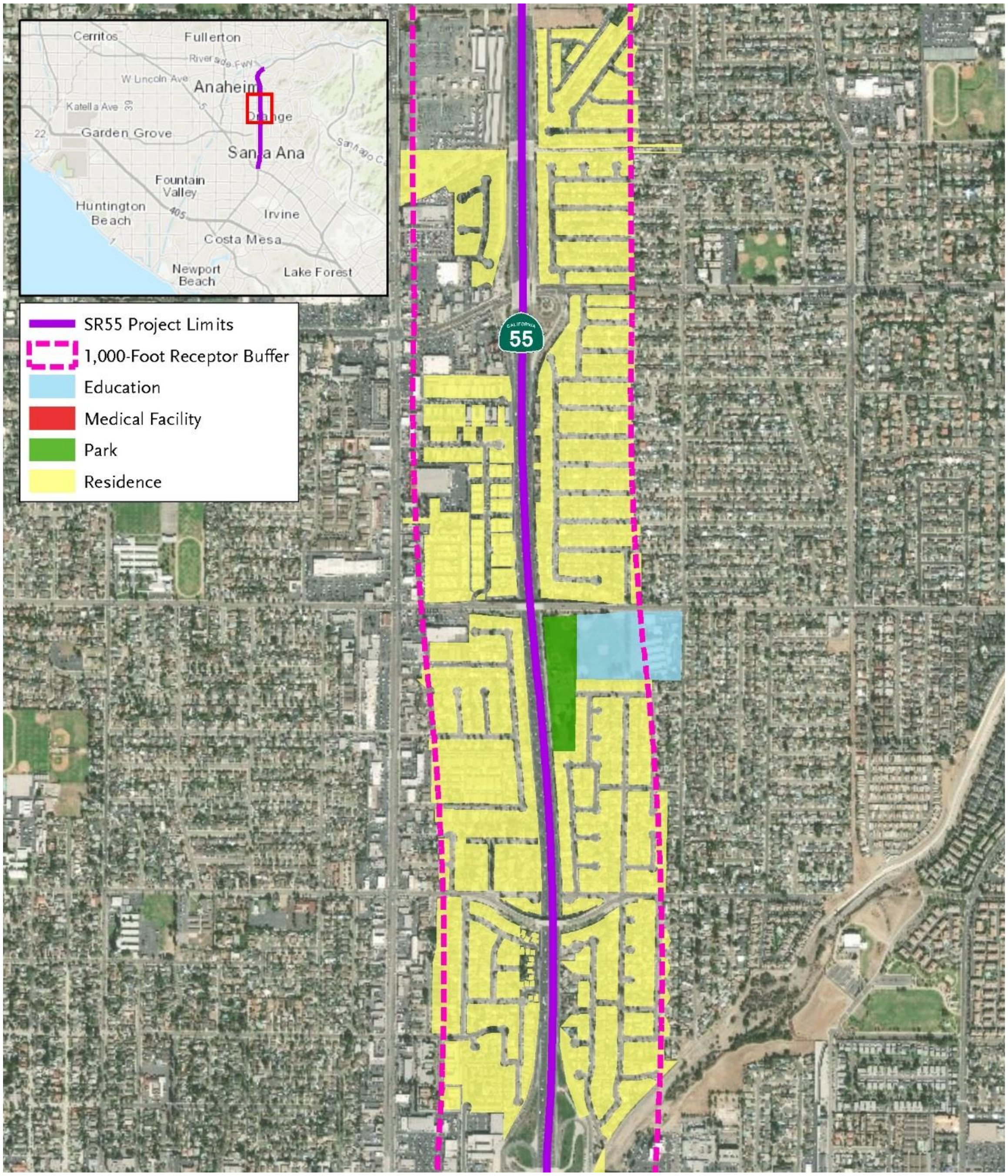


Figure 2.13-1. Map of Sensitive Land Uses Along the Mid-Southern Project Corridor (3 of 4)

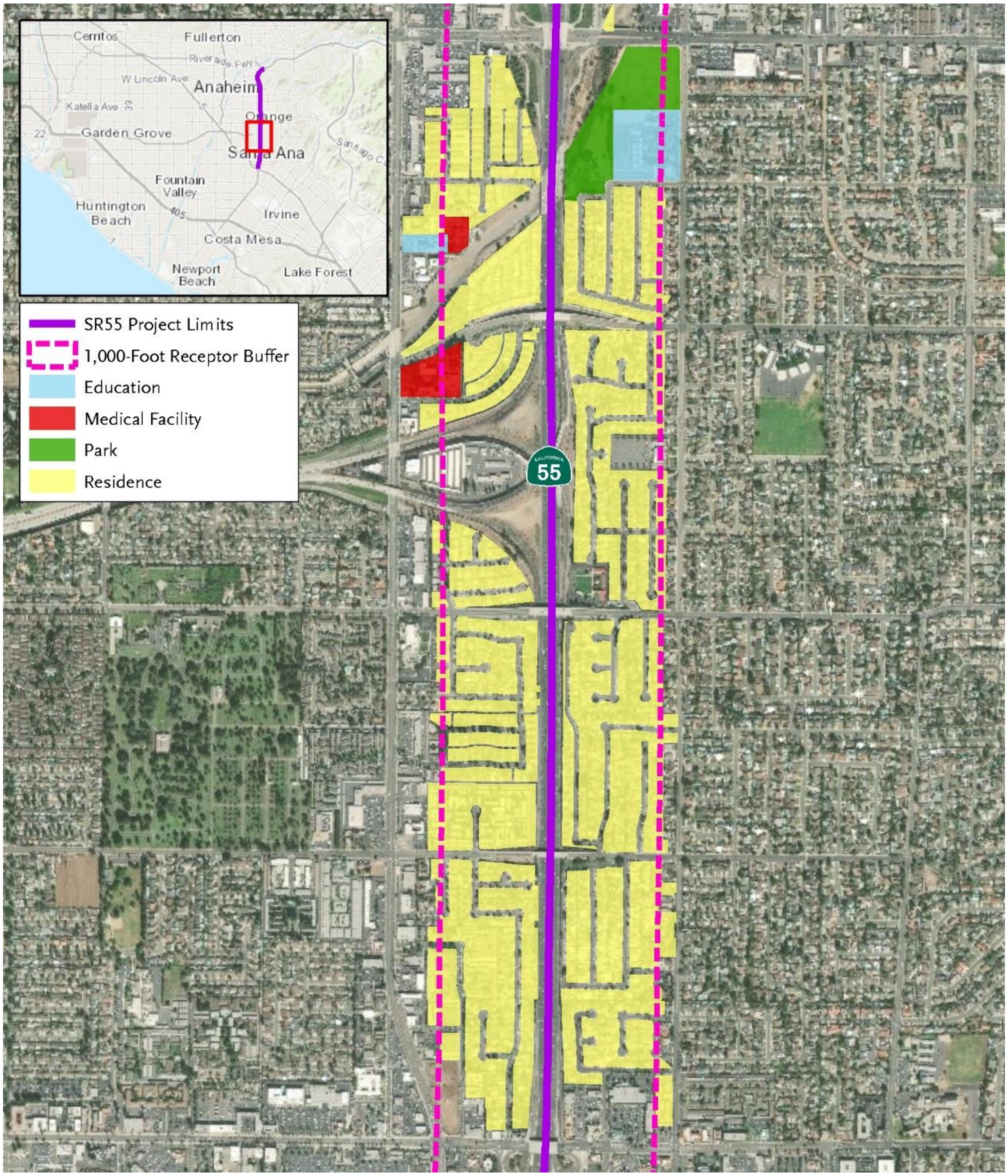
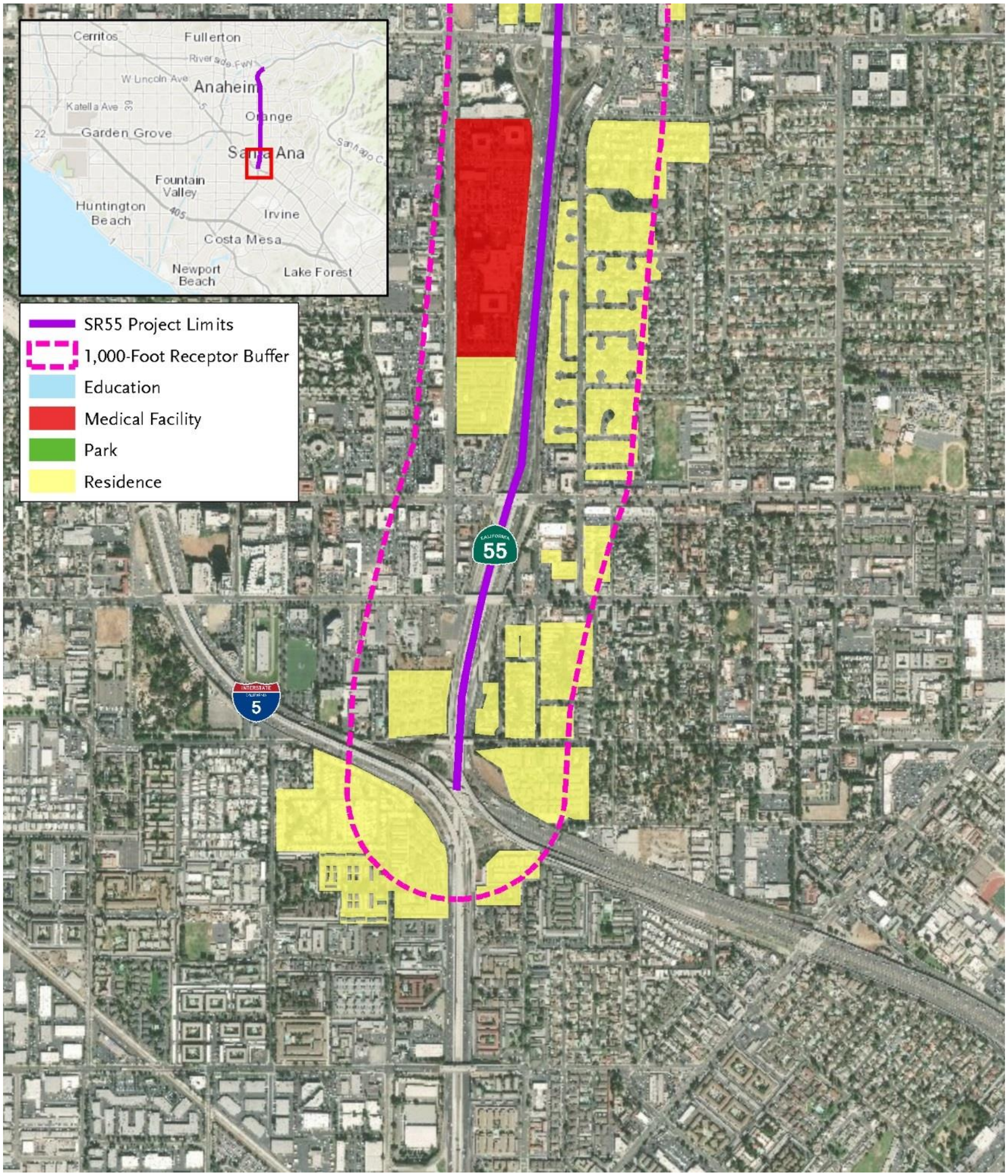


Figure 2.13-1. Map of Sensitive Land Uses Along the Southern Project Corridor (4 of 4)



2.13.3 Environmental Consequences

2.13.3.1 Regional Conformity

The project is listed in the 2016–2040 financially constrained RTP/SCS which was found by the SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The project is also included in the SCAG financially constrained 2019 FTIP, page 2 of the Orange County Project Listing for State Highways. The SCAG 2019 FTIP was determined to conform by FHWA and FTA on December 17, 2018. The design concept and scope of the project is consistent with the project description in the 2016–2040 RTP/SCS, 2019 FTIP (SCAG 2018), and the open to traffic assumptions of the SCAG regional emissions analysis.

2.13.3.2 Project-Level Conformity

Carbon Monoxide Hot-Spots Analysis

Caltrans has developed the Transportation Project-Level Carbon Monoxide Protocol (Caltrans 1997) for assessing carbon monoxide impacts of transportation projects. The procedures and guidelines comply with the following regulations without imposing additional requirements: Section 176(c) of the 1990 FCAA Amendments, federal conformity rules, State and local adoptions of the federal conformity rules, and the CEQA requirements [California Code of Regulations Title 21 Section 1509.3(25)]. Two conformity-requirement decision flow charts are provided in the CO Protocol for intersection analyses. The flowcharts are included in Appendix D of the Air Quality Report (November 2018,). An explanatory discussion of the steps used to determine the conformity requirements that apply to the current project is provided below:

Is the project exempt from all emissions analyses? NO. The project is a widening project, which is not exempt from regional emissions analysis per 40 CFR 93.126.

Is the project exempt from regional emissions analysis? NO. The project is a widening project, which is not exempt from regional emissions analysis per 40 CFR 93.127.

Is the project locally defined as regionally significant? YES. The project would increase capacity and is defined as regionally significant.

Is the project in a federal attainment area? NO. The project is located within an attainment/ maintenance area for the federal CO standard as of June 11, 2007.

Is there a currently conforming RTP and FTIP? YES. The 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) was found by SCAG to conform on April 7, 2016; and FHWA and FTA made a regional conformity determination finding on June 2, 2016. The 2019 FTIP was determined to conform on December 17, 2018.

Is the project included in the regional emissions analysis supporting the currently conforming RTP and FTIP? YES. The design concept and scope of the project is consistent with the project description in the 2016-2040 RTP/SCS, 2019 FTIP, and the open to traffic assumptions of the SCAG regional emissions analysis.

Has project design concept and/or scope changed significantly from that in regional analysis? NO. See previous response.

Examine local impacts. Section 3.1.9 of the flowchart directs the project evaluation to Section 4 (Local Analysis) of the CO Protocol.

Assessment of the project's effect on localized ambient air quality is based on analysis of CO. As stated in the CO Protocol, the determination of project-level CO impacts should be carried out according to the local analysis. The following discussion provides explanatory remarks for every step of the local analysis of the CO Protocol (screening methodology):

Is the project in a carbon monoxide nonattainment area? NO. The project site is located in a federal attainment/maintenance area as of June 11, 2007.

Was the area redesignated as "attainment" after the 1990 Clean Air Act? YES. See previous response.

Has "continued attainment" been verified with the local Air District, if appropriate? YES. As shown in Table 2.13-3, above, monitored CO concentrations in the project area were below the NAAQS for the latest three-year period.

Does the project worsen air quality? YES. As discussed below in Section 2.13.3.3, Construction (Short-Term) Impacts, the project would increase regional CO emissions when compared to No Build emissions.

Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of the attainment demonstration? NO. To answer this question, Section 7.4.2 of the CO Protocol recommends selecting one of the worst-case locations in the region where attainment has been demonstrated and comparing it to the build scenario of the project with a similar configuration. Therefore, the intersection of Wilshire Boulevard and Veteran Avenue from the SCAQMD 2003 Air Quality Management Plan (AQMP) Appendix V attainment demonstration and the intersection of Katella Avenue and Tustin Street were compared to evaluate whether the project would result in higher CO concentrations using the following conditions.

a. The receptors at the intersection of Katella Avenue and Tustin Street would be the same distance or farther from the traveled roadway than the receptors at the intersection of Wilshire Boulevard and Veteran Avenue for which attainment has been demonstrated. The attainment demonstration evaluated the CO concentrations at a distance of 3 meters (10 feet) from the edge of the roadways. Since the CO Protocol does not permit the modeling of receptor locations closer than 3 meters (10 feet), receptor locations for the project would be the same or farther than the receptors evaluated for the attainment demonstration.
b. The Katella Avenue and Tustin Street intersection would have lower traffic volumes when compared to the intersection of Wilshire Boulevard and Veteran Avenue. The traffic volumes are presented in Table 2.13-4.

Table 2.13-4: CO Hot-Spot Analysis Study Intersections Peak Hour Traffic Volumes

Intersection	West Link Peak-Hour Traffic Volumes	East Link Peak-Hour Traffic Volumes	North Link Peak-Hour Traffic Volumes	South Link Peak-Hour Traffic Volumes	Total Volume
Attainment Demonstration: Wilshire Blvd and Veteran Ave	4,951	3,317	1,400	933	10,601
No Build Alternative (2035): Katella Ave & Tustin St	2,040	1,960	1,860	1,620	7,480
Build Alternative (2035): Katella Ave & Tustin St	2,040	1,990	1,860	1,660	7,550

Notes:
Ave: Avenue; Blvd: Boulevard; St: Street
Source: Orange County Transportation Analysis Model, Version 4.0.; 2003 AQMP, Appendix V, Modeling and Attainment Demonstrations, page V-4-26.

c. The worst-case meteorology used for the Katella Avenue and Tustin Street would be identical to the meteorology used for the Wilshire Boulevard and Veteran Avenue intersection in the attainment demonstration. The CAL3QHC model was used for the attainment demonstration. Therefore, if the project were modeled, both intersections would be evaluated using the same meteorology settings in the CAL3QHC model, as the model only has one meteorological data set.

d. The peak hour traffic volumes presented in Table 2.13-4 show that the peak-hour link volumes for Katella Avenue and Tustin Street would be lower than the traffic volumes at the intersection of Wilshire Boulevard and Veteran Avenue used in the attainment demonstration.

e. The number of vehicles operating in cold start mode was not available in the attainment demonstration for the Wilshire Boulevard and Veteran Avenue intersection. However, the percentage of vehicles operating during the peak hour in cold start mode for the Katella Avenue and Tustin Street intersection would be expected to be the same or lower than Wilshire Boulevard and Veteran Avenue intersection.

f. The percentage of heavy-duty gas trucks utilizing the Wilshire Boulevard and Veteran Avenue intersection was not provided in the attainment demonstration from 2003. According to the Orange County Transportation Analysis Model, the percentage of heavy-duty trucks, diesel and gas, utilizing the Katella Avenue and Tustin Street intersection is approximately 2 percent. The majority of heavy-duty trucks are currently powered with diesel fuel and not gasoline. The percentage of heavy-duty gas trucks is less than 2 percent. Importantly, the CO emission rate for diesel engines is substantially less than the CO emission rate for gasoline engines. In addition, what is inherently important in an intersection CO hot-spot analysis is the number of truck trips, not the percentage.

   As shown in Table 2.13-4, the peak-hour volume at Katella Avenue and Tustin Street is approximately 3,000 fewer vehicles than the peak-hour volume at Wilshire Boulevard and Veteran Avenue. Given the differences in peak-hour volumes and the low percentage of heavy-duty trucks at the intersection of Katella Avenue and Tustin Street, it can reasonably be concluded that the intersection of Katella Avenue and Tustin Street has less truck volume than was estimated at the intersection of Wilshire Boulevard and Veteran Avenue. Therefore, similar to the attainment demonstration, heavy-duty gas trucks would not contribute to a CO hot-spot.

g. The average delay and queue length for the Katella Avenue and Tustin Street intersection would be expected to be the same or less than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration. The LOS for the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstration was not listed; however, based on the traffic volumes and intersection geometry, the intersection was likely LOS F. The Katella Avenue and Tustin Street intersection would function at LOS D or F depending on the peak hour. However, this intersection has lower volumes than the Wilshire Boulevard and Veteran Avenue intersection.

h. The background concentrations of CO in the project area are lower than the CO concentrations used in the attainment demonstration for the intersection of Wilshire Boulevard and Veteran Avenue, as shown in Table 2.13-5.

i. The maximum background 1- and 8-hour CO concentrations in the project area were 8.4 and 2.6 parts per million (ppm) in 2017. These concentrations are lower than the background concentrations used for the attainment demonstration which were predicted to be 10.8 ppm for the 1-hour measurements and 9.9 ppm for the 8-hour measurements for the year 2002, as shown in Table 2.13-5.

The evaluation of the above conditions has shown that the Katella Avenue and Tustin Street intersection would not be expected to result in higher CO concentrations than the Wilshire Boulevard and Veteran Avenue intersection used for the attainment demonstrations. In addition, the SCAQMD 2003 AQMP Appendix V attainment demonstration indicated that in 1997 and 2002, 1-hour CO concentrations were considerably lower than the NAAQS and CAAQS (Table 2.13-5). The analysis was based on 1997 and 2002 traffic volumes and showed 38 to 45 percent reduction in concentrations between the two years.

Table 2.13-5 presents maximum CO concentrations in the attainment demonstration and in the project area. The assessment demonstrates that the project would not create a CO hot-spot at any intersections in the vicinity of the alignment.

Table 2.13-5: Average 1-Hour Carbon Monoxide Concentrations in PPM in the Attainment Demonstration and in the Project Area

Year & Location	Morning	Afternoon	Peak	Standard	Maximum One-Hour CO Concentration In the Project Area (2015–2017)
1997 Wilshire Blvd - Veteran Ave	7.7	5.7	-	35	3.1
1997 Sunset Blvd - Highland Ave	6.9	7.3	-	35	3.1
1997 La Cienega Blvd - Century Blvd	6.4	5.2	-	35	3.1
1997 Long Beach Blvd - Imperial Hwy	5.1	5.2	2.2	35	3.1
2002 Wilshire Blvd - Veteran Ave	4.6	3.5	-	35	3.1
2002 Sunset Blvd - Highland Ave	4.0	4.5	-	35	3.1
2002 La Cienega Blvd - Century Blvd	3.7	3.1	-	35	3.1
2002 Long Beach Blvd - Imperial Hwy	3.0	3.1	1.2	35	3.1

Notes: Ave: Avenue; Blvd: Boulevard; CO: carbon monoxide; Hwy: Highway
Source*:* SCAQMD 2003 AQMP, Appendix V, Modeling and Attainment Demonstrations, V-4-25 and pages V-4-26.

Therefore, according to the CO Protocol, the project is satisfactory, and no further analysis is needed. The project would not be expected to create a CO hot-spot; therefore, the project has demonstrated project level conformity for CO and will not directly impact or indirectly affect CO concentration levels.

Particulate Matter Hot-Spots Analysis

In November 2015, the U.S. EPA released an updated version of Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas for quantifying the local air quality impacts of transportation projects and comparing them to the PM NAAQS (75 Federal Register (FR) 79370). The guidance document requires a hot-spot analysis to be completed for a POAQC. The final rule in 40 CFR 93.123(b)(1) defines a POAQC as:

i. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles

ii. Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project

iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location

iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location

v. Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation

The proposed project was submitted to stakeholders at the TCWG meeting on May 22, 2018, pursuant to the Interagency Consultation requirement of 40 CFR 93.105 (c)(1)(i). U.S. EPA, FHWA, Caltrans, California ARB, SCAQMD, and other interagency consultation participants concurred that the project is not a POAQC under 40 CFR 93.123(b)(1) regarding POAQC determination. The project is not considered a POAQC because it does not meet the definition as defined in U.S. EPA's Transportation Conformity Guidance (see TCWG meeting Notes in Appendix B: Air Quality Documentation). Therefore, PM hot-spot analysis is not required. The Interagency Consultation documents may be referenced in the Air Quality Assessment Report (November 2018, updated 2019).

2.13.3.3 Construction (Short-Term) Impacts

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other construction-related activities. Emissions from construction equipment also are expected and would include CO, NOx, VOCs, directly-emitted particulate matter (PM_{10} and $PM_{2.5}$), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NOx and VOCs in the presence of sunlight and heat. The short-term construction emissions would have temporary direct effects on air quality.

Site preparation and roadway construction typically involves clearing; cut-and-fill activities; grading, removing, or improving existing roadways; building bridges; and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. These activities could temporarily generate enough PM_{10} and $PM_{2.5}$ and small amounts of CO, SO_2, NOx, and VOCs to be of concern. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site could deposit mud on local streets, which could indirectly affect air quality by contributing to airborne dust after it dries. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment in operation. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site, thus potentially indirectly affecting air quality.

Construction activities for large development projects are estimated by the U.S. EPA to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. The Department’s Standard Specifications, Section 14 (Caltrans 2015d) on dust minimization requires use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM_{10} emissions, heavy-duty trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NOx, VOCs, and some soot particulate (PM_{10} and $PM_{2.5}$) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Under California law and ARB regulations, off-road diesel fuel used in California must meet the same sulfur and other standards as on-road diesel fuel (not more than 15 ppm sulfur), so SO_2-related issues due to diesel exhaust will be minimal.

Some phases of construction, particularly asphalt paving, may directly impact surrounding residents and traveling motorists by resulting in short-term odors in the immediate area of each paving site(s). Such odors would quickly disperse to below detectable levels as distance from the site(s) increases.

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in long-term adverse conditions. Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District’s Roadway Construction Emissions Model. While the model was developed for Sacramento conditions in terms of fleet emission factors, silt loading, and other model assumptions, it is considered adequate for estimating road construction emissions by the SCAQMD (in its CEQA guidance) and is used for that purpose in this analysis.

Construction emissions were estimated for the Build Alternative using detailed equipment inventories and construction scheduling information provided by the engineering team combined with emissions factors from the EMFAC2014 and OFFROAD models. Construction-related emissions for the Build Alternative are presented in Table 2.13-6. The results of the construction emission calculations are included on page one of Appendix C in the Air Quality Assessment Report. The emissions presented are based on the best information available at the time of calculations. The emissions represent the peak daily construction emissions that would be generated from the Build Alternative.

Table 2.13-6: Maximum Daily Emissions Generated by Construction Activities

Phase	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	CO (lbs/day)	NO_x (lbs/day)	CO_2 (tons/day)
Grubbing/Land Clearing	61.2	13.5	25.9	25.4	3.6
Grading/Excavation	63.7	15.7	77.2	78.1	8.6
Drainage/Utilities/Sub-Grade	62.2	14.4	59.1	46.7	5.7
Paving	1.3	1.1	40.8	24.8	3.9
Maximum Daily Emissions	**63.7**	**15.7**	**77.2**	**78.1**	**8.6**

Notes: lbs/day: pounds per day
Source: Roadway Construction Emissions Model. Construction emissions modeling output data can be found on page one of Appendix C to the Air Quality Assessment Report (March 2019).

Furthermore, implementation of the following Project Features, some of which may also be required for other purposes such as stormwater pollution control, will further reduce any direct and indirect air quality impacts resulting from construction activities:

PF-AQ-1: The construction contractor must comply with the Caltrans' Standard Specifications in Section 14-9 (2015).

Section 14-9-02 specifically requires compliance by the contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances.

PF-AQ-2: Construction equipment and vehicles will be properly tuned and maintained. All construction equipment will use low-sulfur fuel as required by California Code of Regulations Title 17, Section 93114. Heavy-duty vehicles with a Gross Vehicle Weight Rating of 10,000 pounds or heavier will be prohibited from idling more than 5 minutes per regulations established by the Air Resources Board.

PF-AQ-3: The construction contractor must comply with all SCAQMD rules, including Rule 402 (Nuisance) and Rule 403 (Fugitive Dust). Compliance with Rule 403 mandates several dust control measures, including, but not limited to, watering, track out reduction measures, sweeping, and covering stockpiles.

2.13.3.4 Long-Term (Operational) Effects – Criteria Pollutants and Ozone Precursors Emissions

Operational emissions take into account long-term changes in emissions due to the project (excluding the construction phase). The operational emissions analysis compares forecasted emissions for Existing/Baseline conditions, No Build, and Build Alternatives. Regional operational emissions associated with project implementation were calculated using CT-EMFAC2014 (Caltrans 2014b). CT-EMFAC2014 is the most recent on-road emissions modeling tool in California that has been approved for use by the U.S. EPA. CT-EMFAC2014 contains a comprehensive emissions inventory of motor vehicles that provides estimated emission rates for air pollutants. Refer to the Air Quality Assessment Report (November 2018, updated 2019) for a comprehensive discussion of the detailed traffic data and emissions calculation methodology.

Mobile source emissions in the project corridor were estimated for exhaust, brake wear, tire wear, and re-entrained dust. Emissions were estimated using project-specific traffic data, CT-EMFAC (version 6.0), and U.S. EPA guidance for re-entrained dust. For exhaust emissions, the emissions factors generated by the CT-EMFAC modeling software are expressed in units of grams of pollutant emitted per mile traveled (g/mi) and are associated with a vehicle type traveling at a given speed. The raw traffic data files contained traffic volume data for non-trucks and trucks during four time periods of the day as shown below:

- Morning (AM) (6:00 a.m. to 9:00 a.m.) 3 hours
- Midday (MD) (9:00 a.m. to 3:00 p.m.) 6 hours
- Afternoon (PM) (3:00 p.m. to 7:00 p.m.) 4 hours
- Nighttime (NT) (7:00 p.m. to 6:00 a.m.) 11 hours

The data for all time periods were compiled into a single large spreadsheet for efficient data management and analysis. The traffic data files divided the 7.5-mile project corridor into individual link segments of varying lengths for mainline lanes, HOV lanes, and on/off-ramps. For each individual link segment, non-truck and truck volumes were provided in the traffic data files during each of the four time periods for Existing Conditions in 2017, the No Build Alternative in 2035 and 2055, and the Build Alternative in 2035 and 2055. The traffic data files also included descriptions of the link segments, the lengths of the link segments, and the average speeds of non-trucks and trucks over each segment during the associated time period.

The following equation was used to estimate emissions of air pollutants from non-trucks and trucks over each link segment during each period of the day, for each alternative scenario in each analysis year. The conversion factor is 453.592 grams per pound.

$$E_{Si} = \frac{L_S \times [(V_{NT} \times EF_{NT-Si}) + (V_T \times EF_{T-Si})]}{453.592}$$

Where the variables represent the following:

E_{Si}: The emissions of air pollutant i in pounds (lbs) from the link segment during the time period;

L_S: The length of the individual link segment in miles (mi) from the traffic data;

V_{NT}: The volume of non-trucks traveling over the link segment during the period;

$EF_{NT\text{-}Si}$: The CT-EMFAC non-trucks emission factor in grams per mile (g/mi) for pollutant i at the link segment non-truck speed from the traffic data;

V_T: The volume of trucks traveling over the link segment during the period;

$EF_{T\text{-}Si}$: The CT-EMFAC trucks emission factor in grams per mile (g/mi) for pollutant i at the link segment truck speed from the traffic data.

The equation produces the sum of emissions of air pollutant i in pounds from non-trucks and trucks traveling over the individual link segment during the specific period. To calculate daily emissions of each air pollutant under each scenario, the regional air quality analysis summed the emissions from all individual link segments for the four periods of the day. Daily emissions were calculated for criteria pollutants and ozone precursors.

An example calculation is provided below that was used to quantify CO emissions from the northbound (NB) link segment “Between Irvine Blvd On-Ramp and 17th St Off-Ramp” during the morning period in Baseline 2017. In the “Regional Emissions Calculation Worksheet” Appendix file in Appendix E of the Air Quality Report, this segment is denoted with the Link ID 19609 and the data described is for the “Mainline” segment. The length of this link segment is 0.5 mile, and the average speed for non-trucks and trucks provided in the traffic data was 45 mph. The CT-EMFAC exhaust CO emission factors in the following equation were extracted for non-trucks and trucks traveling at 45 mph in 2017.

$$24.18^a\ lb = \frac{0.5^b\ miles \times [(21{,}147^c\ NT \times 0.983^d\ g/mi) + (1{,}753^e\ T \times 0.844^f\ g/mi)]}{453.592\ \left(g/_{lb}\right)}$$

a: This value can be found on page 6 of 295 in Appendix E of the Air Quality Report.

b: This value can be found on page 4 of 295 in Appendix E of the Air Quality Report.

c: This value can be found on page 5 of 295 in Appendix E of the Air Quality Report.

d: This value can be found on page 292 of 295 in Appendix E of the Air Quality Report.

e: This value can be found on page 5 of 295 in Appendix E of the Air Quality Report.

f: This value can be found on page 292 of 295 in Appendix E of the Air Quality Report.

Table 2.13-7 shows emissions in the existing condition and 2035 and 2055 for the No Build and Build Alternatives. Except for particulate matter, emissions decrease in 2035 and 2055 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls. The particulate matter emissions are predominantly attributed to brake and tire wear and re-entrained dust, which are directly correlated to increases in regional vehicle miles traveled (VMT). When compared to the No Build Alternative, the Build Alternative would result in slight reductions in daily criteria pollutant emissions due to improved traffic flow, excluding PM_{10} and $PM_{2.5}$. The marginal increases in regional particulate matter emissions are directly attributed to brake and tire wear and re-entrained road dust. The marginal increase in regional particulate matter emissions does not reflect a deterioration of traffic conditions throughout the project corridor as a result of implementation of the Build Alternative.

Table 2.13-7: Summary of Comparative Emissions Analysis

Scenario/Analysis Year	VOC (lbs/day)	CO (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)	NOx (surrogate for NO_2) (lbs/day)
Baseline 2017	169.5	4,467.3	572.0	188.9	1,239.9
No Build Alternative 2035	80.8	1,848.8	595.9	188.3	264.8
Build Alternative 2035	79.6	1,837.0	594.1	187.8	261.3
No Build Alternative 2055	81.5	1,750.8	647.5	203.6	217.1
Build Alternative 2055	81.4	1,754.9	651.6	204.9	215.0

Notes: CO: carbon monoxide; lbs/day: pounds per day; NOx: nitrogen oxides; PM_{10}: particulate matter less than 10 microns in diameter; $PM_{2.5}$: fine particulate matter less than 2.5 microns in diameter; VOC: volatile organic compound
Source: CT-EMFAC 2014.

Nitrogen Dioxide Concentrations

The U.S. EPA modified the NO_2 NAAQS to include a 1-hour standard of 100 parts per billion (ppb) in 2010. Currently there is no federal project-level NO_2 analysis requirement. However, NO_2 is among the near-road pollutants of concern, and project analysts will be expected to explain how transportation projects affect near-road NO_2.

Regionally, the project is in an NO_2 Attainment – Maintenance (Primary) area and included in the conforming RTP/SCS and 2019 FTIP. For project-level analysis, NO_2 assessment protocol is not available. Neither EMFAC nor CT-EMFAC provides NO_2 emissions estimates. Instead, those models provide NO_X (combination of NO and NO_2) emissions estimates. Near-road NO_2 concentrations will likely be dominated by overall NO_X emissions. As long as ozone is present at relatively low (background) concentrations, most of the directly emitted NO will convert to NO_2 within a few seconds. Therefore, NO_X emissions overall can serve as a useful analysis surrogate for NO_2. The Caltrans Near-Road Nitrogen Dioxide Assessment report can be used as a reference (Caltrans 2012b).

Table 2.13-7 shows NO_X emissions for existing, No Build Alternative, and Build Alternative conditions. Emissions decrease in 2035 and 2055 compared to the existing condition primarily due to fleet turnover and improvements in exhaust controls. When compared to the No Build Alternative, the Build Alternative would result in slight reductions in NO_X emissions due to improved traffic flow and decreased congestion.

2.13.3.5 Mobile Source Air Toxics

FHWA released updated guidance in October 2016 (FHWA 2016) for determining when and how to address impacts of mobile source air toxics (MSAT) in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects
- Qualitative analysis for projects with low potential MSAT effects
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects

Projects with no impacts generally include those that (a) qualify as a categorical exclusion under 23 CFR 771.117, (b) qualify as exempt under the FCAA conformity rule under 40 CFR 93.126, and (c) are not exempt but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of Diesel Particulate Matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

The multi-directional AADT in 2055 would be above the 140,000 benchmark value for a quantitative analysis. Based on the FHWA guidance, the project has the potential for meaningful differences in MSAT emissions; therefore, level of emissions for the highest priority MSATs for the No Build Alternative and Build Alternative was evaluated (Level 3 Analysis: Projects with Higher Potential MSAT Effects).

The latest version of CT-EMFAC (CT-EMFAC2014 v6.0, released May 2017) was used to estimate daily emissions of benzene, 1,3-butadiene, formaldehyde, acrolein, naphthalene, diesel particulate matter (DPM), and polycyclic organic matter (POM). MSAT emissions were estimated for Baseline, No Build, and Build Alternatives for the opening year (2035) and horizon year (2055) using CT-EMFAC.

The modeling results for the Baseline, No Build, and Build Alternatives are presented in Table 2.13-8. Relative to existing conditions in the Baseline, emissions of all MSAT compounds decrease in Construction Year 2035 and Design Year 2055. This trend is generally attributed to fleet turnover and improvements in fuel combustion technology. Between the No Build and Build Alternatives, emissions of all MSAT compounds decrease with implementation of the Build Alternative. The difference in daily MSAT emissions between the No Build and Build Alternatives results from higher average speeds associated with the alleviation of congestion throughout the project corridor.

Table 2.13-8: Summary of Comparative MSAT Emissions Analysis

Scenario/ Analysis Year	1,3-butadiene (lbs/day)	Acetaldehyde (lbs/day)	Acrolein (lbs/day)	Benzene (lbs/day)	Diesel PM (lbs/day)	Formaldehyde (lbs/day)	Naphthalene (lbs/day)	Polycyclic Organic Matter (lbs/day)
Baseline (2017)	1.21	3.54	0.27	5.69	11.11	8.95	0.16	0.25
No Build (2035)	0.58	1.64	0.13	2.69	1.45	4.15	0.08	0.10
Build Alternative (2035)	0.57	1.60	0.12	2.65	1.53	4.06	0.08	0.10
No Build Alternative (2055)	0.58	1.64	0.13	2.71	1.26	4.14	0.08	0.09
Build Alternative (2055)	0.59	1.61	0.13	2.71	1.25	4.10	0.08	0.09

Source: CT-EMFAC 2014.

Construction Conformity

The construction period is planned to last approximately three years. Construction activities will not last for more than five years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)). Emissions from construction-related activities are thus considered temporary as defined in 40 CFR 93.123(c)(5) and are not required to be included in PM hot-spot analyses to meet conformity requirements. Construction activities are not anticipated to have permanent direct or indirect impacts on air quality.

Naturally Occurring Asbestos and Structural Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. The State Department of Conservation, in conjunction with the United States Geological Survey, has prepared a map and spreadsheet inventory of asbestos areas and areas known to contain serpentinite and ultramafic rocks. The locations of the identified deposits were examined, and it was determined that the project is not in an area containing naturally occurring asbestos. Standard dust control measures such as watering would effectively control unanticipated naturally occurring asbestos (NOA) exposure.

Demolition activities would be subject to SCAQMD Rule 1403 (Asbestos Emissions from Demolition/Renovation Activities). Rule 1403 is intended to limit asbestos emissions and the associated disturbance of asbestos-containing waste material generated or handled during these activities. The rule addresses the national emissions standards for asbestos along with some additional requirements. The rule requires a survey for asbestos-containing material to be conducted prior to any renovation or demolition activity and that the lead agency and its contractors notify SCAQMD of any identified asbestos containing material. This notification includes a description of structures and methods utilized to determine whether asbestos-containing materials are potentially present.

All asbestos-containing material found on the site must be removed prior to demolition or renovation activity in accordance with SCAQMD Rule 1403, including specific requirements for surveying, notification, removal, and disposal of material containing asbestos. Therefore, projects that comply with Rule 1403 would ensure that asbestos-containing materials would be disposed of appropriately and safely, thus not directly or indirectly affecting air quality. In addition, construction activities would be completed by asbestos-certified contracts per Caltrans standards.

Lead

Lead is normally not an air quality issue for transportation projects unless the project involves disturbance of soils containing high levels of aerially deposited lead or painting or modification of structures with lead-based coatings. No industrial sources of lead emissions have been identified near the project site. Regardless, soils will be tested for the presence of hazardous materials such as lead. If lead is present, the project would be required to develop a Lead Compliance Plan to minimize exposure per SCAQMD rules and regulations.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

The project would implement Caltrans standard Project Features, as noted above. The project would also comply with SCAQMD rules, including Rule 403, related for fugitive dust control. The Caltrans standard Project Features and SCAQMD rules ensure that there will be no permanent direct or indirect impacts on air quality due to construction activities. No other minimization measures have been identified as necessary to reduce construction emissions.

2.13.4.1 Climate Change

Neither the U.S. EPA nor the FHWA has issued explicit guidance or methods to conduct project-level greenhouse gas analysis. FHWA emphasizes concepts of resilience and sustainability in highway planning, project development, design, operations, and maintenance. Because requirements have been set forth in California legislation and executive orders on climate change, the issue is addressed in the CEQA chapter of this document. The CEQA analysis may be used to inform the NEPA determination for the project. Refer to Section 3.2 for the CEQA discussion of potential climate change impacts.

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