

3.5 Air Quality and Greenhouse Gases

3.5.1 Introduction

This section provides an evaluation of air quality, health risk, GHGs, and global climate change-related effects associated with implementing the No Build Alternative and Build Alternative Options. Information contained in this section is summarized from the *Air Quality and Greenhouse Gas Technical Memorandum* (Appendix E of this Tier 1/Program EIS/EIR).

3.5.2 Regulatory Framework

In accordance with NEPA (42 USC Section 4321 et seq.), CEQ regulations implementing NEPA (40 CFR Parts 1501-1508), FRA's Procedures for Considering Environmental Impacts (64 FR 28545, May 26, 1999) and CEQA, FRA identified sensitive receptors within the Tier 1/Program EIS/EIR Study Area and evaluated the potential air quality, health risk, GHGs, and global climate change-related impacts that could occur from implementation of the Build Alternative Options.

Federal

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. Environmental Protection Agency (EPA) and California Air Resources Board (ARB) set standards for the concentration of air pollutants.

United States Environmental Protection Agency General Conformity Rule

The U.S. EPA General Conformity Rule (40 CFR 93 Subpart B) applies to federal actions, other than those related to highway and transit planning, that result in emissions of non-attainment or maintenance pollutants, or their precursors, in federally designated non-attainment or maintenance areas. The U.S. EPA General Conformity Rule establishes a process to demonstrate that federal actions would be consistent with applicable state implementation plans and would not cause or contribute to new violations of the National Ambient Air Quality Standards (NAAQS), increase the frequency or severity of existing violations of the NAAQS, or delay the timely attainment of the NAAQS.

Federal Clean Air Act

The FCAA, enacted in 1963, established federal air quality standards, known as NAAQS, and defines non-attainment areas as geographic regions designated as not meeting one or more of the NAAQS. Attainment areas are areas with concentrations of criteria pollutants that are below the levels established by the NAAQS. The FCAA also requires that a state implementation plan be prepared for local areas not meeting these standards (non-attainment area) and a maintenance plan be prepared for each former non-attainment area that subsequently demonstrated compliance with the standards.

NAAQS have been established for transportation-related criteria pollutants that are linked to potential health concerns: carbon monoxide (CO); nitrogen dioxide (NO₂); ozone (O₃); particulate matter 10 microns or less (PM₁₀); particulate matter 2.5 microns or less (PM_{2.5}); sulfur dioxide (SO₂); and lead (Pb). The FCAA requires U.S. EPA to designate areas as attainment, non-attainment, or maintenance for each criteria pollutant based on whether the NAAQS have been achieved.

Greenhouse Gas Reporting Program

On September 22, 2009, U.S. EPA published the final rule that requires mandatory reporting of GHG emissions from large sources in the U.S. The gases covered by the final rule are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases, including nitrogen trifluoride and hydrofluorinated ethers. Currently, this is not a transportation-related regulation and, therefore, the final rule does not apply to the Tier 1/Program EIS/EIR. However, the methodology developed as part of this regulation is helpful in identifying potential GHG emissions.

On December 7, 2009, the *Final Endangerment and Cause or Contribute Findings for Greenhouse Gases*, under Section 202(a) of the FCAA, was signed by the U.S. EPA administrator. The endangerment finding states that current and projected concentrations of the seven final rule GHGs in the atmosphere threaten public health and welfare. Furthermore, combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution.

On April 5, 2017, CEQ withdrew its *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*. As such, California's laws and CEQA considerations were used to satisfy the NEPA considerations for GHGs.

State

California Clean Air Act

The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts explicit authority to implement transportation control measures and regulate indirect sources of air pollution. The CCAA focuses on attainment of the California Ambient Air Quality Standards (CAAQS), which for certain pollutants and averaging periods are more stringent than the comparable federal standards. The following are criteria pollutants, which the California ARB and U.S. EPA regulate: CO, NO₂, SO₂, O₃, PM₁₀, PM_{2.5}, and Pb. CAAQS are generally more stringent than the NAAQS and incorporate additional standards for sulfates, hydrogen sulfide, and vinyl chloride, and visibility-reducing particles. Additional information on CAAQS and NAAQS is provided in the *Air Quality and Greenhouse Gas Technical Memorandum* (Appendix E of this Tier 1/Program EIS/EIR).

Assembly Bill 1493

Assembly Bill (AB) 1493, enacted in 2002, requires the California ARB to develop and implement regulations to reduce automobile and light-truck GHG emissions.

Assembly Bill 32

AB 32, known as the Global Warming Solutions Act of 2006 and enacted in 2006, requires the state to reduce GHG emissions to 1990 levels by 2020, mandating the California ARB create a plan that includes market mechanisms and implement rules to achieve “real, quantifiable, cost-effective reductions of GHGs.” The required scoping plan includes the implementation of the high-speed rail system as a GHG reduction measure, estimating a 2020 reduction of 1 million metric tons of carbon dioxide equivalent.

Executive Order S-3-05

Executive Order (EO) S-3-05, enacted in 2005, establishes targets to reduce California’s GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below the 1990 levels by 2050.

Governor’s Executive Order S-01-07

Under EO S-01-07, enacted in 2007, the carbon intensity of California’s transportation fuels is to be reduced by at least 10 percent by 2020.

Governor's Executive Order S-13-08

EO S-13-08, enacted in 2008, addresses the risk of sea level rise resulting from global climate change. It requires all state agencies that are planning construction projects in the areas vulnerable to sea level rise consider a range of sea level rise scenarios to assess project vulnerability and, to the extent feasible, reduce expected risks, and increase resiliency to sea level rise.

Governor's Executive Order B-30-15

EO B-30-15, enacted in 2015, established a California GHG reduction target of 40 percent below 1990 levels by 2030. This is intended to make it possible to reach the state's goal of reducing emissions 80 percent under 1990 levels by 2050.

Senate Bill 375

SB 375, known as the Sustainable Communities and Climate Protection Act of 2008, requires the California ARB to develop regional reduction targets for GHG emissions and prompts the creation of regional land use and transportation plans to reduce emissions from passenger vehicle use throughout the state. The law was enacted in 2008 and became effective on January 1, 2009. The targets apply to the regions in the state covered by California's 18 MPOs. The 18 MPOs have been tasked with creating the regional land use and transportation plans called SCSs. The MPOs are required to develop the SCSs through integrated land use and transportation planning and demonstrate an ability to attain the proposed reduction targets by 2020 and 2035.

Senate Bill 32

SB 32, which was signed into law on September 8, 2016, expands upon AB 32 to reduce GHG emissions and mandates the reduction target in GHG emissions as written into EO B-30-15.

Regional

Southern California Association of Governments

Through the FCAA amendments, California's 18 MPOs are responsible for the planning, programming, and coordination of federal highway and transit investments in urbanized areas. As part of this work, MPOs help to ensure that the transportation and air quality plans of the region are consistent with goals established in the state implementation plans. The MPO responsible for air quality within the Tier 1/Program EIS/EIR Study Area is the SCAG. The SCAG region encompasses 6 counties (Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura) and 191 cities in an area covering more than 38,000 square miles. On April 7, 2016, SCAG's Regional Council adopted the 2016-2040 RTP/SCS. The RTP/SCS is a long-range visioning plan that balances future

mobility and housing needs with economic, environmental, and public health goals. The RTP/SCS charts a course for closely integrating land use and transportation, so that the region can grow smartly and sustainably.

South Coast Air Quality Management District Regulations

The South Coast Air Quality Management District (SCAQMD) has jurisdiction over the South Coast Air Basin (SCAB) and the Salton Sea Air Basin (SSAB), of which the Program is located within. To ensure continued progress toward clean air and comply with state and federal requirements, the SCAQMD, in conjunction with the California ARB, SCAG, and U.S. EPA, generally updates its air quality management plans every 3 years. The 2016 Air Quality Management Plan was adopted by the SCAQMD Governing Board on March 3, 2017 (SCAQMD 2016). The SCAQMD implements the following rules:

- SCAQMD Rule 402 – Nuisance: This rule prohibits discharge or air contaminants or other materials that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or the public; endanger the comfort, repose, health, or safety of any such persons or the public; or cause, or have a natural tendency to cause injury or damage to businesses or property.
- SCAQMD Rule 403 – Fugitive Dust: This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earth-moving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.
- SCAQMD Rule 1108 – Cutback Asphalt: This rule prohibits the sale or use of any cutback asphalt containing more than 0.5 percent by volume organic compounds which evaporate at 260°C (500°F) or lower within the SCAQMD.
- SCAQMD Rule 1113 – Architectural Coatings: This rule is intended to limit the volatile organic compounds (VOC) content of architectural coatings used in the SCAQMD.

Local and Tribal Governments

Regulations from cities, local agencies, and tribal governments would be identified in the Tier 2/Project-level analysis once site-specific rail infrastructure improvements and station facilities are known.

3.5.3 Methods for Evaluating Environmental Effects

The methodology for this Tier 1/Program service-level evaluation identifies existing conditions for air quality and GHGs and provides the approach and assumptions for analyzing air quality and GHG environmental consequences associated with implementation of the Build Alternative Options. The methodology considers the change in travel conditions for the proposed transportation improvements by comparing the Build Alternative Options with the No Build Alternative during the identified horizon years.

Given that the details of the needed rail infrastructure and station locations are unknown at this time, direct and indirect effects on air quality and GHG emissions were evaluated qualitatively for the following: 1) evaluation of construction-related emissions; 2) identification and evaluation of operation-related emissions sources; 3) evaluation of GHG emissions; and 4) discussions of likely Tier 2/Project-level analyses. Quantitative emissions estimates were provided for locomotive and VMT emissions reductions during operation of the Build Alternative Options.

Horizon Years

For the purpose of comparison between the No Build Alternative and Build Alternative Options, three horizon years were analyzed:

- Existing Year (2018): Under this scenario, Program-related transportation impacts were analyzed for the surrounding roadways and rail (passenger and freight) systems under existing conditions. This scenario was analyzed to fulfill CEQA requirements for establishing a baseline environmental setting.
- Opening Year (2024): Under this scenario, Program-related transportation impacts were analyzed for the surrounding roadways and rail (passenger and freight) systems on the first day the Program is operational.
- Future Year (2044): Under this scenario, Program-related transportation impacts were analyzed for the surrounding roadways and rail (passenger and freight) systems under full build-out conditions.

Air Quality Assumptions

Potential regional air quality effects from the Program were evaluated based on a comparison of their effects on overall air quality emissions. In addition, the effect of these changes on maintenance and non-attainment areas, as classified by U.S. EPA at the time of analysis, is discussed.

To examine the Program’s potential effects on local air quality, a quantitative analysis was conducted based on potential changes in VMT as a result of estimated changes in local traffic at stations, changes in rail service, and location of parking facilities. Regional VMT estimates and EMFAC2017 emissions factors were used to estimate criteria pollutant emissions for the Build Alternative Options and No Build Alternative. Locomotive emissions were estimated using rail miles traveled estimates and U.S. EPA locomotive emissions factors. Potential local health risks associated with construction and locomotive diesel particulate matter emissions were evaluated qualitatively.

The emissions thresholds that trigger requirements of the General Conformity Rule for federal actions emitting criteria pollutants in non-attainment or maintenance areas, or their precursors, are called *de minimis* levels. If a project’s emissions are projected to be below the *de minimis* levels, then the FCAA assumes the project would not result in any substantial air quality effects, and no further analysis would be required.

Conversely, if the Build Alternative Options emissions exceed *de minimis* levels, then the Project would require an air quality conformity determination relative to the NAAQS. Site-specific information is required to assess the need for a conformity determination. This information would be available in a Tier 2/Project-level analysis.

This Tier 1/Program-level analysis was prepared by comparing the net increase in air quality criteria pollutant emissions estimated to occur under the No Build Alternative and Build Alternative Options against the General Conformity *de minimis* levels shown in Table 3.5-1. Because the Program would be located partially in the SCAB and partially in the SSAB, net criteria pollutant emissions occurring in each air basin would be compared with applicable *de minimis* levels (i.e., emissions occurring within the SCAB would be compared with SCAB *de minimis* levels).

Table 3.5-1. General Conformity *De Minimis* Thresholds

Criteria Pollutant	SCAB (tons per year)	SSAB (tons per year)
O ₃	10	25
CO	100	100
PM ₁₀	100	100
PM _{2.5}	100	100
Pb	25	25

Source: U.S. EPA 2018b

Notes:

CO=carbon monoxide; O₃=ozone; Pb=lead; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SCAB=South Coast Air Basin; SSAB=Salton Sea Air Basin

Greenhouse Gas Emission Assumptions

GHG emissions were evaluated on a statewide level, as emissions released as a result of implementing the Build Alternative Options would not be localized or regional due to their rapid dispersion into the global atmosphere. For the GHG emissions evaluation, passenger VMT and locomotive operations were evaluated as the main source of energy consumption under the Build Alternative Options. Regional VMT estimates and EMFAC2017 emissions factors were used to estimate GHG emissions for the No Build Alternative and Build Alternative Options. Locomotive emissions were estimated using rail miles traveled estimates and U.S. EPA locomotive emissions factors.

Tier 1/Program EIS/EIR Study Area

The Tier 1/Program EIS/EIR Study Area for air quality includes the affected air basins: SCAB for the Western Section and the Eastern Section west of Cabazon and the SSAB for the Eastern Section east of Cabazon. The Tier 1/Program EIS/EIR Study Area for GHGs includes the state of California.

Data Sources

The data sources used to establish the existing conditions include information from the California ARB, U.S. EPA, and air quality management districts. Existing ambient air quality and GHG emissions data from the California ARB and U.S. EPA were collected and summarized. The current status of MPO-administered areas within the Program Corridor were described with regard to ambient air quality standards and the final conformity rule. GHG emissions were compiled from the California ARB for the affected environment. The California ARB GHG emissions information is available on a statewide basis.

Related Resources

This evaluation incorporates data and evaluation from related resources to contribute to the air quality and GHG assessment, as applicable. These related resources are identified in Table 3.5-2.

Table 3.5-2. Related Resource Inputs for Air Quality and Greenhouse Gas Assessment

Resource	Input for Air Quality and GHG Assessment
Transportation (Section 3.3)	Potential changes in VMT were identified, including those resulting from local traffic, as an input to air quality and GHG emissions.
Public Utilities and Energy (Section 3.12)	Net changes in energy consumption within the affected environment as a result of the Build Alternative Options and the potential effects on regional air quality would be evaluated during Tier 2/Project-level analysis when specific Project details are available.

Notes:

GHG=greenhouse gas; VMT=vehicle miles traveled

3.5.4 Affected Environment

Air Quality

The Program Corridor crosses a large geographic area within Southern California, spanning approximately 144 miles from its western terminus in Los Angeles to its eastern terminus in Coachella. As shown on Figure 3.5-1, the entire Western Section and a portion of the Eastern Section (west of Cabazon) of Program Corridor is located within the SCAB. The Eastern Section (east of Cabazon) of the Program Corridor is located within the SSAB.

Build Alternative Option 1 (Coachella Terminus)

Table 3.5-3 summarizes the federal (under NAAQS) and state (under CAAQS) attainment status for the SCAB and SSAB. The two air basins are in federal and state non-attainment status for several of the air quality criteria pollutants.

Table 3.5-3. Federal and State Attainment Status of the South Coast Air Basin and Salton Sea Air Basin

Pollutant	Federal Attainment Status: SCAB	State Attainment Status: SCAB	Federal Attainment Status: SSAB	State Attainment Status: SSAB
O ₃ (1-hour standard)	—	Non-attainment	—	Non-attainment
O ₃ (8-hour standard)	Non-attainment/ Extreme	Non-attainment	Non-attainment/ Severe 15	Non-attainment
PM ₁₀	Attainment/ Maintenance	Non-attainment	Non-attainment/ Serious	Non-attainment

Pollutant	Federal Attainment Status: SCAB	State Attainment Status: SCAB	Federal Attainment Status: SSAB	State Attainment Status: SSAB
PM _{2.5}	Non-attainment/ Moderate	Non-attainment	Attainment/ Unclassifiable	Attainment
CO	Attainment/ Maintenance	Attainment	Attainment/ Unclassifiable	Attainment
NO ₂ (1-hour standard)	Attainment/ Unclassifiable	Attainment	Attainment/ Unclassifiable	Attainment
NO ₂ (annual standard)	Attainment/ Maintenance	Attainment	Attainment/ Unclassifiable	Attainment
SO ₂	Attainment/ Unclassifiable	Attainment	Attainment/ Unclassifiable	Attainment
Pb	Non-attainment (partial Los Angeles County only)/Attainment (rest of the SCAB)	Attainment	Attainment/ Unclassifiable	Attainment
All others	—	Attainment	—	Attainment/ Unclassifiable

Source: California ARB 2018; U.S. EPA 2018a

Notes:

CO=carbon monoxide; NO₂=nitrogen dioxide; O₃=ozone; Pb=lead; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SCAB=South Coast Air Basin; SO₂=sulfur dioxide; SSAB=Salton Sea Air Basin

Emissions of PM_{2.5} and nitrogen oxide (NO_x) from diesel locomotive engines currently contribute to the non-attainment of the NAAQS for PM_{2.5} and O₃. U.S. EPA has established emission standards for these pollutants for newly manufactured and remanufactured locomotives (73 FR 25098, Locomotive and Commercial Marine Rule). U.S. EPA is projecting that PM_{2.5} and NO_x emissions will drop as a result of these standards.

Rail service can also contribute to visibility concerns in non-attainment and maintenance areas through primary and secondary PM_{2.5}, SO₂, and NO_x diesel emissions. Under the provisions of the FCAA, U.S. EPA has designated a number of areas in California, including national parks and wilderness areas, as Mandatory Class I Federal Areas, where visibility is an important value. Under the U.S. EPA Regional Haze Rule, states must establish goals to improve visibility in Mandatory

Class I Federal Areas and develop long-term strategies to reduce emissions of air pollutants that cause visibility impairment. Of the Mandatory Class I Federal Areas in the region, the San Jacinto Wilderness and San Gorgonio Wilderness are located nearest to the Tier 1/Program EIS/EIR Study Area; however, no Mandatory Class I Federal Areas are located within the Tier 1/Program EIS/EIR Study Area (U.S. EPA 2019).

Build Alternative Option 2 (Indio Terminus)

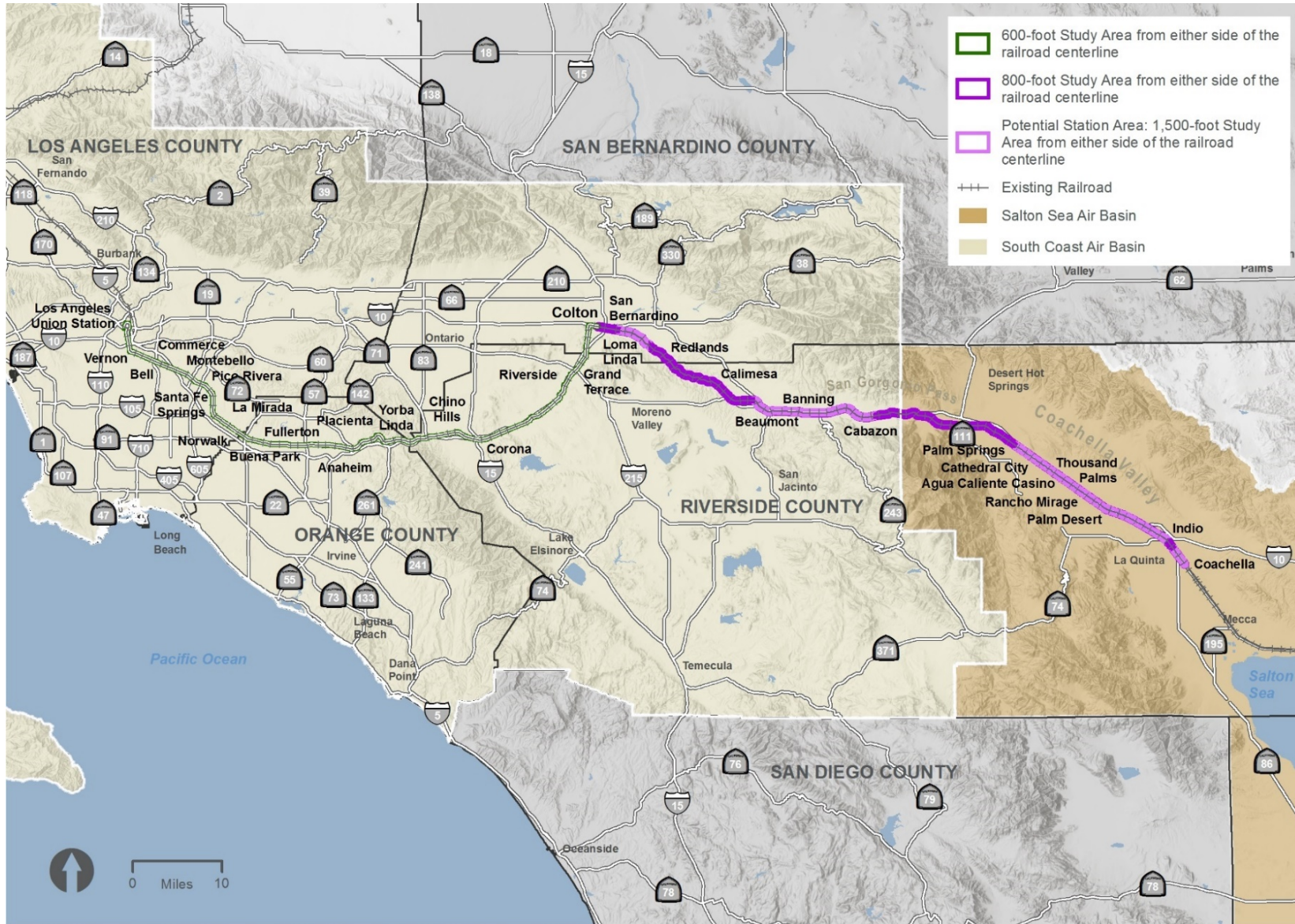
Existing air quality data and information within Build Alternative Option 2 is the same as Build Alternative Option 1.

Build Alternative Option 3 (Indio Terminus with Limited Third Track)

Existing air quality data and information within Build Alternative Option 3 is the same as Build Alternative Option 1.

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Figure 3.5-1. Air Basins Traversed by the Program Corridor



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Greenhouse Gas Emissions

Build Alternative Option 1 (Coachella Terminus)

GHGs are inventoried on a statewide basis because their effects are not localized or regional. A summary of the 2018 statewide GHG emissions inventory is provided in Table 3.5-4. Transportation is the largest contributor of GHGs in California, accounting for 39.8 percent of the total statewide GHG emissions. Contributions from the transportation sector include emissions from on-road and off-road vehicles, aviation, rail, and water-borne vehicles, as well as a few other smaller sources.

Table 3.5-4. California Greenhouse Gas Inventory

GHG Emission Category	2018 Emissions (million metric tons carbon dioxide equivalent)	Percentage of Total (%)
Transportation	169.5	38.8
Electric power	63.1	14.4
Commercial and residential	41.4	9.5
Industrial	89.2	20.4
Agriculture and forestry	32.6	7.5
High global warming potential gases	20.5	4.7
Recycling and waste	20.5	4.7
Total California emissions	436.8	100.0

Source: California ARB 2020

Notes:

GHG=greenhouse gas

Build Alternative Option 2 (Indio Terminus)

Existing GHG data and information within Build Alternative Option 2 is the same as Build Alternative Option 1.

Build Alternative Option 3 (Indio Terminus with Limited Third Track)

Existing GHG data and information within Build Alternative Option 3 is the same as Build Alternative Option 1.

3.5.5 Environmental Consequences

Overview

Effects as a result of implementing the Build Alternative Options can be broadly classified into construction and operational effects. Both short-term or temporary effects and long-term or permanent air quality and GHG-related effects would be anticipated as a result of constructing any of the Build Alternative Options.

Construction effects on air quality are generally short term and are due to the emissions from construction equipment; fugitive dust from ground-level disturbances; on-site materials processing and handling, such as concrete plants; and vehicle emissions from increases in local traffic congestion. The potential construction effects on air quality are evaluated based on the intensity of the construction activities and construction duration of the Program. The longer the construction period and the more non-road construction equipment used (such as cranes, bulldozers, heavy duty trucks, and concrete batch plants), the greater the potential for construction effects on air quality.

Effects could also result from operation of any of the Build Alternative Options, as the addition of two daily round trips would result in the increased consumption of fossil fuels and resultant release of emissions. However, while implementation of any of the Build Alternative Options would increase emissions from locomotives, those emissions would be partially offset by automobile emissions reduction that would occur due to the travel mode shift from automobile to rail transport within the Program Corridor. Any of the Build Alternative Options would be largely beneficial to air quality in the region and anticipated to contribute to the region's long-term attainment of air quality goals by reducing VMT and vehicle emissions.

Site-specific sensitive land uses potentially affected by the Program would be further identified as part of the Tier 2/Project-level environmental review process. Specific types and degrees of impacts on sensitive receptors would not be known until further design and construction information is known.

No Build Alternative

The No Build Alternative, as described in Chapter 2, Program Alternatives, of this Tier 1/Program EIS/EIR, is used as the baseline for comparison. The No Build Alternative would not implement the Program associated with this service-level evaluation. Existing air quality, compared with future air quality without the Program, would be affected by two key factors: regional growth and air quality and GHG regulatory actions. Regional growth, such as increased residential development and density, along with additional industry, results in more and greater sources of air and GHG emissions. These increases in air emissions are offset by transportation projects, which generally

reduce traffic congestion, thus minimizing local effects for emission hot spots, as well as vehicle regulatory programs that control the level of emissions from on-road and non-road vehicles.

While regional program efforts and changes in transportation technology (e.g., use of electrified and Tier IV equipment) would reduce future pollutant burdens for air quality criteria pollutants such as VOC, CO, NO_x, PM_{2.5}, and PM₁₀, and GHG emissions within the Program Corridor, several existing and committed transportation projects would occur in the Program Corridor under the No Build Alternative. These future projects would result in an increase in passenger and freight services resulting in more and greater sources of air quality and GHG emissions within the Program Corridor under the No Build Alternative.

As summarized in Table 3.5-5, projected future growth in the Program Corridor would result in a corresponding increase in traffic and VMT, as more cars would be on the roadways. Therefore, traffic congestion is likely to worsen with the No Build Alternative, resulting in air quality effects. With the continued trend in increases of VMT within the Program Corridor, energy consumption and GHG emissions would likely increase under the No Build Alternative. This assessment does not, however, consider other influences, including changes in Corporate Average Fuel Economy, standards, bus and aircraft efficiency, fuel compositions, and other factors.

Table 3.5-5. Annual Vehicle Miles Traveled Estimates (No Build Alternative)

Horizon Year	VMT Estimate
Existing Year (2018)	3,195,227,280
Opening Year (2024)	3,475,105,216
Future Year (2044)	4,335,611,649

Notes:

VMT=vehicle miles traveled

Build Alternative Options 1, 2, and 3

Air Quality Effects

CONSTRUCTION

Western Section. The Build Alternative Options would not require construction of additional rail or station infrastructure in the Western Section because the existing railroad infrastructure and stations from LAUS to Colton would be used. When compared with the No Build Alternative, short-term/temporary air quality effects would be negligible because no additional construction activities are planned within the Western Section under Build Alternative Options 1, 2, and 3.

Eastern Section. Construction activities required for infrastructure improvements (such as sidings, additional main line track, wayside signals, drainage, grade-separation structures) and station facilities would result in short-term increases in dust and equipment-related emissions in and around the construction site. Exhaust emissions during construction would be generated by fuel combustion in motor vehicles and construction equipment, and particulate emissions would result from soil disturbance, earthwork, and other construction activities. Construction vehicle activity and disruption of normal traffic flow may also result in increased motor vehicle emissions within the construction area.

The air quality emissions that could be generated would vary depending on the length of the construction period, specific construction activity (e.g., grading, paving, pile driving), types of equipment, and number of personnel.

Construction of any of the Build Alternative Options would have the potential to cause temporary air quality effects. In general, the degree of adverse construction effects is proportional to the length of new rail proposed to be constructed, number of grade separations, number and size of new facilities, relationship of the improvements and facilities to populated areas, and the duration of construction at each site.

Potential air quality impacts from each construction project would be short term, occurring at a location only while construction work is in progress. Construction activities would be required to comply with applicable local, state, and federal regulations, in addition to the implementation of identified best management practices (BMP), to minimize emissions and construction effects.

Design specifics and locations of the rail infrastructure improvements and station facilities are not known at this time, so the air quality emissions that could be generated and potential sensitive receptors that could be affected during specific construction activities cannot be quantified at the Tier 1/Program-level evaluation. Once detailed construction information for the site-specific rail infrastructure improvement or station facility is available, a quantitative estimate of the total air quality emissions during construction would be conducted and impacts on sensitive receptors would be evaluated during the Tier 2/Project-level analysis.

Although construction of site-specific rail infrastructure and station facilities would be subject to applicable regulations and BMPs, when compared with the No Build Alternative, short-term localized construction air quality effects could be substantial within the Program Corridor under Build Alternative Option 1 if the implementation of BMPs would not bring construction emissions to below identified SCAQMD construction emission thresholds. The Tier 2/Project-level analysis would also evaluate mobile source air toxics emissions to assess construction period effects and SCAQMD regional and local daily significance thresholds. When compared with Build Alternative Option 1, Build Alternative Option 2 would have slightly reduced effects due to a shorter route

alignment and reduced station options. However, the magnitude of effects would be similar for Build Alternative Option 2 and would be considered substantial when compared with the No Build Alternative. When compared with Build Alternative Options 1 or 2, Build Alternative Option 3 may have slightly reduced effects due to a smaller footprint associated with a shorter route alignment, reduced station options, and reduced third rail track infrastructure. However, the magnitude of effects would be similar for Build Alternative Option 3 and would be considered substantial when compared with the No Build Alternative.

OPERATION

Western and Eastern Section. During operation, passenger train frequencies proposed as part of the Program would consist of the addition of two daily, round-trip intercity diesel-powered passenger trains operating the entire length of the Program Corridor between Los Angeles and Coachella. Operational activities are anticipated to be limited to maintenance of culverts, bridges, embankments, and station areas. Operation of any of the Build Alternative Options would generally result in a long-term net benefit to air quality by reducing emissions of criteria pollutants, air toxics, and GHG. There are several factors that would contribute to the extent to which the operation any of the Build Alternative Options have a long-term effect on air quality. These include the operation of the stations and other supporting facilities, the forecast ridership of the rail system, and the subsequent vehicle and airplane emission change due to the shift of travel mode.

Build Alternative Options with higher ridership would have the potential to shift more passengers from driving to riding the trains, thus decreasing the regional VMT and associated vehicle emissions. In addition, longer route segments would provide access to more locations and would likely have a greater reduction in regional VMT.

The estimated annual railroad emissions for operation of the Build Alternative Options for the horizon years are provided in Table 3.5-6 and Table 3.5-7. These estimates do not consider future emission reductions associated with new emission standards or changes in transportation technology (e.g., U.S. EPA Tier IV equipment). As summarized in Table 3.5-6 and Table 3.5-7, the estimated Build Alternative Options locomotive emissions would not exceed General Conformity *de minimis* levels in the SCAB or SSAB.

Table 3.5-6. Locomotive Emission Estimates (Build Alternative Option 1)

Air Basin	NO _x (tons per year)	VOC (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)	CO (tons per year)
Estimated Rail Emissions					
SCAB	5.0166	0.2007	0.0008	0.0007	6.4213
SSAB	1.7984	0.0719	0.0003	0.0003	2.3020
Total	6.8150	0.2726	0.0011	0.0010	8.7233
General Conformity De Minimis Level					
SCAB	10	10	100	100	100
SSAB	25	25	100	100	100

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

CO=carbon monoxide; NO_x=nitrogen oxide; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SCAB=South Coast Air Basin; SSAB=Salton Sea Air Basin; VOC=volatile organic compound

Table 3.5-7. Locomotive Emission Estimates (Build Alternative Options 2 and 3)

Air Basin	NO _x (tons per year)	VOC (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)	CO (tons per year)
Estimated Rail Emissions					
SCAB	4.9279	0.1971	0.0007	0.0007	6.3077
SSAB	1.7097	0.0684	0.0003	0.0003	2.1884
Total	6.6376	0.2655	0.0010	0.0010	8.4961
General Conformity De Minimis Level					
SCAB	10	10	100	100	100
SSAB	25	25	100	100	100

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

CO=carbon monoxide; NO_x=nitrogen oxide; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SCAB=South Coast Air Basin; SSAB=Salton Sea Air Basin; VOC=volatile organic compound

While operation of the Build Alternative Options would increase emissions from locomotives, those emissions would be offset by automobile emissions reduction that would occur due to the travel mode shift from automobile to rail transport within the travel corridor. A projection of ridership and VMT reductions is provided in Table 3.5-8 and Table 3.5-9 for the Build Alternative Options.

Table 3.5-8. Annual Ridership and Annual Vehicle Miles Traveled by Horizon Year (Build Alternative Option 1)

Alternative Scenarios	Annual Ridership (one-way trips)	VMT (million)
Existing Year (2018)^a		
2018 baseline/existing conditions	—	3,200.0
Opening Year (2024)		
No Build Alternative	—	3,500.0
Build Alternative Option 1	204,107	3,489.5
Change in VMTs from No Build Alternative	—	10.5
Future Year (2044)		
No Build Alternative	—	4,300.0
Build Alternative Option 1	338,540	4,282.6
Change in VMTs from No Build Alternative	—	17.4

Source: Appendix C of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

VMT=vehicle miles traveled

Table 3.5-9. Annual Ridership and Annual Vehicle Miles Traveled by Horizon Year (Build Alternative Options 2 and 3)

Alternative Scenarios	Annual Ridership (one-way trips)	VMT (million)
Existing Year (2018)^a		
2018 baseline/existing conditions	—	3,200.0
Opening Year (2024)		
No Build Alternative	—	3,500.0

Alternative Scenarios	Annual Ridership (one-way trips)	VMT (million)
Build Alternatives Options 2 and 3	188,290	3,490.3
Change in VMTs from No Build Alternative	—	9.7
Future Year (2044)		
No Build Alternative	—	4,300.0
Build Alternative Options 2 and 3	312,306	4,283.9
Change in VMTs from No Build Alternative	—	16.1

Source: Appendix C of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

VMT=vehicle miles traveled

Operation of the Build Alternative Options would be largely beneficial to air quality in the region and anticipated to contribute to the region's long-term attainment of air quality goals by reducing VMT and vehicle emissions. A conservative estimate of regional air quality criteria pollutants and the corresponding reductions related to the VMT reduction estimates is provided in Table 3.5-10 and Table 3.5-11 for the Build Alternative Options. The VMT emissions reduction estimates provided in Table 3.5-10 and Table 3.5-11 would be partially offset by locomotive and station operations emissions.

Table 3.5-10. Regional Air Quality Criteria Pollutant Estimates by Horizon Year (Build Alternative Option 1)

Alternative Scenarios	VOC (tons per year)	NO _x (tons per year)	CO (tons per year)	SO _x (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)
Existing Year (2018)^a						
2018 baseline/existing emissions	96.3	349.3	4,282.4	11.2	164.8	69.1
Opening Year (2024)						
No Build Alternative	40.9	163.0	2,637.7	10.1	177.5	73.5
Build Alternative Option 1	40.7	162.0	2,621.8	10.0	176.4	73.1
Change in emissions from No Build Alternative	-0.2	-1.0	-15.9	-0.1	-1.1	-0.4

Alternative Scenarios	VOC (tons per year)	NO _x (tons per year)	CO (tons per year)	SO _x (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)
Future Year (2044)						
No Build Alternative	10.1	79.4	1,918.8	9.4	216.7	87.4
Build Alternative Option 1	10.0	78.8	1,903.4	9.3	215.0	86.7
Change in emissions from No Build Alternative	-0.1	-0.6	-15.4	-0.1	-1.7	-0.7

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

CO=carbon monoxide; NO_x=nitrogen oxide; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SO_x=sulfur oxide; VOC=volatile organic compounds

Table 3.5-11. Regional Air Quality Criteria Pollutant Estimates by Horizon Year (Build Alternative Options 2 and 3)

Alternative Scenarios	VOC (tons per year)	NO _x (tons per year)	CO (tons per year)	SO _x (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)
Existing Year (2018)^a						
2018 baseline/existing emissions	96.3	349.3	4,282.4	11.2	164.8	69.1
Opening Year (2024)						
No Build Alternative	40.9	163.0	2,637.7	10.1	177.5	73.5
Build Alternatives Options 2 and 3	40.7	162.1	2,623.0	10.0	176.5	73.1
Change in emissions from No Build Alternative	-0.2	-0.9	-14.7	-0.1	-1.0	-0.4

Alternative Scenarios	VOC (tons per year)	NO _x (tons per year)	CO (tons per year)	SO _x (tons per year)	PM ₁₀ (tons per year)	PM _{2.5} (tons per year)
Future Year (2044)						
No Build Alternative	10.1	79.4	1,918.8	9.4	216.7	87.4
Build Alternative Options 2 and 3	10.0	78.8	1,904.6	9.3	215.1	86.8
Change in emissions from No Build Alternative	-0.1	-0.6	-14.2	-0.1	-1.6	-0.6

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

CO=carbon monoxide; NO_x=nitrogen oxide; PM_{2.5}=particulate matter 2.5 microns or less; PM₁₀=particulate matter 10 microns or less; SO_x=sulfur oxide; VOC=volatile organic compounds

Localized activities, including locomotive idling and vehicular queuing in and around commuter parking lots, have the potential to result in air quality effects. Locations adjacent to station-related commuter parking lots could potentially experience increases in localized air quality pollutant concentrations, as additional traffic could be concentrated in these areas in addition to increased train idling at the station. The generation of localized CO, PM_{2.5}, and PM₁₀ emissions tend to occur at locations with a large number of vehicles idling, such as at congested intersections. Implementation of the Program under any of the Build Alternative Options could result in beneficial localized air quality effects through relieving traffic congestion in a local area.

Implementation of the Program could add new at-grade rail crossings that would increase localized vehicle emissions at those locations, other rail infrastructure improvements, such as grade-separated crossings, could also be implemented, which could also relieve traffic congestion at the local level.

Localized air quality emissions from Program operation would have the potential to expose nearby population to air pollutants such as diesel particulate matter. Potential localized air quality emissions associated with Program operation would be mostly from diesel locomotives idling. However, localized air quality emissions from diesel train travel are expected to be limited due to the low number of diesel locomotives that would idle at particular locations. Localized air quality effects would be higher in urban or populated areas due to the exposure of sensitive receptors. Facilities located mostly in suburban or rural areas, such as those in the Eastern Section, would likely have

lower potential to cause localized air quality emission exposure than facilities in the Western Section, where there are more densely populated areas.

Similar to construction activities, operational activities would be subject to applicable local, state, and federal regulations, and operational BMPs would be implemented to minimize emissions and operational effects. Although operation of site-specific rail infrastructure and station facilities would be subject to applicable regulations and BMPs, when compared with the No Build Alternative, localized operational air quality effects could be substantial within the Program Corridor under Build Alternative Option 1 if the implementation of BMPs would not bring operational emissions to below identified localized SCAQMD operational emission thresholds. The Tier 2/Project-level analysis would also evaluate mobile source air toxics emissions to assess operational effects and SCAQMD regional and local daily significance thresholds. As shown in Table 3.5-10 and Table 3.5-11, when compared with Build Alternative Option 1, Build Alternative Options 2 and 3 could have nominally greater operational emissions of NO_x, sulfur oxide (SO_x), PM₁₀, and PM_{2.5}. However, the magnitude of effects would be similar for Build Alternative Option 2 and 3 and could be considered substantial when compared with the No Build Alternative.

Final conclusions of localized effects would depend on design details and information on affected locations and the corresponding traffic data that are not available as part of this Tier 1/Program service-level evaluation. Therefore, localized effects of the Program would be evaluated during Tier 2/Project-level analysis to determine air pollutant effects and quantify on-road mobile-source emissions reductions, as well as locomotive operations and train station operations area-source emissions.

Implementation of any of the Build Alternative Options would not be anticipated to have any measurable air quality effects on Mandatory Class I Federal Areas, including the San Gorgonio Wilderness and San Jacinto Wilderness. When compared with the No Build Alternative, effects on Mandatory Class I Federal Areas would be negligible under Build Alternative Option 1. When compared with Build Alternative Option 1, Build Alternative Options 2 and 3 would have the same magnitude of effect and would be considered negligible when compared with the No Build Alternative. Further site-specific analysis to assess visibility concerns, such as regional haze, would be considered during Tier 2/Project-level analysis.

According to the SCAQMD CEQA Air Quality Handbook, land uses associated with odor complaints typically include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. Implementation of any of the Build Alternative Options would not be anticipated to have any measurable odor effects, as the Program does not include any uses identified by SCAQMD as being associated with odor complaints. When compared with the No Build Alternative, odor effects would be negligible under

Build Alternative Option 1. When compared with Build Alternative Option 1, Build Alternative Options 2 and 3 would have the same magnitude of effect and would be considered negligible when compared with the No Build Alternative.

Greenhouse Gas Effects

CONSTRUCTION

Western Section. The Build Alternative Options would not require construction of additional rail or station infrastructure in the Western Section because the existing railroad infrastructure and stations from LAUS to Colton would be used. Therefore, no GHG emissions would be generated, as no additional construction activities are planned within the Western Section under Build Alternative Options 1, 2, and 3. When compared with the No Build Alternative, short-term/temporary GHG effects would be negligible.

Eastern Section. Construction activities required for infrastructure improvements (such as sidings, additional main line track, wayside signals, drainage, grade-separation structures) and station facilities would result in short-term increases GHG emissions in and around the construction site. GHG emissions would be generated from the use of equipment to conduct vegetation clearing, grading and excavation, and transport of materials and waste. The GHG emissions that could be generated would vary depending on the length of the construction period, specific construction activity (e.g., grading, paving, pile driving), types of equipment, and number of personnel. In some situations, construction GHG emissions associated from a project may be orders of magnitude lower than the operational emissions from the project due to construction emissions generally being short in duration compared with the project's overall lifetime. However, there are instances when projects have long construction periods (e.g., 10 years) and may result in a large amount of emissions.

The generation of GHG emissions from each construction project would be short term. Construction activities would be required to comply with applicable local, state, and federal regulations, in addition to the implementation of identified BMPs, to minimize GHG emissions and construction effects.

Design specifics and locations of the rail infrastructure improvements and station facilities are not known at this time, so the GHG emissions that could be generated during specific construction activities cannot be quantified at the Tier 1/Program-level evaluation. Once detailed construction information for the site-specific rail infrastructure improvement or station facility is available, a quantitative estimate of the total GHG emissions during construction would be conducted and impacts would be evaluated during the Tier 2/Project-level analysis.

Although construction of site-specific rail infrastructure and station facilities would be subject to applicable regulations and BMPs, when compared with the No Build Alternative, short-term construction GHG effects could be moderate within the Program Corridor under Build Alternative

Option 1. When compared with Build Alternative Option 1, Build Alternative Option 2 would have slightly reduced effects due to a shorter route alignment and reduced station options. However, the magnitude of effects would be similar for Build Alternative Option 2 and would be considered moderate when compared with the No Build Alternative. When compared with Build Alternative Option 1 or Build Alternative Option 2, Build Alternative Option 3 may have slightly reduced effects due to a smaller footprint associated with a shorter route alignment, reduced station options, and reduced third rail track infrastructure. However, the magnitude of effects would be similar for Build Alternative Option 3 and would be considered moderate when compared with the No Build Alternative.

OPERATION

Western and Eastern Section. Implementation of any of the Build Alternative Options has the potential to provide energy savings and reduce the transportation system’s effect on climate change. Based on projected ridership and VMT reductions, passenger rail use within the Program Corridor would decrease VMT and related mobile-source emissions. Emission reductions of GHG would mainly be attributed to the reduced travel time and resulting reduced fuel usage that would occur with operation of the Build Alternative Options. Table 3.5-12 and Table 3.5-13 provide a summary of mobile-source emissions for Opening Year (2024) and Future Year (2044) for each of the Build Alternative Options.

Table 3.5-12. Greenhouse Gas Emission Estimates (Build Alternative Option 1)

Emissions	No Build Alternative (metric tons per year)	Build Alternative Option 1 (metric tons per year)
Existing Year (2018)^a		
Automobile emissions	1,033,792	1,033,792
Passenger rail emissions	—	—
Total GHG emissions	1,033,792	1,033,792
Change in GHG emissions from No Build Alternative	—	—
Opening Year (2024)		
Automobile emissions	934,560	928,913
Passenger rail emissions	—	3,017
Total GHG emissions	934,560	931,930

Emissions	No Build Alternative (metric tons per year)	Build Alternative Option 1 (metric tons per year)
Change in GHG emissions from No Build Alternative	—	-2,630
Change in GHG emissions from Existing Year (2018)	-99,232	-101,862
<i>Future Year (2044)</i>		
Automobile emissions	862,289	855,363
Passenger rail emissions	—	3,017
Total GHG emissions	862,289	858,380
Change in GHG emissions from No Build Alternative	—	-3,909
Change in GHG emissions from Existing Year (2018)	-171,503	-175,412

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

GHG=greenhouse gas

Table 3.5-13. Greenhouse Gas Emission Estimates (Build Alternative Options 2 and 3)

Emissions	No Build Alternative (metric tons per year)	Build Alternative Options 2 and 3 (metric tons per year)
<i>Existing Year (2018)^a</i>		
Automobile emissions	1,033,792	1,033,792
Passenger rail emissions	—	Not Applicable
Total GHG emissions	1,033,792	1,033,792
Change in GHG emissions from No Build Alternative	—	—
<i>Opening Year (2024)</i>		
Automobile emissions	934,560	929,352
Passenger rail emissions	—	3,017
Total GHG emissions	934,560	932,369
Change in GHG emissions from No Build Alternative	—	-2,191

Emissions	No Build Alternative (metric tons per year)	Build Alternative Options 2 and 3 (metric tons per year)
Change in GHG emissions from Existing Year (2018)	-99,232	-101,423
<i>Future Year (2044)</i>		
Automobile emissions	862,289	855,901
Passenger rail emissions	—	3,017
Total GHG emissions	862,289	858,918
Change in GHG emissions from No Build Alternative	—	-3,371
Change in GHG emissions from Existing Year (2018)	-171,503	-174,874

Source: Appendix E of this Tier 1/Program EIS/EIR

Notes:

^a Existing Year (2018) assumes no reductions from emissions, as the Program would not be in operation.

GHG=greenhouse gas

As shown in Table 3.5-12 and Table 3.5-13, when compared with the No Build Alternative, GHG effects would be beneficial within the Program Corridor under Build Alternative Option 1. When compared with Build Alternative Option 1, Build Alternative Options 2 and 3 would have slightly reduced beneficial effects due to a shorter route alignment and reduced station options. However, the magnitude of effects would be similar for Build Alternative Option 2 and 3 and would be considered beneficial when compared with the No Build Alternative. A comprehensive quantitative GHG analysis would be performed during Tier 2/Project-level analysis to determine GHG effects and quantify on-road mobile-source emissions reductions, as well as locomotive operations and train station operations area-source emissions.

3.5.6 NEPA Summary of Potential Effects

Table 3.5-14 through Table 3.5-16 summarize the qualitative assessment of potential effects (negligible, moderate, or substantial) under NEPA for each of the Build Alternative Options. This service-level evaluation uses the Tier 1/Program EIS/EIR Study Area to determine the relative magnitude of the air quality- and GHG-related effects of the Build Alternative Options when compared with the No Build Alternative. Specific mitigation measures to reduce effects would be identified during the Tier 2/Project-level environmental process.

Table 3.5-14. NEPA Summary of Effects on Air Quality Emissions

Alternative Option	Potential Intensity of Effect: Western Section	Potential Intensity of Effect: Eastern Section
No Build Alternative ^a	Construction: Negligible Operation: Substantial	Construction: Negligible Operation: Substantial
Build Alternative Option 1 (Coachella Terminus)	Construction: Negligible Operation: Beneficial (regional), substantial (localized)	Construction: Substantial Operation: Beneficial (regional), substantial (localized)
Build Alternative Option 2 (Indio Terminus)	Construction: Negligible Operation: Beneficial (regional), substantial (localized)	Construction: Substantial Operation: Beneficial (regional), substantial (localized)
Build Alternative Option 3 (Indio Terminus with Limited Third Track)	Construction: Negligible Operation: Beneficial (regional), substantial (localized)	Construction: Substantial Operation: Beneficial (regional), substantial (localized)

Notes:

- ^a The No Build Alternative, as identified, includes existing and potential expansion of roadway, passenger rail, and air travel facilities within the Tier 1/Program EIS/EIR Study Area; however, for the service-level evaluation, identifying levels of effect from potential expansion of those facilities is speculative and would be dependent on Project-level analysis.

Table 3.5-15. NEPA Summary of Effects on Regional Haze and Odors

Alternative Option	Potential Intensity of Effect: Western Section	Potential Intensity of Effect: Eastern Section
No Build Alternative ^a	Construction: Negligible Operation: Negligible	Construction: Negligible Operation: Negligible
Build Alternative Option 1 (Coachella Terminus)	Construction: Negligible Operation: Negligible	Construction: Negligible Operation: Negligible
Build Alternative Option 2 (Indio Terminus)	Construction: Negligible Operation: Negligible	Construction: Negligible Operation: Negligible

Alternative Option	Potential Intensity of Effect: Western Section	Potential Intensity of Effect: Eastern Section
Build Alternative Option 3 (Indio Terminus with Limited Third Track)	Construction: Negligible Operation: Negligible	Construction: Negligible Operation: Negligible

Notes:

- ^a The No Build Alternative, as identified, includes existing and potential expansion of roadway, passenger rail, and air travel facilities within the Tier 1/Program EIS/EIR Study Area; however, for the service-level evaluation, identifying levels of effect from potential expansion of those facilities is speculative and would be dependent on Project-level analysis.

Table 3.5-16. NEPA Summary of Effects on Greenhouse Gases

Alternative Option	Potential Intensity of Effect: Western Section	Potential Intensity of Effect: Eastern Section
No Build Alternative ^a	Construction: Negligible Operation: Substantial	Construction: Negligible Operation: Substantial
Build Alternative Option 1 (Coachella Terminus)	Construction: Negligible Operation: Beneficial	Construction: Moderate Operation: Beneficial
Build Alternative Option 2 (Indio Terminus)	Construction: Negligible Operation: Beneficial	Construction: Moderate Operation: Beneficial
Build Alternative Option 3 (Indio Terminus with Limited Third Track)	Construction: Negligible Operation: Beneficial	Construction: Moderate Operation: Beneficial

Notes:

- ^a The No Build Alternative, as identified, includes existing and potential expansion of roadway, passenger rail, and air travel facilities within the Tier 1/Program EIS/EIR Study Area; however, for the service-level evaluation, identifying levels of effect from potential expansion of those facilities is speculative and would be dependent on Project-level analysis.

3.5.7 CEQA Summary of Potential Impacts

Based on the information provided in Sections 3.5.4 and 3.5.5, and considering the CEQA Guidelines Appendix G Checklist questions for air quality and GHGs, the Build Alternative Options would have potentially significant impacts on air quality and GHGs when reviewed on a Program-wide basis. Placing the infrastructure improvements and new stations largely within or along the existing ROW would reduce the potential for significant impacts associated with air quality

and GHG. However, because the infrastructure and station sites have not been selected, some areas that may contain sensitive land uses may be significantly impacted. At the Tier 1/Program analysis level, it is not possible to know the location, extent, and particular characteristics of impacts on these areas. Proposed programmatic mitigation measures strategies discussed in Section 3.5.8 would be applied to reduce potential impacts.

Table 3.5-17 summarizes the CEQA significance conclusions for the Build Alternative Options; the proposed programmatic mitigation strategies that could be applied to minimize, reduce, or avoid the potential impact, and the significance determination after mitigation strategies are applied. The identification and implementation of site-specific mitigation measures necessary for Project implementation would occur as part of the Tier 2/Project-level analysis.

Table 3.5-17. CEQA Summary of Impacts on Air Quality and Greenhouse Gases

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<i>Would the Program conflict with or obstruct implementation of the applicable air quality plan?</i>		
<i>Construction</i>		
<p>Western Section – No Impact. No construction impacts are anticipated during at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p>Eastern Section – Less Than Significant. The SCAQMD Air Quality Management Plan is a regional blueprint for achieving air quality standards and healthful air through various measures, such as trip reduction strategies, vehicle substitution, VMT reduction, and technological improvements. While construction activities may generate localized air quality emissions, construction of the Program under Build Alternative Options 1, 2, and 3 would result in the operation of an enhanced passenger rail system within the Eastern Section of the Program Corridor. Impacts are anticipated to be less than significant at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<i>Operation</i>		
<p>Western Section – Less Than Significant. The SCAQMD Air Quality Management Plan is a regional blueprint for achieving air quality standards and healthful air through various measures, such as trip reduction strategies, vehicle substitution, VMT reduction, and technological improvements. Operation of an enhanced passenger rail system within the Western Section of the Program Corridor would reduce VMTs within the region, which would have a corresponding reduction in air quality emissions generated. Since the Program would improve regional air quality through VMT reductions and technological improvements, the Project would not conflict with or obstruct implementation of the SCAQMD Air Quality Management Plan. Impacts are anticipated to be less than significant at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<p>Eastern Section – Less Than Significant. Operation of an enhanced passenger rail system within the Eastern Section of the Program Corridor would reduce VMTs within the region, which would have a corresponding reduction in air quality emissions generated. Since the Program would improve regional air quality through VMT reductions and technological improvements, the Project would not conflict with or obstruct implementation of the SCAQMD Air Quality Management Plan. Impacts are anticipated to be less than significant at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p><i>Would the Program result in cumulatively considerable net increase of any criteria pollutant for which the region is non-attainment under an applicable federal or state ambient air quality standard?</i></p>		
<p><i>Construction</i></p>		
<p>Western Section – No Impact. No construction impacts are anticipated during at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p>Eastern Section – Potentially Significant. Potential impacts associated with air quality construction emissions depend of the location of new stations and other rail infrastructure improvements, which are currently unknown. Construction of these improvements could require large scale construction activities over an extended period of time. A detailed air quality construction analysis cannot be considered at the Tier 1/Program EIS/EIR level because such an analysis at this stage would be too speculative, given the exact location and duration of construction associated with station facilities and other rail infrastructure improvements is unknown at this time. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Site-specific impacts would be determined during the Tier 2/Project-level analysis.</p>	<p>AQ-1 LU-2</p>	<p>Potentially Significant. AQ-1 and LU-2 would minimize, reduce, or avoid potential impacts associated with net increases of criteria pollutants; however, impacts may remain significant after mitigation.</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
Operation		
<p>Western Section – Potentially Significant. Potential impacts associated with air quality pollutant emissions would vary depending on the traffic generated in and around the existing stations as a result of operation associated with the enhanced passenger rail system. Therefore, there is potential for the Build Alternative Options to result in the generation of operational air quality pollutants at a localized level. However, it is anticipated that at the regional level, operation of the Program within the Western Section of the Program Corridor would result in a reduction of VMTs, which would result in a corresponding reduction in regional air quality pollutants generated. Therefore, potentially significant impacts associated with localized air quality emissions are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Once Tier 2/Project-level details are known, a quantitative air quality analysis would be prepared to identify and evaluate air quality emissions during operation.</p>	AQ-1	<p>Potentially Significant. AQ-1 would minimize, reduce, or avoid potential impacts from air quality emissions; however, impacts may remain significant at the localized level after mitigation.</p>
<p>Eastern Section – Potentially Significant. Potential impacts associated with air quality pollutant emissions would vary depending on the location of proposed infrastructure, level of activity, specific operations, and number of new stations. However, these details are currently unknown; therefore, there is potential for the Build Alternative Options to result in an increase in air quality emissions at the localized level. However, it is anticipated that at the regional level, operation of the Program within the Eastern Section of the Program Corridor would result in a reduction of VMTs, which would result in a corresponding reduction in regional air quality pollutants generated. Therefore, potentially significant impacts associated with localized air quality emissions are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Once Tier 2/Project-level details are known, a quantitative air quality analysis would be prepared to identify and evaluate air quality emissions during operation.</p>	AQ-1	<p>Potentially Significant. AQ-1 would minimize, reduce, or avoid potential impacts from air quality emissions; however, impacts may remain significant at the localized level after mitigation.</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<i>Would the Program expose sensitive receptors to substantial pollutant concentrations?</i>		
<i>Construction</i>		
<p>Western Section – No Impact. No construction impacts are anticipated during at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p>Eastern Section – Potentially Significant. Potential impacts associated with construction air quality emissions depend of the location of new stations and other rail infrastructure improvements and their proximity to sensitive receptors, which are currently unknown. A detailed construction air quality analysis cannot be considered at the Tier 1/Program EIS/EIR level because such an analysis at this stage would be too speculative, given the exact location and duration of construction associated with station facilities and other rail infrastructure improvements is unknown at this time. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Site-specific air quality construction impacts would be identified and evaluated during the Tier 2/Project-level analysis.</p>	<p>AQ-1 LU-2</p>	<p>Potentially Significant. AQ-1 and LU-2 would minimize, reduce, or avoid potential impacts associated with net increases of criteria pollutants; however, impacts may remain significant after mitigation.</p>
<i>Operation</i>		
<p>Western Section – Potentially Significant. The increase in train service (two additional round-trip daily trains within the Program Corridor) would not change existing land use and is anticipated to result in a decrease in regional and local VMTs. Operation of the Program within the Western Corridor would enhance passenger rail services within an existing high-quality transit corridor. However, there is the potential for generation of air quality criteria pollutants associated with increases in vehicles accessing the existing stations to use the enhanced passenger rail service. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Site-specific air quality impacts on sensitive receptors would be identified and evaluated during the Tier 2/Project-level analysis.</p>	AQ-1	<p>Potentially Significant. Operation of the Program is anticipated to result in a beneficial air quality impact at the regional level, as VMTs would be reduced. AQ-1 would minimize, reduce, or avoid potential impacts associated with cumulatively considerable net increases of criteria pollutants at the localized level; however, impacts at the local level may remain significant after mitigation.</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<p>Eastern Section – Potentially Significant. Potential impacts are dependent on the location of infrastructure improvements and station locations. Temporary emissions would be generated during construction, and permanent emissions would be generated by vehicles and locomotives at the stations; however, pollutant emissions would vary daily depending on the level of activity, specific operations, number of new stations, and prevailing weather. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Site-specific air quality impacts on sensitive receptors would be identified and evaluated during the Tier 2/Project-level analysis.</p>	<p>AQ-1</p>	<p>Potentially Significant. Operation of the Program is anticipated to result in a beneficial air quality impact at the regional level, as VMTs would be reduced. AQ-1 would minimize, reduce, or avoid potential impacts associated with cumulatively considerable net increases of criteria pollutants at the localized level; however, impacts at the local level may remain significant after mitigation.</p>
<p><i>Would the Program result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?</i></p>		
<p><i>Construction</i></p>		
<p>Western Section – No Impact. No construction impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	<p>Not applicable</p>	<p>Not applicable</p>
<p>Eastern Section – Less than Significant. Construction activities may generate odors from construction equipment and vehicles (e.g., diesel exhaust). However, these impacts would be short term and limited in extent at any given time and range. Therefore, less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	<p>Not applicable</p>	<p>Not applicable</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
Operation		
<p>Western Section – Less than Significant. Operation of the Program would generate odors from the operation of the additional passenger rail trains and the continued operation of the existing station facilities. However, these types of uses and generation of odors already occur within the Western Section of the Program Corridor. The types of uses are not within a category of land uses that are associated with objectionable odors. Therefore, less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p>Eastern Section – Less than Significant. Operation of the Program in the Eastern Section of the Program Corridor would not result in objectionable odors because the Build Alternative Options do not include any land uses identified by SCAQMD as being associated with objectionable odor generation. Therefore, less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable
<p><i>Would the Program generate GHG emissions, either directly, or indirectly, that may have a significant impact on the environment?</i></p>		
Construction		
<p>Western Section – No Impact. No construction impacts are anticipated during at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<p>Eastern Section – Potentially Significant. Construction of the Build Alternative Options would generate GHG emissions. Construction of these improvements could require large scale construction activities over an extended period of time. A detailed construction GHG analysis cannot be considered at the Tier 1/Program EIS/EIR level because such an analysis at this stage would be too speculative, given the exact location and duration of construction associated with station facilities and other rail infrastructure improvements is unknown at this time. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Site-specific impacts would be identified and evaluated during the Tier 2/Project-level analysis.</p>	<p>GHG-1 LU-2</p>	<p>Less than Significant. GHG-1 and LU-2 would minimize, reduce, or avoid potential impacts through design and further analysis.</p>
<p>Operation</p>		
<p>Western Section – Potentially Significant. Operation of the Build Alternative Options would generate GHG emissions. However, the Build Alternative Options would result in overall energy savings and reduce the transportation system’s impact on climate change because rail transit, and public transportation more generally, produces significantly lower GHG emissions per passenger mile than private single-occupancy vehicles. Based on projected ridership and VMT reductions, passenger rail use within the Program Corridor would decrease VMT and related mobile-source emissions. This would be offset somewhat by locomotive operations and train station facility operations that would generate GHG emissions. Therefore, potentially significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3. Further analysis would be conducted during Tier 2/Project-level evaluation.</p>	<p>GHG-2 LU-3</p>	<p>Less than Significant. GHG-2 and LU-3 would minimize, reduce, or avoid potential impacts through design and further analysis. While operation of the Program would generate GHG emissions, the Program is also anticipated to result in regional GHG reduction benefits.</p>
<p>Eastern Section – Potentially Significant. Operation of the Build Alternative Options would generate GHG emissions. However, the Build Alternative Options would result in overall energy savings and reduce the transportation system’s impact on climate change because rail transit, and public transportation more generally, produces significantly lower GHG emissions per passenger mile than private single-occupancy vehicles. Based on projected ridership and</p>	<p>GHG-2 LU-3</p>	<p>Less than Significant. GHG-2 and LU-3 would minimize, reduce, or avoid potential impacts through design and further analysis. While operation of the Program would generate GHG emissions, the</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<p>VMT reductions, passenger rail use within the Program Corridor would decrease VMT and related mobile-source emissions. This would be offset somewhat by locomotive operations and train station facility operations that would generate GHG emissions. However, the specific Tier 2/Project-level details necessary to determine impacts are unavailable at this time because station locations and infrastructure components are unknown. Therefore, further analysis would be considered during Tier 2/Project-level analysis.</p>		<p>Program is also anticipated to result in regional GHG reduction benefits.</p>
<p><i>Would the Program conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</i></p>		
<p><i>Construction</i></p>		
<p>Western Section – No Impact. No construction impacts are anticipated during at the Tier 1/Program EIS/EIR evaluation level because no physical improvements are proposed or required in the Western Section under Build Alternative Options 1, 2, and 3.</p>	<p>Not applicable</p>	<p>Not applicable</p>
<p>Eastern Section – Less Than Significant. While construction activities may generate GHG emissions, construction of the Program under the Build Alternative Options would result in the operation of an enhanced passenger rail system within the Eastern Section of the Program Corridor. The operation of the enhanced passenger rail system would reduce VMTs within the region, which would have a corresponding reduction in GHG emissions generated. Since the Program is anticipated to result in beneficial GHG emission reductions through VMT reductions and technological improvements, the Program would not conflict with or obstruct implementation of the plans, policies, or programs associated with GHG reduction efforts. Less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	<p>Not applicable</p>	<p>Not applicable</p>
<p><i>Operation</i></p>		
<p>Western Section – Less Than Significant. Operation of an enhanced passenger rail system within the Western Section of the Program Corridor would reduce VMTs within the region,</p>	<p>Not applicable</p>	<p>Not applicable</p>

Impact Summary	Mitigation Strategy	Significance with Mitigation Strategy
<p>which would have a corresponding reduction in GHG emissions generated. Since the Program is anticipated to result in reductions of regional GHG emissions through VMT reductions and technological improvements, the Program would not conflict with or obstruct implementation of the plans, policies, or programs associated with GHG reduction efforts. Less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>		
<p>Eastern Section – Less Than Significant. Operation of an enhanced passenger rail system within the Eastern Section of the Program Corridor would reduce VMTs within the region, which would have a corresponding reduction in GHG emissions generated. Since the Program is anticipated to result in reductions of regional GHG emissions through VMT reductions and technological improvements, the Program would not conflict with or obstruct implementation of the plans, policies, or programs associated with GHG reduction efforts. Less than significant impacts are anticipated at the Tier 1/Program EIS/EIR evaluation level under Build Alternative Options 1, 2, and 3.</p>	Not applicable	Not applicable

Notes:

EIR=environmental impact report; EIS=environmental impact statement; FRA=Federal Railroad Administration; GHG=greenhouse gas; SCAQMD=South Coast Air Quality Management District; VMT=vehicle miles traveled

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3.5.8 Avoidance, Minimization, and Mitigation Strategies

Identified below are proposed programmatic mitigation strategies for further consideration in the Tier 2/Project-level analysis. During the Tier 2/Project-level analysis, construction and operational impacts would be quantified, and BMPs and site-specific mitigation measures would be recommended. Proposed programmatic mitigation strategies or design considerations, consistent with state and federal regulations may include, but are not limited to, the following:

Mitigation Strategy AQ-1: During Tier 2/Project-level analysis, a site-specific air quality analysis shall be required for the specific rail infrastructure or station facilities proposed. If an air quality analysis is warranted at the Tier 2/Project level, the air quality analysis shall be prepared using the standards and procedures of the South Coast Air Quality Management District and applicable local jurisdiction(s) in which the Project is located. The air quality analysis shall include analysis of construction and operational air quality impacts, including identification and analysis of:

- Construction equipment to be used and corresponding air quality emissions that could be generated from construction activities.
- Construction and operational traffic impacts analysis, including quantification of construction emissions and comparison with South Coast Air Quality Management District significance thresholds.
- Sensitive receptors and exposure of those sensitive receptors to air quality emissions during construction and operational activities. If sensitive receptors are located within or adjacent to the Project site, a health risk assessment to assess cancer risks and non-carcinogenic hazards for sensitive receptors may be required.
- Best management practices to be implemented during construction activities such as practices to limit idling and construction emissions, the use of ozone precursor emission controls, implementation of diesel emission reduction plans, and use of California Air Resources Board-certified equipment for pose combustion controls
- If a Project is located within an area designated as non-attainment for federal particulate matter 10 microns or less and particulate matter 2.5 microns or less standards, a particulate matter 10 microns or less and particulate matter 2.5 microns or less hot spot analysis shall be prepared based on guidance provided in Transportation Conformity Guidance for Qualitative Hot Spot Analyses in Particulate Matter 2.5 Microns or Less and Particulate Matter 10 Microns or Less Non-attainment and Maintenance Areas (United States Environmental Protection Agency 2006). As part of the hot-spot analyses, a project-level

conformity determination shall include a finding of whether the Project is a Project of Air Quality Concern.

Mitigation Strategy GHG-1: During Tier 2/Project-level analysis, a construction energy conservation plan to avoid excess energy consumption shall be required for the specific rail infrastructure or station facility proposed. The construction energy conservation plan shall identify best management practices including, but not limited to, the following:

- Identification of opportunities to use newer, more energy efficient construction equipment, vehicles, and materials
- Limit construction equipment idling
- Develop and implement a program encouraging construction workers to carpool or use public transportation for travel to and from construction sites
- Locate construction materials production facilities onsite or in proximity to project work sites
- Schedule material deliveries during off-peak hours to minimize highway congestion

Mitigation Strategy GHG-2: During Tier 2/Project-level analysis, an operational energy conservation plan shall be required for the specific rail infrastructure or station facility proposed. The operational energy conservation plan shall identify best management practices, including, but not limited to, the following:

- Limit operational idling at stations
- Identify state-of-the-art locomotives to maximize fuel efficiency
- Target market to drivers of single-occupancy vehicles to maximize the effects of rail modal use on energy conservation and reduction of greenhouse gas emissions
- Concentrate bus-service routes to feed passengers to train stations
- Bring dispersed riders to train stations through other methods (e.g., demand response systems [paratransit, taxi, shuttle, call-and-ride])

Mitigation Strategy LU-2: Based on the results of a subsequent Tier 2/Project-level analysis and recommendations, the identified lead agency or agencies shall determine if a construction management plan is required for construction activities of the Tier 2/Project-level improvement being proposed. If required, a construction management plan shall be developed by the contractor and reviewed by the lead agency or agencies prior to construction and implemented during construction activities. The construction management plan shall include, but not be limited to, the following:

- Measures that minimize effects on populations and communities within the Tier 2/Project Study Area
- Measures pertaining to visual protection, air quality, safety controls, noise controls, and traffic controls to minimize effects on populations and communities within the Tier 2/Project Study Area
- Measures to ensure property access is maintained for local businesses, residences, and community and emergency services
- Measures to consult with local transit providers to minimize effects on local and regional bus routes in affected communities
- Measures to consult with local jurisdictions and utility providers to minimize effects on utilities in affected communities

Mitigation Strategy LU-3: During a subsequent Tier 2/Project-level analysis, a land use consistency analysis shall be conducted by the identified lead agency or agencies to determine consistency of the Tier 2/Project-level improvement being proposed with the applicable local jurisdictional general plans or programs. If the land use consistency analysis identifies sensitive land uses or environmental resources within the Tier 2/Project-level Study Area, design or siting strategies shall be identified by the lead agency or agencies to avoid or minimize conflicts with sensitive land uses or environmental resources.

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