California High-Speed Rail Authority

Bakersfield to Palmdale Project Section

FINAL General Conformity Determination

JULY 2021

CALIFORNIA High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

California High-Speed Rail System, Bakersfield to Palmdale Section
Final General Conformity Determination

Prepared by:

U.S. Department of Transportation
Federal Railroad Administration

This Final General Conformity Determination has been prepared by the Federal Railroad Administration (FRA), pursuant to Section 176(c) of the Federal Clean Air Act, 42 U.S.C. 7506(c)(1), and its implementing regulations ("General Conformity Rule"). Specifically, this Final General Conformity Determination documents FRA's finding that the California High-Speed Rail System, Bakersfield to Palmdale Section will comply with the General Conformity Rule, provided that the nitrogen oxides (NOx) and volatile organic compound (VOC) emissions caused by the construction of the Project, will be offset through a Voluntary Emission Offset Agreement (VERA) with the San Joaquin Valley Unified Air Pollution Control District.

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Appendix

Appendix A: Final General Conformity Determination Comments and Responses

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ACRONYMS AND ABBREVIATIONS

AIA	air impact assessment
AQMD	Air Quality Management District
Authority	California High-Speed Rail Authority
AVAQMD	Antelope Valley Air Quality Management District
CAA	Clean Air Act
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCNM	César E. Chávez National Monument
CEQA	California Environmental Quality Act
C.F.R.	Code of Federal Regulations
CO	carbon monoxide
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EKAPCD	Eastern Kern Air Pollution Control District
EMFAC2014	EMission FACtors 2014
EMMA	Environmental Mitigation Management and Assessment
FRA	Federal Railroad Administration
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GHG	greenhouse gas
HP	horsepower
HS	hydrogen sulfide
HSIPR	High-Speed Intercity Passenger Rail
HSR	high-speed rail
IAMFs	Impact Avoidance and Minimization Features
LMF	Light Maintenance Facility
MDAB	Mojave Desert Air Basin
MOWF	Maintenance-of-Way Facility
Mph	miles per hour
MPO	metropolitan planning organizations
NAAQS	National Ambient Air Quality Standards
O_3	ozone
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
RoadMod	Road Construction Emissions Model
ROD	Record of Decision

SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_x	sulfur oxide
USEPA	United States Environmental Protection Agency
VERA	Voluntary Emissions Reduction Agreement
VHT	vehicle hours traveled
VMT	vehicle miles traveled

EXECUTIVE SUMMARY

The California High-Speed Rail (HSR) System will provide intercity, high-speed service on more than 800 miles of guideway throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the southern Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. The Bakersfield to Palmdale HSR Section ("Project" or "Action"), which is the focus of this General Conformity Determination, is a critical link connecting the Merced to Fresno, and Bakersfield to Palmdale HSR sections to the Palmdale to Los Angeles HSR sections.[1]

The General Conformity Rule, as codified in Title 40 Code of Federal Regulations (CFR) Part 93, Subpart B, establishes the process by which federal agencies determine conformance of proposed projects that are federally funded or require federal approval with applicable air quality standards. This determination must demonstrate that a Proposed Action would not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment. The California High-Speed Rail Authority (Authority), as the Action proponent, is receiving federal grant funds through the Federal Railroad Administration's (FRA) High-Speed Intercity Passenger Rail program. The Action may also receive FRA safety approvals. Because of the federal funding and potential safety approvals; the Action is subject to the General Conformity Rule; and because construction-phase emissions (without mitigation) would exceed General Conformity emission thresholds, the Action is not exempt and must demonstrate conformity.

FRA prepared a Draft General Conformity Determination, pursuant to 40 CFR part 93, subpart B, which establishes the process for complying with the General Conformity requirements of the Clean Air Act. FRA published a notice in the Federal Register on May 13, 2021 advising the public of the availability of the Draft Conformity Determination for a 30-day review and comment period. The Draft Conformity Determination was published at http://www.regulations.gov, Docket No. FRA-2021-0046. The comment period of the Draft Conformity Determination closed on June 14, 2021. FRA received one comment regarding *Coccidioides immitis*, or more commonly known as the Valley Fever fungus, and a letter of support from the San Joaquin Valley Air District. Both letters were responded to in Appendix A of this Final General Conformity Determination.

This Final General Conformity Determination documents FRA's finding that the Action complies with the General Conformity Rule and that it conforms to the purposes of the area's approved State Implementation Plan and is consistent with all applicable requirements. The Final General Conformity Determination is available at http://www.regulations.gov, Docket No. FRA-2021-0046, and on FRA's website at https://railroads.dot.gov/environment/environmental-reviews/clean-air-act-california-general-conformity-determinations. This Final General Conformity Determination is basedon the Impact Avoidance and Minimization Measures and Mitigation Measures that were described in Section 3.3.8 of the EIR/EIS and that will be implemented for the Action. This compliance is demonstrated herein as follows:

- The operation of the Action would result in a reduction of regional emissions of all applicable air pollutants and would not cause a localized exceedance of an air quality standard; and
- Whereas emissions generated during the construction of the Action would exceed General Conformity thresholds for two pollutants, these emission increases would be offset through a Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District (SJVAPCD), the Air Quality Investment Program in the Antelope Valley Air Quality Management District (AVAQMD), and the Emission Banking Certificate Program in the Eastern Kern Air Pollution Control District (EKAPCD).

[1] As part of its first phase, the California HSR system is currently planned as seven distinct sections from San Francisco in the north to Los Angeles and Anaheim in the south.

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1 INTRODUCTION

This document is the Final General Conformity Determination for the Bakersfield to Palmdale Section of the California High-Speed Rail (HSR) System ("Project" or "Federal Action") and is required by the implementing regulations of Section 176 of the Clean Air Act (CAA). Section 176(c)(1) of the CAA prohibits federal agencies from engaging in, supporting, or providing financial assistance for licensing, permitting or approving any activities that do not conform to an approved CAA implementation plan. That approved plan may be a federal, state or tribal implementation plan.

The CAA defines nonattainment areas as geographic regions that have been designated as not meeting one or more of the National Ambient Air Quality Standards (NAAQS). The CAA requires that each state prepare a State Implementation Plan (SIP) for each nonattainment area, and a maintenance plan be prepared for each former non-attainment area that subsequently demonstrated compliance with the standards. The SIP is a state's plan for how it will meet the NAAQS by the deadlines established by the CAA.

The General Conformity Rule is codified in Title 40 Code of Federal Regulations (C.F.R.) Part 93, Subpart B, "Determining Conformity of General Federal Actions to State or Federal Implementation Plans." Conformity is defined as "upholding an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards." 40 C.F.R. Part 93 also establishes the process by which federal agencies determine conformance of proposed projects that are federally funded or require federal approval. This determination must demonstrate that the Proposed Action would not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment. Since the Action is receiving federal funds through grants with the Federal Railroad Administration (FRA) and may also receive safety approvals from FRA, it is an action that may be subject to the General Conformity Rule.

This Final General Conformity Determination is being issued after the release of the Bakersfield to Palmdale Final Environmental Impact Report/Environmental Impact Statement (EIR/EIS), which was prepared in accordance with the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Because the analysis used for the EIR/EIS also generated the information necessary for the General Conformity Determination, specific analysis may be incorporated herein by reference.

1.1 Regulatory Status of Study Area

By way of background, in addition to the regulations covering the General Conformity Rule, on November 24, 1993, the U.S. Environmental Protection Agency (EPA) promulgated final transportation conformity regulations to address transportation plans, programs, and projects developed, funded or approved under title 23 U.S. Code or the Federal Transit Act, 49 U.S. Code 1601 et seq. (40 C.F.R. Part 93 Subpart A). These regulations have been revised several times since they were first issued. While the transportation conformity regulations do not apply to this Action (see Section 1.2), many of the transportation planning documents developed under those regulations are helpful in understanding the regional air quality and planning status of the study area.

The Bakersfield to Palmdale Project Section passes through three air quality management districts and two air basins: the San Joaquin Valley Air Pollution Control District (SJVAPCD), the Eastern Kern Air Pollution Control District (EKAPCD), and the Antelope Valley Air Quality Management District (AVAQMD). The SJVAPCD and the San Joaquin Air Basin encompass the same area; the EKAPCD and the AVAQMD are both located within the Mojave Desert Air Basin.

Planning documents for pollutants for which the study area is classified as a federal nonattainment or maintenance area are developed by the SJVAPCD, EKAPCD, AVAQMD, and the California Air Resources Board (CARB), and approved by USEPA. Table 1 lists the planning documents relevant to the proposed Action's study area.

Table 1 Planning Documents Relevant to Action's Study Area

Type of Plan	Status
San Joaquin Valley Air Pollution Control District	
1-Hour Ozone (O_3) Attainment Plan	On March 8, 2010, the USEPA approved the San Joaquin Valley's 2004 Extreme Ozone Attainment Plan for the 1-hour O_3 standard. However, effective June 15, 2005, the USEPA revoked the federal 1-hour O_3 standard for areas, including SJVAB.[1] Due to subsequent litigation, the USEPA withdrew its plan approval in November 2012, and the SJVAPCD and CARB withdrew this plan from consideration. SJVAPCD adopted a revised plan in September 2013 and is currently seeking CARB's approval.
8-Hour O_3 Attainment Plan	On May 5, 2010, the USEPA reclassified the 8-hour O_3 nonattainment status of San Joaquin Valley from "serious" to "extreme." The reclassification requires the state to incorporate more stringent requirements, such as lower permitting thresholds and implementing reasonably available control technologies at more sources.[1] The 2007 Ozone Plan contained a comprehensive and exhaustive list of regulatory and incentive-based measures to reduce emissions of O_3 and particulate matter precursors throughout the San Joaquin Valley. On December 18, 2007, the SJVAPCD Governing Board adopted the plan with an amendment to extend the rule adoption schedule for organic waste operations. On January 8, 2009, the USEPA found that the motor vehicle budgets for the years 2008, 2020, and 2030 from the 2007 8-hour Ozone Plan were not adequate for transportation conformity purposes.[2]
Particulate Matter, 10 microns or less in diameter (PM_{10}) Maintenance Plan	On September 25, 2008, the USEPA redesignated the San Joaquin Valley to attainment for the PM_{10} NAAQS and approved the 2007 PM_{10} Maintenance Plan.[3]
Particulate Matter, 2.5 microns or less in diameter ($PM_{2.5}$) Attainment Plan	The 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standard, approved by the District Governing Board on November 15, 2018, will bring the San Joaquin Valley into attainment of the USEPA's 1997 annual $PM_{2.5}$ standard, 2006 24-hour $PM_{2.5}$ standard, and 2012 annual $PM_{2.5}$ standard as expeditiously as practicable.[4] The plan provides measures designed to reduce emissions such that the valley will attain the federal standards as soon as possible.
Carbon Monoxide (CO) Maintenance Plan	On July 22, 2004, CARB approved an update to the State Implementation Plan that shows how 10 areas, including the SJVAB, will maintain the CO standard through 2018. On November 30, 2005, the USEPA approved and promulgated the implementation plans and designation of areas for air quality purposes.[5]
Eastern Kern Air Pollution Control District	
2017 Ozone Attainment Plan	On July 27, 2017, the EKAPCD adopted the 2017 Ozone Attainment Plan for the Eastern Kern County nonattainment area. The Plan demonstrates that the air quality improvement was achieved due to successful implementation of ozone control strategies contained in the region's SIP. It also demonstrates that significant ozone precursor emission reductions that have been impacted in the region are permanent and enforceable. A maintenance plan is also included to ensure that the region would not experience exceedance. The Plan requests a redesignation in accordance with the Federal Clean Air Act.[6]

Type of Plan	Status
Antelope Valley Air Quality Management District	
Western Mojave Desert Ozone Attainment Plan	The Western Mojave Desert non-attainment area, which includes the AVAQMD, was designated non-attainment for the NAAQS for ozone by the USEPA on April 15, 2004. The USEPA designated the Western Mojave Desert area as non-attainment area for the 8-hour ozone NAAQS. The AVAQMD is included in the Western Mojave Desert non-attainment area and has adopted state and federal attainment plans for the region within its jurisdiction. The 2007 Western Mojave Desert Ozone Attainment Plan includes the latest planning assumptions regarding population, vehicle activity, and industrial activity and addresses all existing and forecasted ozone precursor-producing activities within the Antelope Valley through the year 2020. The document includes updates to the necessary information to allow general and transportation conformity findings to be made within the Antelope Valley.[7]
Antelope Valley Ozone Attainment Plan	The 2004 Antelope Valley Ozone Attainment Plan includes AVAQMD's review and update of all elements of the Air Quality Management Plan that had been previously prepared by the South Coast Air Pollution Control District, when that District had jurisdiction of the Antelope Valley. The Plan indicates Antelope Valley will also show significant progress toward attainment of the CAAQS for the ozone standard. The document also includes the latest planning assumptions regarding population, vehicle activity, and industrial activity and addresses all existing and forecasted ozone precursor- producing activities within the Antelope Valley.[8]

Sources: [1] *San Joaquin Valley Air Pollution Control District, 2004*
[2] *San Joaquin Valley Air Pollution Control District, 2007a*
[3] *San Joaquin Valley Air Pollution Control District, 2007b*
[4] *San Joaquin Valley Air Pollution Control District, 2018*
[5] *California Air Resources Board, 2004*
[6] *Eastern Kern Air Pollution Control District, 2017*
[7] *Antelope Valley Air Quality Management District, 2008*
[8] *Antelope Valley Air Quality Management District, 2004*

AVAQMD = Antelope Valley Air Quality Management District
CARB = California Air Resources Board
CO = carbon monoxide
EKAPCD = Eastern Kern Air Pollution Control District
NAAQS = National Ambient Air Quality Standards
O_3 = ozone
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
SJVAB = San Joaquin Valley Air Basin
SJVAPCD = San Joaquin Valley Air Pollution Control District
USEPA = U.S. Environmental Protection Agency

1.2 General Conformity Requirements

On November 30, 1993, USEPA promulgated final General Conformity regulations at 40 C.F.R. Part 93 Subpart B for all federal activities except highways and transit programs covered by Transportation Conformity. The regulations in Subpart B were subsequently amended in March of 2010. The Action requires approval by FRA, and because the Action will not be funded or require approval(s) under Title 23 U.S. Code or the Federal Transit Act, 49 U.S. Code 1601 et seq., the General Conformity requirements are applicable, rather than transportation conformity. In general terms, unless a project is exempt under 40 C.F.R. § 93.153(c) or is not on the agency's presumed–to-conform list pursuant to 40 C.F.R. § 93.153(f), a General Conformity Determination is required where a federal action in a nonattainment or maintenance area causes an increase in the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutants that are equal to or exceed certain *de minimis* rates.

The General Conformity regulations incorporate a stepwise process, beginning with an applicability analysis. According to USEPA's General Conformity Guidance: Questions and Answers (USEPA 1994) (USEPA Guidance), before any approval is given for a federal action to go forward, the federal agency must apply the applicability requirements found at 40 C.F.R. §

93.153 to the federal action and/or determine on a pollutant-by-pollutant basis, whether a determination of General Conformity is required. During the applicability analysis, the federal agency determines the following:

- Whether the action will occur in a nonattainment or maintenance area;
- Whether one or more of the specific exemptions apply to the action;
- Whether the federal agency has included the action on its list of presumed-to-conform actions;
- Whether the total direct and indirect emissions are below or above the *de minimis* levels; and/or
- Where a facility has an emissions budget approved by the State or Tribe as part of the SIP or TIP, the federal agency determines that the emissions from the proposed action are within the budget (USEPA 2010).

The USEPA Guidance states that the applicability analysis can be (but is not required to be) completed concurrently with any analysis required under NEPA. The applicability analysis for this Action is described in Section 8.0.

If through the applicability analysis process the responsible federal agency determines that the General Conformity regulations do not apply to the federal action, no further analysis or documentation is required. If, however, the General Conformity regulations do apply to the federal action, the responsible federal agency must conduct a conformity evaluation in accordance with the criteria and procedures in the implementing regulations; publish a Final determination of General Conformity for public review; and then publish the final determination of General Conformity.

To make a conformity determination, the federal agency must demonstrate conformity by one or more of several prescribed methods. These methods include:

- Demonstrating that the direct and indirect emissions are specifically identified in the relevant implementation plan;
- Obtaining a written statement from the entity responsible for the implementation plan that the total indirect and direct emissions from the action, along with other emissions in the area, will not exceed the total implementation plan emission budget; or
- Fully offsetting the total direct and indirect emissions by reducing emissions of the same pollutant in the same nonattainment or maintenance area.

2 DESCRIPTION OF THE FEDERAL ACTION REQUIRING CONFORMITY EVALUATION

In accordance with applicable General Conformity regulations and guidance, when a General Conformity Determination is necessary, the FRA conducts a General Conformity evaluation for the specific federal action associated with the preferred alternative for a project or program (USEPA 1994), and FRA must issue a positive conformity determination before the federal action is approved. Each federal agency is responsible for determining conformity of those proposed actions over which it has jurisdiction. This Final General Conformity Determination is related only to those activities included in the federal action pertaining to the Action, which is the Action's potential approval through a NEPA Record of Decision (ROD). The Action is described further in Section 3.0 below.

General Conformity requirements only apply to federal actions proposed in nonattainment areas (i.e., areas where one or more NAAQS are not being achieved at the time of the proposed action and requiring SIP provisions to demonstrate how attainment will be achieved) and in maintenance areas (i.e., areas recently reclassified from nonattainment to attainment and requiring SIP provisions to demonstrate how attainment will be maintained).

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3 CALIFORNIA HIGH SPEED RAIL PROJECT

3.1 California High Speed Rail System

The Authority, a state governing board formed in 1996, is responsible for planning, designing, constructing, and operating the HSR System. Its mandate is to develop a high-speed rail system connecting the state's major population centers and coordinating with the state's existing transportation network, which includes intercity rail and bus lines, regional commuter rail lines, urban rail and bus transit lines, highways, and airports.

The HSR System will provide intercity, high-speed service on more than 800 miles of railroad throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the southern Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. It will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train-control systems, with trains capable of operating up to 220 miles per hour (mph) over a fully grade-separated, dedicated guideway alignment.

FRA is responsible for oversight and regulation of railroad safety and is also charged with the implementation of the High-Speed Intercity Passenger Rail (HSIPR) financial assistance program. As part of the HSIPR Program, FRA is providing partial funding for the environmental analysis and documentation required under NEPA, CEQA and other related environmental laws. Pursuant to U.S. Code (U.S.C.) Title 23 Section 327, under the NEPA Assignment Memorandum of Understanding (MOU) between FRA and the State of California, effective July 23, 2019, the Authority is the federal lead agency for environmental reviews for all Authority Phase 1 and Phase 2 California HSR System projects. The FRA maintains responsibility to perform Clean Air Act Conformity determinations under the NEPA Assignment MOU. The Authority and the FRA have agreed to collaborate on the development of conformity determinations. As part of this collaboration, the Authority has provided the FRA this Final General Conformity Determination and supporting information, as well as the Authority's proposed approach for achieving general conformity. The FRA will make the ultimate general conformity determination. In addition to its involvement in the environmental analysis and documentation, FRA is also providing partial funding for the final design and construction of the initial construction section of the HSR System, which includes activities analyzed in this Final Conformity Determination.

In April 2012, FRA and the Authority published the Final EIR/EIS for the Merced to Fresno Section of the HSR System. The Authority certified the EIR and adopted the project in May, while the FRA issued its ROD in September 2012. The Merced to Fresno Section is within the San Joaquin Valley Air Basin (SJVAB) and a General Conformity Determination was prepared as part of the environmental process to comply with the CAA. It is worth noting that the Merced to Fresno General Conformity Determination includes the Authority's commitment to offset all emissions to net zero through a Voluntary Emissions Reduction Agreement (VERA) between the Authority and the SJVAPCD.

Although the Authority considers the Bakersfield to Palmdale section of the HSR System independent of the other HSR System sections for purposes of NEPA and CEQA analysis, certain construction activities within the Merced to Fresno Section, as well as within the Fresno to Bakersfield and San Jose to Merced Sections, may occur concurrently with Bakersfield to Palmdale Section construction activities. Therefore, estimates of these cumulative emissions within the SJVAPCD, EKAPCD, and AVAQMD have been presented in Section 13.0 of this document. These emissions estimates have been included in this document in the interest of the full disclosure of construction emissions that may occur in the SJVAPCD, EKAPCD, and AVAQMD from other sections of the HSR Project; each of these sections will undergo separate conformity determinations at a later date.

3.2 California High Speed Rail System – Bakersfield to Palmdale Section

The purpose of the Bakersfield to Palmdale Section of the HSR System is to implement the California HSR System between Bakersfield and Palmdale, providing the public with electric-

powered high-speed rail service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit systems, and the highway network in the south San Joaquin Valley and Mojave Desert, and to connect the northern and southern portions of the HSR System.

The Bakersfield to Palmdale Section would be approximately 80 miles in length and would traverse valley, mountain, and high desert terrain, as well as urban, rural, and agricultural lands. From the north, this section would begin at the Bakersfield Station and travel south and southeast through the Tehachapi Mountains, then descend into the Antelope Valley where it would terminate at the Palmdale Station in the south. This section includes a potential Light Maintenance Facility (LMF) and a Maintenance-of -Way Facility (MOWF) in the Lancaster area.

The Bakersfield to Palmdale Project Section would include surface, underground, and elevated track types with varying profiles. Surface tracks would be built on concrete or ballast material (a thick bed of angular rock) placed on compacted soil. To the extent practicable, fill material for the rail bed would be obtained from on-site excavations. Underground tracks would be in areas with cut slopes and retaining walls or tunnels. Although tunnels are underground and hidden from sight, their approaches have deep open excavations and extensive portal facilities necessary for maintenance and safety. Elevated tracks would be on retained fill (earth), embankments, or structures and would consist of cast-in-place, reinforced-concrete columns supporting the box girders and bridge deck.

The EIR/EIS for the Bakersfield to Palmdale Project Section examines alignment alternatives, stations, LMF, and MOWF sites within the general Railway corridor. The following alternatives are considered: Alternative 1, Alternative 2, Alternative 3, and Alternative 5. The following stations are considered: the Bakersfield Station and the Palmdale Station. The EIR/EIS also considers the César E. Chávez National Monument Design Option (CCNM Design Option), which would result in only a minimal change in construction emissions due to the additional 124 feet of track required for the design, and the Refined CCNM Design Option, which would be anticipated to result in slightly higher emissions due to the additional 2,006 feet of track required for the design. Total emissions would be 0.028 percent higher with the CCNM Design Option. The Refined CCNM option would increase the length of the line by 0.45 percent and would require additional off-haul associated with additional earthwork activities. Emission estimates presented in this Final GeneralConformity Determination for each Bakersfield to Palmdale Project Section (B-P) Build Alternativewould be applicable with or without the CCNM Design Option, due to rounding, and the differencewould be within the margin of error of the model estimates. Emission estimates for each B-P Alternative with the Refined CCNM Design Option are identified in this Final General Conformity Determination.

4 AIR QUALITY CONDITIONS IN THE STUDY AREA

4.1 Meteorology and Climate

Air quality is affected by both the rate and location of pollutant emissions, and by meteorological conditions that influence movement and dispersal of pollutants in the atmosphere. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and local air quality levels. Elevation and topography can affect localized air quality.

The Action traverses two air basins. The northern section of the Action is in the SJVAB, which encompasses the southern third of California's Central Valley. The southern section of the Action is on the western edge of the Mojave Desert Air Basin (MDAB).

4.1.1 San Joaquin Valley Air Basin

The SJVAB is approximately 250 miles long and is shaped like a narrow bowl. The sides and southern boundary of the bowl are bordered by mountain ranges. The valley's weather conditions include frequent temperature inversions; long, hot summers; and stagnant, foggy winters, all of which are conducive to the formation and retention of air pollutants (SJVAPCD 2011).

The SJVAB is typically arid in the summer months with cool temperatures and prevalent tule fog (i.e., a dense ground fog) in the winter and fall. The average high temperature in the summer months is in the mid-90s and the average low in the winter is in the high 40s. January is typically the wettest month of the year with an average of about 2 inches of rain. Wind direction is typically from the northwest with speeds around 30 mph (Western Regional Climate Center 2011).

4.1.2 Mojave Desert Air Basin

The MDAB is separated from populated valleys and coastal areas to the west by several mountain ranges. These valleys and coastal areas are the major source of ozone precursor emissions affecting ozone exceedances within the Kern County part of the Mojave Desert. Surrounding mountain ranges contain a limited number of passes serving as "transportation corridors." Air quality in Kern County is primarily influenced by the Tehachapi Pass corridor with some influence through Soledad Canyon (EKAPCD 2003).

During the summer the MDAB is generally influenced by a Pacific Subtropical High cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south. The MDAB averages between 3 and 7 inches of precipitation per year (from 16 to 30 days with at least 0.01 inch of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least 3 months have maximum average temperatures over 100.4-degrees Fahrenheit (AVAQMD 2011). Predominant surface wind flow patterns are southerly and westerly, transporting air pollution from the SJVAB through the Tehachapi Mountains and over the San Gabriel and San Bernardino Mountains (CARB 2015).

4.2 Ambient Air Quality in the Study Area

CARB maintains ambient air monitoring stations for criteria pollutants throughout California. The stations closest to the B-P Build Alternative alignments are the 43301 Division Street station in the City of Lancaster; the 923 Poole Street station in Mojave; and the 5558 California Avenue station in Bakersfield. These stations monitor NO_2, O_3, PM_{10}, $PM_{2.5}$, and CO. The land uses in the region range from urban and residential to rural and agricultural, and these stations represent these land use types. Air quality standards, primarily for O_3 and particulate matter, have been exceeded in the SJVAPCD, the EKAPCD, and the AVAQMD because of existing industrial, mobile, and agricultural sources. The four monitoring station locations are shown on Figure 1.

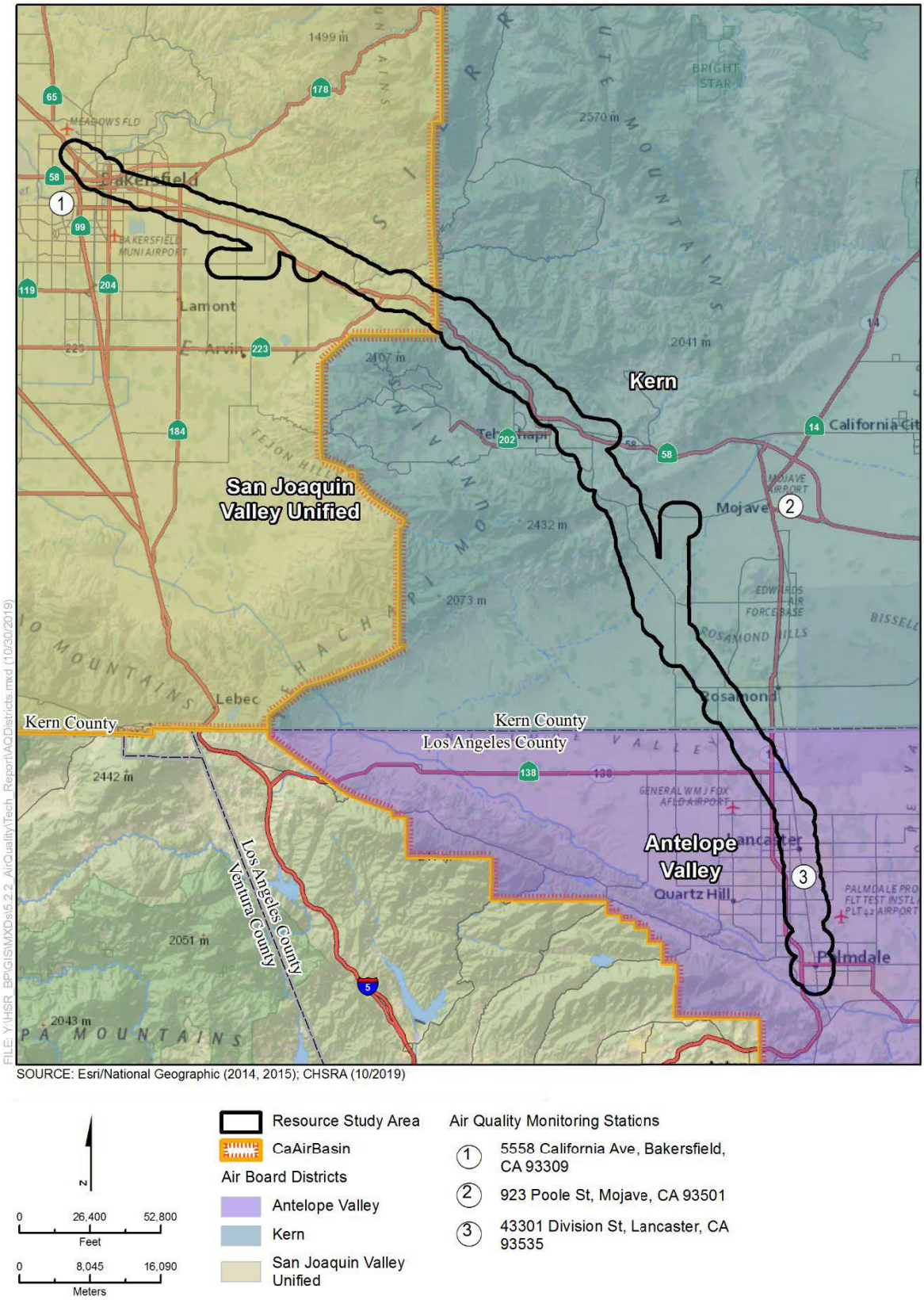

Figure 1 Air Quality Monitoring Stations Closest to Action

A brief summary of the monitoring data includes the following:

- Monitored data from 2017 through 2019 do not exceed either the state or federal standards for CO. The Mojave and Bakersfield stations were not monitored for CO during 2017 through 2019; therefore, CO data from the 2000 S Union Avenue, Bakersfield, monitoring site is included.
- O_3 values for the region exceed the state and national 8-hour O_3 standards for all three stations for years 2017 through 2019. O_3 values for the region also exceed the state 1-hour O_3 standard for all stations for every year from 2017 through 2019 except in 2019 at the 923 Poole Street station in Mojave.
- The PM_{10} values for the region exceed the national 24-hour PM_{10} standard for the Lancaster and Mojave stations for the year 2019. The state 24-hour PM_{10} concentrations were exceeded at all stations for all years. However, the number of days over the state standard was not available.
- The $PM_{2.5}$ values for the region exceed the national 24-hour $PM_{2.5}$ standard for the Lancaster station for 2018, the Bakersfield station for 2018, and the Bakersfield station for 2017 through 2019.
- SO_2 values were not monitored at any of the three stations or the additional station at 2000 S Union Avenue in Bakersfield between 2017 and 2019.

Table 2 lists the three monitoring stations nearest to the Action and ambient criteria pollutant concentrations for 2017, 2018, and 2019.

Table 2 Ambient Criterial Pollutant Concentration Data at Air Quality Monitoring Stations Closest to the Action

Air Pollutant	Standard/Exceedance	43301 Division Street, Lancaster			923 Poole Street, Mojave			5558 California Avenue, Bakersfield		
		2017	2018	2019	2017	2018	2019	2017	2018	2019
Carbon Monoxide (CO)[1]	Year Coverage	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Max. 1-hour Concentration (ppm)	1.3	1.2	1.4	1.8	1.9	1.2	1.8	1.9	1.2
	Max. 8-hour Concentration (ppm)	0.9	1.0	0.9	1.2	1.3	1.0	1.2	1.3	1.0
	Number of Days>Federal 1-hour Std of >35 ppm	0	0	0	0	0	0	0	0	0
	Number of Days>Federal 8-hour Std of >9 ppm	0	0	0	0	0	0	0	0	0
	Number of Days>California 8-hour Std of >9 ppm	0	0	0	0	0	0	0	0	0
Ozone (O_3)	Year Coverage[2]	98%	96%	91%	99%	99%	99%	99%	100%	98%
	Max. 1-hour Concentration (ppm)	0.109	0.125	0.096	0.097	0.111	0.085	0.122	0.107	0.097
	Max. 8-hour Concentration (ppm)	0.087	0.105	0.081	0.086	0.095	0.077	0.104	0.098	0.088
	Number of Days>Federal 8-hour Std of >0.070 ppm	43	48	13	35	53	10	85	60	24
	Number of Days>California 1-hour Std of >0.09 ppm	10	5	N/A	1	8	0	11	8	N/A
	Number of Days>California 8-hour Std of >0.07 ppm	43	49	N/A	37	56	N/A	87	34	N/A
Nitrogen Dioxide (NO_2)	Year Coverage	87%	97%	N/A	NM	NM	NM	97%	97%	N/A
	Max. 1-hour Concentration (ppm)	46.5	47.6	50.0	NM	NM	NM	66.0	61.5	67.0
	Annual Average (ppm)	N/A	8	8	NM	NM	NM	12	12	12
	Number of Days>Federal 1-hour Std of >100 ppm	0	0	0	NM	NM	NM	97%	97%	N/A

Air Pollutant	Standard/Exceedance	43301 Division Street, Lancaster			923 Poole Street, Mojave			5558 California Avenue, Bakersfield		
		2017	2018	2019	2017	2018	2019	2017	2018	2019
Sulfur Dioxide (SO_2)	Year Coverage	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Max. 24-hour Concentration (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Annual Average (ppm)	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Number of Days>California 24-hour Std of >0.04 ppm	NM	NM	NM	NM	NM	NM	NM	NM	NM
Respirable Particulate Matter (PM_{10})	Year Coverage	NM	NM	NM	NM	NM	NM	98%	95%	NM
	Max. 24-hour Concentration (µg/m³)[3]	82.4	89.3	165.0	93.4	93.1	248.0	143.6	142.0	116.0
	Number of Days>Federal 24-hour Std of >150 µg/m³	0	0	2	0	0	2	0	0	0
	Number of Days>California 24-hour Std of >50 µg/m³	NM	NM	NM	10	19	N/A	16	13	N/A
	Annual Average[3] (µg/m³)	26.3	25.2	NA	25.3	26.7	N/A	42.6	42.1	N/A
Fine Particulate Matter ($PM_{2.5}$)	Year Coverage	97%	99%	N/A	95%	94%	N/A	94%	93%	N/A
	Max. 24-hour Concentration (µg/m³)	26.6	40.4	13.6	26.9	39.0	19.8	101.8	95.8	59.1
	State Annual Average (µg/m³)	7.3	7.2	N/A	NM	NM	NM	15.9	15.7	N/A
	Number of Days>Federal 24-hour Std of >35 µg/m³	0	1	0	0	2	0	28	36	N/A
	Annual Average[3] (µg/m³)	7.2	7.2	6.1	5.5	7.1	6.5	15.6	17.6	11.9

Sources: California Air Resources Board and U.S. Environmental Protection Agency, 2020

[1] CO data for the 923 Poole Street, Mojave, and 5558 California Avenue, Bakersfield, monitoring sites are from the 2000 S Union Avenue, Bakersfield, monitoring site.

[2] Coverage is for the 8-hour standard.

[3] Coverage is for the national standard.

> = greater than

µg/m³ = micrograms per cubic meter

N/A = not available

NM = not monitored

PM_{10} = particulate matter smaller than or equal to 10 microns in diameter

$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter

ppm = parts per million

Std = standard

4.3 Study Area Emissions

4.3.1 San Joaquin Valley Air Pollution Control District

CARB maintains an annual emission inventory for select counties and air basins in the state. The inventory for the SJVAB comprises of data submitted to CARB by the SJVAPCD plus estimates for certain source categories, which are provided by CARB staff. The 2012 inventory data (the most recent data provided by the CARB) for the SJVAB is summarized in Table 3. Note that Table 3 shows tons per day, while the emissions estimates for the Proposed Action are shown in tons per year.

Table 3 Estimated Annual Average Emissions for the SJVAPCD (tons per day)

Source Category	TOG	ROG	CO	NO_X	SO_X	Particulate Matter	PM_{10}	$PM_{2.5}$
Stationary Sources								
Fuel Combustion	18.82	3.60	23.76	29.17	4.30	6.0	5.53	5.31
Waste Disposal	457.38	20.98	0.5	0.29	0.12	0.56	0.15	0.11
Cleaning and Surface Coatings	23.34	20.31	0.01	0.0	0.0	0.1	0.1	0.1
Petroleum Production and Marketing	130.88	33.59	0.61	0.27	0.14	0.23	0.16	0.15
Total Industrial Processes	16.72	15.68	0.83	6.71	3.36	16.54	8.03	3.16
Total Stationary Sources	647.15	94.16	25.70	36.44	7.92	23.44	13.97	8.82
Stationary Sources Percentage of Total	36.7	26.3	2.8	11.2	76.2	4.4	5.0	11.7
Areawide Sources								
Solvent Evaporation	53.11	47.59	--	--	--	--	--	--
Miscellaneous Processes	969.01	128.58	186.76	13.25	1.27	488.35	250.24	59.99
Total Areawide Sources	1,022.12	176.16	186.76	13.25	1.27	488.35	250.24	59.99
Areawide Sources Percentage of Total	57.9	49.2	20.6	4.0	12.2	92.4	88.9	71.4
Mobile Sources								
On-Road Motor Vehicles	53.22	48.51	437.65	177.87	0.67	10.78	10.77	6.73
Other Mobile Sources	41.62	39.02	252.45	97.60	0.53	5.89	6.61	6.09
Total Mobile Sources	94.84	87.53	690.10	275.47	1.20	16.66	17.38	12.81
Mobile Sources Percentage of Total	5.4	24.4	76.5	84.7	11.5	3.2	6.2	16.9
Grand Total	**1,764.1**	**357.9**	**902.6**	**325.2**	**10.4**	**528.5**	**281.6**	**75.6**

Source: California Air Resources Board, 2015
CO = carbon monoxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
ROG = reactive organic gas
SO_X = sulfur oxides
TOG = total organic gas

In the SJVAPCD, mobile source emissions account for over 65 percent of the basin's ROG and NO_x emission inventory. Area sources account for over 90 percent and over 50 percent of the basin's particulate and total VOC emissions, respectively, and stationary sources account for over 75 percent of the basin's sulfur oxide (SO_x) emissions.

4.3.2 Eastern Kern County Air Pollution Control District

Emission inventory data for the EKAPCD for 2012 (the most recent data the CARB provides) is summarized in Table 4. In the EKAPCD, mobile source emissions account for more than 74 percent of the ROG and 56 percent of the NO_x emission inventory. Area sources made up more than 64 percent of the particulate emissions, where stationary sources made up 88 percent of SO_x emissions. Note that Table 4 shows tons per day, whereas the emissions estimates for the Proposed Action are shown in tons per year.

Table 4 Estimated Annual Average Emissions for the EKAPCD (tons per day)

Source Category	TOG	ROG	CO	NO_X	SO_X	Particulate Matter	PM_{10}	$PM_{2.5}$
Stationary Sources								
Fuel Combustion	0.52	0.12	0.56	2.46	0.23	0.40	0.37	0.36
Waste Disposal	7.30	0.05	--	--	0.00	0.00	0.00	0.00
Cleaning and Surface Coatings	0.85	0.77	--	--	--	0.00	0.00	0.00
Petroleum Production and Marketing	0.20	0.20	--	--	--	--	--	--
Industrial Processes	0.11	0.09	6.79	15.43	2.25	5.69	3.67	1.55
Total Stationary Sources	8.98	1.22	7.35	17.89	2.48	6.09	4.04	1.91
Stationary Sources Percentage of Total	44	12	13	50	88	23	25	29
Areawide Sources								
Solvent Evaporation	1.14	1.21	--	--	--	--	--	--
Miscellaneous Processes	1.85	0.30	1.37	0.26	0.01	17.09	8.26	1.40
Total Areawide Sources	3.26	1.51	1.37	0.26	0.01	17.09	8.26	1.40
Areawide Sources Percentage of Total	16	14	2	1	0	64	52	21
Mobile Sources								
On-Road Motor Vehicles	2.59	2.37	23.53	9.70	0.03	0.54	0.54	0.35
Other Mobile Sources	5.71	5.48	24.90	7.85	0.31	3.13	3.06	3.02
Total Mobile Sources	8.30	7.85	48.44	17.55	0.34	3.67	3.06	3.37
Mobile Sources Percentage of Total	40	74	85	49	12	14	19	50
Grand Total	**20.54**	**10.59**	**57.15**	**35.70**	**2.83**	**26.85**	**15.90**	**6.68**

Source: California Air Resources Board, 2015
CO = carbon dioxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
ROG = reactive organic gas
SO_X = sulfur oxides
TOG = total organic gas

4.3.3 Antelope Valley Air Quality Monitoring District

Emission inventory data for the AVAQMD for 2012 (the most recent data the CARB provides) is summarized in Table 5. In the AVAQMD, mobile source emissions account for more than 91 percent and 69 percent of the CO and NO_x emission inventory, respectively. Area sources made up more than 55 percent of the particulate emissions, whereas stationary sources made up 45 percent of particulate emissions. Mobile sources were 64 percent of the SO_x emissions. Stationary sources made up 43 percent of the area-wide ROG emissions. Note that Table 5 shows tons per day, whereas the emissions estimates for the Proposed Action are shown in tons per year.

Table 5 Estimated Annual Average Emissions for the AVAQMD (tons per day)

Source Category	TOG	ROG	CO	NO_X	SO_X	Particulate Matter	PM_{10}	$PM_{2.5}$
Stationary Sources								
Fuel Combustion	0.36	0.17	1.35	5.09	0.02	3.24	1.36	0.57
Waste Disposal	2.88	0.06	0.00	0.00	0.00	0.54	0.16	0.02
Cleaning and Surface Coatings	5.21	3.36	--	--	--	0.21	0.20	0.19
Petroleum Production and Marketing	13.82	3.11	--	--	--	--	--	--
Industrial Processes	0.19	0.11	0.00	0.01	0.00	17.57	8.46	2.00
Total Stationary Sources	22.46	6.82	1.36	5.09	0.03	21.56	10.81	2.79
Stationary Sources Percentage of Total	63	43	2	28	21	45	43	49
Areawide Sources								
Solvent Evaporation	3.89	3.39	--	--	--	--	--	--
Miscellaneous Processes	3.78	0.74	3.67	0.50	0.02	26.43	13.52	2.28
Total Areawide Sources	7.67	4.13	3.67	0.50	0.02	26.43	13.52	2.28
Areawide Sources Percentage of Total	21	26	6	3	14	55	53	40
Mobile Sources								
On-Road Motor Vehicles	3.19	2.84	41.25	9.54	0.05	--	0.65	0.33
Other Mobile Sources	2.36	2.22	11.57	2.84	0.04	0.32	0.31	0.30
Total Mobile Sources	5.54	5.06	52.81	12.37	0.09	0.32	0.97	0.63
Mobile Sources Percentage of Total	16	32	91	69	64	1	4	11
Grand Total	**35.68**	**16.01**	**57.84**	**17.97**	**0.14**	**48.31**	**24.66**	**5.70**

Source: California Air Resources Board, 2015
CO = carbon dioxide
NO_X = nitrogen oxides
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
ROG = reactive organic gas
SO_X = sulfur oxides
TOG = total organic gas

4.4 Action Study Area Designations

The study area defined in the EIR/EIS for the Action and for this Final General Conformity Determination includes the SJVAPCD, EKAPCD, and AVAQMD. Under the federal criteria, the SJVAPCD is currently designated as nonattainment for 8-hour O_3, the 1997 annual $PM_{2.5}$ standard (annual standard of 15 micrograms per cubic meter [$\mu g/m^3$]) and 24-hour standard (65 $\mu g/m^3$), and the 2006 24-hour $PM_{2.5}$ standard (35 $\mu g/m^3$). The SJVAPCD is a maintenance area for PM_{10}, and the Bakersfield urbanized area is a maintenance area for CO. The SJVAPCD is in attainment for the NO_2 and SO_2 NAAQS. The SJVAPCD is unclassified for the lead NAAQS. The EKAPCD is currently designated nonattainment for federal 8-hour O_3. The western portion of the district is currently designated nonattainment for PM_{10}. The EKAPCD is an attainment/ unclassifiable area for the $PM_{2.5}$, CO, and lead NAAQS. The EKAPCD is unclassified for the federal NO_2 and SO_2 standards. Under the federal criteria, the AVAQMD is currently designated as nonattainment for 8-hour O_3. The AVAQMD is an attainment/unclassified area under the NAAQS for CO, NO_2, SO_2, and lead. The AVAQMD is unclassified for the PM_{10} and $PM_{2.5}$ NAAQS.

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5 RELATIONSHIP TO NEPA

The Final Bakersfield to Palmdale EIR/EIS identifies reasonable foreseeable environmental impacts of the Action, both adverse and beneficial, identifies appropriate measures to mitigate adverse impacts, and identifies the agencies' preferred alternative. The EIR/EIS was prepared to comply with both NEPA and CEQA.

The General Conformity regulations establish certain procedural requirements that must be followed when preparing a General Conformity evaluation and are similar but not identical to those for conducting an air quality impact analysis under NEPA regulations. NEPA requires that the air quality impacts of the proposed Action's implementation be analyzed and disclosed. For purposes of NEPA, the air quality impacts of the Action were determined by identifying the Action's associated incremental emissions and air pollutant concentrations and comparing them, respectively, to emissions thresholds and state and national ambient air quality standards. The air quality impacts of the Action under future Build conditions were also compared in the EIR/EIS to the future No-Build conditions for NEPA purposes (they were also compared to existing conditions). The General Conformity Determination process and general findings are discussed in Sections 3.3.2.1, 3.3.4.5, 3.3.6.3, 3.3.7.1, and 3.3.9.2 of the EIR/EIS.

In order to appropriately identify and offset, where necessary, the emissions resulting from the Bakersfield to Palmdale section of the HSR system, the FRA is issuing this Final General Conformity Determination. The Authority shall enter into agreements with the SJVAPCD (VERA), EKAPCD (Emission Banking Certificate Program), and the AVAQMD (Air Quality Investment Program) to offset emissions, as necessary, resulting from the Bakersfield to Palmdale Section as described in Section 12.2.

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6 AVOIDANCE AND MITIGATION MEASURES TO REDUCE EMISSIONS TO BE INCORPORATED IN THE ACTION

In order to reduce impacts on the environment, the construction of the Action will include impact avoidance and minimization features and mitigation measures that will be implemented as part of the Action to minimize, avoid, and mitigate air quality impacts. These Impact Avoidance and Minimization Features (IAMF) and mitigation measures will be included components of the Action. The IAMFs and mitigation measures required by the ROD will be included in the Mitigation Monitoring and Enforcement Program that will be issued concurrently with the Authority's ROD and that would be enforceable commitments undertaken by the Authority. Construction of the Action is anticipated to occur through a design/build contract. The Authority will include all of the IAMFs and required mitigation measures in the construction contract, which will create a binding and enforceable contractual commitment to implement these design features and mitigation measures.

The Authority will be responsible for implementing and overseeing a mitigation monitoring program to ensure that the contractor meets all air quality IAMFs and mitigation measures.

- **AQ-IAMF#1: Fugitive Dust Emissions**—During construction, the Contractor shall employ the following measures to minimize and control fugitive dust emissions. The Contractor shall prepare a fugitive dust control plan for each distinct construction segment. At a minimum, the plan shall describe how each measure would be employed and identify an individual responsible for ensuring implementation. At a minimum, the plan shall address the following components unless alternative measures are approved by the applicable air quality management district.
  - Cover all vehicle loads transported on public roads to limit visible dust emissions, and maintain at least 6 inches of freeboard space from the top of the container or truck bed.
  - Clean all trucks and equipment before exiting the construction site using an appropriate cleaning station that does not allow runoff to leave the site or mud to be carried on tires off the site.
  - Water exposed surfaces and unpaved roads at a minimum three times daily with adequate volume to result in wetting of the top 1 inch of soil but avoiding overland flow. Rain events may result in adequate wetting of top 1 inch of soil thereby alleviating the need to manually apply water.
  - Limit vehicle travel speed on unpaved roads to 15 miles per hour (mph).
  - Suspend any dust-generating activities when average wind speed exceeds 25 mph.
  - Stabilize all disturbed areas, including storage piles that are not being used on a daily basis for construction purposes, by using water, a chemical stabilizer/suppressant, hydro mulch or by covering with a tarp or other suitable cover or vegetative ground cover, to control fugitive dust emissions effectively. In areas adjacent to organic farms, the Authority would use non-chemical means of dust suppression.
  - Stabilize all on-site unpaved roads and off-site unpaved access roads, using water or a chemical stabilizer/suppressant, to effectively control fugitive dust emissions. In areas adjacent to organic farms, the Authority would use non-chemical means of dust suppression.
  - Carry out watering or presoaking for all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities.
  - For buildings up to 6 stories in height, wet all exterior surfaces of buildings during demolition.
  - Limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at a minimum of once daily, using a vacuum type sweeper.

- After the addition of materials to or the removal of materials from surface or outdoor storage piles, apply sufficient water or a chemical stabilizer/suppressant.

- **AQ-IAMF#2: Selection of Coatings**—During construction, the Contractor shall use:
  - Low-volatile organic compound (VOC) paint that contains less than 10 percent of VOC contents (VOC, 10%).
  - Super-compliant or Clean Air paint that has a lower VOC content than that required by San Joaquin Valley Unified Air Pollution Control District Rule 4601, Eastern Kern Air Pollution Control District Rule 410, and Antelope Valley Air Quality Management District Rule 1113, when available. If not available, the Contractor shall document the lack of availability; recommend alternative measure(s) to comply with by San Joaquin Valley Unified Air Pollution Control District Rule 4601, Eastern Kern Air Pollution Control District Rule 410, and Antelope Valley Air Quality Management District Rule 1113; or disclose absence of measure(s) for full compliance and obtain concurrence from the Authority.
- **AQ-IAMF#3: Renewable Diesel**—During construction, the Contractor would use renewable diesel fuel to minimize and control exhaust emissions from all heavy-duty diesel-fueled construction diesel equipment and on-road diesel trucks. Renewable diesel must meet the most recent ASTM D975 specification for Ultra Low Sulfur Diesel and have a carbon intensity no greater than 50% of diesel with the lowest carbon intensity among petroleum fuels sold in California. The Contractor would provide the Authority with monthly and annual reports, through the Environmental Mitigation Management and Application (EMMA) system, of renewable diesel purchase records and equipment and vehicle fuel consumption. Exemptions to use traditional diesel can be made where renewable diesel is not available from suppliers within 200 miles of the project site. The construction contract must identify the quantity of traditional diesel purchased and fully document the availability and price of renewable diesel to meet project demand.
- **AQ-IAMF#4: Reduce Criteria Exhaust Emissions from Construction Equipment**—Prior to issuance of construction contracts, the Authority would incorporate the following construction equipment exhaust emissions requirements into the contract specifications:
  1. All heavy-duty off-road construction diesel equipment used during the construction phase would meet Tier 4 engine requirements.
  2. A copy of each unit's certified tier specification and any required CARB or air pollution control district operating permit would be made available to the Authority at the time of mobilization of each piece of equipment.
  3. The contractor would keep a written record (supported by equipment-hour meters where available) of equipment usage during project construction for each piece of equipment.
  4. The contractor would provide the Authority with monthly reports of equipment operating hours (through the Environmental Mitigation Management and Assessment [EMMA] system) and annual reports documenting compliance.
- **AQ-IAMF#5: Reduce Criteria Exhaust Emissions from ON-Road Construction Equipment**—Prior to issuance of construction contracts, the Authority would incorporate the following material-hauling truck fleet mix requirements into the contract specifications:
  1. All on-road trucks used to haul construction materials, including fill, ballast, rail ties, and steel, would consist of a fleet mix of equipment model year 2010 or newer, but no less than the average fleet mix for the current calendar year as set forth in the CARB's EMFAC 2014 database.
  2. The contractor would provide documentation to the Authority of efforts to secure such a fleet mix.

3. The contractor would keep a written record of equipment usage during project construction for each piece of equipment and provide the Authority with monthly reports of VMT (through EMMA) and annual reports documenting compliance.

- **AQ-IAMF#6: Reduce the Potential Impact of Concrete Batch Plants**—Prior to construction of any concrete batch plant, the contractor would provide the Authority with a technical memorandum documenting consistency with the Authority's concrete batch plant siting criteria and utilization of typical control measures. Concrete batch plants would be sited at least 1,000 feet from sensitive receptors, including places such as daycare centers, hospitals, senior care facilities, residences, parks, and other areas where people may congregate. The concrete batch plant would implement typical control measures to reduce fugitive dust such as water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central dust collection systems, and other suitable technology, to reduce emissions to be equivalent to the USEPA AP-42 controlled emission factors for concrete batch plants. The contractor would provide to the Authority documentation that each batch plant meets this standard during operation.
- **AQ-MM#1: Offset Project Construction Emissions through Off-Site Emission Reduction Programs**—The Authority and SJVAPCD have entered into a contractual agreement to mitigate (by offsetting) to net zero the project's actual emissions from construction equipment and vehicle exhaust emissions of volatile organic compound (VOC), NO_X, particulate matter (PM_{10}), and $PM_{2.5}$. The agreement will provide funds for the SJVAPCD's Emission Reduction Incentive Program [1] (SJVAPCD 2011) to fund grants for projects that achieve emission reductions, with preference given to highly affected communities, thus offsetting project-related impacts on air quality. To lower overall cost, funding for the VERA program to cover estimated construction emissions for any funded construction phase will be provided at the beginning of the construction phase. At a minimum, mitigation/offsets will occur in the year of impact, or as otherwise permitted by 40 Code of Federal Regulations (C.F.R.) Part 93 Section 93.163.

  The Authority shall also enter into an agreement with the Antelope Valley Air Quality Management District (AVAQMD) and Eastern Kern Air Pollution Control District (EKAPCD) to mitigate (by offsetting) to net zero the project's actual emissions from construction equipment and vehicle exhaust emissions of VOC, NO_X, PM_{10} and $PM_{2.5}$. In the AVAQMD, the Authority shall participate in the Air Quality Investment Program, which funds stationary- and mobile-source emission reduction strategies. In the EKAPCD, the Authority shall provide an application for the Emission Banking Certificate Program.

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7 REGULATORY PROCEDURES

The General Conformity regulations establish certain procedural requirements that must be followed when preparing a General Conformity evaluation. This section addresses the major applicable procedural issues and specifies how these requirements are met for the evaluation of the Federal Action. The procedures required for the General Conformity evaluation are similar but not identical to those for conducting an air quality impact analysis pursuant to NEPA regulations. It is anticipated, however, that the Final General Conformity Determination will be published concurrent with the Authority's ROD for the Federal Action. This Final General Conformity Determination is being released for public and agency review pursuant to 40 C.F.R. § 93.156.

The Authority identified the appropriate emission estimation techniques and planning assumptions in close consultation with the state entities charged with regulating air pollution in the SJVAB and MDAB.

7.1 Use of Latest Planning Assumptions

The General Conformity regulations require the use of the latest planning assumptions for the area encompassing the Federal Action, derived from the estimates of population, employment, travel, and congestion most recently approved by the area's metropolitan planning organization (MPO) (40 C.F.R. § 93.159(a)).

The traffic data used in the air quality analysis (see EIR/EIS, Section 3.2) are consistent with the most recent estimates made by the MPOs for traffic volume growth rates, including forecast changes in vehicle miles traveled (VMT) and vehicle hours traveled (VHT). The Authority developed these estimates based on the MPO's traffic assignment models using the baseline and future population, employment, and travel and congestion information available at the time the analysis was prepared. These assumptions are consistent with those in the current conformity determinations for the region's Transportation Plan and TIP.

7.2 Use of Latest Emission Estimation Techniques

The General Conformity regulations require the use of the latest and most accurate emission estimation techniques available, unless such techniques are inappropriate (40 C.F.R. § 93.159(b)). Operational phase vehicular emission factors were estimated by using the CARB emission factor program, EMission FACtors 2014 (EMFAC2014). Parameters were set in EMFAC2014 for each individual county to reflect conditions within each county, and statewide parameters were used to reflect statewide conditions. Operational phase aircraft emissions were estimated using the Federal Aviation Administration's Aviation Environmental Design Tool. In addition, electrical demands caused by propulsion of the trains, and of the trains at terminal stations and in storage depots and maintenance facilities were estimated using average emission factors for each kilowatt-hour required from CARB statewide emission inventories of electrical and cogeneration facilities data along with USEPA eGRID2012 (released October 20, 2015) electrical generation data. The energy estimates used for the propulsion of the HSR system include the use of regenerative braking power. Operation of the Bakersfield to Palmdale Project Section HSR stations and the LMF and co-located MOWF were determined using the California Emissions Estimator Model (CalEEMod).

Emissions from regional building demolition and construction of the at-grade rail segments, elevated rail segments, retained-fill rail segments, electrical substations, train stations, LMF/MOWF, and roadways and roadway overpasses were calculated using emission factors from CalEEMod. CalEEMod uses emission factors from the OFFROAD 2011 model. The OFFROAD 2011 model provides the latest emission factors for off-road construction equipment and accounts for lower fleet population and growth factors as a result of the economic recession and updated load factors based on feedback from engine manufacturers. The use of emission rates from the OFFROAD models reflects the recommendation of CARB to capture the latest off-road construction assumptions. OFFROAD 2011 default load factors (the ratio of average equipment horsepower utilized to maximum equipment horsepower) and useful life parameters

were used for emission estimates. Mobile-source emission burdens from worker vehicle trips and truck trips were also calculated using CalEEMod.

Construction exhaust emissions from equipment, fugitive dust emissions from earthmoving activities, and emissions from worker vehicle trips, deliveries, and material hauling were calculated and compiled in CalEEMod for each year of construction.

Action-specific data, including construction equipment lists and the construction schedule, were used for construction associated with the alignment/guideway. Action-specific data were not available for the nonlinear construction associated with the stations and LMF/MOWF buildings. Therefore, the CalEEMod default settings were used in these instances only.

Mobile-source emission burdens from worker trips and truck trips were estimated using CalEEMod.

7.3 Major Construction-Phase Activities

Action-specific data, including construction equipment lists and the construction schedule, were used for construction associated with the alignment/guideway. Calculations were performed for each year of construction.

Major activities were grouped into the following categories (described in more detail in Section 9.0 of this report):

- Mobilization
- Site preparation including demolition, land clearing, and grubbing
- Earthmoving
- Roadway crossings
- Elevated structures
- Track laying – elevated, at-grade, and retained fill
- Traction power supply station
- Switching station
- Paralleling station
- LMF/MOWF
- Bakersfield Station
- Palmdale Station
- Hauling emissions, including truck and rail
- Demobilization

7.4 Emission Scenarios

The General Conformity regulations require that the evaluation reflect certain emission scenarios (40 C.F.R. §93.159(d)). Specifically, these scenarios generally include the evaluation of the direct and indirect emissions from a proposed Action for the following years: (1) for nonattainment areas, the attainment year specified in the SIP or if the SIP does not specify an attainment year, the latest attainment year possible under the CAA, and for maintenance areas, the farthest year for which emissions are projected in the approved maintenance plan; (2) the year during which the total of direct and indirect emissions for the Federal Action are projected to be the greatest on an annual basis; and (3) any year for which the applicable SIP specifies an emissions budget. Both the operational and construction phases of the Action have to be analyzed, and the following applies to the proposed Action.

Emissions generated during the operational phase of the HSR would meet the emission requirements for the years associated with Items 1 and 3 because the emissions generated during the operational phase of the proposed Action would be less than those emitted in the No-Build scenario. In addition, microscale analyses conducted for the EIR/EIS demonstrate that the operational phase of the HSR would not cause or exacerbate a violation of the NAAQS for all applicable pollutants. The microscale CO modeling results for 2016 and 2040 are presented in the *Bakersfield to Palmdale Project Section Final Air Quality and Global Climate Change*

Technical Report (Authority 2018b). Bakersfield Station data are included in the *Fresno to Bakersfield Section Final EIR/EIS* (Authority and FRA 2014) and technical reports.

- Emissions generated during HSR's construction phase, which would include the year with the greatest amount of total direct and indirect emissions, may be subject to General Conformity regulations because regional emissions would increase and, as such, have the potential to cause or exacerbate an exceedance of an NAAQS. Therefore, analyses were conducted to estimate the amounts of emissions that would be generated during the construction phase (for comparison with the General Conformity applicability rates) and the potential impacts of these emissions on local air quality levels. Emissions generated at the construction sites (e.g., tailpipe emissions from the on-site heavy-duty diesel equipment and fugitive dust emissions generated by vehicles traveling within the construction sites) and on the area's roadways by vehicles traveling to and from these sites (by vehicles transporting materials and the workers traveling to and from work) were considered.
- Air quality dispersion modeling would be required for this conformity analysis to estimate the Action's localized impacts on $PM_{2.5}$ and CO concentrations if the annual emissions of the pollutants generated during construction were to exceed the General Conformity *de minimis* thresholds.

Annual emissions were estimated for each year of the proposed Action's construction period. These emissions, which are the maximum values for the Action, are described in more detail in Section 10.0 of this report.

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8 APPLICABILITY ANALYSIS

The first step in a General Conformity evaluation is an analysis of whether the requirements apply to a proposed federal action in a nonattainment or a maintenance area. Unless exempted by the regulations or otherwise presumed to conform, a federal (non-Transportation) action requires a General Conformity Determination for each pollutant where the total of direct and indirect emissions caused by the federal action would equal or exceed an annual *de minimis* emission rate.

8.1 Attainment Status of Action Area

USEPA and CARB designate each county (or portions of counties) within California as attainment, maintenance, or nonattainment based on the area's ability to meet ambient air quality standards. Regions are designated as attainment for a criteria pollutant when the concentration of that pollutant is below the ambient air standard. If a criteria pollutant concentration is above the ambient air standard, the area is in nonattainment for that pollutant. Areas previously designated as nonattainment that subsequently demonstrated compliance with the ambient air quality standards are designated as a maintenance area. Table 6 summarizes the federal (under NAAQS) and state (under CAAQS) attainment status for each of the air basins for which the Action would be located.

8.1.1 Attainment Status: San Joaquin Valley Air Basin

Under the federal criteria, the SJVAPCD is currently designated as nonattainment for 8-hour O_3, the 1997 annual $PM_{2.5}$ standard (annual standard of 15 micrograms per cubic meter [µg/m^3]) and 24-hour standard (65 µg/m^3), and the 2006 24-hour $PM_{2.5}$ standard (35 µg/m^3). The SJVAPCD is a maintenance area for PM_{10}, and the Bakersfield urbanized area is a maintenance area for CO. The SJVAPCD is in attainment for the NO_2 and SO_2 NAAQS. The SJVAB is unclassified for the lead NAAQS.

Under the state criteria, the SJVAPCD is currently designated as nonattainment for 1-hour O_3, 8-hour O_3, PM_{10}, and $PM_{2.5}$. The SJVAPCD is an attainment/unclassified area for the state CO standard and an attainment area for the state NO_2, SO_2, and lead standards. The SJVAPCD is an unclassified area for the state hydrogen sulfide standard and visibility-reducing particle standard, and is classified as an attainment area for sulfates and vinyl chloride (SJVAPCD 2013a).

8.1.2 Attainment Status: Antelope Valley Air Quality Management District

Under the federal criteria, the AVAQMD is currently designated as nonattainment for 8-hour O_3. The AVAQMD is an attainment/unclassified area under the NAAQS for CO, NO_2, SO_2, and lead. The AVAQMD is unclassified for the PM_{10} and $PM_{2.5}$ NAAQS.

Under the state criteria, the AVAQMD is currently designated as nonattainment for O_3 (classified as extreme nonattainment) and PM_{10}. The AVAQMD is an attainment/unclassified area for state $PM_{2.5}$, CO, NO_2, SO_2, and lead standards. The AVAQMD is an unclassified area for the state hydrogen sulfide standard, visibility-reducing particle standard, and particulate sulfate standard (AVAQMD 2014).

8.1.3 Attainment Status: Eastern Kern Air Pollution Control District

The EKAPCD is currently designated nonattainment for federal 8-hour O_3. The western portion of the district is currently designated nonattainment for PM_{10}. The EKAPCD is an attainment/ unclassifiable area for the $PM_{2.5}$, CO, and lead NAAQS. The EKAPCD is unclassified for the federal NO_2 and SO_2 standards.

Under the state criteria, the EKAPCD is currently designated as nonattainment for 1-hour O_3, 8-hour O_3, and PM_{10}. The EKAPCD is in attainment for the state NO_2, SO_2, and lead standards, and is an unclassified area for the $PM_{2.5}$ and CO state standards (EKAPCD 2012).

Table 6 Federal and State Attainment Status

Pollutants	Federal Classification	State Classification
San Joaquin Valley Air Pollution Control District		
O_3: 1-Hour	No Federal Standard	Nonattainment (Severe)
O_3: 8-Hour	Nonattainment (Extreme)	Nonattainment
PM_{10}	Attainment/Maintenance	Nonattainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Urban portion of Fresno County and Kern County: Maintenance Remaining basin: Attainment	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Lead	No Designation/Classification	Attainment
Antelope Valley Air Quality Management District		
O_3: 1-Hour	No Federal Standard	Nonattainment (Extreme)
O_3: 8-Hour	Nonattainment (Severe)	Nonattainment (Extreme)
PM_{10}	Attainment/Unclassified	Nonattainment
$PM_{2.5}$	Attainment/Unclassified	Unclassified
CO	Attainment	Attainment
NO_2	Attainment/Unclassified	Attainment/Unclassified
SO_2	Attainment/Unclassified	Attainment/Unclassified
Lead	Attainment	Attainment
Eastern Kern Air Pollution Control District		
O_3: 1-Hour	No Federal Standard	Moderate Nonattainment
O_3: 8-Hour	Nonattainment	Nonattainment
PM_{10}	Attainment/Unclassified (EKAPCD) Nonattainment (Kern River/Cummings Valleys), Attainment Maintenance (Indian Wells Valley)	Nonattainment
$PM_{2.5}$	Attainment/Unclassified	Unclassified
CO	Attainment/Unclassified	Unclassified
NO_2	Unclassified	Attainment
SO_2	Unclassified	Attainment
Lead	Attainment/Unclassified	Attainment

Sources: U.S. Environmental Protection Agency, 2013; San Joaquin Valley Air Pollution Control District, 2013a; Antelope Valley Air Quality Management District, 2016; Eastern Kern Air Pollution Control District, 2012c

CO = carbon monoxide
EKAPCD = Eastern Kern Air Pollution Control District
NO_X = nitrogen oxides
O_3 = ozone
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
SO_2 = sulfur dioxide

9 CONSTRUCTION ACTIVITIES CONSIDERED

As shown in Section 3.3.6.3 of the EIR/EIS, the results of the regional analyses conducted for the proposed Action demonstrate that emissions generated during the operational phase would be less than those emitted in the No-Build and existing conditions scenarios and that the microscale analyses demonstrate that the Action would not cause or exacerbate a violation of the NAAQS for these pollutants. As such, no further analysis of the operational period emissions is necessary for this General Conformity determination. Section 9.0 will focus on the emissions generated from the construction period emissions for the Bakersfield to Palmdale Project.

The analysis conducted for the EIR/EIS to estimate potential air quality impacts caused by on-site (e.g., demolition activities, construction equipment operations, and truck movements) and off-site (e.g., motor vehicle traffic effects due to truck trips) construction-phase activities included the following:

- Estimation of emissions generated by the construction activities (e.g., deconstruction, concrete and steel construction), including fugitive dust emissions and emissions released from diesel-powered equipment and trucks based on the hours of operation of each piece of equipment;
- Identification of heavily traveled truck routes to estimate the cumulative effects of on-site construction activity emissions and off-site traffic emissions;
- An on-site dispersion modeling analysis of the major construction areas;
- An off-site dispersion modeling analysis of the roadway intersections/interchanges adjacent to the construction areas using traffic data that include construction-related vehicles and background traffic; and
- A comparison of the on-site and off-site modeling results to the applicable NAAQS for the applicable pollutants.

Emission rates for these activities were estimated based on the following:

- The number of hours per day and duration of each construction activity;
- The number and type of construction equipment to be used;
- Horsepower (HP) and utilization rates (hours per day) for each piece of equipment;
- The quantities of construction/demolition material produced and removed from each site; and
- The number of truck trips needed to remove construction/demolition material, and to bring the supply materials to each site.

The following is a discussion of the major activities considered, the timing of these activities, and the procedures used to estimate emission rates.

A full description of construction analysis methodology can be found in Section 6.9 of the *Bakersfield to Palmdale Section Air Quality and Global Climate Change Technical Report* for this Action (Authority 2018b).

Construction activities associated with proposed Action would result in criteria pollutant and greenhouse gas (GHG) emissions. Construction emissions for the proposed Action are quantified and analyzed in Section 3.3.6.3 of the EIR/EIS. The analysis assumed that project construction would occur from 2018 to 2026. The construction schedule has since been revised. See Section 2.8 in Chapter 2 of the EIR/EIS for additional details on the revised construction schedule. Although the schedule has been updated, the analysis is still valid as the equipment quantities and annual emission rates would remain unchanged. While separate projects for purposes of planning the HSR system, construction of the Bakersfield to Palmdale Section would overlap with the construction period for the Merced to Fresno Project Section and Fresno to Bakersfield Project Section, thereby adding to the cumulative air quality impacts within the SJVAB. In addition, construction of the Bakersfield to Palmdale Project Section would overlap with the

construction period for the Palmdale to Burbank Project Section, thereby adding to the cumulative air quality impacts within the MDAB. The cumulative emissions that could result from potential concurrent construction activities are presented in Section 13 of the General Conformity Report.

9.1 Site Preparation

9.1.1 Demolition

This analysis assumed that demolition of existing structures along the HSR alignment and near HSR stations would take place from December 2020 through August 2021. Demolition emissions were calculated with CalEEMod using the project-specific equipment list. In addition to the fugitive dust emissions resulting from the destruction of existing buildings, emissions were estimated for worker trips, construction equipment exhaust, and truck-hauling exhaust.

9.1.2 Land Grubbing

Land grubbing refers to the site preparation activities for HSR alignment construction. Emissions from land grubbing were estimated using the OFFROAD 2011 emission factors as well as a site-specific equipment list. This analysis assumed that land grubbing would take place at four staging areas from December 2020 to August 2021. Fugitive dust from land-grubbing activities includes that from worker trips, construction equipment exhaust, and truck-hauling exhaust.

9.2 Earth Moving

The earthmoving activities include grading, trenching, and cut/fill activities for the HSR alignment construction. This analysis assumed that earthmoving would occur at four locations from March 2018 to October 2020. The emissions associated with the earthmoving activities were estimated using CalEEMod with OFFROAD 2011 emission factors, in conjunction with the site-specific equipment list. Fugitive dust from land-grubbing activities includes that from worker trips, construction equipment exhaust, and truck-hauling exhaust.

The construction area used in CalEEMod was the total area to be cleared based on the length of the alignment. Although the track widths vary along the alignment, it was conservatively assumed that a width of 120 feet would be graded along the entire length of the alignment. This width accounts for the widest portion of the alignment (four tracks wide) plus a buffer on each side.

Earthwork is the disturbance of soil or earth by any means, including excavation (including subsurface), tunneling, drilling, infilling, stockpiling, dumping of soil or sand, and construction/ reconstruction of any track, embankment, or drainage channel. Earthwork would be performed in such a manner as to achieve a balanced condition where the quantity of soil or earthen materials removed through excavation would be roughly equal to the quantity of material being placed in embankments. The adjustment of the ratio of excavation to embankment to achieve this balance would be performed by variations in cut-slope ratios, embankment widths, and embankment slope ratios during construction as existing ground conditions are revealed. It is intended that cut material and tunnel spoils would be stored and processed on-site and used as fill materials if deemed suitable by the site geotechnical engineer. It is not anticipated that any excavated materials would need to be exported to off-site locations for the B-P Build Alternatives.

9.3 HSR Alignment Construction

This analysis assumed that the HSR alignment construction would occur from 2020 to 2026, and includes the following construction phases and operation of a concrete batch plant:

- Constructing structures for the elevated rail
- Laying elevated rail and at-grade rail
- Constructing the retaining wall for the retained-fill rail
- Laying retained-fill rail

9.3.1 Rail Type and Alignment Alternatives

The four B-P Build Alternatives differ in total length, location, width, and percentage of at-grade/ elevated/retained fill. Table 3.3-5 of the EIR/EIS summarizes the total length of at-grade rail, elevated rail, and retained-fill rail for each B-P Build Alternative. The CCNM Design Option would add 124 feet to the length of each B-P Build Alternative and the Refined CCNM Design Option would add 2,006 feet to the length of each B-P Build Alternative. Due to rounding, the total length in miles would not change with the CCNM Design Option. Emissions from construction of the track were determined using CalEEMod. Equipment counts, horsepower, hours of operation, and load factors used in CalEEMod are included in the *Bakersfield to Palmdale Project Section Air Quality and Global Climate Change Technical Report* (Authority 2018b).

9.3.2 Concrete Batch Plants

Concrete would be required for the construction of bridges used to support the elevated sections of the HSR alignment, for construction of the station platform, and for construction of the retaining wall used to support the retained-fill sections of the alignment. To provide enough concrete on-site, it is estimated that batch plants would operate in the Action vicinity (i.e., within 0.5 mile) during construction of the Action. Because the locations of the concrete batch plants are unknown, fugitive dust emissions associated with the plants were estimated based on the total amount of concrete required and on emission factors from Chapter 11.12 of AP-42 (USEPA 2006). Emissions from on-road truck trips associated with transporting material to and from the concrete batch plants were included in materials-hauling emissions calculations.

9.3.3 Material Hauling

Emissions from the exhaust of trucks used to haul materials (including concrete slabs) to the construction site were calculated using heavy-duty truck emission factors from EMFAC2014 and anticipated travel distances of haul trucks within the SJVAB and MDAB. Ballast materials could potentially be hauled by rail within the air basins. Locomotive emission factors from *Emission Factors for Locomotives* (USEPA 2009b) and the travel distance by rail to the Action site were used to estimate rail emissions.

Based on active permitted quarry locations, ballast materials are expected to be available within the SJVAB and MDAB (California Department of Conservation 2016). Therefore, for the regional emission analysis, emissions from ballast materials-hauling were calculated using the distance traveled within the Action air districts. Emissions from ballast materials hauling by trucks and locomotives outside the Action air districts were estimated based on the travel distances and transportation method (by rail or by truck) from the locations where ballast materials would be available. Rail emission factors using the USEPA guidance (USEPA 2009b) were used to estimate the locomotive emissions. Construction materials would likely be delivered from supply facilities within the SJVAB and the MDAB.

9.4 Train Station Construction

Emissions from HSR station construction would be the result of mass site grading, building construction, and architectural coatings. Where applicable, emissions resulting from worker trips, vendor trips, and construction equipment exhaust were included. Paving activities associated with surface parking lots were included. For the purposes of this analysis, it was assumed that construction of the Palmdale Station would begin in 2018[2] and be completed by 2021. CalEEMod was used to estimate emissions from construction phases of the Palmdale Station.

[2] This schedule is presented for analysis purposes only; the resulting data remains valid because the equipment quantities and annual emission rates would remain unchanged.

9.5 Maintenance Facilities Construction

Emissions associated with construction of the LMF and MOWF are expected as a result of mass site grading, asphalt paving, building construction, and architectural coatings. These activities would occur during maintenance activities.

Fugitive dust from construction of the maintenance-of-way facility includes that from worker trips, construction equipment exhaust, and truck-hauling exhaust. Emissions from track construction were estimated using CalEEMod.

9.6 Roadway Crossing Construction

The B-P Build Alternatives would include the relocation and expansion of freeway segments, local roads, and overpasses, as well as reconstruction of several intersections. Fugitive dust and exhaust emissions from these construction activities were estimated using the Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model. Roadway demolition emissions are included in the CalEEMod analysis using the Action-specific equipment list.

For purposes of this analysis, it was assumed that roadway Action construction would begin in January 2020[3] and be completed by June 2022 (a total of 28 months), and that each type of roadway Action would be constructed independently at staggered intervals during the 28-month period.

Based on Action-specific data, a simplified construction schedule was used to estimate construction emissions. The representative Action roadway length for each scenario was estimated by averaging all anticipated Action roadway lengths within that designated scenario.

[3] This schedule is presented for analysis purposes only; the resulting data remains valid because the equipment quantities and annual emission rates would remain unchanged.

10 ESTIMATED EMISSIONS RATES AND COMPARISON TO *DE MINIMIS* THRESHOLDS – BAKERSFIELD-PALMDALE

Construction activities associated with the HSR alternatives would result in criteria pollutant emissions. Construction emissions for the four Bakersfield to Palmdale alternatives are quantified and analyzed in this section.

10.1 Construction Impacts within the SJVAPCD

Total annual estimated emissions generated within the SJVAPCD during the proposed Action's construction period, as presented in the HSR EIR/EIS, are provided in Table 7. As shown in the table, direct emissions from the construction phase of the Bakersfield to Palmdale Project Section within the SJVAPCD would exceed the GC applicability thresholds for VOC and NO_x in certain calendar years in which construction would take place. The maximum estimated annual values of each pollutant, by non-attainment or maintenance area, and the percentage of the 2012 estimated emission rates in the SJVAPCD (see Table 3) for the Bakersfield to Palmdale construction are as follows:

- NO_x: 177 tons per year (tpy)(0.15%)
- VOCs: 17 tpy (0.01%)
- $PM_{2.5}$: 9 tpy (0.03%)
- PM_{10}: 15 tpy (0.02%)
- CO: 90 tpy (0.03%)

Table 7 Estimated Annual Average Emissions for the SJVAPCD

	Emissions (Tons/Year)											
Pollutants	2018	2019	2020	2021	2022	2022 with Refined CCNM Option	2023	2023 with Refined CCNM Option	2024	2025	2026	Conformity Applicability Thresholds (tons/year)
Alternative 1												
NO_x	55*	2	104*	156*	133*	142*	107*	110*	51*	25*	15*	10
VOCs	5	1	11*	16*	14*	14*	11*	11*	7	4	2	10
$PM_{2.5}$	3	1	5	8	7	7	6	6	3	2	1	100
PM_{10}	4	1	7	13	12	12	11	11	6	2	1	100
CO[1]	7	1	25	69	68	68	60	60	12	5	3	100
Alternative 2												
NO_x	0	0	134*	151*	121*	136*	76*	78*	31*	15*	15*	10
VOCs	0	0	13*	15*	13*	13*	8	8	4	2	2	10
$PM_{2.5}$	0	0	6	8	8	8	5	5	2	1	1	100
PM_{10}	0	0	10	15	13	13	10	10	6	1	1	100
CO[1]	0	0	29	86	83	84	48	48	7	3	3	100
Alternative 3												
NO_x	0	0	145*	168*	151*	160*	84*	87*	51*	15*	15*	10
VOCs	0	0	15*	17*	16*	16*	9	9	7	2	2	10
$PM_{2.5}$	0	0	6	9	8	8	4	4	3	1	1	100
PM_{10}	0	0	8	11	11	11	6	6	4	1	1	100
CO[1]	0	0	31	90	89	89	22	22	12	3	3	100

Emissions (Tons/Year)												
Pollutants	2018	2019	2020	2021	2022	2022 with Refined CCNM Option	2023	2023 with Refined CCNM Option	2024	2025	2026	Conformity Applicability Thresholds (tons/year)
Alternative 5												
NO_x	0	0	155*	177*	161*	170*	128*	131*	50*	32*	13*	10
VOCs	0	0	15*	17*	16*	16*	13*	13*	6	5	2	10
$PM_{2.5}$	0	0	7	9	8	8	7	7	3	2	1	100
PM_{10}	0	0	10	11	11	11	9	9	4	2	1	100
CO[1]	0	0	42	90	90	90	85	85	12	7	3	100

Source: California High-Speed Rail Authority, 2020
Values marked with an asterisk (*) exceed applicability thresholds
[1] Bakersfield urbanized maintenance area only
[2] The emissions presented in this table reflect the impact of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, per the California Air Resource Board's "EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicles Rule Part One" issued on November 20, 2019. https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_Final.pdf.
CCNM = César E. Chávez National Monument
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

10.2 Construction Impacts within the EKAPCD

Total annual estimated emissions generated within the EKAPCD during the proposed Action's construction period, as presented in the HSR EIR/EIS, are provided in Table 8. As shown in the table, construction emissions for Bakersfield to Palmdale Project Section within the EKAPCD would exceed the GC applicability thresholds for NO_x in some construction years. The maximum estimated annual values of each pollutant, by non-attainment or maintenance area, and the percentage of the 2012 estimated emission rates in the EKAPCD (see Table 4) for the Bakersfield to Palmdale construction are as follows:

- NO_x: 279 tpy (2.14%)
- VOCs: 27 tpy (0.70%)
- $PM_{2.5}$: 14 tpy (0.57%)
- PM_{10}: 22 tpy (0.38%)
- CO: 540 tpy (2.591%)

Table 8 Estimated Annual Average Emissions for the EKAPCD

Emissions (Tons/Year)												
Pollutants	2018	2019	2020	2021	2022	2022 with Refined CCNM Option	2023	2022 with Refined CCNM Option	2024	2025	2026	Conformity Applicability Thresholds (tons/year)
Alternative 1												
NO_x	33	60*	172*	207*	177*	213*	121*	131*	56*	32	20	50
VOCs	3	6	17	20	18	18	15	16	7	5	3	50
$PM_{2.5}$	2	3	8	11	10	10	9	9	3	2	1	N/A
PM_{10}	4	5	13	18	16	16	15	15	7	2	1	70

	Emissions (Tons/Year)											
Pollutants	2018	2019	2020	2021	2022	2022 with Refined CCNM Option	2023	2022 with Refined CCNM Option	2024	2025	2026	Conformity Applicability Thresholds (tons/year)
CO	18	35	161	392	381	384	346	346	155	29	17	N/A
Alternative 2												
NO_x	0	0	152*	254*	185*	222*	114*	124*	33	20	20	50
VOCs	0	0	15	25	19	19	12	12	4	2	2	50
$PM_{2.5}$	0	0	7	13	10	10	7	7	3	1	1	N/A
PM_{10}	0	0	14	22	18	18	14	14	7	1	1	70
CO	0	0	149	521	486	489	287	288	33	16	16	N/A
Alternative 3												
NO_x	0	0	184*	277*	233*	269*	132*	142*	57*	20	20	50
VOCs	0	0	17	27	24	24	13	13	7	3	2	50
$PM_{2.5}$	0	0	7	13	12	12	7	7	3	1	1	N/A
PM_{10}	0	0	10	17	16	16	10	10	5	1	1	70
CO	0	0	161	534	521	524	137	138	57	17	17	N/A
Alternative 5												
NO_x	0	0	187*	279*	232*	268*	183*	193*	54*	41	17	50
VOCs	0	0	18	27	24	24	19	19	7	6	2	50
$PM_{2.5}$	0	0	9	14	12	12	10	10	3	3	1	N/A
PM_{10}	0	0	12	18	15	15	12	12	4	3	1	70
CO	0	0	127	540	522	525	491	492	54	37	14	N/A

Source: California High-Speed Rail Authority, 2020
Values marked with an asterisk (*) exceed applicability thresholds
[1] The emissions presented in this table reflect the impact of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, per the California Air Resource Board's "EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicles Rule Part One" issued on November 20, 2019. https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_Final.pdf.
CCNM = César E. Chávez National Monument
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

10.3 Construction Impacts within the AVAQMD

Total annual estimated emissions generated within the AVAQMD during the proposed Action's construction period, as presented in the HSR EIR/EIS, are provided in Table 9. As shown in the table, emissions from the construction phase of the Bakersfield to Palmdale Project Section within the AVAQMD would exceed the GC applicability thresholds for NO_x in certain construction years. The maximum estimated annual values of each pollutant, by non-attainment or maintenance area, and the percent of the 2012 estimated emission rates in the AVAQMD (see Table 5) for the Bakersfield to Palmdale construction are as follows:

- NO_x: 177 tpy (2.70%)
- VOCs: 17 tpy (0.29%)
- $PM_{2.5}$: 9 tpy (0.43%)
- PM_{10}: 11 tpy (0.12%)
- CO: 380 tpy (1.80%)

Table 9 Estimated Annual Average Emissions for the AVAQMD

Pollutants	Emissions (Tons/Year) 2018	2019	2020	2021	2022	2023	2024	2025	2026	Conformity Applicability Thresholds (tons/year)
Alternative 1										
NO_x	0	12	69*	72*	63*	50*	17	12	10	25
VOCs	0	2	7	7	6	5	2	2	1	25
$PM_{2.5}$	0	1	3	3	3	3	1	2	1	N/A
PM_{10}	0	1	5	5	4	4	2	2	1	N/A
CO	0	7	68	175	169	150	17	11	8	N/A
Alternative 2										
NO_x	0	0	95*	132*	122*	81*	56*	38*	10	25
VOCs	0	0	9	12	12	9	7	5	1	25
$PM_{2.5}$	0	0	4	6	6	4	3	2	1	N/A
PM_{10}	0	0	6	8	7	5	4	3	1	N/A
CO	0	0	96	132	122	81	56	38	10	N/A
Alternative 3										
NO_x	0	0	46*	84*	88*	35*	17	10	10	25
VOCs	0	0	3	8	9	3	2	1	1	25
$PM_{2.5}$	0	0	2	4	5	1	1	1	1	N/A
PM_{10}	0	0	3	6	6	2	1	1	1	N/A
CO	0	0	53	232	239	39	17	8	8	N/A
Alternative 5										
NO_x	0	0	155*	177*	161*	128*	50*	32*	13	25
VOCs	0	0	16	17	16	13	6	5	2	25
$PM_{2.5}$	0	0	7	9	8	7	3	1	1	N/A
PM_{10}	0	0	10	11	11	9	4	1	1	N/A
CO	0	0	177	380	378	357	50	29	11	N/A

Source: California High-Speed Rail Authority, 2020
Values marked with an asterisk (*) exceed applicability thresholds
[1] The emissions presented in this table reflect the impact of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule, per the California Air Resource Board's "EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicles Rule Part One" issued on November 20, 2019. https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_Final.pdf.
CCNM = César E. Chávez National Monument
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

11 REGIONAL EFFECTS

As shown in Section 3.3-6.3 of the EIR/EIS, the total regional emissions for all of the applicable pollutants are lower during the operations phase of the Action than under No-Build conditions (and will therefore not exceed the *de minimis* emission thresholds). As such, only emissions generated during the construction phase were compared to the conformity threshold levels to determine conformity compliance. Based on the results shown in Table 7, Table 8, and Table 9, regional construction-phase emissions, compared to the General Conformity applicability rates, are summarized below.

11.1 Construction Impacts within the SJVAPCD

- Annual estimated VOC emissions are greater than the applicability rate of 10 tons per year in years 2020 through 2023 for Alternative 1, Alternative 2, and Alternative 5 and in years 2020 through 2022 for Alternative 3.
- Annual estimated CO emissions are less than the applicability rate of 100 tons per year in all years for all Action Alternatives.
- Annual estimated NO_x emissions are greater than the applicability rate of 10 tons per year in years 2018 and 2020 through 2026 for Alternative 1, and 2020 through 2026 for Alternative 2, Alternative 3, and Alternative 5.
- Annual estimated PM_{10} emissions are less than the applicability rate of 100 tons per year in all years for all Action Alternatives.
- Annual estimated $PM_{2.5}$ emissions are less than the applicability rate of 10 tons per year in all years for all Action Alternatives.
- There are no applicable thresholds for SO_2 annual emissions.

11.2 Construction Impacts within the EKAPCD

- Annual estimated VOC emissions are less than the applicability rate of 50 tons per year in all years for all Action Alternatives.
- Annual estimated NO_x emissions are greater than the applicability rate of 50 tons per year in years 2019 through 2025 for Alternative 1 and in years 2020 through 2024 for Alternative 2, Alternative 3, and Alternative 5.
- Annual estimated PM_{10} emissions are less than the applicability rate of 70 tons per year in all years for all Action Alternatives.
- There are no applicable thresholds for CO, SO_2, and $PM_{2.5}$ annual emissions.

11.3 Construction Impacts within the AVAQMD

- Annual estimated VOC emissions are less than the applicability rate of 25 tons per year in all years for all Action Alternatives.
- Annual estimated NO_x emissions are greater than the applicability rate of 25 tons per year in years 2020 through 2023 for Alternative 1 and Alternative 3 and in years 2020 through 2025 for Alternative 2 and Alternative 5.
- There are no applicable thresholds for CO, SO_2, PM_{10}, and $PM_{2.5}$ annual emissions.

As such, a General Conformity Determination is required for this Action for VOC, and NO_x for the years during construction where the emissions would exceed the *de minimis* thresholds and do not meet any of the exceptions cited in 40 C.F.R. § 93.154(c). This Final Conformity Determination identified the Authority's commitment to reduce VOC and NO_x emissions through emissions offsets using a VERA with the SJVAPCD, the Air Quality Investment Program with the AVAQMD, and the Emission Banking Certificate Program in the EKAPCD, explained in Section 12.2 below.

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12 GENERAL CONFORMITY EVALUATION

For federal actions subject to a General Conformity evaluation, the regulations delineate several ways an agency can demonstrate conformity (40 C.F.R. § 93.158). This section summarizes the findings that were used to make the determination for the Action.

12.1 Conformity Requirements of Proposed Action

Based on the results shown in Table 7, Table 8, and Table 9, conformity determinations are required for construction-phase emissions for:

- **VOC**—Because annual estimated emissions are greater than the applicability rate of 10 tons per year in years 2020 through 2023 for Alternative 1, Alternative 2, and Alternative 5 and in years 2020 through 2022 for Alternative 3 in the SJVAPCD
- **NO_x**—Because annual estimated emissions are greater than the applicability rate of 10 tons per year in years 2018 and 2020 through 2026 for Alternative 1, and 2020 through 2026 for Alternative 2, Alternative 3, and Alternative 5 in the SJVAPCD; greater than the applicability rate of 50 tons per year in years 2019 through 2025 for Alternative 1 and in years 2020 through 2024 for Alternative 2, Alternative 3, and Alternative 5 in the EKAPCD; and greater than the applicability rate of 25 tons per year in years 2020 through 2023 for Alternative 1 and Alternative 3 and in years 2020 through 2025 for Alternative 2 and Alternative 5 in the AVAQMD

12.2 Compliance with Conformity Requirements

To support this General Conformity Determination, the FRA demonstrates herein that the VOC and NO_x emissions caused by the construction of the proposed Action will not result in an increase in regional VOC and NOx emissions. This will be achieved by offsetting the VOC and NO_x emissions generated by construction of the HSR in a manner consistent with the General Conformity regulations.

The offsets are anticipated to be accomplished through a VERA between the Authority and the SJVAPCD, the Air Quality Investment Program with the AVAQMD, and the Emission Banking Certificate Program in the EKAPCD. The requirements for the VERA, the Air Quality Investment Program, and the Emission Banking Certificate Program would be implemented as part of the Action as described in the mitigation measure from the EIR/EIS:

AQ-MM#1: Offset Project Construction Emissions through Off-Site Emission Reduction Programs

In 2014, the Authority and the San Joaquin Air Pollution Control District (SJVAPCD) entered into a contractual agreement through a Memorandum of Understanding and a Voluntary Emission Reduction Agreement (VERA). The VERA mitigates (by offsetting) to net zero the project's actual emissions from construction equipment and vehicle exhaust emissions of volatile organic compound (VOC), NO_X, particulate matter (PM_{10}), and $PM_{2.5}$. The agreement will provide funds for the SJVAPCD's Emission Reduction Incentive Program (SJVAPCD 2011) to fund grants for projects that achieve emission reductions, with preference given to highly affected communities, thus offsetting project-related impacts on air quality. To lower overall cost, funding for the VERA program to cover estimated construction emissions for any funded construction phase will be provided at the beginning of the construction phase. At a minimum, mitigation/offsets will occur in the year of impact, or as otherwise permitted by 40 Code of Federal Regulations (C.F.R.) Part 93 Section 93.163.

The Authority shall also enter into an agreement with the Antelope Valley Air Quality Management District (AVAQMD) and Eastern Kern Air Pollution Control District (EKAPCD) to mitigate (by offsetting) to net zero the project's actual emissions from construction equipment and vehicle exhaust emissions of VOC, NO_X, PM_{10} and $PM_{2.5}$. In the AVAQMD, the Authority shall participate in the Air Quality Investment Program, which funds stationary- and mobile-source

emission reduction strategies. In the EKAPCD, the Authority shall provide an application for the Emission Banking Certificate Program.

12.3 Consistency with Requirements and Milestones in Applicable SIP

The general conformity regulations state that notwithstanding the other requirements of the rule, a federal action may not be determined to conform unless the total of direct and indirect emissions from the federal action is in compliance or consistent with all relevant requirements and milestones in the applicable SIP (40 C.F.R. § 93.158(c)). This includes but is not limited to such issues as reasonable further progress schedules, assumptions specified in the attainment or maintenance demonstration, prohibitions, numerical emission limits, and work practice standards. This section briefly addresses how the construction emissions for the Action were assessed for SIP consistency for this evaluation.

12.3.1 Applicable Requirements from USEPA

The USEPA has already promulgated requirements to support the goals of the Clean Air Act with respect to the NAAQS. Typically, these requirements take the form of rules regulating emissions from significant new sources, including emission standards for major stationary point sources and classes of mobile sources as well as permitting requirements for new major stationary point sources. Since states have the primary responsibility for implementation and enforcement of requirements under the Clean Air Act and can impose stricter limitations than the USEPA, the USEPA requirements often serve as guidance to the states in formulating their air quality management strategies.

12.3.2 Applicable Requirements from CARB

In California, to support the attainment and maintenance of the NAAQS, CARB is primarily responsible for regulating emissions from mobile sources. In fact, the USEPA has delegated authority to the CARB to establish emission standards for on-road and some non-road vehicles separate from the USEPA vehicle emission standards, although the CARB is preempted by the Clean Air Act from regulating emissions from many non-road mobile sources, including marine craft. Emission standards for preempted equipment can only be set by the USEPA.

12.3.3 Applicable Requirements from SJVAPCD

To support the attainment and maintenance of the NAAQS in the SJVAB, the SJVAPCD is primarily responsible for regulating emissions from stationary sources. As noted above, SJVAPCD develops and updates its Air Quality Management Plan (AQMP) regularly to support the California SIP. While the AQMP contains rules and regulations geared to attain and maintain the NAAQS, these rules and regulations also have the much more difficult goal of attaining and maintaining the California ambient air quality standards.

12.3.4 Applicable Requirements from EKAPCD

On July 27, 2017, the EKAPCD adopted the 2017 Ozone Attainment Plan for the East Kern County nonattainment area. The Plan demonstrates that the air quality improvement was achieved due to successful implementation of ozone control strategies contained in the region's SIP. It also demonstrates that significant ozone precursor emission reductions that have been impacted in the region are permanent and enforceable. A maintenance plan is also included to ensure that the region would not experience exceedance. The Plan requests a redesignation in accordance with the Federal Clean Air Act (EKAPCD 2017).

12.3.5 Applicable Requirements from AVAQMD

Under CEQA, the AVAQMD is a commenting agency on air quality within its jurisdiction. The CEQA and Federal Conformity Guidelines, released in 2011, are intended to assist persons preparing environmental analysis or review documents for any project within the jurisdiction of the District by providing background information and guidance on the preferred analysis approach. The guidelines include annual and daily GHG emission thresholds of significance for project-generated GHGs and criteria pollutants within the jurisdiction of the AVAQMD (AVAQMD 2011).

12.3.6 Consistency with Applicable Requirements for the Authority

The Authority already complies with, and will continue to comply with, a myriad of rules and regulations implemented and enforced by federal, state, regional, and local agencies to protect and enhance ambient air quality in the SJVAB and MDAB.

In particular, due to the long persistence of challenges to attain the ambient air quality standards in the SJVAB and MDAB, the rules and regulations promulgated by CARB and SJVAPCD are among the most stringent in the U.S.

The Authority will continue to comply with all existing applicable air quality regulatory requirements for activities over which it has direct control and will meet in a timely manner all regulatory requirements that become applicable in the future.

These are appropriate USEPA, CARB, and SJVAPCD rules that are standard practice and BMPs for construction in the SJVAPCD and include control of emissions, exhaust---such as:

- SJVAPCD Rule 2201, New and Modified Stationary Source Review: Rule 2201 applies to new or modified stationary sources and requires that sources not increase emissions above the specified thresholds. If the post-Action stationary source has the potential to emit equal emissions or exceed the offset threshold levels, offsets will be required (SJVAPCD 2006). Stationary sources at the station (such as natural gas heaters) would need to be permitted by the SJVAPCD and would have to comply with best available control technology requirements. Stationary sources such as exterior washing, welding, material storage, cleaning solvents, abrasive blasting, painting, oil/water separation, and wastewater treatment and combustion would require permits. Permits would need to be obtained for equipment associated with these activities from the SJVAPCD and would need to comply with best available control technology requirements.
- SJVAPCD Rule 2280, Portable Equipment Registration requires portable equipment used at project sites for less than 6 consecutive months must be registered with SJVAPCD. The district will issue the registrations 30 days after the receipt of the application (SJVAPCD 1996).
- SJVAPCD Rule 2303, Mobile Source Emission Reduction Credits: The Action may qualify for SJVAPCD vehicle emission reduction credits if it meets the specific requirements of Rule 2303 for any of the following categories (SJVAPCD 1994):
  - Zero-Emission Transit Buses
  - Zero-Emission Vehicles.
  - Retrofit Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
  - Retrofit Heavy-Duty Vehicles
- SJVAPCD Rule 4201 and Rule 4202, Particulate Matter Concentration and Emission Rates apply to operations that emit or may emit dust, fumes, or total suspended particulate matter. Particulate emissions from the Action must be less than the specified emissions limit (SJVAPCD 1992a, 1992b).
- SJVAPCD Rule 4301, Fuel Burning Equipment limits the emissions from fuel-burning equipment whose primary purpose is to produce heat or power by indirect heat transfer. The Action will comply with the emission limits (SJVAPCD 1992c).
- Fugitive dust regulations are applicable to outdoor fugitive dust sources. Operations, including construction operations, must control fugitive dust emissions in accordance with SJVAPCD Regulation VIII (SJVAPCD 2004). According to Rule 8011, the SJVAPCD requires the implementation of control measures for fugitive dust emission sources. The Action would also implement the mandatory control measures listed on pages 77 and 78 of the *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015) to reduce fugitive dust emissions. These measures are not considered mitigation measures because they are required by the regulation.

Many of the control measures required by the SJVAPCD are the same or similar to the control measures listed in the Statewide Program EIR/EIS. The SJVAPCD Rule 8011 requirements are listed below:

- All disturbed areas, including storage piles, which are not being actively used for construction purposes, will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant, or covered with a tarp or other suitable cover or vegetative ground cover.
- All onsite unpaved roads and offsite unpaved access roads will be effectively stabilized for dust emissions using water or a chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities will be effectively controlled of fugitive dust emissions by utilizing an application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building will be wetted during demolition.
- All materials transported offsite will be covered or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container will be maintained.
- All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or a chemical stabilizer/suppressant.
- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.

For projects in which construction related activities would disturb equal to or greater than one acre of surface area, the District recommends a demonstration of receipt of a District approved Dust Control Plan or Construction Notification form, before issuance of the first grading permit, be made a condition of approval.

- SJVAPCD Rule 9510, Indirect Source Review: In December 2005, the SJVAPCD adopted the Indirect Source Rule (Rule 9510) to meet the SJVAPCD's emission reduction commitments in the PM_{10} and Ozone Attainment Plans (SJVAPCD 2005). Indirect Source Review regulation applies to any transportation project in which construction emissions equal or exceed two tons of NO_x or PM_{10} per year. Construction of the HSR alignment (specifically, onsite off-road construction exhaust emissions) would be subject to Indirect Source Review. Accordingly, the Authority would have to submit an Air Impact Assessment (AIA) application to the SJVAPCD with commitments to reduce construction exhaust NO_x and PM_{10} emissions by 20 percent and 45 percent, respectively. Operation of the HSR would be exempt under Sections 4.1 and 4.2 of Rule 9510.
- SJVAPCD CEQA Guidelines: The SJVAPCD prepared the GAMAQI to assist lead agencies and project applicants in evaluating the potential air quality impacts of projects in the SJVAB (SJVAPCD 2015). The GAMAQI provides SJVAPCD-recommended procedures for evaluating potential air quality impacts during the CEQA environmental review process. The GAMAQI provides guidance on evaluating short-term (construction) and long-term (operational) air emissions (Appendix F). The most recent version of the GAMAQI was adopted March 2015 and was used in this evaluation and contains guidance on the following:

  - Criteria and thresholds for determining whether a project may have a significant adverse air quality impact.
  - Specific procedures and modeling protocols for quantifying and analyzing air quality impacts.
  - Methods to mitigate air quality impacts.
  - Information for use in air quality assessments and environmental documents that will be updated more frequently, such as air quality data, regulatory setting, climate, and topography.

- EKAPCD Rule 402, Fugitive Dust: The purpose of Rule 402 is to prevent, reduce, and mitigate ambient concentrations of anthropogenic fugitive dust emissions to an amount sufficient to attain and maintain the NAAQS and CAAQS. Controlling fugitive dust when visible emissions are detected may not prevent all PM_{10} emissions, but will substantially reduce ambient concentrations (EKAPCD 2014).
- EKAPCD CEQA Guidelines: The EKAPCD adopted the *Guidelines for Implementation of the California Environmental Quality Act of 1970, As Amended*, in 1996 (EKAPCD 2012b). The guidelines include thresholds for criteria air pollutants and guidance on implementation of mitigation measures.
- AVAQMD Rule 403, Fugitive Dust: The provisions of this rule include actions to prevent, reduce or mitigate fugitive dust particulate matter entrained in the ambient air as a result of man-made sources. The rule limits actions that would result in a source of dust that causes 20 percent opacity or greater during an observation of three minutes or more in any one hour. It also limits PM_{10} concentrations to under 50 micrograms per cubic meter.
- AVAQMD Rule 109, Recordkeeping for VOC Emissions: The provisions of this rule shall apply to an owner or operator of a stationary source within the District conducting operations, which include the use of adhesives, coatings, solvents, and/or graphic arts materials, when records are required to determine a District rule's applicability or source's exemption from a rule, rule compliance, or specifically as a Permit to Operate or Permit to Construct condition (AVAQMD 2010).

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13 ESTIMATED EMISSION RATES AND COMPARISON TO *DE MINIMIS* THRESHOLDS – CUMULATIVE ANALYSIS

The study area for cumulative air quality impacts is the SJVAB and the MDAB. While separate projects for purposes of planning the HSR System, construction of the Bakersfield to Palmdale Section would overlap with the construction period for the Merced to Fresno Section and Fresno to Bakersfield Section, thereby adding to the cumulative air quality impacts within the SJVAB. In addition, construction of the Bakersfield to Palmdale Section would overlap with the construction period for the Palmdale to Burbank Section, thereby adding to the cumulative air quality impacts within the MDAB.

For purposes of full disclosure of the potential impacts, the cumulative emissions that could result from potential concurrent construction activities are presented here. As the analysis demonstrates, even where concurrent construction will take place, there would be no new pollutants exceeding the *de minimis* thresholds. In addition, construction period emissions would be offset as a result of the VERA between the Authority and the SJVAPCD, the Air Quality Investment Program with the AVAQMD, and the Emission Banking Certificate Program in the EKAPCD.

The total annual estimated emissions generated within the SJVAB during construction of the Merced to Fresno Section are provided in Table 10 and the total annual estimated emissions generated within the SJVAB during construction of the Merced to Fresno Section are provided in Table 11. The total annual estimated emissions generated within the SJVAB during the construction of the combined Merced to Palmdale sections (Merced to Fresno, Fresno to Bakersfield, plus Bakersfield to Palmdale) are provided in Table 12. As shown in this table, the combined annual construction emissions of the three sections would exceed the thresholds for NO_x in the years 2014 through 2026, VOCs in the years 2014 through 2023, and PM_{10} in the year 2015.

These values are the peak on-site emissions during each analysis year plus maximum annual off-site emissions. The maximum estimated annual values of each pollutant, by non-attainment or maintenance area, and the percent of the 2012 estimated emission rates in the SJVAB (see Table 3) for the combined (Merced to Palmdale) construction are as follows:

- NO_x: 928 tpy (0.78%)
- VOCs: 54 tpy (0.04%)
- $PM_{2.5}$: 42 tpy (0.15%)
- PM_{10}: 84 tpy (0.08%)
- CO: 99 tpy (0.03%)

For the Merced to Fresno segment of the HSR system, construction emission rates were estimated in the EIR/EIS for each of the six alternatives/options previously under consideration for the Merced to Fresno Section. However, only those values associated with the Preferred Alternative are included in this Conformity Determination. These values represent the Preferred Alternative with the Avenue 21 wye option, because that option has the highest estimated emissions. If the Avenue 24 wye option is selected, the estimated emission rates will be lower than those presented in this determination.

Portions of the San Jose to Merced and Sacramento to Merced sections of the HSR would also be constructed within the SJVAB. It is possible that the schedule for construction of these sections could overlap with construction of the Merced to Fresno, Fresno to Bakersfield, and Bakersfield to Palmdale sections, contributing to the cumulative annual emissions totals of HSR construction in the SJVAB. Portions of the Palmdale to Burbank sections of the HSR would also be constructed within the MDAB. It is possible that the schedule for construction of this section could overlap with construction of the Bakersfield to Palmdale Section, contributing to the cumulative annual emissions totals of HSR construction in the MDAB.

Table 10 Estimated Annual Average Emissions for the Merced to Fresno Section

	Emissions (Tons/Year)												Conformity Applicability Thresholds (tons/year)
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
NO_x	169*	110*	115*	32*	13*	49*	15*	7	4	0	0	0	10
VOCs	15*	11*	8	2	2	11*	2	1	5	0	0	0	10
$PM_{2.5}$	8	6	4	2	1	3	1	0	2	0	0	0	100
PM_{10}	13	9	6	4	1	6	2	1	9	0	0	0	100
CO[1]	29	22	11	4	2	5	4	1	1	0	0	0	100

Source: California High-Speed Rail Authority, 2014
Values marked with an asterisk (*) exceed applicability thresholds
[1] Fresno urbanized maintenance area only
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

Table 11 Estimated Annual Average Emissions for the Fresno to Bakersfield Section

	Emissions (Tons/Year)												Conformity Applicability Thresholds (tons/year)
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	
NO_x	622*	818*	549*	161*	71*	4	2	80*	1	0	0	0	10
VOCs	24*	43*	34*	9	4	0	0	4	0	0	0	0	10
$PM_{2.5}$[1]	20	36	29	12	10	7	0	2	0	0	0	0	100
PM_{10}	51	75*	62	16	15	9	3	4	0	0	0	0	100
CO: Fresno[1]	31	75	66	12	4	1	1	9	0	0	0	0	100
CO: Bakersfield[1]	30	65	58	15	4	1	2	9	0	0	0	0	100

Source: California High-Speed Rail Authority, 2014
Values marked with an asterisk (*) exceed applicability thresholds
[1] Fresno and Bakersfield urbanized maintenance areas only
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

Table 12 Estimated Annual Average Emissions for the Merced to Palmdale Section

	Emissions (Tons/Year)													Conformity Applicability Thresholds (tons/year)
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
NO_x	791*	928*	664*	193*	139*	113*	204*	366*	274*	193*	57*	41*	20*	10
VOCs	39*	54*	42*	11*	11*	17*	20*	32*	29*	19*	7	6	2	10
$PM_{2.5}$	28	42	33	14	14	13	10	16	14	10	3	3	1	100
PM_{10}	64	84*	68	20	20	20	19	27	27	15	7	3	1	100
CO: Fresno[1]	60	97	78	16	6	6	5	10	1	0	0	0	0	100
CO: Bakersfield[1]	30	65	58	15	11	2	44	99	90	85	12	7	3	100

Sources: California High-Speed Rail Authority, 2014, 2020
Values marked with an asterisk (*) exceed applicability thresholds
[1] Fresno and Bakersfield urbanized maintenance areas only
CO = carbon monoxide
NO_x = nitrogen oxide
PM_{10} = particulate matter smaller than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter smaller than or equal to 2.5 microns in diameter
VOC = volatile organic compound

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14 REPORTING AND PUBLIC COMMENTS

To support a decision concerning the Federal Action, the FRA issued a Draft General Conformity Determination for public and agency review for a 30-day period as required by 40 C.F.R §§93.155 and 93.156. In developing the analysis underlying this general conformity determination, the Authority has consulted with the SJVAPCD, EKAPCD, and AVAQMD on a variety of technical and modeling issues. The Authority has also consulted with USEPA and CARB on the overall approach to general conformity.

14.1 Availability of Final General Conformity Determination

FRA will provide copies of this Final General Conformity Determination to the appropriate regional offices of USEPA, CARB, SJVAPCD, EKAPCD, and AVAQMD. The Final General Conformity Determination is available at http://www.regulations.gov, Docket No. FRA-2021-0046, and on FRA's website at https://railroads.dot.gov/environment/environmental-reviews/clean-air-act-california-general-conformity-determinations.

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15 FINDINGS AND CONCLUSIONS

As part of the environmental review of the proposed Action, FRA conducted a General Conformity evaluation pursuant to 40 C.F.R. Part 93 Subpart B. The General Conformity regulations apply at this time to this Federal Action because the Action is located in an area that is designated as an extreme nonattainment area for the 8-hour ozone standard, nonattainment for $PM_{2.5}$, and a (partial) maintenance area for PM_{10} and CO. The FRA conducted the General Conformity evaluation following all regulatory criteria and procedures and in coordination with USEPA, SJVPCD, EKAPCD, AVAQMD, and CARB. As a result of this review, the FRA concluded, based on the fact that Action-generated emissions will either be fully offset (for construction phase) or less than zero (for operational phase), that the proposed Action's emissions can be accommodated in the SIP for the SJVAB. FRA has determined that the proposed Action as designed will conform to the approved SIP, based on:

- A commitment from the Authority that construction-phase NO_x and VOC emissions will be offset consistent with the applicable federal regulations through a VERA with the SJVAPCD, the Air Quality Investment Program in the AVAQMD, and the Emission Banking Certificate Program in the EKAPCD.
- The SJVAPCD, EKAPCD, and AVAQMD will seek and implement the necessary emission reduction measures, using Authority funds.
- The SJVAPCD, EKAPCD, and AVAQMD will serve in the role of administrator of the emissions reduction projects and verifier of the successful mitigation effort.

Therefore, FRA concludes that the proposed Action, as designed, conforms to thepurpose of the approved SIP and is consistent with all applicable requirements.

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17 PREPARER QUALIFICATIONS

Amy Fischer, Senior Air Quality Scientist, Ms. Fischer has a B.S. in Environmental Policy Analysis from the University of Nevada, Reno. With 20 years of experience, Amy Fischer serves as a senior air quality and greenhouse gas emissions specialist qualified to conduct analyses for a variety of infrastructure projects. Ms. Fischer is the technical lead on air quality and climate change impact analyses documents and oversees the research, and preparation of technical reports. She is skilled in air quality assessment models including: The California Emissions Estimator Model (CalEEMod), Emission Factor models (EMFAC/OFFROAD), Road Construction Estimator Model (RoadMod) and Line Dispersion Models (CALINE).

Tin Cheung, Senior Air Quality Scientist, Mr. Cheung graduated with a bachelor's degree in Environmental Studies and Geography from the University of California at Santa Barbara. He is a Senior Air Quality Scientist with 23 years of experience in the preparation of air quality and noise studies. He has worked on a multitude of small and large projects and is extremely proficient in quantitative computer models which include USEPA's AERMOD air pollutant dispersion model, the California Emissions Estimator Model (CalEEMod), CARB's EMFAC emission factor model, SMAQMD's Road Construction Emissions Model, Caline4 roadway air pollutant dispersion model and numerous other air quality and noise models.

Matthew Long, MESc, MPP, Senior Environmental Scientist, prepared the greenhouse gas analyses for this project. Matthew holds a Master's Degree in Environmental Science from the Yale School of Forestry and Environmental Studies and a Master's Degree in Public Policy from the Luskin School of Public Affairs at UCLA. He also has over 9 years of professional consulting experience providing CEQA/NEPA analysis for large infrastructure projects, including electrical transmission projects, flood control projects, and commercial-scale renewable energy development projects. Recently, Mr. Long provided management support and revised the Geology and Soils and Noise analyses for the BLM's LUPA and Final EIS for the Desert Renewable Energy Conservation Plan.

Cara Carlucci, Planner, Ms. Carlucci holds a B.S. in City & Regional Planning with a minor in Real Property Development from California Polytechnic State University, San Luis Obispo. At LSA, she provides planning and technical assistance to project managers on a variety of planning and environmental documents including environmental assessments, initial studies, and environmental impact reports. She has contributed to the CEQA air quality analysis for residential, commercial, and infrastructure projects, as well as stand-alone air quality impact studies.

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APPENDIX A: FINAL GENERAL CONFORMITY DETERMINATION COMMENTS AND RESPONSES

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