ATTACHMENT C: SUMMARY OF THE PALMDALE TO BURBANK PROJECT SECTION FINAL EIR/EIS

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SUMMARY

Since the publication of the Palmdale to Burbank Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the following substantive changes have been made to this section:

- Figure S-2 Palmdale to Burbank Project Section Corridor, was revised to clarify that the Burbank Airport Station is approved.
- Section S.2, Tiered Environmental Review: California High-Speed Rail Authority Final Statewide Program EIR/EIS and Palmdale to Burbank Project Section EIR/EIS, was revised to clarify the Federal Aviation Administration's status as a cooperating agency, and to remove the California State Historic Preservation Officer and Los Angeles County Flood Control District as California Environmental Quality Act (CEQA) responsible agencies.
- Section S.4.1, Purpose of the High-Speed Rail System, was revised to align with the 2005 Statewide Program EIR/EIS.
- Section S.4.2, Purpose of the Palmdale to Burbank Project Section, the project purpose statement was refined to reflect the language specified in the December 18, 2014 Checkpoint A concurrence letter from the United States Army Corps of Engineers (USACE). The USACE and the Authority mutually agreed on this project purpose statement pursuant to the National Environmental Policy Act/Clean Water Act Section 404/Rivers and Harbors Act Section 14 (33 U.S.C. 408) Integration Process for the California High-Speed Train Program Memorandum of Understanding (dated November 2010).
- Section S.4.4, Need for the California HSR System Statewide and within the Palmdale to Burbank Region, was revised to align with an analogous section in Chapter 1 Project Purpose, Need, and Objectives.
- Table S-1, Summary of Key Design Features of the Build Alternatives, was revised to clarify the data presented.
- Figure S-5 Palmdale to Burbank Build Alternatives and Station Locations, was revised to clarify that the Burbank Airport Station is approved. Table S-3, Impact Avoidance and Minimization Features, was updated to revise feature names and add new features.
- Section S.7, No Project Alternative Impacts, was revised to reference to No Fill Alternative evaluated as part of Checkpoint C. Bullets for Hydrology and Water Resources, Safety and Security, Station Planning , Land Use, and Development, Agricultural Farmland and Forestland, and Aesthetics and Visual Quality were edited to clarify impacts under the No Project Alternative.
- Section S.8.2, Comparison of Impacts for the Palmdale to Burbank Project Section Build Alternatives, including Table S-4, was revised to reflect additional business displacements that would occur at Avion Burbank by the approved Burbank Airport Station.
- Table S-4, Pre-Mitigation Comparison of Key CEQA/NEPA Impacts for the High-Speed Rail Build Alternatives, was revised to reference the South Coast Air Basin (SCAB), Mojave Desert Air Basin (MDAB), and San Joaquin Valley Air Basin (SJVAB) instead of the air districts when comparing the alternative's construction emissions to the General Conformity *de minimis* levels; to include the exceedances of the SJVAB *de minimis* levels and SJVAPCD CEQA thresholds; and to include the nitrogen dioxide emissions.
- Table S-4, Pre-Mitigation Comparison of Key CEQA/NEPA Impacts for the High-Speed Rail Build Alternatives, was revised to clarify the numbers of cultural resources and parks present in the study area/area of potential effects for the six Build Alternatives.
- Table S-5, CEQA Summary of Resources with Significant Impacts and Applicable Mitigation Measures, was revised to clarify the impact summary for Impact AQ#2 and Impact AQ#3, add BIO-MM#102, BIO-MM#103, and BIO-MM#104 related to Impact BIO#1, Impact BIO#2,

Impact BIO#3, Impact BIO#4, Impact BIO#5, Impact BIO#6, Impact BIO#7, and Impact BIO#14, and to clarify the descriptions of AQ-MM#1, HWR-MM#1, and HWR-MM#3.

- Figure S-13 Communities Affected by Aboveground Construction, was revised to correct the language used in the legend from "Proposed HSR Station" to "Approved HSR Station."
- Table S-6, Estimated Capital Costs of the High-Speed Rail Alternatives Palmdale to Burbank, was updated to reflect revised costs associated with track structures and track, and terminal and intermodal stations for each Build Alternative, and updated to reflect revised costs associated with each cost category for the SR14A Build Alternative.
- The Air Quality discussions in Sections SS.8.2.1, SS.8.2.2, and SS.8.2.3 were revised to clarify that *de minimis* levels are based on the respective air basin and not set by the air districts, and to summarize NOx exceedances.
- Section S.10, Environmental Justice, was revised to include more recent laws and regulations pertaining to environmental justice (Presidential Executive Orders 13895, 13990, 14008, and 14096), revised to expand the discussion of beneficial effects from the Build Alternatives on California populations, including low-income and minority populations, and revised to describe offsetting mitigation measures that would avoid or reduce disproportionately high and adverse effects on EJ populations.
- Section S.11, Areas of Controversy, was updated to include additional areas of controversy.
- Section S.12, Environmental Process, was updated to provide information on the publication and public review of the Draft EIR/EIS.
- Section S.13, Summary of Changes between Draft and Final EIR/EIS, was added.
- Section S.13.2, Next Steps in the Environmental Process, was added to provide a discussion of the next steps in the environmental process.
- Section S.14.3, United States Army Corps of Engineers Decision-Making, was updated to provide information regarding federally authorized Civil Works projects Section 408 review.

S.1 Introduction and Background

The California High-Speed Rail Authority (Authority), a state governing board formed in 1996, has responsibility for planning, designing, constructing, and operating the California High-Speed Rail (HSR) System. Its mandate is to develop an HSR system that coordinates 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 California HSR System would provide intercity, high-speed service on more than 800 miles of tracks throughout California, connecting the major population centers of Sacramento, the San Francisco Bay Area, the Central Valley, Los Angeles, the Inland Empire, Orange County, and San Diego. Figure S-1 shows this proposed statewide system alignment. 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 at speeds up to 220 miles per hour over a dedicated track alignment.

The Authority plans to implement the California HSR System in two phases. Phase 1[1] would connect San Francisco to Los Angeles/Anaheim via the Pacheco Pass and the Central Valley. The HSR system would meet the requirements of Proposition 1A, including nonstop service between San Francisco and Los Angeles designed to achieve a time of 2 hours and 40 minutes.

[1] Phase 1 would be built in stages dependent on funding availability.

Phase 2 would connect the Central Valley to the state capital, Sacramento, and would extend the system from Los Angeles to San Diego.

The approximately 31- to 38-mile Palmdale to Burbank Project Section would be a critical link in Phase 1 of the California HSR System. This Final EIR/EIS evaluates facilities required to construct and operate the Palmdale to Burbank Project Section as well as the construction footprint. This project section footprint spans from the city of Palmdale near the vicinity of Spruce Court just west of Sierra Highway in the north, to the city of Burbank in the south. The Palmdale to Burbank Project Section includes a station in the city of Burbank near the Hollywood Burbank Airport (formerly Bob Hope Airport). As described in Section S.5.7, the Burbank Airport Station and the HSR infrastructure to Lockheed Drive was previously evaluated in the adjacent Burbank to Los Angeles Project Section Final EIR/EIS (SCH No. 2014071073). The Authority Board approved that Burbank to Los Angeles Project Section, including the Burbank Airport Station, in January 2022; these elements are included throughout the Final EIR/EIS for context, reference, and informational purposes.

High-Speed Rail System

The rail system that includes the high-speed rail trackway, bridges, tunnels, passenger stations, electrical power infrastructure, and maintenance facilities.

The Authority also initially defined the Palmdale to Burbank Project Section to include a Palmdale Station; however, the Palmdale Station, proposed Maintenance Facility, and the alignment to Spruce Court in Palmdale, were fully evaluated as part of the Bakersfield to Palmdale Project Section Final EIR/EIS (SCH No. 2009082062). The Authority Board approved that Bakersfield to Palmdale Project Section, including the Palmdale Station, in August 2021; any discussion and analysis of the Palmdale Station is included in this Final EIR/EIS for context, reference, and to provide additional information.

Figure S-2 shows the general Palmdale to Burbank Project Section corridor that is analyzed in this Final EIR/EIS.

The Build Alternatives evaluated in this Final EIR/EIS include the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives. The Preferred Alternative for the proposed project is the SR14A Build Alternative, which includes the approved Burbank Airport Station (refer to Chapter 8, Preferred Alternative and Station Sites). Each of the Palmdale to Burbank Project Section Build Alternatives would require the construction of one adit and one intermediate window facility. This Final EIR/EIS evaluates optional adit and intermediate window sites for each Build Alternative. The final adit and intermediate window facilities will be selected from the options evaluated in this Final EIR/EIS during final design of the Preferred Alternative, after the issuance of the Authority's Record of Decision (ROD) and Notice of Determination (NOD).

Adits

An ***adit*** is an access shaft that facilitates construction of bored tunnels. An adit can serve as a tunnel boring machine entry or exit point. It can enable use of multiple tunnel boring machines to shorten construction time.

Intermediate Windows

An ***intermediate window*** is a vertical shaft connecting to an underground construction area. It includes an elevator and gantry cranes to provide access, water, power, ventilation, and other support during construction.

Source: Authority, 2021

Figure S-1 High-Speed Rail Statewide System

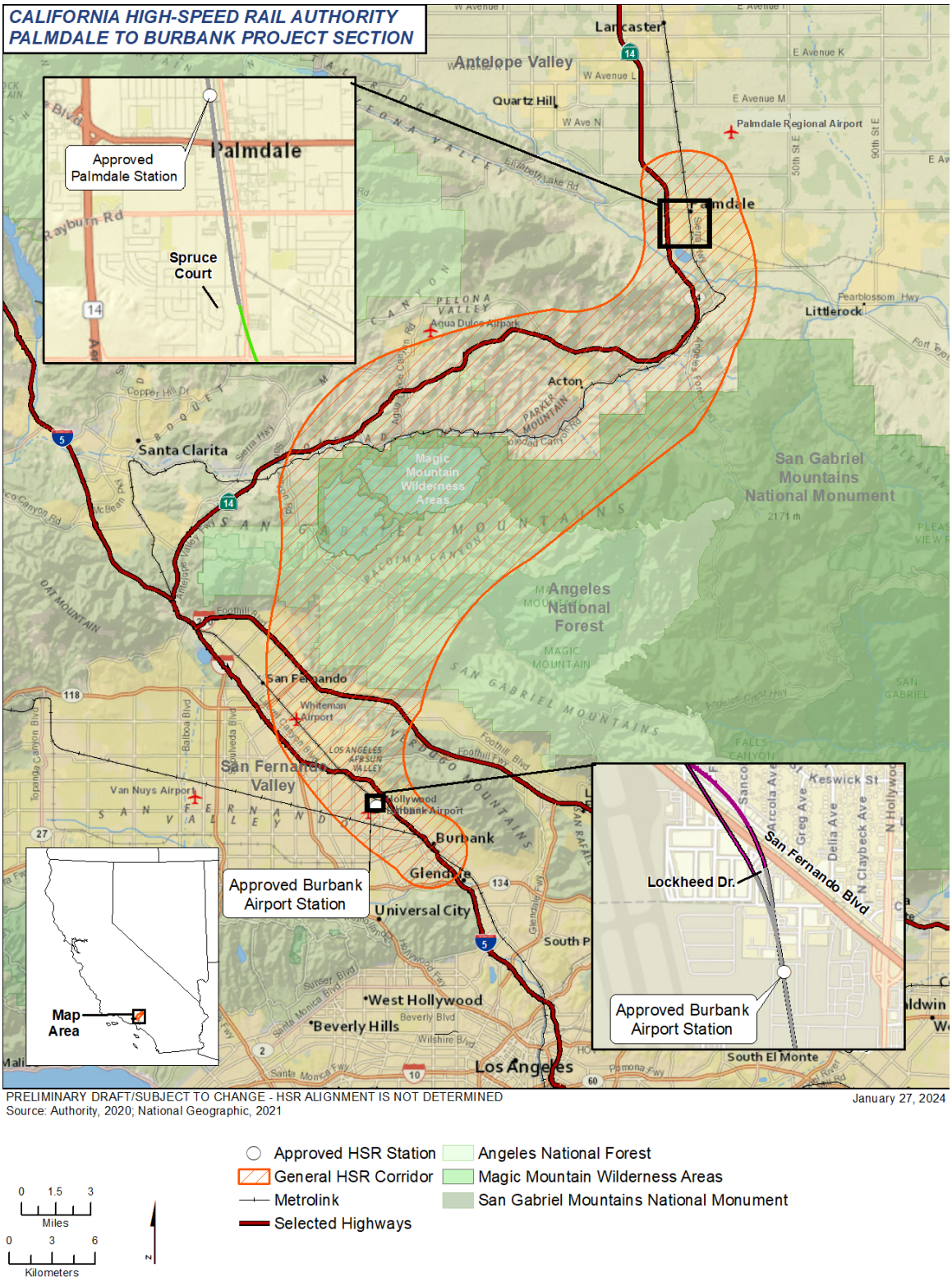


Figure S-2 Palmdale to Burbank Project Section Corridor

This summary provides an overview of the Palmdale to Burbank Project Section Final EIR/EIS and addresses the topics listed below:

- The tiered environmental review
- Issues raised during the scoping process
- Purpose of and need for the California HSR System and the Palmdale to Burbank Project Section
- Description of the proposed No Project Alternative and the six Build Alternatives
- Design considerations to avoid and minimize impacts
- No Project Alternative impacts
- HSR alternatives evaluation, including:
  - HSR benefits
  - Comparison of impacts and mitigation measures
  - Capital and operating costs
- Section 4(f) and Section 6(f)
- Environmental justice
- Areas of controversy
- Environmental process
- Next steps in the environmental process

The full text of the environmental analysis in the Final EIR/EIS is available on the Authority's website at: https://hsr.ca.gov/programs/environmental-planning/.

S.2 Tiered Environmental Review: California High-Speed Rail Authority Final Statewide Program EIR/EIS and Palmdale to Burbank Project Section EIR/EIS

The Council on Environmental Quality (CEQ) regulations establish procedures for compliance with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] 4321 et seq.).[2,3] CEQ regulations allow for a phased environmental review process. This process is referred to as "tiered decision-making." This phased decision-making process supports a broad-level programmatic decision at the first tier to be followed by more specific decisions at the second tier, with one or more second-tier EISs. The NEPA tiering process allows incremental decision-making for large projects that would be too extensive and cumbersome to analyze in a traditional project EIS. CEQA also encourages tiering and provides for first-tier and second-tier EIRs.

The Palmdale to Burbank Project Section EIR/EIS is a second-tier EIR/EIS that tiers off of first-tier program EIR/EIS documents and provides project-level information for decision-making on this portion of the California HSR System. The Authority and the Federal Railroad Administration (FRA) prepared the 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train*

[2] While this EIR/EIS was being prepared, the FRA adopted new NEPA compliance regulations (23 C.F.R. 771). Those regulations only apply to actions initiated after November 28, 2018. See 23 C.F.R. 771.109(a)(4). Because this EIR/EIS was initiated prior to that date, it remains subject to FRA's Environmental Procedures rather than the Part 771 regulations.

[3] The CEQ issued new regulations on July 14, 2020, effective September 14, 2020, updating the NEPA implementing procedures at 40 C.F.R. Parts 1500-1508. However, this project initiated NEPA before the effective date and is not subject to the new regulations, relying on the 1978 regulations [amended in 1986, 51 Federal Register 15618 (April 25,1986)] as they existed prior to September 14, 2020. All subsequent citations to CEQ regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and the preamble at 85 Fed. Reg. 43340.

System (Statewide Program EIR/EIS) (Authority and FRA 2005), which provided a first-tier analysis of the general effects of implementing the California HSR System across two-thirds of the state. The 2008 *Bay Area to Central Valley High-Speed Train Program EIR/EIS* (Bay Area to Central Valley Program EIR/EIS) (Authority and FRA 2008) and the *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012) were also first-tier and programmatic, focused on the Bay Area to Central Valley region. These first-tier EIR/EIS documents provided the Authority with the environmental analysis necessary for the evaluation of the overall California HSR System and for making broad decisions about general high-speed train alignments and station locations for further study in the second-tier EIR/EISs. Printed and/or electronic copies of the EIR/EIS and Tier 1 documents are also available for review during business hours at the Authority's Headquarters at 770 L Street, Suite 620 MS-1, Sacramento, CA and by appointment at the Authority's Southern California Regional Office at 355 S. Grand Avenue, Suite 2050, Los Angeles, CA. To make an appointment to view the documents at the Southern California Regional Office, please call 800-630-1039.

The Palmdale to Burbank Project Section EIR/EIS is a second-tier document and analyzes the environmental impacts and benefits of implementing the High-Speed Rail in the more geographically limited area between Palmdale and Burbank and is based on detailed project planning and engineering. The analysis therefore builds on the earlier decisions and program EIR/EISs and provides more site-specific and detailed analysis.

The Authority is preparing the Palmdale to Burbank Project Section EIR/EIS as a joint NEPA/CEQA document to reduce duplication between state and federal environmental review processes and to synchronize decision-making. The Authority is the project sponsor and lead agency under NEPA, [4] pursuant to an assignment of FRA's authority under 23 U.S.C. 327 and is the state lead agency under CEQA. There are five cooperating agencies included in this Tier 2, project-level NEPA review process:

- USACE, agreed by letter dated December 30, 2009
- Surface Transportation Board, agreed by letter dated May 2, 2013
- United States Forest Service (USFS), agreed by letter dated August 25, 2014
- U.S Department of the Interior, Bureau of Land Management, agreed by letter dated November 6, 2012
- Federal Aviation Administration, agreed by letter dated March 4, 2021

Cooperating Agency

Agencies invited by the lead federal agency that have agreed to participate in the NEPA process and have legal jurisdiction over, and/or technical expertise regarding, environmental impacts associated with a proposed project

Responsible Agency

A public agency with some discretionary authority over a project but has not been designated the Lead Agency. A Responsible Agency complies with CEQA by considering the EIR or negative declaration prepared by the Lead Agency and by reaching its own conclusions on whether and how to approve the project.

The following California agencies serve as CEQA responsible agencies for the Palmdale to Burbank Project Section:

- California Department of Fish and Wildlife
- California Department of Transportation
- California Public Utilities Commission
- California Department of Water Resources

[4] Memorandum of Understanding for the National Environmental Policy Act Assignment (FRA and State of California 2019).

- California State Lands Commission
- State Water Resources Control Board
- Antelope Valley Air Quality Management District
- South Coast Air Quality Management District

S.3 Issues Raised During the Scoping Process

On July 24, 2014, public scoping for the Palmdale to Burbank Project Section EIR/EIS was initiated with the distribution of a Notice of Preparation to the State Clearinghouse; elected officials; local, regional, and state agencies; and the interested public, and the publication of a Notice of Intent in the *Federal Register*. During the public scoping period, the Authority hosted 916 attendees at seven public meetings and one federal agency meeting between August 5 and August 19, 2014:

- Santa Clarita – August 5, 2014
- Burbank – August 6, 2014
- Palmdale – August 7, 2014
- Acton/Agua Dulce – August 11, 2014
- Sylmar – August 12, 2014
- Lake View Terrace – August 14, 2014
- Downtown Los Angeles – August 19, 2014
- Los Angeles – August 8, 2014 (federal agency meeting)

Follow-up public meetings were also held in December of 2014, as Build Alternatives that would traverse the Angeles National Forest (ANF) including the San Gabriel Mountains National Monument (SGMNM) were introduced. Close to 1,000 people attended the following meetings:

- Santa Clarita – December 2, 2014
- Shadow Hills – December 3, 2014
- Palmdale – December 4, 2014
- Burbank – December 8, 2014
- San Fernando – December 9, 2014
- Sylmar – December 10, 2014
- Acton/Agua Dulce – December 13, 2014

Throughout the scoping process, the Authority received 938 comment submittals from federal, state, and local agencies; elected officials; businesses; organizations; and individuals. The *Palmdale to Burbank Section 2014 Scoping Report* and the *Open House Meetings Summary Report* (Authority 2014, 2015) describes comments received during the public scoping period for the Palmdale to Burbank Project Section. The following list summarizes major topics identified during the scoping process:

- Build Alternatives
- Station locations
- Impacts on environmental justice communities
- Socioeconomic impacts, including impacts on residences, schools, religious institutions, and employment

- Negative visual impacts on nearby communities including glare
- Conversion of agricultural lands and forest land
- Air pollution and greenhouse gas emissions
- Impacts on cultural resources, including archaeological and Native American sites
- Impacts on biological and aquatic resources and wetlands
- Electromagnetic interference/fields (EMI/EMF) impacts on adjacent land uses
- Geology, soils, seismicity, and paleontological resources
- Release of hazardous materials at existing oil wells and from project maintenance
- Impacts on streams and groundwater
- Noise and vibration impacts on schools, residences, communities, rural areas, domestic animals, and wildlife
- Impacts on parks, recreation, and open space areas such as the ANF, including SGMNM
- Use of renewable energy for project operation
- Conflicts with existing utilities
- Safety of passengers in the event of terrorist attacks, earthquakes, and other emergencies
- Safety of nearby schools in the event of an accident
- Impacts on adjacent land uses and the Hollywood Burbank Airport
- Transit access to HSR stations
- Impacts regarding tunneling
- Technical/engineering concerns
- Use of tax dollars on the California HSR System

S.4 Purpose of and Need for the California HSR System and the Palmdale to Burbank Project Section

S.4.1 Purpose of the High-Speed Rail System

The 2005 Statewide Program EIR/EIS established the purpose of the statewide HSR system and identified and evaluated alternative HSR corridor alignments and station locations as part of a statewide HSR system:

> *The purpose of the statewide HSR system is to provide a reliable high-speed electric-powered train system that links the major metropolitan areas of the state, and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources* (Authority and FRA 2005).

S.4.2 Purpose of the Palmdale to Burbank Project Section

The purpose of the Palmdale to Burbank Project Section of the California HSR System is to provide the public with electric-powered HSR service that provides predictable and consistent travel times between the Antelope Valley and the San Fernando Valley, provide connectivity to airports, mass transit systems, and the highway network in the Antelope Valley and the San

Fernando Valley; and to connect the Northern and Southern portions of the Statewide HSR System.

The project would construct, maintain, and operate an electrified, high-speed train system connecting the Palmdale Transportation Center in Palmdale to the Hollywood Burbank Airport in Burbank. The project includes the construction, improvement, upgrade, operation, and maintenance of new and existing facilities and infrastructure necessary to support the system.

S.4.3 CEQA Objectives and Policies for the California HSR System in California and within the Palmdale to Burbank Region

As the lead agency, the Authority is preparing this EIR/EIS consistent with specific CEQA EIR content and processing requirements. CEQA Guidelines Section 15124 requires an EIR to include a statement of objectives that will support the underlying purpose of the project. In response to its statutory mandate and CEQA requirements, the Authority's mandate is to plan, build, and operate a California HSR System that is coordinated with California's existing transportation network by adopting the following objectives and policies for the proposed California HSR System:

- Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports
- Meet future intercity travel demand that will be unmet by present transportation systems and increase capacity for intercity mobility
- Maximize intermodal transportation opportunities by locating stations to connect with local transit systems, airports, and highways
- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel
- Provide a sustainable reduction in travel time between major urban centers
- Increase the efficiency of the intercity transportation system
- Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible
- Develop a practical and economically viable transportation system that can be implemented in phases and generate revenues in excess of operations and maintenance costs
- Provide intercity travel in a manner sensitive to and protective of the region's natural and agricultural resources and reduce emissions and vehicle miles traveled (VMT) for intercity trips

The approximately 31- to 38-mile-long Palmdale to Burbank Project Section is an essential part of the statewide California HSR System. This project section would provide Palmdale, the San Fernando Valley, Burbank, and other communities near the approved HSR stations access to a new transportation mode. The Build Alternatives would help to improve passenger rail service between Palmdale and Burbank and would provide a passenger rail connection between Northern California and Los Angeles which would contribute to increased mobility throughout California through more direct and efficient travel.

S.4.4 Need for the California HSR System Statewide and within the Palmdale to Burbank Region

The need for an HSR system exists statewide, with regional areas contributing to this need. The 31- to 38-mile-long Palmdale to Burbank Project Section is an essential component of the statewide California HSR System.

The capacity of California's intercity transportation system, including the Palmdale and Burbank region, is insufficient to meet existing and future travel demands. The current and projected future congestion of the transportation system will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The current transportation system has not kept pace with

the increase in population, economic activity, and tourism within the state. The interstate highway system, commercial airports, and the conventional passenger rail system[5] serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key airports is uncertain; some needed expansions might be impractical or are constrained by physical, political, and other factors. The need for improvements to intercity travel systems in California, including intercity travel between the southern San Joaquin Valley, the Bay Area, Sacramento, and Southern California, relates to the following issues:

Metrolink

A commuter rail service operating seven routes in six Southern California counties.

- Future growth in demand for intercity travel including the growth in demand within the Palmdale to Burbank Project Section corridor
- Capacity constraints that will result in increasing congestion and travel delays, including those in the Antelope Valley (cities of Lancaster and Palmdale) and in the city of Los Angeles
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourism in California, including within the Palmdale to Burbank Project Section corridor
- Increased frequency of accidents on intercity highways and passenger rail lines, including within the project vicinity
- Reduced mobility resulting from the demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including within the Palmdale to Burbank Project Section corridor
- Poor and deteriorating air quality and pressure on natural resources and agricultural lands resulting from highway and airport expansions and urban development pressures, including those within Palmdale to Burbank Project Section corridor
- Legislative mandates to moderate the effects of transportation on climate change, including required reductions in GHG emissions caused by vehicles powered by the combustion of carbon-based fuels

Figure S-2 shows the area of the Palmdale to Burbank Project Section within the Los Angeles County region and the state of California. The Los Angeles County region contributes significantly to the statewide need for a new intercity transportation service connecting the major population and economic centers and other regions of the state.

S.5 Alternatives

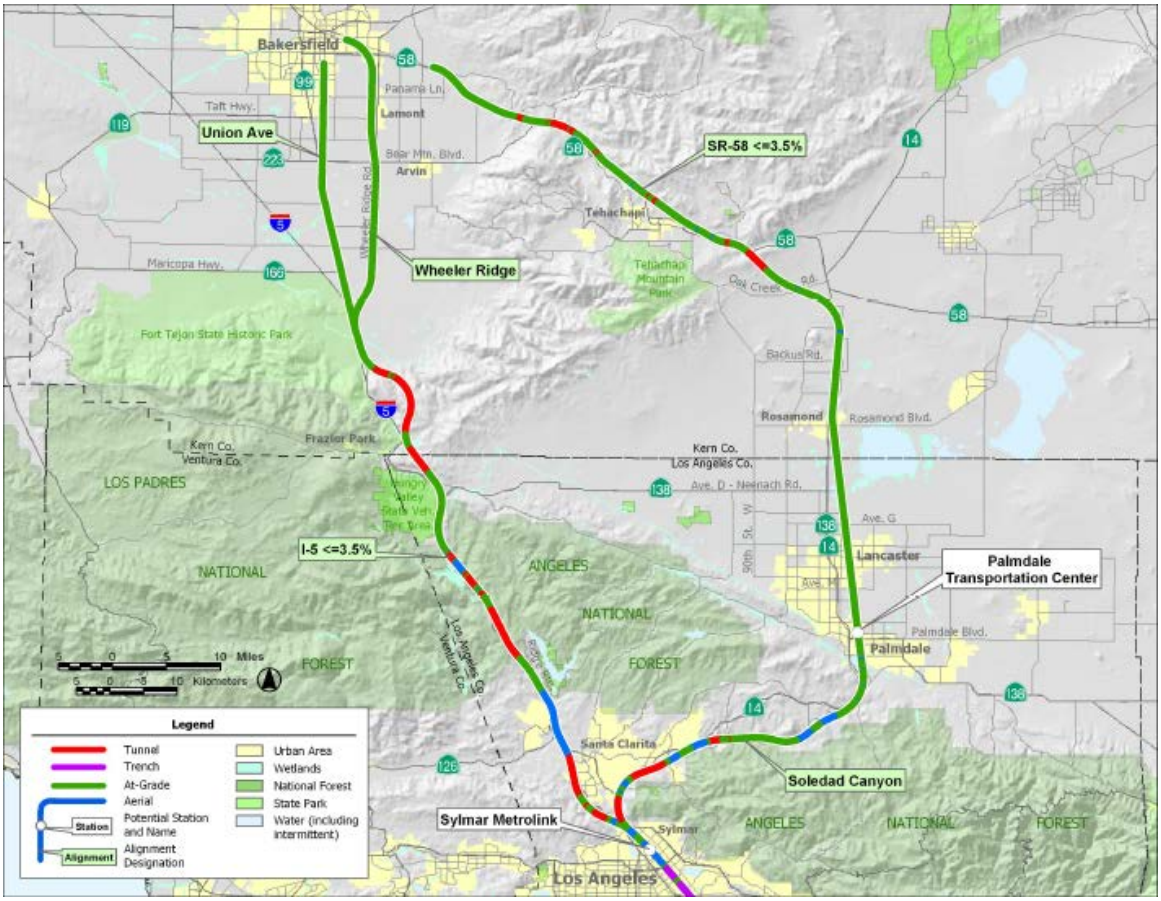
S.5.1 Background of the Palmdale to Burbank Project Section

In 2005, the Authority and FRA relied on the California HSR System program EIR/EIS documents to identify the Soledad Canyon and Los Angeles County Metropolitan Transportation Authority (Metro)/Metrolink corridors for study of alternative routes between Palmdale and Burbank. Therefore, the Palmdale to Burbank Project Section EIR/EIS analyzes the State Route (SR) 14 alignment, which generally follows the Soledad Canyon and Metro/Metrolink corridors.

The 2005 Statewide Program EIR/EIS examined potential alignments between the city of Bakersfield and the Sylmar neighborhood of Los Angeles, and between Sylmar and downtown Los Angeles (Figure S-3). Between Bakersfield and Sylmar, two alignments were considered that

[5] Conventional passenger rail systems include inter-regional commuter rail services such as Amtrak and Metrolink. These are not to be confused with local, light, and heavy rail transit systems that generally operate within a smaller sub-regional area (e.g., Los Angeles County's Metro Rail System).

would have followed either the Interstate (I-)5/Grapevine corridor or SR 58 and the Metrolink rail corridor through the Antelope Valley via SR 14/Soledad Canyon. Both corridors included one station option each: at a site bounded by the SR 126/I-5 interchange, Magic Mountain Parkway, and the Old Ridge Route for the I-5/Grapevine corridor, and at the Palmdale Transportation Center for the SR 58/Soledad Canyon corridor.



Source: Authority, 2005

Figure S-3 Potential Alignments from the 2005 Statewide Program EIR/EIS

As reflected in the 2005 Statewide EIR/EIS, the Authority and FRA selected the SR 58/Soledad Canyon and Metro/Metrolink corridors as the preferred alignment between Bakersfield and Sylmar, with a station in the city of Palmdale. This alignment would extend east from Bakersfield generally following SR 58 through the Tehachapi Mountains to Mojave, along Metro/Metrolink corridors through the Antelope Valley and Soledad Canyon, and then generally following SR 14 from the city of Santa Clarita to the Sylmar neighborhood of the city of Los Angeles. The alignment would provide superior connectivity and accessibility to the Antelope Valley and would have a higher potential for serving long-distance commuters to Los Angeles.

As part of the 2005 Statewide Program EIR/EIS, the Authority considered corridors between Sylmar and Los Angeles Union Station that would generally follow the I-5 freeway or the Metro/Metrolink Antelope Valley Line. Station options in the neighborhoods of Sylmar and Sun Valley and in the cities of San Fernando and Burbank were evaluated. The Authority determined that sharing existing commuter and freight tracks would not meet the California HSR System's purpose and that dedicated tracks would be necessary to achieve the performance goals of the California HSR System.

The Palmdale to Los Angeles Section alternatives were then defined through the following:

- Public scoping conducted for the 2005 Statewide Program EIR/EIS
- Scoping conducted for the Palmdale to Los Angeles Section in 2007
- The alignment and station screening evaluation process described in the *Palmdale to Los Angeles Preliminary Alternatives Analysis Report* (Authority and FRA 2010) and Palmdale to Los Angeles Supplemental Alternatives Analysis (SAA) Reports (Authority and FRA 2011; 2012; 2014).

Figure S-4 shows the evolution of alternatives for the Palmdale to Burbank Project Section over time.

In May 2014, the 2014 SAA Report recommended that the Palmdale to Los Angeles Section be divided into two project sections (Palmdale to Burbank and Burbank to Los Angeles). Following this recommendation, a second public scoping period took place from July to September 2014. Following the second public scoping period and additional follow-up meetings held in December 2014, a subsequent SAA Report for the Palmdale to Burbank Subsection (Authority and FRA 2015) was presented to the Authority Board of Directors in June 2015.

During the Authority's June 9, 2015, board meeting, issues were raised about the alternatives presented in the 2015 SAA Report. Concerns encompassed a variety of topics including air quality, aesthetics, cultural resources, impacts on environmental justice communities, impacts on ANF including SGMNM, and project costs. After the board meeting, the Authority explored ways to refine the alternatives to address concerns raised at the board meeting and during previous stakeholder outreach. The 2016 SAA Report refined the alignments and stations presented in the 2015 SAA Report by reducing tunnel depth, reducing community impacts, minimizing impacts on ANF including SGMNM, avoiding impacts near Big Tujunga Wash, and improving travel time by reducing route length.

The SAA Report process was also informed by various working groups. Community and stakeholder working groups were formed to facilitate meaningful public comments from organizations and residents along the Palmdale to Burbank Project Section corridor in 2014, 2015, and 2016. Working groups included Environmental Justice communities and members of Native American tribes. Community working groups included local community members invited by the Authority, and stakeholder working groups included leaders from various constituencies along the Palmdale to Burbank Project Section corridor. Stakeholder working groups included members conversant with land use, transportation, environmental sustainability, and societal topics within the region.

Based on the SAA Reports and comments received from working groups, the Authority carried forward the six Build Alternatives for detailed study in this EIR/EIS: the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives.

S.5.2 No Project Alternative

The No Project Alternative represents the state's transportation system (highway, air, bus, conventional rail) as it is currently and as it would be after implementation of programs or projects that are in regional transportation plans, which have identified funds for implementation and are expected to be in place by 2040, as well as major planned land use changes. Inclusion of the No Project Alternative enables decision-makers and the public to compare the impacts of the proposed Build Alternatives against future conditions that would occur without the project.[6]

Between 2015 and 2040, the population of Los Angeles County is expected to increase by nearly 1.5 million residents, from approximately 10 million to more than 11 million. Los Angeles County is expected to add 551,200 new jobs by 2040 (SCAG 2016). The general plans for Palmdale and Burbank, the two main urban centers in the Palmdale to Burbank Project Section study area, also anticipate growth associated with new and improved transportation hubs and surrounding transit-

[6] NEPA requires the evaluation of a "no action" alternative in an EIS (CEQ Regulations Section 1502.14(d)). Similarly, CEQA requires that an EIR include the evaluation of a "no project" alternative (CEQA Guidelines Section 15126.6(e)).

oriented development. Since workers are anticipated to commute from nearby counties to fill in new employment opportunities as new jobs are added in Los Angeles County, stresses on the local transportation system associated with this employment growth would likely occur under the No Project Alternative.

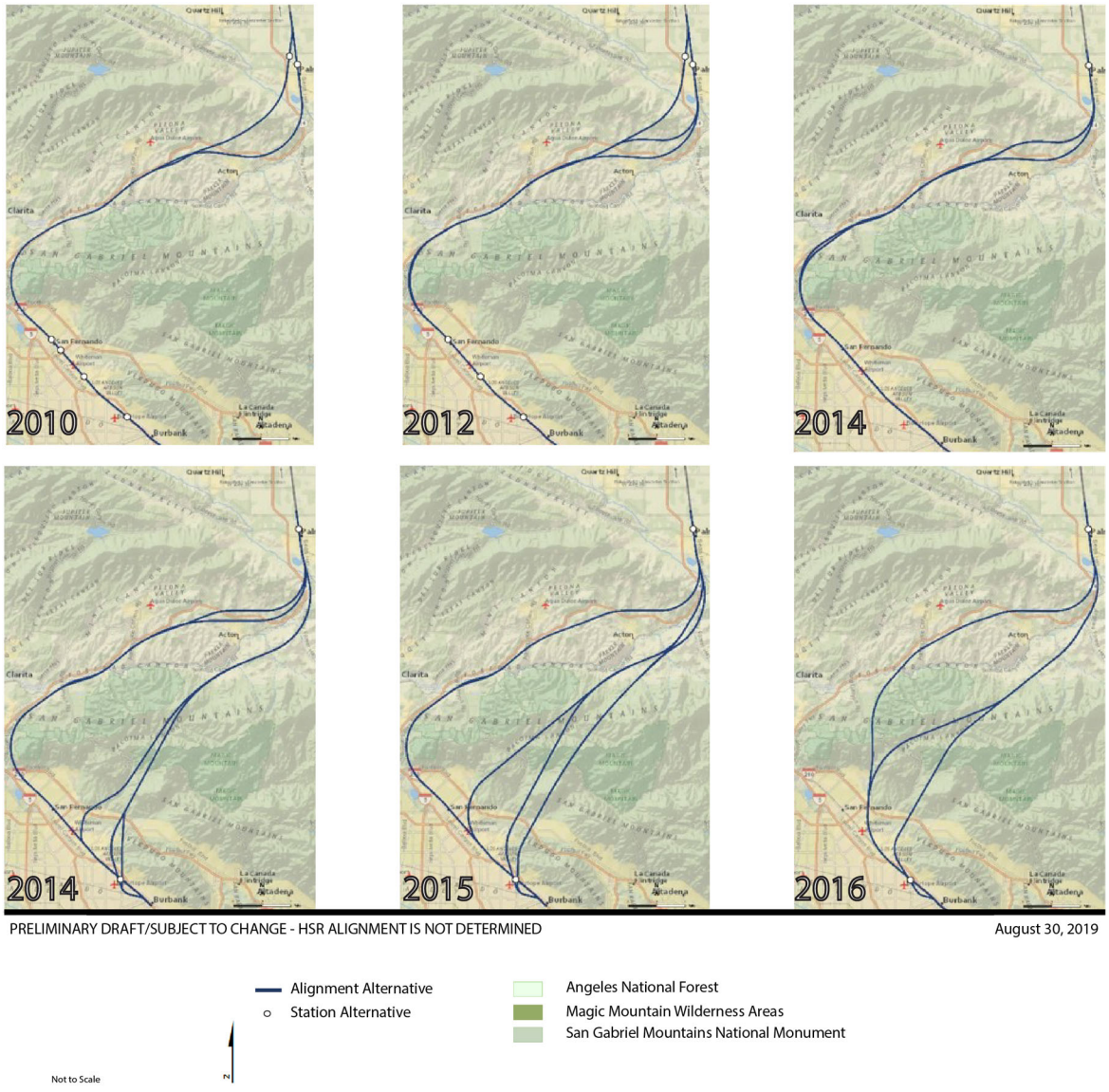


Figure S-4 Evolution of Palmdale to Burbank Project Section Alternatives

Foreseeable future projects servicing this population include shopping centers, industrial parks, other transportation projects, and residential developments. These development and transportation infrastructure projects are planned to accommodate the growth projections in the area. Such projects would encourage both compact development and greater investment in local transit modes as a means of reducing vehicle trips. Overall, development would be focused within the urbanized portions of the Antelope and San Fernando Valleys. Between these urban centers, areas within the ANF including SGMNM would likely remain intact and undisturbed because of their protected status.

S.5.3 Palmdale to Burbank Project Section High-Speed Rail Build Alternatives

There are six end-to-end Build Alternatives proposed for the Palmdale to Burbank Project Section: Refined SR14, SR14A, E1, E1A, E2, and E2A. Figure S-5 shows the alignments of the Build Alternatives and key project features. The six Build Alternative alignments would begin in the Antelope Valley, within the city of Palmdale. Farther south, the Build Alternative alignments would tunnel beneath the ANF including SGMNM, before terminating in Burbank at the Burbank Airport Station. South of the ANF, the Refined SR14, SR14A, E1, and E1A Build Alternative alignments would traverse several city of Los Angeles neighborhoods including Sylmar, Pacoima, and Sun Valley in the San Fernando Valley. Located farther to the east, the E2 and E2A Build Alternative alignments would traverse the Lake View Terrace and Shadow Hills neighborhoods. Table S-1 provides a high-level comparison of key design features associated with each of the Build Alternatives. The sections that follow describe each of the Build Alternatives in more detail.

Table S-1 Summary of Key Design Features of the Build Alternatives

Design Feature	Refined SR14	SR14A	E1	E1A	E2	E2A
Total length (linear miles)	37.08	38.38	35.04	36.12	31.24	31.64
At-grade profile (linear miles)	10.32	10.38	10.66	9.94	9.07	8.35
At-grade covered tunnel (linear miles)	.0.47	0.47	0	0	0	0
Cut-and-cover tunnel (linear miles)	1.52	1.52	2.61	1.60	1.85	0.85
Bored/Mined tunnel (linear miles)	25.58	27.95	24.64	26.31	22.48	24.14
Elevated profile (linear miles)	2.91	1.56	0.86	1.07	1.53	1.74
Number of straddle bents[1]	1	2	1	2	1	2
Number of railroad crossings	3	5	3	5	2	5
Number of major water crossings[2]	25	19	12	12	13	13
Number of at-grade road crossings	0	0	0	0	0	0
Number of public and private roadway closures	9	5	13	12	11	10
Number of new roadway overcrossings and undercrossings	11	9	10	9	11	10

[1] A straddle bent consists of a platform supported by columns. This platform supports the HSR alignment.
[2] Major waterbodies crossings include Una Lake, the East Branch California Aqueduct, the Santa Clara River System, Pacoima Wash, Tujunga Wash, and the Big Tujunga Creek System.
HSR = high-speed rail

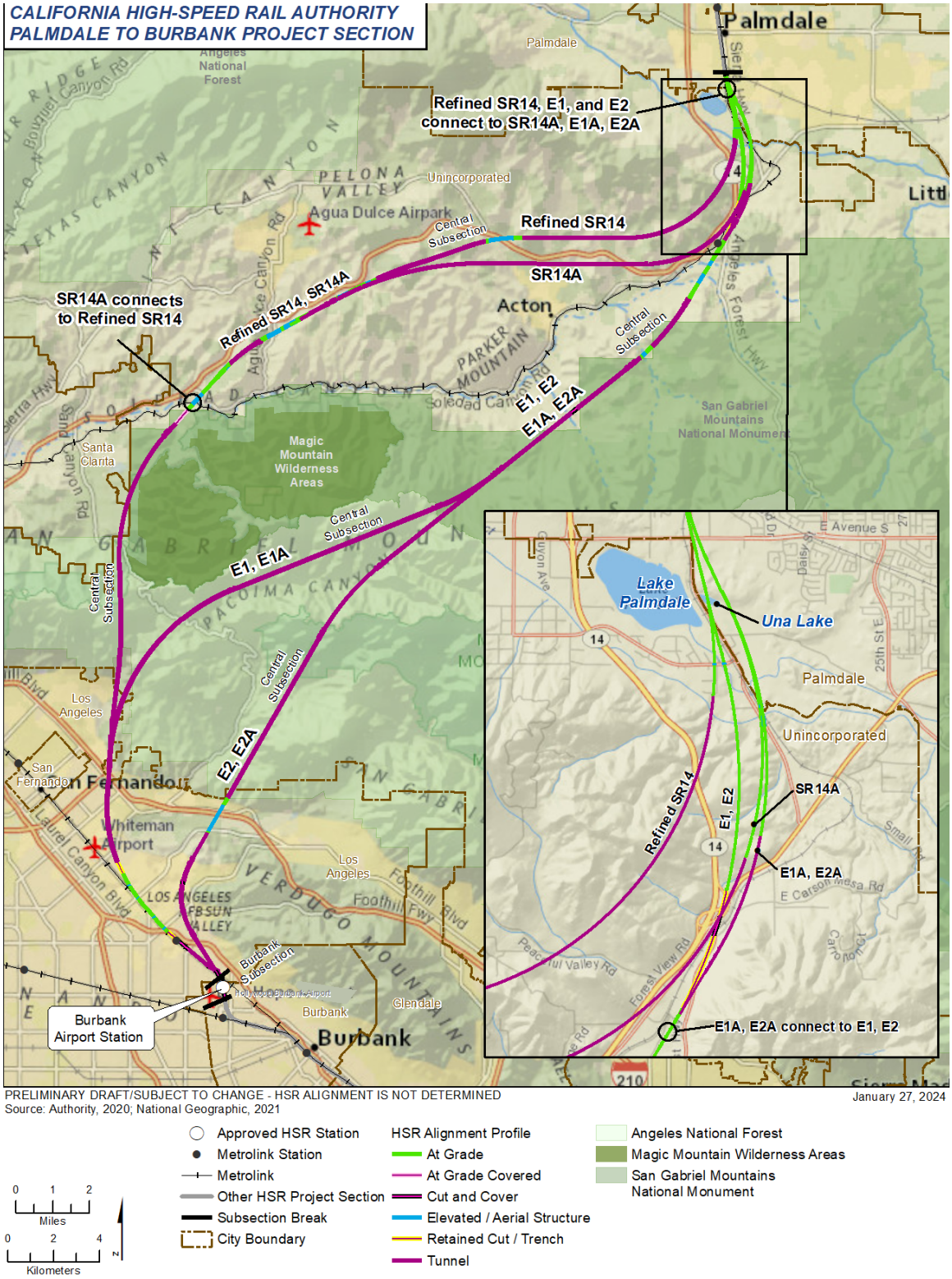


Figure S-5 Palmdale to Burbank Build Alternatives and Station Locations

S.5.3.1 Refined SR14 Build Alternative

The Refined SR14 Build Alternative (Figure S-6) would begin in the city of Palmdale near Spruce Court on the west side of Sierra Highway. The Refined SR14 Build Alternative would pass south through the city of Palmdale and then continue in a westerly direction through a series of tunnels, on viaducts, and at grade, roughly following the SR 14 freeway. After crossing Soledad Canyon Road and the Santa Clara River, the Refined SR14 Build Alternative would enter a 12-mile-long tunnel with a maximum depth of approximately 2,080 feet[7] continuing in a southerly direction beneath ANF including SGMNM. Construction of a portion of this tunnel would occur within the existing Vulcan Mine site, which would be regraded and restored to a condition better reflecting the surrounding topography at the outset of construction. The finished southern tunnel opening near the Vulcan Mine site would be located inside the ANF including SGMNM. After entering a tunnel near the Vulcan Mine, the Refined SR14 Build Alternative would pass beneath portions of ANF including SGMNM. The Refined SR14 Build Alternative would continue beneath the Sylmar neighborhood of the city of Los Angeles, before emerging from the tunnel and transitioning to an at-grade alignment in the Pacoima neighborhood of Los Angeles. It would then continue at grade, on viaduct, and underground through the Sun Valley neighborhood of Los Angeles and the city of Burbank until reaching the Burbank Airport Station.

Viaduct

An elevated train track often used in urban, uneven, or rugged terrain, or to cross streams or rivers.

At Grade

Describes a section of track built on the ground surface.

S.5.3.2 SR14A Build Alternative

The SR14A Build Alternative alignment (Figure S-7) would begin in the city of Palmdale near Spruce Court on the west side of Sierra Highway. South of East Avenue S, the SR14A Build Alternative alignment would curve eastward and south approximately 300 feet east of Una Lake. South of Una Lake, the SR14A Build Alternative alignment would curve westward, cross over the Metrolink Antelope Valley Line, Sierra Highway, and the Soledad Siphon, and continue southwest, entering a tunnel portal approximately 0.5 mile northeast of the Sierra Highway/Pearblossom Highway intersection. The SR14A Build Alternative alignment would then continue westward in an approximately 13-mile tunnel before surfacing approximately 0.75 mile east of Agua Dulce Canyon Road. The alignment would transition between at-grade and elevated profiles closely paralleling SR 14 before entering an approximately 1-mile tunnel. Transitioning from tunnel to at grade, the SR14A Build Alternative alignment would converge with the Refined SR14 Build Alternative alignment at the Vulcan Mine site. The remaining SR14A Build Alternative alignment south of the Vulcan Mine site would be identical to the Refined SR14 Build Alternative alignment.

[7] After construction of the project is completed, a small permanent structure and associated power facilities for emergency egress, maintenance, and ventilation equipment could be installed at the selected adit locations. Refer to Section Chapter 2, Alternatives, for further discussion of adit features.

Figure S-6 Refined SR14 Build Alternative Overview Map

Figure S-7 SR14A Build Alternative Overview Map

S.5.3.3 E1 Build Alternative

The E1 Build Alternative (Figure S-8) would begin in the city of Palmdale near Spruce Court on the west side of Sierra Highway. The E1 Build Alternative would continue south through the city of Palmdale and would be identical to the Refined SR14 Build Alternative until north of the intersection of East Avenue S and Sierra Highway. After crossing the California Aqueduct, the E1 Build Alternative would transition into a tunnel approximately 0.6 mile north of ANF including SGMNM. The tunnel would continue southwest for approximately 1.6 miles and end in Aliso Canyon to cross a tributary of the Santa Clara River on viaduct. After this crossing, the E1 Build Alternative would enter a second tunnel continuing southwest. This tunnel would be 21.7 miles in length and would reach a maximum depth of 2,063 feet,[8] curving south-southwest while traversing ANF including SGMNM. Moving south from where the tunnel would leave the boundaries of ANF including SGMNM, the E1 Build Alternative would follow a path identical to that of the Refined SR14 Build Alternative. The E1 Build Alternative would traverse underneath the Sylmar neighborhood of Los Angeles and emerge from this tunnel in the Pacoima neighborhood of Los Angeles. It would then continue southeast at grade, on viaduct, and underground through the Sun Valley neighborhood of the city of Los Angeles and the city of Burbank until reaching the Burbank Airport Station.

S.5.3.4 E1A Build Alternative

The E1A Build Alternative alignment (Figure S-9) would diverge from the E1 Build Alternative alignment south of East Avenue S, following a more easterly route approximately 300 feet east of Una Lake. In contrast to the E1 Build Alternative alignment, the E1A Build Alternative alignment would cross over the California Aqueduct on elevated structures before entering a tunnel portal approximately 2,600 feet southwest of the Sierra Highway/Pearblossom Highway intersection. After continuing underground for approximately 1.7 miles, the E1A Build Alternative alignment would transition to an at-grade profile approximately 350 feet north of Vincent View Road. Just south of Vincent View Road, the E1A Build Alternative alignment would converge with the E1 Build Alternative alignment. The remaining E1A alignment south of Vincent View Road would be identical to the E1 Build Alternative alignment.

[8] After construction of the project is completed, a small permanent structure and associated power facilities for emergency egress, maintenance, and ventilation equipment could be installed at the selected adit locations. Refer to Chapter 2, Alternatives, for further discussion of adit features.

Figure S-8 E1 Build Alternative Overview Map

Figure S-9 E1A Build Alternative Overview Map

S.5.3.5 E2 Build Alternative

The northern 18 miles of the E2 Build Alternative would be identical to the E1 Build Alternative. The E2 Build Alternative (Figure S-10) would begin in the city of Palmdale, cross the California Aqueduct, and transition into a tunnel approximately 0.6 mile north of ANF including SGMNM. This tunnel would continue southwest for approximately 1.6 miles and end in Aliso Canyon to cross a tributary of the Santa Clara River on viaduct. After this crossing, the E2 Build Alternative would enter a second tunnel continuing southwest. After continuing for approximately 5 miles along the same path as the E1 alignment, the E2 alignment would shift to a more westerly direction through ANF including SGMNM. This second tunnel would be 16.6 miles in length and would reach a maximum depth of 2,670 feet, curving south-southwest while traversing ANF including SGMNM. The E2 Build Alternative would exit this tunnel in the hills above the Lake View Terrace neighborhood. The E2 Build Alternative would then cross Big Tujunga Wash on viaduct and enter a tunnel that would lead to the Burbank Airport Station.

S.5.3.6 E2A Build Alternative

The E2A Build Alternative (Figure S-11) alignment would follow a similar route to the E1A Build Alternative to Vincent View Road, where it would follow the E2 Build Alternative alignment. The remaining E2A Build Alternative alignment would be identical to the E2 Build Alternative alignment, south of Vincent View Road, under the ANF, into the San Fernando Valley, and to the southern terminus of the Central Subsection.

Figure S-10 E2 Build Alternative Overview Map

Figure S-11 E2A Build Alternative Overview Map

S.5.4 Electrical Interconnections and Infrastructure

The Palmdale to Burbank Project Section would include the extension of power transmission lines to a series of traction power substations (TPSS) located at approximately 30-mile intervals along the HSR corridor. Each traction power substation would be approximately 32,000 square feet (200 feet by 160 feet). Switching and paralleling stations would balance the electrical load between tracks and switch power off or on to either track in the event of an emergency. Switching stations would be required at approximately 15-mile intervals, midway between the TPSSs. Paralleling stations would be required at approximately 5-mile intervals along the Build Alternative alignment between the switching stations and the TPSSs; paralleling stations would be located underground when the alignment is in tunnel. The paralleling stations would need to be approximately 9,600 square feet (120 feet by 80 feet). Each station would include an approximately 450-square-foot (18 feet by 25 feet) control room. Permanent emergency standby generators are anticipated to be located at passenger stations and terminal lay-up/storage. Electrical interconnections and infrastructure are included in the Build Alternative footprints evaluated in this Final EIR/EIS. The ultimate electrical interconnections and infrastructure locations will be selected from the options evaluated in this Final EIR/EIS during final design of the Preferred Alternative, after the issuance of the Authority's ROD and NOD.

S.5.5 Adits and Intermediate Windows

Fault Chamber

A wide, underground chamber constructed to protect trains from earthquakes and fault rupture.

Several potential adit location options have been identified for each of the Build Alternatives. Adits are access shafts intended to facilitate underground tunnel construction and maintenance. Adits may also facilitate construction of fault chambers and other similar design requirements, that would provide added safety for HSR operations and maintenance in the vicinity of or when crossings hazardous fault zones. After construction is completed, a small permanent structure and facilities for emergency egress, maintenance, and ventilation would be installed at the adit locations.

Several intermediate window locations are also identified for each of the Build Alternatives. An intermediate window is a vertical shaft that can provide access, water, power, ventilation, and other support to tunnel construction areas. After construction is complete, a small structure for permanent access, and possibly ventilation equipment, would remain at the surface.

This Final EIR/EIS evaluates multiple options for adit and intermediate window sites for each Build Alternative which are described in Table S-2 below. The ultimate adit and intermediate window facility locations will be selected from the options evaluated in this Final EIR/EIS during final design of the Preferred Alternative, after the issuance of the Authority's ROD and NOD.

Table S-2 Palmdale to Burbank Project Section Build Alternative Adit and Intermediate Window Options

Feature Name	Location	Build Alternative
Adit		
SR14-A1	Located within the ANF along Little Tujunga Canyon Road	Refined SR14, SR14A
SR14-A2	Located just south of Pacoima Dam; would surface west of the Refined SR14 alignment and connect to Gavina Avenue	Refined SR14, SR14A
SR14-A3	Located just south of Pacoima Dam; would surface east of the Refined SR14 alignment and connect to Wallabi Avenue	Refined SR14, SR14A
E1-A1	Located along Little Tujunga Canyon Road, within the ANF. Would extend east from the underground cavern to a CSA north of Little Tujunga Canyon Road	E1, E1A

Feature Name	Location	Build Alternative
E1-A2	Located along Little Tujunga Canyon Road, within the ANF. Would extend west from the underground cavern to a CSA along Little Tujunga Canyon Road	E1, E1A
E2-A1	Connects to Little Tujunga Canyon Road within the ANF; extends west from the underground cavern to a temporary CSA within an in-holding approximately 0.4 mile north of Gold Creek Road	E2, E2A
E2-A2	Connects to Little Tujunga Canyon Road within the ANF; extends west from the underground cavern to a temporary CSA within an in-holding along Gold Creek Road	E2, E2A
Intermediate Window		
SR14-W1	Located directly north of the I-210/SR 118 interchange	Refined SR14, SR14A
SR14-W2	Located directly south of the I-210/SR 118 interchange	Refined SR14, SR14A
E1-W1	Located north of Arrastre Canyon, just outside the ANF boundary	E1, E1A
E1-W2a	Located directly north of the intersection of the I-210 and SR 118 freeways	E1, E1A
E1-W2b	Located directly south the intersection of the I-210 and SR 118 freeways	E1, E1A
E2-W1	Located just outside the ANF, north of Arrastre Canyon	E2, E2A
E2-W2	Located at the current site of the CalMat Mine in Sun Valley	E2, E2A

ANF = Angeles National Forest; CSA = construction staging area; I- = Interstate; SR = State Route

S.5.6 Station Area Development

The Palmdale to Burbank Project Section would include a station in the city of Burbank (Figure S-12), which would be designed to optimize connections to local transit, airports, highways, and bicycle and pedestrian networks. HSR stations would include the following elements:

- Passenger platforms
- Station house with ticketing, waiting areas, passenger amenities, administration and employee areas, and baggage and freight-handling service
- Short-term and long-term vehicle parking
- Passenger pick-up and drop-off areas
- Motorcycle/scooter parking
- Bicycle parking
- Waiting areas and queuing space for taxis and shuttle buses
- Pedestrian walkway connections

S.5.7 Burbank Airport Station

The Burbank Airport Station is at the southern end of the Palmdale to Burbank Project Section and was evaluated as part of the Burbank to Los Angeles Project Section. See Section 2.5.2.2 in Chapter 2, Alternatives, for a depiction of the Burbank Airport Station area that is an overlap area (common element) between the two HSR project sections. The Burbank to Los Angeles Project Section Final EIR/EIS was released on November 5, 2021 (SCH No. 2014071073), and contains the full analysis of the Burbank Airport Station. The Authority's Board certified the EIR/EIS and approved the Burbank to Los Angeles Project Section Preferred Alternative, including the

Burbank Airport Station, on January 20, 2022. The information regarding the Burbank Airport Station is for context, reference, and informational purposes.

The approved Burbank Airport Station site (Figure S-12) is east of the Hollywood Burbank Airport. This site is bordered by San Fernando Road to the north, Hollywood Way to the east, and Winona Avenue to the south. Airport facilities occupy much of the land south of this station site, industrial and light industrial land uses occupy land to the east of this station site, and residential land uses are to the north of this station site. The station site is near the I-5 freeway, which is approximately 0.25 mile to the north.

The HSR tracks and train boarding platforms will be underground at the Burbank Airport Station. The aboveground facilities will include a station building (to house ticketing areas, passenger waiting areas, restrooms, and related facilities), passenger pick-up/drop-off facilities for private autos, a transit center for buses and shuttles, and surface parking areas. Aboveground facilities would encompass approximately 65 acres and will provide up to approximately 3,000 surface parking spaces.

S.6 Impact Avoidance and Minimization Features

The Authority committed to implementing design features to avoid and minimize impacts of the statewide HSR system to the maximum extent possible consistent with the Tier 1 environmental documents, including the 2005 Statewide Program EIR/EIS, 2008 Bay Area to Central Valley Program EIR/EIS, and the 2012 Partially Revised Final Program EIR. These Impact Avoidance and Minimization Features (IAMFs) are described in Appendix 2-E, and are included as applicable, in the analysis of each of the Build Alternatives. Table S-3 below lists the IAMFs that would be part of the project. The Authority would implement these features during project design and construction, as relevant to the particular project section, to avoid and minimize impacts.

Project design includes considerations to avoid and minimize environmental and community impacts through incorporation of the following additional measures:

- Follow existing transportation corridors
- Span water crossings
- Use shared rights-of-way
- Include passages for wildlife movement
- Include narrowed footprint with elevated or retained cut profile
- Avoid sensitive environmental resources to the extent practical

Table S-3 Impact Avoidance and Minimization Features

IAMF Number	IAMF Title
Transportation	
TR-IAMF#1	Protection of Public Roadways during Construction
TR-IAMF#2	Construction Transportation Plan
TR-IAMF#3	Off-Street Parking for Construction-Related Vehicles
TR-IAMF#4	Maintenance of Pedestrian Access
TR-IAMF#5	Maintenance of Bicycle Access
TR-IAMF#6	Restriction on Construction Hours
TR-IAMF#7	Construction Truck Routes
TR-IAMF#8	Construction during Special Events
TR-IAMF#9	Protection of Freight and Passenger Rail during Construction
TR-IAMF#11	Maintenance of Transit Access

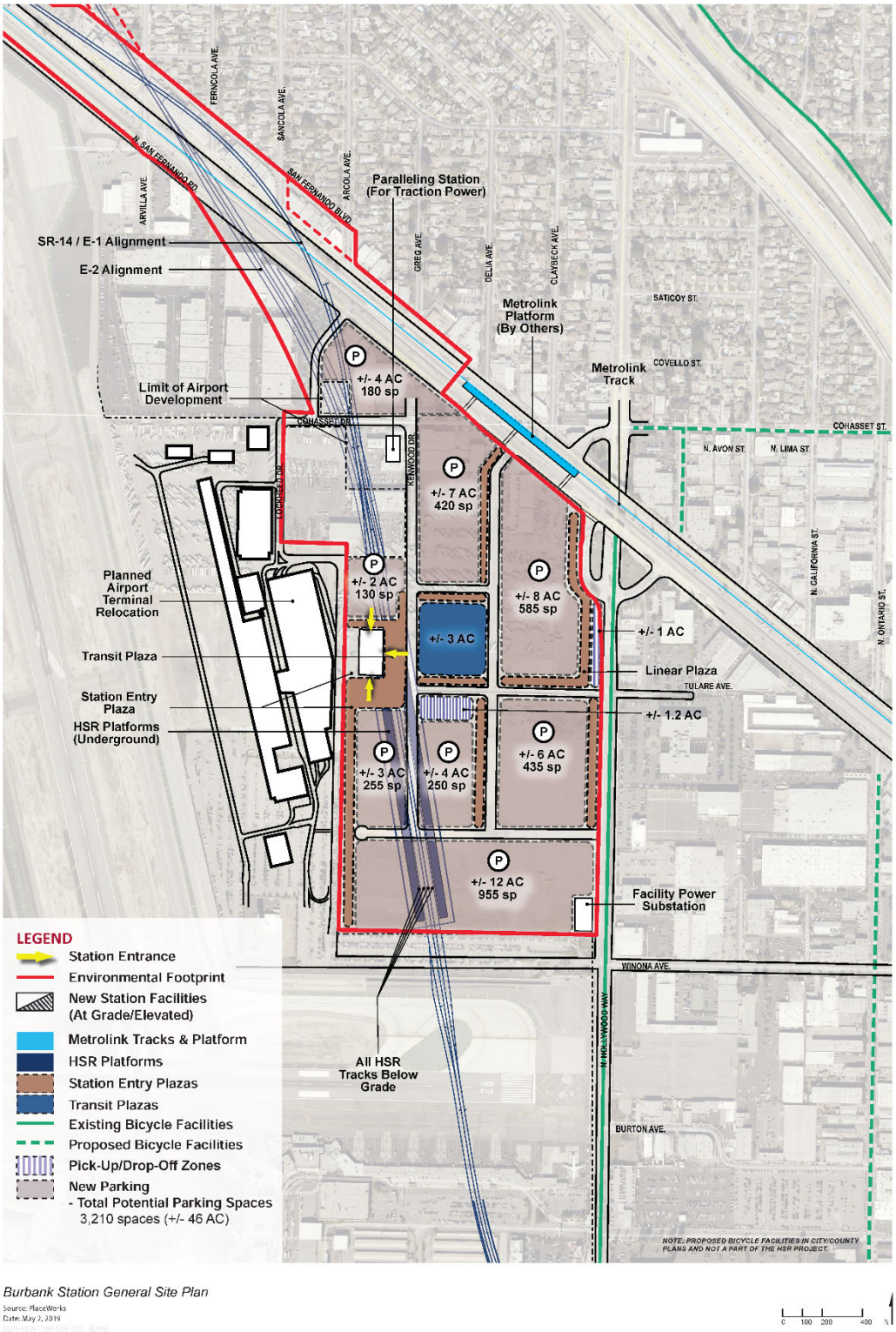
IAMF Number	IAMF Title
TR-IAMF#12	Pedestrian and Bicycle Safety
Air Quality and Global Climate Change	
AQ-IAMF#1	Fugitive Dust Emissions
AQ-IAMF#2	Selection of Coatings
AQ-IAMF#3	Renewable Diesel
AQ-IAMF#4	Reduce Criteria Exhaust Emissions from Construction Equipment
AQ-IAMF#5	Reduce Criteria Exhaust Emissions from On-Road Construction Equipment
AQ-IAMF#6	Reduce the Potential Impact of Concrete Batch Plants
Noise and Vibration	
NV-IAMF#1	Noise and Vibration
Electromagnetic Interference and Electromagnetic Fields	
EMI/EMF-IAMF#1	Preventing Interference with Adjacent Railroads
EMI/EMF-IAMF#2	Controlling Electromagnetic Fields/Electromagnetic Interference
Public Utilities and Energy	
PUE-IAMF#1	Design Measures
PUE-IAMF#2	Irrigation Facility Relocation
PUE-IAMF#3	Public Notifications
PUE-IAMF#4	Utilities and Energy
Biological and Aquatic Resources	
BIO-IAMF#1	Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors and General Biological Monitors
BIO-IAMF#2	Facilitate Agency Access
BIO-IAMF#3	Prepare WEAP Training Materials and Conduct Construction Period WEAP Training
BIO-IAMF#4	Operation and Maintenance Period WEAP Training
BIO-IAMF#5	Prepare and Implement a Biological Resources Management Plan
BIO-IAMF#6	Establish Monofilament Restrictions
BIO-IAMF#7	Prevent Entrapment in Construction Materials and Excavations
BIO-IAMF#8	Delineate Equipment Staging Areas and Traffic Routes
BIO-IAMF#9	Dispose of Construction Spoils and Waste
BIO-IAMF#10	Clean Construction Equipment
BIO-IAMF#11	Maintain Construction Sites

IAMF Number	IAMF Title
BIO-IAMF#12	Design the Project to be Bird Safe
Hydrology and Water Resources	
HYD-IAMF#1	Storm and Groundwater Management
HYD-IAMF#2	Flood Protection
HYD-IAMF#3	Prepare and Implement a Construction Stormwater Pollution Prevention Plan
HYD-IAMF#4	Prepare and Implement an Industrial Stormwater Pollution Prevention Plan
HYD-IAMF#5	Tunnel Boring Machine Design and Features
HYD-IAMF#6	Tunnel Lining Systems
HYD-IAMF#7	Grouting
HYD-IAMF#8	Private Well Monitoring and Minimizing Access Disruptions for Private Water Supply Wells Outside of the ANF
Geology, Soils, Seismicity, and Paleontolgical Resources	
GEO-IAMF#1	Geologic Hazards
GEO-IAMF#2	Slope Monitoring
GEO-IAMF#3	Gas Monitoring
GEO-IAMF#4	Historic or Abandoned Mines
GEO-IAMF#5	Naturally Occurring Hazardous Materials
GEO-IAMF#6	Ground Rupture Early Warning Systems
GEO-IAMF#7	Evaluate and Design for Large Seismic Ground Shaking
GEO-IAMF#8	Suspension of Operations During an Earthquake
GEO-IAMF#9	Subsidence Monitoring
GEO-IAMF#10	Geology and Soils
GEO-IAMF#11	Engage a Qualified Paleontological Resources Specialist
GEO-IAMF#12	Perform Final Design Review and Triggers Evaluation
GEO-IAMF#13	Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan (PRMMP)
GEO-IAMF#14	Provide WEAP Training for Paleontological Resources
GEO-IAMF#15	Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found
Hazardous Materials and Wastes	
HMW-IAMF#1	Property Acquisition Phase I and Phase II Environmental Site Assessments, Additional Preconstruction Investigations, and Associated Actions to Control Site Contamination
HMW-IAMF#2	Landfill
HMW-IAMF#3	Work and Vapor Barriers
HMW-IAMF#4	Known, Suspected, and Unanticipated Environmental Contamination
HMW-IAMF#5	Demolition Plans
HMW-IAMF#6	Spill Prevention

IAMF Number	IAMF Title
HMW-IAMF#7	Storage and Transport of Materials
HMW-IAMF#8	Permit Conditions
HMW-IAMF#9	Environmental Management System
HMW-IAMF#10	Hazardous Materials Plans
HMW-IAMF#11	Stakeholder Consultation for the San Fernando Valley Superfund Site Area 1
Safety and Security	
SS-IAMF#1	Construction Safety Transportation Management Plan
SS-IAMF#2	Safety and Security Management Plan
SS-IAMF#3	Hazard Analyses
SS-IAMF#4	Oil and Gas Wells
SS-IAMF#5	Aviation Safety
SS-IAMF#6	Stakeholder Coordination for the Hollywood Burbank Airport
Socioeconomics and Communities	
SOCIO-IAMF#1	Construction Management Plan
SOCIO-IAMF#2	Compliance with Uniform Relocation Assistance and Real Property Acquisition Policies Act
SOCIO-IAMF#3	Relocation Mitigation Plan
Station Planning, Land Use, and Development	
LU-IAMF#1	HSR Station Area Development: General Principles and Guidelines
LU-IAMF#2	Station Area Planning and Local Agency Coordination
LU-IAMF#3	Restoration of Land Used Temporarily During Construction
Agricultural Farmland and Forest Land	
AG-IAMF#1	Restoration of Important Farmland Used for Temporary Staging Areas
AG-IAMF#2	Permit Assistance
AG-IAMF#3	Farmland Consolidation Program
AG-IAMF#4	Notification to Agricultural Property Owners
AG-IAMF#5	Temporary Livestock and Equipment Crossings
AG-IAMF#6	Equipment Crossings
Parks, Recreation and Open Space	
PK-IAMF#1	Parks, Recreation, and Open Space
Aesthetics and Visual Quality	
AVQ-IAMF#1	Aesthetic Options
AVQ-IAMF#2	Aesthetic Review Process
Cultural Resources	
CUL-IAMF#1	Geospatial Data Layer and Archaeological Sensitivity Map

IAMF Number	IAMF Title
CUL-IAMF#2	WEAP Training Session
CUL-IAMF#3	Pre-construction Cultural Resource Surveys
CUL-IAMF#5	Archaeological Monitoring Plan and Implementation
CUL-IAMF#6	Pre-Construction Conditions Assessment, Plan for Protection of Historic Built Resources, and Repair of Inadvertent Damage
CUL-IAMF#7	Built-Environment Monitoring Plan
CUL-IAMF#8	Implement Protection and/or Stabilization Measures
Environmental Justice	
EJ-IAMF#1	Authority EJ Ombudsman and Contractor's EJ Liaison
EJ-IAMF#2	Business Spotlighting
EJ-IAMF#3	Environmental Justice Community-Inclusive Development of Aesthetic Treatments and Community Cohesion Enhancements
EJ-IAMF#4	EJ Business Relocation/Displacement Assistance
EJ-IAMF#5	EJ Community Post-Construction Transition to Operation
EJ-IAMF#6	Non-Regulatory Supplemental and Informational Monitoring (NSIM)

Source: Appendix 2-E, Impact Avoidance and Minimization Features
Authority = California High-Speed Rail Authority
HSR = high-speed rail
IAMF = impact avoidance and minimization feature



Burbank Station General Site Plan

Source: PlaceWorks
Date: May 3, 2019

Figure S-12 Approved Burbank Airport Station

S.7 No Project Alternative Impacts

In assessing future conditions, the No Project Alternative assumes that the California HSR System would not be built, but programmed and funded improvements to the intercity transportation system (highway, rail, and transit) as well as reasonably foreseeable local development projects (with funding sources already identified) would be developed as planned by 2040. Section S.5.2 describes the No Project Alternative conditions.

Because some future projects considered under the No Project Alternative are in the early planning process, specific impacts cannot always be determined, but each project would require environmental review under CEQA. Projects seeking federal funding or approvals would also need to conduct a NEPA-specific analysis. Environmental resources that would be affected under the No Project Alternative are described below.

- **Transportation—**No Project Alternative conditions are based on the Regional Travel Demand Forecasting Models[9] that assume completion of new trip-generating land-use projects (i.e., residential, commercial, and industrial developments) and capacity-increasing projects (i.e., highway widening and installation of new roadways) throughout the Palmdale to Burbank region. Such projects could encourage compact development and greater investment in local transit modes as a means of reducing vehicle traffic. However, even with these improvements, a growing regional population would continue to exacerbate roadway congestion, resulting in an overall increase in VMT.
- **Air Quality and Global Climate Change—**No Project Alternative air quality assumptions estimate that total emissions for volatile organic compounds, carbon monoxide, and nitrogen oxides would decrease from 2015 to 2040 as newer, lower-emitting vehicles replace older, higher-emitting vehicles. These decreases would offset VMT increases resulting from population growth throughout the Los Angeles region. In contrast, emissions of sulfur dioxide, particulate matter less than or equal to 10 microns and 2.5 microns (PM_{10}, and $PM_{2.5}$) in 2040 would be higher than the levels in 2015 because emissions of these pollutants are dependent on factors other than vehicle emission technology, such as wood-burning stoves and industrial processes. Improvements in vehicle emission technology would not reduce PM_{10} and $PM_{2.5}$ emissions from noncombustion processes, such as from brake wear or other sources of on-road dust. Emissions of sulfur dioxide, which are most commonly generated from power plants and other industrial facilities, are expected to

Vehicle Miles Traveled (VMT)

VMT is a metric of the total miles traveled by vehicles in a defined area over a defined period and is often used to estimate the environmental impacts of driving, such as GHG and air pollutant emissions.

Volatile Organic Compounds

A compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions, except those designated by U.S. Environmental Protection Agency as having negligible photochemical reactivity.

Carbon Monoxide

A colorless, odorless gas generated in the urban environment primarily by the incomplete combustion of fossil fuels in motor vehicles.

Nitrogen Oxides

A class of pollutant compounds that includes nitrogen dioxide and nitric oxide, both of which are emitted by motor vehicles.

Sulfur Dioxides

Sulfur-oxygen compounds that include the important criteria pollutants sulfur dioxide and sulfur trioxide.

Particulate Matter (PM_{10} and $PM_{2.5}$)

Liquid and solid particles of a wide range of sizes and compositions; of particular concern for air quality are particles smaller than or equal to 10 microns and 2.5 microns in size (PM_{10} and $PM_{2.5}$, respectively).

[9] The Regional Travel Demand Forecasting Models are produced by the Southern California Association of Governments.

increase as demand for energy and industrial products rises along with population and economic growth. Under the No Project Alternative, these increases in emissions would lead to a degradation of regional air quality in air basins throughout the state.

- **Noise and Vibration—**Existing highways, airports, and railways would continue to generate noise throughout the period to 2040. Highways would experience greater VMT over time, resulting in gradually increasing noise levels in the region. Although infrastructure projects are subject to regulations to minimize new sources of noise, reasonably foreseeable projects would also maintain or increase vibration impacts along transportation corridors throughout the region.
- **Electromagnetic Fields and Electromagnetic Interference—**As the regional population increases, so too would the use of electrical infrastructure and communications equipment, such as high-voltage power lines and antennas. Although such electromagnetic field (EMF)/electromagnetic interference (EMI)-generating equipment currently exists between Palmdale and Burbank, installation of new equipment to meet demand would increase EMF and EMI generation throughout the region.

Electromagnetic Field (EMF)

A force field that extends outward from any moving electrical current, consisting of magnetic and electrical fields

Electromagnetic Interference (EMI)

An electrical emission or disturbance that disrupts electrical or electronic equipment or systems

- **Public Utilities and Energy—**Planned growth throughout the Palmdale to Burbank Project Section region would increase use of, and demand for, public utilities, such as water, sanitary sewer, solid waste, and energy services. However, current and future projects would undergo project-specific environmental review to compensate for increased utility and energy demands.
- **Biological and Aquatic Resources —** Development pressure throughout Los Angeles County would continue to affect wildlife habitat and aquatic resources by converting rural or undeveloped land into urban and suburban residential communities and commercial and industrial uses, and infrastructure consistent with adopted local government general plans. Such impacts include loss, fragmentation, or degradation of habitat; and the loss of special-status plants and animals. Each present and future project would undergo environmental review to evaluate and minimize impacts on plants, wildlife, and habitat through avoidance, minimization, and compensatory mitigation measures. Nevertheless, irreversible loss of natural communities could occur as development pressure increases throughout the region. In the context of the Clean Water Act (CWA) Section 404(b)(1), a No Fill Alternative was analyzed to determine whether such an alternative would be practicable in light of the overall project purpose. The analysis indicates that a No Fill Alternative would not be practicable, and therefore would not be the least environmentally damaging preferred alternative for the Palmdale to Burbank Project Section. The practicability analysis of the No Fill Alternative is included the Palmdale to Burbank Checkpoint C Summary Report (Authority 2024).
- **Hydrology and Water Resources—**Growth in communities between Palmdale and Burbank would install new structures and infrastructure within regional watersheds and groundwater basins. Construction projects could alter surface water drainage patterns, degrade surface water or groundwater quality, increase flood risks, or reduce groundwater recharge. However, new development projects would be subject to federal, state, and local regulations designed to minimize and prevent impacts on water resources. Assuming these projects do not include the construction of tunnels in the hydrology and water resources tunnel construction study area, the anticipated effects to groundwater unique to the Build Alternatives would be avoided.
- **Geology, Soils, Seismicity, and Paleontological Resources—**New projects constructed between Palmdale and Burbank would encounter a variety of engineering and safety constraints related to geology, soils, seismicity, and mineral resources. Safety and

engineering constraints could be influenced by hazards associated with active faults in the region, including the San Andreas Fault. In addition, construction activities are likely to encounter paleontological resources (i.e., fossils), which are likely to be present in regions throughout Los Angeles County. New development would also be subject to environmental review to identify appropriate hazard mitigation and resource protection.

- **Hazardous Materials and Wastes—**Accidental spills or releases of hazardous materials could result from their continued use, storage, or transportation throughout the Palmdale to Burbank region. Proposed projects on contaminated sites could disturb hazardous media — such as contaminated soil, soil vapor, or groundwater. Such accidents might pose hazards that could affect public and environmental health. Best management practices, avoidance measures, and regulatory oversight would reduce potential risks associated with hazardous materials and wastes.
- **Safety and Security—**New residential, commercial, industrial, recreational, and transportation projects would change the demand for fire protection, law enforcement, and emergency medical services. The demand for law enforcement, fire, and emergency services would change, and coincide with the anticipated population growth and needs of planned industrial, residential, and commercial developments. Regional and local plans address future community conditions regarding safety and security needs. New development would also be subject to environmental review to identify appropriate hazard mitigation and resource protection.
- **Socioeconomics and Communities—**New projects throughout the Palmdale to Burbank region may displace residences and businesses, disrupt, or divide established communities, and/or reduce community cohesion. Such projects could also create economic opportunities (through job creation and larger tax revenue) or economic losses (through community disruption or displacement). Future projects would undergo individual environmental review to evaluate community cohesion and socioeconomic disruptions and identify mitigations.
- **Station Planning, Land Use, and Development—**Local and regional land use plans encourage growth management through urban infill near transit corridors. However, some local and regional land use policies anticipate completion of the California HSR System and include policies that consider HSR stations as elements of transit-oriented development. Therefore, the No Project Alternative could result in some local jurisdictions facing more difficulty in achieving desired higher-density development.
- **Agricultural Farmland and Forestland—**Local and regional land use plans encourage urban infill, which would minimize development pressure on lands that contain agricultural and forest resources. However, there is very little agricultural farmland between Palmdale and Burbank, so the No Project Alternative would be unlikely to result in substantial farmland conversions. Land use restrictions within ANF including SGMNM would generally preclude development projects from affecting forest lands in these areas managed by USFS.
- **Parks, Recreation, and Open Space—**Regional and local land use plans contain provisions for funding, acquiring, and maintaining public parks and recreation facilities to meet the needs resulting from population growth throughout the Palmdale and Burbank region. Future developments planned under the No Project Alternative would require individual environmental review to avoid impacts on parks, recreational facilities, and open space.
- **Aesthetics and Visual Quality—**Planned growth between Palmdale and Burbank would add infrastructure to undeveloped, rural, suburban, and urban landscapes. Future projects would influence the visual character of the resource study area (RSA). Project-level environmental review would require that projects avoid, minimize, or mitigate visual changes. In addition, due to land use restrictions in the ANF including SGMNM, the No Project Alternative would not result in development and would avoid visual impacts in the ANF including SGMNM. Local and regional growth management and land use plans encourage infill and higher-density development in urban areas and concentration of future land uses such as residential

and commercial around transit corridors, which would help reduce the conversion of undeveloped lands in general.

- **Cultural Resources—**Future projects would encounter archaeological and historic built resources between Palmdale and Burbank. Future development projects would be subject to federal and state laws and local regulations requiring minimization of impacts on historic properties. However, permanent loss of cultural resources could occur at new development sites throughout the region.
- **Regional Growth—** Urban and suburban areas such as Palmdale, Los Angeles, and Burbank are highly developed and are expected to experience population and employment growth. Transportation projects under the No Project Alternative could have the potential to induce growth in these areas. Conversely, land use restrictions within the ANF would generally preclude development and growth within the boundaries of the ANF.
- **Cumulative Impacts—** General plans and other planning documents for Los Angeles County and cities in the region project locations and types of growth likely to occur under buildout of the plans. Accommodating the buildout of these general plans and other planning documents will require land and the construction of new residential areas, roadways, electric power generation facilities, utilities, schools, hospitals, and commercial and industrial facilities.
- **Section 4(f) and Section 6(f)—**New development projects throughout the Palmdale to Burbank region would result in impacts on Section 4(f) and 6(f) resources. These impacts would occur mainly in developed areas including Palmdale and Burbank. Because of land-use restrictions in the ANF including SGMNM, no major development would occur within ANF including SGMNM.
- **Environmental Justice—**Jurisdictions in the region would evaluate the potential environmental and human health effects of future projects that would potentially have disproportionately high and adverse impacts on environmental justice populations.

Environmental Justice

Environmental justice evaluations entail identifying and addressing the potential for disproportionately high and adverse effects on minority and/or low-income populations.

S.8 Palmdale to Burbank Project Section Alternatives Evaluation

The following sections provide an overview of the impacts of the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives, including both adverse impacts and benefits common to the Build Alternatives. If adverse impacts are substantial, then proposed mitigation is described. A comparison of the capital and operating costs is also presented. As shown previously, Table S-1 provides a high-level comparison of key design features associated with each of the Build Alternatives.

S.8.1 Palmdale to Burbank Project Section Benefits

The California HSR System would help to accommodate anticipated population and employment growth and associated travel needs in California by providing millions of people the option to travel by train rather than by automobile or airline. According to the California Department of Finance, between 2015 and 2040, California's population is expected to increase by 21 percent, or 8 million residents—from approximately 39 million to 47 million (CDOF 2016); in the same time frame, employment in California is also expected to increase by 15 percent, or 3 million employees-from approximately 18 million to 21 million (BLS 2016). Between 2015 and 2040, the population of Los Angeles County is expected to increase by 15 percent or nearly 1.5 million residents—from approximately 10 million to more than 11 million; in the same time frame, employment in Los Angeles County is expected to increase by 11 percent or 0.5 million employees—from approximately 4.7 million to 5.2 million (SCAG 2016). As documented in the more recent 2023 California High-Speed Rail Project Update Report, growth forecasts are flattening. These updated demographic forecasts have affected overall travel demand in the state, including rail ridership forecasts (Authority 2023). On February 9, 2024, the Authority

released its Draft 2024 Business Plan for public review and comment. The draft business plan included new Phase 1 systemwide ridership projections. The projections rely on the California Rail Ridership Model prepared by the Authority in collaboration with the Caltrans Division of Rail and Mass Transportation.

Although the new model forecasts a slight increase in projected Valley to Valley ridership, the Phase 1 systemwide forecast is roughly 30 percent lower than what was presented in the 2020 or 2022 Business Plans, primarily because of a decrease in California population projections. The 2040 Phase 1 medium ridership is now forecast at 28.4 million and the high ridership forecast is 30.6 million (Authority 2024b).[10] Despite this meaningful reduction, the Authority continues to conclude that building the electrified system in California remains economically beneficial (Draft 2024 Business Plan, Chapter 5).

The California HSR System would provide a safe, clean, efficient transit system to accommodate this population and employment growth. An estimated 5,600 riders are anticipated to board through stations within the Palmdale to Burbank Project Section daily (Authority 2019b). The all-electric HSR train would be powered completely by 100 percent renewable energy. As such, the California HSR System would serve as a climate-change mitigation strategy to reduce California's greenhouse gas emissions by converting future automobile and aviation trips to HSR trips. Reductions in automobile VMT and aviation travel would result in a reduction of greenhouse gas emissions because the high-speed trains would be powered by renewable energy. Although the California HSR System would increase electricity consumption, the California HSR System would reduce vehicle and air travel miles with corresponding reductions in fuel consumption and air emissions, for a net reduction in emissions from transportation. Along with addressing the capacity constraints of automobile and airline travel, the California HSR System would improve air quality, reduce congestion, and improve transportation safety and travel time.

The Palmdale to Burbank Project Section would provide an interface with commercial airports, mass transit, and the highway network to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur. The HSR stations in Palmdale and Burbank would provide transit hubs that could support local government plans for high-density transit-oriented development and could attract development away from the edges of urban boundaries. The California HSR System would also improve water quality compared to the No Project Alternative because of decreased VMT, which would reduce non-point-source pollutants from vehicle travel.

Non-Point-Source Pollutants

Pollution that collects from a wide area and cannot be traced to a single source. Examples include pesticides or fertilizers from farms or developed lands that wash into rivers or percolate through the soil into groundwater.

The Palmdale to Burbank Project Section would provide benefits at the local, regional, and state levels. At the regional level, benefits would include economic growth, long-term air quality benefits, and traffic congestion reductions. Construction of the California HSR System would generate a total of approximately 35,000 to 37,000 job-years, depending on the selected Build Alternative, and operation and maintenance of the project would result in a total of approximately 5,000 new job-years.[11] It is anticipated that the regional workforce in Los Angeles County would be able to accommodate this employment demand, so the induced economic activity would benefit the regional economy.

S.8.2 Comparison of Impacts for the Palmdale to Burbank Project Section Build Alternatives

The Refined SR14 and SR14A Build Alternative alignments would diverge from the E1, E1A, E2, and E2A Build Alternatives near the California Aqueduct, and would turn west and follow the existing SR 14 freeway. The E1, E1A, E2, and E2A Build Alternatives would diverge and continue

[10] Refer to Draft 2024 Business Plan, Table 5.1.2: Phase 1 High, Medium, and Low Ridership by Year, p.92.

[11] A job-year is 1 year of work for one person; therefore, a single new construction job that lasts 5 years would equal 5 job-years, and 10 new construction jobs that last 5 years would equal 50 job years.

in a southwesterly direction beneath the ANF including SGMNM where both would continue in a tunnel. The Build Alternative corridors would each follow the same route in the city of Burbank as they approach the Burbank Airport Station.

Table S-4 lists and compares the key NEPA and CEQA impacts of the six Build Alternatives prior to mitigation. Table S-5 lists significant project impacts and proposed mitigation measures for the Build Alternatives and the CEQA level of significance after mitigation; impacts determined to be less than significant prior to mitigation under CEQA are not included. The comparison of the six Build Alternatives highlighted in Table S-4 and discussed in the paragraphs below generally focuses on impacts where each Build Alternative would result in different impacts for the specified resource topics and serves to differentiate the impacts among each of the Build Alternatives.

This impact analysis takes into account project design features (i.e., IAMFs) which are to comply with regulatory requirements to avoid and reduce environmental impacts prior to application of mitigation measures. As a result, the Authority would implement the design features and comply with these regulations, and therefore, such measures are not summarized here.

Table S-4 Pre-Mitigation Comparison of Key CEQA/NEPA Impacts for the High-Speed Rail Build Alternatives

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Transportation						
Construction Impacts						
Number of roadway segments where the LOS would degrade to an unacceptable level during northbound spoils hauling	LOS would degrade to an unacceptable level at 2 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 2 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 2 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 4 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 4 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 4 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 5 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 3 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 4 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 3 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 5 roadway segments in the PM peak hour.
Number of roadway segments where the LOS would degrade to an unacceptable level during southbound spoils hauling	LOS would degrade to an unacceptable level at 2 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 2 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 2 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 3 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 4 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 4 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 5 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 5 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 2 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 3 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 3 roadway segments in the AM peak hour. LOS would degrade to an unacceptable level at 4 roadway segments in the PM peak hour.

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Number of intersections (including new intersections) where the LOS would degrade to an unacceptable level during northbound spoils hauling	LOS would degrade to an unacceptable level at 4 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 5 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 5 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 7 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 6 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 7 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 5 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 7 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 4 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 3 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 3 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 3 intersections in the PM peak hour.
Number of intersections (including new intersections) where the LOS would degrade to an unacceptable level during southbound spoils hauling	LOS would degrade to an unacceptable level at 6 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 6 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 7 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 8 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 6 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 7 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 6 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 7 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 3 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 3 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 3 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 3 intersections in the PM peak hour.

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Number of freeway segments where the LOS would degrade to an unacceptable level during southbound spoils hauling	LOS would degrade to an unacceptable level at 2 freeway segments in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 2 freeway segments in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 freeway segment in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 freeway segment in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 freeway segment in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 freeway segment in the AM peak hour. LOS would degrade to an unacceptable level at 2 freeway segments in the PM peak hour.
Number of roadway segments where the LOS would degrade to an unacceptable level during project construction	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.	LOS would degrade to an unacceptable level at 1 roadway segment in the AM peak hour. LOS would degrade to an unacceptable level at 1 roadway segments in the PM peak hour.

Impact		Build Alternative					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Number of intersections (including new intersections) where the LOS would degrade to an unacceptable level during project construction		LOS would degrade to an unacceptable level at 3 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 4 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 3 intersections in the AM peak hour. LOS would degrade to an unacceptable level at 4 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 1 intersection in the AM peak hour. LOS would degrade to an unacceptable level at 2 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 1 intersection in the AM peak hour. LOS would degrade to an unacceptable level at 1 intersection in the PM peak hour.	LOS would degrade to an unacceptable level at 1 intersection in the AM peak hour. LOS would degrade to an unacceptable level at 2 intersections in the PM peak hour.	LOS would degrade to an unacceptable level at 1 intersection in the AM peak hour. LOS would degrade to an unacceptable level at 1 intersection in the PM peak hour.
Operations Impacts							
Number of roadway segments where the LOS would degrade to an unacceptable level during 2040 Plus Project conditions		LOS would degrade to an unacceptable level at a total of 8 roadway segments in the AM peak hour (2 additional roadway segments compared to 2040 No Project conditions). LOS would degrade to an unacceptable level at a total of 11 roadway segments in the PM peak hour (6 additional roadway segments compared to 2040 No Project conditions).					
Number of intersections (including new intersections) where the LOS would degrade to an unacceptable level during 2040 Plus Project conditions		LOS would degrade to an unacceptable level at a total of 6 intersections in the AM peak hour (1 additional intersection compared to 2040 No Project conditions). LOS would degrade to an unacceptable level at a total of 12 intersections in the PM peak hour (4 additional intersections compared to 2040 No Project conditions).					
Air Quality and Global Climate Change							
Construction Impacts							
Criteria pollutant emissions during project construction would exceed General Conformity *de minimis* levels		The Build Alternatives would exceed annual General Conformity *de minimis* levels. Years during which exceedances would occur for each criteria pollutant and relevant air quality management district are listed below.					
Criteria Pollutant	*Air Basin*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*
Volatile organic compounds	SCAB	None	None	None	None	None	None
	MDAB	None	None	None	None	None	None

Impact		Build Alternative					
		Refined SR14	SR14A	E1	E1A	E2	E2A
	SJVAB	None	None	None	None	None	None
Nitrogen oxides	SCAB	2021 – 2025	2020 – 2026	2021 – 2026	2021 – 2026	2021 – 2026	2021 – 2026
	MDAB	None	None	None	None	None	2023
	SJVAB	None	None	None	None	None	None
Nitrogen Dioxide[1]	SCAB	None	None	None	None	None	None
	MDAB	N/A	N/A	N/A	N/A	N/A	N/A
	SJVAB	N/A	N/A	N/A	N/A	N/A	N/A
Carbon monoxide	SCAB	2023	2022 – 2023	None	None	None	2022, 2024 – 2025
	MDAB	None	None	None	None	None	None
	SJVAB	None	None	None	None	None	None
Sulfur dioxide (as a precursor to $PM_{2.5}$)[2]	SCAB	None	None	None	None	None	None
	MDAB	None	None	None	None	None	None
	SJVAB	None	None	None	None	None	None
Particulate matter less than or equal to 10 micrometers	SCAB	None	None	None	None	None	None
	MDAB	None	None	None	None	None	None
	SJVAB	None	None	None	None	None	None
Particulate matter less than or equal to 2.5 micrometers	SCAB	None	None	None	None	None	None
	MDAB	None	None	None	None	None	None
	SJVAB	None	None	None	None	None	None
Criteria pollutant emissions during project construction would exceed CEQA thresholds		The Build Alternatives would exceed CEQA thresholds. Exceedances would occur for each criteria pollutant and relevant air quality management district as listed below (yearly unless otherwise noted).					
Criteria Pollutant	*Air Quality Management District*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*	*Exceedance Years*

Impact		Build Alternative					
		Refined SR14	SR14A	E1	E1A	E2	E2A
Volatile organic compounds	SCAQMD (daily)	None	None	None	None	None	None
	AVAQMD	None	None	None	None	None	None
	SJVAPCD	None	None	None	None	None	None
Nitrogen oxide	SCAQMD (daily)	2020 – 2025	2020 – 2027	2021 – 2025	2021 – 2025	2021 – 2026, 2028	2021 – 2025
	AVAQMD	None	None	None	None	None	2023
	SJVAPCD	None	None	None	None	None	None
Carbon monoxide	SCAQMD (daily)	2021 – 2023	2020 – 2024	2023	2023	2021 – 2025	2023
	AVAQMD	None	None	None	None	None	None
	SJVAPCD	None	None	None	None	None	None
Sulfur dioxide	SCAQMD (daily)	None	None	None	None	None	None
	AVAQMD	None	None	None	None	None	None
	SJVAPCD	None	None	None	None	None	None
Particulate matter less than or equal to 10 micrometers	SCAQMD (daily)	None	None	None	None	None	None
	AVAQMD	None	None	None	None	None	None
	SJVAPCD	None	None	None	None	None	None
Particulate matter less than or equal to 2.5 micrometers	SCAQMD (daily)	None	None	None	None	None	None
	AVAQMD	None	None	None	None	None	None
	SJVAPCD	None	None	None	None	None	None
Health risks from construction emissions		None of the six Build Alternatives would result in exceedance of applicable thresholds for cancer risk or for chronic and acute noncancer health impacts.					

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Increased cancer risk to residential sensitive receptors exceeding thresholds	No	No	No	No	No	No
Increased noncancer health risk (chronic and acute) to residential sensitive receptors exceeding thresholds	No	No	No	No	No	No
Localized construction effects	The Build Alternatives have communities that would experience localized construction emission exceedances, assuming worst-case scenarios for construction activities.					
Total construction GHG emissions (metric tons CO_2e)[3]	134,000	171,000	142,000	154,000	140,000	179,000
Noise and Vibration						
Construction Impacts						
Residential communities affected by aboveground construction activities (Figure S-13)	▪ Harold / Alpine ▪ Agua Dulce	▪ Harold / Alpine ▪ Agua Dulce	▪ Harold / Alpine ▪ Near Southern California Edison (SCE) Vincent Substation	▪ Harold / Alpine ▪ Near SCE Vincent Substation	▪ Harold / Alpine ▪ Near SCE Vincent Substation ▪ Lake View Terrace ▪ Sun Valley	▪ Harold / Alpine ▪ Near SCE Vincent Substation ▪ Lake View Terrace ▪ Sun Valley

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Noise-sensitive areas affected by traffic noise from truck trips hauling construction spoils	▪ Big Springs Road northwest of Acton for Refined SR14	▪ None for SR14A	▪ Portals: Aliso Canyon Road, Crown Valley Road, and Soledad Canyon Road south of Palmdale ▪ Adit: Sand Canyon Road and Placerita Canyon Road in ANF	▪ Portals: Aliso Canyon Road, Crown Valley Road, and Soledad Canyon Road south of Palmdale ▪ Adit: Sand Canyon Road and Placerita Canyon Road in ANF	▪ Wheatland Avenue in the Shadow Hills neighborhood ▪ Foothill Boulevard in the Lake View Terrace neighborhood ▪ Aliso Canyon Road, Soledad Canyon Road, and Crown Valley Road south of Palmdale	▪ Wheatland Avenue in the Shadow Hills neighborhood ▪ Foothill Boulevard in the Lake View Terrace neighborhood ▪ Aliso Canyon Road, Soledad Canyon Road and Crown Valley Road south of Palmdale

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Operations Impacts						
Operation of the rail corridor would result in moderate and severe noise impacts and significant vibration and ground-borne noise effects.	**Noise Effects**					
	Moderate: 129	Moderate: 99	Moderate: 143	Moderate: 173	Moderate: 141	Moderate: 168
	Severe: 55	Severe: 19	Severe: 108	Severe: 44	Severe: 164	Severe: 102
	Vibration Effects					
	Residential: 27	Residential: 27	Residential: 20	Residential: 20	Residential: 0	Residential: 0
	Institutional: 1	Institutional: 1	Institutional: 1	Institutional: 1	Institutional: 0	Institutional: 0
Domestic animals may experience startle effects within 50 feet of the alignment at these following locations	Pacific Crest Trail, Vasquez Rocks Natural Area Park	Pacific Crest Trail, Vasquez Rocks Natural Area Park	None	None	Hansen Dam Recreation Area, and Stonehurst Park and Recreation Center	Hansen Dam Recreation Area, and Stonehurst Park and Recreation Center
Electromagnetic Fields and Electromagnetic Interference						
Construction Impacts						
Potentially sensitive receptors within the RSA	2	2	2	2	0	0
Facilities that could operate sensitive equipment within 50 feet of construction equipment	2	2	2	2	0	0
Operations Impacts						
Facilities that could operate sensitive equipment within the RSA	2	2	2	2	0	0
Number of schools within 500 feet of the HSR footprint	3	4	3	3	2	2
Miles of existing track in the RSA that could be affected by EMI generated by project operation	13	14	16	15	12	11
Airports that operate within the RSA	2	2	2	2	2	2

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Public Utilities and Energy						
Construction Impacts						
Planned temporary interruption of utility services						
High-risk utility conflicts	291	260	254	219	169	161
Major low-risk utility conflicts	170	150	146	126	109	103
Total construction water demand (acre feet/year)	1,033	1,371	848	1,169	603	945
Total construction energy consumption (MMBtu/year)	3.16 million	3.23 million	2.70 million	2.71 million	3.01 million	3.02 million
Biological and Aquatic Resources						
Construction Impacts						
Number of affected special-status plant species	All of the Build Alternatives would affect the same 3 Federal Endangered Species Act (FESA)-listed special-status plant species and 42 non-FESA-listed special-status plant species					
Number of affected special-status plant communities	6	6	5	5	6	6
Number of affected FESA-listed special-status wildlife species	12	12	11	11	11	10
Number of non-FESA-listed special-status wildlife species affected	45	44	42	42	46	46
Acreage of affected wetland waters of the U.S. (temporary and permanent footprint)	8	1	8 – 9[4]	1 – 3[4]	15	8
Acreage of affected nonwetland waters of the U.S. (temporary and permanent footprint)	40 – 42[4]	26 – 30[4]	33 – 34[4]	20 – 21[4]	27 – 28[4]	14 – 15[4]
High risk of impacts on state and federally jurisdictional aquatic resources, including waters of the U.S., from groundwater depletion in ANF (miles)	3.2	3.2	5.5	5.5	9.9	9.9
Acreage of affected additional waters of the State	6	2	7	2	7	2
Acreage of affected CDFW riparian habitat (temporary and permanent footprint)	29 – 44[4]	20 – 47[4]	31 – 36[4]	25 – 30[4]	24 – 25[4]	18 – 20[4]

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Acreage of affected CDFW lakes and streambeds (temporary and permanent footprint)	50 – 52[4]	29 – 33[4]	44 – 46[4]	28 – 30[4]	53[4]	38[4]
High risk of impacts on aquatic resource subject to Section 1600 et. seq. regulation from groundwater depletion in ANF (linear miles)	3.2	3.2	5.5	5.5	9.9	9.9
Risk of Secondary Effects from Tunnel Construction[5]	Lowest Risk	Lowest Risk	High Risk	High Risk	Highest Risk	Highest Risk
Hydrology and Water Resources						
Construction Impacts						
Number of waterbody crossings at grade (fill, embankment, or cut-and-cover tunnel)	48	43	43	42	34	39
Number of viaduct waterbody crossings	12	3	7	3	8	3
Number of tunnel waterbody undercrossings	29	32	43	44	44	40
Acres of construction-period ground disturbance	3,409 – 3,492[4]	3,144 – 3,232[4]	2,249 – 2,263[4]	2,022 – 2,159[4]	2,093 – 2,094[4]	1,963 – 1,964[4]
Acres of permanent footprint	2,490 – 2,565[4]	2,164 – 2,238[4]	2,156	1,898 – 2,021[4]	1,994 – 2,006[4]	1,835 – 1,847[4]
Acres of new impervious surfaces	787	752	742	700	650	607
Acres of construction-period ground disturbance within SFHAs	279 – 281	291 – 293[4]	306	306	422	421
Acres of permanent footprint within floodplains	279 – 281	291 – 293[4]	306	306	422	421
Number of groundwater basins crossed by construction footprint	4	3	3	1	2	0
Number of groundwater wells within 1 mile of alignment centerline	30	30	24	24	22	22
Miles of tunnel beneath ANF	7.3	7.3	17.9	17.9	17.90	17.90
Width (feet) of gouge, crushed, and sheared rock fault zones	1,180	1,180	860	860	2,820	2,820
Number of Faults and Fault Zones	15	15	7	7	20	20

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Number of High-Risk Areas within the Tunnel Construction RSA	1	1	2	2	6	6
Number of Moderate Risk Areas within the Tunnel Construction RSA	3	3	4	4	5	5
Miles of Tunnel in Groundwater Pressure above 25 bar	1.6	1.6	6.9	6.9	6.6	6.6
Seeps and springs in ANF within 1 mile of alignment centerline	0	0	1	1	6	6
Streams in the ANF within 1 mile of Build Alternative alignment	11	11	22	22	39	39
Private wells within or near ANF including SGMNM	14	14	38	38	25	25
Production wells within or near ANF including SGMNM	4	4	0	0	3	3
Private structures within or near ANF that could rely on private wells within ANF	333	333	152	152	253	253
Geology, Soils, Seismicity, and Paleontological Resources						
Construction Impacts						
Acres of temporary surface footprint within high subsidence potential zones	1,679	1,509	1,886	1,651	1,886	1,651
Acres of permanent footprint within high-subsidence-potential zones (surface / subsurface)	1,650 / 30	1,487 / 95	1,855 / 16	1,609 / 35	1,854 / 16	1,609 / 35
Acres of temporary and permanent footprint in areas of known karst terrain (surface / subsurface)	266 / 1.4	152 / 4.8	0 / 0	0 / 0	0 / 0	0 / 0
Acres of temporary footprint within nonseismic landslide hazard areas (surface / subsurface)	0 / 5	0 / 8	0 / 15	0 / 15	5 / 3	5 / 3
Acres of temporary footprint within seismic landslide hazard areas	100 – 104[4]	90 – 94[4]	40 – 49[4]	40 – 49[4]	119	90
Acres of temporary footprint within highly erodible soil areas	365 – 375[4]	354 – 364[4]	161 – 168[4]	100 – 104[4]	223 – 241	156 – 183[4]

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Acres of permanent footprint within highly erodible soils	356 – 363[4]	345 – 353[4]	153 – 160[4]	98 – 102[4]	215 – 233[4]	147 – 152[4]
Acres of temporary and permanent footprint within soil areas that are highly corrosive to steel (surface / subsurface)	882 / 8	832 / 19	447 / 5	436 / 5	447 / 5	399 / 5
Acres of temporary and permanent footprint within soil areas that are highly corrosive to concrete	24	13	24	13	24	13
Acres of temporary footprint within areas of difficult excavation	1,075	975	1,879	1,938	1,808	1,869
Acres of temporary surface footprint within liquefaction-prone areas	274 – 282[4]	208 – 216[4]	180	151	217	190
Acres of footprint within dam inundation zones (temporary / permanent)	551 – 586[4] / 547 – 566[4]	539 – 574[4] / 524 – 543[4]	480 – 496[4] / 480 – 496[4]	551 – 570[4] / 535 – 555[4]	173 / 260	331 / 320
Tons of construction aggregate required for construction (million tons)	8.1	9.3	8.1	8.7	8.9	8.4
Acres of temporary and permanent surface footprint within MRZ-2 zones	658 – 679[4]	664 – 685[4]	408 – 423[4]	419 – 433[4]	246	247
Acres of permanent footprint within MRZ-2 zones (surface / subsurface)	643 – 660[4] / 94 – 96[4]	651 – 667[4] / 95 - 96[4]	408 – 423[4] / 45	415 – 429[4] / 45	246 / 10	247 / 31
Active mining facilities within construction footprint	1	1	0	0	0	0
Closed mining facilities within construction footprint	3	3	1	1	1	1
Inactive oil/gas wells within construction footprint	1	1	1	1	2	2
Linear miles of bored tunnel through paleontologically sensitive geologic units (high / low sensitivity)	7.80 / 6.51	9.54 / 8.57	4.76 / 3.42	6.06 / 3.58	4.77 / 3.31	6.07 / 3.47
Linear miles of surface profile through paleontologically sensitive geologic units (high / low sensitivity)	2.50 / 11.87	1.84 / 11.59	2.81 / 10.40	1.77 / 10.49	3.02 / 9.46	1.93 / 8.60
Acres of surface footprint within paleontologically sensitive geologic units (high / low sensitivity)	493.37 / 1,975.64	581.22 / 1,907.45	410.19 / 1,630.67	386.51 / 1,608.10	499.52 / 1,428.92	478.93 / 1,395.99

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Hazardous Materials and Wastes						
Construction Impacts						
Estimated contaminated spoils quantities (million cubic yards)	6.8	6.8	3.0	3.0	3.8	3.8
Number of high-priority PEC[7] sites within construction footprint	26	26	24	24	21	20
Number of medium-priority PEC sites within construction footprint	76	82	74	77	38	42
Number of educational facilities within the educational facility RSA	18 – 23[4]	21 – 26[4]	10	10	6	6
Number of landfills within 0.25 mile of alignment centerline	21 – 25[4]	25 – 26[4]	21 – 25[4]	25 – 26[4]	16	16
Number of inactive oil/gas facilities	1	1	1	1	1 – 2[4]	1 – 2[4]
Operations Impacts						
Number of educational facilities within the educational facility RSA	18 – 23[4]	21 – 26[4]	10	10	6	6
Safety and Security						
Construction Impacts						
Number of temporary road closures	17	15	17	15	7	5
Number of permanent road closures	9	5	13	12	11	10
Operations Impacts						
Number of airports/airstrips located within RSA	3	3	2	2	1	1
Schools within 0.25 miles of the Build Alternative footprint	13	14	12	12	7	7

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Socioeconomics and Communities						
Construction Impacts						
Residential communities affected by aboveground construction activities	▪ Boulders at the Lake ▪ Harold ▪ Acton (near Vasquez High School) ▪ Agua Dulce (near Big Springs Road) ▪ Sylmar	▪ Boulders at the Lake ▪ Sylmar	▪ Boulders at the Lake ▪ Harold ▪ Acton (near Foreston Drive) ▪ Sylmar	▪ Boulders at the Lake ▪ Acton (near Foreston Drive) ▪ Sylmar	▪ Boulders at the Lake ▪ Harold ▪ Acton (near Foreston Drive) ▪ Lake View Terrace ▪ Sun Valley	▪ Boulders at the Lake ▪ Acton (near Foreston Drive) ▪ Lake View Terrace ▪ Sun Valley
Existing residential communities divided by at-grade or above-grade Build Alternative footprint	▪ Harold ▪ Acton (near Vasquez High School) ▪ Agua Dulce (near Big Springs Road)	▪ N/A	▪ Harold ▪ Acton (near Foreston Drive)	▪ Acton (near Foreston Drive)	▪ Harold ▪ Acton (near Foreston Drive) ▪ Lake View Terrace	▪ Acton (near Foreston Drive) ▪ Lake View Terrace
Total single-family residential units displaced	38 – 41[4]	8 – 11[4]	13 – 18[4]	12 – 17[4]	38	37
Total multifamily residential units displaced	13	29	11	27	11	27
Communities with insufficient suitable replacement residential housing	Southeast Antelope Valley	None	None	None	Lake View Terrace	Lake View Terrace
Total businesses displaced	214 – 231[4]	213 – 230[4]	213 – 230[4]	215 – 232[4]	121	123
Communities with insufficient suitable replacement sites for businesses	▪ Pacoima ▪ Sun Valley	▪ Pacoima ▪ Sun Valley	▪ Pacoima ▪ Sun Valley	▪ Pacoima ▪ Sun Valley	▪ Sun Valley ▪ Shadow Hills	▪ Sun Valley ▪ Shadow Hills
Cumulative sales tax over construction period	$95,700,900	$97,402,700	$92,291,300	$93,663,100	$92,891,800	$94,264,800

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Annual average sales tax during construction	$11,962,600	$12,175,300	$11,536,400	$11,707,900	$10,321,300	$10,473,900
Station Planning, Land Use, and Development						
Construction Impacts						
Acres of existing land uses subject to temporary land-use effects						
Industrial	<1[4]	<1[4]	<1 – 2[4]	0 – <1[4]	0	0
Commercial	<1[4]	<1[4]	0 – <1[4]	0 – <1[4]	0 – <1[4]	0[4]
Residential	24 – 41[4]	10 – 27[4]	28 – 63[4]	48 – 63[4]	32 – 63[4]	35 – 64[4]
Agricultural	8	3	8	3	8	3
Recreational	0	0	0	0	0	0
Public	1 – 2[4]	0 – <1[4]	1 – 2	0 – <1[4]	1	0 – <1[4]
Institutional	8	8	0	0	0 – <1	0 – <1
Railroads/utilities	1	0[4]	1 – 2	0	1	0
Vacant land	65 – 77[4]	80 – 93[4]	27 – 40[4]	59 – 75[4]	32 – 47[4]	46 – 61[4]
Total Acres	108 – 129	102 – 120	66 – 117	110 – 144	74 – 122	84 – 130
Acres of general plan designated land uses subject to temporary land-use effects						
Industrial	<1 – 12[4]	<1-12[4]	<1 – 12[4]	0	0	0
Commercial	<1	11	0	11	0	11
Medium-high-density residential	0	0	0	0	0	0
Low-density residential	82 – 97	69 – 84[4]	53	81 – 96	56	65
Agricultural/open space	1 – 5	<1-4[4]	1	1	<1	<1
Angeles National Forest	6 – 33	6 – 33[4]	<1 – 27[4]	<1 – 27[4]	<1 – 32[4]	<1 – 32[4]
Public facility/institutional	17[3]	8 – 9[4]	11 – 15	9[4]	12	5
Right-of-way	0	0	0	0	0	0
Specific plan	0	0	0	0	0	0

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Total Acres	107 – 163	96 – 153	67 – 108	103 – 144	70 – 101	84 – 115
Total permanent surface conversions to transportation land use (acres)	1,515 – 1,597[4]	1,246 – 1,328[4]	1,233 – 1,288[4]	1,077 – 1,127[4]	1,187 – 1,210[4]	984 – 996[4]
Effects on existing land uses (acres)						
Industrial	198 – 217[4]	125 – 138[4]	155 – 167[4]	152 – 164[4]	92	90
Commercial	18 - 21[4]	13 – 16[4]	19 – 22[4]	18 – 21[4]	12 – 13[4]	11
Residential	140 - 148[4]	65 - 73[4]	149 – 158[4]	137 – 143[4]	184 – 189[4]	175 – 176[4]
Agricultural	13	17	<1	5	<1	5
Recreational	<1	<1	<1	<1	<1	<1
Public	139[4]	103	122 – 123[4]	114	93	85
Institutional	7	7	1	1 – 13[4]	0 – 1[4]	0 – 1[4]
Railroads/utilities	147[4]	101	187 – 188[4]	132	157	103
Vacant land	911 – 970[4]	796 – 855[4]	644 – 673[4]	578 – 595[4]	691 – 701[4]	574 – 586[4]
Total Acres	1,575 – 1,657	1,306 – 1,388	1,279 – 1,334	1,138 – 1,188	1,231 – 1,248	1,044 – 1,058
Effects on planned land uses (acres)						
Industrial	141 – 147[4]	123– 130[4]	135 – 150[4]	145 – 152[4]	72	78
Commercial	40	26	47	21	44	19
Medium-high-density residential	<1	3	1	3	1	0 – <1
Low-density residential	787 – 788[4]	586	632	506	680 – 681[4]	555
Agricultural/open space	236	170	185	165	164	143
Angeles National Forest	216 – 288[4]	216 – 288[4]	95 – 109[4]	95 – 109[4]	83 – 102[4]	83 – 102[4]
Public facility/institutional	114 – 115[4]	104 – 105[4]	135 – 141[4]	121	79	60
Right-of-way	4	3	0	0	0	0
Specific plan	0	0	0	0	0	0

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Total Acres	1,539 – 1,619	1,231 – 1,311	1,230 – 1,265	1,056 – 1,077	1,123 – 1,143	938 – 958
Permanent specific land-use impacts within Angeles National Forest (acres)						
Back country	0 – 66[4]	0 – 66[4]	62 – 76[4]	62 – 76[4]	29 – 33[4]	29 – 33[4]
Back country (motorized use restricted)	<1	<1	0	0	0	0
Back country (Nonmotorized)	0 – <1	0 – <1	22 – 23[4]	22 – 23[4]	22 – 37[4]	22 – 37[4]
Developed area interface	216 – 221[4]	216 – 221[4]	0 – 10[4]	0 – 10[4]	27	27
Total Acres	216 – 288	216 – 288	95 – 109	95 – 109	83 – 102	83 – 102
Unplanned Population Growth Due to Temporary Construction Employment						
Total direct employment created during construction (in job years)	37,100	37,800	35,800	36,300	36,000	36,500
Total indirect and induced employment created during construction (in job years)	46,300	47,100	44,500	45,300	44,900	45,600
Total direct, indirect, and induced employment created during construction (in job years)	83,400	84,900	80,300	81,600	80,900	82,100
Agricultural Farmland and Forest Land						
Construction Impacts						
Temporary use of Important Farmland (acres)	None					
Temporary use of Grazing Land (acres)	0 – 21[4]	10 – 21[4]	8	8	8	8
Temporary use of Forest Land	Adit Option SR14-A1	Adit Option SR14-A1	Adit Option E1-A1 Adit Option E1-A2	Adit Option E1-A1 Adit Option E1-A2	None	None
Parks, Recreation, and Open Space						
Construction Impacts						
Number of affected parks, recreational areas, and open space resources affected	22	23	17	18	13	14

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Aesthetics and Visual Quality						
Construction Impacts						
Number of key viewpoints with adverse effects to visual quality	6	2	2	2	4	4
Cultural Resources[8, 9]						
Construction Impacts						
Number of known archaeological resources	19	11	14	9	12	9
Number of built historical resources	3	3	6	6	5	5
Operations Impacts						
Number of historically significant built-environment resources	3	3	6	6	5	5
Regional Growth						
Construction Impacts						
Direct jobs created during peak year construction (2023)	7,800	7,900	7,900	8,000	7,900	8,000
Direct jobs created as percent of projected construction-industry jobs (2023)	5.4%	5.5%	5.5%	5.6%	5.5%	5.6%
Total direct, indirect, and induced jobs created during construction (2023)	83,400	84,900	80,300	81,600	80,900	82,100
Operations Impacts						
HSR operations and maintenance employment growth (jobs)	500					
HSR increased employment due to improved accessibility (jobs)	4,900					
Total HSR-induced long-term employment growth (jobs)	5,383					
Percent increase over 2040 No Project Alternative employment projections (jobs)	0.1%					

Impact	Build Alternative					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Total HSR-induced population growth	11,693					
Percent increase over 2040 No Project Alternative population projections	0.1%					
Impacts of long-term land-use consumption	The Build Alternatives would generate an additional 0.8 percent housing need beyond the No Project Alternative projections. Growth resulting from the project would be consistent with that already planned for the RSA; therefore, there would be no increased land use consumption due to long-term induced population growth.					
Cumulative Impacts						
Construction Impacts						
Adverse Effects	Construction of each Build Alternative would result in cumulative adverse effects pertaining to the following resource topics: Transportation, Air Quality (General Conformity and Localized Construction Effects), Noise, Paleontological Resources, Socioeconomics and Communities (Population and Community Impacts), Aesthetics and Visual Quality, and Cultural Resources.					
Operations Impacts						
Adverse Effects	Operations of each Build Alternative would result in cumulative adverse effects pertaining to noise.					

[1] As the SCAB is in maintenance for the NO_2 NAAQS, the alternative's emissions must be compared to the NO_2 de minimis level. As NO_2 is a subset of NOx, for the purposes of this analysis, the NO_2 emissions are assumed to be equal to the NOx emissions. A NO_2 analysis was not required for the MDAB or SJVAB because NO_2 is in attainment for these basins.
[2] Although the basins are in attainment for SO_2, because SO_2 is a precursor for $PM_{2.5}$, the $PM_{2.5}$ General Conformity de minimis levels are used.
[3] Values differ from those in Section 3.3 due to rounding
[4] As discussed in Section S.5.3.6, the Build Alternatives would require adits and intermediate windows for construction access to tunneled portions of the alignment. This table includes ranges of quantifiable impacts that would result from the selection of each adit and intermediate window combination.
[5] A special-status plant species is a plant species that has some form of state or federal protection because it is threatened or rare.
[6] For further breakdown of impacts on special-status plant and wildlife species from changes in hydrologic conditions due to tunnel construction, refer to Section 3.7, Biological and Aquatic Resources.
[7] The PEC designation applies to specific sites where there is a possibility of existing, past, or potential hazardous materials release into soil, groundwater, or surface water.
[8] Per the Section 106 PA, the recorded archaeological sites in the project area of potential effects that have not been evaluated for National Register of Historic Places eligibility will be revisited and will undergo phased evaluation.
[9] Phased resources consist of resources that have not been surveyed due to lack of access, either due to physical constraints or where access to resources has not been granted.
Numbers in this table have been rounded.
ANF = Angeles National Forest; AVAQMD = Antelope Valley Air Quality Management District; CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; CESA = California Endangered Species Act; CO_2e = carbon dioxide equivalent; EMI = electromagnetic interference; FESA = federal Endangered Species Act; GHG = greenhouse gas; HSR = high-speed rail; LOS = level of service; MDAB = Mojave Desert Air Basin; MMBtu = million British thermal units; MRZ = mineral resource zone; PEC = potential environmental concern; RSA = resource study area; SCE = Southern California Edison; Section 106 PA = Section 106 Programmatic Agreement; SFHA = Special Flood Hazard Area; SCAB = South Coast Air Basin; SCAQMD = South Coast Air Quality Management District; SGMNM = San Gabriel Mountains National Monument; SJVAB = San Joaquin Valley Air Basin; SJVAPCD = San Joaquin Valley Air Pollution Control District; VMT = vehicle miles traveled

Table S-5 CEQA Summary of Resources with Significant Impacts and Applicable Mitigation Measures

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Transportation			
Impact TRA#5: Spoils Hauling Effects on Transit Services.	Construction-period earthwork and tunneling activities for the Build Alternatives would generate substantial spoils material, which would be trucked to various potential disposal sites in the Palmdale to Burbank region. Spoils hauling for all Build Alternatives would significantly affect transit services.	**TRA-MM#12:** The contractor will develop a Transportation Construction Management Plan to manage circulation for affected modes of travel during the construction period, which will include the following: ▪ Schedule a majority of construction-related travel during off-peak hours. ▪ Locate spoils collection areas and access to minimize delays during peak hours. ▪ Where feasible, temporarily restripe roadways to maximize vehicular capacity at locations affected by construction closures. However, there is no guarantee that these measures would adequately reduce impacts on transit services during spoils hauling.	Less than Significant for all six Build Alternatives.
Impact TRA#11: Project Construction Effects on Rail and Transit Services.	Transit operators would require scheduling and route adjustments to accommodate modifications to the transportation network in the approved HSR station areas.	**TRA-MM#9 and TRA-MM#11**: *Transit Providers*— A Transit Coordination Plan will implement revisions to transit routes, stops, and schedules to serve the approved HSR station areas.	Less than Significant for all six Build Alternatives
Impact TRA#12: Project Construction Effects on Nonmotorized Modes Near the Burbank Airport Station.	Coordination with the cities of Palmdale and Burbank would be required during the HSR station planning and roadway design phase to address impacts on pedestrian and bicyclist access and circulation.	**TRA-MM#10 and TRA-MM#11**: *Nonmotorized Modes*— The California HSR System will construct new pedestrian and bicycle facilities to compensate for loss of existing facilities and restore connections affected by modifications to the local roadway network.	Less than Significant for all six Build Alternatives
Air Quality and Global Climate Change			
Impact AQ#2: Regional Air Quality Impact during Construction.[1]	Construction-period emissions would exceed the applicable SCAQMD CEQA threshold(s) for all Build Alternatives. Construction-period emissions would exceed the applicable NO_X AVAQMD CEQA threshold for the E2A Build Alternative. While the specific	**AQ-MM#1:** The Authority will secure emissions offsets in the SCAQMD to achieve net emissions below the applicable emission thresholds.	Significant and Unavoidable for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
	construction year and pollutant-type exceedances vary among the Build Alternatives, there are no deviations large enough that would make one Build Alternative substantially less impactful than another.	**AQ-MM#2:** The Authority will secure emissions offsets in the AVAQMD to achieve net emissions below the applicable emission thresholds. **AQ-MM#3:** The Authority will use zero emission or near zero emission technology for 25 percent of all light-duty on-road vehicles. The Authority will have a goal to use zero emission or near zero emission technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction.	
Impact AQ#3: Compliance with Air Quality Plans during Construction.[1]	Construction-period emissions would result in the exceedance of SCAQMD thresholds for NOx and CO for all Build Alternatives and AVAQMD CEQA threshold~~s~~ for NOx for the E2A Build Alternative. These exceedances could conflict with or obstruct implementation of the air quality plans, which have been prepared to attain NAAQS and CAAQS.	**AQ-MM#1:** The Authority will secure emissions offsets in the SCAQMD to achieve net emissions below the applicable emission thresholds. **AQ-MM#2:** The Authority will secure emissions offsets in the AVAQMD to achieve net emissions below the applicable emission thresholds. **AQ-MM#3:** The Authority will use zero emission or near zero emission technology for 25 percent of all light-duty on-road vehicles. The Authority will have a goal to use zero emission or near zero emission technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction.	Significant and Unavoidable for all six Build Alternatives
Impact AQ#5: Localized Construction Effects.[1]	Construction activities for the Build Alternatives would cause localized elevated criteria pollutant concentrations. These elevated concentrations would cause or contribute to exceedances of the NAAQS and CAAQS.	**AQ-MM#3:** The Authority will use zero emission or near zero emission technology for 25 percent of all light-duty on-road vehicles. The Authority will have a goal to use zero emission or near zero emission technology for 100 percent of the light-duty on-road vehicles, 25 percent of the heavy-duty on-road vehicles, and a minimum of 10 percent for off-road conduction equipment used for construction.	Significant and Unavoidable for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Noise and Vibration			
Impact N&V#1: Construction Noise Impacts on Sensitive Receivers.[1]	HSR construction activities for the Build Alternatives would expose residences near the HSR construction footprint to construction noise that exceeds recommended threshold criteria.	**N&V-MM#1:** Prior to starting construction, the contractor will prepare a noise-monitoring program to describe how the contractor will monitor construction noise to verify compliance with applicable noise limits.	Significant and Unavoidable for all six Build Alternatives
Impact N&V#2: Spoils Hauling Route Noise Impacts on Sensitive Receivers.[1]	Trucks on haul routes used for removal of spoils from construction activities for the Refined SR14, E1, E1A, E2, and E2A Build Alternatives would result in noise impacts. No severe construction noise impacts from spoils hauling are anticipated for the SR14A Build Alternative	**N&V-MM#1:** Prior to starting construction, the contractor will prepare a noise-monitoring program to describe how the contractor will monitor construction noise to verify compliance with applicable noise limits.	Significant and Unavoidable for the Refined SR14, E1, E1A, E2, and E2A Build Alternatives Not applicable to the SR14A Build Alternative
Impact N&V#3: HSR Construction Vibration Impacts on Sensitive Receivers.	HSR construction activities for the Build Alternatives may cause ground-borne vibration levels that would cause annoyance or interference with sensitive equipment.	**N&V-MM#2:** The contractor will prepare a vibration technical memorandum documenting vibration reduction methods to meet applicable vibration threshold criteria.	Less than Significant for all six Build Alternatives
Impact N&V#4: Operational Traffic Noise Impacts on Sensitive Receivers.[1]	Noise due to traffic generated by the Palmdale Station during project operations would increase noise levels at nearby residential receivers.	**N&V-MM#3:** The Authority will implement noise barriers, sound insulation, and noise easements as mitigation for noise impacts in accordance with California HSR System Noise Mitigation Guidelines.	Significant and Unavoidable for all six Build Alternatives
Impact N&V#6: Operational Train Noise Impacts.[1]	Operation of the California HSR System for the Build Alternatives would result in moderate and severe noise impacts.	**N&V-MM#3, N&V-MM#4, N&V-MM#5, and N&V-MM#6:** The Authority will implement measures to reduce operations noise, including: ▪ Operation noise mitigation guidelines ▪ Vehicle noise specifications ▪ Special track work at crossovers and turnouts ▪ Additional noise analysis following final design ▪ Noise barriers	Significant and Unavoidable for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact N&V#7: Noise and Vibration Impacts on Domestic Animals.	Wildlife: Wildlife within 50 feet of the HSR trackway at viaduct crossing locations would periodically experience noise levels that exceed the applicable FRA thresholds for wildlife noise exposure. Domestic Animals: Because of the location of equestrian facilities such as stables and riding trails, the Refined SR14, SR14A, E2, and E2A Build Alternatives would result in startle effects on horses. The E1 and E1A Build Alternatives would not result in startle effects on horses because of its distance from equestrian facilities.	**N&V-MM#8:** The Authority will post signage to warn users of an upcoming train crossing and the approximate time for the crossing at equestrian facilities near the Refined SR14, SR14A, E2, and E2A Build Alternative corridors, reducing noise impacts on domestic animals to less than significant. Wildlife within 50 feet of the Build Alternatives would experience noise impacts. There are no feasible mitigation measures to reduce impacts associated with noise impacts on wildlife at viaduct crossings. Fencing associated with the project would preclude animals from getting within 50 feet of the alignment, so as not to expose them to noise impacts. Additionally, unconfined wildlife would have the ability to avoid ground-borne noise levels by moving away from the track as trains approach, and noise from pass-bys would be short; therefore, impacts would be less than significant.	Less than Significant for the Refined SR14, SR14A, E2, and E2A Build Alternatives Not applicable to the E1 and E1A Build Alternatives
Impact N&V#8: Operational Train Vibration Impacts (Refined SR14, SR14A, E1, and E1A Build Alternatives only).	Operation of the California HSR System for the Build Alternatives would result in significant vibration impacts.	**N&V-MM#7:** The Authority will develop site-specific vibration reduction measures, including stiffening floors in vibration-sensitive buildings, creating buffer zones, and modifying HSR vehicles.	Less than Significant for the Refined SR14, SR14A, E1, and E1A Build Alternatives Not applicable to the E2 and E2A Build Alternatives
Impact N&V#9: Noise and Vibration from HSR Stationary Facilities.	Roadway relocations, railway relocations, and operation of California HSR System features (including adits and substations) associated with the Build Alternatives would result in moderate and severe noise impacts.	**N&V-MM#3 and N&V-MM#6:** The Authority will implement measures to reduce operation noise and vibration, including: ▪ Operation noise mitigation guidelines ▪ Additional noise analysis following final design ▪ Noise barriers	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Electromagnetic Interference/Electromagnetic Fields			
Impact EMI/EMF#1: Temporary Impacts from Use of Heavy Construction Equipment (Refined SR14, SR14A, E1, and E1A Build Alternatives only).	The Refined SR14, SR14A, E1, and E1A Build Alternatives would require the use of heavy construction equipment capable of generating EMI/EMFs near two facilities (Pacifica Hospital and Serra Medical Group in Sun Valley) that could contain EMI–sensitive equipment. The E2 and E2A Build Alternatives are not located near facilities that could contain EMI–sensitive equipment.	**EMI/EMF-MM#1:** The Authority will contact relevant entities regarding the impacts of HSR-related EMFs on sensitive equipment before completion of final project design. Where necessary to avoid interference, final design will include suitable design provisions (such as magnetic field shielding walls) to prevent EMI at sensitive equipment.	Less than Significant for the Refined SR14, SR14A, E1, and E1A Build Alternatives Not applicable to the E2 and E2A Build Alternatives
Impact EMI/EMF#3: Temporary Impacts from Operation of Electrical Equipment (Refined SR14, SR14A, E1, and E1A Build Alternatives only).	The Refined SR14, SR14A, E1, and E1A Build Alternatives would require the use of electrical equipment capable of generating EMF near two facilities (Pacifica Hospital and Serra Medical Group in Sun Valley) that could contain EMI–sensitive equipment. The E2 and E2A Build Alternatives would not operate near facilities that could contain EMI–sensitive equipment.	**EMI/EMF-MM#1:** The Authority will contact relevant entities regarding the impacts of HSR-related EMFs on sensitive equipment before completion of final project design. Where necessary to avoid interference, final design will include suitable design provisions (such as magnetic field shielding walls) to prevent EMI at sensitive equipment.	Less than Significant for the Refined SR14, SR14A, E1, and E1A Build Alternatives Not applicable to the E2 and E2A Build Alternatives
Impact EMI/EMF#7: EMI with Sensitive Equipment.	The Refined SR14, SR14A, E1, and E1A Build Alternatives could expose sensitive medical equipment to EMI at two facilities (Pacifica Hospital and Serra Medical Group in Sun Valley) that could contain EMI–sensitive equipment. The E2 and E2A Build Alternatives would not operate near facilities that could contain EMI–sensitive equipment.	**EMI/EMF-MM#1:** The Authority will contact relevant entities regarding the impacts of HSR-related EMFs on sensitive equipment before completion of final project design. Where necessary to avoid interference, final design will include suitable design provisions (such as magnetic field shielding walls) to prevent EMI at sensitive equipment.	Less than Significant for the Refined SR14, SR14A, E1, and E1A Build Alternatives Not applicable to the E2 and E2A Build Alternatives
Public Utilities and Energy			
Impact PUE#1: Planned Temporary Interruption of Utility Services.	Construction would require the temporary shutdown of utility lines, such as water, sewer, electricity, or gas, to safely move or extend these lines. Additionally, The SR14A, E1A, and E2A Build Alternatives would require the reconfiguration of multiple buildings and equipment	**PUE-MM#2:** Prior to the start of construction, the Authority will coordinate with AVEK to facilitate the reconfiguration of the Acton Water Treatment Plant. The Authority will ensure that all replacement/relocated facilities are required to be in place, tested, and	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
	at the Acton Water Treatment Plant that would intersect with the alignments. The reconfiguration of facilities at the Acton Water Treatment Plant may require temporarily halting water pumping through the plant.	operational before any part of the existing Acton Water Treatment Plant is taken offline so that the Acton Water Treatment Plant would remain operable in conjunction with implementation of the Build Alternatives. The Authority will pay its fair share of the impact fee for reconfiguration of the Acton Water Treatment Plant.	
Impact PUE#3: Effects from Water Demand during Construction.	Construction activities for all Build Alternatives would use water to increase the water content of soil to optimize compaction for dust control, to prepare concrete, and to re-seed disturbed areas. This would periodically increase demand for water beyond the planned allocation of water supplies to the local water agencies.	**PUE-MM#1:** In recognition of the uncertainties with planning for water procurement years in advance and the various restrictions, limitations, and unknowns associated with water supplies in the project area, the Authority will prepare a water supply analysis for the selected Build Alternative that identifies the detailed water supply needs for HSR construction and operation. Based on the results of the water supply analysis, the Authority will coordinate with the water agencies to determine which water suppliers have availability and if allocations for additional water supply are needed. The Authority will identify the sources of water that will meet water supply needs, if needed. In the event that additional water supply is needed, the Authority will pay the water agencies its fair share of fees.	Less than Significant for all six Build Alternatives
Biological and Aquatic Resources			
Impact BIO#1: Project Construction Effects on Habitat for Special-Status Plants and Plant Communities. **Impact BIO#2:** Project Construction Effects on Special-Status Amphibian Habitat.	Construction of the Build Alternatives would permanently convert special-status species habitat within the construction footprint into HSR infrastructure. Vehicles and personnel would directly and indirectly affect special-status species and habitat. Operation and maintenance activities for the Build Alternatives would be unlikely to affect special-status species or habitat because these activities would occur where natural habitat was removed during construction. However, impacts would include mortality, injury, or harassment caused by increased	**BIO-MM#1, BIO-MM#2, BIO-MM#3, BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#7, BIO-MM#8, BIO-MM#14, BIO-MM#15, BIO-MM#16, BIO-MM#17, BIO-MM#18, BIO-MM#20, BIO-MM#21, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#28, BIO-MM#29, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#36, BIO-MM#38, BIO-MM#39, BIO-MM#43, BIO-MM#44, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#52, BIO-MM#53, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#61, BIO-MM#62, BIO-MM#63, BIO-MM#65, BIO-MM#66, BIO-MM#67, BIO-**	Less than Significant for all six Build Alternatives (Impact BIO#1 through Impact BIO#7, and Impact BIO#14)

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#3: Project Construction Effects on Special-Status Bird Habitat. **Impact BIO#4:** Project Construction Effects on Special-Status Fish Habitat **Impact BIO#5:** Project Construction Effects on Special-Status Invertebrate Habitat. **Impact BIO#6:** Project Construction would Affect Special-Status Mammal Habitat. **Impact BIO#7:** Project Construction Effects on Special-Status Reptile Habitat **Impact BIO#14:** Project Operation Effects on Habitat for Special-Status Species Individuals and Communities.	human activity related to the maintenance of California HSR System equipment and facilities, by exposure to accidental spills, including contaminants or pollutants, and noise from train operations. Groundwater seepage into long tunnels would affect habitat reliant on surface water resources, including springs, seeps, and streams.	**MM#68, BIO-MM#69, BIO-MM#70, BIO-MM#71, BIO-MM#72, BIO-MM#73, BIO-MM#74 BIO-MM#76, BIO-MM#78, BIO-MM#79, BIO-MM#80, BIO-MM#81, BIO-MM#82, BIO-MM#84, BIO-MM#85, BIO-MM#86, BIO-MM#87, BIO-MM#88, BIO-MM#89, BIO-MM#90, BIO-MM#91, BIO-MM#92, BIO-MM#93, BIO-MM#94, BIO-MM#95, BIO-MM#96, BIO-MM#97, BIO-MM#98, BIO-MM#99, BIO-MM#100, BIO-MM#101, BIO-MM#102, BIO-MM#103, and BIO-MM#104:** The Authority will implement measures to reduce impacts on special-status plant species, wildlife species, and plant communities, including: ▪ Pre-construction surveys to determine the presence of special-status plants and wildlife within the construction footprint ▪ Construction site monitoring, deterrence, and relocation to protect special-status wildlife within and immediately adjacent to the construction footprint ▪ Aquatic resource protection, nondisturbance zones, seasonal work restrictions, erosion-control measures, and construction monitoring ▪ Habitat revegetation, grading, exotic plant removal, and long-term monitoring and maintenance within areas disturbed by construction activities ▪ Compensatory habitat mitigation consisting of off-site habitat acquisition, restoration, or enhancement; purchase of mitigation credits; or payment into a land bank fund ▪ Development of an AMMP, which will involve ongoing monitoring and reporting activities to provide for the detection and remediation of both foreseeable and unforeseeable hydrogeological impacts	

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#8: Project Construction Effects on State and Federally Jurisdictional Aquatic Resources. **Impact BIO#9:** Project Construction Effects on Fish and Wildlife Resources Protected by Fish and Game Code Section 1600 et seq.	Construction of the Build Alternatives would affect aquatic resources. Direct impacts on functions and values of wetlands and waters caused by construction would include a decrease in the benefits the wetlands and waters could have on surface water quality, flood attenuation, and groundwater recharge, as well as a decrease in the quality of nesting/foraging and overall habitat available for wildlife. Erosion, siltation, chemical spills or leaks, and runoff into natural and constructed water features would degrade water quality. Operation and maintenance activities for the Build Alternatives would increase erosion, sedimentation, or contamination of aquatic areas adjacent to the HSR corridor.	**BIO-MM#4, BIO-MM#5, BIO-MM#6, BIO-MM#32, BIO-MM#33, BIO-MM#34, BIO-MM#39, BIO-MM#46, BIO-MM#47, BIO-MM#50, BIO-MM#53, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#62 and BIO-MM#93:** The Authority will implement measures to reduce aquatic resources impacts, including: ▪ Revegetation, grading, exotic plant removal, and long-term monitoring and maintenance within aquatic resources disturbed by temporary construction activities ▪ Vernal pool work restrictions (e.g., seasonal avoidance), protection (e.g., exclusion fencing), and construction monitoring ▪ Compensatory aquatic resources mitigation consisting of off-site acquisition, restoration, or enhancement; purchase of mitigation credits; or payment into a land bank fund	Less than Significant for all six Build Alternatives (Impact BIO#8 and Impact BIO#9)
Impact BIO#10: Project Construction Effects on Federally Designated Critical Habitat.	The Refined SR14, SR14A, E2, and E2A Build Alternatives would affect critical habitat for federally endangered species. The E1 and E1A Build Alternatives would not affect critical habitat.	**BIO-MM#6, BIO-MM#47, BIO-MM#50, and BIO-MM#53:** Application of species-specific mitigation measures will reduce impacts on species with critical habitat within the Refined SR14, SR14A, E2, and E2A Build Alternatives disturbance areas.	Less than Significant for the Refined SR14, SR14A, E2, and E2A Build Alternatives Not applicable to the E1 and E1A Build Alternatives
Impact BIO#11: Project Construction Effects on Significant Ecological Areas.	Construction and operation of the Build Alternatives would affect significant ecological areas.	**BIO-MM#6, BIO-MM#47, BIO-MM#50, and BIO-MM#53:** Application of species-specific mitigation measures will reduce impacts on species with critical habitat within the Build Alternative disturbance areas.	Less than Significant for all six Build Alternatives
Impact BIO#12: Project Construction Effects on Protected Trees.	Construction and operation of the Build Alternatives would affect trees protected under county and local plans and ordinances.	**BIO-MM#6, BIO-MM#35, BIO-MM#50, BIO-MM#55, BIO-MM#56, and BIO-MM#58:** Application of species-specific mitigation measures will reduce impacts on protected trees within the Build Alternative disturbance areas.	Less than Significant for all six Build Alternatives (Impact BIO#12 and Impact BIO#19)

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact BIO#13: Project Effects on Wildlife Movement Corridors.	Project construction activities and the presence of permanent HSR footprint associated with all Build Alternatives would affect wildlife movement and habitat connectivity.	**BIO-MM#6, BIO-MM#36, BIO-MM#37, BIO-MM#58, BIO-MM#60, BIO-MM#64, BIO-MM#77, BIO-MM#78, and BIO-MM#83:** Application of-specific mitigation measures will reduce impacts on wildlife movement corridors within the Build Alternative disturbance areas.	Less than Significant for all six Build Alternatives
Impact BIO#19: Project Operation would Affect Protected Trees.	Operation of the Build Alternatives would affect trees protected under county and local plans and ordinances.	**BIO-MM#35:** Application of species-specific mitigation measure will reduce impacts on protected trees within the Build Alternative disturbance areas.	Less than Significant for all six Build Alternatives
Hydrology and Water Resources			
Impact HWR#2: Construction Activities Required for the Build Alternatives.	Construction-related chemicals and soils exposed through ground-disturbing activities like grubbing, vegetation removal, and grading could temporarily affect surface water quality during the construction period. Excavation, trenching, tunneling, and dewatering activities would potentially increase the risk of groundwater contamination for all Build Alternatives in areas where construction over groundwater aquifers is proposed.	**HWR-MM#1:** Areas of likely groundwater contamination would require controls for the isolation and treatment of contamination.	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact HWR#3: Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives.	Construction of the Build Alternatives would require surface disturbance within flood hazard areas, which may affect the carrying capacity of the floodway.	**HWR-MM#2:** The Authority will implement the following measures to reduce flood hazards: ▪ Restore floodplains disturbed by construction activities by grading to pre-construction topography and revegetation. ▪ Avoid placement of facilities in the floodplain or raise the ground with fill above the base flood elevation. ▪ Use construction methods and facilities to minimize potential encroachments onto surface water resources.	Less than Significant for all six Build Alternatives
Impact HWR#4: Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives (Refined SR14, SR14A, E1, and E1A Build Alternatives only).	The Refined SR14, SR14A, E1, and E1A Build Alternatives would cross the Hansen Spreading Grounds; new impervious surfaces within the spreading ground would potentially interfere substantially with groundwater recharge within the San Fernando Groundwater Basin.	**HWR-MM#3:** New groundwater recharge areas would be constructed, or the Authority would implement other equally effective measures to ensure there is no net loss in recharge area capacity.	Less than Significant for all six Build Alternatives
Impact HWR#5: Changes in Hydrogeologic Conditions Associated with Tunnel Construction Beneath the ANF which May Affect Surface and Subsurface Water Resources.	Long tunnel construction associated with all Build Alternatives has the potential to temporarily affect hydrogeology resources in ANF including SGMNM. Long-term groundwater seepage into tunnel structures would potentially reduce the viability of surface waters, springs, seeps, and wells.	**HWR-MM#4:** The Authority will develop an AMMP, which would involve ongoing monitoring and reporting activities to detect and remediate, in a timely manner, both foreseeable and unforeseeable hydrogeological impacts that may arise in the future on USFS lands. The AMMP will generate information and data sufficient to identify unanticipated hydrogeological impacts that may arise during the construction and operation of the HSR, if any, and will trigger actions to avoid, minimize, and/or offset such impacts	Less than Significant for all six Build Alternatives
Geology, Soils, Seismicity, and Paleontology			

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact GSSP#4: Construction Could Expose Erodible Soils During Construction.	The Boulevard Mine and CalMat Mine disposal sites would be regraded to a new base elevation (expected to remain below surrounding grade) and managed as open pits. Exposed soils at would be subject to standard engineering guidelines and applicable regulations to minimize exposure to erosive forces, but, depending on the end use of this mine site, long-term soil loss would potentially occur for all Build Alternatives.	**GEO-MM#1:** The contractor and/or Authority will develop a restoration plan or temporary soil stabilization plan (interim reclamation plan) for spoil disposal sites. This plan will establish that these locations are not left with exposed soils that would be vulnerable to wind and water erosion.	Less than Significant for all six Build Alternatives
Impact GSSP#10: Inundation Related to Seismically Induced Dam Failure Could Endanger People or Structures During Construction.	Construction of the Build Alternatives would not cause or accelerate the potential for dam inundation. However, the Build Alternatives would be located within several dam inundation areas. Dam failures would potentially result in significant damage to structures and equipment or result in injuries or death.	**GEO-MM#2** Prior to commencing construction activities, the construction contractor will develop an evacuation plan to address accident conditions and inundation hazards in dam inundation zones.	Less than Significant for all six Build Alternatives
Impact GSSP#13: Mine Conditions Could Pose Hazards During Construction.	Construction workers would face entrapment risks at the Vulcan Mine, Boulevard Mine, and CalMat Mine disposal sites. This impact would be identical for all Build Alternatives.	**GEO-MM#2** Prior to commencing construction activities, the construction contractor will develop an evacuation plan to address accident conditions and entrapment risks at the Vulcan Mine, Boulevard Mine, and CalMat Mine disposal sites.	Less than Significant for all six Build Alternatives
Impact GSSP#15: Surface Excavation and Subsurface Tunneling Could Destroy Unique Paleontological Resources.[1]	Several geologic units within the construction footprints of the Build Alternatives have the potential to yield paleontological resources. Bored tunnel construction would likely destroy paleontological resources encountered beneath the ground surface because typical paleontological resource protection techniques (such as visual surveying and monitoring) are not feasible during bored tunnel construction.	There are no feasible mitigation measures to reduce impacts on subsurface paleontological resources.	Significant and Unavoidable for all six Build Alternatives
Hazardous Materials and Wastes			
Impact HMW#3: Potential for Handling Hazardous Materials or Waste within 0.25 Mile of an Educational	Construction and operation activities for all Build Alternatives would entail handling of hazardous materials or waste near educational facilities.	**HMW-MM#1:** The contractor will prepare a memorandum for the Authority's approval regarding construction Best Management Practices (BMPs) for hazardous materials throughout construction, including a plan to prevent the use of extremely hazardous	Less than Significant for all six Build Alternatives (Impact HMW#3 and Impact HMW#8)

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Facility during Construction. **Impact HMW#8:** Potential for Handling Hazardous Materials or Waste Within 0.25 mile of an Educational Facility during Operations.		materials within 0.25 mile of a school. During operations, no extremely hazardous substances or a mixture of extremely hazardous substances would be used in a quantity equal to or greater than the state threshold quantity (Health and Safety Code Section 25532) within 0.25 mile of a school. An operations plan will be created by the Authority and coordinated with the educational facilities to document compliance.	
Safety and Security			
Impact S&S#3: Permanent Interference with Emergency Response. **Impact S&S#4**: Interference with Emergency Response from Train Accidents and Increased Activity at Stations and Facilities.	Operation of the Build Alternatives would potentially interfere with emergency response within the HSR stations and rights-of-way because of limited access to HSR facilities.	**S&S-MM#1:** The Authority will monitor the response of local fire, rescue, and other emergency service providers to incidents at HSR stations. The Authority will enter a cost-sharing agreement with these providers to fund the Authority's fair share of emergency service needs created by the project. The project will also minimize interference with emergency response by including design provisions and procedures for emergency service access to HSR facilities.	Less than Significant for all six Build Alternatives (Impact S&S#3 and Impact S&S#4)
Socioeconomics and Communities			
Impact SOCIO#2: Permanent Disruption to Community Cohesion or Division of Established Communities from Construction.	Construction of the Build Alternatives would physically and visually divide established communities.	**SO-MM#2:** The Authority will engage in special outreach to affected homeowners, residents, landowners, business owners, community organizations, and local officials, as well as require the Authority's evaluation of the community's modified access, in order to enable the Authority to maintain community cohesion and avoid physical deterioration.	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact SOCIO#3: Permanent Displacement of Community Facilities from Construction (E2 and E2A Build Alternatives only).	Construction of the E2 and E2A Build Alternatives would displace a community facility: the Los Angeles County Department of Public Social Services in Sun Valley, which could necessitate the construction of a new facility if suitable replacement facilities are unavailable. The Refined SR14, SR14A, E1, and E1A Build Alternatives would not result in the displacement of community facilities.	**SO-MM#3:** The Authority will consult with the appropriate parties before the acquisition phase of the project to assess potential opportunities to reconfigure facilities and buildings and/or relocate affected community facilities, as necessary, to minimize the disruption of facility activities and services, and to provide for relocation that allows the community currently being served to continue to use these services.	Less than Significant for the E2 and E2A Build Alternatives Not applicable to the Refined SR14, SR14A, E1, and E1A Build Alternatives
Impact SOCIO#14: Permanent Effects on Agricultural Operations from Project Operations.	Impacts on Important Farmland from the Refined SR14 and SR14A Build Alternatives would be limited to the construction of an electrical utility corridor across an approximately 9-acre vineyard east of the Sierra Highway/SR 14 interchange for a traction power facility.	**AG-MM#1:** The Authority will design and build electrical utility corridors to avoid placing structures on agricultural lands. This will entail coordination with the farm owners to ensure that electrical utilities are placed on poles with powerlines that span agricultural land uses, within the identified project footprint, so that no agricultural land would be converted to a nonagricultural use either directly or indirectly. Utility easements would not affect existing agricultural operations and activities.	Less than Significant for the Refined SR14, SR14A Build Alternatives Not applicable to the, E1, E1A, E2, and E2A Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Station Planning, Land Use and Development			
Impact LU#3: Permanent Alterations to Existing and Planned Land Uses from Construction of the Build Alternatives.	HSR construction staging areas and project infrastructure associated with all Build Alternatives would convert land to transportation use. I	**LU-MM#1, SO-MM#1, SO-MM#2, SO-MM#3, N&V-MM#3, N&V-MM#6, TR-MM#1, TR-MM#2, TR-MM#3, TR-MM#4, TR-MM#5, TR-MM#6, TR-MM#7, and TR-MM#8:** The Authority will implement the following measures to reduce land-use impacts: ▪ Assist station cities with implementation of station-area plans ▪ Assist with residential and community facility relocations ▪ Implement local improvements and community workshops to minimize division of communities ▪ Minimize visual disruption at temporary construction areas	Less than Significant for all six Build Alternatives
Agricultural Farmland and Forest Land			
Impact AG#2: Permanent Conversion of Agricultural Land to Nonagricultural Land (Refined SR14 and SR14A Build Alternatives only).	The Refined SR14 and SR14A Build Alternatives would require an electrical utility corridor that would traverse a parcel of Important Farmland, an approximately 9-acre vineyard east of where the Refined SR14 Build Alternative crosses Sierra Highway. The E1, E1A, E2, and E2A Build Alternatives would not impact parcels of Important Farmland.	**AG-MM#1:** The Authority shall design and build utility corridors to avoid placing structures on agricultural lands. This entails electrical utilities being placed on poles that span agricultural land uses, within the identified Build Alternative footprint, so that no agricultural land would be converted to a nonagricultural use.	Less than Significant for the Refined SR14 and SR14A Build Alternatives No impact for the E1, E1A, E2, and E2A Build Alternatives
Parks, Recreation, and Open Space			
Impact PK#1: Acquisition of Parks, Recreation, and Open Space Resources.	Construction and operation of the Build Alternatives would require temporary construction easements and permanent acquisition of park, recreational, and open space resources. Such acquisitions reduce the capacity of a park or recreational resource to provide the features and attributes that are important to the surrounding communities.	**PR-MM#6, PR-MM#7, PR-MM#8, and PR-MM#9:** The Authority will restore and return land used for temporary construction areas to the property owners. The Authority will offset permanent parks, recreational area, and open space acquisitions through consultation with the property owner to negotiate resource compensation, replacement, or enhancement consistent with applicable state and federal laws.	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact PK#2: Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes to Parks, Recreation, and Open Space Resources.	Construction of the Build Alternatives would create access, noise, vibration, air quality, and visual changes that would affect parks, recreational areas, and open space resources.	**PR-MM#1, PR-MM#2, PR-MM#3, PR-MM#4, PR-MM#5, and PR-MM#8:** The Authority will implement the following measures to reduce construction-period disruption of parks, recreational areas, and open space resources: ▪ Provide routes to park and trail facilities within or near the construction footprint ▪ Maintain access to park facilities during construction ▪ Follow standard safety procedures to protect traffic ▪ Temporarily or permanently replace recreation areas within the construction footprint ▪ Develop a construction staging and management plan to minimize noise, dust, traffic, and visual disruptions ▪ Consult with property owners regarding compensation or replacement/enhancement of access to the affected park facility	Less than Significant for all six Build Alternatives
Impact PK#3: Changes to Parks, Recreation, and Open Space Resource Character	Operation of the Build Alternatives would result in noise/vibration increases and changes in visual quality, which would potentially affect the enjoyment of passive recreational activities in open-space areas.	**PR-MM#7, PR-MM#8, PR-MM#9, and BIO-MM#101:** The Authority will offset permanent parks, recreational area, and open space acquisitions through consultation with the property owner to negotiate resource compensation, replacement, or enhancement consistent with applicable state and federal laws. The Authority will consult with property owners regarding compensation for, or replacement or enhancement of, the access driveways or parking areas at the recreation resource to maintain accessibility to park facilities or to provide alternative access. The Authority anticipates constructing sound barriers to address permanent or intermittent noise impacts on suitable special-status bird habitats. The Authority will incorporate design measures to reduce the visual effects of proposed sound barriers.	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact PK#4: Increased or Decreased Use of Parks, Recreation, and Open Space Resources (E1, E1A, E2, and E2A Build Alternatives only).	Increased connectivity resulting from operation of the Build Alternatives would increase or decrease the use of existing parks and recreational facilities.	**PR-MM#8:** The Authority will consult with the property owner regarding the specific conditions of the changes to access and compensation for, or replacement or enhancement of, access facilities at the recreation resource to maintain accessibility to park facilities or to provide alternative access.	Less than Significant for the E1, E1A, E2, and E2A Build Alternatives Not applicable to the Refined SR14 and SR14A Build Alternatives
Aesthetics and Visual Quality			
Impact AVQ#1: Temporary Construction Impacts on Existing Visual Quality.	Construction activities for the Build Alternatives, including earth preparation (which includes excavation and embankment activities), rail bed construction, materials storage, and equipment movement, would cause substantial visual disturbance in the relatively rural areas between Palmdale and Burbank.	**AVQ-MM#1:** The contractor will prepare a technical memorandum identifying how the project would minimize construction-related visual/aesthetic disruption through measures such as relegating and regrading areas disturbed during construction.	Less than Significant for all six Build Alternatives
Impact AVQ#2: Temporary Construction Impacts from Light and Glare.	Lighting associated with nighttime construction for the Build Alternatives would intermittently affect nighttime views.	**AVQ-MM#2:** Nighttime construction lighting will be shielded and directed downward in a manner to minimize light falling outside of the construction site boundaries. Shielding nighttime construction lighting will minimize the light and glare within developed areas at night.	Less than Significant for all six Build Alternatives
Impact AVQ#3: Temporary Construction Impacts on Scenic Vistas and Drives.	Construction activities would temporarily decrease scenic views along Sierra Highway (near Una Lake), Soledad Canyon Road, Aliso Canyon Road and Little Tujunga Canyon Road, and SR 14 highway scenic drive. The Build Alternatives would also be visible from the Lamont Odett Vista Point.	**AVQ-MM#1:** The contractor will prepare a technical memorandum identifying how the project would minimize construction-related visual/aesthetic disruption through measures such as relegating and regrading areas disturbed during construction.	Less than Significant for all six Build Alternatives
Impact AVQ#4: Permanent construction impacts on visual quality.[1]	Construction of the Build Alternatives would result in permanent changes to the landscape, which would change the visual quality. HSR-related structures, including the Burbank Airport Station, elevated guideways, and ancillary facilities would block views, cast shadows, and add built features to the landscape for each of the Build Alternatives.	**AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, and AVQ-MM#6:** The Authority will implement the following measures to reduce permanent effects on visual quality from construction of the project: ▪ Utilize aesthetic preferences approved by local jurisdictions for non-station structures.	Significant and Unavoidable for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		▪ Incorporate vegetation screening along at-grade and elevated guideways next to residential areas. ▪ Plant vegetation within land acquired for the project that is not used for the HSR or related supporting infrastructure. ▪ Screen traction power supply stations and radio communication towers for the project from public view with landscaping, solid walls or fencing.	
Cultural Resources			
Impact CUL#1: Effects on Known Archaeological Resources Caused by Construction Activities.	Ground disturbance associated with construction of the Build Alternatives would result in direct impacts on known archaeological resources in the archaeological APE.	**CUL-MM#1, CUL-MM#3, and CUL-MM#4:** The Authority will implement the following measures to reduce construction effects on known and unknown archaeological resources: ▪ Consult MOA signatories, concurring parties, and tribal consulting parties to determine the preferred treatment and appropriate mitigation measures. ▪ Develop meaningful mitigation measures for effects on as-yet-unidentified Native American archaeological resources that cannot be avoided. ▪ Halt construction activities and require compliance with applicable regulations should there be an unanticipated archaeological discovery. ▪ Adhere to BMPs at identified archaeological sites. ▪ Establish and maintain resource buffer zones surrounding vulnerable sites during construction activities.	Less than Significant for all six Build Alternatives
Impact CUL#2: Effects on Unknown Archaeological Resources Caused by Construction Activities.	Ground disturbance associated with construction of the Build Alternatives has the potential to affect unknown archaeological resources encountered during project construction.	**CUL-MM#1, CUL-MM#2, and CUL-MM#3:** The Authority will implement the following measures to reduce effects on human remains discovered during construction activities: ▪ Consult MOA signatories, concurring parties, and tribal consulting parties to determine the preferred treatment and appropriate mitigation measures.	Less than Significant for all six Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
		▪ Halt construction activities and require compliance with applicable regulations should there be an unanticipated archaeological discovery. Contact the relevant county coroner to determine whether an investigation regarding cause of death would be required.	
Impact CUL#3: Effects on Human Remains Discovered during Construction Activities.	Ground-disturbing construction activities for the Build Alternatives would have the potential to disturb human remains, including those interred outside of formal cemeteries.	**CUL-MM#1, CUL-MM#2, and CUL-MM#3:** The Authority will implement the following measures to reduce effects on human remains discovered during construction activities: ▪ Consult MOA signatories, concurring parties, and tribal consulting parties to determine the preferred treatment and appropriate mitigation measures. ▪ Halt construction activities and require compliance with applicable regulations should there be an unanticipated archaeological discovery. ▪ Contact the relevant county coroner to determine whether an investigation regarding cause of death would be required.	Less than Significant for all six Build Alternatives
Impact CUL#4: Effects on Historic Built Resources Caused by Construction Activities (E1, E1A, E2, and E2A Build Alternatives only).	The Refined SR14 and SR14A Build Alternatives would not result in significant impacts on historical built resources. The E1, E1A, E2, and E2A Build Alternatives would result in indirect impacts on historical built resources in the built historical APE. Implementation of the E1, E1A, E2, and E2A Build Alternatives would introduce "visual elements that diminish the integrity of a property's" setting and feeling.	**CUL-MM#5 and CUL-MM#6:** The Authority will implement the following measure for the E1, E1A, E2, and E2A Build Alternatives to reduce effects on built historical resources during construction activities: ▪ Consultation with SHPO to develop protection measures to preserve the visual integrity of the Blum Ranch viewshed. ▪ Coverage of roadway with geofabric prior to laying asphalt. Asphalt will be removed following construction of the project.	Significant and Unavoidable for E1, E1A, E2, and E2A Build Alternatives Not applicable to the Refined SR14 and SR14A Build Alternatives

Impact	Summary of Significant Impact before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Cumulative Impacts			
Cumulative Localized Construction Effects (Air Quality)[1]	Construction activities for the Build Alternatives would cause localized elevated criteria pollutant concentrations. These elevated concentrations would cause or contribute to exceedances of the NAAQS and CAAQS.	No additional mitigation to address the cumulative impact.	Significant and Unavoidable for all six Build Alternatives
Cumulative Noise Impacts[1]	Construction of the Build Alternatives, in conjunction with other past, present, and reasonably foreseeable projects, would result in noise effects that would last for the duration of construction activities. The Build Alternatives, in combination with cumulative projects, could cause exceedance of noise thresholds to sensitive receptors during operation.	No additional mitigation to address the cumulative impact.	Significant and Unavoidable for all six Build Alternatives
Cumulative Paleontological Resource Impacts[1]	Construction of the Build Alternatives, in combination with past, present, and reasonably foreseeable future development would result in significant cumulative impacts on paleontological resources.	No additional mitigation to address the cumulative impact.	Significant and Unavoidable for all six Build Alternatives
Cumulative Population and Community Impacts[1]	The Build Alternatives, along with other planned projects, could permanently divide established communities and could permanently displace residences or businesses, necessitating construction of replacement housing or facilities.	No additional mitigation to address the cumulative impact.	Significant and Unavoidable for all six Build Alternatives
Cumulative Aesthetic and Visual Quality Impacts[1]	Construction of the Build Alternatives, along with reasonably foreseeable future projects, could degrade visual and aesthetic resources, which represents a significant cumulative impact.	No additional mitigation to address the cumulative impact.	Significant and Unavoidable for all six Build Alternatives

[1] Indicates an impact that would be significant and unavoidable at the project level and during cumulative conditions.
AMMP = Adaptive Monitoring and Management Plan; ANF = Angeles National Forest; APE = Area of Potential Effects; Authority = California High-Speed Rail Authority; AVAQMD = Antelope Valley Air Quality Management District; BMP = best management practices; CAAQS = California Ambient Air Quality Standards; CDFW = California Department of Fish and Wildlife; CEQA = California Environmental Quality Act; EMF = electromagnetic field; EMI = electromagnetic interference; FRA = Federal Railroad Administration; HSR = high-speed rail; LADWP = Los Angeles Department of Water and Power; MOA = Memorandum of Agreement; NAAQS = National Ambient Air Quality Standards; SCAQMD = South Coast Air Quality Management District; SGMNM = San Gabriel Mountains National Monument; SHPO = State Historic Preservation Officer

S.8.2.1 Refined SR14 and SR14A Build Alternatives

The SR14A Build Alternative alignment is the longest of the six Build Alternatives (38 miles), followed by the Refined SR14 Build Alternative alignment (37 miles). Additionally, both the Refined SR14 and SR14A Build Alternatives would have the shortest length of tunnel beneath the ANF including the SGMNM. The Refined SR14 and SR14A Build Alternatives would also have the shortest construction duration.

- **Transportation**—Northbound and southbound spoils hauling associated with the Refined SR14 and SR14A Build Alternatives would result in fewer roadway segment impacts where the LOS would degrade to unacceptable levels compared to the E1, E1A, E2, and E2A Build Alternatives. However, southbound spoils hauling associated with the Refined SR14 and SR14A Build Alternatives would degrade LOS at two freeway segments to unacceptable levels during the AM peak hour; the E1, E1A, E2, and E2A Build Alternatives would only degrade LOS at 1 freeway segment to an unacceptable level in the AM peak hour (southbound spoils hauling associated with each of the six Build Alternatives would degrade LOS at 2 freeway segments during the PM peak hour). Construction of the Refined SR14 and SR14A Build Alternatives would degrade LOS to unacceptable levels at more intersections (3 intersections in the AM peak hour and 4 intersections in the PM peak hour) compared to the E1, E1A, E2, and E2A Build Alternatives (each of which would degrade LOS at 1 intersection in the AM peak hour and 1 to 2 intersections in the PM peak hour).
- **Air Quality**—Construction of the Refined SR14 and SR14A Build Alternatives would exceed General Conformity *de minimis* levels for CO (in 2023, and 2022-2023, respectively) and NOx (in 2021-2025, and 2020-2026, respectively) in the SCAB. The SR14A Build Alternative would exceed SCAQMD daily CEQA thresholds for NOx for a greater span of years than each of the other Build Alternatives (2020-2027). Operation of all six Build Alternatives would have a beneficial effect and would reduce statewide emissions of all pollutants when compared to existing and future No Project baselines, under all ridership scenarios.
- **Noise and Vibration**—Construction of the Refined SR14 Build Alternative would result in noise impacts in the communities of Harold/Alpine and Agua Dulce (Figure S-13). The Refined SR14 and SR14A Build Alternatives are the only Build Alternatives that would result in construction noise impacts in Agua Dulce. Spoils hauling during construction of SR14A Build Alternative would not result in any noise impacts, while the Refined SR14 Build Alternative would limit impacts to Big Springs Road northwest of Acton. Operation of the SR14A Build Alternative would cause the fewest moderate noise impacts on residences, but the Refined SR14 and SR14A Build Alternatives would result in the most vibration effects on residences. However, unlike the other Build Alternatives, the Refined SR14 and SR14A Build Alternatives would have noise impacts on the Pacific Crest Trail and Vasquez Rocks Natural Area Park. Like the E2 and E2A Build Alternatives, the Refined SR14 and SR14A Build Alternatives would result in noise impacts on domestic animals and wildlife. In contrast, the E1 and E1A Build Alternatives would only result in noise impacts on wildlife.

> *Sensitive Receivers*
>
> Land uses where increased annoyances caused by noise and vibration could occur are classified as sensitive receivers. Examples of sensitive receivers include residences, hospitals, and schools.

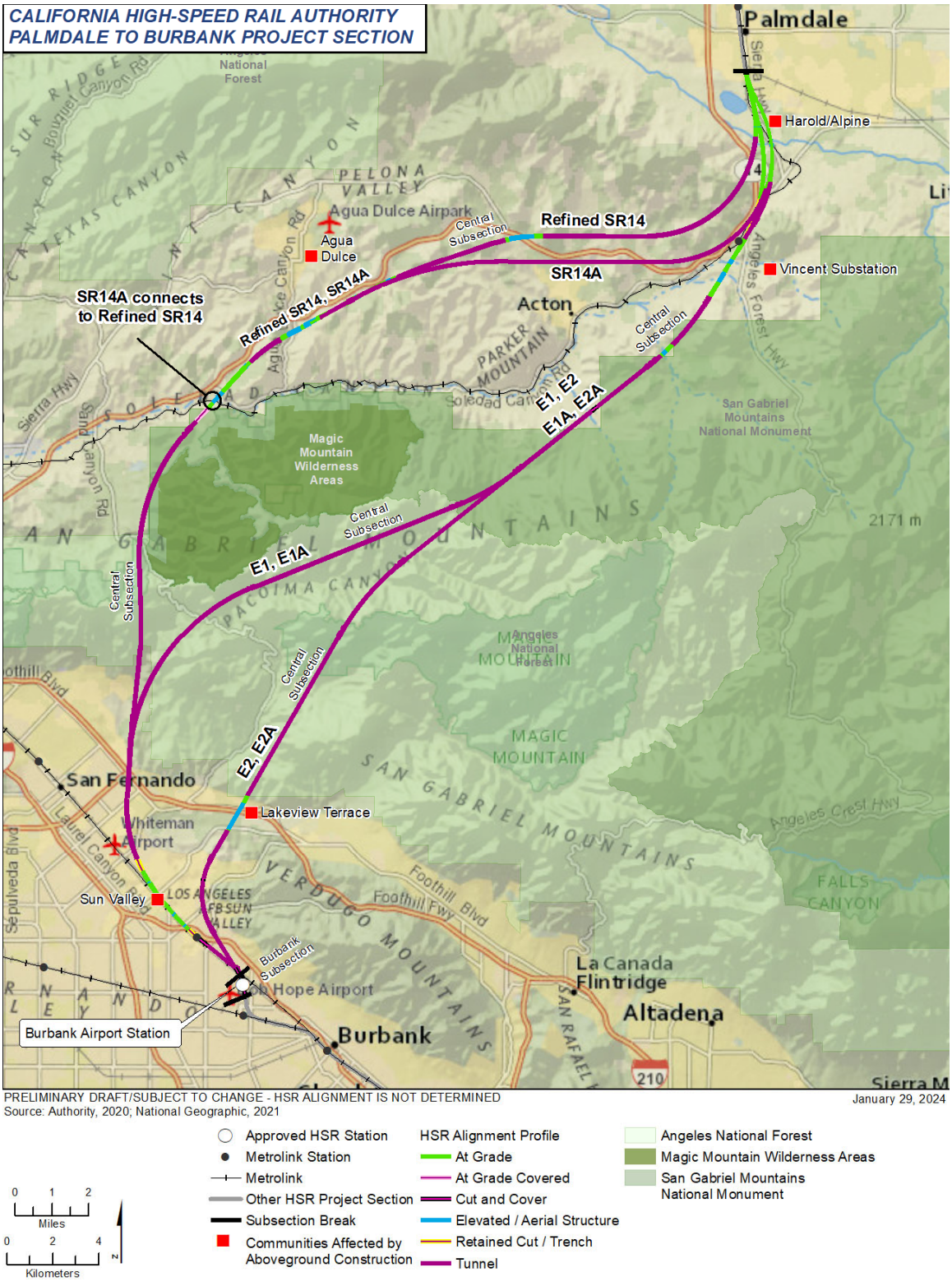


Figure S-13 Communities Affected by Aboveground Construction

- **Electromagnetic Fields and Electromagnetic Interference**—Construction of the Refined SR14 and SR14A Build Alternatives would result in EMI at facilities that could operate sensitive equipment: Serra Medical Group and Pacifica Hospital. The E2 and E2A Build Alternatives would avoid this impact. The Refined SR14 and SR14A Build Alternatives would encounter existing railroad track that could be affected by EMI (13 miles and 14 miles of railroad track, respectively), less than the E1 and E1A Build Alternatives (16 miles and 15 miles respectively), but more than the E2 and E2A Build Alternatives (12 miles and 11 miles, respectively).
- **Public Utilities and Energy**—The Refined SR14 and SR14A would result in more high-risk and major low-risk utility conflicts during construction (461 total utility conflicts and 410 total utility conflicts, respectively), compared to the E1 and E1A Build Alternatives (400 and 345, respectively) and the E2 and E2A Build Alternatives (278 and 264, respectively). Construction of the SR14A Build Alternative would require the greatest total water demand of each of the six Build Alternatives. The SR14A Build Alternative would also consume the most energy and would generate the most solid waste during construction of each of the Build Alternatives. The Refined SR14 Build Alternative would consume more energy during construction and generate more solid waste than the E1, E1A, E2, and E2A Build Alternatives.
- **Biological and Aquatic Resources**—In general, the Refined SR14 and SR14A Build Alternatives would result in the most biological and aquatic resource impacts. The Refined SR14 and SR14A Build Alternatives would affect the most listed wildlife species and the most acreage of wildlife habitat. All six Build Alternatives would affect the same special-status plant species, but the Refined SR14 and SR14A Build Alternatives would affect the largest plant habitat area. Where the Refined SR14 and SR14A Build Alternatives cross the Santa Clara River in Soledad Canyon, the unarmored threespine stickleback is known to be present (a California Department of Fish and Wildlife fully protected[12] fish species). Bridge design in this area would require special provisions to avoid impacts on this species. The Refined SR14 and SR14A trackway and ancillary facilities would also affect waters of the U.S., which provide habitat for several special-status species. Changes in groundwater contribution to surface-water resources resulting from tunneling activities beneath the ANF could adversely affect aquatic habitat, altering the amount and quality of aquatic habitats for associated biological resources. The Refined SR14 and SR14A Build Alternatives would have the least risk for potential impacts on habitat for plant species and communities from tunneling under the ANF.
- **Hydrology and Water Resources**—Between Palmdale and Burbank, the Refined SR14 Build Alternative would require 48 surface water crossings at grade (including crossings on fill, on embankment, or in cut-and-cover tunnels) and 12 viaduct crossings; the SR14A Build Alternative would require 43 surface water crossings at grade and 3 such crossings over viaduct. The Refined SR14 Build Alternative alignment would cross Una Lake on embankment at grade, and would require substantial fill of this waterbody, which would reduce in size; the SR14A Build Alternative would avoid Una Lake, pursuing a more easterly course approximately 300 feet east of Una Lake. South of Una Lake, the Refined SR14 Build Alternative would pass beneath the California Aqueduct and then continue on a series of viaducts across tributaries of the Santa Clara River until crossing the channel of the Santa Clara River in Soledad Canyon before entering a long tunnel under ANF; the SR14A Build Alternative alignment would traverse a more easterly route and cross over the California Aqueduct, and would also cross the channel of the Santa Clara River in Soledad Canyon before entering a tunnel under the ANF. The Refined SR14 and SR14A Build Alternative alignments would continue through the ANF in areas with no known or mapped seeps or springs within the Moderate Risk Areas and High Risk Areas evaluated, which indicates that the Refined SR14 and SR14A Build Alternatives, when compared to the other Build

[12] California Department of Fish and Wildlife fully protected species may not be taken (e.g., harassed, harmed, wounded, killed, captured, or collected), and no permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

Alternatives, may have the fewest impacts on hydrogeological resources within the ANF including SGMNM. Additionally, the Refined SR14 and SR14A Build Alternative tunnels would encounter the shortest distances through high-risk groundwater pressures compared to the E1, E1A, E2, or E2A Build Alternatives, reducing the chance for seepage into HSR tunnels that could affect local hydrogeology. The Refined SR14 and SR14A Build Alternatives would encounter the fewest streams within the ANF including SGMNM compared to the E1, E1A, E2, or E2A Build Alternatives. Compared to the E2 and E2A Build Alternatives, the Refined SR14 and SR14A Build Alternatives would encounter less total width of faults within the ANF including SGMNM that could result in seepage into tunnels. However, this width would be wider than the width of fault zones encountered by the E1 and E1A Build Alternatives. South of the ANF, the Refined SR14 and SR14A Build Alternative alignments would cross the Hansen Spreading Grounds and channel, which are owned and maintained by the Los Angeles County Flood Control District for the purposes of conveying stormwater to local rivers and groundwater reservoirs. Construction of the Refined SR14 and SR14A Build Alternatives would cause the most ground disturbance of the Build Alternatives, which could result in erosion and water quality degradation. The Refined SR14 Build Alternative would entail the least construction-period ground disturbance within special flood hazard areas. The Refined SR14 and SR14A Build Alternatives would negatively affect the groundwater recharge function of the Hansen Spreading Grounds. The Refined SR14 and SR14A Build Alternatives footprint also encompasses the most active groundwater wells within 1 mile of the alignment centerline.

- **Geology, Soils, Seismicity, and Paleontological Resources**—The Refined SR14 and SR14A Build Alternatives would require the longest crossing of the San Gabriel Fault Zone, which poses major geotechnical challenges. The Refined SR14 and SR14A Build Alternatives also propose the most surface disturbance and subsurface tunneling through geologic units with a high likelihood to yield paleontological resources. With regard to mineral resources, the Refined SR14 and SR14A Build Alternatives would result in the greatest restriction of access to regionally significant mineral resources.
- **Hazardous Materials and Wastes**—The Refined SR14 and SR14A Build Alternatives would generate contaminated spoils by excavating contaminated soils associated with PEC sites near the Vulcan Mine site and Hansen Spreading Grounds in the San Fernando Valley; the E1 and E1A Build Alternatives would generate contaminated spoils similar to the Refined SR14 and SR14A Build Alternatives; and the E2 and E2A Build Alternatives would generate contaminated spoils south of the Big Tujunga Wash crossing and at the CalMat Mine disposal site. The Refined SR14 and SR14A Build Alternatives would generate the most potentially hazardous spoils (approximately 6.8 million cubic yards [mcy]) compared to the E1 and E1A Build Alternatives (approximately 3.0 mcy) and the E2 and E2A Build Alternatives (approximately 3.8 mcy). The Refined SR14 and SR14A Build Alternatives could result in the handling of hazardous materials within 0.25 mile of more education facilities than each of the other Build Alternatives (18 to 23 education facilities and 21 to 26 education facilities, respectively, depending on the adit option chosen).
- **Safety and Security**—The Refined SR14 and SR14A Build Alternatives would result in fewer permanent road closures from construction (9 road closures and 5 road closures, respectively) compared to the E1 and E1A Build Alternatives (13 road closures and 12 road closures, respectively) and E2 and E2A Build Alternatives (11 road closures and 10 road closures, respectively). These closures would have similar potential to create traffic hazards for each Build Alternative; the grade separations implemented as part of project design would minimize traffic hazards. The Refined SR14 and SR14A Build Alternatives' vicinity includes the most airports and airstrips of the six Build Alternatives. Each Build Alternative vicinity includes the Hollywood Burbank Airport. In addition, the Refined SR14 and SR14A Build Alternatives' vicinity includes Agua Dulce Airpark and Whiteman Airport.
- **Socioeconomics and Communities**—As discussed in Section S.5.3.6, the Build Alternatives would require adits and intermediate windows for construction access to tunneled portions of the alignment. Thus, ranges of quantifiable impacts that would result

from the selection of each adit and intermediate window option combination are discussed here. The Refined SR14 Build Alternative would displace the most existing single-family residential units (38 to 41), while the SR14A Build Alternative would displace the fewest existing single-family residential units (8 to 11). The SR14A Build Alternative would displace the most existing multifamily residential units (29) as compared to the E1 and E1A Build Alternatives (13 to 18 and 12 to 17 single-family residential units, and 11 and 27 multifamily residential units, respectively) and the E2 and E2A Build Alternatives (38 and 37 single-family residential units, 11 and 27 multifamily residential units, respectively). The Refined SR14 and SR14A Build Alternatives would result in higher cumulative sales taxes and annual average sales taxes during the construction period.

- **Agricultural Farmland and Forest Land**—The Refined SR14 and SR14A Build Alternatives would require an electrical utility corridor across an approximately 9-acre parcel of Important Farmland east of where the Refined SR14 and SR14A Build Alternatives cross the Sierra Highway. If electrical towers were placed within this parcel of Important Farmland, 1 acre of this land would be converted to nonagricultural use. Power lines extending from adit facilities associated with the Refined SR14 and SR14A Build Alternatives could encounter forest land in areas managed by the USFS. Adherence to the USFS Special Use Authorization includes several provisions including those that would require the Authority to avoid, or else be liable for, damaging or contaminating the surrounding environment; provisions would adequately avoid, minimize, or compensate for the permanent loss of forest land or conversion of forest land to nonforest use that could result from construction of permanent adit facilities within the ANF.
- **Parks, Recreation, and Open Space**—The Refined SR14 Build Alternative infrastructure would be located near 22 parks, recreation, and open space resources; the SR14A Build Alternative would be located near 23 parks, recreation, and open space resources. This is a larger number than are near other Build Alternatives, and in the case of the Refined SR14 Build Alternative includes facilities in direct conflict with a 400-foot segment of the Pacific Crest Trail. To preserve access during both the construction and operation periods for the Refined SR14 Build Alternative, the trail would be realigned. Given the large number of park resources within the Refined SR14 and SR14A Build Alternatives' RSA (including the Pacific Crest Trail for the Refined SR14 Build Alternative), the Refined SR14 and SR14A Build Alternatives would have the greatest potential for indirect effects on parks, recreational areas, and open space resources (i.e., construction-period access restrictions, new noise and vibration sources, air quality degradation during construction, visual changes, and permanent changes to park character).
- **Aesthetics and Visual Quality**—Construction and operation of the Refined SR14 and SR14A Build Alternatives would affect visual quality in scenic areas between Palmdale and Burbank. Large-scale overcrossing structures associated with the Refined SR14 Build Alternative would obstruct views of various waterways and other natural scenic resources, such as the Pacific Crest Trail and near the community of Agua Dulce.
- **Cultural Resources**—With implementation of IAMFs and mitigation measures, construction and operation of the Refined SR14 and SR14A Build Alternatives would result in less than significant impacts on archaeological and built historic resources. Based on the number of historic properties within the archaeological and built historic RSAs and the extent of construction and operations impacts, the SR14A Build Alternative would have the least potential for direct and indirect effects on cultural resources.
- **Regional Growth**—Because the Build Alternatives are similar in length and would use the same Burbank Airport Station site, regional growth effects of the six Build Alternatives would not differ with regard to operations effects. However, effects would differ slightly with regard to construction jobs. The Refined SR14 and SR14A Build Alternatives would create the highest number of total construction job-years (83,400 and 84,900 total job-years during construction, respectively).

- **Cumulative Impacts**—The Refined SR14 and SR14A Build Alternatives would not substantially differ from the E1, E1A, E2, and E2A Build Alternatives regarding the contribution of significant cumulative effects. The Palmdale to Burbank Project Section in combination with other past, present, and reasonably foreseeable future actions or projects (cumulative projects), listed in Appendix 3.19-A of this Final EIR/EIS, would result in the following significant cumulative construction-period impacts under CEQA: transportation, air quality (General Conformity and localized construction effects), noise, paleontological resources, socioeconomics and communities (population and community impacts), and aesthetics and visual quality. In addition, the Palmdale to Burbank Project Section in combination with other cumulative projects would result in cumulative noise impacts during long-term operation of the HSR Build Alternative.

S.8.2.2 E1 and E1A Build Alternatives

Both the E1 and E1A Build Alternative alignments would be slightly shorter in length (35 miles each) than the Refined SR14 Build Alternative (37 miles) and SR14A Build Alternative alignments (38 miles), but longer than the E2 and E2A Build Alternative alignments (31 miles each). Total construction time for the E1 and E1A Build Alternatives (8.5 years each) would be longer than that for the Refined SR14 and SR14A Build Alternatives (8.3 years each), but shorter than that for the E2 and E2A Build Alternatives (9.3 years each).

- **Transportation**—Northbound and southbound spoils hauling associated with the E1 and E1A Build Alternatives would result in more roadway segment impacts where the LOS would degrade to unacceptable levels compared to the Refined SR14, SR14A, and E2 Build Alternatives. Southbound spoils hauling associated with the E1 and E1A Build Alternatives would degrade LOS at 1 freeway segment to unacceptable levels during the AM peak hour, identical to the E2 and E2A Build Alternatives and fewer than the Refined SR14 and SR14A Build Alternatives (each of which would degrade LOS at 2 freeway segments to an unacceptable level in the AM peak hour). Southbound spoils hauling associated with each of the six Build Alternatives would degrade LOS at 2 freeway segments during the PM peak hour. Construction of the E1 and E1A Build Alternatives would degrade LOS to unacceptable levels at fewer intersections (1 intersection in the AM peak hour for both and 2 intersections for the E1 Build Alternative and 1 intersection for the E1A Build Alternative in the PM peak hour) compared to the Refined SR14 and SR14A Build Alternatives (each of which would degrade LOS at 3 intersections in the AM peak hour and 4 intersections in the PM peak hour), but the same number of intersections as the E2 and E2A Build Alternatives.
- **Air Quality**—Construction of the E1 and E1A Build Alternatives would result in exceedances of the General Conformity *de minimis* levels for NO_x (in 2021-2026 for both E1 and E1A) in the SCAB. Construction of the E1 and E1A Build Alternatives would not result in exceedances in General Conformity *de minimis* levels for CO in both air basins. The E1 and E1A Build Alternative would exceed SCAQMD daily CEQA thresholds for CO for a lesser timespan than each of the other Build Alternatives (2023 only). Operation of all six Build Alternatives would have a beneficial effect and would reduce statewide emissions of all pollutants when compared to existing and future No Project baselines, under all ridership scenarios.
- **Noise and Vibration**—Construction of the E1 and E1A Build Alternatives would result in noise impacts in the communities of Harold/Alpine, and a community located near the Southern California Edison Vincent Substation between Palmdale and Acton (Figure S-13). Traffic noise from spoils hauling associated with construction of the E1 and E1A Build Alternatives would affect noise-sensitive uses surrounding portal and adit sites along Aliso Canyon Road, Soledad Canyon Road, Crown Valley Road south of Palmdale, Sand Canyon Road, and Placerita Canyon Road. The E1A Build Alternative would have the most moderate operational noise impacts of the six Build Alternatives. Unlike the Refined SR14, SR14A, E2, and E2A Build Alternatives, the E1 and E1A Build Alternatives would not result in noise impacts on domestic animals. The E1 and E1A Build Alternatives would, however, result in noise impacts on wildlife.

- **Electromagnetic Fields and Electromagnetic Interference**—Construction of the E1 and E1A Build Alternatives would result in EMI at facilities that could operate sensitive equipment: Serra Medical Group and Pacifica Hospital. The E2 and E2A Build Alternatives would avoid this impact. The Refined E1 and E1A Build Alternatives would encounter more existing railroad track that could be affected by EMI (16 miles and 15 miles of railroad track, respectively) than the Refined SR14 and SR14A Build Alternatives (13 miles and 14 miles respectively) and the E2 and E2A Build Alternatives (12 miles and 11 miles, respectively).
- **Public Utilities and Energy**—The E1 and E1A would result in fewer high-risk and major low-risk utility conflicts during construction (400 total utility conflicts and 345 total utility conflicts, respectively) compared to the Refined SR14 and SR14A Build Alternatives (461 and 410, respectively) but more than the E2 and E2A Build Alternatives (278 and 264, respectively). Construction of the SR14A Build Alternative would require the greatest total water demand of each of the six Build Alternatives. The SR14A Build Alternative would also consume the most energy and would generate the most solid waste during construction of each of the Build Alternatives. The Refined SR14 Build Alternative would consume more energy during construction and generate more solid waste than the E1, E1A, E2, and E2A Build Alternatives.
- **Biological and Aquatic Resources**—The E1 and E1A Build Alternatives would affect the fewest acres of special-status plant species habitat and the fewest non-federal Endangered Species Act (FESA)-listed special-status wildlife species. With regard to aquatic resources, the E1A Build Alternative would affect the fewest acres of waters of the U.S. The E1A Build Alternative would also affect the fewest acres of lakes and streambeds subject to California Fish and Game Code Section 1600 et. seq. Changes in groundwater contribution to surface-water resources resulting from tunneling activities could adversely affect aquatic habitat, altering the amount and quality of aquatic habitats for associated biological resources. The E1 and E1A Build Alternatives would have the most potential to adversely impact special-status amphibian and reptile habitat from tunneling under the ANF.
- **Hydrology and Water Resources**—Between Palmdale and Burbank, the E1 Build Alternative would entail 43 surface water crossings at grade (including crossings on fill, on embankment, or in cut-and-cover tunnels) and seven viaduct crossings; the E1A Build Alternative would entail 42 water crossings at grade and three viaduct crossings. As with the Refined SR14 Build Alternative, the E1 Build Alternative would cross Una Lake on embankment at grade; in contrast, the E1A Build Alternative would avoid Una Lake, pursuing a more easterly course approximately 300 feet east of Una Lake. The E1 Build Alternative would cross the California Aqueduct on fill or embankment and tributaries of the Santa Clara River south of Palmdale on a viaduct; the E1A Build Alternative would take a more easterly route along this portion of the alignment and would also cross over the California Aqueduct and tributaries of the Santa Clara River. South of Aliso Canyon, the E1 and E1A Build Alternatives would avoid most surface waters between the Antelope Valley and the San Fernando Valley by tunneling under the ANF including SGMNM. The E1 and E1A Build Alternative alignments would cross the ANF through areas where there are known and mapped seeps and springs, which indicate the potential for hydrogeological impacts during construction. The E1 and E1A Build Alternative tunnels would traverse a longer distance than the Refined SR14 and SR14A Build Alternative tunnels in areas of high groundwater pressure, increasing the chance of hydrogeological impacts resulting from seepage into tunnels. The E1 and E1A Build Alternatives would encounter more streams within the ANF including SGMNM compared to the Refined SR14 and SR14A Build Alternatives but would encounter fewer than the E2 and E2A Build Alternatives. The E1 and E1A Build Alternative alignments would traverse the least width of faults within the ANF including SGMNM with the potential to increase seepage into tunnels. South of the ANF, the E1 and E1A Build Alternative alignments would cross the Hansen Spreading Grounds and channel. The E1 and E1A Build Alternatives would permanently reduce the size of groundwater recharge ponds in the Hansen Spreading Grounds. Construction of the E1 and E1A Build Alternatives would result in fewer acres of construction-period ground disturbance than the Refined SR14 and

SR14A Build Alternatives but would disturb more acres than would the E2 and E2A Build Alternatives. The E1 and E1A Build Alternatives would result in more acres of construction-period ground disturbance within special flood hazard areas than would the Refined SR14 and SR14A Build Alternatives, but fewer than would the E2 and E2A Build Alternatives.

- **Geology, Soils, Seismicity, and Paleontological Resources**—The E1 and E1A Build Alternatives would require fewer permanent structures within hazardous and potentially hazardous fault zones than the Refined SR14 and SR14A Build Alternatives. However, the E1 and E1A Build Alternatives would experience greater risks from these fault zones than the E2 and E2A Build Alternatives. The E1 and E1A Build Alternatives would result in the smallest impact on regionally significant mineral resources when compared to the Refined SR14, SR14A, E2, and E2A Build Alternatives.
- **Hazardous Materials and Wastes**—The E1 and E1A Build Alternatives would generate contaminated spoils by excavating contaminated soils associated with PEC sites near the Vulcan Mine site and Hansen Spreading Grounds in the San Fernando Valley; the Refined SR14 and SR14A Build Alternatives would generate contaminated spoils similar to the E1 and E1A Build Alternatives; and the E2 and E2A Build Alternatives would generate contaminated spoils south of the Big Tujunga Wash crossing and at the CalMat Mine disposal site. The E1 and E1A Build Alternatives would generate the least potentially hazardous spoils (approximately 3 mcy) compared to the Refined SR14 and SR14A Build Alternatives (approximately 6.8 mcy) and the E2 and E2A Build Alternatives (approximately 3.8 mcy). The E1 and E1A Build Alternatives could result in the handling of hazardous materials within 0.25 mile of 10 education facilities each, fewer than the Refined SR14 and SR14A Build Alternatives (18 to 21 and 23 to 26 educational facilities respectively, depending on the adit option chosen) but more than the E2 and E2A Build Alternatives (6 education facilities each).
- **Safety and Security**—The E1 and E1A Build Alternatives would result in more permanent road closures from construction (13 road closures and 12 road closures, respectively) compared to the Refined SR14 and SR14A Build Alternatives (9 road closures and 5 road closures, respectively) and E2 and E2A Build Alternatives (11 road closures and 10 road closures, respectively). These closures would have similar potential to create traffic hazards for each Build Alternative; the grade separations implemented as part of project design would minimize traffic hazards. Each Build Alternative vicinity includes the Hollywood Burbank Airport. In addition, the E1 and E1A Build Alternatives' vicinity includes Whiteman Airport.
- **Socioeconomics and Communities**—As discussed in Section S.5.3.6, the Build Alternatives would require adits and intermediate windows for construction access to tunneled portions of the alignment. Thus, ranges of quantifiable impacts that would result from the selection of each adit and intermediate window option combination are discussed here. The E1 and E1A Build Alternatives would displace fewer single-family residential units (13 to 18 and 12 to 17, respectively) compared to the number displaced by the Refined SR14 (38 to 41) or E2 and E2A Build Alternatives (38 and 37, respectively), but more than the SR14A Build Alternative (8 to 11). The E1 and E1A Build Alternatives would displace 11 multifamily residential units and 27 multifamily units, respectively, lower than the number displaced by the Refined SR14 and SR14A Build Alternatives (13 and 29, respectively) and similar to the E2 and E2A Build Alternatives (11 and 27, respectively). The E1 and E1A Build Alternatives would displace 213 to 230 businesses and 215 to 232 businesses, respectively, more than would be displaced by the E2 and E2A Build Alternatives (121 and 123, respectively) and a similar number of businesses as would be displaced by the Refined SR14 and SR14A Build Alternatives (214 to 231 and 213 to 230, respectively).
- **Agricultural Farmland and Forest Land**—The E1 and E1A Build Alternatives would not result in permanent conversions of Important Farmland. Power lines extending from adit facilities associated with the E1 and E1A Build Alternatives would encounter forest land. Adherence to the USFS Special Use Authorization includes several provisions including those that would require the Authority to avoid, or else be liable for, damaging or contaminating the surrounding environment; provisions would adequately avoid, minimize, or

compensate for the permanent loss of forest land or conversion of forest land to nonforest use that could result from construction of permanent adit facilities within the ANF.

- **Parks, Recreation, and Open Space**—The E1 Build Alternative infrastructure would be located near 17 parks, recreation, and open space resources; the E1A Build Alternative would be located near 18 parks, recreation, and open space resources. Direct and indirect impacts on parks, recreational areas, and open space resources would be less than significant.
- **Aesthetics and Visual Quality**—The E1 and E1A Build Alternatives would adversely affect visual quality in scenic areas between Palmdale and Burbank. While the E1 and E1A Build Alternatives would be built largely below grade and would therefore result in the fewest permanent construction impacts and least visual impacts on their surroundings, project infrastructure would contrast with the natural harmony of some views near Sierra Highway (E1 Build Alternative only), Soledad Siphon (E1A Build Alternative only), and Foreston Drive.
- **Cultural Resources**—Construction of the E1 and E1A Build Alternatives would result in significant and unavoidable visual impacts on two historical built resources: Blum Ranch and Blum Ranch Farmhouse. Construction of the E1 and E1A Build Alternatives would result in less than significant impacts on archaeological resources, and operations impacts on historical built resources could be brought to a less than significant level.
- **Regional Growth**—Because the Build Alternatives are similar in length and would use the same Burbank Airport Station site, regional growth effects of the six Build Alternatives would not differ with regard to operations effects. However, effects would differ slightly with regard to construction jobs. The E1 Build Alternatives would create the fewest number of total construction job-years (80,300 total job-years during construction); The E1A Build Alternative would create fewer total construction job-years (81,600 total job-years during construction) than the Refined SR14, SR14A and E2A Build Alternatives.
- **Cumulative Impacts**— The E1 and E1A Build Alternatives would not substantially differ from the Refined SR14, SR14A, E2, and E2A Build Alternatives regarding the contribution of significant cumulative effects. The Palmdale to Burbank Project Section in combination with other past, present, and reasonably foreseeable probable future actions or projects (cumulative projects), listed in Appendix 3.19-A of this Final EIR/EIS, would result in the following significant cumulative construction-period impacts under CEQA: transportation, air quality (General Conformity and localized construction effects), noise, paleontological resources, socioeconomics and communities (population and community impacts), and aesthetics and visual quality. In addition, the Palmdale to Burbank Project Section in combination with other cumulative projects would result in cumulative noise impacts during long-term operation of the HSR Build Alternative.

S.8.2.3 E2 and E2A Build Alternatives

The E2 and E2A Build Alternatives would have the shortest total length, but the longest construction duration of the six Build Alternatives.

- **Transportation**—Northbound and southbound spoils hauling associated with the E2 and E2A Build Alternatives would result in fewer roadway segment impacts where the LOS would degrade to unacceptable levels compared to the E1 and E1A Build Alternatives, but more roadway segment impacts than the Refined SR14 and SR14A Build Alternatives. Northbound and southbound spoils hauling associated with the E2 and E2A Build Alternatives would degrade LOS to unacceptable levels at fewer intersections compared to the Refined SR14, SR14A, E1, and E1A Build Alternatives. Southbound spoils hauling associated with the E2 and E2A Build Alternatives would degrade LOS at 1 freeway segment to unacceptable levels during the AM peak hour, identical to the E1 and E1A Build Alternatives and fewer than the Refined SR14 and SR14A Build Alternatives (each of which would degrade LOS at 2 freeway segments to an unacceptable level in the AM peak hour). Construction of the E2 and E2A Build Alternatives would degrade LOS to unacceptable levels at fewer intersections

(1 intersection in the AM peak hour and 2 intersections for the E2 Build Alternative and 1 intersection for the E2A Build Alternative in the PM peak hour) compared to the Refined SR14 and SR14A Build Alternatives (each of which would degrade LOS at 3 intersections in the AM peak hour and 4 intersections in the PM peak hour), but the same number of intersections as the E1 and E1A Build Alternatives.

- **Air Quality**—The E2A Build Alternative is the only Build Alternative that would exceed General Conformity *de minimis* levels for NOx (in 2023) in the Mojave Desert Basin and AVAQMD CEQA thresholds for NOx (in 2023). Like the Refined SR14 and SR14A Build Alternatives, the E2A Build Alternative would also exceed General Conformity *de minimis* levels for CO during construction (in 2022 and 2024 – 2025) in the SCAB. Construction of the E2 and E2A Build Alternatives would exceed General Conformity *de minimis* levels for NO_X (in 2021-2026 for both E2 and E2A) in the SCAB. Operation of all six Build Alternatives would have a beneficial effect and would reduce statewide emissions of all pollutants when compared to existing and future No Project baselines, under all ridership scenarios.
- **Noise and Vibration**—Of the six Build Alternatives, the E2 and E2A Build Alternatives would cause construction noise and vibration impacts in the most residential communities (Figure S-13). Noise impacts from spoils hauling associated with the E2 and E2A Build Alternative alignments would occur along Wheatland Avenue in the Shadow Hills neighborhood, along Foothill Boulevard in the Lake View Terrace neighborhood, and along Aliso Canyon Road, Soledad Canyon Road, and Crown Valley Road south of Palmdale. Operation of the E2 and E2A Build Alternatives would also result in operational noise impacts on the most sensitive receivers. Unlike the other Build Alternatives, operations of the E2 and E2A Build Alternatives would not result in ground-borne vibration impacts on residential sensitive receptors. Like the Refined SR14 and SR14A Build Alternatives, the E2 and E2A Build Alternatives would result in noise impacts on domestic animals and wildlife. In contrast, the E1 and E1A Build Alternatives would only result in noise impacts on wildlife.
- **Electromagnetic Fields and Electromagnetic Interference**—Unlike the Refined SR14, SR14A, E1, and E1A Build Alternatives, construction of the E2 and E2A Build Alternatives would not result in EMI at facilities that could operate sensitive equipment and would avoid EMI to potentially sensitive receptors within the RSA. The E2 and E2A Build Alternatives would encounter the shortest length existing railroad track that could be affected by EMI (12 miles and 11 miles of railroad track, respectively) compared to the Refined SR14 and SR14A Build Alternatives (13 miles and 14 miles respectively) and the E1 and E1A Build Alternatives (16 miles and 15 miles, respectively).
- **Public Utilities and Energy**—The E2 and E2A would result in fewer high-risk and major low-risk utility conflicts during construction (278 total utility conflicts and 264 total utility conflicts, respectively), compared to the Refined SR14 and SR14A Build Alternatives (461 and 410, respectively) and the E1 and E1A Build Alternatives (400 and 345, respectively). Construction of the E2 Build Alternative would require the least total water demand and would generate the least amount of solid waste of each of the six Build Alternatives. The SR14A Build Alternative would also consume the most energy and would generate the most solid waste during construction of each of the Build Alternatives. The E2 and E2A Build Alternatives would consume more energy during construction than the E1 and E1A Build Alternatives, but less than the Refined SR14 and SR14A Build Alternatives.
- **Biological and Aquatic Resources—**The E2 and E2A Build Alternatives would affect more special-status plant species habitat than the E1 and E1A Build Alternatives, but less than the Refined SR14 and SR14A Build Alternatives. Of the six Build Alternatives, the E2A Build Alternative would affect the fewest acres of listed special-status wildlife habitat. The E2 Build Alternative would affect the most acreage of wetland waters of the U.S., although the E2A Build Alternative would affect the fewest acres of nonwetland waters of the U.S. The E2 Build Alternative would affect Una Lake, which provides habitat for several special-status species. Changes in groundwater contribution to surface-water resources resulting from tunneling activities could adversely affect aquatic habitat, altering the amount and quality of aquatic habitats for

associated biological resources. The E2 and E2A Build Alternatives are the only alternatives with the potential to impact special-status bird and fish habitat from tunneling under the ANF.

- **Hydrology and Water Resources**—The E2 Build Alternative would entail 34 surface water crossings at grade (including crossings on fill, on embankment, or in cut-and-cover tunnels) and eight viaduct crossings; the E2A Build Alternative would entail 39 surface water crossings at grade and three viaduct crossings. The E2 Build Alternative would cross Una Lake on embankment at grade; in contrast, the E2A Build Alternative would avoid Una Lake, pursuing a more easterly course approximately 300 feet east of Una Lake. The E2 and E2A Build Alternative alignments would cross the California Aqueduct on fill or embankment and would also cross tributaries of the Santa Clara River south of Palmdale; the E2A Build Alternative would take a more easterly route along this portion of alignment and would also cross over the California Aqueduct and tributaries of the Santa Clara River. South of Aliso Canyon, the E2 and E2A Build Alternatives would avoid most surface waters between the Antelope Valley and the San Fernando Valley by tunneling under ANF including SGMNM. The E2 and E2A Build Alternative alignments would cross Big Tujunga Wash (on viaduct) south of ANF. The E2 and E2A Build Alternative alignments would cross the ANF through areas where there are the most known and mapped seeps and springs, which indicate the potential for hydrogeological impacts during construction. The E2 and E2A Build Alternative tunnels would traverse the longest distance in areas of high groundwater pressure compared to the paths of the Refined SR14, SR14A, E1, and E1A Build Alternatives, so the E2 and E2A Build Alternatives have a greater risk of impacts on hydrogeology. The E2 and E2A Build Alternatives would also be located within 1 mile of more streams within the ANF and would encounter the greatest total width of faults with the potential to increase seepage into tunnels. The E2 and E2A Build Alternatives would involve the most construction-period ground disturbance and permanent footprint within special flood hazard areas but would have the fewest groundwater wells within 1 mile of the alignment centerline.
- **Geology, Soils, Seismicity, and Paleontological Resources**—The E2 and E2A Build Alternatives would involve the least permanent footprint within dam inundation zones and would require the largest amount of construction aggregate for construction. The E2 and E2A Build Alternatives would result in similar impacts on paleontological resources as the E1 and E1A Build Alternatives but would result in the fewest impacts on regionally significant mineral resources when compared to the Refined SR14, SR14A, E1, and E1A Build Alternatives.
- **Hazardous Materials and Wastes**—The E2 and E2A Build Alternatives would generate contaminated spoils by excavating contaminated soils associated with PEC sites south of the Big Tujunga Wash crossing and at the CalMat Mine disposal site; the Refined SR14, SR14A, E1, and E1A Build Alternatives would generate contaminated spoils near the Vulcan Mine site and Hansen Spreading Grounds in the San Fernando Valley. The E2 and E2A Build Alternatives would generate less potentially hazardous spoils (approximately 3.8 mcy) compared to the Refined SR14 and SR14A Build Alternatives (approximately 6.8 mcy) but more than the E1 and E1A Build Alternatives (approximately 3.0 mcy). The E2 and E2A Build Alternatives could result in the handling of hazardous materials within 0.25 mile of 6 education facilities, fewer than the Refined SR14 and SR14A Build Alternatives (18 to 23 education facilities and 21 to 26 education facilities respectively, depending on the adit option chosen) and the E1 and E1A Build Alternatives (10 educational facilities, each).
- **Safety and Security**—The Refined E2 and E2A Build Alternatives would result in more permanent road closures from construction (11 road closures and 10 road closures, respectively) compared to the Refined SR14 and SR14A Build Alternatives (9 road closures and 5 road closures, respectively) but fewer than the E1 and E1A Build Alternatives (13 road closures and 12 road closures, respectively). These closures would have similar potential to create traffic hazards for each Build Alternative; the grade separations implemented as part of project design would minimize traffic hazards. The E2 and E2A Build Alternatives' vicinity includes the fewest airports and airstrips of the six Build Alternatives, only including the Hollywood Burbank Airport.

- **Socioeconomics and Communities**—As discussed in Section S.5.3.6, the Build Alternatives would require adits and intermediate windows for construction access to tunneled portions of the alignment. Thus, ranges of quantifiable impacts that would result from the selection of each adit and intermediate window option combination are discussed here. The E2 and E2A Build Alternatives would displace 38 and 37 single-family residential units, respectively, which is a larger number than the E1, E1A, and SR14A Build Alternatives (13 to 18; 12 to 17; and 8 to 11 single-family residential units, respectively), but a smaller number than the Refined SR14 Build Alternative would displace (38 to 41). The E2 and E2A Build Alternatives would displace 11 multifamily residential units and 27 multifamily units, respectively; the E2 Build Alternative would displace fewer multifamily residential units than the Refined SR14 and SR14A Build Alternatives (13 and 29, respectively) and a similar number of multifamily units to the E1 and E1A Build Alternatives (11 and 27, respectively). The E2 and E2A Build Alternatives would require the fewest business displacements (121 and 123 businesses, respectively) compared to the number of business displacements under the E1 (213 to 230) and the E1A (215 to 232) or the Refined SR14 (214 to 231) and the SR14A (213 to 230) Build Alternatives.
- **Agricultural Farmland and Forest Land**—The E2 and E2A Build Alternatives would not result in permanent conversions of Important Farmland or forest land resources.
- **Parks, Recreation, and Open Space**—The E2 Build Alternative infrastructure would be located near 13 parks, recreation, and open space resources; the E2A Build Alternative would be located near 14 parks, recreation, and open space resources. These are fewer than would be near the alignments for the other four Build Alternatives. However, the direct and indirect impacts on the Hansen Dam Open Space under the E2 and E2A Build Alternatives would represent the largest impacts on parks, recreational areas, and open space resources of the six Build Alternatives.
- **Aesthetics and Visual Quality**—The E2 and E2A Build Alternatives would adversely affect visual quality in scenic areas between Palmdale and Burbank. Although the E2 and E2A Build Alternatives would largely be built underground, project infrastructure would contrast with the natural harmony of some views near the tunnel portals, such as near Lake View Terrace and Big Tujunga Wash.
- **Cultural Resources**—Like the E1 and E1A Build Alternatives, construction of the E2 and E2A Build Alternatives would result in significant and unavoidable visual impacts on two historical built resources: Blum Ranch and Blum Ranch Farmhouse. Construction of the E2 and E2A Build Alternatives would result in less than significant impacts on archaeological resources, and operations impacts on historical built resources could be brought to a less than significant level.
- **Regional Growth**—Because the Build Alternatives are similar in length and would use the same Burbank Airport Station site, regional growth effects of the six Build Alternatives would not differ with regard to operations effects. However, effects would differ slightly with regard to construction jobs. The E2 and E2A Build Alternatives would create a lower number of total construction job-years (80,900 and 82,100 total job-years during construction, respectively) compared to the Refined SR14 and SR14A Build Alternatives (83,400 and 84,900 total job-years during construction, respectively).
- **Cumulative Impacts**— The E2 and E2A Build Alternatives would not substantially differ from the Refined SR14, SR14A, E1, and E1A Build Alternatives regarding the contribution of significant cumulative effects. The Palmdale to Burbank Project Section in combination with other past, present, and reasonably foreseeable probable future actions or projects (cumulative projects), listed in Appendix 3.19-A of this Final EIR/EIS, would result in the following significant cumulative construction-period impacts under CEQA: transportation, air quality (General Conformity and localized construction effects), noise, paleontological resources, socioeconomics and communities (population and community impacts), and aesthetics and visual quality. In addition, the Palmdale to Burbank Project Section in

combination with other cumulative projects would result in cumulative noise impacts during long-term operation of the HSR Build Alternative.

S.8.3 Comparison of HSR Stations

As described in Section S.5.6, the Palmdale to Burbank Project Section would use the approved Burbank Airport Station adjacent to the Hollywood Burbank Airport in Burbank. This station site would be identical for all six Build Alternatives. Thus, impacts resulting from the station do not influence the selection of the Preferred Alternative. The impacts of this station are included in Table S-4 and Table S-5.

S.8.4 Preferred Alternative

The Authority has identified the SR14A Build Alternative as the Preferred Alternative for the Palmdale to Burbank Project Section, with the approved Burbank Airport Station. The Authority identified the Preferred Alternative by balancing the adverse and beneficial impacts of the project on the human and natural environment. The Authority weighed a variety of issues, including natural resource and community impacts, the input of the communities along the route, the views of federal and state resource agencies, project costs, constructability, and other differentiators to identify what the Authority believes is the best Build Alternative to achieve the project's Purpose and Need.

S.8.5 Capital and Operating Costs

Table S-6 provides cost estimates in 2018 dollars for each of the six Build Alternatives. The cost estimates include the total labor and materials necessary to construct the Palmdale to Burbank Project Section, including stations, utility relocations, electrical infrastructure and substations, and modifications to roadways required to accommodate grade-separated guideways. Additionally, the cost estimates do not include acquiring vehicles as those are part of the California HSR System costs and are not associated with construction of individual project sections.

Table S-6 Estimated Capital Costs of the High-Speed Rail Alternatives Palmdale to Burbank (2018$ millions)

Authority Cost Category	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A Build Alternative	E2 Build Alternative	E2A Build Alternative
10 Track structures and track	$13,387	$13,465	$13,960	$14,592	$14,238	$14,828
20 Stations, terminal, intermodal[1,2]	$582	$617	$559	$557	$692	$653
30 Support facilities: yards, shops, administration buildings[3]	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
40 Sitework, right-of-way, land, existing improvements	$3,978	$4,197	$3,506	$3,053	$3,135	$3,215
50 Communications and signaling	$186	$194	$183	$193	$174	$168
60 Electric traction	$264	$438	$251	$252	$226	$226

Authority Cost Category	Refined SR14 Build Alternative	SR14A Build Alternative	E1 Build Alternative	E1A Build Alternative	E2 Build Alternative	E2A Build Alternative
70 Vehicles	Considered a systemwide cost and not included as part of the Build Alternatives within individual project sections.					
80 Professional services	$2,759	$2,863	$2,809	$2,963	$2,909	$3,012
90 Unallocated contingency[4]	$750	$776	$756	$795	$765	$791
100 Finance charges	Estimate to be developed prior to project construction.					
Total[5]	**$21,906**	**$22,550**	**$22,064**	**$22,405**	**$22,139**	**$22,894**

Source: Appendix 6-B, Preliminary Engineering for Project Definition Record Set Capital Cost Estimate Report
[1] Station costs overlap. The Palmdale Station and the Maintenance Facility are also included in the Bakersfield to Palmdale Project Section costs. The Burbank Station costs are also included in the Burbank to Los Angeles Project Section costs.
[2] Roadway modifications and accesses to the alignment are accounted for under station cost estimates. The SR14A, E1A, and E2A Build Alternatives would require significantly fewer roadway modifications due to more tunneling and through avoidance of the Pearblossom Interchange, resulting in lower station construction cost estimates compared to the Refined SR14, E1, and E2 Build Alternatives.
[3] The Palmdale to Burbank Project Section cost information does not include support facilities due to the limited level of design information available for these project features.
[4] All cost categories include unallocated contingencies, including relocation of the Antelope Valley-East Kern Water Treatment Plant (Authority 2023). Category SCC 90 represents only unallocated monies..
[5] Totals may not sum due to rounding.
[6] Capital cost estimates were reviewed and updated between publication of the Draft EIR/EIS and Final EIR/EIS. Cost revisions were made to correct errors (e.g. double-counting), to include key changes in the project resulting from the Authority's consideration of public comments (e.g. project footprint reductions), and to account for inflation escalation and cost increases (e.g. professional services, unallocated contingency).
Authority = California High-Speed Rail Authority
SCC = standard capital cost
SR = State Route

The operations and maintenance costs in 2015 dollars as apportioned to the Palmdale to Burbank Project Section are shown in Table S-7 and are based on Phase 1 of the California HSR System, total cost per route mile.[13] The costs associated with operations and maintenance are apportioned on the basis of trainset miles[14] operated in the Palmdale to Burbank Project Section. The costs associated with maintenance of infrastructure are apportioned as a ratio of 40 route miles to 500 Phase 1 total route miles. For more information on the operations and maintenance cost model used for cost forecasting, please refer to Appendix 6-A and Appendix 6-B of this Final EIR/EIS.

Table S-7 Annual Operation and Maintenance Costs Apportioned to the Palmdale to Burbank Project Section (2015$ millions)

Operations and Maintenance Activity	2040 Medium Ridership Scenario	2040 High Ridership Scenario
Train operations	$22	$24
Dispatching	$3	$3
Maintenance of equipment	$11	$12
Maintenance of infrastructure	$10	$11

[13] Route mile is defined as the distance traveled over tracks between two points.
[14] A trainset mile is the movement of a train 1 mile.

Operations and Maintenance Activity	2040 Medium Ridership Scenario	2040 High Ridership Scenario
Station and train cleaning	$6	$6
Commercial costs and functions	$7	$8
General and administrative	$4	$5
Insurance	$4	$4
Unallocated contingency	$3	$3
Total[1]	**$70**	**$76**

Source: Appendix 6-A, High-Speed Rail Operating and Maintenance Cost for Use in EIR/EIS Project-Level Analysis
[1]Totals may not sum due to rounding.
EIR/EIS = Environmental Impact Report/Environmental Impact Statement

S.9 Section 4(f) and Section 6(f)

S.9.1 Section 4(f)

Under Section 4(f) of the U.S. Department of Transportation Act (codified at 49 U.S.C. 303), an operating administration of the U.S. Department of Transportation may not approve a project that uses properties protected under this section of the law unless there is a finding of *de minimis* impact, or if there are no prudent or feasible alternatives to such use, and the project includes all possible planning to minimize harm to such properties. Properties protected under Section 4(f) are publicly owned lands of a park, recreation area, or wildlife and waterfowl refuge or land of a historical site (publicly or privately owned) of national, state, or local significance as determined by the federal, state, regional, or local officials having jurisdiction over the resource.

As described in Section 4.6.1, most uses of parks, recreation facilities, and wildlife and waterfowl refuges would result in a *de minimis* impact, with two exceptions. With a *de minimis* impact determination, individual resource avoidance assessments are not required. As discussed in Section 4.6.2, Cultural Resources, all cultural resources would have a *de minimis* impact. Cultural resources are not included in the following section. Therefore, Chapter 4 of this Final EIR/EIS only provides individual resource avoidance assessments for Section 4(f) uses of two park resources: Lang Station Open Space and Rim of the Valley Trail (Proposed Extension). Table S8 provides a summary of Section 4(f) use determinations.

Table S-8 Summary of Section 4(f) Use Determinations

Resource	Section 4(f) Use Determination[1]					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Parks and Recreation Resources						
Palmdale Hills Trail (Proposed Extension)	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]
Acton Community Trail (Proposed Extension)	No use	No use	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]
Littlerock Trail (Proposed Extension)	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]

Resource	Section 4(f) Use Determination[1]					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Vasquez Loop Trail (Proposed Extension)	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]	*de minimis*[2]
Pacific Crest Trail	*de minimis*	No use	No use	No use	No use	No use
San Gabriel Mountains National Monument	No use	No use	*de minimis*	*de minimis*	*de minimis*	*de minimis*
Angeles National Forest	No use	No use	No use	No use	*de minimis*	*de minimis*
Rim of the Valley Trail (Proposed Extension)	Temporary occupancy[2]	Temporary occupancy[2]	No use	No use	Temporary occupancy[2]	Temporary occupancy[2]
Hansen Dam Open Space Area	No use	No use	No use	No use	*de minimis*	*de minimis*
Lang Station Open Space	Permanent Use	Permanent Use	No use	No use	No use	No use
Historic Resources						
Palmdale Ditch	No use	No use	*de minimis*	*de minimis*	*de minimis*	*de minimis*
East Branch of the California Aqueduct	*de minimis*	*de minimis*	*de minimis*	*de minimis*	*de minimis*	*de minimis*
Site 19-003890 (Prehistoric Vasquez Rocks Archaeological District	*de minimis*	*de minimis*	No use	No use	No use	No use
Blum Ranch Historic District	No use	No use	*de minimis*	*de minimis*	*de minimis*	*de minimis*
Blum Ranch Farmhouse	No use	No use	*de minimis*	*de minimis*	*de minimis*	*de minimis*

Resource	Section 4(f) Use Determination[1]					
	Refined SR14	SR14A	E1	E1A	E2	E2A
Pink Motel and Café	No use	No use	No use	No use	No use	No use
Eagle and Last Chance Mine Road	No use	No use	*de minimis*	*de minimis*	*de minimis*	*de minimis*

Source: Authority 2019a

[1] A Section 4(f) use may be constituted as a permanent use,[15] temporary occupancy,[16] or a constructive use.[17] A finding of *de minimis* impact is proposed for several Section 4(f) resources. Section 4(f) uses are defined in detail in Chapter 4, Final Section 4(f) and 6(f) Evaluations.
Authority = California High-Speed Rail Authority

[2] If the proposed trail extension is not constructed at the time of construction of the Build Alternative, the trail would not be physically affected, resulting in no use.

S.9.2 Section 6(f)

Section 6(f) properties are recreation resources funded by the Land and Water Conservation Fund Act (54 U.S.C. 200305(f)). Parklands acquired or developed with Land and Water Conservation Fund Act funds cannot be converted to other uses without the approval of the National Park Service, and approval is granted only if replacement parkland of "reasonably equivalent usefulness and location is provided." No Section 6(f)-protected property was identified as part of this environmental review. Therefore, there would be no Section 6(f) impacts associated with the six Build Alternatives.

S.10 Environmental Justice

Environmental justice can be defined as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income. For a proposed transportation project, this means involvement from the early stages of transportation planning and decision-making through construction, operations, and maintenance. The decision-making process must evaluate, to the extent practicable and permitted by law, the potential disproportionately high and adverse human health and environmental impacts of their programs, policies, and activities on minority and/or low-income populations. A disproportionately high and adverse effect on minority populations and low-income populations is generally defined as an effect that:

- Would be predominantly borne by minority populations or low-income populations, or
- Would be suffered by minority populations or low-income populations and would be appreciably more severe or greater in magnitude than the adverse effect suffered by the non-low-income or non-minority populations in the affected area and the reference community.

The following laws and regulations govern environmental justice-related issues:

- Title VI of the Civil Rights Act (Public Law 88-352); Presidential Executive Order 12898, known as the Federal Environmental Justice Policy and the Presidential Memorandum accompanying USEO 12898

[15] When a Section 4(f) property is permanently incorporated into a proposed transportation facility.

[16] When a Section 4(f) property, in whole or in part, is required for construction-related activities but not permanently incorporated into a transportation facility.

[17] When a transportation project does not permanently incorporate the property of a protected resource, but the proximity of the project results in impacts (e.g., noise, vibration, visual, access, and ecological) after incorporation of mitigation that are so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired.

- Improving Access to Services for Persons with Limited English Proficiency (Presidential Executive Order 13166)
- U.S. Department of Transportation Order 5610.2(a), which updates the original Environmental Justice Order
- The Council on Environmental Quality's Environmental Justice Guidance under NEPA (CEQ 1997)
- Americans with Disabilities Act (42 U.S.C. 12101 et seq.)
- Uniform Relocation Assistance and Real Property Program (42 U.S.C. 4601 et seq.)
- California Government Code Section 65040.12(e)
- California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund (Assembly Bill32, Chapter 488, Statutes of 2006)
- Advancing Racial Equity and Support for Underserved Communities (Presidential Executive Order 13895)
- Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (Presidential Executive Order 13990)
- Justice40 Initiative (Presidential Executive Order 14008, Section 223)
- Revitalizing Our Nation's Commitment to Environmental Justice for All (Presidential Executive Order 14096)

Addressing environmental justice issues involves procedural and technical considerations. Procedural considerations include reaching out to ensure that minority and/or low-income populations and other traditionally underserved populations are effectively engaged in public involvement processes. As discussed further in Chapter 9, Public and Agency Involvement, the Authority has been conducting outreach for the Palmdale to Burbank Project Section since 2014. Additional outreach events specifically aimed toward environmental justice communities began in 2019 and are ongoing (refer to Appendix 5-A for the complete Environmental Justice Outreach Plan, including discussion of procedural considerations). Additionally, the Authority's Title VI policy and plan and a Limited English Proficiency policy and plan address the Authority's commitment to nondiscrimination on the basis of race, color, national origin, age, sex, or disability and commitment to provide language assistance to individuals with limited English proficiency.

The presence of environmental justice populations is more prevalent in Los Angeles County than in the state as a whole. As such, the proposed alignments of the Palmdale to Burbank Project Section Build Alternatives would result in impacts on environmental justice populations. Although the six Build Alternatives for the Palmdale to Burbank Project Section were designed to avoid impacts on these populations, avoiding these impacts entirely was not feasible. The Authority has concluded that the Palmdale to Burbank Project Section would result in disproportionately high and adverse effects on minority and/or low-income populations associated with socioeconomics (business displacements, community cohesion, or both).[18] However, the Authority has also found that long-term operation of the Build Alternatives would result in beneficial effects on California populations, including low-income and minority populations.

During operations, the Build Alternatives as part of the California HSR System would provide benefits to the regional transportation system by reducing vehicle trips on local freeways through the diversion of intercity trips from road trips to the HSR system. This reduction would be a net benefit to transportation and traffic operations because a reduction in VMT would help maintain or

[18] EO 14096—Revitalizing Our Nation's Commitment to Environmental Justice for All was enacted on April 21, 2023. EO 14096 on environmental justice does not rescind EO 12898, which has been in effect since February 11, 1994, and is currently implemented through DOT Order 5610.2C. This implementation will continue until further USDOT guidance is provided regarding the implementation of the new EO 14096 on environmental justice..

potentially improve the operating conditions of regional roadways. Reductions in VMT would result in a reduction of statewide and regional criteria pollutants compared to existing and future No Project baselines providing a net benefit to statewide air quality. Because these benefits would be statewide, both EJ and non-EJ populations would experience these net benefits.

The reduction in traffic congestion as a result of the Build Alternatives would in turn decrease the occurrence of vehicular, pedestrian, and cycling accidents, providing a safety benefit for travelers from both EJ and non-EJ populations in the study area. Because the Build Alternatives would operate on a fully grade-separated, dedicated track using contemporary safety, signaling, and ATC systems, conflicts with other vehicles, pedestrians, and bicyclists would be avoided. On a more local level, the Burbank Airport Station would revitalize and bring economic benefits to the Burbank Subsection, which includes both EJ and non-EJ communities, and would accelerate the implementation of local development plans in Burbank and provide an opportunity to achieve TOD planning goals. Operation of the Build Alternatives would also provide long-term employment benefits, and create approximately 5,400 direct and indirect jobs in Los Angeles County. Such long-term employment benefits would likely be experienced by both EJ and non-EJ populations.

The Authority has concluded that, when project benefits and impacts are considered as a whole, all six Build Alternatives would result in disproportionately high and adverse effects on EJ populations related to socioeconomics (business displacements, community cohesion, or both). (Refer to Chapter 5, Environmental Justice, for further discussion of impacts on these populations and measures identified to minimize impacts). The Authority's environmental justice determination in this Final EIR/EIS considered comments received on its preliminary determinations during the public comment period and additional community engagement meetings. In accordance with U.S. Department of Transportation Order 5610.2C, if disproportionately high and adverse effects are identified, the action would only be carried out if the Authority determines that "further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable."

As described in Section 5.8.3, Offsetting Mitigation Measures, the Authority developed a range of potential community improvements through engagement with the affected jurisdictions, community organizations active in the affected communities, and potential implementing partners. Potential community improvements that could qualify as offsetting mitigation measures include upgrades to existing community facilities, structures, functions, and actions or the addition of facilities, structures, functions, or actions made for the benefit of a local community. Offsetting mitigation measures do not include elements of the proposed project; direct mitigation measures in the EIR/EIS; improvements required by local, state, or federal mandates; or improvements fully funded by dedicated existing sources of funding.

To be considered for Authority implementation as offsetting mitigation measures, potential community improvements were required to have a reasonable nexus, or relationship, to project effects. A community improvement has a "reasonable nexus" if it may reasonably offset a specific identified disproportionately high and adverse effect on the community such as but not limited to community cohesion, visual, aesthetics, or noise. Community benefits can be demonstrated through an analysis that validates the offsetting reduction in disproportionately high and adverse effects or through community agreement where the impacted community accepts the benefit of the improvement as an offsetting mitigation measure for disproportionately high and adverse effects. The process and evaluation of potential community improvements is described further in Appendix 5-B, Environmental Justice Development of Community Improvements as Offsetting Mitigation.

The improvements listed in Table 5-25 in Chapter 5, Environmental Justice, are proposed as offsetting mitigation measures to offset disproportionately high and adverse effects on minority populations and low-income populations due to their reasonable nexus to project effects and ability to provide substantial benefits to minority populations and low-income populations within the communities wherein these effects would occur. Profiles for each of the potential offsetting mitigation measures are included in Appendix 5-B, and contain a description of each measure,

location, disproportionately high and adverse effects addressed by the measure, summary of relevant input from communities and local agencies, determination of reasonable nexus to residual disproportionately high and adverse effects, and a figure showing the measure location. The following section in this chapter analyzes the secondary environmental effects of the proposed offsetting mitigation measures.

S.11 Areas of Controversy

Based on the scoping meetings and public outreach efforts throughout the environmental review process, the following are known areas of controversy:

- Impacts on corridor communities (including noise, visual quality impacts, loss of community character and cohesion, and right-of-way acquisition) from at-grade and elevated alignments (particularly for the Refined SR14 Build Alternative) in the San Fernando Valley
- Impacts on forest land in the ANF including SGMNM
- Impacts on groundwater and hydrogeology in the ANF including SGMNM
- Seismic/geological considerations
- Noise impacts on domestic animals and wildlife
- Impacts disproportionately borne by environmental justice populations
- Impacts on special-status plants and wildlife
- Impacts on Una Lake
- Water supply during construction
- Impacts in the Bee Canyon area, including wildlife connectivity

S.12 Environmental Process

S.12.1 Public and Agency Comment

The Palmdale to Burbank Project Section Draft EIR/EIS was posted on the Authority's website and formally made available to California state agencies by the State Clearinghouse beginning August 31, 2022. The public review and comment period originally ran for a 60-day public review from September 2, 2022, through November 1, 2022, pursuant to CEQA and NEPA. However, in response to agency and stakeholder requests, the Authority extended the public review and comment period by 30 days, to December 1, 2022, for a total of 90 days after the document was published.

At the start of the public review period on September 2, 2022, copies of the Draft EIR/EIS were sent to cooperating federal agencies, state responsible and trustee agencies (including copies sent through the State Clearinghouse); were available at the Authority's offices in Sacramento and Los Angeles; and were at libraries in the project area.

An electronic version of the Draft EIR/EIS was available at the Authority's website hsr.ca.gov. Electronic versions of the Draft EIR/EIS and associated environmental documents could be requested by telephone or email.

Comments could be submitted to the Authority via postal mail, email, and the public hotline. During the public review period, the Authority held an Online Open House on October 6, 2022, and an Online Public Hearing on October 18, 2022, to provide an overview of the environmental document, and an opportunity for the public to ask questions and submit comments on the Draft EIR/EIS. The presentation was also available in Spanish.

During the comment period, including the extended comment period, there were 481 comment submissions and 2,489 total comments submitted on the Palmdale to Burbank Project Section Draft EIR/EIS. After the close of the public comment period, the Authority received 26 submissions that have been included in the record.

The comments covered a wide range of issues and represented viewpoints from government agencies, organizations, business groups, businesses, residents, and property owners. The Authority received comment submissions from 11 federal agencies,9 state agencies, 5 elected officials, 44 local agencies, 60 businesses and organizations, and 352 individuals. Eighteen comment submissions were received during the October 18, 2022, online public hearing.

Key comments addressed the following topics:

- Tunneling—Comments expressed concern about impacts from tunneling including hydrology, noise, and vibration.
- Funding—Comments expressed concern regarding project costs, funding availability for construction and operation, and prudent use of public funding.
- Landscape—Comments expressed concerns about impacts on the natural landscape surrounding the foothill communities including Kagel Canyon, Lake View Terrace, Shadow Hills, and Sunland-Tujunga.
- Construction—Comments expressed concerns related to construction effects on surrounding neighborhoods.
- Property acquisition—Comments expressed concerns about the right-of-way acquisition process and relocation assistance to be provided by the Authority, as well as potential impacts on property values.

Most comments from the Lake View Terrace, Tujunga Wash, and surrounding communities indicated that individuals did not want an HSR alignment that would destroy natural landscapes surrounding the foothill communities (Kagel Canyon, Lake View Terrace, Shadow Hills, and Sunland-Tujunga) and preferred an alignment that would not impact these communities.

Many members of the public in the Antelope Valley requested that the HSR alignment does not tunnel beneath homes and businesses. Commenters from many communities crossed by the Palmdale to Burbank Project Section expressed interest in the project and looked forward to the additional transportation mode it would provide them, as well as the additional jobs it would bring the region.

Among comments received from the general public, effects on hydrology, biological resources, private property acquisitions, and potential tunneling impacts were the top concerns about the project. Common issues raised included safety, noise and vibration impacts from tunneling, neighborhoods, and construction effects. Commenters also expressed concern about project cost estimates, funding availability (including advisability of using public funding for this project), and questions regarding the next steps for the project.

Jurisdictions that submitted comments include Los Angeles County, the City of Burbank, the City of Los Angeles, the City of Acton, and the City of Agua Dulce. Regional, State, and federal agencies generally confined their comments to concerns about their resources and the pertinent analysis. This included USFS and USACE. Businesses generally commented on specific property impact issues.

The Authority assessed and considered all substantive comments on the Draft EIR/EIS that were received by the close of the comment period, and included a response, where necessary, in the Final EIR/EIS. Responses to comments are available in Volume 4 of this Final EIR/EIS.

S.12.2 Identification of Preferred Alternative

After considering public and agency comments, the Authority identified the SR14A Build Alternative (Figure S-7) as its preferred Build Alternative on August 20, 2020. The Preferred Alternative represents the most advantageous Build Alternative based on the analysis provided in this EIR/EIS in the context of purpose and need, project objectives, NEPA and CEQA, local and regional land use plans, natural resource and community impacts, the input of the communities along the route, project costs, and constructability.

A portion of each of the six Build Alternatives evaluated in this Final EIR/EIS would cross under the ANF, including the SGMNM. Minimizing the potential for adverse effects on the natural resources in the ANF including SGMNM, particularly effects on groundwater and surface water, was key in evaluating and determining a Preferred Alternative. In addition, the six Build Alternatives include long deep bored tunnels under the ANF, including the SGMNM. Constructability issues such as rock quality and effects associated with squeezing ground, in-situ stresses, and groundwater pressures on the tunnel lining system, were key factors in evaluating and identifying a Preferred Alternative for the Palmdale to Burbank Project Section.

The Preferred Alternative also integrates the Authority's evaluation under Section 4(f) of the Department of Transportation Act (U.S.C. Title 49, § 303) (Section 4(f)), which provides special protection to publicly owned public parks; recreational areas of national, state, or local significance; wildlife or waterfowl refuges; and lands of a historic site of national, state, regional, or local significance. As described in Chapter 4, Final Section 4(f) and 6(f) Evaluations, Section 4(f) properties can only be used by federally funded transportation projects if there is no feasible and prudent Build Alternative, and planning has been undertaken to minimize harm to 4(f) property used by the project. For more information on the Authority's evaluation under Section 4(f), see Chapter 4, Final Section 4(f) and Section 6(f) Evaluations.

S.13 Summary of Changes between Draft and Final EIR/EIS

Since the close of the public comment period on the Draft EIR/EIS on December 1, 2022, the Authority reviewed the public comments received. The Authority continued to consult with regulatory agencies with jurisdiction over some components of the project. Evaluation of public comments, additional review of the Draft EIR/EIS, and consultations with regulatory agencies have resulted in project design refinements; additional and clarified analysis; corrections, additions to, and refinements of IAMFs; and additions to and refinements of mitigation measures.

The following sections summarize these changes.

S.13.1 Summary of Engineering and Design Refinements

Volume 3 Preliminary Engineering for Project Definition (PEPD) of this Final EIR/EIS memorializes changes to alignment plans in response to public comments and to correct errors. The following design refinements were included in the Final EIR/EIS:

- An updated bridge type over the Tujunga Channel to steel truss and the location of this structure referred to the stationing of the Tujunga Channel based on the USACE Upper Los Angeles and Tujunga Wash HEC-RAS Models were added to PEPD Record Set REV02 Bridges and Elevated Structures Plans. Also, an updated Tujunga Channel structure headway and updated bridge section were added to PEPD Record Set REV02 Track Alignment Plans.
- An access road to the Boulder Mobile Home water tank was added to PEPD Record Set Addendum SR14A / E1A / E2A Roadway and Grade Separation Plans and PEPD Record Set Addendum SR14A / E1A / E2A Grading and Drainage Plans
- PEPD Plan Sets incorporate the design refinement of Build Alternatives Refined SR14 and SR14A project footprint in the Bee Canyon area. The project footprint in this area was reduced to minimize environmental impacts. The access road, overhead power line and water line to tunnel Portal 8/4A in Bee Canyon were moved adjacent to the HSR alignment and the temporary construction staging and layout areas were revised to stay within the permanent environmental footprint.
- PEPD Plan Sets incorporate the design refinement of Build Alternatives Refined SR14 and SR14A project footprint in the Pacoima Wash area. The construction staging and layout areas associated to the tunnel adits in Pacoima were revised to reduce the project environmental footprint and limit the impact on Jurisdictional Waters.
- Plans CV-I4002-14A in the PEPD Record Set Addendum SR14A/E1A/E2A Construction Staging Plans and plan CV-I4002-S14 in the PEPD Record Set REV02 Construction Staging

Plans, depicting the excavation at Portal 9 area during phase 4, were revised to include a note referencing the Excavation Refinement Memo dated 2/13/2024.

S.13.2 Summary of Environmental Analysis Changes

The following section summarizes substantive updates to the analysis in Volumes 1 through 3 of this Final EIR/EIS. Changes were made to address public comments and based on Authority review of the Draft EIR/EIS:

- Minor text additions and clarifications throughout the Final EIR/EIS.

Volume 1

Chapter 1, Project Purpose, Need and Objectives

- Section 1.1.3.2, Business Plans for the Statewide High-Speed Rail System was updated to provide information on the 2022 Business Plan and Draft 2024 Business Plan.
- Approved and in-progress HSR Tier 2 EIR/EISs were updated in Section 1.1.3.5, Project-Level Environmental Reviews.
- Section 1.1.4, The Palmdale to Burbank Project Section, has been updated to reflect the approval of the Burbank to Los Angeles Project Section.
- Figure 1-3, has been updated to reflect the approval of the Burbank Airport Station and to add Palmdale Station.
- Figure 1-4, has been updated to reflect the approval of the Burbank Airport Station and to add Palmdale Station.
- For Section 1.2.2, Purpose of the Palmdale to Burbank Project Section, the project purpose statement was refined to reflect the language specified in the December 18, 2014 Checkpoint A concurrence letter from the United States Army Corps of Engineers (USACE). The USACE and the Authority mutually agreed upon this project purpose statement pursuant to the National Environmental Policy Act/Clean Water Act Section 404/Rivers and Harbors Act Section 14 (33 U.S.C. 408) Integration Process for the California High-Speed Train Program Memorandum of Understanding (dated November 2010).
- Additional information regarding Checkpoints A, B, and C was added to Section 1.2.2, Purpose of the Palmdale to Burbank Project Section.
- Section 1.2.4, Statewide and Regional Need for the High-Speed Rail System in California and in the Palmdale to Burbank Project Section, was updated to align with California High-Speed Rail Authority methodology.
- Section1.2.4.1, Travel Demand and Capacity Constraints, was updated to revise the name of Los Angeles County Public Works.
- Figure 1-9, has been updated to correct the location of the Hollywood Burbank Airport Metrolink Stations and to reflect the approval of the Burbank Airport Station.
- Section1.2.4.4, Air Quality and Greenhouse Gas Emissions, was updated to clarify the two air quality management basins that the project would traverse, and the range of nonattainment classifications.
- Section1.2.4.4, Air Quality and Greenhouse Gas Emissions, was updated to provide summaries for 2023 CEQ Guidance regarding GHG emissions and climate change and the CARB *2022 Scoping Plan for Achieving Carbon Neutrality*.
- Figure 1-10, Related Transportation Projects, was updated to clarify project names.
- Section 1.4.2, High Desert Corridor Project, was revised to update project details.

Chapter 2, Alternatives

- Figure 2-2, Palmdale to Burbank Project Section Build Alternatives, was revised to clarify that the Burbank Airport Station is approved and to add Palmdale Station.
- Figure 2-3, Palmdale to Burbank Project Section Stations, was added to depict the previously approved Palmdale Station and Burbank Airport Station in relation to the six Build Alternatives.
- Figures 2-3 through 2-104 were renumbered to Figures 2-4 through 2-105, respectively.
- The legends on Figures 2-48 through 2-53, Refined SR14 Build Alternative; Figures 2-57 through 2-61, SR14A Build Alternative; Figures 2-63 through 2-66, E1 Build Alternative; Figures 2-68 through 2-71, E1A Build Alternative; Figures 2-73 through 2-76, E2 Build Alternative; and Figures 2-78 through 2-81, E2A Build Alternative were revised to clarify that High-Speed Rail (HSR) stations are approved.
- The legends and labels on Figures 2-56, 2-62, 2-67, 2-72, and 2-77 were revised to clarify that the Burbank Airport Station is approved.
- Section 2.3, High-Speed Rail System Infrastructure, was revised to provide information regarding lighting and glare.
- Section 2.3, High-Speed Rail System Infrastructure, was revised to provide information about temporary drainage facilities.
- Section 2.3.6, Grade Separations, was revised to clarify the wildlife crossing structure design for medium and large mammals.
- Section 2.4.1.2, Summary of High-Speed Rail Project-Level Alternatives Development Process, was updated with information regarding Checkpoints A, B, and C.
- Section 2.5, Alignment and Station Alternatives Evaluated in this Final EIR/EIS, was revised to clarify the derivation of the approximate 20,000 square foot parcel.
- Section 2.5.1.4, Intercity Transit Elements, was revised to provide updated information regarding the Regional Connector and High Desert Corridor projects.
- Section 2.5.2.1, High-Speed Rail Project Impact Avoidance and Minimization Features, was updated to add features and revise the titles of features.
- Section 2.5.2.2, Summary of Design Features, was revised to include the project's travel time, to clarify development of alternative routing for freeway on-and off-ramp operations, and to introduce Table 2-14, Summary of Station Sites.
- Figure 2-45 has been renumbered to 2-46 and revised to clarify that the Burbank Station overlap area is identical because it is the same geographic area as Burbank Subsection.
- Table 2-15, Palmdale to Burbank Project Section Proposed Modifications to California Department of Transportation State Highway Facilities, has been revised to remove High Desert Corridor and clarify the location of State Route 138 relative to the proposed High-Speed Rail project.
- Figure 2-46 has been renumbered to Figure 2-47 and revised to remove High Desert Corridor and to add the locations of Map Identification Numbers 9 and 10 from Table 2-15, Palmdale to Burbank Project Section Proposed Modifications to California Department of Transportation State Highway Facilities.
- Section 2.5.3, High-Speed Rail Build Alternatives – Detailed Description, was revised under the Utilities headings to clarify that the SR14A, E1A, and E2A Build Alternatives would affect the Acton Water Treatment Plant.

- Section 2.5.3.1, Refined SR14 Build Alternative, under the Station Site heading was updated to include the Avion Burbank development in the description of the Burbank Airport Station area. Section2.5.3.1, Refined SR14 Build Alternative, was also revised to acknowledge the Bee Canyon and Pacoima Wash Design Refinement in the description of the alignment and of the Adits and Intermediate Windows.
- Section 2.5.3.2, SR14A Build Alternative (Preferred Alternative/CEQA Proposed Project), was revised to acknowledge the Bee Canyon and Pacoima Wash Design Refinement.
- Figure 2-51, Figure 2-59, Figure 2-82, and Figure 2-84 were updated to depict the project design refinement at Bee Canyon and Pacoima Wash.
- Figure 2-53 has been renumbered to Figure 2-54 and revised to reflect a more recent base map that depicts elements of the Avion Burbank development.
- Section 2.5.3.5, E2 Build Alternative, and Section 2.5.3.6, E2A Build Alternative, were revised to clarify the location of the track alignment under the E2 Burbank Subsection and E2A Burbank Subsection.
- Section 2.6, Travel Demand and Ridership Forecasts, was revised to add a footnote explaining the fluctuation in traffic volumes during the COVID-19 pandemic.
- Section 2.6, Travel Demand and Ridership Forecasts, was revised to include additional information about the 2022 and Draft 2024 Business Plans.
- Section 2.9.5.3, Tunnels (Spoils Subsection), was revised to clarify the driving distances for spoils that would be sent to landfills.
- Table 2-37, Construction Staging Areas by Build Alternative, was revised to take into account the reduced temporary footprint associated with the Bee Canyon and Pacoima Wash Design Refinement.
- Table 2-39, Potential Major Environmental Regulatory Review, Authorizations, Approvals, and Processes, was updated and revised with respect to California Department of Water Resources, Antelope Valley Air Quality Management District, South Coast Air Quality Management District Lahontan Regional Water Quality Control Board, Los Angeles Regional Water Quality Control Board, and Los Angeles County Flood Control Board.
- Section 2.10, Regulatory Review, Authorizations, Approvals, and Processes, has been updated to provide information regarding concurrence with Checkpoints A, B, and C.

Section 3.1, Introduction

- Footnote 2 was revised to provide information regarding the most recent Council on Environmental Quality (CEQ) regulations.
- Section 3.1.4.5, Affected Environment, was updated to provide more information regarding the environmental baseline.
- Section 3.1.4.6, Environmental Consequences, was revised to provide information regarding the Authority's 2022 Business Plan and 2024 Draft Business Plan.
- Footnote 5 was revised to clarify consideration of the No Action Alternative with respect to future United States Army Corps of Engineers Clean Water Act Section 404(b)(1) reviews.
- Text box titled "What is the Palmdale to Bakersfield Project Section Build Alternative footprint" was revised to clarify that the Burbank Airport Station has been approved.

Section 3.2, Transportation

- Table 3.2-8, Intersection Level of Service (LOS) in the Central Subsection, Existing (2015) No Project Condition, was updated to correct the names of San Fernando Road Minor and San Fernando Road.

- Section 3.2.4.1, Definition of Resource Study Areas, Section 3.2.4.3, Methods for National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Impact Analysis, and Section 3.2.5.6, Spoils Hauling, were updated to reflect refined hazardous materials spoils hauling assumptions. No changes were made to Impact TR#4: Spoils Hauling Effects on Freeway Segments, because the new spoils assumptions would not result in significant effects to LOS.
- Section 3.2.4.3, Methods for NEPA and CEQA Impact Analysis, was updated to provide more information regarding the baseline. This section was also updated to include additional information about the 2020 and Draft 2024 Business Plans.
- Section 3.2.4.3, Methods for NEPA and CEQA Impact Analysis, was revised under the Existing (2015) Plus Construction Conditions subheading to add a footnote explaining the fluctuation in traffic volumes during the COVID-19 pandemic.
- Section 3.2.5.4, Burbank Subsection of Affected Environment, was updated to reflect current status of the Burbank Airport North Metrolink Station as completed and operational.
- Section 3.2.5.6, Spoils Hauling, was updated to include a footnote stating that the addition of spoils hauling trucks on State Route 58 (SR-58) during construction would not substantially affect traffic conditions.
- Section 3.2.6, Environmental Consequences, under Impact TRA#11 Project Construction Effects on Rail and Transit Services, was updated to provide coordination with the Southern California Regional Rail Authority regarding compliance with Metrolink's Design Criteria Manual.
- Table 3.2-9 was updated to correct the name of Lincoln Street.
- Section 3.2.7, Mitigation Measures, was updated to include coordination with relevant stakeholders related to TR-MM#10 and TR-MM#12.
- The names and status of Metrolink's Burbank Airport Stations were revised throughout this section.
- Figure 3.2-2 through Figure 3.2-7 have been added to show spoil haul route locations.

Section 3.3, Air Quality and Greenhouse Gases

- Section 3.3, Air Quality and Greenhouse Gases, was updated to reflect refined hazardous materials spoils hauling assumptions (i.e., the estimated volume of hazardous spoils has been reduced) and assumptions for trucking of recycled water for the SR14A Build Alternative.
- Section 3.3.2.1, Federal, was updated to explain that the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule was repealed on December 21, 2021.
- A summary of the 2023 Council on Environmental Quality (CEQ) Guidance regarding greenhouse has (GHG) emissions and climate change was added to Section 3.3.2.1.
- A summary of the California Air Resources Board (CARB) 2022 *Scoping Plan for Achieving Carbon Neutrality* was added to Section 3.3.2.2.
- With respect to 40 Code of Federal Regulations (C.F.R.) Section 93.158, the term "Part" was replaced with "Section" throughout Chapter 3.3.
- Section 3.3.4.2, Impact Avoidance and Minimization Features, was updated to revise the requirements for AQ-IAMF#1 and AQ-IAMF#5. The description of AQ-IAMF#1 was updated to add the requirement that Contractors provide the fugitive dust control plan to Los Angeles Unified School District, Acton-Agua Dulce Unified School District, and any other potentially affected public school districts. The description of AQ-IAMF#5 was updated to revise the requirement that on-road trucks used for hauling during construction will be of model year

2020 or newer. References to the requirements for these IAMFs have also been revised throughout this section for consistency.

- Footnote 3 was added to Section 3.3.4.3, Methods for NEPA and CEQA Impact Analysis, to describe the Global Warming Potentials used in the analysis.
- Section 3.3.4.3, Methods for NEPA and CEQA Impact Analysis, was updated under the Heath Risk Assessment heading to describe consideration of recently approved or foreseeable projects.
- Federal Attainment statuses for fine particulate matter (2.5 microns or less in diameter) ($PM_{2.5}$) and nitrogen dioxide (NO_2) were revised in Table 3.3-6.
- The 3-year period detailed in Section 3.3.5.3 and Table 3.3-9 was updated to 2019–2021, and Table 3.3-8 ozone (O_3), carbon monoxide (CO), and NO_2 concentrations were updated to that period.
- With respect to "General Conformity" and "*de minimis*," the term "threshold" was replaced with "level" throughout this section.
- Annual General Conformity *de minimis* level for $PM_{2.5}$ in Table 3.3-14, Table 3.3-17, Table 3.3-19, Table 3.3-24, Table 3.3-25, and Table 3.3-28 were revised from 100 to 70. Federal Attainment status for PM2.4 and NO2 were revised in Table 3.3-6.
- Table 3.3-4, Table 3.3-16, Table 3.3-17, Table 3.3-19, Table 3.3-21, Table 3.3-23, Table 3.3-24, Table 3.3-26, Table 3.3-27, Table 3.3-29, Table 3.3-30, and Table 3.3-32 have been revised to reflect that a criteria pollutant emission that is equal to a General Conformity *de minimus* level is the same as an exceedance, NO_2 levels were added to tables showing the annual construction emissions in the South Coast Air Quality Management District (SCAQMD), and table note 1 has been updated to reflect the respective air basin rather than the management district.
- Impact AQ#3, Compliance with Air Quality Plans during Construction, was updated to reference the respective air basin rather than the management district, where applicable.
- Impact AQ#13, Statewide and Regional Operations Greenhouse Gas Emissions Analysis, was updated to reflect greenhouse gas emissions reduction goals established by Assembly Bill (AB) 1279.
- Section 3.3.6.2, No Project Alternative, was updated to clarify the two ridership scenarios.
- Footnote 2 was added to Table 3.3-28.
- Footnote 9 was added to include high- and medium-ridership numbers from the Draft 2024 Business Plan.

Section 3.4, Noise and Vibration

- Section 3.4.3, Consistency with Plans and Laws, was updated to remove text indicating that the project is consistent with the majority of regional and local policies and plans.
- Section 3.4.4, Methods for Evaluating Impacts, under the Operating Conditions subheading, was updated to clarify the assumptions regarding numbers of trains.
- Section 3.4.4.3, Methods for NEPA and CEQA Impact Analysis, was revised to include a footnote that provides additional information about the latest Draft 2024 Business Plan.
- A footnote was added under Impact N&V#2: Spoils Haul Route Noise Impacts on Sensitive Receivers to explain that the analysis is inclusive of the spoils transport to both Class I/Class II Hazardous/Designated Waste facilities and Class III Non-Hazardous, Contaminated Waste facilities.

Section 3.6, Public Utilities and Energy

- Section 3.6.2.2, State, was updated to include the State Water Resources Control Board – Division of Drinking Water 97-005 Process Memorandum.
- Table 3.6-1 Regional and Local Plans was updated to reflect the latest General Plan in Palmdale (*Palmdale 2045 General Plan*).
- Table 3.6-2 Urban Water and Sewer Management Plans and Regional Water Management Documents was updated to add Metropolitan Water District of Southern California's 2020 Urban Water Management Plan.
- Table 3.6-7 Utility Service Providers was revised to correct the stormwater provider for the City of Burbank.
- Table 3.6-10 Water Distributors and Suppliers within the Expanded Utility Resource Study Area was updated to revise data related to Antelope Valley-East Kern Water Agency, Los Angeles County Waterworks District 37, Los Angeles County Waterworks District 40, and Metropolitan Water District.
- Table 3.6-11 Most Likely Water Distributors and Suppliers for the Construction and Operation of the Palmdale to Burbank Project Section was revised to remove Los Angeles County Waterworks Districts as a supplier for the Burbank Subsection.
- Section 3.6.4.3, Methods for National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Impact Analysis, under the Utility Demands for Project Operation subsection, was revised to correct the wastewater generation rate.
- Section 3.6.4.3, Methods for NEPA and CEQA Impact Analysis, under the Utility Demands for Project Operation subsection and the Operation Energy subsection, was revised to include a footnote that provides additional information about the latest Draft 2024 Business Plan.
- Section 3.6.5.5, Water Supply Infrastructure and Facilities was revised to add a heading for and description of the East Valley Feeder Line.
- Section 3.6.5.5, Water Supply Infrastructure and Facilities, was revised to clarify Acton Water Treatment Plant's capacity.
- Section 3.6.5.6, Wastewater Infrastructure, was revised to clarify how wastewater is conveyed in the Resource Study Area (RSA).
- Section 3.6.5.8, Solid Waste Disposal Facilities, was revised to include additional landfill facilities that could accept hazardous and nonhazardous construction materials.
- Section 3.6.5.10, Energy, under the Existing Electric Power Generation Capacity subheading, was revised to correct California's installed in-state electric generation capacity from 292,039 gigawatt-hours (GWh) to 206,411 GWh.
- Section 3.6.6.3, Build Alternatives, Impact PUE#1 Planned Temporary Interruption of Utility Services, was revised to indicate that an additional utility, associated with the Acton Water Treatment Plan, would be affected by the SR14A, E1A, and E2A Build Alternatives.
- Section 3.6.6.3, Build Alternatives, Impact PUE#1 Planned Temporary Interruption of Utility Services, was revised to identify potential conflicts with utilities and existing monitoring wells. Water and wastewater systems were added to with the description of relocated systems.
- Section 3.6.6.3, Build Alternatives, Impact PUE#3 Effects from Water Demand during Construction, was revised to include revised analysis of water demand in the Central Subsection. Additional details about potable water suppliers for the Palmdale to Burbank Project Section were provided in Impact PUE#3.
- Section 3.6.6.3, Build Alternatives, Impact PUE#4 Effects from Wastewater Generated during Construction was revised to correct water amounts.

- Section 3.6.6.3, Build Alternatives, Impact PUE#5, Effects from Solid Waste Generated during Construction, was updated to include specification of solid waste generated (i.e., Hazardous/Designated Wastes, Nonhazardous, Contaminated Wastes, and Nonhazardous, Uncontaminated Wastes).
- In Section 3.6.6.3, Build Alternatives, Impact PUE#5: Effects from Solid Waste Generated during Construction, was updated to reflect revisions to amount of solid waste generated by the Refined SR14, SR14A, E1, E1A, E2, and E2A Build Alternatives during construction.
- In Section 3.6.6.3, Build Alternatives, Impact PUE#9 Operational Wastewater Service Demand, the footnote in Table 3.6-24 was revised to clarify the estimates for wastewater demand.
- Section 3.6.63, Build Alternatives, Impact PUE#11 Permanent Operations Energy Demand was revised to clarify that the Authority adopted a goal for the HSR system in California to run entirely on electricity generated from renewable sources.
- PUE-MM#1, in Section 3.6.7, Mitigation Measures, was revised for clarification regarding description of minimum adequate water supply for dry years, as part of the updated water supply analysis.
- PUE-MM#2, in Section 3.6.7, was revised to more clearly state that replacement/relocated facilities at the Antelope Valley-East Kern Water Agency (AVEK) Water Treatment Plant will be in place, tested, and operational before any part of the existing Acton Water Treatment Plant is taken offline.

Section 3.7, Biological and Aquatic Resources

- Section 3.7.1, Introduction, was revised to include additional information about the reduced impact acreages for the design refinement in Bee Canyon and Pacoima Wash.
- Section 3.7.1.1, Key Definitions, was revised to expand the definitions of Habitats of Concern and Conservation Banks to include mitigation banks, and to add that riparian areas are also regulated under the Porter-Cologne Act. A footnote was also added to clarify the species' status of roosting bats would need to be determined through emergence and acoustic survey efforts. This section was also revised to clarify the description of Aquatic Resources and acknowledge the Approved and Preliminary Jurisdictional Determinations that were issued by the United States Army Corps of Engineers (USACE) on March 1, 2022.
- Section 3.7.2.1, Federal, was revised to include information about Section 14 of the Rivers and Harbors Act (Section 408).
- Section 3.7.2.2, State, was revised to include information about California Senate Bill 147 and the Western Joshua Tree Conservation Act.
- Table 3.7-1 was revised by removing the phrase "and Supplemental Work Area" from the direct area of effect for core habitat, aquatic resources, and special-status plant resource study areas (RSA). Table 3.7-1 was also updated to reflect the new RSA acreages following the Refined SR14 and SR14A Build Alternative design refinement in Bee Canyon and Pacoima Wash.
- Figure 3.7-2, Biological and Aquatic Resource Study Areas, was updated to reflect new resource study area limits.
- Section 3.7.4.2, Impact Avoidance and Minimization Features, was revised to include United States Forest Service access to construction sites on Angeles National Forest lands under BIO-IAMF#2 and review and approval of plans and BMPs related to Forest Service lands under BIO-IAMF#5 and BIO-IAMF#11. BIO-IAMF#9 was revised to indicate that efforts would be made to remove and store topsoil if a site is already identified as needing restoration post-disturbance.

- Section 3.7.4.4, Biological Resources Methodology, was revised under the Delineation of Aquatic Resources heading to include additional information regarding delineating waters of the United States and under the Vegetation Communities heading to provide additional information regarding groundwater-dependent species. Section 3.7.4.4 was further revised to clarify the type of issues that natural resource agencies were consulted on, and additional consultation meetings that were held were added to Table 3.7-3. The title of Table 3.7-3 was revised to "Consultation History with Regulatory Agencies" for clarity. This section was also revised to make reference to the Watershed Evaluation/Qualitative Aquatic Resource Assessment Report, which was prepared alongside and appended to the Checkpoint C Summary Report. This section was also revised to update the number of vernal pools identified within 1,000 feet of all six Build Alternatives following changes to the design footprint.
- Section 3.7.5.2 and Table 3.7-4 were revised to clarify the methodology and the resource study area used to delineate vegetation communities and landcover types. Table 3.7-4 was also revised to account for design refinements in Bee Canyon and Pacoima Wash.
- Section 3.7.5.3 was edited to make reference to Slender-horned spineflower habitat within Bee Canyon.
- Figure 3.7-5 through Figure 3.7-14, which depict vegetation communities and land cover types within the core habitat RSA, were updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Table 3.7-5 was added to list the acreage of each vegetation community affected by the Build Alternatives within the core habitat RSA (please note that subsequent tables have been renumbered as result of this table addition).
- Table 3.7-6 and Table 3.7-8 titles were revised to add the phrase "Suitable Habitats."
- Table 3.7 6, Table 3.7-11, and Table 3.7-32 were revised to include Joshua tree.
- Table 3.7-7 and Table 3.7-11 were revised to include California juniper woodland.
- Table 3.7-8, Special-Status Wildlife Suitable Habitats within the Core Habitat Resource Study Area, was updated to include additional information regarding mountain lion and the California legless lizard in the table notes.
- Section 3.7.4.6, Aquatic Resources, was updated to account for new affected environment acreages following design refinements for the Refined SR14 and SR14A Build Alternatives in Bee Canyon. Those design refinements resulted in updated aquatic RSA limits, and updated aquatic resource acreages within those limits. This section was also updated to reflect the number of vernal pools identified within 1,000 feet of all six Build Alternatives following changes to the design footprint.
- Section 3.7.5.6 was revised to include a reference to Appendix 3.7-D, which was added to the Final EIR/EIS to depict Jurisdictional Aquatic Resources.
- Table 3.7-9 was revised to account for the design refinements in Bee Canyon and Pacoima Wash. The acreage of aquatic resources for each agency was updated to reflect changes in the aquatic RSA following changes to the design for the Refined SR14 and SR14A Build Alternatives.
- Section 3.7.5.11, Protected Trees, has been updated to clarify what constitutes a protected tree.
- Section 3.7.5.12, Wildlife Movement Corridors, was revised to note that many of the ecologically important areas for wildlife movement identified are currently unprotected.
- Section 3.7.6.2 was revised to reference the No Fill Alternative that was analyzed in the context of CWA Section 404(b)(1).

- The discussion of ephemeral stream locations in risk areas has been removed or clarified in Section 3.7.6.3 because ephemeral streams are not fed by groundwater and therefore would not be potentially affected by any seepage into tunnels constructed within the Angeles National Forest (ANF).
- Under Section3.7.6.3, High-Speed Rail Build Alternatives, and throughout the section, the title of Impact BIO#1 was revised.
- Table 3.7-12 title was revised to replace “Special-Status Plant Habitat” with “Suitable Habitat for Groundwater-Dependent Special-Status Plant Species.”
- Under Section 3.7.6.3, High-Speed Rail Build Alternatives, under Impact BIO#1, the numbers of special-status plant species and communities were updated. Table 3.7-11 was updated to reflect design refinement in Bee Canyon and Pacoima Wash. The sub-heading Tunnel Construction Impacts on Special-Status Plant Habitat was revised to Tunnel Construction Impacts on Modeled Suitable Habitat for Special-Status Plant Species.
- Impact BIO#1 was revised to add scalebroom scrub in the list of communities identified as groundwater-dependent or partially groundwater-dependent.
- Table 3.7-14, under Impact BIO#2, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Table 3.7-16, under Impact BIO#3, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Impact BIO#3 was revised to refer to the correct bird species (southwestern willow flycatcher) for the E2A Build Alternative.
- In Impact BIO#4, references to figures depicting habitat for the Santa Ana sucker and unarmored three-spine stickleback have been corrected, and a reference to BIO-MM#104 was added.
- Table 3.7-18, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- In Impact BIO#5, references to BIO-MM#102 and BIO-MM#103 were added and the number of vernal pools identified within 1,000 feet of all six Build Alternatives following changes to the design footprint was updated.
- Table 3.7-20, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash, and to reflect the new impact acreages for vernal pool fairy shrimp following changes to the design footprint.
- Table 3.7-21, under Impact BIO#6, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Table 3.7-23, under Impact BIO#7, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Impact BIO#8 was updated to discuss the different methods used to analyze aquatic resources in the Tunnel Construction RSAs and the changes in impacts resulting from the Refined SR14 Build Alternative refinements. Impact BIO#8 was also edited to clarify the jurisdictional status of surface waters within the Tunnel Construction RSA and to distinguish compensatory mitigation potentially needed as a result of tunneling effects. Reference to the preliminary Compensatory Mitigation Plan was also added.

- The acreage within the Refined SR14 and SR14A Build Alternative footprint was updated in Table 3.7-25 and Table 3.7-26 to reflect the refined design.
- Intermittent/ephemeral streams were removed from Table 3.7-27 and Table 3.7-29 and associated text, as they would not be affected by changes in hyrdrologic conditions.
- Impact BIO#9 was updated to discuss the changes in impacts resulting from the Refined SR14 Build Alternative.
- The acreage within the Refined SR14 and SR14A Build Alternative footprints was updated in Table 3.7-28 to reflect the refined design.
- Section 3.7.6.3, High-Speed Rail Build Alternatives, Impact BIO #13 was revised to correctly indicate that the crossing is located to the north at Stonecrest Road.
- Table 3.7-31 title was revised to replace “Operational Noise Effects on Special-Status Bird Habitat” with “Acreages of Special-Status Bird Habitat Affected by Operational Noise”.
- Section 3.7.6 and Section 3.7.8 were revised to reflect updated impacts acreages for the Refined SR14 and SR14A Build Alternatives associated with the design refinement in Bee Canyon and Pacoima Wash, which reduced the environmental footprint. Updates were made to tables, showing a reduced impact to acreages of aquatic resources and special-status species habitat.
- The term “functions and values” in the context of aquatic resources was updated globally to refer to “functions and services” to be consistent with the 2008 Aquatic Resources Mitigation Rule (33 C.F.R. 332).
- Section 3.7.6, Impact BIO#13, was edited to add Figure 3.7-49 and Figure 3.7-50, which show wildlife movement opportunities across SR 14 in Bee Canyon.
- Section 3.7.6, Impact BIO#17, was revised to include a footnote to clarify exposure time of wildlife to vibration resulting from train passage.
- Section 3.7.7, Mitigation Measures, was revised with respect to mitigation measures as follows:
    - BIO-MM#1 and BIO-MM#2 were modified to strengthen the effectiveness of these measures, including any secondary impacts associated with implementation of them.
    - BIO-MM#2 was revised to include more information regarding relocation site and coordination with regulatory agencies.
    - BIO-MM#6 was revised to address components of measure specific to special-status butterfly species and seed sourcing.
    - BIO-MM#7 was updated to include more information regarding the survey methodology.
    - BIO-MM#8 was revised to include reference to regulatory authorizations stipulated in CFGC §§ 1002, 1002.5, 1003 and/or Cal. Code Regs., tit. 14, § 650, and to provide clarifications on the ESA buffer.
    - BIO-MM#14 was modified to clarify that regulatory authorizations are not solely issued under FESA and/or CESA. No-work buffers were also clarified.
    - BIO-MM#15 and BIO-MM#18 were modified to add the distance of a vertical buffer.
    - BIO-MM#15 was revised to specify that the measure applied to non-special-status raptors.
    - BIO-MM#16 was modified to address any unoccupied aircraft system (UAS) operations near condor roosting or nesting locations, as well as including CDFW as being notified, if the Authority is informed of or finds roosting California condors.

- BIO-MM#17, BIO-MM#20, BIO-MM#21, BIO-MM#44, and BIO-MM#72 were modified to strengthen the effectiveness of these measures, including any secondary impacts associated with implementation of them.
- BIO-MM#21 was revised to clarify information on avoidance buffers and relocation methods.
- BIO-MM#25, BIO-MM#26, and BIO-MM#27 were revised to include a more in-depth description of the required survey efforts and follow-up actions involving bat species.
- BIO-MM#28 and BIO-MM#29 were revised to clarify that preconstruction surveys for ringtail and American badger include areas extending 100 feet from the boundary of the work area.
- BIO-MM#33, BIO-MM#34, and BIO-MM#47 were modified to clarify that applicable aquatic resources include those considered WOTUS under the CWA or waters of the state under the Porter-Cologne Act and/or regulated under California Fish and Game Code (CFGC) section 1600 et seq.
- BIO-MM#35 was revised to clarify that implementation of compensatory mitigation would be conducted by a certified biologist and to clarify the application of this mitigation measure for Joshua trees.
- BIO-MM#37 was revised to clarify the definition of “potential wildlife movement areas.”
- BIO-MM#38 was revised to indicate why this mitigation would be effective.
- BIO-MM#43 was modified to provide more clarity regarding Swainson’s hawks nest sites and to define primary, secondary, and tertiary foraging habitat.
- BIO-MM#46 and BIO-MM#47 were modified to provide more clarity regarding section 1600 et seq. requirements. BIO-MM#47 was also revised to reference the Checkpoint C Summary Report, which provides further description of compensatory mitigation in the context of jurisdictional resources.
- BIO-MM#52 was revised to include all special-status reptile species within the resource study area.
- BIO-MM#53 was revised to clarify that compensatory mitigation ratios for endangered and threatened species will be determined pursuant to regulatory authorizations issued under FESA and CESA, as well as that to the extent feasible, compensatory mitigation will be provided within CDFW Region 5 and within Los Angeles County.
- BIO-MM#54 was revised to further clarify the uses of herbicides and pesticides within the riparian areas, as well as include a consideration of pesticide use relative to monarch butterfly.
- BIO-MM#55 was revised to include consideration of pesticide and herbicide use relative to monarch butterfly host plants.
- BIO-MM#56 was revised to clarify the schedule for Project Biologist presence in the work area.
- BIO-MM#61 was revised to provide alternative reporting mechanisms.
- BIO-MM#62 was revised to include the requirement for a Fish Salvage and Relocation Plan.
- BIO-MM#64 was revised to provide additional clarification about wildlife crossings that would be created by the Authority.
- BIO-MM#66 was revised to provide clarification on no-work buffers.

- BIO-MM#67 was revised to provide clarification on the requirements related to nest relocation for bald eagles and golden eagles. BIO-MM#67 was also updated to include information on compensatory mitigation in the event relocated eagles fail to resume nesting or establish a new nest away from the impact area.
- BIO-MM#68 was revised to include clarification on when coordination with CDFW will occur.
- BIO-MM#69 was revised to update the requirements for the no-work buffer and to discuss additional requirements in the event a tricolored blackbird or nesting colony is detected during surveys.
- BIO-MM#71 was revised to add CDFW to coordination efforts to establish that no California condors are present in the area prior to helicopter use and was modified to state the effectiveness of this measure and that no secondary impacts would occur due to the implementation of this mitigation measure.
- BIO-MM#73 was revised to clarify the monitoring process within California condor foraging areas.
- BIO-MM#85 was revised to specify unarmored three-spined stickleback and its habitat as well as update the type of construction barrier that will be used.
- BIO-MM#87 was revised to clarify that the mitigation would also apply to other natural watercourses, in addition to the Santa Clara River.
- BIO-MM#88, BIO-MM#90, and BIO-MM#92 were revised to clarify the application of these mitigations for all drainages along the Palmdale to Burbank Project Section alignment.
- BIO-MM#93 was revised to clarify requirements for the supplemental water that could be used.
- BIO-MM#94 was revised to add more detail regarding the survey, exclusion buffer, and other requirements for avoiding impacts to monarch butterfly.
- BIO-MM#95 was revised to clarify details regarding compensatory mitigation for monarch butterfly habitat.
- BIO-MM#96 was revised to clarify buffer distances and mountain lion den surveys.
- BIO-MM#97 was revised to clarify dispersal habitat.

- Section 3.7.7, Mitigation Measures, was revised to add three new mitigation measures; BIO-MM#102 and BIO-MM#103 address project impacts on Crotch bumble bee and its habitat, and BIO-MM#104 addresses scour avoidance features pertinent to the Santa Clara River and unarmored three-spine stickleback.
- Section 3.7.8.1, Table 3.7-32, Special-Status Plant Species and Plant Community Habitat Impacts, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Section 3.7.8.2, Table 3.7-33, FESA-Listed Special-Status Wildlife Habitat Impacts, was updated to reflect the reduced footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Table 3.7-34, Non-FESA–Listed Special-Status Wildlife Habitat Impacts, was updated to reflect the refined footprint associated with the Refined SR14 and SR14A Build Alternative design refinements in Bee Canyon and Pacoima Wash.
- Table 3.7-35, State and Federally Jurisdictional Aquatic Resources Impacts, was updated to reflect the refined design for the Refined SR14 and SR14A Build Alternatives.

- Section 3.7.10.1, Federally Listed Plant and Wildlife Species and Critical Habitat, was revised for consistency with the Biological Assessment.
- The phrase “federally protected” has been updated throughout the section to “federally jurisdictional.”

Section 3.8, Hydrology and Water Resources

- Discussion of impacts to federal U.S. Army Corps of Engineers (USACE) Civil Works projects requiring Section 408 review was added in Section3.8.2.1, under Impact HWR #3 Changes in Flood Risks Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives and Impact HWR #6 Project Operation Effects on Water.
- Section 3.8.2.1, Federal, was revised to note there are no navigable waters of the United States (WOTUS) present within the Palmdale to Burbank Project Section resource study area (RSA), under Section 9 of the Rivers and Harbors Act.
- Section 3.8.2.2, State, was revised for clarity regarding the Cobey-Alquist Floodplain Management Act (California Water Code Section 8400 et seq.).
- Section 3.8.2.3, Regional and Local, was revised to change the "City of Santa Clarita" to "Upper Santa Clara River" and to clarify the discussion and Los Angeles County’s Capital Flood.
- Section 3.8.2.3, Regional and Local, was revised to add discussion of Upper Los Angeles River Area Watermaster.
- Section 3.8.2.3, Regional and Local, was revised to include the new subsection “County Floodplains and Floodways,” which discusses Los Angeles County’s Capital Flood.
- Section 3.8.4.2, Impact Avoidance and Minimization Features, was revised to note both storm and groundwater management would apply for HYD-IAMF#1.
- Section 3.8.4.4, Methods for Evaluating Impacts under NEPA, was revised to clarify Federal Emergency Management Agency (FEMA) and local agency requirements regarding floodplain encroachment.
- Table 3.8-1, Hydrology and Water Resources Information Sources, was updated to include Los Angeles County Floodway maps.
- Section 3.8.5.3, Floodplains, was revised to clarify Los Angeles County Public Works stream crossing design requirements.
- Table 3.8-5, Groundwater Basins, was updated and revised to depict the various groundwater basins within the Palmdale to Burbank Project Section.
- Impact HWR#4, Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives, its associated CEQA Conclusion, and HWR-MM#3, Compensation for Impacts on Hansen Spreading Grounds, were revised to delete references to modifying operations.
- Impact HWR#4, Changes in Groundwater Recharge Associated with Temporary Construction Activities and Permanent Structures Required for the Build Alternatives, was strengthened to more clearly state the potential for direct impacts to private water supply wells from tunnel construction.
- The discussion of ephemeral stream locations in risk areas has been removed because ephemeral streams are not fed by groundwater and therefore would not be potentially affected by any seepage into tunnels constructed within the Angeles National Forest (ANF).
- In Section 3.8.5.7, Hydrogeological Conditions, the hydraulic conductivity value range was clarified to align with the data presented in Table 3.8-7.

- Section 3.8.6.3, Build Alternatives, was revised to incorporate a global revision correcting USACE facilities to USACE projects.
- HWR-MM#1 was revised to specify sampling collection that would occur for affected well owners.
- HWR-MM#2 was revised to specify the reduction in the Hansen Spreading Grounds would be mitigated through replacement groundwater recharge areas to ensure for no net loss in recharge area or capacity.
- HWR-MM#4 was revised to specify the reports for state and federal resource agencies regarding groundwater and surface water conditions before, during, and after construction would be generated quarterly and annually.
- HYD-IAMF#8 has been added which addresses effects on private wells.
- Section 3.8.8.4, Groundwater Depletion, was revised to clarify that HWR-MM#3 requires the Authority to provide replacement groundwater recharge area. Section 3.8.8.6, Hydrology and Hydrogeology in the ANF, was revised under the Conductivity heading to add information regarding predominant lithologies.
- Section 3.8.8.6, Hydrology and Hydrogeology in the ANF, was revised under the Conductivity heading to add information regarding predominant lithologies.
- References to “LADWP” with respect to the Hansen Spreading Grounds were revised to Los Angeles County Flood Control District (LACFCD) throughout this section.

Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources

- Section 3.9.4.2, Impact Avoidance and Minimization Features, was revised to add the requirement in GEO-IAMF#1 that the construction management plan (CMP) shall include, if deemed necessary, details regarding the automated remote monitoring, and define the settlement/deformation thresholds. Additional details were added to the summary of GEO-IAMF#10 to include the various standards that the Authority would follow.
- Section 3.9.5.4, Soil Hazards, under the Corrosive Soils heading, was updated to correct the narrative related to the E2 Build Alternative.
- GEO-IAMF#5 was updated to clarify that it would apply for naturally occurring hazardous materials. Additionally, GEO-IAMF#5 was updated to include discussion of soils corrosive to concrete.
- GEO-IAMF#10 was updated to specify the various design standards that would be applied during project construction in regard to facility design and construction.
- Section 3.9.5 and Table 3.9-6 were updated to reflect revised calculations for various impact thresholds to account for the Bee Canyon/Pacoima Wash design refinement.

Section 3.10, Hazardous Materials and Wastes

- Section3.10.2, Laws, Regulations, and Orders, was updated to include California Code of Regulations (Cal. Code Regs.) Title 22, Division 4.5, California Division of Occupational Safety and Health, Antelope Valley Air Quality Management District Rule 109, and South Coast Air Quality Management District Rules 1166, 1403, and 1466.
- Section 3.10.2.3, Consistency with Plans and Laws, was updated to clarify the Certified Unified Program Agency for the City of Burbank.
- Section 3.10.4, Methods for Evaluating Impacts, was updated to clarify parcel acquisition field assessment procedures and to define recognized environmental conditions.
- Section 3.10.4.2, Impact Avoidance and Minimization Features, was revised to update the titles and/or requirements of HMW-IAMF#1, HMW-IAMF#3, HMW-IAMF#4, HMW-IAMF#5,

HMW-IAMF#6, HMW-IAMF#7; to add HMW-IAMF#11, which requires stakeholder consultation for the San Fernando Valley Superfund Site Area 1 to review the permitting requirements, as well as the project design and construction methods for proposed modifications to groundwater extraction wells and ancillary infrastructure; to include reference to GEO-IAMF#1, GEO-IAMF#4, GEO-IAMF#5, HYD-IAMF#7; and to correct the reference of HYD-IAMF#4 to HYD-IAMF#3.

- Section 3.10.4.3, Methods for National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Impact Analysis, was revised to clarify methodology for spoils hauling.
- Section 3.10.5, Affected Environment, and Section 3.10.6, Environmental Consequences, were revised to include additional information related to the San Fernando Valley Superfund Site Area 1.
- Section 3.10.5.4, General Environmental Concerns, was amended to revise the definition of asbestos.
- Impact HMW-#1 was revised to update the anticipated volume of hazardous materials for the SR14A and Refined SR14 Build Alternatives. Table 3.10-8 and Section 3.10.8.3 were also revised to be consistent with these updated volumes.
- Appendix 3.10-B was added to Volume 2 of the Final EIR/EIS to provide a summary of sites of low, medium, and high potential concern for the HSR Palmdale to Burbank Section.

Section 3.11, Safety and Security

- Table 3.11-3, in Section 3.11.2, Laws, Regulations, and Orders, was revised to remove the City of Lancaster Hazard Mitigation Plan and City of Lancaster Emergency Operations, as the City of Lancaster is considered to be outside of the RSA for safety and security for the Palmdale to Burbank Project Section.
- Section 3.11.3, Consistency with Plans and Laws, was revised to include reference to Appendix 3.1-B, USFS Policy Consistency Analysis, of the Palmdale to Burbank Project Section Draft EIR/EIS.
- Section 3.11.4, Methods for Evaluating Impacts, was updated to clarify the evaluation of safety impacts for community safety and security.
- Section 3.11.5, Affected Environment, has been revised to clarify there are two Los Angeles Police Department Stations in the resource study area (the previous text indicated there were three Los Angeles Police Department Stations in the resource study area).
- The Valley Fever discussion in Section 3.11.5, Affected Environment, was updated to reflect the most recent California Department of Public Health Data from 2021 (previously 2017).
- Impact S&S#6: Temporary Exposure to Construction Site Hazards, has been revised to include mention of tunneling activities.
- Impact S&S#9: Temporary and Permanent Interference with Airport Safety, the title of this impact has been revised to reflect that it addresses both temporary and permanent impacts. The text has been revised to clarify the scope of the Palmdale to Burbank Project Section.
- Impact S&S#10: Temporary Exposure to Valley Fever, was revised to clarify that preparation of the Valley Fever action plan will be included as part of the Safety and Security Management Plan, and like Section 3.11.5 referenced above, was updated to reflect the 2021 California Department of Public Health Data.
- Impact S&S#11, Temporary Exposure to Risk from High-Risk Facilities, has been revised to include mention of landfills.
- Impact S&S#12, Permanent Operational Safety Impacts, was revised to reflect updates to high-speed rail operational safety study references and to provide cross-references to and

additional details about the analysis of the potential for seismic events to impact train operations and safety.

- Impact S&S#16, Temporary and Permanent Exposure to Wildfire Hazards, was revised to clarify that project design would be consistent with National Fire Protection Association Standard 130, and removed a statement that the project would not require installation of associated infrastructure that may exacerbate wildfire risk. Although some HSR infrastructure could exacerbate wildfire risk, as described under Impact S&S#16, the Authority will develop and incorporate fire and life safety programs into the project design and construction (SS-IAMF#1 and SS-IAMF#2), which will minimize or avoid fire risks from project construction and operations. In addition, Table 3.11-16 was revised under Impact S&S#16 to provide a unit of measurement (acres) in the table.
- Section 3.11.7, Mitigation Measures, and Section 3.11.7.1, Impacts from Implementing Mitigation Measures, were revised to clarify fair share cost of service funds.
- Section 3.11.8.1, Comparison of Construction Impacts, was revised to include a discussion about the NFPA Safety Code.
- Table 3.11-17, Comparison of High-Speed Rail Build Alternative Impacts for Safety and Security, was revised to include additional details of the analysis of the potential for seismic events to impact train operations (Impact S&S#12: Permanent Operational Safety Impacts).
- Section 3.11.10.1, Consistency with Applicable United States Forest Service Policies, has been revised to include discussion of the Palmdale to Burbank Project Section's consistency with Angeles National Forest Management Plan policies Fire 1 through Fire 5.
- Section 3.11.10.2, United States Forest Service Resource Analysis, was revised to include SS-IAMF#4.

Section 3.12, Socioeconomics and Communities

- Section 3.12.1, Introduction, was updated to explain the Authority's review of more recent census and school district funding data during preparation of the Final EIR/EIS.
- Table 3.12-1, Summary of Regional and Local Plans, in Section 3.12.2, Laws, Regulations, and Orders, has been updated to reflect the project's consistency with the Palmdale 2045 General Plan.
- Section 3.12.5.1, Social Setting, was revised to remove consideration of the Courtship Ranch equestrian facility as an element of community cohesion. Because this facility is privately run, it would not be considered an element of community cohesion in the Lake View Terrace neighborhood, nor would the facility be substantially affected by the project.
- Figure 3.12-1, Figure 3.12-6, Figure 3.12-7, Figure 3.12-23, and Figure 3.12-24 were updated to depict the project design refinement at Bee Canyon and Pacoima Wash.
- Figure 3.12-19 was revised to depict residential displacements associated with the project at the Boulders at the Lake Mobile Home Park.
- Impact SOCIO#2 in Section 3.12.6.2, Build Alternatives, was updated to address the Authority's action regarding affected neighborhoods.
- Impact SOCIO#2 in Section 3.12.6.3, Build Alternatives, and Table 3.12-43, were updated to remove the determination that the SR14A, E1A, and E2A Build Alternatives would result in community cohesion impacts to the Boulders at the Lake Mobile Home Park.
- Impact SOCIO#16 in Section 3.12.6.3, Build Alternatives, was updated to reflect that the project would not have noise effects in schools.
- References to the community of Harold as unincorporated were deleted throughout the section. Harold is in the City of Palmdale (including Section 3.12.5.1, Social Setting; Impact SOCIO#1, Impact SOCIO#2, and Impact SOCIO#12 in Section 3.12.6.3, Build Alternatives;

Section 3.12.8.1, Population and Communities; and Table 3.12-43 in Section 3.12.8, National Environmental Policy Act (NEPA) Impacts Summary).

- Revisions were made to discussions under Impact SOCIO#6 (including Table 3.12-24 through Table 3.12-36) and Impact SOCIO#12 (including the notes under Table 3.12-38 and Table 3.12-39) in Section 3.12.6.3, Build Alternatives; Section 3.12.8.2, Displacements and Relocation; Table 3.12-43 in Section 3.12.8, NEPA Impacts Summary; and Figure 3.12-26 under Impact SOCIO#4 regarding construction of the Avion Burbank development.
- The date regarding replacement units in Southeast Antelope Valley under the Refined SR14 Build Alternative subheading in Impact SOCIO#4 of Section 3.12.6.3 was revised to reflect October 2016.
- The California Environmental Quality Act (CEQA) Conclusion discussion under Impact SOCIO#15: Potential for Permanent Physical Deterioration from Operations, has been revised to remove the statement on agricultural lands.
- Section 3.12.8.2, Displacement and Relocation, has been revised to discuss total residential displacements from implementation of the project.

Section 3.13, Station Planning, Land Use, and Development

- Table 3.13-1 was updated to provide more information regarding the existing conditions baseline.
- Section 3.13.5.2, Affected Environment, was revised to provide updated information regarding the now substantially complete Avion Burbank Project.
- Figure 3.13-4, Figure 3.13-17, and Figure 3.13-29 were revised to reflect a reduced footprint in Bee Canyon for the Refined SR14 and SR14A Build Alternatives.
- Table 3.13-2, Table 3.13-3, Table 3.13-6, Table 3.13-7, Table 3.13-8, Table 3.13 9, Table 3.13 10, and Table 3.13-15 were revised to include updates for land use calculations to reflect a reduced footprint from the Bee Canyon/Pacoima Wash Design Refinements.
- Table 3.13-9, Table 3.13-10, Table 3.13-11, Table 3.13-12, and Table 3.13-15 were revised to reflect changes to the planned and existing land uses in the Burbank Subsection based on this updated information.
- Figure 3.13-31 was revised to reflect a reduced footprint near Pacoima Wash for the Refined SR14 and SR14A Build Alternatives.
- Section 3.13.6.3, Environmental Consequences, was updated to provide additional information regarding potential for indirect impacts due to electromagnetic interference /electromagnetic field (EMI/EMF) generation.
- Section 3.13.6.3, Environmental Consequences, was revised to remove references to N&V-MM#1 and include references to N&V-MM#3 and N&V-MM#6.

Section 3.14, Agricultural Land Uses

- Table 3.14-3, Agricultural Farmland within the Refined SR14 and SR14A Build Alternative Resource Study Area in the Central Subsection, was revised to reflect the changes in the Resource Study Area from the Bee Canyon/Pacoima Wash Design Refinements**.**
- Figure 3.14-2 through Figure 3.14-16 were revised to clarify the rendering of the shading and to add labels consistent with the landmarks mentioned in the text.
- Figure 3.14-4 was revised to reflect a reduced footprint in Bee Canyon for the Refined SR14 and SR14A Build Alternatives.
- Figure 3.14-6 was revised to reflect a reduced footprint near Pacoima Wash for the Refined SR14 and SR14 Build Alternatives.

- Table 3.14-6, Build Alternatives Footprint on or under Agricultural Farmland, Base Footprint (acres), was revised to reflect the changes in the base footprint from the Bee Canyon/Pacoima Wash Design Refinements.
- Impact AG#3 was revised to clarify that the Authority would apply for a Special Use Authorization from the U.S. Forest Service (USFS), which would include conditions to avoid or minimize impacts on forest land or management of forest resources within the Angeles National Forest (ANF).
- Figure 3.14-16, was revised to reflect a reduced footprint near Pacoima Wash for the Refined SR14 and SR14A Build Alternatives.
- Table 3.14-7, Comparison of the High-Speed Rail Build Alternative Impacts for Agricultural Farmland and Forest Land (acres), was revised to reflect the changes in the areas impacted based on the Bee Canyon/Pacoima Wash Design Refinements.

Section 3.15, Parks, Recreation, and Open Space

- Table 3.15-1, has been revised to include the most recent Palmdale General Plan. Section 3.15.5.1, Central Subsection, under the Trails and Other Resources subheading, was revised to clarify the multi-use capabilities of Palmdale Hills Trail (Proposed Extension), Littlerock Trail (Proposed Extension), Vasquez Loop Trail, and Rim of the Valley Trail (Proposed Extension).
- Section 3.15.5.1, Central Subsection, was revised to add the Lang Station Open Space at Bee Canyon. Additional revisions regarding the Lang Station Open Space at Bee Canyon include Table 3.15-3 through Table 3.15-7, and Figure 3.15-2.
- Table 3.15-3, Recreation Resources within the Central Subsection Resource Area, was revised to correct the owner of the proposed Pacoima Wash Urban Greenway, Palmdale Hills Trail (Proposed Extension), HHH Memorial Recreation Center and Pool, Hansen Dam Open Space Area, Roger W. Jessup Park, Stonehurst Park and Recreation Center, and Sun Valley Recreation Center and Pool.
- Table 3.15-4 Construction and Operations Impacts on Parks, Recreation, and Open Space Resources, has been revised to clarify California Environmental Quality Act (CEQA) impact discussions for all parks, recreation, and open space resources evaluated in this section.
- Impact PK#2 for the Angeles National Forest, including the San Gabriel Mountains National Monument discussion in Table 3.15-4, was updated to discuss project construction noise and vibration effects on the Angeles National Forest.
- Section 3.15.10.2, Land Uses within the Angeles National Forest, under the Construction-Related Access, Noise, Vibration, Air Quality, and Visual Changes subheading, was updated to discuss project construction noise and vibration effects on the Angeles National Forest.
- All references to “El Cariso Regional Park and Golf Course” have been changed to “El Cariso Community Regional Park” throughout this section. El Cariso Park (80 acres) and El Cariso Golf Course (82 acres) are two separate facilities that are adjacent to each other. As shown on Figure 4-16 in Chapter 4 of the Final EIR/EIS, the El Cariso Golf Course is located outside the resource study area and therefore is no longer evaluated in Chapter 4 of this Final EIR/EIS.

Section 3.16, Aesthetics and Visual Quality

- Table 3.16-1, Summary of Regional and Local Plans, Policies, and Regulations, was revised to provide information regarding Palmdale 2045 General Plan, and to change “scenic corridors” to “scenic drives” in the City of Los Angeles General Plan row and to “scenic highways” in the Sunland-Tujunga-Lake View Terrace-Shadow Hills-East La Tuna Canyon Community Plan row.

- Section 3.16.4.2, Impact Avoidance and Minimization Features, and Section3.16.6.3, Build Alternatives, were updated to include new EJ-IAMF#3: Environmental Justice (EJ) Community-Inclusion Development of Aesthetic Treatments and Community Cohesion Enhancements.
- Sections 3.16.5.3, Landscape Unit 1: Central Subsection, 3.16.6.4, Temporary Construction Impacts, and 3.16.6.5, Permanent Construction and Operations Impacts, were revised to clarify viewer groups.
- Section 3.16.6.3, Build Alternatives, and Table 3.16-3, Characteristics of Typical High-Speed Rail Components, were revised to clarify aspects of lighting and soundwalls.
- Section 3.16.6.3, Build Alternatives, was revised to clarify that IAMFs would be incorporated in the project design to minimize impacts.
- Section 3.16.6.5, Permanent Construction and Operations Impacts, was revised to clarify discussion of the Pacific Crest Trail and viewer groups.
- Section 3.16.8.1, Build Alternatives, was revised to specify “Burbank Airport Station.”

Section 3.17, Cultural Resources

- Section 3.17.1, Introduction, and Section 3.17.4, Coordination of Section 106 Process with National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) Compliance, have been updated to reflect execution of the First Amended Programmatic Agreement.
- Table 3.17-2, Section 106 Technical Reports and Concurrence Dates, was updated regarding the Memorandum of Agreement.
- Section 3.17.4, Coordination of Section 106 Process with NEPA and CEQA Compliance, was updated under the Consulting Parties heading to add two parties.
- Table 3.17-4, Summary of Outreach Efforts to Identify Native American Consulting/Concurring Parties, was updated to reflect the Authority’s consultation since publication of the Draft EIR/EIS and the name was revised to, Summary of Outreach Efforts to Identify Consulting/Concurring Parties, to better reflect the content.
- Section 3.17.6.2, Overview of Historic Built Resources, was updated to provide additional information regarding the California Aqueduct and the Owens Valley.
- Section 3.17.7, Environmental Consequences, was updated to provide additional details and clarifications regarding the impacts to historic built resources.
- Section 3.17.7.5, Build Alternatives, was revised under the Section 106 Conclusion heading for Impact CUL#1 to delete a reference to resource P-19-004606 related to the SR14A Build Alternative, which is duplicative of information presented in Section 3.17.7.3, Overview of Effects of the No Project and Build Alternatives. Section3.17.7.5, Build Alternatives, was also revised under the Section 106 Conclusion heading for Impact CUL#1 to delete a reference to resource P-19-000628 related to the SR14A Build Alternative, which is duplicative of information presented in Table 3.17-18, Comparison of High-Speed Rail Build Alternative Impacts for Cultural Resources.
- Section 3.17.7.5, Build Alternatives, was updated to include discussion of the Pink Motel and Café under Impact CUL#4 of the Refined SR14 and SR14A and E1 and E1A Build Alternatives. Section 3.17.7.5, Build Alternatives, was also updated to include discussion of the Palmdale Ditch and East Branch of the California Aqueduct under Impact CUL#6 under the Refined SR14 and SR14A Build Alternatives.
- Section 3.17.7.5, Build Alternatives, was revised to include discussion of the Palmdale Ditch, East Branch of the California Aqueduct, Eagle and Last Chance Mine Road, and Blum Ranch under Impact CUL#6 of the E1 and E1A Build Alternatives.

- CUL-MM#5, Minimize adverse effects to Blum Ranch through consultation with State Historic Preservation Officer (SHPO), was revised to clarify the relevant Build Alternatives.
- Section 3.17.9.1, Archaeological Resources, and Section 3.17.11.2, United States Forest Service Resource Analysis, were revised to clarify the timing of additional surveys.
- Table 3.17-6, Previously Recorded and Determined or Assumed Eligible Resources in the Area of Potential Effects, was revised to clarify that resource P-19-002039 is not in the Area of Potential Effects (APE) for the Palmdale to Burbank Project Section. It has been retained in Table 3.17-6 for context only; effects are not analyzed in this EIR/EIS.
- Table 3.17-6, Previously Recorded and Determined or Assumed Eligible Resources in the Area of Potential Effects, was revised to clarify that resource 19-000628 is in the APE for Build Alternative SR14A.
- Table 3.17-9, Known Archaeological Resources Affected by Construction of the Refined SR14 and SR14A Build Alternatives, Table 3.17-12, Known Archaeological Resources Affected by Construction of the E1 and E1A Build Alternatives, and Table 3.17-15, Known Archaeological Resources Affected by Construction of the E2 and E2A Build Alternatives, were revised to explain that resource P-19-002039 is in the Bakersfield to Palmdale Project Section APE rather than the Palmdale to Burbank Project Section APE, and has been included in Section 3.17 Cultural Resources for context only.
- Table 3.17-9, Known Archaeological Resources Affected by Construction of the Refined SR14 and SR14A Build Alternatives, Table 3.17-12, Known Archaeological Resources Affected by Construction of the E1 and E1A Build Alternatives, and Table 3.17-15, Known Archaeological Resources Affected by Construction of the E2 and E2A Build Alternatives, were revised to identify the terms grubbing and grading with asterisks, and to provide definitions of those terms below the tables.
- Table 3.17-10, Built Resources Affected by Construction of the Refined SR14 and SR14A Build Alternatives, Table 3.17-11, Built Resources Affected by Operations of the Refined SR14 and SR14A Build Alternative, Table 3.17-13, Built Resources Affected by Construction of the E1 and E1A Building Alternatives, Table 3.17-14, Built Resources Affected Operations of the E1 and E1A Build Alternatives, Table 3.17-16, Built Resources Affected by Construction of the E2 and E2A Build Alternatives, Table 3.17-17, Built Resources Affected by Operations of the E2 and E2A Build Alternatives, Table 3.17-18, Comparison of High-Speed Rail Build Alternative Impacts for Cultural Resources, and Table 3.17-19, Summary of CEQA Significance Conclusions and Mitigation Measures for Cultural Resources, were updated to align with revisions to Section 3.17.7, Environmental Consequences.
- Table 3.17-18, Comparison of High-Speed Rail Build Alternative Impacts for Cultural Resources, was revised to delete resource P-19-002039, which is not in the APE for the Palmdale to Burbank Project Section.
- Table 3.17-18, Comparison of High-Speed Rail Build Alternative Impacts for Cultural Resources, NEPA Conclusion Before Mitigation column was revised to clarify the conclusion that there is no potential to affect certain resources.
- Table 3.17-19, Summary of CEQA Significance Conclusions and Mitigation Measures for Cultural Resources, was revised to clarify that resource P-19-000628 would experience a less-than-significant impact under Build Alternative SR14A.
- Table 3.17-20, Archaeological Resources within the Angeles National Forest (ANF), including the San Gabriel Mountains National Monument (SGMNM), was updated to include asterisks in the Description column to denote archaeological resources in the Aliso-Arrastre Special Interest Area.
- Section 3.17.11.2, United States Forest Service Resource Analysis, was updated to provide information regarding the Aliso-Arrastre Special Interest Area.

- Table 3.17-21, Historic Built Resources in the ANF, including the SGMNM, and Section 3.17.11, United States Forest Service Impact Analysis, have been revised to clarify that two resources are not in the APE for the Refined SR14 and SR14A Build Alternatives.
- Sections and tables throughout were updated to reflect that the San Manuel Band of Mission Indians is now known as Yuhaaviatam of San Manuel Nation.

Section 3.18, Regional Growth

- Table 3.18-1, was revised to incorporate the Palmdale 2045 General Plan.
- The discussion under Table 3.18-9 has been updated to reflect the housing need projections presented in the table. These projections are also corrected in Section 3.18.6.3, High-Speed Rail Build Alternatives, under the Impacts of Long-Term Land Use Consumption subheading.
- The total number of construction job-years for the Refined SR14A Build Alternative was revised in Section 3.18.8.

Section 3.19, Cumulative Impacts

- Section 3.19.3.1, Section 3.19.3.2, Section 3.19.4.3, and Section 3.19.5.3 have been updated to reflect new hazardous materials spoils hauling assumptions in the San Joaquin Valley Air Control District due to changes in trucking routes. Additionally, Section 3.19.5.2, Section 3.19.5.6, Section 3.19.5.7 ,and Section 3.19.5.10 have been updated to reflect changes made to construction debris and tunnel spoils quantity in a cumulative context.
- Information about new planned projects in the resource study area (RSA) has been added to Section 3.19.5.2 and Section 3.19.5.7.
- Section 3.19.5.6 has been updated to reflect changes to cumulative water demand during construction.
- Section 3.19.5.8 and Table 3.19-6have been revised to reflect the most recent Palmdale 2045 General Plan.
- Table 3.19-1 has been updated to reflect revised RSAs for Transportation, Air Quality and Global Climate Change, and Public Utilities and Energy.
- Footnote 9 added to address ridership numbers in the 2024 Business Plan.

Chapter 4, Section 4(f)/6(f) Evaluation

- Table 4-1, Park, Recreation Area, and Wildlife and Waterfowl Refuge Resources: No Use, has been corrected to reflect Los Angeles County Department of Parks and Recreation as the official with jurisdiction (OWJ) over Veterans Memorial Community Regional Park and Tujunga Ponds Wildlife Sanctuary and the Los Angeles County Public Works as the OWJ over Pacoima Wash Proposed Urban Greenway.
- Table 4-2, Parks and Recreation Resources Evaluated for Section 4(f) Use, and Section 4.6.1.1, Central Subsection (under the Pacific Crest Trail subheading), have been corrected to identify the United States Forest Service (USFS) as the OWJ for the Pacific Crest Trail.
- Figure 4-22 has been updated to indicate the parcels that are privately owned, to add a label for Vulcan Mine, and to remove the “Protected under section 4(f)” label in the legend.
- Section 4.5.1.1, Central Subsection, under the SR14A Build Alternative subheading, was revised to add the Lang Station Open Space at Bee Canyon. Additional revisions regarding the Lang Station Open Space at Bee Canyon, including Table 4-1, Table 4-6, Figure 4-2, and Figure 4-12 was also revised to show the Open Space at Bee Canyon.
- Section 4.6.1, Park, Recreation Area, and Wildlife and Waterfowl Refuge Resources, has been updated with the Authority’s final use determinations after OWJ consultation.

- Section 4.5.1.1, Central Subsection, has been updated to provide results of OWJ consultation.
- Sections 4.7, 4.8, and 4.9 were updated to include additional analysis of alternatives, measures to minimize harm and the least harm analysis relative to Lang Station Open Space at Bee Canyon.
- All references to “El Cariso Regional Park and Golf Course” have been changed to “El Cariso Community Regional Park” throughout this chapter. El Cariso Park (80 acres) and El Cariso Golf Course (82 acres) are two separate facilities that are adjacent to each other. As shown on Figure 3.15-3 in Section 3.15 and Figure 4-16 in Chapter 4 of the Final EIR/EIS, the El Cariso Golf Course is located outside the resource study area and therefore is no longer evaluated in Chapter 4 of this Final EIR/EIS.

Chapter 5, Environmental Justice

- Chapter 5 was updated throughout to affirm the Authority’s preliminary conclusions pertaining to Environmental Justice as final.
- Table 5-1, Summary of Regional and Local Plans, was updated to include information from the City of Palmdale's most recent General Plan
- Table 5-4, Summary of Environmental Justice Outreach Events, was updated to reflect project outreach events held between January 2015 through December 2018, and between January 2020 through January 2024.
- Table 5-5, Summary of Effects on Environmental Justice Populations – All Build Alternatives, was revised to remove the determination that the SR14A, E1A, and E2A Build Alternatives would result in community cohesion impacts to the Boulders at the Lake Mobile Home Park, consistent with the evaluation presented in Section 5.7.2.8.
- Section 5.2.1 Laws, Regulations, and Orders, was updated to include the Justice40 Initiative, USEO 13895, USEO 13990, and USEO 14096.
- Section 5.4.2, Impact Avoidance and Minimization Features, was revised to include newly developed environmental justice-specific impact avoidance and minimization features.
- Section 5.4.3, Methods for Environmental Justice Impact Analysis, was updated to explain the Authority’s review of more recent census data during preparation of the Final EIR/EIS.
- Section 5.6.1, Engagement Methods Input from Environmental Justice Populations, and Section 5.6.3, Summary of Environmental Justice Engagement, were revised to reflect 2015 as the date outreach events began.
- Section 5.6.3, Summary of Environmental Justic Engagement, was updated to reflect project outreach events held in November and December 2023.
- AQ-IAMF#5 in Section 5.7.2.2 was revised to reflect a 2020 model year for on-road trucks.
- Section 5.7.2.1, Transportation, was revised to include discussion of the spoils hauling route to the Buttonwillow Landfill along the I-5 freeway, and to include discussion on the proportion of affected freeways and intersections from project spoils hauling that are located in EJ communities.
- Section 5.6.2.2, Air Quality and Global Climate Change, was revised to clarify that since project construction-period emissions would result in exceedances of air district and National Ambient Air Quality Standards for NOx and CO, and would remain adverse after mitigation, construction of each of the six Build Alternatives would result in adverse air quality effects on EJ and non-EJ populations. The section was also revised to include discussion on the proportion of air quality health risk cases that are located in EJ communities.
- Section 5.7.2.3, Noise and Vibration, and Table 5-24 Summary of Adverse Effects on EJ Populations, were revised to clarify that because traffic noise effects on sensitive receptors,

noise effects from stationary sources, and operational train noise and vibration effects would remain adverse after mitigation, operations of each of the six Build Alternatives would result in adverse noise and vibration effects on EJ and non-EJ populations. The section was also revised to include discussion on the proportion of sensitive receptors that are located in EJ communities that would be adversely affected from construction noise and spoils hauling.

- Section 5.7.2.8, Socioeconomics and Communities, including 3.1 5-12 through Table 5-17, was revised to include business displacements associated with the Burbank Avion development.
- Section 5.8.3, Offsetting Project Benefits to All EJ Communities or to Specific Communities, was revised to include a brief discussion of EJ communities directly to the north and west of the Burbank Airport Station (as shown in Figure 5-6) that would benefit from the High-Speed Rail (HSR) Build Alternative as a result of improved regional accessibility.

Chapter 6, Project Costs and Operations

- Footnote 1 was revised to provide information regarding the 2022 Business Plan and 2024 Draft Business Plan.
- Section 6.2.2, Palmdale to Burbank Project Section Build Alternatives, was revised to clarify that 2018, 2020, 2022, and 2024 Business Plans do not include cost estimates for Phase 2.
- Section 6.2.2, Palmdale to Burbank Project Section Build Alternatives, Table 6-1, Estimated Capital Costs of the Palmdale to Burbank Project Section Build Alternatives, and Appendix 6-B were updated to reflect revised costs associated with track structures and track, and terminal and intermodal stations.
- Section 6.3.1, Assumptions, was corrected to state the Phase 1 system route miles as 500 from 520, and the number of Phase 1 system revenue service train runs as 217 from 196.
- A footnote in Section 6.3.3, Development of Operations and Maintenance Costs, was added which describes the ticket price assumptions for the California High-Speed Rail (HSR) System based on the 2022 Business Plan.
- Section 6.3.3, Development of Operations and Maintenace Costs, was revised to correct a typo in which the number of route miles used to calculate costs associated with the maintenance of infrastructure, which was 500 but was incorrectly stated as from 520 to 500.

Chapter 8, Preferred Alternative and Station Sites

- Figure 8-1, Palmdale to Burbank Project Section Preferred Alternative, and Station and Figure 8-2 Palmdale to Burbank Project Section Build Alternatives and Station, were revised to reflect approval of the Burbank Airport Station.
- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Biological and Aquatic Resources regarding Construction and Operations Impacts to include information as to nonurban portions of each Build Alternative alignment that would restrict wildlife movement.
- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Air Quality and Global Climate Change to include the pertinent summary of air quality analysis for spoils hauling in the San Joaquin Valley Air Pollution Control District.
- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Hazardous Materials and Wastes to include the revised estimates for total hazardous wastes for the Refined SR14 and SR14A Build Alternatives and to include information about the potential environmental concerns (PECs).
- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Parks, Recreation and Open Space to include the number of parks and recreational resources affected by each Build Alternative.

- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Biological and Aquatic Resources, Hydrology and Water Resources, and Geology, Soils, Seismicity, and Paleontological Resources to account for changes in impacts associated with the Bee Canyon and Pacoima Wash Design Refinement.
- Table 8-2 Comparison of High-Speed Rail Build Alternatives, was updated under Geology, Soils, Seismicity , and Paleontological Resources to include a comparison of acres of temporary and permanent surface footprint within soil areas that are highly corrosive to steel.
- Table 8-2, Comparison of High-Speed Rail Build Alternatives, was updated under Cultural Resources, to clarify the resources present in the study areas for the six Build Alternatives as summarized in Table 3.17, Comparison of High-Speed Rail Build Alternatives for Cultural Resources, discussed in Section 3.17, Cultural Resources.
- Section 8.3.1, Burbank Airport Station Options Considered, was updated to provide additional information regarding the approval status of the Burbank Airport Station.
- Section 8.4.2.12, Cultural Resources, was updated to clarify the numbers of resources affected.
- Section 8.4.2.8, Hazardous Materials and Wastes, was updated to provide additional information regarding spoils deposition at Vulcan Mine.
- Section 8.7, Least Environmentally Damaging Practicable Alternative, has been revised to reflect U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency (USEPA) concurrence on Checkpoint C including the relevant concurrence dates.
- Footnote 6 has been updated to reflect concurrence from the State Historic Preservation Officer on the Finding of Effect.

Chapter 9, Public and Agency Involvement

- Updated the introductory discussion of this chapter to include a footnote on the recently signed U.S. Executive Order (USEO) 14096.
- Updated Section 9.4.4, Tribal Coordination Meetings, and Table 9-5, Public and Agency Meetings, to reflect that the San Manuel Band of Mission Indians is now known as Yuhaaviatam of San Manuel Nation.
- Updated Section 9.4.5, Agency Meetings and Consultation, to revise the list of Responsible Agencies under CEQA, consistent the list of CEQA Responsible Agencies in Chapter 1, Project Purpose, Need, and Objectives, and Chapter 2, Alternatives, of this Final EIR/EIS.
- Updated Section 9.4.7, Section 404 Process, Clean Water Act, to provide additional details of the coordination between the Authority, U.S. Army Corps of Engineers (USACE), and U.S. Environmental Protection Agency (USEPA), since the publication of the Draft EIR/EIS.
- Updated Section 9.4.7, Section 7 Consultation, Federal Endangered Species Act, to identify that the Authority has submitted a Draft Biological Assessment to the U.S. Fish and Wildlife Service (USFWS) after the publication of the Draft EIR/EIS.
- Drafted Section 9.6, Publication and Review of the Draft EIR/EIS to provide details regarding environmental document publication; public and agency information meetings and hearings; comments on the Draft EIR/EIS; responses to common comments; and engineering and design refinements fter publication of the Draft EIR/EIS.
- Updated Section 9.7, Log of Public and Agency Meetings, was revised to account for additional meetings with the public, agencies, and stakeholders.

Chapter 10, Distribution List

- This chapter was updated to reflect notice and distribution of the Final EIR/EIS and to reflect changes in elected officials.

Chapter 11, List of Preparers

- This chapter was updated to reflect the list of participating High-Speed Rail Authority and Regional Consultant staff.

Chapter 12, References

- The reference lists for each chapter and section were updated to reflect references cited in the Final EIR/EIS.

Chapter 13, Glossary

- Chapter 13 was revised to add the terms “grading,” “grubbing,” and “traction power facilities”.

Chapter 15, Acronyms

- Revisions to acronyms and additional acronyms introduced after printing and publication of the Draft EIR/EIS were added to this chapter.

Volume 2

- **Appendix 2-A (Parts 1 - 3) Roadways and Grade Separations**— The following substantive changes have been made to this appendix:
    - Appendix 2-A Part 1 of 3, drawings CV-B0002-S14, CV-Y4013-S14, CV-Y4014-S14, CV-Y4015-S14, CV-Y4017-S14, CV-Y1012-S14, CV-Y1013-S14, CV-Y1014-S14, CV-Y3003-S14, CV-Y3004-S14 have been updated to show the new Portal 8 Access Road in Refined SR14 Build Alternative which was moved parallel and adjacent to the HSR southbound track alignment in Bee Canyon and the reduced footprint at Pacoima Adits to minimize impact on Jurisdictional Waters.
    - Appendix 2-A Part 2 of 3, drawings CV-B0002-14A, CV-Y4006-14A, CV-Y4007-14A, CV-Y4008-14A, CV-Y1007-14A, CV-Y1008-14A, CV-Y1009-14A, CV-Y3001-14A have been updated to show the new Portal 4A Access Road in SR14A Build Alternative which was moved parallel and adjacent to the HSR southbound track alignment in Bee Canyon.
    - Appendix 2-A Part 3 of 3, drawings CV-R4001-14A, CV-R4002-14A, CV-R1004-14A, CV-R3003-14A, CV-T4002-14A, CV-T4004-14A, CV-R4001-EA, CV-R4002-EA, CV-R1004-EA, CV-R3003-EA, CV-T4002-EA, CV-T4004-EA have been updated to include the access road to the water tank located on the North-West corner of Boulders Mobile Home Park.
- **Appendix 2-D Design Baseline Report**— The following substantive changes have been made to this appendix:
    - Two utility owners were updated in Table 14-4 from Antelope Valley-East Kern Water Agency (AVEK) to Los Angeles County Department of Public Works (LADPW) (Number 155 and 157).
    - The structural design for the bridge over the Hansen Dam Spillway were updated, as shown on Figure 11-8, Figure 9-11, and Figure 11-10.
    - Section 11.1.3 was revised to add Hansen Dam Spillway as a Truss Structure and to remove reference from Section 11.1.4 – U – Shape Section.
    - Table 11-2 was revised by adding the Southern California Regional Rail Authority overhead structure over Sheldon Street and correcting the Stationing of Brandford Street.
    - Table 14-4 was revised by adding the water pipelines within the Acton Water Treatment Plant owned by AVEK (#144).

- The Section 408 Permission discussion in Section 18, Design and Construction Permits has been updated to include discussion of the preferred alternative (SR14A).
- Figure 2-5, Table 5-3 Total Right of Way Costs and Table 9-1 Construction Laydown Areas were revised based on revised environmental footprint and engineering design of Construction Staging Areas, access road and utilities in Bee Canyon and Construction Staging Areas in Pacoima adits.
- Table 17-1 in Section 17.1, HSR Design Variances was updated to include an additional Design Variance associated with the alignment at the tight curve connecting the San Fernando Road tangent and the Burbank Airport Station.
- Appendix A – Location of Proposed Soundwalls has been revised to correct the proposed soundwalls for the SR14A Build Alternative. In the Draft EIR/EIS, the Appendix had incorrectly listed the soundwall for the Refined SR14 Build Alternative and not the SR14A Build Alternative.

- **Appendix 2-E Impact Avoidance and Minimization Features**— The following substantive changes have been made to this appendix:
  - United States Forest Service was added to Acronyms and Abbreviations list.
  - Revisions have been made to clarify and amplify Impact Avoidance and Minimization Features AQ-IAMF#1, AQ-IAMF#2, AQ-IAMF#5, BIO-IAMF#2, BIO-IAMF#5, BIO-IAMF#9, BIO-IAMF#11, GEO-IAMF#1, GEO-IAMF#4, GEO-IAMF#5, HMW-IAMF#1, HMW-IAMF#2, HMW-IAMF#3, HMW-IAMF#4, HMW-IAMF#6, HMW-IAMF#7, HMW-IAMF#8, HYD-IAMF#1, HYD-IAMF#7, PUE-IAMF#2, SS-IAMF#5, SS-IAMF#6, and TR-IAMF#2.
  - Impact Avoidance and Minimization Feature EJ-IAMF#1 through EJ-IAMF#6 have been added.
  - Impact Avoidance and Minimization Feature HMW-IAMF#11 has been added.
  - Impact Avoidance and Minimization Feature HYD-IAMF#8 has been added which addresses effects on private wells.
- **Appendix 2-H Regional and Local Policy Consistency Analysis**— Table 2-H-1 was revised to reflect updated applicable local and regional plans, as well as the addition of Policy COS 3.5 for the Los Angeles County Antelope Valley Area Plan 2035.
- **Appendix 2-I Spoils Disposal Assumptions used for Environmental Analysis**— The following substantive changes have been made to this appendix:
  - The assumptions for the percentage of hazardous waste that would be generated at Portal 9; the area between and including the Intermediate Window and Portal 10; and the Trench, Sequential Excavation Method (SEM), and Cut-and-Cover Tunnel in the Burbank Area due to the Refined SR14 and SR14A Build Alternatives.
  - Footnote 7 has been added to the Table.
  - References have been added to the end of the document.
- **Appendix 3.1-A Palmdale to Burbank: Footprint Mapbook**— Since publication of the Palmdale to Burbank Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS), the following substantive changes have been made to this appendix to depict the project design refinement at Bee Canyon and Pacoima Wash:
  - Parcel Map Index, HSR Refined SR14, SR14A Build Alternative
  - Map 21, HSR Refined SR14 Build Alternative
  - Map 22, HSR Refined SR14 Build Alternative
  - Map 28, HSR Refined SR14, SR14A Build Alternatives

  - Map 33, HSR Refined SR14, SR14A Build Alternative
  - Map 18, HSR SR14A Build Alternative
  - Map 19, HSR SR14A Build Alternative

- **Appendix 3.1-B USFS Policy Consistency Analysis**— The following substantive changes have been made to this appendix:
  - Section 2.10, Archaeological Resources Protection Act of 1979, was added.
  - Table 3.1-B-2: Angeles National Forest (ANF) Land Management Plan – Part 2 Policy Consistency Analysis was updated as to Water (WAT) 3-Hazardous Materials, Lands 3 Boundary Management, and ME 1-Minerals Management.
  - Table 3.1-B-2: Angeles National Forest Land Management Plan – Part 3 Policy Consistency Analysis was updated to include discussion of Place-Based Program Emphasis including Soledad Front Country, Angeles Uplands West, and The Front Country Places.
  - Table 3.1-B-2: Angeles National Forest Land Management Plan – Part 3 Policy Consistency Analysis was updated to exclude analysis of Aesthetic Management Standard S9 impacts outside the ANF.
  - Table 3.1-B-2: Angeles National Forest Land Management Plan – Part 3 Policy Consistency Analysis was updated to indicate consistent with Soil, Water, Riparian, and Heritage Standard S46.
  - Table 3.1-B-3: San Gabriel Mountains National Monument Management Plan Policy Consistency Analysis was updated to indicate consistency with Biological Resources Goal 1.
- **Appendix 3.6-A High Risk and Major Utility Impact Report**— The following substantive changes have been made to this appendix:
  - The acronym for the Los Angeles Department of Public Works has been revised from LACDPW to LACPW.
  - The appendices have been revised to accurately depict utility owners.
  - Entry #59 was added to SR14A Build Alternative, Appendix B.
  - Entry #79 was added to E1A/E2A Build Alternatives, Appendix B.
- **Appendix 3.7-C Supplemental Analysis of Tunneling Effects on Biological Resources**— The following substantive changes have been made to this appendix:
  - Table B-1 was updated to include a description of Montane Riparian habitat.
  - Table B-3 was updated to include information on California Juniper Woodland.
- **Appendix 3.7-D Jurisdictional Aquatic Resources**— This appendix was added to provide mapsets delineating Waters of the US and Waters of the State as well as CDFW regulated areas within the Palmdale to Burbank Project Section.
- **Appendix 3.8-A Hydrology and Water Resources (Parts 1-2)**— This appendix has been updated to include the Refined SR14 Build Alternative in Figures 3.8-A-20 through 3.8-A-23. Additionally, the following figures were revised to reflect the Bee Canyon/Pacoima Wash design refinement:
  - Figure 3.8-A-22
  - Figure 3.8-A-23
  - Figure 3.8-A-30
  - Figure 3.8-A-32

  - Figure 3.8-A-33
  - Figure 3.8-A-34
  - Figure 3.8-A-36
  - Figure 3.8-A-45
  - Figure 3.8-A-47
  - Figure 3.8-A-49
  - Figure 3.8-A-51

- **Appendix 3.8-B Major Waterbodies Crossed Table**— Table 3.8-B, Major Waterbodies Crossed by the Palmdale to Burbank Project Section Build Alternatives, was revised to exclude Build Alternative Alignments E1A and E2A, which were listed as crossing the Una Lake waterbody.
- **Appendix 3.8-C Adaptive Management and Monitoring Plan for Potential Hydrologic Effects w/in ANF**— Section 4.1, USFS Standards, was revised to clarify management actions related to supplemental water.
- **Appendix 3.8-D Supplemental Water Demand Analysis for Potential Impacts within ANF/SGMNM**— This appendix has been updated to include additional information about the High Risk Area for the Refined SR14 and SR14A Build Alternatives (High Risk Areas Refined SR14/SR14A-4). Additionally, a map of High Risk Areas for the E2 and E2A Build Alternatives was added to Section 2.2 Methods.
- **Appendix 3.10-A Hazardous Materials and Wastes Figures**— The following substantive changes have been made to this appendix:
  - Figure 3.10-A-2 and Figure 3.10-A-5 were revised to reflect a reduced footprint in Bee Canyon for the Refined SR14 and SR14A Build Alternatives.
  - Figure 3.10-A-3 and Figure 3.10-A 6 were revised to reflect a reduced footprint near Pacoima Wash for the Refined SR14 and SR14A Build Alternatives.
  - Figure 3.10-A-3, Figure 3.10-A-6, Figure 3.10-A-9, Figure 3.10-A-12, Figure 3.10-A-15, and Figure 3.10-A-18 were revised to denote the areas of overlap between the Palmdale to Burbank and Burbank to Los Angeles project sections.
  - Figure 3.10-A-19 was revised to remove Area # 3: Verdugo, since this area is no longer a part of the SFV Superfund Site.
- **Appendix 3.12-C Children's Health and Safety Risk Assessment**— The following substantive changes have been made to this appendix:
  - Figure 3.12-1, Figure 3.12-C-6, and Figure 3.12-C-7 were updated to depict the project design refinement at Bee Canyon and Pacoima Wash.
  - Section 5.3.1, Construction-Period Impacts, was revised to state spoils removed from portal locations would generate different quantities of potentially contaminated spoil materials that would require extraction, transport, and safe disposal.
  - Section 4.4, Parks and Recreation, Section 5.3.1.2, Differences in Impacts Among HSR Build Alternatives, and Section 5.3.2.2, Differences in Impacts Among HSR Build Alternatives, were updated to include Lang Station Open Space at Bee Canyon.
- **Appendix 3.18-A RIMS II Modeling Details**— This appendix has been updated in Section 1, Summary of Findings, Section 2.3 Construction Cost Estimates, and Table 3.18-A-3, Palmdale to Burbank Build Alternative Capital Costs by Standard Cost Category to reflect revised costs associated with track structures and track, and terminal and intermodal stations.

- **Appendix 3.19-A Cumulative Project List**— The explanation of "N/A" below has been clarified and Figure 3.19-A-1 through Figure 3.19-A-7 have been revised to add projects and update project status.
- **Appendix 4-A Resources to be Analyzed in Section 4(f) and Section 6(f)**—The analysis was revised to include new information about Lang Station Open Space at Bee Canyon.
- **Appendix 4-B Lang Station Open Space Draft Section 4(f) and Section 6(f) Evaluation**—This appendix was added to provide the individual Section 4(f) and 6(f) analysis for Lang Station Open Space at Bee Canyon.
- **Appendix 5-A Environmental Justice Outreach Plan**— The following substantive changes have been made to this appendix:
    - Section 1.2, Regulatory Setting, was updated to include discussions regarding the United States Department of Transportation (USDOT) Order 5610.2C, the Presidential Memorandum Accompanying United States Presidential Executive Order (USEO) 12898, USEO 13166, the Uniform Relocation Assistance and Real Property Acquisition Policies Act, USEO 13895, USEO 13990, USEO 14008 (Section 223), and USEO 14096.
    - Section 3.3.2, Environmental Justice Group Events and Meetings, was updated to include information on Environmental Justice (EJ) outreach that will be required under Impact Avoidance and Minimization Feature (IAMF) EJ-IAMF#1 and other EJ-related IAMFs.
    - Attachment A, Advocacy and Community Groups Serving Minority and Low-Income Communities, has been revised to include Pacoima Beautiful.
    - Attachment B, Focused Alignment Outreach Plan Strategy, has been revised to include recommend outreach tactics for the Lake View Terrace Community.
- **Appendix 6-B Preliminary Engineering for Project Definition (PEPD) Record Set Capital Cost Estimate Report** — The following substantive changes have been made to this appendix:
    - Appendix C, Detailed Cost Budget, was updated to reflect revised costs associated with
      track structures and track, and terminal and intermodal stations.
    - Appendix D, List of Documents, was updated to include AVEK Water Treatment Plant Utility Relocation, Acton CA, Budgetary Estimate.
- **Appendix 9-A Concurrence and Agreement Letters**— The following substantive changes have been added to this appendix:
    - Appendix 9-A was re-titled from Consultation with Authorities with Jurisdiction to Concurrence and Agreement Letters to clarify its content.
    - Table 1, Concurrence and Agreement Letters, was added.
    - Checkpoint A agreement from U.S. Army Corps of Engineers (USACE) dated December 18, 2014, was added.
    - Checkpoint A agreement from U.S. Environmental Protection Agency (USEPA) dated December 29, 2014, was added.
    - Concurrence with the conclusions presented in the Section 106 Finding of Effect from the Department of Parks and Recreation Office of Historic Preservation (OHP) dated September 3, 2021, was added.
    - Executed Section 106 Memorandum of Agreement and its transmittal from OHP dated December 14, 2023, was added.

- Checkpoint C agreement from USACE dated January 5, 2024, was added.
- Checkpoint C agreement from USEPA dated January 9, 2024, was added.
- Transmittal of Biological Assessment to U.S. Fish and Wildlife Service (USFWS) and request for Biological Opinion dated June 1, 2023, was added.
- Concurrence from Los Angeles County Department of Parks and Recreation (LACDPR) with Section 4(f) finding dated February 14, 2024, was added.
- Concurrence with Section 4(f) finding from U.S. Department of the Interior (USDOI) dated January 22, 2024 was added.

Volume 3

Key changes in Volume 3 include:

- An updated bridge type over the Tujunga Channel to steel truss and the location of this structure referred to the stationing of the Tujunga Channel based on the USACE Upper Los Angeles and Tujunga Wash HEC-RAS Models were added to PEPD Record Set REV02 Bridges and Elevated Structures Plans. Also, an updated Tujunga Channel structure headway and updated bridge section were added to PEPD Record Set REV02 Track Alignment Plans.
- An access road to the Boulder Mobile Home water tank was added to PEPD Record Set Addendum SR14A / E1A / E2A Roadway and Grade Separation Plans and PEPD Record Set Addendum SR14A / E1A / E2A Grading and Drainage Plans
- PEPD Plan Sets incorporate the design refinement of Build Alternatives Refined SR14 and SR14A project footprint in the Bee Canyon area. The project footprint in this area was reduced to minimize environmental impacts. The access road, overhead power line and water line to tunnel Portal 8/4A in Bee Canyon were moved adjacent to the HSR alignment and the temporary construction staging and layout areas were revised to stay within the permanent environmental footprint.
- PEPD Plan Sets incorporate the design refinement of Build Alternatives Refined SR14 and SR14A project footprint in the Pacoima Wash area. The construction staging and layout areas associated to the tunnel adits in Pacoima were revised to reduce the project environmental footprint and limit the impact on Jurisdictional Waters.
- Plans CV-I4002-14A in the PEPD Record Set Addendum SR14A/E1A/E2A Construction Staging Plans and plan CV-I4002-S14 in the PEPD Record Set REV02 Construction Staging Plans, depicting the excavation at Portal 9 area during phase 4, were revised to include a note referencing the Excavation Refinement Memo dated 2/13/2024.

S.14 Next Steps in the Environmental Process

The following discussion outlines the next steps in the environmental process, specifically the public agency decision-making process. Notices of availability of the Final EIR/EIS were published and made available to agencies and the public on May 24, 2024. Before the Authority makes decisions regarding the project, CEQA and NEPA require that each lead agency make specific findings and determinations regarding the project alternatives, potential impacts, mitigation measures, and conformance with specific environmental laws. Using these findings and determinations, and considering the entire Administrative Record that includes comments received on the Final EIR/EIS, the Authority will prepare a CEQA decision document and a NEPA decision document approving the completion of the environmental review process and formally selecting the project alternative to be implemented.

S.14.1 California High-Speed Rail Authority Decision-Making

The Authority has prepared the Palmdale to Burbank Project Section Final EIR/EIS, which includes responses to comments on the Draft EIR/EIS. The Authority Board of Directors will

consider whether to certify the Final EIR/EIS for compliance with CEQA and approve the project pursuant to CEQA. The Authority Board of Directors will also consider whether to approve a Record of Decision selecting the Preferred Alternative and directing the Chief Executive Officer to issue it as a final ROD pursuant to the NEPA Assignment Memorandum of Understanding.[19]

Once the Authority certifies the Final EIR/EIS, it can approve the project and make related CEQA decisions (findings, mitigation plan, and potential statement of overriding considerations). The required CEQA findings prepared for each significant impact will be one of the following:

- Changes to Build Alternatives have been required or incorporated into the project that avoid or substantially lessen the significant environmental effect as identified in the Final EIR/EIS.
- Changes or Build Alternatives are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.
- Specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or Build Alternatives identified in the Final EIR/EIS.

If the Authority proceeds with project approval, it will file a NOD that describes the project and states whether the project will have a significant effect on the environment. If the Authority approves a project that will result in the occurrence of significant effects identified in the Final EIR/EIS that cannot be avoided or substantially lessened, CEQA requires the preparation of a Statement of Overriding Considerations that provides specific reasons to support the project. These may include economic, legal, social, technological, or other benefits of the proposed project that outweigh unavoidable adverse environmental effects. If such a statement is prepared, it will be referenced in the Authority's NOD.

The environmental process under NEPA is completed with publication of a Final EIR/EIS and a ROD. Pursuant to 23 U.S.C. 327 and the NEPA Assignment Memorandum of Understanding dated July 23, 2019, FRA assigned its federal environmental review responsibilities to the Authority. The Authority is now the NEPA lead agency. As such, if the Authority proceeds with approval of the project, it will issue a ROD. The ROD would describe the project and alternatives considered, describe the selected alternative, and identify the environmentally preferable alternative; make environmental findings and determinations with regard to the Endangered Species Act, Section 106, Section 4(f), and environmental justice; present FRA's determination of air quality conformity; and identify any required mitigation measures.

Except as allowed under 40 C.F.R. 1506.1, no project-related construction may begin until the Authority's final decision has been issued; 30 days have passed since the issuance of the ROD; and necessary federal, state, and local permits have been obtained.

S.14.2 Federal Railroad Administration Decision-Making

Pursuant to the NEPA Assignment Memorandum of Understanding[20], the FRA retains responsibility for certain critical activities, including making project-level Clean Air Act conformity determinations and conducting formal government-to-government tribal consultations.

S.14.3 United States Army Corps of Engineers Decision-Making

The USACE would review the Build Alternatives and identify a Least Environmentally Damaging Practicable Alternative for the Palmdale to Burbank Project Section. The Authority prepared and submitted a Checkpoint C Summary Report to USACE and USEPA for review in July 2023. USEPA and USACE provided written concurrence with the Authority's Palmdale to Burbank

[19] Memorandum of Understanding for the National Environmental Policy Act Assignment (FRA and State of California 2019).
[20] Memorandum of Understanding for the National Environmental Policy Act Assignment (FRA and State of California 2019).

Project Section Checkpoint C Summary Report, which determined that the SR14A Build Alternative is the preliminary least environmentally damaging practicable alternative for the Palmdale to Burbank Project Section, January 9, 2024, and January 5, 2024, respectively.

The Authority would also apply for a permit under Section 404 of the Clean Water Act, because the Build Alternatives would require discharges of fill material into waters of the U.S. This permit would include conditions to avoid and minimize impacts from discharges on waters of the U.S.

The project would require permission from USACE under Section 14 of the Rivers and Harbors Act (33 U.S.C. 408) (Section 408) in the event the Preferred Alternative (SR14A) would make alterations to, or permanently occupy or use, any USACE federally authorized Civil Works project. Lopez Dam, Hansen Dam, and Tujunga Channel, which are in the project study area, are USACE projects regulated under Section 408. Proposed alterations must not be injurious to the public interest or impair the usefulness of the USACE project. Pursuant to the November 2010 *Memorandum of Understanding – National Environmental Policy Act (42 U.S.C. 4321 et seq.) and Clean Water Act Section 404 (33 U.S.C. 1344) and Rivers and Harbors Act Section 14 (33 U.S.C. 408) – Integration Process for the California High-Speed Train Program* (NEPA/404/408 MOU), the Authority and USACE are in discussions regarding the potential effects of the Build Alternatives on these USACE projects.

The closest Build Alternatives to the Lopez Dam, SR14A and Refined SR14, would not be within the USACE project lands and would be 650 feet to the east. At that location, the alternatives would consist of tunnels 355 feet under ground. With respect to Hansen Dam, the closest Build Alternatives, SR14A and Refined SR14, would not be within the USACE project lands, would be over 2,000 feet west, and would consist of tunnels 290 feet under ground. The distances between the SR14A and Refined SR14 Build Alternatives and Lopez Dam and Hansen Dam were measured from the centerline of the alignments to the closest point of the dams.

The Authority evaluated the potential for project construction or operation to result in adverse effects to these USACE projects, including the potential for ground settlement and vibration effects, and determined these USACE projects are sufficiently outside the potential zone of influence. Therefore, the Build Alternatives would not directly or indirectly alter, occupy, or use either Lopez or Hansen Dams.

The Build Alternatives (Refined SR14, SR14A, E1 and E1A) would cross over Tujunga Channel on viaduct that would clear span the channel. Abutments supporting the viaduct would be outside of the existing concrete U-box structure that makes up the Tujunga Channel, on property owned by the Los Angeles County Flood Control District. The design also allows continued maintenance access along the channel. Additionally, the preliminary engineering project design drawings include culverts that would be placed under the HSR embankment located within the Hansen Spreading Grounds, which would convey water under the embankment and between ponds which would maintain the pre-project flows through the existing outfall structure. With implementation of HWR-MM#3, the groundwater recharge function, operation and capacity of the Spreading Grounds would not substantially change. The operation plan does not provide for the temporary or permanent storage of floodwaters for recreation purposes. Operation of Hansen Dam would not be altered or affected by the construction of the proposed tunnels in the SR14A Build Alternative.

A meeting was held with USACE and the Authority on April 6, 2023, and technical work has been prepared to support the coordination under the NEPA/404/408 MOU. The Authority will continue its engagement with USACE to determine whether a preliminary determination is necessary with respect to any of the aforementioned USACE projects pursuant to the NEPA/404/408 MOU..

USACE intends to use the Final EIR/EIS to fulfill its NEPA compliance responsibilities associated with Section 408 permission and Section 404 of the CWA permit decision-making, including a determination about the Authority’s compliance with the USEPA’s Section 404(b)(1) Guidelines. Other actions expected to be taken by the USACE include final determinations on the least environmentally damaging practicable alternative and whether the Authority's Preferred Alternative is contrary to the public interest, review and approval of the Authority's compensatory

mitigation plan, adoption of the Final EIS, issuance of necessary RODs, Section 404 permit and Section 408 permission decisions (as applicable). This document can be used, perhaps among others, for alteration/modification of completed federal flood risk management facilities and associated operations and maintenance, and real estate permissions or instruments (as applicable).

S.14.4 United States Forest Service Decision-Making

The Authority would apply for a Special Use Authorization from USFS, which would include conditions to avoid or minimize impacts on forest land or management of forest resources within the ANF including SGMNM. A Special Use Authorization would be required because HSR tunnels and other facilities would be constructed within the ANF including within SGMNM boundaries.

S.14.5 Surface Transportation Board Decision-Making

On completion of the environmental process and issuance of a ROD by the Authority, the Surface Transportation Board will issue a final decision on whether to approve the Palmdale to Burbank Project Section (the final decision also serves as the Surface Transportation Board's ROD under NEPA). In making its final decision, the Surface Transportation Board will consider the transportation merits, environmental record, and recommendations from the Surface Transportation Board's Office of Environmental Analysis on the Preferred Alternative and mitigation measures. No project-related construction may begin until the Surface Transportation Board's final decision has been issued and has become effective.

S.14.6 Bureau of Land Management Decision-Making

The Authority would apply for a grant of right-of-way for Bureau of Land Management properties crossed by the Preferred Alternative.

S.15 Project Implementation

After the issuance of the Authority's ROD and NOD, the Authority would complete final design, obtain permits, and acquire property prior to construction.

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