S. SUMMARY

S.1 Introduction and Background

The California High-Speed Rail Authority (Authority), a state governing board formed in 1996, has responsibility for planning, designing, building, 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 track 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 depicts this statewide system. The California HSR System will use state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automated train control systems, with trains capable of operating up to 220 miles per hour in HSR sections that are fully grade separated and on a dedicated track alignment.

High-Speed Rail System

The system that includes the high-speed rail guideways, structures, stations, traction-powered substations, and maintenance facilities.

The Authority plans to implement the California HSR System in two phases. Phase 1[1] would connect San Franciso to Los Angeles and Anaheim via the Pacheco Pass and the Central Valley with an express travel time of approximately 2 hours and 40 minutes or less. Phase 2 will connect the Central Valley to the state's capital, Sacramento, and would extend the system from Los Angeles to San Diego.

The Los Angeles to Anaheim Project Section (project section), depicted on Figure S-2, is consistent with the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century (California Streets and Highways Code 2704 et seq.). The project section would extend approximately 30 miles and would provide HSR service between Los Angeles Union Station (LAUS) and the Anaheim Regional Transportation Intermodal Center (ARTIC) in Anaheim. Because the project section is in an existing corridor with passenger rail service, the project does not propose building new HSR stations, but rather proposes modifications to existing stations to allow for HSR operations. HSR station modifications to LAUS were approved as part of the Burbank to Los Angeles Project Section following the certification of the Burbank to Los Angeles Project Section Final Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), and the Los Angeles to Anaheim Project Section would not modify the prior approval of HSR station modifications to LAUS.[2] The project would include the addition of HSR station platforms and other facilities at ARTIC. One optional intermediate HSR station facility could be included, either at the Norwalk/Santa Fe Springs Metrolink Station or at the Fullerton Metrolink/National Railroad Passenger Corporation (Amtrak) Station. This portion of the HSR alignment is consistent with the Authority's selection of the Los Angeles – San Diego – San Luis Obispo Rail Corridor for project-level study.

This summary provides an overview of the Los Angeles to Anaheim Project Section Draft EIR/EIS) and addresses the topics listed below:

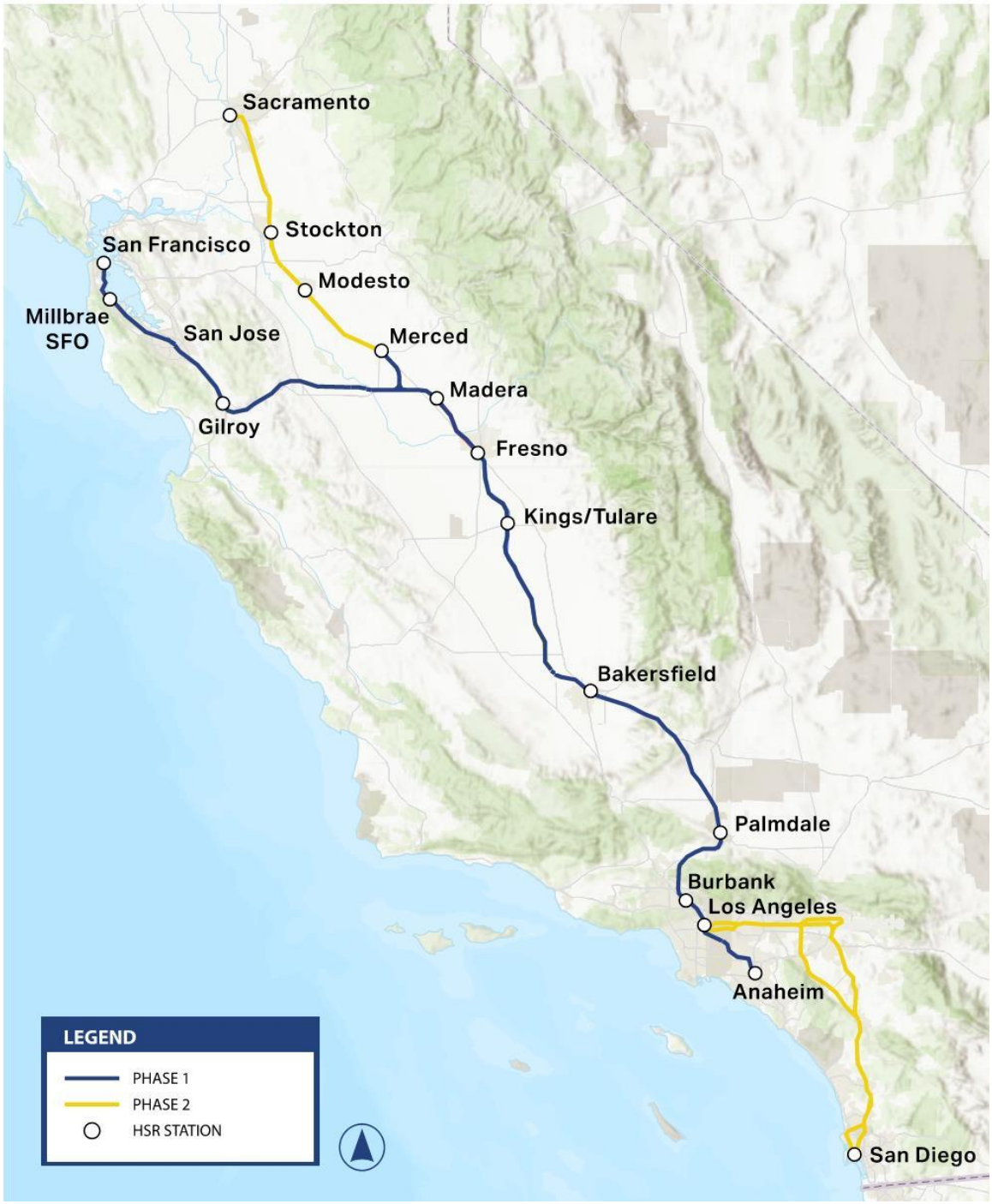
- The tiered environmental review
- Issues raised during the scoping process

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

[2] For more information on the Burbank to Los Angeles Project Section, refer to website, Burbank to Los Angeles Project Section: Environmental Documents - California High Speed Rail.

- Purpose and Need for the statewide HSR system and the project section
- Description of the proposed No Project Alternative and the Los Angeles to Anaheim Project Section build alternatives
- The impact avoidance and minimization features (IAMF) incorporated into the design of each project alternative
- The No Project Alternative impacts
- Evaluation and development of two build alternatives
- The project alternatives evaluation, including:
  - Benefits, adverse effects common to all alternatives, and comparison of impacts and mitigation measures
  - Section 4(f) and Section 6(f) property impacts
- Community benefits and impacts
- Capital costs of the project alternatives
- Areas of controversy
- Environmental process, including identification of a Preferred Alternative
- Next steps in the environmental review process
- Project implementation

The full text of the analysis can be found in the Draft EIR/EIS, available on the Authority's website at www.hsr.ca.gov.



Source: Authority 2024

Figure S-1 California High-Speed Rail Statewide System

Source: Authority 2025a
Draft alignments, elements not to scale

Figure S-2 Los Angeles to Anaheim Project Section

S.2 Tiered Environmental Review: Final Statewide Program EIR/EIS and Los Angeles to Anaheim Project Section Project EIR/EIS

The National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] 4321 et seq.) allows for decision making through a phased process. This process is referred to as *tiered decision making*. This tiered decision-making process supports a broad-level programmatic decision using a first-tier EIS; this first-tier process is 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 one project EIS. The California Environmental Quality Act (CEQA) (Public Resources Code 21000 et seq.) also encourages tiering and also provides for first-tier and second-tier EIRs.

Sequence of California High-Speed Rail Tiered Environmental Documents

1st Tier/Program Documents

- Final Program Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Proposed California High-Speed Train System (2005)
- Bay Area to Central Valley High-Speed Train Final Program EIR/EIS (2008)
- Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR (2012)

2nd Tier/Project Documents

- Palmdale to Burbank Project Section Final EIR/EIS (2024)
- Burbank to Los Angeles Final EIR/EIS (2022)
- Los Angeles to Anaheim Project Section Draft EIR/EIS (this document)

The Los Angeles to Anaheim Project Section EIR/EIS is a second-tier EIR/EIS that tiers off two first-tier program EIR/EIS documents and provides project-level information for decision making on this section of the HSR System. The Authority and the Federal Railroad Administration (FRA) prepared the 2005 *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Statewide Program EIR/EIS) (Authority and FRA 2005), which provided a first-tier analysis of the general effects of implementing the statewide HSR system across two-thirds of the state. The 2008 *Bay Area to Central Valley HST Final Program EIR/EIS* (Bay Area to Central Valley Program EIR/EIS) (Authority and FRA 2008), and the Authority's *2012 Bay Area to Central Valley HST Partially Revised Final Program EIR* (Authority 2012) were also first-tier and programmatic but focused on the Bay Area to Central Valley region. These first-tier EIR/EIS documents provided the FRA and the Authority with the environmental analysis necessary for the evaluation of the overall HSR System and for making broad decisions about general HSR alignments and station locations for further study in the second-tier EIR/EISs. Printed and electronic copies of the Draft EIR/EIS are 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 (877) 699-0494. Electronic copies of the Tier 1 documents are also available for review at the Authority offices, or on request by calling the Authority office at (877) 669-0494.

The project section Draft EIR/EIS analyzes the environmental impacts and benefits of implementing the HSR in the more geographically limited area between Los Angeles and Anaheim and is based on more 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. Already-approved EIR/EIS portions of the HSR program in Southern California include Palmdale to Burbank and Burbank to Los Angeles.

Pursuant to U.S.C. Title 23 Section 327, under the renewed NEPA Assignment Memorandum of Understanding between the FRA and the State of California, effective on July 22, 2024, the Authority is the federal lead agency for NEPA and related environmental reviews and approvals for Authority Phase 1 and Phase 2 California HSR System projects, including this project section (FRA and State of California 2024). In this role, the Authority is the project sponsor and the lead federal agency for compliance with NEPA and other federal laws. The FRA administers the High-Speed Intercity Passenger Rail Program and has awarded California $3.48 billion in grant funding for statewide HSR system environmental studies, as well as HSR construction in the Central Valley. The FRA has primary responsibility for developing and enforcing rail line safety regulations in accordance with 49 U.S.C., Subtitle V, Part A (49 U.S.C. 20101 et seq.) for performing General Conformity determinations per Section 176 of the Clean Air Act (42 U.S.C. 7506), and other federal approvals retained by the FRA.

There are two cooperating agencies included in the NEPA review process for the project section: the U.S. Army Corps of Engineers (USACE) and Surface Transportation Board (STB). USACE agreed by letter, dated December 30, 2009, to participate as a cooperating agency under NEPA for all Tier 2 project sections. STB, by letter dated May 2, 2013, is also participating as a cooperating agency under NEPA for all Tier 2 project sections.

S.3 Issues Raised During the Scoping, Alternatives Analyses, and Environmental Review Process

Public scoping is an important element in the process of determining the focus and content of an EIR/EIS and provides an opportunity for public and agency involvement. Scoping helps identify the range of actions, alternatives, environmental effects, and mitigation measures to be analyzed in depth and helps focus detailed study on those issues pertinent to the final decision on the project. The Authority and FRA developed and the Authority continues to implement a public and agency involvement program as part of the environmental review process for the project section Draft EIR/EIS. The public and agency involvement program included public involvement and outreach, agency involvement, and notification and circulation of the CEQA Notice of Preparation (State Clearinghouse No. 2007031067) for public review and comment on March 12, 2007. The FRA published a NEPA Notice of Intent in the *Federal Register* on March 15, 2007.

In 2020, the Authority and FRA issued a Revised Notice of Preparation/Notice of Intent for the project-level Draft EIR/EIS for the initiation of additional scoping to solicit input on the proposed project, including the facilities in Colton and Lenwood that are no longer considered in this Draft EIR/EIS. This scoping period occurred between August 25 and September 24, 2020.

As part of the initial public outreach for the project section, agency-focused scoping meetings and public scoping meetings were held in 2007 and 2020. The specific locations and dates of public scoping meetings were as follows:

- April 5, 2007: LAUS/Los Angeles County Metropolitan Transportation Authority (Metro), Metro Board Room, One Gateway Plaza, Los Angeles
- April 11, 2007: Gordon Hoyt Conference Room, City Hall West, 201 S Anaheim Boulevard, Anaheim
- April 12, 2007: Norwalk Transportation Center, Arts & Sports Complex Community Meeting Center (Sproul Room), 13200 Clarkdale Avenue, Norwalk
- September 3, 2020: Telephone Town Hall Meeting
- September 9, 2020: Virtual Agency Scoping Meeting
- September 10, 2020: Virtual Scoping Meeting
- September 12, 2020: Virtual Scoping Meeting

Refer to Chapter 9, Public and Agency Involvement, of the Draft EIR/EIS for a summary of activities related to the environmental review process leading up to and including its publication.

During the preparation of this Draft EIR/EIS, questions were received through public information meetings and workshops as well as emails, phone calls, and one-on-one discussions with agencies and individual interested parties. The majority of questions focused on stations and connectivity, air quality, greenhouse gas (GHG) emissions and climate change, communities, noise and vibration, right-of-way impacts, traffic and circulation, increased truck traffic, and safety. Authority staff addressed these and other questions through references to the environmental analysis already under way for this Draft EIR/EIS and informed agencies and the public of additional upcoming opportunities to provide comments. Authority staff also assessed impacts of other alternatives or changes that individuals and organizations had suggested. Outreach staff recorded unanswered questions from individuals or organizations for direct follow-up, or as items to be addressed during future meetings. On request, the Authority also hosted separate meetings and briefings with interested parties as needed. Consistent with the Authority's Title VI Program Plan and Limited English Proficiency Plan, the Authority conducted specific outreach efforts to low-income and minority populations and to communities of concern. The purpose of this outreach was to increase the Authority's understanding of potential project effects on these populations.

Meeting locations and times were posted to the Authority website. Meeting materials provided contact information for those with special needs to allow them to make requests for necessary arrangements to attend meetings. At each meeting location and during scoping efforts, interpretation services were offered prior to the meetings through the meeting notification materials. In accordance with the Limited English Proficiency Plan (Authority 2012), materials prepared for public meetings hosted by the Authority were translated into languages spoken by more than 5 percent of the population, and language interpreters were available at each public information meeting. Spanish interpretation services were provided at the public meetings in Los Angeles, Commerce, Montebello, Pico Rivera, Santa Fe Springs, Norwalk, Fullerton, Buena Park, Anaheim, and unincorporated areas of Los Angeles County. In addition to Spanish, interpretation services were provided in Chinese, Japanese, Korean, and Tagalog at meetings in Los Angeles, and in Korean at meetings in Fullerton and Buena Park. Public information meetings and agency meetings were held during the alternatives analysis process to inform the public about the results of the alternatives analysis and recommendations for future alternatives. Various methods were used to present information and provide opportunities for input by participants, such as open houses, formal presentations, information sessions, and question-and-comment sessions. Project information and announcements were also posted on the Authority's website. Detailed information displays about the alternatives analysis process and station updates were also provided at public meetings. In addition to the public information meetings, one-on-one briefings and small group meetings were held with jurisdictions within the project corridor throughout the process. Another element of the outreach was to provide updates through presentations to community groups, local organizations, and business owners, as well as to the to the Counties of Los Angeles and Orange and corridor cities to facilitate an inclusive and transparent process. Public and agency comments and issues raised on project section alternatives helped shape the following evaluation measures considered in the alternatives analysis reports:

- Constructability and reliability of operation
- Capital cost and operating costs
- Disruption to existing railroads and utilities
- Development potential for Transit-Oriented Development within walking distance of stations
- Consistency with other planning efforts and adopted plans
- Construction access within existing transportation right-of-way
- Displacements and properties where access is affected
- Local traffic effects around stations and at-grade separations
- Effects on waterways, wetlands, natural preserves, or sensitive habitats
- Effects on cultural resources, parklands, or agricultural lands
- Noise and vibration effects on sensitive receptors
- Change in visual/scenic resources
- Avoidance of geological and soil constraints, and areas with potential hazardous materials

The Authority held interested party and technical working group meetings throughout the alternatives analysis process to review design details and collect information about existing conditions and local preferences. At these meetings, the Authority coordinated with local jurisdictional staff in an effort to understand key issues and community concerns related to the project section design. Interested party and technical working group participants included staff from local governments, the Southern California Association of Governments, the Los Angeles – San Diego –San Luis Obispo Joint Powers Authority, Orange County Transportation Authority, Metro, Southern California Regional Rail Authority, Gateway Cities Council of Governments, BNSF Railway (BNSF), Los Angeles Chamber of Commerce, and Orange County Business Council.

Separate agency staff meetings were also held, which included briefings, regular coordination meetings, alignment review meetings, and design workshops or targeted meetings to review plans for stations, grade separations, and the light maintenance facility (LMF). Participants in agency staff meetings included the cities of Los Angeles, Vernon, Commerce, Bell, Montebello, Pico Rivera, Norwalk, Santa Fe Springs, La Mirada, Buena Park, Fullerton, and Anaheim. During

the development of this Draft EIR/EIS, the Authority and FRA held meetings to consult with federal, state, and local agencies to provide updates and obtain feedback from the public. The Authority held informal and formal public meetings in winter 2016, spring 2017, fall 2018, and fall 2023 during preparation of this Draft EIR/EIS. These meetings provided information on various HSR project components and served as forums to obtain feedback. The Authority participated in additional public meetings hosted by other agencies to provide project information and obtain feedback. The Authority exchanged communications with Native American Tribal representatives during coordination meetings and one-on-one meetings with the Authority and FRA, both of which were attended by multiple tribes and tribal representatives.

The Authority and FRA held scoping meetings on April 5, April 11, and April 12, 2007, in Los Angeles, Anaheim, and Norwalk in the project section corridor, with over 100 people in attendance. From these scoping meetings, the Authority and FRA received 64 comment submissions, including 34 letters and 30 written comment cards. Scoping meetings and comments received on the Notice of Preparation and Notice of Intent helped the lead agencies identify general environmental issues to be addressed in the project section Draft EIR/EIS. The project section scoping process identified issues with the proposed alignments and stations, suggestions for new or modified alignments and stations, and issues of potential concern related to the proposed project. The scoping period for the environmental process occurred from March 15 to April 24, 2007.

In 2018, the Authority incorporated the BNSF Lenwood and Colton Components into the project section as part of the 2018 HSR Project Alternative (these project elements were later removed, as discussed further below). In 2020, the Authority issued a Revised Notice of Preparation/Notice of Intent for the project-level Draft EIR/EIS for the initiation of additional scoping to solicit input on facilities in Colton and Lenwood. The revised scoping period for the environmental process occurred from August 25, 2020, through September 24, 2020. Because of health concerns surrounding the novel coronavirus (COVID-19), the revised scoping meetings were modified from in-person to virtual and online meetings. By the end of the revised scoping process, the Authority received 130 written and oral comments (including letters, emails, transcriptions, and telephone town hall phone calls) from agencies, organizations, and individuals.[3]

In 2020, the Authority conducted revised scoping to obtain additional public and agency input for the BNSF Components (Colton Component and Lenwood Component). Early interested party feedback on the BNSF Colton Intermodal Facility Component raised substantial opposition and concern to introducing a new intermodal facility far outside the project corridor. In particular, interested parties in the Inland Empire expressed concerns about the Colton facility's impacts with the added concern that the benefits of HSR and its associated improvements would not reach them.

Responding to these concerns, the Authority considered additional potential alternatives in the 2023 Supplemental Alternatives Analysis Report that would eliminate the need to redirect trains and trucks to a new BNSF intermodal facility in San Bernadino County (Authority 2023a). To maintain reliability and freight and passenger rail service, staging tracks were identified as mitigation for some alternatives during project construction. The 2023 Supplemental Alternatives Analysis Report introduced three new alternatives to address the project's Purpose and Need, and respond to concerns expressed on the 2018 HSR Project Alternative. These three new alternatives were the Shared Passenger Track Alternative, 3A – Freeway Tunnel Alternative, and 3B – Union Pacific Railroad (UPRR) Alignment Alternative. The 2018 HSR Project Alternative and the Shared Passenger Track Alternative were initially deemed the best candidates for further

[3] To incorporate design refinements in 2023 and to address interested party feedback on the BNSF Components received following the Authority's revised scoping in 2020, the Shared Passenger Track Alternatives were introduced in the 2023 Supplemental Alternatives Analysis Report released in November 2023. Several virtual and in-person public meetings were held to discuss the results of the alternatives analysis, grade separations, and light maintenance facilities, and interested party and public input was provided to the Authority in late 2023. This input was also included in the Draft EIR/EIS.

analysis. However, because of concerns related to the Colton Component, only the Shared Passenger Track Alternative was selected for continued evaluation. The Shared Passenger Track Alternative follows the same alignment as the 2018 HSR Project Alternative but excludes the Colton and Lenwood Components, reduces the frequency of HSR service between Los Angeles and Anaheim, and allows freight trains to run on passenger rail tracks.

Based on public and agency scoping and the receipt of public and agency comments, key issues related to six topics were considered during alternatives development and development of this Draft EIR/EIS, including protection of the environment, alignment and station alternatives, connectivity and coordination with impacts on other transportation facilities, train technologies, project funding/cost, and issues outside the scope of the Los Angeles to Anaheim Project Section Draft EIR/EIS. Refer to Chapter 9 for details on the public and agency involvement program and on the locations and dates of public and agency meetings held as part of this program.

S.4 Purpose of and Need for the High-Speed Rail System and the Los Angeles to Anaheim 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 stations as part of a statewide HSR system (Authority and FRA 2005).

> *The purpose of the statewide HSR System is to provide a reliable, electric-powered train system that links the major metropolitan areas of the state and 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.*

S.4.2 Purpose of the Los Angeles to Anaheim Project Section

The purpose of this project is to implement the Los Angeles to Anaheim Project Section of the California HSR System to provide the public with electric-powered HSR service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit, and the highway network in the Los Angeles–Orange Counties metropolitan region, and connects to the rest of the system.

The purpose and need for the project section was developed through a process established by the Authority, FRA, USACE, and U.S. Environmental Protection Agency 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) that was intended to facilitate the integration of NEPA, Section 404 of the Clean Water Act, and Section 14 of the Rivers and Harbor Act (Section 408). The parties reached agreement on the purpose and need in July 2012. For Clean Water Act Section 404(b)(1) compliance, USACE must take into consideration the applicant's needs in the context of the geographic area of the proposed action and the type of project being proposed. Although the project section initially followed the NEPA/404/408 MOU, technical analysis confirms that the project section's impact on waters of the U.S. can be authorized under the Nationwide Permit program. As a result, only the NEPA/404/408 MOU's requirements with respect to Section 408 are applicable. USACE has determined that the overall project purpose (as stated above) allows for a reasonable range of alternatives to be analyzed, which is acceptable as the basis for the USACE 404(b)(1) alternatives analysis.

S.4.3 CEQA Project Objectives of the High-Speed Rail System in California and within the Los Angeles to Anaheim Project Section

The Authority's statutory mandate is to plan, build, and operate an HSR system coordinated with California's existing transportation network, particularly intercity rail and bus lines, commuter rail

lines, urban rail lines, highways, and airports. In accordance with Section 15124 of the State CEQA Guidelines, the Authority has responded to this mandate by adopting the following objectives and policies for the proposed 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.
- Minimize conflicts between freight and passenger rail services
- 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.

Although these CEQA project objectives are not directly incorporated into the project's purpose and need under NEPA, an alternative's ability to achieve these CEQA project objectives will be considered in evaluating the reasonableness of an alternative under NEPA.

S.4.4 Statewide and Regional Need for the High-Speed Rail System in the Los Angeles to Anaheim Project Section

The need for an HSR system is directly related to the expected growth in population and increase in intercity travel demand in California over the next 20 years and beyond. With growth in travel demand, there will be an increase in travel delays arising from the growing congestion on California's highways and at airports. In addition, there will be negative effects on the economy, quality of life, and air quality in and around California's metropolitan areas from a transportation system that will become less reliable as travel demand increases. The intercity highway system, commercial airports, and conventional passenger rail serving the intercity travel market are currently operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth.

The approximately 30-mile-long project section is an essential component of the statewide HSR system. It would provide access to a new transportation mode and contribute to increased mobility throughout California. This project section would connect to the Burbank to Los Angeles Project Section, as well as the Los Angeles to San Diego corridor, the latter being part of Phase 2 program development.[4] The capacity of California's intercity transportation system, including in the Los Angeles-Long Beach-Anaheim Metropolitan Statistical Areas (MSA), which includes the Los Angeles to Anaheim Project Section, is insufficient to meet existing and future travel demand. The current and projected future system congestion 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 in the state, including

[4] The Authority has not adopted a schedule for implementation of Phase 2.

within the Los Angeles-Long Beach-Anaheim MSA. The interstate highway system, commercial airports, and passenger rail systems[5] serving the intercity travel market are operating at or near capacity and will require large public investments 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 necessary expansions may be impractical, or are constrained by physical, political, and other factors. The need for improvements to intercity travel in California—including intercity travel between the Los Angeles-Long Beach-Anaheim MSA, the San Francisco Bay Area, the Central Valley, and Sacramento—relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand within the project section
- Capacity constraints that will result in increasing congestion and travel delays, including within the project section
- 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 project section
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including within the project section
- Poor and deteriorating air quality as a result of increasing vehicle and airport operational congestion, including within the project section
- 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

Geographically, the project section is in one of the most densely populated areas of California. When completed, this project would provide the public with electric-powered HSR service that offers predictable and consistent travel times between major urban centers. In addition, the project would provide enhanced connections to airports, mass transit, and the highway network in the Los Angeles-Long Beach-Anaheim MSA,[6] and a direct connection to the rest of the HSR system.

S.5 Alternatives

This section summarizes the alternatives evaluated in the project Draft EIR/EIS. All components of the alternatives were evaluated during an alternatives analysis screening process, which considered the effects of the alternatives on the social, natural, and built environment as described in *Alternatives Analysis Methods for Project EIR/EIS* (Authority 2011). This analysis is documented in Alternatives Analysis reports: Preliminary Alternatives Analysis Report in 2009, Supplemental Alternatives Analysis Reports in 2010 and 2016, the Los Angeles to Anaheim Project Section Refinement Report 2016, and the 2023 Supplemental Alternatives Analysis Report released in November 2023. Out of five alternatives analyzed, the Authority advanced the Shared Passenger Track Alternative based on costs and potential impacts on environmental resources, for analysis in the project Draft EIR/EIS.

[5] Passenger rail systems include commuter rail services like Metrolink and intercity rail services like Amtrak. These are not to be confused with rail transit systems that generally operate within a smaller sub-region (e.g., Los Angeles County's Metro Rail system).

[6] MSAs are geographic entities delineated by the U.S. Office of Management and Budget for use by federal statistical agencies in collecting, tabulating, and publishing federal statistics. A metropolitan area contains a core urban area of 50,000 or more population. Each metropolitan area can consist of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by, e.g., commuting to work) with the urban core.

S.5.1 No Project Alternative

NEPA requires the evaluation of a no action alternative in an EIS (64 *Federal Register* 28546, Section 14). Similarly, CEQA requires that an EIR include the evaluation of a no project alternative (State CEQA Guidelines 15126.6(e)). The No Project Alternative (synonymous with the No Action Alternative) represents the conditions that would occur if the proposed action is not implemented. Specifically, with respect to the Shared Passenger Track Alternatives, the No Project Alternative reflects the impacts of growth planned for the region as well as existing and planned improvements to the highway, bicycle and pedestrian, aviation, conventional passenger rail, local rail and bus transit, intercity bus, and freight rail systems in the project section area, through the year 2040 time horizon of the environmental analysis.

Section 2.6.1, No Project Alternative, describes planned improvements proposed by various agencies that would be implemented regardless of construction and operation of the proposed build alternatives. Planned and other reasonably foreseeable projects under the No Project Alternative would also include commercial and industrial land developments and utility construction projects. In addition, large residential housing developments consisting of single- and multifamily residential units, condominiums, and apartment projects are planned in the area. The No Project Alternative as it relates to the Shared Passenger Track Alternatives is discussed in Sections 2.6.1.1, Planned Land Use, through 2.6.1.6, Planned Port Improvements. A full list of anticipated future projects is provided in Appendix 3.19-A, Cumulative Plans and Nontransportation Projects List, and Appendix 3.19-B, Cumulative Transportation Projects Lists.

The California Department of Finance and Southern California Association of Governments forecast Los Angeles County's population to decline by 7 percent while Orange County's would grow by 3 percent by the year 2040. These forecasts project that employment would grow by 7 and 17 percent for Los Angeles and Orange County, respectively. General plan updates in each of the counties and incorporated cities in the region have occurred in preparation for this projected growth.

S.5.2 Los Angeles to Anaheim Project Section Alternatives

This Draft EIR/EIS analyzes two build alternatives: Shared Passenger Track Alternative A and Shared Passenger Track Alternative B. The Shared Passenger Track Alternatives were selected based on a balanced consideration of the environmental information presented in this Draft EIR/EIS in the context of CEQA, NEPA, other federal and state laws, local and regional land use plans, community preferences, and cost.

The Shared Passenger Track Alternatives propose new and upgraded track, overhead contact system, maintenance and traction power facilities, grade separations, drainage improvements, communications towers, security fencing, modifications to passenger train stations, and other necessary facilities to introduce HSR service into the Los Angeles – San Diego – San Luis Obispo Rail Corridor from south of LAUS beginning at U.S. Highway 101 to ARTIC.[7] The Shared Passenger Track Alternatives include an HSR station at ARTIC. New and upgraded tracks would allow other freight and passenger rail trains to share tracks with HSR. This shared-track arrangement is known as "blended operations." The project footprint would primarily be within the existing railroad right-of-way, typically 100 feet wide, and include both a northbound and southbound electrified track for HSR. With the exception of the area just north of U.S. Highway 101 to First street, the project footprint would include all project components and consequential physical changes, including existing and potential station facilities, potential maintenance sites,

[7] The Burbank to Los Angeles Project Section, and approved LAUS HSR improvements, included the Authority's construction of overhead contact system leading through LAUS to a point north of U.S. Highway 101. First Street is the match line where the Metrolink Union Station tracks stop and the Authority's Los Angeles to Anaheim Project Section's tracks begin. Starting from that point, the Authority's project includes the HSR project tracks and all other project infrastructure south to ARTIC. Between north of U.S. Highway 101 and First Street, the Authority's project includes installation of overhead contact system.

other ancillary HSR facilities, areas needed for construction mobilization and material laydown, roadway and utility relocations, power supply connections, and associated property rights.

Table S-1 provides a summary of the main elements of Shared Passenger Track Alternatives A and B. The project section includes a combination of at-grade, elevated, and below-grade track, depending on corridor and design constraints.

Both Shared Passenger Track Alternatives propose up to two HSR trains per hour servicing each direction between LAUS and ARTIC; this level of service was analyzed in the 2023 Supplemental Alternatives Analysis Report, and is necessary to maintain the current and projected freight and passenger rail volumes in the corridor.

Table S-1 Summary of Design Features of the Shared Passenger Track Alternative A and Shared Passenger Track Alternative B

Feature	Total
Total length (linear miles)	29.7
At-grade profile (linear miles)	23.8
Elevated profile (linear miles)	5
Below-grade/braced trench profile (linear miles)[1]	0.9
Number of straddle bents[2]	16
Number of railroad crossings[3]	8
Number of major water crossings[4]	9
Number of roadway overcrossings and undercrossings	58

[1] Shared Passenger Track Alternative B also includes an additional 0.18 mile of trench alignment for the 15th Street light maintenance facility yard lead tracks.
[2] A straddle bent is a pier structure that spans (or "straddles") the functional/operational limit of a roadway, highway, or railway.
[3] Railroad crossings means a railroad crossing another railroad.
[4] Features considered major water crossings are Los Angeles River, Rio Hondo and Spreading Grounds, San Gabriel River, North Fork Coyote Creek, La Mirada Creek, Coyote Creek, Brea Creek, Fullerton Creek, and Carbon Creek.

As listed in Table S-2, Shared Passenger Track Alternatives A and B would have the same elements, and their only difference would be the location of the LMF.

Table S-2 Proposed Build Alternative Elements

Project Elements	Build Alternative Elements
Alignment	Shared Passenger Track Alternatives A and B: ▪ North of US 101 to First Street[8]: Overhead catenary system installation ▪ First Street to I-10: Two electrified tracks would be shared with HSR and passenger rail. ▪ I-10-Downey Rd: Two existing tracks would be electrified for shared use. ▪ Downey Rd to Fullerton Junction: Two new mainline tracks would be added in the corridor, with two tracks electrified for shared use. ▪ Fullerton Junction to ARTIC: Two existing tracks would be electrified for shared use.

[8] Tracks in this segment will be built by the Los Angeles County Metropolitan Transportation Authority as part of the Link Union Station Project. Refer to the Link Union Station EIS/Supplemental EIR for more information.

Project Elements	Build Alternative Elements
Ancillary features	Shared Passenger Track Alternatives A and B: ▪ Two TPSS sites (Los Angeles and Anaheim) ▪ Switching station (Santa Fe Springs) ▪ Two paralleling stations (Montebello and Fullerton) ▪ Two sets of layover tracks (Los Angeles and Anaheim)
HSR station	Shared Passenger Track Alternatives A and B: ▪ HSR station at ARTIC (HSR station platform and other facilities)
Light maintenance facility	Shared Passenger Track Alternative A: ▪ 26th St in Vernon, 49 acres, would accommodate 24 single trainsets, double-ended Shared Passenger Track Alternative B: ▪ 15th Street in Los Angeles, 52 acres, would accommodate 20 single trainsets, single-ended
Freight and passenger railroad modifications	Shared Passenger Track Alternatives A and B: ▪ Modifications to freight tracks and yards, including a new consolidated storage area adjacent to Hobart Yard ▪ Modifications to the existing Norwalk/Santa Fe Springs Metrolink Station: Platforms would be shifted to east and would be on an elevated structure. Existing surface parking would be replaced. ▪ Modifications to the existing Fullerton Metrolink/Amtrak Station: A fourth mainline track would be added south of the corridor. The existing side platforms would be removed and replaced with a new center platform over Harbor Blvd. Existing pedestrian bridge would be removed and replaced with new pedestrian underpass. ▪ Relocation of the Commerce Metrolink Station and Buena Park Metrolink Station
Roadway modifications	Shared Passenger Track Alternatives A and B: ▪ Five full grade separations (Pioneer Blvd, Norwalk Blvd, Los Nietos Rd, Cerritos Ave, and State College Blvd) ▪ Eight at-grade crossings would remain at grade in Anaheim (Orangethorpe Ave, La Palma Ave, Sycamore St, Broadway, Santa Ana St, Sixth St, Vermont Ave, and Ball Rd). ▪ Modifications to existing grade separations, including roadway vertical realignment or new piers and abutments within roadways ▪ Roadway realignments (26th Street, Artesia Boulevard, Walnut Avenue) ▪ Roadway closures near Hobart Yard
Modifications to Waterways	Shared Passenger Track Alternatives A and B: ▪ Modifications at eight water crossings (Hobart Channel, Rio Hondo, San Gabriel River, North Fork Coyote Creek, La Mirada Creek, Coyote Creek, Brea Creek, Balcom Avenue Storm Drain)

ARTIC = Anaheim Regional Transportation Intermodal Center; HSR = high-speed rail; I- = Interstate; TPSS = traction power substation; US 101 = U.S. Highway 101

Between U.S. Highway 101 and First Street, the dedicated HSR track alignment would be integrated with the Link Union Station Project as proposed by Metro.[9] The Link Union Station Project involves construction of tracks that HSR trains would run on through LAUS to First Street. Environmental impacts associated with Metro's construction of common rail infrastructure that would serve HSR and other passenger traffic through LAUS to First Street is analyzed in the Link Union Station Project's environmental document.[10] The physical construction elements of the Shared Passenger Track Alternatives would begin south of LAUS, at the northern edge of U.S. Highway 101, where the viaduct built as part of the Metro Link US project would begin. This location is the match line between the Burbank to Los Angeles Project Section[11] and the Los Angeles to Anaheim Project Section. From this northern edge of U.S. Highway 101 to First Street, the Authority would build the overhead contact system on the existing rail infrastructure to power HSR trains. The overhead contact system north of U.S. Highway 101 was part of the Burbank to Los Angeles Project Section and was approved in connection with the Authority's January 2022 decision-making. From First Street south to ARTIC, the Shared Passenger Track Alternatives would include construction of the HSR project tracks and all other project infrastructure.

S.5.2.1 Station Area Development

In identifying and selecting stations as part of the Shared Passenger Track Alternatives, the Authority considered, among other evaluation measures, the potential for transit-oriented development in walking distance of the stations. Because the project section is within an existing corridor with passenger rail service, Shared Passenger Track Alternatives A and B do not propose new HSR stations, but rather modifications to existing passenger rail stations to allow for shared operations with HSR.

ARTIC High-Speed Rail Platform and Station Facilities

At ARTIC, HSR station platforms and other facilities would be added:

- Passenger boarding and alighting platforms (both high level and low level)
- Station building with ticketing, waiting areas, passenger amenities, vertical circulation, and administration and employee areas
- Vehicle parking (short-term and long-term)
- Pick-up and drop-off areas
- Bicycle parking
- Waiting areas and queuing space for taxis, ride app services, and buses
- Pedestrian walkway connections
- Facility power substation to provide electricity to the HSR station building

Built at the existing ARTIC station, the proposed HSR platform and station facilities would be at grade, with two new HSR tracks and a single 1,410-foot center platform for HSR, south of and parallel to the existing Metrolink/Amtrak tracks and platforms. The HSR platform would be

[9] Link Union Station is a Metro project with goals to increase the regional and intercity rail service capacity of LAUS and to improve schedule reliability at LAUS through implementation of a run-through tracks configuration and elimination of the existing stub-end tracks configuration while preserving current levels of freight rail operations, accommodating the planned HSR system in Southern California, increasing the passenger/pedestrian capacity, and enhancing the safety of LAUS.

[10] The Link Union Station Draft EIR/EIS and Supplemental EIR/EIS can be found on the project website: https://www.linkunionstation.com/.

[11] The Burbank to Los Angeles Project section is an Authority project to provide the public with electric-powered HSR service that provides predictable and consistent travel times between major urban centers, and connectivity to airports, mass transit systems, and the highway network in the San Fernando Valley and the Los Angeles Basin; and to connect the northern and southern portions of the statewide HSR system.

accessed through an extension of ARTIC's existing pedestrian bridge from the northeast and through an extension of two existing pedestrian tunnels on the western end of the existing ARTIC platforms. The existing Metrolink/Amtrak parking lot north of Angel Stadium would be reconfigured into a pick-up/drop-off area and connected to the existing access road from Katella Avenue. A new parking structure would be built adjacent to State Route 57 and Katella Avenue, providing 1,350 HSR parking spaces and 626 replacement parking spaces to account for existing parking spaces at ARTIC that would be displaced by the HSR tracks and platform. In light of the uncertainty regarding the need for station area parking, the Authority has conservatively identified parking facilities based on the maximum forecast for parking demand at each station and the local conditions affecting access planning. This approach results in providing the upper range of actual needs and the maximum potential environmental impacts of that range. To attract, support, and retain high ridership levels, the Authority is working with transportation service providers and local agencies to promote transit-oriented development around HSR stations and expand multimodal access to the HSR system.

Optional High-Speed Rail Station

HSR trains would not stop at the Norwalk/Santa Fe Springs Metrolink Station or Fullerton Metrolink/Amtrak Station under either Shared Passenger Track Alternative A or B. However, in line with the Authority's alternative development process, an option for a full-stop HSR station was considered separately and evaluated should the Authority Board decide to select one of the two HSR station option locations for inclusion in one of the build alternatives. If the HSR station option is selected in conjunction with Shared Passenger Track Alternative A or B, several additional elements to support full-stop HSR service would be included along with the station modifications required under the build alternatives described in Table S-2.

- **Norwalk/Santa Fe Springs HSR Station Option:** Two more electrified passenger rail tracks would be added to the elevated structure, for a total of four tracks through the station. The side tracks would serve the modified Metrolink side platforms, and the two center tracks would serve HSR center platform in between the modified Metrolink side platforms. There would be a larger station facility to be shared between HSR and Metrolink, and additional parking provided.
- **Fullerton HSR Station Option:** The overall track configuration would be the same as under the build alternatives, but the southernmost track would be slightly farther south to allow room for a center HSR platform that extends over Highland Avenue. The shared tracks would be on retained fill over Highland Avenue. HSR station buildings and facilities would be added south of Walnut Avenue between Highland Avenue and Harbor Boulevard, with two new pedestrian bridges.

S.5.2.2 Light Maintenance Facilities

Each Shared Passenger Track Alternative includes an LMF. The different LMF options provide a differentiating physical feature of the alternatives.

Shared Passenger Track Alternative A includes the 26th Street LMF. This LMF would have an overall size of 49 acres and be roughly bounded by the realigned mainline tracks on the north, a relocated 26th Street on the south, Downey Road on the west, and Interstate 710 on the east. The changes on the south side of Hobart Yard would require 26th Street to be realigned, which would provide access to the LMF. The yard would be double-ended, with all tracks having access from the mainline on both the east and west sides, which is advantageous because it allows for more efficient maneuvering of trains in and out of the yard. HSR trains would access the LMF from the east and west on two new yard lead tracks, which would be south of the mainline tracks.

Within the 26th Street LMF, there would be an outdoor train yard with 12 yard tracks to allow for the storage of 24 single trainsets, along with a 1,410-foot-long, six-track shop building, which can accommodate 12 trainsets. The internal LMF access roads would be wide enough to accommodate service vehicles, consolidate commissary functions, and provide more clearance from the overhead contact system poles to the yard tracks. The Authority's minimum

requirements for maintenance operation facilities, all of which would be provided at the 26th Street LMF, include the following:

- 30,000-square-foot, two-story administrative building
- Right-of-way access to storage tracks for crews
- Train washer
- 100 parking spaces
- 20,000 square feet of sewerage
- 30,000 square feet of power facilities
- 20,000-square-foot water storage cistern
- 35,000 square feet of bulk storage area
- 45,000 square feet for stormwater treatment
- 45,000 square feet of paved area for deliveries/materials
- 6,500 square feet for a collection point
- 32,500 square feet miscellaneous area

Because the 26th Street LMF location is already within the existing project footprint, acquisition of new right-of-way would not be necessary as part of the facility's construction.

Shared Passenger Track Alternative B includes the 15th Street LMF. This site is in Los Angeles between Olympic Boulevard and 15th Street, immediately adjacent to the existing Amtrak Eighth Street Yard. It would have an overall size of 52 acres and would include a six-track shop building able to accommodate 12 trainsets, along with an outdoor train yard with a storage capacity of 20 HSR trainsets. The 15th Street LMF would be a single-ended yard, which means that access to and from the mainline tracks is provided only on one side, at the northern end. The 15th Street LMF would require more parcels than the 26th Street LMF, because it would require all new right-of-way in a primarily industrial area. The 15th Street LMF would provide the necessary LMF facilities for Shared Passenger Track Alternative B. The 15th Street LMF would include the same maintenance operation facilities as the 26th Street LMF. Access to the 15th Street LMF would be provided by new yard lead tracks, which would be built parallel to the existing railroad corridor from Seventh Street; these yard lead tracks would need to cross under Olympic Boulevard in trenches to avoid impacts on the historic structure. The yard lead tracks would be below grade as they approach the LMF site. The northern portion of the LMF would be excavated and regraded to match the grade of and connect to the yard lead tracks.

S.6 Impact Avoidance and Minimization Features

The Authority has committed to integrate programmatic IAMFs consistent with the (1) 2005 Statewide Program EIR/EIS, (2) 2008 Bay Area to Central Valley Program EIR/EIS, and (3) 2012 Partially Revised Final Program EIR into the HSR project. IAMFs are project features (such as standard engineering practices, adherence to legal requirements, and specific training for construction workers) that have been incorporated into the design of an alternative to avoid or minimize impacts. Appendix 2-A, Impact Avoidance and Minimization Features, provides the inventory of the IAMFs that are considered to be part of the Shared Passenger Track Alternatives. Some of these measures have been modified for incorporation into the Shared Passenger Track Alternatives along with project section-specific design consideration. The Authority would implement these features during project design and construction, by:

- Following existing transportation corridors to the extent feasible
- Spanning water crossings where practical
- Using shared right-of-way when feasible
- Including passages for wildlife movement
- Including narrowed footprint with elevated or retained cut profile
- Avoiding sensitive environmental resources to the extent practical

A list of the IAMFs by resource topic is provided in Table S-3. Refer to Appendix 2-A for detailed descriptions of the IAMFs for this project.[12]

Table S-3 Impact Avoidance and Minimization Features by Resource Topic

Resource Topic	Impact Avoidance and Minimization Feature
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 ▪ TR-IAMF#12: Pedestrian and Bicycle Safety ▪ TR-IAMF#13: Stakeholder Coordination with Transportation Agencies
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
Noise and vibration	▪ NV-IAMF#1: Noise and Vibration
Electromagnetic fields and electromagnetic interference	▪ EMF/EMI-IAMF#1: Preventing Interference with Adjacent Railroads ▪ EMF/EMI-IAMF#2: Controlling Electromagnetic Fields/Electromagnetic Interference
Public utilities and energy	▪ PUE-IAMF#1: Design Measures ▪ PUE-IAMF#3: Public Notifications ▪ PUE-IAMF#4: Utilities and Energy

[12] As noted in Appendix 2-A, for BNSF-led project components, the Authority assumes AQ-IAMF#1 and AQ-IAMF#2 would apply, but not the remaining air quality IAMFs (AQ-IAMF#3, AQ-IAMF#4, or AQ-IAMF#5).

Resource Topic	Impact Avoidance and Minimization Feature
Biological and aquatic resources	▪ BIO-IAMF#1: Designate Project Biologist, Designated Biologists, Species-Specific Biological Monitors, and General Biological Monitors ▪ BIO-IAMF#3: Prepare WEAP Training Materials and Conduct Construction Period WEAP Training ▪ BIO-IAMF#4: Conduct 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 and BMP Training ▪ BIO-IAMF#12: Design the Project to Be Bird Safe
Hydrology and water resources	▪ HYD-IAMF#1: Stormwater 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
Geology, soil, seismicity, and paleontological resources	▪ GEO-IAMF#1: Geologic Hazards ▪ GEO-IAMF#2: Slope Monitoring ▪ GEO-IAMF#3: Gas Monitoring ▪ 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 Resource Specialist ▪ GEO-IAMF#12: Perform Final Design Review and Triggers Evaluation ▪ GEO-IAMF#13: Prepare and Implement Paleontological Resources Monitoring and Mitigation Plan ▪ GEO-IAMF#14: Provide WEAP Training for Paleontological Resources ▪ GEO-IAMF#15: Halt Construction, Evaluate, and Treat if Paleontological Resources Are Found

Resource Topic	Impact Avoidance and Minimization Feature
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 ▪ 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
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
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 Implementation 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
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 ▪ CUL-IAMF#2: WEAP Training Session ▪ CUL-IAMF#3: Preconstruction Cultural Resource Surveys ▪ CUL-IAMF#4: Relocation of Project Features when Possible ▪ CUL-IAMF#5: Archaeological Monitoring Plan and Implementation ▪ CUL-IAMF#6: Preconstruction 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 or Stabilization Measures

Resource Topic	Impact Avoidance and Minimization Feature
Community analysis	▪ CA-IAMF#1: Authority Community Ombudsperson and Contractor's Community Liaison ▪ CA-IAMF#2: Business Spotlighting ▪ CA-IAMF#3: Community-Inclusive Development of Aesthetic Treatments and Community Cohesion Enhancements ▪ CA-IAMF#4: Business Relocation/Displacement Assistance ▪ CA-IAMF#6: Nonregulatory Supplemental and Informational Monitoring

BMP = best management practice; HSR = high-speed rail; WEAP = Worker Environmental Awareness Program

S.7 No Project Alternative Impacts

The No Project Alternative considers the impacts of growth planned for the region as well as existing and planned improvements to the highway, aviation, conventional passenger rail, local rail and bus transit, intercity bus, and freight rail systems in the project section study area through the 2040 horizon used in the environmental analysis. These projects would be implemented regardless of this project section's construction and operation. Planned and other reasonably foreseeable projects under the No Project Alternative would also include commercial and industrial land developments and utility construction projects. In addition, large residential housing developments consisting of single- and multifamily residential units, condominiums, and apartment projects are planned in the area. A full list of anticipated future projects is provided in Appendix 3.19-A and Appendix 3.19-B.

Development under the No Project Alternative would result in impacts (relative to existing conditions) on the following resources[13]:

- **Transportation:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to increased congestion on regional roadways despite planned transportation improvements, because anticipated growth would outpace roadway expansion. Intersection and roadway segment conditions would deteriorate throughout the project section from the existing conditions with respect to level of service, volume-to-capacity ratios, and delays, although a few intersections would improve. Section 3.2 provides further details regarding specific future conditions.
- **Air quality and global climate change:** Under the No Project Alternative, existing regional transportation systems would continue to operate, recent development trends within the project section are anticipated to continue, and the population in the resource study area (RSA) would continue to grow through 2040.[14] In addition, changes to existing highway, airport, and conventional rail systems described in adopted regional transportation plans and municipal general plans would likely be implemented (pending availability of funding). Furthermore, residential, commercial, industrial, and associated infrastructure development projects (e.g., shopping centers, wastewater conveyance upgrades) would occur. These planned projects and developments would affect regional emissions levels with or without the Shared Passenger Track Alternatives.

  Statewide emissions of criteria pollutants and GHGs from surface transportation are predicted to decrease over time, despite economic growth and development, because total

[13] This section omits discussion of agricultural and forest lands, because there are no agricultural lands in the project section and therefore no impacts.

[14] Los Angeles and Orange Counties grew at an annual average growth rate of 0.2 and 0.5 percent, respectively, over the period from 2010 to 2021 (refer to Section 3.12, Socioeconomics and Communities) and are expected to have growth rates of approximately -0.4 percent and 0.2 percent, respectively, from 2021 to 2040. This indicates that growth in Los Angeles County will be negative, while growth in Orange County will be more rapid than in other parts of the state (0.1 percent).

emissions from vehicles decrease as older, higher-emitting vehicles are retired and replaced by newer, lower-emitting vehicles. Additionally, implementation of the Southern California Association of Governments' Regional Transportation Plan/Sustainable Communities Strategy would reduce GHG emissions from passenger vehicles and light-duty trucks by 5 percent per capita by 2020 and 19 percent per capita by 2035 compared to 2005.

- **Noise and vibration:** Under the No Project Alternative, construction and operational impacts on sensitive receivers from HSR noise and vibration would not occur in the RSAs for the project. There would be no temporary or permanent increases in project-related noise or vibration. However, the population in the RSAs would continue to grow, specifically in Orange County, and changes in noise and vibration sources from development projects and infrastructure improvements along with additional rail and road traffic from other planned projects within the existing rail alignment could cause localized noise and vibration impacts.
- **Electromagnetic Fields and Electromagnetic Interference.** Under the No Project Alternative, recent development trends are anticipated to continue, including an increase in the use of electricity and radio frequency communication equipment, high-voltage transmission/power lines, and directional and nondirectional (cellular and broadcast) antennas, resulting in increased electromagnetic fields and electromagnetic interference. By 2040, greater use of electrical devices including electric vehicles, and technological advances in wireless transmission (such as wireless data communication), is expected to lead to increased generation of electromagnetic fields and electromagnetic interference that might affect people and sensitive receptors.
- **Public utilities and energy:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to impacts on public utilities and energy. Existing land would be converted for residential, commercial, industrial, and transportation infrastructure development to accommodate future population shifts and employment growth, placing potential pressures on public utilities and energy resources. In addition, the demand for energy would increase as a result of the increased population associated with increased housing, leading to additional public utility and electricity demand. Planned development and transportation projects that would occur under the No Project Alternative would most likely include various forms of mitigation to address impacts on public utilities and energy. In addition, related county and city ordinances contain goals and policies to ensure that sewer, water, and utility infrastructure is adequate to accommodate new development. Potential increases in petroleum demand could be a concern relative to energy supplies.
- **Biological and aquatic resources:** Under the No Project Alternative, recent development trends and infrastructure maintenance in the highly urbanized project section are anticipated to continue, leading to ongoing biological and aquatic resources impacts. Planned improvements such as industrial, residential, and associated infrastructure development projects, including capital improvements to existing highway, airport, conventional rail systems, flood-control facilities, and aquifer recharge facilities, are anticipated to affect biological and aquatic resources during construction and operation, including altering hydrologic conditions in aquatic resources, increasing sediment discharges to waterbodies, exposing wildlife to pesticides, and removing remnant patches of native vegetation. Based on forecasted population growth in the region, existing and future transportation systems would experience more traffic and congestion and, therefore, would have a negative impact on wildlife resulting from increased direct mortality on wildlife through collisions and increased indirect mortality of wildlife through pollution. Similarly, increased traffic and congestion would lead to indirect mortality of botanical resources through pollution including dust. Both wildlife and plants would likely experience direct effects because of habitat loss through the conversion of habitat to roads to reduce congestion.
- **Hydrology and water resources:** Under the No Project Alternative, recent development trends are anticipated to continue, including planned residential, industrial, commercial, and transportation projects that would build new impervious surfaces in the RSA and would result in associated direct and indirect impacts on hydrology and water resources. These

impervious surfaces could increase the total volume of runoff generated during storm events, increase the risk of flooding in receiving waterbodies, and potentially result in erosion or sedimentation in receiving waterbodies. The impervious surfaces associated with these developments could accumulate contaminants during the summer. In the winter, these contaminants could be discharged to a waterbody as runoff during storms, contributing to increased pollutant loads in the surface water RSA. Planned developments would be required to comply with existing laws and regulations that protect surface water hydrology, including various Clean Water Act Section 402 National Pollutant Discharge Elimination System permits. Recent development trends could also affect groundwater quantity because the demand for drinking water would increase as the population grows. Because drinking water in the RSA is partly supplied by aquifers within the RSA, as the population shifts and employment increases, groundwater pumping in the RSA could increase to supply local demand. Land use changes under the No Project Alternative could result in indirect impacts on groundwater quality.

- **Geology, soils, seismicity, and paleontological resources:** Under the No Project Alternative, recent development trends are anticipated to continue leading to impacts on geology, soils, seismicity, and paleontological resources. Future infrastructure and development projects carry potential risks for property damage caused by geology, soils, and seismicity, including localized deposits of soils that have low bearing support or exhibit excessive settlement under load or involve geologic hazards from steep slopes near rivers and streams, primary seismic hazards from earthquake ground shaking, and secondary hazards from earthquake-induced liquefaction and slope failures. Historical trends in development have increased impermeable surfaces and resulted in erosion and the loss of valuable topsoil in areas of Orange and Los Angeles Counties, including the RSA. In addition, the area has a history of land subsidence in response to water and mineral (oil and gas resources) extraction. The increasing population would result in development in areas where the risk of geologic and seismic hazards, such as slope instability near rivers or liquefaction in areas of liquefiable soils, is higher, ultimately resulting in more risk to the public and a greater chance of property damage. In addition, the use of older buildings to accommodate the increasing population could present a risk during a seismic event, because these buildings were typically built to less-stringent standards. Population growth in the regions with accompanying construction of other projects such as housing, business buildings, and highways could also affect paleontological resources. Projects would likely follow existing regulations that would protect the great majority of these resources but, inevitably, some fossil resources could be lost.
- **Hazardous materials and wastes:** Under the No Project Alternative, recent development trends and operation of the existing regional transportation system are anticipated to continue. Planned improvements, including transportation projects, would require compliance with regulatory requirements for abandonment and relocation of oil or gas wells, as well as release of hazardous materials, and hazardous gases or other subsurface materials that may be present. Planned development projects would require the storage, transport, use, and disposal of hazardous materials during construction and operation. Within the RSA, there are existing schools, hospitals, parks, and other places of congregation near these transportation systems. These facilities could be subjected to risks associated with the routine transport and handling of hazardous materials and wastes and the construction and operation of future transportation system improvements. Contamination concerns and risks are associated with potential environmental concern sites identified in the RSA. Planned improvements in areas of existing oil or gas fields could result in the release of hazardous materials from the rupture of a pipeline or disturbance of a well casing. Risks associated with encountering oil and gas wells such as spills, fires, or explosions could threaten the safety of the public. Increased traffic and congestion would potentially increase the risk of accidental release of hazardous materials or wastes in the environment.
- **Safety and security:** Under the No Project Alternative, development trends are anticipated to continue. Employment in the RSA would continue to grow through 2040, but population

would decrease slightly in the RSA through 2040, primarily in Los Angeles County. The residential and commercial growth that would occur throughout the RSA is anticipated to affect safety and security resources because increased vehicular traffic volumes would correspond with an increase in traffic accidents in which injuries and fatalities could occur. Expansion of development and the transportation network could also result in increased incidence of crime, depending on various factors.

- **Socioeconomics and communities:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to ongoing socioeconomic and community impacts. Planned projects would result in changes to the local economy and regional housing stock, and contribute to increased regional urbanization. Development and transportation projects would result in temporary construction impacts such as noise, vehicle delays, traffic detours and temporary and permanent residential and business displacement impacts and relocations affecting communities, neighborhoods, and minority and low-income populations.
- **Station planning, land use, and development:** Under the No Project Alternative, recent development trends and population growth in the project section would continue, resulting in ongoing land use and development changes. Employment in the indirect RSA would continue to grow through 2040, but the population would decrease slightly in the indirect RSA through 2040, primarily in Los Angeles County. This would likely be a continuation of existing land use patterns through anticipated future development projects. Existing land uses would be converted for residential, commercial, and industrial development, as well as for transportation infrastructure, to accommodate future population shifts and employment growth, thereby placing potential pressures on existing land uses not subject to conversion leading to impacts from conversion of existing land uses and altered land use patterns. A full list of anticipated future development projects is provided in Appendix 3.19-A and Appendix 3.19-B.
- **Parks, recreation, and open space:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to ongoing impacts on parks, recreation, and open space resources. Although there would be minor increases in population in Orange County, these increases would not result in indirect effects associated with greater use of parks, recreation, and open space resources. Planned recreational resource developments would help to relieve the strain on existing facilities and minimize impacts on parks, recreation, and open space resources. In addition, related county and city ordinances contain provisions for funding, acquiring, and maintaining public parks and recreation facilities adequate to meet the needs of future planned growth.
- **Aesthetics and visual quality:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to ongoing viewer, visual resource, and visual quality impacts. Planned residential, industrial, commercial, and transportation projects would introduce new development in the RSA, resulting in direct and indirect impacts on viewers, visual character, and visual quality. These projects would also increase sources of evening light and glare, which could degrade nighttime views. Planned development activities including demolition, new construction, ground disturbance and compaction in construction and staging areas, accelerated erosion or increased flooding associated with changes in drainage patterns, and development of new borrow sites could lead to impacts on aesthetics and visual quality. In some locations, views toward open spaces, such as the Rio Hondo, the San Gabriel and Santa Ana River Trails, and the San Gabriel Mountains, may be reduced or blocked by new structures.
- **Cultural resources:** Under the No Project Alternative, recent development trends in the project section are anticipated to continue, leading to ongoing cultural resources impacts. Development activities including demolition, new construction, ground disturbance and compaction in construction and staging areas, accelerated erosion or increased flooding associated with changes in drainage patterns, and development of new borrow sites could lead to impacts on cultural resources. These impacts could include the disturbance of unknown archaeological resources and demolition, destruction, relocation, or alteration of

historic built resources or their setting. Public access to areas containing cultural resources has the potential to affect cultural resources through collection, vandalism, and intentional or unintentional destruction of artifacts.

- **Regional growth:** Under the No Project Alternative, recent development trends are anticipated to continue, leading to impacts related to regional growth. Regional growth is expected to continue and employment would increase within the RSA. This would lead to the implementation of transit-oriented and high-density development in urban areas including new housing and commercial development in accordance with plans and policies, which would accommodate projected population and employment growth. Projections between 2021 and 2040 indicate employment would increase in Los Angeles and Orange Counties by approximately 7.0 and 18.9 percent, respectively. RSA population would decrease by 611,988 people, with Los Angeles County experiencing an annual percentage decrease of 0.67 percent. The population of Orange County would increase minimally over the almost 20-year period at an average annual increase rate of 0.17 percent.

S.8 High-Speed Rail Alternatives Evaluation

The following sections provide an overview of the impacts, including benefits common to both project alternatives and proposed mitigation, and compares differences between the impacts of the two alternatives. This section then presents discussions of the impacts that differentiate the alternatives (and proposed mitigation measures), as well as cost estimates for each alternative.

S.8.1 High-Speed Rail Benefits

HSR project operation would reduce total VMT. Future intercity auto travel using freeways would divert to HSR service, relieving projected congestion on some regional routes. The reduction in future intercity trips would also improve the ability of regional roadways, freeways, and airports to accommodate freight traffic. Additional details regarding current and future VMT and ridership are included in detail in the *Los Angeles to Anaheim Project Section Transportation Technical Report* (Authority 2025b). Access to technical reports supporting the Draft EIR/EIS is described on the Authority's website: www.hsr.ca.gov. Table S-4 provides a summary of VMT for the statewide total with Shared Passenger Track Alternative A or B for the horizon year (2040).[15]

Table S-4 Reduction in Statewide Annual Vehicle Miles Traveled: Horizon Year 2040, with a Blend of 2023 Project Update Report and 2024 Business Plan Ridership Data

Geographic Area	Annual VMT: Horizon Year 2040		
	No Project	Plus Project[1]	Difference
Statewide Total	97,525,790,530	95,658,503,838	(1,867,286,692)
With inclusion of Norwalk/Santa Fe Springs HSR Station Option[1]	97,525,790,530	97,086,923,954	(438,866,576)
With inclusion of Fullerton HSR Station Option[1]	97,525,790,530	97,050,734,457	(475,056,073)

Source: Authority 2025b
VMT estimates for inclusion of HSR station options was calculated using a blend of 2023 Project Update Report and 2024 Business Plan data.
[1] Refers to the Shared Passenger Track Alternatives
HSR = high-speed rail; VMT = vehicle miles traveled

The project analysis estimated the emission changes that would result from projected reductions of on-road VMT and intrastate air travel and increases in electrical demand (required to power the project). In the project analyses, the HSR system is predicted to have a beneficial effect on (i.e.,

[15] Refer to Appendix 1-A, Changes in Project Benefits and Impacts, for further detail on vehicle miles traveled reduction estimates.

reduce) statewide emissions of all applicable pollutants.[16] For full results of the air quality emissions and GHG analysis, refer to the *Los Angeles to Anaheim Project Section Air Quality and Global Climate Change Technical Report* (Authority 2025c).

Construction of the Shared Passenger Track Alternatives would result in a number of benefits to communities, members of the public, infrastructure, the environment, and the economy. When completed, the project will provide state-of-the-art, electrically powered, high-speed, steel-wheel-on-steel-rail technology, including contemporary safety, signaling, and automatic train control systems, with trains capable of operating up to 220 miles per hour. In addition, the project will provide enhanced connections to airports, mass transit, and the highway network in the Los Angeles-Long Beach-Anaheim MSA, and a direct connection to the rest of the HSR system.

The Shared Passenger Track Alternatives would achieve the following:

- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel that supplements critically overused interstate highways and commercial airports and reduces travel time between major urban centers.
- Benefit overall mobility with five new full grade separations, which would also improve safety and emergency access, as well as facilitate the potential implementation of quiet zones.
- Improve connectivity and access to transit services, providing transit options for short and long trips that would result in improved travel times.
- Reduce VMT within Los Angeles and Orange Counties by approximately 2.7 billion trips over the No Project Alternative by 2040.
- Maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways.
- Increase the efficiency of the intercity transportation system by maximizing the use of existing transportation corridors and rights-of-way (to the extent feasible) while also meeting future intercity travel demand that will be unmet by present transportation systems.
- Provide intercity travel in a manner sensitive to and protective of the region's natural resources, and reduce emissions and VMT for intercity trips.
- Reduce the exposure of motorists, pedestrians, and bicyclists to traffic hazards and provide a safety benefit for children.
- Benefit air quality by decreasing GHG emissions.
- Result in a net reduction in energy usage.
- Provide economic benefits through creation of jobs and expenditures, which would contribute to regional economic growth and generation of new sales tax revenues.

Analysis of the Shared Passenger Track Alternatives has determined that the project would have no impact on agricultural and forestry resources because such resources do not exist in the RSA.

S.8.2 Adverse Effects Common to All Alternatives

The following potentially significant impacts would occur with all HSR build alternatives. The impact analysis takes into account project design features, IAMFs, and implementation of

[16] The air quality analysis modeled the change in indirect and direct emissions associated with operation of the project. The modeled indirect emissions include the change in passenger vehicle emissions and power plant emissions. The modeled direct emissions include the LMF operations, the station operations, and the fugitive dust from train operations. The analysis concluded that the project would result in a net reduction of criteria pollutant and GHG emissions relative to existing conditions and the No Project Alternative.

regulatory requirements to avoid or reduce impacts from implementing the project prior to application of mitigation measures.

Table S-5 and Table S-6 show the differences between the alternatives, along with the associated mitigation measures for these impacts.

S.8.3 Comparison of Impacts for the Project Alternatives

Table S-5, Table S-6, and Table S-7 present the impacts for the alternatives, along with associated mitigation measures.

Table S-5 Premitigation and Post-Mitigation Comparison of Construction Impacts by Alternative and Intermediate Station Option

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Transportation							
Impact TR-1: Temporary Impacts on Intersections, Roadways, and Freeways from Temporary Road Closures, Relocations, and Modifications During Construction	Temporary road closures and realignments could result in increases in travel times, delays, and inconvenience to the traveling public. However, detours and alternate routes would be preserved during construction, and the CTP would maintain traffic flow on major roadways, freeways, and intersections. Other project features would include identification of off-street parking areas for construction, limitation of construction material deliveries during AM and PM peak hours, use of truck routes, and maintaining roadway capacity during special events.	Similar to Shared Passenger Track Alternative A. Construction of the 15th Street LMF would result in slightly different temporary impacts in the vicinity of the LMF site.	Similar to the Shared Passenger Track Alternatives within station area. Inclusion of the Norwalk/ Santa Fe Springs HSR Station Option could result in slightly different shifts in traffic in the vicinity of the HSR station option site to build the additional elements.	Similar to the Shared Passenger Track Alternatives within station area. Inclusion of the Fullerton HSR Station Option could result in slightly different shifts in traffic in the vicinity of the HSR station option site to build the additional elements.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact TR-2: Permanent Impacts on Signalized Intersections from Construction of Permanent Roadway Modifications	Permanent roadway closures and roadway modifications associated with project construction would cause shifts in travel patterns and result in delays at two signalized intersections that exceed the threshold.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#1, TRAN-MM#2, TRAN-MM#4	No adverse effect
Impact TR-3: Permanent Impacts on Unsignalized Intersections from Construction of Permanent Roadway Modifications	Permanent roadway closures and roadway modifications associated with project construction would cause shifts in travel patterns and result in delays at one unsignalized intersection that exceed the threshold.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#3	No adverse effect
Impact TR-4: Permanent Impacts on Roadway Segments from Construction of Permanent Roadway Modifications	Permanent roadway closures and roadway modifications associated with project construction would cause shifts in travel patterns and result in delays at two roadway segments that exceed the threshold.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#5	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact TR-5: Temporary Impacts on Pedestrian, Bicycle, and Transit Facilities During Construction	Construction would require changes to pedestrian, bicycle, and transit facilities. The project would be designed to maintain safe and accessible facilities, but construction would affect the performance of several bicycle paths. However, the CTP will include methods to minimize construction traffic. In addition, the contractor will prepare specific CMPs to minimize construction impacts on bicycles and pedestrians and to maintain transit access during construction. The contractor will also provide a technical memorandum that describes how pedestrian and bicycle accessibility will be maintained across the HSR corridor. The Authority will coordinate with transit agencies, so that bus routes serving the existing and relocated passenger rail stations will be maintained and rerouted during construction.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/ Santa Fe Springs HSR Station Option could result in slightly different shifts in traffic in the vicinity of the HSR station option site. Temporary closures and detours described in Table 3.2-20 could occur for a longer duration to build the HSR station elements.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option could result in slightly different shifts in traffic in the vicinity of the HSR station option site. Temporary closures and detours described in Table 3.2-20 could occur for a longer duration to build the HSR station elements.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact TR-6: Permanent Impacts on Pedestrian, Bicycle, and Transit Facilities from Construction of Permanent Roadway Modifications	Shared Passenger Track Alternative A would not permanently reconfigure or modify any existing or preclude any planned bicycle facilities. Project construction would permanently modify roadways, including fully grade separating five existing at-grade crossings with the roadway lowered under a new railroad bridge. At these locations, the pedestrian and bicycle facilities would be rebuilt during construction to ensure that safe and accessible connections are provided. Transit lines at these locations would experience an improvement in service. To maintain pedestrian and bicycle access, project design plans will include specifications for vehicle lanes, passenger loading zones, sidewalks, crosswalks, bike lanes, trails, bus stops, parking, and intersection controls.	Similar to Shared Passenger Track Alternative A. A portion of 16th Street would be permanently closed during construction of the 15th Street LMF, but no transit routes operate within the area and all reconstructed roadways would replace all bicycle and pedestrian facilities on completion of construction.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in minor differences in permanent roadway modifications (new signalized intersection), but would not result in different LOS impacts.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in minor differences in the permanent roadway modifications (slightly different changes along the Walnut Avenue realignment), but would not result in different LOS impacts.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact TR-7: Permanent Impacts on Freeway Mainline Segments and Ramps During Construction	Project construction would not permanently modify any freeway facilities, and there would not be any impacts.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact TR-8: Temporary Impacts on Freight and Passenger Rail Operations During Construction	Project construction would temporarily disrupt freight and passenger rail service where tracks would be modified. With the future High Desert Operational Efficiency Project, freight trains would be staged outside of the LOSSAN Corridor, minimizing delay for all passenger and freight operators in the corridor. The Authority would also work closely with all agencies that provide services within the corridor and specific measures would be identified in the Construction Management Plans to minimize construction traffic, provide for traffic controls, and establish construction truck routes. Nonetheless, because specific work windows for track construction activities have not yet been defined, the avoidance or minimization of potential disruptions to freight and passenger rail services cannot be ensured at this time.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives within station area.	Same as the Shared Passenger Track Alternatives within station area.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#6	No adverse effect
Air Quality and Global Climate Change							
Impact AQ-1: Temporary Direct and Indirect Impacts on Air Quality within Applicable Air Basin	Temporary construction activity would generate criteria pollutants. Construction-related NO_X emissions would exceed the respective General Conformity *de minimis* levels. Emissions of all other pollutants would be less than the General Conformity *de minimis* levels. Consequently, the Authority would purchase emissions offsets during project construction through an agreement with SCAQMD, require that all project contractors use light-duty on-road vehicles that use ZE or near-ZE technology (a minimum of 25% of the fleet, with a goal of 100%), and incorporate best industry practices on large stationary equipment. However, even with implementation of mitigation measures, the impact under NEPA would be adverse because the NO_X emission exceedances would delay SCAQMD from achieving its attainment goals listed within the 2022 AQMP.	Similar to Shared Passenger Track Alternative A. Construction impacts for the project would be slightly higher than those for Shared Passenger Track Alternative A, due to Shared Passenger Track Alternative B including construction of LMF support structures at Hobart Yard and an LMF at 15th Street.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-17, Table 3.3-18, Table 3.3-23, and Table 3.3-24, inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in slightly higher construction emissions within the station area in 2035, 2036, or 2037 for various criteria pollutants compared to construction emission levels that would occur without the HSR station option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-19, Table 3.3-20, Table 3.3-25, and Table 3.3-26, inclusion of the Fullerton HSR Station Option would result in slightly higher construction emissions within the station area in 2035, 2036, or 2037 for various criteria pollutants compared to construction emission levels that would occur without the HSR station option.	Adverse effect	AQ-MM#1, AQ-MM#2, AQ-MM#3	Adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-2: Temporary Direct Impacts on Implementation of an Applicable Air Quality Plan	Emissions of NO_X from temporary construction activity in excess of the General Conformity *de minimis* levels could impede implementation of ozone plans in the SCAB. Consequently, the Authority would purchase emissions offsets during project construction through an agreement with SCAQMD, require that all project contractors use light-duty on-road vehicles that use ZE or near-ZE technology (a minimum of 25% of the fleet, with a goal of 100%), and incorporate best industry practices on large stationary equipment. However, even with implementation of mitigation measures, the impact under NEPA would be adverse, because the NO_X emission exceedances would delay SCAQMD from achieving its attainment goals listed within the 2022 AQMP. Emissions of criteria pollutants other than NO_X from temporary construction activity in the SCAB would not exceed the General Conformity *de minimis* levels.	Similar to Shared Passenger Track Alternative A. Because the design of Shared Passenger Track Alternative A is nearly the same as that of Shared Passenger Track Alternative B and the facilities and capabilities provided at each LMF are the same, the types and amounts of construction activities would be nearly the same. Consequently, construction emissions would be nearly the same for Shared Passenger Track Alternative A and Shared Passenger Track Alternative B.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. The Norwalk/Santa Fe Springs HSR Station Option would include construction of a few additional elements, including the HSR platform, facilities, and parking. As presented in Table 3.3-17, inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in slightly higher annual average construction emissions than emission levels that would occur without the HSR station option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. The Fullerton HSR Station Option would include construction of a few additional elements, including the HSR platform, facilities, and parking. As presented in Table 3.3-19, inclusion of the Fullerton HSR Station Option would result in slightly higher annual average construction emissions than emission levels that would occur without the HSR station option.	Adverse effect	AQ-MM#1 AQ-MM#2 AQ-MM#3	Adverse effect
Impact AQ-3: Temporary Direct and Indirect Impacts on Global Climate Change—Greenhouse Gas Emissions	GHG emissions generated during temporary construction of 66,302 MT CO_2e (within the SCAB) would be offset by reductions achieved through project operations within about 1 month (relative to No Project conditions).	Similar to Shared Passenger Track Alternative A. GHG emissions generated during temporary construction of 68,666 MT CO_2e (within the SCAB) would be offset by reductions achieved through project operations within about 1 month (relative to No Project conditions).	Similar impacts to those of the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in 67,490 MT CO_2e, which would be slightly greater compared to Shared Passenger Track Alternative A. A similar effect would result for GHG emissions with inclusion of the HSR station option as part of Shared Passenger Track Alternative B. However, GHG emissions would be offset by reductions achieved through project operations.	Similar impacts to those of the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would result in 67,428 MT CO_2e, which would be slightly greater compared to Shared Passenger Track Alternative A. A similar effect would result for GHG emissions with inclusion of the HSR station option as part of Shared Passenger Track Alternative B. However, GHG emissions would be offset by reductions achieved through project operations.	No adverse effect	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-7: Temporary Direct Impacts on Localized Air Quality During Construction—Criteria Pollutants	Construction-related PM_{10} concentrations would not contribute to existing exceedances of the PM_{10} CAAQS and would not lead to new exceedances of the $PM_{2.5}$ CAAQS and NAAQS. All concentrations would be less than their respective thresholds, guidelines, or standards. The Authority will require the lowest-emitting construction equipment technology, renewable diesel fuel, and adoption of best management practices to address construction-period emissions. All feasible emissions control measures (i.e., SCAQMD fugitive dust control measures, renewable diesel, Tier 4 Final-compliant construction equipment, and 2020 or newer truck fleet) will be carried out.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect	No mitigation needed	N/A
Impact AQ-8: Temporary Direct Impacts on Localized Air Quality—Exposure to Diesel Particulate Matter (Health Risk)	Temporary construction activity would not generate DPM or $PM_{2.5}$ concentrations greater than applicable health risk thresholds. The maximum increase in potential cancer risk (8.9 per million) would occur in the area of Paramount Blvd to Pioneer Blvd. The maximum increase in potential chronic Hazard Index of (0.010) would occur in the area of Beach Blvd to Dale St.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would develop the 15th Street LMF, but would still require the same demolition, clearing, and grading for the modifications adjacent to Hobart Yard. Construction-related health risks would be similar to those described for Shared Passenger Track Alternative A, because the three construction segments evaluated in the HRA would also apply to Shared Passenger Track Alternative B.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect	No mitigation needed	N/A
Impact AQ-9: Temporary Direct Impacts on Localized Air Quality—Exposure to Asbestos and Lead-Based Paint	Project design and compliance with existing asbestos and LBP handling and disposal standards would prevent exposure of sensitive receptors to substantial pollutant concentrations.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would develop the 15th Street LMF, but would still require the same demolition, clearing, and grading for the modifications adjacent to Hobart Yard. Because construction of the 15th Street LMF would require a greater amount of demolition activities, there would be a slightly higher potential risk for health hazards, but all regulations and requirements regarding demolition of asbestos- or lead-containing materials would apply.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR Station Option platform, facilities, and parking would require demolition of several buildings, and there would be a slightly higher potential risk for health hazards. All regulations and requirements regarding demolition of asbestos- or lead-containing materials would apply.	No adverse effect	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-10: Temporary Direct Impacts on Localized Air Quality—Exposure to Odors	Emissions-generated odors would be limited to construction activities and would not be expected to affect a substantial number of people.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would develop the 15th Street LMF instead of the 26th Street LMF; however, under Shared Passenger Track Alternative B, construction of other project elements would still occur at the 26th Street LMF site, and there would be additional potential odorous impacts at the 15th Street LMF location. Shared Passenger Track Alternative B would use standard construction techniques, and the equipment odors would be typical of most construction sites.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Construction of the HSR platform, facilities, and parking would use standard construction techniques, and the equipment odors would be typical of most construction sites. The odors would be temporary and localized. Although construction of the Norwalk/Santa Fe Springs HSR Station Option elements would have a slightly longer construction schedule, they would cease once construction activities have been completed. SCAQMD Rule 1108 would also reduce construction-related odors.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Construction of the HSR platform, facilities, and parking would use standard construction techniques, and the equipment odors would be typical of most construction sites. The odors would be temporary and localized. Although construction of the Fullerton HSR Station Option elements would have a slightly longer construction schedule, they would cease once construction activities have been completed. SCAQMD Rule 1108 would also reduce construction-related odors.	No adverse effect	No mitigation needed	N/A
Noise and Vibration							
Impact N&V-1: Temporary Exposure of Sensitive Receivers to Construction Noise	Temporary noise impacts at noise-sensitive locations could occur at a total of 1,379 Category 2 (residential) receivers and at 4 Category 3 (institutional) receivers during daytime construction and at a total of 7,855 residences during nighttime construction. Construction noise would result in an impact for sensitive receivers within the estimated impact distances presented in Table 3.413 in the cities of Los Angeles, Vernon, Bell, Commerce, Montebello, Pico Rivera, Whittier, Norwalk, Santa Fe Springs, La Mirada, Buena Park, Fullerton, and Anaheim.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	N&V-MM#1	No adverse effect
Impact N&V-2: Temporary Exposure of Sensitive Receivers to Vibration from Construction	Temporary vibration impacts at vibration-sensitive locations could exceed the residential annoyance criterion of 72 VdB at distances of up to 290 feet from construction activities. Construction vibration would result in a temporary impact because perceptible temporary increases in vibration levels are expected for sensitive receivers within the vibration estimated impact distances for one or more construction activity presented in Table 3.4-15. Vibration damage could occur at four structures within 77 feet of pile driving sites	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the vicinity of the station area.	Adverse effect (all alternatives and HSR station options)	N&V-MM#2	No adverse effect
Impact N&V-3: Temporary Traffic-Generated Noise from Rerouting Traffic During Construction	Because the estimated increases in traffic noise are less than 12 dBA, there would be no adverse noise impacts related to rerouted traffic.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Electromagnetic Fields and Electromagnetic Interference							
Impact EMF/EMI-1: Temporary Impacts from Use of Heavy Construction Equipment	Substantial EMF fluctuations caused by construction vehicle movements would be limited to within 50 feet of the construction footprint, and radio communications systems would comply with FCC regulations designed to prevent EMI. EMF fluctuations caused by construction vehicle movements would be limited to within 50 feet of the construction easement. However, no receptors sensitive to this type of interference were identified and, with incorporation of project features and, when necessary for specific sensitive equipment, implementation of mitigation, for those identified sensitive receptors included in Table 3.5-12, effects will be addressed. The potential for impacts on sensitive equipment applies at receptor Site 13 (Nutrilite Health Institute) in Buena Park.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	EMF/EMI-MM#1	No adverse effect
Impact EMF/EMI-2: Temporary Impacts from Communications Equipment	There would be no exposure of people to a substantial EMF risk generated by radio transmissions between construction personnel because the project would adhere to 47 CFR Part 15 and compliance means that interference with other radio-based service would be avoided.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-3: Temporary Impacts from Operation of Electrical Equipment	Potential, although unlikely, for a temporary impact applies at receptor locations 13 (Nutrilite Health Institute) in Buena Park. Project features that require compliance with international guidelines and federal and state regulations would address potential impacts. Any remaining impacts on specific sensitive equipment would be addressed through mitigation established by this Draft EIR/EIS.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	EMF/EMI-MM#1	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Public Utilities and Energy							
Impact PU&E-1: Temporary Interruption of Utility Service	Temporary interruptions to utility services would be temporary and for short durations. Project features include the contractor notifying the public of planned outages through a combination of communication media within the jurisdiction of the affected service providers (PUE-IAMF#3). The contractor will also prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions to utility services (PUE-IAMF#4).	Similar to Shared Passenger Track Alternative A. The 15th Street LMF has potential conflicts with an additional 29 utilities, but a majority would be protected in place and of the remaining additional conflicts construction would only require the relocation of five utilities: three storm sewers, one storm drain, and one overhead electrical line. PUE-IAMF# and PUE-IAMF#4 will be included to minimize, avoid, and prevent significant impacts on utility service.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area. Although construction of the HSR station elements would result in an additional five utility conflicts that would need to be protected in place (two storm drains, two sewer conduits, and one water conduit), PUE-IAMF# and PUE-IAMF#4 will similarly be included to minimize, avoid, and prevent significant impacts on utility service.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-2: Accidents and Disruption of Services	Accidents and disruption of utility services could potentially occur during construction. Accidental disruptions would be limited in occurrence and impacts would be short term as a result of the established practices for utility identification and notification. The contractor would prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions to utility services.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-3: Effects from Water Demand During Construction	Construction including the 26th Street LMF, ARTIC, and modifications at Norwalk/Santa Fe Springs and Fullerton would require 90.7 AFY of water annually. The short-term increase in water demand would be addressed by mitigation requiring a preconstruction water supply analysis to ensure adequate water supplies for construction activities.	Similar to Shared Passenger Track Alternative A. Construction including the 15th St LMF, ARTIC, and modifications at Metrolink stations at Norwalk/Santa Fe Springs and Fullerton would require 91.5 AFY of water annually.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would require an additional 5.3 AFY annually.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would require an additional 5.5 AFY annually.	Adverse effect (all alternatives and HSR station options)	PUE-MM#1	No adverse effect
Impact PU&E-4: Effects on Stormwater Infrastructure During Construction	During construction, the project has the potential to affect stormwater infrastructure in the project area. The project will incorporate a SWPPP and construction best management practices to avoid or minimize erosion and sedimentation from increased rates and volumes of flows.	Similar to Shared Passenger Track Alternative A. Because construction of the 15th Street LMF would require a greater area of disturbance than the 26th Street LMF, effects related to stormwater could be experienced in more areas under Shared Passenger Track Alternative B.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would disturb up to an additional 10 acres of land.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact PU&E-5: Effects from Waste Generation During Construction	Construction would result in 1.74 million cubic yards of solid waste from excavation and demolition activities. The Authority's contractor would handle, store, and dispose of hazardous waste in accordance with applicable requirements, including the Resource Conservation and Recovery Act. Project features would include requirements that a certified hazardous waste collection company transport the waste to an authorized hazardous waste management facility for recycling or disposal.	Construction would result in 1.83 million cubic yards of solid waste from excavation and demolition activities. The Authority's contractor would comply with applicable requirements, including the Resource Conservation and Recovery Act, and a certified hazardous waste collection company would transport the waste to an authorized hazardous waste management facility for recycling or disposal.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR station platform, facilities, and parking would generate an additional 33,874 cubic yards of construction-related solid and hazardous waste from necessary demolition of additional buildings and facilities.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-6: Conflicts with Existing Utilities	Pursuant to utility agreements negotiated between the Authority and the utility owners, the Authority would work with utility owners during final engineering design and construction of the project to relocate 264 major utility lines and protect in place 692 utility lines. Shared Passenger Track Alternative A would also require the removal, extension, or realignment or abandonment of 22 utility lines. Project features would include the contractor notifying the public of planned outages through a combination of communication media within the jurisdiction of the affected service providers. The contractor would also prepare a technical memorandum documenting how construction activities will be coordinated with service providers to minimize or avoid interruptions to utility services.	Similar to Shared Passenger Track Alternative A. The Authority would relocate 269 major utility lines and protect in place of 716 utility lines. Shared Passenger Track Alternative B would also require the removal, extension, or realignment or abandonment of 22 utility lines. Shared Passenger Track Alternative B would similarly include project features to minimize potential impacts related to outages and disruptions to service.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in an additional five utility conflicts that would need to be protected in place.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-7: Reduced Access to Existing Utilities in the HSR Right-of-Way During Construction	Reduced access to existing utilities during and after construction would not require expansion of existing or construction of utility infrastructure. Access would be ensured through coordination with service providers.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. The project would protect in place the five utility conflicts caused by project construction where they are still accessible.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-8: Effects from Upgrade or Construction of Power Lines	The project would require an upgrade of power lines and comply with CPUC General Order 131-E.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact PU&E-9: Construction Energy Consumption	Construction would require 961,480 MMBtu over the course of 7 years. The design of the project would include the use of energy-saving measures during construction to minimize both electricity and fossil fuel consumption. Energy expended on construction would be recovered in about 1 month based on anticipated 2040 ridership.	Similar to Shared Passenger Track Alternative A. Construction would require 1,006,271 MMBtu. The design of the project would include the use of energy-saving measures during construction to minimize both electricity and fossil fuel consumption. Energy expended on construction would be recovered in about 1 month.	Similar impacts to those of the Shared Passenger Track Alternatives. Construction of the Norwalk/Santa Fe Springs HSR Station Option would require an additional 21,235 MMBtu. The design of the project would include the use of energy-saving measures during construction to minimize both electricity and fossil fuel consumption. Energy expended on construction would be recovered in about 1 month.	Similar impacts to those of the Shared Passenger Track Alternatives. Construction of the Fullerton HSR Station Option would require an additional 19,127 MMBtu. The design of the project would include the use of energy-saving measures during construction to minimize both electricity and fossil fuel consumption. Energy expended on construction would be recovered in about 1 month.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Biological and Aquatic Resources							
Impact BIO-1: Construction Impacts on Riparian Habitat, Vegetation Communities, Land Cover, and Special-Status Natural Communities	Potential temporary and permanent construction impacts on riparian and special-status natural communities (hardstem and California bulrush marsh and duckweed blooms and relatives).	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#33, BIO-MM#34, BIO-MM#47, BIO-MM#50, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#62, BIO-MM#79	No adverse effect
Impact BIO-2: Construction Impacts on Special-Status Plant Species	Potential temporary construction impact on two special-status plant species.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#62, BIO-MM#79, BIO-MM#80	No adverse effect
Impact BIO-3: Construction Impacts on Special-Status Birds, Raptors, and Migratory Birds	Potential temporary and permanent construction impacts on up to 10 special-status avian species, migratory birds, and raptors through direct impacts or habitat modification.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would result in the same temporary construction impacts on nesting birds, raptors, and migratory birds and slightly greater permanent construction impacts on nesting birds (0.91 acre), Burrowing Owl (0.01 acre), Yellow Warbler (0.90 acre), Loggerhead Shrike (0.90 acre), and White-Tailed Kite (0.90 acre).	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. The additional area of disturbance associated with the Fullerton HSR Station Option contains suitable nesting habitat for raptors and migratory birds within the permanent construction impact area (1.42 acres). Suitable burrowing and nesting habitat for Burrowing Owl (0.03 acre) and nesting habitat for White-Tailed Kite, Loggerhead Shrike, and Yellow Warbler (all with 1.32 acres) exists within the permanent construction area. No habitat is present in the temporary construction area or the areas anticipated to receive shading impacts.	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#14, BIO-MM#15, BIO-MM#20, BIO-MM#21, BIO-MM#37, BIO-MM#44, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#62, BIO-MM#63, BIO-MM#68, BIO-MM#76, BIO-MM#82, N&V-MM#1, AVQ-MM#1, AVQ-MM#2	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact BIO-4: Construction Impacts on Special-Status Mammals	Potential temporary and permanent construction impacts on up to nine special-status mammal species through direct impacts or habitat modification.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would be the same for temporary construction impacts on special-status mammals. Permanent impacts for Shared Passenger Track Alternative B would be slightly greater for three bat species (0.90 acre greater for Mexican long-tonged bat, western red bat, and western yellow bat) and mountain lion (0.91 acre), with shading impacts being slightly less (0.01 acre for three bat species [western mastiff bat, western red bat, and western yellow bat]).	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable habitat for special-status mammals within the area of additional permanent disturbance, including mountain lion (1.35 acres) and bat species (1.32 acres of permanent impacts on suitable habitat for Mexican long-tongued bat, western red bat, and western yellow bat; and 0.07 acre of permanent impacts on suitable habitat for Townsend's big-eared bat, western mastiff bat, pocketed free-tailed bat, and big free-tailed bat).	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#25, BIO-MM#26, BIO-MM#27, BIO-MM#37, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#62, BIO-MM#63, BIO-MM#76, BIO-MM#82, N&V-MM#1, AVQ-MM#1, AVQ-MM#2	No adverse effect
Impact BIO-5: Construction Impacts on Aquatic Resources	Potential temporary and permanent construction impacts on aquatic resources.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#33, BIO-MM#34, BIO-MM#47, BIO-MM#50, BIO-MM#55, BIO-MM#58, BIO-MM#62	No adverse effect
Impact BIO-6: Construction Impacts on Wildlife Movement Corridors	Potential temporary and permanent construction impacts on wildlife movement corridors through substantial interference of the functioning of the corridor.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#6, BIO-MM#34, BIO-MM#37, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60, BIO-MM#62, BIO-MM#63, BIO-MM#82, N&V-MM#1, AVQ-MM#1, AVQ-MM#2	No adverse effect
Impact BIO-7: Construction Impacts on Locally Protected Biological Resources (Tree and Shrub Preservation Policies or Ordinances)	Potential conflict with local policies or ordinances resulting from temporary and permanent construction impacts on protected biological resources (trees and shrubs).	Same as Shared Passenger Track Alternative A.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable habitat for protected trees and shrubs within the area of additional disturbance for the HSR station elements.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable habitat for protected trees and shrubs within the area of additional disturbance for the HSR station elements.	Adverse effect (all alternatives and HSR station options)	BIO-MM#35, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Hydrology and Water Resources							
Impact HWR-1: Temporary Impacts on Drainage Patterns, Stormwater Runoff, and Hydraulic Capacity (Surface Water Hydrology) During Construction	Shared Passenger Track Alternative A would cross 11 water features. For water crossings with flowing water during construction, construction could alter existing drainage patterns and stormwater runoff. Up to approximately 891 acres of land would be disturbed. Construction activities could redirect and increase the volume and rate of shallow overland flows, increasing the potential for erosion and siltation in areas of exposed soils and along channel banks. Drainage patterns would be maintained to the extent feasible, and a SWPPP as prepared as part of compliance with the CGP and adherence with regulatory permits would minimize potential impacts on surface water hydrology.	Similar to Shared Passenger Track Alternative A. Up to approximately 939 acres of land would be disturbed, representing a larger footprint of similar types of impacts compared to Shared Passenger Track Alternative A. The increase in disturbed area is associated with the proposed 15th Street LMF, which would be on a larger area (63.1 acres) than the 26th Street LMF (54 acres). In addition, the 15th Street LMF would require deeper excavation depths than the 26th Street LMF. Greater excavation depths would result in increased soil disturbance. However, construction activities would be subject to a SWPPP as part of compliance with the CGP and would adhere to regulatory permits to minimize potential impacts on surface water hydrology.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Alternatives within the station area. Construction of the Fullerton HSR Station Option platform, facilities, and parking would occur within a larger area than the area necessary as part of the Norwalk/Santa Fe Springs HSR Station Option. The additional area of temporary disturbance with inclusion of the Fullerton HSR Station Option would be up to 10 more acres.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-2: Permanent Construction Impacts on Drainage Patterns, Stormwater Runoff, and Hydraulic Capacity (Surface Water Hydrology)	Grading, impervious surfaces, new bridges and culverts, and modified drainage systems would result in minimal changes to drainage patterns and stormwater runoff. New rail and roadway crossings would maintain drainage patterns of waterbodies, and approximately 53 acres of new impervious surface would be built, increasing the percentage of impervious surfaces within the project section from 76% (existing) to 83%. Maintaining drainage patterns and preconstruction flow rates, an SWMTP, and the design of modified drainage systems would minimize permanent impacts on surface water hydrology.	Similar to Shared Passenger Track Alternative A. Approximately 61.5 acres of new impervious surface would be built. The percentage of impervious surfaces within the project section as part of Shared Passenger Track Alternative B would increase from 75% (existing) to 83%. Shared Passenger Track Alternative B would be similarly subject to an SWMTP, and the design of modified drainage systems would minimize permanent impacts on surface water hydrology.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in an additional 10 acres of disturbance and an additional 8.9 acres of new impervious surface cover.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HWR-3: Temporary Impacts on Surface Water Quality During Construction	Grading, excavation, work in waterbodies and other activities that would disturb, destabilize, and stockpile soil would result in temporary impacts on surface water quality. Runoff from 891 acres of disturbed soil would be controlled to prevent elevated turbidity and sedimentation in receiving waterbodies. Construction activities would occur in waterbodies, which may be temporarily diverted and dewatered and physically disturb waterbodies. Applying construction site BMPs in accordance with a SWPPP and the CGP and adhering to regulatory permit conditions would reduce temporary water quality impacts.	Similar to Shared Passenger Track Alternative A. Construction activities associated with Shared Passenger Track Alternative B would disturb a larger area of soil (939 acres) than Shared Passenger Track Alternative A. However, Shared Passenger Track Alternative B would similarly apply construction BMPs in accordance with the SWPPP and CGP and adhere to regulatory permit conditions.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Alternatives within the station area. Construction of the Fullerton HSR Station Option platform, facilities, and parking would occur within a larger area than the area necessary as part of the Shared Passenger Track Alternatives. The additional area of temporary disturbance with inclusion of the Fullerton HSR Station Option would be up to 10 more acres, but the types of temporary impacts would be similar in nature and no waterbodies would be crossed as part of construction of the station option.	Adverse effect (all alternatives and HSR station options)	BIO-MM#62	No adverse effect
Impact HWR-4: Permanent Impacts on Surface Water Quality During Construction	Land use change and impervious surfaces would have the potential to permanently affect surface water quality. Shared Passenger Track Alternative A would result in approximately 53 acres of new impervious surfaces, increasing the percentage of impervious surfaces within the project section from 76% (existing) to 83%. Implementing an SWMTP and application of BMPs and a SWPPP under the CGP would manage the quality and quantity of runoff generated by impervious surfaces and minimize potential impacts.	Similar to Shared Passenger Track Alternative A. Under Shared Passenger Track Alternative B, approximately 61.5 acres of new impervious surface would be built. The increase in the percentage of impervious surfaces within the project section as part of Shared Passenger Track Alternative B would increase from 75% (existing) to 83%.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in an additional 8.9 acres of impervious surface cover.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-5: Temporary Impacts on Groundwater Volume, Quality, and Recharge During Construction	Shared Passenger Track Alternative A would result in an increase of approximately 7%, or 53 acres, of impervious surfaces. Dewatering, excavations, and accidental leaks and spills of materials and waste throughout various locations in the project footprint would minimally affect groundwater quality and volume. Impacts would be reduced by adhering to the RWQCBs' dewatering requirements; a construction management plan; coordination with utility providers and the RWQCBs; and implementation of BMPs and project features regarding the management, transport, and disposal of construction waste and materials.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would result in an increase of approximately 8%, or 61 acres, of impervious surfaces, as well as deeper excavation depths (up to 8 feet). Potential impacts would be reduced through similar means as described for Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Alternatives within the station area. Construction of the Fullerton HSR Station Option platform, facilities, and parking would occur within a larger area than the area required as part of the Shared Passenger Track Alternatives. Although relocation of utilities could be up to 30 feet deep and would require dewatering during construction, the depth of excavation for the Fullerton HSR Station Option elements would likely not exceed 10 feet in depth for most of the site and the types of temporary impacts would be similar in nature as those described for the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HWR-6: Permanent Impacts on Groundwater Volume, Quality, and Recharge During Construction	New impervious surfaces in groundwater subbasins (approximately 53 new acres or an increase from 76% to 83% of the project section), would minimally affect groundwater quality and volume, because implementation of stormwater BMPs to allow surface water infiltration would improve runoff quality that could affect groundwater resources and facilitate recharge.	Similar to Shared Passenger Track Alternative A. Approximately 61.5 new acres of impervious surface would be built. The new impervious surfaces within the project section as part of Shared Passenger Track Alternative B would increase the percentage of impervious surfaces within the project footprint from 75% (existing) to 83%. Shared Passenger Track Alternative B would similarly implement stormwater BMPs.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in an additional 8.9 acres of impervious surface cover.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-7: Temporary Impacts on Flood Hazard, Tsunami, or Seiche Zones Resulting in the Risk of Release of Pollutants During Construction	Shared Passenger Track Alternative A would disturb 891 acres. Construction would occur in 100-year floodplains. Temporary impacts would be minimized by implementation of a SWPPP under the CGP and an Environmental Management System and hazardous materials monitoring plans to prevent release of pollutants because of inundation.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would disturb 939 acres, resulting in a greater area of temporary disturbance (48 acres) within the same floodplains as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-8: Permanent Impacts on Flood Hazard, Tsunami, or Seiche Zones Resulting in the Risk of Release of Pollutants During Construction	Construction would occur in 100-year floodplains. Implementation of a Flood Protection Plan would minimize development within floodplains; Implementation of BMPs and an Environmental Management System and hazardous materials monitoring plans would limit the potential for risk release of pollutants. No tsunami or seiche hazards are anticipated because of the location of the project corridor.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Geology, Soils, Seismicity, and Paleontological Resources							
Impact GSSPR-1: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Surface Fault Rupture or Seismically Induced Ground Shaking During Construction	The types of construction that could potentially result in induced seismic faulting or seismically induced ground shaking are not required for the project. There are no known active faults with documented Holocene-age fault rupture that traverse the project footprint and alignment. The up-dip termination of the PHT fault is approximately 1.5 miles beneath the alignment and, therefore, is not a ground rupture hazard from faulting. Active folding in Holocene-age alluvium has been reported near the PHT fault's Santa Fe Segment. Therefore, there is a potential hazard related to tectonic uplift and tilting during a potential future large-magnitude earthquake on the PHT fault.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-2: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Liquefaction During Construction	Temporary structures associated with the construction of Shared Passenger Track Alternative A may be exposed to liquefaction hazards and subsequent settlement as a result of strong ground shaking. Project features will minimize direct and indirect risks to life and property resulting from liquefaction and ground failure during construction. These project features include conforming to guidelines specified by relevant transportation and building agencies including designing temporary construction structures in accordance with Caltrans seismic design criteria and applying construction safety measures like evacuation plans. Furthermore, construction activities would not cause a regional increase in groundwater elevations or involve the types of activities that would directly or indirectly cause or accelerate the potential for seismic settlement.	Similar to Shared Passenger Track Alternative A. A portion of the 15th Street LMF is within a CGS-delineated liquefaction zone. However, construction activities would not cause a regional increase in groundwater elevations or other geologic conditions that would cause or accelerate the potential for liquefaction during construction. Furthermore, any temporary local fluctuations that may occur in relation to trenching or other construction activities would adhere to relevant transportation and building agencies and codes.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-3: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Seismically Induced Flooding from Dam Failure or Seiche During Construction	Portions of the Shared Passenger Track Alternative A footprint are within flood inundation zones. However, because of regulatory oversight and the comparatively shorter duration of construction (as opposed to operation), the potential for seiche or dam failure from seismically induced flooding hazard is unlikely during construction. Moreover, the risk of exposure to flooding during construction is not greater than under existing conditions. The project would not involve activities that would trigger a seismic event. Construction activities would not exacerbate dam failure because construction would not be near dams or reservoirs.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-4: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Slope Failure Hazards Associated with Unstable Soils, Cut-and-Fill Slopes, or Collapsible Soils, Including Seismically Induced Landslides During Construction	No substantial cut-and-fill slopes are planned along the project section for Shared Passenger Track Alternative A. Temporary cut slopes made during construction excavation will be at appropriate inclinations based on the shear strength parameters of the earth materials at the locations of planned excavations. Potentially collapsible soils may be present along the Shared Passenger Track Alternative A footprint. Project features will minimize direct and indirect risks to life and property resulting from liquefaction and ground failure during construction. These project features include conforming to guidelines specified by relevant transportation and building agencies. Construction of the project would not temporarily increase the risk of exposing people or structures to potential effects because of slope failure hazards associated with unstable soils, cut-and-fill slopes, or landslides beyond what currently exists in the RSA.	Similar to Shared Passenger Track Alternative A. Although the effects of soil failure would be greater if a large seismic event were to occur, the likelihood of a large earthquake during construction is considered low because of the comparatively short duration of these temporary activities relative to the infrequency of large earthquakes. In addition, temporary slopes would be built with an adequate factor of safety to avoid slope failures, and would be sloped at appropriate angles based on the shear strength parameters of the earth materials at the locations of planned excavations as required by the applicable codes and regulations. The project section would not cross mapped landslide boundaries based on published geologic maps.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-5: Soil Erosion as a Result of Construction	Project features for construction of Shared Passenger Track Alternative A will minimize substantial soil erosion or the loss of topsoil that would adversely affect the viability of the ecosystem or productivity through the adoption of BMPs that protect exposed soil, include soil stabilization through the use of stabilizers, mulches, revegetation, and covering of exposed work areas with biodegradable geotextiles.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would implement BMPs that protect exposed soil and include soil stabilization measures, which would minimize substantial soil erosion and the loss of topsoil.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Similar to Shared Passenger Track Alternative A. The Fullerton HSR Station Option would require greater disturbance of land during construction, but through BMPs and inclusion of soil stabilization measures, effects related to substantial soil erosion and loss of topsoil would be minimized.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-6: Be Located on Geologic Unit or Soil that is Unstable, or that Would Become Unstable as a Result of the Project, and Potentially Result in On- Or Off-Site Landslide, Lateral Spreading, Subsidence, Liquefaction, or Collapse as During Construction	Ground subsidence is a time-dependent process, and the likelihood of ground subsidence during construction is considered low because of the comparatively short duration of construction. Construction or modification of bridges, culverts, grade separations, open trench sections, and near surface water features (where groundwater levels may be locally higher) could require dewatering during construction. The amount of dewatering is likely to be relatively small and done in widely spaced locations. Effects from groundwater dewatering would be temporary, because dewatering would cease once construction has been completed. Controlling the amount of groundwater withdrawal would counteract the potential for subsidence to occur. The project alignment is relatively flat; therefore, the probability for lateral spreading in response to the liquefaction of subsurface soil is low. However, there is a possibility that localized lateral spreading may occur in areas where the project alignment crosses over creeks and river channels. The project will incorporate features that reduce the effects of dewatering by controlling and minimizing groundwater withdrawal and requiring treatment before discharge. Therefore, the project would not increase the potential for subsidence.	Similar to Shared Passenger Track Alternative A. The effect of subsidence and lateral spreading during construction of the 15th Street LMF, would be similar to the effect described for Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would implement the same project features to reduce the effects of dewatering by controlling and minimizing groundwater withdrawal and requiring treatment before discharge.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-7: Difficult Excavation Encountered During Construction	Impacts from difficult excavation encountered for Shared Passenger Track Alternative A during construction will be minimized by project features that require the contractor to account for geotechnical properties during the construction phases of the project and, thus, address risk factors associated with difficult excavation conditions such as hardpan and shallow groundwater.	Similar to Shared Passenger Track Alternative A. With the LMF at 15th Street, difficult excavation encountered during construction would be similar to that described for Shared Passenger Track Alternative A, with an additional area of construction that has the potential to encounter boulder zones. The 15th Street LMF is adjacent to the Los Angeles River, and the presence of cobbles and boulders should be anticipated and construction may require specialized drilling equipment. However, Shared Passenger Track Alternative B would include the same project features to minimize impacts from difficult excavation encountered during construction.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-8: Soil Corrosion and Expansion Hazards as a Result of Construction	There are soils that exhibit expansive or corrosive characteristics within the Shared Passenger Track Alternative A footprint. Project features will minimize direct and indirect risks to life and property from corrosive and expansive soils conforming to guidelines specified by relevant transportation and building codes. Additionally, if it is anticipated that temporary construction structures would be in place long enough, then the governing codes may consider these structures to be permanent and they would be designed accordingly. These codes would provide for construction of permanent structures to withstand geologic constraints.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-9: Availability of Mineral or Energy Resources as a Result of Construction	The project would not cross areas of known geothermal resources and there is no mining of mineral resources in the RSA. Therefore, project construction would not permanently affect the availability of geothermal or mineral resources. There are oil wells within 200 feet of the HSR track centerline. The contractor will inspect wells to assess their status and wells will be dealt with in accordance with CalGEM standards and in coordination with the owner. In the case that relocated wells do not attain the current production rates of the now-abandoned active wells, the Authority will be responsible for compensating the well owner for lost production.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-10: Substantial Risk Caused by Disruption of Subsurface Oil and Gas Resources as a Result of Construction	In the northern and central portions, the RSA traverses three oil fields that have a high probability of containing methane and other subsurface gases. The potential for encountering subsurface gases is considered high where foundation piles would be drilled, including for elevated structures in the oil fields. Project features will minimize direct and indirect risks to life and property from exposure inhalation or explosion of hazardous in-situ gas by conforming with OSHA regulatory requirements for excavations; installing gas monitoring, collecting, and ventilating systems; and using explosion-proof equipment.	Similar to as Shared Passenger Track Alternative A. The nearest oil field to the 15th Street LMF is the Bandini oil field, about 1 mile southwest. At this distance, the potential for hazardous gases is low.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-11: Geologic Units Sensitive for Paleontological Resources Disturbed During Construction	Construction of Shared Passenger Track Alternative A would involve ground disturbance in geologic units identified as having high paleontological sensitivity. However, effects would occur on a limited basis because the project includes effective measures to engage a PRS for direct monitoring during construction, execution of a PRMMP, and provisions to halt construction if paleontological resources are found. These measures will avoid or reduce the permanent potential loss of information in a manner consistent with current accepted standards for paleontological resources.	Similar to Shared Passenger Track Alternative A. Relative to the 26th Street LMF, ground-disturbing work at the 15th Street LMF may result in greater impacts on unique paleontological resources because the depth of ground disturbance would be greater at this location than at the 26th Street LMF location.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Hazardous Materials and Wastes							
Impact HMW-1: Transport, Use, Storage, and Disposal of Hazardous Materials and Hazardous Wastes	Construction would temporarily increase the regional transport, use, storage, and disposal of hazardous materials, including diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals. Project features (including preparation of a soil management plan, CMP, and spill prevention plan; compliance with applicable state and federal permits and regulations; and an Environmental Management System) will avoid and minimize impacts on the public and environment as part of the project.	More significant than Shared Passenger Track Alternative A because of the potential for higher contaminated soil volumes. The likelihood of encountering known contaminated soils is higher for Shared Passenger Track Alternative B, so the volume of contaminated soils that may require disposal at hazardous waste or designated waste facilities would likely be higher under Shared Passenger Track Alternative B. However, Shared Passenger Track Alternative A involves more soil disturbance on the Exide property, which increases the potential severity of contaminated soil likely encountered.	More significant impacts than the Shared Passenger Track Alternatives within the station area. The construction area for the Fullerton HSR Station Option is larger and includes more extensive excavations than those required for implementation of the Shared Passenger Track Alternatives; therefore, there would be a greater potential to encounter and handle affected soils.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HMW-2: Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	The accidental release of hazardous materials could present health and safety risks to the public, construction workers, and the environment. Project features are included to minimize effects from inadvertent spills through compliance with regulations for the transport of hazardous materials; compliance with SWRCB Construction General Permit conditions; and establishment of an Environmental Management System and SPCC plan prior to construction. The severity of impacts associated with upset and accident conditions involving the release of hazardous materials would depend on the volume and type of material released, would be short term, and would correspond to the construction period.	Similar to Shared Passenger Track Alternative A. Construction of the 15th Street LMF would have a minor to moderate likelihood of encountering hazardous waste–affected soils at the LMF site, compared to a major likelihood at the 26th LMF site.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Construction of the HSR station option elements would occur within a larger area and there would be a greater potential to encounter PEC sites during excavation.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HMW-3: Inadvertent Disturbance of Hazardous Materials and Wastes	During construction, ground-disturbing activities including, but not limited to, trenching, dewatering activities, demolition of roadways or other structures, and track modifications, could encounter or disturb previously undocumented soil or groundwater contamination. Compliance with regulations that control the transport, use, storage, and disposal of hazardous materials will limit the potential for an inadvertent release of hazardous materials during construction, and the Authority will develop a CMP that includes provisions for responding to the disturbance of undocumented contamination. Project design features also include measures that are intended to ensure the safe dismantling and removal of roadway components or other structures and debris and prevents the accidental release of lead and asbestos, thereby protecting workers and the public from potential exposure to hazardous materials during demolition.	Similar to Shared Passenger Track Alternative A. The amount of ground disturbance would be greater for Shared Passenger Track Alternative B to build the 15th Street LMF, so there would be a greater likelihood to encounter and inadvertently disturb undocumented contaminated media.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. The amount of ground disturbance would be greater to build the HSR station option elements, so there would be a greater likelihood to encounter and inadvertently disturb undocumented contaminated media.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HMW-4: Construction within or Near Sites of Potential Environmental Concern or Cortese List Sites	There are 305 PEC sites in the immediate vicinity of the project, including 74 sites categorized as Category A, 210 sites as category B (high and medium priority, respectively) and 21 as category C within 150 feet of the project footprint. Although the project could result in the release of hazardous materials that could affect public health and the environment, project features (including Phase I and II ESAs, work and vapor barriers, CMP, SPCC plan, and Environmental Management System) will address most effects from the release of hazardous materials during construction on or near PEC sites. Nonetheless, because of the extensive nature of potential impacts associated with the two Superfund sites (one listed and one proposed to be listed), because of incomplete characterization and remediation and because completion of remediation activities at each site is currently unknown, significant exposure to contaminants associated with these sites could occur during construction.	Similar to Shared Passenger Track Alternative A. The likelihood of encountering hazardous materials through construction of the 15th Street LMF is minor to moderate, compared to the major likelihood of such outcomes through construction of the 26th Street LMF.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Greater impacts than the Shared Passenger Track Alternatives within the station area. The construction area for the Fullerton HSR Station Option is larger and includes more extensive excavations than those required for implementation of the Shared Passenger Track Alternatives; therefore, there would be greater potential to encounter hazardous materials during construction.	Adverse effect (all alternatives and Fullerton HSR station option) No adverse effect (Norwalk/Santa Fe Springs HSR Station Option)	HMW-MM#2	Shared Passenger Track Alternative A, Shared Passenger Track Alternative B, Fullerton Station Option: Adverse effect Norwalk/Santa Fe Springs Station Option: N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HMW-5: Increased Exposure to Lead-Based Paint and Asbestos as a Result of Roadway and Building Demolition	Demolition could result in asbestos or lead exposure, which presents a potential safety risk to construction workers, the public, and the environment. Effects related to roadway or other structure demolition would be short term and would occur during the demolition phase of project construction. Project features would address effects from asbestos and lead exposure through the development of a demolition plan with specific asbestos and lead abatement procedures prior to construction activities and procedures for the safe transport, containment, storage, and disposal of hazardous materials.	Similar to Shared Passenger Track Alternative A. Construction of the 15th Street LMF would require demolition of several additional buildings, which would increase the possibility of exposure to LBPs and ACMs.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR platform, facilities, and parking would be within a larger area than the area that would be modified under the Shared Passenger Track Alternatives and would require demolition of several additional buildings, which would increase the possibility of exposure to LBPs and ACMs.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HMW-6: Handling of Hazardous Materials, Substances, or Waste within 0.25 Mile of a School	Forty educational facilities are within the RSA. Hazardous materials would be used or stored within 0.25 mile of a school. Hazardous wastes such as ACM and LBP could also be generated during demolition of existing structures, roadways, or track modifications. Project features would include measures to address effects from asbestos and lead exposure through the development of a demolition plan with specific asbestos and lead abatement procedures prior to construction activities; procedures for the safe transport, containment, storage, and disposal of hazardous materials; and preparation of Phase I and II ESAs and a CMP.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	HMW-MM#1	No adverse effect
Impact HMW-7: Risks During Construction on or Near Landfills and Oil and Gas Wells	Two closed landfills are within the RSA that have also been identified as PEC sites: #227 in Vernon (medium) and #105 in Norwalk (medium). Neither site is within the project footprint and the risk of potential exposure to contamination from these landfill sites is considered very low. Project features, such as methane protection measures, CMP, SPCC plan, and compliance with applicable state and federal regulations, will be included and prevent or minimize the likelihood of a hazardous materials release and prepare workers in the event that a release does occur.	Similar to Shared Passenger Track Alternative A. Construction of the 15th Street LMF would increase the amount of ground disturbance and excavation, which would increase the potential for disturbance of hazardous materials associated with unknown or undocumented landfills and oil and gas wells	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR Station Option platform, facilities, and parking would be within a larger area than the area modified under the Shared Passenger Track Alternatives, and would increase the potential for disturbance of hazardous materials associated with unknown or undocumented landfills and oil and gas wells.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Safety and Security							
Impact SS-1: Increased Response Times for Fire, Rescue, and Emergency Services from Temporary Road Closures	Construction would result in temporary, short-term impacts on traffic flow, circulation, and access during the construction phase, but these impacts are expected to be intermittent and geographically dispersed based on phasing and segment-specific activities. Emergency vehicle access for police and fire protection services would be maintained at all times, and closures would be phased to prevent concurrent closures for limiting emergency access. Project design features including a CSTMP and construction transportation plan will effectively minimize impacts of project construction on emergency response times.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would have an additional roadway modification at the 15th St LMF site, where a small portion of 16th St would be closed. As with Shared Passenger Track Alternative A, a detailed construction transportation plan will be developed to minimize the impacts in combination with detours to maintain emergency vehicle access and reduce emergency response time delays in accordance with the CSTMP.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-2: Increased Response Times for Fire, Rescue, and Emergency Services from Permanent Road Closures and Permanent Roadway Changes	Permanent roadway modifications would not result in increased response times for emergency responders. Permanent roadway modifications include modifications to existing grade separations, roadway realignments, and roadway closures. Overall, the existing roadway network would be maintained, lane configurations would be maintained, and the roadway closures would occur within areas that would become part of BNSF yards. Replacement of at-grade crossings by road-rail grade separations would improve emergency response travel times through those intersections.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-3: Temporary Exposure to Construction Site Hazards	Workers would be temporarily exposed to construction site hazards. Project design features will require compliance with applicable federal, state, and local regulations and documentation of how safety and security measures and construction safety and health plans would manage potential exposure of construction site hazards and effectively minimize impacts on workers and visitors. The effect for construction on or near the Orange County North Basin site and the Exide site in Vernon would be potentially adverse because construction on or near the Orange County North Basin site and the Exide site in Vernon could potentially cause a significant hazard to the public or the environment from a release of hazardous materials. The effect would be potentially adverse and would therefore require mitigation.	Similar to Shared Passenger Track Alternative A with the exception of potential impacts related to the Exide site. Potential impacts related to the Exide site, a known contamination site, that would occur with Shared Passenger Track Alternative A be reduced with Shared Passenger Track Alternative B, resulting in a decrease in potential exposure to construction site hazards for Shared Passenger Track Alternative B.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Greater impacts than the Shared Passenger Track Alternatives within the station area. The construction area for the Fullerton HSR Station Option is larger and includes more extensive excavations than those required for implementation of the Shared Passenger Track Alternatives; therefore, there would be greater potential to encounter hazardous materials during construction.	Adverse effect (all alternatives and HSR station options)	HMW-MM#2	Shared Passenger Track Alternative A, Shared Passenger Track Alternative B, Fullerton Station Option: Adverse effect Norwalk/Santa Fe Springs Station Option: No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SS-4: Temporary Exposure to Criminal Activity at Construction Sites	Criminal activity at and around construction sites could include theft of equipment and materials, or vandalism, acts that would not be substantially different from what occurs at other large sites. Security for and access to facilities during construction would be for authorized persons only, deterring criminal activity at construction sites. The SSMP that will be implemented by the contractor prior to commencement of construction will include security lighting, fencing, and monitoring measures to provide security to construction sites and protect the security of construction workers and equipment.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-5: Accidents Associated with Construction-Related Detours and Traffic Hazards	Road closures and detours from construction could distract automobile drivers, pedestrians, or bicyclists traveling in the area. Distraction or unfamiliarity with the detour or new route created because of these temporary road closures could affect automobile, bicyclist, or pedestrian behaviors, and increase the potential for traffic accidents. Project design features would manage construction vehicle traffic and construction-related temporary road closures and detours and would effectively minimize exposure to traffic hazards.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-6: Accidents Associated with Permanent Detours and Traffic Hazards	Permanent roadway modifications would result in permanent routes in some locations but, overall, the existing roadway network would be maintained as it currently exists. Any permanent modifications would be designed to comply with all applicable design standards so that no traffic hazards would be introduced.	Same as Shared Passenger Track Alternative A..	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-7: Temporary Exposure to Landfill Hazards	Hazards related to potential migration of hazardous gases from construction will be reduced or eliminated with project design features requiring hazard assessment of construction work within 1,000 feet of landfills would effectively minimize potential exposure to landfill hazards, including methane, from project construction.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SS-8: Temporary Exposure to Oil and Gas Well Hazards	Construction workers could face risks from working near oil wells and potential exposure to occupational hazards from oil well releases. Project design standards requiring identification and relocation of active and abandoned oil and gas wells within 200 feet of the HSR track prior to commencement of construction would effectively minimize potential exposure to oil and gas well hazards during project construction.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-9: Temporary Exposure to Valley Fever	Construction activities could cause airborne dust containing the fungus that causes Valley fever to be inhaled by construction workers and visitors to the site. The public could be exposed to the fungus from off-site transport of fill material on public roads and from fugitive dust outside the boundaries of the construction sites. Effective coordination, education, and prevention measures as part of the project design features would minimize temporary impacts on construction workers and the public related to exposure to Valley fever.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-10: Interference with Aviation Safety	One public-service airport, 33 private heliports, and 8 public heliports are within 2 miles of the project. A Metropolitan Water District heliport on Almeda St in Los Angeles County is 300 feet from the project. Fullerton Municipal Airport in Fullerton in Orange County is less than 0.1 mile from the existing Fullerton Metrolink/Amtrak Station. Shared Passenger Track Alternative A would not encroach on areas defined in the airport land use plan that have height restrictions for Fullerton Municipal Airport. Project features would require the Authority to submit designs and information to FAA to ensure that permanent HSR features within and adjacent to the boundary of these facilities do not conflict with 14 CFR Part 77.9(b) or other applicable FAA regulations. The project would be incompatible with the Fullerton Municipal Airport RPZ because of new rail construction and operation within the RPZ. Construction within the RPZ would be subject to review during FAA review of the project section.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Socioeconomics and Communities							
Impact SO-1: Disruption or Division of Existing Communities from Construction	Shared Passenger Track Alternative A would cause temporary disruption of communities through secondary effects related to traffic, noise and vibration, dust and ambient air quality, recreational resources, utility interruptions, and aesthetic changes during construction activities. These impacts would be temporary and would not result in the physical division of an existing community. Property acquisitions for project construction would result in permanent removal of 3 residential units and 256 businesses, but these would not physically divide communities or isolate one community from another. Grade separations would permanently improve connectivity across the rail corridor and improve bicycle and pedestrian access and safety.	Similar to Shared Passenger Track Alternative A. Acquisitions associated with the LMF at 15th Street would displace an additional 18 businesses when compared to Shared Passenger Track Alternative A (a total of 274 businesses). However, based on the locations of the displaced businesses in an industrial area adjacent to an existing rail corridor, these property acquisitions would not physically divide communities or isolate one community from another.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Norwalk/Santa Fe Springs HSR station platform, facilities, and parking would result in slightly higher emissions compared to the Shared Passenger Track Alternatives.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR station platform, facilities, and parking would displace nine additional businesses and would also result in slightly higher emissions compared to the Shared Passenger Track Alternatives.	Adverse effect (all alternatives and HSR station options)	SO-MM#1, SO-MM#2	No adverse effect
Impact SO-2: Residential Displacements and Relocations	The project would displace three single-family residential units in the West Whittier–Los Nietos CDP. There is an anticipated surplus of replacement sites for the displaced residents and there would be relocation assistance provided. The project would not require the construction of replacement housing elsewhere because there are sufficient residential replacement properties.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-3: Business Displacements and Relocations	Construction of the project would result in displacement of 256 businesses with an estimated 2,948 employees. The greatest number of business and employee displacements would occur in the Commerce and Vernon areas, where 115 businesses with an estimated 1,101 employees and 37 businesses with an estimated 911 employees would be displaced in each city, respectively. There is a surplus of suitable replacement sites in the cities with business displacements, except for Commerce and Vernon.	Similar to Shared Passenger Track Alternative A. Construction of the project would result in displacement of 274 businesses with an estimated 3,781 employees. The greatest number of business and employee displacements would still occur in Commerce and Vernon. There is a surplus of suitable replacement sites in the cities with business displacements, except for Commerce and Vernon.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR station platform, facilities, and parking would displace nine additional businesses.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SO-4: Physical Deterioration	Temporary construction impacts from increases in dust, noise, traffic congestion, and access disruptions are not anticipated to result in the physical deterioration of communities in the area. Physical deterioration would not occur, because suitable relocation sites have been identified to accommodate the relocation of residential, commercial, and industrial businesses within most cities and displacements would not result in considerable residential migration out of a community or introduce changes to the business environment.	Similar to Shared Passenger Track Alternative A. Eighteen additional business relocations in Los Angeles are anticipated for construction of the 15th St LMF. As described above, suitable relocation sites have been identified to accommodate the relocation of commercial and industrial businesses within Los Angeles and displacements would not result in considerable residential migration out of a community or introduce changes to the business environment.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR station platform, facilities, and parking would displace nine additional businesses. Although several businesses would be relocated in this area, they represent a small proportion of the much larger industrial area spanning Fullerton and would not substantially disrupt the larger existing district.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-5: Job Creation During Construction	Project construction would lead to a temporary increase in employment for construction and create an additional 31,950 total annual job-years, with 15,300 direct and 16,650 indirect/induced annual job-years in construction. Given the number of unemployed workers in the RSA, there would be an ample supply of local residents to fill many of the new jobs, which would reduce the number of jobs needing to be filled by new residents and the resulting population, housing, and public service effects.	Same as Shared Passenger Track Alternative A.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Norwalk/Santa Fe Springs HSR Station Option would create an additional estimated 840 total annual job-years, with 400 direct and 440 indirect/induced annual job-years in construction.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR Station Option would create an additional estimated 1,740 total annual job-years, with 820 direct and 920 indirect/induced annual job-years in construction.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-6: Changes in School District Funding	The project could displace 0.018 percent of the student population (approximately two students) from the school districts in West Whittier–Los Nietos CDP. The project could result in school district revenue losses of $34,256 in West Whittier–Los Nietos CDP. Revenue losses represent 0.02 percent of total revenue within the affected school district.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area	Same impacts as the Shared Passenger Track Alternatives within the station area	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-7: Property Value Changes and Property Tax Losses	The project would result in approximately $4.7 million in losses in property taxes in the project area. Construction and maintenance of the project have the potential to affect property values in the RSA. Longer-term property value changes, positive or negative, are more difficult to predict in the future because of factors that affect property values, including diverse consumer preferences and fluctuation in the economy.	Similar to Shared Passenger Track Alternative A. The project would result in approximately $6.3 million in losses in property taxes in the project area. Construction, operations, and maintenance of the project have the potential to affect property values in the RSA. Longer-term property value changes, positive or negative, are more difficult to predict in the future because of factors that affect property values, including diverse consumer preferences and fluctuation in the economy.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to those for the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR station platform, facilities, and parking would displace nine additional businesses. Inclusion of the Fullerton HSR Station Option would result in additional losses of approximately $48,639 in property taxes in Fullerton.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SO-8: County and City Sales Tax Effects	A temporary increase in sales tax revenues is expected for Los Angeles County and the communities in the region because of project construction. Increases in sales tax revenues are estimated at $1.5 million combined for Los Angeles and Orange Counties. Sales and tax use losses from business displacements would affect both county and city tax revenues. The project could result in a county sales tax loss of $2,320,003 for Los Angeles and Orange Counties. The project could result in a city sales tax loss of $2,010,932 total across cities with business displacements.	Similar to Shared Passenger Track Alternative A. The additional business relocations required for the 15th St LMF would result in an additional loss of sales and use tax of $108,947 in the city of Los Angeles.	Similar impacts to those for the Shared Passenger Track Alternatives within the station area. Construction of the Norwalk/Santa Fe Springs HSR Station Option would result in additional spending on construction equipment and materials to build the station elements. There would be a slightly larger temporary increase in sales tax revenues in Los Angeles County.	Similar impacts to those for the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR Station Option would result in additional spending on construction equipment and materials to build the station elements. There would be a slightly larger temporary increase in sales tax revenues in Orange County. The nine additional business relocations required in Fullerton would result in an additional loss of sales and use tax in the amount of $66,865 in Fullerton.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-9: Impacts on Children's Health and Safety from Construction	Substantial risks to children's health and safety would be reduced through the incorporation of project features designed to address effects related to transportation, air quality, noise, hazardous materials and waste, and safety and implementation of mitigation measures established by other sections of this Draft EIR/EIS.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Station Planning, Land Use, and Development							
Impact LU-1: Temporary Direct Impacts on Land Use Patterns and Incompatibility as Result of Construction Activities	Construction would temporarily use land immediately adjacent to the rail right-of-way for construction staging, laydown, and fabrication areas, resulting in temporary use of existing land. Project features include requiring that the Authority-designated contractor restore affected lands to as close to their preconstruction condition as possible.	Similar to Shared Passenger Track Alternative A. Land use patterns around the 15th St LMF are mostly similar to those of the 26th St LMF. Therefore, with the LMF at 15th Street, land use patterns and incompatibility during construction would be generally similar to those of Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Construction of the Fullerton HSR Station Option would be within a larger area than would be modified under the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact LU-2: Temporary Indirect Impacts on Land Use Patterns and Incompatibility as Result of Construction Activities	Land use incompatibility from construction could occur in urban areas within 0.5 mile of the project section. Temporary indirect impacts on land use patterns, including hardship on adjacent businesses and residences from increases in noise, dust, or changes in traffic patterns, would be addressed through project features.	Similar to Shared Passenger Track Alternative A. Land use patterns around the 15th St LMF are mostly similar to those of the 26th St LMF. Therefore, with the LMF at 15th Street, land use patterns and incompatibility during construction would be generally similar to those of Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact LU-3: Permanent Direct or Indirect Impacts on Land Use Patterns and Incompatibility as Result of Roadway Closures and Modifications	Construction would not result in altered land use patterns or adjacent incompatible land uses as a result of roadway closures or modifications.	Similar to Shared Passenger Track Alternative A. The LMF would be in an already developed area. A small segment of 16th St would be permanently closed because the land would be incorporated into the 15th St LMF; its closure would not change land use patterns or be incompatible with land use development patterns.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact LU-4: Permanent Alteration of Land Use Patterns from Land Use Conversion	Shared Passenger Track Alternative A would entail permanent conversion of 240.17 acres of existing nontransportation land uses to transportation-related use. The project would not result in permanent impacts that would alter existing and planned land uses and would not convert land use to transportation uses adjacent to incompatible uses.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would entail permanent conversion of 278.85 acres of existing nontransportation land uses to transportation-related use. The project would not result in permanent impacts that would alter existing and planned land uses and would not convert land use to transportation uses adjacent to incompatible uses.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would entail an additional 4.19 acres of land conversion to transportation use.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Agricultural Farmland and Forest Land							
No impacts on agricultural farmland or forest land would occur from the project.	No impact.	No impact.	No impact.	No impact.	No impact. The project study area does not contain any agricultural farmland or forest land.	N/A	N/A
Parks, Recreation, and Open Space							
Impact PR-1: Temporary Construction Impacts from Noise and Vibration on Recreational Resources	Construction activities associated with Shared Passenger Track Alternative A would result in noise and vibration impacts at various recreational resources; however, the majority are primarily used for active recreation uses. Resources that qualify as sensitive receivers would not experience noise levels that exceed FRA criteria. Therefore, construction would not result in noise and vibration impacts.	Similar to Shared Passenger Track Alternative A. If the planned Los Angeles River Trail is built prior to the project, short-term noise and vibration impacts from construction activities have the potential to indirectly affect recreational activity and user experience for approximately 0.7 mile along the 15th St LMF. However, construction noise impacts that would interfere with or diminish use of the resource are not anticipated based on FRA criteria.	Similar to Shared Passenger Track Alternatives within station area; Construction-generated noise and vibration would be perceptible. Noise levels would be audible at a higher level at this resource; however, because of the distance from the station area and because no noise-sensitive receivers are present at John Zimmerman Park, construction-period noise and vibration impacts that would interfere with or diminish use of the resource are not anticipated based on FRA criteria.	Similar to Shared Passenger Track Alternatives within station area. Construction of the HSR platform, facilities, and parking would occur in a larger area than would be modified under the Shared Passenger Track Alternatives, but would be closer to the nearest resources, which include Union Pacific Park, Union Pacific Trail Phase II, and the Union Pacific Railroad Right-of-Way Multipurpose Path. However, construction noise and vibration impacts with the potential to interfere with or diminish use of the resources are not anticipated based on FRA criteria.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact PR-2: Temporary Construction Impacts from Fugitive Dust on Recreational Resources	Construction could affect 20 resources with fugitive dust. Project features would include the contractor implementing a fugitive dust control plan prior to construction to control dust emissions from equipment, materials, and construction activities, which would minimize the amount of fugitive dust that could affect nearby users of recreational resources within the project section.	Similar to Shared Passenger Track Alternative A. Construction of the 15th St LMF would require extensive excavation and grading across the site, as well as a below-grade segment for the yard lead tracks, resulting in higher quantities of fugitive dust compared to Shared Passenger Track Alternative A. Fugitive dust would be minimized through a fugitive dust control plan.	Similar to Shared Passenger Track Alternatives within the station area. Construction of the HSR platform, facilities, and parking would occur in the same area that would be modified under the Shared Passenger Track Alternatives and would be within the same distance of the nearest resource that would be affected, which is John Zimmerman Park. Incorporation of project features would minimize the amount of fugitive dust.	Similar to Shared Passenger Track Alternatives within the station area. Construction of the HSR platform, facilities, and parking would occur in a larger area than would be modified under the Shared Passenger Track Alternatives, but would be closer to the nearest resources, which are Union Pacific Park, Union Pacific Trail Phase II, and the Union Pacific Railroad Right-of-Way Multipurpose Path. Incorporation of project features would minimize the amount of fugitive dust.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PR-3: Temporary Construction Impacts from Visual Changes on Recreational Resources	Depending on location, viewers at 19 resources could be aware of staging areas, worker parking, and equipment and materials storage areas. The Authority has committed to incorporating design features for aesthetics and visual quality that reduce visual impacts from construction experienced by users of the current and planned trails, including compliance with the Authority's aesthetics guidelines and aesthetic review process.	Similar to Shared Passenger Track Alternative A. If the Los Angeles River Trail is implemented prior to construction of Shared Passenger Track Alternative B, a longer portion of the Los Angeles River Trail would be visible to construction activity associated with the 15th St LMF, resulting in additional temporary visual changes. Incorporating design features for aesthetics and visual quality would reduce visual impacts and construction would not create a perceived barrier to use.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as those for the Shared Passenger Track Alternatives within the station area. With inclusion of the Fullerton HSR Station Option, additional short-term visual impacts may occur during construction on Union Pacific Park, Union Pacific Trail Phase II, and the Union Pacific Railroad Right-of-Way Multipurpose Path, which are closer to the station. Incorporating design features for aesthetics and visual quality would reduce visual impacts and construction would not create a perceived barrier to use.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PR-4: Project Construction Would Diminish Access to or Use of Recreational Resources	Access to eight resources would be limited during construction because of construction-related activity, temporary construction easements and placement of equipment and storage areas. Construction activities associated with the project could temporarily diminish access to the foregoing paths or create a barrier for access. Project features (including design features for aesthetics and visual quality and compliance with Authority guidelines and review process) and implementation of mitigation established in this Draft EIR/EIS would ensure construction does not result in diminished access.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	PR-MM#1, PR-MM#2	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact PR-5: Permanent Easements or Acquisitions of Property from Parks and Recreation Due to Construction	Construction of Shared Passenger Track Alternative A would occur directly adjacent to and within the resource boundaries of the Union Pacific Trail Phase II. Approximately 0.18 acre of the resource would be permanently acquired for implementation of the project.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	PR-MM#4	No adverse effect
Aesthetics and Visual Quality							
Impact AVQ-1: Visual Quality During Construction	Even with incorporation of project features to minimize the visual effects of construction and implementation of mitigation established by this Draft EIR/EIS, construction would affect the visual character of the four historic bridges in the Downtown Los Angeles Landscape Unit and have substantial adverse effects on the scenic values of the bridges as important visual resources. Effects on the visual quality at locations in all of the landscape units, other than those in the immediate vicinities of the four historic bridges, would not be substantial.	Similar to Shared Passenger Track Alternative A. The alternative would not require removal of Federated Metals Corporation. However, there would still be a change to the visual landscape from construction of the 15th St LMF.	Same as the Shared Passenger Track Alternatives in the station area.	Similar impacts as the Shared Passenger Track Alternatives in the station area.	Downtown Los Angeles Landscape Unit, Gateway Cities Landscape Unit, and Fullerton/Anaheim Landscape Unit: Adverse effect (all alternatives and HSR station options)	AVQ-MM#1	Shared Passenger Track Alternative A and Shared Passenger Track Alternative B: Downtown Los Angeles Landscape Unit: Adverse effect Gateway Cities Landscape Unit and Fullerton/Anaheim Landscape Unit: No adverse effect Norwalk/Santa Fe Springs HSR Station Option: Downtown Los Angeles Landscape Unit and Fullerton/ Anaheim Landscape Unit: N/A Gateway Cities Landscape Unit: No adverse effect Fullerton HSR Station Option: Downtown Los Angeles Landscape Unit and Gateway Cities Landscape Unit: N/A Fullerton/Anaheim Landscape Unit: No adverse effect
Impact AVQ-2: Nighttime Lighting During Construction	Lighting for construction sites in the landscape units would create a new source of substantial light for up to 5 years, resulting in effects and reducing visual quality for the duration of construction. Effects of the project would be addressed through project features to minimize the visual effects of nighttime construction lighting and implementation of mitigation established by this Draft EIR/EIS.	Similar to Shared Passenger Track Alternative A. Adverse effects at the Olympic Boulevard Bridge would be slightly more intense than those associated with Shared Passenger Track Alternative A because of the larger construction area associated with the 15th St LMF.	Same as the Shared Passenger Track Alternatives in the station area.	Similar impacts as the Shared Passenger Track Alternatives in the station area. The Fullerton HSR Station Option is in closer proximity to cultural visual resources that have the potential to be affected by nighttime construction activities that would be slightly more intense with inclusion of the HSR station option. There are also residential land uses nearby.	Adverse effect (all alternatives and HSR station options)	AVQ-MM#2	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Cultural Resources							
Impact CUL-1: Disturbance of Known Archaeological Sites During Construction	Construction would result in 5 archaeological resources being affected: ▪ P-19-000182/CA-LAN-182 ▪ P-19-002770/CA-LAN-2770 ▪ P-19-003073/CA-LAN-3073 ▪ P-19-003683/CA-LAN-3683 ▪ P-30-120020	Construction would result in 6 archaeological resources being affected: All archaeological sites in Shared Passenger Track Alternative A plus: ▪ P-19-002121/CA-LAN-2121	Same as Shared Passenger Track Alternatives within the station area where there are no known archaeological resources in the vicinity.	Construction of the Fullerton HSR Station Option would result in two additional archaeological resources being affected: ▪ P-30-001712/CA-ORA-1712 ▪ P-30-001724/CA-ORA-1724	Adverse effect (all alternatives and HSR station options)	CUL-MM#1, CUL-MM#2, CUL-MM#3	No adverse effect
Impact CUL-2: Permanent Disturbance of Unknown Archaeological Sites During Construction	Construction may result in the discovery of previously undiscovered archaeological resources.	Similar to Shared Passenger Track Alternative A. The larger construction area may result in the discovery of additional previously undiscovered archaeological resources.	Same as Shared Passenger Track Alternatives within the station area.	Similar to Shared Passenger Track Alternatives within the station area. The larger construction area may result in the discovery of additional previously undiscovered archaeological resources.	Adverse effect (all alternatives and HSR station options)	CUL-MM#1, CUL-MM#2, CUL-MM#3	No adverse effect
Impact CUL-3: Permanent Demolition, Destruction, Relocation, or Alteration of Historic Architectural Resources or Setting During Construction	Construction would result in an adverse effect on the First, Fourth, and Seventh Street Bridges and the Olympic Boulevard Bridge. These properties would undergo permanent alteration.	Similar to Shared Passenger Track Alternative A. Construction would result in additional impacts on one historic built resource and different effects on three of the historic built resources that are also affected by Shared Passenger Track Alternative A.	Same as Shared Passenger Track Alternatives within the station area where there are no historic properties in the vicinity.	Same as those of the Shared Passenger Track Alternatives in the station area. Construction of the HSR platform, facilities, and parking would be on a larger area than would be modified under the Shared Passenger Track Alternatives, but the HSR station elements are all at sufficient distances from the historic properties, and construction of those additional elements would not add any impacts.	Adverse effect (all alternatives)	CUL-MM#12	Shared Passenger Track Alternative A and Shared Passenger Track Alternative B: Adverse effect Norwalk/Santa Fe Springs HSR Station Option: No effect Fullerton HSR Station Option: No adverse effect
Impact CUL-4: Potential for Visual, Noise, or Vibration Effects on a Historic Building or Structure During Construction	Construction would result in no adverse effect for visual, noise, or vibration impacts.	Same as Shared Passenger Track Alternative A	Same as Shared Passenger Track Alternatives within the station area where there are no historic properties in the vicinity.	Same as Shared Passenger Track Alternatives within the station area	No adverse effect (all alternatives and HSR station options)	N/A	Shared Passenger Track Alternative A, Shared Passenger Track Alternative B, and Fullerton HSR Station Option: No adverse effect Norwalk/Santa Fe Springs HSR Station Option: No effect
Impact CUL-5: Disturbance of Known Tribal Cultural Resources During Construction Defined by Public Resources Code 21074	Construction would not result in any effects on known tribal cultural resources.	Same as Shared Passenger Track Alternative A	Same as Shared Passenger Track Alternatives within the station area where there are no tribal cultural resources in the vicinity.	Same as Shared Passenger Track Alternatives within the station area	No effect (all alternatives and HSR station options)	N/A	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Regional Growth							
Impact RG-1: Impact on Regional Growth from Short-Term Employment Impacts	Project construction has the potential to affect regional growth through materials procurement and the demand for labor that would lead to a temporary increase in employment for construction and jobs that support construction activities and workers. Because there is an existing sizable pool of construction workers within a reasonable commuting distance in and outside the RSA, the likelihood of a substantial number of construction workers competing for traditional owner-occupied or rental housing units for these short-term related jobs during construction years for the project is projected to be low, and impacts on regional growth from short-term employment are not anticipated.	Same as Shared Passenger Track Alternative A	Similar to the Shared Passenger Track Alternatives. There would be an additional increase in job-years, but the permanent relocation of a substantial number of construction workers from outside the RSA is unlikely.	Similar to the Shared Passenger Track Alternatives. There would be an additional increase in job-years, but the permanent relocation of a substantial number of construction workers from outside the RSA is unlikely.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

ACM = asbestos-containing materials; AFY = acre-feet per year; AQMP = air quality management plan; ARTIC = Anaheim Regional Transportation Intermodal Center; Authority = California High-Speed Rail Authority; BMP = best management practice; CAAQS = California Ambient Air Quality Standards; CalGEM = California Geologic Energy Management Division; Caltrans = California Department of Transportation; CDP = Census-Designated Place; CFR = Code of Federal Regulations; CGP = Construction General Permit; CGS = California Geological Survey; CMP = Construction Management Plan; CO_2e = carbon dioxide equivalent; CPUC = California Public Utilities Commission; CSTMP = Construction Safety Transportation Management Plan; CTP = construction transportation plan; dBA = A-weighted decibels; DPM = diesel particulate matter; EIR/EIS = environmental impact report/environmental impact statement; EMF = electromagnetic field; EMI = electromagnetic interference; ESA = environmental site assessment; FAA = Federal Aviation Administration; FCC = Federal Communications Commission; FRA = Federal Railroad Administration; GHG = greenhouse gas; HRA = health risk assessment; HSR = high-speed rail; LBP = lead-based paint; LMF = light maintenance facility; LOS = level of service; LOSSAN Corridor = Los Angeles – San Diego – San Luis Obispo Rail Corridor; MMBtu = million British thermal units; MT = metric tons; N/A = not applicable; NAAQS = National Ambient Air Quality Standards; NEPA = National Environmental Policy Act; NO_X = nitrogen oxides; OSHA = Occupational Safety and Health Administration; PEC = potential environmental concern; PHT = Puente Hills blind thrust; PM_{10} = particulate matter smaller than or equal to 10 micrometers in diameter; $PM_{2.5}$ = particulate matter smaller than or equal to 2.5 micrometers in diameter; PRMMP = Paleontological Resources Monitoring and Mitigation Plan; project section = Los Angeles to Anaheim Project Section; PRS = paleontological resources specialist; RSA = resource study area; RPZ = Runway Protection Zone; RWQCB = Regional Water Quality Control Board; SCAB = South Coast Air Basin; SCAQMD = South Coast Air Quality Management District; SPCC = spill prevention, control, and countermeasure, SWRCB = State Water Resources Control Board; SSMP = Safety and Security Management Plan; SWMTP = stormwater management and treatment plan; SWPPP = stormwater pollution prevention plan; VdB = vibration decibels; ZE = zero-emission

Table S-6 Premitigation and Post-Mitigation Comparison of Operational Impacts by Alternative and Intermediate Station Option

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Transportation							
Impact TR-9: Continuous Permanent Impacts on Vehicle Miles Traveled During Operation	The project would result in an annual statewide reduction of 1,867,286,692 vehicle miles traveled, because it would shift a portion of vehicular traffic to rail use.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in an annual statewide reduction of 438,866,576 vehicle miles traveled.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would result in an annual statewide reduction of 475,056,073 vehicle miles traveled.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact TR-10: Continuous Permanent Impacts on Signalized Intersections During Operations	The project would result in increases in travel times, delays, and inconvenience to the traveling public at 20 signalized intersections.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in increases in travel times, delays, and inconvenience to the traveling public at an additional 11 signalized intersections, for a total of 31.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would result in increases in travel times, delays, and inconvenience to the traveling public at an additional 3 signalized intersections, for a total of 23.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#1, TRAN-MM#2, TRAN-MM#4	No adverse effect
Impact TR-11: Continuous Permanent Impacts on Unsignalized Intersections During Operations	The project would result in increases in travel times, delays, and inconvenience to the traveling public at two unsignalized intersections.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in increases in travel times, delays, and inconvenience to the traveling public at eight unsignalized intersections.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would result in impacts at the same two unsignalized intersections as the Shared Passenger Track Alternatives; however, the delays during the AM peak period would be slightly greater.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#3	No adverse effect
Impact TR-12: Continuous Permanent Impacts on Roadway Segments During Operations	The project will lead to higher vehicular density and volume-to-capacity ratios along 20 roadway segments because of traffic shift and rerouting.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in higher volume-to-capacity ratios along 26 roadway segments because of traffic shift and rerouting.	Similar to the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would result in higher volume-to-capacity ratios along 21 roadway segments because of traffic shift and rerouting.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#5	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact TR-13: Continuous Permanent Impacts on Pedestrian, Bicycle, and Transit Facilities During Operations	Operations would introduce nonmotorized and transit trips around station areas (approximately 350 nonmotorized trips and 668 bus passengers during peak hours in Horizon Year 2040, respectively). However, the project would be designed to maintain or enhance pedestrian and bicycle access and would not affect transit service. In addition, the Authority will work closely with all agencies that provide bus service to existing and planned rail stations to define roles and responsibilities, inclusive of operational and maintenance responsibilities, to prevent effects to existing and planned bus routes servicing rail stations within the project corridor.	Same as Shared Passenger Track Alternative A.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would generate approximately 158 additional nonmotorized trips and 164 additional bus passengers per day during peak hours in Horizon Year 2040, respectively.	Similar to the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would generate approximately 283 additional nonmotorized trips and 290 additional bus passengers per day during peak hours in Horizon Year 2040, respectively.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact TR-14: Continuous Permanent Impacts on Freeway Mainline Segments and Ramps During Operations	During operations, because of increases in delays and travel times at intersections and nearby road segments, motorists may use freeways, which would result in one on-ramp queue length exceeding the transportation impact thresholds.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	Adverse effect (all alternatives and HSR station options)	TRAN-MM#7	No adverse effect
Impact TR-15: Continuous Permanent Impacts on Freight Rail and Passenger Rail System Capacity During Operations	Operation of the project would not affect freight or passenger rail capacity or operations or result in secondary or growth-inducing impacts. The Authority will further define the roles and responsibilities within the shared corridor of freight and passenger rail agencies, including operational and maintenance responsibilities.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives within the station area.	Same as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Air Quality and Global Climate Change							
Impact AQ-4: Continuous Permanent Direct Impacts on Air Quality within Applicable Air Basin—On-Road Vehicle and Power Plant Emissions	Long-term operation of the HSR system would reduce regional criteria pollutant emissions, relative to No Project conditions, resulting in a regional and local air quality benefit. Annual reductions would be 24 tons of VOC, 1,628 tons of CO, 68 tons of NO_X, 7 tons of SO_2, 208 tons of PM_{10}, and 56 tons of $PM_{2.5}$.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Norwalk/Santa Fe Springs HSR Station Option would add a small amount of direct operational emissions to the Shared Passenger Track Alternatives. The reduction in vehicle emissions would more than offset the emissions increases associated with operation of the HSR station option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Fullerton HSR Station Option would add a small amount of direct operational emissions to the Shared Passenger Track Alternatives. The reduction in vehicle emissions would more than offset the emissions increases associated with operation of the HSR station option.	No adverse effect	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-5: Continuous Permanent Direct Impacts on Implementation of an Applicable Air Quality Plan	Emissions generated during project operation would be less than with No Project conditions, because the project would lead to reductions in travel by on-road vehicles and aircraft. Therefore, impacts of project operation would not impede implementation of air quality plans in the SCAB. Changes in emissions from project operation would not exceed the General Conformity *de minimis* levels.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Norwalk/Santa Fe Springs HSR Station Option would add a small amount of direct operational emissions to the Shared Passenger Track Alternatives. The reduction in vehicle emissions would more than offset the emissions increases associated with operation of the HSR station option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Fullerton HSR Station Option would add a small amount of direct operational emissions to the Shared Passenger Track Alternatives. The reduction in vehicle emissions would more than offset the emissions increases associated with operation of the HSR station option.	Beneficial effect	No mitigation needed	N/A
Impact AQ-6: Continuous Permanent Direct and Indirect Impacts on Global Climate Change—Greenhouse Gas Emissions—On-Road Vehicle, Power Plant, and Electrical Equipment Emissions	Long-term operation of the HSR system would reduce GHG emissions, relative to No Project conditions, resulting in a statewide and regional GHG benefit. The annual reduction would be 616,807 MT CO_2e.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Norwalk/Santa Fe Springs HSR Station Option would add a small amount of direct operational GHG emissions to the Shared Passenger Track Alternatives. However, there would be a greater net decrease in GHG emissions when compared to 2040 No Project conditions (-631,598 MT CO_2e) than the GHG-emission-reduction levels that would occur without the Norwalk/Santa Fe Springs HSR Station Option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. As presented in Table 3.3-33, operation of the Fullerton HSR Station Option would add a small amount of direct operational GHG emissions to the Shared Passenger Track Alternatives. However, there would be a greater net decrease in GHG emissions when compared to 2040 No Project conditions (-627,737 MT CO_2e) than the GHG-emission-reduction levels that would occur without the Fullerton HSR Station Option.	Beneficial effect	No mitigation needed	N/A
Impact AQ-11: Continuous Permanent Direct Impacts on Localized Air Quality—Carbon Monoxide Hot Spots (NAAQS Compliance)	Increased station traffic would not result in localized CO hot spots or exceedances of the CO NAAQS or CAAQS.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-12: Continuous Permanent Direct Impacts on Localized Air Quality—Exposure to Mobile Source Air Toxics	Operations of the HSR system would result in a regional MSAT reduction and benefit. Increased station traffic would have a low potential for meaningful localized MSAT effects.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. With inclusion of the Norwalk/Santa Fe Springs HSR Station Option, localized increases in MSAT emissions could occur near the station because of additional passenger and employee commute trips. USEPA's vehicle and fuel regulations, coupled with fleet turnover, would reduce MSAT emissions over time, thereby offsetting the increase in localized traffic associated with the Norwalk/Santa Fe Springs HSR Station Option.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. With inclusion of the Fullerton HSR Station Option, localized increases in MSAT emissions could occur near the station because of additional passenger and employee commute trips. USEPA's vehicle and fuel regulations, coupled with fleet turnover, would reduce MSAT emissions over time, thereby offsetting the increase in localized traffic associated with the Fullerton HSR Station Option.	No adverse effect	No mitigation needed	N/A
Impact AQ-13: Continuous Permanent Direct Impacts on Localized Air Quality—Criteria Pollutants	Localized operational emission rates under Shared Passenger Track Alternative A would be less than the Localized Significance Thresholds for CO, NO_X, PM_{10}, and $PM_{2.5}$.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Localized operational emission rates with inclusion of the Norwalk/Santa Fe Springs HSR Station Option would still be less than the Localized Significance Thresholds for CO, NO_X, PM_{10}, and $PM_{2.5}$.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Localized operational emission rates with inclusion of the Fullerton HSR Station Option would still be less than the Localized Significance Thresholds for CO, NO_X, PM_{10}, and $PM_{2.5}$.	No adverse effect	No mitigation needed	N/A
Impact AQ-14: Continuous Permanent Direct Impacts on Localized Air Quality—Particulate Matter Hot Spots (NAAQS Compliance)	The project does not meet the criteria for a project of air quality concern, based on the descriptions as indicated in 40 CFR Part 93.123(b)(1), and therefore would not result in a PM hotspot.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect	No mitigation needed	N/A
Impact AQ-15: Continuous Permanent Direct Impacts on Localized Air Quality—Exposure to Diesel Particulate Matter (Health Risk)	The proposed 101,904 feet of staging and storage tracks at Hobart Yard as part of the project may expose sensitive receptors to additional DPM emissions. Because the level of activity for this 101,094 feet of storage and support track at Hobart Yard is unknown, there is the potential that nearby sensitive receptors would be exposed to DPM emissions that would result in a health risk impact.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives.	Same impacts as the Shared Passenger Track Alternatives.	Adverse effect	AQ-MM#4	Adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact AQ-16: Continuous Permanent Direct Impacts on Localized Air Quality—Exposure to Odors	Emissions-generated odors would be limited to LMF facility operations and would not be expected to affect a substantial number of people.	Similar to Shared Passenger Track Alternative A. Shared Passenger Track Alternative B would develop the 15th Street LMF instead of the 26th Street LMF. The potential for odors from operation of the LMF and paint and solvent use would be located at the 15th Street LMF site, but would be limited to the immediate area where the products are being used and would not be expected to result in substantial odors to residential or other areas containing sensitive receptors within the local RSA.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. The potential for odors from operation of the Norwalk/Santa Fe Springs HSR Station Option and paint and solvent use would be limited to the immediate area of the station site, and would not be expected to result in substantial odors for nearby sensitive receptors.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. The potential for odors from operation of the Fullerton HSR Station Option and paint and solvent use would be limited to the immediate area of the station site, and would not be expected to result in substantial odors for nearby sensitive receptors.	No adverse effect	No mitigation needed	N/A
Noise and Vibration							
Impact N&V-4: Permanent Exposure of Sensitive Receivers to Noise from Project Operation	Predicted operational noise levels would result in 59 permanent severe noise impacts (before mitigation); potential to reduce 33 of these impacts with mitigation.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower noise levels in the vicinity of the station.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower noise levels in the vicinity of the station.	Adverse effect (all alternatives and HSR station options)	N&V-MM#3	Adverse effect
Impact N&V-5: Permanent Exposure of Sensitive Receivers and Buildings to Ground-Borne Noise and Vibration from Project Operation	Predicted operational ground-borne vibration levels would result in 517 permanent vibration impacts (before mitigation); potential to reduce these impacts with mitigation (to be evaluated during project design).	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower ground-borne vibration levels in the vicinity of the station.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower ground-borne vibration levels in the vicinity of the station.	Adverse effect (all alternatives and HSR station options)	N&V-MM#4	Adverse effect
Impact N&V-6: Noise Effects on Wildlife and Domestic Animals	Exposure of wildlife and domestic animals to noise generated during project operation would be limited within the highly urbanized setting of the project section and would not be adverse.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower noise levels in the vicinity of the station.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With the HSR station option, there would be lower train speeds and lower noise levels in the vicinity of the station.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact N&V-7: Traffic Noise	No traffic noise impacts are anticipated.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact N&V-8: Noise from High-Speed Rail Stationary Facilities	There are no sensitive receivers within the FRA- and FTA-established estimated impact distances for these facilities; therefore, no operational noise impacts related to stationary facilities are anticipated.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Electromagnetic Fields and Electromagnetic Interference							
Impact EMF/EMI-4: Permanent Human Exposure to Electromagnetic Fields	There would be no exposure of a person to documented EMF levels to which passengers or members of the public would be exposed in exceedance of thresholds of MPE limits of 5 kV/m and 9,040 mG for the public.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-5: People with Implanted Medical Devices and Exposure to Electromagnetic Fields	Impacts from exposure to EMF within interconnection facilities will be avoided through compliance with international guidelines and federal and state regulations. These facilities that could interfere with implanted medical devices will be inaccessible to the public, and the provisions of the Authority's EMCPP will restrict workers with implanted medical devices from accessing traction power facilities and emergency power generators.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-6: Potential for Corrosion of Underground Pipelines, Cables, and Adjoining Rail	Ground currents generated by project operation could result in corrosion of underground pipelines and cables. However, project features that require compliance with international guidelines and federal and state regulations would include the grounding of nearby ungrounded linear metal structures or insulating metallic pipes to prevent flow of leakage current, such that corrosion will be minor.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-7: Potential for Nuisance Shocks	Electrical currents generated by project operation could result in nuisance shocks from ungrounded metal structures. However, through compliance with international guidelines and federal and state regulations, the Authority will identify and ground nearby ungrounded linear metal structures to prevent possible risks.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-8: Effects on Adjacent Existing Rail Lines	Operation would generate electrical currents that could result in minor interference with adjacent existing rail lines. However, interference would be avoided by application of standard design practices that a nonelectric railroad must use when an electric railroad or electric power lines are installed next to its tracks and through coordination with adjacent railroads to prevent EMI/EMF interference prior to operations.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact EMF/EMI-9: Permanent Interference with Sensitive Equipment	EMFs generated during project operation could interfere with sensitive equipment, including high-tech electronic devices and police and fire radio services. Site 13 (Nutrilite Health Institute) in Buena Park were identified as having potential for impact. However, interference will be avoided with the use of dedicated frequency blocks and procurement of communications equipment meeting FCC regulations, as well as through coordination with adjacent railroads to prevent EMI/EMF interference prior to operations, and implementation of mitigation established by this Draft EIR/EIS.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Adverse effect (all alternatives and HSR station options)	EMF/EMI-MM#1	No adverse effect
Impact EMF/EMI-10: Electromagnetic Interference Effects on Schools	Radio systems used during project operation could interfere with communication systems at nearby schools. However, interference will be avoided by the use of dedicated frequency blocks and procurement of equipment meeting FCC regulations.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact EMF/EMI-11: Effects Related to Adjacent Airports	The potential to interfere with airport systems would be avoided with the use of dedicated frequency blocks, procurement of communications equipment meeting FCC regulations and coordination with FAA.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Public Utilities and Energy							
Impact PU&E-10: Reduced Access to Existing Utilities in the HSR Right-of-Way During Operation	The right-of-way would be fenced and secured after construction. If there are any utility conflicts caused by project construction, the project would relocate or reinforce the utilities where they are still accessible.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-11: Operational Water Supply Demand	Operation of Shared Passenger Track Alternative A would require 294.2 AFY less than the current water usage for the land within the project footprint, but would require more water at the 26th Street LMF and ARTIC. The Authority would address the potential impacts on local and regional water suppliers through completion of a water demand analysis for water supplies for operation, as required through mitigation in this Draft EIR/EIS.	Operation of Shared Passenger Track Alternative B would require 345.5 AFY less than the current water usage for the land within the project footprint, but would require more water at the 15th Street LMF and ARTIC. The Authority would address the potential impacts on local and regional water suppliers through a water demand analysis for water supplies for operation, as required through mitigation in this Draft EIR/EIS.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Operational water demand associated with the Norwalk/Santa Fe Springs HSR Station Option would amount to 42.0 AFY, which would be an increase of 13.4 AFY compared to existing uses.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Operational water demand associated with the Fullerton HSR Station Option would amount to 41.7 AFY, which would be an increase of 32.6 AFY compared to existing uses.	Adverse effect (all alternatives and HSR station options)	PUE-MM#1	No adverse effect

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact PU&E-12: Operational Wastewater Service Demand	Operation of the 26th Street LMF and ARTIC would generate more than 108,649 gallons per day of wastewater flows. The 26th Street LMF and ARTIC wastewater flows, in addition to existing treatment commitments, would not exceed the available wastewater treatment capacity of local providers.	Similar to Shared Passenger Track Alternative A. Operation of the 15th Street LMF and ARTIC would generate 111,220 gallons per day of wastewater flows. The 15th Street LMF and ARTIC wastewater flows, in addition to existing treatment commitments, would not exceed the available wastewater treatment capacity of local providers.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Wastewater flows associated with the Norwalk/Santa Fe Springs HSR Station Option would be an additional 18,727.5 gallons per day, which could be accommodated by the wastewater treatment provider.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Wastewater flows associated with the Fullerton HSR Station Option would be an additional 18,582.5 gallons per day, which could be accommodated by the wastewater treatment provider.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-13: Effects on Storm Drain Facilities During Operation	During operation, the project has the potential to affect stormwater infrastructure in the project area. The design of the project would include the detainment of on-site stormwater runoff, improvement of infiltration rates, and minimization of disruptions to the movement of water. Stormwater management practices and measures, including permeable surfaces and detention facilities, will also be incorporated into the project design.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-14: Effects on Solid Waste During Operation	Operation would result in 538 tons of solid waste from operation activities at the 26th Street LMF. Of the eight landfills that serve the RSA, all have sufficient capacity to accommodate operational waste disposal.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Operation of the station would generate slightly more solid waste.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Operation of the station would generate slightly more solid waste.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-15: Effects from Hazardous Waste Generation	Operation would result in small amounts of hazardous waste. Exact amounts are incalculable at this time because of high variability in circumstances related to operations. Project features include the requirement that a certified hazardous waste collection company deliver the waste to an authorized hazardous waste management facility for recycling or disposal. The Authority would also be required to prepare a hazardous materials management business plan and hazardous materials monitoring plans.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PU&E-16: Operational Energy Demand	Operations would result in a net decrease in regional energy consumption of an estimated 9,660,265 MMBtu per year in 2040.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would generate an additional energy demand of 17,736 MMBtu and ultimately result in a decrease in regional energy consumption by 9,850,989 MMBtu.	Similar impacts to those of the Shared Passenger Track Alternatives. Inclusion of the Fullerton HSR Station Option would generate an additional energy demand of 16,843 MMBtu and ultimately result in a decrease in regional energy consumption by 9,792,611 MMBtu.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Biological and Aquatic Resources							
Impact BIO-8: Operational Impacts on Riparian Habitat, Vegetation Communities, Land Cover, and Special-Status Natural Communities	Potential operational impacts on riparian and special-status natural communities (hardstem and California bulrush marsh herbaceous alliance and duckweed blooms and relatives).	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#54, BIO-MM#55	No adverse effect
Impact BIO-9: Operational Impacts on Special-Status Birds, Raptors, and Migratory Bird Species	Potential operational impacts on up to 10 special-status birds, raptors, and migratory birds.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable nesting habitat for raptors and migratory birds in the area of additional disturbance for the HSR station elements.	Adverse effect (all alternatives and HSR station options)	BIO-MM#54, BIO-MM#55, BIO-MM#76, BIO-MM#83, BIO-MM#84	No adverse effect
Impact BIO-10: Operational Impacts on Special-Status Mammals	Potential operational impacts on up to nine special-status mammals.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable habitat for special-status mammals, including western red bat and western yellow bat, within the area of additional disturbance for the HSR station elements.	Adverse effect (all alternatives and HSR station options)	BIO-MM#54, BIO-MM#76, BIO-MM#83	No adverse effect
Impact BIO-11: Operational Impacts on Wildlife Movement Corridors	Potential operational impacts on wildlife movement corridors.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Same impacts as the Shared Passenger Track Alternatives. No impacts within the station area.	Adverse effect (all alternatives and HSR station options)	BIO-MM#54, BIO-MM#55, BIO-MM#83	No adverse effect
Impact BIO-12: Operational Impacts on Locally Protected Biological Resources (Tree and Shrub Preservation Policies or Ordinances)	Potential conflict with local policies or ordinances from operational impacts on protected biological resources (trees and shrubs).	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts to the Shared Passenger Track Alternatives within the station area. There is suitable habitat for protected trees and shrubs in the area of additional disturbance for the HSR station elements.	Adverse effect (all alternatives and HSR station options)	BIO-MM#35, BIO-MM#54, BIO-MM#55, BIO-MM#56, BIO-MM#58, BIO-MM#60	No adverse effect
Hydrology and Water Resources							
Impact HWR-9: Impacts on Drainage Patterns, Stormwater Runoff, and Hydraulic Capacity (Surface Water Hydrology) During Operations	O&M activities would result in minimal intermittent changes to drainage patterns and stormwater runoff. The quantity of runoff would be managed, as required by the applicable MS4 permits, which would minimize potential impacts.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HWR-10: Impacts on Surface Water Quality During Operations	Brake dust and other contaminants released by trains during ongoing operation of the rail would be deposited into waterbodies. However, the electrically powered train technology with regenerative braking proposed for the HSR system and an SWMTP would minimize potential water quality impacts from brake dust and other contaminants to the maximum extent practicable using the best available technology. The design of stations and maintenance facilities would comply with the applicable MS4 permits, as well as the Industrial General Permit, and would include implementation of an SWMTP to minimize potential impacts.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Alternatives within the station area. Operation of the Norwalk/Santa Fe Springs HSR Station Option would result in greater amounts of brake dust, because trains must reduce their speed to approach the station. However, brake dust would flow through stormwater treatment measures, reducing impacts on surface water quality. All other impacts related to surface water quality would be the same as those of the Shared Passenger Track Alternatives.	Similar impacts as the Shared Passenger Alternatives within the station area. Operation of the Fullerton HSR Station Option would result in greater amounts of brake dust, because trains must reduce their speed to approach the station. However, brake dust would flow through stormwater treatment measures, reducing impacts on surface water quality. All other impacts related to surface water quality would be the same as those of the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-11: Impacts on Groundwater Volume, Quality, and Recharge During Operations	There are new impervious surfaces that would be within groundwater recharge areas; however, stormwater management measures would allow for infiltration. The electrically powered train technology with regenerative braking proposed for the HSR system and an SWMTP would minimize potential water quality impacts from brake dust and other contaminants.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Alternatives within the station area. Operation of the Norwalk/Santa Fe Springs HSR Station Option would result in greater amounts of brake dust, because trains must reduce their speed to approach the station. However, brake dust would flow through stormwater treatment measures, reducing impacts on groundwater quality. All other impacts related to surface water quality would be the same as those of the Shared Passenger Track Alternatives.	Similar impacts as the Shared Passenger Alternatives within the station area. Operation of the Fullerton HSR Station Option would result in greater amounts of brake dust, because trains must reduce their speed to approach the station. However, brake dust would flow through stormwater treatment measures, reducing impacts on groundwater quality. All other impacts related to surface water quality would be the same as those of the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HWR-12: Impact on Floodplains During Operations	O&M activities would require intermittent activities in FEMA delineated floodplains, including in-water bridge maintenance. Potential impacts would be minimized through flood protection measures and by monitoring weather forecasts for intense storms and flood conditions.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HWR-13: Impact from Risk of Release of Pollutants from Inundation During Operations	O&M activities would require activities in areas susceptible to potential flooding. The Authority will prepare an SWMTP that complies with applicable MS4 permits. In addition, an Environmental Management System and hazardous materials monitoring plans would limit the potential for spills, limit the amount of hazardous materials used for operations, and establish cleanup protocols to prevent accidental spills of hazardous materials in the event of inundation.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Geology, Soils, Seismicity, and Paleontological Resources							
Impact GSSPR-12: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Surface Fault Rupture or Seismically Induced Ground Shaking During Operation	The project does not include operational or maintenance activities that would increase stresses in the Earth's crust and, therefore, would not increase risk of seismic movement. The nearest active fault to the project footprint and alignment with documented Holocene fault rupture is outside of the project footprint and would not result in risk of fault rupture within the project footprint. Therefore, the project would not directly or indirectly cause fault rupture during operation.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-13: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Liquefaction and Other Types of Seismically Induced Ground Failure During Operation	Shared Passenger Track Alternative A could experience secondary seismic hazards, including liquefaction, seismically induced slope failures, and seismically induced ground failure. Project features will minimize direct and indirect risks to life and property resulting from liquefaction and ground failure during operation, include using seismic design standards in the structural design and using early warning systems that would be triggered by strong ground motion, and shutting down train operations during or after an earthquake.	Similar to Shared Passenger Track Alternative A. A portion of the 15th Street LMF site is within a CGS-delineated liquefaction zone. However, the same project features discussed for Shared Passenger Track Alternative A would minimize direct and indirect risks to life and property resulting from liquefaction and ground failure during operation.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact GSSPR-14: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Seismically Induced Flooding from Dam Failure or Seiche During Operation	The risk of dam failure is believed to be low for the project section. Furthermore, as noted above, the project would not exacerbate seismic conditions. Therefore, project operation would avoid a permanent increase in risks associated with seismic-related dam failure or seiche.	Similar to Shared Passenger Track Alternative A. The LMF site at 15th Street is approximately 220 feet above mean sea level. Although large flood-control reservoirs are upgradient of the proposed LMF site, the risk of damage from seiches is considered low because of the small volume of water present and the distance of the reservoirs to the site (24 miles upstream of the northern end of the project alignment). The LMF site components would not increase deep stresses in the Earth's crust or directly or indirectly cause a seismically induced seiche during operation.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact GSSPR-15: Increased Exposure of People or Structures to Potential Loss of Life, Injuries, or Destruction Due to Slope Failure Associated with Cut-and-Fill Slopes, or Landslides, Including Seismically Induced Landslides	There are no mapped landslides within the footprint of Shared Passenger Tack Alternative A. Precautions taken during construction would also minimize risks prior to operation of the project. Furthermore, project features will minimize direct and indirect risks to life and property resulting from unstable soils, cut-and-fill slopes, and landslides during operation. Features include slope monitoring by a registered engineering geologist and a requirement for HSR trains to be equipped with autonomous equipment for daily track surveys. The track-monitoring program will provide early warning of reduced track integrity in case of ground settlement. Therefore, the project would not permanently increase potential for slope failure hazards associated with cut-and-fill slopes during operation.	Similar to Shared Passenger Track Alternative A. Landslide potential is considered negligible for the same reasons discussed for Shared Passenger Track Alternative A and potential effects from slope failure hazards associated with cut-and-fill slopes during operations are considered negligible through implementation of project features and protection systems during design and construction.	Same impacts as the Shared Passenger Track Alternatives in the station area.	Same impacts as the Shared Passenger Track Alternatives in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Hazardous Materials and Wastes							
Impact HMW-8: Operations and Maintenance Transport, Use, Storage, and Disposal of Hazardous Materials and Hazardous Wastes	Operations would involve the use of small amounts of hazardous materials for O&M. Prior to O&M activities, the Authority will prepare hazardous materials monitoring plans. Compliance with applicable state and federal regulations will address the potential for improper handling of hazardous materials. Additionally, operations will require proper management of hazardous materials routinely used through development of an Environmental Management System. The foregoing project features would allow for proper management of hazardous materials routinely used during operations.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HMW-9: Operations and Maintenance Upset and Accident Conditions Involving the Release of Hazardous Materials into the Environment	Long-term operation would involve the intermittent transport, storage, use, and disposal of hazardous materials for O&M. Project features include measures for compliance with established state and federal regulations involving handling and transport of hazardous materials and implementation of a Hazardous Materials Business Plan, SPCC plan, and Environmental Management System. With these measures, the risks of upsets and accident conditions will be limited.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact HMW-10: Operations and Maintenance Near Sites of Potential Environmental Concern (Including Cortese List Sites)	O&M activities would occur near sites of known or unknown contamination. O&M would have limited potential for ground disturbance and risks would be correspondingly reduced when compared to construction. Preparation of Phase I and II ESAs will occur prior to construction, rendering the potential disruption or exacerbation of a known or unknown site of contamination during operation to negligible levels. Operation of the project near PEC sites, including Cortese List sites, would not result in the release of hazardous materials that could create a substantial hazard to public health or the environment.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact HMW-11: Operations and Maintenance Handling of Hazardous Materials or Waste within 0.25 Mile of a School	There would be long-term risks associated with the handling of small amounts of hazardous materials within 0.25 mile of 40 educational facilities during operations. There would be intermittent use of small amounts of hazardous materials for O&M. Project features will be in place to limit the risk of a release of hazardous materials during O&M activities within 0.25 mile of schools and the project would not pose a health and safety hazard to students or school employees.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Safety and Security							
Impact SS-11: Permanent Interference with Emergency Response Access from Operational Activities	Operations could create delays in emergency response if access is limited. Project features would establish design standards, systems, and procedures such that project operation would not result in inadequate emergency access to the HSR access-controlled right-of-way, station, or maintenance facility.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
SS-12: Permanent Interference with Emergency Response Times from Operational Activities	HSR operations would add up to four new gate-down events each hour and could result in increased frequencies of delays at limited areas in the vicinity of the existing at-grade crossings. Based on the Authority's screening analysis, affected areas would be primarily on the eastern side of the railroad, with delays experienced by response vehicles dispatched from Anaheim Fire Station #1.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. With inclusion of the Fullerton HSR Station Option, the impact would be greater than that identified for the Shared Passenger Track Alternatives, because HSR trains would travel at slower speeds through the at-grade crossings in Anaheim, thereby increasing the gate-down times compared to nonstop service.	Adverse effect (all alternatives and HSR station options)	SS-MM#1	No adverse effect
Impact SS-13: Permanent Exposure to Rail-Related Hazards	Operation could result in additional potential for railroad-related accidents in the project section, which could pose safety hazards to passengers, crew, residences, and other properties because of collisions or derailment. Project features would minimize permanent exposure to rail-related hazards. Project features require operational rail design and safety features, including PTC systems, that would reduce the potential for permanent exposure to rail-related hazards, including incidents and accidents including derailments and collisions.	Similar to Shared Passenger Track Alternative A. The 15th Street LMF would be approximately 3 miles from LAUS, resulting in shorter travel times of deadhead moves of HSR trains between LAUS to the LMF. Decreased train travel time to and from LAUS would decrease the potential exposure to rail hazards.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Addition of the Norwalk/Santa Fe Springs HSR Station Option could increase the potential for rail-related hazards related to HSR trains entering and exiting the station, and to increased numbers of workers and passengers near the railroad right-of-way. Only authorized persons would be permitted access and station design would include necessary safety systems and barriers in the station area.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Addition of the Fullerton HSR Station Option could increase the potential for rail-related hazards related to HSR trains entering and exiting the station, and to increased numbers of workers and passengers near the railroad right-of-way. Only authorized persons would be permitted access and station design would include necessary safety systems and barriers in the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SS-14: Permanent Exposure to High-Risk Facilities	High-risk facilities within the RSA have the potential to be affected by HSR operations. Control measures to reduce identified risks will be applied, and high-risk utilities that cross or run parallel to the tracks and that would not be removed or relocated will remain protected in place after completion of construction during operation. Project features, including a preliminary hazard analysis to determine risks to project operations, would minimize permanent exposure to high-risk facilities.	Similar impacts as Shared Passenger Track Alternative A. Construction of the 15th Street LMF would have potential conflicts with an additional 29 utilities and result in five additional major and high-risk utility conflicts in the city of Los Angeles that would require relocation as compared to Shard Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-15: Permanent Exposure to Oil and Gas Well Hazards	Operations will require that active wells be abandoned and relocated in accordance with state standards and in coordination with the well owners, thereby reducing the potential for exposure to hazards.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-16: Potential for Criminal and Terrorist Activity	Operations have the potential to attract criminal and terrorist activity. Project features, including a threat and vulnerability assessment, as well as security plans and a SEPP, would minimize potential for criminal and terrorist activity.	Same as Shared Passenger Track Alternative A.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Because this is an existing Metrolink station, adding HSR service would result in additional people accessing and passing through the station site. Authority-developed project design features, plans, and safeguards would minimize security impacts.	Similar impacts to those of the Shared Passenger Track Alternatives within the station area. Because this is an existing passenger rail station, adding HSR service would result in additional people accessing and passing through the station site. Authority-developed project design features, plans, and safeguards would minimize security impacts.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-17: Need for Expansion of Existing Fire, Rescue, and Emergency Services Facilities	Operation of Shared Passenger Track Alternative A would not result in significant emergency response delays that would require the need for new or expanded facilities. Operations will include project design characteristics that increase safety via improvements at the at-grade crossings and full and partial grade separation that would minimize the potential for rail incidents. Authority-developed plans include collaboration with local responders to coordinate and develop effective emergency response so expansion of services and facilities is not needed.	Similar to Shared Passenger Track Alternative A. The alternatives differ only in the LMF site and would be subject to similar safety systems and similar procedures for emergency planning and incident response.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SS-18: Permanent Safety Hazard to Schools	Operations include a PTC system, intrusion detection system, and inspections maintenance programs to minimize the risk of accidents. Additionally, derailment containment systems, including check rails, parapets, undercar guards, and alternate barrier systems, would keep the train within the right-of-way and railcars upright in the event of a derailment, minimizing the safety risk for schools in the RSA.	Same impacts as Shared Passenger Track Alternative A. A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SS-19: Wildfire Hazards	There are no areas within moderate to very high fire hazard severity zones, or wildland. Therefore, the risk of wildfire hazard would be minimal. The Authority would form a statewide Fire and Life Safety and Security Committee for programs and coordination activities that allow for rapid response by local emergency responders in the case of an accident, reducing the potential for uncontrolled wildfire events.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Socioeconomics and Communities							
Impact SO-10: Disruption or Division of Existing Communities During Operations	Traffic impacts during project operation on adjoining and nearby roadways would be direct and continual but would not physically divide an established community because the project would be within an existing rail corridor. Although there would be substantial aesthetic degradation of historic bridges as a result of project operation, there would be no physical division of an established community as a result of these visual changes. Future activity near Hobart Yard could pose health risks from DPM emissions, but because Hobart Yard is in an industrial area with few nearby residents, impacts are unlikely to disrupt or divide local communities.	Same as Shared Passenger Track Alternative A.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Operation of the Norwalk/Santa Fe Springs HSR Station Option would add a small number of emissions to those described for the Shared Passenger Track Alternatives, which could result in additional disruption to communities in the station area. Overall, operation of the system with inclusion of the HSR station option would result in a net regional decrease in emissions of criteria pollutants.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Operation of the Fullerton HSR Station Option would add a small number of emissions to those described for the Shared Passenger Track Alternatives, which could result in additional disruption to communities in the station area. Overall, operation of the system with inclusion of the HSR station option would result in a net regional decrease in emissions of criteria pollutants.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-11: Job Creation During Operations	Project O&M has the potential to result in an increase in employment for the upkeep and repair of tracks, stations, and LMFs and for materials needed for O&M. In the long term, the HSR system would result in job creation from improvements in accessibility in areas surrounding stations. When considered on an annual basis, 680 jobs would be added to the region by 2040. Employment growth constitutes a minor increase to projected growth.	Same as Shared Passenger Track Alternative A.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option would result in an additional amount of job creation relative to the Shared Passenger Track Alternatives.	Similar impacts to the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option would result in an additional amount of job creation relative to the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Impact SO-12: Impacts on Children's Health and Safety from Operations	No residual impacts on children's health and safety are expected from operations in the project section with incorporation of project features and implementation of mitigation measures established in other sections of this Draft EIR/EIS. There would be no adverse impacts on children's health and safety.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact SO-13: Unplanned Growth	The project would serve the existing and future need for transportation while providing economic incentives for revitalization and transit-oriented development around transit areas. However, the extent to which these changes would be realized would be primarily determined by land use decisions made at the local jurisdiction level. Therefore, these changes would not induce substantial unplanned growth in the region, either directly or indirectly.	Similar to Shared Passenger Track Alternative A. Siting the LMF at 15th Street would result in additional job growth related to the LMF in the city of Los Angeles instead of Vernon.	Similar impacts as those for the Shared Passenger Track Alternatives within the station area. Inclusion of the Norwalk/Santa Fe Springs HSR Station Option may induce additional long-term population growth from the increased accessibility and mobility that the HSR station option would bring to metropolitan areas within the RSA. It is unlikely that including the HSR station option would attract a substantial number of new residents to the region, because it would not lead to a wholesale shift in residential locations from outside major metropolitan areas to Los Angeles and Anaheim.	Similar impacts as those for the Shared Passenger Track Alternatives within the station area. Inclusion of the Fullerton HSR Station Option may induce additional long-term population growth from the increased accessibility and mobility that the HSR station option would bring to metropolitan areas within the RSA. It is unlikely that including the HSR station option would attract a substantial number of new residents to the region, because it would not lead to a wholesale shift in residential locations from outside major metropolitan areas to Los Angeles and Anaheim.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Station Planning, Land Use, and Development							
Impact LU-5: Permanent Alteration of Land Use Patterns from Increased Noise, Light, and Glare	Shared Passenger Track Alternative A would introduce new noise, light, and glare to the right-of-way, but adjacent and nearby land uses have historically been exposed to noise, light, and glare of current transportation operations. The project would not result in permanent alteration of land use patterns from increased noise, light, and glare.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect	No mitigation needed	N/A
Impact LU-6: Land Use Impacts of Parking and Traffic Access Demands at Station Sites	The proposed relocations of the Commerce and Buena Park Metrolink Stations and modifications to the Norwalk/Santa Fe Springs Metrolink Station, Fullerton Metrolink/Amtrak Station, and HSR facilities at ARTIC would not result in land use impacts from changes in parking and traffic access.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area. The Norwalk/Santa Fe Springs HSR Station Option would provide 640 more parking spaces compared to what the Shared Passenger Track Alternatives would provide, for a total of 1,248 parking spaces. A new access road would be provided from Imperial Highway, along the eastern side of the site. Therefore, altered land use patterns and incompatibility would not occur.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Parking would be added just south of Walnut Avenue between Highland and Richman Avenues, outside of the existing railroad right-of-way. The new parking structure would accommodate a total of up 1,114 HSR parking spaces. Therefore, altered land use patterns and incompatibility would not occur.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Agricultural Farmland and Forest Land							
No impacts on agricultural farmland or forest land would occur from the project.	No impact.	No impact.	No impact.	No impact.	No impact. The project study area does not contain any agricultural farmland or forest land.	N/A	N/A
Parks, Recreation, and Open Space							
Impact PR-6: Permanent Changes from Noise to Recreational Resources Character and Use	Operations would not result in permanent effects from noise.	Similar to Shared Passenger Track Alternative A. A longer portion of the planned Los Angeles River Trail would be near the LMF, and users of the trail could experience higher levels of operational noise. However, operational noise impacts are not anticipated based on FRA criteria.	Similar to Shared Passenger Track Alternatives within the station area.	Similar to Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PR-7: Permanent Visual Changes to Recreational Resources Character and Use	Operations would result in visual changes to views of the project section from 16 resources, which could influence some users to instead use other nearby recreational resources. Project features (including design features for aesthetics and visual quality and compliance with Authority guidelines and review process) would substantially avoid or minimize impacts on viewers, visual character, and visual quality.	Similar to Shared Passenger Track Alternative A. A longer portion of the planned Los Angeles River Trail would be near the LMF, and users of the trail could experience greater visual changes to views of 15th St. Project features (including design features for aesthetics and visual quality and compliance with Authority guidelines and review process) would substantially avoid or minimize impacts on viewers, visual character, and visual quality.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Similar impacts as those for the Shared Passenger Track Alternatives within the station area. Union Pacific Park, Union Pacific Trail Phase II, and the Union Pacific Railroad Right-of-Way Multipurpose Path are near the Fullerton HSR Station Option's station and parking facilities. The parked and moving vehicles would represent permanent visual changes to views of the station from the trail. Project features would substantially avoid or minimize impacts on viewers, visual character, and visual quality.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact PR-8: Deterioration of Recreational Resources from Increased Use	Operations would not result in deterioration of recreational resources from increased use.	Same as Shared Passenger Track Alternative A.	Same impacts as the Shared Passenger Track Alternatives within the station area.	Same impacts as the Shared Passenger Track Alternatives within the station area.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Aesthetics and Visual Quality							
Impact AVQ-3: Visual Quality During Operation	Visual quality effects include increased activity along the rail corridor, new and expanded stations with greater transit and commuter activity, and signal lights. Even with incorporation of project features to minimize operational visual effects and implementation of mitigation established by this Draft EIR/EIS, the project would result in substantial aesthetic degradation effects on four historic bridges in the Downtown Los Angeles Landscape Unit because of discordant operational view elements and moving security features, such as signal lights.	Similar to Shared Passenger Track Alternative A. The 15th St LMF is proposed next to the existing Redondo Junction Roadhouse, where current maintenance already occurs. The 15th St LMF would convert the existing industrial uses and big-box warehouses to the LMF, but would be seen as a visual expansion of the existing rail facilities.	Same as the Shared Passenger Track Alternatives within the station area.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Changes required as part of the HSR station option would slightly increase the visual dominance of the rail line, but would not greatly affect the quality of the view because the changes would be in keeping with the existing visual landscape.	Downtown Los Angeles Landscape Unit, Gateway Cities Landscape Unit and Fullerton/Anaheim Landscape Unit: Adverse effect	AVQ-MM#3, AVQ-MM#4, AVQ-MM#5, AVQ-MM#6, AVQ-MM#7, CUL-MM#12	Shared Passenger Track Alternative A and Shared Passenger Track Alternative B: Downtown Los Angeles Landscape Unit: Adverse effect Gateway Cities Landscape Unit and Fullerton/Anaheim Landscape Unit: No adverse effect Norwalk/Santa Fe Springs HSR Station Option: Downtown Los Angeles Landscape Unit and Fullerton/ Anaheim Landscape Unit: N/A Gateway Cities Landscape Unit: No adverse effect Fullerton HSR Station Option: Downtown Los Angeles Landscape Unit and Gateway Cities Landscape Unit: N/A Fullerton/Anaheim Landscape Unit: No adverse effect
Impact AVQ-4: Nighttime Lighting During Operation	Light and glare during train operations would be intermittent and of brief duration. Security lighting on bridges and at maintenance facilities would be shielded to avoid light spilling onto adjacent land uses. Effects of the project would also be addressed through project features that substantially avoid or alleviate impacts on viewers, visual character, and visual quality.	Same as Shared Passenger Track Alternative A.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Existing security and signal lighting are present within the area because of operations of the existing Metrolink/Amtrak platform; however, the Norwalk/Santa Fe Springs HSR Station Option would increase the frequency of light and glare from these sources. The HSR station option would require additional nighttime security lighting at its facilities.	Similar impacts as the Shared Passenger Track Alternatives within the station area. Existing security and signal lighting are present within the area because of operations of the existing Metrolink platform; however, the Fullerton HSR Station Option would increase the frequency of light and glare from these sources. The Fullerton HSR Station Option would require additional nighttime security lighting at its facilities.	No adverse effects (all alternatives and HSR station options)	No mitigation needed	N/A

Resource Category	Shared Passenger Track Alternative A	Shared Passenger Track Alternative B	With Inclusion of HSR Station Option		NEPA Conclusion Before Mitigation	Mitigation	Conclusion Post Mitigation (All Build Alternatives and Station Options)
			Norwalk/Santa Fe Springs	Fullerton			
Cultural Resources							
Impact CUL-6: Potential for Visual, Noise, or Vibration Effects on a Historic Building or Structure During Operations	Operation would result in a not adverse effect for visual, noise, or vibration impacts.	Same as Shared Passenger Track Alternative A	Same as Shared Passenger Track Alternatives within the station area where there are no historic properties in the vicinity.	Same as Shared Passenger Track Alternatives within the station area	No adverse effect (all alternatives and HSR station options)	N/A	Shared Passenger Track Alternative A and Shared Passenger Track Alternative B: No adverse effect Norwalk/Santa Fe Springs and Fullerton HSR Station Options: No effect
Regional Growth							
Impact RG-2: Impacts on Regional Growth from Long-Term Employment Related to Operations, Maintenance, and Increased Mobility and Accessibility	Project O&M have the potential to affect regional growth with the increase in employment for the upkeep and repair of tracks, stations, and LMFs, and for materials needed for O&M. Employment growth constitutes a minor increase to projected growth, and impacts on regional growth from long-term employment are not anticipated.	Same as Shared Passenger Track Alternative A.	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact RG-3: Impact on Regional Growth from Induced Population Growth	The project is expected to result in increased population and employment as a result of improved accessibility throughout the state and the enhanced attractiveness of station areas for development and investment. Workers are expected to come from within the RSA; therefore, substantial unplanned population growth is not anticipated. Although exurban growth can be reasonably expected as a result of HSR, it is not anticipated to represent a substantial shift in population growth than is otherwise anticipated. Impacts on regional growth from induced population growth are not anticipated.	Same as Shared Passenger Track Alternative A	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A
Impact RG-4: Impact on Long-Term Regional Growth from Land Use Consumption	As employment and population growth occur, new development would consume currently undeveloped or underutilized land, and impacts on regional growth from land use consumption are not anticipated.	Same as Shared Passenger Track Alternative A	Same as the Shared Passenger Track Alternatives.	Same as the Shared Passenger Track Alternatives.	No adverse effect (all alternatives and HSR station options)	No mitigation needed	N/A

AFY = acre-feet per year; APE = area of potential effects; ARTIC = Anaheim Regional Transportation Intermodal Center; Authority = California High-Speed Rail Authority; BNSF = BNSF Railway; CAAQS = California Ambient Air Quality Standards; CFR = Code of Federal Regulations; CGS = California Geological Survey; CMP = Construction Management Plan; CO = carbon monoxide; CO_2e = carbon dioxide equivalent; DPM = diesel particulate matter; EIR/EIS = environmental impact report/environmental impact statement; EMCPP = Electromagnetic Compatibility Program Plan; EMF = electromagnetic field; EMI = electromagnetic interference; ESA = environmental site assessment; FAA = Federal Aviation Administration; FCC = Federal Communications Commission; FEMA = Federal Emergency Management Agency; FRA = Federal Railroad Administration; FTA = Federal Transit Administration; GHG = greenhouse gas; HSR = high-speed rail; kV/m = kilovolt per meter; LAUS = Los Angeles Union Station; LMF = light maintenance facility; mG = milligauss; MMBtu = million British thermal units; MPE = maximum permissible exposure; MS4 = Municipal Separate Storm Sewer System; MSAT = mobile-source air toxic; MT = metric tons; N/A = not applicable; NAAQS = National Ambient Air Quality Standards; NEPA = National Environmental Policy Act; NO_X = nitrogen oxides; O&M = operations and maintenance; PEC = potential environmental concern; PHT = Puente Hills blind thrust; PM = particulate matter; PM_{10} = particulate matter smaller than or equal to 10 micrometers in diameter; $PM_{2.5}$ = particulate matter smaller than or equal to 2.5 micrometers in diameter; project section = Los Angeles to Anaheim Project Section; PTC = positive train control; RSA = resource study area; SCAB = South Coast Air Basin; SCAQMD = South Coast Air Quality Management District; SEPP = Security and Emergency Preparedness Plan; SO_2 = sulfur dioxide; SPCC = spill prevention, control, and countermeasure, SWMTP = stormwater management and treatment plan; USEPA = U.S. Environmental Protection Agency; VOC = volatile organic compound

S.8.4 CEQA Summary of Impacts and Mitigation

This section provides a summary of the CEQA determinations on resources as a result of implementation of the Shared Passenger Track Alternatives from the existing rail corridor through Los Angeles to Anaheim. Where feasible, mitigation measures are applied to avoid or reduce significant impacts that would result from construction and operations of the Shared Passenger Track Alternatives.

The following resources would not have significant impacts under CEQA for the Shared Passenger Track Alternatives for either construction or operation, and therefore would not require mitigation:

- Agricultural farmland and forest lands
- Geology, soils, seismicity, and paleontological resources
- Station planning, land use, and development

A determination of the level of significance after mitigation measures also is required under CEQA. In most cases mitigation measures reduce the impacts to less-than-significant levels (CEQA). Table S-7 summarizes the significant CEQA impacts for each resource, lists the applicable mitigation measures, and indicates the level of significance after mitigation. This information is also provided for resources where cumulative impacts have been identified to which the Shared Passenger Track Alternatives would considerably contribute.

Table S-7 CEQA Summary of Resources with Significant Impacts and Applicable Mitigation Measures for the Shared Passenger Track Alternative

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Transportation			
Construction	▪ Impact TR-8: Temporary Impacts on Freight and Passenger Rail Operations During Construction	▪ TRAN-MM#6: Prepare Track Construction Work Window Plan	Less than significant
Air Quality and Global Climate Change			
Construction	▪ Impact AQ-1: Temporary Direct and Indirect Impacts on Air Quality within the Applicable Air Basin ▪ Impact AQ-2: Temporary Direct Impacts on Implementation of an Applicable Air Quality Plan	▪ AQ-MM#1: Offset Project Construction Emissions in the SCAB through SCAQMD Emissions Offsets Program ▪ AQ-MM#2: Requirements for Use of Zero-Emission or Near-Zero-Emission Vehicles and Off-Road Equipment to Reduce Construction Emissions ▪ AQ-MM#3: Reduce the Potential Impact of Stationary Sources	Significant and unavoidable
Operations	▪ Impact AQ-15: Continuous Permanent Direct Impacts on Localized Air Quality—Exposure to Diesel Particulate Matter (Health Risk)	▪ AQ-MM#4: Requirement of a Future Operational Health Risk Assessment	Significant and unavoidable
Noise and Vibration			
Construction	▪ Impact N&V-1: Temporary Exposure of Sensitive Receivers to Construction Noise	▪ N&V-MM#1: Construction Noise Mitigation Measures	Less than significant
	▪ Impact N&V-2: Temporary Exposure of Sensitive Receivers to Vibrations from Construction	▪ N&V-MM#2: Construction Vibration Mitigation Measures	Less than significant
Operations	▪ Impact N&V-4: Permanent Exposure of Sensitive Receivers to Noise from Project Operation[1]	▪ N&V-MM#3: Implement California High-Speed Rail Project Noise Mitigation Guidelines	Significant and unavoidable at 26 residences
	▪ Impact N&V-5: Permanent Exposure of Sensitive Receivers and Buildings to Vibrations from Project Operation	▪ N&V-MM#4: Implement Operational Vibration Mitigation Measures	Significant and unavoidable

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Electromagnetic Fields and Electromagnetic Interference			
Construction	▪ Impact EMF/EMI-1: Temporary Impacts from Use of Heavy Construction Equipment ▪ Impact EMF/EMI-3: Temporary Impacts from Operation of Electrical Equipment	▪ EMF/EMI-MM#1: Protect Sensitive Equipment	Less than significant
Operations	▪ Impact EMF/EMI-9: Permanent Interference with Sensitive Equipment	▪ EMF/EMI-MM#1: Protect Sensitive Equipment	Less than significant
Public Utilities and Energy			
Construction	▪ Impact PU&E-3: Effects from Water Demand During Construction	▪ PUE-MM#1: Water Demand Analysis for Water Supplies at Stations for Operation	Less than significant
Operations	▪ Impact PU&E-11: Operational Water Supply Demand	▪ PUE-MM#1: Water Demand Analysis for Water Supplies at Stations for Operation	Less than significant
Biological and Aquatic Resources			
Construction	▪ Impact BIO-1: Construction Impacts on Riparian Habitat, Vegetation Communities, Land Cover, and Special-Status Natural Communities ▪ Impact BIO-2: Construction Impacts on Special-Status Plant Species ▪ Impact BIO-3: Construction Impacts on Special-Status Birds, Raptors, and Migratory Birds ▪ Impact BIO-4: Construction Impacts on Special-Status Mammals ▪ Impact BIO-5: Construction Impacts on Aquatic Resources ▪ Impact BIO-6: Construction Impacts on Wildlife Movement Corridors ▪ Impact BIO-7: Construction Impacts on Locally Protected Biological Resources (Tree and Shrub Preservation Policies and Ordinances)	▪ BIO-MM#6: Prepare and Implement a Restoration and Revegetation Plan ▪ BIO-MM#14: Conduct Preconstruction Surveys and Delineate Active Nest Buffers Exclusion Areas for Breeding Birds ▪ BIO-MM#15: Conduct Preconstruction Surveys and Monitoring for Raptors ▪ BIO-MM#20: Conduct Protocol Surveys for Burrowing Owls ▪ BIO-MM#21: Implement Avoidance and Minimization Measures for Burrowing Owl ▪ BIO-MM#25: Conduct Preconstruction Surveys for Special-Status Bat Species ▪ BIO-MM#26: Implement Bat Avoidance and Relocation Measures ▪ BIO-MM#27: Implement Bat Exclusion and Deterrence Measures	Less than significant

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
		▪ BIO-MM#33: Restore Aquatic Resources Subject to Temporary Impacts ▪ BIO-MM#34: Monitor Construction Activities in Aquatic Resources ▪ BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees or Shrubs ▪ BIO-MM#37: Minimize Effects on Wildlife Movement Corridors During Construction ▪ BIO-MM#44: Provide Compensatory Mitigation for Loss of Active Burrowing Owl Burrows and Habitat ▪ BIO-MM#47: Prepare and Implement a Compensatory Mitigation Plan for Impacts on Aquatic Resources ▪ BIO-MM#50: Implement Measures to Minimize Impacts During Off-Site Habitat Restoration, or Enhancement, or Creation on Mitigation Sites ▪ BIO-MM#55: Prepare and Implement a Weed Control Plan ▪ BIO-MM#56: Conduct Monitoring of Construction Activities ▪ BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones ▪ BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds ▪ BIO-MM#62: Prepare Plan for Dewatering and Water Diversions ▪ BIO-MM#63: Work Stoppage ▪ BIO-MM#68: Avoid and Minimize Impacts on White-Tailed Kite ▪ BIO-MM#76: Implement Wildlife Rescue Measures ▪ BIO-MM#79: Conduct Presence/Absence Preconstruction Surveys for Special-Status Plant Species and Special-Status Natural Communities	

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
		▪ BIO-MM#80: Prepare and Implement Plan for Salvage and Relocation of Special-Status Plant Species ▪ BIO-MM#82: Implement Lighting Minimization Measures During Construction ▪ N&V-MM#1: Construction Noise Mitigation Measures ▪ AVQ-MM#1: Minimize Visual Disruption from Construction Activities ▪ AVQ-MM#2: Minimize Light Disturbance During Construction	
Operation	▪ Impact BIO-8: Operational Impacts on Riparian Habitat, Vegetation Communities, Land Cover, and Special-Status Natural Communities ▪ Impact BIO-9: Operational Impacts on Special-Status Birds, Raptors, and Migratory Birds ▪ Impact BIO-10: Operational Impacts on Special-Status Mammals ▪ Impact BIO-11: Operational Impacts on Wildlife Movement Corridors Impact BIO-12: Operational Impacts on Locally Protected Biological Resources (Tree and Shrub Preservation Policies or Ordinances)	▪ BIO-MM#35: Implement Transplantation and Compensatory Mitigation Measures for Protected Trees ▪ BIO-MM#54: Prepare and Implement an Annual Vegetation Control Plan ▪ BIO-MM#55: Prepare and Implement a Weed Control Plan ▪ BIO-MM#56: Conduct Monitoring of Construction Activities ▪ BIO-MM#58: Establish Environmentally Sensitive Areas and Nondisturbance Zones ▪ BIO-MM#60: Limit Vehicle Traffic and Construction Site Speeds ▪ BIO-MM#76: Implement Wildlife Rescue Measures (Wildlife Rescue) ▪ BIO-MM#83: Implement Lighting Minimization Measures During Operations ▪ BIO-MM#84: Nesting Bird Surveys During Operations	Less than significant
Hydrology and Water Resources			
Construction	▪ Impact HWR-3: Temporary Impacts on Surface Water Quality During Construction	▪ BIO-MM#62: Prepare Plan for Dewatering and Water Diversions	Less than significant

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Hazardous Materials and Wastes			
Construction	▪ Impact HMW-4: Construction within or Near Sites of Potential Environmental Concern or Cortese List Sites	▪ HMW-MM#2: Coordination of HSR Design and Construction with Remediation of Exide Site and Orange County North Basin Superfund Site	Significant and unavoidable
Construction	▪ Impact HMW-6: Handling of Hazardous Materials, Substances, or Waste within 0.25 Mile of a School	▪ HMW-MM#1: Limit Use of Extremely Hazardous Materials Near Schools During Construction	Less than significant
Safety and Security			
Construction	▪ Impact SS-3: Temporary Exposure to Construction Site Hazards	▪ HMW-MM#2: Coordination of HSR Design and Construction with Remediation of Exide Site and Orange County North Basin Superfund Site	Significant and unavoidable
Operation	▪ Impact SS-12: Permanent Interference with Emergency Response Times from Operational Activities	▪ SS-MM#1: Implement Emergency Response Time Mitigation Strategies	Less than significant
Socioeconomics and Communities			
Construction	▪ Impact SO-1: Disruption or Division of Existing Communities from Construction	▪ SO-MM#1: Implement Measures to Reduce Impacts Associated with the Division of Residential Neighborhoods ▪ SO-MM#2: Implement Measures to Reduce Impacts Associated with the Division of Communities	Less than significant
Parks, Recreation, and Open Space			
Construction	▪ Impact PR-4: Project Construction Would Diminish Access to or Use of Recreational Resources	▪ PR-MM#1: Temporary Restricted Access to Park Facilities During Construction ▪ PR-MM#2: Providing Park Access	Less than significant
	▪ Impact PR-5: Permanent Easements or Acquisitions of Property from Parks and Recreation Due to Construction	▪ PR-MM#4: Replacement of Property Acquired from Existing or Planned Multiuse Trails and Paths	Less than significant

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Aesthetics and Visual Resources			
Construction	▪ Impact AVQ-1: Visual Quality During Construction	▪ AVQ-MM#1: Minimize Visual Disruption from Construction Activities	Significant and unavoidable for Downtown Los Angeles Landscape Unit Less than significant for Gateway Cities Landscape Unit and Fullerton/Anaheim Landscape Unit for visual quality during construction
	▪ Impact AVQ-2: Nighttime Lighting During Construction	▪ AVQ-MM#2: Minimize Light Disturbance During Construction	Less than significant for all landscape units
Operation	▪ Impact AVQ-3: Visual Quality During Operation	▪ AVQ-MM#3: Incorporate Design Aesthetic Preferences into Final Design and Construction of Nonstation Structures ▪ AVQ-MM#4: Provide Vegetation Screening Along At-Grade and Elevated Guideways Adjacent to Residential Areas ▪ AVQ-MM#5: Replant Unused Portions of Land Acquired for the HSR Project ▪ AVQ-MM#6: Screen Traction Power Distribution Stations and Radio Communication Towers ▪ AVQ-MM#7: Incorporate Design Criteria for Elevated Guideways and Station Elements that Can Adapt to Local Context	Significant and unavoidable for Downtown Los Angeles Landscape Unit Less than significant for Gateway Cities Landscape Unit and Fullerton/Anaheim Landscape Unit

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Cultural Resources			
Construction	Impact CUL-1: Disturbance of Known Archaeological Resources During Construction	▪ CUL-MM#1: Mitigate Adverse Effects on Archaeological and Built Environment Resources Identified During Phased Identification and Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the Programmatic Agreement and Memorandum of Agreement ▪ CUL-MM#2: Halt Work in the Event of an Archaeological Discovery and Comply with the Programmatic Agreement, Memorandum of Agreement, Archaeological Treatment Plan, and All State and Federal Laws, as Applicable ▪ CUL-MM#3: Other Mitigation for Effects on Precontact Archaeological Sites	Less than significant
	▪ Impact CUL-2: Permanent Disturbance of Unknown Archaeological Resources During Construction	▪ CUL-MM#1: Mitigate Adverse Effects on Archaeological and Built Environment Resources Identified During Phased Identification and Comply with the Stipulations Regarding the Treatment of Archaeological and Historic Built Resources in the Programmatic Agreement and Memorandum of Agreement ▪ CUL-MM#2: Halt Work in the Event of an Archaeological Discovery and Comply with the Programmatic Agreement, Memorandum of Agreement, Archaeological Treatment Plan, and All State and Federal Laws, as Applicable ▪ CUL-MM#3: Other Mitigation for Effects on Precontact Archaeological Sites	Less than significant

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
	▪ Impact CUL-3: Permanent Demolition, Destruction, Relocation, or Alteration of Historic Architectural Resources or Setting During Construction	▪ CUL-MM#12: Design Review for Intrusion-Protective Barriers	Significant and unavoidable for disturbance for the permanent demolition, or destruction or alteration of historic architectural resources during construction
Cumulative Resources			
Air Quality and Global Climate Change			
Construction	Construction of the Shared Passenger Track Alternatives would contribute to cumulative impacts on regional emissions temporarily and, when combined with reasonably foreseeable projects that are built during the same timeframe, could cause or exacerbate an exceedance of air quality standards (i.e., exceedances of the NO_X threshold).	No feasible mitigation measures are available	Significant and Unavoidable (for NO_X only): cumulatively considerable
Operation	The additional activity associated with the storage and staging tracks at Hobart Yard could expose residential receptors to additional DPM emissions, and there is a possibility that the associated health risk may result in potentially significant cumulative impacts and the project would result in a considerable contribution.	No feasible mitigation measures are available	Significant and unavoidable: cumulatively considerable
Noise and Vibration			
Construction	Similar to noise impacts, ground-borne vibration generated by construction of the Shared Passenger Track Alternatives and the adjacent HSR section could combine with vibration from other planned development and transportation projects to affect nearby sensitive receptors.	▪ CUM-N&V-MM#1: Consult with Agencies Regarding Construction Activities	Significant and unavoidable: cumulatively considerable

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Operation	During operations, the project would result in severe noise impacts at noise-sensitive receptors. Additionally, these noise emissions would combine with the noise emissions of other planned rail transit projects to result in significant cumulative operational noise impacts under CEQA because the combined noise exposure would exceed FRA criteria for severe noise impacts.	▪ CUM-N&V-MM#1: Consult with Agencies Regarding Construction Activities	Significant and unavoidable: cumulatively considerable
Hazardous Materials and Wastes			
Construction	Substantial exposure to contaminants could occur during construction of the Shared Passenger Track Alternatives due to the proximity to two Superfund sites and because completion of remediation activities at each site is currently unknown. Given this, the Shared Passenger Track Alternatives, in combination with reasonably foreseeable projects within the cumulative RSA, would result in a significant cumulative impact and the project would have a cumulatively considerable contribution	No feasible mitigation measures are available	Significant and unavoidable: cumulatively considerable
Aesthetics and Visual Quality			
Construction	Temporary construction activities from development and other transportation projects such as the I-5 Freeway Expansion Project Construction, Parkwest Development, and OCVIBE would result in construction activities that would create temporary visual changes and introduce new visual elements from construction staging, equipment, lighting, and spoils. The Shared Passenger Track Alternatives would contribute to these cumulative impacts in locations where HSR structures would be built in the same areas as other development is expected. Construction staging areas would generally be surrounded by commercial or industrial lands, away from high-sensitivity viewer groups. Other projects may be under construction within the RSA at the same time, and visible by the same viewers. Therefore, construction of the Shared Passenger Track Alternatives, in combination with cumulative projects, may cause a significant cumulative impact on visual quality.	No feasible mitigation measures are available	Significant and unavoidable for Downtown Los Angeles Landscape Unit: cumulatively considerable

Resource Category	Summary of Significant (CEQA) Impacts Before Mitigation	Summary of Mitigation Measures	CEQA Level of Significance After Mitigation[1]
Operation	Once built and operational, built elements would be introduced into the RSA as part of the proposed project including trains (rolling stock), tracks, grade separated rights-of-way, and support structures (including radio towers, which may be up to 100 feet tall).	No feasible mitigation measures are available.	Significant and unavoidable for Downtown Los Angeles Landscape Unit: cumulatively considerable

[1] Significant impact determinations for the cumulative analysis are "cumulatively significant" impacts before mitigation and "cumulatively considerable" after mitigation.
CEQA = California Environmental Quality Act; DPM = diesel particulate matter; EMF = electromagnetic fields; FRA = Federal Railroad Administration; HSR = high-speed rail; I = Interstate; LOS = level of service; NO_X = nitrogen oxides; RSA = resource study area; SCAB = South Coast Air Basin; SCAQMD = South Coast Air Quality Management District

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 are no prudent or feasible alternatives 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 historic 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.

What are Section 4(f) properties?

Section 4(f) properties are publicly owned lands of parks, recreation areas, or wildlife and waterfowl refuges or publicly or privately owned lands of national, state, or local significance. A project that uses Section 4(f) properties may not be approved unless there are no prudent or feasible alternatives and the project includes all possible planning to minimize harm to such properties.

The Section 4(f) properties present in the study area include 41 park and recreation areas and 27 cultural resources. The Shared Passenger Track Alternatives would result in the permanent use of four historic properties (First Street Bridge, Fourth Street Bridge, Seventh Street Bridge, and Olympic Boulevard [Ninth Street] Bridge). The Authority has preliminarily concluded that both Shared Passenger Track Alternatives A and B would result in *de minimis* impacts on one recreational resource (Union Pacific Trail Phase II) and one historic property (Rio Hondo). The Authority has proposed that seven resources meet the "temporary occupancy" exception and would not constitute a use as a temporary occupancy (Rio Hondo River Trail, Rio Hondo River Bike Path, San Gabriel River Trail, San Gabriel River Bike Path, Coyote Creek North Fork Bikeway, Coyote Creek Main Branch Bikeway Extension [Planned], and Brea Creek Bastanchury Corridor [Planned]), and one historic property (Hunt Foods and Industries Office and Library). No feasible and prudent alternatives are available to avoid these permanent uses, and measures to minimize harm are included in the project to address the Shared Passenger Track Alternatives' effects on these resources. The severity of the other impacts on park, recreation, and open space resources would be similar under all project alternatives. Mitigation measures that are applicable to Section 4(f) resources include:

- PR-MM#1: Temporary Restricted Access to Park Facilities During Construction
- PR-MM#2: Providing Park Access
- PR-MM#4: Replacement of Property Acquired from Existing or Planned Multiuse Trails
- AQ-MM#1: Offset Project Construction Emissions in the South Coast Air Basin through South Coast Air Quality Management District Emissions Offsets Program
- AQ-MM#2: Requirements for Use of Zero-Emission or Near-Zero-Emission Vehicles and Off-Road Equipment to Reduce Construction Emissions
- AQ-MM#3: Reduce the Potential Impact of Stationary Sources
- N&V-MM#1: Construction Noise Mitigation Measures
- CUL-MM#8: Repair of Inadvertent Damage
- CUL-MM#12: Design Review for Protective Barriers

The Authority has preliminarily determined that both Shared Passenger Track Alternatives result in a Section 4(f) *de minimis* impact for one historic property at Rio Hondo Channel. The Authority is continuing coordination, as appropriate, with the State Historic Preservation Officer. During final design, additional measures to minimize harm may be agreed on to further reduce potential impacts on Section 4(f) properties. For additional information, refer to Chapter 4, Draft Section 4(f) and 6(f) Evaluations.

S.9.2 Section 6(f)

Section 6(f) properties are recreation resources funded by the Land and Water Conservation Fund Act. Land purchased with these funds cannot be converted to nonrecreational use without coordination with the National Park Service and mitigation that includes replacement of the quality and quantity of land used. No Section 6(f)-protected properties have been identified in the study area as part of this review. Therefore, the Shared Passenger Track Alternatives would not result in any Section 6(f) impacts.

S.10 Community Analysis

Community analysis assesses the potential for actions to have disproportionately high and adverse environmental and health impacts on minority/nonminority and low-income/non-low-income populations or communities. Authority policy also allows opportunities for substantive input for minority and low-income populations in the project planning process.

The process must have evaluated, to the extent practicable and permitted by law, the potential disproportionately high adverse human health and environmental impacts of their programs, policies, and activities on minority and low-income communities. A disproportionately high and adverse effect on minority and low-income populations is generally defined as an effect that:

- Would be predominantly borne by a specific community or population, or
- Would be suffered by a community or population and would be appreciably more severe or greater in magnitude than the adverse effect suffered by another community or population in the affected area relative to the reference community.

The Shared Passenger Track Alternatives would likely result in a limited set of disproportionately high and adverse effects on low-income and minority communities residing or conducting business in the project section related to operational air quality, operational noise and vibration, and business displacements. Because minority and low-income populations are predominantly present in the RSAs, these effects are expected to be greater in kind and magnitude to those living or working along the RSAs than those outside of the RSAs.

Operations health risk assessments were conducted to evaluate the cancer risk and chronic noncancer risk from diesel particulate matter emissions generated by the reconfiguration of the Hobart and Commerce Yards.[17] Project operation at Hobart Yard would add about 101,094 feet of relocated storage and staging tracks, spread across 14 new tracks. The BNSF mainline tracks would also be shifted along some locations in the project corridor. Future activity pertaining to the new tracks and BNSF mainline track shift is unknown and therefore cannot be analyzed in the health risk assessment. Without clear activity data to analyze, it is possible that project operation at Hobart Yard could pose health risk from exposure to diesel particulate matter. Because Hobart Yard is in the low-income and minority communities of Hobart/west Commerce, east Commerce, and Hobart in Vernon, there would be a potential disproportionately high and adverse effect from exposure to diesel particulate matter emissions. Because the potential increase in activity at Hobart Yard is unknown, the effectiveness of IAMFs and mitigation measures cannot be determined precisely. In the absence of certainty, exposure to diesel particulate matter emissions would result in a disproportionately high and adverse effect for purposes of this EIR/EIS.

Business displacements required for project construction would result in disproportionately high and adverse effects on minority communities in the following communities: the Hobart neighborhood in Vernon, and west Commerce. In addition, there is a deficit of suitable replacement units to accommodate the displaced businesses in Vernon and Commerce. With

[17] Acute (short-term) noncancer risk was not evaluated because no threshold (reference exposure level) for acute noncancer risk has been established for diesel particulate matter.

IAMFs and mitigation measures, effects would be reduced but disproportionately high and adverse effects would remain.

Project operation would result in permanent disproportionately high and adverse effects for noise and vibration in minority communities in the McCampbell neighborhood in Pico Rivera and minority and low-income communities in central Anaheim. With IAMFs and mitigation measures, these effects would be reduced; however, residual disproportionately high and adverse effects would remain. Additional information about this determination can be found in Chapter 5, Community Analysis. Because analyses remain preliminary, final determinations as to disproportionately high and adverse effects will not be made until the completion of the EIR/EIS process when analyses and outreach are completed.

The communities within the RSAs would experience beneficial effects resulting from the project, including transit improvements that would provide improved access to jobs and community amenities, new employment opportunities, reduced air quality-related emissions, improved bicycle and pedestrian facilities, and improved access and safety through grade separation of current at-grade crossings. Many of these benefits would be experienced by minority and low-income communities more greatly than the rest of the general public because of their proximity to the proposed project corridor.

In addition, construction of either Shared Passenger Track Alternative is projected to result in employment growth and the creation of an estimated 31,950 direct, indirect, and induced job-years in the RSA over 7 years. Of the total created annual job-years, 15,300 would be direct and 16,650 would be indirect and induced. This projected employment growth and job creation is expected to benefit the region during construction. Operations and maintenance (O&M) of the Shared Passenger Track Alternatives would result in employment growth and add 680 direct, indirect, and induced jobs in the four-county region by 2040. Job growth from increased connectivity in the region from the Shared Passenger Track Alternatives would occur in a wide variety of industries and the regional workforce is expected to fill many of the jobs created. These benefits would be experienced by communities throughout Los Angeles and Orange Counties.

When considering IAMFs, proposed mitigation measures, and benefits of the project, the Authority has preliminarily determined that the Shared Passenger Track Alternatives would result in disproportionately high and adverse environmental effects on low-income or minority communities related to operational air quality, operational noise and vibration, residential displacements, and business displacements in the following communities: southwest West Whittier–Los Nietos Census-Designated Place, Hobart in Vernon and Commerce, west Commerce, east Commerce, Downey and McCampbell in Pico Rivera, northeast Buena Park, southeast Santa Fe Springs, northern Santa Fe Springs, Almond in Fullerton, downtown Fullerton, central Anaheim, and southeast Anaheim.

The Authority's community analysis in this Draft EIR/EIS is preliminary and is subject to change based on comments received during the public comment period on this document.

In the Final EIR/EIS, the Authority will make its final determination concerning whether the project alternatives will have a disproportionately high and adverse effect on minority populations and low-income populations considering the project effects on these populations, measures to minimize harm, and project benefits. The Authority will take into account the input of minority populations and low-income populations during the ongoing and continuing engagement, including regarding measures to minimize harm as well as comments from minority populations and low-income populations on the Draft EIR/EIS.

S.11 Capital and Operational Costs

Capital costs represent the total cost associated with the design, management, land acquisition, and construction of the HSR system. The estimate of long-term O&M costs includes both train operations and infrastructure maintenance. Operations consist of labor costs, electrical power, and other factors required to keep the HSR in service whereas maintenance includes routine

servicing of vehicles, maintenance of the tracks, signals, communications, and other systems needed to keep the system safe and reliable.

To help evaluate and compare project construction costs, the Authority has developed nine main standardized capital cost categories, reflected in Table S-8.[18]

Table S-8 Standardized Capital Cost Categories for the Los Angeles to Anaheim Project Section (2023$ in millions)

FRA Standard Cost Categories[1]	Shared Passenger Track Alternatives A and B[2]
10 Track structures and track	$1,025
20 Stations, terminals, intermodal	$138
30 Support facilities: yards, shops	$1,075
40 Sitework and special conditions	$1,230
50 Systems	$375
60 Right-of-Way, Land, Existing Improvements[1]	$1,744
70 Vehicles	(Considered a systemwide cost and not included as part of the Shared Passenger Track Alternative)
80 Professional services	$755
90 Unallocated contingency[2]	$252
100 Finance Charges	Estimate to be developed prior to construction
Total[3]	**$6,593**
Early Action Project Total Costs	$3,014
Total with Early Action Project Costs Removed	$3,579

Source: Appendix 6-B, Los Angeles to Anaheim Project Section Preliminary Engineering for Project Definition Record Set Capital Cost Estimate Report

[1] The FRA's Standard Cost Categories do not include items specifically excluded such as allowances for agreements or right-of-way costs with the Los Angeles County Metropolitan Transportation Authority or Orange County Transportation Authority for shared use in the Los Angeles to Anaheim Project Section. These agreements would be required and would have an associated fee.

[2] Costs are in Quarter 4 2023$ (rounded to the nearest $million), except for Cost Category 30. The project cost includes an estimate for savings that could be reasonably accrued from standard value engineering review. The savings estimate is based on actual Authority engineering design review of the Los Angeles to Anaheim Project Section. More detail on the type of refinements considered as value engineering is found in the Preliminary Engineering for Project Definition General Notes.

[3] Although the Authority anticipates the funding for early action projects to come in part, and potentially in whole, from other agencies and entities, this cost estimate reflects combined spending anticipated by the Authority and others. Costs do not include optional intermediate high-speed rail station facilities at Norwalk/Santa Fe Springs or Fullerton. Totals may not add up because of rounding.

Authority = California High-Speed Rail Authority; FRA = Federal Railroad Administration

The cost associated with construction of Shared Passenger Track Alternatives A and B is estimated at approximately $6,593 million for each alternative.

O&M costs account for staff, labor, and materials supplies required to run the HSR system and to perform required maintenance. O&M costs are estimated based on daily rail miles, operating speeds, HSR station configurations, maintenance and storage facilities, and assumed operating frequencies in accordance with the 2023 Project Update Report.

[18] The capital costs presented in this EIR/EIS reflect the capital costs that were developed for the 2023 Supplemental Alternatives Analysis that was approved by the Authority Board in May 2024. The Authority is preparing updated capital costs, to be published with the 2026 Business Plan in early 2026.

The O&M cost forecasts for the Shared Passenger Track Alternatives are based on assumptions from the *High-Speed Rail Operating and Maintenance Cost Model Documentation.* The Authority developed other assumptions based on refinements to the HSR plan over time and aspects specific to the project Section.

Total O&M costs include additional assumptions related to maintenance and train operations. The system would include one operations control center and three terminal control facilities to manage dispatching. A heavy maintenance facility would be in the Central Valley, with two LMFs dispersed across the rest of the system, including one in Northern California along the Peninsula Corridor at Brisbane and one in the project section in Southern California at either 26th Street in Vernon or 15th Street in Los Angeles. O&M support activities would also be provided at five maintenance of infrastructure facilities.

Table S-9 outlines the medium ridership forecast O&M costs by cost category estimated for Phase 1 of the California HSR System for the year 2040.

Table S-9 Annual Operational and Maintenance Costs for Phase 1 (2015 $millions)

Operations and Maintenance Activity	2040 Medium Ridership Forecast
Train operations	$285
Dispatching	$30
Maintenance of equipment	$134
Maintenance of infrastructure	$122
Station and train cleaning	$71
Commercial	$94
General and administrative	$53
Insurance	$52
Unallocated contingency	$35
Total	**$874**

Source: Appendix 6-A, High-Speed Rail Operating and Maintenance Cost for Use in Environmental Impact Report/Environmental Impact Statement Project-Level Analysis
Totals may not add up because of rounding.

O&M costs in 2015 dollars as apportioned to the project section are listed in Table S-10 and are based on the Phase 1 HSR system, total cost per route mile for the medium-cost scenario. The costs associated with O&M are apportioned on the basis of trainset miles operating in the project section, taken from a systemwide total. The costs associated with the maintenance of infrastructure facilities are apportioned to each geographic project section as a rate of 31 miles to the 520 Phase 1 total route miles. The O&M cost estimate for the project section is consistent with assumptions used for other project sections in the HSR program.

Table S-10 Annual Operational and Maintenance Costs, Apportioned to the Los Angeles to Anaheim Project Section (2015 $millions)

Operations and Maintenance Activity	2040 Medium Ridership Forecast
Train operations	$17.61
Dispatching	$1.85
Maintenance of equipment	$8.28
Maintenance of infrastructure	$7.54

Operations and Maintenance Activity	2040 Medium Ridership Forecast
Station and train cleaning	$4.39
Commercial	$5.81
General and administrative	$3.27
Insurance	$3.21
Unallocated contingency	$2.16
Total	**$54.12**

Source: Appendix 6-A (Authority 2017)
The 2040 medium cost is based on a rate of $1.75 million per mile.
Totals may not add up because of rounding.

S.12 Areas of Controversy

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

- Protection of the environment
- Alignment and station alternatives
- Connectivity and coordination with impacts on other transportation facilities
- Train technologies
- Project funding costs
- Right-of-way acquisition and planning
- Traffic impacts
- Noise and vibration impacts

S.13 Environmental Process

The Authority is circulating the Draft EIR/EIS to affected local jurisdictions, state and federal agencies, tribes, community organizations, other interest groups, interested individuals, and the public. The document also is available at the Authority offices, public libraries in the study area, and on the Authority's website: www.hsr.ca.gov. The following discussion outlines the next steps in the environmental process, from public and agency comment on the Draft EIR/EIS to construction and operation.

S.13.1 Public and Agency Comment

The Draft EIR/EIS will be circulated for a comment period, which will include public meetings and hearings. For more information on the schedule of public meetings and hearings, visit the Authority's website: www.hsr.ca.gov.

S.13.2 Identification of Preferred Alternative

After considering public and agency comments, the Authority further refined the Shared Passenger Track Alternative into Shared Passenger Track Alternatives A and B. The Authority identified Shared Passenger Track Alternative A as the Preferred Alternative in May 2024. The Authority will prepare a Los Angeles to Anaheim Project Section Final EIR/EIS that will include responses to comments and a description of the Preferred Alternative and proposed mitigation.

As described above, the alignment is the same between Shared Passenger Track Alternatives A and B. The only difference between Shared Passenger Track Alternatives A and B is the location of the LMF, at 26th Street or 15th Street (Shared Passenger Track Alternative A or B, respectively). The Preferred Alternative includes the 26th Street LMF for the following reasons:

- **Operational Flexibility**

  - The 26th Street LMF would be a double-ended yard with two-way access to mainline tracks from both the north and south, providing greater operational flexibility and redundancy. The 15th Street LMF would only provide one-way access for trains from the mainline tracks, increasing the chance of track fouling and decreasing operational efficiency.
  - The 26th Street LMF would have more trainset storage capacity than the 15th Street LMF.
  - The 15th Street LMF would be situated in a highly constrained area of the West Bank between the existing Arts District neighborhood and Amtrak's Eighth Street.
  - Maintenance yard track and facilities. Accommodation of the HSR lead tracks into the Level III LMF yard would require a reconfiguration of the existing Amtrak lead track and relocation of the access gate to its Eighth Street Yard.

- **Displacements and Right-of-Way**
  - The 26th Street LMF would use land that would be acquired to build other elements of the project, such as the Hobart Yard modifications, and it would not require acquisition of additional property. This would minimize displacement impacts compared to obtaining new right-of-way, as would be needed for the 15th Street LMF alternative.

- **Other Environmental Impacts**
  - Although most of the environmental impacts are similar, construction of the 15th Street LMF would result in a greater magnitude of some impacts, specifically from the yard lead track trenches and excavation of the yard site. Construction of the trenches would result in a greater potential for vibration damage impacts on the historic Olympic Boulevard bridge. Moreover, the 15th Street LMF would result in impacts on one additional known archaeological resource.

Regarding the HSR station options, no HSR station options are included in the Preferred Alternative for the following reasons:

- As discussed in Chapter 8, Preferred Alternative, the Fullerton HSR Station Option would reduce the project footprint in Fullerton. Omitting the HSR station option here would thus result in fewer impacts on the community and better align with the City of Fullerton's Transportation Specific Plan, which aims to remove public parking facilities in the downtown area.
- It reduces costs.
- It reduces duplicative passenger rail service within the corridor. LAUS and ARTIC are only 30 miles apart: the Norwalk/Santa Springs HSR Station Option would be 13 miles from ARTIC and 10 miles from the Fullerton HSR Station Option. The Fullerton HSR Station Option would only be 10 miles from ARTIC. Existing passenger rail service, provided by Amtrak and Metrolink, already provides connections among ARTIC, Fullerton, Norwalk/Santa Fe Springs, and LAUS. Additionally, Proposition 1A, passed by California voters in 2008, included a provision limiting the total number of HSR stations that could be built. Inclusion of one of the HSR station options could preclude future station development in Phase 2 of the HSR system.

Neither of the locations for the HSR station option would result in increased benefits related to transit-oriented development, because passenger rail stations already exist at those locations. Therefore, no HSR station option is included in the Preferred Alternative.

S.14 Next Steps in the Environmental Process

The Authority is circulating the Draft EIR/EIS to affected local jurisdictions, state and federal agencies, tribes, community organizations, other interest groups, interested individuals, and the public. The document also is available at the Authority offices, public libraries in the study area, and on the Authority's website. The following discussion outlines the next steps in the

environmental process, from public and agency comment on the Draft EIR/EIS to construction and operation.

S.14.1 California High-Speed Rail Authority Decision Making

The Authority will prepare the Final EIR/EIS, which will include responses to comments on this Draft EIR/EIS. The Authority will then consider whether to certify the Final EIR/EIS for compliance with CEQA. If 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 would be one of the following:

- Changes or 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 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 HSR alternatives identified in the Final EIR/EIS.

If the Authority proceeds with approval of the project, the Authority would file a Notice of Determination that identifies the project and notes whether it would have a significant impact on the environment. If the Authority approves a project that would result in the occurrence of a significant impact identified in the Final EIR but not avoided or substantially lessened, CEQA requires the preparation of a Statement of Overriding Considerations, which provides specific reasons to support the project including economic, legal, social, technological, or other benefits of the proposed project that outweigh adverse environmental effects. If such a statement is prepared, the Authority's Notice of Determination will reference the statement.

The environmental process under NEPA is completed with publication of a Final EIR/EIS and a Record of Decision (ROD). Pursuant to 23 U.S.C. 327 and a Memorandum of Understanding effective July 22, 2024, the FRA assigned its federal environmental review responsibilities to the Authority. The Authority is now the NEPA lead agency. Therefore, 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, and Section 4(f); present FRA's determination of air quality conformity; and identify any required mitigation measures.

S.14.2 Federal Railroad Administration Decision Making

As established in the NEPA Assignment Memorandum of Understanding, the FRA will make findings and determinations with regard to air quality conformity under the Clean Air Act.

S.14.3 U.S. Army Corps of Engineers Decision Making

Construction of the project would require a permit from USACE under Section 404 of the Clean Water Act (33 U.S.C. 1251 et seq.). A permit under Section 10 of the Rivers and Harbors Act (33 U.S.C. 403) would not be required because no navigable waters as defined under 33 Code of Federal Regulations Part 329.4 would be crossed by the project. Permission under Section 14 of the Rivers and Harbors Act (33 U.S.C. 408) would be required for effects on flood-control facilities and floodplains. The project section qualifies for the USACE Nationwide Permit Program, specifically Nationwide Permit 14, Linear Transportation Projects. The Nationwide Program is a streamlined permitting program for categories of activities expected to result in minimal adverse environment effects. Because the Authority has committed to meet the stringent requirements of this program, including impact thresholds and mandatory mitigation measures, compliance with the Clean Water Act 404(b)(1) Guidelines is achieved on a programmatic basis rather than on the project level. Accordingly, the project appears to not need separate Clean Water Act Section 401

water quality certification and would fall under the exemptions for an alternatives analysis, pursuant to Section IV.A.1(g) of the procedures.

USACE is using this Draft EIR/EIS to integrate the procedural and substantive requirements of NEPA and its permitting responsibilities (including the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines) to provide a single document that streamlines and enables informed decision making including, but not limited to, adoption of the EIS, issuance of necessary RODs, Section 404 permit decisions and Section 408 permit decisions (as applicable). This single document can be used for alteration/modification of completed federal flood risk management facilities and any associated O&M, and real estate permissions or instruments (as applicable).

S.14.4 Surface Transportation Board Decision Making

The Authority would seek STB permission to build the project section. On completion of the environmental process and issuance of a ROD and on request from the Authority, the STB is anticipated to issue a final decision on whether to approve the project (the final decision also serves as the STB's ROD under NEPA). No project-related construction on the project section may begin until the STB's final decision has been issued and has become effective.

S.15 Project Implementation

After the issuance of the ROD and Notice of Determination, the Authority would complete final design, obtain construction permits, and acquire property before construction.

The anticipated dates for completion of key milestones as part of the environmental process are provided in Table S-11. After the issuance of the ROD and Notice of Determination, the Authority would complete final design, obtain construction permits, and acquire property before construction.

Table S-11 Los Angeles to Anaheim Project Section Milestone Schedule

Date	Key Milestones
December 2025	Public release of Draft EIR/EIS
November 2026	Final EIR/EIS published
December 2026	Notice of Determination and Record of Decision

EIR/EIS = environmental impact report/environmental impact statement