

California High-Speed Rail Authority

Los Angeles to Anaheim Project Section

**Staff Report: State's
Preferred Alternative**

November 2018



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ACRONYMS AND ABBREVIATIONS

AA	Alternatives Analysis
Amtrak	National Passenger Railroad Corporation
ARTIC	Anaheim Regional Transportation Intermodal Center
Authority	California High-Speed Rail Authority
BNSF	BNSF Railway
CEQA	California Environmental Quality Act
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FRA	Federal Railroad Administration
HSR	High-Speed Rail
LAUS	Los Angeles Union Station
LOSSAN Corridor	Los Angeles – San Diego – San Luis Obispo Rail Corridor
NEPA	National Environmental Policy Act
SAA	Supplemental Alternatives Analysis
UPRR	Union Pacific Railroad

1 INTRODUCTION

1.1 Report Purpose

The purpose of this report is to provide the evaluation framework for a staff report that presents the High-Speed Rail (HSR) Project Alternative as the staff-recommended State's Preferred Alternative that the Los Angeles to Anaheim Project Section Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS) will identify. The California High-Speed Rail Authority (Authority) and Federal Railroad Administration (FRA) are preparing the EIR/EIS pursuant to the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA).

This staff report refers to the staff-recommended State Preferred Alternative because it has not yet received Authority Board of Directors (Board) concurrence. Authority staff will present this report to the Board at the November 15, 2018 Board meeting and provide an opportunity for the Board members to offer input and direction to staff. If the Board concurs with the staff report and recommendation, then the Draft EIR/EIS will identify the HSR Project Alternative as the State Preferred Alternative. If FRA also concurs, the HSR Project Alternative will also be identified as the NEPA Preferred Alternative.

The staff report and Board concurrence do not in any way represent a final decision by the Authority or the FRA on selection of the HSR Project Alternative. At the conclusion of the EIR/EIS public comment period, the Authority will determine whether to certify the Final EIR, adopt necessary CEQA findings, and take action to approve the Preferred Alternative or another alternative for the Los Angeles to Anaheim Project Section. The Authority anticipates that the FRA would issue a Record of Decision on the Final EIS.

1.2 Preferred Alternative Approach

The Authority and the FRA believe identifying the Preferred Alternative in the Draft EIR/EIS facilitates a more effective public comment period. This approach allows the public, stakeholders, and relevant public agencies to have more time to focus their attention and comments, if they so choose, on the Preferred Alternative that will be identified in the Draft EIR/EIS rather than the Final EIR/EIS. This approach also aligns with recent federal laws, which encourage the federal transportation modal administrations to name a Preferred Alternative in the Draft EIS rather than the Final EIS. This approach also more closely follows CEQA,¹ under which a Draft EIR identifies and defines a proposed project (which is conceptually equivalent to the Preferred Alternative).

¹ Public Resources Code (21000-21189)

2 ALTERNATIVES

2.1 Alternatives Development

This chapter describes the background and development of the HSR system and its individual components. This chapter also describes the background, development, and details of the alternatives preliminarily considered for the Los Angeles to Anaheim Project Section (project section) of the HSR system and the reasons for selecting the alternatives studied in detail in the EIR/EIS. The HSR Project Alternative discussed in this chapter is based on the alternatives selected by the Authority and FRA at the conclusion of the Tier 1 EIR/EIS processes for the HSR system (see Section 1.1.2, The Decision to Develop a Statewide High-Speed Rail System). A comparative analysis of the HSR Project Alternative and the No Project Alternative is included in Chapter 3 and Appendix A of this staff report for key environmental resources.

The Los Angeles to Anaheim Project Section of the HSR system would extend approximately 30 miles, between Los Angeles Union Station (LAUS) in Los Angeles and Anaheim Regional Transportation Intermodal Center (ARTIC) in Anaheim. This narrow, existing railroad corridor is constrained by the surrounding urban environment and other existing rail operators in the area, including trains operated by the National Railroad Passenger Corporation (Amtrak), Metrolink (governed by the Southern California Regional Rail Authority), the Union Pacific Railroad (UPRR), and BNSF Railway (BNSF). The project section would cross the cities of Los Angeles, Vernon, Bell, Commerce, Montebello, Pico Rivera, Santa Fe Springs, Norwalk, La Mirada, Buena Park, Fullerton, and Anaheim, as well as the unincorporated area of Los Angeles County known as West Whittier. At LAUS, it would connect with the Burbank to Los Angeles Project Section and the rest of the HSR alignment. The planned HSR alignment for this project section would run along a portion of the existing Los Angeles – San Diego – San Luis Obispo Rail Corridor (LOSSAN Corridor) between LAUS and ARTIC with intermediate stations in Norwalk/Santa Fe Springs and Fullerton.

The Authority and FRA developed the HSR Project Alternative by conceptualization, analysis, and screening, and interagency concurrence through the NEPA/Clean Water Act Section 404/Rivers and Harbors Act Section 408 integration process. Extensive engagement with the public, agencies and Native American tribes during the alternatives analysis process served to aid the development of the alternative.

2.2 Background

2.2.1 Los Angeles to Anaheim Project Section EIR/EIS Background

The Los Angeles to Anaheim Project Section would be a critical link in the Phase 1 HSR system connecting San Francisco and the Bay Area to Los Angeles and Anaheim. The Authority and FRA relied on the *2005 Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System (Statewide Program EIR/EIS)* (Authority and FRA 2005) to select a corridor for further study in the Los Angeles to Anaheim Project Section EIR/EIS. Therefore, the project-specific EIR/EIS for the Los Angeles to Anaheim Project Section focuses on alternative alignments along the general Preferred Alternative corridor.

Pursuant to the requirements of NEPA and CEQA, the Authority and FRA have conducted a public and agency involvement program as part of the environmental review process. The Authority and FRA have actively engaged local representatives, Native American tribes, public agencies, business interests, the public, and communities along the corridor in the development of the Los Angeles to Anaheim Project Section. This outreach began in 2007 with the Authority and FRA issuing a Notice of Intent to begin a project-level environmental review of the Los Angeles to Anaheim Project Section.² Scoping meetings were held in 2007 to receive input on the

² The Notice of Intent was issued in the Federal Register on March 15, 2007 (72 Fed. Reg. 12250).

scope of issues that should be analyzed in the EIR/EIS. The Authority and FRA published a draft Scoping Report documenting the results of this process in September 2009. The Authority and FRA considered public input received during additional public meetings held throughout the preparation of this Draft EIR/EIS. The Authority and FRA also engaged Environmental Justice populations throughout the Draft EIR/EIS process.

2.3 Potential Alternatives Considered During Alternatives Screening Process

Following the decisions of the Statewide Program EIR/EIS (see Section 1.1.2, The Decision to Develop a Statewide High-Speed Rail System), the Authority, in cooperation with the FRA, began the environmental review process for the Los Angeles to Anaheim Project Section. The environmental review process includes a NEPA Notice of Intent and CEQA Notice of Preparation (published in March 2007) and an agency and public scoping process. Public and agency comments received during the Los Angeles to Anaheim Project Section EIR/EIS scoping period and through interagency coordination meetings also informed the development of initial alternatives for the screening evaluation. After analysts identified the initial group of potential alternatives, they developed alignment plans, preliminary profile concepts, and cross sections.

The following sections summarize the Los Angeles to Anaheim Project Section alternatives development and analysis process and results.

2.3.1 High-Speed Rail Project-Level Alternatives Development Process

2.3.1.1 Project Definition Framework and Alternatives Development

HSR project definition began with the corridor and station locations selected by the Authority and FRA with the Statewide Program EIR/EIS (Authority and FRA 2005) and concludes with the identification of the preferred HSR Project Alternative. Project definition becomes increasingly complete, detailed, and collaborative to meet the analytical and decision-making needs at progressive stages of CEQA/NEPA and NEPA integration processes.

Summary of High-Speed Rail Project-Level Alternatives Development Process

An EIR/EIS is required to analyze the potential impacts of a range of reasonable alternatives (Cal. Code Regs., tit. 14, § 15126.6; 40 C.F.R. § 1502.14(a)). Under CEQA, the alternatives are to include a No Project Alternative and a range of potentially feasible alternatives that would (1) meet most of the project's basic objectives and (2) avoid or substantially lessen one or more of the project's significant adverse impacts (Cal. Code Regs., tit. 14, § 15126.6(c)). In determining the alternatives to be examined in the EIR, the lead agency must describe its reasons for excluding other potential alternatives. There is no ironclad rule governing the range of alternatives to be studied in an EIR other than the "rule of reason." Under the "rule of reason," an EIR is required to study a sufficient range of alternatives in order to permit a reasoned choice (Cal. Code Regs., tit. 14, § 15126.6(f)). It is not required that all possible alternatives be studied.

Under NEPA, an EIS is required to analyze reasonable alternatives to the proposed action, including the no-action alternative. (40 C.F.R. § 1502.14) Pursuant to Section 14(l) of the FRA's Procedures for Considering Environmental Impacts, these include "all reasonable alternative courses of action that could satisfy the [project's] purpose and need" (64 Fed. Reg. 28546). The range of alternatives should include those that are technically and economically practical and feasible. There is no minimum number of alternatives that must be considered in an EIS, and consideration of a single build alternative is permissible when there are no other reasonable alternatives.

The development of project-level alternatives followed the process described in *Alternatives Analysis Methods for Project EIR/EIS* (Authority 2009). The assessment of potential alternatives involved both qualitative and quantitative measures that address applicable policy and technical considerations. These included field inspections of corridors; project team input and review considering local issues that could affect alignments; qualitative assessment of constructability, accessibility, operations, maintenance, right-of-way, public infrastructure impacts, railway

infrastructure impacts, and environmental impacts; engineering assessment of project length, travel time, and configuration of key features of the alignment, such as the presence of existing infrastructure; and geographic information system–based analysis of impacts on farmland, water resources, wetlands, threatened and endangered species, cultural resources, current urban development, and infrastructure.

The Authority and FRA evaluated the potential alternatives against the HSR system performance criteria: travel time, route length, intermodal connections, capital costs, operating costs, and maintenance costs. Screening also included environmental criteria to measure the potential impacts of the proposed alternatives on the natural and human environment. The land use criteria measured the extent to which a station alternative would support transit use; would be consistent with existing adopted local, regional, and state plans; and would be supported by existing and future growth areas. Constructability measured the feasibility of construction and the extent to which right-of-way would be obtainable or constrained. Community impacts measured the extent of disruption to neighborhoods and communities, such as potential to minimize (1) right-of-way acquisitions, (2) dividing an established community, and (3) conflicts with community resources. Environmental resources and quality measured the extent to which an alternative minimizes impacts on natural resources.

Based on the Statewide Program EIR/EIS (Authority and FRA 2005), the Authority and FRA selected the LOSSAN Corridor in 2005 as the alignment to advance for further Tier 2 (project-level) study between Los Angeles and Anaheim. The LOSSAN corridor was selected during the Tier 1 (statewide) process because of its predicted lower capital cost, fewer negative environmental impacts, ability to provide improvements to all passenger rail services along the corridor, and public support. The Authority and FRA based the selection of the LOSSAN Corridor alignment on the assumption that the capacity and compatibility uses associated with the shared operation with existing non-electric service (Amtrak, Metrolink, and freight trains) would be resolved in subsequent project-level studies.

The Authority and FRA then conducted further planning to develop and screen potential alignment alternatives between Los Angeles and Anaheim, in cooperation with FRA. The Anaheim to Los Angeles Section Alternatives Analysis Report (2009 AA Report) (Authority and FRA 2009), the Los Angeles to Anaheim Supplemental Alternatives Analysis Report (2010 SAA Report) (Authority and FRA 2010), and the Los Angeles to Anaheim Project Section Supplemental Alternatives Analysis Report (2016 SAA Report) (Authority and FRA 2016) document the alternatives development process. The 2016 SAA Report considered two alternatives: Alternative 1 (formerly called the Dedicated High-Speed Train Alternative) and Alternative 2 (formerly called the Consolidated Shared-Track Alternative). Due to higher capital costs, right-of-way impacts, and potential impacts on sensitive resources, the FRA and the Authority eliminated Alternative 1 from further consideration, and refined Alternative 2 to include up to five main line tracks in the project corridor. This allowed for introduction of HSR service with blended operations with existing Amtrak, Metrolink, and BNSF trains.

The Refinement Report (Appendix 2-B) describes design refinements to 2016 SAA Alternative 2. These design refinements occurred after the April 2016 SAA as a result of engagement with key stakeholders within the project corridor (BNSF, Metrolink, Amtrak, Orange County Transportation Authority, Los Angeles County Metropolitan Transportation Authority [LA Metro], local jurisdictions, the Gateway Cities Council of Governments). The Authority and FRA made design refinements to Alternative 2 between Redondo Junction and Fullerton Junction, which is the portion of the project section owned by BNSF. Generally, the design refinements to Alternative 2 reduced the total acres that would need acquired to introduce HSR service within the active passenger and freight rail corridor. This EIR/EIS refers to the refined version of Alternative 2 as the HSR Project Alternative.

2.3.1.2 Alternatives Considered and Findings

The alternatives analysis describes how alternatives were developed, taking into account alignment and station development considerations for the urban corridor between Los Angeles and Anaheim. The alternatives analysis process evaluated design options within individual

alternatives in order to isolate concerns, screen, and refine the overall alternative to avoid key environmental issues or improve performance. The alternatives not carried forward had greater direct and indirect environmental impacts, were impracticable, or failed to meet the project purpose.

The following sections discuss the alternatives included in the alternatives analyses. Additional information on alternatives preliminarily considered but not carried forward for full evaluation in this EIR/EIS can be found in the AA Report (Authority 2009), the 2010 SAA Report (Authority and FRA 2010), and the 2016 SAA Report (Authority and FRA 2016).

2009 Alternatives Analysis Report

The 2009 AA Report used preliminary planning, environmental, and engineering information to identify feasible and practicable alternatives to carry forward for environmental review and preliminary engineering drawings in the project EIR/EIS. Alternatives analyzed in the 2009 AA Report were the Program Level Shared-Track Alternative, Expanded Shared-Track Alternative, and Dedicated High-Speed Train Alternative. The Authority added a station option in Fullerton. The Authority did not advance the Anaheim to Irvine subsection into project analysis and therefore did not consider it in the 2009 AA Report. The Program Level Shared-Track Alternative included modifications to the typical at-grade configuration in station areas where freight access would be needed on the south side of the right-of-way. The Expanded Shared-Track Alternative included three tracks, instead of the two existing, for the subsection between Hobart Yard and Fullerton. With the information available at the time, the Authority deemed the existing two tracks dedicated to BNSF traffic unable to accommodate future freight and passenger train traffic. The Dedicated High-Speed Train Alternative configuration would allow HSR to run on dedicated tracks and leave enough right-of-way for all non-HSR traffic operations on up to four conventional tracks if needed in the future.

For each of these alternatives, the 2009 AA Report evaluated detailed configuration options for three subsections: Anaheim to Fullerton, Fullerton to Hobart Yard, and Hobart Yard to LAUS, and associated stations. The 2009 AA Report found the Dedicated High-Speed Train Alternative was the only alternative that would provide the capacity and performance to meet the Phase 1 Service Plan. The Service Plan proposed five trains per hour at the time the report was published (Authority 2009). The Authority also determined that shifting existing tracks and using minimum design standards for horizontal features could reduce the right-of-way needed for the Dedicated High-Speed Train Alternative. The 2009 SAA Report dropped the Expanded Shared-Track Alternative and the Program Level Shared-Track Alternatives from further consideration due to the uncertainty, at the time, of the operational ability for HSR to share tracks with other trains (Authority 2009).

Table 2-1 lists design options carried forward or eliminated from further consideration.

Table 2-1 Summary of High-Speed Rail Project Alternative Design Options—2009 Alternatives Analysis Report

Project Component	Design Options Carried Forward	Design Options Eliminated from Further Consideration
Maintenance/Layover Facilities	<ul style="list-style-type: none"> ▪ Anaheim Area Maintenance/Layover Facility ▪ Los Angeles Area Maintenance/Layover Facility 	<ul style="list-style-type: none"> ▪ Intermediate Maintenance/Layover Facilities
ARTIC	<ul style="list-style-type: none"> ▪ 6-track, 2-platform at-grade station 	<ul style="list-style-type: none"> ▪ Existing Anaheim Station
Anaheim	<ul style="list-style-type: none"> ▪ At-grade ▪ Deep tunnel 	<ul style="list-style-type: none"> ▪ Aerial ▪ Braced trench tunnel

Project Component	Design Options Carried Forward	Design Options Eliminated from Further Consideration
Fullerton Station	<ul style="list-style-type: none"> At-grade—no HSR station Aerial HSR station 	<ul style="list-style-type: none"> Deep tunnel HSR station
Fullerton Airport	<ul style="list-style-type: none"> HSR tracks in trench 	<ul style="list-style-type: none"> HSR tracks at-grade
Buena Park Metrolink Station	<ul style="list-style-type: none"> HSR tracks south of existing station 	<ul style="list-style-type: none"> HSR tracks aerial
La Mirada Railyards	<ul style="list-style-type: none"> HSR tracks north of existing tracks 	<ul style="list-style-type: none"> HSR tracks south of existing tracks
Norwalk/Santa Fe Springs Station	<ul style="list-style-type: none"> No HSR station HSR station north of existing station 	<ul style="list-style-type: none"> HSR station east of existing station
DT Junction ¹	<ul style="list-style-type: none"> La Habra subdivision flyover/Patata Line trench Tall aerial structure 	<ul style="list-style-type: none"> At-grade rail crossings
Commerce/Vernon Railyards	<ul style="list-style-type: none"> HSR tracks on aerial structure south of existing tracks 	<ul style="list-style-type: none"> HSR tracks at-grade
Interstate 710	<ul style="list-style-type: none"> Tall aerial structure 	<ul style="list-style-type: none"> At-grade
Hobart Yard/Los Angeles River	<ul style="list-style-type: none"> Washington Blvd/at-grade 	<ul style="list-style-type: none"> Union Pacific/tall aerial
Los Angeles Station	<ul style="list-style-type: none"> Aerial HSR station above existing LAUS 	<ul style="list-style-type: none"> Deep tunnel HSR station below existing LAUS Shallow trench HSR station on Los Angeles River west bank

Source: Authority and FRA, 2009

¹ DT Junction is the historical and industry name for this area; DT does not represent additional information.

ARTIC = Anaheim Regional Transportation Intermodal Center

HSR = high-speed rail

LAUS = Los Angeles Union Station

2010 Supplemental Alternatives Analysis Report

The 2010 SAA Report accounted for refinements in design criteria and added the Consolidated Shared-Track Alternative to compare to the Dedicated Alternative. From the time of the 2009 AA Report, the Authority continued coordination with stakeholders such as LA Metro, Orange County Transportation Authority, Metrolink, and Amtrak. This coordination resulted in new proposed operational and physical configurations that would allow for consideration of a revised shared-track alternative, which became the Consolidated Shared-Track Alternative. Both the Dedicated High-Speed Train Alternative and the Consolidated Shared-Track Alternative were able to provide the operational capacity and performance to implement HSR.

The Dedicated High-Speed Train Alternative’s two tracks exclusively for high-speed trains allowed for higher-speed operations than the Shared-Track Alternative’s, and removed potential impacts from delayed Metrolink and Amtrak service. It also prevented mixing HSR trains with conventional trains, thus not requiring a waiver from the FRA. The Consolidated Shared-Track Alternative minimized the operating impacts of shared-track operation (such as congestion and delay) by consolidating all passenger rail schedules in the corridor, and provided separation between freight trains and HSR trains. The Authority and FRA advanced both alternatives. As with the 2009 AA Report, the 2010 SAA Report refined various station, alignment, and maintenance facility design options as coordination with local cities and agencies progressed and additional engineering detail became available. Table 2-2 and 2-3 provide overview information on the project component design options.

Table 2-2 Summary of Dedicated High-Speed Rail Project Alternative Design Options—2010 Supplemental Alternatives Analysis Report

Project Component	Design Options Carried Forward	Design Options Eliminated from Further Consideration
Los Angeles Station	<ul style="list-style-type: none"> ▪ LAUS aerial HSR station option ▪ LAUS at-grade HSR station option 	<ul style="list-style-type: none"> ▪ LAUS deep tunnel HSR station option ▪ Vignes aerial HSR station option ▪ West bank trench HSR station option
Los Angeles River	<ul style="list-style-type: none"> ▪ At-grade option 	<ul style="list-style-type: none"> ▪ Tall aerial option
Vernon/Commerce Railyards	<ul style="list-style-type: none"> ▪ Interstate 710 tall aerial option 	<ul style="list-style-type: none"> ▪ Interstate 710 at-grade option
Pico Rivera Railyard	<ul style="list-style-type: none"> ▪ Shifted track alignment option 	<ul style="list-style-type: none"> ▪ Existing track alignment option
DT Junction	<ul style="list-style-type: none"> ▪ Tall aerial option ▪ Aerial south option 	<ul style="list-style-type: none"> ▪ At-grade option
Norwalk/Santa Fe Springs Station	<ul style="list-style-type: none"> ▪ No HSR station option ▪ East HSR station option 	<ul style="list-style-type: none"> ▪ North HSR station option
La Mirada Railyards	<ul style="list-style-type: none"> ▪ At-grade option 	<ul style="list-style-type: none"> ▪ Aerial option
Buena Park/Fullerton Airport	<ul style="list-style-type: none"> ▪ Underpass option 	<ul style="list-style-type: none"> ▪ Flyover option
Fullerton Station	<ul style="list-style-type: none"> ▪ No HSR station option ▪ At-grade HSR station option 	Not applicable
Anaheim	<ul style="list-style-type: none"> ▪ At-grade option ▪ Deep bore tunnel option 	<ul style="list-style-type: none"> ▪ Aerial option ▪ Braced trench tunnel option
ARTIC	<ul style="list-style-type: none"> ▪ West at-grade HSR station option ▪ Underground HSR station option 	<ul style="list-style-type: none"> ▪ East at-grade station option
Vehicle Maintenance Facility	<ul style="list-style-type: none"> ▪ Anaheim west option ▪ Los Angeles 8th St option¹ 	<ul style="list-style-type: none"> ▪ Los Angeles Union Pacific Rail Road Railyard option ▪ Anaheim east option

Source: Authority and FRA, 2010

¹ While the Authority and FRA noted that additional evaluation would be needed for the Los Angeles 8th Street option, it was carried forward as an option.

LAUS = Los Angeles Union Station

HSR = high-speed rail

ARTIC = Anaheim Regional Transportation Intermodal Center

Table 2-3 Summary of Consolidated Shared-Track Alternative Design Options—2010 Supplemental Alternatives Analysis Report

Project Component	Design Options Carried Forward	Design Options Eliminated from Further Consideration
Los Angeles Station	<ul style="list-style-type: none"> ▪ LAUS aerial HSR station option ▪ LAUS at-grade HSR station option 	Not applicable
Los Angeles River Adjacent	<ul style="list-style-type: none"> ▪ At-grade/cut and cover option 	Not applicable

Project Component	Design Options Carried Forward	Design Options Eliminated from Further Consideration
Los Angeles River Crossing	<ul style="list-style-type: none"> Aerial Los Angeles River crossing 	Not applicable
Montebello/Pico Rivera	<ul style="list-style-type: none"> At-grade option Aerial option 	Not applicable
Norwalk/Santa Fe Springs Station	<ul style="list-style-type: none"> No HSR station option East HSR station option 	Not applicable
La Mirada Railyards	<ul style="list-style-type: none"> At-grade option 	Not applicable
Buena Park/Fullerton Airport	<ul style="list-style-type: none"> Underpass option 	Not applicable
Fullerton	<ul style="list-style-type: none"> At-grade option 	Not applicable
Fullerton Station	<ul style="list-style-type: none"> No HSR station option At-grade HSR station option 	Not applicable
Anaheim	<ul style="list-style-type: none"> At-grade option 	Not applicable
ARTIC	<ul style="list-style-type: none"> East at-grade HSR station option 	Not applicable
Vehicle Maintenance Facility	<ul style="list-style-type: none"> Anaheim west option Los Angeles 8th St option¹ 	<ul style="list-style-type: none"> Los Angeles Union Pacific Rail Road Railyard option Anaheim east option

Source: Authority and FRA, 2010

¹ While the Authority and FRA noted that additional evaluation would be needed for the Los Angeles 8th Street option, it was carried forward as an option.

LAUS = Los Angeles Union Station

HSR = high-speed rail

ARTIC = Anaheim Regional Transportation Intermodal Center

2016 Supplemental Alternatives Analysis Report

The 2016 SAA Report focused on the refinement of the Consolidated Shared-Track Alternative (renamed Alternative 2), further applying the “blended” approach described in the California High-Speed Rail Revised 2012 Business Plan and the 2014 Business Plan. This blended approach includes phased implementation of the HSR system as a whole, with implementation of a blended system on the bookends (the northernmost and southernmost project sections). The 2016 SAA Report concluded that Alternative 1 (previously the Dedicated High-Speed Train Alternative) would require the acquisition of additional right-of-way that, while generally including industrial uses, also included some residential areas in the southern section of the corridor. In contrast, Alternative 2, while also requiring right-of-way acquisitions, would not require as many of them in residential areas south of Fullerton Junction. Alternative 2 was also refined to include certain components of previously considered project alternatives and to reflect ongoing stakeholder engagement. The 2016 SAA Report advanced Alternative 2 and eliminated Alternative 1 due to its greater impacts on right-of-way and community resources.

2016 Refinement Report

The 2016 Refinement Report evaluated refinements to the Los Angeles to Anaheim Project Section Alternative 2 that the Authority advanced from the 2016 SAA Report. It recommended advancing the refined project alternative for further evaluation in the Los Angeles to Anaheim Project Section EIR/EIS. The refinements further capitalized on the blended system concept and reduced right-of-way impacts by consolidating passenger service on HSR tracks, removing passenger service from freight tracks, and allowing freight trains to use HSR tracks when necessary. These refinements provided two electrified tracks for HSR service while reducing the

total number of mainline railroad tracks needed to introduce HSR service within the LOSSAN Corridor. Generally, these additional refinements resulted in avoidance or minimization of potential environmental impacts on historic resources, parks and recreational facilities, and water resources; reduced need for property acquisition; reduced construction cost. The Authority made these refinements in response to input from the public, stakeholders, and other operators within and adjacent to the railroad corridor.

Figure 2-1 illustrates the alternatives development process. Table 2-4 presents an overview of the alternatives considered for the project section.

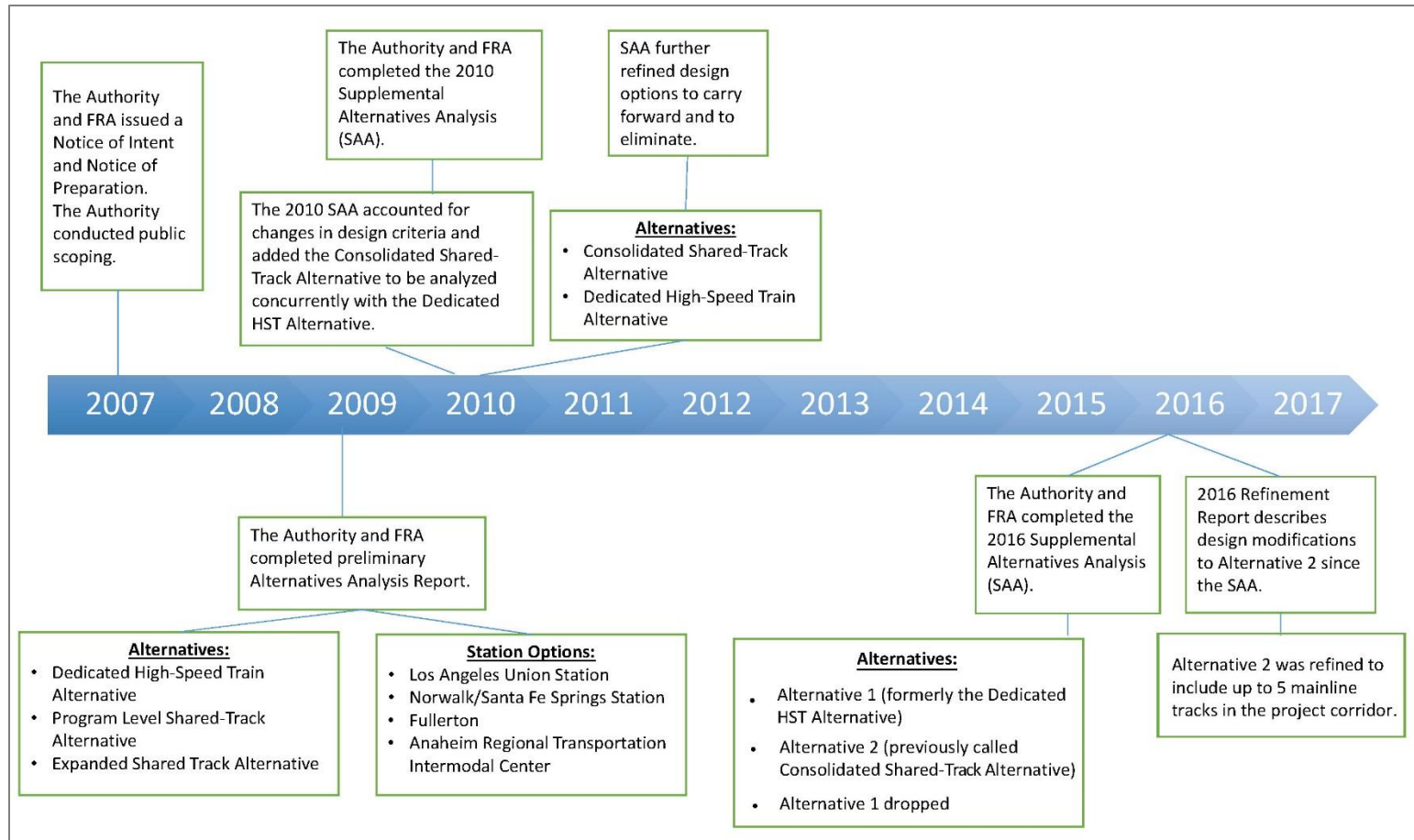


Figure 2-1 Potential Alternatives Considered During Alternatives Screening Process

Table 2-4 Project Section Alternatives and High-Speed Rail Station Options Considered

Alternative	Alternatives Analysis Report Introduced	Eliminated or Carried Forward
Alignment Options		
Dedicated High-Speed Train Alternative	2009 Alternatives Analysis Report	Carried forward in the 2009 Alternatives Analysis Report and 2010 Supplemental Alternatives Analysis Report Renamed Alternative 1 in 2016 Supplemental Alternatives Analysis Report
Program Level Shared-Track Alternative	2009 Alternatives Analysis Report	Eliminated in the 2009 Alternatives Analysis Report
Expanded Shared-Track Alternative	2009 Alternatives Analysis Report	Eliminated in the 2009 Alternatives Analysis Report
Consolidated Shared-Track Alternative	2010 Supplemental Alternatives Analysis Report	Carried forward in the 2010 Supplemental Alternatives Analysis Report Renamed Alternative 2 in 2016 Supplemental Alternatives Analysis Report
Alternative 1	2009 Alternatives Analysis Report (previously called Dedicated High-Speed Train Alternative)	Eliminated in the 2016 Supplemental Alternatives Analysis Report
Alternative 2	2010 Supplemental Alternatives Analysis Report (previously called Consolidated Shared-Track Alternative); Modified in the 2016 Refinement Report	Carried forward in the 2016 Supplemental Alternatives Analysis Report
High-Speed Rail Station Options		
Los Angeles Station		
Aerial HSR station above existing LAUS	2009 Alternatives Analysis Report	Carried forward in 2009 Alternatives Analysis Report and 2010 Supplemental Alternatives Analysis Report
Deep tunnel HSR station below existing LAUS	2009 Alternatives Analysis Report Reintroduced in 2010 Supplemental Alternatives Analysis Report	Eliminated in 2009 Alternatives Analysis Report Eliminated in 2010 Supplemental Alternatives Analysis Report
Shallow Trench HSR station on Los Angeles River west bank	2009 Alternatives Analysis Report Reintroduced in 2010 Supplemental Alternatives Analysis Report	Eliminated in 2009 Alternatives Analysis Report Eliminated in 2010 Supplemental Alternatives Analysis Report
Vignes Aerial HSR station	2010 Supplemental Alternatives Analysis Report	Eliminated in 2010 Supplemental Alternatives Analysis Report

Alternative	Alternatives Analysis Report Introduced	Eliminated or Carried Forward
Los Angeles Union Station at-grade HSR station	2010 Supplemental Alternatives Analysis Report	Carried forward in 2010 Supplemental Alternatives Analysis Report
Norwalk/Santa Fe Springs Station		
No HSR station	2009 Alternatives Analysis Report	Carried forward in 2009 Alternatives Analysis Report and 2010 Supplemental Alternatives Analysis Report
HSR station east of existing tracks	2009 Alternatives Analysis Report Reintroduced 2010 Supplemental Alternatives Analysis Report	Eliminated in 2009 Alternatives Analysis Report Carried forward in 2010 Supplemental Alternatives Analysis Report
HSR station north of existing tracks	2009 Alternatives Analysis Report	Eliminated in 2010 Supplemental Alternatives Analysis Report
Fullerton Station		
At grade – No HSR station	2009 Alternatives Analysis Report	Carried forward in 2010 Supplemental Alternatives Analysis Report
Aerial HSR station	2009 Alternatives Analysis Report	Carried forward in 2010 Supplemental Alternatives Analysis Report
Deep tunnel HSR station	2009 Alternatives Analysis Report	Eliminated in 2009 Alternatives Analysis Report
Anaheim Regional Transportation Intermodal Center		
Existing Anaheim station	2009 Alternatives Analysis Report	Eliminated in 2009 Alternatives Analysis Report
Anaheim Regional Transportation Intermodal Center	2009 Alternatives Analysis Report	To be carried forward
6 track, 2 platform at-grade station	2009 Alternatives Analysis Report	Carried forward in 2010 Supplemental Alternatives Analysis Report

Source: Authority and FRA, 2016

All HSR stations carried forward in the 2010 Supplemental Alternatives Analysis Report were also carried forward in the 2016 Supplemental Alternatives Analysis Report.

2.4 Alternatives Considered for Evaluation in Draft EIR/EIS

This section describes the project alternatives to be evaluated in the Los Angeles to Anaheim EIR/EIS.

2.4.1 No Project Alternative

NEPA requires the evaluation of a no action alternative in an EIS (Council on Environmental Regulations § 1502.14(d)). Similarly, CEQA requires that an EIR include the evaluation of a no project alternative (CEQA Guidelines § 15126.6(e)). The No Project Alternative (synonymous with the No Action Alternative) represents the conditions that would occur in the forecast year (in this case, 2040) if the proposed project (in this case, the Los Angeles to Anaheim Project Section) is not implemented. 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 Los Angeles to Anaheim Project Section area, through the year 2040 time horizon of the

environmental analysis. Under the No Project Alternative, the California HSR System would not be built.

The No Project Alternative assumes that all known programmed and funded improvements to the intercity transportation system (highway, Amtrak, and regional rail) and reasonably foreseeable local land development projects (with funding sources identified) would be developed by 2040. The No Project Alternative is based on a review of the following: regional transportation plans for all modes of travel (e.g., the Southern California Association of Governments' [SCAG] 2012 Regional Transportation Plan/Sustainable Communities Strategy [RTP/SCS]); the California Department of Transportation's 2014 State Transportation Improvement Program; SCAG's 2014 Federal Transportation Improvement Program; the Southern California Regional Rail Authority (Metrolink) strategic plans (Southern California Regional Rail Authority 2016); transportation plans and programs for Los Angeles County; airport master plans; and city and county general plans.

2.4.2 High-Speed Rail Project Alternative

2.4.2.1 Overview

The HSR Project Alternative proposes new and upgraded track, maintenance facilities, traction power, grade separations, drainage improvements, communications towers, electrical interconnections, security fencing, passenger train stations, and other necessary facilities to introduce HSR service into the LOSSAN Corridor from LAUS to ARTIC. New and upgraded tracks would allow other trains to share tracks with HSR. The Project Alternative 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 high-speed trains.³

The Project Alternative would provide four mainline tracks by adding one or two new tracks to the existing corridor as needed. Some existing tracks would also be realigned to optimize the available right-of-way. The railroad right-of-way would consist of up to six tracks, but the majority of the corridor would consist of two electrified, and two non-electrified mainline tracks. Additionally, ancillary facilities (traction power substations, radio towers, etc.) would be installed adjacent to the tracks and are anticipated to require acquisition of some additional right-of-way.

The Project Alternative would include HSR stations in Los Angeles, Norwalk/Santa Fe Springs, Fullerton, and Anaheim.

The majority of the existing railroad is currently at-grade, but many of the crossings of roads, railroads, and other transportation facilities are grade separated. The scope of this alternative includes grade separating the HSR alignment at 10 existing at-grade crossings and closing roadways at two existing at-grade crossings. Combined, these changes would occur at all but two⁴ of the remaining at-grade road crossings. LA Metro would complete a grade separation at the intersection of Rosecrans Avenue and Marquardt Avenue in the City of Santa Fe Springs as a separate project prior to commencement of HSR operations. Santa Ana Street would remain at-grade, with potential future crossing improvements including added safety measures required to allow for HSR operations of speeds up to 110 miles per hour. Grade separations prevent conflicts with other modes of transport, including automobile, bicycle, and pedestrian, and ensure optimal HSR (and other passenger rail) operations. For closed and remaining at-grade crossings, this alternative would include safety improvements, such as pedestrian undercrossings or overcrossings.

The HSR Project Alternative includes a combination of at-grade, elevated, and below-grade tracks, depending on corridor and design constraints. The at-grade track section would consist of

³ The project footprint is the area required to build, operate, and maintain HSR service based on the following elements of design: station areas, hydrology, track, roadway, structures, systems, and utilities.

⁴ Existing tracks would still cross two roadways at-grade, but HSR tracks would be on an elevated structure at one of these crossings and would not cross that roadway at-grade.

track set on ballasted railroad ties, compacted earth, or retained fill (contained earth with retaining walls). The elevated track segments would consist of concrete columns and concrete box girder either cast-in-place or pre-cast. The height of the elevated track section would vary and could be as high as 65 feet, with columns spaced approximately 90 feet apart. The distance between the centerlines of the tracks would be a minimum of 14 feet and design speeds would not exceed 110 miles per hour.

The HSR Project Alternative would construct up to two new tracks and realign existing tracks. With the HSR Project Alternative, the railroad right-of-way would accommodate up to six tracks, but the majority of the corridor would consist of four mainline tracks. Additionally, the project section would install ancillary facilities (e.g., traction power substations, radio towers) adjacent to the tracks and could require the acquisition of additional right-of-way.

There would be two electrified tracks for the entire length of project section, except in the light maintenance facility, where all tracks used for servicing HSR trains would include electrification. All electrified tracks would include an overhead contact system.

The HSR Project Alternative also assumes the implementation of the planned and programmed projects by other entities, as described in the No Project Alternative.

2.4.2.2 Freight or Passenger Railroad Modifications

The HSR Project Alternative would be built and operated within and adjacent to an existing freight and passenger rail corridor, creating a corridor that is primarily four mainline tracks from Los Angeles to Fullerton and two mainline tracks from Fullerton Junction to Anaheim. New and upgraded tracks for HSR trains would be shared with passenger rail currently operating in the LOSSAN Corridor. Freight rail would operate primarily on the non-electrified tracks, though the electrified tracks could accommodate freight traffic if necessary.

The Project Section would remove and realign existing railroad track throughout the corridor. In some instances, the project section would remove existing storage tracks and relocate them to Hobart Yard in Vernon and Commerce.

To replace freight storage tracks eliminated by the project section at the BNSF Eighth Street Yard, Pico Rivera Yard, and Buena Park/Fullerton Sidings, storage tracks would be constructed directly south of Hobart Yard, between the current yard and the proposed realignment of the mainline tracks. Relocation of storage tracks to Hobart Yard would eliminate some truck parking and container storage. The project section would relocate truck parking to the property between the northern limit of Hobart Yard and Washington Boulevard.

2.4.2.3 Light Maintenance Facility

The project section would include a light maintenance facility of approximately 60-acres on the west bank of the Los Angeles River. It would provide space for fleet storage, cleaning, repair, overnight layover accommodations, and train maintenance and repair facilities. The facility would occupy the site of the current BNSF storage tracks and would require their relocation. The project section would preserve existing Amtrak storage tracks at the existing railroad yard.

2.4.2.4 Non-High-Speed Rail Stations

Commerce and Buena Park Metrolink stations would need to be relocated because of design changes required by the HSR Project Alternative. The Commerce Metrolink Station would be relocated to an area northeast of the intersection of Telegraph Road and Maple Avenue, which is approximately 1 mile to the east of its current location. This relocation is necessary due to changes required by the HSR Project Alternative that would cause conflicts between a reconfigured intermodal rail yard and the current Commerce Metrolink Station. The Buena Park Metrolink Station would be relocated to between South Coyote Creek and Beach Boulevard, approximately 0.75 miles to the northwest of its current location. The new station location would be within the city of Buena Park. This relocation is necessary due to changes required by the HSR Project Alternative that would add and realign tracks through the existing Buena Park Metrolink Station.

2.4.2.5 Metrolink Station Relocations

To accommodate HSR, and future rail volume growth along the corridor, this project includes the relocation of the existing Commerce and Buena Park Metrolink stations. Due to necessary track modification, each station will need moved to alternate locations along the rail corridor, within approximately ½ mile from their current sites. Authority staff have performed a detailed analysis, and solicited public and stakeholder input to arrive at identify the proposed new station sites.

2.4.2.6 Los Angeles Union Station

The Los Angeles Metropolitan Transportation Authority (LA Metro) is currently undertaking a project to improve operations at Los Angeles Union Station via a project labeled Link US. These improvements entail upgraded track configurations and station enhancements, which would also serve to accommodate HSR. Authority staff is currently engaged in advancing this project to ensure it continues to fully satisfy HSR's needs.

2.4.2.7 Operations of the Los Angeles to Anaheim Project Section

Metrolink Orange County and 91/Perris Valley Lines, Amtrak Pacific Surfliner and Southwest Chief, and BNSF and UPRR freight trains currently operate within the Los Angeles to Anaheim Project Section. As the project section is within the active LOSSAN Corridor passenger and freight rail corridor, operation patterns and frequency of existing service would have to be modified to accommodate HSR service. New and realigned tracks would change the track configuration on which the various users operate. Table 2-5 presents currently proposed HSR train operations for the Los Angeles to Anaheim Project Section.

Table 2-5 High-Speed Rail Indicative Service Levels

Time of Day	Trains per Hour per Direction	Terminal Stations Served
Peak	2	San Francisco – Anaheim
	1	Merced – Anaheim
	3	Total, Peak Period Trains per Hour
Off-Peak	1	San Francisco – Anaheim
	1	Merced – Anaheim
	2	Total, Off-Peak Period Trains per Hour

Peak period operations are applicable to six hours per day. Off-peak period operations are applicable for up to ten hours per day.

Table 2-6 presents existing and forecasted daily train operations for all operators using the Los Angeles to Anaheim Project Section.

Table 2-6 Existing and Future Trains per Day (All Rail Services in Both Directions)

Operator	2016 Existing Conditions		Opening Day		2040 Horizon Year	
	LAUS to Fullerton	Fullerton to Anaheim	LAUS to Fullerton	Fullerton to Anaheim	LAUS to Fullerton	Fullerton to Anaheim
California HSR*	N/A	N/A	76	76	76	76
Metrolink**	28	29	50	41	50	41
Amtrak***	26	24	36	34	46	44
BNSF****	87	4	116	4	141	4
UPRR****	0	2	0	2	0	4

* Opening Day and 2040 Horizon Year projections from the California High Speed Rail Authority’s “Year 2029 and Year 2040 Concept Timetable for EIR/EIS Analysis”.

** Existing Conditions from 2016 Metrolink Schedule (effective October 3, 2016); Opening Day projections extrapolated from 2016 Metrolink 10-Year Strategic Plan, “Growth Scenario 2: Overlay of Additional Service Patterns” (Metrolink Orange County Line also runs a local service south of Fullerton and Metrolink 91/Perris Valley Line runs only between LAUS and Fullerton within LOSSAN Corridor).

*** Existing Conditions from 2016 LOSSAN Corridor Schedule; Opening Day projections extrapolated from 2012 LOSSAN Corridorwide Strategic Implementation Plan “Long-Term Operations Analysis” (increase of ~1 train every year for the Amtrak Pacific Surfliner and no growth for the Amtrak Southwest Chief – Amtrak Southwest Chief runs only between LAUS and Fullerton within LOSSAN Corridor).

**** Existing Conditions from 2012 LOSSAN Corridorwide Strategic Implementation Plan “Long-Term Operations Analysis”; Opening Day projections extrapolated from 2012 LOSSAN Corridorwide Strategic Implementation Plan “Long-Term Operations Analysis” (increase of ~9 trains every 4 years for BNSF between LAUS and Fullerton; small UPRR increase from 2029 to 2040 between Fullerton and Anaheim). BNSF and UPRR trains do not share the corridor with passenger trains between LAUS and Redondo Junction.

Note: Metrolink and Amtrak service levels will be lower on weekend days. BNSF and UPRR service levels will vary from day to day.

2.4.2.8 Shared Urban Railroad Corridor Section

California HSR would operate in a “shared modern urban corridor” alongside BNSF, Amtrak and the Southern California Regional Rail Authority (Metrolink). Features of the corridor would include positive train control, uniform corridor protection including sound walls where warranted, grade separations, and an earthquake early warning system. The HSR Project Alternative accommodates other planned increases in freight and passenger railroad operations, and addresses impacts to corridor owners including the BNSF Railway between Redondo Junction and Fullerton Junction. Therefore a support yard and additional siding and storage tracks further inland are also anticipated to mitigate impacts and enhance overall operational efficiency of this important rail corridor for both freight and passenger service. Intensive coordination with BNSF, LA Metro, Amtrak, LOSSAN, California State Transportation Agency and Southern California Regional Rail Authority is underway and will continue throughout the project development process. The Los Angeles to Anaheim Project Section EIR/EIS will include the environmental assessment of these recently identified project components.

2.5 Summary of Public, Agency, and Stakeholder Presentation and Input on Project Alternatives

Extensive public, agency, and stakeholder engagement took place during the preparation of the various Alternatives Analysis and this EIR/EIS. This section summarizes the outreach that has occurred prior to the release of the Draft EIR/EIS.

2.5.1 Outreach Conducted for the HSR Project Alternative

The Authority and FRA coordinated with key environmental resource agencies during the alternatives analysis process and presented the 2016 SAA Report to the Board in April 2016. The

Authority and FRA consulted with and sought input from Native American tribes during development of the Section 106 Programmatic Agreement for the HSR program. In April 2016, the Authority developed a stakeholder working group to engage community leaders and discuss project information and key milestones on an ongoing basis.

Authority staff targeted outreach activities to support environmental justice outreach, public and agency scoping, and the refinement of alternatives for the project section. The Authority contacted groups with interest in environmental and economic social justice issues, established minority organizations, and other civic and group leaders and elected officials. Other opportunities to gain a better understanding of the potential environmental justice impacts included city council meetings, stakeholder working groups, public information meetings, and group briefings.

During and following public and agency scoping, the Authority and FRA met with staff from local public agencies within the project section corridor to ensure that the EIR/EIS properly reflects the local, on-the-ground conditions and appropriately analyzes impacts. With consideration of the comments received during the planning and initial scoping processes, the Authority considered various design options to the alternatives for HSR track configurations, grade separations, and station sites. The alternatives were further refined in SAA Reports completed in July 2010 and April 2016 (Authority and FRA 2010, 2016).

Outreach included working with staff from the corridor cities of Los Angeles, Vernon, Commerce, Bell, Montebello, Pico Rivera, Santa Fe Springs, Norwalk, La Mirada, Buena Park, Fullerton, and Anaheim, as well as legislative district offices and local community and industry partners. Discussions and activities have centered on project awareness, collaboration, and multiple opportunities to provide input.

The Authority and FRA have coordinated extensively with the other owners and operators within the project corridor (LA Metro, BNSF, Metrolink, and Amtrak) since project inception. The intent is to plan for the corridor to accommodate the existing and future needs of all operators. To date, all operators have been provided the conceptual project definition – along the entirety of the corridor between Los Angeles to Anaheim, as well as at Los Angeles Union Station and LA Metro’s “Link US” project. Formal concurrence of the operators with the HSR Project Alternative will occur in the future, and will be based on more refined project definitions for both infrastructure improvements and operational characteristics.

The Authority and FRA submitted a letter to the U.S. Environmental Protection Agency and U.S. Army Corps of Engineers, dated October 26, 2017, indicating the following, “Pursuant to our Memorandum of Understanding concerning the Integration Process for the California High-Speed Train Program dated November 2010, the FRA and Authority are providing this joint written notice. Based on current project section information, the MOU’s Checkpoint B, “Range of Alternatives,” and Checkpoint C, “Preliminary LEDPA” processes do not apply to the Los Angeles to Anaheim project section. As a result we will not be utilizing those steps as part of the Integration MOU.”

2.5.2 Summary of Public Input on the HSR Project Alternative

Based on public scoping and the receipt of public and agency comments, key issues considered during alternatives evaluation and development of the Draft EIR/EIS included the following: (1) protection of the environment, (2) alignment and station alternatives, (3) connectivity and coordination with/impacts on other transportation facilities, (4) train technologies, (5) project funding/cost, air quality and noise/vibration impacts and (6) issues outside the scope of the Los Angeles to Anaheim Project Section EIR/EIS.

3 EVALUATION OF ALTERNATIVES

This staff report provides a summary evaluation of the No Project Alternative and the HSR Project Alternative included in the Los Angeles to Anaheim Project Section Draft EIR/EIS. The Authority weighed environmental factors, as well as the NEPA Purpose and Need and CEQA Objectives, to determine which alternative would best balance the potential impacts and benefits. In general, although the HSR Project Alternative would have some adverse impacts on the environment and community, it achieves project goals and objectives while providing numerous benefits to the transportation network and regional community. Therefore, staff chose the recommended alternative based on the preliminary assessment of environmental factors to be evaluated in the Draft EIR/EIS for the No Project Alternative and the HSR Project Alternative.

- **NEPA Purpose and Need:** The HSR Project Alternative would meet the Program and Project Section Purpose and Need, as stated in the 2005 Statewide Program EIR/EIS and Chapter 1 of the Los Angeles to Anaheim Project Section EIR/EIS:
 - The program-wide purpose of the HSR System is “to provide a reliable high-speed electric-powered train system that links the major metropolitan areas of the state, and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and to relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California’s unique natural resources” (Authority and FRA 2005).
 - The purpose of the Los Angeles to Anaheim Project Section is to “provide the public with electric-powered HSR service that offers predictable and consistent travel times between major urban centers. In addition, the project will provide enhanced connections to airports, mass transit, and the highway network in the Los Angeles-Long Beach-Anaheim Metropolitan Statistical Area,⁵ and a direct connection to the rest of the HSR system (Authority and FRA 2017).
- **CEQA Project Objectives:** The HSR Project Alternative would meet the Program and Project Section’s CEQA Objectives, described in Chapter 1 of the Los Angeles to Anaheim Project Section EIR/EIS. These objectives are to:
 - 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, airports, and highways.
 - Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
 - Provide a sustainable reduction in travel time between major urban centers.
 - Increase the efficiency of the intercity transportation system.
 - Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible.

⁵ Metropolitan statistical areas 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 metro area contains a core urban area population of 50,000 or more. Each metro 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 (for example, as measured by commuting to work) with the urban core.

- 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 for intercity trips.
- Additionally, the Authority has identified the following transportation network issues that will be addressed by developing the Los Angeles to Anaheim Project Section:
 - 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.
 - Unreliability of travel stemming from congestion and delays, 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 operations congestion, including those within the project section.
- **Environmental Factors:** The Draft EIR/EIS will detail the impacts that the No Project Alternative and HSR Project Alternative would have on environmental resources. Presented below are a few of the key findings.

3.1 Environmental Criteria Analysis

This section below, in general, is intended to summarize key differentiators between two or more build alternatives. Typically, this summary does not include a comparison to the No Project Alternative. In the Los Angeles to Anaheim Project Section, there is only one build alternative proposed, the HSR Project Alternative. Summarizing impacts between one build alternative and the No Project Alternative will likely be weighted towards significant adverse impacts for the build alternative. In general, the construction of a complex and innovative project, such as HSR, would always alter the physical landscape and character, even in an urbanized area or within an existing rail corridor. An explanation of the relative benefits and challenges that the HSR Project Alternative would have, relative to not constructing it at all, is information that can be considered by decision-makers. These benefits and challenges are summarized below and detailed in Appendix A. The information below is based on preliminary analysis completed to date, which is still in development and subject to change.

3.2 Air Quality

Although temporary construction activities are predicted to have short-term air quality effects, the HSR Project Alternative is expected to have a regional net beneficial effect in terms of long-term operational emissions, including a net decrease of pollutants and greenhouse gas emissions compared to the No Project Alternative. Therefore, the HSR Project Alternative would result in long-term beneficial effects to regional air quality and global climate change.

Based on preliminary analysis, the HSR Project Alternative would result in temporary, short term, impacts to local air quality during construction. However, over the permanent and long-term operations of the HSR system, regional air quality would improve and greenhouse gas emissions would decrease because of reductions in highway and air travel.

Construction activities would affect air quality through temporary emissions and increased concentrations. Potential exposure of humans to emissions of criteria pollutants and toxic air contaminants would be temporary, lasting only for the construction period and during the time that construction equipment is operating close to that particular location. During construction,

contractors would reduce potential effects by implementing emissions reduction measures resulting from factors related to pollutants and health risks; however, some impacts may be significant and unavoidable.

During project operation, relocated freight service activity in the areas surrounding Hobart Yard would create increased inhalation health risks and exposure to diesel particulate matter emissions. As a result, the HSR Project Alternative could exceed local significance thresholds for cancer and noncancer hazards at analyzed receptor locations adjacent to the relocated track. While the overall level of diesel particulate emissions would be the same under the HSR Project Alternative when compared to the No Project Alternative, the spatial distribution of where emissions would occur would change.

3.3 Noise and Vibration

Construction of the HSR Project Alternative would result in temporary increases in noise and vibration levels at sensitive receivers near construction areas. Noise-sensitive receivers near the construction zone may be exposed to noise levels exceeding the FRA criteria for daytime hours (between 7:00 a.m. and 10:00 p.m.) for one or more phases of construction. Noise-sensitive receivers near the construction zone may be exposed to noise levels exceeding the FRA criteria for nighttime hours for one or more phases of construction. However, in any given location along the HSR alignment, construction noise would be temporary and intermittent, and would cease once work is complete. Mitigation measures would be implemented to limit the exposure of the sensitive receivers to excess noise during construction.

Operation of the HSR Project Alternative would result in some impacts from noise and ground-borne vibration at residences, primarily in the cities of Pico Rivera and Anaheim. These impacts could be significant for both noise and vibration. Mitigation measures such as the installation of an impervious noise barrier, vehicle and track improvement measures such as vehicle suspension enhancements, special track support systems, building modifications, and trenches, are focused on noise and vibration control methods at the source and would reduce impacts related to long-term exposure of sensitive receivers to noise and of buildings to vibrations.

3.4 Cultural Resources

In accordance with Section 106 of the National Historic Preservation Act, 27 historic architectural properties were identified within the area of potential effects of the HSR Project Alternative. Of those properties, the HSR Project Alternative might result in Adverse Effects to four properties and No Adverse Effect or No Effect to the remaining 23 properties. Adverse effects to the four historic properties likely would be resolved adequately through mitigation developed in consultation with various consulting parties and memorialized in a Section 106 memorandum of agreement.

The FRA has preliminarily determined that six properties would incur Section 4(f) *de minimis* use. A *de minimis* impact is a use of a Section 4(f) property that is generally considered minor in nature. For historic properties, a *de minimis* impact is one that results in a Section 106 determination of “no adverse effect” or “no historic properties affected.” Authority staff will send Section 106 and *de minimis* documentation to the State Historic Preservation Officer. Staff will also provide written notification to the State Historic Preservation Officer that a non-response for the purposes of a “No Adverse Effect” determination will be treated as the written concurrence for a *de minimis* finding.

The project section would have potential impacts to archaeological historic properties during construction as a result of ground disturbance. Due to the heavily developed nature of the project area and lack of access at this time, surveys to identify archaeological resources will occur during the design-build phase of the project. An archaeological treatment plan will be developed in consultation with consulting parties, including Native American government representatives, and will describe methods that will be used to identify, evaluate, and if necessary mitigate adverse effects to archaeological historic properties.

3.5 Environmental Justice

Environmental justice populations include minority populations and low-income populations. Minority and low-income populations are present in substantial proportions close to the existing rail corridor, and the HSR Project Alternative would affect them both directly and indirectly. There are substantial minority and low-income populations in Commerce. Because there are few replacement properties to relocate displaced businesses in Commerce, a proportion of displaced businesses would likely relocate outside the taxing jurisdiction of Commerce, potentially resulting in permanent losses to local government sources of revenue and displacement of employees.

The analyses identified disproportionately high and adverse impacts due to operational noise effects in the cities of Pico Rivera and Anaheim, where substantial minority and low-income populations exist.

3.6 Regional Growth

Based on preliminary analysis, construction of the HSR Project Alternative would result in employment growth and the creation of an estimated 19,000 direct, indirect, and induced jobs in Los Angeles and Orange Counties. This projected employment growth and job creation would benefit the region during construction. Operation of the HSR Project Alternative would result in employment growth and add 2,600 direct, indirect, and induced jobs within the two-county region by 2040. Additionally, increased accessibility provided by HSR service would add 5,000 jobs in Los Angeles County by 2050.

3.7 Socioeconomics and Communities

Based on preliminary analysis, property acquisitions for the construction of the HSR Project Alternative would result in displacement of approximately 250 businesses with an estimated 2,800 employees. The HSR Project Alternative would displace the most business and employees in Commerce, with approximately 110 businesses and an estimated 940 employees; the next highest number of business and employee displacements would be in Vernon, with 30 businesses and an estimated 860 employees.

3.8 Station Areas and Land Use

Based on preliminary analysis, implementing the HSR Project Alternative would attract growth and investment in HSR station areas by increasing statewide accessibility and reducing travel times to intercity destinations.

3.9 Other Performance Criteria

Table 3-1 summarizes key performance, operations and cost information for the HSR Project Alternative. The table below provides the capital cost estimate in 2018 dollars. The cost estimate includes the total effort and materials necessary to construct the Los Angeles to Anaheim Project Section, including stations and modifications to roadways required to accommodate grade-separated guideways. Cost estimates contained in the EIR/EIS document reflect all project features and mitigations required to support HSR operations in year 2040. Therefore, these estimates may differ from estimates that reflect start-up operation and/or interim phases carried in other available HSR documents.

Table 3-1 Key Performance Criteria

Performance, Operations, and Costs	
Alignment Length	30 miles
Speed Capacity (mph)	110 miles per hour
Estimated Capital Costs	\$4,800 million
Estimated Annual Operations and Maintenance Costs	\$45 to 59 million

This project alternative is the same alternative evaluated in the 2018 Business Plan, but with refined design since the 2018 Business Plan. However, the capital costs outlined reflect a conservative scope and sufficient project footprint to accommodate project refinement through final design for construction documents. This allows the Authority to evaluate maximum impacts in the EIR/EIS and reduces the risk that environmental clearance does not cover all potential impacts. It is important to note that these cost estimates include duplications with adjacent project sections and are not additive. Further, the Authority has not yet applied value engineering and other optimization measures to reduce these costs, including the Early Train Operator benchmarking review, footprint refinement and constructability mitigations.

4 RECOMMENDATION

Authority staff recommends that the Board identify the HSR Project Alternative as the Preferred Alternative for preparing the Los Angeles to Anaheim Project Section EIR/EIS.

The HSR Project Alternative would achieve the NEPA Purpose and Need as well as the CEQA Project Objectives of providing a fast, reliable intercity travel mode that meets future travel demand. The HSR Project Alternative could result in impacts under NEPA and CEQA, but would also provide multiple regional and local benefits that support the recommendation for the HSR Project Alternative selected as the Preferred Alternative.

Upon Board direction on staff's recommendations, the Draft EIR/EIS may identify the HSR Project Alternative as the Preferred Alternative. The Authority will release the Draft EIR/EIS for public and agency review and comment and will consider those comments in developing the final environmental document.

At this time, the Board is neither adopting nor approving a Preferred Alternative. There will be no approval of the alternative until completion of the Final EIR/EIS. Staff will return to the Board at a future date to consider approving the HSR Project Alternative, as informed by the final environmental document.

Figure 4-1 presents the Staff-Recommended Preferred Alternative.



Figure 4-1 Staff-Recommended Preferred Alternative

5 REFERENCES

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APPENDIX A – COMPARISON OF PROJECT ALTERNATIVES

The following tables provide a comparison between the No Project Alternative and the HSR Project Alternative of the Los Angeles to Anaheim Project Section. Development of the Draft EIR/EIS is ongoing; therefore, the tables do not provide statistical detail at this time. However, relative impacts would likely remain consistent with those presented below. All results are preliminary and subject to refinement as the Draft EIR/EIS is developed.

Table A-1 compares the NEPA Purpose and Need and CEQA Project Objectives criteria for the No Project Alternative and the HSR Project Alternative.

Table A-1 Comparison of Project Section Alternatives based upon NEPA Purpose and Need and CEQA Project Objectives

Criteria	No Project Alternative	HSR Project Alternative
NEPA Purpose and Need		
Meets project purpose and need	No	Yes
CEQA Project Objectives		
Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports	No	Yes; provides a new intercity travel mode that supplements the existing transportation system
Meet future intercity travel demand that will be unmet by present transportation systems; and increase capacity for intercity mobility	No	Yes; meets future travel demand and increases travel capacity
Maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways	No	Yes; locates HSR stations in areas that maximize intermodal connections
Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel	No	Yes; HSR provides these passenger oriented benefits
Provide a sustainable reduction in travel time between major urban centers	No	Yes; provides a trip between Anaheim and Los Angeles with travel time that is competitive with auto and conventional rail
Increase the efficiency of the intercity transportation system	No	Yes; provides a faster alternative to intercity travel
Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible	No	Yes; locates the project within an existing railroad right-of-way
Develop a practical and economically viable transportation system that can be implemented in phases, and generate revenues in excess of operations and maintenance costs	No	Yes; HSR service would be developed and implemented in phases, and would generate revenues in excess of operations and maintenance costs

Criteria	No Project Alternative	HSR Project Alternative
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 for intercity trips	No	Yes; the HSR system would reduce vehicle miles travelled (VMT) and emissions

Table A-2 presents the environmental challenges, and benefits, of the HSR Project Alternative.

Table A-2 HSR Project Alternative Environmental Factors

Environmental Factors	Challenges	Benefits
Transportation	<ul style="list-style-type: none"> ▪ Additional traffic accessing HSR stations ▪ Closing of a road ▪ Temporary detours of multi-use trails 	<ul style="list-style-type: none"> ▪ Provides additional mode of intercity transportation (consistent with project's NEPA Purpose and Need and CEQA Project Objectives) ▪ Improvements in travel safety and circulation with new grade separations
Air Quality/Greenhouse Gases	<ul style="list-style-type: none"> ▪ Short-term impacts during construction, as a result of greenhouse gas emissions and localized, elevated criteria pollutant concentrations 	<ul style="list-style-type: none"> ▪ Regional air quality improvements during operation from reductions in highway and air travel
Noise/Vibration	<ul style="list-style-type: none"> ▪ Construction and operations impacts from increases in noise and ground-borne vibration 	None
Electromagnetic Interference/Electromagnetic Field	<ul style="list-style-type: none"> • Increase in EMF/EMI levels, but not considered adverse 	None
Public Utilities and Energy	<ul style="list-style-type: none"> ▪ Potential for utilities interruptions during construction ▪ Impacts to utilities from construction ▪ Generation of construction-related solid and hazardous waste 	<ul style="list-style-type: none"> ▪ Decreased statewide energy use
Biological and Aquatic Resources	<ul style="list-style-type: none"> ▪ Temporary and permanent impacts on special-status species and habitat, aquatic resources, trees ▪ Increase in potential for introducing and spreading invasive and nonnative species ▪ Localized displacement of some special-status bird and mammal species individuals 	None

<p>Hydrology and Water Quality</p>	<ul style="list-style-type: none"> ▪ Temporary and permanent impacts on drainage patterns, stormwater runoff, erosion, and surface water from disturbed land ▪ Potentially worsened water quality ▪ Altered existing drainage patterns and increased surface water volume or rate ▪ Increase in impervious surfaces could affect groundwater recharge ▪ Potential for increase in flooding from alignment crossing floodplains 	<p>None</p>
<p>Geology, Soils, Seismicity, and Paleontological Resources</p>	<ul style="list-style-type: none"> ▪ Seismic activity could result in seismic hazards, which could result in an increased risk of property damage or injury during construction ▪ Increased potential for erosion as a result of exposed soils ▪ Potential for loss of scientifically important fossil resources 	<p>None</p>
<p>Hazardous Materials and Wastes</p>	<ul style="list-style-type: none"> ▪ An increased potential of the release of hazardous materials or waste during construction ▪ Potential impacts from hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of existing schools. ▪ Increased potential for the release of hazardous materials or waste ▪ Potential impacts from hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or wastes within 0.25 mile of existing schools 	<ul style="list-style-type: none"> ▪ Project sites remediated and reduction of hazardous materials and wastes

Safety and Security	<ul style="list-style-type: none"> ▪ Road closures/reconstruction could delay emergency responses ▪ Construction site related hazards for workers 	<ul style="list-style-type: none"> ▪ Reduced emergency response times and enhanced roadway safety, as a result of grade separating existing crossings
Socioeconomics and Communities	<ul style="list-style-type: none"> ▪ Construction impacts from exposure to increased noise/vibration, visual changes, and reduced access to recreational resources ▪ Permanent impacts from business acquisitions ▪ Property tax losses from property acquisitions 	<ul style="list-style-type: none"> ▪ Attracts growth and investment in station areas by increasing accessibility and reducing travel time for residents ▪ Local employment opportunities and construction spending ▪ Grade separating existing crossings could improve connectivity and access
Station Planning, Land Use, and Development	<ul style="list-style-type: none"> ▪ Land use conversions to transportation uses for construction and operation 	<ul style="list-style-type: none"> ▪ Attracts growth and investment in station areas by increasing statewide accessibility and reducing travel time
Parks, Recreation, and Open Space	<ul style="list-style-type: none"> ▪ Temporary construction effects/impacts include park access disruptions, noise and vibration, dust, air quality, and visual setting changes ▪ Temporary construction easements on recreational resources as described below under Section 4(f)/6(f) Resources 	None

<p>Aesthetics and Visual Quality</p>	<ul style="list-style-type: none"> ▪ Temporary visual impacts associated with construction staging and laydown areas ▪ Permanent visual changes would be associated with HSR system including the relocation of the Commerce Metrolink Station, Buena Park Metrolink Station, and Hobart Tower ▪ Permanent visual changes would be associated with HSR system including tracks, overhead catenary wires, fencing, the side profiles or rail cars, and trackway 	<p>None</p>
<p>Cultural Resources</p>	<ul style="list-style-type: none"> ▪ Potential adverse effects to historic overhead bridges from installing safety barriers ▪ Permanent relocation of Hobart Tower, a historical architectural resource ▪ Potential effects to historic structures caused by visual impacts, noise, and vibration ▪ Potential effects to archaeological sites during construction from ground disturbance 	<p>None</p>
<p>Regional Growth</p>	<p>None</p>	<ul style="list-style-type: none"> ▪ Short- and long-term employment benefits during construction and operation

<p>Section 4f/6f Resources</p>	<ul style="list-style-type: none"> • Temporary occupancies with no use of the following resources: Rio Hondo Bike Path, San Gabriel River Mid Trail, Coyote Creek Bikeway/North Fork, Coyote Creek Bikeway (Planned), Brea Creek Bikeway (Planned), Citrus Park, and Olive Street Elementary School • Preliminary Section 4(f) use determinations of an adverse effect on Hobart Tower • Preliminary Section 4(f) use determinations of no direct adverse effect on Rio Hondo Channel • No Section 6(f) resources in resource study area 	<ul style="list-style-type: none"> ▪ No use of Section 4(f) resources caused by project operation
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Source: Authority and FRA, 2017