California High-Speed Rail Authority

# San Francisco to San Jose Project Section

## Staff-Recommended Preferred Alternative Staff Report

**September 2019**


CALIFORNIA High-Speed Rail Authority

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being or have been carried out by the State of California pursuant to 23 U.S.C. 327 and a Memorandum of Understanding effective July 23, 2019, and executed by the Federal Railroad Administration and the State of California.

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# ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| Authority | California High-Speed Rail Authority |
| BART | Bay Area Rapid Transit |
| BCDC | San Francisco Bay Conservation and Development Commission |
| C.F.R. | Code of Federal Regulations |
| Cal. Code Regs. | California Code of Regulations |
| CEQ | Council on Environmental Quality |
| CEQA | California Environmental Quality Act |
| EIR | environmental impact report |
| EIS | environmental impact statement |
| Fed. Reg. | Federal Register |
| FRA | Federal Railroad Administration |
| HSR | high-speed rail |
| I- | Interstate |
| LEDPA | Least Environmental Damaging Practicable Alternative |
| LMF | light maintenance facility |
| MOU | Memorandum of Understanding |
| MTC | Metropolitan Transportation Commission |
| NEPA | National Environmental Policy Act |
| NOI | Notice of Intent |
| NOP | Notice of Preparation |
| PCJPB | Peninsula Corridor Joint Powers Board |
| Project Section, project | San Francisco to San Jose Project Section |
| PTC | positive train control |
| SB | Senate Bill |
| SFO | San Francisco International Airport |
| US | U.S. Highway |
| USACE | U.S. Army Corps of Engineers |
| USEPA | U.S. Environmental Protection Agency |

# 1 INTRODUCTION

## 1.1 Purpose

This staff report's purpose is to provide the rationale for identifying Alternative A as the staff-recommended Preferred Alternative that will be identified in the San Francisco to San Jose Project Section (Project Section, or project) Draft Environmental Impact Report/Environmental Impact Statement (Draft EIR/EIS). This staff report refers to the staff-recommended Preferred Alternative because it has not yet received the concurrence of the California High-Speed Rail Authority (Authority) Board of Directors acting either in its capacity as the state lead agency under the California Environmental Quality Act (CEQA) or the federal lead agency under the National Environmental Policy Act (NEPA) pursuant to NEPA assignment.[1]

Authority staff will present this report to the Authority Board of Directors at the September 17, 2019 Board Meeting. This meeting will provide an opportunity for the Board Members to offer input and direction to staff regarding the Preferred Alternative. If the Board concurs with the staff report and recommendation, Alternative A will be identified in the Draft EIR/EIS as the Preferred Alternative (also identified in the Draft EIR/EIS as the CEQA Proposed Project).

The staff report and concurrence by the Authority do not in any way represent a final decision by the Authority on the selection of the Preferred Alternative. At the conclusion of the public comment period on the forthcoming Draft EIR/EIS, and after consideration of these comments, the Authority will determine whether to certify the Final EIR/EIS, adopt necessary findings, and take action as both the state lead agency and federal lead agency to approve the Preferred Alternative or another alternative for the Project Section.

## 1.2 Preferred Alternative Approach

The approach of presenting a staff-recommended Preferred Alternative in the Draft EIR/EIS allows the public, stakeholders, and public agencies to have more time to focus their attention and comments, if they so choose, on the Preferred Alternative. This approach aligns more closely with recent federal transportation laws that encourage the federal transportation administrations to name a Preferred Alternative in the NEPA Draft EIS rather than the Final EIS. It more closely follows standard CEQA approaches, under which a Draft EIR identifies and defines the Proposed Project, which is conceptually equivalent to a Preferred Alternative.

[1] Effective as of July 23, 2019, the FRA assigned its NEPA federal lead agency responsibilities for the high-speed rail project to the State of California, acting through the State Transportation Agency and the Authority, pursuant to 23 U.S.C. 327 and a Memorandum of Understanding.

# 2 PROJECT ALTERNATIVES

## 2.1 Alternatives Development

Following completion of the *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Statewide Final Program EIR/EIS) (Authority and FRA 2005), the *San Francisco Bay Area (Bay Area) to Central Valley High-Speed Train Final Program EIR/EIS* (Bay Area to Central Valley Program EIR/EIS) (Authority and FRA 2008), the *Bay Area to Central Valley High-Speed Train Revised Final Program EIR* (Authority 2010), and the *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012a), the Authority advanced the San Francisco to San Jose Project Section for further study. The project-level environmental review process for a fully grade-separated four-track system within the Project Section commenced in early 2009 with a NEPA Notice of Intent (NOI), CEQA Notice of Preparation (NOP), and public scoping process. That analysis paused in 2011 in response to community concerns regarding the magnitude of potential impacts of the fully grade-separated four-track system on environmental and community resources. In 2016, the Authority and FRA began to focus on a predominantly two-track blended system within the Project Section.

*What does "blended" mean?*

***Blended*** refers to operating the HSR trains with existing intercity and commuter and regional rail trains on common infrastructure.

Alternative development and consideration was an iterative process from 2009 to 2018 as illustrated in Figure 1. The Authority conducted agency consultation and public outreach to solicit feedback on the range of alternatives to be evaluated in the Draft EIR/EIS and inform the alternatives development. After the Authority identified the initial range of potential alternatives, engineers developed plans, concepts, and cross sections to support decision-making needs at progressive stages of environmental review. Initial alternatives were developed and screened in coordination with the NEPA/404/408 Integration process.[2] The following subsections summarize the alternatives development and analysis process and results.

### 2.1.1 High-Speed Rail Project-Level Alternatives Requirements

An EIR/EIS is required to analyze the potential effects of a range of reasonable alternatives (14 California Code of Regulations [Cal. Code Regs.] § 15126.6; 40 Code of Federal Regulations [C.F.R.] Part 1502.14(a)). Under CEQA, the alternatives are to include a No Project Alternative and a range of potentially feasible alternatives that could (1) meet most of the project's basic objectives and (2) avoid or substantially lessen one or more of the project's significant adverse effects (14 Cal. Code Regs. § 15126.6(c)). The lead agency must describe its reasons for excluding other potential alternatives when considering alternatives for evaluation in the environmental document. Under the "rule of reason," an EIR is required to study a sufficient range of alternatives to permit a reasoned choice (Cal. Code Regs. 14 § 15126.6(f)). CEQA does not require that all possible alternatives be studied.

Under NEPA, the alternatives analysis is "the heart of the environmental impact statement" (40 C.F.R. Part 1502.14). Under Council on Environmental Quality (CEQ) regulations, an EIS is required to examine "all reasonable alternatives" to the proposed action, as well as the No Action Alternative.

[2] NEPA/404/408 Integration is a formal process by which the FRA, Authority, U.S. Army Corps of Engineers (USACE), and U.S. Environmental Protection Agency (USEPA) coordinate on the identification, preliminary technical evaluation, and validation of detailed evaluation of alternatives in a NEPA document to ascertain that the requirements of Clean Water Act Section 404 (concerning waters/wetlands) and Rivers and Harbors Act Section 408 (concerning federally authorized flood control projects) are fully and concurrently considered. The FRA, Authority, USACE, and USEPA signed a Memorandum of Understanding that established a three-step "checkpoint" process to govern interagency coordination for the integration process. The State of California assumed the NEPA federal lead agency responsibilities for the high-speed rail project on July 23, 2019.

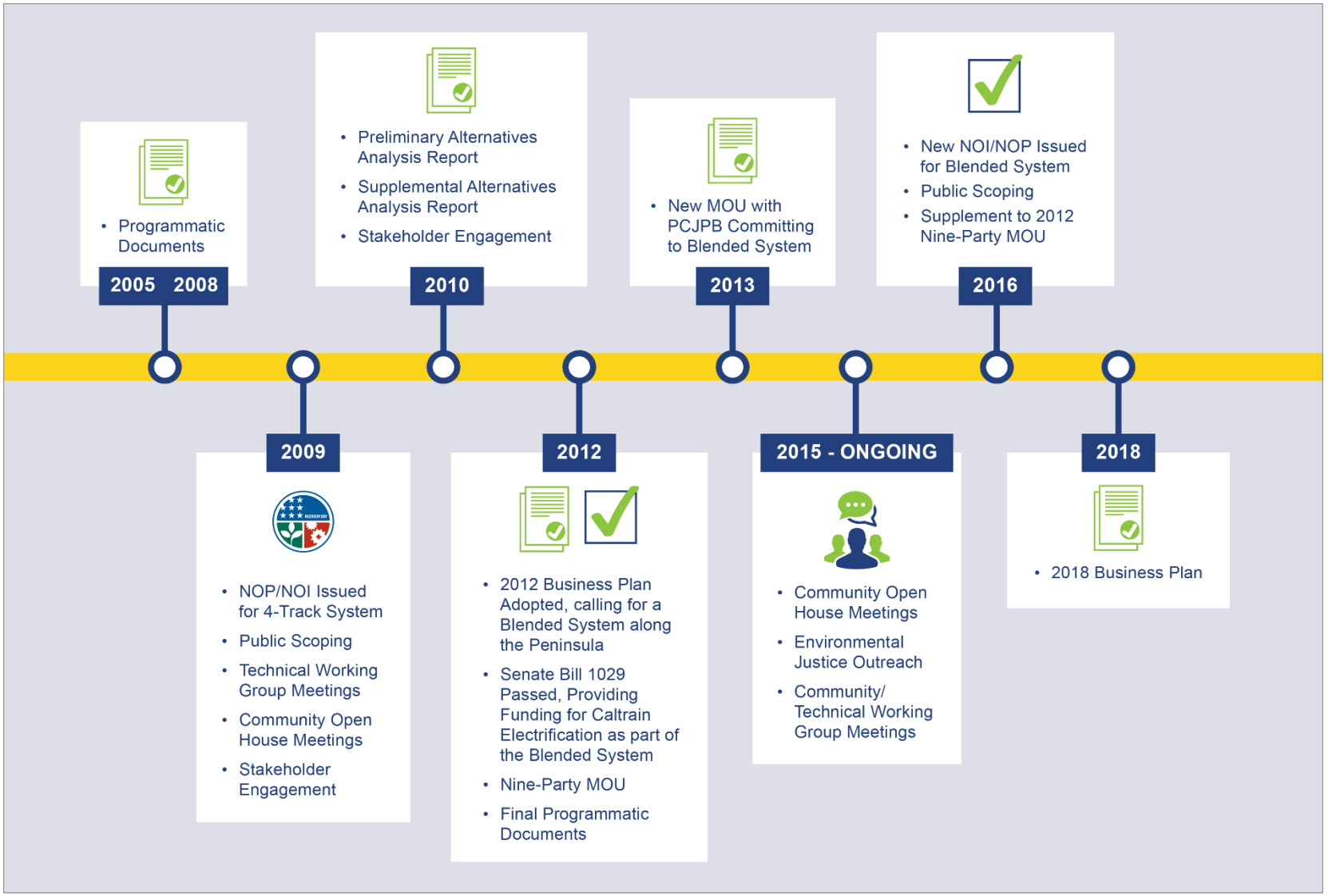


**Figure 1 Project Alternatives Development and Screening Process**

The CEQ guidance also allows, when the number of potentially reasonable alternatives is very large, the lead agency to examine "a reasonable number of examples, covering the full spectrum of alternatives" (CEQ 1981). Pursuant to Section 10(b) of the FRA's *Procedures for Considering Environmental Impacts*, "It is entirely proper that the number of alternatives being considered should decrease as the environmental consideration process proceeds and as analysis reveals that certain alternatives would in fact be unreasonable" (64 *Federal Register* [Fed. Reg.] 28546, 28550). The Authority considered the input of the public and interested resource agencies when developing the reasonable range of alternatives. Pursuant to CEQA and NEPA, the Authority and FRA held scoping meetings throughout the alternatives development process to invite public participation in defining the scope of the analysis, including the range of reasonable alternatives.

### 2.1.2 Tier 1 Planning

The Authority and FRA have used a tiered environmental review process to support decisions for the high-speed rail (HSR) system. Tiering of environmental documents means addressing a broad program in "Tier 1" environmental documents, then analyzing the details of individual projects within the larger program in subsequent project-specific or "Tier 2" environmental documents. The Authority and FRA began the Tier 1 environmental review process with the Statewide Final Program EIR/EIS (Authority and FRA 2005), which deferred selection of a corridor between the San Francisco Bay Area and Central Valley until completion of a second, more focused Program EIR/EIS. The Authority and FRA completed the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008), which evaluated two network alternatives for linking the Bay Area and Central Valley—the Pacheco Pass and the Altamont Pass—and four alignment alternatives between San Francisco and San Jose—Interstate (I-) 280, U.S. Highway (US) 101, and the Caltrain corridor (exclusive or shared guideway). Figure 2 illustrates the range of alignment alternatives considered in the Bay Area to Central Valley Program EIR/EIS.

In 2008, the Authority and FRA selected the Pacheco Pass network alternative, which used existing rail and transportation rights-of-way to the greatest extent feasible, minimizing impacts to wetlands and aquatic resources, other environmental resources, and communities. Additionally, the Authority and FRA advanced the shared use Caltrain corridor between San Francisco and San Jose for further study in a Tier 2 project-level EIR/EIS (depicted on Figure 3). The station locations advanced for Tier 2 study included a station in downtown San Francisco, a San Francisco International Airport (SFO) Station at Millbrae, a potential mid-Peninsula station in either Redwood City or Palo Alto, and the San Jose Diridon Station. As a result of litigation, these decisions were reconfirmed by the Bay Area to Central Valley High-Speed Train Revised Final Program EIR (Authority 2010) and the Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR (Authority 2012a).

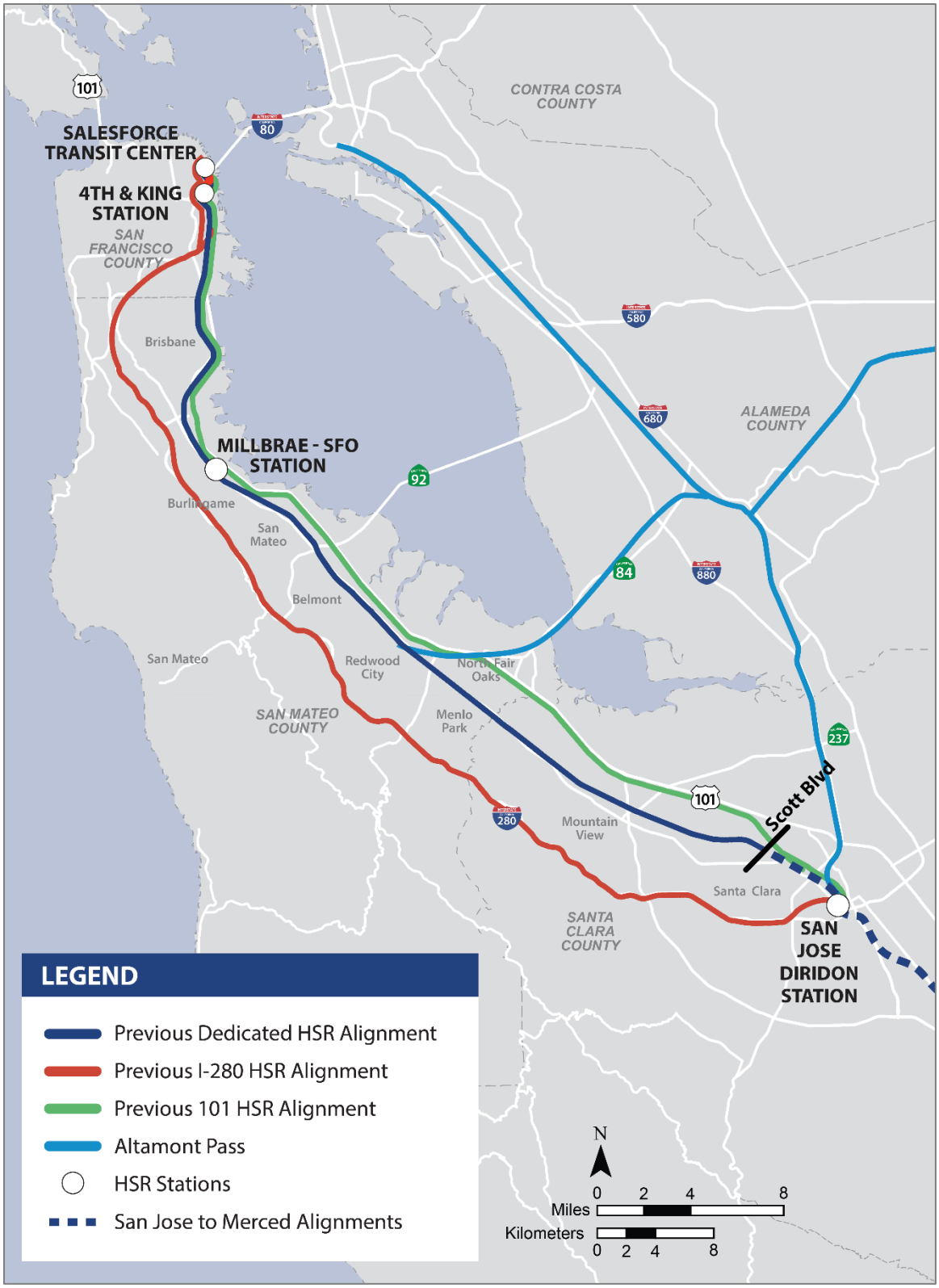


**Figure 2 Alignment Alternatives Considered and Eliminated in Tier 1 Planning**


**Figure 3 Alignment and Station Locations Carried Forward from Tier 1 Planning**

## 2.1.3 Tier 2 Planning

### *2.1.3.1 Initial Tier 2 Planning for Four-Track System*

The Authority issued an NOP on January 8, 2009 (State Clearing House No. 2008122079) and the FRA published an NOI in the *Federal Register* on December 29, 2008 to begin the Tier 2 project-level environmental review process. The proposed project was a fully grade-separated four-track system between San Francisco and San Jose with high-speed rail sharing the corridor with Caltrain commuter trains. Scoping meetings were held in 2009 and approximately 950 comment submissions were received during the scoping period. The feedback received during the scoping period informed the initial range of alternatives for the San Francisco to San Jose Project Section, which is documented in the Preliminary Alternatives Analysis in April 2010 and Supplemental Alternatives Analysis in August 2010 (Authority and FRA 2010a, 2010b). The Authority held community workshops and open houses to share information about the alternatives under consideration for the Project Section at that time.

**Preliminary Alternatives Analysis (April 2010)**

The Preliminary Alternatives Analysis carried forward a predominantly four-track, grade-separated shared-use alignment between San Francisco and San Jose. The alternatives analysis primarily addressed the potential vertical configurations of the alignment alternatives within the Caltrain shared-use corridor. The vertical options considered in alternatives development included aerial viaduct; berm; at grade (existing Caltrain grade); trench; covered trench or tunnel; and deep tunnel.[3] These options were assessed based on their ability to meet Purpose and Need and project objectives, constructability, and environmental considerations. Additionally, public and agency engagement informed the evaluation of alignment alternatives; as a result of this engagement, the Authority evaluated tunnel options throughout the corridor and limited the use of high berms in commercial or residential areas where they would reduce connectivity and mobility or where a strong local opposition to this type of structure was expressed. The Preliminary Alternatives Analysis recommended carrying forward for further evaluation a variety of vertical design options between San Francisco and San Jose, illustrated in Figure 4.

The Preliminary Alternatives Analysis also recommended further evaluation of stations in downtown San Francisco, Millbrae, and San Jose Diridon Station, as well as a potential mid-Peninsula station in Redwood City, Palo Alto, or Mountain View. The Authority considered the current Caltrain Mountain View Station (which was not evaluated in the program-level documents) as an additional potential mid-Peninsula station at the request of the City of Mountain View.

[3] An aerial viaduct consists of concrete structures supported by columns. A berm consists of earthen fill with 2:1 side slopes or within retaining walls. At-grade track is typically at the level of the surrounding ground surface or is sometimes elevated or below grade if that is the configuration of the existing Caltrain tracks; along much of its alignment, the existing Caltrain track is on a low berm several feet off the ground. A covered trench or tunnel is an excavated trench covered partially or fully with a deck to allow streets or other uses above the track. A deep tunnel is typically a bored tunnel with ventilations shafts.


**Figure 4 Alignment Alternatives and Station Locations Carried Forward from the Preliminary Alternatives Analysis**

**Supplemental Alternatives Analysis (August 2010)**

The Supplemental Alternatives Analysis modified the recommendations presented in the Preliminary Alternatives Analysis based on consultation with local cities and agencies, constructability factors, cost, and the goals of minimizing displacements and impacts on communities and construction-related disruption to Caltrain. Based on these considerations, the report identified three basic design options for the alignment alternatives. Design Option A relied predominantly on at-grade and aerial structure solutions to travel the length of the San Francisco to San Jose corridor. Design Option B and B1 relied on at-grade, aerial, trench and tunnel design solutions. All three design options included a new two-track covered trench or tunnel in San Francisco parallel to the existing Caltrain track.

Figure 5 depicts the alignment alternatives and station locations carried forward for further evaluation as a result of the Supplemental Alternatives Analysis. These included the Design Option A, B, and B1 alignment alternatives and station locations in downtown San Francisco, Millbrae, and San Jose Diridon Station, as well as a potential mid-Peninsula station in Redwood City, Palo Alto, or Mountain View.

The Supplemental Alternatives Analysis also evaluated four potential light maintenance facility (LMF) sites including the Port of San Francisco Piers 90-94, San Francisco International Airport (SFO), and two sites in the Brisbane Baylands area east or west of the Caltrain corridor (Figure 6). These sites were identified in accordance with the Authority's preliminary siting criteria for maintenance facilities, which described the facility design and locational criteria to meet the functional requirements for an LMF between San Francisco and San Jose (Authority 2009), including:

- **Site size**—The site must be large enough (approximately 100 acres) to accommodate storage and maintenance operations.
- **Proximity to the mainline tracks** – It is important that the LMF be located immediately adjacent to the mainline tracks, to minimize the length of the lead track. Long lead tracks have the potential to disrupt communities and have noise and visual impacts.
- **Double-ended lead tracks**—The LMF should be a double-ended facility (i.e., capable of dispatching and receiving trains from both ends of the facility). Doubled-ended facilities increase operational flexibility and allow for efficient dispatch of track maintenance equipment in the event there is an issue with one of the lead tracks. A stub-ended track is a high-risk design and should be avoided when a double-ended facility is feasible.

The Port of San Francisco site was found to be operationally deficient because of its size, distance from the mainline tracks, and need to be 'stub-ended' (single access and egress), which would constrict operations. Acquiring the right-of-way to construct the necessary lead tracks from this site to the Caltrain mainline tracks would be costly and running trains along the lead tracks would be disruptive to the adjacent dense urban neighborhoods. This site was therefore not recommended for further study.

The SFO site was adequately sized (100 acres), but operationally deficient because of its distance from the mainline track and need to be 'stub-ended'. Providing the necessary lead tracks from this site to the Caltrain mainline tracks would be costly and require modifications to the U.S. 101 Interchange. Furthermore, the SFO site was determined to be not available as the lease to the site had been renewed with the current tenants. This site was therefore not recommended for further study.


**Figure 5 Alignment Alternatives, Station Locations, and Light Maintenance Facilities Carried Forward from the Supplemental Alternatives Analysis**


**Figure 6 Light Maintenance Facility Sites—San Francisco to San Jose Project Section**

The Brisbane Bayshore east and west sites provided adequate space (100 acres) to provide operational flexibility desired for a double-ended maintenance facility. They were located adjacent to the Caltrain mainline, thereby providing convenient and close connections to the high-speed rail mainline tracks for both southbound and northbound access. Providing northbound and southbound access, would support timely provision of trainsets to the San Francisco terminal station, and would facilitate switching trainsets out during normal operations. For these reasons, the two options at the Brisbane Bayshore site were recommended for be carried forward for further study.

Additional assessment of these four sites was conducted as part of the *San Francisco to San Jose Project Section Checkpoint B Summary Report* (Authority 2019a), to consider the environmental impacts that would likely result from the development of each site and to identify practicability constraints associated with the sites. This assessment is summarized in Section 2.1.3.3, Tier 2 Planning for Two-Track Blended System.

### *2.1.3.2 Transition to a Two-Track Blended System*

The four-track system proposal generated concerns from communities along the highly urbanized Caltrain corridor. The cities and communities along the Project Section developed around the historic rail corridor, resulting in the current blend of residential, commercial, mixed-use, and industrial development that tightly borders the rail corridor. The communities expressed concerns about the magnitude of potential impacts on environmental and community resources due to the proximity of the corridor to sensitive residential land uses and the need for additional right-of-way acquisitions along the Project Section, particularly in the areas of proposed mid-Peninsula stations. In response to these concerns, the Authority suspended further work on the Project Section EIR/EIS in mid-2011 to consider blended operations for the two services (Caltrain and high-speed rail) within a smaller project footprint, and determine the HSR service to be studied in the Tier 2 EIR/EIS (Authority 2011). In November 2011, the Authority proposed blended operations for the Project Section, which would provide high-speed rail service between San Francisco and San Jose and a "one-seat ride"[4] to San Francisco by sharing Caltrain's existing predominantly two-track system, without requiring a dedicated four-track system.

Several important legislative actions and implementation decisions followed the Authority's proposal for blended operations for the Project Section in 2011. The framework for blended operations along the San Francisco Peninsula was memorialized in 2012 through four separate, but related actions: Authority adoption of the *California High-Speed Rail Program Revised 2012 Business Plan* (2012 Business Plan) (Authority 2012b), adoption of the *Metropolitan Transportation Commission (MTC) Resolution No. 4056 Memorandum of Understanding*[5] (MTC 2012), and passage of Senate Bill (SB) 1029 and SB 557, which are described in more detail as follows:

- The 2012 Business Plan (Authority 2012b) proposed a blended system for the Peninsula described as primarily a two-track system that would be shared by Caltrain and high-speed rail service, and other current passenger and freight rail tenants. The key improvements identified for the blended system included an upgraded signal system, electrification, and other infrastructure upgrades. The 2012 Business Plan (Authority 2012b) further concluded that the high-speed rail project to be studied in the Project Section EIR/EIS would be the blended system.
- MTC Resolution No. 4056 (MTC 2012) is a nine-party agreement to establish a *Funding Framework for a High Speed Rail Early Investment Strategy for a Blended System in the Peninsula Corridor*. The early investment strategy identifies an interrelated program of projects to upgrade existing commuter rail service and prepare for high-speed rail use of the infrastructure that along with other improvements substantially within the existing Caltrain right-of-way would allow high-speed trains to use the Caltrain corridor between San Francisco and San Jose. The two interrelated projects funded by the early investment strategy are the installation of electric traction power infrastructure and purchase of electric passenger train equipment for Caltrain commuter services, and upgrades to the signal system to provide positive train control (PTC).

[4] A "one-seat ride" does not require a transfer between vehicles to complete the trip.

[5] The Authority and eight other Bay Area agencies (Peninsula Corridor Joint Powers Board, City and County of San Francisco, San Francisco County Transportation Authority, Transbay Joint Powers Authority, San Mateo County Transportation Authority, Santa Clara Valley Transportation Authority, City of San Jose, and MTC) approved MTC Resolution No. 4056 Memorandum of Understanding in March 2012.

- SB 1029 appropriated funding for the electrification of the rail corridor and further defined the blended system by mandating that any funds appropriated by SB 1029 for projects in the San Francisco to San Jose corridor, consistent with the blended system strategy identified in the 2012 Business Plan (Authority 2012b), would not be used to expand the blended system to an independently dedicated four-track system (SB 1029 § 1 and § 2).
- SB 557 provides that any bond funds appropriated pursuant to SB 1029 will be used solely to implement a primarily two-track blended system substantially within the existing Caltrain right-of-way and that any track expansion beyond the blended system approach would require the approval of all nine parties to MTC Resolution No. 4056 (MTC 2012).

After adoption of the nine-party MOU (MTC 2012), Caltrain moved forward with environmental clearance of the electrification project as part of the Caltrain Modernization Program. At the same time, the Authority worked collaboratively and iteratively with Caltrain to better define and analyze options for how the blended system could be developed and what infrastructure would be needed to add high-speed rail service to the corridor. This effort led to the Tier 2 planning that started in 2016 and is described below.

### *2.1.3.3 Tier 2 Planning for Two-Track Blended System*

The framework for pursuing a blended system in the Project Section, along with other evolutions in statewide implementation of the high-speed rail system, provided the foundation for a new Tier 2 planning effort focusing on a predominantly two-track blended system utilizing existing Caltrain track and remaining substantially within the existing Caltrain right-of-way. On May 9, 2016, the Authority and FRA published an NOP and NOI, which reinitiated scoping for the Project Section EIR/EIS. The 2016 NOP/NOI rescinded the 2009 NOP and 2008 NOI and presented the blended system for the Project Section, which implements the strategy identified by the Authority's 2012 Business Plan and subsequent 2014 and 2016 Business Plans. The 2018 Business Plan re-affirmed this strategy. Station locations include the San Francisco Salesforce Transit Center, an interim San Francisco 4th and King Street Station, Millbrae, and San Jose Diridon Station. Consistent with the 2016 Business Plan, a mid-Peninsula station in Redwood City, Palo Alto, or Mountain View was not included as part of the project, based on community feedback and lack of interest in the station from those communities. Public scoping activities were conducted between May 9, 2016, and July 20, 2016 and included three scoping meetings and approximately 30 meetings with business and community groups, early agency coordination, and elected official briefings.

Alternatives development for the Project Section was constrained by the blended system framework which establishes the high-speed rail project as a predominantly two-track blended system using existing Caltrain track and remaining substantially within the existing Caltrain right-of-way. This framework, combined with the spatial constraints of integrating with existing passenger and freight rail in an existing right-of-way, limited the range of potential alignment alternatives for the Project Section. As a result, the alternatives development process for the blended system focused largely on blended system operations, achieving the objectives of predictable and consistent travel times for both high-speed rail and Caltrain service, and location of the LMF. This section summarizes the alignment alternatives, LMF, and passing tracks considered during the alternatives development process for the two-track blended system, which are described in greater detail in the *San Francisco to San Jose Project Section Checkpoint B Summary Report* (Authority 2019a).

**Alignment Alternatives**

***Fully Grade-Separated Four-Track Alignment Alternative***

The Authority originally proposed a shared, fully grade-separated four-track alignment alternative on the Caltrain corridor between San Francisco and San Jose, as described in Section 2.1.3.1, Initial Tier 2 Planning for Four-Track System. This alternative is no longer being considered because it fails to comply with State legislative mandates from SB 1029 and SB 557 requiring the

Project Section to be developed as a predominantly two-track blended system substantially within the existing Caltrain right-of-way.

***Tunnel Alignment Alternative***

The Authority also considered an approximately 6-mile-long tunnel alignment from Brisbane directly to the Salesforce Transit Center, comprised of two separate tunnels with a maximum depth of 80 feet that would return to grade near the intersection of Cesar Chavez Street and I-280 to avoid the interstate's pile foundations. While the tunnel alignment from Brisbane to the Salesforce Transit Center would decrease travel time relative to the at-grade alignments along the Caltrain corridor, it was withdrawn due to the substantially greater capital costs, construction-related environmental effects, and inconsistency with blended system planning, commitments, and legislation.

**Light Maintenance Facilities**

As part of the Checkpoint B[6] analysis, an additional assessment of the four LMF sites considered in the 2010 Supplemental Alternatives Analysis (Port of San Francisco, SFO, West Brisbane, and East Brisbane sites) was conducted to determine the environmental impacts that would likely result from the development of each site and to identify practicability constraints associated with the sites. This evaluation was based on the preliminary engineering designs evaluated in the 2010 Supplemental Alternatives Analysis, which were subsequently refined during the alternatives development process for the predominantly two-track blended system. Consistent with the LMF functional criteria the evaluation assumed that each site would be 100 acres. Table 1 summarizes the performance of the LMF sites evaluated relative to the siting and evaluation criteria.

[6] To coordinate decision making, the Authority and FRA entered into a NEPA/Section 404/Section 408 Integration Process Memorandum of Understanding (MOU) with the USACE and USEPA, which established a system of "checkpoints" (Checkpoints A, B, and C) to guide the process of selecting and analyzing alternatives. These checkpoints are described in greater detail in Section 2.3.2.3, Clean Water Act Section 404/408 Integration Process.

**Table 1 Summary of Light Maintenance Facility Sites Evaluation[1]**

| Site Options | Performance Relative to Sting Criteria and Environmental Evaluation | Decision Carried Forward | Decision Withdrawn |
|---|---|---|---|
| Port of San Francisco | ▪ Size—100 acres<br>▪ Operational considerations—stub-ended facility<br>▪ Not available – Site is part of San Francisco Maritime Eco-Industrial Center<br>▪ Wetlands and waters impact - 5.1 acres<br>▪ Biological resources – no special-status species or riparian habitat<br>▪ Traffic circulation – would block road connection from Cesar Chavez Street to commercial/industrial development and would require reconstruction of a section of I-280 | | X |
| West Brisbane | ▪ Size—100 acres<br>▪ Operational considerations—double-ended facility<br>▪ Site is available, but reduces land available for planned development (mixed use/residential permitted and commercial) at Brisbane Baylands<br>▪ Wetlands and waters impact - 10.2 acres<br>▪ Biological resources – no special-status species or riparian habitat | X | |
| East Brisbane | ▪ Size—100 acres<br>▪ Operational considerations—double-ended facility<br>▪ Site is available, but reduces land available for planned development (commercial/residential prohibited) at Brisbane Baylands<br>▪ Wetlands and waters impact - 1.4 acres<br>▪ Biological resources – no special-status species or riparian habitat | X | |
| SFO | ▪ Size—100 acres<br>▪ Operational considerations—stub-ended facility<br>▪ Not available – Site is in long-term lease for critical airport-related operations.<br>▪ Wetlands and waters impact - 1.8 acres<br>▪ Biological resources – 0.6 acres of habitat for salt marsh harvest mouse, California Ridgway's rail and California black rail | | X |

SFO = San Francisco International Airport
I- = Interstate
[1] This analysis was based on project footprints from the 2010 Supplemental Alternatives Analysis. The design of the East and West Brisbane LMFs has been refined since 2010, therefore the current project footprints that will be reported in the Draft EIR/EIS have slightly different impacts on aquatic and biological resources than shown in this table.

The development of each of the four sites for an LMF would result in impacts on aquatic resources, with West Brisbane having the greatest impacts and East Brisbane the least. As a potentially practicable option with the least aquatic resource impacts and no impacts on listed species, the East Brisbane site is evaluated in the Draft EIR/EIS. The West Brisbane site is also evaluated in the Draft EIR/EIS because it is a potentially practicable option. Although development of an LMF at the Port of San Francisco or SFO site would result in less impacts on aquatic resources than at the West Brisbane site, neither site would serve as a practicable option because of their operational constrictions and lack of availability. Because the Port and SFO options would not be practicable for an LMF, they were not advanced for consideration in the Draft EIR/EIS.

**Passing Tracks**

Since the framework for blended system operations was established in 2012, the Authority and Caltrain have studied the feasibility of blended system operations, including the utility of passing tracks. Passing tracks allow for faster-moving trains to bypass slower-moving trains, and have the potential to provide operational benefits associated with faster recovery times from disruption events on the railway. Caltrain and the Authority prepared studies in 2013 and 2016, respectively, to assess the feasibility of blended system operations and various passing track options between San Francisco and San Jose (LTK Engineering Services 2013; SMA Rail Consulting 2016). Figure 7 illustrates the locations of the passing track options evaluated as part of these studies.

Table 2 describes the passing track options evaluated, summarizes the results of the evaluation, and identifies whether each passing track option was carried forward for further evaluation or withdrawn from consideration. Blended system planning work developed a reasonable range of operating service plans without the need for additional passing tracks. Based on the operational analysis and a preliminary evaluation of community impacts associated with the passing track options, the Authority carried forward the No Passing Track Option and the Short Middle Four-Track Passing Track Option for further evaluation, as explained in Table 2.


**Figure 7 Passing Track Options—San Francisco to San Jose Project Section**

**Table 2 Summary of Passing Track Options Evaluation**

| Option | Description | Summary of Evaluation | Decision Carried Forward | Decision Withdrawn |
|---|---|---|---|---|
| No Passing Track | No additional passing track | The No Passing Track Option would not provide any operational benefit for HSR, but would avoid right-of-way acquisition, temporary construction disruption, and aesthetic impacts associated with the passing track options, and would only increase average travel times[1] for Caltrain by 18 seconds relative to the No Project Alternative based on the 2016 analysis. | X | |
| Short Middle Four-Track | 6 miles four-track from San Mateo to Redwood City | The Short Middle Four-Track Passing Track Option would allow for faster average travel times for HSR by 2 minutes 24 seconds relative to the No Passing Track Option and enable faster recovery times from disruptions to railway operations based on the 2016 analysis. Relative to the No Project Alternative, this option would increase average travel times for Caltrain by 2 minutes and 48 seconds. Additionally, this option would be built within an already grade-separated track section, minimizing community disruption and displacements associated with expanding the existing right-of-way. | X | |
| Long Middle Four-Track | 8 miles four-track from San Mateo to Redwood City | The Long Middle Four-Track Passing Track Option would have similar average travel times for HSR relative to the Short Middle Four-Track Passing Track Option and would improve Caltrain's average travel times compared to both the baseline conditions and the No Passing Track Option based on the 2016 analysis. However, it would require more construction along a longer extent of track, resulting in greater environmental and community impacts. | | X |
| Long-Middle Three-Track | 16 miles three-track from San Mateo to Palo Alto | The Long Middle Three-Track Passing Track Option would result in the fastest average travel times for Caltrain and HSR of the options evaluated based on the 2016 analysis, but would require construction along the longest extent of track, resulting in greater environmental and community impacts. The use of the third track for bidirectional travel would also require precise coordination of HSR and Caltrain operations to provide for safe use of the passing track, presenting operational challenges. | | X |
| North Four-Track | 10 miles four-track from Brisbane to Burlingame | The North Four-Track Passing Track Option was eliminated based on the 2013 analysis, because it would have the slowest average travel time for Caltrain and HSR, would have difficulty supporting operational service time differences for overtakes, and would result in a high level of signal congestion. | | X |
| South Four-Track | 8 miles four-track from Palo Alto to Santa Clara | The South Four-Track Passing Track Option was eliminated based on the 2013 analysis, because it would have the second slowest average travel time for HSR. | | X |

*Sources: LTK Engineering 2013, SMA Rail Consulting 2016; Authority 2019*
HSR = high-speed rail
[1] *Average travel times* refers to peak hour average representative travel times.

## 2.2 Alternatives Evaluated in the EIR/EIS

Based on the process described in Section 2.1, Alternatives Development, the Authority and FRA advanced two project alternatives for detailed analysis in the Draft EIR/EIS—Alternative A and Alternative B (depicted on Figures 8 and 9, respectively). Both project alternatives would use existing and in-progress infrastructure improvements developed by Caltrain for its Caltrain Modernization Program, including the electrification of the Caltrain corridor between San Francisco and San Jose and upgrades to the existing signal system to meet PTC requirements. These improvements are key components of the early investment strategy established by MTC Resolution No. 4056 to prepare for blended high-speed rail and Caltrain service.

The Authority would also build additional infrastructure improvements and project elements beyond the Caltrain Modernization Program to accommodate high-speed rail service and comply with the Authority's requirements for that service. Project elements required for both project alternatives include track modifications to support higher speeds while maintaining passenger comfort; station and platform modifications to accommodate high-speed rail trains passing through or stopping at existing stations; safety and security improvements for at-grade roadway crossings and at existing Caltrain stations; an LMF located east or west of the mainline Caltrain tracks; and communication radio towers located at approximately 2.5-mile intervals. A 6-mile passing track section between San Mateo and Redwood City (the Short Middle Four-Track Passing Track Option) would be provided under Alternative B. Table 3 provides a summary of design features for the two project alternatives. Any differences in design features between the two project alternatives would be associated with the Brisbane LMF and passing track.

**Table 3 Summary of Design Features for Alternatives A and B**

| Feature | Alternative A | Alternative B |
|---|---|---|
| Length of existing Caltrain track (miles)[1] | 42.9 | 42.9 |
| Length of track shifted horizontally (miles)[1] | 14.5 | 17.4 |
| Length of OCS pole relocation (miles)[1, 2] | 9.4 | 13.1 |
| LMF | East Brisbane | West Brisbane |
| Modified Caltrain stations | 4th and King Street, Millbrae, Bayshore (relocated), San Bruno, Hayward Park, Broadway, Atherton | 4th and King Street, Millbrae, Bayshore (relocated), Hayward Park, Hillsdale, Belmont, San Carlos (relocated), San Bruno, Broadway, Atherton |
| Number of modified or new structures[3] | 14 | 35 |
| Number of at-grade crossings with safety modifications (e.g., four-quadrant gates, median barriers) | 38 | 38 |
| Communication radio towers | 20 | 20 |

LMF = light maintenance facility
OCS = overhead contact system
[1] Lengths shown are guideway mileages, rather than the length of the northbound and southbound track.
[2] OCS pole relocations are assumed for areas with track shifts greater than 1 foot.
[3] Structures include bridges, grade separations such as pedestrian underpasses and overpasses, tunnels, retaining walls, and culverts.


**Figure 8 Alternative A**


**Figure 9 Alternative B**

### 2.2.1 Alternative A

Alternative A would modify approximately 14.5 miles of existing Caltrain track predominantly within the existing Caltrain right-of-way, install safety improvements and communication radio towers, modify seven existing Caltrain stations or platforms to accommodate high-speed rail service in the corridor, and build the East Brisbane LMF. Caltrain has several four-track segments where trains can pass; no additional passing tracks would be built under Alternative A.

High-speed rail stations would be located at the existing 4th and King Street and Millbrae Stations. The existing 4th and King Street Station would serve as the interim terminal station for the Project Section until the Downtown Extension (which has been environmentally cleared by the Transbay Joint Powers Authority) provides high-speed rail access to the Salesforce Transit Center. Station improvements at the 4th and King Street Station would be limited to installing a booth for high-speed rail ticketing and support services, adding high-speed rail fare gates, and modifying existing tracks and platforms. At the Millbrae Station, new high-speed rail station facilities including a station hall for ticketing and support services would be built on the west side of the existing Caltrain corridor. A new overhead crossing would extend from the station hall to the existing station concourse, providing access to the new high-speed rail tracks and platforms on the west side of the existing Caltrain/Bay Area Rapid Transit (BART) platform. Multimodal station access improvements, including curbside pick-up and drop-off areas, would be provided along El Camino Real and the extension of California Drive. Replacement parking for displaced Caltrain and BART commuter parking would be located west of the station along El Camino Real.

The East Brisbane LMF under Alternative A would be built on approximately 100 acres of predominantly vacant lands east of the Caltrain corridor in Brisbane. Direct high-speed rail mainline track access would be provided along double-ended yard leads that would cross over the mainline track on an aerial flyover at the north end with an at-grade lead track entering the LMF from the south. The East Brisbane LMF would include a maintenance yard with 17 yard tracks adjacent and parallel to a maintenance building containing eight shop tracks with interior access and inspection pits for underside and truck inspections. The maintenance building would provide storage areas for reserve equipment, workshops, and office space. An access road would connect the facility to Tunnel Avenue, which would be realigned east of the LMF.

### 2.2.2 Alternative B

Alternative B would modify approximately 17.4 miles of existing Caltrain track predominantly within the existing Caltrain right-of-way, install safety improvements and communication radio towers, modify 10 existing stations or platforms to accommodate high-speed rail service in the corridor, and build the West Brisbane LMF and the Short Middle Four-Track Passing Track. high-speed rail stations would be located at the existing 4th and King Street and Millbrae Stations, and improvements at these stations would be the same as described for Alternative A.

The West Brisbane LMF would be built south of the San Francisco Caltrain tunnels on approximately 110 acres west of the Caltrain corridor. Direct mainline track access would be provided along double-ended yard leads that would cross over the mainline track on an aerial flyover and would enable north and south movements. The West Brisbane LMF would have the same types of facilities (e.g., maintenance yard and maintenance building), as the East Brisbane LMF.

The approximately 6-mile-long passing track under Alternative B would extend through San Mateo, Belmont, San Carlos, and into the northern portion of Redwood City. The existing tracks would be realigned predominantly within the existing right-of-way to accommodate the new four-track configuration. However, additional right-of-way would be required in some areas with particularly narrow existing rights-of-way or where curve straightening would be necessary to achieve higher speeds. Construction of the passing tracks would require modifications to the existing Hayward Park, Hillsdale, and Belmont Stations, and relocation of the San Carlos Station approximately 2,260 feet south of their current location. A number of bridges, underpasses or overpasses, retaining walls, and culverts would require modification to accommodate the four-track passing track under Alternative B, which would not be required under Alternative A.

## 2.3 Public and Agency Outreach and Stakeholder Engagement

### 2.3.1 Public Outreach and Engagement

The predominantly two-track blended system using existing Caltrain track was developed in response to public and agency feedback received during the initial Tier 2 planning for a dedicated four-track system between 2009 and 2011. Scoping activities for the Draft EIR/EIS for the two-track blended system occurred between May 9, 2016, and July 20, 2016. In May 2016, the Authority held formal scoping meetings in the cities of San Francisco, San Mateo, and Mountain View. In addition to formal scoping meetings, public input was sought through other means, including presentations, briefings, and workshops. Throughout the development of the Draft EIR/EIS, the Authority and FRA held meetings to consult with federal, state, and local agencies to provide project updates and obtain feedback. The Authority and FRA also continued to consult with environmental regulatory agencies, landowning state and federal agencies, and other stakeholders during this time. Appendix A provides a listing of the public and agency meetings held by the Authority and FRA as part of the continued outreach from July 2016 through May 2019. The following sections summarize key public and stakeholder input relative to alternatives.

#### *2.3.1.1 Local Communities*

During the process of developing alternatives, the Authority collected the following feedback from local communities relevant to the development and differentiation of alternatives[7]:

- **City of Brisbane**—Community members expressed concerns about the proposed Brisbane LMF and associated air quality, visual, and noise impacts of construction and operation. The City of Brisbane raised concerns about the compatibility of the West Brisbane LMF under Alternative B with existing and planned land uses at the Brisbane Baylands site, the ability of the Authority to conduct cost-effective remediation of the former landfill on the site of the East Brisbane LMF, and the potential loss of revenue due to displaced planned commercial development from the East Brisbane LMF under Alternative A.
- **City of San Mateo**—Residents of the City of San Mateo expressed concerns about the visual impact of radio towers under both project alternatives, as well as noise, safety, pollution, and displacements associated with construction of the passing track under Alternative B. Both alternatives would introduce two communication radio towers in San Mateo, so visual impacts of the radio towers would be the same under Alternatives A and B. Many residents expressed preferences for Alternative A because it would require fewer construction-related noise impacts, emissions, and displacements in San Mateo.
- **City of Belmont**—The City of Belmont raised concerns related to disruption of city infrastructure, displacements of residences and businesses, and economic impacts related to property acquisitions required for construction of the passing track under Alternative B. Most residents prefer Alternative A because it would minimize disruption to existing infrastructure and private property in Belmont.
- **City of San Carlos**—The City of San Carlos and its residents are concerned about visual impacts associated with extending the elevated embankment, property impacts along Old County Road, loss of parking at the San Carlos Transit Village Project (currently under construction), and the relocation of the San Carlos Station under Alternative B. Most residents prefer Alternative A because it would not create more visual impacts, property impacts, and parking impacts in San Carlos. Additionally, the relocation of San Carlos Station would not occur under Alternative A.

Feedback was also received from local communities in locations where the design of project alternatives would be the same. Although this feedback is an important component of the evaluation of alternatives, it does not inform the identification of the Preferred Alternative because

[7] Additional outreach was conducted in relation to the staff-recommended Preferred Alternative during July and August 2019 that is not summarized here.

there is only one project design under consideration in these communities. Communities along the entire project alignment expressed concerns about construction- and operations-related noise and traffic impacts and requested coordination with local jurisdictions about proposed mitigation (e.g., quiet zones, vehicle detection). Other key concerns that were prevalent throughout the project corridor include safety and security at at-grade crossings and on station platforms; project impacts on emergency service providers and response times; and project impacts on Caltrain service, other transit services, and Caltrain station parking. The City and County of San Francisco requested that the Authority evaluate pedestrian access and egress near the 4th and King Street Station. The City of Millbrae expressed concern about the project's compatibility with proposed development near the Millbrae Station. Additionally, several communities raised concerns about disruptions of utilities (San Bruno and Santa Clara), disruption to community cohesion (North Fair Oaks), and visual impacts of radio towers (Palo Alto) and tree removal (Atherton).

#### *2.3.1.2 Native American Tribes*

Native American outreach and consultation efforts have been ongoing at key milestones throughout the project planning and environmental processes from 2009 to 2019. Due to concerns about potential disturbance of cultural resources, the Authority must maintain the confidentiality of some of the information shared by tribal representatives. Tribal representatives have expressed concerns about the potential to encounter tribal resources during construction and the need for continued consultation and involvement of tribal representatives through ongoing planning and design of the project and during construction.

#### *2.3.1.3 Businesses*

The Authority has met with a wide variety of business representatives throughout project development. Key concerns include displacement of existing businesses; incompatibility of project design with future land use development potential; disruption of access to businesses during construction; business relocation procedures and the effectiveness of relocations; increased traffic congestion; and the adverse and beneficial effects of the project on local and regional businesses. Business representatives have expressed preferences for alternatives that minimize the displacement of businesses. Alternative A would have fewer commercial and industrial displacements than Alternative B. Alternative B would displace more commercial and industrial businesses in San Mateo, Belmont, and San Carlos due to the construction of the passing track. As a result, businesses along the project corridor have expressed a preference for Alternative A.

#### *2.3.1.4 Environmental Justice*

As part of the Authority's environmental justice engagement, targeted outreach to minority populations and low-income populations was conducted from scoping through preparation of the staff-recommended Preferred Alternative. The following issues and concerns were brought up by members of communities along the project having high concentrations of minority populations and low-income populations:

- **City/County of San Francisco and Brisbane**—Minority populations and low-income populations in San Francisco's Sunnydale, Visitacion Valley, and Little Hollywood neighborhoods and in Brisbane expressed concerns about the proposed Brisbane LMF and associated air quality, visual, and noise impacts of construction and operation. Some community members expressed concerns about the cumulative impacts on human health associated with operations of an LMF in an area where the majority of San Francisco's industrial land uses are concentrated. The same residents inquired about potential offsetting benefits related to local employment opportunities with the LMF, improved street lighting throughout the area, and development of open space or green space to offset the potential emissions from LMF operations. Of the two alternatives, the East Brisbane LMF under Alternative A would be farther from existing residential uses in Brisbane, and is therefore preferred by most residents.

- **Cities of San Mateo, Belmont and San Carlos**—Minority populations and low-income populations in the cities of San Mateo, Belmont and San Carlos expressed concerns about construction- and operations-related noise, safety, pollution, residential and business displacements, and visual impacts associated with construction of the passing track under Alternative B. Community members raised concern about displacement of low-income housing and the ability of displaced residents to relocate within the same communities due to housing affordability.

Feedback was also received from community members in locations with high concentrations of minority populations and low-income populations where the design of project alternatives is the same; this feedback is not relevant to the selection of the Preferred Alternative but has informed design of the system and will be more fully discussed in the Draft EIR/EIS. Affordable housing was a key concern raised by low-income populations in Redwood City, North Fair Oaks, and Sunnyvale. Community cohesion and connectivity across the railroad tracks was a key concern raised by residents in North Fair Oaks. Community members in several communities expressed interest the availability of reduced-fare tickets for low-income residents.

### 2.3.2 Agency Consultation

The Authority consulted with cooperating federal, state, and local agencies under NEPA and with trustee and responsible agencies under CEQA regarding specific resource areas associated with these agencies. Interested federal, state, and local agencies were also consulted throughout the process.

Two cooperating agencies participated in the NEPA review process—the U.S. Army Corps of Engineers (USACE) and the Surface Transportation Board. Multiple other federal agencies have been involved and contributed to the environmental review:

- U.S. Environmental Protection Agency (USEPA)
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- National Park Service
- Advisory Council on Historic Preservation

A number of California agencies (state and regional) serve as CEQA responsible agencies for the Draft EIR/EIS:

- California Department of Fish and Wildlife
- California Department of Transportation
- California Public Utilities Commission
- California State Lands Commission
- Peninsula Corridor Joint Powers Board (PCJPB or Caltrain)
- State Water Resources Control Board
- Bay Area Air Quality Management District
- San Francisco Bay Conservation and Development Commission (BCDC)

Meetings with representatives of federal, state, regional, and local agencies throughout the environmental review process are documented in Appendix A.

#### *2.3.2.1 Federal and State Resource Agencies*

Coordination with environmental agencies was conducted throughout development of the staff-recommended Preferred Alternative through multiple working groups and one-on-one meetings. Environmental resource agencies expressed concerns about construction and operations impacts on species and their habitat, as well as impacts on wetlands, other waters, and riparian habitat. Alternative A would have fewer impacts on wetlands and other waters as well as listed species and their habitat. Based on information the Authority has gathered and produced to-date, the Authority believes it is likely that the USACE and USEPA will concur with the Authority that Alternative A is the Least Environmentally Damaging Practicable Alternative (LEDPA) per Clean Water Act Section 404(b)(1).

BCDC raised concerns about encroachment of the project within their jurisdiction, particularly at the Brisbane LMF sites. BCDC is a state agency that has been granted authority by the state, pursuant to the McAteer-Petris Act,[8] to plan and regulate activities and development in and around San Francisco Bay, consistent with policies adopted in the San Francisco Bay Plan. BCDC requires permits to fill areas within the Bay or bay/tidal waterways or to undertake development activities that occur within 100 feet of the bay ("shoreline band"). Both project alternatives would encroach on BCDC jurisdictional areas within bay/tidal waterways and within the shoreline band; however, the encroachment would be greater under Alternative A than Alternative B.

#### *2.3.2.2 Transportation Agencies and Public Works Departments*

The Authority has participated in nearly 30 meetings with the Caltrain Blended Infrastructure Working Group to collaborate on engineering and design of the blended operations, passing tracks, electrification, station safety improvements, and early investments. This coordination is ongoing, and has continued to inform the alternatives development.

Local transportation agencies and public works departments are concerned about disruption of traffic and roadways during construction; increase in traffic around new stations; and additional traffic congestion caused by increased gate down time at at-grade crossings. Temporary construction-related disruption in local circulation would be greater under Alternative B, but the permanent operations-related impacts on intersection operations in station areas and at at-grade crossings would be the same under both project alternatives. Local transportation agencies and public works departments have not expressed preferences for any project alternatives separate from their respective cities and residents, which are summarized in Section 2.3.1.1, Local Communities.

#### *2.3.2.3 Clean Water Act Section 404/408 Integration Process*

Two important processes that integrate many of the applicable regulatory requirements are Section 404 of the Clean Water Act and Section 408 of the Rivers and Harbors Act, as managed by the USACE with oversight from the USEPA. These laws authorize the USACE to make permit decisions regarding the discharge of dredged or fill material into waters of the U.S. and alterations or modifications to existing federal flood risk management facilities. To coordinate decision making, the Authority and FRA entered into a NEPA/Section 404/Section 408 Integration Process Memorandum of Understanding (MOU) with the USACE and USEPA (FRA et al. 2010). The MOU outlines three major checkpoints in the integration of the NEPA, Section 404, and Section 408 processes. Each checkpoint consists of the submittal of technical data and studies by the Authority and FRA to the USACE and USEPA for review and consideration prior to issuing a formal written agency response.

- The first of these submittals is Checkpoint A, which involves preparing a project Purpose and Need statement that duly serves NEPA and Section 404 requirements. The USACE agreed with the purpose and need statement on May 3, 2016 and the USEPA agreed with the Purpose and Need statement on May 5, 2016.
- The second submittal is Checkpoint B, which involves screening potential project alternatives and determining an appropriate range of "reasonable" and "practicable" alternatives using the best available information. On July 26, 2019 and August 14, 2019, the USEPA and USACE provided letters concurring with the range of alternatives to be carried forward in the Draft EIR/EIS.
- The third and final submittal is Checkpoint C, which consists of the assembly and assessment of information contained in the Draft EIR/EIS and associated technical reports for consideration by the USACE and USEPA in determining the preliminary LEDPA and providing a formal agency response. The documentation includes those analyses completed

[8] Cal. Gov. Code §§ 66000–66694 (2015). BCDC also derives its authority from the Suisun Marsh Preservation Act. See Cal. Public Res. Code §§ 29000–29612 (2015).

to meet requirements of NEPA, Sections 401 and 404 of the Clean Water Act, and Section 14 of the Rivers and Harbor Act, which include consideration of compliance with the federal Endangered Species Act and the National Historic Preservation Act.

### 2.3.3 Feedback on the Staff-Recommended Preferred Alternative

Outreach on the staff-recommended Preferred Alternative was initiated by the Authority on July 2, 2019 through a legislative briefing and press release. The Authority conducted outreach in July and August 2019 concerning the staff-recommended Preferred Alternative with stakeholders and members of the public and to receive their feedback for the Board of Directors to consider when giving staff direction in identifying the Preferred Alternative. A summary of the information in this staff report, including the description of how the alternatives were developed, the alternatives under evaluation, prior stakeholder, public and agency input, and the evaluation of alternatives in Chapter 4, Evaluation of Alternatives, was presented to the public and input was solicited in reaction to the staff recommendation. Over 200 community members, stakeholders, and agency officials attended briefings and meetings throughout the project corridor during the outreach period in July and August 2019. A summary of the feedback received during the outreach process is provided in the *San Francisco to San Jose Project Section Preferred Alternative Outreach Summary Report* and associated meeting summaries. Comments from community members, stakeholders, and agency officials also may be presented at the September 17, 2019 Authority Board Meeting.

**July 2019**

- San Mateo County Board of Supervisors
  July 9, 2019
- City/County Staff Coordination Group
  July 17, 2019
- Brisbane City Council
  July 18, 2019
- San Francisco Community Working Group
  July 22, 2019
- San Francisco County Transportation Authority Board of Directors
  July 23, 2019
- Millbrae City Council
  July 23, 2019
- San Mateo County Community Working Group
  July 24, 2019
- Local Policy Maker Working Group
  July 25, 2019

**August 2019**

- Santa Clara Open House
  August 6, 2019
- Transbay Joint Powers Authority
  August 8, 2019
- San Francisco Open House
  August 12, 2019
- Redwood City Open House
  August 19, 2019

**September 2019**

- Santa Clara City Council
  September 4, 2019
- Santa Clara County Board of Supervisors
  September 10, 2019

# 3 EVALUATION CRITERIA AND METHODOLOGY

This staff report evaluates Alternatives A and B by comparing the two alternatives across several criteria. Each of the criteria includes multiple components, as described below. The staff recommendation is based on looking for the best balance between the factors that differentiate the alternatives.

- **Performance, operations, and capital costs**—These characteristics affect how the alternatives would perform in implementing high-speed rail, as well as the estimated capital and maintenance costs associated with each. Engineering estimates and the system operating plan for the blended system inform the cost estimates.
- **Community factors**—The evaluation compares the following key community factors that differentiate between the two alternatives.
  - Displacements
  - Aesthetics and visual quality
  - Station planning, land use, and development
  - Transportation
  - Safety and security
  - Environmental justice
- **Environmental factors—**The evaluation compares the following key environmental factors that differentiate between the two alternatives.
  - Wetlands and aquatic resources
  - Biological resources (special-status species habitat)

Chapter 4 provides quantitative data (e.g., counts, areas, distances, costs) for most criteria evaluated (e.g., displacements, wetlands and aquatic resources). The evaluation relies on qualitative comparisons where necessary, such as for land use policy consistency. The tables in Chapter 4 include only those environmental resource areas with significant adverse impacts that substantially differentiate the alternatives. Because both project alternatives share the same design and alignment along most of their length, the key differences in impacts are associated with differences at the Brisbane LMF and within the passing track area.

Resource areas for which the impacts do not substantially differentiate the alternatives are not included in the tables in Chapter 4. Their absence does not mean that impacts on these resource areas are not an important part of the EIR/EIS evaluation or that such resources are not of concern to the public, stakeholders, and agencies. All resource areas and community concerns are important to the Authority as it pursues the CEQA/NEPA process, permitting and final design, construction, and implementation of the high-speed rail program. The following resource areas do not substantially differentiate the alternatives: air quality and climate change; noise and vibration; electromagnetic fields and interference; public utilities and energy; geology, soils, and seismicity; hazardous materials and waste; hydrology and water quality; paleontological resources; socioeconomics and communities (apart from displacements); parks, recreation, and open space resources; cultural resources; Section 4(f) and 6(f); and regional growth.

# 4 EVALUATION OF ALTERNATIVES

The purpose of the Project Section is to contribute to completion of the statewide high-speed rail system by providing the public with electric-powered high-speed rail service that offers predictable and consistent travel times between San Francisco and San Jose, connects to the southern portion of the high-speed rail system, and provides enhanced connections to SFO and Norman Y. Mineta San Jose International Airport, rail and mass transit, and the Bay Area highway network, consistent with the Passenger Rail Vision in the California State Rail Plan (Caltrans 2018).

The Authority has responded to its mandate to plan, build, and operate an high-speed rail system that is coordinated with California's existing transportation network by adopting the following objectives and policies for the proposed high-speed rail system:

- Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports
- Meet future intercity travel demand that would be unmet by current transportation systems and increase capacity for intercity mobility
- Maximize intermodal transportation opportunities by locating stations to connect with local rail and transit networks, airports, and highways
- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel
- Provide a sustainable reduction in travel time between major urban centers
- Increase the efficiency of the intercity transportation system
- Maximize the use of existing transportation corridors and rights-of-way, to the extent feasible
- Develop a practical and economically viable transportation system that can be implemented in phases by 2040 and generate revenues in excess of operations and maintenance costs
- Provide intercity travel in a manner considerate and protective of the region's sensitive environmental resources and reduce emissions and vehicle miles traveled for intercity trips
- Provide blended system infrastructure that supports a viable operations plan for HSR, while also minimizing environmental impacts and maximizing compatibility with Peninsula communities

Guided by the project objectives, the project alternatives evaluated in the Draft EIR/EIS incorporate refinements that, when compared to the alternatives studied in the 2010 Preliminary Alternatives Analysis and Supplemental Alternatives Analysis evaluations and the Checkpoint B evaluation, further avoid or minimize potential impacts on communities, land uses, and environmental resources. In addition, the refinements incorporated from the outreach since 2016 improve the constructability of the project alternatives and optimize the high-speed rail system's operations. The staff-recommended Preferred Alternative reflects additional engineering, and collaborative engagement with communities along the Project Section.

## 4.1 System Performance, Operations and Costs

Table 4 indicates key performance, operations, and cost parameters for the two project alternatives evaluated in the Draft EIR/EIS. The best-performing alternative is shown in bold.

**Table 4 System Performance, Operations and Costs by Alternative**

| Criteria | Alternative A | Alternative B |
|---|---|---|
| Alignment length (miles) | 42.9 | |
| Maximum Operating Speed (mph) | Up to 110 | |
| HSR Peak Hour Average Representative Travel Time between San Francisco and San Jose (minutes) | 47 | **45*** |
| Proposition 1A Service Travel Time Compliance? | Yes | Yes |
| Estimated Capital Costs (2017$)[1] | **$2.6 billion*** | $3.5 billion |
| Estimated Annual Operations and Maintenance Costs (2017$)[2] | $78 million | |
| Caltrain Peak Hour Average Representative Travel Time between San Francisco and San Jose (minutes) | **63*** | 65 |

***Bold** text indicates best-performing alternative

[1] Capital cost estimates prepared for the project alternatives were developed by utilizing recent bid data from large transportation projects in the western United States and by developing specific, bottom-up unit pricing to reflect common HSR elements and construction methods with an adjustment for Bay Area labor and material costs. All material quantities for the project alternatives are based on a preliminary 15 percent design.

[2] Annual operations and maintenance costs are based on the 2018 Business Plan (Authority 2018).

The key differentiators are peak hour average representative travel times and capital costs. Alternative A has lower capital costs than Alternative B because it would not require the construction of the passing track. The passing track under Alternative B would result in a peak hour average representative travel time for HSR that would be approximately 2 minutes faster than Alternative A. Alternatively, the passing track under Alternative B would result in an approximately 2 minutes slower peak hour average representative travel time for Caltrain because operation of the passing tracks with blended service would require Caltrain trains to have longer station dwell times in order to allow for high-speed rail trains to pass. The alignment length, maximum operating speed, and operations and maintenance costs are the same between the two project alternatives.

## 4.2 Community and Environmental Factor Analyses

Table 5 shows the individual impacts of the alternatives after mitigation based on the in-progress Draft EIR/EIS environmental analysis. Discussions of key differentiators by topic follow the table. The best performing (lowest impact) alternative is shown in bold.

**Table 5 Community and Environmental Factors by Alternative**

| Effects | Alternative A | Alternative B |
|---|---|---|
| **Community Factors** | | |
| **Displacements** | | |
| Residential displacements (number of units) | **10** | 19 |
| Commercial and industrial displacements (number of businesses) | **29** | 108 |
| Community and public facilities displacement (number of units) | **2** | 4 |
| Commercial and industrial displacements (square feet) | **211,261** | 466,084 |
| **Aesthetics and Visual Quality** | | |
| Number of key viewpoints with decreased visual quality | **3** | 5 |
| **Land Use and Development** | | |
| Permanent Alteration of Land Use Patterns at Brisbane Light Maintenance Facility | **The East Brisbane LMF would not affect Icehouse Hill.**<br>**The East Brisbane LMF would reduce the area of planned development at Brisbane Baylands by:**<br>▪ **Commercial development (where residential is prohibited): 93 acres**<br>▪ **Mixed uses (where residential is permitted): 2 acres** | The West Brisbane LMF would grade Icehouse Hill, an area designated for preservation by the General Plan. This would be considered a permanent and significant alteration of an existing land use.<br>The West Brisbane LMF would reduce the area of planned land uses at Brisbane Baylands by:<br>▪ Commercial development (where residential is prohibited): 90 acres<br>▪ Mixed uses (where residential is permitted): 21 acres<br>Because residential development is planned in areas of mixed uses, implementation of the West Brisbane LMF could affect the development of planned residential units. |
| **Transportation** | | |
| Temporary interference with local vehicle circulation | **No change.** | Would occur in highly congested areas along El Camino Real during passing track construction. |
| Pedestrian access from Downtown San Carlos to Caltrain Station | **No change.** | Reduced pedestrian access due to the relocation of the station approximately 2,260 feet south of current location. |

| Effects | Alternative A | Alternative B |
|---|---|---|
| **Safety and Security** | | |
| Temporary impacts in emergency vehicle access/response times due to temporary road closures and construction traffic | **Temporary road closures would result in delays in emergency vehicle access and increases in response times. Construction traffic would not impede emergency vehicle access.** | There would be more temporary road closures and more construction traffic generated under Alternative B because of passing track construction. They would create more disruptions to emergency vehicle access thereby generating greater delays and increases in response times than under Alternative A. |
| **Environmental Justice** | | |
| Construction-related disruption to Caltrain service | **Less disruption to Caltrain service.** | Greater disruption to Caltrain service due to passing track construction. |
| Permanent effect on planned mixed-use development (residential uses permitted) in Brisbane (acres) | **2** | 21 |
| **Environmental Factors** | | |
| **Wetlands and Aquatic Resources**[1] | | |
| Permanent impacts on wetlands and other waters of the U.S. (acres) | **8.8** | 12.8 |
| **Biological Resources (Special-Status Species Habitat)** | | |
| Permanent impacts on bent-flowered fiddleneck habitat (acres) | 57.6 | **33.8** |
| Permanent impacts on bristly sedge habitat (acres) | **1.8** | 6.5 |
| Permanent impacts on Congdon's tarplant and Pappose tarplant habitat (acres) | 53.8 | **28.7** |
| Permanent impacts on saltmarsh common yellowthroat habitat (acres) | **2.4** | 6.9 |
| Permanent impacts on white-tailed kite nesting habitat (acres) | **12.2** | 13.9 |
| Permanent impacts on western red bat habitat (acres) | **8.6** | 9.2 |
| Callippe silverspot butterfly habitat (acres) | **0.0** | 8.0 |

**Bold:** best performing alternative
[1] Waters of the U.S. consist of wetlands and nonwetland waters that are considered jurisdictional under Section 404 of the federal Clean Water Act. Wetlands are a sub-classification of waters of the U.S.

## 4.3 Review of Key Differentiators by Subsection

This section describes key community and environmental factor differentiators by subsection. Alternatives A and B vary in the San Francisco to South San Francisco and San Mateo to Palo Alto Subsections. Because the alternatives are identical in the San Bruno to San Mateo and Mountain View to Santa Clara Subsections, those subsections are not discussed. Community and environmental factors shown in Table 5 that do not substantially differentiate alternatives in a given subsection are not included in the discussion. For example, because the displacements within the San Francisco to South San Francisco Subsection are the same for both project alternatives, that resource is not discussed for that subsection.

### 4.3.1 San Francisco to South San Francisco Subsection

- **Station Planning, Land Use, and Development**—Alternative A would construct the East Brisbane LMF adjacent to existing vacant and industrial uses, which would allow the City of Brisbane to group its mixed-use residential developments on the west side of the Caltrain tracks, as it has planned. While the East Brisbane LMF would affect plans for commercial and open space developments, the Authority would work to mitigate those impacts. Alternative B is less preferable for the City of Brisbane's land use plans because it would build the West Brisbane LMF in an area planned for both commercial development and mixed use development, where up to 2,200 residential units are permitted. In addition, Alternative B would require the grading of Icehouse Hill, which is a prominent area for biological resource habitat and which the City of Brisbane General Plan identifies shall be preserved.
- **Environmental Justice**—Alternative A would build the East Brisbane LMF which minimizes impacts on planned mixed use development at Brisbane Baylands where up to 2,220 residential units (of which a minimum of 330 units would be affordable housing) are permitted. Alternative B would build the West Brisbane LMF which would directly affect the planned mixed use development and affordable housing planned in Brisbane. In the context of the regional housing affordability crisis in the San Francisco Bay Area, the effect on planned affordable housing under Alternative B would disproportionately affect low-income populations.
- **Wetlands and Aquatic Resources**—Alternative A would result in lower overall permanent impacts on wetlands and aquatic resources (8.8 acres of wetlands and other waters of the U.S.), relative to Alternative B (12.8 acres of wetlands and other waters of the U.S.). The difference in wetlands and aquatic resources impacts between the project alternatives occurs primarily at the Brisbane LMFs.
- **Biological Resources (Special-Status Species Habitat)**—Alternative A would result in lower permanent impacts on habitat for bristly sedge, saltmarsh common yellowthroat, white-tailed kite (nesting), western red bat, and Callippe silverspot butterfly. Alternative B would result in lower permanent impacts on habitat for bent flowered fiddleneck, Congdon's tarplant, and Pappose tarplant. Of these species, Callippe silverspot butterfly (which is affected by Alternative B only) is the only one that is protected under either the federal or state Endangered Species Act. Overall, Alternative A would have less impacts on special-status species habitat primarily because of the different habitat present within the East Brisbane LMF footprint compared to the West Brisbane LMF project footprint.

### 4.3.2 San Mateo to Palo Alto Subsection

- **Displacements**—Alternative A would result in fewer displacements because the alignment is predominately within the existing Caltrain right-of-way and no passing tracks are proposed. Compared to Alternative A, Alternative B would displace an additional 9 residences, 79 businesses, and 2 community facilities within this subsection due to the need for additional right-of-way acquisition along the length of the passing tracks. Additional right-of-way acquisition under Alternative B would affect several residences in San Mateo and Belmont, and would affect a strip of commercial and industrial businesses between the Caltrain corridor and Old County Road in San Mateo, Belmont, and San Carlos. The greatest number

of business displacements would occur in Belmont (65) and San Mateo (23) under Alternative B, and would affect retail trade (including automobile-related businesses), transportation and warehousing, and accommodation and food services.

- **Aesthetics and Visual Quality**— Alternative A would have no effect on visual quality at key view points within this subsection because track shifts and other modifications would conform to the existing character of the area. Alternative B would reduce the visual quality at two key viewpoints—Key Viewpoint 7 at South B Street in San Mateo and Key Viewpoint 9 in San Carlos—where the passing track would intrude visually on residential areas and the historic San Carlos station.
- **Transportation**—The duration and scale of construction activities under Alternative A within this subsection would be relatively minor, therefore construction-related traffic would not interfere with local vehicle circulation over the baseline condition. Construction of Alternative B would require substantial construction vehicle activity in highly congested areas along El Camino Real to construct the passing tracks, which would interfere with local vehicle circulation. Alternative A would have no permanent operations impacts on passenger rail and bus access within this subsection, whereas Alternative B would relocate the San Carlos Station approximately 2,260 feet south of its current location, reducing accessibility to Caltrain from downtown San Carlos due to the additional walking distance from the relocated station.
- **Safety and Security**—Delays in emergency vehicle access and response times would occur under both project alternatives as a result of temporary road closures. Additionally, Alternative B would generate construction vehicle activity in heavily congested areas along the passing track. Temporary increases in response times and delay of emergency vehicles during construction would therefore be greater under Alternative B.
- **Environmental Justice**—Construction of Alternative A would require only minor track modifications within this subsection, and would result in less disruption to Caltrain service than Alternative B. Construction of Alternative B would require single-tracking in the 6-mile-long passing track area for up to 2 years, which would be highly disruptive to Caltrain service and result in service delays. These disruptions would disproportionately affect low-income populations that are dependent on public transit systems for mobility.

## 4.4 Policy Considerations: Caltrain Business Plan

Over the last year, Caltrain has been working to develop its business plan, which will develop a long-term service vision for the corridor, define the infrastructure needed to support that service vision, work through the community interfaces with the rail corridor, and address the organization that will be needed to deliver the vision. As part of the service plan development, the Caltrain Business Plan is currently considering three 2040 growth scenarios: high growth, moderate growth, and baseline growth. The 2040 baseline growth scenario includes service assumptions that form Caltrain's existing commitments and reflect past and ongoing blended system planning with the Authority. The operating parameters for the 2040 baseline scenario are consistent with Alternative A, confirming that passing tracks are not needed to add four high-speed rail trains per hour to the corridor. Furthermore, while the Caltrain Business Plan has identified various passing track options to accommodate growth in Caltrain service in the medium and high growth scenarios, those passing track options are all different from the passing track option evaluated in Alternative B. As such, there is strong alignment between Alternative A and the assumptions in the Caltrain Business Plan.

# 5 RECOMMENDATION

Alternative A, shown on Figure 8, is the Staff-Recommended Preferred Alternative. Alternative A is a predominantly two-track blended system, which includes the 4th and King Street Station, the East Brisbane LMF, the Millbrae Station, and no additional passing tracks. A detailed list of communication facilities associated with Alternative A is provided in Appendix B, Preferred Alternative Communications Radio Towers. As described in Chapter 4, Alternative A has fewer impacts on both community and environmental resources, and is the lower cost alternative. Extensive stakeholder outreach has been important in developing and evaluating the alternatives.

Based on consideration of the factors discussed above, the Authority staff is recommending Alternative A to be the Preferred Alternative for the San Francisco to San Jose Project Section. Of the project alternatives, Alternative A represents the best balance of adverse and beneficial impacts on community and environmental resources, and maximizes the transportation benefits of the high-speed rail system while having the lowest cost.

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# APPENDIX A PUBLIC AND AGENCY MEETINGS, JULY 2016–MAY 2019

| Organization/Individual | Number of Meetings Held | Meeting Dates |
|---|---|---|
| #iwillride students | 1 | 11/18/2016 |
| 4th & King Street Station rail yard workshop | 1 | 8/30/2017 |
| 4th & King Street Station meeting | 1 | 2/23/2017 |
| American Planning Association Event, Redwood City | 1 | 5/14/2019 |
| American Society of Civil Engineers | 1 | 3/23/2018 |
| Associated General Contractors Public Works Night, Redwood City | 1 | 9/7/2016 |
| BART | 1 | 8/1/2016 |
| Bay Area Council Transportation Committee | 1 | 7/9/2018 |
| Bayview Citizens Advisory Committee | 1 | 12/7/2016 |
| Bayview Hill Neighborhood Association | 1 | 3/6/2017 |
| Belmont City Council | 1 | 7/11/2017 |
| Belmont Mayor Charles Stone | 1 | 6/26/2017 |
| Breakfast of Champions Oakland | 1 | 1/12/2017 |
| Brisbane Baylands public hearing | 1 | 6/7/2017 |
| Brisbane City Council | 1 | 7/19/2018 |
| California State Assemblymember Chiu | 1 | 7/19/2018 |
| California State Assemblymember Chu | 1 | 7/20/2018 |
| California State Assemblymember Kalra | 1 | 7/20/2018 |
| California State Assemblymember Low | 1 | 7/20/2018 |
| California State Assemblymember Ting | 1 | 7/19/2018 |
| California State Senator Weiner | 1 | 7/19/2018 |
| CalSTA | 1 | 6/8/2017 |
| Caltrain | 23 | 8/1/2016, 10/13/2016, 2/23/2017, 6/8/2017, 6/22/2017 (2), 6/28/2017, 9/8/2017, 9/25/2017, 6/5/2018, 6/21/2018, 7/5/2018, 8/1/2018, 9/5/2018, 9/27/2018, 10/25/2018, 11/29/2018, 12/20/2018, 1/29/2019, 2/28/2019, 8/23/2018, 4/25/2019, 5/23/2019 |
| Caltrain Business Plan—Project Partner Committee | 1 | 6/25/2018 |
| Caltrain/TJPA 4th and Townsend Workshop | 1 | 5/25/2017 |
| Caltrain/TJPA Coordinating Group | 7 | 7/28/2016, 1/25/2017, 2/23/2017, 8/30/2017, 9/28/2017, 8/23/2018, 10/26/2018 |
| Caltrans Calmentor Program | 1 | 5/5/2017 |

| Organization/Individual | Number of Meetings Held | Meeting Dates |
|---|---|---|
| Caltrans District 4 | 5 | 223/2017, 3/23/2017, 4/27/2017, 9/28/2017, 10/26/2018 |
| Caltrans Native American Advisory Committee | 1 | 11/16/2016 |
| Capitol Corridor | 1 | 7/28/2016 |
| City and County of San Francisco | 3 | 10/19/16, 3/23/2017, 8/1/17 |
| City of Belmont | 1 | 7/11/2017 |
| City of Brisbane | 2 | 9/21/2017, 6/19/2018 |
| City of Burlingame | 2 | 5/3/2017, 8/8/2018 |
| City of Burlingame Vice Mayor Donna Colson | 1 | 8/8/2018 |
| City of San Carlos | 1 | 6/7/2017 |
| City/County Staff Coordinating Group | 19 | 9/14/2016, 11/9/2016, 2/15/2017, 4/19/2017, 5/17/2017, 6/21/2017, 8/16/2017, 10/18/2017, 12/6/2017, 2/14/2018, 4/18/2018, 6/20/2018, 7/18/2018, 8/15/2018, 9/19/2018, 11/14/2018, 12/12/2018, 2/20/2019, 3/20/2019 |
| Community Working Group, San Francisco | 6 | 8/4/2016, 10/26/2016, 2/2/2017, 10/24/2018, 3/18/2019, 5/28/2019 |
| Community Working Group, San Mateo County | 6 | 7/25/2016, 10/6/2016, 1/30/2017, 10/22/2018, 3/12/2019, 5/20/2019 |
| Community Working Group, South Peninsula (formerly Santa Clara County CWG) | 6 | 8/2/2016, 10/13/2016, 1/31/2017, 10/15/2018, 3/14/2019, 5/7/2019 |
| Council General of Japan | 1 | 7/9/2018 |
| Cupertino Chamber of Commerce | 1 | 5/5/2017 |
| East Palo Alto City Council | 1 | 11/15/2016 |
| FRA | 36 | 2/1/2017, 4/25/2017, 5/9/2017, 5/23/2017, 5/24/2017, 6/13/2017, 6/27/2017, 6/28/2017, 7/25/2017, 8/8/2017, 8/22/2017, 8/23/2017, 9/12/2017, 9/26/2017, 9/27/2017, 10/24/2017, 11/7/2017, 11/22/2017, 12/5/2017, 12/19/2017, 1/9/2018, 2/13/2018, 3/13/2018, 4/10/2018, 4/24/2018, 5/8/2018, 6/12/2018, 6/26/2018, 6/27/2018, 7/24/2018, 8/14/2018, 8/28/2018, 10/23/2018, 11/28/2018, 12/18/2018, 5/7/2019 |
| Friendly Acres—Centennial Neighborhood Association | 1 | 2/16/2017 |
| Global Climate Action Summit | 1 | 9/12/2018-9/14/2018 |
| Harbor Industrial Association | 1 | 3/1/2018 |
| Integral Group | 1 | 9/28/2017 |

| Organization/Individual | Number of Meetings Held | Meeting Dates |
|---|---|---|
| Joint Disadvantaged Business Enterprise Business Community Meeting, San Carlos | 1 | 8/2/2016 |
| Joint Peninsula Corridor Scheduling Working Group | 1 | 10/14/2016 |
| LifeMoves Homeless Walks | 3 | 3/26/2019, 3/28/2019, 4/4/2019 |
| Little Hollywood Neighbors | 1 | 1/18/2017 |
| Local Policy Maker Group | 21 | 7/28/2016, 9/22/2016, 11/17/2016, 2/23/2017, 4/27/2017, 5/25/2017, 6/29/2017, 8/24/2017, 11/30/2017, 2/22/2018, 4/26/2018, 6/28/2018, 7/26/2018, 8/23/2018, 11/29/2018, 12/20/2018, 1/25/2019, 2/26/2019, 2/28/2019 (2), 3/28/2019 |
| Megaregional Rail Leadership Workshop hosted by Capitol Corridor JPA | 1 | 6/21/2017 |
| Menlo Park Rotary Club | 1 | 1/11/2017 |
| Millbrae City Council | 2 | 1/24/2017, 2/14/2017 |
| Millbrae Station Area Intermodal Working Group | 9 | 8/2/2016, 9/21/2016, 10/25/2016, 11/16/2016, 12/15/2016, 1/25/2017, 4/26/2017, 5/31/2017, 7/6/2017 |
| Mountain View Chamber of Commerce | 2 | 4/12/2017, 10/10/2018 |
| MTC | 2 | 6/8/2017, 7/9/2018 |
| North Fair Oaks community mural unveiling (information table) | 1 | 5/19/2019 |
| North Fair Oaks Community Council | 2 | 8/25/2016, 7/27/2017 |
| North Terminal stakeholders | 1 | 7/27/2017 |
| Northern California (combined) Community Working Groups and Technical Working Groups | 1 | 5/1/2018 |
| Northern California Legislative Briefing | 3 | 4/13/2016, 10/13/2016, 3/28/2017, 1/24/2019, 4/9/2019 |
| /Norwegian Delegation | 1 | 5/4/2017 |
| Open House meetings | 3 | 4/5/2017, 4/11/2017, 4/13/2017 |
| P3 Summit | 1 | 9/27/2016 |
| Palo Alto Rail Committee | 1 | 4/26/2017 |
| Preliminary Engineering for Project Definition (PEPD) Office Hours – meeting held with Town of Atherton, City of Santa Clara, City of Palo Alto, City of Redwood City, City of Brisbane, City of Menlo Park, City of San Bruno, City of San Carlos, VTA, City of Belmont, City and County of San Francisco, San Francisco County Transit Authority, City of Burlingame, City of San Mateo, City of Mountain View, City of Millbrae, San Francisco International Airport, San Mateo County, and City of Sunnyvale | 17 | 7/24/2018, 7/25/2018 (3), 7/26/2018 (5), 8/1/2018, 8/2/2018, 8/8/2018 (4), 8/28/2018, 8/30/2018 |
| Rail Alignment and Benefits Workshop, San Francisco | 1 | 5/29/2018 |

| Organization/Individual | Number of Meetings Held | Meeting Dates |
|---|---|---|
| Rail~Volution, San Francisco | 1 | 10/12/2016 |
| Redwood City Council | 2 | 11/10/2016, 10/23/2017 |
| Redwood City—San Mateo County Chamber of Commerce | 3 | 12/9/2016, 3/9/2017, 6/14/2018 |
| Refugee and Immigrant Forum, San Jose | 1 | 3/20/2019 |
| Resource agencies tour | 1 | 10/25/2016 |
| Salesforce Transit Center grand opening (information table) | 1 | 8/11/2018 |
| SAMCEDA | 2 | 2/14/2017, 4/10/2018 |
| San Bruno City Council | 1 | 12/13/2016 |
| San Bruno Rotary Club | 1 | 4/12/2017 |
| San Carlos City Council | 2 | 6/26/2017, 10/24/2017 |
| San Carlos Museum (information table) | 1 | 10/14/2018 |
| San Francisco Chamber of Commerce | 3 | 2/23/2017, 7/10/2018, 11/14/2018 |
| San Francisco County Transportation Authority | 1 | 4/25/2017 |
| San Mateo County Board of Supervisors | 1 | 9/6/2016 |
| San Mateo County Supervisor David Pine | 1 | 8/8/2018 |
| San Mateo Elk's Club | 1 | 8/3/2017 |
| Santa Clara City Council | 1 | 2/19/2019 |
| Santa Clara County Board of Supervisors | 1 | 11/15/2016 |
| Seattle Metropolitan Chamber of Commerce, San Francisco | 1 | 6/2/2017 |
| SFO | 1 | 8/1/2016 |
| Small and disadvantaged business workshop, Menlo Park | 1 | 8/23/2016 |
| Society of American Military Engineers | 1 | 9/8/2016 |
| Sons in Retirement City of San Mateo | 1 | 7/27/2016 |
| Sons in Retirement Walnut Creek | 1 | 10/15/2018 |
| Southern Pacific Retired Executives Club | 1 | 10/5/2016 |
| SPUR | 5 | 10/25/2016, 6/27/2017, 9/28/2017, 3/28/2018, 4/19/2018 |
| SPUR Station Symposium | 1 | 10/11/2018 |
| Sunnyvale City Council | 1 | 1/23/2018 |
| Sunnyvale State of the City (information table) | 1 | 9/15/2018 |
| Town of Atherton Rail Committee | 2 | 2/6/2018, 10/2/2018 |
| Town of Atherton staff | 2 | 8/3/2016, 8/10/2016 |
| Transportation Equity Allied Movement Coalition (TEAMC) | 1 | 3/26/2019 |
| TransportCA, Mineta Transportation Institute | 1 | 4/28/2017 |
| U.S. Congresswoman Anna Eshoo's staff | 1 | 3/7/2019 |
| U.S. Congresswoman Jackie Speier's staff | 1 | 6/9/2017 |

| Organization/Individual | Number of Meetings Held | Meeting Dates |
|---|---|---|
| U.S. Congresswoman Zoe Lofgren | 1 | 7/9/2018 |
| University of California Berkeley Symposium | 1 | 5/22/2017 |
| Universal Paragon | 1 | 11/14/2018 |
| Visitacion Valley community leaders | 1 | 5/30/2019 |
| Visitacion Valley NeighborUp (information table) | 1 | 4/9/2019 |
| Visitacion Valley Planning Alliance | 1 | 11/19/2016 |
| Visitacion Valley Service Providers Collaborative | 1 | 3/7/2019 |
| VTA | 4 | 6/8/2017, 6/22/2017 9/8/2018, 9/25/2017 |
| VTA Disadvantaged Business Enterprise Study Workshop, San Francisco | 1 | 7/23/2016 |

BART = Bay Area Rapid Transit
CalSTA = California State Transportation Agency
Caltrans = California Department of Transportation
FRA = Federal Railroad Administration
HSR = high-speed rail
MTC = Metropolitan Transportation Commission
SAMCED = San Mateo County Economic Development Association
SPUR = San Francisco Bay Area Planning and Urban Research Association
TJPA = Transbay Joint Power Authority
VTA = Santa Clara Valley Transportation Authority

# APPENDIX B: PREFERRED ALTERNATIVE COMMUNICATIONS RADIO TOWERS

| Stationing | Communications Radio Tower | Selection Rationale for Alternate Sites |
|---|---|---|
| 162+58 | Radio tower co-located with Caltrain PS-1 | N/A |
| 245+49 | Stand-alone radio tower 1, alternate site 1 | Minimizes impacts to wetlands and aquatic resources |
| 358+50 | Stand-alone radio tower 1A, alternate site 1 | Improved access from Brisbane LMF |
| 476+65 | Stand-alone radio tower 2, alternate site 2 | Adjacency to right-of-way |
| 585+00 | Radio tower co-located with Caltrain TPS-1 | N/A |
| 745+23 | Stand-alone radio tower 3, alternate site 2 | Minimizes impacts to wetlands and aquatic resources |
| 890+00 | Radio tower co-located with Caltrain PS-3 | N/A |
| 1046+13 | Stand-alone radio tower 4, alternate site 2 | Minimizes business displacements |
| 1179+32 | Radio tower co-located with Caltrain PS-4 | N/A |
| 1257+62 | Stand-alone radio tower 5, alternate site 1 | Minimizes residential displacements |
| 1387+77 | Stand-alone radio tower 6, alternate site 1 | Minimizes residential/commercial displacements |
| 1495+25 | Radio tower co-located with Caltrain SWS-1 | N/A |
| 1638+84 | Stand-alone radio tower 7, alternate site 2 | Minimizes commercial displacements |
| 1728+64 | Stand-alone radio tower 8, alternate site 2 | Minimizes business displacements |
| 1865+41 | Stand-alone radio tower 8A, alternate site 1 | Minimizes residential displacements and impacts on cultural resources |
| 1991+97 | Stand-alone radio tower 9, alternate site 1 | Improved access via a signalized intersection |
| 2093+59 | Stand-alone radio tower 10, alternate site 2 | Minimizes commercial displacements |
| 2154+99 | Radio tower co-located with Caltrain PS-6 | N/A |
| 2268+87 | Stand-alone radio tower 11, alternate site 1 | Improved access from public right-of-way |

N/A = not applicable