

8 PREFERRED ALTERNATIVE

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

- Section 8.1, Introduction, was updated with an overview of comments received on the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS and to state that Alternative A continues to be the Preferred Alternative.
- Section 8.2, Summary of Key Stakeholder Input, was revised to refer readers to Volume 4, Responses to Comments on the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS, for a complete list of submissions, identified comments, and the Authority's responses to comments.
- Section 8.2.1, Local Communities, was updated to include summaries of comments received on the Draft EIR/EIS from local communities, and to notify readers that an overview of project design changes in response to public comments is included the Summary.
- Section 8.2.2, Federal and State Resource Agencies, was updated to state the California High-Speed Rail Authority (Authority) is consulting with National Marine Fisheries Service and the U.S. Fish and Wildlife Service under Section 7 of the federal Endangered Species Act in preparation for issuance of a biological opinion from each agency. Formal consultation is expected to be completed prior to the issuance of the Record of Decision.
- Section 8.2.2 was also updated to note that since publication of the Draft EIR/EIS, the Authority has refined the alignment of Lagoon Road to avoid the priority use area north of Brisbane Lagoon.
- Section 8.2.3, Native American Tribes; Section 8.2.4, Transportation Agencies and Public Works Departments; and Section 8.2.5, Businesses, were updated to include a brief summary of comments received on the Draft EIR/EIS.
- Section 8.2.5, Feedback on the Staff-Recommended Preferred Alternative, was revised to include a brief summary of comments received on the Preferred Alternative.
- Section 8.4, Preferred Alternative, including Table 8-1, was updated to reflect revisions to the impact analysis since publication of the Draft EIR/EIS. A discussion of the differences between the Millbrae Station Design evaluated in the Draft EIR/EIS and in Sections 3.2 to 3.18, Chapter 4, and Chapter 5 of this Final EIR/EIS (hereafter referred to as the Millbrae Station Design) and the Millbrae Station Reduced Site Plan Design Variant (RSP Design Variant) was added to Section 8.4.1, Review of Alternative Key Differentiators by Subsection.
- Section 8.4.2, Preliminary Cost Estimate by Alternative, including Table 8-2, was revised to reflect the updated cost estimate in 2021\$ as presented in Chapter 6, Project Costs and Operations.
- Section 8.4.4, Preferred Alternative Identification, was updated to include information about the preferred communication radio tower sites, which are listed in Table 8-3.

8.1 Introduction

This chapter identifies the Authority's Preferred Alternative for the San Francisco to San Jose Project Section (Project Section, or project) of the California High-Speed Rail (HSR) System. This project extends from 4th and King Street Station in San Francisco to West Alma Avenue in San Jose, and it includes a light maintenance facility (LMF) in Brisbane. The Preferred Alternative is Alternative A (illustrated on Figure 8-1), which consists of a predominantly two-track blended system with no additional passing track, the Millbrae Station Design, and the Diridon Design Variant (DDV) in the San Jose Diridon Station Approach Subsection. The Preferred Alternative would modify approximately 17.4 miles of existing Caltrain track and includes platform modifications to 8 of the existing 27 Caltrain stations between San Francisco and San Jose to accommodate HSR trains passing through or stopping at the stations. HSR service would be

provided at three existing Caltrain stations proposed to be shared by HSR and Caltrain—4th and King Street, Millbrae, and San Jose Diridon—which would require more extensive modifications to tracks, platforms, or station facilities to accommodate HSR trains and additional passenger services. The Preferred Alternative also includes the approximately 100-acre East Brisbane LMF, which would provide storage capacity for trains and accommodate light maintenance activities.

The selection of the Preferred Alternative was based on the data and analysis presented in this Final EIR/EIS, including the supporting technical reports. The identification of the Preferred Alternative was also based on comments and input from agencies, local communities, stakeholders, and the public submitted during scoping and outreach from 2016 to 2021; input received during outreach meetings concerning the Preferred Alternative held during the summer of 2019; and comments and input received from agencies, local communities, stakeholders, and the public on the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS.

During the public review period on the Draft EIR/EIS, the Authority received 151 comment submissions through a combination of letters, emails, and oral comments provided at the public hearing, which resulted in 2,121 discrete comments. Comments ranged from expressing general support or opposition to the project to detailed, site-specific comments about the nature of the project, the range of alternatives, and potential impacts resulting from the project. Key issues raised included concern about at-grade crossing safety, traffic delay/congestion, noise impacts, conflicts with planned development, and requests for grade separations. During the public review period on the Revised/Supplemental Draft EIR/EIS, the Authority received 25 comment submissions through a combination of letters, emails, and oral comments, which resulted in 136 discrete comments. These comments focused on the range of alternatives, the analysis of the Millbrae Station Reduced Site Plan Design Variant, biological analysis for monarch butterfly, and airport compatibility. In addition, some commenters reiterated prior comments on the Draft EIR/EIS. Some of the analysis in this Final EIR/EIS was modified to address comments received on the Draft EIR/EIS and the Revised/Supplemental Draft EIR/EIS, and some mitigation measures were modified or added. However, fundamental impact differences did not change, and the Authority continues to support Alternative A as the Preferred Alternative.

The Final EIR/EIS provides information on the physical and operational characteristics, cost, and potential environmental consequences associated with each of the project alternatives (i.e., the No Project Alternative, Alternative A, and Alternative B) in the context of the following parameters:

- Physical/operational characteristics
 - Alignment
 - Length
 - Capital cost
 - Ridership
 - Constructability
- Community and environmental impacts
 - Transportation-related topics (air quality, noise and vibration, and energy)
 - Human environment (land use and community impacts, regional growth, aesthetics and visual quality, socioeconomics, environmental justice, public utilities, and hazardous materials and waste)
 - Cultural resources (archaeological resources and historic built properties)
 - Natural environment (geology and seismic hazards, paleontological resources, hydrology and water resources, and biological and aquatic resources)
 - Section 4(f) or 6(f) properties (certain types of publicly owned parklands, recreation areas, and wildlife and waterfowl refuges, and significant historical sites regardless of ownership)



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Figure 8-1 Preferred Alternative

In identifying a Preferred Alternative, the Authority was guided by the project's Purpose and Need and project objectives described in Chapter 1, Project Purpose, Need, and Objectives, and the performance criteria for the blended system identified in Chapter 2, Alternatives, as well as the following:

- Alternatives analyses process initiated in 2009 following formal scoping for a fully grade-separated four-track system, which includes the Preliminary Alternatives Analysis and the Supplemental Alternatives Analysis for the San Francisco to San Jose Project Section (Authority and Federal Railroad Administration [FRA] 2010a, 2010b)
- Further outreach, consultation, and alternatives refinement between 2016 and 2019 following re-initiation of scoping in 2016 for a two-track blended system using the existing Caltrain track and remaining substantially within the existing Caltrain right-of-way

Additionally, the criteria used to identify the Preferred Alternative are consistent with Section 404(b)(1), Guidelines of the Clean Water Act (CWA) (40 Code of Federal Regulations [C.F.R.] Parts 230–233), including minimizing impacts on waters of the U.S. and other sensitive environmental resources. As a result of the analyses presented in this Final EIR/EIS, the Authority has preliminarily determined that the Preferred Alternative represents the Least Environmentally Damaging Practicable Alternative (LEDPA), consistent with the U.S. Army Corps of Engineers' (USACE) permit program (33 C.F.R. Parts 320–331) and the U.S. Environmental Protection Agency's (USEPA) Section 404(b)(1) Guidelines (40 C.F.R. Parts 230–233). The USACE and USEPA concurred with the Authority's LEDPA determination in June 2020.

Portions of the Project Section with blended Caltrain and HSR operations would be implemented on facilities owned by the Peninsula Corridor Joint Powers Board (PCJPB).¹ While the alternative descriptions have been developed based on planning assumptions and preliminary engineering conducted by the Authority for the purposes of environmental analysis, the ultimate implementation of the project (both physical infrastructure and service operations) on PCJPB-owned facilities would be subject to further joint blended system planning and agreement with PCJPB as governed through existing and future interagency agreements. The ongoing multi-agency Diridon Integrated Station Concept planning process is a separate planning process and decisions about future changes to the San Jose Diridon Station and the surrounding, PCJPB-owned rail infrastructure and corridor are the subject of multiple planning and agreement processes that are proceeding independently from this environmental process.

8.2 Summary of Key Stakeholder Input

Stakeholder input is an important component of the Authority's evaluation of alternatives in the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) environmental processes. The Authority has closely coordinated with many individuals, local governments, public agencies, and organizations to obtain local knowledge and input on the project alternatives. The Authority and FRA engaged, and the Authority continues to engage, extensively with stakeholders, beginning with scoping in 2009 for the four-track dedicated San Francisco to San Jose Project Section and continuing through preparation and release of this Final EIR/EIS. During that time, commenters submitted hundreds of comments indicating a preference for one or more alternatives or providing comments on a broad spectrum of topics. All comments received on the Draft EIR/EIS and the Revised/Supplemental Draft EIR/EIS were reviewed and considered, consistent with the requirements of NEPA and CEQA. Refer to Volume 4 for a complete list of submissions, delimited comments, and the Authority's responses to comments. Outreach efforts are described in detail in Chapter 9, Public and Agency Involvement. This section summarizes key stakeholder input relative to alternatives, including specific outreach in summer 2019 regarding the identification of a Preferred Alternative. Outreach efforts regarding identification of the Preferred Alternative in summer 2019 are summarized in the separate *San Francisco to San Jose Project Section Preferred Alternative Outreach Summary Report* (Authority 2019a). The following sections summarize comments received from local

¹ PCJPB is the owner and managing authority for the Peninsula Corridor.

communities, state and federal agencies, Native American tribes, transportation and public works departments, businesses, and environmental justice populations.

8.2.1 Local Communities

Key feedback from local communities relevant to the Preferred Alternative includes the following:

- **City of Brisbane**—Prior to publication of the Draft EIR/EIS, community members expressed concerns about the proposed Brisbane LMF and associated air quality, visual, and noise impacts of construction and operation. Prior to publication of the Draft EIR/EIS, 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 level of remediation needed at the former landfill on the East Brisbane LMF site, and the potential loss of property and sales tax revenue due to displaced planned commercial development from the East Brisbane LMF under Alternative A. Extensive comments were received from the City of Brisbane on the Draft EIR/EIS and were reiterated on the Revised/Supplemental Draft EIR/EIS. Key concerns included, but were not limited to, the site evaluation for LMF alternatives; the level of detail of the project description and impact analysis; the project's impacts on the Brisbane Fire Station's access and emergency response times; the project's conflicts with the proposed Baylands Development and the Geneva Avenue extension; the adequacy of the impact analysis related to traffic and noise and vibration; impacts on biological and aquatic resources; hazardous materials impacts and construction on a landfill; and operational water use.
- **City of Millbrae**—In comments submitted of the Draft EIR/EIS, the City of Millbrae expressed concern about the project's compatibility with approved development near the Millbrae Station. Commenters questioned the need for replacement parking at the Millbrae Station and resulting impacts on the Millbrae Serra Station Development. In response to these comments on the Draft EIR/EIS, the Authority developed the RSP Design Variant, which is evaluated in the Revised/Supplemental Draft EIR/EIS and in Section 3.20, Millbrae Station Reduced Site Plan Design Variant, of this Final EIR/EIS.
- **City of San Mateo**—Prior to publication of the Draft EIR/EIS, residents of the city of San Mateo expressed concerns about the visual impact of 100-foot 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. Comments on the Draft EIR/EIS from the City of San Mateo focused on the project's impacts on noise, traffic, and businesses (under Alternative B); the project's consistency with the City of San Mateo General Plan policies; the lack of site-specific traffic mitigation measures; and the project's consistency with the Caltrain Business Plan.
- **City of Belmont**—Prior to publication of the Draft EIR/EIS, 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 expressed a preference for Alternative A because it would minimize disruption to existing infrastructure and private property in Belmont. Comments on the Draft EIR/EIS from the City of Belmont expressed a preference for Alternative A and raised concerns about the impacts of Alternative B on businesses, aesthetics, and the Belmont Village Specific Plan. The City of Belmont also raised concerns about construction worker parking, the project's impacts on utilities, the project's consistency with the City of Belmont General Plan policies, and the project's consistency with the Caltrain Business Plan.
- **City of San Carlos**—Prior to publication of the Draft EIR/EIS, the City of San Carlos and its residents raised concerns 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 that is under construction as of March 2022, and the relocation of the San Carlos Station under Alternative B. Most residents expressed a preference for 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. No official comments were received on the Draft EIR/EIS from the City of San Carlos.

- **City of Santa Clara and City of San Jose, north of downtown San Jose**—Prior to publication of the Draft EIR/EIS, Santa Clara residents expressed concern about construction and operational traffic. Residents of the Newhall neighborhood in Santa Clara expressed concern about community cohesion and connectivity. Residents of the College Park neighborhood in San Jose expressed concern about the impacts on aesthetics and visual quality from viaduct designs north of downtown. This was one of the considerations in developing the Viaduct to Interstate (I-) 880 design option under Alternative B. Residents of the College Park neighborhood expressed a preference for Alternative A over Alternative B (Viaduct to I-880) or Alternative B (Viaduct to Scott Boulevard) because of the reduced visual quality impact of an at-grade design. Comments on the Draft EIR/EIS from the City of Santa Clara expressed a preference for Alternative A, and focused on construction impacts related to traffic and noise, impacts on the Reed and Grant Streets Sports Park, requirements for permits and easements, public outreach prior to construction, and utility conflicts.
- **City of San Jose, downtown area to Tamien**— Prior to publication of the Draft EIR/EIS, some residents expressed a preference for a tunnel option for downtown San Jose to avoid visual impacts and business and residential displacement impacts of an aerial alignment, and the noise, displacements, and other impacts of an at-grade alignment. However, as explained in Chapter 2, the Authority determined that a tunnel option would be prohibitively expensive and infeasible due to constructability and cost. Some downtown businesses indicated a preference for the at-grade design under Alternative A over the viaduct options under Alternative B because of concerns about aesthetics and visual quality impacts, as well as displacement of existing or future development potential in the downtown area. Residents in the North Willow Glen/Gardner neighborhood indicated a preference for Alternative B (both viaduct options) because they would travel around the Gardner and North Willow Glen communities. Alternative A would pass through these communities, which raised neighborhood concerns about traffic at the at-grade crossings, operational train noise, construction impacts on the neighborhood, impacts on Fuller Park, and property acquisition. The City of San Jose also expressed concern about the effects of alternatives on future development of the Diridon Station area. No official comments were received on the Draft EIR/EIS from the City of San Jose; however, the City of San Jose did provide comments on the San Jose to Merced Project Section Draft EIR/EIS, which were reviewed and considered for applicability to the San Francisco to San Jose Project Section.

Local communities in locations where the design of project alternatives would be the same also provided feedback. Although this feedback is an important component of the evaluation of alternatives, it did not inform the selection of the Preferred Alternative because 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 included 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. 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).

Refer to Section S.1.1, Modifications since the Draft EIR/EIS, in the Final EIR/EIS Summary for an overview of the changes to project design and the Final EIR/EIS as a result of public comments on the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS.

8.2.2 Federal and State Resource Agencies

Coordination with environmental agencies was conducted throughout development of the Final EIR/EIS through multiple working groups and one-on-one meetings. Environmental resource agencies expressed concerns about construction and operations impacts on species and their habitat, and impacts on wetlands, other waters, and riparian habitat. Alternative A and Alternative B would have similar impacts overall on listed species and their habitat, while Alternative A would have fewer impacts on wetlands and other waters. As noted previously, USACE and USEPA have concurred with the Authority that Alternative A is the LEDPA per CWA Section 404(b)(1). The Authority is consulting with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service under Section 7 of the federal Endangered Species Act in preparation for issuance of a biological opinion from each agency, which are expected to be completed prior to the issuance of the Record of Decision.

The San Francisco Bay Conservation and Development Commission (BCDC) raised issues concerning the project’s consistency with the policies of the *San Francisco Bay Plan* (BCDC 2019), the project’s compatibility with the priority use area designation north of Brisbane Lagoon, and whether the project would provide maximum feasible public access to the San Francisco Bay. BCDC is a state agency that has been granted authority by the State of California, pursuant to the McAtteer-Petris Act,² to plan and regulate activities and development in and around San Francisco Bay. BCDC regulates the filling and dredging of the San Francisco Bay and any substantial change in use of any water or land within their jurisdictional areas through the permitting process described in the McAtteer-Petris Act. Within BCDC’s jurisdiction, both project alternatives would require fill of certain bay/tidal waterways and development within the shoreline band. Construction of the East Brisbane LMF under Alternative A would place a portion of Visitacion Creek into an underground culvert, resulting in more fill in bay/tidal waterways than Alternative B. Since publication of the Draft EIR/EIS, the Authority has refined the alignment of Lagoon Road under both project alternatives to avoid the priority use area north of Brisbane Lagoon. Additionally, with proposed mitigation measures, the project alternatives would increase access to the San Francisco Bay by closing a gap in the Bay Trail between the southeast part of San Francisco and Brisbane Lagoon and provide compensatory mitigation for impacts on aquatic resources.

8.2.3 Native American Tribes

Native American outreach and consultation efforts have been ongoing at key milestones throughout the project planning process. Because of 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. Section 3.16, Cultural Resources, provides more information on Native American outreach and consultation efforts. The Amah Mutsun Tribe provided comments on the Draft EIR/EIS, which consisted of recommendations regarding cultural sensitivity training for construction workers and the qualifications of monitors present for ground-disturbing activities.

8.2.4 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 blended operations, passing tracks, electrification, station safety improvements, and early investment projects to upgrade the existing

² California Government Code Sections 66000–66694. BCDC also derives its authority from the Suisun Marsh Preservation Act. See California Public Resources Code Sections 29000–29612.

commuter rail infrastructure in the Caltrain right-of-way. This coordination is ongoing, and has continued to inform the alternatives development. PCJPB submitted comments on the Draft EIR/EIS and raised concerns about certain proposed modifications to Caltrain infrastructure, the service plan and prototypical schedule used as the basis for the analysis in the Draft EIR/EIS, and the lack of evaluation of the impact of the HSR project on Caltrain's planned service increases envisioned in the *2040 Caltrain Service Vision* (Caltrain 2020).

Local transportation agencies and public works departments expressed concern 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 and the number of permanent operations-related impacts on intersection operations in station areas and at at-grade crossings would be greater under Alternative B. Local transportation agencies and public works departments have not expressed preferences for any project alternatives separate from their respective cities, which are summarized in Section 8.2.1, Local Communities.

8.2.5 Businesses

The Authority has met with representatives of a variety of business throughout project development, as described in Chapter 9. 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 effectiveness of relocations; increased traffic congestion; and the adverse and beneficial effects of the project on local and regional businesses. Business representatives expressed preferences for alternatives that would 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, and in San Jose due to construction of the viaduct options. As a result, businesses along the project corridor have expressed a preference for Alternative A. Freight operators and users of freight provided comments on the Draft EIR/EIS expressing concerns about disruption of freight service during project construction and operation.

8.2.6 Environmental Justice Outreach

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 this Final EIR/EIS. This outreach is discussed in Chapter 5, Environmental Justice, and in Chapter 9. The following issues and concerns were brought up by members of communities along the project that have concentrations of minority populations and low-income populations:

- **City/County of San Francisco and Brisbane**—Members of 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 operations. Some community members expressed concerns about the cumulative impacts on human health associated with the operations of an LMF in an area where a substantial amount 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 through 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**—Members of 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 concerns about displacement of low-income

housing and the ability of displaced residents to relocate within the same communities due to the high cost of housing.

- **San Jose**—Representatives of minority populations and low-income populations in San Jose raised concerns about operational noise and vibration; aesthetics; residential displacements; impacts on Fuller Park; and community cohesion and connectivity. As described in Section 8.2.1, residents in the North Willow Glen/Gardner neighborhood—which is considered to have a low-income population—expressed a preference for Alternative B (both viaduct options) because the alignment would go around the neighborhood.

Community members in locations with high concentrations of minority populations and low-income populations where the project design would be the same under both alternatives also provided feedback. While this feedback is important to the Authority and has informed the design of the HSR system, it does not inform the selection of the Preferred Alternative because only one project design is being considered in these communities. 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 in the availability of reduced-fare tickets for low-income residents.

8.2.7 Feedback on the Staff-Recommended Preferred Alternative

The Authority conducted extensive outreach from July through September 2019 to share Alternative A as the Staff-Recommended Preferred Alternative with project stakeholders and members of the public. A handout was prepared to distribute at the meetings, which included a description of how the alternatives were developed; the alternatives under evaluation; prior stakeholder, public, and agency input; and the evaluation of alternatives.

More than 200 community members, stakeholders, and agency officials attended briefings and meetings held throughout the project corridor during this outreach period. The location and dates of these meetings are listed below:

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

The Authority compiled the feedback obtained on the staff-recommended Preferred Alternative at these outreach meetings. The *San Francisco to San Jose Project Section Preferred Alternative Outreach Summary Report* (Authority 2019a) summarizes the individual meetings and provides an overview of the feedback received during the outreach meetings. A number of comments on the Draft EIR/EIS were related to the Preferred Alternative, largely expressing support for Alternative A.

8.3 Alternatives Considered

In the *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Authority and FRA 2005), the Authority and FRA 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 *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Authority and FRA 2008), which advanced the Pacheco Pass network alternative and shared HSR and Caltrain use of the Caltrain corridor on a four-track fully grade-separated system between San Francisco and San Jose. As a result of litigation, the Authority prepared additional programmatic environmental review for the Bay Area and the Central Valley, and in 2012 completed the *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012a). Through these programmatic documents, the Authority selected the Pacheco Pass network alternative with shared use of the Caltrain corridor between San Francisco and San Jose (Authority 2012b, 2012c).

The Authority, in cooperation with the FRA, began the project-level environmental review process for the San Francisco to San Jose Project Section of the California HSR System with a NEPA Notice of Intent, CEQA Notice of Preparation, and public scoping process in late 2008 and early 2009. The proposed project was a fully grade-separated four-track system between San Francisco and San Jose with HSR sharing the corridor with Caltrain express commuter trains. The environmental review process resulted in alternatives analysis reports developed in consultation with the public; federal, state, and local agencies; and community groups—the *Preliminary Alternatives Analysis Report for the San Francisco to San Jose Section* (Authority and FRA 2010a) and the *Supplemental Alternatives Analysis Report for the San Francisco to San Jose Section* (Authority and FRA 2010b).

The four-track system proposal generated concerns from communities along the Caltrain corridor because of the magnitude of potential impacts on environmental and community resources. In response to these concerns, the Authority suspended further work on the San Francisco to San Jose Project Section Draft EIR/EIS in mid-2011 so that the Authority could consider blended operations for the two rail services 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 HSR service between the two cities and a “one-seat ride”³ to San Francisco by sharing Caltrain’s existing predominantly two-track system, without requiring a dedicated four-track system. The framework for blended operations along the San Francisco Peninsula was established 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 2012d), adoption of the *Metropolitan Transportation Commission (MTC) Resolution No. 4056 Memorandum of Understanding*⁴ (MTC 2012), and passage of Senate Bill (SB) 1029⁵ and SB 557.⁶

The Authority and FRA reinitiated a new project-level environmental review process in April 2016 for the San Francisco to San Jose Project Section focusing on a predominantly two-track blended system using existing Caltrain track and remaining substantially within the existing Caltrain right-

³ A *one-seat ride* does not require a transfer between vehicles to complete the trip.

⁴ 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 the MTC Resolution No. 4056 Memorandum of Understanding in March 2012.

⁵ SB 1029, approved July 2012, amended the Budget Act of 2012 to appropriate funds for HSR projects in the San Francisco to San Jose corridor, consistent with the blended system strategy identified in the Authority’s 2012 Business Plan and MTC’s 2012 MOU.

⁶ SB 557 was passed by the legislature and signed by the governor in 2013. SB 557 provides that any bond funds appropriated pursuant to SB 1029 will be used solely to implement a blended system 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).

of-way. Pursuant to the National Environmental Policy Act (NEPA)/404/408 Integration Process Memorandum of Understanding (MOU) (FRA et al. 2010) Checkpoint A provisions, the Authority and FRA submitted a Purpose and Need statement to USEPA and USACE in April 2016 (as described in Section 8.7, Least Environmentally Damaging Practical Alternative). USACE agreed with the Purpose and Need statement on May 3, 2016, and USEPA agreed with the Purpose and Need statement on May 5, 2016. On May 9, 2016, the Authority and FRA distributed a CEQA Notice of Preparation and NEPA Notice of Intent, respectively, which reinitiated scoping for the Draft EIR/EIS.

Since 2016, the Authority has conducted agency consultation, public outreach, and alternatives development. The Authority prepared the *San Francisco to San Jose Project Section Checkpoint B Summary Report* (Authority 2019c) to analyze and document the project alternatives and to inform the selection of a reasonable range of alternatives for inclusion in the Draft EIR/EIS. The project alternatives considered during this process were constrained by the actions and legislative mandates from 2012 establishing the HSR project as a predominantly two-track blended system using existing Caltrain track and remaining substantially within the existing Caltrain right-of-way. These legislative mandates, combined with the spatial constraints of integrating with existing passenger and freight rail in a constrained right-of-way, limited the range of potential build alternatives. In July and August 2019, the USEPA and the USACE concurred on the decision to carry forward Alternative A and Alternative B for evaluation in this Final EIR/EIS. For more information on the alternatives analysis process, please see Section 2.5, Alternatives Considered during Alternatives Screening Process, of this Final EIR/EIS.

8.4 Preferred Alternative

The Preferred Alternative for the Project Section is Alternative A (Figure 8-1). It was selected based on a balanced consideration of the environmental information presented in this Final EIR/EIS in the context of project purpose and need; project objectives; CEQA, NEPA, and Section 404(b)(1) requirements; regional and local land use plans; community preferences; and costs.

The identification of the Preferred Alternative also integrates the Authority's evaluation under Section 4(f) of the Department of Transportation Act (49 United States Code § 303) (Section 4(f)), which provides special protection to publicly owned parks, recreational areas, and wildlife and waterfowl refuges, and lands of a historic site of national, state, or local significance. As described in Chapter 4, Section 4(f)/6(f) Evaluation, Section 4(f) properties can only be used by federally funded transportation projects if there is no feasible and prudent avoidance alternative and all possible planning has been taken to minimize harm to any 4(f) property used by the project, or if the use results in a *de minimis* impact on such property. For more information on the Authority's evaluation under Section 4(f), see Chapter 4.

The Preferred Alternative is estimated to cost approximately \$5,317 million (2021\$). The Preferred Alternative would have lower capital costs than Alternative B, which is estimated at \$8,835 million (2021\$) for Alternative B (Viaduct to I-880) and \$9,899 million (2021\$) for Alternative B (Viaduct to Scott Boulevard). Additional details on the estimated costs for each alternative can be found in Chapter 6, Project Costs and Operations, and Appendix 6-A, San Francisco to San Jose Project Section: PEPD Record Set Capital Cost Estimate Report.

During the alternatives development process, the Authority considered many issues to identify the best alternative to achieve the project's purpose and need. These issues included natural resources and community impacts, input of the communities along the project alignment, the views of federal and state resource agencies, project costs, and constructability of the project alternatives. The Authority subsequently identified the Preferred Alternative by considering environmental, economic, technical, and other factors, and by balancing the adverse and beneficial impacts of the project on the community and natural environment. Taking this approach means that no single issue was a decisive factor in identifying the Preferred Alternative in any given geographic area.

This evaluation of potential impacts on community and natural environmental resources highlighted information on how the project alternatives differ. Potential impacts that do not substantially differentiate the alternatives were not included in the identification of the Preferred Alternative. The following resources do not have impacts that substantially differentiate the alternatives:

- Air quality and greenhouse gases
- Vibration
- Electromagnetic fields and interference
- Public utilities and energy
- Hydrology and water resources
- Geology, soils, seismicity, and paleontological resources
- Hazardous materials and waste
- Archaeological resources
- Regional growth
- Environmental justice

Their absence does not mean that these impacts are not an important part of the alternatives evaluation or are not of concern to the public, stakeholders, and agencies. The Authority considers all resource areas and community concerns as necessary in the NEPA/CEQA process, permitting, final design, construction, and implementation.

Table 8-1 shows the potential impacts of the project alternatives on community and natural environmental factors that differentiate the alternatives. The community factors include displacements, aesthetics and visual quality, land use and development, transportation,⁷ emergency vehicle access/response times, and noise. The natural environmental factors include aquatic resources, biological resources, Section 4(f) resources, and built environmental resources. The impacts shown in Table 8-1 include relevant and applicable mitigation. The best-performing alternative for each impact is **bold** with an asterisk (*).

Table 8-1 Community and Environmental Effects by Alternative

Effects	Alternative A ¹	Alternative B ²
Community Factors		
Displacements		
Residential displacements (number of units)	14*	42/62
Commercial and industrial displacements (number of units)	48/49*	171/202
Community and public facilities displacement (number of units)	3*	6/7

⁷ In accordance with SB 743 (2013) and the CEQA Guideline Updates (December 2018), the Authority does not consider traffic vehicle delay, measured through level of service or other metrics, to be a CEQA significant impact. This approach became mandatory for all CEQA lead agencies in California as of July 1, 2020. However, traffic delay is considered a potential adverse effect under NEPA and is analyzed accordingly in this EIR/EIS. Refer to Section 3.2, Transportation, for more information about traffic delay.

Effects	Alternative A ¹	Alternative B ²
Aesthetics and Visual Quality		
Visual quality effects	<ul style="list-style-type: none"> ▪ At-grade alignment* ▪ Existing right-of-way* 	<ul style="list-style-type: none"> ▪ 6-mile-long passing track ▪ 4 miles (Viaduct to I-880) or 6 miles (Viaduct to Scott Boulevard) of aerial viaducts and station in downtown San Jose
Land Use and Development		
Permanent Alteration of Land Use Patterns at Brisbane Light Maintenance Facility	<p>The East Brisbane LMF would not affect Icehouse Hill.*</p> <p>The East Brisbane LMF would reduce the area of planned development at Brisbane Baylands by:</p> <ul style="list-style-type: none"> ▪ Planned development (residential prohibited): 108.6 acres ▪ Planned development (residential permitted): 3.7 acres* 	<p>The West Brisbane LMF would grade Icehouse Hill, an area designated for preservation in the 2018 Brisbane General Plan Amendment (City of Brisbane 2018). This would be considered a permanent and significant alteration of an existing land use.</p> <p>The West Brisbane LMF would reduce the area of planned land uses at Brisbane Baylands by:</p> <ul style="list-style-type: none"> ▪ Planned development (residential prohibited): 93.6 acres ▪ Planned development (residential permitted): 22 acres <p>Implementation of the West Brisbane LMF would have a greater effect on development of planned residential units.</p>
Transportation		
Intersections with adverse NEPA effects after mitigation	80*	83
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.
Emergency Vehicle Access/Response Times		
Temporary impacts in emergency vehicle access/response times due to temporary road closures	Temporary road closures would result in delays in emergency vehicle access and increases in response times.*	There would be more temporary road closures under Alternative B because of passing track construction. The closures would create more disruptions to emergency vehicle access, thereby generating greater delays and increases in response times than under Alternative A.

Effects	Alternative A ¹	Alternative B ²
Noise		
Severe noise impacts with noise barrier mitigation (number of sensitive receptors)	495	455/452*
Severe noise impacts with noise barrier mitigation and if local municipalities implement quiet zones ³ (number of sensitive receptors)	264	237/234*
Environmental Factors		
Aquatic Resources⁴		
Direct impacts on jurisdictional aquatic resources ⁵ (acres)	11.7*	18.1
Biological Resources (Special-Status Species Habitat)⁴		
Direct impacts on habitat for special-status plant species (non-overlapping acres)	109.7	64.6*/65.4
Direct impacts on habitat for three listed butterflies (acres)	96.3*	108.1
Direct impacts on suitable habitat for monarch butterfly (acres)	139.7*	163.4
Direct impacts on central California coast steelhead habitat (acres)	3.7	2.9*
Direct impacts on green sturgeon habitat (acres)	7.0	5.8*
Direct impacts on Pacific lamprey habitat (acres)	3.0	2.3*
Direct impacts on essential fish habitat for Chinook Pacific Coast salmon (acres)	2.8	2.1*
Direct impacts on essential fish habitat for Pacific Coast groundfish (acres)	2.4*	3.0
Direct impacts on California red-legged frog habitat (acres)	17.7*	23.5
Direct impacts on western pond turtle habitat (acres)	43.9*	73.7/72.9
Direct impacts on burrowing owl habitat (acres)	134.5	108.0*/109.0
Direct impacts on Alameda song sparrow habitat (acres)	1.3	0.7*
Direct impacts on saltmarsh common yellowthroat habitat (acres)	1.7*	8.6
Direct impacts on least Bell's vireo habitat (acres)	2.1*	3.6

Effects	Alternative A ¹	Alternative B ²
Direct impacts on yellow warbler habitat (acres)	0.7*	1.9
Direct impacts on tricolored blackbird habitat (acres)	8.8	4.6*/5.5
Direct impacts on white-tailed kite nesting habitat (acres)	22.8	19.9*/27.5
Direct impacts on San Francisco dusky-footed woodrat and ringtail habitat (acres)	0.7*	2.0/9.7
Direct impacts on pallid bat and Townsend's big-eared bat roosting habitat (acres)	1.5	1.3*
Direct impacts on western red bat roosting habitat (acres)	11.8*	13.8/21.4
Section 4(f)/6(f) Resources		
Permanent use (<i>de minimis</i>) of park resources (# of resources)	1*	2*/4
Built Environment Historic Resources		
Number of permanent adverse effects on NRHP-listed/eligible resources (# of resources)	1*	2/3
Number of permanent significant impacts on CEQA-only historic resources (# of resources)	1*	1*

CEQA = California Environmental Quality Act

FRA = Federal Railroad Administration

I = Interstate

LMF = light maintenance facility

NRHP = National Register of Historic Places

Bold values denoted with an asterisk (*) identify best performing alternative(s).

¹ Where differences occur, values are presented for Alternative A without the DDV, followed by Alternative A with the DDV. For Alternative A, the Brisbane Corporation Yard was considered an industrial business displacement.

² Where applicable, values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard). If only one value is presented, the value would be identical under the Viaduct to I-880 and Viaduct to Scott Boulevard options.

³ A *quiet zone* is an area in which an FRA exemption has been granted to the rule requiring trains to sound their horns when approaching public roadway-rail grade crossings. A quiet zone is a section of rail line at least 0.5 mile in length that contains one or more consecutive public grade crossings or a single public grade crossing at which locomotive horns are not routinely sounded. Only local cities and counties can request establishment of a quiet zone through the FRA.

⁴ Acreages represent estimates of direct (temporary and permanent) impacts on a given resource.

⁵ Includes aquatic resources considered jurisdictional under Section 404 of the federal Clean Water Act or the Porter-Cologne Act.

Information and analysis of the differences in the potential impacts of the project alternatives on community and natural environmental factors was incorporated into a staff report that was presented to the Authority Board of Directors at their meeting on September 17, 2019 (Authority 2019b). At this meeting, the Board of Directors concurred with the identification of Alternative A as the Preferred Alternative. After publication of the Final EIR/EIS and certification of the Final EIR/EIS pursuant to CEQA, the Authority will consider whether to formally adopt the Preferred Alternative.

8.4.1 Review of Alternative Key Differentiators by Subsection

This section describes the key community and environmental factors that differentiate the alternatives within each subsection of the Project Section, as shown in Table 8-1. Alternatives A

and B vary in the San Francisco to South San Francisco Subsection, San Mateo to Palo Alto Subsection, and the San Jose Diridon Station Approach Subsection. Because the alternatives are identical in the San Bruno to San Mateo and Mountain View to Santa Clara Subsections, those subsections are not discussed, except to identify the differences in impacts between the Millbrae Station Design and the RSP Design Variant within the San Bruno to San Mateo Subsection. Community and environmental factors shown in Table 8-1 that do not substantially differentiate alternatives in a given subsection also are not included in the discussion. For example, because there are no Section 4(f) uses in the San Francisco to South San Francisco Subsection, that resource topic is not discussed for that subsection.

8.4.1.1 San Francisco to South San Francisco Subsection

- **Land use and development**—Alternative A would construct the East Brisbane LMF adjacent to existing vacant and industrial uses in an area designated for planned development (residential prohibited), which would allow the City of Brisbane to build planned development (residential permitted) on the west side of the Caltrain tracks, as it has planned. 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 designated for both planned development (residential permitted)—where up to 2,200 residential units are permitted—and planned development (residential prohibited). 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’s General Plan Amendment identifies to be preserved (City of Brisbane 2018).
- **Wetlands and aquatic resources**—Alternative A would result in lower overall permanent impacts on jurisdictional aquatic resources (11.7 acres) than would Alternative B (18.1 acres). The difference in wetlands and aquatic resources impacts between the project alternatives occurs primarily at the Brisbane LMF, where more freshwater emergent wetland is within the footprint of the West Brisbane LMF under Alternative B.
- **Biological resources (special-status species habitat)**—Alternative A would result in lower impacts on habitat for saltmarsh common yellowthroat, western red bat, federally listed butterflies (callippe silverspot butterfly, Bay checkerspot butterfly, and Mission blue butterfly), and monarch butterfly. Alternative B would result in lower impacts on habitat for burrowing owl, central California coast steelhead, and green sturgeon. Of these species, the three federally listed butterflies, steelhead, and green sturgeon are the only special-status species protected under the federal Endangered Species Act. Alternative B would require major earthwork at Icehouse Hill to build the West Brisbane LMF, eliminating all 8 acres of habitat for the three listed butterfly species; both project alternatives would also affect additional acres of nectaring and dispersal habitat for these listed butterfly species. Alternative A would permanently impact 0.6 acre of habitat for steelhead and green sturgeon in Visitacion Creek but the habitat at this location is severely degraded and the occurrence of these species is unlikely.

8.4.1.2 San Bruno to San Mateo Subsection

Although the design of Alternative A and B is identical in the San Bruno to San Mateo Subsection, the Authority developed two design variants for integrating new HSR infrastructure at the existing Millbrae BART/Caltrain Intermodal Station, which could be incorporated into Alternatives A or B. The Millbrae Station Design was developed in accordance with the Authority’s established station design guidelines, criteria, and policies. The RSP Design Variant, which is evaluated in the Revised/Supplemental Draft EIR/EIS and in Section 3.20 of this Final EIR/EIS, was developed to minimize impacts, to the degree feasible, on existing and planned development in Millbrae in response to comments on the Draft EIR/EIS. The primary differences in impacts between the Millbrae Station Design and the RSP Design Variant are as follows:

- **Displacements**—Construction of the Millbrae Station Design would displace 1 single-family residence and 14 commercial businesses, whereas the RSP Design Variant would displace no single-family residences and 2 commercial businesses.

- Land use and development**—Construction of the Millbrae Station Design would permanently convert 7.8 acres to transportation uses, resulting in a substantial change in existing land use; the RSP Design Variant would permanently convert 3.7 acres, but would not result in a substantial change in existing land uses. While both Millbrae Station Design and the RSP Design Variant would conflict with the approved Millbrae Station Development, resulting in a substantial change in planned land use patterns, the RSP Design Variant would affect less land that is planned for TOD and accordingly would have a lesser degree of conflict with Millbrae Station Area Specific Plan.

8.4.1.3 *San Mateo to Palo Alto Subsection*

- Displacements**—Alternative A would result in fewer displacements because the alignment is predominantly 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 most business displacements would occur in Belmont (65) and San Mateo (23) under Alternative B, which 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 within this subsection because track shifts and other modifications would conform to the existing visual character of the area. Alternative B would include a four-track passing track that would intrude visually on residential areas and the historic San Carlos Station.
- Transportation**—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. The station relocation would also lengthen San Mateo County Transit District Route 260 (which currently terminates at San Carlos Station) and increase bus travel times from Redwood Shores. As a result, the station relocation would decrease the performance of transit services at the San Carlos 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. Temporary increases in response times and delay of emergency vehicles during construction would be greater under Alternative B due to the need to build the passing track in heavily congested areas along El Camino Real.

8.4.1.4 *San Jose Diridon Station Approach Subsection*

- Displacements**—Alternative A would have the fewest displacements (24 for Alternative A without the DDV and 25 for Alternative A with the DDV) because the alignment would be at grade and primarily within the Caltrain right-of-way. In contrast, Alternative B (Viaduct to I-880) would have 88 displacements and Alternative B (Viaduct to Scott Boulevard) would have 140 displacements. The most displacements would occur in San Jose under both alternatives.
- Aesthetics and visual quality**—Alternative A would have the lowest operations impact on aesthetics and visual quality because it would be at grade mostly within the Caltrain right-of-way. Alternative B (both viaduct options) would have more impacts on visual quality than Alternative A because the alignment would be on an elevated viaduct outside existing rail rights-of-way through most of San Jose. Alternative B (Viaduct to Scott Boulevard) would have the most impacts on visual quality because the alignment would be on elevated viaduct

outside existing rail rights-of-way through Santa Clara and downtown San Jose (approximately 2 more miles of viaduct than Alternative B [Viaduct to I-880]).

- **Noise**—Alternative A would have a greater number of noise impacts on sensitive receptors than Alternative B (both viaduct options) because operation would require sounding of HSR train horns at two at-grade crossings south of the San Jose Diridon Station, whereas Alternative B (both viaducts) would not require sounding of HSR train horns. Operation of Alternatives A and B (Viaduct to I-880) would also require sounding of HSR train horns when passing through the Santa Clara Station, whereas Alternative B (Viaduct to Scott Boulevard) would not sound the HSR horns.
- **Traffic**—Alternative A would have 8 adverse intersection effects under NEPA after mitigation within this subsection, whereas Alternative B would have 11 adverse intersection effects under NEPA after mitigation.
- **Section 4(f)/6(f) park resources**—Alternative A would affect a small portion of Fuller Park. Alternative B (both viaduct options) would have permanent impacts on portions of the Los Gatos Creek Trail and Guadalupe River Trail. Additionally, Alternative B (Viaduct to Scott Boulevard) would affect a portion of Reed Street Dog Park and Reed and Grant Street Sports Park.
- **Built environment historic resources**—Both project alternatives would have a permanent significant and unavoidable impact on the Southern Pacific Depot District (the historic Diridon Station) and the property located at 75 South Autumn Street. Alternative B (both viaduct options) also would have a permanent significant and unavoidable impact on the Sunlite Baking Company property, while Alternative B (Viaduct to Scott Boulevard) would have an additional permanent significant and unavoidable impact on the Santa Clara Railroad Historical Complex.
- **Biological resources**—Alternative A would have greater impacts on steelhead habitat, green sturgeon habitat, and essential fish habitat for Pacific Coast salmon than Alternative B (both viaduct options), while Alternative B would have greater impacts on Pacific lamprey habitat and Pacific Coast groundfish. Alternative A would impact more tricolored blackbird habitat and burrowing owl habitat, while Alternative B would impact more riparian special-status species habitat (least Bell’s vireo, yellow warbler, San Francisco dusky-footed woodrat and ringtail, western red bat) than Alternative A. Additionally, Alternative B (both viaduct options) would have greater impacts on California red-legged frog and western pond turtle habitat. These differences in impacts occur where the project alternatives cross Los Gatos Creek and Guadalupe River.

8.4.2 Preliminary Cost Estimate by Alternative

Table 8-2 shows the capital cost estimates for both project alternatives between the 4th and King Street Station in San Francisco and West Alma Avenue in San Jose. The Preferred Alternative (Alternative A) is estimated to cost approximately \$5,317 million (2021\$), which is lower than the cost of Alternative B, which is estimated at \$8,835 million (2021\$) for Alternative B (Viaduct to I-880) and \$9,899 million (2021\$) for Alternative B (Viaduct to Scott Boulevard). The primary differences between the two project alternatives are the location of the LMF in Brisbane (either east or west of the existing Caltrain tracks), the additional passing track included under Alternative B, and the alignment through Santa Clara and downtown San Jose (blended at grade, or dedicated viaduct beginning at either I-880 or Scott Boulevard).

Table 8-2 Capital Costs of the Project Alternatives (2021\$ Millions)

	Alternative A	Alternative B ¹
Capital Costs	\$5,317	\$8,835 / \$9,899

Source: Volume 2, Appendix 6-A

¹ Values are presented for Alternative B (Viaduct to I-880) first, followed by Alternative B (Viaduct to Scott Boulevard).

Conceptual cost estimates prepared for the project alternatives were developed using recent bid data from large transportation projects in the western United States and 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 level of design. Additional information on the methods for developing these cost estimates and a breakdown by cost category (e.g., track, right-of-way acquisition, professional services) is provided in Chapter 6, Project Costs and Operations.

8.4.3 Additional Policy Considerations: Caltrain Business Plan

Over the last two years, 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 organizational changes that will be needed to deliver the vision. As part of the service plan development, during development of its business plan, Caltrain is 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 would not be needed in order to add four HSR 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 a strong correlation between Alternative A and the assumptions in the forthcoming Caltrain Business Plan. The schedule for adoption of the Caltrain Business Plan is uncertain due to challenges associated with the ongoing COVID-19 pandemic.

8.4.4 Preferred Alternative Identification

Alternative A has been identified as the Preferred Alternative. Alternative A includes the 4th and King Street Station, the East Brisbane LMF, the Millbrae Station, an at-grade San Jose Diridon Station, and no additional passing tracks. As shown in Table 8-1, Alternative A would have fewer impacts on community factors than Alternative B because it would result in fewer displacements and visual quality impacts, would have less impact on planned mixed-use development (where residential is permitted), and would have fewer temporary road closures that could result in emergency vehicle delays during construction. Alternative A would also have fewer permanent impacts on jurisdictional aquatic resources and would avoid impacts on Icehouse Hill, an area identified for protection by the City of Brisbane because of its biological resource habitat. Relative to Alternative B, Alternative A would have fewer impacts on Section 4(f) built environment historic resources and result in the least overall harm under Section 4(f). Alternative A is also the lower cost alternative and is in alignment with Caltrain's Business Plan assumptions. Extensive stakeholder outreach has identified a clear preference for Alternative A, because it minimizes impacts on communities.

Based on consideration of the factors discussed in this chapter and this Final EIR/EIS, the Authority has determined the Preferred Alternative to be the best choice for the Project Section and overall HSR system. Of the project alternatives, Alternative A represents the best balance of adverse and beneficial impacts on the natural environment and community resources, and it maximizes the transportation and safety benefits of the HSR system at the lowest cost.

The Draft and Final EIR/EIS analyze two potential site options for some of the project's standalone communication radio towers but only one would ultimately be implemented; this approach provides some flexibility in identification of the preferred locations based on considerations of site access, site availability, and impacts on environmental or community resources. The Preferred Alternative for the Final EIR/EIS includes the preferred communication radio tower sites listed in Table 8-3. The table also identifies the stationing for each identified site. Stationing locations can be found on the engineering drawings in Volume 3, Preliminary Engineering Plans.

Table 8-3 Communication Radio Tower Sites Included in the Preferred Alternative

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

N/A = not applicable

8.5 Environmentally Superior Alternative

The CEQA Guidelines (§ 15126.6(e)(2)) state that if the *environmentally superior alternative* is the No Project Alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives. For the reasons described in this Final EIR/EIS, the environmentally superior alternative is not the No Project Alternative. The project alternatives would provide benefits—including reduced vehicle trips on freeways and overall vehicle miles traveled, reduced regional air pollutant emissions, reduced need for freeway and airport expansion, and reduced greenhouse gas emissions—to help California meet reduction targets for 2030 in SB 32 and beyond, all of which would not be realized under the No Project Alternative. CEQA does not require a lead agency to select the environmentally superior alternative as its preferred alternative; however, the Preferred Alternative is the environmentally superior alternative. Implementing the HSR project from San Francisco to San Jose would have adverse environmental impacts regardless of which alternative is selected, but overall, the Preferred Alternative would be the environmentally superior alternative by best meeting environmental regulatory requirements and best minimizing impacts on the natural environment and communities.

8.6 Environmentally Preferable Alternative

Environmentally preferable alternative is a NEPA term for the alternative that would promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. As required by the regulations implementing NEPA, the Authority's environmentally preferable alternative will be identified in the Record of Decision for the Project Section.

8.7 Least Environmentally Damaging Practicable Alternative

The Authority and the Surface Transportation Board are working closely with federal, state, and regional agencies to meet regulatory requirements by refining the project alternatives to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided.

Two important processes that integrate many of the applicable regulatory requirements are Section 404 of the CWA 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 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 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 statement that duly serves NEPA and Section 404 requirements. The USEPA and USACE concurred on the Project Section Purpose and Need in May 2016 to satisfy Checkpoint A (Authority and FRA 2016).
- The second submittal is Checkpoint B, which is required to screen and reduce the potential project alternatives to an appropriate range of "reasonable" and "practicable"⁸ alternatives using the best available information. On July 26, 2019, and August 14, 2019, the USEPA and USACE, respectively, provided letters on the alternatives that the Authority proposed to carry through to the Draft EIR/EIS. Both agencies concurred on the 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 to determine the preliminary LEDPA and provide a formal agency response. The documentation includes those analyses completed to meet requirements of NEPA, Sections 401 and 404 of the CWA, 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. The USEPA and the USACE provided concurrence on the preliminary LEDPA determination in June 2020.

Checkpoints A and B are available for review on the Authority's website (www.hsr.ca.gov), at the repository locations listed in Chapter 10, Distribution List; the Authority's Northern California Regional Office at 100 Paseo de San Antonio, Suite 300, San Jose, CA 95113; and the Authority's Headquarters at 770 L Street, Suite 620 MS-1, Sacramento, CA 95814. Copies of Checkpoint C are available on the Authority's website.

⁸ "Practicability" is defined as available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes (40 C.F.R. § 230.10(a)(2)).