

California High-Speed Rail Authority

San Francisco to San Jose Project Section

Project Environmental Impact Report/
Environmental Impact Statement

Checkpoint A
Project Purpose, Need, and Objectives

April 2016

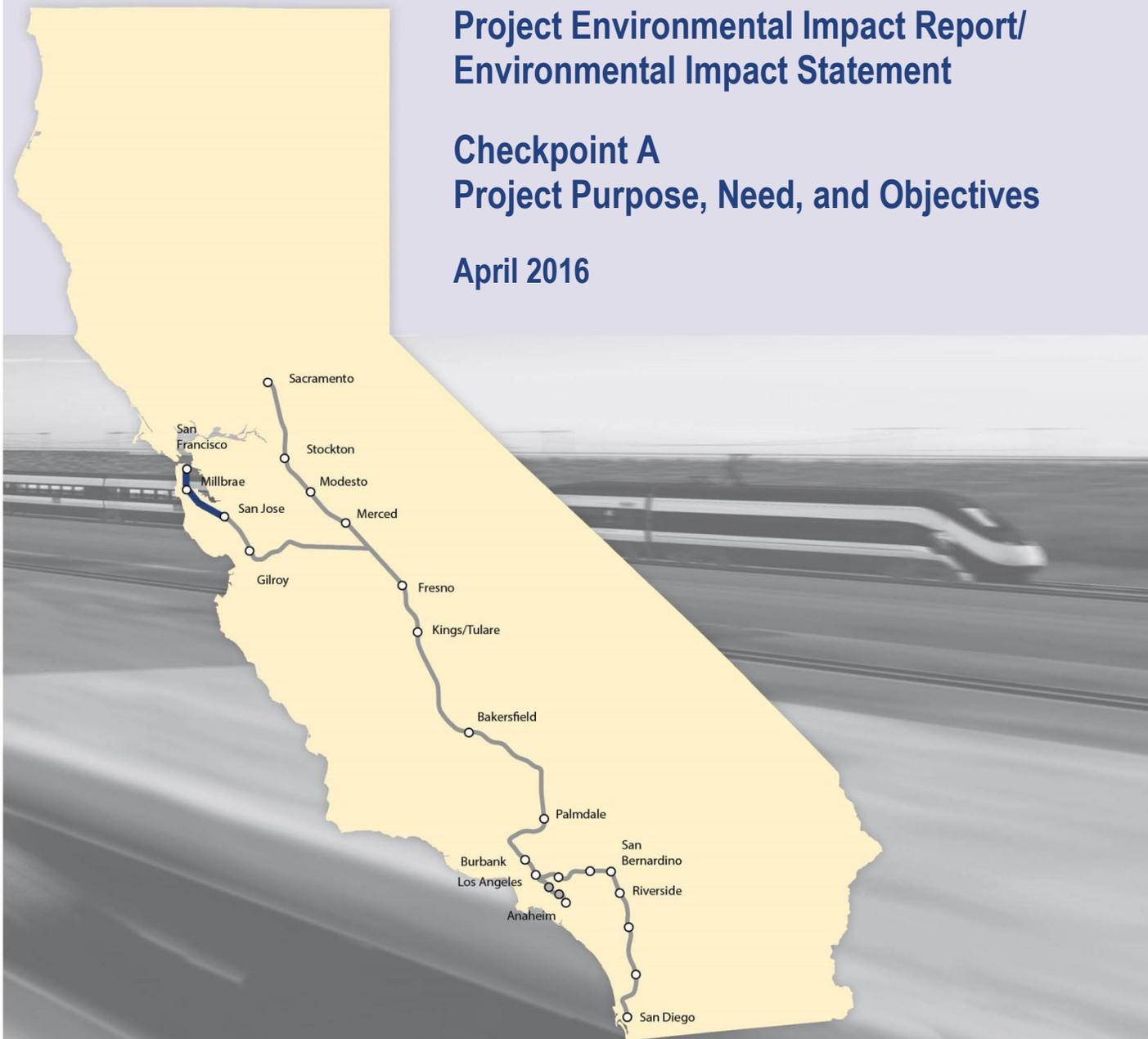


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ACRONYMS AND ABBREVIATIONS

AB	(California) Assembly Bill
ABAG	Association of Bay Area Governments
AC	Alameda County
AC Transit	Alameda-Contra Costa County Transit District
Authority	California High-Speed Rail Authority
BART	Bay Area Rapid Transit
CAA	US Environmental Protection Agency Clean Air Act
C.F.R.	Code of Federal Regulations
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CIB	California Interregional Blueprint
CO	carbon monoxide
CO ₂	carbon dioxide
CTP	California Transportation Plan
DTX	Downtown Extension Project
EIR	environmental impact report
EIS	environmental impact statement
FRA	Federal Railroad Administration
GHG	greenhouse gas
HSR	high-speed rail
MOU	memorandum of understanding
MPO	metropolitan planning organization
MTC	Metropolitan Transportation Commission
NEPA	National Environmental Policy Act
NO ₂	nitrogen dioxide
O ₃	Ozone
PM	particulate matter
PM ₁₀	particulate matter smaller than or equal to 10 microns in diameter
PM _{2.5}	particulate matter smaller than or equal to 2.5 microns in diameter
RTP	regional transportation plan
SB	(California) Senate Bill
SCS	Sustainable Communities Strategy
SFCTA	San Francisco County Transportation Authority
SFO	San Francisco International Airport
SFTP	San Francisco Transportation Plan

SO ₂	sulfur dioxide
STB	Surface Transportation Board
TTC	Transbay Transit Center
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VMT	vehicle miles traveled
VTA	Santa Clara Valley Transportation Authority
VTP	Valley Transportation Plan

1 PROJECT PURPOSE, NEED, AND OBJECTIVES

1.1 Introduction

1.1.1 The High-Speed Rail System

The California High-Speed Rail Authority (Authority) proposes to construct, operate, and maintain an electric-powered high-speed rail (HSR) system in California. When completed, the nearly 800-mile train system would provide new passenger rail service to more than 90 percent of the state's population. More than 200 weekday trains would serve the statewide intercity travel market.¹ The system would be capable of operating speeds up to 220 miles per hour in certain HSR sections, with state-of-the-art safety, signaling, and automated train control systems. The California HSR System, as shown on Figure 1-1, would connect and serve the state's major metropolitan areas, extending from San Francisco to Los Angeles² and Anaheim in Phase 1, with extensions to Sacramento and San Diego in Phase 2. Phased implementation of the HSR system is consistent with the provisions of Proposition 1A, *The Safe, Reliable, High-Speed Passenger Train Bond Act* (California Streets and Highways Code, Division 4, Chapter 20, Section 2704 et seq.) adopted by California voters in November 2008.

Following statewide Tier 1 environmental review, the Authority and the Federal Railroad Administration (FRA) approved the HSR system and selected corridors for Tier 2 study. Building a system of such magnitude, complexity, and cost is impractical to implement as a single project. The Authority and FRA have divided the Phase I HSR system into eight project sections, each connecting a major California city, as shown on Figure 1-2. One of these sections is the San Francisco to San Jose Project Section on the alignment utilizing the Caltrain right-of-way.

1.1.2 Evolution of the San Francisco to San Jose Project Section

The Authority and FRA's HSR system planning process developed the concept for shared use of the rail corridor between San Francisco and San Jose by Caltrain and HSR. The Authority and Caltrain entered into an agreement in 2004 to work cooperatively to evaluate shared use of the rail corridor at the program level of environmental review.³ Following approval of Proposition 1A in 2008, the agencies entered into another agreement to continue to work in partnership identifying design alternatives supporting HSR and modernized Caltrain service. These original shared use plans called for a fully-grade-separated four-track system between San Francisco and San Jose, which was evaluated in the Tier 1 environmental documents.⁴

Rail passenger transportation

Commuter rail passenger transportation serves metropolitan and suburban areas with the same region.

Intercity rail passenger transportation serves travel markets that cross state or regional boundaries.

What are Tier 1 and Tier 2 environmental documents?

Tier 1 environmental documents evaluate the impacts of a broader program—for example, potential locations for an HSR corridor between the Bay Area and Central Valley.

Tier 2 environmental documents evaluate impacts of a specific project included in the program—for example, the San Francisco to San Jose HSR Project Section.

¹ "Intercity rail passenger transportation" is defined at 49 U.S.C. 24102(4) as "rail passenger transportation except commuter rail passenger transportation." Commuter rail passenger transportation" is defined at 49 U.S.C. 24102(3) as "short-haul rail passenger transportation in metropolitan and suburban areas."

² The San Francisco Bay Area and Los Angeles Basin regions are considered the "bookends" of the HSR system.

³ Two program-level environmental documents were prepared: the *Final Program EIR/EIS for the proposed California High-Speed Train System* and the *Bay Area to Central Valley High-Speed Train (HST) Program EIR/EIS* that evaluated the impacts of proposed HSR corridors and selected the HSR sections comprising the California statewide system.

⁴ See Section 1.1.4 for a discussion of the program-level environmental documents and their relationship to this project level EIR/EIS.



Figure 1-1 Statewide High-Speed Rail System—Implementation Phases



Figure 1-2 Statewide High-Speed Rail System, Phase 1 and Phase 2—Project Sections

In 2009, the Authority and FRA began a Tier 2 environmental review process for the San Francisco to San Jose Project Section evaluating shared use of a fully-grade-separated four-track system. The Authority and FRA completed project scoping and prepared initial and supplemental alternatives screening documents based on the four-track system proposal. The four-track system proposal generated concerns from communities along the Caltrain rail corridor because of the magnitude of potential impacts to environmental and community resources. In response to these concerns, the Authority suspended further work on the *San Francisco–San Jose Section Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* in mid-2011 so that it could consider blended operations for the two 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 San Francisco to San Jose Project Section, which would provide HSR service between the two cities and a “one-seat ride”⁵ to San Francisco by sharing track with Caltrain, without requiring a dedicated four-track system.

The framework for blended operations along the Peninsula⁶ was memorialized in 2012 through four separate, but related actions: Authority adoption of the *California High-Speed Rail Program Revised 2012 Business Plan* (Authority 2012b), adoption of the *Metropolitan Transportation Commission (MTC) Resolution No. 4056 Memorandum of Understanding*⁷ (MTC 2012), and passage of Senate Bills 1029⁸ and 557.⁹ Implementing blended operations along the San Francisco Peninsula is supported by the *2013 California State Rail Plan* (Caltrans 2013), *Caltrain Strategic Plan* (Caltrain 2014), the *Valley Transportation Plan 2040* (VTA 2014), and the *Regional Rail Plan for the San Francisco Bay Area* (MTC 2007).¹⁰

What does “blended” mean?

“Blended” refers to integrating the HSR system with existing intercity and commuter and regional rail systems through coordinated infrastructure (blended systems) and scheduling, ticketing, and other means (blended operations).

- The 2012 Business Plan (Authority 2012b) proposed a blended system for the San Francisco Peninsula described as primarily a two-track system that would be shared by Caltrain and HSR service, and other current passenger and freight rail tenants. The key improvements identified for the blended system included advanced signal system, electrification, and infrastructure upgrades which would be implemented by Caltrain. The 2012 Business Plan (Authority 2012b) further concluded that, as allowed by law, the HSR project to be studied in the San Francisco to San Jose Project Section EIR/EIS would be the blended system.
- The 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 on the Caltrain Corridor. The “Initial Investment Strategy” identifies an inter-related program of projects to upgrade existing commuter rail service and prepare for a future high speed train project with infrastructure that remains substantially within the existing Caltrain right-of-way. It would primarily utilize the existing track configuration on the Peninsula. The two inter-related projects funded by the “Initial Investment Strategy” are the installation of electric traction

⁵ A “one-seat ride” does not require a transfer between vehicles to complete the trip.

⁶ The Peninsula is San Mateo and northern Santa Clara counties.

⁷ The Authority and eight other San Francisco 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.

⁸ Senate Bill 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 Metropolitan Transportation Commission Memorandum of Understanding.

⁹ Senate Bill 557 was passed by the Legislature and signed by the Governor in 2013.

¹⁰ The California High-Speed Rail Authority defines the San Francisco Bay Area as composed of the five counties that would be directly served either by high-speed rail or by interconnecting rail service: Alameda County, Contra Costa County, San Francisco County, San Mateo County, and Santa Clara County.

power infrastructure and purchase of electric passenger train equipment for commuter services, and the installation of an advanced signal system to provide positive train control.

- Senate Bill 1029 further defined the blended system by mandating that any funds appropriated for projects in the San Francisco to San Jose corridor, consistent with the blended system strategy identified in the 2012 Business Plan (Authority 2012b), shall not be used to expand the blended system to an independently dedicated four-track system (SB 1029 §1 and §2).
- Senate Bill 557 provides that any bond funds appropriated pursuant to Senate Bill 1029 shall 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 the MTC Resolution No. 4056 (MTC 2012).

1.1.3 The Proposed San Francisco to San Jose Project Section

The San Francisco to San Jose Project Section would provide HSR service from the Transbay Transit Center (TTC) in San Francisco to Diridon Station in San Jose. The San Francisco to San Jose Project Section includes approximately 48 miles of blended infrastructure. Consistent with Proposition 1A,¹¹ this HSR project section follows an existing transportation corridor and is designed to achieve a nonstop travel time of 30 minutes between San Francisco and San Jose. The Authority and FRA must consider alternatives that meet this overall Project purpose and also avoid impacts to the environment, including waters of the United States. Section 1.2.3 describes the overall Project purpose under the Clean Water Act. Figure 1-3 shows the extent of the blended system within the San Francisco to San Jose Project Section.

The San Francisco to San Jose Project Section would provide HSR services at a downtown San Francisco station, a Millbrae station, and a San Jose station. Connections to Caltrain, Bay Area Rapid Transit (BART), and local light-rail and bus transit services would be provided at these stations. The San Jose station would provide additional connections to Amtrak intercity (Capitol Corridor) and interstate services, and Altamont Corridor Express service. Access to the San Francisco International and San Jose Mineta International airports would be provided via the Millbrae and San Jose stations, respectively. The San Francisco to San Jose Project Section would connect to the San Jose to Merced Project Section at the San Jose Diridon Station as shown on Figure 1-2, extending HSR service to the Central Valley¹² and on to Los Angeles via Palmdale and Burbank.

The Downtown Extension Project (DTX) is a proposed 1.3-mile tunnel extending the electrified peninsula rail corridor in San Francisco from the existing 4th and King Station to the TTC to connect with Caltrain, BART, the San Francisco Municipal Railway, and bus lines for Alameda-Contra Costa County Transit District (AC Transit), Golden Gate Transit, Greyhound, SamTrans, WestCAT Lynx, and long-distance buses. Although the Authority would not construct the DTX, HSR would utilize this track to reach the TTC. Construction of the TTC Phase 1 project is underway with anticipated completion in 2017. It includes the transit center structure with an above ground urban park, bus access facilities, an underground walkway to the BART system, two below-grade levels: a concourse level and a structural shell for the HSR and Caltrain train station.¹³ The DTX and TTC projects were evaluated in the *Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project Final EIS/EIR* (U.S. DOT, FTA, CCSF, PCJPB, SFRA 2004). The Transbay Joint Powers Authority certified the Final EIS/EIR in 2004. The Federal Transit Administration and FRA issued the EIS Record of Decision in February 2005 (FRA 2005) to

¹¹ Proposition 1A requires the high-speed train system be designed to achieve certain characteristics, including a nonstop service travel time of 30 minutes between San Francisco and San Jose [§2704.09(b)(3)] on an alignment that follows existing transportation and utility corridors to the extent feasible [§2704.09 (g)].

¹² The Sacramento and San Joaquin valleys combined are called the Central Valley.

¹³ FRA funded the train box for HSR and secured rights for HSR use of four tracks in the station in perpetuity.

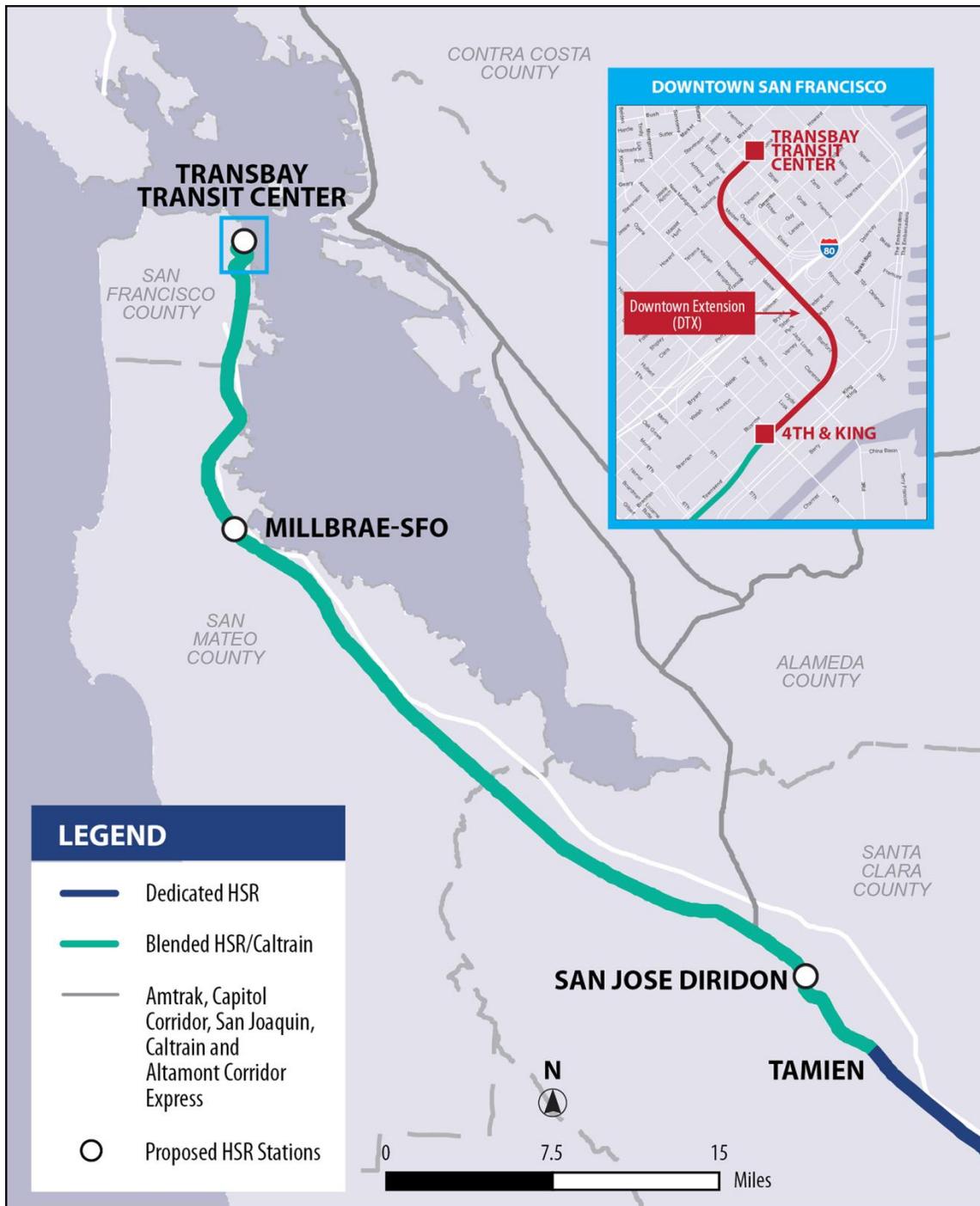


Figure 1-3 San Francisco to San Jose Project Section

support FRA funding the HSR train box and securing HSR rights to use four tracks in the TTC station in perpetuity. In 2012, a Supplemental EIS/EIR was initiated to address adjustments to the DTX tunnel design. FRA is a cooperating agency for the preparation of the *Transbay Transit Center Program Draft Supplemental EIS/EIR* (U.S. DOT, FTA, FRA, TJPA 2015), published December 28, 2015.

The San Francisco to San Jose Project EIR/EIS will focus its Tier 2 analysis on HSR service and infrastructure within the geographic area between the 4th and King Station and the San Jose Diridon Station, which has not been studied in a Tier 2 environmental document. Relevant information and analysis from the final Transbay Terminal/ Downtown Extension Project EIS/EIR (U.S. DOT, FTA, CCSF, PCJPB, SFRA 2004) and TTC Program Supplemental EIS/EIR (U.S. DOT, FTA, FRA TJPA 2015) will be incorporated by reference where appropriate.

1.1.4 The High-Speed Rail Environmental Review Process

The Authority and FRA have prepared two Tier 1 environmental documents for the HSR system under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). In 2005, the Authority and FRA issued a statewide *Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System* (Authority and FRA 2005), which evaluated the ability of the HSR system to meet the existing and future capacity demands on California's intercity transportation system and identified general corridors and station locations in most of the state. At the conclusion of the Tier 1 environmental process, the Authority and FRA made the following decisions: selected the high-speed train alternative over no project or expanded freeways and airports (the modal alternative) to meet California's growing intercity transportation needs; selected high-speed steel-wheel on steel-rail train technology; selected corridor alignments and station locations for most of the statewide HSR system to analyze further in project-level EIR/EIS project documents; and adopted Tier 1 mitigation strategies to carry forward into the project-level analysis. The Final Program EIR/EIS (Authority and FRA 2005) identified a broad corridor between the San Francisco Bay Area and Central Valley for additional review in another Tier 1 EIR/EIS.

After the completion of the Final Program EIR/EIS (Authority and FRA 2005) in 2005, the Authority and FRA prepared a second Tier 1 EIR/EIS, the *Final Bay Area to Central Valley High-Speed Train (HST) Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS)* (Authority and FRA 2008) to identify a corridor alignment and the station locations for the connection between the San Francisco Bay Area and the Central Valley. At the conclusion of the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) process, the Authority and FRA selected a Pacheco Pass connection, corridor alignments, and station locations for further second-tier evaluation. Components of the preferred corridor between San Francisco and San Jose included shared use of a dedicated four-track HSR system along the Caltrain corridor, stations in downtown San Francisco at the TTC, Millbrae, and in downtown San Jose at Diridon and a potential mid-peninsula station.

As a result of CEQA litigation, the Authority rescinded its certification of the Bay Area to Central Valley Final Program EIR (Authority 2012c), its approval of the Pacheco Pass Network Alternative serving San Francisco via San Jose, and related documents. The Authority then prepared and certified the *Bay Area to Central Valley High-Speed Train Revised Final Program EIR* (Authority 2010) and selected the Pacheco Pass connection, corridor alignments, and station locations for further Tier 2 evaluation. A second legal challenge resulted in the Authority preparing a *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012a). The Authority certified the Partially Revised Final Program EIR (Authority 2012a) in April 2012 (Authority 2012d) and reaffirmed the Pacheco Pass connection, corridor alignments, and station locations for second-tier evaluation. On July 24, 2014, the California Third Court of Appeal issued a decision finding that the Program EIR fully complied with CEQA on three issues that had been disputed in the lawsuit challenging the Authority's earlier Revised Final Program EIR (Authority 2010), including the ridership model, the range of alternatives, and assessment of vertical profile options for San Francisco to San Jose.

These Tier 1 decisions established the broad framework for the HSR system and shaped the scope of issues and project elements for consideration and decision in the second Tier 2 environmental process. This Tier 2 EIR/EIS is based on the train technology and vehicle types selected at the conclusion of the Tier 1 process. Many mitigation strategies adopted at the Tier 1 level have been incorporated directly into the Tier 2 description as project design features, while other mitigation strategies have been refined and will apply as specific mitigation measures as discussed further in Chapter 3. The Authority and FRA developed this EIR/EIS in consultation with resource and regulatory agencies, including the Surface Transportation Board (STB), which has jurisdiction over the construction and operation of new interstate rail lines. FRA and the Authority intend this document to be sufficient to support the U.S. Army Corps of Engineers (USACE) Section 404 and Section 408 permit decisions (as applicable).

1.1.5 Lead Agencies, NEPA Cooperating Agencies, and CEQA Responsible Agencies

For the California HSR System, FRA is the lead federal agency for complying with NEPA and other federal laws. FRA administers the High-Speed Intercity Passenger Rail Program and has awarded California \$3.48 billion in grant funding for HSR system environmental studies and construction in the Central Valley. FRA also has primary responsibility for developing and enforcing railroad safety regulations in accordance with Title 49 United States Code, Subtitle V, Part A (49 U.S.C. § 20101 et seq.), the Rail Safety Improvement Act of 2008 (Public Law 110-432). The Authority is a joint-lead agency under NEPA and the CEQA Lead Agency.

Two cooperating agencies participate in the NEPA review process. The USACE agreed by letter, dated December 30, 2009, to act as a cooperating agency. The STB, by letter dated May 2, 2013, is also a cooperating agency under NEPA because of its authority to approve project construction.¹⁴ Multiple other federal agencies have been involved and contributed to the environmental review, including the U.S. Environmental Protection Agency (USEPA), U.S. Fish and Wildlife Service, National Marine Fisheries Service, National Park Service, and the Advisory Council on Historic Preservation.

A number of California agencies (state and regional) would serve as CEQA responsible agencies for the San Francisco to San Jose Project Section. These include: California Department of Fish and Wildlife, California Department of Transportation, California Public Utilities Commission, California State Lands Commission, State Water Resources Control Board, Bay Area Conservation and Development Commission, and the Bay Area Air Quality Management District. The Final EIR/EIS can be used by these agencies either through the provisions of CEQA Guidelines Section 15220 et seq. or CEQA Guidelines Section 15096 to approve or permit aspects of the HSR project.

1.1.6 Consistency with Federal Transportation Policy

In 2008, Congress enacted a major reauthorization of intercity rail passenger programs, creating a new priority for rail passenger services in the nation's transportation system. The Passenger Rail Investment and Improvement Act of 2008 (Division B of Public Law 110-432) authorized the appropriation of federal funds to support high-speed and intercity rail passenger service implementation, including authority for the Secretary of Transportation to establish and implement a high-speed rail corridor development program. In the American Recovery and Reinvestment Act of 2009 (Public Law 111-5), Congress appropriated \$8 billion in capital assistance for these rail services. Congress provided an additional \$2.5 billion in the Department of Transportation Appropriations Act of 2010 (Title I, Division A of the Consolidated Appropriations Act, 2010). The Full-Year Continuing Appropriations Act, 2011 (Public Law 112-110) reduced available funding by \$400 million. FRA also issued a Strategic Plan, *A Vision for High-Speed Rail in America* (FRA 2009), describing the agency's plan for intercity passenger rail development and

¹⁴ The Surface Transportation Board (STB) is a bipartisan, independent adjudicatory body. The Board was established by the ICC Termination Act of 1995 (49 U.S.C. §10101 et seq.; Public Law 104-88, December 29, 1995) to assume some, but not all, functions of the ICC. STB has jurisdiction over the construction and operation of new interstate rail lines (49 U.S.C. 10901, 10502).

subsequent program guidance to implement the High-Speed Intercity Passenger Rail Program with Congressional funding.

The HSR system also is consistent with recent expressions of federal multimodal transportation policy—most notably, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, the Transportation Equity Act for the 21st Century (Public Law 109-59, August 10, 2005), and its predecessor, the Intermodal Surface Transportation Efficiency Act of 1991 (Public Law 102-240, December 18, 1991). These encourage public transportation investment that increases national productivity and domestic and international competition, while improving safety, social and environmental conditions. Specifically, these policies encourage investments that offer the following benefits:

- Link all major forms of transportation
- Improve public transportation systems and services
- Provide better access to seaports and airports
- Enhance efficient operation of transportation facilities and service

In December 2015, President Barack Obama signed the *Fixing America’s Surface Transportation Act* (FAST Act) into law. As the most current expression of federal multimodal transportation policy, the FAST Act seeks to improve surface transportation infrastructure, including roads, bridges, transit systems, and the passenger rail network.

1.2 Purpose of and Need for the High-Speed Rail System and the San Francisco to San Jose Project Section

1.2.1 Purpose of the High-Speed Rail System

The Tier 1 EIR/EIS established the purpose of the HSR system, and identified and evaluated alternative HSR corridor alignments and stations as part of a statewide HSR system. The purpose of the statewide HSR system is to provide a reliable high-speed electrified train service that links the major metropolitan areas of the state and that delivers predictable and consistent travel times. A further objective is to provide an interface with commercial airports, mass transit, and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California’s unique natural resources (Authority and FRA 2005).

1.2.2 Purpose of the San Francisco to San Jose Project Section

The Project’s purpose is to implement the California HSR System to provide the public with electric-powered HSR service that offers predictable and consistent travel times between San Francisco and San Jose, facilitates connectivity to the San Francisco and San Jose International airports, mass transit, the San Francisco Bay Area highway network, and to the statewide HSR system to:

- Achieve HSR service that meets Proposition 1A travel time using blended train operations in the Caltrain corridor
- Provide blended system infrastructure that supports commercially feasible HSR, while also minimizing environmental impacts and maximizing compatibility with communities along the rail corridor
- Establish an HSR connection to the economic center of northern California

A further purpose of the San Francisco to San Jose Project Section is to construct, maintain, and operate an electrified, high-speed train system, which includes the construction, improvement, upgrade, operation, and maintenance of new and existing facilities and infrastructure necessary to support the system connecting the Transbay Transit Center in San Francisco to Diridon Station in San Jose. Consistent with state law and to minimize environmental impacts by providing a

High-speed rail stations

The HSR stations support existing and planned transit-oriented development, while providing an interface with San Francisco and San Jose Mineta international airports, regional and local mass transit services, and the San Francisco Bay Area highway network.

reduced HSR footprint, the system will “blend” with the existing Caltrain system through the primary use of a two-track configuration, incorporating “common-level”¹⁵ boarding platforms at stations shared with Caltrain, and using existing transportation corridors and rights-of-way. The system would be designed and operated to provide consistent and predictable travel, capable of achieving a nonstop service travel time of 30 minutes between San Francisco and San Jose.

1.2.3 Overall Project Purpose Statement Pursuant to Clean Water Act Section 404(b)(1) Guidelines

For Section 404(b)(1) compliance, the USACE must take into consideration the Authority’s needs in the context of the geographic area and type of the proposed Project. FRA, the Authority, USACE, and USEPA signed a MOU in November 2010 to integrate NEPA and Section 14 of the Rivers and Harbors Act (Section 408) and 404 of the Clean Water Act permitting processes. The Project may require an individual permit under Section 404 authorizing fill of jurisdictional water. The USACE cannot authorize fill under an individual permit if there is a “practicable alternative” to the proposed project which would have a less adverse effect on the aquatic system, so long as the alternative does not have other significant adverse environmental consequences (40 C.F.R. Section 230.10(a)). An alternative is “practicable” if it “is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purposes.” For Section 404 of the Clean Water Act, the overall project purpose is to construct and maintain HSR service between San Francisco and San Jose that blends with the Caltrain system, incorporates common-level boarding, and is capable of a thirty minute travel time.

The USACE and USEPA concurred as part of the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008) that the San Francisco to San Jose Caltrain corridor was the most likely to contain the least environmentally damaging practicable alternative (LEDPA) (Authority and FRA 2010). The Authority and FRA, in cooperation with USACE and USEPA, will identify a proposed LEDPA among the project alternatives that will be developed for this corridor if an individual permit is required. The MOU provides a structure for this process, with Checkpoint A describing the Purpose and Need, Checkpoint B describing the range of alternatives, and Checkpoint C identifying the LEDPA among the range of alternatives.

1.2.4 CEQA Project Objectives of the High-Speed Rail System in California and in the San Francisco to San Jose Project Section Area

The Authority’s statutory mandate is to plan, build, and operate a HSR system coordinated with California’s existing transportation network, particularly intercity rail and bus lines, commuter rail lines, urban rail lines, highways, and airports. As the CEQA lead agency, the Authority is subject to specific CEQA EIR content and processing requirements. CEQA Guidelines Section 15124 requires an EIR to include a statement of objectives that will support the underlying purpose of the project. In response to its statutory mandate and CEQA requirements, the Authority has adopted the following objectives and policies for the proposed HSR system and the San Francisco to San Jose Project Section:

- Provide intercity travel capacity to supplement critically over-used 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 transit systems, airports, and highways

¹⁵ “Common-level” boarding platforms are level with the interior doors of trains such that a passenger transferring from one train to a second train is not required to climb up or down steps to gain access the second train on the same platform.

- 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 2030 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 (VMT) for intercity trips
- Provide blended system infrastructure that supports a viable operation plan for HSR, while also minimizing the environmental impacts and maximizing compatibility with Peninsula communities

The approximately 48-mile-long San Francisco to San Jose Project Section is an essential component of the statewide HSR system. As the northern San Francisco Bay Area terminus of the HSR system it would provide access to a new transportation mode; contribute to increased mobility along the Caltrain corridor and throughout California; and connect the San Francisco Bay Area to the rest of the statewide HSR system via three counties: San Francisco, San Mateo, and Santa Clara as shown on Figure 1-3. As a major population and economic center for California, the San Francisco Bay Area contributes significantly to the statewide need for a new intercity transportation service that would connect San Francisco with Los Angeles and other regions of the state. Figure 1-4 shows the location of the San Francisco to San Jose Project Section within California.

1.2.5 Statewide and Regional Need for the High-Speed Rail System in the San Francisco to San Jose Project Section

The capacity of California's intercity transportation system, including San Francisco, the Peninsula and South Bay,¹⁶ is insufficient to meet existing and future travel demand. The current and projected future system congestion will result in deteriorating air quality, reduced reliability, increased travel times, more accidents and increasing greenhouse gas emissions. The current statewide and regional transportation system has not kept pace with the significant increase in population, economic activity, and tourism in the state, including that in the San Francisco Bay Area. The interstate highway system, commercial airports, and conventional passenger rail system serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future growth over the next 25 years and beyond. Moreover, the feasibility of expanding many major highways and key airports is uncertain, as some needed expansions might be impractical or constrained by physical, regulatory, environmental, political, and other factors. The need for improvements to intercity travel in California, including intercity travel between San Francisco, the Peninsula and San Jose relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand within the San Francisco Bay Area
- Capacity constraints that will result in increasing congestion and travel delays, including those in the San Francisco Bay Area, particularly in the Peninsula and South Bay areas
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourists in California, including within the Peninsula and South Bay areas

¹⁶ The South Bay refers to Santa Clara County.



Figure 1-4 Statewide High-Speed Rail System—San Francisco to San Jose Project Section

- Reduced mobility as a result of increasing demand on limited modal connections among major airports, transit systems, and passenger rail in the state, including within the Peninsula and South Bay areas
- Poor and deteriorating air quality and pressure on natural resources as a result of expanded highways and airports and urban development pressures, including those in the San Francisco Bay Area
- Legislative mandates to moderate the effects of transportation upon climate change, including required reductions in greenhouse gas emissions caused by vehicles powered by the combustion of carbon-based fuels

The major population, economic, and political centers lie on the coasts of northern and southern California and in the Central Valley. The following sections provide additional information about the factors contributing to the need for the San Francisco to San Jose Project Section and how implementing the HSR project between San Francisco and San Jose addresses these needs.

1.2.5.1 Future Growth and Demand for Intercity Travel

Population and Employment

Between 2010 and 2040, the Department of Finance projects California population to increase by almost 10 million residents, from about 37 million to 47 million (more than 26 percent growth) as shown in Table 1-1, and to continue to grow steadily to about 50 million people by 2050 (California Department of Finance 2014). County growth rates are similar to the statewide projected growth. The Department of Finance projects the total three-county population to increase by 28 percent.

Table 1-1 Population Growth in California and the Counties of the San Francisco to San Jose Project Section

Area	Population		
	2010	2040 (projected)	Percent Growth 2010 to 2040
San Francisco County	808,850	1,027,004	27%
San Mateo County	719,446	874,626	22%
Santa Clara County	1,785,089	2,331,887	31%
Counties of the San Francisco to San Jose Project Section ¹	3,313,385	4,233,517	28%
California	37,341,978	47,233,240	26%

Source: California Department of Finance 2014.

¹ San Francisco to San Jose Project Section Region includes San Francisco, San Mateo, and Santa Clara counties.

Between 2010 and 2040, the Association of Bay Area Governments (ABAG) and MTC project that the San Francisco Bay Area nine-county region would add 1.1 million jobs, for a total of 4.5 million (ABAG and MTC 2013). Almost 40 percent of these jobs would be in the region's three largest cities—San Francisco, San Jose, and Oakland. Nine of the 15 San Francisco Bay Area cities expected to experience the greatest job growth are located in the Silicon Valley because of the growth of the knowledge sector (ABAG and MTC 2013).

San Francisco is presently the second largest employment center in California and Silicon Valley, in Santa Clara County, is the country's largest high-tech employment center. The region also enjoys high employment in the professional services, health and education, and leisure and hospitality sectors. According to the San Francisco Convention and Visitors Bureau, San Francisco hosted 16.9 million visitors in 2013 (San Francisco Tourism Board 2014). As shown in Table 1-2, the lower unemployment rates and higher incomes indicate an abundance and wide range of high-level job opportunities within the counties along the San Francisco to San Jose Project Section.

Table 1-2 Unemployment and Income in California and in the Counties of the San Francisco to San Jose Project Section

Area	Unemployment Rate (2015)	Per Capita Personal Income (2014)
California	5.8%	\$49,985
San Francisco County	3.3%	\$90,600
San Mateo County	3.1%	\$89,659
Santa Clara County	3.7%	\$74,883

Sources: California Employment Development Department 2016; U.S. Department of Commerce 2015.

The growth of these economic centers, combined with the region's national reputation for education, medicine, and biotechnology, means already congested local roads, highways, airports, and transit systems in the San Francisco Bay Area will face unprecedented demand in the years ahead as people migrate to the state. Operation of HSR between San Francisco and San Jose would reduce stress on the existing transportation systems by reallocating some of the regional demand away from the highways and airports.

The HSR system would serve planned mixed-use developments at the proposed HSR stations in San Francisco, Millbrae and San Jose Diridon. The new housing proposed as part of the station area planning for the HSR stations would bring more employees into the area to help meet the projected job growth. Providing HSR service along the Peninsula would also support the continued growth of the Bay Area economy, providing a new regional transportation service that would allow more direct access to the San Francisco and Silicon Valley economic centers. HSR would not offer a below market, subsidized passenger rail service, but instead would provide rapid long-distance travel, priced at commercial market rates. The pricing structure for HSR fares would be expected to be similar to typical airline fares. The cost of the fares would discourage a daily commute to and from the Bay Area and Los Angeles basin.

Travel Demand

The San Francisco Peninsula and South Bay areas have experienced continued population and employment growth increasing travel demand and commuter traffic throughout the region. Figure 1-5 illustrates the major routes and airports used for intercity and statewide travel among the markets potentially served by the HSR system. The increase in commuter traffic reflects the substantial increase in "reverse commute" trips¹⁷ from San Francisco to Peninsula and South Bay locations over the past decade and the increase in off-peak travel between the San Francisco, Peninsula and South Bay locations (PCJPB 2015). With a growing Peninsula and South Bay population continuing to commute to increasing employment opportunities in San Francisco and, conversely, a growing San Francisco population commuting to increasing knowledge sector jobs in the South Bay, the existing regional transportation infrastructure between San Francisco and

¹⁷ The "reverse commute" is a regularly taken round trip from an urban area (such as within the city of San Francisco) to a suburban area (such as Palo Alto or Mountain View) in the morning and returning in the evening. It typically applies to a trip to work in the suburbs from home in the city.



Figure 1-5 Major Intercity Travel Routes and Airports

San Jose faces challenges in satisfying both regional and statewide travel demand. The HSR system is designed to provide additional capacity for regional and statewide travel.

The jobs/housing ratio is an indicator of the balance between employment and housing in a geographical area and can serve as a rough indicator of the amount of commuter travel demand to or from that geographical area. A low jobs/housing ratio (less than 1.0) suggests that relatively few job opportunities exist for community residents requiring a commute elsewhere for work, while a high ratio (greater than 1.5) suggests a “surplus” of jobs, with employees needing to commute from surrounding areas to fill the available jobs. Table 1-3 presents the 2010 jobs/housing ratio and projected 2040 jobs/housing ratio for the San Francisco to San Jose HSR region.

Table 1-3 Jobs/Housing Ratio: San Francisco to San Jose High-Speed Rail Region, 2010 and 2040

Area	2010			2040 (projected)		
	Jobs	Households	Ratio	Jobs	Households	Ratio
Cities						
San Francisco	568,720	345,810	1.6	759,500	447,350	1.7
Millbrae	6,870	7,990	0.9	9,300	11,050	0.8
Redwood City	58,080	27,960	2.1	77,480	36,860	2.1
Palo Alto	89,690	26,490	3.4	119,470	34,370	3.5
Mountain View	47,950	31,960	1.5	63,590	41,800	1.5
San Jose	377,140	301,370	1.3	524,510	432,030	1.2
Counties						
San Francisco	568,720	345,810	1.6	759,500	447,350	1.7
San Mateo	345,200	257,840	1.3	445,080	315,090	1.4
Santa Clara	926,260	604,200	1.5	1,229,530	818,390	1.5

Source: Association of Bay Area Governments and Metropolitan Transportation Commission, *Plan Bay Area 2040 Final, Appendix 1 Forecast of Jobs, Population and Housing*, July 2013.

Because the three counties traversed by the San Francisco to San Jose Project Section have more jobs than housing, workers are commuting into these counties. By 2040, the projected increase in jobs/housing ratios in the three counties would generate more employees on the freeways, on commuter rail systems, and on regional and local bus systems commuting from surrounding areas. A similar trend is evident for several of the cities along the Peninsula. The jobs/housing ratio projections provide another indication that the economic growth in the communities along the Peninsula will continue to increase travel demand for intercity travel services. The widening gap between population and employment growth and roadway capacity expansion means that a growing pool of the region’s residents will face congested travel conditions that will persist for longer periods of time as more drivers adjust their time of travel to avoid the most heavily congested peak period commuter hours.

1.2.5.2 Capacity Constraints, Increasing Congestion, and Travel Delays

Highways

The existing freeway infrastructure in San Francisco, the Peninsula, and South Bay is overburdened by rapidly growing population and employment and the associated demand for transportation services. Existing demand for travel between San Francisco and San Jose via US 101 and I-280 regularly exceeds existing highway capacities, resulting in congestion that is increasing in both frequency and duration (PCJPB 2015). According to the most recent MTC Vital Signs data (MTC 2015), seven of the San Francisco Bay Area’s 20 most congested highway segments (in

terms of commuter time spent in congestion) occur within the San Francisco to San Jose HSR Project Section study area. As shown on Figure 1-6, these segments are primarily along US 101 and highways accessing San Jose.



Figure 1-6 Most Congested Highway Segments

The most congested highway segments include the following (ranked in order of congestion, with most congested segment first):

1. US 101 traveling southbound in the evening, between Fair Oaks Avenue and Oakland Road in Santa Clara County
2. US 101 traveling northbound in the evening, between I-280 and the western end of the San Francisco-Oakland Bay Bridge in San Mateo and San Francisco counties
3. US 101 traveling northbound in the morning, between Story Road and Montague Expressway/San Tomas Expressway in Santa Clara County
4. US 101 traveling northbound in the evening, between Woodside Road and Hillsdale Boulevard in San Mateo County
5. I-280 traveling southbound in the evening, between SR 87 and South 11th Street in Santa Clara County
6. US 101 traveling southbound in the morning, between Broadway and Hillsdale Boulevard in San Mateo County
7. I-680 traveling southbound in the morning, between King Road and Wolfe Road in Santa Clara County

Mobility data for the San Francisco-Oakland and San Jose urban areas indicate that 52 percent of peak VMT in 2014 occurred in congested conditions. Considering such factors as delay duration, value of time, and amount of excess fuel consumed, the cost of congestion can be translated into annual costs of \$1,675 to the peak automobile commuter in San Francisco-Oakland, and \$2,230 to the peak automobile commuter in San Jose (Urban Area Report 2014). Congestion and daily delay throughout the study area, particularly on US 101 and I-280, will continue to increase if no roadway improvements are made, constricting movement within the corridor and stifling economic growth in San Francisco, the Peninsula, and the South Bay.

What is VMT?

Vehicle miles traveled, or VMT, is a measurement of miles traveled by vehicles within a specific region for a specific period of time.

Airports

The demand for air travel has been growing steadily in California and regional transportation plans forecast continued growth in air travel over the next decades. Between November 2014 and October 2015, Los Angeles to San Francisco was the second busiest air travel route in the United States, with 3.68 million trips (U.S. DOT 2015a). Annual passenger demand at the San Francisco International Airport (SFO), the Bay Area's only primary large hub airport,¹⁸ has already increased from 37.4 million passengers in 2009 to 44.9 million in 2013, a 20 percent increase in four years (Airports Council International 2014).

Both SFO and Los Angeles International Airport are among the most capacity-constrained airports in the nation. A Federal Aviation Administration study that examined future demand and operational capacity identified both airports as needing additional capacity by 2030 even with planned improvements (FAA 2015). This report notes that SFO is an example of a capacity-constrained airport where new runway construction may not be a feasible solution. The study concludes that other solutions, including regional sharing of air travel among local airports, market mechanisms, and consideration of high-speed ground travel modes, will be needed to alleviate the demand and capacity constraints.

¹⁸ The FAA categorizes public-use airports based on the level of commercial air passenger traffic through each facility. Airports are categorized into primary airports (with more than 2,500 passenger boardings annually and receiving scheduled passenger aircraft service) and nonprimary, or general aviation airports (with no scheduled passenger service or scheduled service with less than 2,500 passenger boardings annually) (FAA 2012). Primary airports are further subdivided by commercial air passenger volume into large hub, medium hub, small hub, and nonhub. General aviation airports are further subdivided by geographic service into national, regional, local, and basic.

As early as 1998, SFO undertook studies to address capacity constraints associated with the airport's existing runway configuration. These studies included plans for new runways to be constructed on fill placed in San Francisco Bay, since expansion of the airport inland is not feasible. Because of environmental concerns and public opposition, SFO withdrew the expansion plans, and in 2008 the San Francisco Board of Supervisors passed a resolution that no additional fill should be placed in San Francisco Bay for new or reconfigured runways at SFO (CCSF 2008). With these constraints, SFO likely will be forced to reduce air service on intercity travel markets with high levels of service (such as between Los Angeles International Airport and SFO). The proposed Millbrae HSR station would provide a direct connection between the HSR system and SFO. The HSR system, including the San Francisco to San Jose Project Section, would help to alleviate these capacity constraints at SFO by providing a new transportation mode between San Francisco and Los Angeles, and improving regional transportation to southern California and the Central Valley.

The San Francisco Bay Area's two primary medium hub airports—the Norman Y. Mineta San Jose International Airport and the Metropolitan Oakland International Airport—are projected to increase their annual passenger demand from 9.4 million passengers in 2014 to 17.6 million by 2027 at San Jose International Airport, an 87 percent increase (City of San Jose 2015), and from 18 million annual passengers in 2010 to 30 million at the Oakland International Airport by 2025, a 67 percent increase (Port of Oakland 2006). Some projected air travel demand may be absorbed by these medium hub airports and by external airports in the larger market area, such as Sacramento, Stockton, and Monterey airports. However, the external airports offer fewer flights and destination locations than the medium hub airports. As such, the external airports are not as attractive to the business commuter or international and national tourist travelers as the medium hub airports.

The HSR system would allow air passenger diversion from San Francisco Bay Area airports and would serve passengers who would normally fly from the San Francisco Bay Area to Los Angeles, Burbank, and Orange County. The California cities that would be served by HSR include 5 of the top 15 Bay Area domestic air passenger markets and 26 percent of all domestic passengers served from the three San Francisco Bay Area airports (Regional Airport Planning Committee 2011). Air passengers would be diverted to HSR by a combination of factors, such as frequent, reliable service, competitive fares, and arriving closer to their final destinations.

1.2.5.3 Unreliability of Travel

San Francisco, San Mateo and Santa Clara counties are served primarily by the US 101 and I-280 freeways. In 2014, freeway travel time during the peak period in the San Francisco-Oakland urban areas was 1.5 times as long as during low-volume conditions (Urban Mobility Scorecard 2015). This is the second worst in the state of California (behind the Los Angeles-Long Beach-Anaheim area), and the fourth worst nationally. In the San Jose area, freeway travel time took 1.43 times as long as during low-volume conditions. On another index measuring freeway commuter stress, the San Francisco-Oakland urban area ranked worst in the nation (Urban Mobility Scorecard 2015). As congestion worsens, daily peak travel periods will extend for longer periods of time.

The California Highway Patrol publishes an annual summary of accident data for state highways. According to those statistics, 3,104 fatalities and 156,909 nonfatal injuries occurred on California highways in 2013, which corresponds to a fatality rate of 0.94 per 100 million VMT (California Highway Patrol 2015). With more vehicles on the intercity highways, the potential for accidents will continue to increase resulting in increased travel delays as incidents are cleared. As delays on the freeways increase, overall system reliability tends to decrease. Implementation of HSR in the San Francisco to San Jose Project Section would offer a reliable and predictable alternative transportation option to highway travel.

Weather conditions in San Francisco, San Mateo and Santa Clara counties can adversely affect highway travel time reliability. Rain and wind can make the roads dangerously slick, while fog and glare can reduce visibility and distract drivers, increasing accident rates.

Weather conditions near SFO (primarily fog) are a key factor in flight delays, which adversely affect air travel reliability. From December 2014 to November 2015, weather was the cause of over 57 percent of flight delays at SFO, the highest in the nation among major airports (U.S. DOT 2016). At SFO, capacity is highly dependent on weather conditions and whether aircraft pilots are allowed to follow visual flight rules (in good weather) or instrument flight rules (in poor weather). Implementing the San Francisco to San Jose Project Section HSR would offer a transportation option that is less affected by weather conditions than driving or flying and, therefore, a more reliable and predictable option.

The reliability of rail travel along the Caltrain corridor is adversely affected by collisions and fatalities primarily associated with the joint use of the rail corridor by both passenger and freight rail services, and to the proximity of pedestrians and motor vehicles to trains at and along grade crossings. According to the FRA, in 2014, California ranked third for most highway-rail grade crossing collisions in the nation, first for highway-rail grade crossing fatalities with 33 fatalities, and first in pedestrian rail trespass fatalities with 93 fatalities (OLI 2014a, 2014b, 2014c). During 2014 Caltrain reported one highway-rail crossing fatality and eight pedestrian rail trespass fatalities (FRA 2015). A partial reporting for Caltrain as of August 2015 shows an increase from one to two highway-rail grade crossing fatalities and from 8 to 12 pedestrian rail trespass fatalities (FRA 2015) along the Caltrain corridor. Grade crossing safety is a high priority for Caltrain, FRA, the Authority, and the California Public Utilities Commission. Highway-rail crossing improvements such as four-quadrant gates and other improvements under consideration would improve safety at existing grade crossings by reducing pedestrian, rail, and vehicle conflicts, which would increase the reliability of travel along this corridor.

1.2.5.4 Limited Modal Connections

Statewide, modal connections among intercity travel facilities (primarily airports) and the extensive network of urban and commuter transit systems are often limited or cumbersome, involving multiple transfers and long waits, though improvement has been made in recent years. The HSR system would provide new and improved high-speed connections to intermodal facilities, including major airports and regional transit, throughout the state. In the San Francisco Bay Area, a major effort to strengthen these connections to local and regional transit systems is underway. For example, the Millbrae Station offers a connection to SFO via cross-platform service between BART and Caltrain and serves as a regional bus transit hub with multiple bus bays served by SamTrans lines. Access to SFO for passengers outside the region currently requires a combination of local and regional transit. Providing HSR service at the Millbrae Station would offer passengers from east of Gilroy and the Central Valley a more direct connection to SFO.

The Transbay Joint Powers Authority is constructing the TTC in downtown San Francisco, which will serve as a local and regional transit hub for AC Transit, BART, Caltrain, Golden Gate Transit, Greyhound, SamTrans, San Francisco Municipal Railway, WestCAT Lynx, Amtrak, and Paratransit buses. It will also accommodate an extension of the Caltrain rail line from its current terminus at 4th and King Streets, bringing Caltrain commuter rail service and HSR service to the TTC. The TTC is designed to include an underground walkway connection to the BART system, which offers more than 100 miles of modern, heavy rail service throughout the counties of San Francisco, San Mateo, Alameda, Contra Costa, and eventually, Santa Clara.

In San Jose, the Diridon Station provides transit connectivity among Caltrain, Santa Clara Valley Transportation Authority (VTA) buses and light rail routes, the Capitol Corridor (intercity passenger rail service between Sacramento and San Jose), Altamont Corridor Express trains (commuter rail service between Stockton in the Central Valley and San Jose), and Amtrak service (connecting the San Francisco Bay Area with southern California). In addition, BART has a planned extension to Diridon Station that will provide transit connectivity around the San Francisco Bay. Providing HSR service at the Diridon Station would expand the intercity modal connections to the Central Valley and southern California.

HSR service between San Francisco and San Jose would provide a substantial mobility option at the TTC and Diridon Station. The service would expand linkages to a number of bus, light-rail, and commuter rail services for intercity travelers to other areas in the San Francisco Bay Area and beyond.

1.2.5.5 Deterioration of Air Quality and Natural Resources

Air Quality

Under the Clean Air Act (CAA), USEPA established nationwide air quality standards to protect public health and welfare with an adequate margin of safety. The federal standards (National Ambient Air Quality Standards) represent the maximum allowable atmospheric concentrations for ozone (O₃), particulate matter (particulate matter smaller than or equal to 10 microns in diameter (PM₁₀) and particulate matter smaller than or equal to 2.5 microns in diameter (PM_{2.5})), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. The CAA defines nonattainment areas as geographic regions designated as not meeting one or more of the National Ambient Air Quality Standards. The CAA requires that a state implementation plan be prepared for each nonattainment area and a maintenance plan be prepared for each former nonattainment area that subsequently demonstrates compliance with the standards. A state implementation plan is a compilation of a state's air quality control plans and rules that the USEPA has approved.

Metropolitan areas will continue to be challenged to reduce emissions to acceptable levels because of the growing number of vehicles and to maintain air quality standards by encouraging more efficient use of land resources, improving mobility, and providing alternative transportation facilities and services. Policies aimed at reducing the trip demand in single-occupant vehicles are integral to all transportation plans and programs to help areas currently in nonattainment status to conform to federal air quality standards. The San Francisco Bay Area exceeds federal and state air quality standards for ozone and the state standard for particulate matter (PM₁₀) (BAAQMD 2015). The projected population growth in the San Francisco Bay Area will result in an increase in VMT, and thus, in the volume of pollutants emitted by motor vehicles.

One statewide strategy adopted in the California State Implementation Plan is the development of multi-use transportation corridors. They include designated lanes for high-occupancy vehicles, the addition of more transit, and the inclusion of rail modal options. To meet federal and state air quality standards over the next 20 to 40 years, the Bay Area will need to require reductions in VMT, integrated land use and transportation planning and development, transportation demand strategies, operational improvements, and new technologies that improve transportation efficiencies and increase transportation alternatives to the single-occupant automobile. The electric-powered HSR system offers an additional transportation option to the single-occupant vehicle and would reduce VMT in support of the California State Implementation Plan.

Natural Resources

In addition to improving and maintaining the state's air quality, the protection and preservation of natural resources by limiting potential impacts related to expanding freeway and airport facilities is also a critical need. Key resources include wetlands and waterways, habitat areas for sensitive species of plants and animals, wildlife migration corridors, and agricultural lands. These natural resources have been subject to both direct and indirect impacts as the population has increased and growth has occurred in the state's less developed areas. Avoiding and minimizing impacts to sensitive natural resources is a guiding criterion in the environmental review process of the HSR system. The HSR system provides intercity travel capacity to supplement over-used interstate and state highways and commercial airports limiting the need for constructing new freeway and airport facilities.

The projected population growth in San Francisco and in the communities along the Caltrain corridor in the coming decades will generate ongoing pressure to convert undeveloped lands to urban uses. The San Francisco to San Jose Project Section would ease the pressure to develop open space by expanding transit capacity on an existing rail corridor and at existing transit

centers in San Francisco, Millbrae, and San Jose. Transit center planning by the local communities to increase development densities is already underway at these existing stations that are proposed as future HSR stations. In San Francisco, the TTC project includes residential, commercial, entertainment and a rooftop park; the Millbrae Station Area Plan prepared by the City of Millbrae envisions a mix of residential and commercial uses, and the San Jose Diridon Station area planning project being prepared by VTA) will increase development densities around the station. These transit-oriented developments will provide housing, employment and entertainment opportunities, while minimizing impacts to sensitive natural resources.

1.2.5.6 Legislation to Reduce Greenhouse Gas Emissions

In 2005, California set statewide targets for reducing greenhouse gas (GHG) emissions. Executive Order S-3-05 requires that state agencies reduce their GHG emissions to 2000 levels by the year 2010, to 1990 levels by the year 2020, and 80 percent below 1990 levels by the year 2050. Shortly after the issuance of Executive Order S-3-05, the California State Legislature adopted Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006. It recognizes that California is the source of substantial amounts of GHG emissions. Legislative findings in the law state the following:

The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to the marine ecosystems and that natural environment, and an increase in the incidences of infectious diseases, asthma, and other health-related problems.

To avoid these consequences, AB 32 requires the California Air Resources Board (CARB), the state agency charged with regulating air quality, to create a plan and implement rules to achieve real, quantifiable, cost-effective reductions of greenhouse gases in California. AB 32 requires CARB to design and implement emissions limits, regulations, and other measures to reduce statewide GHG emissions to 1990 levels by 2020. This plan was developed by CARB in 2008 as the *Climate Change Scoping Plan* (CARB 2008), the state's road map to reaching the GHG reduction goals required by AB 32. The Plan supports the implementation of a high-speed rail system to provide more mobility choices and reduce GHG emissions. A 2013 update to the Scoping Plan (CARB 2008) furthers this support by calling for investment in the cleanest, most advanced systems and infrastructure to move people and goods statewide, including HSR, to meet California's long-term air quality and climate objectives (CARB 2014).

Senate Bill (SB) 375, which became law in September 2008, provides a new planning process to coordinate the community development and land use planning process with regional transportation plans (RTP). SB 375 sets priorities to help California meet GHG reduction goals and requires the RTPs prepared by metropolitan planning organizations (MPO) to include a "sustainable communities strategy" or, if infeasible, an "alternative planning strategy" that would support the GHG emission reduction targets for automobiles and light trucks set by CARB. In July 2013, the ABAG/MTC published a final regional transportation plan/sustainable communities strategy known as *Plan Bay Area 2040* (ABAG and MTC 2013), identifying the region's GHG targets of a 10 percent per capita reduction from 2005 by 2020 and 16 percent per capita reduction by 2035.

Metropolitan planning organizations (MPO)

MPOs are federally mandated and federally funded transportation policy-making organizations made up of representatives from local government and governmental transportation authorities. Comprising of representatives from nine counties, the MPO for the San Francisco Bay Area is the Metropolitan Transportation Commission (MTC). The San Francisco to San Jose Section Project occurs entirely within the MTC's planning area.

Carbon dioxide (CO₂) is the transportation sector's primary contribution to climate change, accounting for 37 percent of California's GHG emissions from 2000 to 2013 (CARB 2015). Carbon dioxide emissions from motor vehicles are essentially proportional to the amount of fuel consumed—each 1-percent increase in fuel consumption results in a corresponding 1-percent

increase in carbon dioxide emissions (USEPA 2008). The projected population growth in the San Francisco Bay Area will result in an increase in VMT and the volume of greenhouse gases emitted by motor vehicles. Particulate emissions levels are a direct function of the amount of driving, with road dust caused by moving vehicles accounting for 60 to 80 percent of particulate emissions from mobile sources. Motor vehicle exhaust is a major source of fine particulates and the precursors to ozone. The continued increase in traffic will exacerbate the existing air quality problem and impede the region's ability to attain state and federal ambient air quality standards. Because emissions are directly proportional to the amount of fuel burned, offering effective transportation choices that can reduce driving will be critical for reducing these emissions.

Compared with travel by car, an electric-powered HSR system would reduce CO₂ emissions; an HSR trip from San Francisco to Los Angeles would save 324 pounds of CO₂ and a trip between San Jose and Los Angeles would save 288 pounds of CO₂ compared to the same trip by car (Bay Area Council Economic Institute 2008). The HSR system would also provide a more energy-efficient mode of travel. A train trip on the HSR system would use one-third the energy of a similar trip by air and one-fifth the energy of a car trip (Bay Area Council Economic Institute 2008).

1.3 Relationship to Other Agency Plans, Policies and Programs

The objectives of the California HSR System include providing an interface between the HSR system and major commercial airports, mass transit, and the highway network. Plans and programs that have been considered in the development of the San Francisco to San Jose Project Section alignment and station location options, or that already include recommendations for an HSR project, follow.

1.3.1 California Transportation Plan 2040

The *California Transportation Plan 2040* (CTP 2040) (Caltrans 2016), prepared by California Department of Transportation, provides a long-range policy framework for guiding transportation decisions and investments by all levels of government and the private sector. CTP 2040 (Caltrans 2016) defines goals, performance-based policies, and strategies to achieve the collective vision for California's future statewide, integrated, multimodal transportation system, envisioning a sustainable system that improves mobility and enhances quality of life. Federal and state laws require developing and preparing a state transportation plan and an update every five years.

The CTP 2040 (Caltrans 2016) was initiated in early 2010 with the development of the *California Interregional Blueprint* (Caltrans 2012) in response to Senate Bill 391 (Liu 2009). The CIB is a state-level transportation blueprint that articulates the state's vision for an integrated multimodal transportation system that complements regional transportation plans and land use visions, and provides the foundation for the CTP 2040 (Caltrans 2016), which will conclude with the Plan's approval by the Secretary of the California State Transportation Agency.

The CTP 2040 (Caltrans 2016) update will focus on meeting new trends and challenges, such as economic and job growth, climate change, freight movement, and public health. The HSR will support CTP 2040 (Caltrans 2016) goals, policies, and strategies by providing an efficient and reliable means of transportation that facilitates economic and job growth, by providing electric-powered transportation that reduce greenhouse gas emissions and air pollutants that contribute to climate change, and by providing some relief to California's strained highway and rail systems.

1.3.2 California State Rail Plan

The current State Rail Plan (Caltrans 2013) seeks to improve the frequency of passenger rail travel and on-time performance by implementing capital and operational improvements. Existing freight rail lines do not have adequate capacity to serve both high-frequency freight and high-frequency passenger rail traffic. Therefore, new rail lines must be constructed to accommodate increases in passenger rail traffic. The State Rail Plan (Caltrans 2013) documents and supports the blended system identified in the 2012 Business Plan (Authority 2012b), noting that the business plan provides for the integration, or blending, of the HSR project by upgrading existing rail systems to provide near-term benefits to passengers, while connecting to, and laying the foundation for, the future HSR system. The State Rail Plan (Caltrans 2013) also acknowledges

that Caltrain, the Authority, and the MTC Resolution No. 4056 MOU (MTC 2012) partners have agreed on shared use of the Caltrain corridor for use of up to six Caltrain trains per peak hour in each direction and up to four HSR trains per peak hour in each direction.

1.3.3 Plan Bay Area

Plan Bay Area (ABAG and MTC 2013), adopted in July 2013, is the San Francisco Bay Area's plan to meet the requirements of Senate Bill 375, which requires the state's MPOs to develop a sustainable communities strategy (SCS) to reduce GHG emissions from passenger vehicles. Plan Bay Area (ABAG and MTC 2013), overseen by the MTC and ABAG, serves as the region's SCS and the 2040 Regional Transportation Plan integrating transportation and land use strategies to manage GHG emissions and plan for future population growth. Plan Bay Area (ABAG and MTC 2013) identifies climate protection as a key initiative, with \$630 million to be invested in adopting a regional commuter benefit ordinance, expanding car-sharing services, encouraging vanpool participation, administering a clean vehicles "feebate"¹⁹ program, developing a smart driving education campaign, implementing vehicle buy-back and purchase incentives, expanding the regional electrical vehicle charger network, and expanding successful strategies in its innovative grants program. The electric powered HSR system would reduce greenhouse gas emissions and provide a more energy efficient transportation mode in support of SB 375 and Plan Bay Area (ABAG and MTC 2013) climate initiatives.

The BART extension to San Jose/Santa Clara, Caltrain Electrification, and the TTC and DTX are three of the major transit projects included in Plan Bay Area (ABAG and MTC 2013). These projects are supported by the San Francisco to San Jose Project Section, which would provide connections to BART service in San Jose and along the Caltrain Corridor, contribute funding to electrification of the corridor, share use of the corridor with Caltrain, and provide connections to other local and regional transit services at the San Francisco terminal.

1.3.4 San Francisco Bay Area Regional Rail Plan

The *San Francisco Bay Area Regional Rail Plan* (MTC 2007), adopted by MTC in September 2007, represents a long-term vision for improving the passenger rail system to serve future San Francisco Bay Area travel demand. MTC joined with BART, Caltrain, and the Authority to develop the plan. The Regional Rail Plan (MTC 2007) examines ways to incorporate passenger trains into existing rail systems, improve connections to other trains and transit, expand the regional rapid transit network, increase rail capacity and coordinate rail investment around transit-friendly communities and businesses. Prepared before the Bay Area to Central Valley Program EIR/EIS (Authority and FRA 2008), the Regional Rail Plan (MTC 2007) explores three possible regional rail scenarios, including regional rail without high-speed rail, regional rail with high-speed rail entering from east (Altamont Pass), and regional rail with high-speed rail entering from south (Pacheco Pass). Overall, the plan looks at improvements and extensions of railroad, rapid transit, and high-speed rail services for the near-term (5 to 10 years), intermediate (10 to 25 years), and long-term (beyond 25 years) time frames.

The Regional Rail Plan (MTC 2007) specifically acknowledges the opportunity for high-speed rail to enhance and accelerate regional rail improvements, noting that "a statewide high-speed train network would enable the operation of fast, frequent regional services along the high-speed lines and should provide additional and accelerated funding where high-speed and regional lines are present in the same corridor." The plan also acknowledges that limited-stop high-speed trains could operate along the San Francisco Peninsula along with continued operation of local services. The San Francisco to San Jose Project Section would help satisfy multiple objectives of the Regional Rail Plan (MTC 2007), by incorporating passenger trains into existing rail systems, improving transit connections, expanding the transit network, and increasing rail capacity.

¹⁹ A "feebate" charges a fee to one user, and that fee is used to provide a discount to another user. In Plan Bay Area 2040, it is a one-time, point-of-purchase fee on new vehicles with low miles-per-gallon ratings to fund a rebate program for fuel-efficient vehicles that emit much less pollution (ABAG and MTC 2013).

1.3.5 MTC Resolution No. 4056 Memorandum of Understanding

MTC Resolution No. 4056 (MTC 2012), adopted in March 2012, and its associated MOU summarizes the agreement among the MTC, the Authority, the Peninsula Corridor Joint Powers Board, the San Francisco County Transportation Authority, the San Mateo County Transportation Authority, Valley Transportation Authority, the City of San Jose, the City and County of San Francisco, and the Transbay Joint Powers Authority, to:

- Jointly support and pursue the implementation of a statewide HSR system that utilizes a blended system and operational model on the San Francisco Peninsula Corridor with its northern terminus at the Transbay Transit Center in San Francisco and its southern limit at Mile Post 51.4 at the Caltrain Tamien Station in San Jose
- Jointly recognize a defined set of inter-related projects consistent with the Authority’s phased implementation plan, consistent with a blended system operation of the corridor, and that achieve objectives including, but not limited to system capacity and connectivity for Caltrain, HSR and freight, public safety, operational efficiency, effectiveness and connectivity
- Generally describe, identify and work to fully fund an inter-related program of projects, including the corridor electrification project, advanced signal system (positive train control), DTX to Transbay Transit Center, and a core capacity project of needed upgrades to stations, tunnels, bridges, potential passing tracks and other track modifications and rail crossing improvements

1.3.6 Valley Transportation Plan 2040

The *Valley Transportation Plan 2040* (VTP 2040) (VTA 2014) is the countywide long-range transportation plan for Santa Clara County prepared by VTA, which also acts as the congestion management agency for the county. VTP 2040 (VTA 2014) provides location-specific improvements in three major program areas: highways, local system, and transit. The highways program includes major freeway improvements, local freeway interchanges, and express lanes. The local system includes local roadway improvements, expressway improvements, pedestrian and bicycle projects, and technology-related projects. The transit program includes projects related to transit efficiency and new transit improvements. The VTP 2040 (VTA 2014) capital investment program includes Caltrain and HSR station improvements at San Jose Diridon to accommodate high-speed rail. Additional investments in the Peninsula Corridor were established through MTC Resolution No. 4056 (MTC 2012) and the associated MOU to prepare the corridor for implementation of “blended” Caltrain and high-speed rail operations in the future. VTA was one of the agencies involved in establishing the investment framework for modernizing the Peninsula Corridor that was formalized in the MTC Resolution No. 4056 MOU (MTC 2012).

Implementing HSR along the Peninsula is anticipated in VTP 2040 (VTA 2014) through funding allocations and VTA participation in MTC Resolution No. 4056. HSR would support the vision of VTP 2040 (VTA 2014) by increasing multimodal transportation infrastructure and services and providing benefits to air quality, while reinforcing the link between transportation and land use planning. Providing HSR at the San Jose Diridon Station would enhance the utility and connectivity of VTPs planned transit investments, connecting HSR service to regional rail services such as Caltrain, Altamont Commuter Express, Capitol Corridor, and Amtrak Coast Starlight, VTA light rail, eight VTA bus routes, and Greyhound and Santa Cruz Metro bus lines.

1.3.7 Caltrain Strategic Plan 2015–2024

Caltrain provides inter- and intra-county commuter rail service along the San Francisco Peninsula, including San Francisco, San Mateo, and Santa Clara counties. The Joint Powers Board operates Caltrain 365 days a year with reduced schedules on weekends and major U.S. holidays. Scheduled headways, or the time between arrivals of trains moving in the same direction, vary by time of day, station, and service type. Overall, service is frequent during the peak periods and is provided every hour in both directions during midday periods. Caltrain now carries an average weekday ridership of

Caltrain operations

Current Caltrain weekly operations include a mix of 92 express (Baby Bullet), limited, and local trains.

more than 58,000 (Caltrain 2015). In 2012, the MTC, the Authority, Caltrain and six other San Francisco Bay Area funding partners established an agreement (MTC 2012) to support the blended system and to invest in the Caltrain Modernization Program.

The *Caltrain Strategic Plan* (Caltrain 2014) was developed in the context of the Caltrain Modernization Program. Over the coming decade, the Caltrain Modernization Program will electrify and upgrade the performance, operating efficiency, capacity, safety, and reliability of Caltrain's commuter rail service through the delivery of several key projects. These include the electrification of the existing Caltrain corridor from San Francisco to San Jose; the replacement of a majority of Caltrain's diesel trains with high-performance electric trains; and the implementation of the Communications-Based Overlay Signal System Positive Train Control Project—an advanced signal system that includes federally mandated safety improvements.

1.3.8 San Francisco Transportation Plan 2040

The *San Francisco Transportation Plan* (SFTP) (SFCTA 2013) is the blueprint for San Francisco's transportation system development and investment over the next 30 years. As the congestion management agency for San Francisco, the San Francisco County Transportation Authority (SFCTA) is responsible for developing the plan and overseeing the delivery of the Proposition K half-cent local transportation sales tax program via the *New Transportation Expenditure Plan for San Francisco* (SFCTA 2003), which was approved by San Francisco voters in 2003. This Prop K Expenditure Plan (SFCTA 2003) estimates that by 2040 new growth will result in about 300,000 new transit trips per day on a system that is already strained by crowding and reliability issues. SFCTA also has served since 1990 as the San Francisco program manager for grants from the Transportation Fund for Clean Air. In this role, SFCTA approves funding for transportation projects that directly benefit air quality, through reduced motor vehicle emissions.

The Prop K Expenditure Plan (SFCTA 2003) affirms funding for a few already committed major capital projects including the SFMTA Central Subway Project and the Caltrain Peninsula Corridor Electrification Project. However, the centerpiece of the Prop K Expenditure Plan (SFCTA 2003) is the development of a network of rapid bus and rail transit corridors.

The HSR system would help achieve the goals of the SFTP (SFCTA 2013) by expanding on the city's existing multi-modal transportation networks, creating an attractive travel option and alternative to regional and long-distance automobile use, and further developing an existing rail transit corridor. The major capital project for funding in the 30-year expenditure plan is the DTX to the TTC, which is proposed as the northern terminus for Caltrain and HSR services. The DTX project, which is estimated to cost \$2.6 billion, is not yet fully funded and therefore the date of implementation is uncertain.

1.3.9 San Francisco International Airport Master Plan

SFO is the largest airport serving the San Francisco Bay Area and the ninth-busiest U.S. airport in terms of total passengers and total cargo tonnage. Although located in unincorporated San Mateo County, the airport is owned and operated by the City and County of San Francisco on approximately 5,100 acres just east of Highway 101 and west of San Francisco Bay. To accommodate forecasted growth the approved *San Francisco International Airport Master Plan* (CCSF 1992) addressed landside facilities including the passenger terminal complex, aircraft aprons, air freight facilities, aircraft maintenance hangars, general aviation facilities, and support facilities such as administration, parking, and roadways. A number of projects were delayed because of adverse economic conditions and events of September 11, 2001, causing a drop in passenger levels and aircraft operations. In 2007, passenger levels and airport operations returned to pre-2001 levels and have since steadily increased, supporting the recent completion of some of the planned facilities, including improvements to Terminal 2, the Terminal 3 Boarding Area E, runway safety areas, and the Terminal 3 East Concourse.

The airport served over 23 million passengers in 2014, an increase of 3.2 percent from 2013 volumes (SFIA 2014). The overall total airport passenger traffic was over 46 million in 2014 (SFIA 2014). To accommodate future growth, planned projects include the construction of a new

air traffic control tower and airport-owned hotel, and redevelopment of Terminal 1 and the West Field Cargo Building.

Ground transportation services at SFO include shuttles, taxis, rental cars, ridesharing and limousines/charters. Public transit serving the airport include BART (via SFO AirTrain), Caltrain (via BART to Millbrae Station), and SamTrans bus service directly to the airport terminals. BART provides regional connectivity between the airport and the greater San Francisco Bay Area, including San Francisco, as well as providing a link to Caltrain, via the Millbrae Station. SamTrans bus routes KX, 292, 397, and 398 provide 24-hour bus service between SFO and various points throughout San Mateo County and into parts of San Francisco and Palo Alto. The San Francisco to San Jose Project Section would enhance modal connectivity at Millbrae Station, by adding a regional/statewide transportation option as well as provide HSR travelers from outside the region a convenient connection to SFO and points throughout the Peninsula via the transportation options currently operating at Millbrae Station.

1.3.10 San Jose International Airport Master Plan

The Norman Y. Mineta San Jose International Airport is one of the three primary airports that serve the San Francisco Bay Area. The airport is classified as a medium hub airport by the Federal Aviation Administration and ranked as the 44th busiest airport in terms of total passengers in 2013 (City of San Jose 2015b). It is owned and operated by the City of San Jose on 1,050 acres at the southerly end of San Francisco Bay. The airport is generally bounded by U.S. 101 on the north, the Guadalupe River and State Route 87 on the east, Interstate 880 on the south, and Coleman Avenue and De La Cruz Boulevard on the west. The *Airport Master Plan for Norman Y. Mineta San Jose International Airport* (City of San Jose Airport Department 2011) was approved in 1997 and updated in 2011. It identifies a range of improvements to airside and landside facilities to accommodate the forecasted 2027 air passenger, air cargo, and general aviation demand. Passenger demand fluctuated between 2006 and 2012, largely because of the nationwide recession and associated airline capacity cuts. During this period, the Airport Master Plan (City of San Jose Airport Department 2011) was revised to more closely align project implementation to air passenger and facility demands. The airport served 9.1 million passengers in 2014, a 6.8-percent increase from 2013 passenger volumes (City of San Jose 2015b).

Ground transportation services at the airport include shuttles, taxis, rental cars and limousines/charters. The VTA Route #10 (the VTA Airport Flyer) provides connections from the airport to BART, VTA light rail, Caltrain, Amtrak, and ACE rail services. A new transit link to the airport from VTA's Guadalupe light rail transit line, and from Caltrain and future BART in Santa Clara, using automated people mover technology is part of VTP 2040 (VTA 2014) capital investment program. Implementing the San Francisco to San Jose Project Section would provide HSR service at Diridon Station, which is close to the airport and offers a connection point for high-speed rail and air travelers, increasing modal connectivity at this regional airport.

1.4 High-Speed Rail Authority Business Plans

1.4.1 2012 and 2014 Business Plans

The Authority business plan must comply with California Public Utilities Code Section 185033 by preparing, adopting, and submitting a business plan to the Legislature every two years. In April 2012, the Authority adopted the 2012 Business Plan (Authority 2012b) to communicate the state's vision for delivering a high-speed train system for California. The phased implementation strategy described in the 2012 Business Plan (Authority 2012b) was reaffirmed in the *2014 Business Plan* (Authority 2014).

The 2012 and 2014 Business Plans (Authority 2012b, 2014) are planning documents that describe an HSR system implementation strategy, including a phased approach for constructing and operating the system. The business plans depicted general HSR routes consistent with the adopted statewide HSR system and approved projects between Merced and Bakersfield. These business plans featured a detailed description of the anticipated implementation phasing of each

individual section including construction sequencing. Key elements of the business plans' phased implementation strategy included:

- **Blending** the HSR system in urban areas with improvements to existing rail systems on shared infrastructure to accelerate and broaden benefits, improve efficiency, minimize community impacts, and reduce construction costs while enhancing rail service for travelers throughout the state
- **Early investments** in the “bookends” (i.e., the San Francisco Bay Area and the Los Angeles Basin regions) to upgrade existing facilities and services, build ridership, and lay the foundation for HSR system expansion
- **Early benefits** to Californians by delivering, using and leveraging investments as they are made

Blended Service

Chapter 2 of the 2012 Business Plan (Authority 2012b) described the blended service concept and proposed applications at specific locations along the California HSR System. The elements of a blended system and blended operations from San Francisco to San Jose and the anticipated benefits were described, along with a summary of the process leading to selection of the blended system for the San Francisco to San Jose Project Section. The 2012 Business Plan (Authority 2012b) identified the blended system as the project to be studied in the San Francisco to San Jose Project Section EIR.

Phased Construction

The 2012 and 2014 Business Plans (Authority 2012b, 2014) described the phased implementation strategy for delivering the statewide HSR system that anticipated constructing the 800+ mile statewide HSR system incrementally over time. The plans identified the Merced to San Fernando Valley as the initial operating segment that would connect the San Joaquin Valley with the Los Angeles Basin and its population centers. Construction would then connect north to the San Francisco Bay Area with the San Jose to Merced Project Section—establishing a “Bay to Basin” high-speed rail system. Subsequent construction of the San Francisco to San Jose Project Section and the Los Angeles to Anaheim Project Section would complete the Phase 1 system.

1.4.2 Draft 2016 Business Plan

The Authority released *Connecting and Transforming California - Draft 2016 Business Plan* (Authority 2016) on February 18, 2016. The Draft 2016 Business Plan updates information and forecasts presented in the 2014 Business Plan (Authority 2014) and identifies major anticipated milestones for upcoming years, focusing on construction and program-delivery. The plan includes details on the HSR business model; implementation strategy; capital cost estimates; funding and financing; forecasts for ridership, revenue, and operating costs; and risk management. It also lays out the approach for sequencing the delivery of the HSR system that maximizes current federal and state dollars for the earliest operating HSR line pursuant to Proposition 1A within available funding.

The following three fundamental objectives provide the foundation for decision making as HSR goes forward:

- Initiate high-speed rail passenger service as soon as possible
- Make strategic, concurrent investments throughout the system that will be linked together over time
- Position the Authority to construct additional increments of the HSR system as funding becomes available

Phased Construction

Like the 2014 Business Plan (Authority 2014), the Draft 2016 Business Plan (Authority 2016) describes the phased implementation of the California HSR System. The Draft 2016 Business Plan (Authority 2016), however, presents a new approach to the sequence of system phasing by first connecting the Silicon Valley to the Central Valley for service in 2025. This “Valley to Valley” approach would allow operations to start as quickly as possible, meet Proposition 1A travel speed and time requirements, and use already committed federal and state funds. The first passenger service would operate between San Jose to North of Bakersfield, offering a one-seat ride between these two destinations. The Draft 2016 Business Plan (Authority 2016) supports concurrent investments to deliver early benefits to Southern California in the Burbank-Los Angeles-Anaheim corridor and to Northern California in the San Francisco to San Jose corridor. It also commits to seeking additional funds to extend the San Jose to North of Bakersfield line to San Francisco and Bakersfield for a one-seat ride and acknowledges that extending HSR service from San Jose to San Francisco would significantly increase ridership and revenue.

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