1.0 Project Purpose, Need, and Objectives

1.1 Introduction

The High-Speed Train System: The California High-Speed Rail Authority (Authority) proposes to construct, operate, and maintain an electric-powered high-speed train (HST) system in California. When completed, the nearly 800-mile train system would provide new passenger rail service to more than 90% of the state's population. More than 200 weekday trains would serve the statewide intercity travel market.[1] The HST would be capable of up to 220-mile-per-hour (mph) operating speeds, with state-of-the-art safety, signaling, and automated train control systems. The HST System would connect and serve the major metropolitan areas of California, extending from San Francisco and Sacramento in the north to San Diego in the south (see Figure 1-1).

Following programmatic environmental review, the Authority and the Federal Railroad Administration (FRA) approved the HST System for intercity travel in California and selected corridors for project-level studies. Building a system of such magnitude, complexity, and cost is impractical to implement as a singular project. The Authority divided the HST System into nine project sections allowing phased system implementation. This approach is consistent with provisions of Proposition 1A, the Safe, Reliable, High-Speed Passenger Train Bond Act, adopted by California voters in November 2008.

The Merced to Fresno HST Project: The Merced to Fresno HST Project section would connect a Merced station and a Fresno station. The planned HST line west of the Merced to Fresno Section is through the Pacheco Pass, connecting the San Francisco to San Jose HST Project to the Central Valley and the rest of the HST System. South of the Downtown Fresno Station, the HST line continues to Los Angeles through Bakersfield and Palmdale.

The HST Environmental Review Process: The Authority and FRA prepared environmental documents for the HST System under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Because they were program-wide (Tier 1) documents, the Authority and FRA prepared the Statewide Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (Authority and FRA 2005) evaluating the HST's ability to meet the existing and future capacity demands on California's intercity transportation system and the Bay Area to Central Valley HST Program EIR/EIS (Authority and FRA 2008). Section 1.5, Tiering of Program EIR/EIS Documents, discusses these documents and the process under which this project-level EIR/EIS tiers off the earlier documents, which are collectively referred to as "Program EIR/EIS documents" throughout this EIR/EIS.

The Authority and FRA made the program-level (Tier 1) decisions in coordination with the U.S. Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers' (USACE's) determination that under the federal Clean Water Act, the Pacheco Pass Network Alternative serving San Francisco and Diridon Station in Downtown San Jose is most likely to yield the Least Environmentally Damaging Practicable Alternative (LEDPA).

[1] ''Intercity rail passenger transportation'' is defined at 49 U.S.C. 24102(4) as ''rail passenger transportation except commuter rail passenger transportation.'' Under the High-Speed Intercity Passenger Rail Program (Federal Register Volume 74, No 119, June 23, 2009), an intercity passenger rail service is defined as consisting "of a group of one or more scheduled trains (roundtrips) that provide intercity passenger rail transportation between bona fide travel markets (not constrained by state or jurisdictional boundaries), generally with similar quality and level-of-service specifications, within a common (but not necessarily exclusive or identical) set of identifiable geographic markets. Similarly, ''commuter rail passenger transportation'' is defined at 49 U.S.C. 24102(3) as ''short-haul rail passenger transportation in metropolitan and suburban areas usually having reduced fare, multiple ride, and commuter tickets and morning and evening peak period operations.''

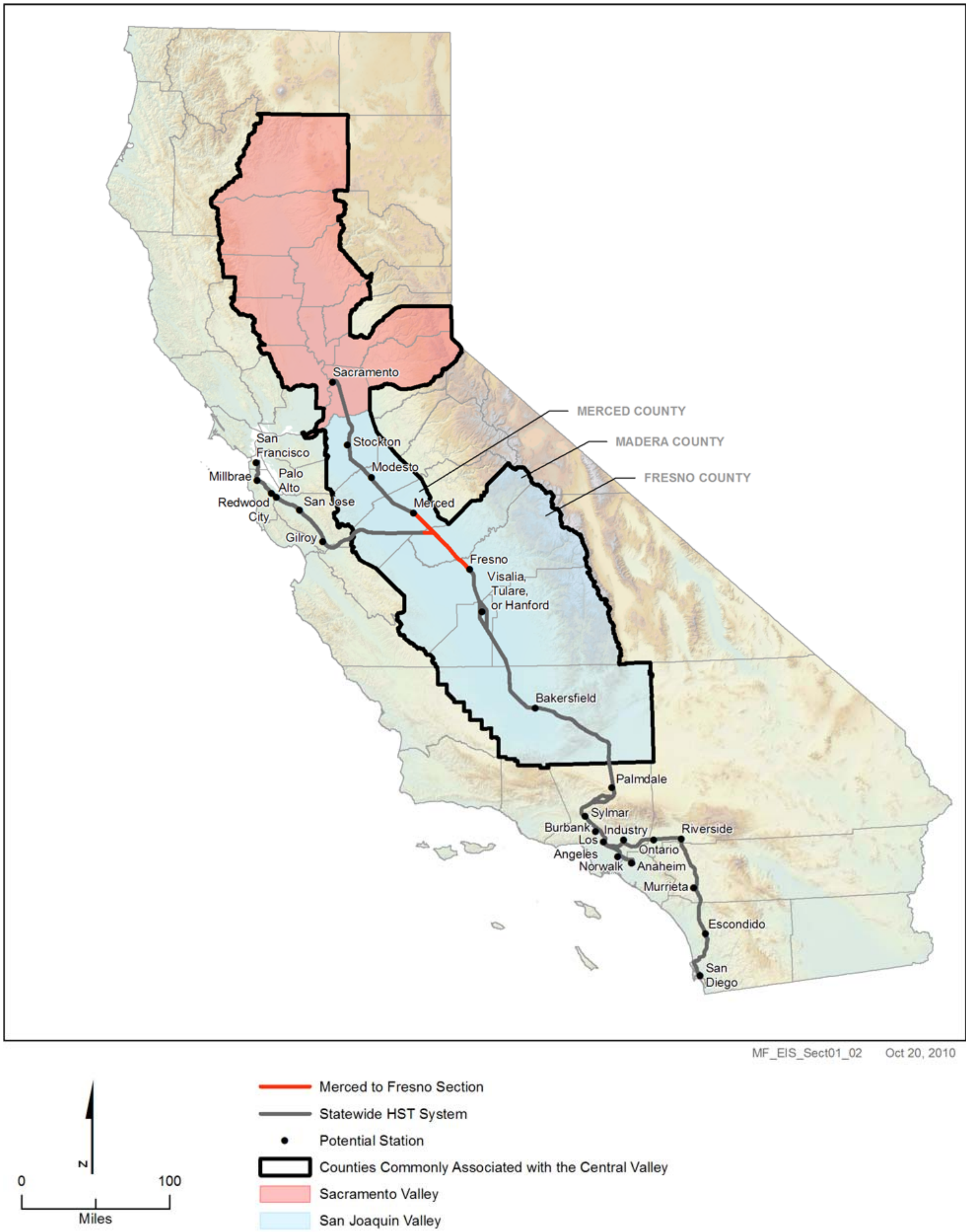


Figure 1-6
Preferred Alignments and Stations
– State of California

The next step in the HST development process includes additional engineering and design and preparation of project EIR/EISs for all HST project sections. This Merced to Fresno Section Project EIR/EIS (Tier 2) evaluates proposed alignments and stations in site-specific detail to provide a complete assessment of the direct, indirect, and cumulative effects of the proposed action, considers public and agency participation in the scoping process, and was developed in consultation with resource and regulatory agencies, including EPA and USACE. FRA and the Authority intend this document to be sufficient to support Section 404 permit decisions and Section 408 permit decisions (as applicable) for alteration/modification of completed federal flood risk management facilities and any associated operation and maintenance, and real estate permissions or instruments (as applicable). Both the EPA and USACE issued letters identifying the Hybrid Alternative as the preliminary LEDPA (March 23, 2012, and March 26, 2012, respectively).

For the HST System, including the Merced to Fresno Section, the FRA is the lead federal agency for compliance with the National Environmental Policy Act (NEPA) and other federal laws. The USACE agreed by letter, dated December 30, 2009, to participate as a cooperating agency under NEPA. In January 2012, the Bureau of Reclamation requested to participate as a cooperating agency under NEPA (Johnson 2012). The Authority is serving as a joint-lead agency under NEPA and is the lead agency for compliance with CEQA.

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 services 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 high-speed rail corridors and intercity passenger rail service. Congress provided an additional $2.5 billion for this program in the Department of Transportation Appropriations Act of 2010 (Title I, Division A of the Consolidated Appropriations Act of 2010 [Public Law 111-117). Available funding was reduced by $400 million in the Full-Year Continuing Appropriations Act, 2011 (Public Law 112-110). FRA issued a strategic plan, *A Vision for High-Speed Rail in America* (FRA 2009) which describes the agency's plan for intercity passenger rail development and subsequent program guidance to implement the High-Speed Intercity Passenger Rail Program with funding provided by Congress through appropriations acts.

The HST System is also 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), and its predecessor, the Intermodal Surface Transportation Efficiency Act (Public Law 102-240), which encourage public transportation investment that increases national productivity and domestic and international competition while improving safety and social and environmental conditions. Specifically, these policies encourage investments that offer benefits such as the following:

- 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.

1.2 Purpose of and Need for the HST System and the Merced to Fresno HST Section

1.2.1 Purpose of HST System

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

1.2.2 Purpose of the Merced to Fresno HST Section

The purpose of this project is to implement the Merced to Fresno Section of the California HST System to provide the public with electric-powered high-speed rail service that provides predictable and consistent travel times between major urban centers and connectivity to airports, mass transit systems, and the highway network in the south San Joaquin Valley, and to connect the northern and southern portions of the system.

For Clean Water Act section 404(b)(1) compliance, the USACE must take into consideration the applicant's needs in the context of the geographic area of the proposed action and the type of project being proposed. The USACE has determined that the overall project purpose (as stated above) allows for a reasonable range of practicable alternatives to be analyzed and is acceptable as the basis for the USACE 404(b)(1) alternatives analysis.

1.2.3 CEQA Project Objectives for the HST System in California and in the Central Part of the San Joaquin Valley Region

The Authority's statutory mandate is to plan, build, and operate an HST system coordinated with California's existing transportation network, particularly intercity rail and bus lines, commuter rail lines, urban rail lines, highways, and airports. The Authority has responded to this mandate by adopting the following objectives and policies for the proposed HST System:

- Provide intercity travel capacity to supplement critically overused interstate highways and commercial airports.
- Meet future intercity travel demand that will be unmet by present transportation systems and increase capacity for intercity mobility.
- Maximize intermodal transportation opportunities by locating stations to connect with local transit systems, airports, and highways.
- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
- Provide a sustainable reduction in travel time between major urban centers.
- Increase the efficiency of the intercity transportation system.
- 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 2020 and generate revenues in excess of operations and maintenance costs.
- Provide intercity travel in a manner sensitive to and protective of the region's natural and agricultural resources and reduce emissions and vehicle miles traveled for intercity trips.

The approximately 65-mile-long corridor between Merced and Fresno is an essential part of the statewide HST System. The Merced to Fresno Section is the location where the HST would intersect and connect with the Bay Area and Sacramento branches of the HST System; it would provide a potential location for the heavy maintenance facility (HMF) where the HSTs would be assembled and maintained as well as a test track for the trains; it would provide Merced and Fresno access to a new transportation mode and would contribute to increased mobility throughout California. Figure 1-1 shows how this section would connect the San Joaquin Valley to the rest of the statewide HST System via Merced County, Madera County, and the northern part of the City of Fresno.

1.2.4 Statewide and Regional Need for the HST System within the Merced to Fresno Section

The need for an HST system exists statewide, with regional areas contributing to this need. The Merced to Fresno Section is an essential component of the statewide HST System.

The capacity of California's intercity transportation system, including the central part of the San Joaquin Valley region, is insufficient to meet existing and future travel demands. The current and projected future system congestion will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The current transportation system has not kept pace with the increase in population, economic activity, and tourism within the state, including that in the central part of the San Joaquin Valley region. 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; some needed expansions might be impractical or are constrained by physical, political, and other factors. The need for improvements to intercity travel in California, including intercity travel between the central part of the San Joaquin Valley, the Bay Area, Sacramento, and Southern California relates to the following issues:

- Future growth in demand for intercity travel, including the growth in demand within the central part of the San Joaquin Valley region.
- Capacity constraints that will result in increasing congestion and travel delays, including those in the central part of the San Joaquin Valley region.
- Unreliability of travel stemming from congestion and delays, weather conditions, accidents, and other factors that affect the quality of life and economic well-being of residents, businesses, and tourism in California, including the central part of the San Joaquin Valley region.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state, including the central part of the San Joaquin Valley region.
- Poor and deteriorating air quality and pressure on natural resources and agricultural lands as a result of expanded highways and airports and urban development pressures, including those within the central part of the San Joaquin Valley region.

Figure 1-2 shows the central location of the Merced to Fresno Section within California. This region contributes significantly to the statewide need for a new intercity transportation service that will connect it with the major population and economic centers and to other regions of the state.

The major population, economic, and political centers are located on the coasts of Northern and Southern California and in the Sacramento Valley. The following sections provide additional information about factors relevant to intercity travel between Merced, Fresno, the Sacramento Valley, the Bay Area, and Southern California.

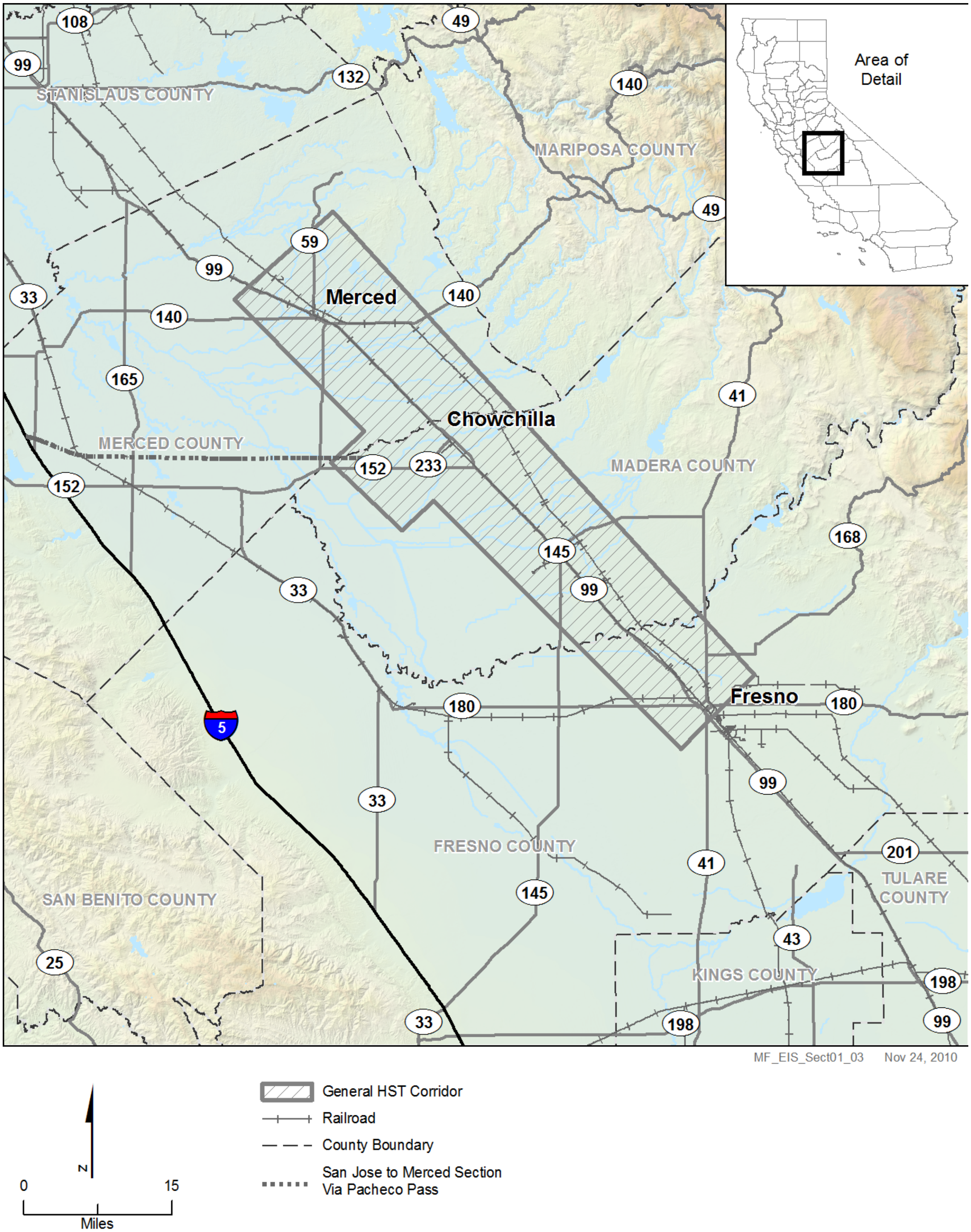


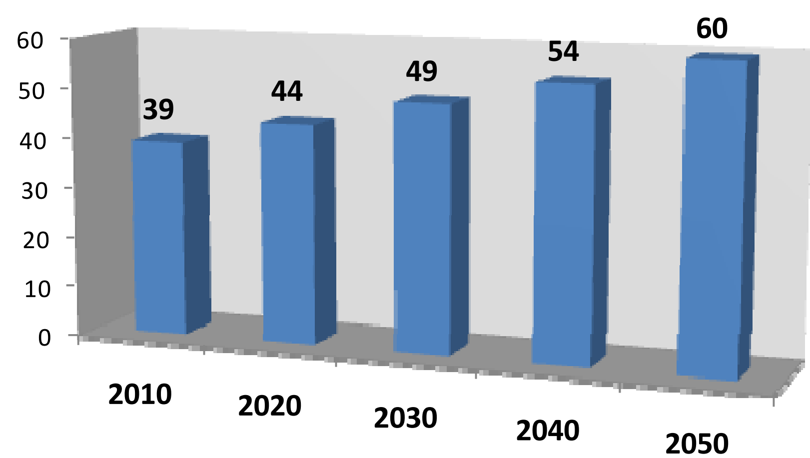
Figure 1-2
Merced to Fresno HST Project Corridor

1.2.4.1 Travel Demand and Capacity Constraints

Intercity travel in California, including travel within the central part of the San Joaquin Valley region, is driven primarily by increased demand for such travel. Growing population, tourism, and economic growth generate this demand.

Population and Economic Growth

According to the California Department of Finance, California's population should increase by 12.5 million residents between 2010 and 2035. This means an increase from about 39 million to 51.5 million people (more than 30% growth). Figure 1-3 illustrates this growth. The population should grow steadily to about 60 million people by 2050 (California Department of Finance 2010).



Source: State of California, Department of Finance, March 2010.

Figure 1-3
Existing and Future California Population (in millions)

The Central Valley is experiencing a population boom, with a current population of 4 million. This should grow to more than 6.6 million people by 2035. The population in the San Joaquin Valley has exceeded the statewide growth rate since 1970 (Council of Fresno County Governments 2007); more than 10% of the state's population resides in this region. San Joaquin County, which is within the central part of the San Joaquin Valley region, will continue to lead the way with a population increase of more than 200% by 2050, while the populations of Merced, Madera, and Fresno counties are projected to increase by 54.1%, 105.6%, and 56.9%, respectively, between 2009 and 2035. Much of the population growth is projected to stem from the overflow from urban coastal areas as people seek affordable housing within commuting range of major metropolitan areas.

The cities of Merced and Fresno are and will continue to be major economic growth centers. In Merced and Madera counties alone, employment is anticipated nearly to double from approximately 138,000 jobs in 2010 to almost 250,000 jobs in 2035 (California Employment Development Department 2010a). Merced has long been the region's economic center, which is fueled by agricultural industry producing high-value crops and other agricultural products. Merced County is the fifth-leading agricultural county in California, and agriculture is one of the Merced County's main revenue sources. Milk products from Merced's commercial dairies are major revenue generators; other important products include poultry, beef, and crops grown in commercial quantities, such as almonds and tomatoes. Nearly two out of every five jobs in Merced County are in agriculture or related to agricultural production (California Employment Development Department 2010a). About 10% of the county's personal income is derived from agriculture-related activities (U.S. Department of Commerce 2010). Merced is also the home of the newest campus in the University of California system.

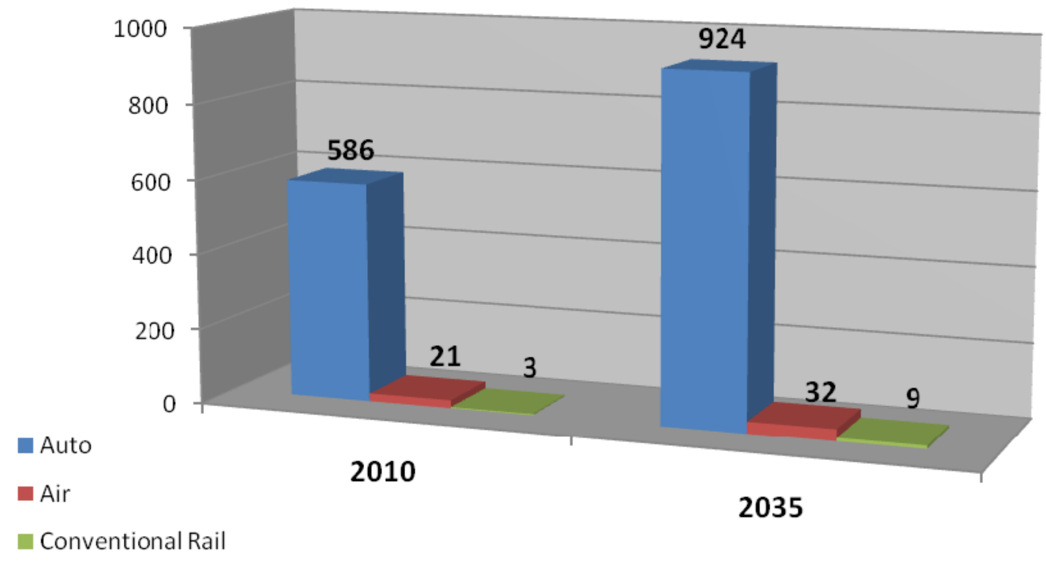
The market value of agricultural products sold in Fresno County in 2007 was over $3 billion (U.S. Department of Agriculture 2007). According to the latest Census of Agriculture county profile information for Fresno County, close to 70% of farmland in the county was devoted to crops. The highest crop acreages were devoted to grapes, vegetable crops, cotton, almonds, and tomatoes. In order of sales value, the most important agricultural commodity categories were fruits, tree nuts, and berries; vegetables, melons, and potatoes; milk and other dairy products; cattle; poultry and eggs; and cotton and cottonseed. Fresno, the fifth largest city in California as of January 1, 2010, is the central San Joaquin Valley's financial and commercial capital. Slightly more than one out of every ten jobs is in the trade sector, and about one in three jobs is in the services sector, where jobs in educational and health services and professional and business services dominate. The financial sector accounted for about 4% of all jobs in Fresno County in 2009 (California Employment Development Department 2010b). The trade, financial, and services sectors account for about a third of all of Fresno County's personal income (U.S. Department of Commerce 2010).

The growth of these economic centers, combined with the region's reputation for agricultural production, means already congested local roads, highways, airports, and transit systems in the central part of the San Joaquin Valley region will increase. They will face unprecedented demand in the years ahead.

Travel Demand

Population growth and the increasing interconnectedness of the central part of the San Joaquin Valley region's economies are creating a surge in travel along State Route (SR) 99, the transportation corridor connecting the central part of the San Joaquin Valley region with the rest of California. It was estimated that in 2010, Californians would make 610 million trips between the state's metropolitan regions, including those in Northern and Southern California and in between. Approximately 209 million of these trips will be journeys of at least 100 miles; by 2035, this number is expected to increase to more than 271 million trips per year. Overall, intercity travel in California is forecast to increase by more than 58% between 2010 and 2035, from 610 million trips to about 965 million trips, as illustrated on Figure 1-4. More than 50% of the intercity travel market between the state's major metropolitan regions is expected to have a destination within the Bay Area to central part of the San Joaquin Valley region.

The automobile will continue to predominate in intercity travel, and by 2035 is expected to account for more than 95% of all intercity travel and close to 90% of longer intercity trips. Figure 1-5 illustrates the major routes and airports used for intercity travel between the markets potentially served by the HST System.



Source: Parsons Brinckerhoff 2010, based on Cambridge Systematics 2007 projections.

Figure 1-4
Intercity Trips (in millions)

Figure 1-5
Major Intercity Travel Routes
and Airports

The San Joaquin Valley has experienced substantial urban growth over the past two decades and is expected to continue to grow at a faster rate than California as a whole. Table 1-1 presents the forecast jobs-to-housing ratios for 2010 and 2035. The jobs-to-housing ratio is an indicator of the balance between employment and housing in a geographical area, and can serve as an indicator of the amount of commute travel demand. This table shows that there is a low jobs-to-housing ratio, where relatively few job opportunities exist for the community's residents and they would need to commute elsewhere for work; a high ratio would suggest a surplus of jobs, with employees needing to commute from the surrounding areas. While the ratio shows a ratio close to or greater than one for the project area, a more desirable ratio would be higher; a typical family household of three or more requires two income earners to make ends meet. The jobs-to-housing ratio projections provide another indication that the economic growth in the central part of the San Joaquin Valley region means travel demand will continue to increase over the next 25 years. The California Department of Transportation (Caltrans) has plans to improve SR 99; however, with all of the planned structural and capacity improvements, Caltrans anticipates that urban areas along SR 99 will not meet acceptable operating standards in 2035. Non-urban areas will operate at a level of service (LOS)[2] of D or better (Caltrans 2009a). The widening gap between job growth and population and roadway capacity expansion means that a growing number of the region's residents will experience 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 commute hours.

Table 1-1
Jobs-to-Housing Ratio in the Merced to Fresno HST Section Region, 2010 and 2035

County	2010			2035		
	Jobs	Households	Ratio	Jobs	Households	Ratio
Merced	85,200	83,861	1.02	155,300	149,500	1.04
Madera	52,822	54,626	0.97	94,480	97,707	0.97
Fresno	397,728	317,941	1.25	618,682	503,622	1.23

Sources:
California Employment Development Department (2010c); Council of Fresno County Governments (2010a); Merced County Association of Governments (2010); Madera County Transportation Commission (2010).

Freeway Congestion and Travel Delays

Travel within the San Joaquin Valley in general, and the Merced to Fresno area in particular, is largely dependent on SR 99 for intercity trips. SR 99 is the principal connection between the major cities in the San Joaquin Valley region, and it currently carries from 38,000 to more than 100,000 in annual daily traffic (Caltrans 2009a). However, most of SR 99 was built in the late 1950s and early 1960s to accommodate a smaller population and transportation infrastructure demands. Not only is the population increasing rapidly in the central part of the San Joaquin Valley region, but also growth is taking place in land use patterns that rely on automobiles for most trips. Currently and over the next 10 to 15 years, depending on available funding, Caltrans has begun implementing the *Route 99 Corridor Business Plan* (Caltrans 2009a), which will remove remaining at-grade intersections and improve others to higher capacity. The plans call for widening the route between Merced and Fresno from four to six lanes, and sometimes six lanes with auxiliary lanes, to ease traffic flow between interchanges. But this plan will not reduce future congestion projected along SR 99 through 2035. According to the *Route 99 Corridor Business Plan*, only a shift in vehicle travel to alternative modes can restore better traffic flows.

[2] LOS is the measure of traffic flow through intersections, where LOS A indicates unencumbered vehicle flow and LOS F indicates poor performance, which is experienced as stop-and-go traffic movement.

In 2010, the vehicle miles traveled (VMT)[3] in Merced and Madera counties were projected at approximately 7.4 million and 4.5 million, respectively. This should nearly double by 2035; Table 1-2 shows forecast travel increases by county. In Merced and Madera counties, approximately 70% of all VMT occurs on the state highway system; the VMT in Fresno County on Caltrans routes is 40% of travel (Caltrans 2009b).

Table 1-2
Increase in Total Daily Vehicle Miles Traveled

County	2010 Daily VMT[a]	2035 Daily VMT (estimate)[b]	Increase in VMT (% of 2010 VMT)
Merced	7,398,932	13,534,370	83
Madera	4,469,260	8,532,552	91
Fresno	23,489,397	27,367,949	17
Total (three counties)	35,357,589	49,434,871	40

[a]Source: Caltrans (2009b).
[b]Source: Estimates for the No Project Alternative were provided by Parsons-Brinckerhoff on February 15, 2010.

Caltrans' goal for state highway facilities is LOS B through D on a scale of A to F, where A is unencumbered travel and F is stop-and-go traffic flow. Without additional system improvements, Caltrans estimates that by 2030, service will likely deteriorate to an unacceptable LOS E and F because of increased interregional and statewide travel (Caltrans 2009a). If California wanted to bring the state route system facilities to an acceptable LOS, the state would need to spend several billion dollars, resulting in large six- to eight-lane facilities on multiple state routes, which would not provide any new travel options or added connectivity. As a result of the regional and statewide population growth, the regional transportation system is expected to experience a substantial increase in congestion. Consequently, there will be a continued lack of reliable, predictable travel between the central part of the San Joaquin Valley region and the state's metropolitan areas as well as within this region.

The central part of the San Joaquin Valley region exemplifies the statewide growth patterns and trends where much of the intercity travel consists of trips of intermediate distance, such as those between Merced and Fresno. Table 1-3 shows the statewide forecasting model results for expected growth in daily traffic volumes on major highways within the next 25 years. All daily volumes are anticipated to increase substantially in the next 25 years. These daily trips include more than 339 million annual intercity trips between the central part of the San Joaquin Valley region and other California metropolitan areas. Travel between the Los Angeles and San Diego regions is the second-largest geographic market, with more than 134 million trips per year in 2030. Travel between Sacramento and San Francisco represents the third-largest intercity travel market in the state, at over 67 million trips per year (Parsons Brinkerhoff estimates based on Cambridge Systematics 2007 projections).

[3] VMT is the total number of automobiles traveling in the given area (county) during a 1-year period.

Table 1-3
Travel Growth for Intercity Highways

Major Highways	Average Daily Volume 2010	Average Daily Volume 2035	% Change
I-5 between San Diego and Los Angeles (Orange County-Los Angeles County line)	185,000	342,000	85
I-5 between Los Angeles and Bakersfield (at Santa Clarita)	222,000	332,000	50
SR 99 in Central Valley (north of Bakersfield)	58,000	83,000	43
US 101 immediately south of San Jose	158,000	253,000	60
I-580 between the Bay Area and Stockton (at Livermore)	156,000	191,000	22
Source: Parsons Brinckerhoff estimates based on Cambridge Systematics 2007 projections.			

Freight Movement

Vehicle travel in and out and within the region competes with freight movement along SR 99 and other local roads. Freight deliveries by truck are an important component of the regional economy, particularly for transporting agricultural goods from farm to market. Currently, daily truck volumes range from 11,000 to more than 14,000 on SR 99, representing 20% to 25% of the average daily traffic. The region's growth, especially along urban segments of SR 99, threatens the ability of the highway to serve future needs. Even with significant planned improvements, such as those planned by Caltrans (discussed previously under Travel Demand), heavily congested segments will remain along SR 99.

Goods traveling between the San Joaquin Valley, Southern California, and the Bay Area are shipped almost entirely by truck. While trucking is the dominant mode for moving freight, rail accounted for 11% of the total tonnage of freight movement through the region in 2000 (Council of Fresno County Governments 2010a). Freight distribution for Merced County in 2000 was approximately 95% by truck and 5% by rail (Merced County Association of Governments 2009a).

The Union Pacific Rail Road (UPRR) and Burlington Northern-Santa Fe (BNSF) Railway provide Class I rail service to the San Joaquin Valley. Both of these railroads offer rail-truck intermodal service from a number of locations in the San Joaquin Valley, most notably a large UPRR railyard in the north portion of the City of Fresno. UPRR operates 25 to 30 freight trains per day and BNSF Railway operates 35 to 40 freight trains per day through Fresno (Council of Fresno County Governments 2010b). These trains carry food products, general freight, grain, and lumber. UPRR and CSX Transportation are teaming to offer a service in the San Joaquin Valley for perishable goods. One of these services, known as "The Express Lane," offers two tiers of refrigerated service from the San Joaquin Valley to New York and Boston (San Joaquin Valley Regional Planning Agencies Policy Council 2008).

Conventional Passenger Rail

Caltrans helps fund intercity passenger rail service by supplementing Amtrak's interstate service through capital and operational measures. Intercity rail transportation in the Merced to Fresno corridor is currently provided by the Amtrak California™ San Joaquin Route, operated by Caltrans on railroad tracks owned by BNSF. Amtrak California operates four trips daily in each direction between Oakland and Bakersfield and two trips daily in each direction between Sacramento and Bakersfield, providing six daily roundtrips between Merced and Fresno. In fiscal year 2008, ridership between Bakersfield and Oakland/Sacramento, the sixth busiest Amtrak route in the country, grew to 949,611 passengers, which was an increase of

18% over fiscal year 2007 and an increase of 40.5% over fiscal year 2000 (Amtrak Government Affairs 2008). The scheduled travel time between Bakersfield and Oakland averages 6 hours and 9 minutes, with an average speed of 51.3 mph (the maximum speed on the route is 79 mph) (Caltrans 2008a). Travel by train can take longer than travel by car. Drivers from Bakersfield can reach Oakland in approximately 5 hours, 1 hour faster than the train's average travel time, and with the convenience of direct door-to-door travel. Passenger train service must yield to freight trains, resulting in longer travel times and less schedule predictability for train passengers. To increase ridership on the San Joaquin Route, the *California State Rail Plan 2007–2008 to 2017–2018* (Caltrans 2008a) seeks to improve the frequency of travel and on-time performance by implementing capital and operational improvements.

Air Travel

Air travel demand has been growing steadily in California and nationwide; federal, state, and regional transportation plans forecast continued growth in air travel over the next decades. By 2005, air travel between Los Angeles to San Francisco was the busiest air route in the United States, with 8.6 million trips, representing approximately 43% of the intercity trips in this market for all transportation modes. In 2009, approximately 13 million passengers are estimated to have traveled between major Northern and Southern California airports (Research and Innovative Technology Administration/Bureau of Transportation Statistics 2009). In addition, far fewer commercial air trips were made to and from Central Valley airports, which do not fall within the top 100 corridors in the United States (Table 1-4). Without HSTs, more than 3% of all intercity travel statewide and approximately 10% of longer intercity trips (those in excess of 100 miles) are forecast to be air travel.

Table 1-4
2009 Intercity Air Travel

From	To	Total Annualized Passengers
Los Angeles-Long Beach-Santa Ana	San Francisco-Oakland-Fremont	6.307 million
San Diego-Carlsbad-San Marcos	San Francisco-Oakland-Fremont	2.415 million
Los Angeles-Long Beach-Santa Ana	San Jose-Sunnyvale-Santa Clara	2.220 million
Los Angeles-Long Beach-Santa Ana	Sacramento-Arden-Arcade-Roseville	1.909 million
Source: Research and Innovative Technology Administration/Bureau of Transportation Statistics (2009).		

There are eight airports in the Central Valley[4] that provide commercial service to the public. With the exception of Sacramento International Airport in Sacramento and Fresno-Yosemite International Airport in Fresno, these airports generally offer only one to three flights daily to larger airports in Northern and Southern California. Fresno-Yosemite International Airport is the San Joaquin Valley's major airport.

Fresno-Yosemite International Airport does not provide substantial intercity commercial airline service to the population in the central part of the San Joaquin Valley. This is evident in comparing air travel activity at Sacramento International Airport and Fresno-Yosemite International Airport. Based on 2010 Census data, the populations of Sacramento and Fresno counties were somewhat similar at about 1.4 million, and 930,000, respectively. (Population for the two areas was similar based upon 2000 Census data also, at 1.3 million and 900,000 respectively.) However, as shown in Table 1-5, the estimated 2010 in-state enplanements (i.e., a visitor flying in and flying out equals one enplanement) at Sacramento International Airport is 10 times higher than at Fresno-Yosemite International Airport. Sacramento International Airport also provides service to 11 California cities while Fresno-Yosemite International Airport only serves San Francisco and Los Angeles international airports within the state.

[4] The Sacramento and San Joaquin valleys combined are called the Central Valley. (See Figure 1-1.)

Table 1-5
Commercial Air Traffic and Central Valley Airports

Airport	Total 2010 Forecast Enplanements[a]	Estimated 2010 In-State Enplanements	Number of Carriers Providing In-State Service	In-State Airports Served
Sacramento International Airport	4,309,623	2,037,724	12	Arcata, Burbank, Los Angeles, Long Beach, Ontario, Palm Springs, San Diego, San Francisco, San Jose, Santa Barbara, Orange County (Santa Ana)
Fresno-Yosemite International Airport	575,709	199,680	8	San Francisco, Los Angeles

[a] Source: Federal Aviation Administration (FAA) (2010).

Air travel to and from Fresno-Yosemite International Airport does not competitively serve San Joaquin Valley residents when compared with automobile travel. As shown in Table 1-5, air travel to and from these airports is restrained by the limited number of flights offered and origin and destination airports served. For trips within California, many San Joaquin Valley travelers choose to drive to their destinations because the travel cost is lower than airfares. For example, a roundtrip airfare between San Francisco and Los Angeles can generally be purchased for approximately $130, while the same airline for the same travel dates charges between $204 and $546 roundtrip for flights between San Francisco and Fresno (United Airlines 2010, 2012). For trips outside of California, travelers from the San Joaquin Valley frequently choose to drive to larger airports in Sacramento, San Francisco, Oakland, San Jose, or Southern California, where they can obtain cheaper fares and a wider variety of direct flights than are available from the Fresno-Yosemite International Airport.

A smaller scale airport that provides some long distance connection flights is the Merced Municipal Airport/Macready Field, which is located southwest of Downtown Merced and south of SR 140. Annual enplanements rose from 5,157 in 2000 to 6,196 in 2007; however, enplanements dropped to 2,173 in 2008 when service was changed from Las Vegas to Ontario (FAA 2009). On April 7, 2010, service resumed to Las Vegas and was discontinued to Ontario because of the previous popularity of the Las Vegas flights (Merced Municipal Airport/Macready Field 2010). Commercial service at this airport currently includes two daily roundtrip flights to Las Vegas, where connections can be made to other destinations. Roundtrip flights between Merced and Las Vegas cost approximately $300 (in 2010 dollars) (Great Lakes Airlines 2010). Therefore, this airport is not serving intra-California destinations for residents in the region.

Fog delays for both automotive and air travel are frequent during winter months. The Central Valley experiences an average of 30 days of dense fog, contributing to delays in airplane departures and a substantial number of accidents along SR 99 (National Oceanic and Atmospheric Administration n.d.). From Fresno, the driving time to San Francisco is approximately 3 hours and 40 minutes, and to Los Angeles, it is approximately 4 hours (Google Maps 2010). The driving time and flight costs from Fresno to San Francisco and Los Angeles might discourage residents of the San Joaquin Valley to consider trips to the metropolitan economic centers, contributing to economic and cultural isolation of the San Joaquin Valley.

Despite the distance, the San Francisco, Oakland, and San Jose airports attract passengers living in Merced, Madera, and Fresno. Annual passenger demand at San Francisco International Airport (SFO) increased from 31 million passengers in 1990 to 37.4 million in 2009 (Airports Council International

2010). By 2035, annual passenger demand at SFO is projected to reach 64.4 million passengers, and the airport is projected to exceed capacity. However, based on unconstrained airport demand, SFO's capacity could be reached as early as 2020. As early as in 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 the San Francisco Bay, since no expansion of the airport inland is feasible. Because of environmental concerns and public opposition, these plans were withdrawn, 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. With such capacity constraints, SFO will likely be forced to reduce air service in intercity travel markets with high levels of service (such as between Los Angeles International Airport [LAX] and SFO) (Mays 2008).

This level of travel demand is noteworthy because both SFO and LAX are among the most capacity-constrained airports in the nation, mentioned in conjunction with New York and Philadelphia. An FAA study that examined future demand and operational capacity identified both of these airports as needing additional capacity by 2015 even with the planned improvements currently proposed. This report notes that SFO will serve as an example of a capacity-constrained metropolitan area where runway construction may not be an option given environmental considerations and policy directives such as those by the San Francisco Board of Supervisors in 2008. Other smaller airports in the San Francisco and Los Angeles travel markets, such as the one in Oakland, were also identified as needing capacity improvements. Because of existing constraints to expanding the airports, 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. The HST System, including the Merced to Fresno Section, would help to alleviate these capacity constraints at SFO by providing a new intercity transportation mode, as well as improve transportation accessibility to the central part of the San Joaquin Valley.

Also, the two major regional San Francisco Bay area airports—the Norman Y. Mineta San Jose International Airport and the Oakland International Airport—are projected to increase their annual passenger demand from 10.7 million passengers in 2007 to 16.3 million at the San Jose airport and from 14.6 million to 20.7 million at the Oakland airport by 2035 (Regional Airport Planning Committee 2009). While some projected air travel demand may be absorbed by these regional airports and by external airports in the larger market area, such as Sacramento, Stockton, and Monterey, they do not provide viable options to a number of air travel markets (e.g., business commuters, international, and national tourist travelers) (SH&E 2009).

Travel Time

Similar to the central part of the San Joaquin Valley, with growing demand for intercity travel and growing capacity constraints, the total automobile travel time will increase statewide. Air and rail travel time will remain basically the same. Table 1-6 shows the approximate total travel time in 2010 and the projected total travel time in 2035 for automobile, air, and rail between various city pairs. These data come from the ridership analysis completed for the HST forecasting model information from regional transportation planning agencies, Caltrans, and current air and conventional rail schedules.

Table 1-6
Estimated Total Travel Times (Door-to-Door in Hours and Minutes) between City Pairs by Auto, Air, and Rail (Peak Conditions)

City Pair	Auto 2010	Auto 2035	Air 2010[a, b]	Air 2035[a, b]	Conventional Rail 2010 and 2035[b, c]
Los Angeles downtown to San Francisco downtown	8:10	9:04	4:40	4:42	9:45[d]
Fresno downtown to Los Angeles downtown	4:35	5:28	4:02	4:01	5:03[e]
Los Angeles downtown to San Diego downtown	4:13	5:09	3:24	3:24	3:19
Burbank (Airport) to San Jose downtown	6:57	7:08	4:39	4:32	10:40[f]
Sacramento downtown to San Jose downtown	3:09	3:36	4:40	4:36	4:06

[a] Represents the same level of service observed in 2005, compiled from FAA data from the 10% ticket sample combined with wait, terminal, access, and egress times developed from the California High-Speed Rail ridership forecasting model (Authority 2011).

[b] Access and egress times based on transit connections.

[c] Conventional rail assumptions for travel times and wait and terminal times are the same for 2010 and 2035. Access and egress times may vary but in practice do not vary significantly between 2010 and 2035.

[d] Based on April 23, 2010, San Joaquin schedule, which would require bus connections from Los Angeles to Bakersfield and from Emeryville to San Francisco.

[e] Based on April 23, 2010, San Joaquin schedule, which would require bus connections from Los Angeles to Bakersfield.

[f] Based on April 23, 2010, San Joaquin schedule, which would require bus connections from Burbank to Bakersfield and from Stockton to San Jose.

Source: Parsons Brinckerhoff estimates based on Cambridge Systematics data.

While air travel time will not change, the number of desired flights to a given destination may be limited by runway capacity, thus reducing flexibility in travel dates available. Projected increases in automobile travel time will be caused largely by growing travel demand and resulting congestion on highways used for intercity travel. Programmed and funded highway improvements will not measurably change future conditions. Some capacity improvements have been funded for the central part of the San Joaquin Valley and in Southern California, but these are basic enhancements intended to improve reliability rather than travel time. The Amtrak plan for the next 10 years includes adding one more roundtrips per day between Oakland and Bakersfield and reducing the travel time between these two cities to below 6 hours (Caltrans 2008a). These improvements will provide some benefit to rail passengers, but will not provide substantial passenger rail capacity to the San Joaquin Valley.

Continuing population growth and increasing tourism in California place severe demands on the already congested transportation system serving the state's major metropolitan areas. As described in the regional transportation plans (listed in Section 3.2, Transportation) for areas that would be served by the proposed HST System, the highways and airports serving key cities are operating at capacity, and plans for expansion will not keep pace with projected growth over the next 20 to 40 years.

1.2.4.2 Safety and Reliability

Projected growth in California's people and goods movement by automobile, air, and rail over the next two decades underscores the need for improved travel safety. With more vehicles on intercity highways, the potential for accidents increases. Travel demand will continue to outpace future highway capacity, resulting in increased travel delays. Roadway congestion, limited airport capacity, passenger train delays from freight train traffic, and a growing intercity travel market adversely affect the travel time reliability of air, conventional passenger rail, and automobile travel. Weather-related events are an additional source of disruption and delay that affect transportation reliability and safety. As noted previously (under Travel Demand), Caltrans expects that the projected growth and travel demand in the central part of the San Joaquin Valley will not be matched by increases in roadway capacity. Many causes of increased highway congestion rates exist all over California. For example, accidents, road work, cars stranded along the roadside, or a routine traffic violation stop can create a bottleneck, potentially delaying commuters for miles. Poor weather conditions (rain, wind, and dense Central Valley fog) also adversely affect the reliability of highway travel times. Rain and wind can make the roads dangerously slick, increasing accident rates. Fog, haze, and glare at times can distract drivers or cause them to slow. As delay on the freeway increases, the overall reliability of the system tends to decrease (Cambridge Systematics 2007).

The California Highway Patrol publishes an annual summary of accident data for state highways; according to those statistics, in 2008 California highways experienced 3,401 fatalities and 170,496 nonfatal injuries, which corresponds to a fatality rate of 1.04 life per 100 million VMT (California Highway Patrol 2008a). The San Joaquin Valley is subject to dense fog, often called tule fog, during the winter months. Tule fog frequently delays commercial service to and from airports in the valley, resulting in unreliable air service. The fog also creates a substantial safety hazard for motorists. Visibility in tule fog is often less than one-eighth of a mile (approximately 600 feet); sometimes visibility can be less than 10 feet (National Weather Service 2010). Visibility in tule fog can also change rapidly; within a short distance, visibility can diminish to near zero. Low and changing visibility is the cause of many chain-reaction vehicle accidents on roads and highways in the San Joaquin Valley. In February 2002, two people were killed in a 90-car pile-up on SR 99 in Fresno County. Visibility at the time of the accident was zero (Hatfield 2002). In November 2007, fog caused a pile-up that involved 108 passenger vehicles on SR 99, south of Fresno (Bussiere n.d.). Accident rates in Merced and Madera counties exceed statewide rates; those for Fresno County are lower than statewide rates (California Highway Patrol 2008b). Many motorists forgo travel between cities in the San Joaquin Valley as well as to and from the valley during the winter because of tule fog. Most other forms of transportation are also affected by this hazard.

Weather conditions are also a key factor in airport flight delays. Some airlines adjust their schedules to achieve on-time arrivals even if departures are delayed; some airlines have increased their scheduled flight times between high-demand city pairs such as LAX and SFO to maintain their on-time arrival statistics in the face of potentially increasing delays. Weather also results in flight cancellations. Aircraft delays cost the airlines and the traveling public time and money, and the FAA has identified the reduction of airport delays nationwide as one of its highest priorities. Data from the U.S. Department of Transportation's *Air Travel Consumer Report* show SFO and LAX as ranking among the worst of major airports in the country in terms of delay (U.S. Department of Transportation 2003). Approximately 14% of flights departing Fresno-Yosemite International Airport were delayed in 2008 (Bureau of Transportation Statistics 2010). Approximately 11% of flights departing Merced Municipal Airport/Macready Field were delayed during the past year (Elliott 2010). Airport delays are a function of capacity, weather conditions, and safety conditions. When demand at an airport exceeds the capacity on the airfield at that time, flights are delayed until they can be safely accommodated. Delayed flights sometimes compound problems for other flights and can result in cancelled flights. Because the FAA Ground Delay Program holds flights at their point of departure until the destination airport can accept the demand, and because short flights (e.g., SFO to Fresno-Yosemite International) are more easily adjusted than longer flights (e.g., the East Coast or Midwest to the West Coast), short flights are more likely to experience delays or capacity reductions. Consequently, intercity air travel within California can experience major delays because of the total airport demand.

1.2.4.3 Modal Connections

Currently, the San Joaquin Valley is underserved by transportation facilities connecting communities in the valley with California's major commercial and cultural hubs. Between San Francisco and Los Angeles, the San Joaquin Valley's major transportation facilities for passenger travel include SR 99, Amtrak

California™, and the Merced and Fresno airports. Passengers prefer transportation systems with connections that perform similarly with respect to the convenience and speed of door-to-door service by automobile. If multiple mode changes (e.g., from car to shuttle to plane to train) are needed to reach a destination, travelers might prefer to travel by car, even if travel times are comparable.

As shown in Figure 1-2, Merced and Fresno are directly connected by SR 99, the fastest transportation route between them. Because I-5 is located approximately 40 miles west of Merced and Fresno, it does not provide a convenient transportation route between the cities. In addition, Amtrak directly connects Merced and Fresno. The frequency and travel times between these cities are not adequate to meet many travel needs. Amtrak currently provides four daily roundtrips between Oakland, Merced, and Fresno and two daily roundtrips between Sacramento, Merced, and Fresno (a total of six trips per day along the Merced to Fresno corridor) (Amtrak Government Affairs 2008). Travel time between Merced and Fresno on Amtrak is approximately 1 hour. Travel time by automobile on SR 99 is also approximately 1 hour.

As discussed above, commercial airports in south San Joaquin Valley are underutilized because it is often less costly for San Joaquin Valley residents to drive than to fly between locations within California. Larger airports that are within driving distance of the San Joaquin Valley provide more variety of direct airline service for trips outside of California, often at much purchase price. For these reasons, the volume of air travel from San Joaquin Valley airports is relatively constant, and correspondingly, commercial airlines have not increased service from these airports, which reduces connectivity options for the Merced to Fresno area.

The options for connecting from the Central Valley to California's largest metropolitan areas includes driving the full distance, driving to a regional or larger airport and then flying, or using an intercity rail and transit bus to the final destination. The limited options of direct, fast, and safe connections to the major metropolitan areas isolate the Central Valley economically, limit the area from which Central Valley businesses draw customers and employees, and reduce the accessibility of job markets for residents. HST service to Merced and Fresno would provide linkages to a number of bus, light rail, and airport services for intercity travelers to other areas in the state.

1.2.4.4 Air Quality and Greenhouse Gas Emissions

EPA adopted the Clean Air Act (CAA), as amended in 1977 and 1990. Under the authority of the CAA, EPA 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 [NAAQS]) represent the maximum allowable atmospheric concentrations for ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. The CAA defines nonattainment areas as geographic regions designated as not meeting one or more of the NAAQS. It requires that a state implementation plan (SIP) 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 SIP is a compilation of a state's air quality control plans and rules that have been approved by EPA.

California has multiple air basins designated as nonattainment areas (see Section 3.3, Air Quality and Global Climate Change) ranging from severe to serious status, including the Sacramento Valley Air Basin, the San Joaquin Valley Air Basin, the South Coast Air Basin, and the Southeast Desert Air Basin (Coachella Valley). Metropolitan areas will continue to be challenged to reduce emissions to acceptable levels from a 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 demand for trips in single-occupant vehicles are integral to all transportation plans and help areas presently in nonattainment status to conform to federal air quality standards.

One statewide strategy adopted in the California SIP is the development of multiuse transportation corridors. Among them, they include designated lanes for high-occupancy vehicles, the addition of more transit, and the inclusion of rail modal options. Meeting federal and state air quality standards over the next 20 to 40 years will also require reduction in the VMT, integration of land use and transportation planning and development, development of transportation demand strategies, implementation of operational improvements, and use of new technologies that improve transportation efficiencies and increase transportation alternatives to the single-occupant automobile. Without the HST System, auto trips are expected to account for more than 95% of all intercity travel and close to 90% of long intercity trips in California by 2035.

In 2005, California set statewide targets for reducing greenhouse gas (GHG) emissions. Executive Order S-3-05 requires that GHG emissions be reduced to 2000 levels by the year 2010, to 1990 levels by the year 2020, and 80% below 1990 levels by the year 2050. Shortly after the issuance of Executive Order S-3-05, the California State Legislature passed Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 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, which is the same 2020 level in Executive Order S-3-05. This plan was developed by CARB in 2008 as the Climate Change Scoping Plan (California Air Resources Board 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 choice and reduce GHG emissions. The “Approved Scoping Plan” was adopted by the CARB at its December 11, 2008, meeting. The measures in this Scoping Plan will be developed and in place by 2012.

Senate Bill 375 (SB 375), which became law in September 2008, provides a new planning process to coordinate community development and land use planning with the RTPs. SB 375 sets priorities to help California meet GHG reduction goals and requires certain RTPs prepared by MPOs to develop a “sustainable communities strategy” that would support the GHG emission reduction targets set by CARB.

The transportation sector is responsible for about 40% of California's GHG emissions (California Air Resources Board 2010). Emissions of criteria pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur dioxide)[5] and GHG emissions from motor vehicles are directly proportional to the amount of fuel burned and affect air quality in the San Joaquin Valley. The San Joaquin Valley Air Basin exceeds federal and state air quality standards for ozone, $PM_{2.5}$, and for the state’s 24-hour standard for PM_{10}.[6] The projected population growth (see Section 3.19, Regional Growth) in the San Joaquin Valley will result in an increase in VMT (see Section 3.2, Transportation) and the volume of pollutants emitted by motor vehicles. Particulate matter levels are a direct function of the amount of driving, with road dust caused by moving vehicles accounting for 60% to 80% of particulate emissions from mobile sources. Motor vehicle exhaust is a major source of fine particulates and the

[5] The Clean Air Act, which was last amended in 1990, requires USEPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. USEPA has set NAAQS for six principal pollutants, which are called “criteria” pollutants.

[6] The federal 1997 8-hour ozone standard is exceeded when the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each air monitor within an area over each year exceeds 0.08 parts per million. The federal 24-hour standard for $PM_{2.5}$ is exceeded when the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area exceeds 35 micrograms per cubic meter. The California standards for ozone, PM_{10}, and $PM_{2.5}$ are designated as having been exceeded for a calendar year for an area when any designated air monitor in the area exceeds the relevant state ambient air standard at any time during that year.

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 to travel by car, with their internal combustion engines, an electric-powered HST system would reduce carbon dioxide (CO_2) emissions; an HST trip from San Francisco to Los Angeles would save 324 pounds of CO_2 for each car making the same trip, and a trip between San Jose and Los Angeles would save 288 pounds of CO_2 per car (Bay Area Council Economic Institute 2008). The HST System would provide a more energy-efficient travel mode; a trip on the HST System would use one-third the energy of a similar trip by air, and one-fifth the energy of a trip made by car (Bay Area Council Economic Institute 2008).

1.2.4.5 Protect and Preserve Natural Resources and Agricultural Lands

California's natural resources, including wetlands and waterways, habitat areas for sensitive species of plants and animals, and wildlife migration corridors have been subject to direct and indirect impacts as the state's population has increased and growth has occurred in the less developed areas of the state. Of California's approximately 100 million acres, only 9 million are considered to be prime, unique, or statewide important farmlands, 25% of which are located in Merced, Madera and Fresno counties. Development in California has been consuming approximately 40,000 acres of agricultural lands per year. Since 1990, this urbanization has converted 538,000 acres. Of this, 30% were prime, unique or statewide important farmlands and over half of this conversion occurred in the San Joaquin Valley. The rapid population growth and the draw of relatively affordable housing in the San Joaquin Valley as compared with other urbanized areas of California has led to the threat of California's most valued agricultural lands, and valued habitat lands for supporting biodiversity. Agricultural lands are a vital part of the state's environment and economy, representing over $36.6 billion in direct farm sales, and 12.8% of the nation's total agricultural value (California Department of Food and Agriculture 2009). The agricultural lands of the Central Valley, with their high quality soils, support production of a wide array of food and fiber that are exported throughout the United States and internationally (refer to Section 3.14, Agricultural Lands, for detail on San Joaquin Valley crops and value). Statewide agriculture-related jobs account for approximately 1.4 of every 100 jobs (U.S. Department of Agriculture, Economic Research Service·2002). The San Joaquin Valley accounts for over half of all direct agricultural jobs in California (California Employment Development Department 2009). These lands, which form the underpinning of the state's agricultural industries, have been subject to a long-term trend of conversion to urbanized uses.

In California, new development has consumed an acre of land for every 9.4 people statewide, but in the San Joaquin Valley, this rate is an acre for every 8 persons (Thompson 2009). Conversion of open lands has also led to inefficient urban development patterns that have resulted in increased cost for providing public services to the newly developed areas. Population growth in the Central Valley in the coming decades is expected to continue, resulting in an ongoing pressure to use agricultural lands to accommodate growth. The HST System would ease the pressure on the state's agricultural land base and open space by reducing the need for expanding airports and freeways. By offering a new transportation option, it provides an opportunity to create transit centers in the central business districts, where mixed land uses (residential, commercial, and business uses) and urban densities are best suited. Multimodal centers draw high volumes of people to interact for pleasure, business, and commerce. The presence of high volumes of people can induce economic investments within walkable distances of these centers. Worldwide and national examples demonstrate increased land values adjacent to large multimodal centers to develop more densely around stations. If the communities zone to take advantage of this increase in land values, the growth can be redirected to limit low density development, which has been consuming large amounts of land area. There is an opportunity to encourage walkable, more concentrated development patterns to meet new growth demands and reduce the rate and occurrence of low density, which erodes the valuable land resources.

1.3 Relationship to Other Agency Plans and Policies

The objectives of the California HST System include providing an interface between the HST System and major commercial airports, mass transit, and the highway network. Plans and programs that have been considered in the development of the Merced to Fresno Section alignment and station location options, or that already include recommendations for an HST project, are discussed below.

San Joaquin Valley Blueprint Roadmap Summary: The *San Joaquin Valley Blueprint Planning Process Summary Report* (The Blueprint) (San Joaquin Valley Regional Planning Agency Policy Council 2009)**:** In January 2006, the councils of government from the eight San Joaquin Valley counties (San Joaquin, Stanislaus, Merced, Madera, Fresno, Tulare, Kings, and Kern) jointly received a grant from the California Department of Business, Transportation, and Housing and the San Joaquin Valley Air Pollution Control District to develop a long-term blueprint for growth in the San Joaquin Valley. The goal was to determine if there are alternatives to current transportation improvement priorities that would make improvements to the region's travel patterns and air quality, while being consistent with local attitudes and values.

On April 1, 2009, the San Joaquin Valley Regional Policy Council reviewed the collaborative work of seven councils of government (San Joaquin, Stanislaus, Merced, Fresno, Tulare, Kings, and Kern) and one regional transportation planning agency (Madera County Transportation Commission) on The Blueprint and took the following actions:

- Adopted a list of smart growth principles to be used as the basis of blueprint planning in the San Joaquin Valley.
- Adopted a preferred blueprint growth scenario (Scenario B+) for the San Joaquin Valley to the year 2050. The preferred scenario will provide guidance for local jurisdictions with land use authorities as they update their general plans.

One of the smart growth principles adopted by the Policy Council is to provide a variety of transportation choices. Transportation is the key factor that will shape urban and rural development in the San Joaquin Valley. The region's transportation improvements will support the shared regional vision by providing connectivity between centers and to other regions, congestion relief, and choices for transporting people and goods while fostering new development, access to key economic assets, and connectivity to global markets. As part of this smart growth principle, The Blueprint envisions HST service in the San Joaquin Valley, with stations in Merced, Fresno, the Kings/Tulare region, and Bakersfield. The Blueprint is expected to be implemented through collaborative local and regional programs and planning processes and through projects built by private sector developers.

San Joaquin Corridor Strategic Plan: The *San Joaquin Corridor Strategic Plan* (Caltrans 2008b) formalized the short-term (3 to 5 years), medium-term (6 to 10 years), and long-term (11 to 25 years) vision for passenger rail service in the Central Valley. The plan includes all San Joaquin Valley counties, except Tulare County, and destination cities such as San Francisco, Oakland, Sacramento, and Los Angeles. The purpose of the plan is to develop a program of improvements that will increase rail ridership, revenue capacity, reliability, and safety within the corridor. Key stakeholders involved in the development of the plan included Amtrak, BNSF, UPRR, and the San Joaquin Valley regional transportation planning agencies. Public input on the plan suggested (1) improving communications regarding passenger services and ensuring station safety and security in the short-term; (2) adding more frequent service and more stations in the medium-term; and (3) providing passenger rail in the UPRR corridor, and direct connections to Los Angeles and the Bay Area in the long term.

The *San Joaquin Corridor Strategic Plan* recognizes that the current passenger trains (known as the San Joaquins) could interface with the HST System to serve as collectors/distributors with potential transfer stations in major cities, such as Sacramento, Merced, Fresno, and Bakersfield. These stations could allow passengers to transfer to and from the San Joaquins to the HST System. Other opportunities will arise for the San Joaquins to "bridge" the HST service while it is under construction in different regions, such as between the Bay Area and Merced and between Los Angeles and Palmdale. The San Joaquins could act as a Central Valley corridor bridge connecting the HST sections in the north and south.

2011 Regional Transportation Plan for Merced County: On July 15, 2010, the Merced County Association of Governments adopted the *2011 Regional Transportation Plan for Merced County* (Merced County Association of Governments 2010), which specifies how $1.6 billion in anticipated federal, state, and local transportation funds will be spent in Merced County through 2035. The RTP contains a fiscally constrained list of projects and programs that have a reasonable expectation of being funded during the life of the plan. Projects seeking state or federal funding, completing environmental clearances, or desiring to begin construction must be included on the RTP list. In turn, the RTP helps inform the development of the STIP, which prioritizes the use of state transportation funds. The RTP notes that Merced County is participating in the HST planning process.

The Merced County 2011 RTP supports growth that enhances multimodal transportation integration and connectivity. Other major goals include providing mass transit as a viable transportation choice and improving pedestrian-friendly facilities. Major projects on the RTP list that would be coordinated with the California HST System include widening SR 99 and associated interchange improvements.

The transportation analysis included in this EIR/EIS is based on the 2007 Merced County RTP that was adopted on May 17, 2007, and was the most current version available at the time of the analysis (Merced County Association of Governments 2007). The 2007 RTP was confirmed to be consistent with the 2011 RTP regarding transportation planning objectives and the type and scale of planned projects.

Madera County 2011 Regional Transportation Plan: On July 21, 2010, the Madera County Transportation Commission adopted the *Final 2011 Regional Transportation Plan* (Madera County Transportation Commission 2010), which specifies how $1.75 billion in anticipated federal, state, and local transportation funds will be spent in Madera County through 2035. The RTP contains a fiscally constrained list of projects and programs that have a reasonable expectation of being funded during the life of the plan. Projects seeking state or federal funding, completing environmental clearances, or desiring to begin construction must be included in the RTP list. In turn, the RTP helps inform the development of the STIP. The RTP notes that Madera County is participating in the HST planning process.

The Madera County 2011 RTP envisions a multimodal transportation system integrated with land use management strategies and air quality goals. Other major goals include supporting land use designs that are more conducive to alternative transportation modes, including greater density in existing developed areas, and implementing intelligent transportation systems to increase economic competitiveness and improve the quality of life. Major projects on the RTP list that would be coordinated with the HST System include widening of SR 99 from four to six lanes through Madera County and associated interchange improvements.

The transportation analysis included in this EIR/EIS is based on the 2007 Madera County RTP that was adopted on May 23, 2007, and was the most current version available at the time of the analysis (Madera County Transportation Commission 2007). The 2007 RTP was confirmed to be consistent with the 2011 RTP regarding transportation planning objectives and the type and scale of planned projects.

2011 Regional Transportation Plan—Long Range Transportation Vision for the Fresno County Region for the Years 2010 to 2035: The Council of Fresno County Governments adopted the *2011 Regional Transportation Plan—Long Range Transportation Vision for the Fresno County Region for the Years 2010 to 2035* (Fresno Forward RTP) (Council of Fresno County Governments 2010a) on July 27, 2010. The RTP specifies how approximately $5.88 billion in anticipated federal, state, and local transportation funds will be spent in Fresno County during the next 25 years. The RTP contains a fiscally constrained list of projects and programs that have a reasonable expectation of being funded during the life of the plan. County-level projects seeking state or federal funding, completing environmental clearances, or desiring to begin construction must be on the RTP list. In turn, the RTP helps to inform the development of the STIP. The RTP recognizes that the HST project is an important state program that would benefit the San Joaquin Valley by connecting it to major metropolitan areas.

The major focus of the Fresno Forward RTP is an interregional perspective to transportation planning within the eight counties of the San Joaquin Valley. These counties have implemented an aggressive program of coordinated planning. In September 1992, the eight regional transportation planning agencies (RTPAs) in the San Joaquin Valley entered into a memorandum of understanding (MOU) to ensure a coordinated regional approach to transportation and air quality planning efforts. The MOU establishes a system for coordinating plans, programs, traffic and emissions modeling, transportation planning, and air quality planning, and providing consistency in data analysis and forecasting. An updated MOU in 2006 created the San Joaquin Valley Regional Planning Agency Policy Council. The council is authorized to represent the RTPAs in multiple forums, including before the California Transportation Commission, the California State Legislature, and Congress.

The *San Joaquin Valley Express Transit Study* (Merced County Association of Governments 2009b) was sponsored by RTPA to develop a comprehensive understanding of existing inter-and intravalley transit services and future transit demand between the San Joaquin Valley and Sacramento, the Bay Area, and Southern California destinations. The study recommends providing commuter rail service in the northern SR 99 corridor (Merced, Stanislaus, and San Joaquin counties), with a southern terminus in the City of Merced. Recommendations for implementing commuter rail service are focused on coordinated regional effort to secure funding and collaboration with the Authority.

Fresno-Yosemite International Airport Master Plan: In 2002, the City of Fresno initiated an update of its 1997 Airport Master Plan to develop a 20-year forecast for aviation development, including plans that allow the airport to be prepared to accept service from potential low-cost carriers. The plan is to determine the projected needs of all airport users for both airside and landside facilities and to evaluate alternatives for development of each airport function (airfield, terminal area, air cargo, access and parking, airport support area, and general aviation) (Council of Fresno County Governments 2010a).

Fresno County Measure C Extension: In 1986, Fresno County voters approved Measure C, a one-half cent sales tax earmarked for transportation purposes. The voters approved a 20-year extension to Measure C, effective July 1, 2007. Over the 20-year period, this measure will provide $1.7 billion for a broad array of transportation improvements. The largest share (34.6%) of Measure C funds will be used to improve local transportation systems in the county. These improvements include such projects as street maintenance/rehabilitation, Americans with Disabilities Act (Public Law 101-36) compliance, pedestrian access and trails, and bicycle facilities. Approximately 30% of Measure C funds are allocated to regional projects, including major highway and airport improvements. Approximately 24% of Measure C funds will be used to expand public transit and improve air quality. At present, the public transit program is focused on expanding the express, local, and feeder bus services throughout the county. These improvements would provide better connections to the Fresno HST station, reducing the need for car travel to and from the station.

1.4 Relationship to Other Transportation Projects and Plans in the Study Area

The objectives of the proposed HST System include interfaces with the HST System and major commercial airports, mass transit systems, and the highway network. Other key transportation projects within the Merced to Fresno Section that offer intercity travel benefits and could enhance intermodal connections to the proposed HST system are described below. These projects have been considered in the planning and development of the Merced to Fresno HST Project and station location options.

State Route 99 Corridor Business Plan: SR 99 is the transportation backbone of the San Joaquin Valley. In recent years, several efforts have focused on improving this highway to meet transportation standards and serve the expected growth in the valley. The updated *Route 99 Corridor Business Plan* (Caltrans 2009a) incorporates these efforts and provides the current blueprint for the corridor. The business plan is an update of the original business plan published in 2005, which first established a comprehensive corridor management plan. That plan laid out the improvements necessary to attain the primary objective of a minimum six-lane freeway for the entire corridor. The funding provided in 2006 with statewide voter approval of Proposition 1B has allowed much of this plan to proceed.

With much of the freeway conversion underway, the business plan has now focused more on capacity-increasing projects. The four priority categories for improvements in the plan include the following:

- Priority Category 1 – Freeway Conversion: This is now deemed complete because non-freeway sections will be eliminated within 5 years.
- Priority Category 2 – Capacity-Increasing Projects: These projects will provide a minimum of six lanes throughout the corridor and eight lanes in some urban areas.
- Priority Category 3 – Major Operational Improvements: These projects will improve outdated interchanges and add auxiliary lanes.
- Priority Category 4 – New Interchanges: These include new interchanges to accommodate growth and development along SR 99.

The business plan identifies 70 projects and establishes priorities by time period, with a goal of completion in 20 years. State and local funding resources have been allocated, and local agencies hope to advance the implementation schedule.

Many of the projects in the *Route 99 Corridor Business Plan* address potential improvements along SR 99 in Merced, Madera, and Fresno counties. These projects provide coordination opportunities for the Fresno to Merced HST Project.

2007 Merced Municipal Airport Master Plan: Improvement plans for Merced Municipal Airport/Macready Field are addressed in the *Merced Municipal Airport Master Plan* (City of Merced 2007). Commercial service could increase moderately under this plan, with a baseline projection that will increase annual aircraft operations from 2,700 in 2004 to more than 9,000 in 2026, servicing up to 53,000 passengers annually. The primary facility improvement recommended in the plan is a new 11,000-square-foot passenger terminal that is projected to be completed by 2011. This will increase the current footprint by more than 7,700 square feet. The improvements will expand options for air and HST passenger travel and will facilitate efficient transfers to complete longer trips.

The Downtown Merced Station will provide connections to Amtrak and Merced Municipal Airport/Macready Field, facilitating easy transfers between the HST and the airport. Currently, there is shuttle service between the Merced Transportation Center, which is located near the proposed Merced HST station site, and the airport.

California State Rail Plan 2007–2008 to 2017–2018: The *California State Rail Plan 2007–2008 to 2017–2018* (Caltrans 2008a) is implemented by Caltrans. The plan envisions capital and operational improvements that will increase service in Merced to eight daily roundtrips by 2018, carrying 1,430,000 passengers annually, with 90% on-time performance. One new roundtrip service will operate between Oakland and Bakersfield; the other new roundtrip service will operate between Sacramento and Bakersfield. This plan also seeks to reduce the travel time between Oakland and Bakersfield to less than 6 hours and between Sacramento and Bakersfield to less than 5 hours. The increased Amtrak service will provide more connections between Amtrak and the HST System.

1.5 Tiering of Program EIR/EIS Documents

Beginning in 2000, the Authority and FRA have been using a tiered environmental review process for the proposed HST System. "Tiering" of environmental documents means addressing a broad, general program in an initial programmatic or first-tier environmental document, then analyzing the complete details of related "second-tier" projects in subsequent documents. The environmental documents for individual or “second-tier” projects may incorporate by reference analyses already completed in the first-tier document to address many large-scale, nonsite-specific resources and issues, while focusing the second-tier analysis on site-specific effects not previously considered. Tiering environmental documents avoids repetitive evaluations of issues when sufficiently addressed in a first-tier analysis.

The 2005 *Final Program EIR/EIS for the Proposed HST System* (Authority and FRA 2005) provided a programmatic analysis of implementing the HST System across the state, from Sacramento in the north, to San Diego in the south, and the San Francisco Bay Area to the west. At the conclusion of that first-tier environmental process, the Authority and FRA selected preferred alignments and station locations for most of the Statewide HST System to analyze further in second-tier EIR/EIS documents; Figure 1-6 shows this preferred alignment and station locations. The 2005 decisions covered most of the geographic area discussed in the Merced to Fresno Section project-level EIR/EIS. Neither the FRA’s nor the Authority’s 2005 decisions were subject to legal challenge.

This project-level EIR/EIS evaluates three alignment alternatives—the UPRR/SR 99 Alternative, the BNSF Alternative, and the Hybrid Alternative—and their design options. This EIR/EIS includes information about the connection to San Jose to the west (i.e., wye) and locations where a heavy maintenance facility (HMF) for the HST System could be built and operated. However, this EIR/EIS provides a decision on neither the wye nor HMF location. The wye location will be selected at the conclusion of the San Jose to Merced Section EIR/EIS (scheduled for publication in 2013) and the HMF will be selected between sites identified in the San Jose to Merced Section EIR/EIS and the Fresno to Bakersfield Section EIR/EIS (the Fresno to Bakersfield Section Revised Draft EIR/EIS is scheduled for publication in 2012). In the Merced to Fresno Section EIR/EIS, Section 2.3, Potential Alternatives Considered during Alternatives Screening Process, and Chapter 7, Preferred Alternative and Stations, provide the reasons for making these decisions at a later time.

After the 2005 Statewide Program EIR/EIS document, the Authority and FRA then prepared a second program EIR/EIS on the HST to identify a preferred alignment and station locations for the connection between the Bay Area and the Central Valley. At the conclusion of the 2008 Bay Area to Central Valley HST Program EIR/EIS process, the Authority and FRA selected a Pacheco Pass connection, preferred alignments, and station locations for further second-tier evaluation. As a result of CEQA litigation, the Authority rescinded its 2008 programmatic decision, prepared a Revised Final Program EIR, and made a new decision on the Bay Area to Central Valley route in 2010. A second legal challenge resulted in the Authority preparing a Partially Revised Final Program EIR. The Authority is expected to rescind its 2010 decisions and make a new set of decisions for the Bay Area to Central Valley connection before considering the Merced to Fresno Section HST Final Project EIR/EIS. The Authority’s rescission of the 2008 and 2010 programmatic decisions does not invalidate FRA’s federal decisions on the 2005 and 2008 Program EIR/EIS documents. The Authority staff recommendation is consistent with the 2008 and 2010 programmatic decisions, to connect the Bay Area and the Central Valley over the Pacheco Pass.

The Merced to Fresno Section HST second-tier project is consistent with the Authority and FRA’s first-tier program decisions. The Merced to Fresno Section would serve as the connection to Sacramento to the north, to the San Joaquin Valley and Bakersfield to the south, and to the Bay Area to the west via the Pacheco Pass. This Merced to Fresno Section Project EIR/EIS tiers from the prior first-tier, program EIR/EIS documents, which provide background information on the Statewide HST Project, how it has evolved to date, and how the Merced to Fresno Section fits within the Statewide HST System. This second-tier Project EIR/EIS, however, contains all the detailed analysis of the environmental impacts of implementing the Merced to Fresno Section HST, including alternatives to this section’s alignment, direct and indirect impacts, cumulative impacts, secondary effects, and mitigation measures. Chapter 3, Affected Environment, Environmental Consequences, and Mitigation Measures, examines the site-specific effects of implementing the HST in the Merced to Fresno Section for each resource area and does not rely on the prior first-tier analysis to identify any environmental impact issue. In this sense, the Merced to Fresno Section Project EIR/EIS is tiered, but it is also a standalone document because it contains all the necessary site-specific environmental analysis to support the decision to proceed with the Merced to Fresno Section HST project.

Figure 1-6
Preferred Alignments and Stations
– State of California

1.6 2012 Business Plan

In April 2012, the Authority released the Revised 2012 Business Plan for the California HST System. This plan updated the 2012 Business Plan released for public review in November 2011. The purpose of the Business Plan is to comply with the requirements of the Public Utilities Code Section 185033. It outlines the type of high-speed rail service the Authority plans to develop; describes the primary benefits of the system; and forecasts patronage, project funding, construction phasing, and project risks. The Business Plan is a planning document that describes a phased approach for construction of the Statewide HST System, depicting general routes consistent with the statewide system that the Authority and FRA selected at the conclusion of the first tier of CEQA and NEPA compliance (Statewide Program EIR/EIS [Authority and FRA 2005], Bay Area to Central Valley Program EIR/EIS [Authority and FRA 2008], Bay Area to Central Valley Revised Final Program EIR [Authority 2010], and Bay Area to Central Valley Partially Revised Final Program EIR [Authority 2012]). The plan includes a detailed description of the anticipated phasing of implementation for each individual section of the HST System, including the order of priority for construction of each second-tier project, such as the Merced to Fresno Section described in this EIR/EIS.

The Revised 2012 Business Plan discusses a blended approach to phasing that would build over time to the Statewide HST System as envisioned for California. Consistent with its statutory mission, the Authority has been planning for the long-term implementation of the entire 800+ miles of the Statewide HST System. In response to feedback on the Draft 2012 Business Plan, the Authority will also prioritize early investments between San Francisco and Los Angeles and Anaheim. The Revised 2012 Business Plan describes in more detail how Phase 1 of the HST System will be implemented, starting in the Central Valley (Merced to Fresno and Fresno to Bakersfield) and then building incrementally toward the Los Angeles Basin (Bakersfield to Palmdale, Palmdale to Los Angeles, Los Angeles to Anaheim), followed by connection to the San Francisco Bay Area (San Jose to Merced, San Francisco to San Jose). This more detailed discussion of phased implementation for the different sections of the Phase 1 HST recognizes current budgetary and funding realities, which will result in both Phase 1 and Phase 2 (i.e., Los Angeles to San Diego and Merced to Sacramento) of the Statewide HST System (as well as the Altamont Corridor being pursued in collaboration with regional agencies) being constructed over a longer period of time than originally anticipated. The details of the schedule for phased implementation or blended approach for each project section will be documented in the project-level EIR/EIS documents.

The three key elements of the Revised 2012 Business Plan implementation strategy to provide a faster, better, cheaper system are as follows:

- **Blending** the HST System with 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.
- Making **early investments** in the “bookends” or San Francisco Bay Area and Los Angeles Basin regions to upgrade existing services, build ridership, and lay the foundation for expansion of the HST System.
- Delivering **early benefits** to Californians by using and leveraging investments as they are made.

The Revised 2012 Business Plan describes a phased implementation strategy to accomplish these three elements. The Initial Operating Section (IOS) first construction, a 130-mile segment that extends from north of Fresno to Bakersfield, will provide the track and structures to support the system spine. The IOS includes construction of new high-speed infrastructure in the Central Valley and adds simultaneous complementary investments to produce immediate benefits throughout the state. Working collaboratively with regional transportation partners, early investments in existing rail systems are proposed in the Los Angeles Basin and the San Francisco Bay Area. These early investments will provide near-term benefits to travelers in metropolitan areas and will lay the foundation for the HST System as it expands to reach the metropolitan areas and connect service throughout the state.

What Does "Blended" Mean?

The 2012 Revised Business Plan refers to blended systems and blended operations, which describe integration of HSTs with existing intercity and commuter/ regional rail systems via coordinated infrastructure (the system) and scheduling, ticketing, and other means (operations).

The IOS first construction is the first investment toward the development of an operating system. It will allow the immediate introduction of improved service for the San Joaquin intercity line. This service will be integrated with the Altamont Commuter Express (ACE) service, the Capitol Corridor, and the Caltrain service and will reach from Bakersfield to the San Francisco Bay area and to Sacramento. It will be accompanied by early investments in the existing regional and commuter systems, and new Northern California unified passenger service. The investment of high-speed rail funds to expedite the connection of the northern and southern parts of the state by establishing new rail service in the gap between Bakersfield and Palmdale will also be an initial priority. Completion of these actions will support an IOS with HSTs operating at 220 mph on a 300-mile segment, including trains and systems, between the Central Valley and the San Fernando Valley, in 2022. By 2026, the Phase 1 Bay to Basin system will connect San Jose, the Central Valley, and Los Angeles/Anaheim on a 410-mile system through a combination of dedicated high-speed rail infrastructure blended with improvements to existing regional systems. The completed Phase 1 blended system will be operational in 2028 on 520 miles of track, blending operations with existing commuter/intercity rail, and incorporating additional improvements for a one-seat ride between Downtown San Francisco and Los Angeles/Anaheim. The Phase 2 expansion will bring high-speed rail to Sacramento, San Diego, and the Inland Empire, continuing the blended approach to provide HST service far earlier than previously identified in the Draft 2012 Business Plan.

The Revised 2012 Business Plan also does not change the "full system" for the HST in the Central Valley as defined and analyzed in the Merced to Fresno Section Project EIR/EIS. The Merced to Fresno Section, which is part of the "spine" of the HST System, will be constructed in the near term to the ultimate design of two dual mainline tracks with four tracks at stations, meeting all performance objectives identified in Chapter 2, Alternatives. The Revised 2012 Business Plan does, however, lay out a new phasing strategy for initiating service and integrating with intercity commuter rail services as an initial step to HST operations. The Merced to Fresno Section EIR/EIS assumed that HST service would be operational for Phase 1, connecting San Francisco with Los Angeles via the Central Valley by 2020 and Phase 2 would extend service to Sacramento and San Diego beginning in 2027. The full system analysis for the EIR/EIS was based on a future year of 2035. The Revised 2012 Business Plan indicates that the IOS first construction would be completed in 2018, with the initial service starting in 2022. The Phase 1 buildout would be operational in 2034 and the full system operation (Phase 2) would occur well beyond the 2035 full system operations envisioned in the Merced to Fresno Section EIR/EIS.

The revised phasing assumptions for the Merced to Fresno Section would not alter the construction impacts outlined in the EIR/EIS. The operational impacts of the HST would, however, be expected to be lower under the Revised 2012 Business Plan in 2020 and 2027 and for the full system buildout in 2035, as presented in this EIR/EIS. Impacts would be lower than those presented in this EIR/EIS because fewer trains are expected to be operational before 2035. With fewer trains operating, the expected ridership under the Revised 2012 Business Plan would be lower and impacts, such as traffic and noise, associated with the train operations in 2035 would generally be less than what is presented in this EIR/EIS. The benefits accruing to the project, such as reduced VMT, reduced GHG emissions, and reduced energy consumption, would also be less than presented in this EIR/EIS. The benefits, as with the impacts, would continue to build and accrue over time and would eventually reach the levels discussed in this EIR/EIS for the full system. A specific time frame has not been set for the implementation of Phase 2; the time frame will depend on funding availability and direction from the California High-Speed Rail Authority Board of Directors.

Other features of the blended approach, as defined in the Revised 2012 Business Plan, would not have any direct implication for the analysis that was performed for the Merced to Fresno Section, as this HST section will be constructed to its ultimate HST track configuration in the near term as part of the IOS. The capital costs for the Merced to Fresno Section did not change with the Revised Business Plan, but the operational costs would incrementally grow over a longer period as the number of trains operating and ridership would take longer to build to the level envisioned in the EIR/EIS.

The interim use of the IOS first construction track for upgraded San Joaquin service could have environmental impacts that differ from those analyzed in this EIR/EIS. Service upgrades for the San Joaquin service and the potential for environmental impact would be appropriately assessed by the operating agency prior to service initiation.

In the remainder of this EIR/EIS, the IOS first construction is referred to as the Initial Construction Segment (ICS).