

**U.S. Department of Transportation  
Federal Railroad Administration**

## **Record of Decision California High-Speed Train System**

This Record of Decision (ROD) records the decision of the Federal Railroad Administration (FRA), an operating administration of the U.S. Department of Transportation, with regard to the California High-Speed Train (HST) System proposed by the California High-Speed Rail Authority (Authority), at the initial programmatic phase of environmental review. In making this decision, FRA considered the information, and analysis, contained in the Draft and Final Program Environmental Impact Report/Environmental Impact Statements (EIR/EIS) for the Proposed California High-Speed Train System and public and agency comments.

This ROD has been drafted in accordance with the Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA), (40 CFR § 1505.2) and FRA Environmental Procedures (64 Fed. Reg. 28545, May 26, 1999). Specifically, this ROD:

- States FRA's decision on the proposed California HST system.
- Provides background on the proposed HST system and the NEPA tiering process.
- Describes FRA's role in the HST program.
- Describes the factors considered by the FRA in making this decision.
- Identifies the alternatives considered by the FRA.
- Summarizes environmental benefits and adverse impacts.
- Summarizes the comments received on the Final Program EIR/EIS.
- Discusses measures to minimize environmental harm.
- Describes compliance with other federal regulations.
- Describes some initial next steps in the tiered environmental review process.

### **1. Decision**

The California High Speed Train Program EIR/EIS is the first programmatic phase of a tiered environmental review process and the FRA, in cooperation with the Authority, is making initial and basic decisions on the proposed HST system. The Authority is the agency of California state government charged under California law (California Public Utilities Code § 185000 et seq.) with the exclusive responsibility for planning, construction, and operation of high-speed passenger train service at speeds exceeding 125 miles per hour. As Federal co-lead agency for the Program EIR/EIS, FRA has



worked jointly with the Authority to carry out the analyses and evaluations included in the Draft and Final Program EIR/EIS's. The FRA makes the following decisions:

1. To select the HST Alternative and to reject the No Action Alternative as well as the Modal Alternative (highway/aviation improvements); and
2. To eliminate certain conceptual HST corridors, alignments, and station options evaluated in the Program EIR/EIS from further consideration; and
3. To select for further consideration in the tiered environmental reviews to be prepared subsequent to the Program EIR/EIS, the preferred conceptual corridor, alignment, and station options for the HST as described in the Final Program EIR/EIS.

The Program EIR/EIS considers the comprehensive nature and scope of the proposed HST system, at the conceptual stage of planning and decision-making, including potential route and station locations. FRA's decisions select conceptual corridors and station locations for further analysis.

The Authority considered and made similar decisions when certifying the Final Program EIR/EIS under CEQA on November 2, 2005. The Authority may also pursue preservation of right-of-way in selected corridors and at station locations through protective advance acquisition consistent with the Federal Uniform Relocations Assistance and Real Property Acquisitions Policies Act and Federal and State law.

Subsequent future tiers of project-level environmental review will examine a range of HST project alternatives as portions of the proposed HST system are advanced within corridors and at station locations selected in the Program EIR/EIS, as well as a no action alternative. Project-level reviews will fully describe site-specific environmental impacts and will identify specific mitigation measures to address those impacts. The FRA and the Authority will assess the site characteristics, size, nature, and timing of proposed specific projects to determine whether the impacts are potentially significant and whether impacts can be avoided or mitigated.

Because the Program EIR/EIS does not assess future actions to implement an HST system at specific locations, the FRA cannot predict site-specific impacts with certainty and cannot determine more specific mitigation measures appropriate for mitigating those impacts. Consequently, the Program EIR/EIS identifies design practices and mitigation strategies, which are an array of actions that can be applied at the project-level to avoid, minimize, or mitigate the types of environmental impacts anticipated as a result of implementation of the HST system. To minimize potential future environmental harm from implementation of the proposed HST system, the FRA adopts the design practices and mitigation strategies in the Mitigation Monitoring and Reporting Plan (MMRP) included as Appendix A.

## 2. Introduction

The Authority was created pursuant to state legislation in 1996 to develop a plan for the construction, operation, and financing of a statewide, intercity high-speed passenger train system offering intercity service (California Public Utilities Code § 185000 et seq.). The Authority's enabling legislation, Senate Bill (SB) 1420 (chaptered 9/24/96, Chapter 796, Statute of 1996), defines high-speed rail as "intercity passenger rail service that utilizes an alignment and technology that makes it capable of sustained speeds of 200 miles per hour (mph) (320 kilometers per hour [kph]) or greater." Based on the results of initial feasibility studies, the Authority advanced the evaluation of a proposed HST system as the logical next step in the development of California's transportation infrastructure.

In June 2000, the Authority adopted the final business plan (Business Plan) (California High Speed Authority 2000) describing an economically viable HST system over 700 miles long (1,127-kilometers). This system would be capable of speeds in excess of 200 miles per hour (mph) (322 kilometers per hour [kph]) and would travel on a mostly dedicated system with fully grade-separated tracks with state-of-the-art safety, signaling, and automated train control systems. It would connect and serve the major metropolitan areas of California, extending from Sacramento and the San Francisco Bay Area through the Central Valley to Los Angeles and San Diego. Such a system would be expected to carry a minimum of 42 million passengers annually, representing 32 million intercity trips and 10 million commuter trips, by the year 2020 and would have revenues in excess of operations and maintenance costs.

At the beginning of the EIR/EIS process, in order to describe a proposed HST system and alternatives for analysis in the EIR/EIS, the Authority and FRA reviewed previous studies and considered the purpose and need of the HST system. The Authority and the FRA determined that the appropriate initial California Environmental Quality Act (CEQA) and NEPA document for the proposed HST system would be a programmatic EIR/EIS, considering the comprehensive nature and scope of the HST system, to support conceptual decision-making. The programmatic level of environmental review allows for the broadest disclosure of impacts, and has provided the opportunity for the Authority, the FRA, and the public to consider alternatives to an HST system, and different conceptually defined HST corridor alignment and station options. Analyzing a proposed large-scale transportation system at the conceptual planning stage also provides the Authority and FRA with the best opportunity to develop design practices and mitigation strategies to avoid and minimize identified impacts.

The California High Speed Train Program EIR/EIS is the first phase of a tiered environmental review process, and was prepared for the first and programmatic-level of review and consideration of early policy decisions on the HST system. The program-level Program EIR/EIS was developed to make two levels of decision.

1. To decide whether to pursue a high speed train system, involving steel-wheel-on-steel-rail technology along certain conceptual corridors shown in Figures 1 and 2 and designed to help meet California's increasing demand



for transportation, versus doing nothing, or recommending a modal alternative (highway/aviation improvements); and

2. To determine which of the conceptual corridors, alignments, and station options evaluated in the Program EIR/EIS can be eliminated from consideration and which to select for further consideration in the tiered environmental reviews to be prepared subsequent to the Program EIR/EIS, if the high-speed train system is pursued.

NEPA requires that an agency consider the environmental effects of its actions at the earliest point in time when the analysis is meaningful, and it is within the agencies' discretion to fashion an environmental process appropriate to the type of decisions they are considering. The Program EIR/EIS shapes the parameters for the site-specific environmental documents to support second-tier project decisions. The tiered project-level environmental reviews will fully describe site-specific environmental impacts of a range of project alternatives within selected corridors and at station locations and will define specific mitigation measures to address those impacts.

Pursuant to the requirements of NEPA and CEQA, a comprehensive public and agency involvement effort was conducted as part of the program environmental process. Public and agency involvement was accomplished through a variety of means, including the following: scoping process that included a series of public and agency scoping meetings; consultation meetings with federal and state resource agency staff representatives throughout the environmental process; informational meetings with interest groups and agencies; presentations and briefings to a broad spectrum of interest groups; information materials, including a series of region-specific fact sheets; the Authority's Web site ([www.cahighspeedrail.ca.gov](http://www.cahighspeedrail.ca.gov)) presenting information about the proposed project and study evaluations; noticed public meetings of the Authority's governing board at which key policy issues and decisions were raised and discussed and opportunities for public comment were provided; public circulation of the Draft Program EIR/EIS; and posting on the Authority's website, including technical studies, public information sessions and seven public hearings on the Draft Program EIR/EIS, as well as written comments received during the public comment period from January 27, 2004 to August 31, 2004; and public circulation of the Final Program EIR/EIS. The FRA's website was linked to the Authority's website throughout the program environmental process.

As part of the agency involvement in the environmental process, the Federal Highway Administration, U.S. Environmental Protection Agency (USEPA), U.S. Army Corps of Engineers (USACE), Federal Transit Administration, Federal Aviation Administration, and U.S. Fish and Wildlife Service served as cooperating agencies under NEPA for the preparation of the Program EIR/EIS.

The announcement of the availability of the Draft and Final Program EIR/EIS and the Authority's website listed the 32 libraries across the state having a hard copy of the documents available for review. Participating libraries were located in the following cities: Anaheim, Bakersfield, Burbank, Escondido, Fremont, Fresno, Gilroy, Irvine, Los Angeles, Merced, Modesto, Mountain View, Norwalk, Oakland, Oceanside, Ontario, Palmdale, Palo Alto, Riverside, Sacramento, San Clemente, San Diego, San Francisco, San Gabriel, San Jose, Santa Clarita, Stockton, Sylmar, Temecula, and Tulare.



The release of the Draft Program EIR/EIS and the release of the Final Program EIR/EIS were also announced through a display ad distributed in 16 statewide newspapers. The display ads were published in the following newspapers: *Sacramento Bee*, *Daily Republic*, *Oakland Tribune*, *San Francisco Chronicle*, *San Jose Mercury*, *Modesto Bee*, *Merced Sun Star*, *Fresno Bee*, *Bakersfield Californian*, *Los Angeles Times*, *Orange County Register*, *Antelope Valley Press*, *The Press-Enterprise*, *North County Times*, *San Diego Tribune*, and *Stockton Record*.

A notice of availability of the Final Program EIR/EIS was published in the Federal Register by the Environmental Protection Agency on September 23, 2005.

### 3. FRA's Role in the HST Program

The FRA is serving as the lead Federal agency for the preparation of this joint State/Federal environmental review of the HST program. The Authority envisions seeking possible future federal financial support for the system that might be provided through the FRA. The FRA and the U.S. Department of Transportation have several loan and loan guarantee programs that might be potential sources of future financial assistance. Although no existing grant or federal bond financing programs provide the type of support envisioned, several proposals to create such programs, are pending before Congress. In addition to possible funding, a Rule of Particular Applicability may be required from the FRA to establish safety standards for the proposed HST system for operating speeds over 200 mph (322 kph) and for operations in shared-use rail corridors.

### 4. Purpose and Need for the Proposed Action

The purpose of the proposed HST system is to provide a reliable mode of travel that links the major metropolitan areas of the state and delivers predictable and consistent travel times. A further purpose is to provide an interface with commercial airports, mass transit, and the highway network and relieve capacity constraints of the existing transportation system as increases in intercity travel demand in California occur, in a manner sensitive to and protective of California's unique natural resources.

The Authority's statutory mandate is to plan, build, and operate an HST system that is coordinated with the state's existing transportation network, particularly intercity rail and bus lines, commuter rail lines, urban rail transit 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 over-utilized interstate highways and commercial airports.
- Meet future intercity travel demand that will be unmet by present transportation systems and increase capacity for intercity mobility.



- Maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways.
- Improve the intercity travel experience for Californians by providing comfortable, safe, frequent, and reliable high-speed travel.
- Provide a sustainable reduction in travel time between major urban centers.
- Increase the efficiency of the intercity transportation system.
- Preserve environmental quality and protect California's sensitive environmental resources by reducing emissions and vehicle kilometers/vehicle miles traveled for intercity trips.
- Consult with resource and regulatory agencies during the tier 1 environmental review and use all available information for assessing the alternative that is most likely to yield the least damaging practicable alternative by avoiding sensitive natural resources (wetlands, habitat areas, conservation areas) where feasible.
- 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, which would generate revenues in excess of operations and maintenance costs.

The capacity of California's intercity transportation system is insufficient to meet existing and future demand, and the current and projected future congestion of the system will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The system has not kept pace with the tremendous increase in population and tourism in the state. The interstate highway system, commercial airports, and conventional passenger rail system serving the intercity travel market are currently operating at or near capacity and will require large public investments for maintenance and expansion in order to meet existing demand and future growth over the next 20 years and beyond. Moreover, the ability to expand many major highways and key airports is uncertain; some needed expansions may be impractical or may be constrained by physical, political, and other factors. Simply stated, the *need* for improvements serving intercity travel within California relates to the following issues.

- Future growth in demand for intercity travel.
- Capacity constraints that will result in increasing congestion and travel delays.
- 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.
- Increasing frequency of accidents on intercity highways and passenger rail lines in congested corridors of travel.
- Reduced mobility as a result of increasing demand on limited modal connections between major airports, transit systems, and passenger rail in the state.



- Poor and deteriorating air quality and pressure on natural resources as a result of expanded highway and airports.

## 5. Factors Considered in Making This Decision

The analysis in the Final Program EIR/EIS confirms that the capacity of California's intercity transportation system is insufficient to meet existing and future demand, and the current and projected future congestion of the system will continue to result in deteriorating air quality, reduced reliability, and increased travel times. The state's intercity transportation system has not kept pace with the tremendous increase in the population and tourism in the state. The interstate highway system, commercial airports, and the conventional passenger rail system serving the intercity travel market are currently operating at or near capacity, and will require large public investments for maintenance and expansion in order to serve existing and future demand. The need for improvements serving intercity travel within California is described further in the Final Program EIR/EIS.

As described in the Final Program EIR/EIS, the purpose and objectives of the HST System, or program, which is identified as the Preferred HST Alternative, is to provide a reliable mode of travel that links the major metropolitan areas of the state and delivers predictable and consistent travel times, while also providing an interface with major commercial airports, public transit services, and the highway network and relieving capacity constraints in the existing transportation system in a manner sensitive to and protective of California's unique natural resources.

The need for a high-speed train system is directly related to the expected growth in population and resulting increases in intercity travel demand in California over the next twenty years and beyond. As a result of this growth in travel demand, congestion is expected to grow on California's highways and at airports. In addition, there will be effects on the economy and quality of life from diminishing reliability of the transportation system as travel demand increases. Air quality in and around California's metropolitan areas continues to be impaired and would worsen with more congestion. The intercity highway system, commercial airports, and conventional passenger rail serving the intercity travel market are currently operating at or near capacity, and will require large public investments for maintenance and expansion in order to meet existing demand and future growth.

The proposed high-speed train system would provide a new mode of high-speed intercity travel that would link the major metropolitan areas of California; interface with international airports, mass transit, and highways; and provide added capacity to meet increases in intercity travel demand projected for the year 2020 and beyond in a manner sensitive to and protective of California's unique natural resources.

The evaluation indicates that the Modal Alternative, improvement to existing highway and air modes of intercity travel, would help meet projected needs for intercity travel in 2020, but would not satisfy the purpose and objectives of the program as well as the HST alternative. In addition the capital cost of the Modal Alternative would be over two



times the estimated capital cost of the HST Alternative, and the Modal Alternative would have considerably less sustainable capacity than the HST Alternative to serve California's intercity travel needs beyond 2020.

The evaluation of the Final Program EIR/EIS also indicates that taking no action under the No Project Alternative would not meet the intercity travel needs projected for the future (2020 and beyond) as population continues to grow, and would fail to meet the purpose and objectives of the program which can be met by the Preferred HST Alternative. The No Project Alternative would result in environmental impacts but would not offer travel improvements compared to the Modal and HST Alternatives.

The evaluation of the Final Program EIR/EIS indicates that the HST Alternative is more effective in meeting the program objectives within the time frame needed and would result in fewer adverse impacts than the Modal or No Project Alternatives. The Preferred HST System Alternative would result in energy savings, air quality improvement and transportation capacity improvements, as compared to the No Project Alternative. In addition to meeting the program objectives, the Preferred HST System Alternative would also provide environmental benefits in the form of increased efficiency in energy use for transportation, decreased energy consumption [e.g., oil fuels consumption], improved air quality, improved travel conditions (including mobility, safety, reliability, travel times, and connectivity and accessibility) and reduced vehicle-miles-traveled for intercity trips. Given the environmental benefits it would provide and relative potential for adverse environmental impact, the HST Alternative is the environmentally preferable alternative.

## 6. Alternatives Considered

The Authority defined the HST Alternative through performance criteria building on information gathered in previous feasibility and corridor evaluation studies. To meet the travel time and service quality goals, the proposed statewide HST system would be capable of speeds in excess of 200 mph (320 kph) on fully grade-separated tracks with state-of-the-art safety, signaling, and automated train control systems. The criteria are based on accepted engineering practices, the criteria and experiences of other existing railway and HST systems, and the comments of HST manufacturers. These performance criteria are summarized in Table 1.





**Table 1**  
**HST Performance Criteria**

Category	Criteria
System Design Criteria	<p>Electric propulsion system.</p> <p>Fully grade-separated guideway.</p> <p>Fully access-controlled guideway with intrusion monitoring systems.</p> <p>Track geometry must maintain passenger comfort criteria (smoothness of ride, lateral acceleration less than 0.1 g).</p>
System Capabilities	<p>All-weather/all-season operation.</p> <p>Capable of sustained vertical gradient of 3.5% without considerable degradation in performance.</p> <p>Capable of operating parcel and special freight service as a secondary use.</p> <p>Capable of safe, comfortable, and efficient operation at speeds over 200 mph.</p> <p>Capable of maintaining operations at 3-minute headways.</p> <p>Capable of traveling from San Francisco to Los Angeles in approximately 2.5 hrs.</p> <p>Equipped with high-capacity and redundant communications systems capable of supporting fully automatic train control.</p>
System Capacity	<p>Fully dual track mainline with off-line station stopping tracks.</p> <p>Capable of accommodating a wide range of passenger demand (up to 26,000 passengers per hour per direction).</p> <p>Capable of accommodating normal maintenance activities without disruption to daily operations.</p>
Level of Service	<p>Capable of accommodating a wide range of service types (express, semi-express/limited stop, and local).</p>

To guide the further definition of alignment and station options, additional engineering criteria and parameters were necessary. The additional criteria and parameters considered in the program-level environmental analysis are defined in the Engineering Criteria Report (January 2004). The Authority also set forth criteria for tunnels within the HST system, which would chiefly be within the northern or southern mountain crossing corridors, and criteria for potential intermediate and terminus station sites.

The performance criteria were applied in the initial broad consideration of possible HST corridors, alignments, and station locations, in the consideration of train technologies that could provide the desired high-speed service, in the framing of the system alternatives for analysis in the Program EIR/EIS, and also in selecting preferred corridor alignments and station locations, as discussed below.

## 6.1 HST Alternatives Eliminated from Further Consideration During the Scoping Phase

The following HST alternative technologies, corridors, alignments, and stations were eliminated from further consideration during the scoping phase of the project and prior to detailed programmatic environmental review:

- **Steel-Wheel-on-Steel-Rail At Lower Speed (below 200 mph)**—The Authority’s enabling legislation defines *high-speed rail* as “intercity passenger rail service that utilizes an alignment and technology that makes it capable of sustained speeds of 200 mph (320 kph) or greater.”
- **Magnetic Levitation Technology and Steel-Wheel-on-Steel-Rail Electrified, Fully Dedicated Service**—While a completely dedicated train technology using a separate track/guideway would be required on the majority of the proposed system, requiring such separation everywhere in the system would likely preclude direct HST service to certain heavily constrained terminus sections (i.e., San Francisco Peninsula from San Jose to San Francisco, and the existing [LOSSAN] rail corridor between Los Angeles Union Station and Orange County). Because of extensive urban development and severely constrained right-of-way, HST service in these terminus sections would need to share physical infrastructure (tracks) with existing passenger rail services in existing or slightly modified corridors.
- **Corridors**— HST corridor options evaluated and eliminated from further consideration are described in detail in Section 2.6.8 of the Final Program EIR/EIS. The eliminated corridors included a San Francisco to Los Angeles only corridor, which would not meet the objective of linking the major metropolitan areas of the state; coastal corridors generally following Highway 101 and Highway 1, which would result in greater impacts to sensitive natural and cultural resources, higher costs and slower travel due to challenging topography and waters; and an Interstate Highway 5 corridor, which failed to meet basic project objectives of maximizing intermodal opportunities, maximizing connectivity and accessibility, and providing transit connections and multi-modal stations, and additionally would result in increased incompatibility with land use planning. Also eliminated were the Capitol Rail Corridor (Sacramento to Oakland) and the Panoche Pass because they would not meet basic project objectives.

**Alignment and Station Options**— Additional HST alignment and station options were evaluated and eliminated from further consideration using criteria related to the purpose and need and program objectives as described in detail in Section 2.6.9 of the Final Program EIR/EIS. The Authority’s performance criteria (as summarized in Table 1) were applied through a screening evaluation, which focused on cost and travel time as primary indicators of engineering viability and ridership potential. Capital costs were estimated and travel times were quantified for each alignment and station option considered. Other engineering criteria such as operational, construction, and right-of-way issues were evaluated qualitatively.

## 6.2 Alternatives Considered in the Program EIR/EIS

### No Project Alternative

The No Project/No Action (No Project) Alternative represents the state's transportation system, that serves the same intercity travel market as the proposed HST system, (highway, air, and conventional rail) as it is today and would be after implementation of programs or projects that are currently in regional transportation plans and have identified funds for implementation by 2020. Improvements that have been approved and funded in the fiscally constrained and conforming Regional Transportation Plans, State Transportation Improvement Plans, and airport development programs were considered part of the No Project Alternative.

### Modal Alternative

The Modal Alternative represents a hypothetical, reasonable build alternative to the proposed HST system consisting of expansion of highways and airports serving the same geographic areas. Under this alternative, the proposed HST system would not be implemented, and the existing transportation infrastructure would be expanded to accommodate the anticipated future intercity travel demand in the same geographic markets as the HST Alternative. The Modal Alternative was developed to provide an equivalent capacity to serve a representative demand for intercity travel (an estimate based on the independent ridership and revenue forecasts prepared for the Authority also used to define the HST Alternative).

During the screening evaluation process, the Authority and the FRA considered both a highway-improvement only modal alternative and an airport-improvement only modal alternative. These alternatives were rejected because neither would be practical or feasible to serve the range of intercity trip lengths to be served by the HST system, and neither would meet the purpose and need and objectives for the system with regard to predictable and reliable travel times, safety, and protection of natural resources through avoidance of environmental impacts. Consideration was also given to improving the conventional passenger rail system to stand alone or serve as part of the modal alternative. This was rejected because it would not provide or assist in providing a competitive option to satisfy intercity travel demand. .

The Modal Alternative evaluated in the Program EIR/EIS includes a combination of potentially feasible highway and aviation system improvements that focus on quantifiable capacity enhancements. The improvements included: additional traffic lanes for highways with associated interchange reconfiguration and ramp improvements; additional gates and runways for airports with associated taxiways, parking, and passenger terminal facilities. For purposes of this analysis, the projected travel demand was allocated to the highways and airport facilities described under the No Project Alternative, to identify these improvements that would be necessary to serve the representative intercity travel demand in lieu of HST service. Existing conventional passenger rail was not included in this alternative because it would not meet the same intercity demand that would be served by the proposed HST system.

## Proposed HST Alternative

The proposed HST system is a system over 700-miles long with electric propulsion and steel-wheeled trains capable of speeds in excess of 200 mph (322 kph) on a mostly dedicated system of fully grade-separated, access-controlled steel tracks and with state-of-the-art safety, signaling, communication and automated train control systems. The corridors considered in the Program EIR/EIS for the HST system are largely within or adjacent to existing transportation facilities or rights of way. These corridors connect and serve the state's major metropolitan areas, and potential station locations that could provide linkage with public transit services and the state's major commercial airports at multi-modal hubs.

Scoping and the screening evaluation led to identification of many HST alignment and station options for analysis in the Program EIR/EIS (See Section 2.6.9 of the Final Program EIR/EIS for more details). A range of HST design options are evaluated in the Program EIR/EIS, and key differences are addressed in the comparison of alternatives. Several major design option choices considered included the following:

- Northern Mountain Crossing: Mountain crossing options through the Coastal Mountain Range between the Central Valley and the Bay Area. Primarily two options: the Pacheco Pass through Gilroy and a northern crossing more directly aligned with San Jose.
- Southern Mountain Crossing: Mountain crossing options through the Tehachapi Mountain Range between Los Angeles and Bakersfield. Primarily two options: the I-5 corridor and a route through the Antelope Valley.
- Bay Area: Service options to the Bay Area along the peninsula to San Francisco and/or the East Bay to Oakland.
- Southern California: Service to Orange County in addition to service to San Diego via Inland Empire and the I-15 corridor.
- Shared-Use Options: Service to the urban centers on shared tracks with other passenger rail services. Based on the screening evaluation, the state-of-the-art high-speed steel-wheel-on-steel-rail technology considered for the system must also be capable of sharing tracks with other services at reduced speeds in heavily urbanized areas (i.e., San Jose to San Francisco, and Los Angeles to Orange County).
- Link to LAX: Direct or transfer to other transit system.

### 6.3 Preferred Program Alternative—HST Alternative

The following description of the HST Alternative is programmatic in nature and provides a broad planning and conceptual outline of the proposed train system, which is based on the information contained in the Final Program EIR/EIS and other reports included or referenced in the Final Program EIR/EIS.



The preferred HST system includes shared use corridors on the San Francisco Peninsula (Caltrain) and in southern California from Union Station in Los Angeles to Anaheim and Irvine. The preferred HST system also includes design practices to minimize impacts to resources, HST station development principles to foster smart growth, increase land use efficiency and minimize impacts to resources, and mitigation strategies to avoid and reduce environmental impacts. These practices, strategies and policies are described below in the discussion of impacts to resources.

The basic physical components of the proposed system include the trains and various structures. The trains are considered to include trainsets, communications, and signal and train control systems. The various structures that will make up part of the HST system include tracks and supporting structures, HST stations, and the electrical power system and facilities. These features may be briefly described as follows:

- Tracks and supporting structures include steel tracks for an HST system over 700 miles long, aerial structures and tunnels, grade separation and access-control features (fences, berms, signals, etc.)
- The electric propulsion and distribution system consisting of a 2x25KV overhead catenary system of poles and wires, as well as electric supply and booster stations
- HST multi-modal stations, intermediate and terminus, at thirty identified potential locations, that will generally include platforms, passenger facilities, baggage facilities, connections with public transit services, parking, and landscaping
- Cleaning, maintenance and storage facilities for the trains, at locations generally identified as facilities for light cleaning and maintenance located near termini in northern and southern California and facilities for heavy cleaning and maintenance located in the Central Valley.

The corridors proposed for the location of the preferred HST system are areas containing proposed alignments and multi-modal station sites. The corridors are conceptually described and represent routes for an over 700-mile long system providing for high-speed intercity passenger rail service between the major metropolitan areas of Sacramento and the San Francisco Bay Area in Northern California, through the Central Valley, to the Los Angeles area and Orange County and to San Diego via the Inland Empire. The preferred alignment and station locations are described briefly in the Summary in the Final Program EIR/EIS (section S.7) and depicted in the Final Program EIR/EIS.

The preferred alignment and station locations are described in detail in Chapter 6A of the Final Program EIR/EIS and can be briefly described by reference to five regional segments of the HST system as described below. The identification of preferred alignments was guided by public comments on the Draft Program EIR/EIS, the purpose and need of the HST system, and the Authority's objectives and criteria for evaluating alignments and station locations that were applied in scoping and the screening evaluation, as documented in Section 2.6.9 of the Final Program EIR/EIS.



Several factors were considered in identifying potential station stops, including speed, cost, local access times, potential connections with other modes of transportation, ridership potential, and the distribution of population and major destinations along the route.

The preferred station sites are all multi-modal transportation hubs that would provide links with local and regional transit, airports and highways. It is assumed that parking at the stations would be provided at market rates (no free parking). Each station site would have the potential to promote higher density, mixed-use, pedestrian-oriented development around the station. As the project proceeds to more detailed study, local governments would be expected to provide (through planning and zoning) for transit-oriented development around HST station locations, and to finance (e.g., through value capture or other financing techniques) and to maintain the public spaces needed to support the pedestrian traffic generated by hub stations if they are to have a HST station.

## **Preferred Alignment and Station Options**

The preferred HST alignment and station options are listed by region as follows:

### **Bay Area-Merced**

A broad preferred corridor between the Bay Area and the Central Valley containing a number of feasible route options within which further study will permit the identification of a single preferred alignment option. This corridor is generally bounded by (and includes) the Pacheco Pass (SR-152) to the south, the Altamont Pass (I-580) to the north, the BNSF Corridor to the east, and the Caltrain Corridor to the west (Highway route numbers are provided only as a convenient reference for the reader, not as a limitation on the corridor to be considered). The future additional study will also further consider the selected alignments and station locations in the Bay Area described below.

San Francisco Peninsula: Caltrain Corridor with potential stations at downtown San Francisco (Transbay Terminal), SFO (Milbrae), and Redwood City or Palo Alto.

East Bay Alignment: “Hayward Line to I-880” alignment with potential stations at Oakland (West Oakland) or 12<sup>th</sup> Street/City Center, Union City, and San Jose.

### **Sacramento-Bakersfield**

Sacramento-Stockton: Union Pacific alignment option or the CCT alignment with potential stations at Downtown Sacramento and Downtown Stockton.

Stockton-Merced: Burlington Northern Santa Fe (BNSF) alignment option with potential stations at Modesto (Amtrak Briggsmore), and Merced (Castle Air Force Base or Downtown Merced).

Merced-Fresno: BNSF alignment option with a potential station at Downtown Fresno.

Fresno-Bakersfield: BNSF alignment option with a potential station at Downtown Bakersfield (Truxtun)





**Bakersfield-Los Angeles**

Bakersfield-Sylmar: SR-58/Soledad Canyon Corridor (Antelope Valley) with a potential station at Palmdale Airport/Transportation Center.

Sylmar-Los Angeles: MTA/Metrolink with potential stations at Downtown Burbank (Burbank Metrolink Media Station) and Los Angeles Union Station.

**Los Angeles to San Diego via the Inland Empire**

Los Angeles to March AFB: UPRR Riverside/UPRR Colton Line alignment option with potential stations at East San Gabriel Valley (City of Industry), Ontario Airport, and Riverside (UC Riverside).

March AFB-Mira Mesa: I-215/I-15 alignment with potential stations at Temecula Valley (Murrieta), and Escondido.

Mira Mesa-San Diego: Carroll Canyon or Miramar Road alignment option with potential stations at University City and Downtown San Diego (Santa Fe Depot).

**Los Angeles to Orange County**

Los Angeles to Irvine: LOSSAN Corridor with potential stations at Norwalk, Anaheim Transportation Center, and Irvine Transportation Center.

## 6.4 Environmentally Preferred Alternative

The HST Alternative would have similar types of adverse environmental impacts as the Modal Alternative. However, the HST Alternative would provide environmental benefits in the form of increased efficiency in energy use for transportation, decreased energy consumption [e.g., oil fuels consumption], improved air quality, improved travel conditions (including mobility, safety, reliability, travel times, and connectivity and accessibility) and reduced vehicle-miles-traveled for intercity trips. For these reasons, the HST Alternative was identified as the preferred system alternative in the Draft Program EIR/EIS, and is identified as the environmentally preferable alternative under NEPA as well as the environmentally superior alternative under CEQA.

## 7. Summary of Potential Beneficial Environmental Effects

The potential environmental, transportation, land use, economic, and social beneficial effects of the HST Alternative are summarized below.

The HST Alternative would benefit the transportation system by:

- Meeting the need for a safe and reliable mode of travel that would link the major metropolitan areas of the state and deliver predictable, consistent travel times sustainable over time.
- Providing quick, competitive travel times between California's major intercity markets (Table 2).



- Providing door-to-door travel times for longer distance intercity markets that would be comparable to air transportation and less than one half as long as automobile travel times.
- Providing considerably quicker travel times for intermediate intercity trips than either air or automobile transportation and bringing frequent HST service to many parts of the state that are not well served by air transportation.
- Providing a new intercity, interregional, and regional passenger mode—the high-speed train—which would improve connectivity and accessibility to other existing transit modes and airports compared to the other alternatives.
- Improving the travel options available in the Central Valley and other areas of the state with limited bus, rail, and air service for intercity trips.
- Providing system redundancy in cases of extreme events, such as adverse weather or petroleum shortages
- Providing a predominantly separate transportation system that would be less susceptible to many factors influencing reliability, such as capacity constraints, congestion, and incidents that disrupt service.
- Providing superior on-time reliability.
- Providing a lower accident and fatality rate than automobile travel.
- Offering greater opportunities to expand service and capacity with minimal expansion of infrastructure.
- Adding capacity to the state's transportation infrastructure and reducing traffic on certain intercity highways and around airports to the extent that intercity trips are diverted to the HST system.
- Eliminating delays at existing at-grade crossings where the HST system would provide grade separation.
- Decreasing injuries and fatalities due to diversion of trips from highways, improving connectivity, and adding a variety of connections to existing modes, additional frequencies, and greater flexibility.

**Table 2**  
**Estimated Total Travel Times (Door to Door) between City Pairs by Auto, Air, and HST in 2020 (Hours:Minutes)**

City Pairs	Auto <sup>1</sup> (No Project Alternative)	Air (No-Project Alternative)		HST (HST Alternative) (Optimal Express Time)	
	Total	Line Haul <sup>2</sup>	Total	Line Haul <sup>2</sup>	Total
Los Angeles downtown to San Francisco downtown	7:57	1:20	3:32	2:35	3:30
Fresno downtown to Los Angeles downtown	4:30	1:05	3:02	1:22	2:33
Los Angeles downtown to San Diego downtown	2:49	0:48	3:00	1:13	2:16
Burbank (Airport) to San Jose downtown	6:50	1:00	3:14	1:49	2:52
Sacramento downtown to San Jose downtown	2:40	No service	No service	0:50	1:53
<sup>1</sup> Auto trips are assumed to be “point to point” and therefore do not have a line-haul (time in vehicle) time associated with their travel times. <sup>2</sup> Time in airplane or train. Source: Parsons Brinckerhoff.					

The HST Alternative would benefit the environment by:

- Using existing transportation corridors and rail lines to minimize the impacts on California’s landscape.
- Avoiding and/or minimizing the potential impacts to cultural, park, recreational and wildlife refuges to the greatest extent possible.
- Decreasing air pollutants statewide and in all air basins analyzed by reducing pollution generated by automobile combustion engines.
- Lowering total energy consumption (HST system uses less energy to move passengers than either airplanes or automobiles).
- Reducing noise in locations where grade separations eliminate horn and crossing gate noise at existing grade crossings.

The HST Alternative would provide land use benefits by:

- Being highly compatible with local and regional plans that support rail systems and transit oriented development and offering opportunities for increased land



use efficiency (i.e., higher density development and reduced rate of farmland loss).

- Meeting the need for improved inter-modal connectivity with existing local and commuter transit systems.
- Providing multi-modal transportation hubs that link with local and regional transit, airports, and highways.
- Increasing public benefits beyond the benefits of access to the HST system itself, including relief from traffic congestion, improved air quality, promotion of infill development and preservation of natural resources, increased stock of affordable housing, promotion of job opportunities, reduction in energy consumption, and improved cost-effectiveness of public infrastructure.
- Promoting the State's adopted smart growth principles and being a catalyst for wider adoption of smart growth principles in communities near HST stations.
- Encouraging infill development and thereby helping to protect environmental and agricultural resources by encouraging more efficient land use and efficient and compact development.

The HST Alternative would create economic benefits by:

- Providing revenue generated by the system, economic growth generated by construction and operation of the system, benefits from reduced delays to air and auto travelers, reduced air pollution, reduced accidents and fatalities and economic advantages related to proximity to the HST system.
- Reducing airport delays (by diverting some airline passengers to high-speed trains), thereby reducing aircraft operating costs.
- Creating denser development, which would accommodate more population and employment on less land. The HST Alternative would result in a slight decrease in urban area growth.
- Creating a statewide increase of 450,000 jobs between 2002 and 2035.
- Providing a location advantage to those areas that are in proximity to an HST station through improved accessibility to labor and customer markets, thereby potentially improving the competitiveness of the state's industries and the overall economy.

The HST Alternative would create social benefits by:

- Providing a new intercity, interregional, and regional passenger mode that would improve connectivity and accessibility to other existing transit modes and airports.
- Improving the travel options available in the Central Valley and other areas of the state with limited bus, rail, and air service for intercity trips.
- Providing travel options for some people who would not otherwise make trips.



- Enhancing and strengthening urban centers. In combination with appropriate local land use policies, the increased accessibility afforded by the high-speed service could encourage more intensive development and may lead to higher property values around stations.

## **8. Summary of Potential Adverse Environmental Impacts**

Potential adverse environmental impacts from the HST Alternative are identified in the Final Program EIR/EIS and are summarized in the following sections. Temporary and construction related impacts are addressed in each appropriate resource topic. The Program EIR/EIS considers the potential for environmental impact related to travel conditions, movement of goods, and emergency access and found that the HST Alternative would have beneficial attributes system-wide.

### **8.1 Traffic and Circulation**

Despite some expected improvement in highway conditions in areas to be served by the HST system, the level of service (LOS) on local roadways in many of these areas is currently poor (ratios of more than 1.0 on average for each of the five regions) and would remain so even with the HST system. The operation of the HST system would result in increased traffic around HST station locations and increased congestion on highway and roadway segments which would provide access to stations.

The construction of the HST system would result in short-term impacts of increased traffic in areas affected by the construction process for the duration of the construction in that area. In a few areas the HST system would result in closure, either temporary or permanent, of local roadways, that in turn would result in increased traffic on nearby roads and longer travel routes for some travelers.

While localized increases in traffic and congestion near HST station areas and during construction are significant at the programmatic level of analysis, mitigation strategies have been identified that can reduce this impact below the level of significance. Adverse impacts related to parking or public transportation are not expected because mitigation strategies have been identified that can avoid these impacts.

### **8.2 Air Quality**

With the HST system, around certain HST stations an increase in traffic and congestion is expected along with a related localized increase in vehicle-generated air pollution. At the program level this localized impact is considered significant, because of uncertainty, since it is not possible to know the exact location, extent, and characteristics of increased traffic and congestion that will be generated around various HST station sites. While potential localized increases in vehicle-generated air pollution are considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.



Construction impacts associated with the HST system include emissions from various activities, such as the use of diesel equipment, soil disturbance, and congestion-related traffic and route changes, all of which are expected to generate temporary short-term localized increases in air pollution. While this impact is considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.

### 8.3 Noise & Vibration

The HST could create long-term noise impacts along the alignment segments from train operations by creating intermittent increased noise. As a newly constructed system, the HST system would be far quieter than typical passenger and freight trains. Construction of the HST could also cause short-term construction-related noise impacts. Significant noise impact from operations will not occur along the entire HST system alignment. Rather, the impact would be localized, because certain areas along the proposed HST system alignment have no sensitive receptors, and because train speeds are slower in some places leading to lower noise impact ratings. While this impact is considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.

The HST system could cause an increase in ground-borne vibrations when the HST passes by an area. The ground-borne vibration impact would not occur along the entire length of the HST system alignment. Rather, the EIR identified 10-60 miles of the HST alignment that could be subject to vibration impacts. Construction activities can also cause some short-term ground-borne vibration. While this impact is considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.

### 8.4 Energy

The HST System would be constructed in phases and is expected to draw power from the statewide electrical grid, which receives power from many sources. The HST system would result in an increase in demand on the statewide electricity supply that could reach 480 MW or 0.6% of projected statewide electricity demand in 2020. With proper planning and design of the power distribution facilities for the HST system in relation to the overall state electrical grid, localized impacts from providing electricity to the HST system can be avoided. Electric power impacts are not expected because mitigation strategies have been identified that can avoid these impacts.

Construction of the HST System would result in one-time non-recoverable energy consumption costs that would be similar in scale to the energy consumption requirements that would be needed for the Modal Alternative, and would be in addition to energy consumed by the planned transportation improvements included in the No Project Alternative. The result of the construction of the HST system would be a new transportation mode that would reduce fuel consumption as compared to the 2020 No Project Alternative. While this impact is considered significant at the program level,



mitigation strategies have been identified that can reduce this impact to a less than significant level.

## **8.5 Electromagnetic Fields and Electromagnetic Interference**

The operation of the HST system could generate additional levels of exposure to electromagnetic fields. The level of exposure will depend on a number of factors that will vary depending on the alignments and operations, including design of power supply systems and vehicles, to be decided at the project-level of design. The HST catenary and distribution systems will operate primarily at 60-Hz fields, which is considered an extremely low frequency (ELF). Because of their rapid decrease in strength with distance, EMFs in excess of background levels are likely to be experienced only relatively near sources.

There is no scientific consensus that there are adverse effects of low-level EMF. Numerous studies have addressed but failed to establish any significant adverse health effects, and various industry, government and scientific organizations with expertise in electromagnetic fields technology have produced a range of voluntary standards that represent their best judgment of what levels are considered safe. The extremely low frequency EMF that result from the operation of the HST system is substantially below any of the standards examined by these experts. The EMFs may interfere with HST maintenance workers' implanted biomedical devices, but there is little potential to interfere with implanted biomedical devices of other workers, passengers or nearby residents. Consequently, based on the review of the scientific evidence, the increased levels of EMF as a result of the HST system operation are less-than-significant at a programmatic, system-wide level, without mitigation and mitigation strategies have been identified that can avoid or reduce EMF exposure.

The HST would generate incidental radiofrequency (RF) fields, and would also use wireless communications that generate radiofrequency fields. Radiofrequency fields would also be produced at the right of way by intermittent contact (unintentional arcing) between the pantograph power pickup and catenary wire. The HST Alternative would introduce additional electromagnetic interference at levels for which there are no established adverse impacts and RF regulations would be complied with. Mitigation strategies have been identified that can avoid EMI.

## **8.6 Land Use, Communities, Property and Environmental Justice**

The HST system would involve laying new track and installing electric power distribution facilities for the HST system and of providing multi-modal transit stations as part of the HST system. Maintenance, storage and cleaning facilities will be part of the HST system, and general potential locations for these facilities were identified in order consider the representative impacts of such facilities in the program analysis. Locations for these facilities will be determined in conjunction with future project-level studies and decisions on implementation phasing. The strategies of placing the proposed HST system in or along existing transportation corridors (existing railroad or highway rights of way) and requiring stations to be multi-modal transit hubs serve to reduce the extent of

land acquisition needed for the proposed new HST system, and serve to limit the extent to which adjacent land uses would be inconsistent or incompatible with the HST system. While 70% of the preferred HST system corridor alignments identified in the Final Program EIR/EIS are either within or adjacent to existing transportation corridors, some property acquisition and relocations will be necessary.

In some areas, the installation of the HST system could affect land uses by creating a new barrier dividing or disrupting existing communities. In addition to the above noted potential impacts of the HST system resulting in a new barrier or dividing some established communities, short term impacts of the HST system during construction include potential neighborhood disruption and division. This impact would be reduced by phasing the construction of segments of the system and by the use of in-line construction techniques where appropriate.

Potential impacts to low-income and minority populations located near the HST system. Using a study area of .25 mile [.40 km, about 1200 feet] and information from the U.S. Census for the year 2000, the Program EIR/EIS identified areas along the HST system likely to have at least 50% low income or minority populations and areas in which the percentage of low-income or minority populations may be at least 10% greater than the average for the area. These will be areas for further study during project-level environmental analyses when more detailed and specific information will be developed for the HST alignments and designs (e.g., whether aerial, at-grade, or below grade). The number and location of people affected and the extent of impacts cannot be determined without the additional information to be provided in project-level studies. Viewed on a systemwide basis, the proposed HST system is not expected to result in disproportionate impacts on minority and low-income populations. The HST system would cross a wide variety of community types in widely varied geographic settings, including rural, urban, and suburban, with various levels and mixes of development. The design practices and engineering criteria used in developing the HST system also serve to reduce impacts to people, including low-income and minority populations near HST facilities, by, among other things, placing the HST system in or along existing transportation corridors. Also, the installation of grade separations will reduce existing horn noise and help maintain local access and community connections.

The identified mitigation strategies will substantially lessen or avoid land use impacts; however, sufficient information is not available at the program-level to conclude with certainty that mitigation will reduce this impact to a less than significant impact in all circumstances.

## 8.7 Agricultural Lands

The HST could convert to non-agricultural uses between approximately 2445 to 3860 acres of important farmland (i.e., farmland listed as prime, statewide important, unique, and farmland of local importance on the Department of Conservation's Farmland Mapping and Monitoring Program (FMMP)).

The HST would cause some farmland severance (division of one farmland parcel into two or more areas of operation by the placement of a barrier through the parcel) in the



Sacramento to Bakersfield region. This impact could arise where the HST alignment options considered in the EIR would bypass urban areas on new corridors traveling mainly north-northwest to south-southwest, thereby diagonally dividing a number of north-south oriented farming parcels. The potential for this impact has been reduced because few bypass alignment options have been selected for further study.

While the identified mitigation strategies described above will substantially lessen this impact, it is unclear absent site-specific information that this impact can be mitigated to a less-than-significant level over the entire HST system.

## **8.8 Aesthetics and Visual Resources**

The construction and operation of the HST system would alter existing scenic landscapes and cause impacts on visual resources related to the addition of infrastructure in, or removal of infrastructure from, the existing landscape. The infrastructure may include construction and improvements of the HST system, tunnels, fences, noise walls, elevated guideways, catenaries (support-pole systems for power supply for trains), and stations. Visual impacts will have a higher sensitivity in areas of scenic open space and mountain crossings. The programmatic analysis of the visual impacts included photo simulations of conceptual design of the facilities associated with the HST system for a set of types of representative landscapes for each segment of the proposed corridors, and concentrated on the locations where the plans show elevated structures, tunnel portals, or areas with extensive cut or fill.

While the mitigation strategies described above will substantially avoid and lessen impacts to aesthetics and visual resources, it is uncertain absent site-specific information that this impact can be mitigated to a less-than-significant level over the entire HST system.

## **8.9 Public Utilities**

Improvements associated with the proposed HST system could cause conflicts with a pipeline or facility associated with a utility. This programmatic evaluation considered three of the most common major fixed facilities that may pose construction challenges as representative utility conflicts: electrical transmission lines, natural gas facilities, and wastewater treatment facilities. The HST system could result in up to 21 potential fixed-facility conflicts (high-impact conflicts), and up to 821 conflicts with utility transmission or pipelines (low-impact conflicts). These low-impact conflicts are not considered significant because they could generally be avoided, minimized, or mitigated by routing either the public utility or the HST system around, over, or under the facility. While this impact is considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.

## 8.10 Hazardous Materials and Wastes

Construction and operation of the HST system could cause impacts to existing hazardous materials or waste sites. Operation of the HST system is not expected to generate hazardous waste. Potentially significant impacts are expected from HST station or maintenance facility conflicts with a known contaminated sites (listed on the federal National Priorities List (Superfund list), the State Priority List, and the California Integrated Waste Management Board's list of solid waste landfills in the State of California). While this impact is considered significant at the program level, mitigation strategies have been identified that can reduce this impact to a less than significant level.

## 8.11 Cultural and Paleontological Resources

The HST could impact prehistoric or historic archaeological resources and traditional cultural properties by causing physical destruction or damage during construction. Archaeological resources include both sites. The HST could impact historic properties and resources by causing physical destruction or damage. The HST could also impact paleontological resources as a result of construction, including grading, cutting, tunneling, erecting pylons for elevated track, and due to station construction. While mitigation strategies have been identified that will substantially lessen or avoid these impacts, sufficient information is not available at the program level to conclude with certainty that mitigation will reduce this impact to a less than significant level in all circumstances.

## 8.12 Geology and Soils

Seismic hazards evaluated include ground shaking and ground failure. The HST could cause risks to workers and public safety due to the collapse or toppling of facilities, either during construction or after completion, due to strong earthquakes. The HST also could create risks to public safety from automobile accidents or the interruption of automobile circulation, if strong earthquakes cause a derailment. HST facilities could sustain damage due to secondary hazards (settlement) over soft or filled ground

The HST could cause risks to workers and public safety due to ground rupture along active faults, either during construction or after completion. The HST also could create secondary public safety risks caused by damage to highways or airports, or interruption of these transportation services, in the event of train derailment caused by ground rupture along active faults.

The HST could also cause risks to workers and public safety due to the failure of natural or construction cut slopes or retention structures. The HST alignment could cross areas with hard, unfractured bedrock that will be difficult to excavate using methods other than blasting, which may pose a safety risk. Faulted materials that may be present can result in instability in the face of a tunnel area, another hazard. The HST could create the potential for migration of potentially explosive and/or toxic gases into subsurface facilities, such as tunnels or underground stations.



While the above impacts are considered significant at the program level, mitigation strategies have been identified that can reduce these impacts to a less than significant level.

### 8.13 Hydrology and Water Quality Impacts

The HST system could encroach on floodplains in each segment. Encroachment into the flood plain by the HST system is anticipated to be between 1865 and 3873 acres system wide. Floodplain encroachment may result in increased flood height from earthen berms or linear barriers to surface water flow.

The HST system could encroach on surface water resources. The representative footprint of the HST system would encroach on between 22,600 to 32,400 linear feet of streams, while encroachment onto lakes would be between 7 to 27 acres. The HST would also add impervious surface area, which can reduce water infiltration, contribute to runoff, and negatively affect surface water quality. The HST could cause erosion, which can negatively affect water quality, where the alignment options would extend to or along the coast along highly erodable slopes.

The HST system may encounter groundwater during construction of at- and above-grade structures, tunnels and tunnel portals, and dewatering may be necessary. In addition, construction and operation of the HST system components may affect groundwater recharge.

While the above impacts are considered significant at the program level, mitigation strategies have been identified that can reduce these impacts to a less than significant level.

### 8.14 Biological Resources and Wetlands

The HST system's direct impacts to biological resources were assessed along alignments using a representative 50 feet total facility footprint for both at-grade and aerial structures. The HST system's potential for indirect effects on species and habitats due to noise, light, or shadows, a larger area was evaluated using a larger area that varied depending on the nature of the location. Sensitive habitat areas included a study envelope that was ½ mile on either side of the alignment centerline, or a 1-mile wide corridor. In urbanized areas, the study envelope was 1000 feet on either side of the alignment centerline.

The HST system could directly impact between 1201 to 1568 acres of natural communities and wildlife habitat that are unique, of relatively limited distribution in a region, or of particularly high wildlife value habitat. The HST system could also fragment existing habitats. The Final Program EIR/EIS indicates there are between 9773 to 17,619 acres of sensitive vegetation that may be indirectly affected by the HST system. The sensitive vegetation acreage range is based on the buffer areas included in the HST study area, which were designed to provide context to the impacts analysis, and are likely to be much larger than the actual indirect effect.

Wildlife movement/migration corridors link together areas of suitable wildlife habitat that are otherwise separated by rugged terrain, changes in vegetation, or human disturbance. The HST system has the potential to affect wildlife movement/migration corridors where the alignment crosses wildlife movement corridors. In addition, fences that will be required for at-grade tracks will introduce a new barrier to animal movement. The actual impact will depend on the selection of final alignment and the final design of structures for the HST system.

Within the larger study envelope for the HST system (1-mile wide corridor in sensitive areas) there are up to 1.2 million linear feet of non-wetland jurisdictional waters (lakes, rivers, streams, and other water bodies). The HST system has the potential to directly or indirectly affect some of these resources.

The HST system could directly impact 30-89 acres of wetlands. The Final Program EIR/EIS indicates there are between 3996 and 18,356 acres of wetlands in the study area, which may be indirectly affected by the HST system.

The HST system has the potential to affect fishery resources during construction due to the need to cross streams and rivers. Construction activities could increase sediment loads in stormwater during rain, or be a source of chemicals, both of which could be released into creeks and harm aquatic resources.

The HST system could directly impact 67-84 special status species based on the representative facility footprint. The study area for the HST system indicates the possible presence of 279 to 350 special status species within the area of potential indirect effect from the HST system. Some of these species could be affected by the construction and the operation of the HST system.

While the mitigation strategies identified will substantially lessen or avoid this impact, sufficient information is not available at the program level to conclude with certainty that mitigation will reduce this impact to a less than significant level in all circumstances.

## **8.15 Public Parks, Recreation, and 4(f) Resources**

The HST system could result in impacts to parks and recreation resources, including publicly owned parks, wildlife and waterfowl refuges, historic sites of national, state or local significance, and other recreational resources covered by either section 4(f) of the Department of Transportation Act (49 U.S.C. § 303(c) or section 6(f) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. § 460l-8).

The HST system could result in direct impacts to lands containing publicly owned parks and recreational resources by causing use of such lands for the placement of HST facilities, and could result in indirect impacts to these resources due to construction activities or HST system operations which adversely affect the use of publicly owned parks and recreational resources. In addition to addressing noise, biology, and air quality impacts in other sections of these Findings, the Program EIR/EIS identifies the park and recreational resources located within 900 feet of the centerline of HST alignments or facilities. No state parks would be crossed or bisected by the HST



system. The EIR, however, identified five state parks that may be within 900 feet of the HST system. Additionally, certain local, regional or federal recreational resources could be affected.

At the program level it is not possible to know precisely the location, extent and particular characteristics of impacts to park resources. Due to this uncertainty, for the purposes of system-wide review at the programmatic level, this impact is considered significant. While mitigation strategies have been identified that would substantially lessen or avoid these impact, sufficient information is not available at the program level to conclude with certainty that mitigation will reduce this impact to a less than significant level in all circumstances.

## 8.16 Cumulative Impacts

Implementation of the HST system could lead to local and regional cumulative effects related to:

- Surface streets leading to and from the intercity highways and airports;
- Localized travel conditions;
- Air quality within the six-basin study area (in combination with the air quality impacts of other highway projects or airport improvements identified for the cumulative impact analysis and those projects considered in the state implementation plan for air quality);
- Noise and vibration;
- Community and neighborhood cohesion and property loss;
- Community/neighborhood impacts (in combination with other transit and roadway projects these localized impacts could contribute to cumulative);
- Land use impacts to various property types, neighborhoods, and communities (in combination with other transit extension and roadway projects);
- Conversion of agricultural land to non-agricultural use;
- Visual resources;
- Public utilities and future land use opportunities (because of right-of-way needs, extensive utility relocation, and property restrictions associated with construction of multiple linear facilities and other reasonably foreseeable future projects in the study area);
- Cultural and paleontological resources;
- Geology and soils related to slope stability in various proposed locations of cut and fill and areas susceptible to slope failure; and related to subsidence if other projects under construction in the area also needed to dewater from the same drainage basin;
- Hydrologic resources;

- Sensitive biological resources and wetlands;
- Parklands and recreational resources; and
- Indirect effects (such as to waterways, wetlands, sensitive habitat and sensitive species) related to the increment of growth associated with the HST system, but anticipated by local general plans, which was projected for the period from now until 2035, recognizing that growth related to the HST system would occur in the future after early implementation steps for the HST system have been taken.

While identified mitigation strategies will substantially lessen or avoid these effects, sufficient information is not available at the program-level to conclude with certainty that mitigation will reduce the HST system's contribution to cumulative effects in all circumstances. To assure that potential cumulative effects will be fully examined in the future, project level studies will incorporate analyses of impacts to waterways, wetlands, sensitive habitat and species based on appropriate regional study areas beyond the sites immediately affected by the HST project. To assure that appropriate planning for HST station areas is undertaken so as to avoid indirect effects associated with growth, station area development strategies are described in Chapter 6B of the Final Program EIR/EIS and are included in the MMRP.

## 8.17 Growth-Inducing Effects

Transportation investments can lead to reduced travel time or cost, improved accessibility to regions or parts of regions, or reduced accidents or air pollution. These effects contribute to economic growth by allowing time and money previously spent on travel to be used for other purposes, attracting businesses and residents to places with increased accessibility or improved quality of life, and reducing overall costs to society. The population and employment growth that result from economic growth comprise the growth-inducing effects of transportation investments such as the HST system. This growth can contribute to additional impacts beyond those directly attributable to the changes in the transportation system, which the EIR refers to as growth-related indirect impacts. The incremental growth associated with the HST system is not expected to result in a significant increase in demand for municipal services. The timeframe within which incremental growth associated with the HST system would be expected is within normal planning horizons and within the purview of the local and regional agencies responsible for planning for municipal services to address.

*Population Effects:* Statewide population is expected to grow by about 54% between 2002 and 2035 under the No Project Alternative. Compared to the No Project Alternative, the statewide population growth is projected to be roughly 2% higher under the HST System Alternative. These population differences among alternatives represent the increased accessibility provided by the transportation investments. An investment in HST is projected to lead to greater economic growth within the state than the No Project Alternative. These statewide figures follow the same general pattern at the regional level, with the exception of the Northern Central Valley, where population growth is projected to be about 4% higher under the HST System Alternative than under the No Project Alternative.

*Employment Effects:* Statewide employment is expected to increase by about 46% between 2002 and 2035 under the No Project Alternative. Compared to the No Project Alternative, statewide employment growth is projected to be roughly 2% higher under the HST System Alternative.

*Land Urbanization Effects:* Urbanized areas in California are expected to grow by 48% between 2002 and 2035 under the No Project Alternative, representing an increase of about 1.5 million acres over the approximately 3.1 million acres in the existing urbanized areas in the counties where HST facilities would be located. Compared to the No Project Alternative, the HST System Alternative is expected to have about 0.1% less growth in urbanized areas, which is about 2600 fewer acres. The HST System Alternative compared to the Modal Alternative would use 68,100 fewer urbanized acres than the Modal Alternative. The HST System Alternative would therefore be able to accommodate more population and employment growth on less land than the No Project Alternative and is not expected to have an adverse effect on urbanization statewide.

*Regional Growth Effects:* For the HST System Alternative, population in the Central Valley is expected to experience a small increase in both net growth and distributive effects as compared to the No Project Alternative. Because such growth would occur well in the future after the initiation of HST service, the locations in which such growth may occur cannot be predicted, although potential regional effects were considered in the land urbanization analysis.

*Indirect/Secondary Effects from Growth:* The HST Alternative may have a positive (i.e., result in an increase), but small, statewide effect on population and employment growth compared to the No Project Alternative. Despite the relatively small magnitude of the expected growth, the growth could contribute to indirect impacts on the human and natural environment. Many of these indirect, growth-related impacts derive from increased urbanization needed to accommodate the additional population and employment. However, the additional growth expected from the HST System Alternative over the No Project Alternative in 2035 is expected to be accommodated on a similar amount of land, and the growth of urbanized area in acres would be smaller under the HST System Alternative, than under the Modal Alternative.

No indirect, growth-related effects from implementing the HST system are expected to the following resource areas: energy, noise and vibration; exposure to EMF or EMI; public utilities; exposure to hazardous materials or wastes; cultural resources; geology and soils; and public parks and recreation. Indirect aesthetic impacts from induced growth under the HST System Alternative are considered speculative.

Overall traffic conditions are expected to improve with the HST system, despite the estimated 2% increase in population and employment under the HST System Alternative. Some increase in local traffic around HST stations, consistent with this increased growth, is expected.

Air quality is expected to improve with the HST system, however, the increased population and employment growth may contribute to increased mobile-source air pollutants due to increased traffic around stations.

Socioeconomic changes from growth under the HST System Alternative are expected to be small, and therefore indirect land use compatibility impacts from induced growth are also expected to be small. Growth under the HST System Alternative would be distributed across various communities, would be reflected in infill development and increased development densities, and is not expected to result in a significant increase in demand for municipal services. Planning for such services is within the purview of local and regional agencies and expected growth in the future would be within typical planning horizons for such services.

Growth under the HST System Alternative is expected to impact 4100 fewer acres of important farmland on a statewide basis than the No project Alternative.

Growth under the HST System Alternative is expected to impact about 270 miles more of waterways than the No Project Alternative, or about 7% more. The largest percentage of this increase is expected to occur in Southern California. The HST System Alternative is expected to affect fewer waterways in the Northern Central Valley region than the No Project Alternative due to induced growth. The Northern Central Valley is projected to experience a decrease in acreage of habitats potentially affected by growth.

Growth under the HST System Alternative has the potential to affect up to 8400 acres more of land which may contain some threatened and endangered species habitat on a system-wide basis than the No Project Alternative. The largest percentage increase is expected to occur in the Bay Area, while the largest acreage increase is expected in the Southern Central Valley. Growth under the HST System Alternative has the potential to affect about 330 acres more containing some wetlands on a system-wide basis than the No Project Alternative, or about 1% more. The largest acreage and percentage increase is project to occur in the Northern Central Valley, whereas Southern California is expected to exhibit a reduction in wetland loss due to future urbanization.

The specific location(s), size, scope and attributes of specific growth related projects that may be proposed in the future cannot be predicted, nor can the outcome of public agency approval processes and the ultimate configuration of any approved projects be predicted. When making future decisions regarding both the final selection of station locations and the timing of station development, the extent to which appropriate Station Area Plans and development principles have been adopted by local authorities will be considered. Denser development near HST stations will concentrate growth in areas conveniently located near stations, reducing the need to convert land to urban use and improving conditions for comprehensive and extensive local transit systems. Local governments would play a significant role in implementing station area development by adopting plans, policies, zoning provisions, and incentives for higher densities, and by approving a mix of urban land uses. Station Area Plans and development principles are included in the MMRP and can be expected to substantially avoid and reduce adverse environmental effects related to growth.

## 9. Measures to Minimize Harm

The Authority has committed to use all practicable means, including design practices and mitigation strategies, to avoid or minimize adverse effects on the environment that would result from the implementation of the HST Alternative. To minimize potential future harm from implementation of the proposed HST system, future project-level environmental analysis and documentation will review and prescribe the design practices and mitigation strategies described in the Authority's adopted Mitigation Monitoring and Reporting Plan included as Appendix A.

Chapter 3 of the Final Program EIR/EIS describes program-level mitigation strategies to minimize or mitigate adverse environmental impacts. The monitoring and enforcement program is to apply this plan during the project-level environmental compliance process. Some mitigation strategies may cause other adverse environmental impacts at the same time that they mitigate impacts addressed in this Program EIR/EIS. Future tiered project-level environmental reviews will determine appropriate site-specific mitigation measures.

### 9.1 Design Practices

The Authority would employ design practices identified in the Final Program EIR/EIS as the HST Alternative is developed further in the project-level environmental review, final design and construction stages. These practices will be applied to avoid and minimize potential adverse environmental impacts. Design practices are incorporated in the Mitigation Monitoring and Reporting Plan and are illustrated below.

- Existing transportation corridors would be used. Nearly 70% of the adopted preferred HST alignments are either within or adjacent to a major existing transportation corridor (existing railroad or highway right-of-way).
- Tracks that are fully grade separated from all roadways would be used.
- Multi-modal transportation hubs would be used.
- Some of the preferred alignments would be in a tunnel or trench section, which would reduce noise.
- Electric power, high-quality track interface, and smaller, lighter and more aerodynamic trainsets would be used, which would result in less noise than existing commuter and freight trains because HST do not have the rumble associated with diesel engines and use a design that greatly minimizes track noise.
- Transit-oriented design and smart growth land use policies would be used. Station area development principles that would be applied at the project-level for each HST station and the areas around the stations would include:
  - Higher density development.
  - A mix of land uses (retail, office, hotels, entertainment, residential, etc.) and housing types to meet the needs of the local community.

- A grid street pattern and compact pedestrian-oriented design that promotes walking, bicycle and transit access.
- Context-sensitive building design that considers the continuity of the building sizes and coordinates the street-level and upper-level architectural detailing, roof forms, and rhythm of windows and doors.
- Limits on the amount and location of development-related parking, with a preference that parking be placed in structures.
- Portions of the system would be in tunnel or on aerial structure, which would avoid and/or minimize impacts to surface water resources.
- Measures to avoid water infiltration would be taken.
- Underpasses or overpasses or other appropriate passageways would be designed to avoid, minimize and/or mitigate any potential impacts to wildlife movement.
- In-line construction would be used for sensitive areas.

## 10. Relationship to Other Plans

The No Project Alternative included planned and programmed transportation improvements in fiscally constrained plans. Proposed improvements to the LOSSAN corridor from Los Angeles to San Diego for passenger train services at speeds under 125 miles per hour, and not under the jurisdiction of the Authority, are being considered by the FRA and the California Department of Transportation, and were studied cooperatively with the Authority. These improvements are the subject of a separate Program EIR/EIS. While local governments and private entities have made other proposals for other high-speed passenger train services, none have been adopted or approved and none are developed enough, nor is their progress predictable enough, to have been integrated or coordinated with the HST system.

The USEPA commented that “FRA has proposed a separate network using magnetic levitation technology for high speed train service in southern California. ... A full discussion of this issue and potential duplication of efforts and incompatibilities should have been included in the Final PEIS.” The Southern California Association of Governments (SCAG) has proposed a regional network of magnetic levitation (maglev) high speed trains in southern California that would be privately financed. The FRA has not proposed, advocated, nor considered advancing such a maglev system. Beginning in 1999, the FRA implemented the maglev transportation technology deployment program provisions of TEA-21 [23 U.S.C. § 322] by soliciting proposals for a maglev project suitable for deployment in the United States. The California Department of Business, Transportation and Housing submitted the SCAG proposal to FRA for consideration; however, the FRA did not select the SCAG project preferring instead projects in Maryland and Pennsylvania. However, Congress continued to provide funds for SCAG’s maglev activities.





The proposed maglev network was developed separately by SCAG to address regional transportation and without integrating the maglev network with the HST system. SCAG has proposed to locate the maglev network in many of the same corridors and to offer comparable high speed transportation services as the HST system, however, the maglev network would not connect major metropolitan areas of the state. The similar and extensive level of investment necessary to implement either the HST system or maglev network makes construction of both unlikely in common corridors serving the same travel markets.

The FRA also considered a proposal as part of the maglev transportation technology deployment program from the State of Nevada through the California-Nevada Super Speed Train Commission. As with the California proposal, FRA did not select this project as part of the program, but it continued to receive funding from Congress. On May 20, 2004 the FRA issued a Notice of Intent to prepare a programmatic EIS for the entire Anaheim, California to Las Vegas, Nevada maglev proposal. At this time, only scoping has been completed for this EIS. This proposal would not share any corridors or travel markets with the HST system. Should this project be built, it would likely complement the HST system, connecting at common stations both in Anaheim and Ontario and offering passengers a wider range of destinations. In section 1307 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy For Users (P.L. 109-59), Congress has extended continued financial support for maglev only to the Las Vegas to Prim, Nevada segment of this proposal and one other project in the Eastern half of the country.

## **11. Compliance with Other Federal Regulations**

### **11.1 Section 4(f) and 6(f) Approvals**

Findings under sections 4(f) [49 U.S.C. § 303(c)] and 6(f) [16 U.S.C. § 460l-8] will be prepared as part of project level environmental review when site-specific information about the HST system and location alternatives are known.

### **11.2 Section 404 of the Clean Water Act**

The USEPA and USACE have participated in the development of both the Draft and Final Program EIR/EIS and in accordance with the MOU among Federal agencies for this environmental review, were consulted concerning the selection of the preferred corridor and route most likely to yield the least environmentally damaging practicable alternative (LEDPA) and as identified as preferred in the Final Program EIR/EIS. The USEPA and USACE have concurred that the preferred HST alignment and station options are most likely to contain the LEDPA. Future project-level environmental review will include further consultation with USEPA and USACE regarding the Clean Water Act leading to USACE permit applications.



### 11.3 Endangered Species Act

Preparation of the Program EIR/EIS involved informal consultation and information sharing with the US Fish and Wildlife Service (USFWS) of the U.S. Department of Interior (DOI). Project-level environmental review would involve consultation with USFWS, as needed, for potential impacts on federally listed plant and wildlife species, including the preparation of a biological assessment or assessments, and biological opinions for each phase of project implementation. Formal consultation under Section 7 of the Endangered Species Act for project study areas of concern would accomplish the following steps identified by DOI: 1) identifying the conservation needs of each listed species with the potential to be impacted by the proposal; 2) identifying the threats to each listed species' conservation related to the proposed action; 3) identifying species conservation or management units and the threats affecting those units; 4) identifying species' conservation goals framed within the context of the HST program; and 5) developing conservation/management unit strategies. The FRA and the Authority would prepare Biological Assessments to address the affected conservation/management units identified.

## 12. Comments Received on the Final Program EIR/EIS

Some public comments on the Final Program EIR/EIS were received and addressed by the Authority as part of their decisions on the HST system, and are included in Appendix B. Substantive comments made in letters written to the FRA are addressed below (and may also have been addressed separately by the Authority).

### 12.1 U.S. Environmental Protection Agency

The USEPA submitted comments on the Final Program EIR/EIS for the proposed California HST System focused primarily on the cumulative impacts assessment in the Final Program EIR/EIS and made recommendations for the "Bay Area to Central Valley PEIS", and for "Future Project-level Tier 2 NEPA Analyses".

*Cumulative impacts assessment:* USEPA commented that the Final Program EIR/EIS did not contain a landscape-level cumulative impact assessment for all sensitive resources, and did not address a comprehensive set of reasonably foreseeable projects. USEPA suggested that a different cumulative impacts analysis may have resulted in different conclusions or different mitigation options, and recommended that future environmental documents consider Caltrans guidance on cumulative impact assessments. *Reasonably foreseeable future actions:* USEPA suggested that additional projects, such as large-scale developments and approved urban planning documents identified within and around the proposed high speed train system, should have been included in the cumulative impacts analysis as reasonably foreseeable future actions.

*Past and present actions:* USEPA disagreed with the Final Program EIR/EIS's characterization of past actions in the context of cumulative impacts analysis, and asserted that a landscape cumulative impacts analysis should include large scale

mitigation, citing for example USEPA's assumption that a continuously-fenced high speed rail system would impede wildlife movement, and when considered with other past, present, and future project impacts to wildlife movement in California, would be potentially significant to a number of species.

*Relationship to other plans:* USEPA commented that "FRA has proposed a separate network using magnetic levitation technology for high speed train service in southern California. ... A full discussion of this issue and potential duplication of efforts and incompatibilities should have been included in the Final PEIS." USEPA recommended that FRA clarify the relationship between the need for this project and the need for other magnetic levitation technology proposals by FRA. FRA has addressed this comment in section 10, above, in this record of decision.

## Response

USEPA's recommendations for the Bay Area to Merced Program EIR/EIS and for future NEPA/CEQA review will be considered for these activities and efforts to coordinate with USEPA will continue. Future cumulative impacts analysis and identification of mitigation will be based on appropriate study areas identified for individual resources. These study areas will be largely regional and local and they cannot be adequately identified until further information is known about alignment locations and the time period of implementation. Additional cumulative impacts analysis and identification of more refined mitigation will accompany project-level review. The Authority and the FRA find the Final Program EIR/EIS applied appropriate methodology to evaluate cumulative impacts from the proposed HST system at the program level and for decisions to be made on the Program EIR/EIS.

*Cumulative impacts assessment:* The USEPA letter does not raise new issues about cumulative assessment in the Final EIR/EIS that were not already addressed in response to USEPA's comments on the Draft EIR/EIS (Comment Letter AF008 in the Final EIR/EIS, dated August 31, 2004).

The cumulative impact analysis in the Program EIR/EIS focused on the resources potentially affected by the proposed action and alternatives and identified where there may be added impacts to these resources, when considering past, present, and reasonably foreseeable future actions. The Program EIR/EIS described the current conditions that incorporate past and present effects of other recent projects in analyzing the potential for direct, indirect and cumulative impacts. The cumulative impact analysis considered reasonably foreseeable highway improvements and transit projects within the study area and extensively analyzed the potential for economic growth related cumulative and secondary effects for each of the three system alternatives. In addition, consideration of the indirect effects related to the reasonably foreseeable population and employment growth that could result from the proposed action and alternatives, as identified using local agency general plans and other planning documents, is addressed in the Final EIR/EIS (see Chapter 5, *Economic Growth and Related Impacts*), and is considered part of the cumulative impacts analysis.



The methodology used is appropriate for this Program EIR/EIS due to the future time frame for the proposed HST system and the speculative nature of information about potential projects some 10 to 15 years in the future, and is consistent with CEQ Guidance. CEQ Guidance suggests that where evaluating reasonable foreseeable adverse effects and where there is incomplete information or unavailable information ...“that cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known . . . the agency shall include . . . the agency’s evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community.” [CEQ Guidance “Considering Cumulative Effects,” p. 20; 40 CFR 1502.22]

*Past and reasonably foreseeable future actions:* USEPA’s suggested approach to future projects is not appropriate for this program analysis, and would be speculative for a proposed system that will not be implemented for at least 10 years. Thorough analysis of site-specific, local area, and focused regional cumulative effects, including specific urban development projects, will be undertaken as part of future project-level environmental review, when this information will be available and more relevant to substantive impact analysis.

For the Program EIR/EIS, the costs of attempting to collect detailed, timely, accurate data on projects, which could be considered “reasonably foreseeable” some 10 to 15 years in the future across all the jurisdictions represented by the HST Alternative conceptual corridors and the Modal Alternative components would be exorbitant and the means to obtain it are not assured. Given the limitations of available information, and the need to assess a future timeframe, the use of the growth analysis to address impacts from future development is an appropriate theoretical approach to cumulative impacts for this programmatic analysis.

USEPA’s suggestion that local general plans be used to identify reasonably foreseeable projects is not appropriate for this Program EIR/EIS. Every city and county is required by California law to adopt a general plan, but, except for housing elements, general plans are not comprehensively updated on a regular periodic basis pursuant to a statutory schedule. Each city and county determines when to update its general plan. Comprehensive updates are both unpredictable and irregular. Because at the beginning of the Program EIR/EIS process in 2001 the general plans for many of the jurisdictions with potential locations for HST facilities or components of the modal alternative were more than 10 years old, and some were more than fifteen or twenty years old, they were useful for identifying land use patterns and growth projections, but not individual projects. For preparing a cumulative impact analysis for thousands of miles of alternative transportation corridors, the general plans did not provide a reliable and consistent information base for identifying reasonably foreseeable future projects to use in analyzing cumulative impacts in a consistent manner for the system as a whole. The economic growth analysis in Chapter 5 addressed the relevant statewide and regional consequences of future actions that may be influenced by the choice of system alternative, and accounted for anticipated growth according to general plans without listing specific projects. The growth analysis properly considered available information, the timeframe for the implementation of the proposed HST system, the timelag in related projects potentially affecting resources, and the estimated secondary environmental impacts in jurisdictions in which HST facilities could potentially be located. In addition,

appropriate mitigation was identified in Chapter 6B, Station Area Development, that could avoid, minimize, and mitigate potential cumulative and secondary effects.

*Cumulative Impact Analysis:* USEPA suggests using Caltrans guidance. This may be considered for future project-level documents. The Caltrans documents provide no guidance on cumulative impact analysis in programmatic EIS's or EIRs, and no guidance on the temporal relationship of future projects to the proposed project, other than noting that reasonably foreseeable projects should be considered based on proximity in time and location

Circumstances at locations across the proposed HST system vary widely; therefore identification of statewide or large-scale mitigation for cumulative effects is not appropriate. The Final Program EIR/EIS explains that the proposed HST system would traverse widely varied terrain with different soils, climate, topography, habitat conditions and species. It will be at grade, on aerial structures and in tunnels. It will include features to facilitate wildlife movement. However, because of the varied terrain it will cross, the impacts from the HST system will differ in different locations. Habitat for individual wildlife species is not continuous across the state but exists in distinct ecosystems. Movement requirements differ for individual species and in different locations. For example, there are great differences between the separate and distinct habitat types found in coastal Orange County, Soledad Canyon, Palmdale, and the Central Valley alignments. While coastal sage scrub habitat is a concern in Orange County, in the Central Valley there are different species and habitats of concern (e.g., San Joaquin Kit Fox). Each area has its own mix of habitat types, species, waters, climate and topography, as well as its own array of land uses and human population. The Program EIR/EIS included a broad analysis of the potential for cumulative impact by resource type. The Final Program EIR/EIS also identifies design practices and mitigation strategies for each resource/impact area, based on potential impacts identified in Chapter 3, Environmental Consequences. These mitigation strategies are also appropriate for the general types of impacts anticipated from cumulative effects. Additional analysis of cumulative impacts in local and regional contexts, and more refined mitigation measures, will be addressed during project-level reviews.

## 12.2 State Parks

The California Department of Parks and Recreation (State Parks) commented on the analysis of three issues in the Final Program EIR/EIS: (1) potential impacts to the five units of the State Park System that lie within 900 feet of the preferred HST north-south alignment, (2) impacts to wildlife corridors and connectivity between State Park System units and other open space or protected lands, and (3) potential impacts of the Bay Area to Central Valley (i.e., Merced) alignment that will be analyzed in a Second Tier Program EIR/EIS. Detailed comments were included on mitigation measures, alternatives, aesthetics, noise, environmental justice, recreation resources, cultural resources, geology and soils, biological resources, and cumulative impacts that substantially restate previously raised concerns, seek additional detailed studies and are critical of the responses provided to earlier State Parks comments on the Draft Program EIR/EIS. Finally, State Parks provided for use in future documents the new names given to the



Taylor Yard and Cornfield park properties, and noted that Orestimba Wilderness had been misspelled in the Final Program EIR/EIS.

## Response

*Parkland Analysis:* The requested additional analysis of the state park system and particularly the five units that are identified as potentially affected by the selected HST corridor alignments, will appropriately be conducted during project-level environmental review. The Program EIR/EIS provides a consistent level of analysis for alternatives within the entire HST system, including thousands of corridor miles, includes design practices and mitigation strategies to avoid and minimize impacts to parks, and identifies steps for subsequent studies. The additional detailed analysis sought by State Parks would have been costly and speculative had it been performed at this time for the Program EIR/EIS. The potential for adverse impacts to parks that may not be fully avoided or reduced by mitigation is acknowledged in the Final Program EIR/EIS.

*Level of Detail:* In detailed comments State Parks fails to distinguish between the program level of analysis appropriate for the HST proposal due to its large scale and the more detailed, site specific studies that are appropriate for project level EIR/EIS's or other more limited programmatic EIR/EIS's, and fails to recognize that site-specific analysis are not necessary or required for the program decisions to be made based on the Final Program EIR/EIS. Future tiered environmental documents will be sufficiently comprehensive, and are the appropriate studies, to incorporate the additional information provided by State Parks (e.g., data from 2005 preliminary planning documents for the Rio de Los Angeles State Park (formerly known as Taylor Yard)) and to address the concerns raised by State Parks' comments in greater detail. The Preferred HST Alternative avoids impacts to many parks and, where potential impacts remain, the Final Program EIR/EIS incorporates mitigation strategies to avoid, reduce and minimize the potential impacts to parks.

As State Parks' comments recognize, potential impacts to park units may vary widely depending upon the rural or urban location, the resources at each park, the ambient noise environment, and other factors, all of which are appropriate for study in future environmental documents. Additionally, Section 4(f) and 6(f) findings will be made at the project level when alignments have been defined in more detail and after considering further variations to reduce and avoid impacts. Regarding wildlife movement, the Final Program EIR/EIS notes that up to 24% of the preferred HST system would be at-grade in new corridors and could present a barrier to wildlife movement, unless adequate features for wildlife crossings are included and incorporated in the system. The mitigation strategies in the Final Program EIR/EIS include underpasses or overpasses or other appropriate passageways at reasonable intervals to be designed during project level studies in order to avoid, minimize and mitigate potential impacts to wildlife movement. The design and placement details for features to facilitate wildlife movement are appropriately determined in the project level studies when more detailed information is available for alignments, HST facilities, and wildlife resources.

*Environmental justice:* Environmental justice, which was noted as a concern by State Parks, was addressed for the proposed HST system as a whole in the Program EIR/EIS,





which satisfies all applicable requirements for program level review, and the topic will receive additional study in future tiered environmental documents for the HST system.

*EMF:* Measurable low-level EMF's occur only in very close proximity to electric power facilities, and would generally be within the HST system right-of-way. Low-level EMF's occur with all electric power facilities and are not unique to the HST system. A variety of studies that have examined the effects of low-level EMF exposures on animals have found that general physiological status is relatively unaffected by low-level EMF exposures. Also, FRA data measuring EMF exposures after the Northeast Corridor Electrification Project found very low exposures levels in proximity to the train system. Further evaluation of potential EMF exposures will occur at the project level when specific species and locations can be examined along with more detailed project design information.

*Bay Area to Central Valley:* After consultation with CEQ and the California Resources Agency, the Authority and the FRA determined that subsequent tiered environmental documents could address the additional study needed of the proposed HST system connection between the Bay Area and the Central Valley and the identification of a preferred alignment for this portion of the system. This decision represents appropriate recognition of the limits of available data and need for further study, which will include review of connections in the Bay Area and the Central Valley, before additional decisions are made to select a preferred route in this area.

### 12.3 State Parks Foundation

The California State Parks Foundation (Foundation) commented that: (1) the Final Program EIR/EIS "remains inadequate in its response to potentially significant park impacts and inappropriately defers critical analysis for land management, habitat preservation, cultural and biological resource management and noise and visual impacts to future project-level analysis"; (2) the Foundation disagrees with response ASO051-1, which states that the use of existing rail corridors for HST operations is not expected to greatly alter the environmental effect of these existing rail lines; (3) the Foundation disagrees with response ASO051-3, which states that that it is premature at this level of design to develop more specific mitigation measures for potential effects; (4) the Foundation does not believe that sufficient information has been disclosed that would lead to a thorough assessment of the proposed project, particularly as it relates to potentially significant impacts on state parks; (5) the Authority should establish an official Advisory Committee for Burbank to Los Angeles Union Station similar to that proposed for the Bay Area study.

#### Response

*Adequacy of the Final Program EIR/EIS:* Please see responses to the letter from State Parks above on the level of detail of the Final Program EIR/EIS. This comment was also addressed as part of the Final Program EIR/EIS, particularly in the Summary and in Standard Response 3.15.13. Please also see Standard Responses 3.15.2, 3.15.4, 3.14.6 regarding biological resource evaluation.



*Conclusions on environmental effect of co-location with existing rail lines:* In alignments near parks where existing nearby passenger and freight trains are part of the ambient noise and visual environment, it is important to recognize that while the HST system is different than those services, the added impact may not be great, and the combined HST and conventional rail facility may improve existing local environments. In dense urban areas (such as at Taylor Yards and Old Town San Diego) the urban environment has elevated ambient noise levels, particularly where there are also freeways nearby and/or existing rail lines. When traveling at reduced speeds the HST is quieter than existing freight and conventional passenger trains. Moreover, when the HST shares rights-of-way with conventional rail, grade separation improvements and/or sound walls or other mitigation measures will reduce existing noise levels and other existing environmental impacts in these corridors.

*Mitigation measures for potential effects:* The need for further study is inherent to the first phase of a tiered environmental process that is followed by further studies and it is entirely proper for further study of discrete issues to be included in future project-level environmental documents, which will be more detailed. The Final Program EIR/EIS contains mitigation strategies appropriately identified at the program level and notes that such strategies will be refined and applied at the project level. Additional steps will be taken at the project-level to avoid impacts to parks by considering alignment variations. The Authority is committed to avoiding Henry Coe State Park, and will continue to apply avoidance and mitigation strategies in future studies regarding other State Parks.

## 13. Corrections to the Final Program EIR/EIS

A number of corrections to the Final Program EIR/EIS were identified during the NEPA waiting period, the CEQA certification process, and in public and agency comments. These errata are included in this record of decision as Appendix C as well as one additional erratum in Appendix B, section 1.3. These corrections make minor modifications to the EIR/EIS, are not considered significant new information, and do not change the analysis or conclusions of the Program EIR/EIS. These corrections merely clarify and amplify issues adequately addressed in the Final Program EIR/EIS. These corrections do not trigger the need to prepare a supplement, per the requirements of the CEQ's NEPA regulations (40 CFR 1502.9(c)(1)).

## 14. Conclusion

The need for an HST system is directly related to the expected growth in population and resulting increases in intercity travel demand in California over the next twenty years and beyond. As a result of this growth in travel demand, there will be increases in travel delays from the growing congestion on California's highways and at airports. In addition, there will be effects on the economy and quality of life from deteriorating reliability of the transportation system as travel demand increases and from worsening air quality in and around California's metropolitan areas. The intercity highway system, commercial airports, and conventional passenger rail serving the intercity travel market are currently



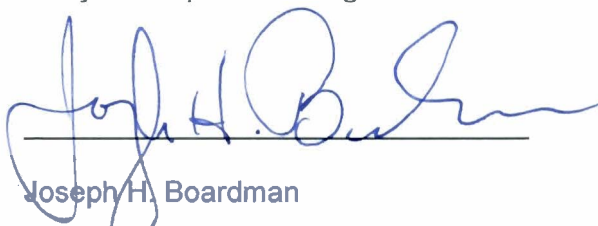
operating at or near capacity, and will require very large public investments for maintenance and expansion in order to meet existing demand and future growth.

The proposed HST system would provide a new mode of high-speed intercity travel that would link the major metropolitan areas of the state; interface with international airports, mass transit, and highways; and provide added capacity to meet increases in intercity travel demand in California projected for the year 2020 and beyond in a manner sensitive to and protective of California's unique natural resources. In addition, the HST Alternative is identified as environmentally preferable under NEPA.

The evaluation and findings indicate that the Modal Alternative, improvement to existing highway and air modes of intercity travel, would help meet projected needs for intercity travel in 2020, but would not satisfy the purpose and objectives of the program as well as the HST alternative. In addition, although the capital cost of the Modal Alternative would be over two times the estimated capital cost of the HST Alternative, the Modal Alternative would have considerably less sustainable capacity than the HST Alternative to serve California's intercity travel needs beyond 2020.

The evaluation and findings of the Final Program EIR/EIS also indicate that taking no action under the No Project Alternative would not meet the intercity travel needs projected for the future (2020 and beyond) as population continues to grow, and would fail to meet the purpose and objectives of the program which can be met by the Preferred HST Alternative. The No Project Alternative would result in environmental impacts but would not offer travel improvements compared to the Modal and HST Alternatives.

Based on the factors outlined above and as informed by the analysis presented in the Draft Program EIR/EIS, public and agency comments, and additional analysis described in the Final Program EIR/EIS, the FRA selects the HST alternative and selects for further analysis the preferred alignments and stations.



Joseph H. Boardman  
Administrator

Federal Railroad Administration

Date: 11/18/2005

Attachments: Appendix A – Mitigation Monitoring and Reporting Plan

Appendix B – Summary of Public Comments from CEQA Certification

Appendix C – Errata for the Final Program EIR/EIS

