



Bay Area to Central Valley High-Speed Train

STAFF RECOMMENDATIONS: Preferred Network Alternative, HST Alignment and Station Locations

November 14, 2007

California High-Speed Rail Authority



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Summary

In order to facilitate the identification of preferred alignment and station locations for the High-Speed Train (HST) alternative in the Final Program Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Bay Area to Central Valley portion of the HST system, California High-Speed Rail Authority (Authority) staff is presenting these recommendations to the Authority at the November 14, 2007, board meeting as an "informational" item. The Authority may consider and concur in some or all of these recommendations, and may provide direction to staff for the preparation of the Final Program EIR/EIS at its meeting on December 19, 2007, or at a later board meeting. At the conclusion of this environmental review process, the Authority expects to certify the Final Program EIR, adopt necessary findings, and take action to approve and select preferred alignment and station locations for this portion of the HST system.

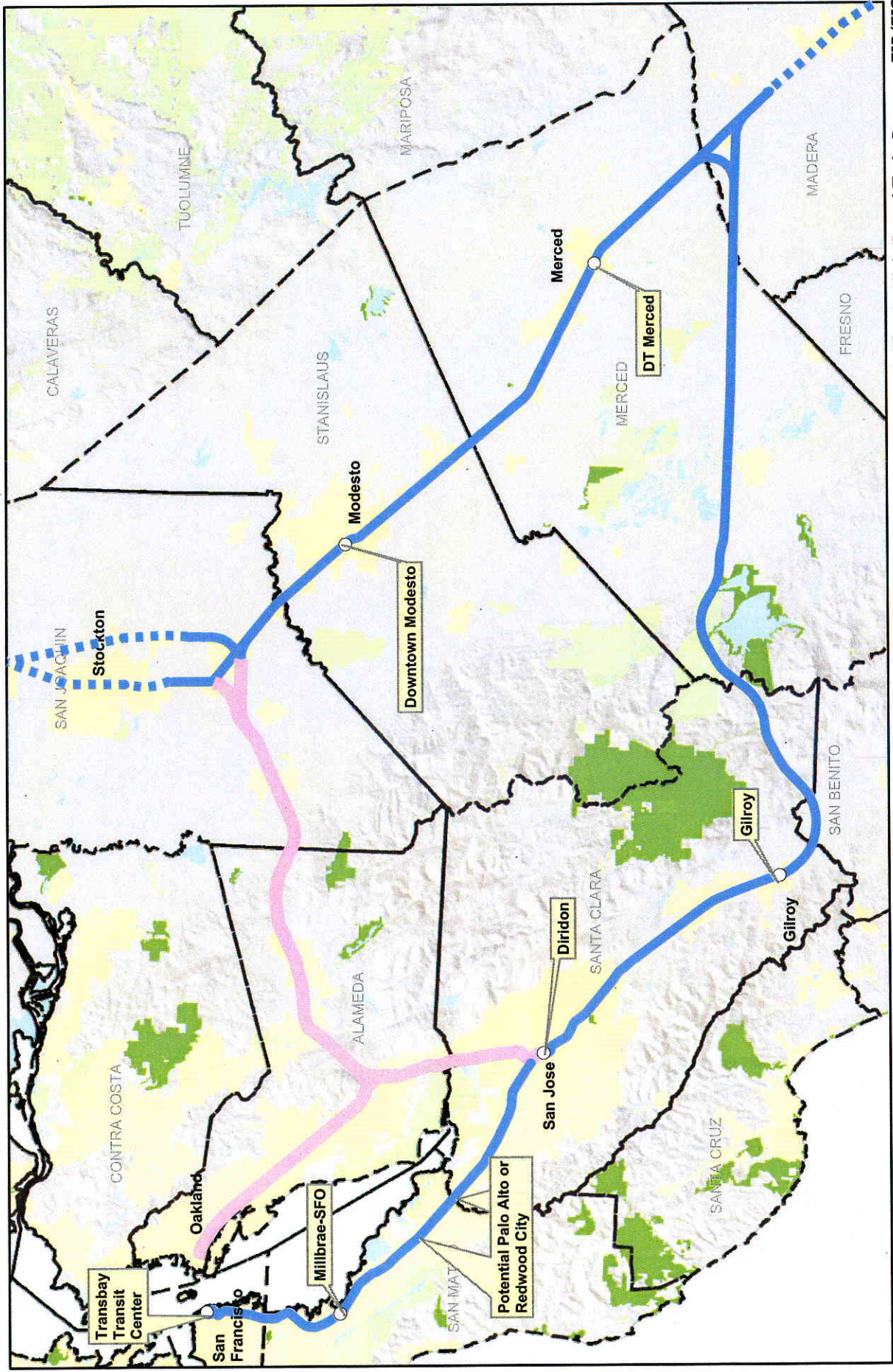
Preferred Network Alternative

- Pacheco Pass to San Francisco (via San Jose) for the proposed HST system and pursue "Regional Rail" commuter and HST service via the Altamont Pass between Sacramento/Northern San Joaquin Valley and Oakland/San Jose in partnership with local and regional agencies and transit providers (see Figure 1).

The Pacheco Pass alternative serving San Francisco and San Jose termini best meets the purpose and need for the proposed HST system. This HST alternative minimizes impacts on wetlands, waterbodies, and the environment. Of those alternatives providing direct HST service to downtown San Francisco and SFO, it has the least number of potential environmental impacts. This alternative minimizes construction issues, which can lead to delay and cost escalation. It best serves the connection between northern and southern California with the greatest potential frequency and capacity, superior connectivity between the South Bay and Southern California, and fewer potential intermediate stops. It fully utilizes the Caltrain corridor, and is consistent with the Authority's adopted phasing strategy. Much of the Bay Area (Metropolitan Transportation Commission, San Francisco, San Francisco Peninsula, San Jose, the South Bay, and Monterey Bay Area) strongly supports the Pacheco Pass with HST service on the Caltrain Corridor to San Francisco.

The Altamont Pass provides superior travel times between Sacramento/Northern San Joaquin Valley and the Bay Area, has great potential for serving long-distance commuters and is strongly supported by the Central Valley and transportation and environmental advocacy organizations. Staff recommends the Altamont Pass corridor should be pursued as an independent though related project with a commuter-oriented purpose and need. The Authority should pursue a partnership with "local and regional agencies and transit providers" to propose and develop a joint-use ("Regional Rail" and HST) infrastructure project in the Altamont Pass corridor—as advocated in the Metropolitan Transportation Commission's (MTC's) recently adopted "Regional Rail Plan for the San Francisco Bay Area".

The Authority cannot unilaterally plan for regionally operated commuter services. Therefore, the Authority's pursuit of regional commuter rail improvements with a component of HST service in the Altamont Pass corridor should be dependent upon forming a partnership with the regional entities. After a partnership is established, the Authority should spearhead efforts to secure local, state, federal, and private funding and to develop a joint-use infrastructure project in the Altamont corridor, including recommending that this corridor be part of a HST funding package.



California High-Speed Train Program EIR/EIS

Preferred HST Alignments
Figure 1

Preferred HST Alignment Alternatives and Station Options

San Francisco to San Jose: *Caltrain Corridor (Shared Use)*

The Draft Program EIR/EIS analyzes one alignment option between San Francisco and San Jose along the San Francisco Peninsula that would utilize the Caltrain rail right-of-way and share tracks with express Caltrain commuter rail services.

Preferred Station Locations:

- ***Downtown San Francisco Terminus: Transbay Transit Center***

The Transbay Transit Center would offer the greatest connectivity and accessibility to San Francisco and the Bay Area, best serve as a regional transit hub, and have the highest ridership potential. It also has considerable agency and public support.

- ***San Francisco Airport Connector Station: Millbrae (SFO)***

The Millbrae (SFO) HST station supports the objectives of the HST project by providing an interface with the northern California hub airport for national and international flights.

- ***Mid-Peninsula Station: Continue to investigate both potential sites and work with local agencies and the Caltrain JPB to determine whether a mid-peninsula station site should be developed.***

The Palo Alto and Redwood City station options would both be multi-modal stations, with similar costs, construction issues, right-of-way issues, and potential environmental impacts. The Palo Alto station option would have somewhat better connectivity and higher ridership, while the Redwood City site is supported by the City of Redwood City.

San Jose to Central Valley: *Pacheco Pass via Henry Miller Road (UPRR Connection) is recommended as the preferred alternative. At the project-level, however, staff recommends the Authority continue to seek and evaluate alignment alternatives utilizing the Pacheco Pass that would mitigate impacts to, or avoid, the Grassland Ecological Area (GEA) to the greatest extent feasible. Staff also recommends that the Authority re-affirm its Statewide Program EIR/EIS decision that there will be no stations between Gilroy and Merced and dismiss from further consideration a potential maintenance facility near Los Banos.*

The Pacheco Pass via Henry Miller Road alternative would provide slightly higher ridership potential, provide the fastest travel times and the most direct link between the Bay Area and Southern California, and would generally parallel an existing roadway corridor through the environmentally sensitive areas that cross from the Bay Area to the Central Valley minimizing potential severance and other environmental impacts as compared to the Pacheco via GEA North alternative.

Preferred Station Locations:

- ***Downtown San Jose Terminus: Diridon Station***

Diridon Station is a multi-modal hub that maximizes connectivity to downtown San Jose, San Jose International Airport, and the southern Bay Area; would have high ridership potential; and is favored by the City of San Jose and the Valley Transportation Authority (VTA).

- ***Southern Santa Clara County: Gilroy Station (Caltrain)***

Gilroy (Caltrain) Station is the preferred HST station to serve Southern Santa Clara County and the Monterey Bay Area. This station would provide the highest accessibility and connectivity for these regions and would have the highest ridership potential.

Central Valley Alignment: *UPRR N/S Alternative is recommended as preferred. However, at the project-level, the Authority would continue to evaluate the BNSF Alternative because of the uncertainty of negotiating with the UPRR for use of some of their right-of-way and would continue investigation of alignments/linkages to a potential maintenance facility at Castle AFB.*

The UPRR alternative would have high potential ridership, would serve potential downtown station sites at Modesto and Merced providing the highest connectivity and accessibility for this part of the Central Valley, and would best meet the Authority's adopted transit-oriented development criteria for station locations.

Preferred Station Locations:

- **Modesto: Downtown Modesto**
The Downtown Modesto Station is the preferred HST station for Modesto because it maximizes connectivity and accessibility to downtown Modesto and would best meet the Authority's adopted transit-oriented development criteria for station locations by serving the downtown of this Central Valley city.
- **Merced: Downtown Merced**
The Downtown Merced Station is the preferred HST station for the Merced area because it maximizes connectivity and accessibility to downtown Merced and would best meet the Authority's adopted transit-oriented development criteria for station locations by serving the downtown of this Central Valley city.

Maintenance Facilities: Castle AFB

Agencies and the public have raised considerable concerns regarding potential environmental impacts related to the suggested maintenance facilities site near Los Banos, whereas there is strong agency and public support in the Merced region for a maintenance facility at Castle AFB. The maintenance facility site near Los Banos should be eliminated from further investigation. The West Oakland site would not serve the preferred Pacheco Pass alternative.

San Francisco Bay Crossings: No Bay crossing for the proposed HST system.

These alternatives would have the greatest potential impacts on the San Francisco Bay and have high capital costs and constructability issues. The Dumbarton Crossing would also have the greatest potential impacts on wetlands and the Don Edwards San Francisco Bay National Wildlife Refuge. To implement these alternatives, extensive coordination would be required with the U.S. Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act, U.S. Fish and Wildlife Service (USFWS), and the California Coastal Commission. Crossing the Bay would be subject to the USACE, California Department of Fish and Game (CDFG), and San Francisco Bay Conservation and Development Commission (BCDC) permit process. A number of agencies and organizations are opposed to the construction of new HST crossings of the San Francisco Bay.

East Bay to Central Valley: Pursue a separate Regional Rail project in the Altamont Corridor.

Under the staff recommendation, the Altamont Pass corridor would be pursued as an independent though related project with a different purpose and need from the proposed HST system, and the Authority's pursuit of rail improvements in the Altamont Pass corridor would be dependent upon developing a partnership with local and regional agencies to provide joint-use infrastructure.

To pursue this separate project, staff recommends the Authority form a partnership with local and regional agencies and transit providers to plan and develop a joint-use infrastructure project in the Altamont Corridor for regional rail commuter and HST services. In a regional partnership, the Authority would consider HST overlay service alternatives—including direct service to Oakland and/or San Jose or potentially terminating at Livermore (connecting to an extended BART system). Providing connectivity and accessibility to Oakland and Oakland International Airport would be a crucial objective for this project.

Introduction

The Draft Bay Area to Central Valley HST Program EIR/EIS (Program EIR/EIS) prepared by the Authority and the Federal Railroad Administration (FRA) does not identify a preference among the HST Network and Alignment Alternatives or station options presented. The Summary of the Program EIR/EIS (Next Steps in the Environmental Process) states that as part of the Final Program EIR/EIS, the Authority will identify "preferred alignment alternatives, station location options, and a preferred network alternative" (page S-17). In order to facilitate the identification of preferred alignment and station locations for the HST alternative in the Final Program EIR/EIS, the Authority staff is presenting these recommendations to the Authority at the November 14, 2007, board meeting as an "informational" item.

The Authority may consider and concur in some or all of these recommendations, and may provide direction to staff for the preparation of the Final Program EIR/EIS at its meeting on December 19, 2007, or at a later board meeting. At the conclusion of this environmental review process, the Authority expects to certify the Final Program EIR, adopt necessary findings, and take action to approve and select preferred alignment and station locations for this portion of the HST system, and it is anticipated that the FRA would issue a Record of Decision (ROD) on the Final Program EIS.

The staff recommendations are based on the data presented in the Draft Program EIR/EIS and supporting technical reports, and consider comments received on the Draft Program EIR/EIS (the comment period concluded on October 26, 2007). HST Network Alternatives represent different ways to combine HST Alignment Alternatives and station location options to implement the HST system in the study region. The Draft Program EIR/EIS focuses on analysis and describes overall effects related to HST Alignment Alternatives. Because there are many possible combinations of alignments and stations, 21 representative HST network alternatives were considered and described to better understand the implications of selection of certain alignment alternatives and station location options.

The network alternatives provide extensive data to inform the selection of preferred alignment alternatives and station location options. Although HST Alignment Alternatives and station location options were screened and evaluated to identify those that are likely to be reasonable and practicable and to meet the project's purpose and need, the Draft Program EIR/EIS did not attempt to do this for the representative network alternatives. The network alternatives were developed to enable an evaluation and comparison of how various combinations of alignment alternatives would meet the project's purpose and need and how each would perform as a HST network (e.g., travel times between various station locations, anticipated ridership, operating and maintenance costs, energy consumption, and auto trip diversions). The different system characteristics, as well as environmental factors of the network alternatives, present complex choices that are now better supported and informed following agency and public review and comment on the Draft Program EIR/EIS.

Chapter 7 of the Draft Program EIR/EIS summarizes and compares the relative differences among physical and operational characteristics and potential environmental consequences associated with the HST alignment and station options, including:

- Physical/operational characteristics
 - Alignment
 - Length
 - Capital Cost
 - Travel Time
 - Ridership
 - Constructability

- Operational Issues
- Potential environmental impacts
 - Transportation related topics (air quality, noise and vibration, and energy)
 - Human environment (land use and community impacts, farmlands and agriculture, aesthetics and visual resources, socioeconomics, utilities and public services, hazardous materials and wastes)
 - Cultural resources (archaeological resources, historical properties) and paleontological resources
 - Natural environment (geology and seismic hazards, hydrology and water resources, and biological resources and wetlands).
 - Section 4(f) and 6(f) resources (certain types of publicly owned parklands, recreation areas, wildlife/waterfowl refuges, and historical sites).

In making these recommendations, the staff was guided by the objectives and criteria for selecting preferred alignments and station locations that were adopted by the Authority and were applied in the screening evaluation as documented in Section 2.5.1 of the Draft Program EIR/EIS (see Table 1 below).

**Table 1
High-Speed Rail Alignment and Station Evaluation Objectives and Criteria**

| Objective | Criteria |
|--|---|
| Maximize ridership/revenue potential | Travel time Length Population/employment catchment area Ridership and revenue forecasts |
| Maximize connectivity and accessibility | Intermodal connections |
| Minimize operating and capital costs | Length Operational issues Construction issues Capital cost Right-of-way issues/cost |
| Maximize compatibility with existing and planned development | Land use compatibility and conflicts Visual quality impacts |
| Minimize impacts on natural resources | Water resources impacts Floodplain impacts Wetland impacts Threatened and endangered species impacts |
| Minimize impacts on social and economic resources | Environmental justice impacts (demographics) Farmland impacts |
| Minimize impacts on cultural and parks/wildlife refuge resources | Cultural resources impacts Parks and recreation impacts Wildlife refuge impacts |
| Maximize avoidance of areas with geologic and soils constraints | Soils/slope constraints Seismic constraints |
| Maximize avoidance of areas with potential hazardous materials | Hazardous materials/waste constraints |

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. There is a critical tradeoff between the

accessibility of the system to potential passengers, which is provided by multiple stations and stops, and the resulting HST travel times. Additional or more closely spaced stations (even with limited service) would lengthen travel times, reduce frequency of service, and limit the ability to operate both express and local services. The station sites recommended as preferred locations 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. Station site selection would occur during subsequent tiered project-level engineering and environmental review. Recommendations are made on station options to allow the Authority to pursue proposed station development at or near that location in future project studies. It is possible and likely that some of the preferred stations included in the Final Program EIR/EIS will not be built.

All the headings below indicate the staff's recommendation of preferred alignments and station locations for the Authority board's consideration. References to existing rail right-of-way as preferred alignments mean the proposed HST system would be located generally within or adjacent to the existing rail right-of-way, unless otherwise specified (e.g., shared use). "Constructability" issues refer to substantial engineering and construction complexity as well as excessive initial and/or recurring costs that present logistical constraints. "Connectivity" relates to how well a station site links with other modes of transportation (transit systems, aviation, and/or highways), and "accessibility" relates to how well the station site is located for serving the surrounding population. "Compatibility" relates to how well a station site fits within current or planned local land uses as defined in local plans.

The Authority will seek FRA concurrence with the preferred alternative identified by the Authority board. Although no permit is being requested at this time under the Clean Water Act, FRA has further committed to obtaining U.S. Environmental Protection Agency (USEPA) and USACE concurrence that the selection of the preferred corridor(s) is most likely to contain the "least environmentally damaging practicable alternative," (LEDPA) consistent with the USACE's permit program (33 CFR Part 320-331) and USEPA's Section 404(b)(1) Guidelines (40 CFR 230-233). In seeking USEPA and USACE concurrence, additional commitments may be identified for future project-level studies.

After the conclusion of this environmental process, the Authority and FRA would focus future project analysis in the study region on alignment and station options selected through this program environmental process. Site-specific location and design alternatives for the preferred alignment and station options, including avoidance and minimization alternatives, would be fully investigated and considered during next tier project-level environmental review.

Summary of Comments on the Identification of the Preferred Alternative

The identification of a preferred HST alignment between the Bay Area and Central Valley is controversial, and this program EIR/EIS process has received a considerable amount of comment from agencies (federal, state, regional, and local), organizations, and the general public. There is a wide divergence of opinion with many favoring the Pacheco Pass, many favoring the Altamont Pass, and many favoring a combination of both passes (with the Pacheco serving as the north/south HST connection and Altamont primarily serving interregional commuter service between Sacramento/Northern San Joaquin Valley and the Bay Area).

A. PACHECO

The Pacheco Pass supporters include the Metropolitan Transportation Commission (MTC), the cities of San Francisco, San Jose, Redwood City, Fremont, Morgan Hill, Cupertino, Sunnyvale, Gilroy, and Salinas; the counties of San Francisco, Santa Clara, San Mateo, and Monterey; Congress members Lofgren, Honda, Eshoo, and Lantos; Assembly member Beale; State Senators Alquist and Maldonado; the San Francisco County Transportation Agency; the Santa Clara Valley Transportation Authority (VTA); Peninsula Corridor (Caltrain) Joint Powers Board (JPB); San Mateo County Transit District (SamTrans); San Mateo County Transportation Authority (TA); Monterey County Transportation Agency; Alameda County Congestion Management Agency; Alameda County Supervisor Scott Haggerty; the San Jose, the Redwood City, and the San Mateo County Chamber of Commerce; the Silicon Valley Leadership Group; and a number of members of the public representing themselves.

There are a number of reasons supporters give for preferring the Pacheco Pass, including: 1) quicker travel times between San Jose/Silicon Valley and Southern California; 2) more frequent/better service between Bay Area and southern California; 3) higher ridership potential; 4) less potential environmental impacts; 5) avoiding impacts on wildlife and sensitive habitat through Don Edwards San Francisco Bay National Wildlife Refuge; 6) best serves the Caltrain Corridor (San Francisco to Gilroy); 7) provides good HST access for the three county Monterey Bay area with a south Santa Clara HST station; 8) can serve San Francisco, Oakland, and San Jose without a new crossing of the Bay; 9) all service through San Jose/best serves south Bay; and 10) less cost for first phase of system between the Bay Area and Anaheim.

There are a considerable number of organizations, agencies, and individuals who have expressed concern regarding potential impacts on the GEA and/or the uninhabited portions of the Pacheco Pass by HST alternatives via the Pacheco Pass. These include the USFWS, CDFG, California Department of Parks and Recreation, Grassland Water District, Grassland Resources Conservation District, Grassland Conservation, Education & Legal Defense Fund, Ducks Unlimited, California Outdoor Heritage Alliance, California Waterfowl Association, Sacramento Area Council of Governments, Citizens' Committee to Complete the Refuge, Bay Rail Alliance, California Rail Foundation (CRF), California State Parks Foundation (CSPF), Defenders of Wildlife, Planning and Conservation League (PCL), Regional Alliance for Transit (RAFT), Sierra Club, Train Riders Association of California (TRAC), and Transportation Solutions Defense and Education Fund (TRANSDEF). California Department of Parks and Recreation raised concerns regarding potential impacts on State Parks and reserve resources through the Pacheco Pass. In addition, the town of Atherton opposes use of the Caltrain Corridor between San Jose and San Francisco and the City of Millbrae has raised concerns regarding potential impacts through the City of Millbrae.

B. ALTAMONT

The Altamont Pass supporters include the cities of Oakland, Union City, and Atwater; the town of Atherton; the counties of San Joaquin, Stanislaus, Mariposa, and Kern; the California Partnership for the San Joaquin Valley; the San Joaquin Regional Policy Council; Sacramento Area Council of Governments; San Joaquin County Council of Governments; Tulare County Association of

Governments; Altamont Commuter Express (ACE); California Department of Parks and Recreation; California Environmental Coalition; California State Parks Foundation (CSPF); Planning and Conservation League (PCL); Sierra Club; Grassland Water District; Grassland Resources Conservation District; Grassland Conservation, Education & Legal Defense Fund; California Outdoor Heritage Alliance; Bay Rail Alliance; Transportation Involves Everyone (TIE); San Joaquin COG Citizens Advisory Committee; Tracy Region Alliance for a Quality Community; Ducks Unlimited; Transportation Solutions Defense and Education Fund (TRANSDEF); California Rail Foundation (CRF); Defenders of Wildlife; Regional Alliance for Transit (RAFT); Citizens' Committee to Complete the Refuge; Train Riders Association of California (TRAC); and a number of members of the public representing themselves.

There are a number of reasons supporters give for preferring the Altamont Pass including: 1) quicker travel times between Sacramento/Northern San Joaquin Valley and the Bay Area; 2) best serves the Central Valley; 3) more Northern San Joaquin markets served on the Authority's adopted first phase of construction between the Bay Area and Anaheim; 4) higher ridership potential; 5) less potential for environmental impacts; 6) avoids impacts on wildlife and sensitive habitat through Pacheco Pass and the GEA; 7) serves a greater population/more population along the alignment; 8) best serves ACE corridor and reduces traffic along I-580; 9) better service between Bay Area and Southern California (either reduced frequency is needed on shared Caltrain alignment or HST trains can be split); 10) best serves San Jose since it would be a terminus station and with much faster travel times to commuter markets in the Northern San Joaquin Valley; and 11) is less sprawl inducing.

There are a considerable number of organizations, agencies, and individuals who have expressed concern regarding potential impacts on the San Francisco Bay and Don Edwards San Francisco Bay National Wildlife Refuge by HST alternatives via the Altamont Pass using a Dumbarton Crossing. These include the MTC; BCDC; USEPA; USFWS; Don Edwards San Francisco Bay National Wildlife Refuge; Congress members Zoe Lofgren, Michael Honda, Anna Eshoo, and Tom Lantos; State Senators Elaine Alquist and Abel Maldonado; Assembly member Jim Beale; Santa Clara County; San Mateo County Transit District (SamTrans); San Mateo County Transportation Authority (TA); Peninsula Corridor (Caltrain) Joint Powers Board (JPB); San Francisco Bay Trail Project; San Jose Chamber of Commerce; San Francisco Bay Trail Project; the City of San Jose; the City of Oakland; and Don Edwards (Member of Congress, 1963-1995). The East Bay Regional Park District has raised concerns in regards to potential impacts on nine regional parks, in particular the Pleasanton Ridge and Vargas Plateau regional parks, and the Alameda Creek Regional Train between Pleasanton and Niles Junction for Altamont Pass alternatives. In addition, the City of Fremont opposes the Altamont Pass, and the City of Pleasanton does not support the Altamont Pass but remains "open" to terminating Altamont alternatives in Livermore. The MTC and Alameda County Supervisor Scott Haggerty also support the investigation of Altamont Pass alternatives terminating in Livermore.

C. COMBINED PACHECO AND ALTAMONT

After completing a two-year "Regional Rail" planning process, the MTC has re-confirmed support for the Pacheco alignment via the San Francisco Peninsula as "the main HSR express line between Northern and Southern California due to several of the reasons stated in Resolution N. 3198:

- has the highest statewide ridership demand, and best serves HSR's key market—Northern California to Southern California, connecting the two most congested regions in the state
- provides direct service to all three major cities—San Francisco, San Jose and Oakland
- avoids construction of a new bay crossing or tube required by the Altamont Pass entry for San Francisco service."

MTC's resolution also "endorse(s) the Altamont route as better suited to serve interregional and local travel between the Bay Area and the Northern San Joaquin Valley." It states:

At the same time the Pacheco pass alignment is being built, the CHSRA should upgrade interregional services between Peninsula—Tri Valley—Sacramento & San Joaquin Valley. As a first step, ACE service can be improved by adding tracks and improving signaling to provide higher speed and more reliable service that would connect with a future BART station in Livermore (Greenville Road or Isabel/Stanley based on further BART analyses); these improvements would need to be compatible with future HSR. An electrified regional train capable of higher speeds, with additional grade separations that would improve road circulation, would replace longer-term, ACE service; the trains would also be compatible with lightweight equipment operating in the Dumbarton Corridor.... [MTC] request[s] that the CHSRA also evaluate an alternative in the Altamont Corridor that terminates HSR at a proposed BART Livermore station where HSR passengers could be dispersed to Bay Area locations throughout the BART system, together with improved ACE service to Santa Clara County... [and] ... request[s] that CHSRA consider seeking additional HSR bond funds dedicated to upgrading the Altamont corridor for regional service.

The Tri-Valley Policy Working Group and Technical Advisory Committee (Tri-Valley PAC) took a similar position. Tri-Valley PAC is a partnership that includes the cities of Dublin, Livermore, Pleasanton, Danville, San Ramon, and Tracy along with transportation providers LAVTA, ACE, and BART. The Tri-Valley supports "continued study of high speed rail through the Altamont Corridor on the Union Pacific corridor **PROVIDED**:

- a. There are no significant Right-of-Way takes.
- b. There is no major aerial structure through Pleasanton."

In addition, the Tri-Valley PAC provided the following comments for consideration by the Authority:

The Draft Bay Area EIR/EIS includes a Bay Area HSR alignment that would include High Speed Train service through the Pacheco Pass and regional overlay service provided through the Altamont pass. The Policy Advisory Committee believes that this option may present the best way of addressing our concerns and delivering optimal HST service to the region as a whole.

The combined Altamont/Pacheco(Hybrid) alignment option allows HSR to provide frequent service along the most direct route between northern and southern California, while still serving the important regional transportation corridors in Northern California, including those in the Central Valley, the Tri-Valley, and between Sacramento and the Bay Area. The Draft EIR/EIS demonstrates that the corridors served by the Altamont alignment include some of the greatest travel demand in the entire system.

While providing these important transportation advantages, a system that provides service in both major corridors also mitigates some of the possible negative impacts identified in the Draft EIR/EIS. Specifically related to the Tri-Valley's key concerns, it would improve the likelihood that HST service could be delivered within the existing Union Pacific Right-of-Way without the need for major aerial infrastructure, or significant right-of-way acquisition through the developed portions of the Tri-Valley.

U.S. Congressman Jim Costa stated that he'd rather not view this as one route over another. He would rather the Valley see a vision for both, and the Capitol Corridor JPB supports "in principle the concept of the two high-speed alignments into and out of the Bay Area. Each alignment would provide a means to meet the high-speed travel markets for (1) long distance travelers from Los Angeles/Southern California using the Pacheco Pass route and (2) the interregional travelers from the Central Valley using the Altamont Pass route." The MTC recommendations are also supported by the Alameda County Congestion Management Agency and Alameda County Supervisor Scott Haggerty.

While the Silicon Valley Leadership Group and the City of San Jose strongly support the Pacheco Pass and the HST link between northern and southern California, they also support high-speed commuter service/improvements to ACE service via the Altamont Pass, and while the California Partnership for the San Joaquin Valley strongly prefers the Altamont Pass, they also commented that the Authority "evaluate the economic feasibility of developing both the Altamont and Pacheco Pass routes to see if each one of those routes, on its own merits, will generate an economic surplus. If it does, then we would like to see both routes implemented." They also state, "if it turns out that one of the two routes must be implemented first, they cannot be implemented concurrently, then our strong preference is for the Altamont route." However, some members of the public have expressed opposition to the "hybrid" idea (Pacheco and Altamont) raising issue with the additional costs and concern that only one pass would be implemented.

The USEPA recommended "eliminating from further consideration a high speed rail alternative connecting Bay Area to Central Valley that includes both an Altamont and a Pacheco Pass alignment, termed, "*Pacheco Pass with Local Service*" in the Draft PEIS. This scenario would effectively result in twice the habitat fragmentation, noise, and indirect impacts to aquatic resources. This alternative would likely result in CWA Section 404 permitting challenges because it is difficult to demonstrate that mountain crossings at both Pacheco and Altamont Passes represent the LEDPA given the increased indirect impacts to aquatic resources and habitat fragmentation associated with this alternative."

Network Alternatives Evaluation

The purpose of the HST system is defined in Chapter 1 of the Draft Program EIR/EIS as follows: *The purpose of the Bay Area HST is to provide a reliable high-speed electrified train system that links the major Bay Area cities to the Central Valley, Sacramento, and Southern California, and that delivers predictable and consistent travel times. Further objectives are to provide interfaces between the HST system and major commercial airports, mass transit, and the highway network and to relieve capacity constraints of the existing transportation system in a manner sensitive to and protective of the Bay Area to Central Valley region's and California's unique natural resources.*

Chapter 1 of the Draft Program EIR/EIS also outlines the objectives that the Authority has adopted, including, "maximize intermodal transportation opportunities by locating stations to connect with local transit, airports, and highways" and states that the Authority's statutory mandate is to plan, build, and operate a 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 21 network alternatives were described in the Draft Program EIR/EIS to present information about overall effects of combinations of HST Alignment Alternatives and station location options to implement the HST system in the study region. The 21 Network Alternatives fell among the three basic approaches for linking the Bay Area and Central Valley: Altamont Pass (11 network alternatives); Pacheco Pass (six network alternatives); and Pacheco Pass with Altamont Pass (local service) (four network alternatives). The network alternatives presented vary in the degree they serve urban areas/centers and international airports. All but one would provide direct HST service to (i.e., include a HST station within) one and up to three of the major urban centers in the Bay Area—San Francisco, San Jose, and Oakland. Some of the network alternatives would provide service to one or more of the three Bay Area international airports at San Francisco, Oakland, and San Jose. Connectivity and enhancement of other transit systems (e.g. ACE, Caltrain, Capitol Corridor, BART, and Valley Transportation Authority) also varies greatly among the network alternatives.

Overall, implementing the HST system would greatly increase the capacity for intercity and commuter travel and reduce existing automobile traffic in specific travel corridors. Full grade-separation along Bay Area rail corridors used by the HST would improve local traffic flow and reduce air pollution at existing rail crossings. The more extensive the HST system implemented in the Bay Area, the greater the travel condition benefits, including increased connectivity to other transit systems, increased convenience, increased reliability, and improved travel times. In particular, more direct connections to the region's airports provide increased connectivity for air transportation system riders.

Recognizing the benefits described above, as well as other attributes, the cities of San Francisco, Oakland, and San Jose all strongly support direct HST service to their respective downtowns. This support was expressed as comments on the Draft Program EIR/EIS, and is consistent with comments/input provided by these cities over the ten years since the Authority was created. MTC, the regional government for the Bay Area, supports direct HST service to the downtowns of each of these three major Bay Area urban centers.

A number of Network Alternatives clearly do not meet the purpose and need for the HST system. The Altamont Pass network alternative that terminates in Union City fails since it does not provide direct HST service to San Francisco, Oakland, or San Jose (the major Bay Area cities) nor does it provide interface with the major commercial airports. Also failing are a Pacheco Pass network alternative that terminates in San Jose and three Altamont Pass network alternatives that only serve one of the three major urban areas/centers. These four alternatives directly provide HST service to at most only one major Bay Area city and one of the region's major commercial airports.

A. PACHECO PASS NETWORK ALTERNATIVES EVALUATION

Six representative Pacheco Pass network alternatives were investigated. These six alternatives encompass the range of different ways to combine HST Alignment Alternatives and station location options to implement the HST system via the Pacheco Pass. All six Pacheco Pass network alternatives provide direct service to downtown San Jose. The Pacheco Pass network alternatives consist of: 1) HST to San Francisco via the San Francisco Peninsula; 2) HST to Oakland via the East Bay; 3) HST to San Francisco via the San Francisco Peninsula and to Oakland via the East Bay (no bay crossing); 4) HST terminating in San Jose; 5) HST to San Francisco via the peninsula and then to Oakland via a new transbay tube; and 6) HST to Oakland via the East Bay and then to San Francisco via a new transbay tube.

As previously explained, the alternative that would terminate in San Jose and not serve either San Francisco or Oakland directly does not meet the purpose and need for the proposed HST system.

The Pacheco Pass alternatives with the greatest environmental impacts and greatest construction issues are the two alternatives that include a new transbay tube. These alternatives would have over 36 acres of potential direct impacts on the San Francisco Bay. To put this into perspective, these alternatives would have 40.3–41 ac of potential impacts on waterbodies (lakes + San Francisco Bay), whereas the preferred Pacheco Pass alternative (HST to San Francisco via the San Francisco Peninsula) would have only 3.8 ac of potential direct impacts. The cost of the additional 8.8-mile HST segment needed to implement a new transbay tube is estimated at about \$4.6 billion—over \$500 million per mile. Moreover, there is only slightly higher ridership and revenue potential (about 2% higher ridership or 1.9 million passengers per year by 2030) when comparing the transbay tube alternative via the San Francisco Peninsula versus the preferred alternative. To implement alternatives that included a new transbay tube, extensive coordination would be required with the USACE under Section 10 of the Rivers and Harbors Act, USFWS, and the California Coastal Commission. Crossing the Bay would also be subject to the USACE, CDFG, and BCDC permit process.

The Pacheco Pass alternative that serves San Francisco, Oakland, and San Jose without a new bay crossing provides the highest level of connectivity and accessibility to the Bay Area of the Pacheco Pass Alternatives by directly serving the three major Bay Area urban centers, serving both the San Francisco Peninsula and the East Bay, and providing good connectivity to the region's three international airports (SFO, Oakland, and San Jose). However, this alternative has greater environmental impacts and greater costs (\$3.6 billion more) than the preferred alternative since it requires over 42 additional miles of HST alignment to be constructed along the east bay. In addition, because this alternative would split the frequency of the HST services (express, suburban express, skip-stop, local, and regional) between the San Francisco Peninsula and the East Bay, this resulted in considerably less ridership and revenue projected for this alternative as compared to the preferred Pacheco Pass alternative (7.8 million passengers a year by 2030 representing 8.4% of the preferred alternative's ridership).

The preferred Pacheco Pass alternative (serving San Francisco via the San Francisco Peninsula) has similar potential environmental impacts as the Oakland to San Jose via the East Bay alternative. Both alternatives maximize the use of existing transportation corridors and avoid impacts on the San Francisco Bay. The preferred alternative to San Francisco would have slightly less potential impacts on wetlands (15.6 ac vs. 17.4 ac), waterbodies (3.8 ac vs. 4.5 ac), and streams (20,276 linear ft. vs. 21,788 linear ft.) but would have slightly more potential impacts on floodplains (520.8 ac vs. 477.5 ac) and species (plant and wildlife), and would potentially impact a greater number of cultural resources (165 vs. 106) than the Pacheco Pass alternative to Oakland via the East Bay. Both alternatives would have high ridership potential and similar costs. The alternative to downtown San Francisco (Transbay Transit Center) is forecast to have about 2.1% (1.96 million riders per year by 2030) higher ridership potential than the alternative to Oakland (West Oakland), but is estimated to cost about 6.8% more (\$800 million).

The Pacheco Pass alternative to downtown San Francisco via the San Francisco Peninsula is preferred because it provides HST direct service to downtown San Francisco, SFO, and the San Francisco Peninsula while maximizing the use of existing rail right-of-way through shared-use with improved Caltrain commuter services. This alternative provides direct service to northern California's major hub airport at SFO and major transit, business, and tourism center at downtown San Francisco. Moreover, this alternative best supports the Authority's adopted phasing plan and would enable the early implementation of the HST/Caltrain section between San Francisco, San Jose, and Gilroy. The Authority's phasing plan (adopted May 2007) states, "Similar to the Anaheim to Los Angeles segment a situation would exist in the Bay Area where local and regional funds are dedicated to train service improvements, should the San Francisco to San Jose segment be identified and selected as part of the preferred alternative, including this segment in Phase I will enable the Authority to maximize the use of these resources and will help to reduce the need for state funds."

The City and County of San Francisco, San Francisco County Transportation Authority, Peninsula Corridor (Caltrain) Joint Powers Board (JPB), San Mateo County Transit District (SamTrans), San Mateo County Transportation Authority (TA), City of Gilroy, City of Redwood City, County of Monterey, and City of Morgan Hill all support HST to San Francisco via San Jose and the San Francisco Peninsula (Caltrain Corridor)—the staff recommended alternative. The MTC recommends use of the Pacheco Pass via the San Francisco Peninsula "as the main HSR express line between Northern and Southern California" but their recommendation also includes a new transbay tube to bring direct service to Oakland. MTC recommends that the first step in implementing HST in Northern California and the Bay Area is "investment in the Peninsula trackage with regional and high-speed rail funding can make this corridor high-speed rail ready," noting that Caltrain intends to use lightweight electrified trains that would be compatible with HST equipment.

B. ALTAMONT PASS NETWORK ALTERNATIVES EVALUATION

Eleven representative Altamont Pass network alternatives were investigated. These 11 alternatives encompass the range of different ways to combine HST Alignment Alternatives and station location options to implement the HST system via the Altamont Pass. The Altamont Pass network alternatives consist of: 1) HST to San Francisco (via Dumbarton) and San Jose (via I-880); 2) HST to Oakland and San Jose via the East Bay; 3) HST to San Francisco (via Dumbarton) and Oakland and San Jose via the East Bay; 4) HST terminating in San Jose; 5) HST terminating in to San Francisco; 6) HST terminating in Oakland; 7) HST terminating in Union City; 8) HST to San Francisco and San Jose via San Francisco Peninsula (and Dumbarton crossing); 9) San Francisco and San Jose, Oakland—no Bay Crossing; 10) Oakland and San Francisco—via transbay tube; and 11) San Jose, Oakland and San Francisco—via transbay tube.

The four Altamont Pass network alternatives that would terminate in Union City or provide direct service to only one of the three major urban centers of the Bay Area (San Francisco, San Jose, and Oakland) do not meet the purpose and need for the proposed HST system.

The two Altamont Pass network alternatives that require a new transbay tube would have high potential environmental impacts and considerable construction issues. These alternatives would have over 36 acres of potential direct impacts on the San Francisco Bay. They would have 38.8 ac of potential impacts on waterbodies (lakes + San Francisco Bay) whereas the Oakland and San Jose Termini Altamont Pass network alternative would have only 2.3 ac of potential direct impacts. The cost of the additional 8.8-mile HST segment needed to implement a new transbay tube is estimated at about \$4.6 billion—over \$500 million per mile. Moreover, there is only slightly higher ridership and revenue potential (less than 2% higher ridership or 1.0–1.6 million passengers per year by 2030) when comparing the transbay tube alternative via the East Bay versus the related Altamont Pass network alternative that terminates in Oakland. To implement alternatives that included a new transbay tube, coordination would be required with the USACE under Section 10 of the Rivers and

Harbors Act, USFWS, and the California Coastal Commission. Crossing the Bay would also be subject to the USACE, CDFG, and BCDC permit process.

The Altamont Pass network alternative that serves San Francisco, Oakland, and San Jose (with a Dumbarton crossing) provides a high level of connectivity and accessibility to the Bay Area by directly serving the three major Bay Area urban centers, serving both the San Francisco Peninsula and the East Bay, and providing good connectivity to the region's three international airports (SFO, Oakland, and San Jose). However, this alternative has greater environmental impacts and greater costs (\$2.4 billion more) than the San Francisco and San Jose Termini Altamont Pass alternative since it requires nearly 38 additional miles of HST alignment to be constructed along the east bay. In addition, because this alternative would further split the frequency of the HST services (express, suburban express, skip-stop, local, and regional) between San Francisco, San Jose, and Oakland (a three way split east of Niles Junction) this resulted in considerably less ridership and revenue projected for this alternative as compared to the San Francisco and San Jose Termini Altamont Pass network alternative (about 6.8 million passengers a year by 2030 representing 7.7% of the other alternative's ridership).

The Altamont Pass network alternative that serves San Francisco, Oakland, and San Jose—no Bay Crossing provides a high level of connectivity and accessibility to the Bay Area by directly serving the three major Bay Area urban centers, serving both the San Francisco Peninsula and the East Bay, and provides good connectivity to the region's three international airports (SFO, Oakland, and San Jose). However, this alternative has greater environmental impacts and greater costs (\$4.5 billion more) than the Oakland and San Jose Termini Altamont Pass alternative since it requires over 62 additional miles of HST alignment to be constructed along the San Francisco Peninsula. In addition, because this alternative results in relatively long travel times to San Francisco (3 hours and 17 minutes SF-LA vs. 2 hours and 23 minutes Oakland-LA and 1 hour 39 minutes SF-Sacramento vs. 53 minutes Oakland-Sacramento) this resulted in somewhat less ridership and revenue projected for this alternative as compared to the Oakland and San Jose Termini Altamont Pass network alternative (about 2.8 million passengers a year by 2030 representing over 3.1% of the other alternative's ridership).

There are considerable trade-offs in comparing the three most promising Altamont Pass network alternatives: San Francisco and San Jose Termini; Oakland and San Jose Termini; and San Francisco and San Jose—via San Francisco Peninsula. Of these three Altamont Pass network alternatives, the Oakland and San Jose Altamont Pass network alternative is estimated to have the least potential environmental impacts predominately because the other two alternatives require a Bay crossing at Dumbarton. The Oakland and San Jose Termini network alternative is estimated to have fewer potential impacts on waterbodies (2.3 ac vs. 39.6 ac), wetlands (12.3 ac vs. 44.4-45.9 ac), special status plant species (40 vs. 56), special status wildlife species (44 vs. 50), non-wetland waters (14,032 linear ft. vs. 15,947-16,773 linear ft.), and cultural resources (128 vs. 149-180) than the two network alternatives serving San Francisco and San Jose termini. The major failure of the Oakland and San Jose network alternative is that it does not provide direct HST service to SFO (northern California's major hub airport), the San Francisco Peninsula (Caltrain Corridor), and downtown San Francisco, the major transit, business, and tourism center of the region. Service utilizing the Caltrain corridor better satisfies the purpose and need of the HST and also best supports the Authority's adopted phasing plan. Moreover, as part of the Regional Rail plan, MTC concluded that "development of an East Bay option with direct service to San Jose and Oakland would include significant right-of-way risk gaining an agreement from UPRR to provide access to Oakland" (Regional Rail Plan for the San Francisco Bay Area, Revised Draft September 2007, pg. 86). The two Altamont Pass alternatives to San Francisco and San Jose have similar environmental impacts, ridership, and costs. However, the San Francisco and San Jose Termini network alternative would offer quicker travel times to San Jose than the San Francisco and San Jose—via the San Francisco

Peninsula (2 hours 19 minutes vs. 2 hours 37 minutes for SJ-LA; and 49 minutes vs. 1 hour and 3 minutes SJ-Sacramento).

The City of Oakland supports direct service to the West Oakland station option via the Altamont Pass. The City of Union City supports direct service to Union City via Altamont Pass. The City of Fremont opposes the Altamont Pass alternatives, but in particular opposes the east-west alignment through Fremont (for Altamont Pass alternatives to San Francisco via Dumbarton). Congress members Zoe Lofgren, Michael Honda, Anna Eshoo, and Tom Lantos; State Senators Elaine Alquist and Abel Maldonado; and Assembly member Jim Beale as well as Santa Clara County, San Jose Chamber of Commerce, Don Edwards, and the City of San Jose all oppose HST alternatives requiring a Dumbarton crossing through the Don Edwards San Francisco Bay National Wildlife Refuge. The City of Oakland, USEPA, USFWS, BCDC, and San Francisco Bay Trail Project also raised concerns regarding potential impacts on Don Edwards San Francisco Bay National Wildlife Refuge and a new crossing of the bay. The City of Pleasanton, Alameda County Congestion Management Agency, and Alameda County Supervisor Scott Haggerty as well as the MTC support the future investigation of terminating Altamont Pass HST alternatives in Livermore. Rail advocacy groups such as the Bay Rail Alliance support the Altamont San Francisco and San Jose Termini network alternative.

The Bay Area Regional Rail Plan adopted by MTC favors the San Francisco and San Jose—via the San Francisco Peninsula Altamont Pass alternative because this alternative would utilize the Caltrain alignment between San Francisco and San Jose and would “maximize the partnership opportunities with CHSRA, could be incrementally developed, provides consistency with existing plans and minimizes duplication with committed plans and investments” (MTC, Sept 2007, pg 86). However, the MTC preference for Altamont also includes an ultimate connection to Oakland from San Francisco via a new transbay tube.

C. PACHECO PASS WITH ALTAMONT PASS (LOCAL SERVICE) NETWORK ALTERNATIVES EVALUATION

Four representative Pacheco Pass with Altamont Pass (local service) network alternatives were investigated. These four alternatives encompass the range of different ways to combine HST Alignment Alternatives and station location options to implement the HST system via the Pacheco Pass while also providing local HST service via the Altamont Pass. The Pacheco with Altamont Pass (local service) network alternatives consist of: 1) HST with San Francisco and San Jose Termini; 2) HST with Oakland and San Jose Termini; 3) HST with San Francisco, San Jose, and Oakland Termini (without Dumbarton Bridge); and 4) HST terminating in San Jose.

The Pacheco Pass and Altamont Pass (local service) network alternative that would terminate in San Jose does not serve either San Francisco or Oakland directly and does not meet the purpose and need for the proposed HST system.

The network alternative to Oakland and San Jose is estimated to be the least costly of the remaining three network alternatives serving both the Pacheco and Altamont passes (\$2.3 billion less than the alternative serving San Francisco and San Jose), would have the least environmental impacts, and would have high ridership potential, but it would not provide direct HST service to downtown San Francisco, SFO, and the San Francisco Peninsula (Caltrain Corridor) between San Francisco and San Jose. The network alternative to San Francisco and San Jose is estimated to have the highest ridership potential (3.27 million passengers a year by 2030 higher than the Oakland and San Jose alternative) but is also estimated to have the highest environmental impacts since it would require a new crossing at Dumbarton. The network alternative to San Francisco, Oakland, and San Jose (without Dumbarton Bridge) would have the highest costs (\$4.4 billion more than the Oakland and San Jose alternative), and the least ridership potential (8.34 million passenger a year by 2030 less than the San Francisco and San Jose alternative), but would provide direct HST service to Oakland,

San Francisco, and San Jose and the region's three international airports without requiring a new bay crossing.

The Pacheco Pass with Altamont Pass (local service) network alternatives do not compare well against either the Pacheco Pass or Altamont Pass network alternatives in the Draft Program EIR/EIS for HST service to be provided by the Authority. These network alternatives resulted in similar ridership and revenue forecasts (with less revenue than comparable Pacheco Pass network alternatives) while having considerably higher capital costs (\$4.4–6.0 billion more for comparable terminus station locations). Although the Pacheco Pass with Altamont Pass (local service) alternatives would increase connectivity and accessibility by potentially providing direct HST service to additional markets, these alternatives would have higher environmental impacts than Altamont or Pacheco Pass alternatives.

D. COMPARISON OF PACHECO PASS AND ALTAMONT PASS ALTERNATIVES

Public Input: There is a wide divergence of opinion for the selection of the alignment between the Bay Area and Central Valley with many favoring the Pacheco Pass, many favoring the Altamont Pass, and many favoring doing both passes (with the Pacheco serving as the north/south HST connection and Altamont primarily serving interregional commuter service between Sacramento/Northern San Joaquin Valley and the Bay Area). San Francisco, Oakland, and San Jose, the three major urban centers of the Bay Area, all want direct HST service. The Central Valley (including Sacramento) and many transportation and environmental organizations strongly prefer the Altamont Pass, whereas much of the Bay Area (MTC, San Francisco, San Jose, San Francisco Peninsula, and Monterey Bay Area) agencies strongly support the Pacheco Pass. Opposition has been raised to potential impacts for both the Pacheco Pass (impacts on the GEA, Pacheco Pass, the Town of Atherton, and Millbrae), and the Altamont Pass (impacts on the San Francisco Bay, Don Edwards San Francisco Bay National Wildlife Refuge, East Bay regional parks, the City of Fremont, City of Livermore, and the City of Pleasanton).

Ridership and Revenue: The HST ridership and revenue forecasts done by MTC in partnership with Authority concluded that both the Pacheco Pass and Altamont Pass network alternatives have high ridership and revenue potential. Distinct differences were found between the Pacheco Pass and Altamont Pass for certain markets, and the sensitivity tests help in the selection of alignments alternatives and station options within the corridors studied. The forecasts also help to differentiate network alternatives that better satisfy the purpose and need and objectives from those that perform less well. Nonetheless, while additional forecasts with different assumptions may result in somewhat different results, the bottom-line conclusion is expected to remain the same: both the Pacheco Pass and Altamont Pass have high ridership potential. This overall conclusion is consistent with the previous ridership analysis done for the Authority's Business Plan (June 2000). The preferred Pacheco Pass alternative is forecast to have somewhat higher ridership and revenue than the three most promising Altamont Pass Alternatives (93.3 million vs. 88.1–90.8 million passengers per year by 2030 with annual revenues \$246–347 million higher for the Pacheco Pass). It is estimated that the Altamont Pass would have higher ridership and revenue potential for the Authority's adopted first phase of construction between the Bay Area and Anaheim (4.1 million more passengers and about \$206 million more revenue annually by 2030) before the full system is completed.

Capital and Operating Costs: Capital and operating costs are not substantially different between the Pacheco Pass and Altamont Pass alternatives. The capital costs are very similar for Pacheco Pass and Altamont Pass network alternatives with costs being somewhat less for service to Oakland as opposed to San Francisco via the Peninsula. The preferred Pacheco Pass alternative is estimated to cost slightly less than the two most promising Altamont Pass alternatives serving San Francisco and San Jose (\$200–300 million less) and somewhat more (\$2.4 billion) than the most promising Altamont Pass alternative serving Oakland and San Jose. The Altamont Pass alternatives have a shorter distance between Sacramento and the Bay Area and therefore are estimated to have

somewhat less operational and maintenance costs than the Pacheco Pass alternatives (between \$67–97 million less annually by 2030 or 5.6–8% less for the most promising alternatives). An advantage of the Pacheco Pass is that it requires less capital costs (\$1.8 billion) for the Authority's adopted first phase of construction between the Bay Area and Anaheim¹.

Travel Times/Travel Conditions: Either the Pacheco Pass or Altamont Pass would provide quick, competitive travel times between northern and southern California. The Pacheco Pass would provide the quickest travel times between the south Bay and southern California (10 minutes less than the Altamont alternatives serving San Jose via the East Bay [I-880], and 28 minutes less than the Altamont San Francisco and San Jose—via San Francisco Peninsula alternative for express service). The Pacheco Pass enables a potential station in southern Santa Clara County (at Gilroy or Morgan Hill), which provides superior connectivity and accessibility to south Santa Clara County and the three Monterey Bay counties and utilizes the entire Caltrain corridor between San Francisco and Gilroy. San Francisco and San Jose would be served with one HST alignment along the Caltrain corridor providing the most frequent service to these destinations, whereas the most promising Altamont Pass alternatives would require splitting HST services (express, suburban express, skip-stop, local, regional) between two branch lines to serve San Jose and either San Francisco or Oakland. The Altamont Pass would provide considerably quicker travel times between Sacramento/Northern San Joaquin Valley and San Francisco or Oakland than the Pacheco Pass (41 minutes less between San Francisco and Sacramento for express service). The Altamont alternatives using the East Bay to San Jose would have express travel times about 29 minutes less than the Pacheco pass between Sacramento and San Jose, while the Altamont San Francisco and San Jose—via the San Francisco Peninsula alternative would take 15 minutes less than the Pacheco Pass for this market. The Altamont Pass would enable a potential Tri-Valley HST station and a potential Tracy HST station, which provide superior connectivity to the Tri-Valley/Eastern Alameda County, Contra Costa County, and the Tracy area and provide for the opportunity for shared infrastructure with an improved ACE commuter service, although additional infrastructure would be necessary for commuter overlay service with associated impacts. The Altamont Pass would have more potential Central Valley stations served on the Authority's adopted first phase for construction between the Bay Area and Anaheim (Tracy and Modesto). The travel time for direct service and travel conditions would be significantly different between the Altamont Pass alternative to Oakland and San Jose in comparison to the other two promising Altamont alternatives and the preferred Pacheco Pass alternatives (which directly serve San Francisco and San Jose). The Oakland and San Jose alternative would provide superior travel times, connectivity and accessibility to Oakland, Oakland International Airport, and the East Bay, but would not directly serve downtown San Francisco, SFO, or the San Francisco Peninsula/Caltrain Corridor.

Constructability Issues: There are constructability issues with both the Pacheco and Altamont pass alternatives. However, the construction related issues associated with the Altamont Pass alternatives are greater than those for the Pacheco Pass. All Altamont Pass alternatives have considerable constructability issues through the right-of-way constrained Tri-Valley area (Livermore and Pleasanton) and tunneling issues in the Pleasanton Ridge/Niles Canyon area. For direct service to San Francisco, the most promising Altamont Pass alternatives require a new Bay Crossing at Dumbarton, which must also go through the Don Edwards San Francisco Bay National Wildlife Refuge and the City of Fremont (which opposes construction of the east-west link through Fremont). For the Altamont Pass alternative serving Oakland, the MTC concluded that "development of an East Bay option with direct service to San Jose and Oakland would include significant right-of-way risk gaining an agreement from UPRR to provide access to Oakland." For the Altamont Pass east bay link to San Jose, Caltrans District 4 has commented that use of the I-880 median would result in significant construction stage impacts between Fremont and San Jose. The Pacheco Pass requires coordination and shared-use on the Caltrain corridor and would have tunneling and environmental issues through

¹ Including the UPRR alignment segment between Castle AFB Maintenance Facility and the junction with the Henry Miller Road alignment for the Pacheco Pass alternative.

the Pacheco Pass, as well as aerial structures and other design refinements and mitigation measures to minimize or avoid potential impacts on the GEA.

Environmental Impacts: The preferred Pacheco Pass alternative would have greater potential impacts on acres of farmlands than the most promising Altamont Pass alternatives (1,372 ac vs. 758 – 764 ac) and potentially impact more acres of floodplains (521 ac vs. 219-318ac) and more linear feet of streams (20,276 linear ft vs. 16,824–17,660 linear ft). This alternative would also potentially result in impacts on the GEA and have the potential to impact wildlife movement. The preferred Pacheco Pass alternative would have somewhat less potential impacts for noise and vibration and would affect a fewer number of 4(f) and 6(f) resources (16 vs. 20–22) than the most promising Altamont Pass alternatives. The differences in the impacts on waterbodies, wetlands, nonwetland waters, species, and cultural resources would vary considerably depending upon the Altamont Pass alternative. The two Altamont Pass alternatives providing direct service to San Francisco would include a new Bay crossing at Dumbarton and would cross areas within the Don Edwards San Francisco Bay National Wildlife Refuge (wetlands and sensitive habitat) and therefore would have considerably higher impacts on waters, wetlands, and 4(f) resources than the Pacheco Pass alternative. In comparison to these Altamont Pass alternatives, the Pacheco Pass alternative would have considerably less potential impacts on waterbodies (3.8 ac vs. 39.6 ac), considerably less potential impacts on wetlands (15.6 ac vs. 44.4–45.9 ac), and fewer potential impacts on nonwetland waters (14,395 linear ft. vs. 15,947–16,773 linear ft), while having relatively similar potential impacts on the number of special status plant species (58 vs. 56), special status wildlife species (53 vs. 49-50), and cultural resources (165 vs. 149-180). In comparing the Altamont Pass alternative to Oakland and San Jose along the east bay, the Pacheco Pass alternative to San Francisco and San Jose would have slightly more potential impacts on waterbodies (3.8 ac vs. 2.3 ac), wetlands (15.6 ac vs. 12.3 ac), and nonwetland waters (14,395 linear ft vs. 14,032 linear ft), special-status plant species (58 vs. 40), special-status wildlife species (53 vs. 44), and cultural resources (165 vs. 128). The Pacheco Pass Alternative would avoid impacts on the Don Edwards San Francisco Bay National Wildlife Refuge, and the mitigation measures it would include in order to reduce or avoid potential impacts on the GEA would provide opportunities for environmental improvements along existing Henry Miller Road.

The MTC's "Regional Rail Plan for the San Francisco Bay Area"

The MTC, BART, Caltrain, and the Authority, along with a coalition of rail passenger and freight operators, prepared a comprehensive "Regional Rail Plan for the San Francisco Bay Area" (Plan) adopted by MTC in September 2007. The Plan establishes a long-range vision to create a Bay Area rail network that addresses the anticipated growth in transportation demand and meets that demand. This Plan examines ways to incorporate expanded passenger train services into existing rail systems, improve connections to other trains and transit, expand the regional rapid transit network, increase rail capacity, coordinate rail investment around transit-friendly communities and businesses, and identify functional and institutional consolidation opportunities. The plan also includes an analysis of potential high-speed rail routes between the Bay Area and the Central Valley. The Plan is separate from the Authority's Draft Program EIR/EIS but was accounted for in the "Cumulative Impacts" (Section 3.17) of the Draft Program EIR/EIS. The Plan issued and approved during the Draft Program EIR/EIS comment period provides useful additional information that should be considered during the Authority's decision-making process.

As the HST system involves major infrastructure investment, the Plan identifies and evaluates options for providing overlay services (use of the HST infrastructure for regional rail service with additional investments in facilities and compatible rolling stock). Overlay services are considered for each HST Network Alternative. Regional overlay operations on HST lines could provide service to additional local stations along the HST lines. Such local stops typically would be developed as four-track sections with a pair of outside platforms for regional trains and two express tracks (no platforms) in the center. The extent of the four-track sections would depend on the prevailing speed of the line for statewide service as well as the spacing and location of the local stops. The regional overlay services would be operated with compatible equipment, but the average speeds would be lower and the overall travel times would be greater than the HST because of the additional stops. Additional investment would be necessary to provide the infrastructure for such regional overlay services.

The Plan concludes that the Bay Area needs a Regional Rail Network. "As the BART system becomes more of a high-frequency, close stop urban subway system, it needs to be complemented with a larger regional express network serving longer-distance trips" and that "High-Speed Rail complements and supports development of regional rail—a statewide high-speed train network would enable the operation of fast, frequent regional services along the high-speed lines and should provide additional and accelerated funding where high-speed and regional lines are present in the same corridor" (MTC, 2007 *Regional Rail Plan*, pg ES-3).

The Plan concludes that "an Altamont alignment would have higher regional ridership (between points located from Merced and north) of 20-million trips in Year 2030 vs. about 16-million trips for a Pacheco alignment—by contrast, a Pacheco alignment would have higher ridership between Northern California and Southern California (between points located from Fresno and south) of 40-million trips in Year 2030 vs. about 34-million trips for an Altamont alignment". In addition, "if either Altamont or Pacheco were selected as the sole option, 4-track sections would be needed at regional stations as well as approaching and departing regional stops. These four-track sections would be required along the Altamont route between Fremont and Tracy and along the Pacheco route between San Jose and Gilroy. By contrast, with an Altamont + Pacheco option, two-track sections would suffice from San Jose to Gilroy and from Fremont to Tracy; additionally, a lower-cost bridge connection at the Dumbarton crossing could be developed thereby reducing the cost of a combination alternative by as much as \$1 billion compared to simply building both of the alignments separately" (MTC, 2007, *Regional Rail Plan*, pg ES-17). The Plan also concludes that, "Regardless of which Altamont or Pacheco options would be developed, an initial phase of investment in the Peninsula alignment between San Jose and San Francisco would help make Caltrain, with an express/limited stop ridership potential of 6.3 million riders per year in 2030 'high speed rail ready'" (MTC 2007, *Regional Rail Plan*, pg. ES-18).

Recommendation for Preferred HST Network Alternative

The Staff recommends as the preferred alternative:

- **Pacheco Pass to San Francisco (via San Jose) for the proposed HST system and pursue "Regional Rail" commuter and HST service via the Altamont Pass between Sacramento/Northern San Joaquin Valley and Oakland/San Jose in partnership with local and regional agencies and transit providers.**

This preferred alternative (see Figure 1) is consistent with the recommendations of the MTC, Capitol JPB, Alameda County Congestion Management Agency, Alameda County Supervisor Scott Haggerty, and the Tri-Valley PAC.

Pacheco Pass

The Pacheco Pass alternative serving San Francisco and San Jose termini best meets the purpose and need for the proposed HST system. Key reasons include:

1) The Pacheco Pass minimizes impacts on wetlands, waterbodies, and the environment.

The statewide HST system should provide direct service to Northern California's major hub airport at SFO and major transit, business, and tourism center at downtown San Francisco. The Pacheco Pass alternative serving San Francisco and San Jose termini has the least potential environmental impacts overall while providing direct HST service to downtown San Francisco, SFO, and the San Francisco Peninsula (Caltrain Corridor) and minimizes construction issues which can lead to delay and cost escalation.

The Pacheco Pass enables San Francisco, SFO, and the San Francisco Peninsula to be directly served without a crossing of the San Francisco Bay. Altamont Pass alternatives requiring a San Francisco Bay crossing would have the greatest potential impacts on the San Francisco Bay and have high capital costs and constructability issues. The Dumbarton Crossing would also have the greatest potential impacts on wetlands and the Don Edwards San Francisco Bay National Wildlife Refuge. To implement these alternatives, extensive coordination would be required with the USACE under Section 10 of the Rivers and Harbors Act and the California Coastal Commission and the Bay crossing would be subject to the USACE, CDFG, and BCDC permit process. A number of agencies, organizations, and individuals have raised concerns regarding to the construction of a HST crossing of the San Francisco Bay. These include the MTC, BCDC, USEPA, USFWS, Congress members Zoe Lofgren, Michael Honda, Anna Eshoo, and Tom Lantos, State Senators Elaine Alquist and Abel Maldonado, and Assembly member Jim Beale as well as Santa Clara County, San Mateo County Transit District (SamTrans), San Mateo County Transportation Authority (TA), Peninsula Corridor (Caltrain) Joint Powers Board (JPB), San Francisco Bay Trail Project, San Jose Chamber of Commerce, the City of San Jose, the City of Oakland, and Don Edwards (Member of Congress, 1963-1995).

While a considerable number of comments have raised concerns about potential environmental impacts for Pacheco Pass alternatives (in particular relating to potential impacts on the GEA), HST via the Pacheco Pass is feasible and preferred because the various measures that are available to avoid, minimize, and/or mitigate those environmental impacts on the extent feasible would offer opportunities for environmental improvements along the HST right of way and could be accomplished during project design, construction, and operation. This contrasts with the more uncertain regulatory approvals that would be needed for crossings of San Francisco Bay and the Don Edwards San Francisco Bay National Wildlife Refuge. Identification of a preferred alternative in the Final Program EIR/EIS is required for NEPA compliance. Since the recommended preferred alternative would have the least environmental impacts, it is also recommended as the environmentally superior alternative for CEQA compliance.

2) The Pacheco Pass best serves the connection between the Northern and Southern California.Operational benefits result in greater frequency and capacity:

San Francisco and San Jose would be served with one HST alignment along the Caltrain corridor providing the most frequent service to these destinations, whereas the most promising Altamont Pass alternatives would split HST services (express, suburban express, skip-stop, local, regional) between two branch lines to serve San Jose and either San Francisco or Oakland—reducing the total capacity of the system to these markets. The proposed HST system already has two locations where there are branch splits (north of Fresno—to Sacramento and the Bay Area, and south of Los Angeles Union Station—to Orange County and the Inland Empire). Avoiding additional branch splits in the HST alignment would benefit train operations and service.

Provides a superior connection between the South Bay and Southern California

The Pacheco Pass enables the shortest, least expensive connection to be constructed between the South Bay and Southern California with the quickest travel times between these markets. A southern Santa Clara County HST station increases connectivity and accessibility for the South Bay and the three county Monterey Bay area.

Fewer stations between the Major Metropolitan Areas

The core purpose of the HST system is to serve passenger trips between the major metropolitan areas of California. There is a critical tradeoff between the accessibility of the system to potential passengers that is provided by multiple stations and stops, and the resulting HST travel times. Additional or more closely spaced stations (even with limited service) would lengthen travel times, reduce frequency of service, and the ability to operate both express and local services. The Pacheco Pass has the advantage of fewer stops through the high-speed trunk of the system between San Francisco or San Jose and Southern California, the most populated regions of the state.

Between Merced and Gilroy, the high-speed trains will be maintaining speeds well over 200 mph. The fact that there is no population between Merced and Gilroy along the Pacheco Pass is a positive attribute since there are fewer communities and hence less community impacts. Moreover, there will be no station between Gilroy and Merced. As a result, the Pacheco Pass minimizes the potential for sprawl inducement as compared with the Altamont Pass. Additionally, the Authority should reiterate its determination that there will be no HST stations between Merced and Gilroy. Should some future entity desire to consider proposing an added station in this segment it would require a substantial commitment of time and resources to reopen this issue and to conduct the extensive additional environmental review that would be needed.

3) The Pacheco Pass best utilizes the Caltrain corridor and is consistent with the Authority's adopted phasing strategy.

The Pacheco Pass alternative would enable the early, incremental implementation of the entire Caltrain Corridor section between San Francisco, San Jose, and Gilroy. The Authority's phasing plan identifies the Caltrain Corridor (between San Francisco and San Jose) as allowing the Authority to maximize the use of local and regional funds dedicated to train service improvements, and thereby helping to reduce the need for state funds.

4) The Pacheco Pass is strongly supported by the Bay Area region, cities, agencies, and organizations.

Much of the Bay Area local and regional governments, transportation agencies, and business organizations strongly support the Pacheco Pass alternative to San Francisco via San Jose and the Caltrain Corridor. Supporters of this Pacheco Pass alternative include: the Metropolitan Transportation Commission (MTC), the cities of San Francisco, San Jose, Redwood City, Fremont, Morgan Hill, Cupertino, Sunnyvale, Gilroy, and Salinas, the counties of San Francisco, Santa Clara,

San Mateo, and Monterey, Congress members Lofgren, Honda, Eshoo, and Lantos, Assembly member Beale, State Senators Alquist and Maldonado, the San Francisco County Transportation Agency, the Santa Clara Valley Transportation Authority (VTA), Peninsula Corridor (Caltrain) Joint Powers Board (JPB), San Mateo County Transit District (SamTrans), San Mateo County Transportation Authority (TA), Monterey County Transportation Agency, Alameda County Congestion Management Agency, Alameda County Supervisor Scott Haggerty, San Jose Chamber of Commerce, Redwood City Chamber of Commerce, San Mateo County Chamber of Commerce, the Silicon Valley Leadership Group, and a number of members of the public representing themselves. There is strong local and regional government support along the Pacheco Pass alignment throughout the Bay Area. This support is critical towards implementing this major infrastructure project through the heavily urbanized Bay Area linking San Francisco, San Jose and Gilroy.

The Central Valley (including Sacramento) and many transportation and environmental organizations are united in strongly preferring the Altamont Pass. However, to reach the major markets in the Bay Area, the Altamont Pass alternatives must go through Alameda County, including Livermore and Pleasanton in the Tri-Valley and Fremont. The Tri-Valley PAC (a partnership that includes the cities of Dublin, Livermore, Pleasanton, Danville, San Ramon, and Tracy along with transportation providers LAVTA, ACE, and BART) has raised serious concerns regarding right-of-way constraints and the need for aerial structures through the Tri-Valley. The Tri-Valley PAC supports HST service through the Pacheco Pass and "regional overlay service provided through the Altamont pass." They believe that this option may present the best way of addressing their concerns and delivering optimal HST service to the region as a whole. The Alameda County Congestion Management Agency and Alameda County Supervisor Scott Haggerty both support the MTC recommendation for the Pacheco alignment via the San Francisco Peninsula as the main HST express line between Northern and Southern California while also supporting upgraded interregional services between the Bay Area—Sacramento and the San Joaquin Valley via the Altamont Pass. The City of Fremont opposes the Altamont Pass alternative as does the City of Pleasanton although Pleasanton remains "open" to terminating Altamont alternatives in Livermore. The concerns through Alameda County are significant enough that the MTC, Alameda County Congestion Management Agency, and Alameda County Supervisor Scott Haggerty have requested that "the CHSRA also evaluate an alternative in the Altamont Corridor that terminates HSR at a proposed BART Livermore station"—even with the main HST express line using the Pacheco Pass.

Altamont Pass

The Altamont Pass provides superior travel times between Sacramento/Northern San Joaquin Valley and the Bay Area and is strongly supported by the Central Valley. Many of the comments received in support of the Altamont Pass are related to its great potential for serving long-distance commuters between the Central Valley and the Bay Area. As indicated by the comments received by the Tri-Valley PAC, many of the negative impacts associated with construction of HST through the Tri-Valley might be considerably reduced by the elimination of the additional tracks needed for HST express services.

The staff recommends that the Authority pursue a partnership with "local and regional agencies and transit providers" to propose and develop a joint-use ("Regional Rail" and HST) infrastructure project in the Altamont Pass corridor—as advocated in MTC's recently approved "Regional Rail Plan for the San Francisco Bay Area". Regionally provided commuter overlay services would require regional investment for additional infrastructure needs and potentially need operational subsidies. The Authority cannot unilaterally plan for regionally operated commuter services.

Under the staff recommendation, the Altamont Pass corridor would be pursued as an independent though related project with a different purpose and need from the proposed HST system. The Authority's pursuit of improved regional commuter rail service in the Altamont Pass corridor should be dependent upon forming a partnership with the region for the joint-use infrastructure. After a

partnership is established, the Authority should spearhead [or some combination of lead, collaborate and coordinate] future project-level environmental studies and efforts to secure local, state, federal, and private funding to develop a joint-use infrastructure project in the Altamont corridor, including recommending that this corridor be part of a HST funding package.

The Authority's analysis suggests that Altamont HST overlay service might terminate in Oakland and/or San Jose via the East Bay, whereas the Regional Rail Plan recommends it cross the Bay at Dumbarton. MTC also recommends future study of terminating this service in Livermore. As a part of future studies, the Authority would need to work with MTC and other agencies to define the appropriate alternatives to be investigated for "Regional Rail"/HST in the Altamont Pass to serve long-distance inter-regional commuters. Staff recommends pursuing potential joint-use Altamont Corridor "Regional Rail"/HST services and identifying alternatives for further evaluation including: direct service to Oakland and/or San Jose or potentially terminating this corridor at Livermore (connecting to an extended BART system). Providing connectivity and accessibility to Oakland and Oakland International Airport would be a crucial objective for this project.

To lay the groundwork for a future "Regional Rail"/HST Altamont Pass project, the Authority should work with ACE, SJRRC, San Joaquin County Council of Governments, the Tri-Valley Pac, Alameda County, Santa Clara County, and others to get the Altamont "Regional Rail"/HST project identified in the update to the 2035 Regional Transportation Plan (RTP) and funds programmed in the 2035 RTP and RTIP. Once the Bay Area to Central Valley HST Program EIR/EIS is certified, the Authority should lead a Altamont "Regional Rail"/HST project study that addresses the Altamont Pass, the East Bay connections and stations in partnership with MTC and the agencies and transit providers along the Altamont corridor, which will provide the information necessary to undertake a project-level environmental document for this project.

Recommendations for HST Alignment Alternatives and Station Location Options for the preferred Pacheco Pass Network Alternative

San Francisco to San Jose

Preferred Alignment

- Caltrain Corridor (Shared Use)

Analysis

The Draft Program EIR/EIS analyzes one alignment option between San Francisco and San Jose along the San Francisco Peninsula that would utilize the Caltrain rail right-of-way, and share tracks with express Caltrain commuter rail services (see Figure 2). The Caltrain Corridor (Shared Use) is the preferred alignment option for direct service to San Francisco and San Francisco International Airport (SFO).

The alignment between San Francisco and San Jose is assumed to have 4-tracks, with the two middle tracks being shared by Caltrain and HST and the outer tracks used by Caltrain. The HST could operate at maximum speeds of 100-125 mph along the Peninsula providing 30-minute express travel times between San Francisco and San Jose. Environmental impacts would be minimized since this alignment utilizes the existing Caltrain right-of-way. This alignment would increase connectivity and accessibility to San Francisco, the Peninsula, and SFO, the hub international airport for northern California. The HST system would provide a safer, more reliable, energy efficient intercity mode along the San Francisco Peninsula while improving the safety, reliability, and performance of the regional commuter service because of the fully grade separated tracks with fencing to prevent intrusion, additional tracks, and a state-of-the-art signaling and communications system. The HST alignment would greatly increase the capacity for intercity and commuter travel and reduce automobile traffic.

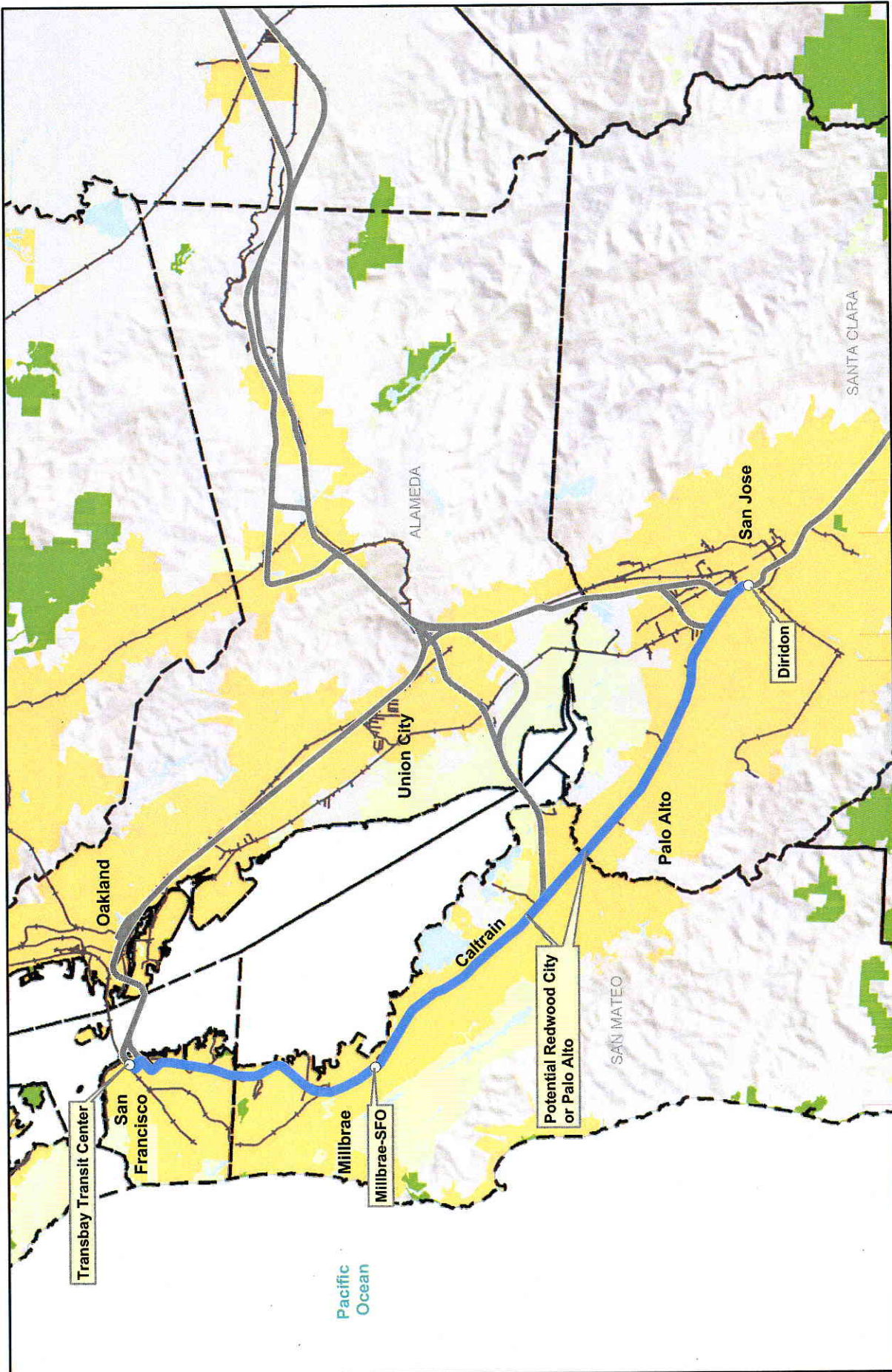
Many comments in favor of the proposed HST on the San Francisco Peninsula were received from agencies and the public, including MTC, the City of San Francisco, Caltrain JPB, SamTrans, the Transbay Transit Center JPB, the City of Santa Clara, the County of Santa Clara, the City of Morgan Hill, and the San Francisco Chamber of Commerce. There was also opposition to improvements on the Caltrain corridor raised by some members of the public. The City of Menlo Park supported investigating options to avoid the San Francisco Peninsula area by substituting existing transit systems for the HST, and the Town of Atherton supports options that would avoid HST service through the Town of Atherton as well as investigating trench concepts through the Town of Atherton at the project level.

Preferred Station Locations

- Downtown San Francisco Terminus: Transbay Transit Center

Analysis

The Transbay Transit Center site is the preferred station option for the San Francisco HST Terminal. The Transbay Transit Center would offer greater connectivity to San Francisco and the Bay Area than the 4th and King site (about a mile from the financial district) because of its location in the heart of downtown San Francisco and since it would serve as the regional transit hub for San Francisco. The Transbay Transit Center is located in the financial district where many potential HST passengers could walk to the station. The Transbay Transit Center is also expected to emerge as the transit hub for all major services to downtown San Francisco, with the advantage of direct connections to BART (1 block from the terminus), Muni, and regional bus transit (SamTrans, AC Transit, and Golden Gate Transit). Moreover, the Transbay Transit Center is compatible with existing and planned development and is the focal point of the Transbay redevelopment plan that includes extensive high-



California High-Speed Train Program EIR/EIS

Legend

- Stations
- Caltrain HST Preferred Alignment
- Studied Alignments
- Lakes
- Urban Areas
- State Parks
- Federal Parks and Refuges
- County Lines

**Preferred HST Alignment:
San Francisco to San Jose
Figure 2**

density residential, office, and commercial/retail development. Sensitivity analysis on the Pacheco Pass "Base" forecasts (low-end forecasts) concluded that the Transbay Transit Center would attract about 2.5 million more annual passengers a year by 2030 than the 4th and King station option.

The capital costs needed for the HST component of the Transbay Transit Center (including the 1.3-mile extension) is estimated to be similar to the estimated costs for the 4th and King option. Since the rail component would be shared with Caltrain services, the Transbay Joint Powers Authority funding plan assigns only a portion of the rail related Transbay Transit costs to the HST system. The rail facilities planned for the Transbay Transit Center are limited to 6 tracks and 3 platforms; however, Caltrain is planning to continue using the existing 4th and King terminal. The Authority's operational analysis indicated that to serve all of the HST trains proposed in the Authority's operational plan, four tracks and two island platforms would have to be dedicated to HST service. Further cooperative operations planning analysis of Transbay terminal rail capacity is needed to determine the most efficient mix and scheduling of both HST and Caltrain commuter services.

Public and agency comments have largely favored the Transbay Transit Center site. The City of San Francisco, the Transbay Terminal JPB, San Mateo County Transit District (SamTrans), the Peninsula Corridor (Caltrain) Joint Powers Board (JPB), San Mateo County Transportation Authority (TA), the San Francisco Chamber of Commerce, and AC Transit all submitted comments in favor of the Transbay Terminal site.

- San Francisco Airport Connector Station: Millbrae (SFO)

Analysis

SFO serves as the "hub" airport for international travel in Northern California and is located about 12 miles south of downtown San Francisco. The conceptual design is to link to SFO at the Millbrae Caltrain/BART station location which is adjacent to SFO (but not directly at the airport). This multi-modal station would link to the airport by the existing BART connection and could possibly be reached in the future by the airport people mover system. The Millbrae (SFO) HST station supports the objectives of the HST project by providing an interface with the northern California hub airport for national and international flights. The Millbrae (SFO) is the preferred HST airport connector station on the San Francisco peninsula.

- Mid-Peninsula Station: Continue to investigate both potential sites and working with local agencies and the Caltrain JPB determine whether a Mid-Peninsula station site should be recommended.

Analysis

The Palo Alto and Redwood City station options would both be multi-modal stations, with similar costs, construction issues, right-of-way issues, and potential environmental impacts. The Palo Alto station option would have somewhat better connectivity and is estimated to have higher ridership potential (1.8–2.6 million boardings and alightings by 2030 for the Pacheco Pass "Base" network alternative) than the Redwood City station option. The City of Redwood City and the Redwood City Chamber of Commerce support the Redwood City station option. Future project-level studies should continue to investigate both potential sites and working with local agencies and the Caltrain JPB determine whether a Mid-Peninsula station site should be recommended.

San Jose to Central Valley: Pacheco Pass

Preferred Alignment

- Pacheco Pass via Henry Miller Road (UPRR Connection). At the project-level, however, staff recommends the Authority continue to seek and evaluate alignment alternatives utilizing the Pacheco Pass that would minimize impacts on, or avoid the GEA.

Analysis

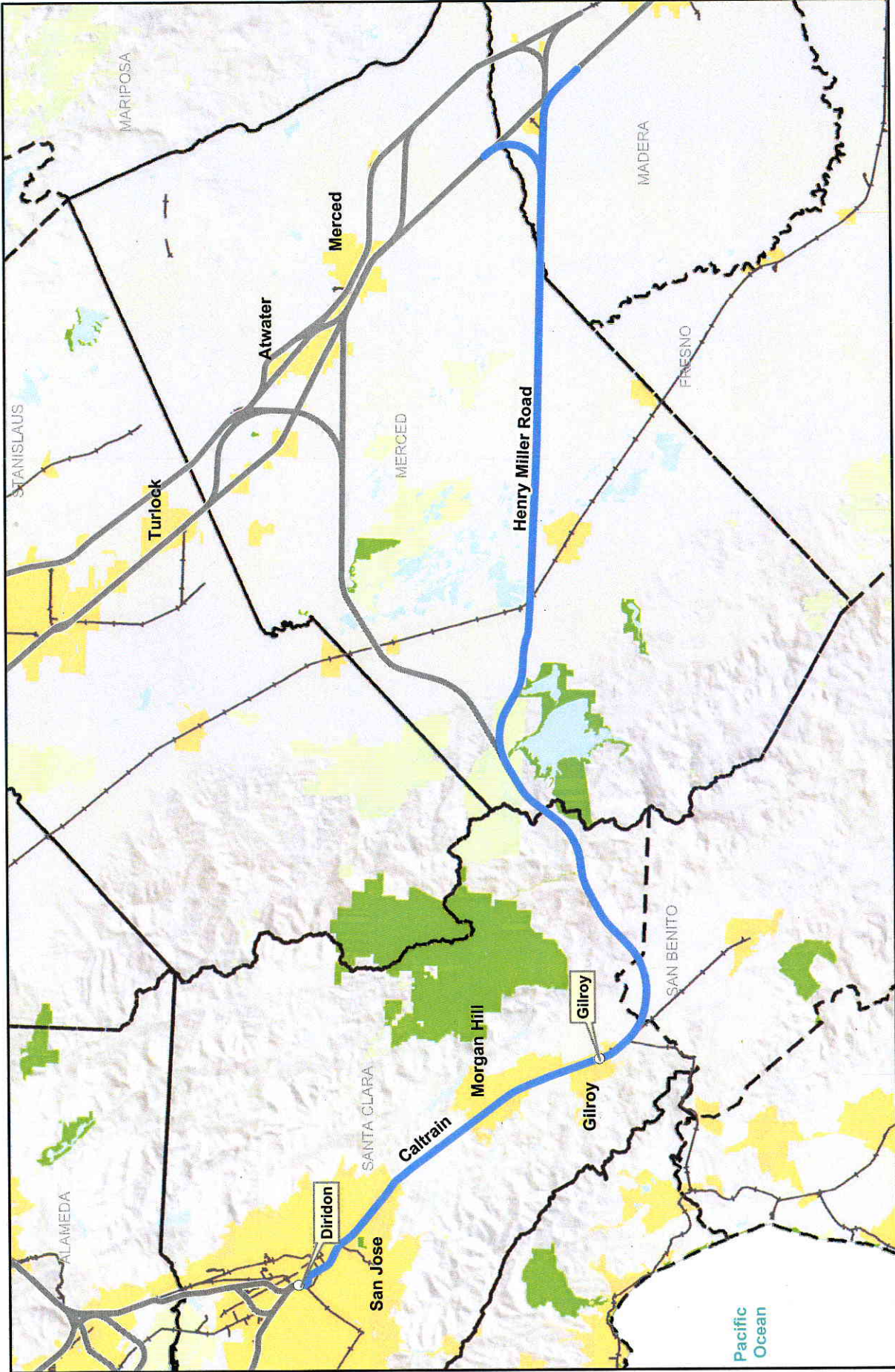
The Pacheco Pass via Henry Miller Road (UPRR Connection) alternative would provide slightly higher ridership potential, provide the fastest travel times and the most direct link between the Bay Area and Southern California (3-4 minutes faster), have slightly less capital costs, and would generally parallel Henry Miller Road, an existing roadway corridor through the environmentally sensitive areas in the Central Valley (resulting in fewer potential severance impacts), while having similar potential environmental impacts as the other Pacheco Pass alternatives evaluated (see Figure 3).

The GEA North alternative is estimated to have higher potential visual impacts (medium vs. low), severance impacts, and cultural impacts than either Henry Miller Road alternative. Potential impacts on farmlands, streams, lakes/waterbodies, and 4(f) and 6(f) resources are estimated to be about the same for each alternative. The GEA North alternative is estimated to have higher potential impacts on wetlands (17.96 ac vs. 11.61 ac), but less potential impacts on non-wetland waters (6,771 linear ft vs. 10,588 linear ft.) when compared to the Henry Miller Road (UPRR Connection) alternative. Both alternatives would have the potential to impact special status plant and wildlife species. While both alternatives would likely result in impacts on the GEA, the GEA North alternative would have greater impacts on publicly owned lands and be more disruptive to wildlife movement patterns than the Henry Miller Road alternative. The GEA North alternative would be on a new alignment and bisect the GEA and result in a new barrier to wildlife movement. The Henry Miller Road alternative would be elevated through large portions of the GEA parallel to an existing roadway that, along with a nearby canal, already bisects the GEA and disrupts wildlife movement. The Henry Miller Road alternative would provide greater opportunities for mitigation and environmental improvements for wildlife.

The Authority has received a considerable amount of input regarding each of the three alternatives investigated for the "San Jose to Central Valley" corridor. Most of these comments are in regard to concerns over potential impacts on the Grassland Ecological Area (GEA) including comments from the Grassland Water District, Grassland Resources Conservation District, Grassland Conservation, Education & Legal Defense Fund, USFWS, CDFG, and Ducks Unlimited.

As noted above, the comments from these agencies and organizations concerned potential impacts on special status species and biological resources including the San Joaquin kit fox, waterfowl, amphibians, and plants, vernal pools, and wetlands that may be affected by the Pacheco Pass via Henry Miller Road (UPRR Connection) either through or near the GEA, the San Luis National Wildlife Refuge Complex, state or federal-owned lands, and lands held in public-private partnership. The biological analysis for this EIR/EIS was conducted at a programmatic level and identifies the need for field reconnaissance-level surveys to be conducted in the future at the project-level. These future surveys will determine specific habitat conditions and impacts along alternatives and surrounding areas and will identify specifically where impacts on special-status species could occur, leading eventually to focused species surveys. The Pacheco section of the HST system will be further designed at the project-level to avoid or minimize potential impacts. Broad program mitigation measures have been identified and will be further refined at the project-level that will mitigate most of the impacts identified by these agencies and organizations. The Authority and FRA will continue coordination with all agencies and organizations involved to identify specific issues and develop solutions that avoid, minimize, and mitigate potential biological impacts.

From a biological perspective, the Pacheco Pass via Henry Miller Road (UPRR Connection) is the recommended preferred alternative because the measures that would be necessary to avoid, minimize, and/or mitigate biological impacts could be accomplished during project design, construction, and operation, and this alignment offers greater opportunities for environmental improvement.



California High-Speed Train Program EIR/EIS

- Legend**
- Stations
 - Pacheco Pass HST Preferred Alignment
 - Studied Alignments
 - State Parks
 - Federal Parks and Refuges
 - Lakes
 - Urban Areas
 - County Lines

10 5 0 10 20 30 Miles
10 5 0 10 20 30 Kilometers



**Preferred HST Alignment:
San Jose to Central Valley
Figure 3**

Preferred Station Locations

- Downtown San Jose Terminus: Diridon Station

Analysis

Diridon Station is the preferred HST station for downtown San Jose and the Southern Bay Area, serving Caltrain, ACE Commuter Rail, the Capitol Corridor, Amtrak long distance services, VTA buses and light rail, and a possible future link to BART (from Fremont). Diridon station is a multi-modal hub that maximizes connectivity to downtown San Jose, San Jose International Airport (Diridon Station is just over 3-miles from San Jose International Airport and the City of San Jose expects there will be a direct local rail line connecting these to two major transportation hubs), and the southern Bay Area, and would have high ridership potential. The Authority identifies the Diridon Station as the preferred HST station option for San Jose and the southern Bay Area. Diridon Station is favored by the City of San Jose and the Valley Transportation Authority (VTA).

- Southern Santa Clara County: Gilroy Station (Caltrain)

Analysis

Gilroy (Caltrain) Station is the preferred HST station to serve Southern Santa Clara County and the Monterey Bay Area. This station would provide the highest accessibility and connectivity for these regions and would have the highest ridership potential.

Central Valley Alignment

Preferred Alignment

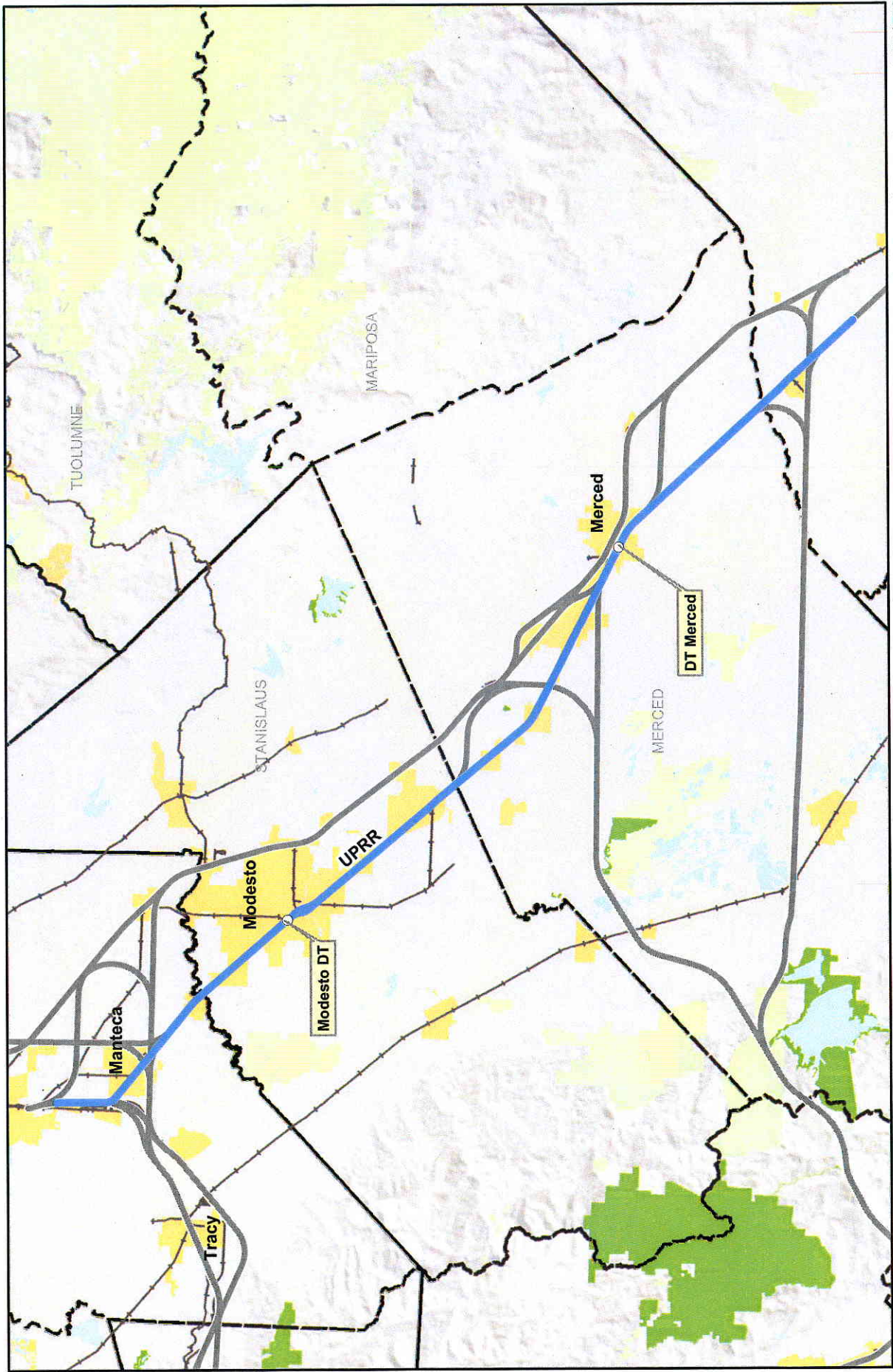
- UPRR N/S Alternative (see Figure 4). However, at the project-level, the Authority would continue to evaluate the BNSF Alternative because of the uncertainty of negotiating with the UPRR for use of some of their right-of-way, and would continue investigation of alignments/linkages to a potential maintenance facility at Castle AFB.

Analysis

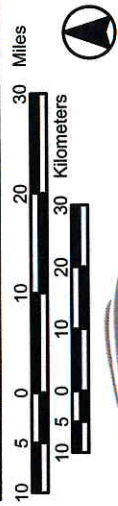
The alternatives considered for the "Central Valley Alignment" generally followed the two existing freight corridors of the UPRR and the BNSF. With that in mind, HST impacts throughout the Central Valley that have already been reduced and avoided could be further avoided and minimized by sharing the existing freight railroad right-of-way. If a decision were made to proceed with the HST system, the Authority would seek agreements with freight operators to utilize portions of the existing rail right-of-way to the greatest feasible extent.

The UPRR alternative would have high potential ridership for both the Pacheco Pass and Altamont Pass corridors and would serve potential downtown station sites at Modesto and Merced (see Figure 4). This alternative would provide the highest connectivity and accessibility for this part of the Central Valley and would best meet the Authority's adopted transit-oriented development criteria for station locations by serving the downtowns of these Central Valley cities. However, the UPRR has expressed opposition to the use of its right-of-way.

The UPRR would have somewhat higher potential noise and visual impacts, and more potential impacts on cultural resources (67 vs. 17-28) since it goes through more urban areas, but would have somewhat fewer potential impacts on farmlands (535 ac vs. 776-838 ac), lakes/waterbodies (0.0 ac vs. 1.5-1.6 ac), wetlands (3.04 ac vs. 3.11-3.76 ac) and non-wetland waters (7,161 linear ft vs. 9,094-10,528 linear ft), floodplains (124.4 ac vs. 158.2-191.1 ac), than the BNSF alternatives.



California High-Speed Train Program EIR/EIS



Preferred HST Alignment:
Central Valley
Figure 4

Preferred Station Locations

- Modesto: Downtown Modesto

Analysis

The Downtown Modesto Station is the preferred HST station for Modesto since it maximizes connectivity and accessibility to downtown Modesto and would best meet the Authority's adopted transit-oriented development criteria for station locations by serving the downtown of this Central Valley city. This option is expected to have slightly higher ridership potential and is more compatible with surrounding land uses than the Amtrak Briggsmore site with similar costs and environmental impacts. The Downtown Modesto Station is favored by the City of Modesto and the San Joaquin County Council of Governments. The Amtrak Briggsmore site would need to continue to be investigated as a part of future project-level analysis since it would be the station site to serve the Modesto area for the BNSF alignment.

- Merced: Downtown Merced

Analysis

The Downtown Merced Station is the preferred HST station for the Merced area since it maximizes connectivity and accessibility to downtown Merced and would best meet the Authority's adopted transit-oriented development criteria for station locations by serving the downtown of this Central Valley city. This option is expected to have less potential impacts on farmlands (0 ac vs. 12 ac) and is more compatible with surrounding land uses than the Castle AFB site with similar costs, ridership, and environmental impacts. The Downtown Modesto Station is favored by the City of Modesto and the San Joaquin County Council of Governments. The Castle AFB site would need to continue to be investigated as a part of future project-level analysis since it could be the station site to serve the Merced area for the BNSF alignment. The Castle AFB is recommended as the preferred site for the maintenance facility within the study region.

Maintenance Facilities

Preferred Location

- Merced area (Castle AFB)

Analysis

Maintenance and storage facilities that would be necessary to support the HST fleet were considered in the Draft Program EIR/EIS. Three locations were carried forward for consideration for "Fleet Storage/Service and Inspection/Light Maintenance" within the study region: 1) West Oakland; 2) Los Banos (located immediately west of where SR-165 intersects Henry Miller Road); and 3) Merced (near or at Castle AFB). Concerns have been raised by the CDFG, Grasslands Water District and others regarding potential impacts on the GEA by the site near Los Banos, whereas there is strong support in the Merced region (Merced County, U.C. Merced, Congressman Cardoza, Merced County HSR Committee, and the Merced County Association of Relaters) for the maintenance facility. The West Oakland site would not serve the preferred Pacheco Pass alternative, but should be considered as a part of future Regional Rail/HST project via the Altamont corridor.

San Francisco Bay Crossings

Preferred Alignment

- No bay crossing for the proposed HST system.

Analysis

The Trans Bay Crossing between Oakland and San Francisco is estimated to result in potential direct impacts on 20.07–22.1 acres of Bay Waters and indirect impacts on 228–235.5 acres of waterbodies. The cost associated with this approximately 7-mile crossing is estimated at over \$5 billion (over \$700 million per mile) with a ridership increase of up to about 2%. To implement this alternative, extensive coordination would be required with the USACE under Section 10 of the Rivers and Harbors Act and the California Coastal Commission and crossing the Bay would be subject to the USACE, CDFG, and BCDC permit process.

The Dumbarton Crossing would result in potential direct impacts on 33.9–55.4 acres of wetlands (predominately through the Don Edwards San Francisco Bay National Wildlife Refuge) and direct impacts of 2,361–3117 linear feet of Bay Waters. All of the Dumbarton alternatives are estimated to have high noise impacts where the alignment is predominately on aerial structure through Fremont, and the bridge alternatives (High Bridge, and Low Bridge) would have high potential noise and vibration impacts throughout the alignment. The cost associated with this approximately 19–21.7-mile crossing is estimated at \$1.5 billion (low bridge) to over \$3 billion (tube). With the “low-bridge” alternative, HST service would be interrupted by water traffic, adversely impacting the reliability and service quality of the HST system. Constructing a new bridge or tube crossing along the Dumbarton corridor would involve major construction activities in sensitive wetlands, saltwater marshes, and aquatic habitat, requiring special construction methods and mitigations. All the alternatives would result in direct impacts on Don Edwards San Francisco Bay National Wildlife Refuge and would have potential direct impacts on 15 special-status plant and 21 special-status wildlife species. To implement this alternative across the bay, extensive coordination would be required with the USACE under Section 10 of the Rivers and Harbors Act and the California Coastal Commission and the Bay crossing would be subject to the USACE, CDFG, and BCDC permit process. BCDC scoping comments note that bridge alternatives that could have adverse impacts on Bay resources can only be approved by BCDC “if there is not an alternative upland location for the route and if the fill in the minimum necessary to achieve the purposes of the project” (BCDC scoping response, December 15, 2005). The Authority has received comments signed by 5 members of Congress and 4 members of the California Legislature stating that any alternative requiring construction through the Don Edwards San Francisco Bay National Wildlife Refuge with additional impacts on the San Francisco Bay and Palo Alto shore of the Bay should be rejected. The City of Fremont opposes the Dumbarton Crossing alternatives because of the potential impacts on Fremont neighborhoods.

The MTC supports a new Transbay Tube between San Francisco and Oakland (via the San Francisco Peninsula) and the Town of Atherton supports a new Transbay Tube between Oakland and San Francisco (via the East Bay).