WELCOME

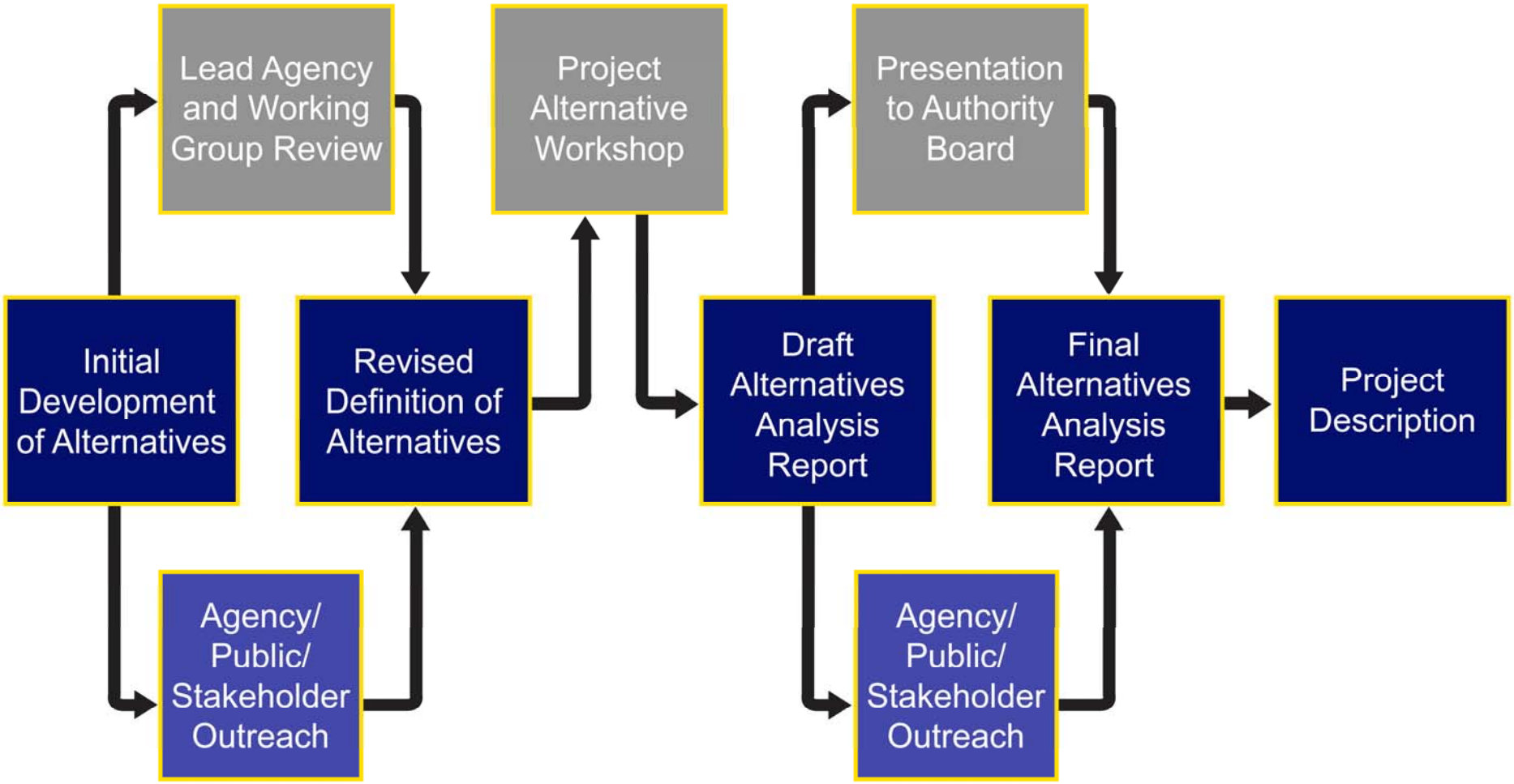
California High-Speed Rail Authority

Public Meeting

San Jose to Merced

High-Speed Train Project

Alternatives Analysis Process



Purpose and Objectives

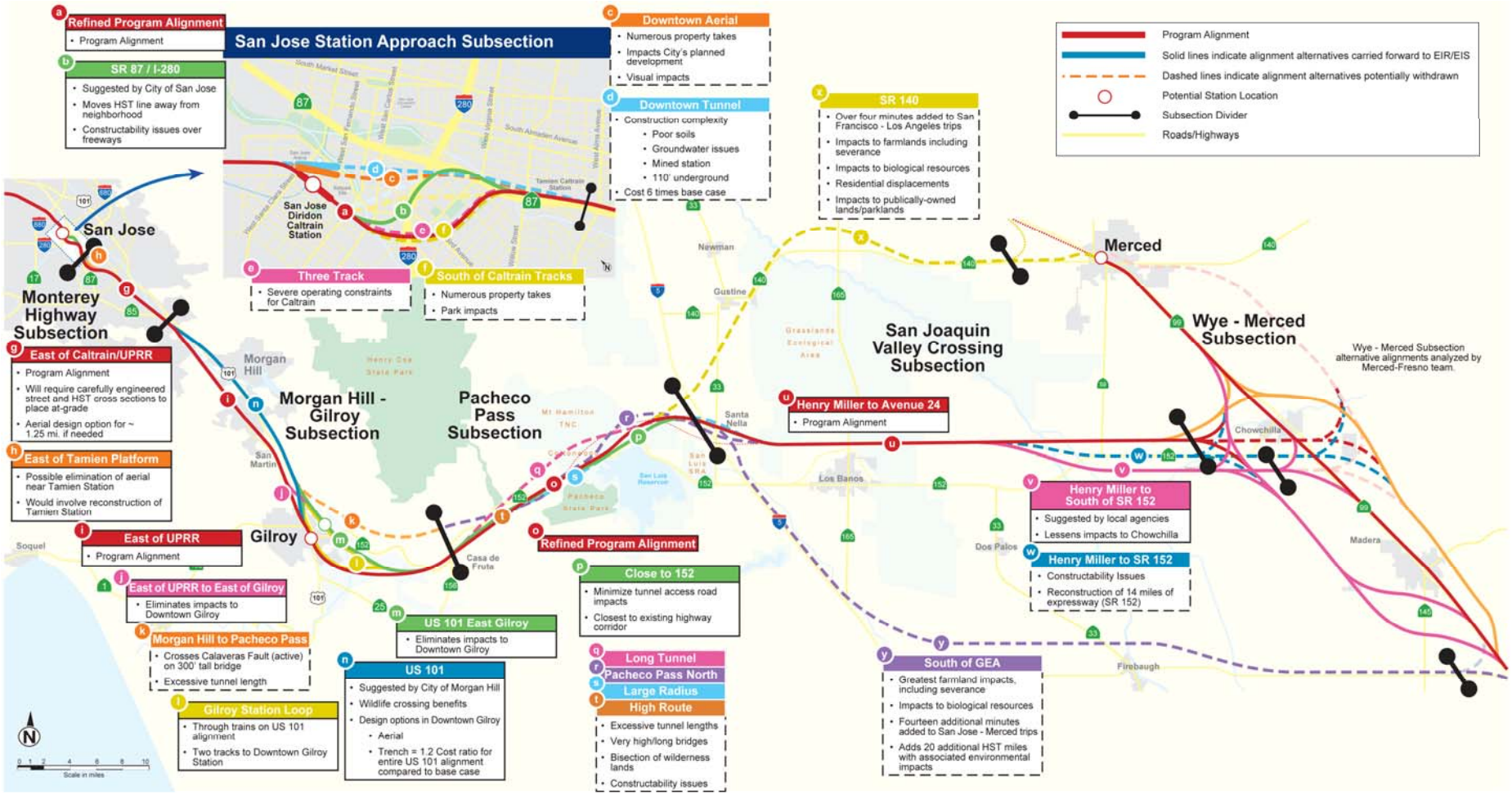
- Provide reliable high-speed train service linking Southern California cities, the Central Valley, Sacramento, and Bay Area
- Deliver predictable and consistent travel times using electric powered steel wheel trains

Objective	Criteria
Maximize ridership & revenue potential	Minimize travel time
Maximize accessibility	Intermodal connections
Minimize operating and capital costs	Minimize route length

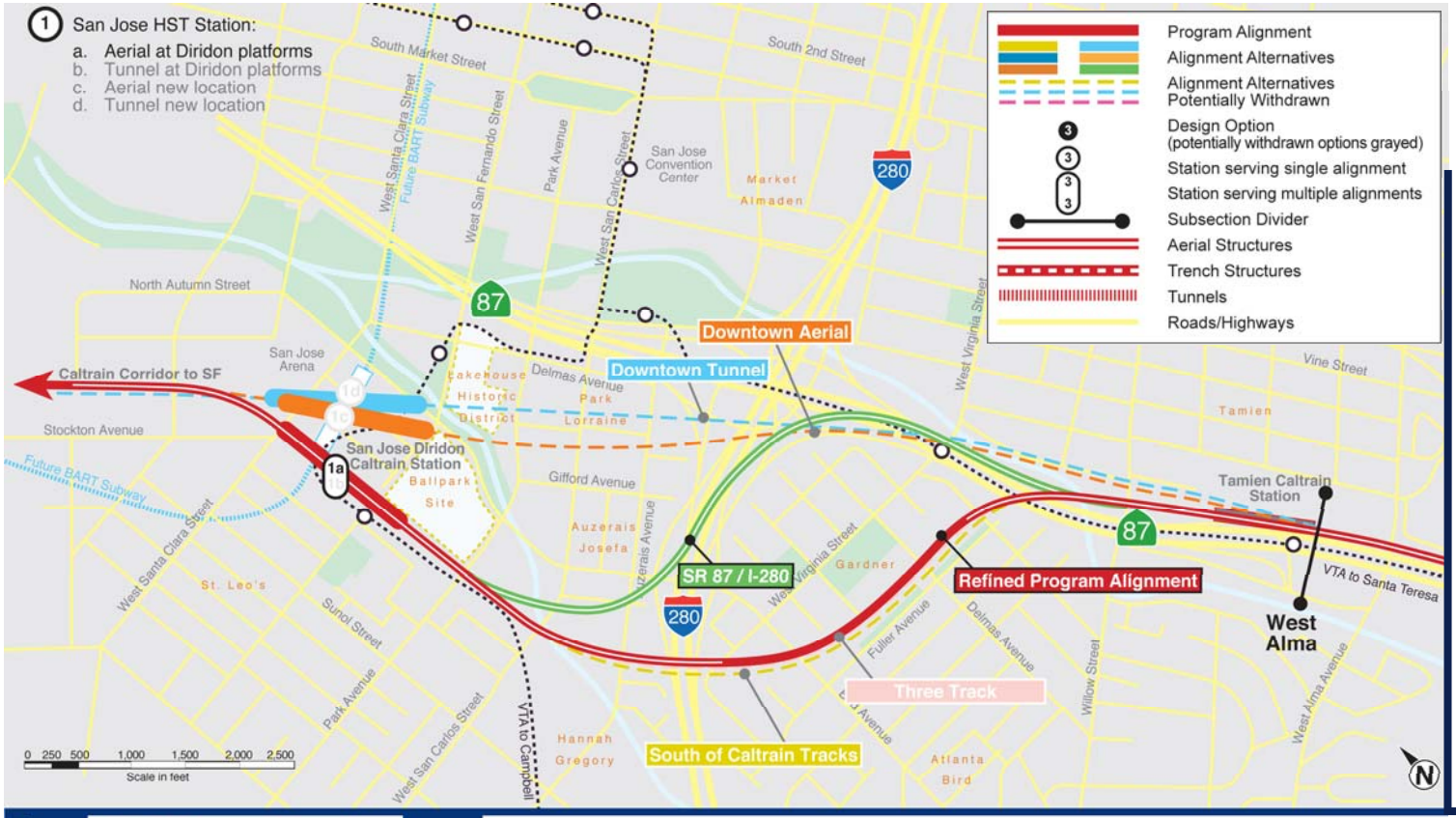
Evaluation Measures

- Minimize disruption to neighborhoods and communities
- Minimize impacts to environmental resources
- Minimize impacts to natural resources
- Land use
- Construction feasibility

San Jose to Merced Section – Alignment Alternatives



San Jose Station Approach Subsection



Carried Forward to EIR / EIS

Refined Program Alignment
Program Alignment

SR 87 / I-280
- Suggested by City of San Jose
- Moves HST line away from neighborhood
- Constructability issues over freeways

Evaluated Key Issues

South of Caltrain Tracks
- Numerous property takes
- Park impacts

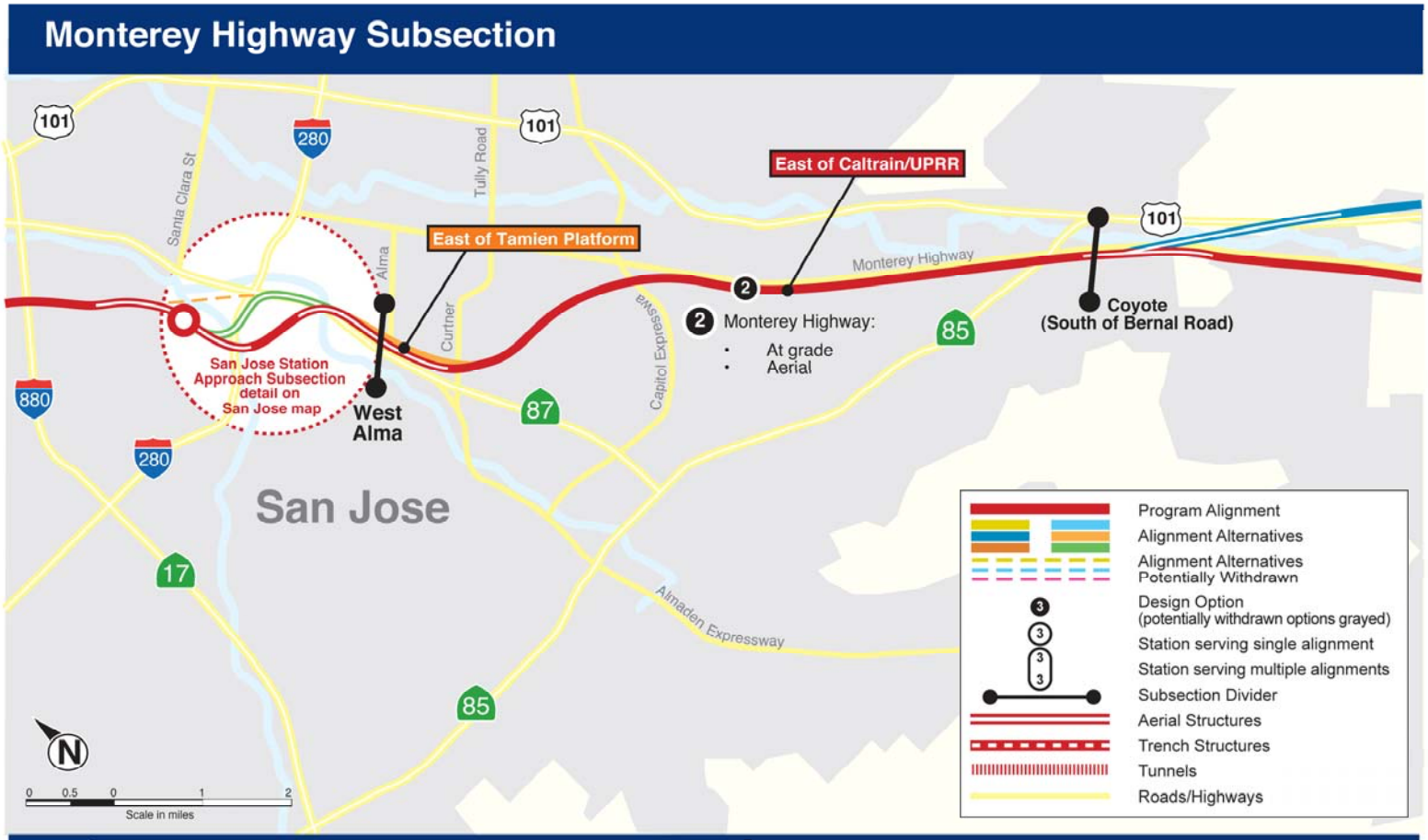
Three Track
- Severe operating constraints for Caltrain

Downtown Tunnel
- Construction complexity
  - Poor soils
  - Groundwater issues
  - Mined station
  - 110' underground
- Cost 6 times base case

Downtown Aerial
- Numerous property takes
- Impacts City's planned development
- Visual impacts

Two alignments were withdrawn early in the AA process for the San Jose Station Approach subsection: (1) Voices of San Jose 5,100' Tunnel, and (2) Voices of San Jose Thread the Needle Tunnel. These tunnel proposals would involve construction of a deep subsurface station and alignment under the active Diridon station freight and passenger tracks with the associated constructability and cost issues. The Project Team met with representatives of the Greater Gardner / Willow Glen neighborhood who agreed that the tunnel alignment recommended by the City of San Jose would serve the same goals as the other proposed tunnels.

Monterey Highway Subsection



Carried Forward to EIR / EIS

East of Caltrain/UPRR

- Program Alignment
- Will require carefully engineered street and HST cross sections to place at-grade
- Aerial design option for ~ 1.25 mi. if needed

East of Tamien Platform

- Possible elimination of aerial near Tamien Station
- Would involve reconstruction of Tamien Station

One alignment was withdrawn early in the AA process for the Monterey Highway subsection – SR 87/85. This alignment would not meet HST criteria for curve radius; would require construction of an aerial alignment over these freeways, through residential neighborhoods, and across from a high school; and would require relocation of VTA's operating LRT line.

Morgan Hill-Gilroy Subsection

Carried Forward to EIR / EIS

East of UPRR

Program Alignment

US 101 East Gilroy

- Eliminates impacts to Downtown Gilroy

US 101

- Suggested by City of Morgan Hill
  - Wildlife crossing benefits
- Design options in Downtown Gilroy
  - Aerial
  - Trench = 1.2 cost ration for entire US 101 alignment

Gilroy Station Loop

- Through trains on US 101 alignment
- Two tracks to Downtown Gilroy Station

East of UPRR to East of Gilroy

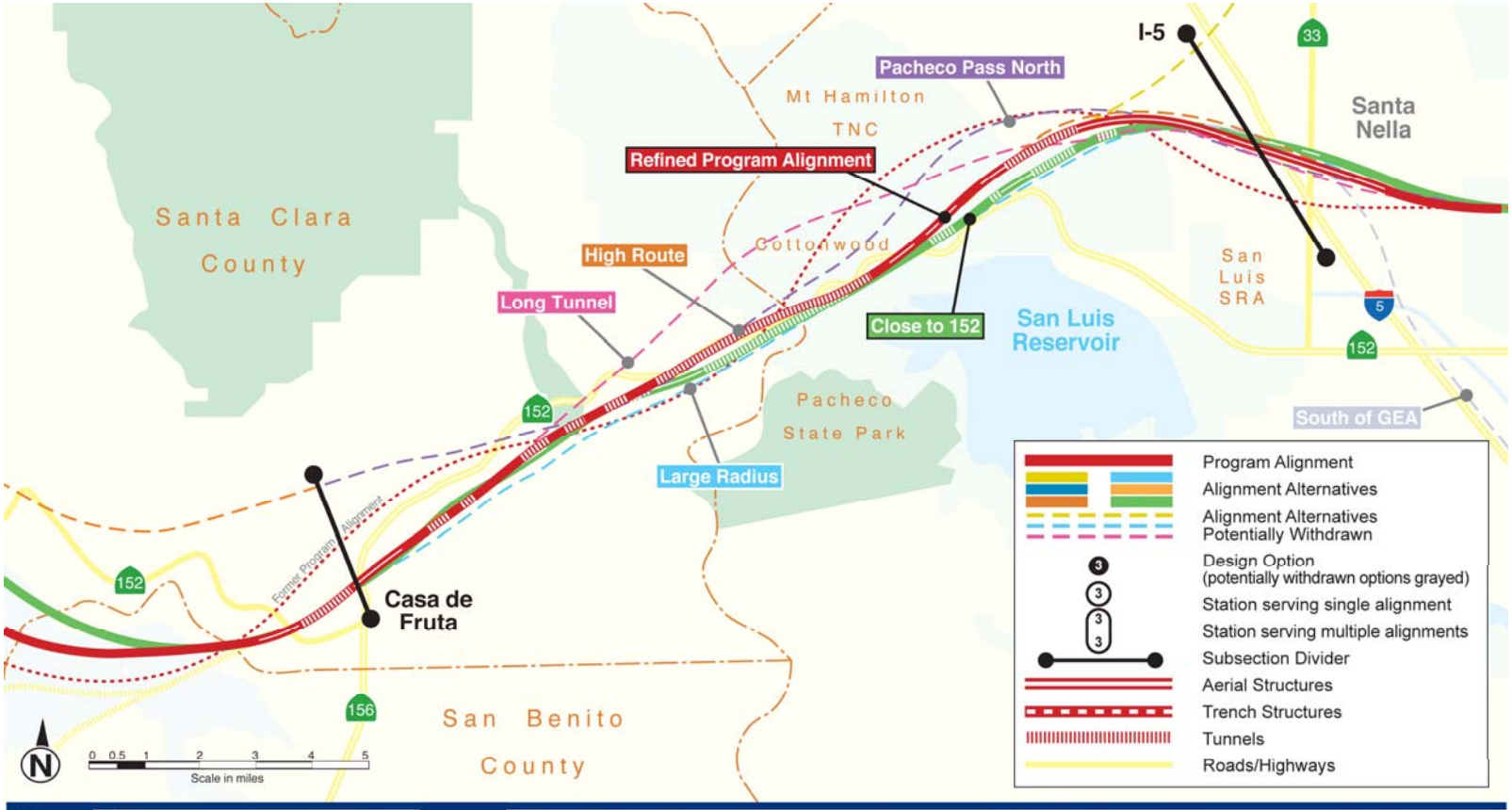
- Eliminates impacts to Downtown Gilroy

Evaluated Key Issues

Morgan Hill to Pacheco Pass

- Crosses Calaveras Fault (active) on 300' tall bridge
- Excessive tunnel length

Pacheco Pass Subsection



Carried Forward to EIR / EIS

Refined Program Alignment

- Using Quantm

Close to 152

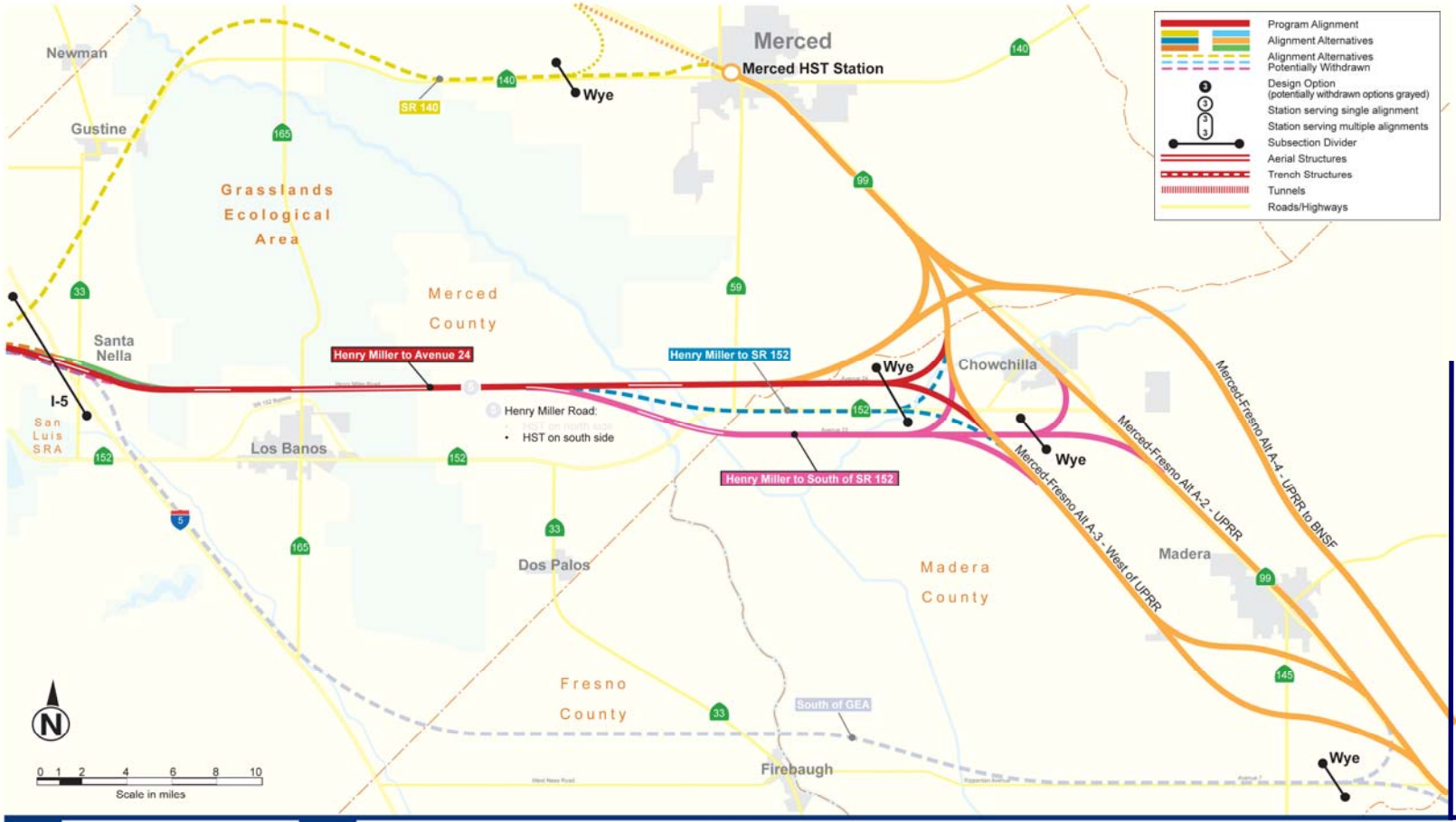
- Minimizes tunnel access road impacts
- Closest to existing highway corridor

Evaluated Key Issues

Large Radius | Pacheco Pass North
High Route | Long Tunnel

- Excessive tunnel lengths
- Very high/long bridges
- Bisection of wilderness lands
- Constructability issues

San Joaquin Valley Crossing Subsection



One alignment was withdrawn early in the AA process in the San Joaquin Valley Crossing Subsection – East of Los Banos to SR 152. This alignment would have additional environmental effects on the Grassland Ecological Area as it would introduce an additional corridor with the new crossing to SR 152. It also was not supported by officials in the City of Los Banos due to possible impacts to existing and proposed City facilities.

Carried Forward to EIR / EIS

Henry Miller to Avenue 24
Program Alignment

Henry Miller to South of SR 152
- Suggested by local agencies
- Lessens impacts to Chowchilla

Evaluated Key Issues

Henry Miller to SR 152
- Constructability Issues
- Reconstruction of 14 miles of expressway (SR 152)

SR 140
- Over four minutes added to San Francisco - Los Angeles trips
- Impacts to farmlands including severance
- Impacts to biological resources
- Residential displacements
- Impacts to publically-owned lands/parklands

South of GEA
- Greatest farmland impacts, including severance
- Impacts to biological resources
- *Fourteen additional minutes added to San Jose - Merced trips*
- Adds 20 additional HST miles with associated environmental impacts

FRA / Authority Workshop Alignments

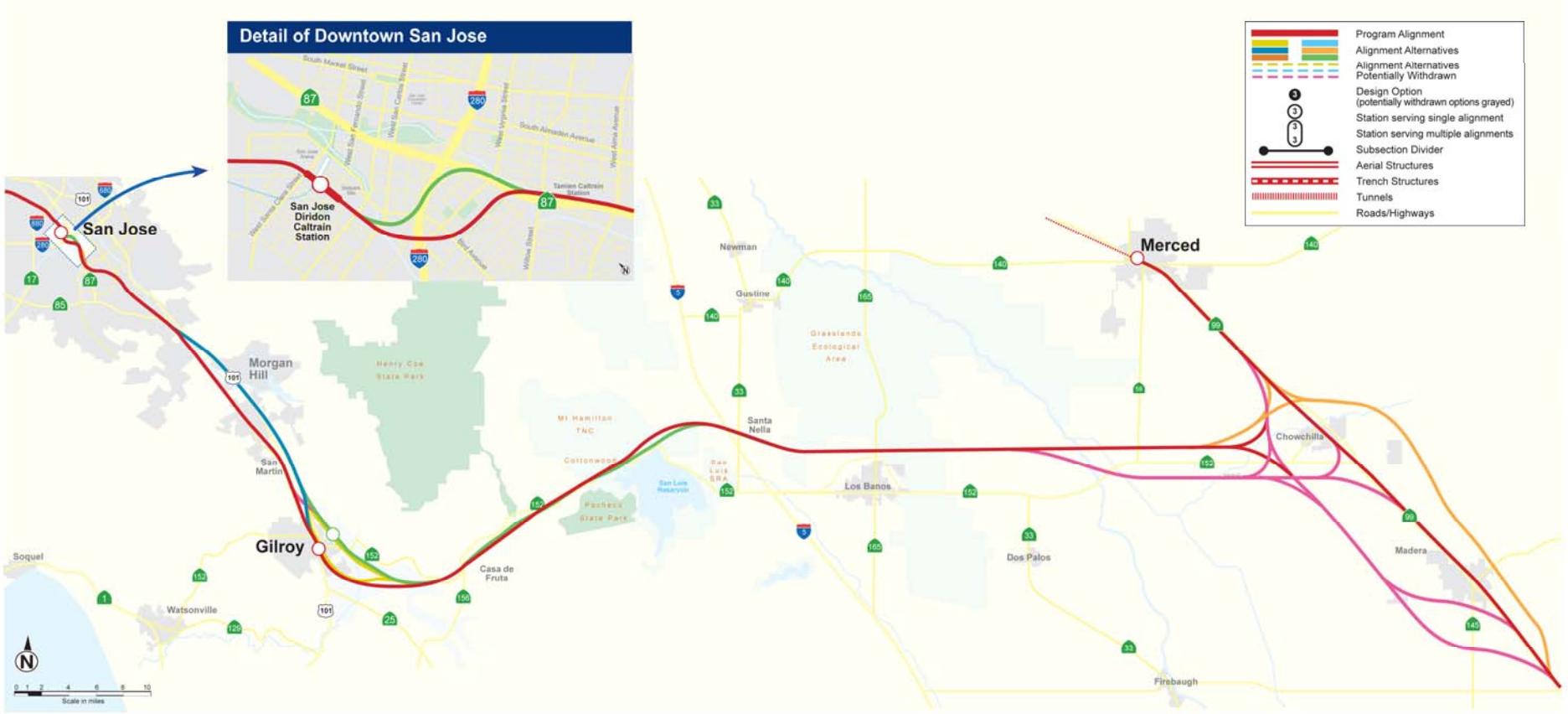


Table 1A - San Jose Station Approach Subsection Evaluation Matrix

TABLE 1A -- SAN JOSE STATION APPROACH SUBSECTION EVALUATION MATRIX

Measurement Criteria	REFINED PROGRAM ALIGNMENT	SOUTH OF CALTRAIN TRACKS	THREE TRACK	DOWNTOWN TUNNEL ALIGNMENT ALTERNATIVE	DOWNTOWN AERIAL ALIGNMENT ALTERNATIVE	SR 87 / I-280 Alignment Alternative
Design Objectives						
Journey Time	◔ 2.56 min 1.92 miles	◔ 2.56 min 1.92 miles	◔ 2.56 min 1.92 miles	● 0.81 min 1.76 miles	◕ 1.06 min 1.76 miles	○ 2.93 min 1.95 miles
Intermodal Connections	Not Applicable					
Operating Costs (Cost Factor)	◔ 1.09	◔ 1.09	◔ 1.09	◔ 1.10	● 1.00	◔ 1.11
Capital Costs	● 1.00	● 1.00	● 1.00	○ 6.40	● 1.00	◕ 1.20
Land Use						
Potential for Transit Oriented Development (TOD)	Not Applicable					
Consistency with Other Planning Efforts	Consistent with City of San Jose General Plan and Santa Clara County General Plan to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system.					
Constructability						
Constructability	◕ • Tight clearances • Local traffic impacts • Several grade separations • Caltrain operational impacts • Utility relocations (especially fiber optic cables from San Francisco to Gilroy)	◕ • Tight clearances • Local traffic impacts • Several grade separations • Caltrain operational impacts • Utility relocations (especially fiber optic cables from San Francisco to Gilroy)	◕ • Tight clearances • Local traffic impacts • Several grade separations • Caltrain operational impacts • Utility relocations (especially fiber optic cables from San Francisco to Gilroy)	○ • Three to Four tunnels • Bad soil – will require stabilization • Below water table. • Wide tunnel station • 110 foot deep tunnels • Impact to Caltrans foundations on SR 87/I-280. • Significant utility relocation	○ • Impacts to traffic flow on SR 87/I-280 • High bridges over existing interchange and curved long span bridges. • Construct curved long span bridges • Significant utility relocation	○ • Impacts to traffic flow on SR 87/I-280 • High bridges over existing interchange and curved long span bridges. • Construct curved long span bridges • Significant utility relocation
Disruption to Existing Railroads	◑ • Caltrain/UPRR tracks shifted to accommodate HST tracks	◑ • HST added along existing Caltrain/UPRR tracks	**Fatal Flaw/Not Ratable** • Reduction from two Caltrain/UPRR tracks to one not consistent with Caltrain / UPRR operations	◕ • Station located beneath planned BART station	● • No disruption	◔ • Aerial alignment above Caltrain/UPRR for short distance
Disruption to and Relocation of Utilities	◔ • 1 Electrical Utility (115 Kilo Volts [KV] Overhead [OH]) • 1 Fiber Optic Line (within Caltrain easement) • Potential Santa Clara Valley Water District (SCVWD) Facilities Conflict •	◔ • 1 Electrical Utility (115 KV OH) • 1 Fiber Optic Line (within Caltrain easement) • Potential SCVWD Facilities Conflict	◕ • 1 Electrical Utility (115 KV OH) • Potential SCVWD Facilities Conflict	◕ • 1 Electrical Utility (115 KV OH) • Potential SCVWD Facilities Conflict.	◕ • 1 Electrical Utility (115 KV OH) • Potential SCVWD Facilities Conflict.	◕ • 1 Electrical Utility (115 KV OH) • Potential SCVWD Facilities Conflict.
Disruption to Communities						
Displacements						
Residential Displacement	◑ • 9 dwelling units - Single-Family Residential (SFR) • 0 dwelling units - Multi-Family Residential (MFR) • 0 dwelling units – Mobile Home Parks (MHP)	◔ • 18 dwelling units – SFR • 0 dwelling units - MFR • 0 dwelling units – MHP	● • 0 dwelling units – SFR • 0 dwelling units - MFR • 0 dwelling units – MHP	● • Potential for some dwelling units - SFR • Potential for some dwelling units - MFR • Potential for some dwelling units – MHP	○ • 34 dwelling units - SFR • 6 dwelling units - MFR • 0 dwelling units – MHP	◕ • 3 dwelling units - SFR • 0 dwelling units - MFR • 0 dwelling units – MHP
Business Displacement	◑ • 0 units - Commercial • 3 units – Industrial	◕ • 2 units - Commercial • 0 units – Industrial	● • 0 units – Commercial • 0 units - Industrial	● • Potential for some units - Commercial • Potential for some units - Industrial	○ • 17 units - Commercial • 0 units - Industrial	◔ • 8 units - Commercial • 0 units - Industrial
Properties with Access Affected	● • 0 parcels	● • 0 parcels	● • 0 parcels	● • 0 parcels	○ • 22 parcels	◕ • 6 parcels
Local Traffic Effects around Stations	Not Applicable					
Highway Grade Separations and Closures	◔ • 12 grade separations • 1 road closure	◔ • 12 grade separations • 1 road closure	◔ • 12 grade separations • 1 road closure	● • 2 grade separations • 0 road closures	○ • 13 grade separations • 0 road closures	◑ • 12 grade separations • 0 road closures
Environmental Resources						
Biological Resources	◕ • 4 ac – California Tiger Salamander (CTS) Range	◑ • 5 ac –CTS Range	● No biological resources	◔ No biological resources	○ • 12 ac – CTS Range	◑ • 6 ac – CTS Range
Cultural Resources	◑ • 11 properties (with buildings over 45 years old) • No known archaeological sites • Moderately sensitive for archaeological deposits	◔ • 19 properties (with buildings over 45 years old) • Known archaeological sites • Highly sensitive for archaeological deposits	● No cultural resources	◔ • Under 21 properties (with buildings over 45 years old) • 2 buildings appear eligible for National Register • Highly sensitive for archaeological resources • Known archaeological deposits	○ • 23 properties (with buildings over 45 years old) • Moderate to high sensitivity for archaeological resources • Known archaeological deposits	◑ • 8 properties (with buildings over 45 years old) • Highly sensitive for archaeological resources • Known archaeological deposits
Parklands	○ • 1.3 ac of publicly-owned lands (Fuller Park) • 3 publicly-owned land potentially indirectly affected (Biebrach Park, Gregory Plaza Tot Lot, Los Gatos Creek, Trail); School playfields)	○ • 1.3 ac of publicly-owned lands (Fuller Park) • 3 publicly-owned land potentially indirectly affected (Biebrach Park, Gregory Plaza Tot Lot, Los Gatos Creek, Trail); School playfields)	◕ • 0 ac of publicly-owned land • 5 publicly-owned land potentially indirectly affected (Biebrach Park, Cahill Park, Gregory Plaza Tot Lot, Los Gatos Creek, Trail, J.Frey/Willow Community Garden); School playfields)	● • 0 ac of publicly-owned land • No publicly-owned land or school playfields potentially indirectly affected	● • 0 ac of publicly-owned land • No publicly-owned land; school playfields potentially indirectly affected	● • 0 ac of publicly-owned land • No publicly-owned land; school playfields potentially indirectly affected
Agricultural Land	No agricultural resources					
Natural Environment						
Noise	○ • 146 ac - SFR • 32 ac - MFR • 0 ac – MHP	○ • 146 ac – SFR • 32 ac – MFR • 0 ac – MHP	○ • 146 ac – SFR • 32 ac - MFR • 0 ac – MHP	● • 0 ac - SFR • 0 ac – MFR • 0 ac – MHP	◑ • 103 ac - SFR • 32 ac - MFR • 0 ac – MHP	◔ • 116 ac - SFR • 30 ac - MFR • 0 ac – MHP
Vibration	◔ • 17 ac - SFR • 1 ac - MFR • 0 ac – MHP	◔ • 17 ac – SFR • 1 ac – MFR • 0 ac – MHP	◔ • 17 ac – SFR • 1 ac - MFR • 0 ac – MHP	◔ • 11 ac - SFR • 7 ac - MFR • 0 ac – MHP	○ • 19 ac - SFR • 8 ac - MFR • 0 ac – MHP	● • 3 ac - SFR • 2 ac - MFR • 0 ac – MHP
Visual/Scenic Resources	◕ • Retaining and sound walls at edge of combined Caltrain/UPRR and HST right-of-way	○ • HST tracks placed in Fuller Park	● • Three track configuration does not require full right-of-way width – opportunity for landscaping	● • No effect on visual/scenic resources	◔ • Aerial structure passes through developed neighborhoods	◔ • Complex configuration of columns and bents above freeways
Geotechnical Constraints	◑ • No crossings of seismic faults or fault rupture hazard zones. • 50 ac – liquefaction zones	◑ • No crossings of seismic faults or fault rupture hazard zones. • 50 ac – liquefaction zones	◑ • No crossings of seismic faults or fault rupture hazard zones. • 50 ac – liquefaction zones	◕ • No crossings of seismic faults or fault rupture hazard zones • 49 ac – liquefaction zones	◕ • No crossings of seismic faults or fault rupture hazard zones • 49 ac – liquefaction zones	◔ • No crossings of seismic faults or fault rupture hazard zones • 51 ac – liquefaction zones
Agency and Public Input						
Agency and Public Input	**Concerns re: Impacts** • Willow Glen Spur Trail • Pinehurst Neighborhood • Greater Gardner Neighborhood NAC, Greater Gardner Action Plan • Willow Glen Neighborhood • Voices of San Jose • Use Tunnels to avoid community impacts **Opposition/Concerns:** • Grade crossings at West Virginia and Auzerais • Impacts to community and other environmental impacts (e.g. noise, visual, etc.)	**Concerns re: Impacts** • Willow Glen Spur Trail • Pinehurst Neighborhood • Greater Gardner Neighborhood NAC, Greater Gardner Action Plan • Willow Glen Neighborhood • Voices of San Jose • Use Tunnels **Opposition/Concerns:** • Grade crossings at West Virginia and Auzerais	**Concerns re: Impacts** • Difference of impacts between four-track and three-track systems **Opposition/Concerns:** • Tracks and grade separations must meet GO 26-D clearances **Support:** • Run a trench alignment along Caltrain and UPRR tracks under Curtner Avenue, travels under Guadalupe River/Los Gatos Creek and arrives at Diridon	**Concerns re: Impacts** • Voices of San Jose • Greater Gardner Neighborhood • Limited biological resource issues on any of the alternatives assuming that Coyote Creek, Los Gatos Creek and the Guadalupe River would either be spanned or tunneled under; no differentiators • Restoration and bank setbacks are occurring along the Guadalupe River **Support** • Support downtown tunnel alignment • Tunnels do not block views of the hills	**Concerns re: Impacts** • Aerial structures are divisive and cause blight • Limited biological resource issues on any of the alternatives assuming that Coyote Creek, Los Gatos Creek and the Guadalupe River would either be spanned or tunneled under; no differentiators • Restoration and bank setbacks are occurring along the Guadalupe River **Opposition/Concerns** • Tunnel the trains	**Concerns re: Impacts** • Limited biological resource issues on any of the alternatives assuming that Coyote Creek, Los Gatos Creek and the Guadalupe River would either be spanned or tunneled under; no differentiators • Restoration and bank setbacks are occurring along the Guadalupe River **Opposition/Concerns** • Greater Gardner neighborhood isolation **Support** • This alignment avoids impacts to Gardner and North Willow Glen • Follow 87/280 instead of UPRR • Consider Thread the Needle Route along 87

○ → ◔ → ◑ → ◕ → ●

Least Favorable → Most Favorable

Table 1B - San Jose Station Approach Subsection (Station Options Only) Evaluation Matrix

TABLE 1B – SAN JOSE STATION APPROACH SUBSECTION (STATION OPTIONS ONLY)
EVALUATION MATRIX

Measurement Criteria	San Jose HST Station: Aerial at Diridon Platforms	San Jose HST Station: Aerial at New Location	San Jose HST Station: Tunnel New Location
Design Objectives			
Journey Time	Included within alignment data		
Intermodal Connections	• Currently served by VTA buses, VTA light rail, DASH Shuttle, Caltrain, ACE, Capitol Corridor, Amtrak thruway buses, Amtrak Coast Starlight, Highway 17 Express, Monterey-Salinas Transit. • Future services would include BART, Amtrak Coast Daylight, and Monterey County Rail Service (TAMC).		
Operating Costs (Cost Factor)	Included within alignment data		
Capital Costs	Included within alignment data		
Land Use			
Potential for Transit Oriented Development (TOD)	● • City of San Jose evaluating TOD opportunities near existing Diridon Caltrain station site. City has assumed this station location and configuration in related planning studies • Compatible with adjacent land uses • Publically-owned parking lots land-banked for TOD	◑ • City of San Jose evaluating TOD opportunities near existing Diridon Caltrain station site • Compatible with adjacent land uses • Aerial station could form focus of development • Aerial station mass would be dominant structure in area • Commercial and retail development could be layered beneath and/or adjacent to aerial structure • Station and alignment would pass through redevelopment area in diagonal configuration potentially reducing redevelopment opportunities	◕ • City of San Jose evaluating TOD opportunities near existing Diridon Caltrain station site. • Compatible with adjacent land uses • Compatible with City's related planning studies • Publically-owned parking lots land-banked for TOD • Building foundations would need to be coordinated with underground station and tunnels
Consistency with Other Planning Efforts	• See Above	• See Above	• See Above
Constructability			
Constructability	Included within alignment data		
Disruption to Existing Railroads	○ • Major construction impacts on Railroad operations	● • Minimal disruption to existing railroad operations	● • Minimal disruption to existing railroad operations
Disruption to and Relocation of Utilities	Included within alignment data		
Disruption to Communities			
Displacements*			
Residential Displacement	● • 0 dwelling units – SFR • 0 dwelling units – MFR	◕ • 1dwelling unit – SFR • 1 dwelling unit – MFR	● • 0 dwelling units – SFR • 0 dwelling units – MFR
Business Displacement	● • 0 units – Commercial • 0 units – Industrial	◕ • 4 units – Commercial • 5 units – Industrial	● • 0 units – Commercial • 0 units – Industrial
Properties with Access Affected	Included within alignment data		
Measurement Criteria	**San Jose HST Station: Aerial at Diridon Platforms**	**San Jose HST Station: Aerial at New Location**	**San Jose HST Station: Tunnel New Location**
Local Traffic Effects around Stations	◑ • Increase in traffic congestion on local streets	◑ • Increase in traffic congestion on local streets	◑ • Increase in traffic congestion on local streets
Highway Grade Separations and Closures	Included within alignment data		
Environmental Resources			
Biological Resources*	◑ • California Tiger Salamander (CTS) Range • 2.2 ac – Grasslands • 0.2 ac – Open waters • 1 Special status plant • 1 Wildlife species • 0 ac – Wetland Habitat	● No Biological Resources	● No Biological Resources
Cultural Resources*	◕ • No known properties • Moderate sensitivity for cultural resources • No known prehistoric archaeological resources	◑ • 9 individual properties • 1 National Register property - Diridon Station • No landmarks • No known prehistoric archaeological resources	● No Cultural r\Resources
Parklands	Included within alignment data	◑ • 10 ac – potential temporary use ,indirect impacttoGuadalupe River Park	● No Parklands
Agricultural Land	No Agricultural Resources		
Natural Environment			
Noise	Included within alignment data		
Vibration	Included within alignment data		
Visual/Scenic Resources	◑ • HST Aerial platforms overshadow historic depot	◔ • Aerial station blocks views of historic depot from east.	● • No visual scenic resources
Geotechnical Constraints	Included within alignment data		
Agency and Public Input			
Agency and Public Input	**Concerns re: Impacts** • Historic Diridon Station **Opposition/Concerns:** • Residences to west • Use tunnels south of Diridon, do not support aerial structures **Support:** • Use at-grade tracks south of Diridon	**Concerns re: Impacts** • Limited Biological Resource Issues on any of the alternatives assuming that Coyote Creek, Los Gatos Creek and the Guadalupe River would either be spanned or tunneled under; no differentiators • Restoration and bank setbacks are occurring along the Guadalupe River **Opposition/Concerns:** • Do not support aerial structures **Support:** • Support aerial structures	**Concerns re: Impacts** • Limited Biological Resource Issues on any of the alternatives assuming that Coyote Creek, Los Gatos Creek and the Guadalupe River would either be spanned or tunneled under; no differentiators • Restoration and bank setbacks are occurring along the Guadalupe River **Support** • Select a San Jose station near the arena

* California High-Speed Rail Authority and U.S. Department of Transportation Federal Railroad Administration, 2008. Final Bay Area to Central Valley High-Speed Train Program Environmental Impact Report/Environmental Impact Statement. Volume 1: Report. May.

○ → ◔ → ◑ → ◕ → ●
Least Favorable → Most Favorable

Table 2 - Monterey Highway Subsection Evaluation Matrix

TABLE 2 – MONTEREY HIGHWAY SUBSECTION EVALUATION MATRIX

Measurement Criteria	EAST OF CALTRAIN/ UPRR (PROGRAM ALIGNMENT)			EAST OF TAMIEN PLATFORM
	East of Caltrain/UPRR Alignment Alternative	Design Options		East of Tamien Platform Alignment Alternative
		Monterey Highway Aerial	Trench	
Design Objectives				
Journey Time and Route Length	• 3.81 min • 7.94 miles			
Intermodal Connections	• Not Applicable			
Operating Costs	• 1.00			
Capital Costs	● **1.0**	◕ **1.1**	○ **1.4**	● **1.0**
Land Use				
Potential for TOD	Not Applicable			
Consistency with Other Planning Efforts	• Consistent with City of San Jose and Santa Clara County general plans to: -Expand public transit and other related infrastructure to improve regional and inter-regional access; and -Provide for a safe, efficient and technologically advanced multi-modal transportation system • Inconsistent with VTA's proposal to implement BRT project along this stretch of highway			
Constructability				
Constructability	◑ • Work may disrupt Caltrain operations • Tight clearances to railroad tracks along Monterey Highway • Increased railroad relocation • Squeezed between SR 87 and and Caltrain Railroad. •	◑ • More complicated construction than for at-grade option but less complicated than for trench option • Involves structural work that is more complex than grading	◔ • Most complicated design option to construct • Involves below-grade structural work and excavation	◕ • Work may disrupt Caltrain operation • Tight clearances to railroad tracks along Monterey Highway • Impacts to existing Tamien Station • Impacts to Luther Industrial Spur
Disruption to Existing Railroads	◑ • Access to UPRR from east blocked by HST from Lick to Coyote	◕ • Access to UPRR from east blocked by HST from Lick to north of SR 85	◕ • Access to UPRR from east blocked by HST from Lick to north of SR 85	○ • Tamien Caltrain station needs to be rebuilt • Access to UPRR from east blocked by HST from Lick to Coyote
Disruption to and Relocation of Utilities	• 1 Electrical Utility (60 Kilo Volts [KV] Overhead [OH]) • 1 Natural gas line (distribution feeder main) • 1 Fiber optic line located within Caltrain easement • Potential Santa Clara Valley Water District (SCVWD) Facilities Conflict			
Disruption to Communities				
Displacements				
Residential Displacement	• 0 dwelling units - Single-Family Residential (SFR) • 0 dwelling units - Multi-Family Residential (MFR) • 0 dwelling units – Mobile Home Parks (MHP)			
Business Displacement	• 8 units – Commercial • 3 units – Industrial			
Properties with Access Affected	◔ • 50 parcels	◔ • 50 parcels	◔ • 50 parcels	◔ • 50 parcels
Local Traffic Effects Around Stations	Not Applicable			
Highway Grade Separations and Closures	◔ • 7 grade separations • 0 road closures	○ • 7 grade separations • 0 road closures	◔ • 7 grade separations • 0 road closures	◔ • 7 grade separations • 0 road closures
Environmental Resources				
Biological Resources	• 130 ac – California Tiger Salamander Range • 49 ac – San Joaquin Kit Fox Range			
Cultural Resources	• No known archaeological sites • Moderately sensitive for archaeological deposits			
Parklands	• 0 ac of publicly-owned land • 3 publicly-owned lands potentially indirectly affected (Danna Rock Park, Edenvale Garden Park, Silver Leaf Park)			
Agricultural Land	• No Agricultural Resources			
Natural Environment				
Noise	• 376 ac - SFR • 178 ac – MFR • 173 ac – MHP			
Vibration	• 44 ac - SFR • 17.5 ac – MFR • 19.4 ac – MHP.			
Visual/Scenic Resources	◑ • Mature Trees along Monterey Highway replaced with new landscaping and soundwalls		◕ • Mature Trees along Monterey Highway replaced with new landscaping	● • HST runs at same grade as existing railway
Geotechnical Constraints	• No crossings of seismic faults or fault rupture hazard zones • 101.5 ac – liquefaction zones			
Agency and Public Input				
Agency and Public Input	**Opposition/concerns:** • Adjacent to Silverleaf neighborhood • Increased congestion in Sliverleaf neighborhood if roadway if narrowed • Traffic and noise impacts in Silverleaf neighborhood • Damage to homes in Silverleaf neighborhood from vibration • Effects on Monterey Hwy. landscaping plans in Silverleaf neighborhood • UPRR Lick-Gilroy ROW has no room for additional rail operations, including HSR • Limited biological resource issues on any of the alternatives so agencies had little feedback; no differentiators. • Access from Coyote Valley • Removal of oak trees • Relocate VTA light rail to Monterey Hwy. and place HST down Hwy. 85/87 • Oppose alignment from Capitol Expressway to Bailey Road and from Blossom Hill Road to Bernal Road • Safety of homes/schools/businesses underneath or adjacent to the aerial tracks and the New Horizons Condominiums **Refine design concept for track system:** • City of San Jose Dept. of Transportation **Support for alignment:** • No land acquisitions or new easements would be required	**Opposition/concerns:** • Safety of homes/schools/businesses underneath or adjacent to the aerial tracks • Impacts to New Horizons Condominiums		**Opposition/concerns:** • A Native American burial site was discovered during construction of Hwy. 87 on the east side of Tamien Station. • Limited biological resource issues on any of the alternatives so agencies had little feedback; no differentiators. • Oppose alignment from Capitol Expressway to Bailey Road and from Blossom Hill Road to Bernal Road **Concerns re: Impacts:** • Impacts to New Horizons Condominiums • Noise impacts from Tamien Station • Impacts to planned parks, and planned trails near Tamien Station • New 11-story residential building at Alma Ave. • Impacts to City of San Jose's day-care facility at Tamien Station. • VTA facilities, including Tamien Station, may be impacted by HSR • Tunnel this alignment

○ → ◔ → ◑ → ◕ → ●

Least Favorable → Most Favorable

Table 3A - Morgan Hill-Gilroy Subsection Evaluation Matrix

TABLE 3A - MORGAN HILL-GILROY SUBSECTION EVALUATION MATRIX

Measurement Criteria	EAST OF UPRR (PROGRAM ALIGNMENT)			US 101	GILROY STATION LOOP	US 101 EAST GILROY	EAST OF UPRR/ EAST OF GILROY	MORGAN HILL TO PACHECO PASS
	East of UPRR Alignment Alternative	Design Options: Downtown Gilroy: HST Aerial	Design Options: Downtown Gilroy: HST Trench	US 101 Alignment Alternative	Gilroy Station Loop Alignment Alternative	US 101 East Gilroy Alignment Alternative	East of UPRR/ East of Gilroy Alignment Alternative	Morgan Hill to Pacheco Pass Alignment Alternative
Design Objectives								
Journey Time and Route Length	◔ 8.73 min 32.01 miles	Not Applicable		○ 8.75 min 32.10 miles	◕ 8.34 min 30.58 miles	◕ 8.34 min 30.58 miles	◑ 8.70 min 31.77 miles	● 7.51 min 27.54 miles
Intermodal Connections	Not Applicable	Not Applicable		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Operating Costs	◔ 1.16	Not Applicable		○ 1.17	○ 1.17	◕ 1.11	◑ 1.15	● 1.00
Capital Costs	● 1.00	● 1.00	○ 1.20	○ 1.30	○ 1.30	● 1.00	◕ 1.08	○ 1.30
Land Use								
Potential for TOD	Not Applicable	Not Applicable		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Consistency with Other Planning Efforts	● Consistent with Morgan Hill's General Plan Supporting: • Infill Development due to existing Caltrain alignment • Efficient Transit system to reduce congestion • Locating transit stops that can be conveniently accessed from downtown • Consistent with City County general plan policies to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system.	Not Applicable		◕ Consistent with City County general plan policies to: • Expand public transit and other related infrastructure to improve regional and inter-regional access. • Expand local transit to connect major shopping and employment centers with downtown. • Provide for a safe, efficient and technologically advanced multi-modal transportation system Not Consistent with: • Infill Development due to existing Caltrain alignment • Locating transit stops that can be conveniently accessed from downtown	● Consistent with City of Gilroy and Santa Clara County general plan policies to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system	● Consistent with City of Gilroy and Santa Clara County general plan policies to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system.	● Consistent with City of Gilroy and Santa Clara County general plan policies to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system.	● Consistent with City of Gilroy and Santa Clara County general plan policies to: • Expand public transit and other regional infrastructure to promote regional and inter-regional access; • Expand local transit to connect major shopping and employment centers with downtown; • Provide for a safe, efficient and technologically advanced multi-modal transportation system
Constructability								
Constructability	◑ • Impact on train operations • Tight clearances to Rail-road tracks • Squeezed between Monterey Highway and Railroad tracks • Impact on Monterey Highway traffic • Viaduct through town • Urban noise restrictions through Gilroy • Urban utility relocations for new stations	◑ • More complicated construction than for at-grade option but less complicated than for trench option • Involves structural work that is more complex than grading	○ • Most complicated design option to construct. • Involves below-grade structural work and excavation.	◔ • Impact on train operations • Tight clearances to Rail Road tracks in Gilroy • Traffic impacts in Gilroy • 2 mile tunnel section • Trench along airport • Viaduct through town • 3 mile access roads for tunnels • Urban noise restrictions through Gilroy • Urban utility relocations	◑ • May disrupt train operations • Tight clearances to rail road tracks in Gilroy • Traffic impacts in Gilroy • 2 mile tunnel section • Viaduct through Gilroy • 8 mile access roads for tunnels • Urban noise restrictions through Gilroy • Urban utility relocations for new station	● • Minimal impact to railway and highway operations • 2 mile tunnel section • Moderate bridge impacts • 5 mile access roads for tunnels	◕ • Impact on train operations • Tight clearances to Rail-road tracks • Squeezed between Monterey Highway and Railroad tracks • Impact on Monterey Highway traffic • Viaduct through town	**Fatal Flaw, Not Ratable** • 3 mile tunnel section (8 mile tunnel needed to avoid impractical bridge • Crosses Calaveras Fault on high bridge • Crosses Pacheco Pass on bridge that is 500 feet high and over a mile long • Not practical to construct • 11 mile access roads for tunnels
Disruption to Existing Railroads	◑ • Access to UPRR from east blocked by HST • Issacson Silo spur needs to be modified for HST	◔ • Caltrain overnight storage tracks moved away from station	◔ • Caltrain overnight storage tracks moved away from station and outside limits of trench	● • No disruption	◕ • Access to UPRR from east blocked by HST	● • No disruption	◕ • Access to UPRR from east blocked by HST	● • No disruption
Disruption to and Relocation of Utilities	○ • 7 Electrical utility overcrossings (115KV, 230 KV, and 500 KV lines) • 3 crossings of natural gas distribution feeder mains. • Potential third party fiber optic line, located within Caltrain easement. • Potential conflict with Santa Clara Valley Water District (SCVWD) Facilities; and trenching poses potential conflict with Santa Clara Conduit, Pacheco Tunnel and Hollister Conduit.	Included within alignment data		○ • 7 Electrical utility overcrossings (115KV, 230 KV, and 500 KV lines) • Potential interference on electrical utilities115KV and 230 KV on parallel path. • 4 crossings of natural gas distribution feeder mains. • Potential conflict with SCVWD Facilities.	◑ • 3 electrical utilities (115 Kilo Volts [KV] Overhead [OH], 230 KV OH and 500 KV OH) • Crosses distribution feeder main twice and backbone transmission system twice • 1 Fiber Optic Line (located within Caltrain easement) • Potential SCVWD Facilities Conflict • Need to investigate potential conflict with Santa Clara conduit, Pacheco tunnel and Hollister conduit	◑ • 3 electrical utilities (115 KV OH, 230 KV OH and 500 KV OH) • Crosses distribution feeder main twice and backbone transmission system twice • 1 Fiber Optic Line (located within Caltrain easement) • Potential conflict with SCVWD Facilities; and trenching poses potential conflict with Santa Clara Conduit, Pacheco Tunnel and Hollister Conduit.	○ • 7 Electrical utility overcrossings (115KV, 230 KV, and 500 KV lines) • 3 crossings of natural gas distribution feeder mains. • Potential third party fiber optic line, located within Caltrain easement. • Potential conflict with SCVWD Facilities; and trenching poses potential conflict with Santa Clara Conduit, Pacheco Tunnel and Hollister Conduit.	◕ • 1 electrical utility (115 KV OH) • Crosses backbone transmission system twice. • Potential conflict with SCVWD Facilities; and trenching poses potential conflict with Santa Clara Conduit, Pacheco Tunnel and Hollister Conduit.
Disruption to Communities								
Displacements								
Residential Displacement	◕ • 9 dwelling units – Single-Family Residential (SFR) • 0 dwelling units – Multi-Family Residential (MFR) • 5 dwelling units – Mobile Home Park (MHP) (1	Not Applicable		◔ • 16 dwelling units – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	○ • 25 dwelling units – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	◑ • 19 dwelling units – SFR • 0 dwelling units– MFR • 0 dwelling units – MHP	◔ • 15 dwelling units – SFR • 0 dwelling units– MFR • 5 dwelling units – MHP	◑ • 19 dwelling units – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP
Business Displacement	○ • 18 units – Commercial • 26 units – Industrial	Not Applicable		◑ • 3 units – Commercial • 21 units – Industrial	◕ • 1 unit ac – Commercial • 11 units ac – Industrial	● • 0 units – Commercial • 1 unit – Industrial •	◕ • 17 units – Commercial • 8 units – Industrial	● • 0 units – Commercial • 1 units – Industrial •
Properties with Access Affected	○ • 167 parcels	Included within alignment data		◑ • 111 parcels	◑ • 111 parcels	◕ • 81 parcels	◔ • 139 parcels	◕ • 81 parcels
Local Traffic Effects around Stations	Not Applicable	Not Applicable		Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Highway Grade Separations and Closures	◕ • 25 grade separations • 13 road closure	Included within alignment data		◔ • 34 grade separations • 5 road closures	◔ • 34 grade separations • 5 road closures	◑ • 30 grade separations • 4 road closures	◕ • 11 grade separations • 25 road closures	◑ • 30 grade separations • 4 road closures
Environmental Resources								
Biological Resources	◔ • 601 ac – California Tiger Salamander (CTS) Range • 184 ac – San Joaquin Kit Fox (SJKF) Range • 41 ac – California Red-legged Frog (CRLF) Range • 3.3 ac – Wetland Habitat	Included within alignment data		◔ • 532 ac – CTS Range • 145 ac – SJKF Range • 41 ac – CRLF Range • 3.4 ac – Wetland Habitat	◑ • 480 ac – CTS Range • 106 ac – SJKF Range • 18.5 ac – CRLF Range • 0.20 ac – Wetland Habitat	◕ • 336 ac – CTS Range • 106.5 ac – SJKF Range • 18.5 ac – CRLF Range • 0.20 ac – Wetland Habitat	○ 410 ac – CTS Range 146 ac – SJKF Range 18 ac – CRLF Range • 458 ac – Critical Habitat • 410 ac – Vernal Pool Regions • 1 ac – Wetland Habitat	◕ • 306.5 ac – CTS Range • 117.5 ac – SJKF Range • 41.5 ac – CRLF Range • 0.55 ac – Wetland Habitat
Cultural Resources	○ • 444 properties (with buildings over 45 years old) • Keesling's Shade Trees (California Registered Point of Historical Interest) • 1 California Historical Landmark • 4 National Register resources • Highly sensitive for archaeological deposits	Included within alignment data		◔ • 285 properties (with buildings over 45 years old) • Keesling's Shade Trees (California Registered Point of Historical Interest) • 3 National Register resources • Low sensitivity for archaeological deposits	◔ • 311 properties (with buildings over 45 years old) • Keesling's Shade Trees (California Registered Point of Historical Interest) • 3 National Register resources • Low sensitivity for archaeological deposits	◔ • 285 properties (with buildings over 45 years old) • Low sensitivity for archaeological deposits	○ • 442 properties (with buildings over 45 years old) • 1 California Registered Point of Historical Interest • 1 California Historical Landmark • 4 National Register Properties • 3 Santa Clara County Heritage Resource Inventory Properties • Highly sensitive for archaeological deposits	◔ • 63 properties (with buildings over 45 years old) • Highly sensitive for archaeological deposits
Parklands	◕ Potential for temporary use of: • Coyote Creek Park Chain • Forest Street Park	Included within alignment data		◑ Potential for temporary use of: • Coyote Creek Park Chain • Fields Sports County Park • Forest Street Park	◑ Potential temporary use of: • Coyote Creek Park Chain • Field Sports County Park • Forest Street Park	◕ Potential temporary use of: • Coyote Creek Park Chain • Field Sports County Park	◔ Potential for temporary use of: • Coyote Creek Park Chain • City Park • Los Paseos Park • Metcalf Park	◕ Potential temporary use of: • Coyote Creek Park Chain • Field Sports County Park
Agricultural Land	○ • 199 ac – Prime Farmland • 82 ac – Farmland of Statewide Importance • 9 ac – Unique Farmland • 32 ac – Farmland of Local Importance • 105 ac – Williamson Act (2006)	● Included within alignment data		◔ • 137 ac – Prime Farmland • 75 ac – Farmland of Statewide Importance • 8 ac – Unique Farmland • 32 ac – Farmland of Local Importance • 100 ac – Williamson Act (2006)	◑ • 133 ac - Prime Farmland • 42.5 ac – Farmland of Statewide Importance • 5.5 ac – Unique Farmland • 38 ac – Farmland of Local Importance • 82.5 ac – Williamson Act (2006)	◕ • 87.5 ac – Prime Farmland • 11.5 ac – Farmland of Statewide Importance • 4 ac – Unique Farmland • 25.5 ac – Farmland of Local Importance • 62 ac – Williamson Act (2006)	○ • 158.5 ac – Prime Farmland • 15.5 ac – Farmland of Statewide Importance • 8ac – Unique Farmland • 38.5 ac – Farmland of Local Importance • 126 ac – Williamson Act (2006)	● • 50 ac – Prime Farmland • 19 ac – Farmland of Statewide Importance • 8 ac – Unique Farmland • 2 ac – Farmland of Local Importance • 106 ac – Williamson Act (2006)
Natural Environment								
Noise	○ • 1188.2 ac – SFR • 36.1 ac – MFR • 97.0 - MHP	Included within alignment data		◑ • 635.8 ac – SFR • 25.2 ac – MFR • 15.7 ac - MHP	○ • 1188.2 ac – SFR • 36.1 ac – MFR • 97.0 ac - MHP	◑ • 660.6 ac – SFR • 4.8 ac – MFR • 15.7 ac - MHP	● 35 ac – SFR 0 ac – MFR • 0.6 ac - MHP	◔ • 1074.2 ac – SFR • 4.8 ac – MFR • 15.7 ac - MHP
Vibration	○ • 1000.5 ac – SFR • 16.5 ac – MFR • 97.0 – MHP	Included within alignment data		● • 129.7 ac – SFR • 0.9 ac – MFR • 0 ac – MHP	◔ • 221.1 ac – SFR • 0.9 ac – MFR • 0 ac - MHP	◑ • 192.1 ac - SFR • 0 ac – MFR • 0 ac MHP	◑ • 150 ac - SFR • 2.7 ac – MFR • 1.6 ac - MHP	◕ • 146.9 ac – SFR • 0 ac – MFR • 0 ac - MHP
Visual/Scenic Resources	◕ • HST follows existing railroad	○ • Aerial structure taller than many surrounding buildings • Large parking garage is out of scale with surrounding area	◑ • Large parking garage is out of scale with surrounding area • Clearing buildings for trench would affect downtown development	◔ • HST on cut-and-fill across hillside next to freeway • Portion of alignment passes low density residential	◔ • HST on cut-and-fill across hillside next to freeway • Portion of alignment passes low-density residential • New transportation corridor in agricultural area	◔ • HST on cut-and-fill across hillside next to freeway • Portion of alignment passes low-density residential • New transportation corridor in agricultural area	◑ • HST follows existing railroad. • New transportation corridor in agricultural area • Portion of alignment passes low-density residential	◔ • HST on cut-and-fill across hillside next to freeway • Portion of alignment passes low-density residential • New transportation corridor in agricultural area
Geotechnical Constraints	◔ • 1 Fault line crossing • 1 Fault rupture hazard zone • 199 acres in liquefaction zones	Included within alignment data		● • 1 Fault line crossing • 1 Fault rupture hazard zone • 107.4 acres in liquefaction zones	◑ • 1 Fault line crossing • 1 Fault rupture hazard zone • 135 acres in liquefaction zones	◕ • 1 Fault line crossing • 1 Fault rupture hazard zone • 110 acres in liquefaction zones	○ • 1 Fault line crossing • 1 Fault rupture hazard zone • 230.6 acres in liquefaction zones	◔ • 2 Fault line crossings • 2 Fault rupture hazard zones • 75.4 acres in liquefaction zones
Agency and Public Support								
Agency and Public Input	**Concerns re: Impacts** • CDFG and USFWS preferred the US 101 alternative over the East of UPRR ROW along Monterey Highway stating that Coyote Valley, between south San Jose and Morgan Hill is a critical linkage for wildlife movement between the Santa Cruz Mountains and the Diablo Range. • USFWS requested that a US 101 alignment stay as close to the existing freeway as possible. • For all alternatives that pass through the Soap Lake floodplain southeast of Gilroy, CDFG, USFWS, and NOAA Fisheries agreed that the alignment with the shortest crossing of the floodplain would be preferable. • All agencies agreed that an elevated section through the floodplain would be necessary because it does flood often. An elevated section would still allow for wildlife movement from the Gabilan Range to the southwest to the Diablo Range	• City of Gilroy opposes Arial alignment / station in downtown	• Gilroy prefers downtown station/ alignment to be in trench.	**Opposition/Concerns** • Trench needed next to San Martin Airport **Support** • Morgan Hill prefers US 101 Alignment Alternative rather than Program Alignment Alternative • Gilroy prefers downtown station if in trench. US 101 station may be acceptable.	**Concerns re: impacts** • For all alternatives that pass through the Soap Lake floodplain southeast of Gilroy, CDFG, USFWS, and NOAA Fisheries agreed that the alignment with the shortest crossing of the floodplain would be preferable. • All agencies agreed that an elevated section through the floodplain would be necessary because it does flood often. An elevated section would still allow for wildlife movement from the Gabilan Range to the southwest to the Diablo Range. VTA: Route 152 • Realignment project Agencies: • Avoid Frazier Lake Airpark **Opposition/Concerns** • Gilroy prefers downtown station if in trench • 101 station may be acceptable • Trench needed next to San Martin Airport	**Concerns re: impacts** • An elevated alignment on the east side of US 101 would be closer in proximity to sensitive serpentine grasslands and Bay Checkerspot Butterfly habitat, but would still allow wildlife to move through the area at the same rate as it does now. The USFWS and CDFG agreed that wildlife movement is more important in this area. **Opposition/Concerns** • If station in Morgan Hill, City prefers 101 location at Cochrane • Morgan Hill prefers 101 alignment rather than Aerial Program Alignment • Trench needed next to San Martin Airport		**Concerns re: impacts** • An elevated alignment on the east side of US101 would be closer in proximity to sensitive serpentine grasslands and Bay Checkerspot Butterfly habitat, but would still allow wildlife to move through the area at the same rate as it does now. The USFWS and CDFG agreed that wildlife movement is more important in this area. **Opposition/Concerns** • If station in Morgan Hill, City prefers 101 location at Cochrane • Morgan Hill prefers 101 alignment rather than Aerial Program Alignment • Trench needed next to San Martin Airport

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Least Favorable → Most Favorable

Table 3B - Morgan Hill-Gilroy HST Station Options Evaluation Matrix

TABLE 3B – MORGAN HILL-GILROY HST STATION OPTIONS EVALUATION MATRIX

Measurement Criteria	Morgan Hill Station: Downtown	Gilroy Station: Downtown (Four-Track)	Gilroy Station: Downtown (Two-track)	US 101 East Gilroy Station	Morgan Hill Station: US 101 at Cochrane
Design Objectives					
Journey Time and Route Length	Not Applicable		• Additional route length of track to Gilroy Downtown Station= 13.2 miles	Not Applicable	Not Applicable
Intermodal Connections	◕ • Currently served by VTA buses, Caltrain, and Monterey-Salinas Transit • Future service would include Monterey County Rail Service (TAMC)	● • Currently served by VTA buses, Caltrain, Amtrak thruway buses, San Benito County Transit Shuttle, Monterey-Salinas Transit, and Greyhound • Future service would include Monterey County Rail Service (TAMC)	● • Currently served by VTA buses, Caltrain, Amtrak thruway buses, San Benito County Transit Shuttle, Monterey-Salinas Transit, and Greyhound • Future services would include Monterey County Rail Service (TAMC)	● • Future services would include VTA buses, Caltrain (via potential shuttle), Amtrak thruway buses, San Benito County Transit Shuttle, Monterey-Salinas Transit and Monterey County Rail Service (TAMC) (future service - via potential shuttle)	◕ • Future services would include VTA buses, Caltrain (via potential shuttle), Monterey-Salinas Transit, and Monterey County Rail Service (TAMC) (future service - via potential shuttle)
Operating Costs	Not Applicable		Included within alignment data	Not Applicable	Not Applicable
Capital Costs	Not Applicable		Included within alignment data	Not Applicable	Not Applicable
Land Use					
Potential for TOD	◑ • Some zoning in area is supportive of TOD: Mixed Use, Multi-Family High, Industrial, Public Facility • Existing single-family neighborhood one block to east • Existing downtown borders west side of site • Site served by existing transit and Caltrain	◔ • Zoning in Downtown Specific Plan is supportive of TOD • Historic Downtown borders site to northwest • TOD to east could entail redevelopment of single-family residential area • Site served by existing transit and Caltrain	◔ • Zoning in Downtown Specific Plan is supportive of TOD • Historic Downtown borders site to northwest • TOD to east could entail redevelopment of single family residential area • Site served by existing transit and Caltrain	◑ • Current zoning is Agricultural • Current land use is agricultural • Site is part of Gilroy's 660 plan for large mixed-use development • Site is distant from Caltrain and existing downtown	◕ • Area zoning is supportive of TOD: Multi-Family Medium, Commercial, General Commercial, Industrial and Public Facility (Hospital) • Much of site is currently vacant land • Site is distant from Caltrain and existing downtown
Consistency with Other Planning Efforts	See above	See above	See above	See above	See above
Constructability					
Constructability	Included within alignment data		Included within alignment data	Included within alignment data	Included within alignment data
Disruption to Existing Railroads	◕ • Caltrain short-term parking needs to be separate from market-rate HST parking	◑ • Caltrain overnight storage tracks moved away from station • Caltrain short-term parking needs to be separate from market-rate HST parking	◕ • Caltrain overnight storage tracks moved away from station	● No disruption	● No disruption
Disruption to and Relocation of Utilities	Included within alignment data		Included within alignment data	Included within alignment data	Included within alignment data
Disruption to Communities					
Displacements	●		●	◕	◕
Residential Displacement	• 0 dwelling units– SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	• 0 dwelling units – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	• 0 dwelling units – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	• 1 dwelling unit – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP	• 1 dwelling unit – SFR • 0 dwelling units – MFR • 0 dwelling units – MHP
Business Displacement	◑ • 2 units – Commercial • 0 units - Industrial	◔ • 1 unit – Commercial • 1 unit - Industrial	◔ • 1 unit – Commercial • 1 unit - Industrial	● • 0 units – Commercial • 0 units - Industrial	● • 0 units – Commercial • 0 units – Industrial
Properties with Access Affected	Included within alignment data		Included within alignment data	Included within alignment data	Included within alignment data
Local Traffic Effects around Stations	• Potential increase in traffic congestion on several local streets		◔	◑	◑
Highway Grade Separations and Closures	Included within alignment data		• Potential increase in traffic congestion on several local streets Included within alignment data	• Lesser disruption to local traffic • Impacts to fewer streets that are mostly under utilized Included within alignment data	• Lesser disruption to local traffic • Impacts to fewer streets that are mostly under utilized Included within alignment data
Environmental Resources					
Biological Resources	◕ • 21 ac – CTS Range • 21 ac – Holland Vernal Pool in the Central Coast Region	◑ • 22 ac – CTS Range • 22 ac – Holland Vernal Pool in the Central Coast Region	◑ • 22 ac – CTS Range • 22 ac – Central Coast Vernal Pool Region	◔ • 37 ac – CTS Range • 37 ac - Central Coast Vernal Pool Region	○ • 39 ac – CTS Range • 39 ac – Central Coast Vernal Pool Region
Cultural Resources	◑ • 2 properties (with buildings over 45 years old) • 2 California Historical Landmark	◔ • 3 properties (with buildings over 45 years old) • Gilroy Station (likely to be eligible for National Register)	◔ • 3 properties (with buildings over 45 years old) • Gilroy Station (likely to be eligible for National Register)	○ • 5 properties (with buildings over 45 years old)	● • No cultural resources
Parklands	No Parklands	◕ • <1 acre of potential temporary use (indirect impact) of Forest Street Park	◕ Potential temporary use of: • <1 ac - Forest Street Park	● No parklands	● No parklands
Agricultural Land	● No agricultural resources		● No agricultural resources	◑ • 28 ac – Prime Farmland • 10 ac – Williamson Act (2006)	◕ • 7 ac – Unique Farmland
Natural Environment					
Noise	Included within alignment data		Included within alignment data	Included within alignment data	Included in alignment data
Vibration	Included within alignment data		Included within alignment data	Included within alignment data	Included in alignment data
Visual/Scenic Resources	◕ • Large parking garage is out of scale with surrounding area	◑ • Aerial structure taller than many surrounding buildings • Large parking garage is out of scale with surrounding area	◑ • Caltrain overnight storage tracks moved away from station • Aerial structure taller than many surrounding buildings • Large parking garage is out of scale with surrounding area	◔ • Station located in an agricultural area	◕ • Location near similar sized development (big box retail)
Geotechnical Constraints	Included within alignment data		Included within alignment data	Included within alignment data	Included within alignment data
Agency and Public Support					
Agency and Public Input	Included within alignment data.				

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Least Favorable → Most Favorable

Table 4 - Pacheco Pass Subsection Evaluation Matrix

TABLE 4 – PACHECO PASS SUBSECTION EVALUATION MATRIX

Measurement Criteria	REFINED PROGRAM ALIGNMENT Refined Program Alignment Alternative	HIGH ROUTE High Route Alignment Alternative	LARGE RADIUS Large Radius Alignment Alternative	LONG TUNNEL Long Tunnel Alignment Alternative	PACHECO PASS NORTH Pacheco Pass North Alignment Alternative	CLOSE PROXIMITY TO SR 152 Close Proximity to SR 152 Alignment Alternative
Design Objectives						
Journey Time and Route Length	◑ 6.30 min 23.09 miles	◕ 6.23 min 22.85 miles	● 6.13 min 22.49 miles	◔ 6.33 min 23.21 miles	○ 6.60 min 24.21 miles	◕ 6.23 min 22.85 miles
Intermodal Connections	Not applicable					
Operating Costs (Cost Factor)	◑ 1.03	◕ 1.02	● 1.00	◑ 1.03	○ 1.08	◕ 1.02
Capital Costs (Cost Factor)	◑ 1.3	○ 1.6	◕ 1.2	◔ 1.4	● 1.0	◑ 1.3
Land Use						
Potential for TOD	Not Applicable					
Consistency with Other Planning Efforts	Consistent with Santa Clara County General Plan to: • Expand public transit and other related infrastructure to improve regional and inter-regional access; and • Provide for a safe, efficient and technologically advanced multi-modal transportation system. Consistent with Merced County General Plan to: • Encourage the movement of people, goods and services through non-automotive transportation, reducing traffic congestion, air pollution, energy consumption and the costs of personal transportation. • Identify and recognize the development potential of vacant parcels within communities. • Provide opportunities to accommodate the specialized needs of the traveling public balanced with circulation and other County needs. Inconsistent with Merced County General Plan to: • Regulate the location, density and design of development to minimize adverse impacts to encourage enhancement of rare and endangered species habitats. • Encourage urban uses, which could result in significant loss of sensitive habitat, be directed to less sensitive wetland, wildlife and vegetation habitat areas. • Ensure open space lands are used for public protection purpose.					
Constructability						
Constructability	◑ • 20 mi. Access Roads for Tunnels • Bridges lower than 200' • Moderate Tunnel Length	**Fatal Flaw/Not Ratable** • **Very high bridges, 500' high** • **Very long bridge, nearly a mile long** • 24 mile access roads for tunnels • Short to moderate Tunnels	**Fatal Flaw/Not Ratable** • **Very high bridges, one bridge over 500' high** • **Long Bridges, some bridges nearly a mile long** • 21 mile access roads for tunnels • Moderate Tunnels	**Fatal Flaw/Not Ratable** • **12.5 mile single tunnel** • Moderate Bridges • 10 mile access road for tunnels	**Fatal Flaw/Not Ratable** • 20 mi. Access Roads for Tunnels • **500' foot high bridge at Casa de Fruta, some other taller bridges** • Moderate Tunnel Length	◑ • 12 mi. access roads for tunnels • Moderate Bridges • Moderate Tunnels
Disruption to Existing Railroads	No Impacts					
Disruption to and Relocation of Utilities	• 7 Electrical Utilities (70 Kilo Volts (KV) Overhead (OH); 500KV; and 230KV OH • 1 Natural Gas Line (Backbone Transmission System) • 1 Water Supply • Potential conflict with Pacheco Tunnel and Hollister Conduit					
Disruption to Communities						
Displacements	● • 0 units – SFR • 0 units – MFR • 0 units – MHP	● • 0 units– SFR • 0 units – MFR • 0 units – MHP	◕ • 12 units – SFR • 0 units – MFR • 0 units – MHP	● • 0 units – SFR • 0 units – MFR • 0 units – MHP	● • 0 units – SFR • 0 units – MFR • 0 units – MHP	● • 0 units – SFR • 0 units – MFR • 0 units – MHP
Properties with Access Affected	◕ • 3 parcels	◕ • 3 parcels	◑ • 5 parcels	◕ • 3 parcels	○ • 23 parcels	◕ • 3 parcels
Local Traffic Effects around Stations	Not Applicable					
Highway Grade Separations and Closures	● • 0 grade separations • 1 road closure	● • 0 grade separations • 1 road closure	◕ • 0 grade separations • 2 road closure	● • 0 grade separations • 1 road closure	○ • 1 grade separation • 7 road closures	● • 0 grade separations • 1 road closure
Environmental Resources						
Biological Resources	○ • 643 ac – California Tiger Salamander (CTS)Range • 588 ac – San Joaquin Kit Fox (SJKF) range • 468 ac – California Red-Legged Frog (CRLF) Range • 65 ac - CRLF critical habitat • 0.4 ac – CTS critical habitat • 354 ac – within proposed CRLF critical habitat • 273.7 ac - of Holland Vernal Pool regions • 11 ac – Vernal Pool Complex • 26.2 ac – Wetland Habitat	○ • 640 ac –CTS Range • 581 ac – SJKF Range • 466 ac – CRLF Range • 57 ac - CRLF critical habitat • 0.4 ac – CTS critical habitat • 353 ac – within proposed CRLF critical habitat • 276.2 ac - of Holland Vernal Pool regions • 6 ac – Vernal Pool Complex • 24.1 ac – Wetland Habitat	○ • 640 ac –CTS Range • 587 ac – SJKF Range • 464 ac – CRLF Range • 65 ac - CRLF critical habitat • 0.4 ac – CTS critical habitat • 352 ac – within proposed CRLF critical habitat • 270.4 ac - of Holland Vernal Pool regions • 7 ac – Vernal Pool Complex • 26.9 ac – Wetland Habitat	○ • 645 ac –CTS Range • 557 ac – SJKF Range • 472 ac – CRLF Range • 50 ac - CRLF critical habitat • 0.4 ac – CTS critical habitat • 354 ac – within proposed CRLF critical habitat • 277.5 ac - of Holland Vernal Pool regions • 1.5 ac – Vernal Pool Complex • 21.9 ac – Wetland Habitat	◔ • 491 ac –CTS Range • 425 ac – SJKF Range • 429 ac – CRLF Range • 63 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 377 ac – within proposed CRLF critical habitat • 228.7 ac - of Holland Vernal Pool regions • 0 ac – Vernal Pool Complex • 0.3 ac – Wetland Habitat	○ • 639 ac –CTS Range • 583 ac – SJKF Range • 466 ac – CRLF Range • 65 ac - CRLF critical habitat • 0.4 ac – CTS critical habitat • 354 ac – within proposed CRLF critical habitat • 277.5 ac - of Holland Vernal Pool regions • 2 ac – Vernal Pool Complex • 27.3 ac – Wetland Habitat
Biological Resources – Above-Ground Impacts Only	○ • 448 ac – California Tiger Salamander (CTS)Range • 424 ac – San Joaquin Kit Fox (SJKF) range • 276 ac – California Red-Legged Frog (CRLF) Range • 10 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 162 ac – within proposed CRLF critical habitat • 214 ac - of Holland Vernal Pool regions • 11 ac – Vernal Pool Complex 24.9 ac – Wetland Habitat	◔ • 342 ac – California Tiger Salamander (CTS)Range • 342 ac – San Joaquin Kit Fox (SJKF) range • 170 ac – California Red-Legged Frog (CRLF) Range • 0 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 79 ac – within proposed CRLF critical habitat • 194 ac - of Holland Vernal Pool regions • 6 ac – Vernal Pool Complex 20.8 ac – Wetland Habitat	◑ • 325 ac – California Tiger Salamander (CTS)Range • 296 ac – San Joaquin Kit Fox (SJKF) range • 310 ac – California Red-Legged Frog (CRLF) Range • 18 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 197 ac – within proposed CRLF critical habitat • 198 ac - of Holland Vernal Pool regions • 5 ac – Vernal Pool Complex 7.8 ac – Wetland Habitat	○ • 441 ac – California Tiger Salamander (CTS)Range • 441 ac – San Joaquin Kit Fox (SJKF) range • 272 ac – California Red-Legged Frog (CRLF) Range • 0 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 163 ac – within proposed CRLF critical habitat • 273 ac - of Holland Vernal Pool regions • 1.5 ac – Vernal Pool Complex 18.9 ac – Wetland Habitat	◑ • 317 ac – California Tiger Salamander (CTS)Range • 286 ac – San Joaquin Kit Fox (SJKF) range • 279 ac – California Red-Legged Frog (CRLF) Range • 17 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 221 ac – within proposed CRLF critical habitat • 204 ac - of Holland Vernal Pool regions • 0 ac – Vernal Pool Complex 0.2 ac – Wetland Habitat	◔ • 339 ac – California Tiger Salamander (CTS)Range • 310 ac – San Joaquin Kit Fox (SJKF) range • 264 ac – California Red-Legged Frog (CRLF) Range • 14 ac - CRLF critical habitat • 0 ac – CTS critical habitat • 152 ac – within proposed CRLF critical habitat • 195 ac - of Holland Vernal Pool regions • 0 ac – Vernal Pool Complex 12.6 ac – Wetland Habitat
Cultural Resources	• Buildings over 45 years old – Not surveyed • No known Prehistoric Archaeological Sites					
Parklands	◑ • 115.6 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA, San Luis Reservoir WA) • No additional publicly-owned lands indirectly affected • 101 ac - TNC land	◑ • 96.5 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA) • No additional publicly-owned lands indirectly affected • 118 ac - TNC land	◕ • 124.8 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA, San Luis Reservoir WA) • 1 publicly-owned land potentially indirectly affected (Pacheco State Park) • 82 ac - TNC land	◔ • 68.2 ac of publicly-owned lands (Henry Coe State Park, Cottonwood Creek WA, San Luis Reservoir SRA) • No additional publicly-owned lands indirectly affected • 173 ac - TNC land	◔ • 71.9 ac of publicly-owned lands (Cottonwood Creek WA) • 2 publicly-owned lands potentially indirectly affected (Canada De Los Osos Ecological Reserve, San Luis Reservoir WA) • 154 ac - TNC land	◑ • 132.6 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA, San Luis Reservoir WA) • No additional publicly-owned lands indirectly affected • 81 ac - TNC land
Parklands – Above-Ground Impacts Only	◔ • 53.9 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA) • No additional publicly-owned lands indirectly affected • 101 ac - TNC land	● • 0 ac of publicly-owned lands • No additional publicly-owned lands indirectly affected • 71 ac - TNC land	◔ • 77.3 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA, San Luis Reservoir WA) • No additional publicly-owned lands indirectly affected • 82 ac - TNC land	◕ • 0 ac of publicly-owned lands • No additional publicly-owned lands indirectly affected • 87 ac - TNC land	◑ • 0 ac of publicly-owned lands • 1 publicly-owned lands potentially indirectly affected (Canada De Los Osos Ecological Reserve) • 93 ac - TNC land	◔ • 68.7 ac of publicly-owned lands (Cottonwood Creek WA, San Luis Reservoir SRA, San Luis Reservoir WA) • No additional publicly-owned lands indirectly affected • 81 ac - TNC land
Agricultural Land	◑ • 80 ac - Prime Farmland • 8 ac - Farmland of Statewide Importance • 13 ac - Unique Farmland • 36 ac - Farmland of Local Importance • 3 ac – confined Animal Agriculture • 187 ac - Williamson Act (2006)	◑ • 80 ac - Prime Farmland • 5 ac - Farmland of Statewide Importance • 13 ac - Unique Farmland • 36 ac - Farmland of Local Importance • 4 ac – confined Animal Agriculture • 230 ac - Williamson Act (2006)	○ • 100 ac - Prime Farmland • 12 ac - Farmland of Statewide Importance • 15 ac - Unique Farmland • 17 ac - Farmland of Local Importance • 1 ac – confined Animal Agriculture • 103 ac - Williamson Act (2006)	◔ • 80 ac - Prime Farmland • 11 ac - Farmland of Statewide Importance • 14 ac - Unique Farmland • 32 ac - Farmland of Local Importance • 1 ac – confined Animal Agriculture • 238 ac - Williamson Act (2006)	◕ • 0 ac - Prime Farmland • 0 ac - Farmland of Statewide Importance • 0 ac - Unique Farmland • 0 ac - Farmland of Local Importance • 0 ac – confined Animal Agriculture • 308 ac - Williamson Act (2006)	◕ • 79 ac - Prime Farmland • 9 ac - Farmland of Statewide Importance • 23 ac - Unique Farmland • 30 ac - Farmland of Local Importance • 0 ac – confined Animal Agriculture • 171 ac - Williamson Act (2006)
Agricultural Land – Above-Ground Impacts Only	◔ • 80 ac - Prime Farmland • 8 ac - Farmland of Statewide Importance • 13 ac - Unique Farmland • 36 ac - Farmland of Local Importance • 3 ac – confined Animal Agriculture • 79 ac - Williamson Act (2006)	◔ • 80 ac - Prime Farmland • 5 ac - Farmland of Statewide Importance • 13 ac - Unique Farmland • 32 ac - Farmland of Local Importance • 4 ac – confined Animal Agriculture • 69 ac - Williamson Act (2006)	◕ • 16 ac - Prime Farmland • 0.4 ac - Unique Farmland • 60 ac - Williamson Act (2006)	○ • 79 ac - Prime Farmland • 11 ac - Farmland of Statewide Importance • 14 ac - Unique Farmland • 32 ac - Farmland of Local Importance • 1 ac – confined Animal Agriculture • 98 ac - Williamson Act (2006)	● • 0 ac - Prime Farmland • 0 ac - Farmland of Statewide Importance • 0 ac - Unique Farmland • 0 ac - Farmland of Local Importance • 0 ac – confined Animal Agriculture • 198 ac - Williamson Act (2006)	◑ • 38 ac - Prime Farmland • 0 ac - Farmland of Statewide Importance • 3 ac - Unique Farmland • 24 ac - Farmland of Local Importance • 0 ac – confined Animal Agriculture • 61 ac - Williamson Act (2006)
Natural Environment						
Noise	◑ • 16 ac – SFR • 0 ac – MFR • 0 ac – MHP	◑ • 16 ac – SFR • 0 ac – MFR • 0 ac – MHP	◔ • 22 ac – SFR • 0 ac – MFR • 0 ac – MHP	○ • 23 ac – SFR • 0 ac – MFR • 0 ac – MHP	◕ • 19 ac – SFR • 0 ac – MFR • 0 ac – MHP	◑ • 16 ac – SFR • 0 ac – MFR • 0 ac – MHP
Vibration	● • 0 ac – SFR • 0 ac – MFR • 0 ac – MHP	● • 0 ac – SFR • 0 ac – MFR • 0 ac – MHP	◕ • 6 ac – SFR • 0 ac – MFR • 0 ac – MHP	● • 0 ac – SFR • 0 ac – MFR • 0 ac – MHP	● • 0 ac – SFR • 0 ac – MFR • 0 ac – MHP	● • 0 ac – SFR • 0 ac – MFR • 0 ac – MHP
Visual/Scenic Resources	◑ • HST line in rural scenic setting	○ • Long bridges across open land • High bridges across valley • Visible around Elephant Head	◔ • Visible from San Luis Reservoir • Visible in Pacheco Creek Valley	◔ • Long bridges across open land • Visible around Elephant Head	◔ • Very visible through Pacheco Creek Valley • High bridges in wilderness area	◔ • Visible from San Luis Reservoir • Visible in Pacheco Creek Valley
Geotechnical Constraints	◔ • 2 Fault Seismic Crossings • No rupture hazard zones • 2 ac – liquefaction zones	◔ • 2 Fault Seismic Crossings • No rupture hazard zones • 3 ac – liquefaction zones	◔ • 1 Fault Seismic Crossing • No rupture hazard zones • 18 ac – liquefaction zones	○ • 1 Fault Seismic Crossing • No rupture hazard zones • 27 ac – liquefaction zones	◑ • 1 Fault Seismic Crossing • No rupture hazard zones • 3 ac – liquefaction zones	◔ • 2 Fault Seismic Crossings • No rupture hazard zones • 2 ac – liquefaction zones
Agency and Public Input						
Agency and Public Input	**Concerns re: impacts** CA Native Plant Society: • Coyote Creek • Coyote Valley • Guadalupe River • Santa Clara County Habitat Conservation Plan Merced County Board of Supervisors: • Coyote Creek • Guadalupe River CA Dept. of Fish and Game: • San Joaquin kit fox habitat • Pacheco Creek habitat Planning and Conservation League, CA Rail Foundation, Bay Rail Alliance, Transportation Solutions Defense and Education Fund: • Plant species along SR 152 Santa Clara Valley Water District: • Pacheco Conduit • Anderson and Coyote Reservoirs • Pajaro watershed Individuals • Homes, water tables south of Hwy. 152 at Dinosaur Point Road • Endangered species at Pacheco State Park, including red-legged frog and kit fox • Private property • Tunnels only **Additional Concerns re: impacts** • The valley floor along Pacheco Creek supports one of the largest and last remaining stands or Sycamore Alluvial Woodlands in Santa Clara County. • All current alternatives that run from the Gilroy area through Pacheco Pass cross Pacheco Creek at some point. NOAA Fisheries and DFG have been working to restore a steelhead run to that creek so they are concerned about further impacts on the Pacheco Creek Valley. • The agencies are less worried about wildlife movement through Pacheco Pass due to the series of tunnels and bridges that will be required to navigate the topography. However, they stated that this area is an important linkage for mountain lion and Tule elk. • As the Pacheco Pass alternatives move east out of the pass and toward San Luis Reservoir DFG and USFWS stated that this area is an important pinch point for San Joaquin kit fox. This area is critical to retaining a connection between the northern population of kit fox, which extends up into Contra Costa County, with the southern population, which extends down to the Carrizo Plain. • All agencies are recommending elevated structures as the alignment comes out of the pass moving east until it crosses I-5. These issues are the same for all alternatives without any differentiators. **Opposition/Concerns** Merced County Farm Bureau, Defenders of Wildlife, Mariposa County Board of Supervisors, USFWS: • Use the Altamont Pass instead **Support** • Station in Los Banos/Santa Nella					

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Least Favorable → Most Favorable

Table 5 - San Joaquin Valley Crossing Subsection Evaluation Matrix

TABLE 5 – SAN JOAQUIN VALLEY CROSSING SUBSECTION EVALUATION MATRIX

Measurement Criteria	HENRY MILLER ROAD TO AVE 24 (REVISED PROGRAM ALIGNMENT)	SR 140	SOUTH OF GEA	HENRY MILLER TO SR 152	HENRY MILLER TO SOUTH OF SR 152
Design Objectives					
Journey Time and Route Length					
I-5 to Merced (includes two subsections from I-5 to Merced)	◕ • 14.98 min • 54.92 miles	● • 10.76 min • 39.47 miles	○ • 29.17 min • 106.93 miles	◕ • 14.45 min • 53.00 miles	◕ • 15.57 min • 57.1 miles
I-5 to Fresno (includes two subsections from I-5 to Fresno)	● • 21.26 min • 77.95 miles	○ • 25.54 min • 93.67 miles	● • 21.11 min • 77.38 miles	● • 21.20 min • 77.73 miles	● • 20.41 min • 78.37 miles
Costs (Cost Factor)					
Operating Costs - I-5 to Wye	◑ • 1.13	● • 1.00	○ • 2.01	◕ • 1.04	◑ • 1.10
Operating Costs - I-5 to Merced (includes two subsections from I-5 to Merced)	◑ • 1.40	● • 1.00	○ • 2.70	◕ • 1.34	◑ • 1.40
Operating Costs - I-5 to Fresno (includes two subsections from I-5 to Fresno)	◕ • 1.04	○ • 1.21	● • 1.00	● • 1.00	● • 1.00
Capital Costs I-5 to Wye	◕ • 1.30	● • 1.00	○ • 2.10	◑ • 1.60	◔ • 1.70
Land Use					
Consistency with Other Planning Efforts	Consistent with Merced County General Plan to: • Encourage the movement of people, goods and services through non-automotive transportation, reducing traffic congestion, air pollution, energy consumption and the costs of personal transportation. • Identify and recognize the development potential of vacant parcels within communities. • Provide opportunities to accommodate the specialized needs of the traveling public balanced with circulation and other County needs. Inconsistent with Merced County General Plan to: • Regulate the location, density and design of development to minimize adverse impacts to encourage enhancement of rare and endangered species habitats. • Encourage urban uses, which could result in significant loss of sensitive habitat, be directed to less sensitive wetland, wildlife and vegetation habitat areas. • Ensure open space lands are used for public protection purpose.				
Constructability					
Constructability	◕ • Moderate grading • 3 mile bridge in a sensitive area	◕ • Moderate grading • 2 mile bridge in a sensitive area	● • Low Grading • Sensitive Environmental Areas	○ • Moderate grading • 3 mile bridge in a sensitive area. • Freeway reconstruction - Caltrans Coordination issues along SR 152.	◕ • Moderate grading • 3 mile bridge in a sensitive area.
Disruption to Existing Railroad	● • HST crosses over California Northern line at Volta	● • HST crosses over California Northern line south of Gustine	● • HST crosses over California Northern line north of Firebaugh	● • HST crosses over California Northern line at Volta	● • HST crosses over California Northern line at Volta
Disruption to and Relocation of Utilities	◑ • 3 Electrical Utilities (60 Kilo Volts [KV] Overhead [OH], 115 KV OH, 70 KV OH) • Crossing San Luis Canal, Delta-Mendota Canal and San Luis drain	● • 1 Electrical Utility (115 KV OH) • 1 Natural gas line (backbone transmission system) • Crossing San Luis Canal, Delta-Mendota Canal and San Luis drain	◔ • 6 Electrical Utilities (60 KV OH, 115 KV OH, 70 KV OH) • 3 Natural gas lines (backbone transmission system, distribution feeder main & local transmission system) • Crossing San Luis Canal, Delta-Mendota Canal and San Luis drain	◕ • 2 Electrical Utilities (115 KV OH, 70 KV OH) • 1 Natural gas line (local transmission system) • Crossing San Luis Canal, Delta-Mendota Canal and San Luis drain	◕ • 2 Electrical Utilities (115 KV OH, 70 KV OH) • 1 Natural gas line (local transmission system) • Crossing San Luis Canal, Delta-Mendota Canal and San Luis drain
Disruption to Communities					
Displacements					
Residential Displacement	◕ • 15 dwelling units	○ • 41 dwelling units	◔ • 35 dwelling units	● • 13 dwelling units	◑ • 28 dwelling units
Business Displacement	● • 0 units	◔ • 7 units	◕ • 2 units	◕ • 2 units	● • 0 units
Properties with Access Affected	◑ • 81 parcels	◔ • 83 parcels	● • 65 parcels	◕ • 74 parcels	○ • 95 parcels
Highway Grade Separations and Closures	◔ • 77 grade separations • 14 road closures	◑ • 30 grade separations • 17 road closures	◔ • 31 grade separations • 39 road closures	○ • 82 grade separations • 10 road closures	○ • 85 grade separations • 5 road closures
Environmental Resources					
Biological Resources	◕ • 445 ac – California Tiger Salamander (CTS) Range • 235 ac – San Joaquin Kit Fox (SJKF) Range • 0 ac – California Red-Legged Frog (CRLF) • 7.4 ac – Vernal Pool Complex • 23.6 ac – Wetland Habitat	◑ • 526.5 ac – CTS Range • 351.5 ac – SJKF Range • 48.5 ac – CRLF Range • 45.5 ac – Vernal Pool Complex • 23.9 ac – Wetland Habitat	○ • 696 ac – CTS Range • 748 ac – SJKF Range • 49 ac – CRLF Range • 61 ac – Vernal Pool Complex • 19.5 ac – Wetland Habitat	◑ • 520 ac – CTS Range • 225 ac – SJKF Range • 0 ac – CRLF Range • 5 ac – Vernal Pool Complex • 13.05 ac – Wetland Habitat	◑ • 529 ac – CTS Range • 217 ac – SJKF Range • 0 ac – CRLF Range • 9 ac – Vernal Pool Complex • 22.7 ac – Wetland Habitat
Cultural Resources	No known archaeological sites Moderately sensitive for archaeological deposits				
Parklands	● • 0 ac of publicly-owned lands • 1 publicly-owned land potentially indirectly affected (Los Banos WA)	○ • 33.6 ac of publicly-owned lands of publicly-owned lands (North Grasslands WA) • 2 publicly-owned lands potentially indirectly affected (Great Valley Grasslands State Park, San Luis NWR)	◑ • 9.2 ac of publicly-owned lands (Dos Amigos WA) • 1 potentially indirectly affected property (Forebay Public Golf Course)	● • 0 ac of publicly-owned lands • 1 publicly-owned land potentially indirectly affected (Los Banos WA)	● • 0 ac of publicly-owned lands • 1 publicly-owned land potentially indirectly affected (Los Banos WA)
Agricultural Land	● • 186 ac – Prime Farmland • 107 ac – Farmland of Statewide Importance • 69 ac – Unique Farmland • 19 ac – Farmland of Local Importance • 13 ac – Confined Animal • 109 ac – Williamson Act	● • 166 ac – Prime Farmland • 146.5 ac – Farmland of Statewide Importance • 47.5 ac – Unique Farmland • 34 ac – Farmland of Local Importance • 14.5 ac – Confined Animal • 336 ac – Williamson Act	○ • 216 ac – Prime Farmland • 267.5 ac – Farmland of Statewide Importance • 64 ac – Unique Farmland • 93.5 ac – Farmland of Local Importance • 0.5 ac – Confined Animal • 18 ac – Williamson Act • Major farmland severance issues	◕ • 197.4 ac – Prime Farmland • 114.5 ac – Farmland of Statewide Importance • 98.1 ac – Unique Farmland • 17.7 ac – Farmland of Local Importance • 11.7 ac – Confined Animal • 67.8 ac – Williamson Act	◔ • 217 ac – Prime Farmland • 130.1 ac – Farmland of Statewide Importance • 78.7 ac – Unique Farmland • 16.6 ac – Farmland of Local Importance • 8.8 ac – Confined Animal • 76.9 ac – Williamson Act
Natural Environment					
Noise	◑ • 1337 ac – SFR • 9.6 ac – MFR • 0 ac – MHP	○ • 2222 ac – SFR • 17.7 ac – MFR • 0 ac – MHP	○ • 2271 ac – SFR • 0 ac – MFR • 9.6 ac – MHP	● • 519 ac - SFR • 9.7 ac – MFR • 0 ac – MHP	◕ • 1097 ac - SFR • 9.7 ac – MFR • 0 ac – MHP
Vibration	◕ • 248.4 ac – SFR • 0 ac – MFR • 0 ac – MHP	◔ • 305.5 ac - SFR • 1.7 ac – MFR • 0 ac – MHP	○ • 578 ac – SFR • 0 ac – MFR • 1.5 ac – MHP	● • 41.5 ac - SFR • 0 ac – MFR • 0 ac – MHP	◕ • 234 ac - SFR • 0 ac – MFR • 0 ac – MHP
Visual/Scenic Resources	● • HST Line in rural setting	◔ • HST river crossing at state park	● • HST Line in rural setting	● • HST Line in rural setting	● • HST Line in rural setting
Geotechnical Constraints	• No geological constraints				
Agency and Public Input					
Agency and Public Input	**Concerns re: impacts:** • Limited feedback received on any of the alignments through the Central Valley that would not be captured in the data analysis that supports the AA. • Grasslands Water District • USFWS • City of Chowchilla • Defenders of Wildlife • Sierra Club Merced Chapter • Merced County Board of Supervisors • Volta School **Opposition/concerns:** • Access to farmland • Impacts to the GEA • Impacts to Volta school **Support for alignment:** • EPA • USACE • Merced County • UC Merced • Congressman Cardoza • County of Madera Board of Supervisors • City of Madera City Council • City of Chowchilla City Council • City of Atwater • City of Merced • City of Los Banos • Merced County Association of Governments • Merced County Economic Development Corporation (MCEDCO) • Merced College • Merced County Hispanic Network • Greater Merced Chamber of Commerce • Most direct route that uses existing east-west roadways and has the fewest impacts to agricultural and biological areas	**Opposition / concerns:** • Limited feedback received on any of the alignments through the Central Valley that would not be captured in the data analysis that supports the AA. • Merced County Association of Governments • UC Merced • Greater Merced Chamber of Commerce County of Merced: • Land use impacts to the GEA, neighborhoods and agricultural properties City of Atwater, City of Merced, Congressman Cardoza: • Impacts to future transportation projects and existing residential/commercial/recreational areas • Increased construction costs **Requested alignment review:** • Grasslands Water District	**Opposition / concerns:** • Limited feedback received on any of the alignments through the Central Valley that would not be captured in the data analysis that supports the AA. • Merced County Association of Governments • Merced County Economic Development Corporation (MCEDCO) • Merced College • Merced County Hispanic Network • UC Merced • Greater Merced Chamber of Commerce County of Merced: • Agricultural land severance • Impact to natural habitats and endangered species • Effects on planned and zoned urban development areas City of Atwater, City of Merced, Congressman Cardoza: • Impact on agricultural and biological resources • Bypasses populated cities • Longer route **Requested alignment review:** • Grasslands Water District **Support for alignment:** • Trains can travel the fastest along this alignment	**Opposition/concerns:** • Limited feedback was received on any of the alignments through the Central Valley that would not be captured in the data analysis that supports the AA. **Support for alignment:** • Merced County Planning Department • City of Atwater • City of Merced • Merced County Association of Governments • Merced County Economic Development Corporation (MCEDCO) • Merced College • Merced County Hispanic Network	**Opposition/concerns:** • Little specific feedback was received on any of the alignments through the Central Valley that would not be captured in the data analysis that supports the AA. • Effects on unincorporated communities **Support for alignment:** • County of Madera Board of Supervisors • City of Madera City Council • City of Chowchilla City Council

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Least Favorable → Most Favorable

Table 6 - Wye to Merced Subsection Evaluation Matrix

TABLE 6 – WYE TO MERCED SUBSECTION EVALUATION MATRIX

Measurement Criteria	ALTERNATIVE A-1- BNSF With South SR152 (Old S152) Wye	ALTERNATIVE A-2 – UPRR (PROGRAM ALIGNMENT) With South SR152 (Old S152) Wye	ALTERNATIVE A-3 – WEST OF UPRR WITH SOUTH SR152 (Old S152) Wye	ALTERNATIVE A-4 – UPRR/BNSF with Ave 24 (Old N152) Wye
Design Objectives				
Travel Time (Merced to Fresno)	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Travel Time (Pacheco Pass to Fresno)	◑ 24.26 min	● 23.89 minutes	● 23.66 min	◑ 25.40 min
Route Length	◔ 28.2 miles	● 19.97 miles	◕ 15.95 miles	● 19.27 min
Intermodal Connections	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Operating Costs	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Capital Costs	**Data Not Available**	**Data Not Available**	**Data Not Available**	**Data Not Available**
Land Use				
Potential for TOD	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Consistency with Other Planning Efforts	◕ Supportive	● 23.89 minutes	◑ Neutral	◕ Supportive
Constructability				
Constructability	**Data Not Available**	**Data Not Available**	**Data Not Available**	**Data Not Available**
Disruption to Existing Railroads (Number of railroad right-of-way crossings)	◑ 2	◕ 1	● 0	◕ 1
Disruption to and Relocation of Utilities (Linear miles located within an urbanized area)	◕ 1.2 miles	◕ 1.9 miles	● 0.0 miles	◕ 1.7 miles
Disruption to Communities				
Displacements				
Residential Displacements	◑ 13 acres	● 0 acres	◕ 1 acres	● 0 acres
Business Displacements	● 0 acres – Commercial 0 acres – Industrial	◑ 6 acres – Commercial 3 acres – Industrial	● 0 acres – Commercial 0 acres – Industrial	● 0 acres – Commercial 0 acres – Industrial
Properties with Access Affected	◔ 15 properties	◑ 13 properties	◕ 5 properties	● 0 properties
Highway Grade Separations and Closures	◔ 15 Grade Separations	◑ 13 separations	◑ 16 Grade separations	● 0 grade separations
Environmental Resources				
Biological Resources	◑ ▪ 0.8 acres – wetlands ▪ 0 acres – vernal pools ▪ 37.6 acres – endangered/ critical habitats	◕ ▪ 0.9 acres – wetlands ▪ 0.0 acres – vernal pools ▪ 0 acres endangered/ critical habitats	◕ ▪ 0.9 acres – wetlands ▪ 0.0 acres – vernal pools ▪ 0 acres – endangered/ critical habitats	◕ ▪ 0.2 acres – wetlands ▪ 0.0 acres – vernal pools ▪ 0 acres – endangered/ critical habitats
Cultural Resources	◕ 4 parcels	◔ 16 parcels	● 0 parcels	◑ 6 parcels
Parklands	● 0 acres	● 0 acres	● 0 acres	● 0 acres
Agricultural Land	◔ 261 acres	◑ 166 acres	◑ 163 acres	◕ 131 acres
Natural Environment				
Noise and Vibration				
Noise	◑ 738 parcels	◔ 507 parcels	◑ 210 parcels	◕ 140 parcels
Vibration	◑ 270 parcels	◑ 186 parcels	◕ 108 parcels	◕ 70 parcels
Visual/Scenic Resources	◕ 3.0 miles of HST on elevated structure in urbanized areas versus rural areas.	◕ 4.9 miles of HST on elevated structure in urbanized areas versus rural areas.	◑ 3.1 miles of HST on elevated structure in urbanized areas versus rural areas.	◔ 16.3 miles of HST on elevated structure in urbanized areas versus rural areas.
Geotechnical Constraints	**Data Not Available**	**Data Not Available**	**Data Not Available**	**Data Not Available**
Agency and Public Support				
Agency and Public Support	◕ ▪ Highly supported by community. ▪ Agency support - Unknown.	◑ ▪ Moderate support by community with redesign to avoid conflict with Chowchilla airport. ▪ Agency support - Unknown.	◑ ▪ High support by community ▪ Agency Support -Unknown	◑ ▪ Moderate by community. ▪ Agency support -- Unknown.

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Least Favorable → Most Favorable

Authority/Federal Railroad Administration (FRA) Workshop and CHSRA Board Decisions

Decision Points/ Alternatives	Authority/FRA & CHSRA Board Decisions	Basis for Decision
SAN JOSE STATION APPROACH		
Refined Program Alignment	Carried Forward	▪ Program Alignment (PA) has been refined to make the most use of existing Caltrain right-of-way.
South of Caltrain Tracks	Potentially withdrawn	▪ Would not be in Caltrain right-of-way to the extent of Refined PA. ▪ Would involve 9 additional residential property takes (dwelling units) compared to PA. ▪ Would have greater impacts on the park along Fuller Avenue.
Three Track	Potentially withdrawn	▪ Would introduce unacceptable operating constraints for Caltrain, other passenger rail and freight rail.
Downtown Tunnel	Potentially withdrawn	▪ 4 tunnel bores needed 110' deep to pass under proposed BART station, I-280/SR 87 Interchange and Guadalupe River. ▪ Major constructability issues, including: (1) poor soils, (2) groundwater, (3) mined station, (4) passing under I-280 freeway pile foundations. ▪ Would cost 6 times the base case.
Downtown Aerial	Potentially withdrawn	▪ Would involve 25 additional single-family residential property takes (dwelling units) and 6 additional multi-family residential units compared to Refined PA. Would involve 14 additional business property takes compared to PA. ▪ Could affect City's planned re-development of areas near Diridon Station. ▪ Would introduce visual impacts of aerial alignment. ▪ 8 additional acres of CTS Range compared to PA. ▪ 12 additional properties with buildings over 45 years old compared to PA.
SR 87/I-280	Carried Forward	▪ Suggested by City of San Jose to reduce impacts to Greater Gardiner/Willow Glen neighborhood. ▪ Would move HST line away from middle of neighborhood. ▪ Potential constructability issues associated with constructing over SR 87/I-280 interchange.
MONTEREY HIGHWAY		
East of Caltrain/UPRR	Carried Forward	▪ Additional engineering to be performed to determine ability to place HST at-grade and eliminate aerial alignment between Tamien Station and SR 87. ▪ East of Tamien at-grade alignments would involve reconstruction of Caltrain Tamien station.
East of Tamien Platform	Carried Forward	
Monterey Highway Design Options		
Monterey Highway: At-grade	Carried Forward	▪ Will require carefully engineered cross sections for HST and reconstructed Monterey Highway, particularly for the portion south of SR 85.
Monterey Highway: Aerial	Carried Forward	▪ Southern portion of Monterey highway near Coyote proposed as aerial alignment. ▪ May extend aerial alignment further north ~1.25 miles to eliminate property takes. ▪ Will depend on ultimate cross sections of HST and reconstructed Monterey Highway.
Monterey Highway: Trench	Potentially withdrawn	▪ Transition to Arial alignment north of Coyote would entail impacts similar to the at-grade option (e.g., property takes) but with additional costs.
MORGAN HILL – GILROY		
East of UPRR	Carried Forward	▪ PA identified as Preferred by Board in 2008. ▪ Would be adjacent to and east of UPRR right-of-way. ▪ Requires reconstruction of half of Monterey Highway north of Morgan Hill.
US 101	Carried Forward	▪ Suggested by City of Morgan Hill. Would remove aerial alignment from downtown Morgan Hill. ▪ Would provide aerial structure for wildlife crossings in sensitive Coyote Valley area. ▪ Would involve 12 additional residential property takes (dwelling units) compared to PA.
Gilroy Station Loop	Carried Forward	▪ Would provide two separate station tracks looping from the US 101 East Gilroy alignment into a downtown Gilroy station. ▪ Would add 30% to total Morgan-Hill–Gilroy alignment costs. ▪ Still requires aerial station in Downtown Gilroy. ▪ Would involve 16 additional residential property takes (dwelling units) compared to PA. ▪ Would affect 71 additional acres of liquefaction-prone areas compared to the PA.
US 101 East Gilroy	Carried Forward	▪ Would eliminate impacts to Downtown Gilroy. ▪ Would involve 10 additional residential property takes (dwelling units) compared to PA.
East of UPRR to East Gilroy	Carried Forward	▪ Would eliminate impacts to Downtown Gilroy ▪ Impacts associated with Downtown Morgan Hill PA alignment would remain.
Morgan Hill to Pacheco Pass	Potentially withdrawn	▪ Would cross active Calaveras Fault on 300' tall bridge. ▪ Would cross Pacheco Pass on bridge that is 500 feet high and over a mile long. ▪ Would require 6 additional miles of tunnels compared to PA. ▪ Would require 9 additional miles of access roads for tunnels as compared to PA. ▪ Would involve 10 additional residential property takes (dwelling units) compared to PA.
Morgan Hill – Gilroy Design Options		
Downtown Gilroy: HST Aerial	Carried Forward	▪ Included in East of UPRR alignment.
Downtown Gilroy: HST Trench	Carried Forward	▪ Gilroy requested HST and UPRR to be placed in trench. HST funds would be used for private railroad. ▪ HST trench excluding UPRR would be 125 feet wide at the widest section and over 3 miles long for the four tracks & station. ▪ Would add 20% to total Morgan Hill-Gilroy alignment costs. ▪ Would place downtown Gilroy station in trench.
PACHECO PASS		
Refined Program Alignment	Carried Forward	▪ PA has been refined using Quantm to reduce tunnel lengths, and bridge heights.
High Route	Potentially withdrawn	▪ Fatal Flaw – Very high/long bridges.
Large Radius	Potentially withdrawn	▪ Fatal Flaw – Very high/long bridges. ▪ Would affect 16 additional acres of liquefaction-prone areas compared to the PA.
Long Tunnel	Potentially withdrawn	▪ Fatal Flaw – Excessive tunnel lengths. ▪ Would affect 25 additional acres of liquefaction-prone areas compared to the PA.
Pacheco Pass North	Potentially withdrawn	▪ Fatal Flaw – 500' bridge.
Close Proximity to SR 152	Carried Forward	▪ Minimizes tunnel access road impacts. ▪ Closest to existing highway corridor.
SAN JOAQUIN VALLEY CROSSING		
Henry Miller Road to Ave 24	Carried Forward	▪ PA adopted in 2008 by Board. ▪ Least costly of Henry Miller alignment alternatives (Capital Cost Factor: 1.4 times SR 140 alternative). ▪ Would displace 15 residential units. ▪ Would affect 1156 acres of biological resources, lower than all other alternatives ▪ Would not directly affect publicly-owned lands.
SR 140	Potentially withdrawn	▪ Over 4 minutes added to San Francisco – Los Angeles trips – not consistent with Proposition 1A. ▪ Although designed to be a mitigation alternative, still would have biological and parkland impacts. ▪ Least costly alignment alternative (Capital Cost Factor: 1.00) to Merced. ▪ Would affect 366 additional acres of biological resources compared to PA. ▪ Impacts to farmlands including severance where alignment is away from SR 140. Would affect 240 additional acres of farmlands compared to PA. ▪ Greatest potential for residential displacements, particularly as alignment approaches Merced and Atwater - would involve 26 additional residential property takes (dwelling units) compared to PA. ▪ Would affect 34 acres of publicly-owned lands/parkland, higher than all other alternatives.
South of GEA	Potentially withdrawn	▪ 14 additional minutes added to San Jose - Merced trips. ▪ Adds 20 additional HST miles with associated environmental impacts and costs. ▪ Most costly alignment alternative (Capital Cost Factor: 2.1 times more costly than SR 140 alignment). ▪ Would affect 1251 additional acres of biological resources compared to PA including: - California Tiger Salamander – this is mainly due to the longer length of this alignment. - San Joaquin kit fox – this is mainly due to the longer length of this alignment. - California red-legged frog. - Vernal pool complex – direct and indirect impacts to vernal pools are typically difficult to mitigate ▪ Impacts to farmlands including severance would affect 157 additional acres of farmlands compared to PA.
Henry Miller to SR 152	Potentially withdrawn	▪ Constructability issues with regard to construction within highway right of way, including reconstruction of 14 miles of expressway (SR 152). ▪ Would displace 13 residential units, lower than all other alternatives. ▪ Would not directly affect any publicly-owned lands.
Henry Miller to South of SR 152	Carried Forward	▪ Suggested by local agencies. ▪ Would lessen impacts of wye on Chowchilla. ▪ Most costly of Henry Miller alignment alternatives (Capital Cost Factor: 1.6 times more costly than SR 140 alignment alternative). ▪ Would not directly affect any publicly-owned lands. ▪ Would affect 4 additional acres of farmlands compared to PA. Would have less potential impact on Farmlands of Statewide Significance (130 acres) compared to the South of GEA alignment (268 acres). ▪ Would involve 8 more grade separations compared to PA.