

8 PREFERRED ALTERNATIVE

Since publication of the Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS), the following substantive changes have been made to this chapter:

- Section 8.1, Introduction, was updated with an overview of comments received on the Draft EIR/EIS and Revised/Supplemental Draft EIR/EIS, to reference the California High-Speed Rail Authority's (Authority) 2020 Business Plan, and to state that Alternative 4, with the inclusion of the Diridon design variant (DDV) and the tunnel design variant (TDV), is the Preferred Alternative.
- A brief summary of key issues identified in comments received on the Draft EIR/EIS was added to Section 8.2, Summary of Key Stakeholder Input, by stakeholder group.
- Section 8.2.7, Agency Consultation, was updated to state that National Marine Fisheries Service issued the Section 7 Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the San Jose to Merced Project Section, concluding formal consultation with the Authority. Formal consultation with the U.S. Fish and Wildlife Service is ongoing and is expected to be completed prior to the Record of Decision.
- Section 8.4, Preferred Alternative, was corrected to reflect that vibration impacts differentiate the alternatives. Table 8-1 was updated with vibration impacts that were analyzed in the Draft EIR/EIS from Table 3.4-21 in Section 3.4, Noise and Vibration. These impacts are described by subsection in Section 8.4.1, Review of Alternative Key Differentiators by Subsection.
- As described in Section 3.4, additional noise-sensitive receptors were identified and determined to have noise impacts under all alternatives in the Pacheco Pass and San Joaquin Valley Subsections. These updates are reflected in Table 8-1.
- Intersections with adverse National Environmental Policy Act (NEPA) effects after proposed mitigation were added to Table 8-1 and described by subsection in Section 8.4.1.
- The number of permanent adverse impacts on National Register of Historic Places (NRHP)-listed/eligible resources for Alternatives 1 and 2 was updated in Table 8-1.
- Table 8-1 and Section 8.4.1.1, San Jose Diridon Station Subsection, through Section 8.4.1.3, Morgan Hill and Gilroy Subsection, were updated to reflect revisions to Chapter 5, Environmental Justice.
- The number of Section 4(f)/6(f) resources and acreages was updated for all four alternatives in Table 8-1.
- Section 8.4.1.1 was updated to reflect changes to the impact on Los Gatos Creek Trail under Alternative 4.
- Errors in the displacements under Alternatives 1, 2, and 3 were corrected in Section 8.4.1.2, Monterey Corridor Subsection.
- The list of jurisdictions that the Authority would fund to construct and operate vehicle priority treatments was updated in Section 8.4.1.3.
- Table 8-2 was updated for consistency with Chapter 6 of this Final EIR/EIS to reflect design changes and to reflect escalated costs in 2021 dollars.
- Section 8.4.3, Additional Considerations, was corrected to include San Jose in the list of cities with directly relevant transportation projects and plans.
- The description of the predominant factors contributing to the impacts of Alternative 2 relative to the other alternatives and the description of operational vibration impacts and intersection adverse effects of Alternative 4 relative to the other alternatives was updated in Section 8.4.4, Alternative Comparison.

- The selection rationale in Table 8-3 was updated to include minimization of impacts on biological and aquatic resources in certain locations.
- Analysis about the DDV and TDV, which was included in Section 3.20 in the Draft EIR/EIS, was incorporated into the resource sections of the Final EIR/EIS and reflected in this chapter.
- Where appropriate, the verb “would,” when used specifically to describe impact avoidance and minimization features or mitigation measures, as well as their directly related activities, was changed to “will,” indicating their integration into project design.

8.1 Introduction

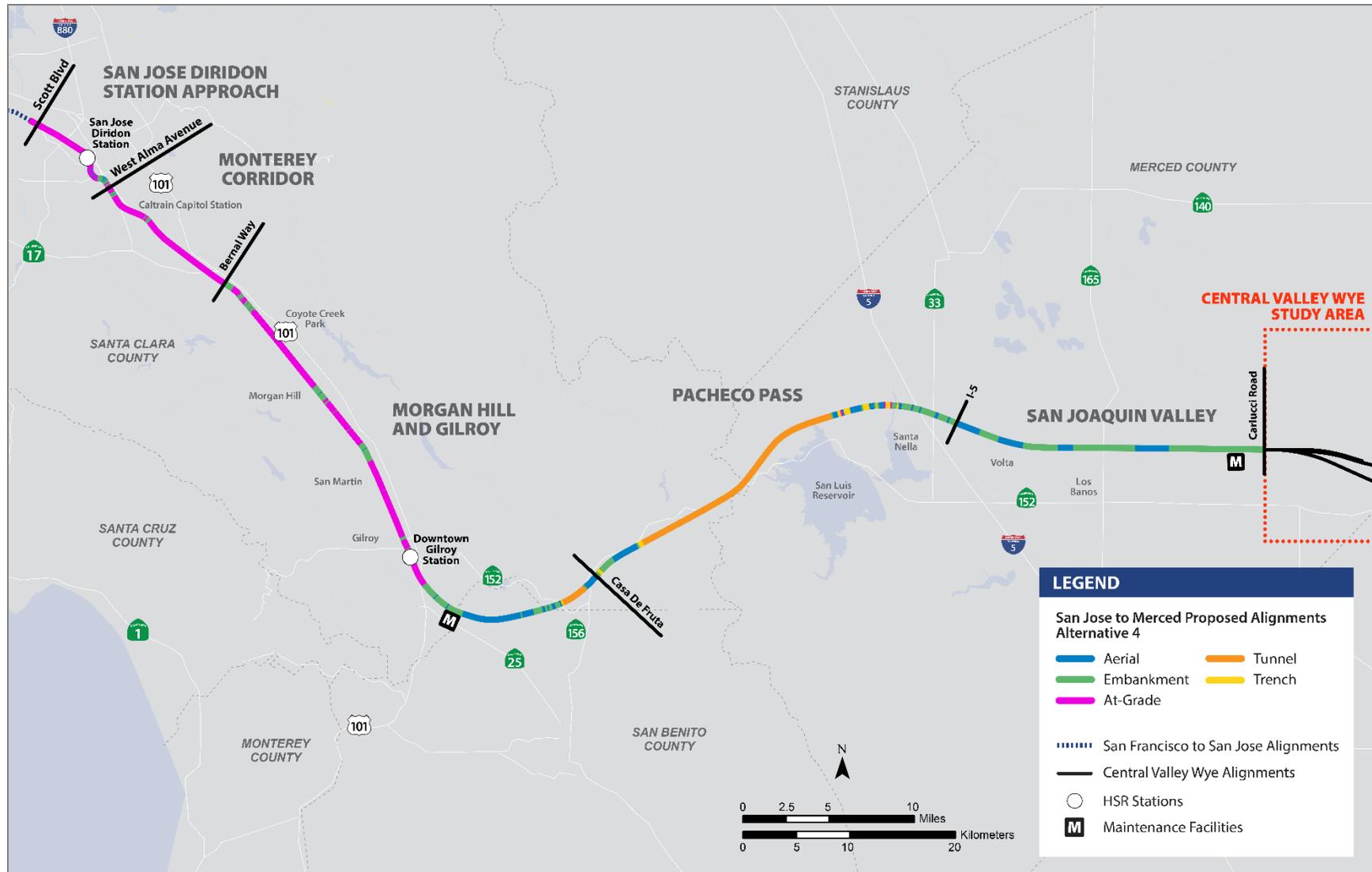
This chapter identifies the Preferred Alternative for the San Jose to Central Valley Wye Project Extent (project or project extent) of the California High-Speed Rail (HSR) System. This project extends from Scott Boulevard in Santa Clara to Carlucci Road in Merced County. The Preferred Alternative is Alternative 4, including the DDV and the TDV, which includes the following design options for each subsection: at grade (San Jose Diridon Station Approach Subsection), at grade (Monterey Corridor Subsection), at grade in Gilroy (Morgan Hill and Gilroy Subsection), tunnel (Pacheco Pass Subsection), and Henry Miller Road (San Joaquin Valley Subsection). The alignment of the Preferred Alternative is illustrated on Figure 8-1. It includes two stations (San Jose Diridon and Downtown Gilroy) and a maintenance of way facility (MOWF), which were selected through the environmental review undertaken for the project. The Preferred Alternative also includes traction power system sites.

The selection of the Preferred Alternative was based on the data presented in this Final EIR/EIS, including the supporting technical reports. The identification of the Preferred Alternative was also based on comments and input from agency, local community, stakeholder, and public comments submitted during scoping and outreach from 2009 to 2021, input received during outreach meetings concerning the Preferred Alternative held during the summer of 2019, and comments and input received from agencies, local communities, stakeholders, and the public on the Draft EIR/EIS.

During the public review period on the Draft EIR/EIS, the Authority received numerous comment submissions through a combination of letters, emails, and oral comments provided at the public hearing, which resulted in nearly 5,000 discrete comments. Comments range from expressing general support for the project to detailed, site-specific comments about the nature of the project and potential impacts resulting from the project. Key issues raised include concern about at-grade crossing safety, requests for grade separations, and disrupted wildlife connectivity. During the public review period on the Revised/Supplemental Draft EIR/EIS, the Authority received 16 comment submissions through a combination of letters and emails. These comments focused primarily on impacts on wildlife. Some of the analysis in this Final EIR/EIS was modified to address comments received on the Draft EIR/EIS and the Revised/Supplemental Draft EIR/EIS, and some mitigation measures were modified or added. However, fundamental impact differences did not change, and the Authority continues to support Alternative 4 as the Preferred Alternative.

This Final EIR/EIS provides information on the physical and operational characteristics, cost, and potential environmental consequences associated with each of the project alternatives and station location options in the context of the following parameters:

- Physical/operational characteristics
 - Alignment
 - Length
 - Capital cost
 - Ridership
 - Constructability



Note: The alignment for Alternative 4, the preferred alternative, is described in Chapter 2, Alternatives.
 Source: Authority 2019a

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Figure 8-1 Preferred Alternative

- Community and environmental impacts
 - Transportation-related topics (transportation, air quality, noise and vibration, and energy)
 - Human environment (land use and community impacts, regional growth, farmlands and agriculture, aesthetics and visual quality, socioeconomics, environmental justice, utilities and public services, and hazardous materials and waste)
 - Cultural resources (archaeological resources, historic properties)
 - Natural environment (geology and seismic hazards, paleontological resources, hydrology and water resources, and biological and aquatic resources)
 - Section 4(f) or 6(f) properties (certain types of publicly owned parklands, recreation areas, wildlife and waterfowl refuges, and significant historical sites regardless of ownership)

In identifying the Preferred Alternative, the Authority was guided by the project's purpose and need and project objectives, described in Chapter 1, Project Purpose, Need, and Objectives, and the HSR Performance Criteria identified in Chapter 2, Alternatives. Between 2010 and 2021, the Authority also prepared a series of documents chronicling agency consultation, public outreach, and preliminary alternatives analyses to establish the range of alternatives to be evaluated in the Final EIR/EIS, including:

- *San Jose to Merced Preliminary Alternatives Analysis Report* (Authority and FRA 2010)
- *San Jose to Merced Supplemental Alternatives Analysis Report* (Authority and FRA 2011a)
- *San Jose to Merced Supplemental Alternatives Analysis Report* (Authority and FRA 2011b)
- *Checkpoint B Summary Report* (Authority and FRA 2013)
- *Connecting and Transforming California: 2016 Business Plan* (Authority 2016)
- *Checkpoint B Summary Report Addendum* (Authority and FRA 2017)
- *Checkpoint B Summary Report Addendum 4* (Authority 2019b)
- *Connecting California, Expanding Economy, Transforming Travel, 2018 Business Plan* (Authority 2018)
- *Draft 2020 Business Plan: Delivering the Vision* (Authority 2020)
- *2020 Business Plan: Recovery and Transformation* (Authority 2021)

The Business Plan documents are all available at www.hsr.ca.gov. The other documents are available for review at the Authority's offices in Sacramento and San Jose, or copies may be requested from the Authority.

The project alternatives that were considered incorporated various combinations of a range of design options for each of the five subsections of the project. In September 2017, the U.S. Environmental Protection Agency (USEPA) and the U.S. Army Corps of Engineers (USACE) concurred with the decision to carry forward the three project alternatives presented in Checkpoint B Addendum 3. In January 2019, the USACE concurred and in February 2019 the USEPA agreed with the decision to carry forward a fourth project alternative presented in Checkpoint B Addendum 4. All four of these alternatives are evaluated in this Final EIR/EIS.

Additionally, the criteria used to identify the Preferred Alternative are consistent with Section 404(b)(1), Guidelines of the Clean Water Act (40 Code of Federal Regulations [C.F.R.] Parts 230–233), including minimizing impacts on waters of the U.S. and other sensitive environmental resources. As a result of the analyses presented in the Final EIR/EIS, the Authority preliminarily determined that the Preferred Alternative represents the Least Environmentally Damaging Practicable Alternative (LEDPA), consistent with the USACE's regulatory program (33 C.F.R. Parts 320–331) and the USEPA's Section 404(b)(1) Guidelines (40 C.F.R. Parts 230–233). The USACE and USEPA concurred with the Authority's determination in April 2020.

Portions of the Preferred Alternative with blended Caltrain and HSR operations would be implemented on Caltrain-owned facilities from north of Capitol Station to Scott Boulevard. The description of the Preferred Alternative has been developed based on initial planning assumptions and preliminary engineering conducted by the Authority for the purposes of environmental analysis. Implementation of the project (construction and operation) on Caltrain-owned facilities would be subject to further joint Blended System planning and agreement with Caltrain as governed through existing and future inter-agency agreements. Caltrain service operating from Tamien Station south described for the Preferred Alternative is illustrative only and has been developed by the Authority for environmental analysis purposes. The ultimate details of any future Caltrain service operating south of Tamien Station would be the subject of future planning and negotiation between the railroads as well as decision by the Caltrain Board. The ongoing multi-agency Diridon Integrated Station Concept (DISC) planning process is a separate planning process and decisions about future changes to the San Jose Diridon Station and the surrounding, Caltrain-owned rail infrastructure and corridor are the subject of multiple planning and agreement processes that fall outside of the scope of this environmental process.

8.2 Summary of Key Stakeholder Input

Stakeholder input is an important component of the Authority's evaluation of alternatives in the NEPA and California Environmental Quality Act (CEQA) environmental processes. The Authority has consulted with many individuals, local governments, tribes, public agencies, and organizations to obtain local knowledge and input on the project alternatives. The Authority and Federal Railroad Administration (FRA) involved, and the Authority continues to involve, stakeholders extensively, beginning with scoping in 2009 for the San Jose to Merced Project Section through preparation and release of this Final EIR/EIS in 2021. All comments received on the public Draft EIR/EIS were reviewed and considered, consistent with the requirements of NEPA and CEQA. Refer to Volume 4, Responses to Comments on the Draft EIR/EIS, for a complete list of submissions, delimited comments, and the Authority's responses to comments. During that time, commenters submitted hundreds of comments indicating a preference for one or more alternatives. Outreach efforts between 2009 and release of the Final EIR/EIS are described in Chapter 9, Public and Agency Involvement. Chapter 9 summarizes stakeholder input related to the alternatives, including specific outreach in summer 2019 regarding identification of a Preferred Alternative, which is also described in the separate *San Jose to Merced Project Section Preferred Alternative Outreach Summary Report* (Authority 2019c).

The following sections summarize comments received from local communities, Native American tribes, agricultural interests, businesses, environmental organizations, environmental justice populations, and state and federal agencies.

8.2.1 Local Communities

Key feedback from local communities concerning the project and the alternatives includes the following:

- **City of Santa Clara and City of San Jose, north of downtown San Jose**—Santa Clara residents expressed concern about construction and operational traffic. Residents of the Newhall neighborhood in Santa Clara expressed concern about community cohesion and connectivity. Residents of the College Park neighborhood in San Jose expressed concern about the impacts on aesthetics and visual quality from viaduct designs north of downtown. (This was one of the considerations in developing the shorter Viaduct to Interstate (I-) 880 design option under Alternative 1). Residents of the College Park neighborhood preferred Alternative 4 to the Viaduct to I-880 design option under Alternative 1 or the Viaduct to Scott Boulevard design option under Alternatives 2 and 3 because of the lower visual quality impact of an at-grade design. Comments on the Draft EIR/EIS from Santa Clara County centered around parks and trails for further consideration in the analysis. The City also expressed concerns about operational traffic at full build-out.
- **City of San Jose, downtown area to Tamien**—Some residents preferred a tunnel option for downtown San Jose to avoid visual impacts and business and residential displacement

impacts of on an aerial alignment, and the noise, displacements, and other impacts of an at-grade alignment. However, as explained in Chapter 2, Alternatives, a tunnel option would be prohibitively expensive and infeasible due to constructability issues. Some downtown businesses preferred the at-grade design option under Alternative 4 over the viaduct option under Alternatives 1, 2, and 3 because of concerns about aesthetics and visual resources impacts, as well as displacement of existing or future development potential in the downtown area. Residents in the North Willow Glen/Gardner Neighborhood preferred Alternatives 1, 2, and 3 because they would go around the Gardner and North Willow Glen communities. Alternative 4 would pass through the communities and raised neighborhood concerns, including traffic at the at-grade crossings, operational train noise, construction impacts on the neighborhood, impacts on Fuller Park, and property acquisition. The City of San Jose was also concerned about the impacts of alternatives on future development of the Diridon Station area. Comments on the Draft EIR/EIS from the City of San Jose in this subsection included concerns about safety at at-grade crossings, requests for grade separations as part of the project or as mitigation, and traffic through at-grade crossings. The City also expressed concern about the process for involvement in detailed design and permitting/implementation.

- **The City of San Jose, Monterey Corridor**—Some residents along the Monterey Corridor preferred a tunnel option for the Monterey Corridor; however, as explained in Chapter 2, Alternatives, a tunnel option would be prohibitively expensive and infeasible. Residents along the Monterey Corridor were concerned about the impacts related to construction disruption, traffic (due to lane reductions or at-grade crossing gate downtime), noise, aesthetics and visual quality, and displacements. Comments on the Draft EIR/EIS from the City of San Jose in this subsection included concerns about safety at at-grade crossings, requests for grade separations as part of the project or as mitigation, and traffic through at-grade crossings. The City also expressed concern about the process for involvement in detailed design and permitting/implementation.
- **City of Morgan Hill**—In 2016, the City of Morgan Hill requested that the Authority include an alternative that would avoid downtown Morgan Hill. The Authority responded and incorporated the Morgan Hill viaduct bypass under Alternatives 1 and 3. The City expressed concern about the embankment design option of Alternative 2 dividing the community and impacts on aesthetics and visual quality, construction disruption, and noise. City staff reacted favorably to the relatively smaller project footprint of Alternative 4 and to the potential regional transit opportunities provided by blended electric-powered passenger rail infrastructure. Residents along the viaduct that bypasses downtown Morgan Hill were concerned about displacement, noise, and aesthetics and visual quality. Comments on the Draft EIR/EIS from the City of Morgan Hill included concerns about safety at at-grade crossings and requests for grade separations. The City also expressed concern about the process for involvement in detailed design and permitting/implementation. The school district expressed concerns about impacts on schools as well as children’s health and safety.
- **Community of San Martin**—Residents of this community preferred an alignment along or east of U.S. Highway (US) 101 that would avoid the center of San Martin. Residents were concerned about displacement of homes and businesses, aesthetics and visual quality, noise, and construction disruption. Santa Clara County was concerned about displacements, impacts on residents, and impacts on agricultural lands and operations. Comments on the Draft EIR/EIS from the Community of San Martin included concerns about safety at at-grade crossings and requests for grade separations.
- **City of Gilroy**—The City of Gilroy has not expressed a definitive preference for either a downtown alignment or an east Gilroy alignment. Residents of Gilroy and east Gilroy expressed different preferences concerning station and alignment options. Downtown residents and businesses were concerned about residential and commercial displacements, noise, aesthetics, historic resources, and disruption of business operations during construction. East Gilroy residents expressed concerns about impacts on aesthetics and visual quality, agricultural lands, reduced access to properties, property acquisitions, induced growth around an East Gilroy Station, and noise. The City has expressed concern about

impacts on the Gilroy wastewater treatment plant facilities, and the Gilroy School District is concerned about impacts on schools. In general, City staff responded favorably to Alternative 4, which would avoid impacts on the regional wastewater treatment and disposal ponds, though they continue to be concerned about downtown traffic management related to at-grade roadway crossings and the proposed closure of 7th Street. The Gilroy School District is concerned about displacement and replacement of the Gilroy Prep School and South Valley Middle School sites by Alternatives 1 or 2. District staff expressed a preference for Alternative 3 or 4, neither of which would affect school properties. Comments on the Draft EIR/EIS from the City of Gilroy included concerns about safety at the at-grade crossings and requests for grade separations.

- Pacheco Pass and San Joaquin Valley**—Farmers, ranchers, residents, irrigation purveyors, conservation organizations, recreational hunters and other stakeholders in the Pacheco Pass and San Joaquin Valley subsections raised concerns about impacts on subsistence ranching operations; loss of sensitive foothill habitats; disruption of wildlife movement corridors; loss of agricultural land and dairies; impacts on agricultural access and water infrastructure; impacts of noise on residents, schools, and livestock; the viability of temporarily disturbed agricultural land after construction; safety of trains operating in excess of 200 miles per hour; impacts on recreational hunting; disruption of waterfowl habitats in the Grasslands Ecological Area; and duck club land values. Stakeholders in this area expressed continued concerns about wildlife connectivity, noise and light impacts on wildlife, and requests for additional mitigation measures to address these impacts.

8.2.2 Native American Tribes

Native American tribal outreach and consultation efforts have been ongoing at key milestones throughout the project planning and environmental processes. Due to concerns about potential disturbance of cultural resources, the Authority must maintain the confidentiality of some of the information shared by tribal representatives. In general, tribal representatives expressed concerns about potential impacts on individual cultural resources and on the larger landscape in which those resources are situated. Tribal representatives emphasized the need for continued consultation and involvement through the design, planning, and construction phases because of the sensitivity of the Pajaro floodplain/Soap Lake and its environs as well as Pacheco Pass landscapes and San Joaquin Valley areas important to tribes. Section 3.17, Cultural Resources, provides more information on Native American outreach and consultation efforts. The Amah Mutsun Land Trust provided comments on the Draft EIR/EIS. These comments expressed concern about impacts on unknown or unidentified resources and the characterization of the native people. Comments also requested continued coordination with the Authority to discuss the project moving forward.

8.2.3 Agricultural Interests

Farmers, ranchers and stakeholders in the Morgan Hill and Gilroy, Pacheco Pass, and San Joaquin Valley Subsections, as well as Merced County and the Merced County Farm Bureau, raised concerns including potential impacts on agricultural land and related uses, dairies and other agricultural operations; impacts on agricultural access and water infrastructure; impacts of noise on livestock; impacts related agriculture conservation easements, wildlife use and movement through agricultural lands; and the viability of temporarily disturbed agricultural land after construction. Several farmers and ranchers provided comments on the Draft EIR/EIS expressing concerns about relocation of agricultural infrastructure, mitigation ratios for indirect effects, and residential displacements on their properties.

8.2.4 Businesses

As explained in Chapter 9, Public and Agency Involvement, the Authority has met with a variety of business representatives throughout the project development process. Key concerns included displacement of existing businesses throughout the project footprint, including particular concern for displacements in downtown San Jose, Morgan Hill, Gilroy, and Merced County. Additional concerns addressed potential incompatibility of design options with future land use development

potential, disruption of access to businesses during or after construction, business relocation procedures and effectiveness of relocations, and the adverse and beneficial effects of the project on local and regional businesses. Business representatives expressed preferences for alternatives that would minimize displacement of businesses. Freight operators and users of freight, including Granite Rock, expressed concerns about disruption of service during project construction.

8.2.5 Environmental Organizations

Environmental advocacy organizations that have provided input to the alternatives development process include the Committee for Green Foothills, Greenbelt Alliance, the Nature Conservancy, Silicon Valley Land Trust, Audubon Society, Ducks Unlimited, Point Blue Conservation Science, Sierra Club, Pathways for Wildlife, Peninsula Open Space Trust, California Waterfowl Association, and the Environmental Defense Fund. These organizations were primarily concerned about impacts on natural resources, including common and rare species and their habitat; wetlands, waters, and riparian habitat; wildlife movement corridors; conserved lands and conservation areas; and implementation of adopted conservation plans and mitigation obligations. These concerns are similar to those raised by the environmental resource agencies and are focused on areas outside urban areas such as Coyote Valley south of San Jose, East Gilroy agricultural and natural areas, Soap Lake floodplain south of Gilroy, Pacheco Pass, and the San Joaquin Valley Grasslands Ecological Area, in addition to rivers and streams that cross both rural and urban areas. Several environmental organizations commented on the Draft EIR/EIS and expressed continued concerns described above. Additionally, many expressed opposition to Alternative 3, which includes a station at East Gilroy.

8.2.6 Environmental Justice Outreach

As part of the Authority's environmental justice engagement, targeted outreach to minority populations and low-income populations was conducted from scoping through preparation of this Final EIR/EIS. This outreach is discussed in the *San Jose to Merced Environmental Justice Engagement Summary Report* (Appendix 5-B); Chapter 5, Environmental Justice; and Chapter 9, Public and Agency Involvement.

The following issues were raised by persons participating in targeted outreach to minority populations and low-income populations along the project extent:

- **San Jose**—Concerns were raised about noise and vibration; aesthetics; local road closures on road network connectivity, access, and the proposed narrowing of Monterey Road; residential displacements; emergency vehicle response times; residential and commercial displacements; effects on homeless persons; property values; parks and trails; community cohesion and connectivity; safety (particularly for at-grade alignments); and potential community improvements under consideration as offsetting mitigation.
- **Morgan Hill**—Concerns were raised about impacts on local roads and road closures; connectivity, access, and right-of-way; visual aesthetics; residential and commercial displacements; emergency vehicle response times; schools; noise; community cohesion and connectivity; safety (particularly for at-grade alignments); and potential community improvements under consideration as offsetting mitigation.
- **Downtown Gilroy**—Concerns were raised about impacts on downtown Gilroy and neighborhoods; local roads, connectivity, access, and right-of-way; emergency vehicle response times; residential and commercial displacements; schools; noise; historic resources; safety (particularly for at-grade alignments); and potential community improvements under consideration as offsetting mitigation.
- **East of Gilroy**—Concerns were raised about aesthetics and changes in community character; quality of life; agricultural lands; reduced access to properties, decreased property values, eminent domain, and property acquisitions; induced growth around the proposed East Gilroy Station; and noise.

- **Pacheco Pass (unincorporated Merced County)**—Concerns were raised about impacts on local roads, connectivity, access, and right-of-way, and construction impacts on Cottonwood Creek and Cottonwood Bay.
- **San Joaquin Valley (unincorporated Merced County)**—Concerns were raised about impacts on local roads; connectivity, access, and right-of-way; agricultural lands and associated irrigation infrastructure; dairy operations; noise; construction disruption of access and traffic; disruption to duck clubs; and potential community improvements under consideration as offsetting mitigation.

The Authority considered all input from low-income community members and minority community members when determining topics to be addressed in the Final EIR/EIS, alternatives to be considered, and mitigation for identified significant impacts.

8.2.7 Agency Consultation

The Authority has been working closely with federal, state, and regional government agencies to meet regulatory requirements. The Authority has refined the project alternatives to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided. Coordination with agencies was conducted throughout development of this Final EIR/EIS through multiple working groups and one-on-one meetings. On June 24, 2021, the National Marine Fisheries Service issued the Section 7 Endangered Species Act Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the San Jose to Merced Project Section, concluding formal consultation with the Authority. Formal consultation with the U.S. Fish and Wildlife Service is ongoing and is expected to be completed prior to the Record of Decision.

8.2.7.1 Water Resource Agencies

Potential impacts on the San Luis Reservoir during initial alternatives development was a concern of the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), the California Department of Water Resources, the California Department of Fish and Wildlife, and the California Department of Parks and Recreation. As noted in Chapter 2, alternatives that would have encroached into the San Luis Reservoir were screened out and were not advanced. None of the alternatives analyzed in detail in this Final EIR/EIS would encroach into the reservoir or across the land surface of associated conservation or recreation areas.

Reclamation, Santa Clara Valley Water District, and San Benito County Water District expressed concerns about potential impacts on the Pacheco Pass Water Tunnel and Water Conduit as well as potential impacts on the Santa Clara and San Benito/Hollister water conduits. Reclamation, Delta Mendota Water Authority, Central California Irrigation District, Henry Miller Reclamation District, and Grasslands Water District also expressed concerns about potential impacts on water canals and drains, access roadways, and other infrastructure interfaces in the Pacheco Pass and San Joaquin Valley Subsections. The project alternatives have been designed to avoid or minimize disruption to water infrastructure during construction and to replace any affected water infrastructure, access roads, or other associated infrastructure in order to avoid permanent limitations on water use or associated operations.

8.2.7.2 Transportation Agencies

The California Department of Transportation (Caltrans) and the California Highway Patrol expressed concern regarding potential impacts on the US 101 (near Gilroy) and I-5 (north of Los Banos) weigh stations. Caltrans also expressed concern regarding highway interfaces. Potential impacts on the US 101 weigh station near Gilroy was identified as a concern early in the planning process; therefore, none of the alternatives evaluated in this Final EIR/EIS would affect these facilities. The project alignment in the San Joaquin Valley Subsection also was shifted to avoid the I-5 weigh station. The Authority continues to coordinate with state agencies on project design in areas where the alternatives cross Caltrans facilities.

The Peninsula Corridor Joint Powers Board (Caltrain) expressed concerns regarding the proposed blended infrastructure, station relocations, and the design of HSR stations that could affect Caltrain access and operations. The Santa Clara Valley Transportation Authority expressed concern regarding the blending of HSR and Caltrain services, the interfaces with the Valley Transportation Authority light rail system, and HSR station designs.

Transportation agencies and local city and county public works departments expressed concerns about potential construction disruption of automotive traffic and bus transit services on highways and roadways, including I-280, State Route 87, US 101, Monterey Road and intersecting roadways, I-5, and State Route 152. These agencies also expressed concern regarding increased traffic around new HSR stations; increased congestion caused by a reduction in traffic lanes on Monterey Road; increased safety gate-down time at at-grade crossings; and emergency vehicle access. Transportation agencies and public works departments have not expressed preferences for any project alternatives extending beyond their respective city boundaries. Caltrans and Caltrain submitted comments on the Draft EIR/EIS consistent with the issues expressed above.

8.2.7.3 Floodplain Management Agencies

Floodplain management agencies, including Santa Clara Valley Water District, and Santa Clara County, San Benito County, and city floodplain administrators expressed concerns about potential impacts on floodplain and floodway water levels and flood risk management infrastructure. Particular concern was raised regarding the Guadalupe River, Llagas Creek, the Pajaro River, and the Soap Lake floodplain. The Authority has worked with local floodplain management agencies to evaluate potential project impacts, including sharing and collaborating on hydraulic modeling analyses, and to consult on project design at floodplain and floodway interfaces.

8.2.7.4 Environmental Resource Agency Consultation

Environmental resource agencies, including the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, National Marine Fisheries Service, Santa Clara Valley Habitat Agency, Santa Clara Valley Open Space Authority, Central Valley Habitat Joint Venture, Grasslands Irrigation District, and University of California at Davis,¹ expressed concerns about the following:

- Potential impacts on common and special-status species and their habitat
- Potential impacts on wetlands, other waters, and riparian habitat
- Potential impacts on surface water storage and water conveyance infrastructure, including San Luis Reservoir, Pacheco Pass Water Tunnel and Conduit, and Santa Clara and San Benito Conduits
- Potential impacts on Santa Clara County major water conveyance pipelines and stormwater canals, Delta-Mendota Canal, Merced County irrigation water delivery canals, and agricultural wastewater drain canals
- Potential impacts on public parklands or facilities
- Potential impacts on floodplains or floodways
- Potential impacts on wildlife movement corridors, including Coyote Valley, the Pajaro River (i.e., Soap Lake) floodplain, Pacheco Creek, Romero Creek, the Grasslands Ecological Area, and the San Joaquin Valley in general
- Potential impacts on conservation areas in Coyote Valley (Coyote Creek Parkway), Soap Lake (private and public conservation easements and land banks), Pacheco Pass

¹ Although not a regulatory agency, the University of California at Davis is advising the Grassland Irrigation District on matters relative to the Grasslands Ecological Area.

(Cottonwood Wildlife Area, San Luis Reservoir, Pacheco Creek Reserve, Romero Ranch Conservation Easement), and San Joaquin Valley (the Grasslands Ecological Area, including several wildlife refuges, wildlife management areas, parks, and private duck clubs)

- Environmental justice assessment

Several initial alternatives would have encroached on the Cottonwood Wildlife Area and the San Luis Reservoir, but they were screened out in favor of the current tunnel alignment in the Pacheco Pass, which would not affect these areas. The four alternatives evaluated in this Final EIR/EIS have been modified through design to avoid and reduce impacts on wildlife habitat, waters/wetlands, wildlife movement corridors, and conservation areas in response to input from environmental resource agencies.

8.2.8 Feedback on the Staff-Recommended Preferred Alternative

The Authority conducted extensive outreach from July through September 2019 to share Alternative 4 as the staff-recommended Preferred Alternative with project stakeholders and members of the public. A handout was prepared to distribute at the meetings. This handout included a description of how the alternatives were developed; the alternatives under study; prior stakeholder, public, and agency input; and the evaluation of the project alternatives.

Approximately 300 community members, stakeholders, and agency officials attended the summer 2019 outreach briefings and meetings held throughout the project corridor. The location and dates of these meetings are listed below:

- **July 2019**

- San Jose-Morgan Hill Technical Working Group—July 8, 2019
- Gilroy-Los Banos Technical Working Group—July 8, 2019
- Morgan Hill-Gilroy Community Working Group—July 10, 2019
- Coyote Valley and Pacheco Pass Conservation Community—July 10, 2019
- Grasslands Ecological Area Stakeholders—July 15, 2019
- San Jose Community Working Group—July 16, 2019
- Morgan Hill City Council—July 17, 2019
- City/County Staff Coordinating Group Meeting—July 17, 2019
- Local Policy Maker Group Meeting—July 25, 2019

- **August 2019**

- San Jose Open House—August 15, 2019
- Gilroy City Council—August 19, 2019
- San Jose City Council—August 20, 2019
- Los Banos Open House—August 21, 2019
- Monterey Corridor Working Group—August 22, 2019
- Gilroy Open House—August 22, 2019

- **September 2019**

- Santa Clara City Council—September 4, 2019
- Santa Clara County Board of Supervisors—September 10, 2019

The Authority compiled the feedback obtained on the staff-recommended Preferred Alternative at these outreach meetings. The *San Jose to Merced Project Section Preferred Alternative Outreach Summary Report* (Authority 2019c) summarizes the individual meetings and provides an overview of the feedback received during the outreach meetings. Several comments on the Draft EIR/EIS were related to the Preferred Alternative, expressing support for and opposition to Alternative 4.

8.3 Alternatives Considered

In the *Final Program EIR/EIS for the Proposed California High-Speed Train System* (Authority and FRA 2005), the Authority and FRA deferred selection of a corridor between the Bay Area and Central Valley until completion of a second, more focused Program EIR/EIS. In 2008, the Authority and FRA completed the *San Francisco Bay Area to Central Valley High-Speed Train Final Program EIR/EIS* (Authority and FRA 2008). As a result of litigation, the Authority prepared additional programmatic environmental review for the Bay Area and the Central Valley, and in 2012 completed the *Bay Area to Central Valley High-Speed Train Partially Revised Final Program EIR* (Authority 2012). Through these programmatic documents, the Authority identified a corridor from San Jose south and then east through Pacheco Pass to the Central Valley to advance for further study in a second-tier, project-level EIR/EIS.

The Authority, in cooperation with the FRA, began the project-level environmental review process for the San Jose to Merced Project Section of the California HSR System with a NEPA Notice of Intent, CEQA Notice of Preparation, and public scoping process in early 2009. The environmental analysis helped to identify initial alternatives and to evaluate those alternatives. Alternatives analysis reports were developed in consultation with the public; federal, state, and local agencies; and community groups to identify the four alternatives evaluated in this Final EIR/EIS. For more information on the project alternatives analysis process, please see Section 2.5, Alternatives Considered during Alternatives Screening Process, of this Final EIR/EIS.

8.4 Preferred Alternative

The Preferred Alternative for the San Jose to Central Valley Wye Project Extent is Alternative 4 (Figure 8-1). It was selected based on a balanced consideration of the environmental information presented in this Final EIR/EIS in the context of project purpose and need; project objectives; the CEQA, NEPA, and Section 404(b)(1) requirements; local and regional land use plans; community preferences; and costs.

The identification of the Preferred Alternative also integrates the Authority's evaluation under Section 4(f) of the Department of Transportation Act (49 United States Code § 303) (Section 4(f)), which provides special protection to publicly owned public parks; recreational areas of national, state, or local significance; wildlife or waterfowl refuges; and lands of a historic site of national, state, or local significance. As described in Chapter 4, Section 4(f)/6(f) Evaluation, Section 4(f) properties can only be used by federally funded transportation projects if there is no feasible and prudent alternative and all possible planning has been taken to minimize harm to any 4(f) property used by the project. For more information on the Authority's evaluation under Section 4(f), see Chapter 4.

The Preferred Alternative is estimated to cost approximately \$19 billion in 2021 dollars (Appendix 6-A), which would be the least capital cost to deliver any of the four project alternatives evaluated in this Final EIR/EIS.

During the alternatives development process, the Authority considered many issues to identify what it believes to be the best alternative to achieve the project's purpose and need. These issues included the natural resource and community impacts, the input of the communities along the project alignment, the views of federal and state resource agencies, project costs, and constructability of the project alternatives. The Authority subsequently identified the Preferred Alternative by considering environmental, economic, technical, and other factors, and by balancing the adverse and beneficial impacts of the project on the community and natural environment. Taking this approach means that no single issue is the controlling factor in identifying the Preferred Alternative in any given geographic area.

This evaluation of potential impacts on community and natural environmental resources highlighted information on how the project alternatives differ substantively. Resources for which the potential impacts do not substantially differ between the alternatives were not included in the evaluation. The following resources do not substantially differentiate the alternatives:

- Archaeological resources

- Air quality and greenhouse gases
- Electromagnetic fields and electromagnetic interference
- Geology, soils, and seismicity
- Hazardous materials and waste
- Hydrology and water resources
- Paleontological resources
- Socioeconomics and communities (apart from displacements)
- Regional growth
- Station planning

Their absence does not mean that impacts on these resources are not an important part of the evaluation or are not of concern to the public, stakeholders, and agencies. All community and natural environmental factors are considered by the Authority as necessary in the NEPA/CEQA process, permitting and final design, construction, and implementation.

Table 8-1 shows the potential impacts of the project alternatives on community and natural environmental factors that substantially differentiate the alternatives. The community factors include displacements, agricultural farmlands, aesthetics and visual quality, land use and development, noise, traffic,² emergency vehicle access/response time, and environmental justice. The natural environmental factors include biological resources, Section 4(f)/6(f) resources, and built environment historic resources. The impacts shown in Table 8-1 include relevant and applicable mitigation. The best performing alternative for each impact is highlighted in **bold with an asterisk (*)**. Community and environmental factors affected by the DDV (which applies to Alternative 4 only) and the TDV (which applies to all alternatives) are shown in parentheses.

Table 8-1 Community and Environmental Factors by Alternative

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Community Factors¹				
Displacements				
Residential displacements (number of units)	147	603	157	68*
Commercial displacements (number of businesses)	217	348	157	66* (68)
Agricultural displacements (number of structural improvements)	49	53	49	40*
Community or public facilities displacement (number of units)	7	8	5	1*
Commercial displacements (square feet)	411,000*	1,800,000	994,000	448,000 (463,120)
Agricultural structure displacements (square feet)	407,000*	1,206,000	1,489,000	542,000

² In accordance with Senate Bill 743 (2013) and the CEQA Guideline Updates (December 2018), the Authority does not consider traffic vehicle delay, measured through level of service or other metrics, to be a CEQA significant impact. The Authority's approach to CEQA is the same approach currently used by the City of San Jose, the City of San Francisco, and other jurisdictions. This approach is currently allowed by the CEQA Guidelines and became mandatory for all CEQA lead agencies in California as of July 1, 2020. However, traffic delay is considered a potential adverse effect under NEPA and is analyzed accordingly in this EIR/EIS. Refer to Section 3.2, Transportation for more information about traffic delay.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Agricultural Farmland				
Permanent conversion of Important Farmland ² (acres)	1,036	1,181	1,193	1,033
Aesthetics and Visual Quality				
Visual quality impacts	Viaduct Elevated Stations	Embankment and Viaduct Elevated Stations Roadway Grade Separations	Viaduct Elevated Stations Alignment in Rural Area (East Gilroy)	At-grade alignment Existing Right-of-Way*
Land Use and Development				
Consistency with City of Gilroy General Plan policy encouraging Transit-Oriented Development in downtown station area	Yes*	Yes*	No	Yes*
Noise				
Severe noise impacts with noise barrier mitigation (number of sensitive receptors)	232 (242)	195 (206)	174* (185)	291 (303)
Severe noise impacts with noise barrier mitigation and if local municipalities implement quiet zones ³ (number of sensitive receptors)	224 (234)	195 (206)	174* (185)	192 (205)
Vibration				
Vibration impacts	81* permanent vibration impacts (before mitigation); potential to reduce all or most of these impacts to below the threshold with mitigation.	143 permanent vibration impacts (before mitigation); potential to reduce all or most of these impacts to below the threshold with mitigation.	140 permanent vibration impacts (before mitigation); potential to reduce all or most of these impacts to below the threshold with mitigation.	1,203 permanent vibration impacts (before mitigation); potential to reduce all but 15 of these impacts to below the threshold with mitigation.
Traffic				
Permanent road closures – San Jose to Gilroy	10	21	9	7*
Permanent road closures – Gilroy to Carlucci Road	8*			
Intersections with adverse NEPA effects after mitigation	23	24	23	22*

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Emergency Vehicle Access/Response Time				
Areas of potential delay to emergency vehicle response times ⁴	Monterey Corridor due to Monterey Road narrowing*			Monterey Corridor, southern Morgan Hill/San Martin, Gilroy due to gate-down time
Comparative level of increase on fire department response times (lower number is less delay)	1*	3	1*	4
Environmental Justice (EJ) ⁵				
Disproportionately high and adverse effects due to disruption of traffic or transit during construction on minority populations or low-income populations	No	No	No	No*
Disproportionately high and adverse effects on operational traffic on minority populations or low-income populations	No	No	No	No*
Disproportionately high and adverse effects on local views associated with either viaduct or embankment on minority populations or low-income populations	Yes	Yes	Yes	No*
Disproportionately high and adverse residential displacements to minority populations or low-income populations	No	No	No	No*
Disproportionately high and adverse business displacements to minority populations or low-income populations	No	No	No	No*
Disproportionately high and adverse effects due to emergency vehicle response time delays on minority populations or low-income populations	No	No	No*	No
Disproportionately high and adverse effect on parks on minority populations or low-income populations	No	Yes	No*	No
Disproportionately high and adverse severe noise impacts on minority populations or low-income populations ⁶	No*	No	No	No
Environmental Factors¹				
Biological Resources				
Permanent impacts on jurisdictional waters and wetlands (acres)	101	108	111	97*

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Permanent impacts on habitat for special-status plant species (non-overlapping acres)	1,179	1,186	1,191	1,154*
Permanent impacts on habitat for listed wildlife species with the most impacts overall (California tiger salamander, acres)	2,249	2,305	2,448	2,126*
Wildlife corridor impacts	Avoids east Gilroy; fewer Soap Lake floodplain impacts*	Avoids east Gilroy; fewer Soap Lake floodplain impacts*	Impacts in east Gilroy; more impacts in Soap Lake floodplain	Avoids east Gilroy; fewer Soap Lake floodplain impacts*
Permanent impacts on conservation areas (acres)	427*	432	481	427*
Section 4(f)/6(f) Resources				
Permanent use of 4(f)/6(f) park resources (number of resources [acres])	4 (4.8)	7 (8.3)	6 (5.8)	2 (0.3)*
Temporary use of 4(f)/6(f) park resources (number of resources [acres])	1 (2.04)	1 (2.04)	1 (2.04)	1 (2.04)
Permanent use of 4(f) historic property resources (number of resources, includes resources with <i>de minimis impact</i>) ⁷	6	8	5	5
Built Environment Historic Resources				
Number of permanent adverse impacts on NRHP-listed/eligible resources (number of resources)	7	11	7	5*
Number of permanent significant impacts on CEQA-only historic resources (number of resources)	2	4	1*	1*

Bold with an asterisk (*) = best performing alternative(s)

¹ Community and environmental factors affected by the DDV (which applies to Alternative 4 only) and the TDV (which applies to all alternatives) are shown in parentheses.

² Important Farmland includes Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance.

³ A "quiet zone" is an area in which an FRA exemption has been granted to the rule requiring trains to sound their horns when approaching public highway-rail grade crossings. A quiet zone is a section of rail line at least one-half mile in length that contains one or more consecutive public grade crossings or a single public grade crossing at which locomotive horns are not routinely sounded. Only local cities and counties can request establishment of a quiet zone through the FRA.

⁴ Types of mitigation needed to minimize emergency vehicle delays differ between the alternatives. Alternatives 1, 2 and 3 would only require vehicle detection equipment. Alternative 4 would also include vehicle detection equipment but would include additional emergency equipment for existing fire stations, new fire stations, and potentially additional ambulance services among other measures as necessary to address emergency vehicle response delays greater than the threshold.

⁵ Criteria used for evaluation are those subjects where the EIR/EIS analysis indicates disproportionately high and adverse effects on low-income populations and minority populations after direct mitigation. Conclusions take into account the effect of direct mitigation, the offsetting value of project benefits, and offsetting mitigation measures proposed for each project alternative.

⁶ Noise impacts after noise barrier mitigation.

⁷ Determinations regarding use of historic properties under Section 4(f) are not synonymous with findings of adverse effect to historic properties per Section 106. See analysis in Chapter 4.

AM = morning

NB = Northbound

NRHP = National Register of Historic Places

PM = evening

SB = southbound
SF = square feet

8.4.1 Review of Alternative Key Differentiators by Subsection

This section describes the key community and environmental factors that differentiate the alternatives within each subsection of the project extent, as shown in Table 8-1. Alternatives 1, 2, 3, and 4 vary in the San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections. Because the alternatives are identical in the Pacheco Pass and San Joaquin Valley Subsections, those subsections are not discussed. Community and environmental factors shown in Table 8-1 that do not substantially differentiate alternatives in a given subsection also are not included in the discussion. For example, because there are no agricultural lands in the San Jose Diridon Station Approach Subsection, that resource is not discussed for that subsection.

8.4.1.1 San Jose Diridon Station Subsection

- **Displacements**—Alternative 4 would have the fewest displacements (24 [25 with the DDV]) because the alignment would be at-grade and primarily within the Caltrain right-of-way. In contrast, Alternatives 2 and 3 would have the most displacements (140 for both alternatives) because of the viaduct design outside of the existing rail right-of-way. Alternative 1 would have more displacements (88) than Alternative 4, but fewer than Alternatives 2 and 3. This is because the Alternative 1 viaduct section would end at I-880 instead of Scott Boulevard.
- **Aesthetics and visual quality**—Alternative 4 would have the lowest operations impact on aesthetics and visual quality because of the at-grade alignment mostly within the Caltrain right-of-way. Alternative 1 would have more impacts on visual quality than Alternative 4 because it would be on an elevated viaduct (to I-880) outside existing rail rights-of-way through most of San Jose. Alternatives 2 and 3 would have the most impacts on visual quality because they would be on elevated viaduct outside existing rail rights-of-way through Santa Clara and San Jose (approximately 2 miles of viaduct more than Alternative 1).
- **Noise and vibration**—Alternative 4 would have higher operational noise impacts than the other alternatives because it would result in the sounding of HSR train horns at two at-grade crossings south of the San Jose Diridon Station whereas the other project alternatives would not sound the HSR train horns. Operation of Alternatives 1 and 4 also would require sounding of HSR train horns when passing through the Santa Clara Station, whereas Alternatives 2 and 3 would not. Although Quiet Zones would eliminate train warning horns for all trains approaching at-grade highway and rail crossings under normal, nonemergency situations, HSR cannot legally establish or require a Quiet Zone; therefore, the analysis does not include Quiet Zones in its conclusion. Regarding operational vibration, Alternative 4 would have higher impacts than other alternatives prior to mitigation; with mitigation, however, there is the potential to reduce impacts at most locations leaving potentially only 15 impacts under this alternative with mitigation, but the evaluation of mitigation effectiveness is preliminary.
- **Traffic**—After mitigation, Alternatives 1, 2, and 3 would have adverse effects at 11 intersections, while Alternative 4 would have adverse effects at 8 intersections.
- **Environmental justice**—Alternatives 1 and 4 would have the lowest operational aesthetics and visual quality and displacement effects on minority populations and low-income populations in the Santa Clara/North San Jose community because the at-grade alignment would mostly be within the Caltrain right-of-way. Alternatives 2 and 3 would have the highest effects on aesthetics and visual quality to low-income populations because they would be on an elevated viaduct. Alternatives 1 and 4 would require sounding HSR train horns when going through the Caltrain Santa Clara Station, while Alternatives 2 and 3 would not. After direct mitigation, consideration of project benefits, and proposed offsetting mitigation, Alternatives 2 and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, and Alternatives 1 and 4 would have no disproportionately high and adverse effects in Santa Clara/North San Jose community area.

Alternative 4 would have the lowest effects relative to aesthetics and visual quality and displacement on minority populations and low-income populations in and south of downtown San Jose because it would be at grade, mostly within the Caltrain right-of-way. Alternatives 1, 2, and 3 would have more aesthetic and visual quality effects on minority populations and low-income populations and more displacement effects than Alternative 4 because they would be on an elevated viaduct outside the existing rail rights-of-way through downtown San Jose. Alternative 4 would have higher noise effects on low-income populations than the other alternatives because it would result in the sounding of HSR train horns at the Diridon Station and at one at-grade roadway crossing south of the San Jose Diridon Station while the other project alternatives would not. After direct mitigation, consideration of project benefits, and proposed offsetting mitigation measures, Alternatives 1, 2, and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, and Alternative 4 would have no disproportionately high and adverse effects in the San Jose Diridon area.

Alternative 4 would have higher noise effects on low-income populations than the other alternatives in the Gardner/North Willow Glen community because it would result in the sounding of HSR train horns at one at-grade roadway crossing while the other project alternatives would not. After direct mitigation, consideration of project benefits, and proposed offsetting mitigation measures, Alternative 4 would have no disproportionately high and adverse effects in the Gardner/North Willow Glen community.

Alternative 4 would have the lowest effects relative to aesthetics and visual quality and displacement on minority populations and low-income populations in the Washington, Guadalupe, Tamien, Alma, Almaden community because it would be at grade, mostly within the Caltrain right-of-way. Alternatives 1, 2, and 3 would have more aesthetic and visual quality on minority populations and low-income populations and displacement effects than Alternative 4 because they would be on an elevated viaduct outside the existing rail rights-of-way. Alternative 4 would have higher noise effects on low-income populations than the other alternatives because it would result in the sounding of HSR train horns at the Tamien Station while the other project alternatives would not. After direct mitigation, consideration of project benefits, and proposed offsetting mitigation, Alternatives 1, 2, and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, and Alternative 4 would have no disproportionately high and adverse effects in the Washington, Guadalupe, Tamien, Alma, and Almaden community.

- **Section 4(f)/6(f) resources**—Alternatives 1, 2, and 3 would have permanent impacts on portions of the Los Gatos Creek Trail and Park (0.55 acre each) and the Guadalupe River Trail (0.8 acre each). Alternatives 2 and 3 would also affect a portion of Reed Street Dog Park (0.18 acre each) and Reed and Grant Street Sports Park (0.82 acre each). In contrast, Alternative 4 would only affect a small (0.03-acre) portion of Fuller Park.
- **Built environment historic resources**—All four project alternatives would have a permanent significant and unavoidable impact on the San Jose Diridon Station and the property located at 75 South Autumn Street. Alternatives 1, 2, and 3 also would have a permanent significant and unavoidable impact on the Sunlite Baking Company property and another property located at 415 Illinois Avenue.

8.4.1.2 Monterey Corridor Subsection

- **Displacements**—Alternative 4 would have the fewest permanent displacements (three) due to the alignment's at-grade profile located mostly within the Caltrain right-of-way. Alternative 2 would have the highest number of displacements (75) because of the embankment design outside of the existing rail right-of-way and several roadway grade separations. Alternatives 1 and 3 would have more displacements (47 for each alternative) than Alternative 4, but fewer than Alternative 2, because they would have a viaduct design and would not require as many roadway grade separations.
- **Aesthetics and visual quality**—Alternative 4 would have the least operational impact associated with aesthetics and visual quality because it would be at grade mostly within the

existing rail right-of-way. Alternatives 1 and 3 would have greater impacts than Alternative 4 because they would be on elevated viaduct outside the existing rail rights-of-way. Alternative 2 would have less impact than Alternatives 1 and 3 because it would be on an embankment outside existing rail rights-of-way.

- **Noise and vibration**—Alternative 4 would have more operational noise impacts than the other alternatives because it would result in the sounding of HSR train horns at the at-grade crossings and Caltrain stations south of the San Jose Diridon Station (Blossom Hill, Capitol), while the other project alternatives would not. Regarding operational vibration, Alternative 4 would have higher impacts than other alternatives prior to mitigation; with mitigation, however, there is the potential to reduce impacts at most locations leaving potentially only seven impacts.
- **Traffic**—Alternative 4 would result in substantially lower additional peak-hour travel time delay on Monterey Road because it would not permanently reduce the number of travel lanes, while Alternatives 1, 2, and 3 would reduce the number of lanes. After mitigation, Alternatives 1 and 3 would have adverse effects at 12 intersections, Alternative 2 would have adverse effects at 11 intersections, while Alternative 4 would have adverse effects at 5 intersections.
- **Environmental justice**—Alternative 4 would have the lowest effects on minority populations and low-income populations associated with aesthetics and visual quality and business displacements because it would be at grade mostly within the existing rail right-of-way. Alternative 2 would have more residential and business displacements affecting minority populations and low-income populations than all other alternatives. Alternatives 1 and 3 would not have residential displacements, while Alternative 4 would have two. Alternatives 1, 2, and 3 would have higher effects on minority populations and low-income populations associated with aesthetics and visual quality due to the elevated alignments on either a viaduct or embankment compared to Alternative 4 being at grade. Alternative 4 would have higher noise effects on low-income populations because it would result in the sounding of HSR train horns at the at-grade crossings and Caltrain stations south of the San Jose Diridon Station (Blossom Hill, Capitol) while the other project alternatives would not. After mitigation, consideration of project benefits, and proposed offsetting mitigation measures, Alternatives 1, 2, and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, and Alternative 4 would have no disproportionately high and adverse effects.
- **Section 4(f)/6(f) resources**—Alternatives 1, 2, and 3 would affect a portion of the Coyote Creek Trail, with Alternatives 1 and 3 affecting 1.03 acres and Alternative 2 affecting 1.2 acres). Alternative 4 would not affect any Section 4(f)/6(f) resources in this subsection.
- **Emergency vehicle access/response time**—Alternatives 1, 2, and 3 would result in increased travel times along Monterey Road during morning and evening peak periods due to the narrowing of Monterey Road from six lanes to four, but vehicle detection mitigation will reduce impacts on emergency vehicle response times to a less than significant level. Alternative 4 could increase emergency response times by more than 30 seconds in a portion of the service area for one fire station (4430 Monterey Road) as a result of increased gate-down time at the at-grade crossings. This potential impact would be re-evaluated prior to the start of HSR service to determine if the impact would occur and its exact scope. Mitigation to reduce any confirmed impact to a less than significant level is possible with vehicle detection mitigation and assuming the City of San Jose would construct and operate a new fire station and install new responder equipment at existing fire stations, with funding provided by the Authority.

8.4.1.3 Morgan Hill and Gilroy Subsection

- **Displacements**—Alternative 4 would have the fewest displacements (81) due to its at-grade alignment mostly within the Caltrain right-of-way. In contrast, Alternative 2 would have the most displacements (730) due to the embankment design outside the existing rail right-of-way and several roadway grade separations that would also affect community cohesion,

particularly in downtown Gilroy. Alternative 1 would have more displacements (218) than Alternative 4 because its alignment would be outside the existing rail right-of-way. Alternative 3 would have the second fewest displacements (114) because it would avoid downtown Gilroy.

- **Agricultural farmland**—The project alternatives would differ in the acreage of permanent conversion of agricultural land only in this subsection. Alternative 4 would permanently convert the smallest amount of agricultural farmland because this alternative would minimize land use displacement and conversion with an alignment predominantly within the existing transportation corridor right-of-way. Alternative 3 would permanently convert the most agricultural farmland because it would pass through the eastern portion of Santa Clara County and bypass the urban area of Gilroy. Alternatives 1, 2, and 4 would pass through downtown Gilroy, which would avoid some agricultural farmland. However, Alternative 2 would require relocation of the UPRR tracks, which would result in impacts on agricultural farmland. Alternative 1 would be built on viaduct in the median of Monterey Road for a portion of its length and would pass through downtown Gilroy, thus avoiding impacts on some of the agricultural farmland in the subsection.
- **Aesthetics and visual quality**—Alternative 4 would have the lowest impact on aesthetics and visual quality because of it would be at grade mostly within the UPRR right-of-way. Alternative 1 would have greater impacts than Alternative 4 because it would be on an elevated viaduct outside rail rights-of-way through Gilroy and would have an elevated HSR station. Alternative 2 would have the most visual impacts in Gilroy because it would be on an elevated embankment, would have an elevated station, and would require construction of roadway grade separations. While Alternative 3 would avoid aesthetic and visual quality impacts in downtown Gilroy, it would affect visual quality in east Gilroy with a guideway on viaduct and embankment and an HSR station at a greenfield site. The impacts of Alternative 3 would be experienced by fewer community members than those affected by the project alternatives in downtown Gilroy.
- **Land Use and development**—The Authority has adopted a station area policy to locate stations in downtown, multimodal transportation hubs and not greenfield sites in order to promote connections to transit, to support transit-oriented development, and to avoid conversion of agricultural and open space lands to urban or transportation uses. Alternative 3 includes the East Gilroy Station, which would be located outside of Gilroy in an agricultural area and therefore would not be consistent with Authority policy. Alternatives 1, 2, and 4 would convert commercial and mixed land uses to transportation uses in downtown Gilroy, whereas Alternative 3 would not. However, Alternative 3 would convert substantially more agricultural lands to transportation uses due to its alignment in east Gilroy and the East Gilroy Station.
- **Noise and vibration**—Alternative 4 would have the most noise impacts because it would result in HSR trains sounding horns at the at-grade crossings and the Caltrain Morgan Hill, San Martin, and Gilroy Stations, whereas the other project alternatives would not. Regarding operational vibration, Alternative 4 would have higher impacts than other alternatives prior to mitigation; with mitigation, however, there is the potential to reduce impacts at most locations, leaving potentially only one impact.
- **Traffic**—After mitigation, Alternatives 1 and 3 would have no adverse effects at intersections, Alternative 2 would have adverse effects at 2 intersections, while Alternative 4 would have adverse effects at 9 intersections.
- **Environmental justice**—Alternative 4 would have the lowest effects on minority populations and low-income populations in Morgan Hill associated with aesthetics and visual quality and residential displacements because it would be at grade mostly within the existing rail right-of-way. Alternatives 1, 2, and 3 would have greater aesthetic and visual effects on low-income populations than Alternative 4 because they would be on an elevated viaduct or embankment outside existing rail rights-of-way through Morgan Hill. Alternative 2 would have the most impacts on minority populations and low-income populations in Morgan Hill due to residential

and business displacements associated with construction of roadway grade separations and right-of-way acquisition. Alternative 4 would have higher noise impacts on low-income populations than the other alternatives because operation would require sounding of HSR train horns at the at-grade crossings and the Caltrain Morgan Hill Station, while the other project alternatives would not. In Morgan Hill, after mitigation, consideration of project benefits, and proposed offsetting mitigation measures, Alternatives 1, 2, and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, and Alternative 4 would have no disproportionately high and adverse effects.

Downtown Gilroy has the highest concentrations of minority populations and low-income populations in the project environmental justice resource study area (more than 85 percent minority and 60 percent low-income). Alternative 3 would avoid downtown Gilroy and would have no impact on minority populations and low-income populations in the downtown area, whereas Alternatives 1, 2, and 4 would result in higher impacts on minority populations and low-income populations. Of these alternatives, Alternative 4 would result in the lowest impacts on minority populations and low-income populations associated with aesthetics and visual quality and displacements because it would be at grade mostly within the UPRR right-of-way. Alternative 2 would have the most displacement impacts for minority and low-income populations because it would be on embankment, would include an elevated station, and would require construction of roadway grade separations. Alternative 4 would have the most noise impacts on low-income populations because operation would require HSR trains to sound horns at the at-grade crossings and the Caltrain Gilroy Station, whereas the other project alternatives would not. While Alternative 3 would avoid impacts in downtown Gilroy, it would affect visual quality in east Gilroy, although these impacts would be experienced by fewer community members and a lower percentage of minority populations and low-income populations. Alternative 3 would result in more conversion of agricultural farmland and would have more impacts on agricultural employment than the other project alternatives. In Gilroy, after mitigation, consideration of project benefits, and proposed offsetting mitigation measures, Alternatives 1, 2, and 3 would have disproportionately high and adverse effects relative to aesthetics and visual quality, Alternative 2 would have disproportionately high and adverse effects relative to the acquisition and displacement of a portion of the South Valley Middle School track and field, and Alternative 4 would have no disproportionately high and adverse effects.

- **Biological resources**—Alternative 4 would have the least impacts on natural resources because it would have a narrow footprint primarily within an existing rail right-of-way and it would travel through downtown Morgan Hill and Gilroy instead of east Gilroy. Alternative 1 would have greater impacts than Alternative 4 for most natural resources because it would not use an existing rail right-of-way and would have a longer alignment outside of an existing transportation corridor (due to the Morgan Hill bypass). Alternative 2 would have higher impacts than Alternative 4 for most natural resources because of its wider embankment footprint and more extensive roadway modifications than Alternative 4. Alternative 3 would have higher impacts on biological and aquatic resources than Alternative 4 because it would not use an existing rail right-of-way, would use the Morgan Hill bypass, would travel through agricultural lands and less developed areas in east Gilroy. In contrast, Alternative 4 would travel through urbanized downtown Morgan Hill and downtown Gilroy.
- **Section 4(f)/6(f) resources**— All alternatives would have a temporary occupancy and would permanently affect a portion of the Coyote Creek Parkway County Park. Regarding permanent impacts, Alternative 4 would have the least impact (0.31 acre), and Alternative 2 would have the most impact (3.34 acres), with the impacts of Alternatives 1 and 3 in between (2.42 acres each). All alternatives would temporarily affect Field Sports County Park (2.04 acres). Alternative 2 would permanently affect a portion of the Morgan Hill Community and Cultural Center (1.31 acres).
- **Built environment historic resources**—Alternative 4 would have a significant and unavoidable impact on the Madrone Underpass and the Live Oak Creamery. Alternative 3 would have a significant and unavoidable impact on the Stevens/Fisher House and the San

Martin Winery. Alternative 1 would have a significant and unavoidable impact on the Stevens/Fisher House, the San Martin Winery, the Live Oak Creamery, and the St. Stephens School. Alternative 2 would have a significant and unavoidable impact on the Coyote Depot Complex, the Stevens/Fisher House, the Cribari Winery, the St. Martin Winery, the Live Oak Creamery, the St. Stephens School, and the IOOF Orphanage Home.

- **Emergency vehicle access/response time**—Alternative 4 could result in increased emergency response times of more than 30 seconds in a portion of the service areas for five fire stations (15670 Monterey Road, 10810 No Name Uno, 880 Sunrise Drive, 8383 Wren Avenue, and 7070 Chestnut Street). This potential impact would be re-evaluated prior to the start of HSR service to determine if the impact actually would occur and its exact scope. Mitigation to reduce any confirmed impact to a less than significant level is possible with vehicle detection mitigation and assuming the City of Morgan Hill, City of Gilroy, and Santa Clara County construct and operate vehicle priority treatments (which may include new fire stations and new responder equipment at existing fire stations), with funding provided by the Authority. The other alternatives would not result in this impact.

8.4.2 Preliminary Cost Estimate by Alternative

Table 8-2 shows the capital cost estimates for each of the project alternatives. Conceptual cost estimates prepared for the project alternatives were developed using recent bid data from large transportation projects in the western United States and by developing specific, bottom-up unit pricing to reflect common HSR elements and construction methods, with an adjustment for Bay Area and Central Valley labor and material costs. All material quantities for the project alternatives are based on preliminary 15 percent design. Alternative 4 is the same alternative evaluated in the 2018 Business Plan (Authority 2018), but its design has been refined since the 2018 Business Plan. However, the capital cost estimates reflect a conservative scope and sufficient project footprint to accommodate project refinement through final design and construction. This allows the Authority to evaluate maximum or worst-case impacts in this Final EIR/EIS, but it also reduces the risk that the environmental clearance would not cover all potential impacts. Furthermore, the Authority has not yet applied value engineering or other optimization measures to reduce the capital cost estimates, including the Early Train Operator benchmarking review, footprint refinement, and constructability mitigations.

**Table 8-2 Capital Costs of the San Jose to Central Valley Wye Project
Extent Alternatives (2021\$ millions)**

Alternative 1	Alternative 2	Alternative 3	Alternative 4
\$28,334	\$25,079	\$28,698	\$18,993

Note: Costs are rounded to the nearest million dollars. The capital costs for all four alternatives include the costs associated with the tunnel design variant. The capital costs for Alternative 4 also include the costs associated with the Diridon design variant.

8.4.3 Additional Considerations

In addition to the operational performance, community factors, and environmental factors, the Authority also considered the compatibility of the alternatives with directly relevant transportation projects and plans in the cities of San Jose, Santa Clara, and Gilroy.

- **Caltrain Peninsula Corridor Electrification Project**—All of the alternatives are designed to be compatible with the Caltrain electrification project.
- **Caltrain Business Plan and Service Vision**—In mid-2018, Caltrain initiated stakeholder outreach for the development of a business plan to address forecasted increases in travel demand and ridership, and the long-term goal of southern Santa Clara County communities for more regular rail service. Adoption of this business plan is anticipated in early 2020. One of the concepts in the Caltrain business plan is to extend electrification and increase service to Gilroy. Alternative 4 is the only alternative that would provide for an extension of

electrification and other infrastructure to support increased regional passenger rail service to Gilroy.

- **BART Silicon Valley Extension**—All of the alternatives would accommodate the planned extension of Bay Area Rapid Transit (BART) to San Jose, including BART stations at Diridon Station and in Santa Clara.
- **State Rail Plan and Other Passenger Rail Service Planning**—The Authority has consulted the State Rail Plan and with other passenger rail provider plans so that the alternatives would not impede plans for expansion of Altamont Corridor Express (ACE), Capitol Corridor, and Transportation Agency for Monterey County (Monterey County Rail Extension) passenger rail service. All of the alternatives would provide adequate capacity at the San Jose Diridon Station and the Gilroy Station for planned expansions of other passenger rail services.

8.4.4 Alternative Comparison

The four project alternatives in the subsections between Gilroy and Carlucci Road in Merced County are very similar, but between Santa Clara and Gilroy the four alternatives would have four comparatively different sets of environmental impacts and costs, as summarized below:

- Alternative 1 would have the lowest impacts relative to commercial and agricultural structural displacements in terms of area (square feet). It would have the most residual noise impacts (with noise barrier mitigation and local quiet zone implementation). The predominant factors contributing to the impacts of Alternative 1 are its elevated viaduct between San Jose and Gilroy, its alignment bypassing downtown Morgan Hill, and its alignment through downtown Gilroy. It would have the second highest capital cost. It would have less alignment in proximity to existing transit corridors compared to Alternatives 2 and 4, but more than Alternative 3.
- Alternative 2 would not be the best performing alternative relative to any community or environmental factors. It would have the most impacts on Section 4(f)/6(f) resources, built environment historic resources, displacements, roadway travel times on Monterey Road, road closures, aesthetics and visual quality, and minority populations and low-income populations. The predominant factors contributing to the impacts of Alternative 2 relative to the other alternatives are its use of elevated embankment in the Monterey Road right-of-way between San Jose and Gilroy, its alignment through downtown Morgan Hill and Gilroy, and the construction of roadway grade separations. Alternative 2 would have the second lowest capital cost. Along with Alternative 4, it would have the most alignment in proximity to existing transit corridors.
- Alternative 3 would have the lowest impact on CEQA-only built environment historic resources (along with Alternative 4) and the fewest operational noise severe impacts. It would have the highest impacts on waters and wetlands, habitat for special-status plant and wildlife species, wildlife movement corridors, conservation areas, and agricultural farmland. The predominant factors contributing to the impacts of Alternative 3 are its use of elevated viaduct between San Jose and east Gilroy, and its alignment bypassing downtown Morgan Hill and Gilroy and through east Gilroy. Alternative 3 would have the highest capital cost. It would have the shortest alignment in proximity to existing transit corridors.
- Alternative 4 would have the lowest impacts on number of displacements, biological resources, Section 4(f)/6(f) resources, aesthetics and visual quality, agricultural farmland, and built environment resources. It would have the most noise impacts from project operation if local jurisdictions choose not to implement quiet zones, but the second lowest noise impacts if noise barrier mitigation and quiet zones are implemented. After mitigation, it would have relatively few operational vibration impacts, but they would be more than the other alternatives. It would affect one or two fewer intersections due to traffic delay/congestion, and it would have the lowest effects related to travel time delays along Monterey Road in San Jose. It could have the highest impact on emergency vehicle response times due to increased gate-down time at the at-grade crossings, but this could be mitigated with new fire

stations and new response equipment, for which HSR would provide funding. The predominant factors contributing to the impacts of Alternative 4 relative to the other alternatives are its at-grade alignment mostly within existing rail rights-of-way between San Jose and Gilroy and its alignment through downtown San Jose, downtown Morgan Hill, and downtown Gilroy. It is the alternative with the lowest capital cost. It, along with Alternative 2, would have the most alignment in proximity to existing transit corridors. Alternative 4 is the only alternative that would also provide the opportunity to extend electrified Caltrain service to Gilroy.

8.4.5 Identification of the Preferred Alternative

Based on the factors discussed in the Authority's staff report (Authority 2019d) evaluating the project alternatives and the Final EIR/EIS, the Authority Board identified Alternative 4 as the Preferred Alternative for the San Jose to Central Valley Wye Project Extent (Figure 8-1). The Preferred Alternative for the Final EIR/EIS includes the preferred systems sites, which include traction power facilities, automatic train control sites, and communications radio towers. These systems are listed below in Table 8-3.

The key considerations in making this selection are:

- While there are relative differences between the way each of the four alternatives would affect various community resources, Alternative 4 would have the lowest overall impacts because it would result in the fewest displacements of residences, businesses, community facilities, and agricultural structures; would result in the least conversion of agricultural farmland to nonagricultural uses (and thus lowest impact on agricultural employment); and would cause the least change in aesthetics and visual quality. Alternative 4 would have the most noise impacts (with noise barrier mitigation only) but the lowest impacts on Monterey Road travel times. While Alternative 4 would potentially have the most impact on emergency vehicle response times, this could be mitigated by the Authority working with local jurisdictions to construct and operate new fire stations and install new responder equipment at existing stations. The other project alternatives would have greater impacts than Alternative 4 in terms of key community resources, with the exception of noise.
- Alternative 4 would result in the lowest impacts on key natural environmental factors of the four project alternatives, such as wetlands and other aquatic habitats providing high-value habitat for a diverse array of species. Alternative 4 is also the alternative most likely to receive support for permitting by the U.S. Army Corp of Engineers under the Clean Water Act (see Section 8.7). Alternative 4 would have the lowest impacts of the four project alternatives on high-value aquatic habitats and habitat for special-status plant and wildlife species.
- Alternative 4 would result in the lowest impacts from permanent use of Section 4(f) parks and NRHP-listed or eligible built environment historic resources.
- Alternative 4 is the lowest-capital cost alternative.

This analysis—highlighting the substantial differences in the potential impacts of the project alternatives on community and natural environmental resources, impacts from permanent use of Section 4(f) parks and NRHP-listed or eligible built historic resources, and capital cost—was incorporated into a staff report (Authority 2019d) that was presented to the Authority Board of Directors at their September 17, 2019, meeting. This staff report also summarized the public, agency, and other stakeholder input on the staff-recommended Preferred Alternative obtained during the summer 2019 outreach meetings. The Authority Board of Directors considered the staff report findings and the additional public testimony of 26 individuals provided at the Board meeting and concurred with the identification of Alternative 4 as the Preferred Alternative for the San Jose to Central Valley Wye Project Extent.

After the release of the Draft EIR/EIS, consideration of comments on the Draft EIR/EIS, and preparation and certification of this Final EIR/EIS, the Authority will consider whether to formally adopt the project Preferred Alternative. That alternative could be Alternative 4 as presented in this Final EIR/EIS, Alternative 4 with design refinements, or another project alternative.

Conservatively, the Final EIR/EIS analyzes two locations for many of the systems sites required for the project, including automatic train control and communication sites, overhead contact system, and traction power distribution systems. The Preferred Alternative for the Final EIR/EIS includes the preferred system sites listed in Table 8-3. The table also identifies the stationing for each identified site. Stationing locations can be found on the engineering drawings in Volume 3, Preliminary Engineering for Project Design Record.

Table 8-3 Systems Sites Included in the Preferred Alternative

Stationing	Traction Power Facility	Automatic Train Control site	Communications Radio Tower	Selection Rationale
2874+71			Stand-alone radio tower FJ12 - alternate site 1	Shorter access road
3002+00	Caltrain PCEP TPS-2		Radio tower PCEP TPS - alternate site 2	Co-locates with selected PCEP TPS site
3085+00	Diridon Passenger Station	TCC Room at Diridon Station	Radio tower Diridon Station JM1A - alternate site 2	Avoids relocation of existing tracks
3199+00	Caltrain PCEP PS-7			Existing PCEP PS site
3208+00			Stand-alone radio tower JM1	Direct access to public street. No alternate location
3288+00			Radio tower ATC-E-JM1 - alternate site 1	Direct access to public street. Minimizes right-of-way acquisition.
403+00		PTC/ATC Type B – alternate site 2		Site closer to Skyway Dr (possible direct access to public street)
428+00			Stand-alone radio tower JM2	Direct access to public street. No alternate location.
512+00	Paralleling Station A1		Radio Tower PS-A1	Uses remainder parcel; only available in constrained right-of-way
624+00			Stand-alone radio tower JM3 - alternate site 1	Direct access to public street. Minimizes right-of-way acquisition.
730+00		ATC Type D JM2 - alternate site 1	Radio tower ATC-D-JM2 - alternate site 1	Minimizes environmental impacts to cultural resources.
841+00	Switching Station A - alternate site 2		Radio tower SWS-A - alternate site 2	Minimizes loss of prime agricultural land.
988+50			Stand-alone radio tower JM5 - alternate site 1	Direct access to ATC access roads.
1119+00			Stand-alone radio tower JM6 - alternate site 1	Direct access to public street.
1190+00	Paralleling Station A2 - alternate site 1		Radio tower PS-A2 - alternate site 1	Avoids community park.

Stationing	Traction Power Facility	Automatic Train Control site	Communications Radio Tower	Selection Rationale
1190+50		ATC Type E JM3 - alternate site 1		Co-located with PS A2.
1321+50			Stand-alone radio tower JM7	Direct access to public street.
1449+00		ATC Type D JM4 - alternate site 2	Radio tower ATC-D-JM4 - alternate site 2	Co-locate with at-grade crossing equipment
1523+00	Substation B (HSR) - alternate site 1		Radio tower SS-B - alternate site 1	
1667+00	Downtown Gilroy Station	TCC Room at Pass Station	Radio tower Downtown Gilroy Station	Co-locate with station facility
1678+00		ATC Type A JM 5	Radio tower ATC-A-JM5	Co-locate with ATC site
1777+00		ATC Type A JM 6	Radio tower ATC-A-JM6	Co-locate with ATC site
1858+00	Paralleling Station A3		Radio tower PS-A3	Co-locate with MOWF
1915+50			Stand-alone radio tower JM8	Direct access to ATC access roads. Minimizes loss of prime agricultural land.
1916+00		ATC Type B		No alternate location
2108+89		ATC Type D JM4- alternate site 2	Radio tower ATC-D-JM4 - alternate site 2	Co-locate with ATC site. Minimizes loss of prime agricultural land.
2186+10	Paralleling Station B1 - alternate site 2		Radio tower PS-B1 - alternate site 2	Co-locate with paralleling site. Minimizes loss of prime agricultural land.
2250+00			Radio tower @ Tunnel 1 west portal	Co-locate with portal.
2345+00	Paralleling Station B2 (@Tunnel 1 east portal)		Radio tower @ Tunnel 1 east portal	Co-locate with portal.
3279+00			Stand-alone radio tower JM9	Direct access to TPS Switching Station B access road.
3320+00	Switching Station B (Tunnel 2 west portal) - alternate site 2	ATC Type D JM5 @ T2 W. Portal	Radio tower Tunnel 2 west portal	Co-locate with tunnel portal.
3596+00	Paralleling Station B3			Located in tunnel.
3860+00	Paralleling Station B4			Locate in tunnel.

Stationing	Traction Power Facility	Automatic Train Control site	Communications Radio Tower	Selection Rationale
4038+00			Radio tower @ Tunnel 2 east portal	Co-located with tunnel portal.
4183+36		ATC Type D JM7	Radio tower ATC-D-JM7	Co-locate with ATC site.
4183+83	Substation Station C		Radio tower SS-C	Co-locate with substation.
4290+25			Stand-alone radio tower JM10	Minimizes loss of prime agricultural land.
4398+50	Paralleling Station C1 - alternate site 1		Radio tower PS-C1 - alternate site 1	Minimizes loss of prime agricultural land
4483+86		ATC Type D JM8- alternate site 1	Radio tower ATC-D-JM8 - alternate site 1	Co-locate with ATC site. Minimizes loss of prime agricultural land and impacts on biological and aquatic resources
4646+50	Paralleling Station C2 - alternate site 2		Radio tower PS-C2 - alternate site 2	Minimizes loss of prime agricultural land.
4771+59			Stand-alone radio tower JM11 - alternate site 1	Minimizes loss of prime agricultural land
4792+29		ATC Type E	Radio tower Interlocking site E	Co-locate with ATC site
4921+63	Switching Station C- alternate site 1		Radio tower SWS-C - alternate site 1	Minimizes loss of prime agricultural land and impacts on biological and aquatic resources
5051+48			Stand-alone radio tower JM12	Direct access to public road.
5175+75		ATC Type D JM9- alternate site 1	Radio tower ATC-D-JM9 - alternate site 1	Minimizes loss of prime agricultural land
5179+50	Paralleling Station C3 - alternate site 1		Radio tower PS-C3 - alternate site 1	Minimizes loss of prime agricultural land and impacts on biological and aquatic resources
5336+60			Standalone radio tower JM13 - alternate site 2	Minimizes loss of prime agricultural land

ATC = automatic train control
 FJ = San Francisco to San Jose Project Section
 JM = San Jose to Merced Project Section
 MOWF = maintenance of way facility
 PCEP = Peninsula Corridor Electrification Project

PS = paralleling station
 TPS = traction power station

8.5 Environmentally Superior Alternative

The CEQA Guidelines (Section 15126.6(e) (2)) state that if the environmentally superior alternative is the No Project Alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives. For the reasons described in this Final EIR/EIS, the environmentally superior alternative is not the No Project Alternative. The project alternatives would provide benefits, including reduced vehicle trips on freeways and overall vehicle miles

traveled, reduced regional air pollutants, reduced need for freeway and airport expansion, and reduced greenhouse gas emissions to help California meet performance targets for 2030 stipulated in Senate Bill 32 and beyond, all of which would not be realized under the No Project Alternative. CEQA does not require a lead agency to select the environmentally superior alternative as its preferred alternative; however, the Preferred Alternative of the project is the environmentally superior alternative. Implementing the HSR project between San Jose and the Central Valley Wye would have adverse environmental impacts regardless of which alternative is selected, but, overall, the Preferred Alternative would be the environmentally superior alternative by best meeting environmental regulatory requirements and best minimizing impacts on the natural environment, farmland, and communities.

8.6 Environmentally Preferable Alternative

The environmentally preferable alternative is a NEPA term for the alternative that would promote the national environmental policy as expressed in NEPA's Section 101 (42 U.S.C. Section 4331). Ordinarily, this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources. As required by the regulations implementing NEPA, the Authority will identify the environmentally preferable alternative in its Record of Decision for the project.

8.7 Least Environmentally Damaging Practicable Alternative

The Authority is working closely with federal, state, and regional agencies to meet regulatory requirements by refining the project alternatives to avoid and minimize impacts and, where necessary, to reach agreement on mitigation measures for impacts that cannot be avoided.

Two important processes that integrate many of the applicable regulatory requirements are Section 404 of the Clean Water Act and Section 408 of the Rivers and Harbors Act, as managed by the USACE with oversight from the USEPA. These laws authorize the USACE to make permit decisions regarding the discharge of dredged or fill material into waters of the U.S. and alterations or modifications to existing federal flood risk management facilities. To coordinate decision-making, the Authority and FRA entered into a NEPA/Section 404/Section 408 Integration Process Memorandum of Understanding with the USACE and USEPA (FRA et al. 2010). The Memorandum of Understanding outlines three major checkpoints in the integration of the NEPA, Section 404, and Section 408 processes. Each checkpoint consists of the submittal of technical data and studies to the USACE and USEPA for review and consideration prior to issuing a formal written agency response:

- The first of these submittals is Checkpoint A, which involves preparing a project purpose and need statement that dually serves NEPA and Section 404 requirements. The USACE concurred with the project's Purpose and Need statement on October 28, 2011, and the USEPA concurred on November 30, 2011 satisfy Checkpoint A.
- The second submittal is Checkpoint B, which is required to screen and reduce the potential project alternatives to an appropriate range of "reasonable" and "practicable" alternatives using the best available information. On September 21, 2017, September 26, 2017, January 22, 2019, and February 1, 2019, the USEPA and USACE provided letters on the project alternatives proposed to be carried through the EIR/EIS. Both agencies concurred on the range of alternatives to be carried forward in the San Jose to Merced Project Section EIR/EIS.
- The third and final submittal is Checkpoint C, which consists of the assembly and assessment of information contained in this Final EIR/EIS and associated technical reports for consideration by the USACE and USEPA to determine the preliminary LEDPA and provide a formal agency response. The documentation includes those analyses completed to meet requirements of NEPA, Sections 401 and 404 of the Clean Water Act, Section 14 of the Rivers and Harbor Act, and includes consideration of compliance with the federal Endangered Species Act and the National Historic Preservation Act. In April 2020, the USEPA and the USACE provided letters on the preliminary LEDPA determination by the

Authority. Both agencies concurred that Alternative 4 represents the preliminary LEDPA for the San Jose to Central Valley Wye Project Extent.

Materials prepared for the checkpoints are available for review at the Authority offices in Sacramento and San Jose, or electronically upon request.