3.11 Safety and Security

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

- Section 3.11.1, Introduction, was modified to more clearly describe at-grade crossing safety improvements included in the project.
- Section 3.11.2.1, Federal, was updated regarding the Federal Railroad Administration (FRA) Procedures for Considering Environmental Impacts. Footnotes were added regarding FRA's Environmental Procedures and the updated Council on Environmental Quality (CEQ) regulations issued after release of the Draft EIR/EIS.
- The publication date of the FRA final rule requiring commuter and intercity passenger railroads to develop and implement a system safety program (SSP) to improve safety of their operations was added to Section 3.11.2.1.
- Text was updated throughout this section to clarify the requirements in Federal Aviation Regulation (FAR) 14 Code of Federal Regulations (C.F.R.) Part 77.
- In Section 3.11.2.2, State, text was revised to describe that the dedicated section of the high-speed rail (HSR) alignment would be fully access-controlled, and the blended section of the HSR alignment would be a partially grade-separated, limited-access guideway.
- Section 3.11.5.1, Emergency Services, and Impact S&S#3 were revised to acknowledge the City of San Jose's implementation of Emergency Vehicle Pre-Emption (EVP) and its applicability to the project.
- Section 3.11.5.1, including Table 3.11-3, was revised to include City of Gilroy Fire Department *2019 Master Plan Update* information.
- Section 3.11.5.3, Community Safety, was updated to include a description of pedestrian and bicycle safety; to present information on current safety features (median channelization and traffic signal preemption) at existing at-grade crossings; and to describe information on City of Santa Clara and City of San Jose safe routes to school programs. The reference to planned bikeway and bicycle facility improvements in Table 2-5, Planned Transportation Improvements, in Chapter 2, Alternatives, was removed from this section, as all identified planned projects have been constructed.
- Analysis about the Diridon design variant (DDV) and tunnel design variant (TDV), which was included in Section 3.20 in the Draft EIR/EIS, has been incorporated into this Final EIR/EIS in Section 3.11.6.2, Emergency Services (in the introduction to the Construction Impacts subsection and under Impact S&S#4); in Section 3.11.6.3, Community Safety and Security (in the introduction to the Construction Impacts subsection, under Impact S&S#9, and in the introduction to the Operations Impacts subsection); and under Impact S&S#16. In each case, the revised text states that the findings of the analysis with the DDV or TDV did not change any conclusions compared to the alternatives without the design variants.
- The title of Impact S&S#7 was updated to more accurately reflect its applicability.
- The table reference in Impact S&S#8: Permanent Exposure to Traffic Hazards was updated to indicate that Table 2-8 (not Table 2-6) shows permanent road closures.
- Impact S&S#12 was modified to add additional description and analysis concerning at-grade crossing safety and to identify the pedestrian-only at-grade crossing at the College Park Caltrain Station. Additionally, the incorrect reference to Figure 2-33 in this text was deleted.
- Section 3.11.7, Mitigation Measures, was updated as follows:
  - The introduction paragraph was modified to apply to all alternatives.
  - Table 3.11-16 was updated to clarify SS-MM#4 applies to all alternatives.

  - Mitigation Measure SS-MM#1 was modified to include local relocation of the fire department, if necessary, to reduce project effects on response times to less than the significance threshold.
  - Mitigation Measure SS-MM#3 was updated to acknowledge the City of San Jose's implementation of EVP and its applicability to the project.
  - Mitigation Measure SS-MM#4 was revised to modify the monitoring requirements, to clarify the provision of additional emergency response equipment for existing fire stations, and to clarify consultation with local cities and fire departments. This measure was also modified to allow for the provision of funding for initial operating costs of a new fire station in South San Jose, one in south Morgan Hill/San Martin, and one in Gilroy, if needed. This measure now also includes installation of an independent, at-grade railroad crossing monitoring system for local police and fire emergency dispatch.
  - Description of certain site-specific traffic mitigation measures that would apply to Alternative 4 if Mitigation Measure SS-MM#4 cannot reduce emergency vehicle response time impacts to a less-than-significant level was added.
- Section 3.11.8.1, Emergency Services, was modified to reflect changes to Mitigation Measure SS-MM#4.
- Section 3.11.9, CEQA Significance Conclusions, was modified to include site-specific traffic mitigation measures for Impact S&S#4.
- Where appropriate, the verb "would," when used specifically to describe impact avoidance and minimization features (IAMFs) or mitigation measures, as well as their directly related activities, was changed to "will," indicating their integration into project design.

3.11.1 Introduction

This section describes safety and security issues in the San Jose to Central Valley Wye Project Extent (project or project extent) resource study area (RSA) where safety and security are most susceptible to change as a result of construction and operation of the project. The analysis evaluates project construction and operations impacts on emergency services and community safety and security, addressing the safety and security of construction site workers, HSR passengers and employees, and the general public (including motorists, pedestrians, and bicyclists) who could be exposed to significant risks of loss, injury, or death during project construction and operations. The primary safety and security concerns associated with the project would be impacts on emergency services and response times in southern San Jose, Morgan Hill, and Gilroy. Construction of the project alternatives has the potential to eliminate property access to San Jose Fire Station #18, restrict emergency vehicle access to Morgan Hill Charter School, and substantially increase emergency response times in southern San Jose due to the narrowing of Monterey Road or an increase in gate down time at at-grade crossings, depending on the alternative selected.

Primary Safety and Security Impacts

- Elimination of access to San Jose Fire Station #18
- Inadequate emergency vehicle access to Morgan Hill Charter School (Alternatives 1 and 2)
- Increase in emergency response times due to the narrowing and elimination of left-turn lanes along Monterey Road (Alternatives 1, 2, and 3) or due to increase in gate down times at at-grade crossings (Alternative 4)
- Safety improvements associated with elimination of existing at-grade crossings (Alternative 2 Only)

To achieve safe operation of the HSR system and maintain community safety and security, which is of the highest priority (Authority 2012a; Authority and FRA 2005, 2008), the HSR system and the project have been designed for optimal performance in conformance with industry standards and federal and state safety regulations. Performance standards for the HSR are included in Chapter 2, Alternatives, Table 2-2. The project would consist of a blended system, in which HSR trains and other trains would operate on the same track that would transition to a fully grade-

separated system in which HSR trains would operate on HSR-dedicated track. The point at which the project would transition from a blended system to a dedicated system varies depending upon the project alternative.

The HSR would transition from a blended system to a fully dedicated track system south of Scott Boulevard in Santa Clara. Alternative 1 would transition to a fully dedicated track system at Interstate (I-) 880 (south of Scott Boulevard). Alternatives 2 and 3 would transition to a fully dedicated track system just south of Scott Boulevard, and Alternative 4 would transition to a fully dedicated track system at the Downtown Gilroy Station.

The blended system would be a partially grade-separated, limited-access guideway. Speeds within the blended system would be limited to an operating speed of less than 110 miles per hour (mph). At-grade roadway crossings would be controlled by right-of-way fencing, four-quadrant gates (quad gates), and roadway channelization. Unauthorized access would be deterred using intrusion detection and monitoring systems. For at-grade crossings from south of Tamien Station in San Jose to south of Gilroy, the HSR project would add railroad preemption connected to adjacent traffic signals where not currently present. The HSR project would also include addition of new road traffic signals (where not currently present) that would have railroad preemption. Control of road traffic signals would be integrated with the HSR automatic train control (ATC) system at those grade crossings where there are road traffic control systems that regulate the flow of traffic across railroad/road crossings. A further upgrade to the at-grade crossings from south of Tamien Station to south of Gilroy would be the addition of obstacle detection. For Alternative 4, the California High-Speed Rail Authority (Authority) would include improvements at the West Virginia Street and Auzerais Avenue at-grade crossings within the Caltrain Corridor, including new train detection and control equipment and railroad preemption connected to adjacent traffic signals, as well as integration with Caltrain signal operations, if feasible.

The dedicated system would be fully grade-separated and fully access-controlled with intrusion monitoring systems, which would prevent access by unauthorized vehicles, people, animals, and objects. The system would include appropriate barriers (fences and walls) and state-of-the-art communication, access-control, and monitoring and detection systems, and all aspects of the HSR system would conform to the latest federal requirements regarding transportation security. Overall safety and reliability of the HSR system would be achieved by the application of proven technical standards commensurate with the desired level of performance. Based on the long-term operating success of European and Asian systems, and because the United States has no specific or current guidelines for the development of HSR systems capable of 220 mph travel, the HSR system design integrates an overall set of guiding principles and system requirements consistent with European and Asian HSR systems and United States rail requirements (e.g., ATC and intrusion detection and control) to establish safe and secure HSR system design and operation.

Safety and security issues addressed in this section include:

- Interference with emergency response times and services and the need for expansion of these services
- Exposure to construction and operational hazards
- Exposure to traffic hazards
- Exposure to wildfire hazards
- Interference with airport safety
- Exposure to high-risk facilities
- Increases in criminal and terrorist activity
- Exposure to extreme weather conditions

The following appendices in Volume 2 of this Final EIR/EIS provide additional details on safety and security:

- Appendix 2-A, Roadway Modifications and Road Crossings, describes road crossings of the alignment, road relocations, and road closures resulting from construction of the project.
- Appendix 2-B, Railroad Crossings, describes existing and proposed railroad crossings related to the project alternatives.
- Appendix 2-D, Applicable Design Standards, describes the relevant design standards for the project alternatives.
- Appendix 2-E, Project Impact Avoidance and Minimization Features, provides the list of all IAMFs incorporated into the project alternatives.
- Appendix 2-J, Regional and Local Policies, provides a list by resource of all applicable regional and local plans and policies.
- Appendix 3.2-A, Transportation Data for Roadways, Highways, and Intersections, provides data on existing roadways, highways, and intersections and describes future road crossings, road relocations, and closures resulting from construction of the project alternatives.
- Appendix 3.11-A, Safety and Security Data, provides data used in the analysis to evaluate potential impacts on safety and security related to the project alternatives.
- Appendix 3.11-B, Airport Obstructions, provides an assessment of potential encroachment of the project alternatives on aviation airspace, pursuant to Federal Aviation Administration (FAA) FAR Part 77 regulations.

Safety and security concerns associated with other hazardous conditions are described and evaluated elsewhere in this Final EIR/EIS. The following eight resource sections and chapter provide additional information related to safety and security:

- Section 3.2, Transportation, evaluates impacts of the project alternatives on transportation, circulation and access, including road closures and roadway, pedestrian, and bicycle access during project construction.
- Section 3.3, Air Quality and Greenhouse Gases, evaluates impacts of the project alternatives on human health from air emissions, such as air toxics and fugitive dust emissions.
- Section 3.5, Electromagnetic Fields and Electromagnetic Interference, evaluates impacts of the project alternatives on human health from electromagnetic fields and electromagnetic interference, including nuisance shocks that could occur from construction and operation of the project.
- Section 3.6, Public Utilities and Energy, evaluates impacts of the project alternatives on utilities, energy, water infrastructure, including from relocations, on irrigation and drainage canals, stormwater systems, water districts, public utility groundwater use, and water supply, and impacts on natural gas and petroleum fuel pipelines (identified as high-risk facilities in the context of safety and security) from construction of the project.
- Section 3.8, Hydrology and Water Resources, evaluates impacts of the project alternatives on safety related to flood flows and flood risk.
- Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources, evaluates impacts of the project alternatives on safety related to seismic and geotechnical hazards.
- Section 3.10, Hazardous Materials and Waste, evaluates impacts of the project alternatives on safety related to hazardous materials and waste, such as use of hazardous materials or exposure to soil and groundwater contamination.
- Section 3.19, Cumulative Impacts, evaluates construction and operations impacts of the project alternatives and other past, present, and reasonably foreseeable future projects.
- Chapter 5, Environmental Justice, evaluates construction and operations impacts of the project alternatives that could have disproportionate adverse effects on low-income populations and minority populations.

3.11.1.1 Definition of Resources

The following are definitions for resources and facilities related to safety and security analyzed in this Final EIR/EIS.

- **Emergency services**—Emergency services include emergency response by fire, law enforcement, and emergency services to fire, seismic events, or other emergency situations.
- **Fire**—Fire protection services provide predominantly emergency firefighting and rescue services. These services typically include local fire departments, including paid and volunteer fire departments, county fire services, and equipment used to respond to incidents.
- **Law enforcement**—Law enforcement services address the discovery, deterrence, rehabilitation, or punishment of criminal behavior and assure that the laws of an area are obeyed. These services are provided by federal, state, and local law enforcement agencies. Railroad operators, including the Authority, may also employ railroad police officers to enforce state laws for the protection of railroad property, personnel, passengers, and cargo (49 C.F.R. Part 207).
- **Emergency medical services**—Emergency medical services refer to the treatment and transport of people in crisis health situations that may be life threatening. These services are typically provided by local fire departments, emergency medical service agencies, and independent ambulance services.
- **Emergency response plans**—Emergency response plans are created by counties and cities within the RSA and outline procedures for operations during emergencies such as earthquakes, floods, fires, and other natural disasters; hazardous materials spills; transportation emergencies; civil disturbance; and terrorism.
- **Community safety and security**—Community safety and security addresses safety and security concerns of construction site workers, HSR passengers and employees, and members of the general public (including motorists, pedestrians, and bicyclists) that could be exposed to significant risks of loss, injury, or death during construction, and HSR system passengers and employees, members of the general public (including motorists, pedestrians, and bicyclists), or structures that could be exposed to significant risk of loss, injury, or death during project operations.
  - Community safety addresses emergency and fire response, automobile, pedestrian and bicycle safety, landfill safety, fire hazards, rail and airport safety, school safety, and high-risk facilities and fall hazards.
  - Community security addresses facility security, criminal acts (including vandalism, theft, and violence), and acts of terrorism.

3.11.2 Laws, Regulations, and Orders

This section presents federal and state laws, regulations, and orders applicable to safety and security and relevant to the project. The Authority would implement the HSR project in compliance with all federal and state regulations. Volume 2, Appendix 2-J describes regional and local plans and policies relevant to safety and security considered in the preparation of this analysis.

3.11.2.1 Federal

Federal Railroad Administration, Procedures for Considering Environmental Impacts (64 Fed. Reg. 28545)

On May 26, 1999, FRA released *Procedures for Considering Environmental Impacts* (FRA 1999). These FRA procedures supplement the Council on Environmental Quality Regulations (40 C.F.R. Part 1500 et seq.) and describe the FRA's process for assessing the environmental impacts of actions and legislation proposed by the agency and for the preparation of associated documents

(42 U.S. Code 4321 et seq.).[1,2] The FRA *Procedures for Considering Environmental Impacts* states that "the EIS should identify any significant changes likely to occur in the natural environment and in the developed environment. The EIS should also discuss the consideration given to design quality, art, and architecture in project planning and development as required by U.S. Department of Transportation Order 5610.4." These FRA procedures state that an EIS should consider possible impacts on public safety.

Rail Safety Improvement Act of 2008 (PL 110-432)

The Rail Safety Improvement Act reauthorized the FRA to oversee the nation's rail safety program. One aim of the statute is to improve conditions of rail bridges and tunnels. The Rail Safety Improvement Act also requires railroads to implement positive train control (PTC) systems by the end of 2015 on certain rail lines.[3] PTC infrastructure consists of integrated command, control, communications, and information systems for controlling train movements that improve railroad safety by significantly reducing the probability of collisions between trains, casualties to roadway workers and damage to their equipment, and over-speed accidents (49 C.F.R. Parts 200–299).[4]

United States Code on Railroad Safety (49 U.S.C. § 20101 et seq.)

This code contains a series of statutory provisions affecting the safety of railroad operations.

Federal Railroad Administration, System Safety Program (49 C.F.R. Part 270)

This regulatory program would require commuter and intercity passenger railroads to develop and implement an SSP. SSP is a structured program with proactive processes and procedures, developed and implemented by railroads to identify and mitigate or eliminate hazards to reduce the number and rates of railroad accidents, incidents, injuries, and fatalities.

On August 12, 2016, the FRA published the final rule requiring commuter and intercity passenger railroads to develop and implement a SSP to improve safety of their operations. FRA stayed the effective date of the final rule until March 4, 2020 (84 *Federal Register* [Fed. Reg.] 45683, December 18, 2018).[5] The final rule was published on March 4, 2020 (85 Fed. Reg. 12826, March 4, 2020).[6]

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[1] While this EIR/EIS was being prepared, FRA adopted new NEPA compliance regulations (23 C.F.R. 771). Those regulations only apply to actions initiated after November 28, 2018. See 23 C.F.R. 771.109(a)(4). Because this EIR/EIS was initiated prior to that date, it remains subject to FRA's Environmental Procedures rather than the Part 771 regulations.

[2] The Council on Environmental Quality issued new regulations on July 14, 2020, effective September 14, 2020, updating the NEPA implementing procedures at 40 C.F.R. Parts 1500-1508. However, this project initiated NEPA before the effective date and is not subject to the new regulations, relying on the 1978 regulations as they existed prior to September 14, 2020. All subsequent citations to Council on Environmental Quality regulations in this environmental document refer to the 1978 regulations, pursuant to 40 C.F.R. 1506.13 (2020) and the preamble at 85 Fed. Reg. 43340.

[3] In late 2015, Congress extended the deadline by at least 3 years to December 31, 2018, with the possibility of an extension to a date no later than December 31, 2020, if a railroad completes certain statutory requirements that are necessary to obtain an extension (www.fra.dot.gov/ptc).

[4] The California HSR Program is being required to employ an ATC system. The ATC system will provide functions of automatic train protection, automatic train operation, and automatic train supervision. The ATC system would include all the safety and non-safety critical functions of a train control system and would comply with FRA's Positive Train Control requirements under both the federal Rail Safety Improvement Act of 2008 and 49 C.F.R. Part 236 Subpart I. A full description of the intended ATC system is provided in Technical Memorandum 3.3.1, *ATC Concept of System* (Authority 2010a), and Technical Memorandum 3.3.2, *ATC Site Requirements* (Authority 2010b).

[5] https://www.govinfo.gov/content/pkg/FR-2018-12-07/pdf/2018-26447.pdf (84 Fed. Reg. 45683).

[6] https://www.federalregister.gov/documents/2020/03/04/2020-04424/system-safety-program-and-risk-reduction-program (85 Fed. Reg. 12826).

Federal Railroad Administration, Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets (49 C.F.R. Parts 229, 231, 236, and 238)[7]

The final rule amends FRA's passenger equipment safety standards using a performance-based approach to adopt new and modified requirements governing the construction of conventional- and high-speed passenger rail equipment. This final rule adds a new tier of passenger equipment safety standards (Tier III) to facilitate the safe implementation of nation-wide, interoperable high-speed passenger rail service at speeds up to 220 mph. While Tier III trainsets must operate in an exclusive right-of-way without grade crossings at speeds above 125 mph, these trainsets can share the right-of-way with freight trains and other tiers of passenger equipment at speeds not exceeding 125 mph. The final rule also establishes crashworthiness and occupant protection performance requirements in the alternative to those currently specified for Tier I passenger trainsets. The Tier III requirements and Tier I alternative crashworthiness and occupant protection requirements remove regulatory barriers and enable use of new technological designs, allowing a more open U.S. rail market. Additionally, the final rule increases from 150 mph to 160 mph the maximum speed for passenger equipment that complies with FRA's Tier II requirements.

In accordance with federal regulations (49 C.F.R. Part 239), Caltrain prepares and periodically updates an emergency preparedness plan [*Caltrain Passenger Train Emergency Preparedness Plan*]; most recently updated February 2013. The plan covers the following topics related to emergencies: communications, employee training and qualifications, joint operations, special circumstances, liaison with emergency responders, on-board emergency equipment, passenger safety information, handling passengers with disabilities, passenger train emergency simulations, debriefing and critiques, emergency exits, and operation (efficiency) tests (PCJPB 2014).

Department of Homeland Security/Transportation Security Administration, Rail Transportation Security (49 C.F.R. Part 1580)

This regulation codifies the Transportation Security Administration (TSA) inspection program. It also includes security requirements for freight railroad carriers; intercity, commuter, and short-haul passenger train service providers; rail transit systems; and rail operations at certain fixed-site facilities that ship or receive specified hazardous materials by rail.

Transportation Security Administration, Security Directives for Passenger Rail

Security Directives RAILPAX-04-01 and RAILPAX-04-02 require rail transportation operators to implement certain protective measures, report potential threats and security concerns to the TSA, and designate a primary and alternate security coordinator.

Emergency Planning and Community Right-to-Know Act (42 C.F.R. Part 116)

The objectives of the Emergency Planning and Community Right-to-Know Act are to allow state and local planning for chemical emergencies, provide for notification of emergency releases of chemicals, and addresses a community's right to know about toxic and hazardous chemicals.

Federal Aviation Administration Rotocraft External-Load Operations and Operation Rules (14 C.F.R. Part 133 and § 133.33)

Helicopter external lift operations are regulated under 14 C.F.R. Part 133, Rotocraft External-Load Operations, and Section 133.33, Operation Rules. The FAA requires helicopter operators to submit an External Load Lift Plan to the agency for review and approval for public safety purposes prior to lifting external loads over or immediately adjacent to structures and/or roads. The plan would specify the following:

- Pilot qualifications and experience (pilots must be qualified in accordance with 14 C.F.R. Part 133 for Class A and B, external load operations)
- Requirements for an aerial hazard analysis of the construction site

[7] https://www.govinfo.gov/content/pkg/FR-2018-11-21/pdf/2018-25020.pdf (83 Fed. Reg. 59182).

- Protective clothing/equipment for ground personnel
- Specifications for all rope used to suspend external loads
- Responsibility for providing load calculations
- Requirements for mission briefing prior to aerial operations
- Safety considerations from Chapter 11 of the *Interagency Helicopter Operations Guide* (National Wildfire Coordination Group 2016), adapted to meet the project's requirements
- Emergency procedures in the event of a mechanical failure

The plan would be required to show the exact routes the helicopter would use and the proximity of the routes to all nearby roads and structures. If the helicopter must fly over a building, the building must be vacated, and if it would fly over a road, all traffic on the road must be temporarily stopped. If external load helicopter operations are conducted in an area away from structures and roads, a waiver may be obtained exempting the operator from submitting a plan.

Federal Aviation Regulations (14 C.F.R. Part 77)

Under FAR Part 77 regulations for determining obstructions to airspace, an existing object, including a mobile object, would be an obstruction to air navigation if it penetrates the surface of a takeoff and landing area of an airport or any imaginary surface established for the airport (14 C.F.R. § 77.24); 14 C.F.R. Part 77 § 77.7 establishes that notification must be submitted to the FAA a minimum of 45 days prior to the proposed commencement of construction.

3.11.2.2 State

California Government Code Section 65302

California Government Code (Gov. Code) Section 65302 requires cities and counties to include in their general plan a statement of development policies setting forth objectives, principles, standards, and plan proposals for seven policy areas, including safety. The safety element provides for the protection of the community from any unreasonable risks associated with seismic and geologic hazards, flooding, and wildland and urban fires. The safety element must also address evacuation routes, peak load water supply requirements, and minimum road widths and clearances around structures, because those items relate to identified fire and geologic hazards.

California Public Utilities Code Section 765.5

Under California Public Utilities Code Section 765.5, the California Public Utilities Commission (CPUC) is required to establish minimum inspection standards such that railroad locomotives, equipment, and facilities in Class I railroad yards in California will be inspected at least every 120 days, and inspection of all branch and mainline track at least every 12 months. The CPUC is required to conduct focused inspections of railroad yards and track, either in coordination with the FRA or as the CPUC finds necessary. The focused inspection program will target rail yards and track that pose the greatest safety risk, based on inspection data, accident history, and rail traffic density.

California Public Utilities Code Section 768

Under California Public Utilities Code Section 768, the CPUC may, after a hearing, require every public utility to construct, maintain, and operate its line, plant, system, equipment, apparatus, tracks, and premises in a manner to promote and safeguard the health and safety of its employees, passengers, customers, and the public. The CPUC may prescribe, among other things, the installation, use, maintenance, and operation of appropriate safety or other devices or appliances, including interlocking and other protective devices at grade crossings or junctions and block or other systems of signaling. The CPUC may establish uniform or other standards of construction and equipment, and require the performance of any other act that the health or safety of its employees, passengers, customers, or the public may demand.

California Public Utilities Code Section 7661 and 7665 (Local Community Rail Security Act of 2006)

Under California Public Utilities Code Section 7661 and Section 7665 (the Local Community Rail Security Act of 2006), every railroad corporation operating in California is required to develop, in consultation with, and with the approval of, the California Emergency Management Agency,[8] a protocol for rapid communications with the agency, the California Highway Patrol (CHP), and designated county public safety agencies in an endangered area if there is a runaway train or any other uncontrolled train movement that threatens public health and safety. Railroad corporations are required to promptly notify the California Emergency Management Agency, the CHP, and designated county public safety agencies, through a communication to the Warning Center of the California Emergency Management Agency, if there is a runaway train or any other uncontrolled train movement that threatens public health and safety, in accordance with the railroad corporation's communications protocol.

California Public Utilities Code Sections 309, 315, 765, 768, 7710, 7727, 7661, and 7665 et seq.

Railroad Safety and Emergency Planning and Response

Under these codes, the CPUC is required to adopt safety regulations and to report sites on railroad lines that are deemed hazardous within California. The Rail Accident Prevention and Response Fund was created in an effort to support prevention regulations financially through fees paid by surface transporters of hazardous materials. In addition, the Railroad Accident Prevention and Immediate Deployment Force was created to provide immediate on-site response in the event of a large-scale unauthorized release of hazardous materials. Modifications of existing highway-rail crossings require CPUC authorization, and temporarily impaired clearance during construction requires application to the CPUC and notice to railroads.

California Public Resources Code (Title 14 and Title 19)

The California Department of Forestry and Fire Protection (CAL FIRE) implements fire safety regulations in the state. The California Public Resources Code (Title 14 and Title 19) includes fire safety regulations that restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on construction equipment with an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify the fire suppression equipment that must be provided on site for various types of work in fire-prone areas.

CAL FIRE has rated areas within California for their potential fire hazards. The risk of wildland fires is related to a combination of factors, including winds, temperatures, humidity levels, and fuel moisture content. Of these four factors, wind is the most crucial. Steep slopes also contribute to fire hazard by intensifying the effects of wind and making fire suppression difficult. Where there is easy human access to dry vegetation, fire hazards increase because of the greater chance of human carelessness.

To quantify this potential risk, CAL FIRE has developed a fire hazard severity scale to predict the damage a fire is likely to cause" (CAL FIRE 2012a). CAL FIRE's fire hazard model incorporates wildland fuels, topography, weather, fire frequency and severity, and the production of burning firebrands (embers), including how receptive land sites are to starting new fires and how far embers move (CAL FIRE 2012a). The fire hazard severity zones are moderate, high, and very high.

CAL FIRE has the primary financial responsibility of preventing and suppressing fires in certain portions of the state, or *State Responsibility Areas*. These areas include "lands covered wholly or in part by timber, brush, undergrowth, or grass, whether of commercial value or not; lands that protect the soil from erosion and retard run off or percolation; lands used principally for range or forage purposes; lands not owned by the federal government; and lands that are not

[8] The California Emergency Management Agency was superseded by the California Governor's Office of Emergency Services in 2013.

incorporated" (CAL FIRE 2012b). Lands are removed from State Responsibility Areas when housing densities average more than three units per acre over an area of 250 acres, unless dictated otherwise. More than 31 million acres of California´s privately owned wildlands are within State Responsibility Areas (CAL FIRE 2012b). Areas that are not within a State Responsibility Area are considered to be within a *Local Responsibility Area*. Under CAL FIRE's fire hazard model, all State Responsibility Areas are rated moderate, high, or very high (CAL FIRE 2019a).

CPUC General Order 164-D Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems and FTA Rail Fixed Guideway Systems: State Safety Oversight (49 C.F.R. Part 659)

CPUC General Order 164-D and 49 C.F.R. Part 659 require CPUC, as a designated state safety oversight agency, to review each rail transit agency's system safety and security program at a minimum of once every 3 years. The purpose of these triennial reviews is to verify compliance and evaluate the effectiveness of each rail transit agency's system safety program plan (SSPP) and security and emergency preparedness plan (SEPP) to assess the level of compliance with CPUC General Order 164-D and other CPUC safety and security requirements (CPUC 2015).

California Emergency Services Act (California Gov. Code § 8550 et seq.)

The Emergency Services Act supports the state's responsibility to mitigate the effects of natural, human-produced, or war-caused emergencies that threaten human life, property, and environmental resources of the state. The act aims to protect human health and safety and to preserve the lives and property of the people of the state. The act provides the Office of Emergency Services with the authority to prescribe powers and duties supportive of the act's goals. In addition, the act authorizes the establishment of local organizations to carry out its provisions through necessary and proper actions.

California Public Resources Code Section 21096

The California Public Resources Code (Cal. Public Res. Code) requires that the California Department of Transportation (Caltrans), Division of Aeronautics, *Airport Land Use Planning Handbook* (Caltrans 2011) be used as a technical resource to assist in the preparation of an EIR for any project situated within the boundaries of an airport land use compatibility plan. The *Airport Land Use Planning Handbook* supports the State Aeronautics Act (Cal. Public Res. Code § 21670 et seq.), providing compatibility planning guidance to airport land use commissions, their staffs and consultants, the counties and cities having jurisdiction over airport area land uses, and airport proprietors.

California Public Resources Code Sections 21098

Cal. Public Res. Code Section 21098 specifies notification procedures if a proposed project is within a "low-level flight path" for aircraft that fly lower than 1,500 feet above the ground or a "military impact zone" within 2 miles of a military installation under the jurisdiction of the U.S. Department of Defense.

California Public Utilities Code Section 21674.7

California Public Utilities Code Section 21674.7 establishes procedures for airport land use planning, including development of airport comprehensive land use plans (CLUP) and defining airport influence areas (AIA). The AIA is a composite of the areas surrounding the airport that are affected by noise, height, and safety considerations. The AIA is defined as a feature-based boundary around the airport within which all actions, regulations, and permits must be evaluated by local agencies to determine how the CLUP policies may affect the proposed development. This evaluation is used to determine whether the development meets the conditions specified for height restrictions and noise and safety protection to the public.

Gas Monitoring and Control at Active and Closed Disposal Sites (27 Cal. Public Res. Code § 20917 et seq.)

Cal. Public Res. Code, Title 27, Sections 20917 et seq. sets forth the performance standards and the minimum substantive requirements for landfill gas monitoring and control as it relates to active

solid waste disposal sites and to proper closure, post-closure maintenance, and ultimate reuse of solid waste disposal sites. These standards and requirements are intended to protect public health and safety and the environment from pollution due to the disposal of solid waste.

California Department of Forestry and Fire Protection—Strategic Fire Plan for California

The *Strategic Fire Plan for California* (CAL FIRE 2016a) provides the state's road map for reducing the risk of wildfire. Part of this plan identifies and assesses community assets at risk of wildfire damage. CAL FIRE generated a list of California communities at risk for wildfire and created fire hazard severity zones.

Power Line Safety and Fire Prevention (Cal. Code Regs., Title 14, § 1250)

California Code of Regulations (Cal. Code Regs.), Title 14, Section 1250 "Fire Prevention Standards for Electric Utilities," specifies utility-related measures for fire prevention. It also provides specific exemptions from electric pole and tower firebreak clearance standards, as well as electric conductor clearance standards, and specifies when and where the standards apply.

California Occupational Safety and Health Administration Construction Safety Orders (Cal. Code Regs., Title 8, § 1502 et seq.)

Worksite safety in California, including construction worksite safety, is regulated by provisions of Title 8 of the Cal. Code Regs. and overseen by the California Occupational Safety and Health Administration (Cal-OSHA). Title 8 requires compliance with standard procedures to prevent construction worksite accidents and requires a written workplace injury and illness prevention program to be in place (Cal. Code Regs., tit. 8, § 1502 et seq.).

California High-Speed Rail Program Safety and Security Management Plan

Safety and security are priority considerations in the planning and execution of all work activities for construction of the California HSR System. The system safety and system security program for the development and operation of HSR is described in the Authority's SSMP (Authority 2018). Based on Federal Transit Administration (FTA) guidelines for the safe and secure development of major capital projects, the SSMP includes the Authority's Safety and Security Policy Statement, roles and responsibilities for safety and security across the system, the program for managing safety hazards and security threats/vulnerabilities, safety and security certification program requirements, and construction safety and security requirements. A hierarchy of controls would be applied when considering the management of identified hazards:

1. Avoidance
2. Elimination
3. Substitution
4. Engineering controls
5. Warnings
6. Administrative controls
7. Personal protection equipment

The safety and security of HSR passengers, employees, and the surrounding communities would be assured through the application of risk-based system safety and system security programs that identify, assess, avoid, and mitigate hazards and vulnerabilities for the HSR. Using domestic and international regulations, guidance, and industry best practices, the objective of the HSR system safety and system security programs is to adequately and consistently apply risk-based hazard mitigation measures.

The dedicated section of the HSR alignment would be fully access-controlled, meaning that the public would be able to access the system only at the station platforms. The blended section of the HSR alignment would be a partially grade-separated, limited-access guideway. Access-control barriers and railway/roadway vehicle barriers along the right-of-way would prevent intrusion into the right-of-way. HSR trainsets and fixed infrastructure would employ the latest safety features and designs to enable the trains to stay upright and in-line in the event of a derailment. ATC systems would provide additional protections against collisions, derailments,

outside hazards such as intrusions into the right-of-way, earthquakes, and severe weather conditions. The HSR guideway, stations, and associated facilities would include fire and life safety infrastructure (including fire and smoke prevention and control); security and communications systems; and features to manage adjacent hazards from electrical and other utilities, hazardous materials facilities, oil and gas wells, and wind turbines. Appropriate setbacks and access controls for adjacent facilities or underneath elevated structures, based upon existing regulations, guidance, or site-specific analysis, would maintain the safety and security of both the HSR operation and adjacent communities.

The SSMP for the project was developed during project design and is updated annually. The SSMP applies to design, construction, and testing and startup of the HSR system, but does not apply to revenue operations of the project. The SSMP would lead to the development of an SSP and SEPP that would be applicable to operation of the project and that would govern safety and security for the HSR operating system (Authority 2018). The Authority would require the SSP and SEPP to be developed and implemented prior to commencement of revenue service of the HSR in accordance with the FRA regulation (49 C.F.R. Part 270) that would require the application of a SSP to passenger railroad operations.[9]

As part of the SSP, the Authority would continue the risk-based hazard management program and risk-based hazard analysis to identify new hazards and resulting risks on the HSR operating system and apply the results of the hazard analysis to develop and implement methods to mitigate or eliminate the identified hazards and risks to the extent practicable. The SSP would describe the procedures, processes, and programs the Authority has implemented that would support the safety and security goals of the SSP. These procedures, processes, and programs would include a maintenance, inspection, and repair program; a rules compliance and procedures review program; an employee and contractor training program, and a public safety outreach program.

3.11.2.3 Regional and Local

All regional and local policies that are applicable to the project are listed in Volume 2, Appendix 2-J. In addition to these regional and local policies, many state and local safety requirements incorporate the following National Fire Protection Association (NFPA) Codes and Standards.

National Fire Protection Association Codes and Standards

State and local safety requirements may incorporate NFPA codes and standards. The NFPA develops, publishes, and disseminates more than 300 codes and standards intended to minimize the possibility and effects of fire and other risks. TM 2.8.1 incorporates several NFPA codes and standards (Authority 2013a). For example, TM 2.8.1 relies on NFPA 130-2010 (now NFPA 130-2017), *Standard for Fixed Guideway and Passenger Rail Systems* (NFPA 2017), to specify guidance on incorporating passenger safety in system design; egress routes in the event of an emergency; emergency response planning, training, and operations; and fire and smoke prevention and suppression. Additionally, NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (NFPA 2016), includes measures to protect citizens and the occupational safety and health of fire department employees.

3.11.3 Consistency with Plans and Laws

As indicated in Section 3.1.6.3, Consistency with Plans and Laws, the California Environmental Quality Act (CEQA) and CEQ regulations require a discussion of inconsistencies or conflicts between a proposed undertaking and federal, state, regional, or local plans and laws. As such, this Final EIR/EIS describes the inconsistency of the project with federal, state, regional, and local plans and laws to provide planning context.

[9] The effective date of 49 C.F.R. Part 270 has been stayed until March 4, 2020, as indicated in the *Federal Register* (83 Fed. Reg. 63106, December 18, 2018).

A number of federal and state laws and implementing regulations, listed in Section 3.11.2.1, Federal, and Section 3.11.2.2, State, are relevant to safety and security. These federal and state requirements include:

- Federal and state acts and laws that provide comprehensive directives for safety and security on passenger rail. Applicable acts and laws include the Federal Rail Safety Improvement Act, sections of the United States Code on railroad safety, FRA regulations for railroad transportation safety, Transportation Security Administration Security Directives for Passenger Rail, and the California General Plan Law.
- Federal and state acts and laws that provide comprehensive requirements for safety, security, and emergency response planning include the Federal Emergency Planning and Community Right-to-Know Act, the California Public Utilities Code, the California Emergency Services Act, the Cal. Public Res. Code, and the California General Plan Law.

The Authority, as the lead agency proposing to construct and operate the HSR system, is required to comply with all federal and state laws and regulations and to secure all applicable federal and state permits prior to initiating construction on the selected alternative. Therefore, there would be no inconsistencies between the project alternatives and these federal and state laws and regulations.

The Authority is a state agency and therefore is not required to comply with local land use and zoning regulations; however, it has endeavored to design and construct the HSR project so that it is compatible with land use and zoning regulations. For example, the project incorporates IAMFs that will require construction contractors to coordinate with local jurisdictions before and during construction to maintain emergency vehicle access. The Authority reviewed a total of 18 plans and policies and 7 local and regional ordinances, and determined the project is consistent with all plans, policies, and ordinances reviewed. The project is compatible with the Airport CLUPs for Norman Y. Mineta San Jose International Airport, San Martin Airport, Frazier Lake Airpark, and Los Banos Municipal Airport.

3.11.4 Methods for Evaluating Impacts

The evaluation of impacts on safety and security is a requirement of the National Environmental Policy Act (NEPA) and CEQA. The following sections define the RSAs and summarize the methods used to analyze impacts on safety and security. As summarized in Section 3.11.1, Introduction, eight other resource sections in Chapter 3 and Chapter 5, Environmental Justice, in this Final EIR/EIS provide additional information related to safety and security.

3.11.4.1 Definition of Resource Study Areas

As defined in Section 3.1, Introduction, RSAs are the geographic boundaries in which the environmental investigations specific to each resource topic were conducted. The RSAs for safety and security encompasses the areas directly or indirectly affected by construction and operation of the project. These areas are composed of the project footprint for each of the project alternatives plus an additional distance from the project footprint where impacts from construction and operations could occur on emergency services and community safety and security.

The safety and security RSA also includes communities, cities, and counties along the project alignment that could be indirectly affected by project construction and operations. Indirect impacts could influence an area outside of the RSA for direct impacts because although certain local service providers (e.g., fire departments, police departments, hospitals) are outside the RSA, they have service boundaries or provide service within the RSA. These service providers are in San Jose, Morgan Hill, Gilroy, Gustine, Hollister, and Los Banos. Table 3.11-1 identifies the safety and security RSAs.

Table 3.11-1 Definition of Safety and Security Resource Study Areas

Facility	Description of Resource Study Area
Construction and Operations—Direct Impacts	
Rights-of-way, stations, and maintenance facilities	Areas within the HSR right-of-way and within 0.5 mile of the project footprint, including the rights-of-way, stations, and maintenance facilities
Schools[1]	Areas within 0.25 mile of the project footprint
Landfills[2]	Areas within 0.25 mile of the project footprint
Airports and high-risk facilities[3]	Areas within 2 miles of the project footprint
Oil and gas wells[4]	Areas within 200 feet of the project footprint
Emergency services	Areas within 0.5 mile of the project footprint, including the right-of-way, stations, and maintenance facilities
Construction and Operations—Indirect Impacts	
Emergency services	Emergency service providers' service areas

Source: Authority and FRA 2017
HSR = high-speed rail
[1] Cal. Code Regs., tit. 5, § 14010(d), requires a safety study for new school sites within 1,500 feet (approximately 0.25 mile) of an existing railroad track.
[2] Landfills would be identified within 0.25 mile of the project footprint per Cal. Code Regs., tit. 27, § 20925.
[3] High-risk facilities include landfills, oil and gas wells, cement plants, ethanol plants, gas plants, industrial plants, power plants, refineries, wastewater treatment facilities, and dams.
[4] Oil and gas wells would be identified within 200 feet of the project footprint per Cal. Code Regs., tit. 14, § 1720.

Landfills are included under the landfill RSA and also included under the high-risk facilities RSA. Landfills would be identified within 0.25 mile of the project footprint per California regulations under the landfill RSA, in addition to being identified within 2 miles of the project footprint under the high-risk facilities RSA.

Oil and gas wells are included under the oil and gas well RSA and also included under the high-risk facilities RSA. Oil and gas wells would be identified within 200 feet of the project footprint per California regulations under the landfill RSA, in addition to being identified within 2 miles of the project footprint under the high-risk facilities RSA.

3.11.4.2 Impact Avoidance and Minimization Features

IAMFs are project features that are considered to be part of the project and are included as applicable in each of the alternatives for purposes of the environmental impact analysis. The full text of the IAMFs that are applicable to the project is provided in Appendix 2-E. The following IAMFs are applicable to the safety and security analysis:

- SS-IAMF#1: Construction Safety Transportation Management Plan
- SS-IAMF#2: Safety and Security Management Plan
- SS-IAMF#3: Hazard Analyses
- SS-IAMF#4: Oil and Gas Wells
- AQ-IAMF#1: Fugitive Dust Emissions
- GEO-IAMF#3: Gas Monitoring
- TR-IAMF#1: Protection of Public Roadways during Construction
- TR-IAMF#2: Construction Transportation Plan
- TR-IAMF#3: Off-Street Parking for Construction-Related Vehicles
- TR-IAMF#5: Maintenance of Bicycle Access
- TR-IAMF#6: Restriction on Construction Hours
- TR-IAMF#7: Construction Truck Routes

This environmental impact analysis considers these IAMFs as part of the project design. In Section 3.11.6, Environmental Consequences, each impact narrative describes how these project features are applicable and, where appropriate, effective at avoiding or minimizing potential impacts to less than significant under CEQA.

3.11.4.3 Methods for Impact Analysis

This section describes the sources and methods the Authority used to analyze potential project impacts on safety and security. These methods apply to both NEPA and CEQA analyses unless otherwise indicated. Refer to Section 3.1.6.4, Methods for Evaluating Impacts, for a description of the general framework for evaluating impacts under NEPA and CEQA. Sections 3.11.4.4, Method for Evaluating Impacts under NEPA, and 3.11.4.5, Method for Determining Significance under CEQA, describe the NEPA and CEQA impact methodologies used to evaluate project impacts on safety and security. The Authority collected data from and reviewed several sources to inform the analysis of potential project impacts on emergency services, community safety, security, and wildfire hazards.

Emergency Services

To assess project impacts on emergency services, the Authority reviewed the following information and data sources:

Organization of Safety and Security Analysis

- Emergency Services
- Community Safety and Security
- Wildfire Hazards

- Authority requirements for safety and security plans and procedures applicable to the project (i.e., the Security Emergency Preparedness Plan, SSMP, and SSP), and the technical memoranda that describe the implementation of these plans and procedures (e.g., Technical Memorandum 2.8.1, *Safety and Security Design Requirements for Infrastructure Elements* [Authority 2013a]), identifies the safety and security requirements for infrastructure elements for the HSR system).
- Technical memoranda that describe the Authority's plans and procedures requirements to evaluate their applicability to and their effect on potential safety and security impacts of construction and operation of the HSR project. Safety and security plans and procedures that would reduce safety and security effects of construction and operation of the HSR project were incorporated into IAMFs that are applicable to the construction and operation of the HSR project.
- General plans, emergency plans, and other relevant local municipality planning documents, as well as information from consultations with local fire protection, police, and other emergency service providers.
- Vehicle accident data and train accident/incident data from the CHP and the FRA.
- The locations of police departments and law enforcement call response times within the emergency services RSA.
- Crime rates in Santa Clara, San Benito, and Merced Counties and crime rates throughout the state were identified to evaluate conditions for law enforcement and response times within the RSA in comparison to statewide averages.
- The locations of fire departments and the types of equipment operated within the RSA, and emergency response times for fire departments within the RSA.
- Temporary and permanent road closures and relocations, grade-separated crossings, and at-grade crossings, as well as the linear extent the project that would operate on elevated track and in tunnels.

Community Safety

The Authority based the evaluation of community safety impacts primarily on (1) existing conditions compared to the design and operational features of the project alternatives, and (2)

international rail operating experience. The analysis addresses safety issues related to traffic hazards, interference with airports, Valley fever, exposure to landfills, high-risk facilities, fall hazards, and interference with community facilities including police stations, fire stations, and hospitals. Additionally, this analysis evaluates HSR passenger and employee safety risks from onboard fire and tunnel fire that would result in automatic train shutdowns or emergency evacuations. Further, the analysis evaluates community safety impacts resulting from exposure to rail-related hazards, (e.g., train accidents and incidents).[10]

The Authority reviewed the planned roadway improvements and planned permanent road closures and relocations that would be implemented for HSR construction and operations and the potential of the roadway improvements, closures, and relocations to affect motor vehicle drivers, pedestrians, and bicyclists. The Authority gathered data from several sources, including the CHP (CHP 2013, 2017) and the FRA (FRA 2016a, 2016b, 2016c, 2016d, 2016e, 2016f, 2017a, 2017b, 2017c), to evaluate motor vehicle, pedestrian, and bicycle safety, including incidents occurring at highway-rail grade crossings, and to characterize train accidents and train incidents within the RSA. In addition, Authority analysts developed a geographic information system (GIS) database with electronic information from local and regional government sources to determine local land uses (including consistency with airport compatibility land use plans), potential fire hazards, landfills, high-risk facilities, and nearby oil and natural gas wells to evaluate how construction and operation of the project alternatives may cause safety hazards. Data sources included CAL FIRE's fire severity zone maps (CAL FIRE 2007a, 2007b, 2007c, 2007d, 2007e, 2008), the California Division of Oil, Gas, and Geothermal Resources (DOGGR) oil and natural gas well database (DOGGR 2017), the U.S. Environmental Protection Agency (USEPA) registry of wastewater treatment plants (USEPA 2016), the U.S. Army Corps of Engineers (USACE) database of dams (USACE 2016), and the California Solid Waste Information System database (CalRecycle 2017).

Security

The evaluation of the potential impacts that the project alternatives could have on security involved similar methods as those used for to evaluate emergency services and safety impacts. The Authority assessed security impacts by reviewing police department and law enforcement call response times within the RSA. Onboard crime statistics from Metro and BART were used to identify the types of potential operational security impacts in the vicinity of HSR stations and maintenance facilities resulting from the project (FBI 2015a, 2015b, 2015c). These Federal Bureau of Investigation (FBI) data represent the best publicly available statistics for the types of crimes that might occur during project operations.

The Authority also evaluated the potential for criminal acts or acts of terrorism affecting the HSR system and other high-risk facilities in the RSA that would result in automatic train shutdowns or emergency evacuations.

To assess project impacts, the Authority reviewed the following information and data sources:

- The locations of police departments and law enforcement call response times.
- The locations of high-risk facilities, such as cement plants, wastewater treatment plants, electric power plants, landfills, and dams and reservoirs.
- The locations of oil and gas wells.

[10] As defined in 49 C.F.R. Section 225.5, a *train accident* involves damages to equipment ("… any collision, derailment, fire, explosion, act of God, or other event involving operation of railroad on-track equipment, whether standing or moving, that results in damages greater than the current reporting threshold to railroad on-track equipment, signals, track, track structures, and roadbed"). A *train incident* involves injuries ("… any event involving the movement of on-track equipment that results in a reportable casualty, but does not cause reportable damage above the current threshold established for train accidents"). In general, train incidents involve injuries or fatalities (casualties) and train accidents involve property damage. As defined by FRA: Casualty is a reportable death, injury, or illness arising from the operation of a railroad. Casualties may be classified as either fatal or nonfatal (FRA 2011).

- The potential effects of criminal acts or terrorism.
- Crime rates in Santa Clara, San Benito, and Merced Counties and crime rates throughout the state, as well as statistics for onboard crime on passenger trains for Metro and BART.
- The locations of fire departments and the types of equipment operated and emergency response times for fire departments within the RSA.
- Responsibilities of railroad police officers under 49 C.F.R. Part 207.[11]

Wildfire Hazards

The evaluation of the potential impacts that the project alternatives could have on wildfire hazards involved similar methods as those used for to evaluate emergency services and safety impacts. The Authority assessed wildfire hazards impacts by reviewing existing conditions compared to the design and operational features of the project alternatives. Authority analysts developed a geographic information system (GIS) database with electronic information from local and regional government sources to determine local land uses (including consistency with airport compatibility land use plans) and potential fire hazards to evaluate how construction and operation of the project alternatives may cause safety hazards. Data sources included CAL FIRE's fire severity zone maps (CAL FIRE 2007a, 2007b, 2007c, 2007d, 2007e, 2008).

Fire hazard models provide a measure of the likelihood of an area burning and how it burns (e.g., intensity, speed, embers produced), so it is possible to predict the likely damage by a fire (CAL FIRE 2012b). This information is identified as part of fire-hazard zoning performed by CAL FIRE. In 2016, CAL FIRE revised the Strategic Fire Plan for California, which provides the state's road map for reducing the risk of wildfire (CAL FIRE 2016a). CAL FIRE created fire-hazard severity zones (CAL FIRE 2007a, 2007b, 2007c). The potential for wildland fires represents a hazard where development is adjacent to open space or near wildland fuels or designated fire severity zones.

Refer to Appendices 3.11-A and 3.11-B for more information regarding the methods and data sources used in this analysis. Laws, regulations, and orders (see Section 3.11.2, Laws, Regulations, and Orders) that regulate safety and security were also considered in the evaluation of impacts on safety and security.

3.11.4.4 Method for Evaluating Impacts under NEPA

CEQ NEPA regulations (40 C.F.R. Parts 1500–1508) provide the basis for evaluating project effects (as described in Section 3.1.6.4). As described in Section 1508.27 of these regulations, the criteria of context and intensity are considered together when determining the severity of the change introduced by the project.

- **Context**—For this analysis, the *context* would include conditions related to safety and security within the RSA, including existing emergency services, law enforcement, emergency medical services, emergency response plans, and community safety features; the regulatory setting relevant to the safety and security, including regional and local safety and security plans and procedures, and the Authority's SSMP; and the history of safe and secure operations of international HSR systems.
- **Intensity**—For this analysis, *intensity* is determined by assessing the degree to which the project could affect the public health and safety of HSR passengers, employees, and the surrounding communities through a reduction in emergency response access, an increase in emergency response times, construction worker risks (e.g., exposure to safety hazards or hazardous materials at construction sites), accident risks, or an increase of vulnerability to criminal or terrorist activity.

[11] As defined in 49 C.F.R. Section 207.2, the term *railroad police officer* means a peace officer who is commissioned in his or her state of legal residence or state of primary employment and directly employed by or contracted by a railroad to enforce state laws for the protection of railroad property, personnel, passengers, or cargo.

3.11.4.5 Method for Determining Significance under CEQA

CEQA requires an EIR to identify the significant environmental impacts of a project (CEQA Guidelines § 15126). One of the primary differences between NEPA and CEQA is that CEQA requires a threshold based impact analysis. Significant impacts are determined by evaluating whether project impacts would exceed the significance thresholds established for the resource (as presented in Section 3.1.6.4). By contrast, under NEPA, significance is used to determine whether an EIS will be required; NEPA requires a federal lead agency to prepare an EIS when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." Accordingly, Section 3.11.9, CEQA Significance Conclusions, summarizes the significance of the environmental impacts on safety and security for each project alternative.

The Authority uses the following thresholds to determine if a significant impact on safety and security would occur as a result of the project alternatives. For the CEQA analysis, the project would result in a significant impact on safety and security if it would:

- Conflict with adopted policies, plans, or programs regarding safety of public transit, bicycle, or pedestrian facilities, or otherwise decrease the safety of such facilities
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses
- Result in a safety hazard for people residing or working in the project vicinity for a project within an area where there is an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport or within the vicinity of a private airstrip
- Result in a safety hazard for people in the RSA as a result of construction or operations activities
- Result in substantial adverse physical impacts associated with the provision of, and the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts in order to maintain acceptable service ratios, response times, or other performance objectives for any public services, including fire protection, police protection, and emergency services
- Result in inadequate emergency access[12]
- Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan
- If in or near State Responsibility Areas or lands classified as very high fire hazard severity zones:
  - Substantially impair an adopted emergency response plan or emergency evacuation plan
  - Because of slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire

[12] For the purposes of this analysis, *inadequate emergency access* is defined as either a substantial blockage of physical access for emergency response purposes or a substantial increase in emergency response times (defined as greater than 30 seconds). While there are local standards for emergency vehicle response time, there are no established state or federal emergency vehicle response time standards, and analysts were not able to identify specific thresholds previously used under CEQA to evaluate this effect. The 30-second criterion was selected on the basis of several considerations. (1) Analysts reviewed local emergency management agency standards for response times (as discussed in this section), of which the more conservative were around 5 minutes. Thirty seconds—or 10 percent of 5 minutes (300 seconds)—was considered to represent a substantial delay in emergency response time. (2) NEPA effects are identified in Section 3.2, Transportation, for signalized intersections with congested conditions (defined as level of service E or F) where the project would result in 4 seconds of additional delay. Because an emergency vehicle route across the railroad is likely to encounter anywhere from two to six intersections affected by gate down time, a 30-second delay would include the collective effects of up to seven intersections.

- Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts on the environment
- Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes

Although not in a very high fire hazard severity area, the project is within or near State Responsibility Areas. Accordingly, impacts from the last four items are addressed in this analysis.

As discussed below, state and local agencies have developed a variety of policies, plans, and programs to address safety and security, including emergency response plans, evacuation plans, and plans to address bicycle safety, among others. Because these policies, plans, and programs have been developed specifically to minimize safety and security risks, a conflict would generally indicate the potential for a significant impact related to safety and security. Therefore, whether the project would conflict with adopted safety policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or an adopted emergency response plan or emergency evacuation, is an appropriate threshold to determine whether the project would result in a significant impact related to safety and security.

3.11.5 Affected Environment

This section describes the affected environment for emergency services, community safety, and security in the RSA. This information provides the context for the environmental analysis and the evaluation of impacts.

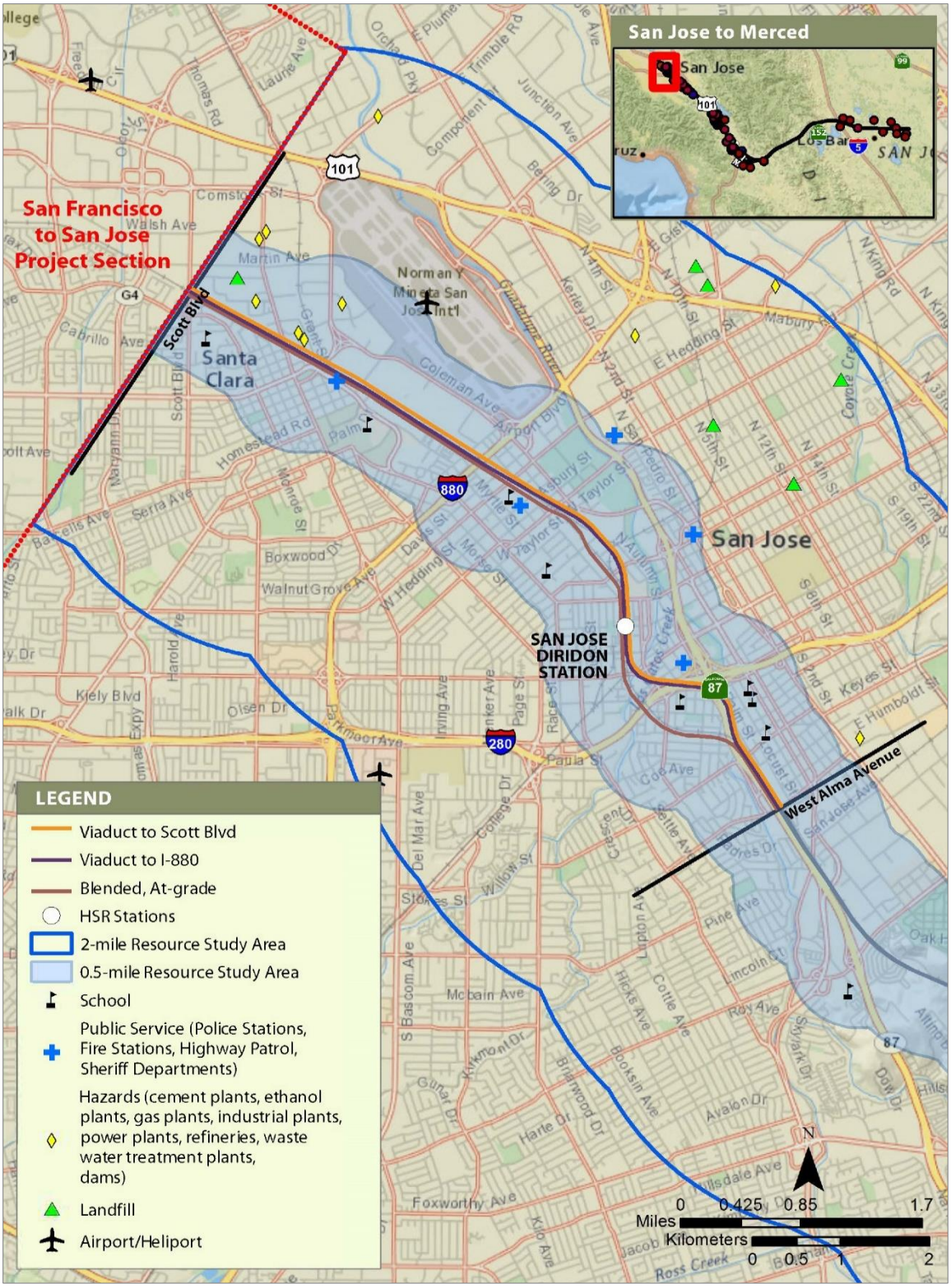
3.11.5.1 Emergency Services

Emergency Response Plans

Past development has led to conditions affecting emergency service access and response times. Volume 2, Appendix 2-J summarizes and discusses emergency operations requirements, including all applicable emergency response plans for the affected communities in the emergency response RSA. In addition to emergency operations requirements set forth in the county and city general plans, all counties and cities operate under the guidance of emergency operations plans. These plans outline procedures for fire, law enforcement, and emergency medical service operations during emergencies such as fires and other natural disasters; hazardous materials spills; transportation emergencies; and terrorism. The plans also identify the location of emergency response facilities, such as emergency dispatch and operations centers, government structures, and hospitals or other medical facilities. Figure 3.11-1 through Figure 3.11-5 and Volume 2, Appendix 3.11-A identify these facilities.

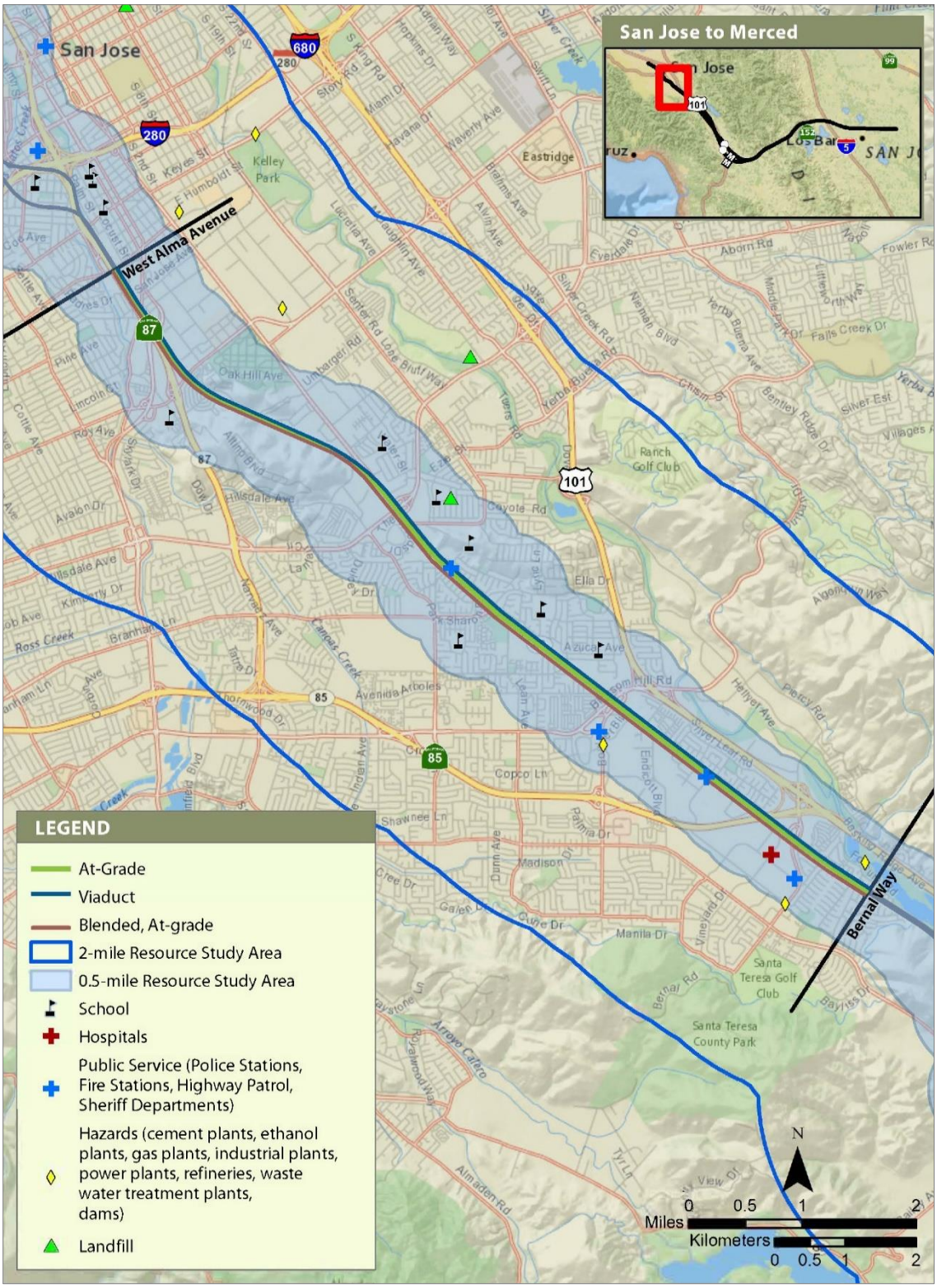
Existing rail services at the San Jose Diridon and Gilroy Stations are Caltrain, (Santa Clara) Valley Transportation Authority (VTA) light rail, Altamont Corridor Express (ACE), and Amtrak. Caltrain, VTA, ACE, and Amtrak have adopted emergency preparedness programs as part of their operating plans. In accordance with FTA Passenger Train Emergency Preparedness requirements (49 C.F.R. Part 239), Caltrain, VTA, and ACE have prepared and periodically update emergency preparedness plans. The plans cover the communications, employee training and qualifications, joint operations, special circumstances, liaison with emergency responders, on-board emergency equipment, passenger safety information, handling passengers with disabilities, passenger train emergency simulations, debriefing and critiques, emergency exits, and operation efficiency tests.

CPUC General Order (GO) 164-D Rules and Regulations Governing State Safety Oversight of Rail Fixed Guideway Systems and the FTA's Rail Fixed Guideway Systems: State Safety Oversight (49 C.F.R. Part 659) require CPUC, as a designated State Safety Oversight Agency, to review each rail transit agency's system safety and security program at a minimum of once every 3 years. The purpose of these triennial reviews is to verify compliance and evaluate the effectiveness of each rail transit agency's SSPP and SEPP to assess the level of compliance with CPUC GO 164-D and other CPUC safety and security requirements (CPUC 2014; PCJPB 2014).



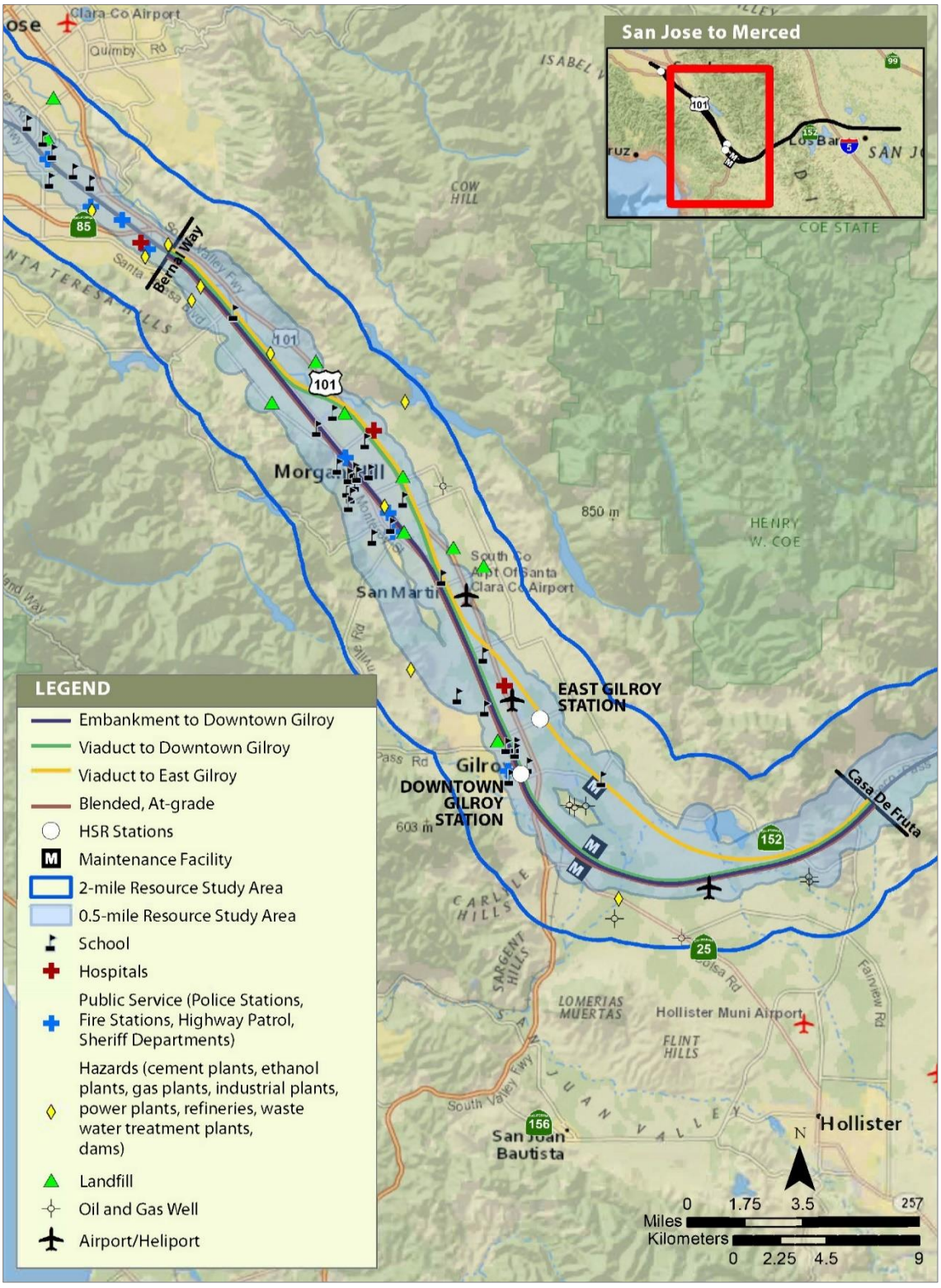
Sources: CalRecycle 2017; UC Berkeley 2016; USACE 2016; USEPA 2016 MARCH 2019
Note: Locations of hospitals, fire departments, and other critical facilities/infrastructure providing emergency services are listed in Appendix 3.11-A.

Figure 3.11-1 San Jose Diridon Station Approach Subsection: Safety and Security Resource Study Area and Existing Conditions



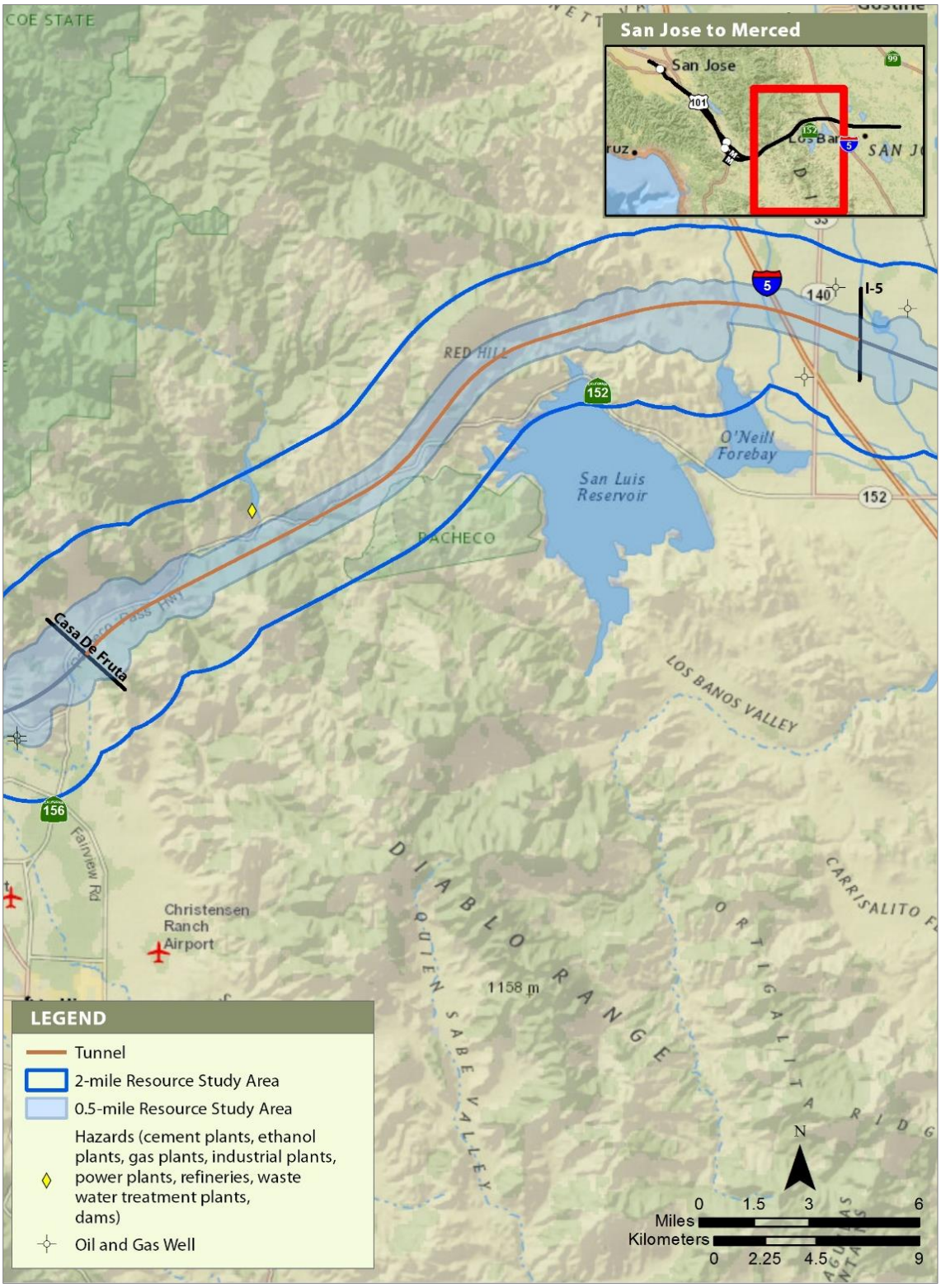
Note: Locations of hospitals, fire departments, and other critical facilities/infrastructure providing emergency services are listed in Appendix 3.11-A.
Sources: CalRecycle 2017; UC Berkeley 2016; USACE 2016; USEPA 2016 MARCH 2019

Figure 3.11-2 Monterey Corridor Subsection: Safety and Security Resource Study Area and Existing Conditions



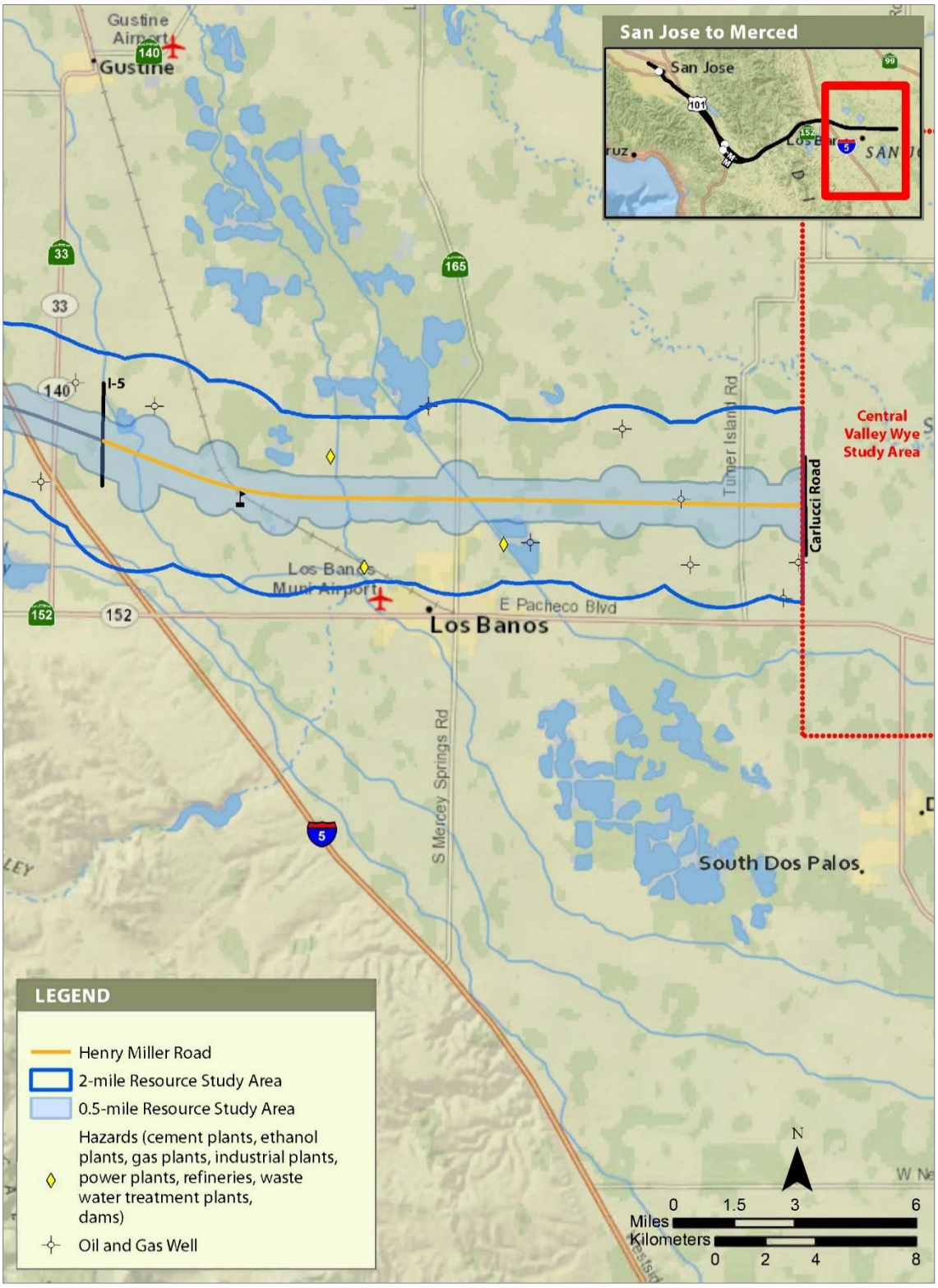
Note: Locations of hospitals, fire departments, and other critical facilities/infrastructure providing emergency services are listed in Appendix 3.11-A.
Sources: CalRecycle 2017; UC Berkeley 2016; USACE 2016; USEPA 2016 MARCH 2019
Red airport symbols are located beyond the 2-mile Resource Study Area.

Figure 3.11-3 Morgan Hill and Gilroy Subsection: Safety and Security Resource Study Area and Existing Conditions



Note: Locations of hospitals, fire departments, and other critical facilities/infrastructure providing emergency services are listed in Appendix 3.11-A.
Sources: CalRecycle 2017; UC Berkeley 2016; USACE 2016; USEPA 2016 MARCH 2019
Red airport symbols are located beyond the 2-mile Resource Study Area.

Figure 3.11-4 Pacheco Pass Subsection: Safety and Security Resource Study Area and Existing Conditions



Note: Locations of hospitals, fire departments, and other critical facilities/infrastructure providing emergency services are listed in Appendix 3.11-A.
Sources: CalRecycle 2017; UC Berkeley 2016; USACE 2016; USEPA 2016 MARCH 2019
Red airport symbols are located beyond the 2-mile Resource Study Area.

Figure 3.11-5 San Joaquin Valley Subsection: Safety and Security Resource Study Area and Existing Conditions

Amtrak's nationwide emergency preparedness program is implemented by Amtrak's Emergency Management and Corporate Security department. The department's organizational structure includes 11 regional emergency managers. Departmental responsibilities include emergency preparedness, passenger train emergency response planning, emergency response training and exercise implementation, and management of the Amtrak incident response team (Amtrak 2017).

The California Governor's Office of Environmental Services (Cal OES) has developed guidelines for a Standardized Emergency Management System (Cal OES 2009). The Standardized Emergency Management System is the system required by California Gov. Code Section 8607(a) for managing emergencies involving multiple jurisdictions and agencies, including standard procedures for emergency response personnel to request resources and equipment from other agencies (Cal OES 2009). Santa Clara, San Benito, and Merced Counties apply National Incident Management System, Standardized Emergency Management System (SEMS), and Incident Command System (ICS) protocols in responding to emergency incidents. The SEMS incorporates the ICS, a field-level emergency response system, multiagency/interagency coordination of emergency response activities, a mutual aid system for obtaining emergency resources from unaffected jurisdictions, and an operational area concept for coordination of resource requests and emergency response of California counties and their subdivisions (Cal OES 2019).

Regionally significant roads, defined in Section 3.2, are typically identified as emergency evacuation routes in county and city general plans and emergency response plans. Fifteen regionally significant roads cross the project alignment or are within other temporary construction areas within the RSA. In addition, local roads within the RSA would be subject to permanent realignment or permanent closure (Chapter 2, Table 2-8).

Emergency vehicle response throughout the RSA is supported by the presence of emergency vehicle detection and preemptive signaling at intersections. Emergency vehicle detection allows responders to communicate to traffic signals in advance of their arrival and have the signal provide a preemptive green indication in their direction of travel. This equipment is provided at some, but not all, of the intersections in the RSA. As an example, in the critical corridor of Monterey Road between Capitol Expressway and Bernal Road, this equipment is provided only at the Bernal Road westbound ramps and Blossom Hill Road eastbound ramps intersections, but not at any other existing signalized intersections in this section.

Temporary and permanent road closures and relocations and construction of new aerial structures, overcrossings, undercrossings, and at-grade and grade-separated crossings affecting Caltrans facilities are shown in Table 2-12. Figure 2-46 illustrates the locations of interstate highways, state highways, and state routes within the RSA. Caltrans facilities within the RSA include I-880, I-280, State Route (SR) 87, SR 85, U.S. Highway (US) 101, SR 152, I-5, SR 33, and SR 165.

Emergency Medical Services

Emergency medical services are provided by local fire departments, emergency medical service agencies, and independent ambulance services. Eight hospitals provide emergency medical services to the RSA. Locations of hospitals in the RSA are listed in Volume 2, Appendix 3.11-A.

Law Enforcement Response

There are six police departments within the RSA including municipal and county departments. Information on service areas, response times, and response criteria (Table 3.11-2) was obtained from published documents and websites. Where information was not available from these sources, surveys were sent and follow-up calls were made to departments to fill information gaps. This analysis reflects responses received from police departments as of August 2017 and represents the best available information. Response times for calls to law enforcement vary in the RSA, ranging from approximately 5 to 20 minutes. Service areas and response times for police and sheriff departments in the RSA are summarized in Table 3.11-2.

Table 3.11-2 Service Areas and Response Times for Police and Sheriff Departments in the Resource Study Area

Police Department	Service Area	Average Response Time	Response Criteria
Santa Clara County Sheriff's Office	Unincorporated areas of Santa Clara County	NA	NA
San Jose Police Department	City of San Jose	Priority 1: 6.7 minutes Priority 2: 20.3 minutes	The San Jose Police Department target response time for police services is 6 minutes for Priority 1 Calls for Service and 11 minutes for Priority 2 Calls for Service. Acceptable response times are considered to be 6 minutes or less for 60% of all Priority 1 Calls for Service and 11 minutes or less for 60% of all Priority 2 Calls for Service.
Morgan Hill Police Department	City of Morgan Hill	Priority 1: 5 minutes 10 seconds Priority 2: 6 minutes 41 seconds	The Morgan Hill Police Department's response time goal is within 5 minutes for Priority 1 Calls for Service and within 8 minutes for Priority 2 Calls for Service.
Gilroy Police Department	City of Gilroy	In FY2014/2015, the Gilroy Police Department responded to 27% of Priority 1 calls within 5 minutes, and 69% of Priority 2 calls within 20 minutes.	The City of Gilroy's response time goal is to respond to 95% of Priority 1 calls within 5 minutes and to respond to 95% of Priority 2 calls within 20 minutes.
San Benito County Sheriff's Department	Unincorporated areas of San Benito County	Priority 1 and Priority 2: 10 to 12 minutes	Deputies are required to respond to Priority 1 calls before other call priorities. The San Benito County 2035 General Plan (2015) Performance Goal PFS-12.2 states that the County shall strive to achieve and maintain appropriate Sheriff Department response times for all call priority levels to provide adequate law enforcement services for all County residents.
Merced County Police Department	Unincorporated areas of Merced County	NA	NA

Sources: City of San Jose 2013, 2016a, 2016b; SJPD 2016; City of Morgan Hill 2017a; Gilroy Police Department 2016
NA = Not available; information was requested from this department through a survey and follow-up calls but was not received at the time of this report.
FY = fiscal year

Fire Station/First Responder Response

Table 3.11-3 shows information on service areas, fire stations, response times, and response criteria for fire departments in the RSA obtained from published documents and websites. Where information was not available from these sources, surveys were sent and follow-up calls were made to the departments to fill information gaps. This analysis reflects responses received from fire departments as of September 2019 and represents the best available information.

The fire departments serving the RSA consist of paid employees. The city fire departments have mutual aid agreements with county fire protection services (and in some cases with other fire departments) to provide concurrent, cooperative response and assistance during emergencies. Additional information on fire department equipment and the boundaries of the CAL FIRE battalions within the RSA are provided in Appendix 3.11-A (Table 5 and Figures 1 through 3).

San Jose

In 2014–2015, the San Jose Fire Department (SJFD) responded to 73 percent of Priority I incidents within 8 minutes. In the 2014–2015 measurement period, the SJFD had a 90 percent First Alarm travel time of 12 minutes and 50 seconds, which is almost 5 minutes longer than the 8-minute national best practice publications for metro/urban areas and the SJFD response time standard. None of the battalions or station areas in San Jose met this goal. Given the traffic congestion and the emergency medical services incident demand during peak hours of the day, this result cannot be improved without more units, lower incident volumes, or both on the busiest units (City of San Jose 2015). In 2016, average incident response time for the SJFD, including call processing time, turnout time, and travel time, was 9 minutes and 5 seconds for medical incidents and 9 minutes and 41 seconds for fire and other incidents (SJFD 2016b). San Jose introduced EVP for certain areas of San Jose covering more than 900 intersections within city limits, including Monterey Road between Capitol Expressway and Bernal Road.

Morgan Hill

In 2015, the average response time for the Morgan Hill Fire Department was 8 minutes 95 percent of the time, which meets the fire department's response time goal (City of Morgan Hill n.d.). To evaluate how to meet future safety demands, the Morgan Hill Fire Department and the Morgan Hill Police Department developed a Public Safety Master Plan that was published in February 2017 (City of Morgan Hill 2017a). The City of Morgan Hill uses the results of the Public Safety Master Plan as a tool to determine staffing levels and any proposed changes to staffing and equipment. There is a tentative plan to add another fire station. The results of the Public Safety Master Plan may help the City to determine the timeline of construction and staffing of the potential station. As Morgan Hill continues to grow, staffing levels and additional resources will be evaluated (City of Morgan Hill 2016).

Gilroy

The Gilroy Fire Department's target response time for emergencies, including fire, medical, and rescue, is within 5 minutes of dispatch. The Gilroy Fire Department's average emergency and nonemergency response times are considered acceptable according to department standards (Gilroy Fire Department 2016b). The recently completed City of Gilroy Fire Department *2019 Master Plan Update* (City of Gilroy Fire Department 2019) identifies a best practice performance goal for total response time of 7:30 minutes or less (which includes a 4:00-minute travel time), 90 percent of the time. Overall, the findings in the master plan state that, currently, the first-due call-to-arrival performance for the city is 16 percent (about 1:13 minutes) slower than the recommended 7:30-minute goal for urban areas. The Master Plan also shows that the city is geographically too large to be served by the existing fire stations, and areas in the southwest of Gilroy where new residential and commercial development is planned would be outside of the 4:00-minute recommended emergency response travel time. The master plan shows that the planned Glen Loma Station would provide service to the southwest part of Gilroy within the recommended response time.

Table 3.11-3 Service Areas and Response Times for Municipal and County Fire Departments in the Resource Study Area

Fire Department	Service Area	Number of Fire Stations	Response Time	Response Criteria
Santa Clara County—Local Responsibility Areas				
Santa Clara County Fire Department	Campbell, Cupertino, Los Altos, Los Altos Hills, Los Gatos, Monte Sereno, Saratoga, and adjacent unincorporated areas	15	EMS Calls: Calls in urban and metropolitan areas responded to in under 8 minutes 90% of the time Structure Fire Calls: First unit arrives to calls in urban and metropolitan areas in under 8 minutes 90% of the time	NA
San Jose Fire Department	City of San Jose	33	90% First Alarm travel time of 12 minutes and 50 seconds (2014–2015 measurement period)	SJFD response time was almost 5 minutes longer than the 8-minute national best practice publications for metro/urban areas and the SJFD response time standard
Morgan Hill Fire Department	City of Morgan Hill	2	In 2015, the average response time was 8 minutes 95% of the time	Fire department response time goal is 8 minutes
Gilroy Fire Department	City of Gilroy	3	The first-due call-to-arrival performance for the City is 16 percent (about 1:13 minutes) slower than the recommended 7:30-minute goal for urban areas	Seven minutes 30 seconds or less (which includes a 4-minute travel time), 90 percent of the time
Santa Clara County—State Responsibility Areas				
CAL FIRE Santa Clara Unit (Battalion 1)	The service area for Battalion 1 is the State Responsibility Areas in portions of western, southern and eastern Santa Clara County, to the San Benito County line	1	NA	NA
CAL FIRE Santa Clara Unit (Battalion 7)	The service area of the South Santa Clara County Fire District and the Morgan Hill Fire Department, together known as Battalion 7, is in the southern end of Santa Clara County	1	NA	NA

Fire Department	Service Area	Number of Fire Stations	Response Time	Response Criteria
San Benito County—State Responsibility Areas				
CAL FIRE San Benito-Monterey Unit—Hollister (Battalion 5)	The service area for the Hollister Battalion 5 is the northeast corner of the unit in San Benito County bordering Santa Clara County		NA	NA
Merced County—State Responsibility Areas				
CAL FIRE Madera Mariposa Merced Unit: Los Banos Battalion (Battalion 17)	The service area for Battalion 17 includes Santa Nella and San Luis Hills, Dos Palos, Dos Palos "Y," Gustine, Los Banos, and Volta	20	NA	NA
Los Banos Fire Department	City of Los Banos	2	NA	NA
Dos Palos Fire Department	City of Dos Palos	1	NA	NA
City of Gustine Fire Department	City of Gustine	1	NA	NA

Sources: City of Morgan Hill, 2016, 2017a, 2018; City of Gilroy 2003, 2017; Gilroy Fire Department 2016a, 2016b, 2016c, 2019; CAL FIRE 2016a, 2016b, 2016c, 2016d, Crawford 2016a; 2016b; City of Los Banos 2017; City of San Jose 2015, 2016b; SJFD 2014, 2016a, 2016b; County of Merced 2013; Merced County Fire Department 2017; County of San Benito 2015a, 2015b; Santa Clara County Fire Department 2016
NA = Not available; information was requested from this department through a survey and follow-up calls but was not received at the time of this report.
CAL FIRE = California Department of Forestry and Fire Protection
EMS = emergency medical services
SJFD = San Jose Fire Department

San Benito County

The CAL FIRE San Benito–Monterey Unit Hollister Battalion (Battalion 5) is located at the northeast corner of the Unit in San Benito County, and the Battalion 5 boundary follows the Sam Benito–Santa Clara county line on both the east and the west down to the end of Cienega Road and east to south of Panoche and Antelope Valley (illustrated on Figure 2 of Appendix 3.11-A). CAL FIRE contract districts in San Benito County maintain automatic aid agreements with neighboring jurisdictions. The San Benito County Fire Department has aid agreements with the South Santa Clara County Fire District, Hollister City Fire Department, and Gilroy Fire Department.

Contracted Emergency Ambulance Response

In addition to fire departments, contracted ambulances also provide first responder services. In the RSA, the Santa Clara Emergency Services Agency contracts with private ambulance services to provide emergency first responder/ambulance services as well as nonemergency ambulance services and ambulance hospital transport services. The current contractor (as of July 2019) for Santa Clara County is Rural/Metro. The ambulance deployment plan is a fluid plan. Ambulances "post" (e.g., are stationed) at locations identified in the county based on how many are available, and they are moved around the county on a regular basis to cover the areas of need. Consequently, the specific posting locations for contracted ambulances could not be identified.

Table 3.11-4 shows the response times that contracted responders are required to comply with at least 90 percent of the time.

Table 3.11-4 Required Response Times for Contracted Ambulance Services in Santa Clara County

Type of Response	Required Response Time (minutes)		
	Metro/Urban Areas	Suburban/Rural Areas	Wilderness Areas
BLS and CPR capable first responder	07:59	09:59	11:59
Early defibrillation responder	07:59	09:59	11:59
Advanced life support responder	07:59	09:59	11:59
Transport ambulance	11:59	16:59	21:59

Source: County of Santa Clara 2014
These standards are required to be met 90 percent or more of the time. Most of the RSA is in areas defined as Metro/Urban.
BLS= basic life support
CPR= cardiopulmonary resuscitation

In 2017, contracted emergency ambulance services met the standards in Table 3.11-4 90 percent or more of the time in all response zones every month (County of Santa Clara 2018). In the first 4 months of 2019, emergency ambulance services met the standards in Table 3.11-4 at least 90 percent of the time in all response zones (County of Santa Clara 2019).

3.11.5.2 Wildfire Hazards

Fire hazard models provide a measure of the likelihood of an area burning and how it burns (e.g., intensity, speed, embers produced), so it is possible to predict the likely damage by a fire (CAL FIRE 2012b). Fire hazard measurement includes the speed at which wildfire moves, the amount of heat the fire produces, and the burning firebrands (i.e., any burning wood that can start a fire) that the fire sends ahead of the flaming front. This information is identified as part of fire-hazard zoning performed by CAL FIRE. State Responsibility Area maps were adopted by CAL FIRE in 2007, and draft Local Responsibility Area maps were published for Santa Clara, San Benito, and Merced Counties in 2007 and 2008 (CAL FIRE 2007a, 2007b, 2007c, 2007d, 2007e, 2008). In 2016, CAL FIRE revised the *Strategic Fire Plan for California*, which provides the state's

road map for reducing the risk of wildfire (CAL FIRE 2016a).[13] Part of this plan identifies and assesses community assets at risk for wildfire damage. CAL FIRE generated a list of California communities at risk to wildfire and created fire-hazard severity zones (CAL FIRE 2007a, 2007b, 2007c).[14] The following discussions describe fire hazard severity zones by subsection.

San Jose Diridon Station Approach Subsection

Most of the San Jose Diridon Station Approach Subsection is in a Local Responsibility Area for fire. This subsection passes through the cities of Santa Clara and San Jose. Based on review of CAL FIRE's California Fire Hazard Severity Zone map, this subsection would not pass through very high hazard zones and therefore is not subject to risk of wildland fires (CAL FIRE 2007a, 2008).

Monterey Corridor Subsection

Based on a review of CAL FIRE's California Fire Hazard Severity Zone maps for Santa Clara County, the Monterey Corridor Subsection is within both State Responsibility Areas and Local Responsibility Areas. However, the entire alignment is outside very high fire hazard severity zones and is consequently not subject to risk of wildland fires (CAL FIRE 2007a, 2008).

Morgan Hill and Gilroy Subsection

The Morgan Hill and Gilroy Subsection is within both State Responsibility Areas and Local Responsibility Areas. The alignment is near both moderate and high severity zones to the west and east of the subsection. High severity zones are directly south of Bernal Way west of the alignment and where the Morgan Hill and Gilroy Subsection would exit the tunnel at Casa de Fruta Parkway/SR 152. The proposed Downtown Gilroy Station and alternative East Gilroy Station would be outside very high fire hazard severity zones (CAL FIRE 2007a, 2008).

Pacheco Pass Subsection

Most of the Pacheco Pass Subsection is within State Responsibility Areas. The alignment is entirely within moderate and high severity zones (CAL FIRE 2007a, 2007b, 2007d, 2008). Although there are areas of very high fire severity north of the alignment, the Pacheco Pass Subsection is not within very high fire severity zones.

San Joaquin Valley Subsection

The San Joaquin Valley Subsection is entirely within Merced County. CAL FIRE determined that Merced County has no very high fire hazard severity zones within Local Responsibility Areas (CAL FIRE 2007c, 2007e). The portions of the San Joaquin Valley Subsection that are within State Responsibility Areas are not within fire hazard severity zones and are not subject to risk of wildland fire.

3.11.5.3 Community Safety

Motor Vehicles and Highways

Appendix 3.11-A, Safety and Security Data, in Volume 2, summarizes rail safety data. In 2017, California was second for the most highway–rail grade crossing incidents in the nation and first for the number of highway–rail grade crossing fatalities, and third in the number of railroad accidents (FRA 2018a, 2018b, 2018c). There were 30 highway–rail grade crossing incidents in Santa Clara County, 3 in San Benito County, and 32 in Merced County from January 2011 to December 2016. During that same time period, 65 at-grade crossing incidents occurred in Santa Clara, San Benito, and Merced Counties. None of these incidents occurred within the RSA (FRA 2016f). Appendix 3.11-A provides information about train accidents and at-grade crossing incidents, and Appendix 2-B, Railroad Crossings, provides information about existing railroad crossings.

[13] The most recent plan available was published in 2010 and revised in April 2016.

[14] The most recent fire hazard maps available are draft Local Responsibility Area maps published in 2008 and State Responsibility Area maps published in 2007.

Pedestrians and Bicycles

According to FRA, California ranked first in the nation in pedestrian rail–trespass casualties (deaths and injuries) in 2016 (FRA 2017c). These fatalities occurred primarily from pedestrian trespass. Between January 2011 and December 2016 there were 28 trespasser fatalities in Santa Clara County and 24 trespasser fatalities in Merced County. There were no trespasser fatalities in San Benito County between 2011 and 2016 (FRA 2017c). Appendix 3.11-A provides information about the at-grade crossing accidents, and Appendix 3.11-B provides information on existing railroad crossings.

Concerning cyclist safety, many pedestrian and bicycle facilities are in the safety and security RSA. Pedestrian and cyclist safety issues associated with the Caltrain tracks in the region primarily result from the conflict between pedestrians and cyclists and trains on at-grade crossings. Some grade crossings have Class I (paved bikeways physically separated from the roadway) or Class II (lanes for cyclists adjacent to the outside travel lane of the roadway, with special lane markings, pavement legends, and signs) bikeway facilities near the at-grade crossings. At other grade crossings, Class III bikeway facilities (signed for bike use but with no separate or exclusive right-of-way or lane striping on the roadway) are on or are proposed for several streets with at-grade crossings.

Railroad Operations

Existing passenger rail services at the San Jose Diridon and Gilroy Stations are Caltrain, VTA light rail, ACE, and Amtrak. Two Class I freight railroads operate within the RSA: the Union Pacific Railroad (UPRR) and BNSF Railway (BNSF).

Passenger Rail

Amtrak

Amtrak provides intercity passenger rail service in California on four principal corridors covering more than 1,300 linear route miles and spanning most of the state. The existing passenger rail network in the San Jose to Merced corridor includes portions of three of these principal corridors: the Coast Starlight follows the UPRR coast route between San Jose and Gilroy; the San Joaquin route follows the BNSF corridor in Madera and Merced Counties; and the Capitol Corridor, which terminates in San Jose, provides service north to Oakland and eventually to Sacramento and Auburn.

Caltrain

The Peninsula Corridor Joint Powers Board's (PCJPB) Caltrain service provides regional service between San Francisco and San Jose, with three peak hour/peak direction weekday trips extending to Gilroy. In 2017, there were 46 daily weekday round trips between San Francisco and San Jose Diridon Station, with 20 round trips extending to Tamien Station and three daily round trips to Gilroy (Caltrain 2017). Between the San Jose Diridon and Gilroy Stations are the Tamien, Capitol, Blossom Hill, Morgan Hill, and San Martin Stations.

Altamont Commuter Express

ACE provides four daily round-trip trains from Stockton to San Jose Diridon Station via Tracy and Livermore, with intermediate stops. ACE is working with the Authority to study an enhanced regional rail service between Stockton, Modesto, and San Jose and plans to expand service to 6 round trips in the short term and 10 round trips in the long term.

VTA

VTA provides light rail service within Santa Clara County. VTA operates a light rail system (Line 901, the Alum Rock–Santa Teresa line) serving San Jose and surrounding suburban areas south and east of Diridon Station. The VTA also manages BART Silicon Valley extending from Fremont through Milpitas, San Jose, and Santa Clara. The program's first phase would connect the Warm Springs BART Station in Fremont to the Berryessa BART Station in San Jose. The second phase would construct a subway tunnel from the Berryessa Station through downtown San Jose and the Diridon Station, terminating service at the Santa Clara Caltrain Station (VTA 2016). The project would connect with BART at the San Jose Diridon Station.

Freight Rail

UPRR operates the freight rail system in the Santa Clara to Madera corridor (via Niles Canyon and the Altamont Pass), while BNSF provides freight movement in and through Merced County. In Santa Clara County, freight trains operate daily on the UPRR Coast Line between San Jose and Gilroy; the Coast Line is also traveled by Caltrain, Amtrak, and ACE passenger services. The current combined freight and passenger train volume along this shared corridor is 11 to 25 trains per day, predominantly Caltrain passenger service (Caltrans 2013). UPRR freight train operations do not follow a set schedule, varying in response to freight customer needs and activity. In Merced County, rail freight service is used by several industrial/manufacturing and agricultural companies, with the largest users in Merced, Atwater, and Los Banos. BNSF is the primary owner of the railroad right-of-way used by freight and Amtrak San Joaquin trains along the SR 99 corridor. BNSF's ongoing track maintenance program in California involves surfacing or undercutting about 2,300 miles of track, replacing more than 100 miles of rail and 300,000 ties, and upgrading signals for PTC implementation.

At-Grade Crossing Conditions

Some of the existing at-grade crossings have median separators to prevent drivers from going around lowered gates by using the opposite travel lane. The types and locations of at-grade crossings with existing median separators include:

- Low concrete median separators on both sides of the tracks: San Jose (West Virginia Street, Branham Lane, Chynoweth Avenue); Morgan Hill (Tilton Avenue, Main Avenue, Dunne Avenue, Tennant Avenue); San Martin (San Martin Street); Gilroy (Las Animas Avenue, Leavesley Road, 10th Street)
- Low concrete median separators on one side of the track: San Jose (Auzerais Avenue); Gilroy (Leavesley Road)
- Metal bollards in the center median on the east side of the tracks: Gilroy (10th Street)
- No median separators: San Jose (Skyway Drive, Blanchard Road); Coyote Valley (Palm Avenue, Live Oak Avenue); Morgan Hill (San Pedro Avenue, Middle Avenue); San Martin (Church Avenue); Gilroy (Masten Avenue, Rucker Avenue, Buena Vista Avenue, Cohansey Avenue, IOOF Avenue, Lewis Street, Martin Street, 6th Street, 7th Street, Luchessa Avenue, Bloomfield Road)

Existing at-grade crossings between San Jose and Gilroy vary as to whether the railroad preemption is or is not interconnected with adjacent traffic signals as follows:

- At-grade crossings with railroad preemption connected to adjacent traffic signals: San Jose (Skyway Drive, Branham Lane, Chynoweth Avenue); Morgan Hill (Tilton Avenue); San Martin (San Martin Street); Gilroy (Masten Avenue, Las Animas Avenue, Leavesley Road, 10th Street)
- Crossings with adjacent traffic signal nearby but no preemption: San Jose (Auzerais Avenue, West Virginia Street, Blanchard Road); Coyote Valley (Palm Avenue); Gilroy (Lewis Street, 6th Street, 7th Street, Luchessa Avenue)
- Crossings with no adjacent traffic signals: Morgan Hill (Main Street, Dunne Street, San Pedro Avenue, Tennant Avenue, Middle Avenue); San Martin (Church Avenue); Gilroy (Rucker Avenue, Buena Vista Avenue, Cohansey Avenue, IOOF Avenue, Martin Street, Bloomfield Road)

Rail Accident/Incident Data

FRA accident/incident data for Santa Clara, San Benito, and Merced Counties are available through December 31, 2016 (FRA 2017a, 2017b). From January 1, 2011, to December 31, 2016, there were 187 accidents/incidents involving 37 fatalities and 150 nonfatal conditions in Santa Clara County, 3 accidents/incidents involving 1 fatality and 2 nonfatal conditions in San Benito County, and 82 accidents/incidents involving 31 fatalities and 51 nonfatal conditions in Merced County. Of the 37 fatalities in Santa Clara County, 28 were trespasser fatalities and the

remainder were highway–rail crossing fatalities. Of the 31 fatalities in Merced County, 24 were trespasser fatalities and the remainder were highway–rail crossing fatalities. There were no trespasser fatalities in San Benito County and only one highway–rail crossing fatality. Of the 272 total incidents that occurred between 2011 and 2016, 65 were at-grade crossing accidents/incidents, 1 was a collision, 4 were derailments, and 202 were other types of incidents.

Of the six fatalities that occurred in Santa Clara County in 2016, two involved grade-crossing incidents and four involved trespassers. One train collision that involved no fatalities or nonfatal conditions was reported in Santa Clara County in 2016. One grade-crossing incident fatality in San Benito County occurred in November 2016. No train accidents were reported in San Benito County in 2016. Of the seven fatalities that occurred in Merced County in 2016, two involved grade-crossing incidents and five involved trespassers. One train accident was reported in Merced County in 2016 (FRA 2017c).

Most of the train accidents that have occurred in Santa Clara, San Benito, and Merced Counties between 2011 and 2016 involved trespassers and grade-crossing (e.g., going around gates). Four accidents, one train collision, and four derailments occurred in Santa Clara, San Benito, and Merced Counties between 2011 and 2016. Appendix 3.11-A provides data for the number of fatal and nonfatal train accidents/incidents by county, types and causes of train accidents/incidents, and at-grade crossing incidents in the region.

Pedestrian/Bicycle Safety

The California Office of Traffic Safety provides annual data on vehicle, pedestrian, and bicycle collisions within cities and counties throughout California. Table 3.11-5 shows the number of pedestrians and bicyclists killed or injured in accidents with vehicles throughout the jurisdictions within the RSA in 2017, the most recent data available.

Table 3.11-5 Pedestrian and Bicyclist Victims Killed or Injured within Resource Study Area Jurisdictions, 2017

Jurisdiction	Pedestrians	Bicyclists
Santa Clara County	**572**	**603**
City of Santa Clara	31	20
City of San Jose	291	218
City of Morgan Hill	5	7
City of Gilroy	23	19
San Benito County	**9**	**13**
Merced County	**91**	**77**

Sources: California Office of Traffic Safety 2020a, 2020b, 2020c, 2020d, 2020e, 2020f, 2020g

To address high accident rates, the City of San Jose adopted the Vision Zero Action Plan in January 2020 (City of San Jose 2020a). The Vision Zero initiative strives to reduce and ultimately eliminate fatalities and severe injuries caused by traffic collisions.

The jurisdictions shown in Table 3.11-6 are within the RSA and have adopted plans that promote bicycle safety.

Table 3.11-6 Adopted Bicycle Master Plans within Resource Study Area Jurisdictions

Jurisdiction	Plan
City of Santa Clara	*City of Santa Clara Bicycle Master Plan Update 2018* (June 2019)
City of San Jose	*City of San José Bike Plan 2020* (November 17, 2009)[1]
City of Morgan Hill	*City of Morgan Hill Bikeways, Trails, Parks, and Recreation Master Plan* (July 20, 2017)
City of Gilroy	*City of Gilroy Bicycle/Pedestrian Transportation Plan* (February 2002)
City of Gilroy	*City of Gilroy Bicycle Pedestrian Commission Strategic Plan 2018* (August 28, 2018)

Sources: City of Santa Clara 2019; City of San Jose 2009; City of Morgan Hill 2017b; City of Gilroy 2002, 2018
[1] The City of San Jose published the draft *San José Better Bike Plan 2025* in May 2020 (City of San Jose 2020b).

Airports, Heliports, and Airstrips

Table 3.11-7 presents the airports and heliports within the airports resource study area (RSA). No private airstrips were identified within the RSA. The Norman Y. Mineta San Jose International Airport, located approximately 0.8 mile east of the project track centerline, and the San Martin Airport, located approximately 0.5 mile east of the project track centerline, are both public-service airports in developed areas within Santa Clara County. As public-service airports, the Norman Y. Mineta San Jose International and San Martin Airports are subject to the Santa Clara County Airport CLUP (County of Santa Clara 2016a, 2016b) prepared by the Santa Clara County Airport Land-Use Commission for the purpose of regulating land use within airport safety zones to minimize airport hazards and risks of accidents.

Table 3.11-7 Airports and Heliports within the Airports Resource Study Area

Facility	Type	County	Distance from Track Centerline (miles)	Alternatives
Norman Y. Mineta San Jose International Airport	Public	Santa Clara	0.75	Alternative 1
			0.74	Alternative 2
			0.74	Alternative 3
			0.75	Alternative 4
San Martin Airport	Public	Santa Clara	0.54	Alternative 1
			0.54	Alternative 2
			0.54	Alternative 3
			0.55	Alternative 4
Santa Clara Towers Heliport	Private	Santa Clara	1.68	Alternative 1
			1.68	Alternative 2
			1.68	Alternative 3
			1.68	Alternative 4
Santa Clara Valley Medical Center Heliport	Private	Santa Clara	1.92	Alternative 1
			1.92	Alternative 2
			1.92	Alternative 3
			1.92	Alternative 4
St. Louise Hospital Heliport	Private	Santa Clara	0.58	Alternative 1
			0.58	Alternative 2
			0.30	Alternative 3
			0.58	Alternative 4

Facility	Type	County	Distance from Track Centerline (miles)	Alternatives
Frazier Lake Airpark	Public	San Benito	0.34	Alternative 1
			0.34	Alternative 2
			0.84	Alternative 3
			0.34	Alternative 4
Los Banos Municipal Airport	Public	Merced	2.0	Alternative 1
				Alternative 2
				Alternative 3
				Alternative 4

Sources: County of Santa Clara 2016a, 2016b; County of San Benito 2001; County of Merced 2012
No private airstrips were identified within 2 miles of the RSA; Merced Regional Airport is approximately 15 miles from the project footprint.

Frazier Lake Airpark, located approximately 0.2 mile south of the project footprint for Alternatives 1, 2, and 4 and approximately 0.6 mile south of the project footprint for Alternative 3, is a public-service airport in an agricultural area in San Benito County. As a public-service airport, the airpark is subject to the *Frazier Lake Airpark Comprehensive Land Use Plan* prepared by the San Benito County Airport Land Use Commission (County of San Benito 2001) to regulate land use within airport safety zones to protect public health, safety, and welfare. This land use plan provides for the orderly expansion of the airport and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses.

Los Banos Municipal Airport and Merced Regional Airport are public-service airports within Merced County. As public-service airports, they are subject to the *Merced County Airport Land Use Compatibility Plan* (County of Merced 2012) prepared by the Merced County Airport Land Use Commission to protect public health, safety, and welfare. This plan provides for the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses. The airports' RSA is the area within 2 miles of the project track centerline. Merced Regional Airport is more than 2 miles from the project footprint (Volume 2, Appendix 3.11-B, Airport Obstructions).

Three privately operated heliports in Santa Clara County are within the RSA. These are located at the Santa Clara Towers building in San Jose, Santa Clara Valley Medical Center in San Jose, and St. Louise Hospital in Gilroy. The three heliports are rooftop facilities associated with medical center and residential high-rise properties and would not be affected by project construction and operations.

14 C.F.R. Part 77 (FAR Part 77) defines obstruction standards as elevations above which structures may constitute a safety hazard to air navigation. An FAR Part 77 airspace surface is an imaginary surface of a takeoff and landing area of an airport or any other imaginary surface established for the airport under 14 C.F.R. Part 77.24. Any penetrations of the FAR Part 77 surface are subject to agency review. If a safety hazard is found to exist, the FAA may issue a determination of a hazard to air navigation. If the FAA determines that a proposed structure would result in an obstruction, the FAA may recommend mitigation. The FAA does not have authority to prevent encroachment; however, under California law, the state can prevent the encroachment if the FAA has issued a determination of a hazard to air navigation. The local jurisdiction can establish and enforce height restrictions (County of Santa Clara 2016b).

Norman Y. Mineta San Jose International Airport, San Martin Airport, Frazier Lake Airpark, and Los Banos Municipal Airport are subject to airport CLUPs (County of Santa Clara 2016a, 2016b; County of Merced 2012; County of San Benito 2001). Each CLUP identifies the AIA for each airport. Appendix 2-J in Volume 2 references each airport CLUP as a regional policy. Appendix 3.11-B provides an AIA analysis for each airport. The online FAR Part 77 Notice Criteria Tool

(FAA 2018) also was used to assess FAA notification requirements for proposed construction of the alternatives. Airport master plans and land use compatibility plans from county airport land use commissions regulate land use within airport safety zones to minimize airport hazards and risk of accidents. Compliance with FAR Part 77 and airport land use commission CLUPs serves to minimize airport hazards and risk of accidents. The project alternatives encroach on the AIA of San Jose, San Martin, and Frazier Lake airports and do not encroach on the AIA of Los Banos Airport. The impact analysis below analyzes potential safety effects of the project.

Schools

Table 3.11-8 lists public and private schools within the schools RSA by subsection. Forty-three public and private schools and educational facilities are within the RSA under Alternative 1, 47 under Alternative 2, 41 under Alternative 3, and 40 under Alternative 4. There are no schools within the RSA in San Benito County and one school within the RSA in Merced County under all four project alternatives. The remaining schools within the RSA are in Santa Clara County: 42 schools under Alternative 1, 46 schools under Alternative 2, 40 schools under Alternative 3, and 39 schools under Alternative 4.

Table 3.11-8 Schools within the Resource Study Area by Subsection

Educational Facility	Alternative
San Jose Diridon Station Approach (Scott Blvd to West Alma Avenue)	
Bellarmine College Preparatory	1, 2, 3, 4
Center for Employment Training - San Jose	1, 2, 3, 4
Downtown College Preparatory	1, 2, 3
Gardner Elementary	1, 2, 3, 4
Our Lady of Grace	1, 2, 3, 4
Rocketship Mateo Sheedy Elementary	1, 2, 3, 4
Sacred Heart Nativity School	1, 2, 3, 4
Santa Clara University	1, 2, 3, 4
Scott Lane Elementary	1, 2, 3, 4
Monterey Corridor (West Alma Ave to Bernal Way)	
Captain Jason M. Dahl Elementary	1, 2, 3, 4
Davis (Caroline) Intermediate	1, 2, 3, 4
Edenvale Elementary	1, 2, 3, 4
Hayes Elementary	2
Lairon College Preparatory Academy	1, 2, 3
The Academy	1, 2, 3, 4
University Preparatory Academy Charter	1, 2, 3
Valley Christian High School	1, 2, 3, 4
Valley Christian Junior High	1, 2, 3, 4
Morgan Hill and Gilroy (Bernal Way to Casa de Fruta/SR 152)	
Ann Sobrato High	1, 2, 3
Antonio Del Buono Elementary	1, 2, 4

Educational Facility	Alternative
Barrett Elementary	1, 2, 3
Central High (Continuation)	1, 2, 3, 4
Charter School of Morgan Hill	1, 2, 3, 4
Christopher High	1, 2, 3, 4
Crossroads Christian School	1, 2, 3, 4
El Toro Elementary	1, 2, 3, 4
Eliot Elementary	1, 2, 3, 4
Extreme Academy and Learning Center	2, 4
Gilroy Adult Education Center	1, 2, 3, 4
Gilroy Prep	1, 2, 3, 4
Glen View Elementary	2
Hollister Prep	1, 2, 3, 4
Lewis H. Britton Middle	1, 2, 3, 4
Little Sonshine	1, 2, 3, 4
Morgan Hill Community Adult School	2, 4
P. A. Walsh STEAM Academy	1, 2, 3, 4
Pacific Point Christian School	1, 2, 3, 4
Paradise Valley/Machado Elementary	1, 2, 3, 4
Phoenix Non-Public School (NPS)	1, 2, 3, 4
Rucker Elementary	1, 2, 3, 4
San Martin Gwinn Environmental Science Academy	1, 2, 3, 4
Shadow Mountain Baptist School	2, 4
Silicon Valley Flex Academy	1, 3
South Valley Middle	1, 2, 3, 4
St. Catherine Elementary	1, 2, 3, 4
St. Mary, Gilroy	1, 2, 4
Stratford School	1, 2, 3, 4
San Joaquin Valley (I-5 to Carlucci Road)	
Volta Elementary	1, 2, 3, 4

The City of Santa Clara and the City of San Jose have active Safe Routes to School National Partnerships that aim to empower communities to make walking and bicycling to school a safe and routine activity. These initiatives include the Walk n' Roll San Jose Program and the City of Santa Clara Department of Public Works Safe Routes to School Program. The cities pursue grant funding opportunities to fund bicycle and pedestrian infrastructure improvements to reduce injuries and fatalities to students traveling to and from school and also seek funding and partnerships for complementary educational programs for students and parents to promote safety

education and encourage increased walking and bicycling (City of San Jose 2020c; Santa Clara County Public Health Department 2020a, 2020b).

Active and Closed Landfills

Operating and closed landfills within 0.25 mile of the project and within 2 miles of the project footprint (high-risk facilities RSA) were evaluated as part of this analysis for their potential to release methane gas, which may present an explosion risk. There are no active or closed landfills within 0.25 mile of the project for any alternative. There are 33 landfills within 2 miles of the project footprint (within the high-risk facilities RSA) for all project alternatives.

Oil and Gas Wells

The Authority reviewed oil, gas, and geothermal resources maps to identify oil, gas, and geothermal wells in the RSA and within 0.25 mile of the project. There are no oil, gas, or geothermal wells in the RSA, or within 200 feet of the project footprint, except for one plugged oil well within 0.1 mile of under all project alternatives in the San Joaquin Valley Subsection (near the intersection of Henry Miller Road and Box Car Road). There are 18 wells, all plugged and abandoned, within 2 miles of the project footprint for all alternatives. Table 3.10-11 shows the risk of oil and gas wells by subsection.

Flooding

Floodplains and potential impacts from flooding, dam failure, and inundation are discussed in greater detail in Sections 3.8, Hydrology and Water Resources, and Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources. Figure 3.9-10 illustrates the locations of dams in the high-risk facilities RSA. A portion of the RSA is within floodplains that become inundated during the 100-year flood, which has a 1 percent chance of occurring annually, and regulated floodways are within the RSA. Figure 3.8-6 and Table 3.8-13 show the Federal Emergency Management Agency–designated floodplains within the high-risk facility RSA.

Valley Fever

Valley fever (coccidioidomycosis) is a fungal infection caused by coccidioides organisms. The fungal infection can be caused by inhalation of fungus in airborne dust after soil disturbance. Valley fever is a regional concern in the San Joaquin Valley, and, as such, is a concern under all of the project alternatives. The fungus that causes Valley fever resides in the soil and thrives in the dry dirt and desert-like weather conditions. The number of reported Valley fever cases in California has increased since 2001, with more than 3,000 documented cases in 2015 (California Department of Public Health [CDPH] 2015, 2016, 2018). Between 2011 and 2015, there were at least a dozen cases per 100,000 people reported annually in Santa Clara County and at least 48 cases per 100,000 people reported annually in Merced County. During the same period, there were fewer than two cases per 100,000 people reported annually in San Benito County. The highest annual rate of Valley fever—more than 76 cases per 100,000 people—occurred in Merced County in 2015 (CDPH 2015, 2016, 2018).

High-Risk Facilities and Fall Hazards

High-risk facilities include landfills, oil and natural gas wells/fields, cement plants, ethanol plants, gas plants, industrial plants, power plants, refineries, wastewater treatment facilities, and dams. High-risk utilities include electric transmission lines, pipelines and other utilities that cross or run parallel to the project footprint. Fall hazards include bridges that overarch the HSR right-of-way and industrial facilities with tall structures that are adjacent to the HSR right-of-way.

Propane, bulk fuel, and bulk chemical storage facilities may be in industrial areas of the RSA, some of which may be adjacent to railroads and highways. Sites with potential environmental concern (PEC) within the RSA are identified and discussed in Section 3.10, Hazardous Materials and Waste (Figures 3.10-3 and 3.10-4 and Table 3.10-2). These PEC sites potentially have contamination from hazardous materials releases and may contain aboveground or below-ground bulk storage tanks or other bulk hazardous material storage on-site.

High-risk utility facilities (including natural gas and petroleum pipelines, electric transmission lines, and other utilities) within and near the project footprint related to public utilities and energy are discussed in Section 3.6, Public Utilities and Energy. High-risk PEC facilities are also discussed in Section 3.10, Hazardous Materials and Waste. The municipal and county emergency response and fire departments follow standard emergency response protocols for industrial sites when responding to emergencies at high-risk facilities in accordance with the emergency operations plans for the departments.

Table 8 in Appendix 3.11-A describes the high-risk utility facilities within the RSA (crossing or parallel to the alignment) that could pose safety hazards to the project in the event of an incident. High-risk utility facilities within the RSA include one electrical substation, 55 natural gas pipelines, 5 petroleum (crude oil) pipelines, and 2 rail systems. Pacific Gas and Electric Company (PG&E) natural gas pipelines are part of a pipeline network and several pipelines listed in Appendix 3.11-A (e.g., PG&E Pipeline 300A) run through more than one county.

High-risk facilities within 2 miles of the project footprint that could pose safety hazards to the project in the event of an incident are illustrated on Figure 3.11-1 through Figure 3.11-5 and are shown in Table 3.11-9. These facilities include cement plants, wastewater treatment plants, electric power plants, landfills, and dams and reservoirs. There are 96 high-risk facilities within 2 miles of the project footprint under Alternatives 1 and 3 (1 cement plant, 3 electric power plants, 50 wastewater treatment plants, 34 active or closed landfills, and 8 dams and reservoirs. Under Alternative 2 there are 95 high-risk facilities within 2 miles of the project footprint, (7 dams and reservoirs and 88 other high-risk facilities [1 cement plant, 3 power plants, 50 wastewater treatment plants, and 34 landfills]). Under Alternative 4 there are 94 high-risk facilities within 2 miles of the project footprint (8 dams and reservoirs and 86 other high-risk facilities [1 cement plant, 3 electric power plants, 48 wastewater treatment plants, and 34 landfills]).

Table 3.11-9 High-Risk Facilities within 2 miles of the Project Footprint

Alternative/Subsection	Cement/Lime Plants	Electric Power Plants	Wastewater Treatment Plants	Landfills	Dams and Reservoirs	Total
Alternative 1						
San Jose Diridon Station Approach	0	1	28	12	0	41
Monterey Corridor	0	1	10	3	2	16
Morgan Hill and Gilroy	1	1	6	19	4	31
Pacheco Pass	0	0	0	0	1	1
San Joaquin Valley	0	0	6	0	1	7
Total	**1**	**3**	**50**	**34**	**8**	**96**
Alternative 2						
San Jose Diridon Station Approach	0	1	28	12	0	41
Monterey Corridor	0	1	10	3	2	16
Morgan Hill and Gilroy	1	1	6	19	3	30
Pacheco Pass	0	0	0	0	1	1
San Joaquin Valley	0	0	6	0	1	7
Total	**1**	**3**	**50**	**34**	**7**	**95**

Alternative/Subsection	Cement/Lime Plants	Electric Power Plants	Wastewater Treatment Plants	Landfills	Dams and Reservoirs	Total
Alternative 3						
San Jose Diridon Station Approach	0	1	28	12	0	41
Monterey Corridor	0	1	10	3	2	16
Morgan Hill and Gilroy	1	1	6	19	4	31
Pacheco Pass	0	0	0	0	1	1
San Joaquin Valley	0	0	6	0	1	7
Total	**1**	**3**	**50**	**34**	**8**	**96**
Alternative 4						
San Jose Diridon Station Approach	0	**1**	26	12	**0**	**39**
Monterey Corridor	0	**1**	10	3	**2**	**16**
Morgan Hill and Gilroy	1	**1**	6	19	**4**	**31**
Pacheco Pass	0	**0**	0	0	**1**	**1**
San Joaquin Valley	0	**0**	6	0	**1**	**7**
Total	**1**	**3**	**48**	**34**	**8**	**94**

Tall structures can pose a safety hazard because of their potential to topple onto HSR structures due to accidents, including fall hazards, high wind events, other severe weather events, or terrorist acts. Tall structures are defined as structures that overarch the project alignment (e.g., bridges) and structures for which the combination of the structure's height and distance from the project footprint is such that the structure (or debris from the structure) could fall onto the project footprint in the event of an incident (e.g., severe weather events). Tall structures within the high-risk facilities RSA consist of vehicle bridges, pedestrian bridges, signal overcrossing structures, buildings, and industrial plants, which are predominantly located within the urban areas of the RSA. Table 3.11-10 shows the number of bridges and other tall structures within the RSA for each subsection under each alternative; Alternative 4 has the greatest number of bridges and other tall structures. Alternative 1 has the fewest number of bridges and other tall structures. There are no bridges or other tall structures in the Pacheco Pass or San Joaquin Valley Subsections for any alternative.

Table 3.11-10 Tall Structures within the Resource Study Area

Subsection	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Bridges, Pedestrian Overpasses, Signal Over Bridges				
San Jose Diridon Station Approach	6	6	6	11
Monterey Corridor	8	8	8	12
Morgan Hill and Gilroy	2	3	2	4
Pacheco Pass	0	0	0	0
San Joaquin Valley	0	0	0	0
Subtotal	**16**	**17**	**16**	**27**

Subsection	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Buildings, Industrial Plants				
San Jose Diridon Station Approach	0	1	1	3
Monterey Corridor	0	0	0	0
Morgan Hill and Gilroy	0	0	0	3
Pacheco Pass	0	0	0	0
San Joaquin Valley	0	0	0	0
Subtotal	**0**	**1**	**1**	**6**
Total	**16**	**18**	**17**	**33**

3.11.5.4 Security

Six municipal and county police and sheriff's departments serve the RSA. Data on crime rates for both violent crime and property crime were collected from the FBI National Uniform Crime Reporting Program database. The violent crime rate in Merced County in 2015[15] was about 621 per 100,000 inhabitants (0.6 percent), which is almost 200 more incidents per 100,000 inhabitants than the statewide average of approximately 426 incidents per 100,000 inhabitants (0.4 percent) (FBI 2015a, 2015b). The violent crime rate in the San Jose-Sunnyvale-Santa Clara Metropolitan Statistical Area (MSA), which includes Santa Clara and San Benito Counties, was almost 252 per 100,000 inhabitants in 2015 (FBI 2015b). The FBI database reports data by MSA but does not separately report data for Santa Clara County and San Benito County. The violent crime rate in Merced County has increased by 6.7 percent since 2010. The violent crime rates in California and the San Jose-Sunnyvale-Santa Clara MSA (which includes Santa Clara and San Benito Counties) have decreased by 3.2 percent and 4.9 percent, respectively, since 2010 (FBI 2010a, 2010b).

The property crime rate for Merced County in 2015 was about 2,952 per 100,000 inhabitants, which is almost 340 incidents per 100,000 inhabitants higher than the state average of 2,618 per 100,000 inhabitants (FBI 2015a, 2015b). The property crime rate for the San Jose-Sunnyvale-Santa Clara MSA, which includes Santa Clara and San Benito Counties, was almost 2,317 per 100,000 inhabitants, approximately 13 percent lower than the state average. The property crime rate for Merced County is approximately 12.7 percent higher than the state average. Property crime rates have increased since 2010 for Santa Clara and San Benito Counties and have decreased since 2010 in Merced County and California. The property crime rate in the San Jose-Sunnyvale-Santa Clara MSA (which includes Santa Clara and San Benito Counties) was approximately 2,256 per 100,000 inhabitants in 2010 and approximately 2,317 per 100,000 inhabitants in 2015, representing a 2.5 percent increase. The property crime rate in Merced County was approximately 3,315 per 100,000 inhabitants in 2010 and approximately 2,592 per 100,000 inhabitants in 2015, representing a 22 percent decrease (FBI 2010b, FBI 2015b).

Analysis of onboard crime for passenger trains used statistics gathered from Metro and BART (FBI 2015c). The reported crimes included crimes committed on board trains and at transit facilities such as stations and parking lots. In 2015, 20,873 Part 1 Offenses, as defined by the National Uniform Crime Reporting Program (i.e., criminal homicide, legacy/revised rape, robbery, aggravated assault, burglary, larceny theft, motor vehicle theft, and arson), occurred statewide in California, excluding heavy rail system agencies. In 2015, 3,241 Part 1 Offenses occurred on the Metro and BART lines, combined (FBI 2015c).[16]

[15] The latest year for which this information was available at the time of this analysis.

[16] The FBI database provides statistics about Metro and BART lines and does not include heavy rail transit services.

3.11.6 Environmental Consequences

3.11.6.1 Overview

This section discusses the potential safety and security impacts that could be generated during project construction and operations focusing on the following topics. Section 3.11.6.2, Emergency Services, discusses potential impacts on emergency response time and emergency response access. Section 3.11.6.3, Community Safety and Security, discusses potential impacts on criminal and terrorist activity, construction worker safety, traffic hazards, aviation hazards, Valley fever, high-risk facilities, operational safety, wildfire, and schools. Each topic area discusses potential impacts from the No Project Alternative and the project alternatives. In particular, the impact discussion considers the potential interference with emergency response times and services from construction and operations, the safety and security of construction workers, passengers, HSR employees, and the general public during construction and operations. The analysis also identifies the permanent beneficial impacts on motor vehicle, pedestrian, and bicycle safety that could result from implementing the project alternatives. There are no active or closed landfills within 0.25 mile of the project footprint for any project alternative; therefore, project construction would not result in impacts related to landfills. There are 33 landfills within 2 miles of the project footprint (within the high-risk facilities RSA) for all project alternatives and 22 other high-risk facilities, including cement and lime plants, electric power plants, and wastewater treatment plants, within 2 miles of the project footprint for all project alternatives. High-risk facilities could represent a hazard to HSR operations.

The Authority has incorporated IAMFs to address safety and security that are described in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features. These features require the contractor to prepare and implement a construction safety transportation management plan that establishes procedures for the contractor's coordination with local jurisdictions to maintain emergency vehicle access during construction and an SSMP that would be implemented prior to initiating construction. The contractor will also conduct a hazard analysis to identify and implement measures that reduce any identified hazards. The contractor will identify and inspect all active and abandoned oil and natural gas wells prior to construction and develop and implement an SSP, including a safety and security certification program, fire and life safety plan, and system security plan, and an SEPP to address safety, security, and emergency response as they relate to the day-to-day operations of the HSR system. The system security plan will address HSR design features intended to maintain security at stations, within the trackwork right-of-way, and onboard trains.

The IAMFs differ from mitigation measures in that they are part of the project and will be implemented by the Authority as a binding commitment included in the project approval. In contrast, mitigation measures may be available to further reduce, compensate for, or offset project impacts that the analysis identifies under NEPA or concludes are significant under CEQA.

The HSR system would provide a safe and reliable means of intercity travel using contemporary safety, signaling, and ATC systems. The HSR system would reduce growth in air and surface traffic. Reduction in traffic congestion as a result of the HSR system would decrease the occurrence of air, vehicular, pedestrian, and cycling accidents. Design of the system also would prevent conflicts with other vehicles, pedestrians, and bicyclists. Overall, the HSR system would provide a safety benefit for travelers in Santa Clara, San Benito, and Merced Counties.

In addition, and as part of the design of the HSR system, the Authority's *Safety and Security Management Plan* (Authority 2018) establishes the Authority's commitment and philosophy to achieve the highest practical level of safety and security throughout the California HSR System's life cycle. Through the application of risk-based system safety and security programs that identify, assess, avoid, and mitigate safety hazards and security vulnerabilities of the California HSR System, the plan minimizes the risk of injury and property damage and maximizes the safety and security of HSR passengers, employees, and the public. The SSMP for the project is based on the programmatic *Safety and Security Management Plan* (Authority 2018).

3.11.6.2 Emergency Services

Construction and operations of the project could result in temporary and permanent changes to emergency response and services within the RSA. Potential impacts include temporary or continuous permanent interference with emergency response access and temporary or permanent interference with emergency response times as a result of temporary or permanent road closures and realignments, increased demand for emergency services as a result of response to train accidents, and temporary or permanent interference with emergency response from criminal activity at construction sites, on trains, and at stations and maintenance facilities.

No Project Impacts

Projections through 2040 show continued population growth in the San Francisco Bay Area and San Joaquin Valley (see Section 2.5.1.1, Projections Used in Planning), with the San Joaquin Valley population projected to grow at a higher rate than any other region in California. Development in the San Francisco Bay Area and San Joaquin Valley to accommodate the population increase would continue under the No Project Alternative and result in associated direct and indirect impacts on safety and security. The No Project Alternative considers the effects of conditions forecasted by current land use and transportation plans near the project, including planned improvements to the highway, aviation, conventional passenger rail, freight rail, and port systems through the 2040 planning horizon. Without the HSR project, the forecasted population growth would increase pressure to expand highway and airport capacities. The Authority estimates that additional highway and airport projects (up to 4,300 highway lane miles, 115 airport gates, and 4 airport runways) would be needed to achieve equivalent capacity and relieve the increased pressure (Authority 2012b). Planned and other reasonably foreseeable projects anticipated to be constructed by 2040 include residential, commercial, industrial, recreational, and transportation projects that could increase the demand for emergency services, affect emergency response times and emergency access, result in the need for construction of new emergency response facilities, and result in additional or continued safety and security hazards. A full list of anticipated future development projects is provided in Volume 2 in Appendix 3.18-A, Cumulative Plans and Nontransportation Projects List, and Appendix 3.18-B, Cumulative Transportation Projects List.

As described in Section 3.11.5, Affected Environment, past development has led to conditions affecting emergency services and community safety and security. Regional and local plans outline procedures for current and future community conditions including fire, law enforcement, and emergency medical service operations during emergencies such as fires and other natural disasters; hazardous materials spills; transportation emergencies; civil disturbance; and terrorism. Average law enforcement and fire department response times are provided in Section 3.11.5. Response times are not always consistent with applicable goals and objectives outlined in regional and local planning documents. For example, the SJFD did not meet its response time standard or best practice standards for response time in 2015. Response time in 2015 for the department was almost 5 minutes above the 8-minute national best practice publications for metro/urban areas and the SJFD response time standard (SJFD 2016b).

The violent crime rate in Merced County has increased by 6.7 percent since 2010. The violent crime rates in California and the San Jose-Sunnyvale-Santa Clara MSA (including Santa Clara and San Benito Counties) have decreased by 3.2 percent and 4.9 percent, respectively, since 2010 (FBI 2010a, 2010b). The property crime rate for Merced County in 2015 was higher than the state average (FBI 2015a, 2015b). The property crime rate for the San Jose-Sunnyvale-Santa Clara MSA, including Santa Clara and San Benito Counties, was approximately 13 percent lower than the state average. The property crime rate for Merced County is approximately 12.7 percent higher than the state average. Property crime rates have increased since 2010 in Santa Clara and San Benito Counties and have decreased since 2010 in Merced County and the state of California. In 2015, 3,241 Part 1 Offenses occurred on the Metro and BART lines combined (FBI 2015c).

Future development projects in Santa Clara, San Benito, and Merced Counties include implementation of airport development and land use plans, and implementation of general and specific plans throughout all three counties. Planned and other reasonably foreseeable projects

under the No Project Alternative would also include transportation projects and residential, commercial, and industrial developments. The residential and commercial growth expected in Santa Clara, San Benito, and Merced Counties is anticipated to affect safety and security. As incidences of crime are expected to increase with population growth, it is also anticipated that increased vehicular traffic volumes would correspond with an increase in accidents in which injuries and fatalities would be expected. However, currently planned roadway capacity expansions would improve operations. These programmed roadway projects will incorporate design features that reduce, but will not completely avoid, the potential for motor vehicle accidents. For these reasons, it is expected that existing accident rates would continue into the future. Transportation improvements would also incorporate design features that reduce the potential for accidents, and service-level goals for emergency responders will have to be adjusted and met for the growing population on a regional level.

Under the No Project Alternative, the demand for law enforcement, fire, and emergency services would change and coincide with the anticipated population growth and needs of planned industrial, residential, and commercial developments. Counties and cities have financial mechanisms in place to meet service-level goals for emergency responders based on the projected population growth in Santa Clara, San Benito, and Merced Counties. In addition, the demand for newly planned development continues to increase with increasing population. Incidences of crime are also expected to increase, leading to safety and security impacts. However, crime rates depend, in part, on economic conditions. Planned development and transportation projects that would occur as part of the No Project Alternative would likely include various forms of mitigation to address impacts on safety and security.

Project Impacts

Construction Impacts

Project construction would involve clearing and grubbing; handling, storing, hauling, excavating, and placing fill; possible pile driving; and construction of bridges, tunnels, road modifications, and utility upgrades and utility line relocations. PG&E network upgrades would require extension of underground or overhead power transmission lines to three traction power substations that would be constructed as part of the project under all project alternatives, and would include reconductoring of overhead electric utilities that may involve use of helicopters for equipment installation. Construction of the project would also involve construction of HSR electrical systems, stations, maintenance facilities, and railbeds. The amount of construction effort for the design variants would be approximately the same and would occur in the same locations as the alternatives without the DDV and the TDV; therefore, construction period effects on safety and security would be the same. Chapter 2, Alternatives, further describes construction activities.

Impact S&S#1: Temporary Impacts on Emergency Access and Response Times from Temporary Roadway and Highway Closures, Relocations, and Modifications

Construction activities associated with the station, maintenance of way facility (MOWF), platform, and track alignment would result in underground utility work, changes in vehicle circulation, temporary closures of roadways or highways, lane closures, road relocations, reduction of highway lane widths, reduced speed limits, temporary on/off road closures, detours, and congestion and delay along roadways and highways, and at intersections. These construction-related activities would lead to temporary increased travel time, delay, and limited access of emergency response vehicles in urban and rural areas because of changes in vehicle circulation and increased travel time, particularly on Monterey Road. These activities would cause temporary delays in emergency vehicle access and response times. Construction activities would require temporary construction easements, which would result in the temporary closure of parking areas or roadway lanes and would include the construction of overcrossings and interchanges. Construction of foundations for bridge pier footings, placement of structural elements, and removal of falsework would require highway lane closures, reduction of highway lane widths, reduced speed limits along highways, temporary on-ramp and off-ramp closures, detours, and temporary freeway closures. In rural areas, construction activities would include the demolition and clearance of structures in the rights-of-way; construction of new grade separations that would

require relocations of existing roads or construction of temporary roads; construction of the maintenance of way siding; and placement of railbeds, track, and systems.

The Authority has incorporated IAMFs into the project design to avoid and minimize project effects. Prior to construction, the contractor will prepare a construction safety transportation management plan that includes the contractor's coordination efforts with local jurisdictions for maintaining emergency vehicle access during construction (SS-IAMF#1). The plan will also specify the contractor's procedures for implementing temporary road closures, including access to residences and businesses during construction, lane closures, signage, detour provisions, emergency vehicle access, and alternative access locations. The contractor will prepare and submit monthly reports to the Authority documenting these implementation activities for compliance monitoring. In addition, a Construction Transportation Plan (CTP) will be prepared that will identify when and where temporary closures and detours would occur, with the goal of maintaining traffic flow, especially during peak travel periods (TR-IAMF#2). The CTP, which will be coordinated with local jurisdictions and reviewed and approved by the Authority, will provide traffic controls, including signage to alert drivers to the construction zone, traffic control methods, traffic speed limitations, alternative access and detour provisions during road closures, and provisions for 24-hour access by emergency vehicles.

In the Monterey Corridor Subsection, Alternatives 1 and 3 would continue the viaduct type construction farther south in the median of Monterey Road. This work would largely be accomplished in the existing right-of-way of Monterey Road, which would be narrowed from six to four lanes to accommodate the project. While temporary road closures and detours would be necessary to construct the viaduct in this area, there would be substantially less construction effects than Alternative 2. Under Alternative 2, the project would be built on an embankment. Embankment construction in the Monterey Corridor Subsection would have more effects on transportation facilities because it would require the relocation and reconstruction of Monterey Road to the east. This would entail roadway closures, detours, and relocations. New overcrossings and interchanges would be necessary at Capitol Expressway, Skyway Drive, Branham Lane, Chynoweth Avenue, and Blossom Hill Road. In order to reconstruct these overcrossings/interchanges, either new temporary facilities would need to be built or the roadways would need to be closed. Under either approach, the temporary roadway detours and relocations could result in temporary increases in emergency vehicle access and response times. Alternative 4 would be built at grade and would require new quad gates at Skyway Drive, Branham Lane, and Chynoweth Avenue. There would be temporary closures and detours during off-peak travel times for deliveries and construction access. Alternative 4 would have fewer effects in this subsection during construction than Alternatives 1, 2, and 3 because Monterey Road would retain its existing 6-lane cross section and would not need to be narrowed.

Under Alternative 2, construction of the project in the San Jose Diridon Station Approach Subsection would involve modifications to Monterey Road that could affect vehicle access to and from San Jose Fire Station 18 at 4430 Monterey Road. Two variations of road design are under consideration for the intersection of Skyway Drive and Monterey Road. Under Skyway Drive Variant A, Monterey Road would retain its current at-grade configuration, and a new connector ramp northwest of the intersection of Skyway Drive and Monterey Road would connect Monterey Road to the depressed Skyway Drive underpass. The fire station would have access along the connector ramp. There would not be a noticeable effect on emergency response time from Station 18 from implementing Skyway Drive Variant A. Skyway Drive Variant B would depress Monterey Road to connect to the Skyway Drive underpass. Under this variant, access to the mobile home park northwest of the intersection of Skyway Drive and Monterey Road would be provided via an access road across the northern portion of the San Jose South Service Yard property. The fire station's access to both Monterey Road and Skyway Drive would be removed as a result of the depression of both Monterey Road and Skyway Drive below grade, and the fire station would not have any road

access unless a new access road was built. San Jose Fire Station 18 and access roads are illustrated on Figure 3.11-6 for Variant A and on Figure 3.11-7 for Skyway Drive Variant B.

Construction of Alternatives 1 and 2 could temporarily impede emergency vehicle access to the Morgan Hill Charter School at 9530 Monterey Road in Morgan Hill. The Morgan Hill Charter School location and configuration of the access roads to the school under Alternatives 1 and 2 are illustrated on Figure 3.11-8 and Figure 3.11-9. The access roads and driveways are within the permanent right-of-way for Alternatives 1 and 2. During construction, temporary or permanent closure or relocation of these roads and driveways could be required, which could impede emergency vehicle access to the school.

CEQA Conclusion

The impact under CEQA would be significant for all four project alternatives because temporary road closures, relocations, and modifications associated with construction, along with relocations or reconstructions, including lane reductions of portions of the Monterey Road, would result in emergency access delays and inadequate response times. The project features will minimize delays and inadequate response times through coordination with local jurisdictions and procedures for implementing or maintaining emergency vehicle access during construction, but significant impacts would still occur. Mitigation measures to address this impact are identified in Section 3.11.9, CEQA Significance Conclusions. Section 3.11.7, Mitigation Measures, describes these measures in detail.

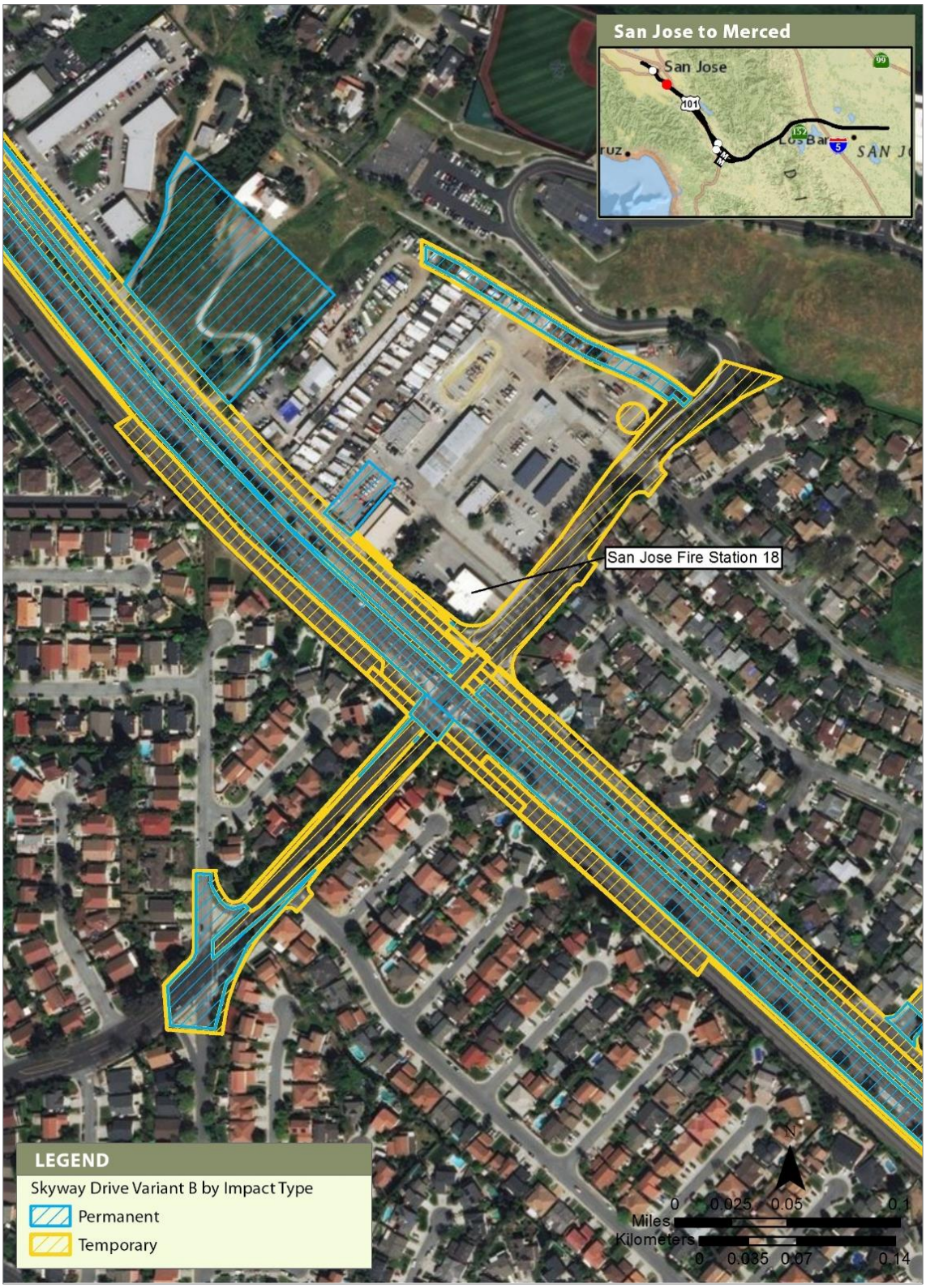
Impact S&S#2: Temporary Impacts on Emergency Access and Response Times from Construction Vehicles

Station, MOWF, platform, and track alignment construction would result in construction traffic, including heavy truck traffic delivering or removing materials and heavy construction equipment moving onto the construction site. Use of heavy equipment and trucks has the potential to disrupt traffic, especially if movements occur during morning or evening peak periods. Construction traffic would also result from construction worker trips. Worker vehicles entering and leaving the construction sites at the beginning and end of shifts would have the potential to increase delays on roadways and at intersections. Construction-related traffic would lead to increased response time and delay of emergency vehicles in urban and rural areas from congestion and delays.

Source: Authority 2019a

MARCH 2019

Figure 3.11-6 Proposed Road Configuration for San Jose Fire Station 18—Skyway Drive Variant A

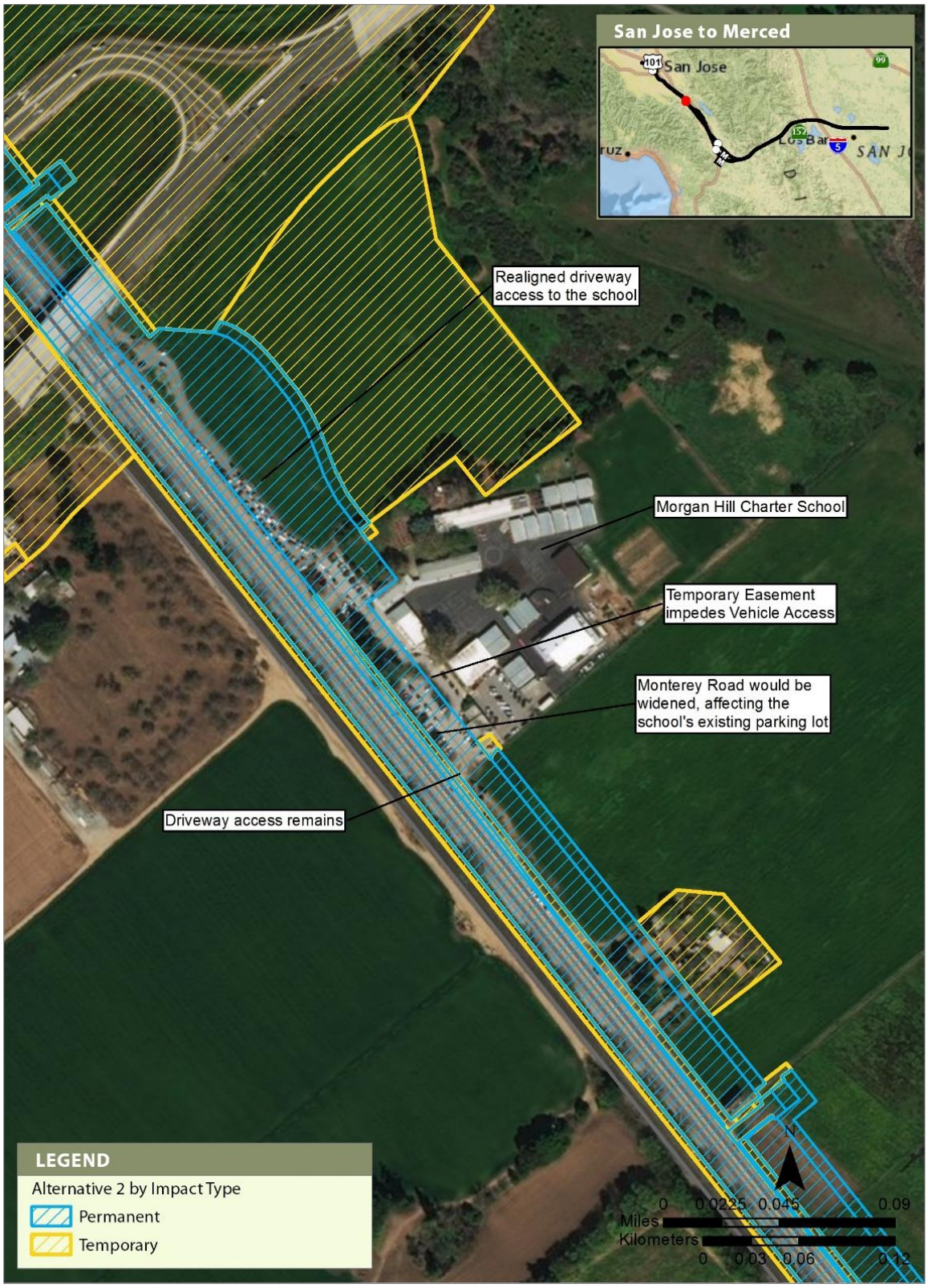


Source: Authority 2019a MARCH 2019

Figure 3.11-7 Proposed Road Configuration for San Jose Fire Station 18—Skyway Drive Variant B

Source: Authority 2019a MARCH 2019

Figure 3.11-8 Proposed Road Configuration for Morgan Hill Charter School—Alternative 1



Source: Authority 2019a

MARCH 2019

Figure 3.11-9 Proposed Road Configuration for Morgan Hill Charter School—Alternative 2

The Authority has incorporated SS-IAMF#1 and TR-IAMF#2 (described in Impact S&S#1) into project design to avoid and minimize impacts on emergency access and response times. In addition, all project-related truck traffic, either for excavation or for transporting construction materials to the site, will use the designated truck routes in each city (TR-IAMF#7) to the extent possible. As part of the CTP, truck routes will be established away from schools, day care centers, and residences, or along the routes with the least impact on operations. A detailed construction access plan will be developed and implemented for the project prior to beginning any construction activities. The construction access plan will be reviewed by local city, county, and transit agencies. The movement of heavy construction equipment such as cranes, bulldozers, and dump trucks to and from the site would generally occur during off-peak hours on designated truck routes. Once on site, heavy construction equipment will remain there until its use for that job was completed, preventing equipment from being moved repeatedly to and from the construction site over public streets. Trips for construction workers would generally occur outside peak hours for roadway and freeway traffic. The contractor will limit the number of construction employees arriving or departing the site between the hours of 7 a.m. and 8:30 a.m. and 4:30 p.m. and 6 p.m. (TR-IAMF#6). The contractor will also limit construction material deliveries between 7 a.m. and 9 a.m. and between 4 p.m. and 6 p.m. on weekdays to reduce traffic conflicts generated by construction traffic. The project may involve the use of remote parking areas for these workers, with shuttles to bring them to and from the construction area if the remote parking areas are distant from the construction site (TR-IAMF#3).

As described under Impact TR#2, improvements would be made to an existing at-grade intersection on SR 152 in the Pacheco Pass Subsection to facilitate truck and worker access during project construction. The intersection is 3.25 miles east of the Casa De Fruta overcrossing and currently provides access to agricultural parcels south of the highway. Improvements and construction access at this location are not anticipated to affect emergency vehicle response times on SR 152.

CEQA Conclusion

The impact under CEQA would be less than significant for all four project alternatives because temporary construction vehicle operations would not interfere with local vehicle circulation, delays, or reductions in levels of service, operational hazards, or loss of access to residences or community facilities that would result in inadequate emergency access. The project features include effective actions to control and manage construction vehicle traffic through implementation of construction plans, standard construction practices, designated construction truck routes, and restrictions on construction hours. Therefore, CEQA does not require mitigation.

Impact S&S#3: Permanent Impacts on Emergency Access and Response Times from Permanent Roadway and Highway Closures, Relocations, and Modifications

Under Alternatives 1, 2, and 3, Monterey Road would be narrowed from six to four lanes (known as a “road diet”[17]) between Capitol Expressway and Blossom Hill Road, consistent with the *Envision: San José 2040 General Plan* (City of San Jose 2011) and for construction of the track alignment. This would require relocation or reconstruction of portions of Monterey Road. The project would not block emergency vehicle access permanently because no roadway access to any response areas would be permanently blocked. However, permanent roadway changes would result in changes to emergency vehicle response times. Increased travel times, permanent changes in vehicle circulations, greater congestion, and increased delays at intersections would occur. These activities would cause permanent delays in emergency vehicle response times. To evaluate the permanent effects of project construction on emergency vehicle response times caused by the narrowing of Monterey Road, a detailed analysis of northbound and southbound travel times was prepared for this section.

[17] A classic road diet typically involves converting an existing four-lane, undivided roadway segment to a three-lane segment consisting of two through lanes and a center, two-way left-turn lane (FHWA 2019).

Table 3.11-11 shows the travel time under Existing and Existing Plus Project conditions on Monterey Road between Capitol Expressway and Bernal Road for the AM and PM peak hours. This approximately 5-mile stretch of road in south San Jose is where the road diet changes with Alternatives 1, 2, and 3 would be expected to have the greatest impact. The peak direction of travel and congestion in the morning is northbound, with cars traveling toward job centers. The reverse is true in the afternoon, with the southbound direction being more heavily congested. For Alternatives 1 and 3, travel time would increase by 0 to 12 minutes in the AM peak hours and 6 to 8 minutes in the PM peak hours depending on the direction of travel. For Alternative 2, travel time would increase by 6 to 8 minutes in the AM peak hours and by 2 to 12 minutes in the PM peak hours depending on the direction of travel.

Table 3.11-11 Existing and Existing Plus Project Travel Times on Monterey Road from Bernal Road to Capitol Expressway Caused by Roadway Changes

Peak Hour	Existing Travel Time (min)	Existing Plus Project Travel Time (min) [1]			
		Alternative 1	Alternative 2	Alternative 3	Alternative 4
Northbound					
AM	15.7	27.6	23.3	27.6	--[2]
PM	11.5	17.1	13.4	17.1	--[2]
Southbound					
AM	12.5	12.5	18.6	12.5	--[2]
PM	11.2	19.3	23.6	19.3	--[2]

Source: Authority 2019c
[1] 2029 Plus Project and 2040 Plus Project travel times take into account trips generated by HSR stations.
[2] Alternative 4 travel time is the same as the No Project travel time as there would be no lane reduction on Monterey Road. Alternative 4 would experience delays due to gate down time, which is an operational impact, as described in Impact TR#12

Alternative 4 travel time for Existing Plus Project conditions is the same as the Existing conditions travel time as there would be no lane reduction on Monterey Road. Alternative 4 would experience delays due to gate down time, which is an operational impact, as described in Impact S&S#4.

CEQA Conclusion

The impact under CEQA would be significant for Alternatives 1, 2, and 3 because of the narrowing of Monterey Road, which would result in delays in emergency vehicle access and response times. Impacts in San Jose would be less than significant where EVP is in place. The impacts would be significant in San Jose where EVP is not in place and in Morgan Hill and Gilroy. Alternative 4 would not include Monterey Road narrowing, and would not result in delays in emergency vehicle access and response times along Monterey Road. Mitigation measures to address this impact are identified in Section 3.11.9, CEQA Significance Conclusions. Section 3.11.7, Mitigation Measures, describes these measures in detail. This impact under CEQA would be less than significant for Alternative 4. Therefore, for Alternative 4, CEQA does not require mitigation.

Operations Impacts

Impact S&S#4: Continuous Permanent Impacts on Emergency Access and Response Times

The project would not permanently block emergency vehicle access because roadway access would not be permanently blocked to any response areas. However, the project would result in emergency vehicle response time delays. The DDV and TDV would not result in a change in ridership or train service; thus, there would be no change in emergency response times related to station traffic or changes in gate down times at the at-grade crossings.

Under all alternatives, the addition of HSR service at the San Jose Diridon Station would generate a total of approximately 1,100 peak hour vehicle trips, adding traffic to multiple intersections in the station's general vicinity. The nearest fire stations are San Jose Fire Station 1 (1.0 mile northeast of the station at 225 North Market Street) and San Jose Fire Station 30 (0.7 mile southeast of the station at 454 Auzerais Avenue).

The addition of HSR service would substantially increase traffic delays at study intersections along Bird Avenue, South Autumn Street, Alameda/West Santa Clara Street, Auzerais Avenue, Delmas Avenue, West San Carlos Street, and West Taylor Street. The added station traffic would not result in substantial delays to intersections along West Julian Street, which is a parallel access route for San Jose Fire Station 1. However, the added traffic generated by HSR service would cause substantial delays to study intersections along Bird Avenue, which is a primary north-south route for Fire Station 30. Consequently, the added traffic generated by HSR service under all alternatives would cause significant impacts on fire station emergency vehicle response times. Additional traffic generated by HSR service would result in increased delay of up to 30 seconds for fire station emergency response times at this location.

Under Alternatives 1, 2, and 3, Monterey Road would be narrowed from six to four lanes (road diet) between Capitol Expressway and Blossom Hill Road, consistent with the *Envision: San José 2040 General Plan* (City of San Jose 2011) and for construction of the track alignment. This would require relocation or reconstruction of portions of Monterey Road. Increased travel times, permanent changes in vehicle circulations, greater congestion, and increased delays at intersections would occur. These activities would cause permanent delays in emergency vehicle response times. To evaluate the effects of project operations on emergency vehicle access and response times on Monterey Road, a detailed analysis of northbound and southbound travel times was prepared for this section.

Table 3.11-12 shows the travel time under Existing, 2029 No Project, 2029 Plus Project, 2040 No Project, and 2040 Plus Project conditions on Monterey Road between Capitol Expressway and Bernal Road for the AM and PM peak hours.[18] This approximately 5-mile stretch of road in south San Jose is where the road diet changes with Alternatives 1, 2, and 3 would be expected to have the greatest impact. The peak direction of travel and congestion in the morning is northbound, with cars traveling towards job centers. The reverse is true in the afternoon, with the southbound direction being more heavily congested. In both directions in both peak hours, travel time would increase by at least 5 minutes from 2040 No Project to 2040 Plus Project under all project alternatives. For Alternatives 1 and 3, travel time would increase by 6 to 8 minutes in the AM peak hours and 11 to 22 minutes in the PM peak hours depending on the direction of travel. For Alternative 2, travel time would increase by 16 to 26 minutes in the AM peak hours and by 5 to 17 minutes in the PM peak hours depending on the direction of travel.

Alternative 4 would result in additional gate down time at the three at-grade crossings. For Alternative 4, travel time would remain the same, increase by less than 1 minute, or decrease by less than 1 minute in the AM peak hour, and increase by 4 to 9 minutes in the PM peak hour, under the various scenarios. These increases in vehicular delay would be a result of the additional gate down time at Skyway Drive, Chynoweth Avenue, and Branham Lane. This would generally increase delays on the streets intersecting with Monterey Road, but could decrease delay and therefore travel time on northbound and southbound through movements on Monterey Road in some instances.

[18] The travel times included in Table 3.11-10 take into account trips generated by HSR stations; therefore, this is an operations impact. Construction activity that results in the permanent reduction in lanes from six to four between Bernal Road to Capitol Expressway is the primary factor in the increase in travel times on this portion of Monterey Road.

Table 3.11-12 Existing, 2029 No Project, 2029 Plus Project, 2040 No Project and 2040 Plus Project Travel Times on Monterey Road from Bernal Road to Capitol Expressway

Peak Hour	Existing Travel Time (min)	2029 No Project Travel Time (min)	2029 Plus Project Travel Time (min)[1]				2040 No Project Travel Time (min)	2040 Plus Project Travel Time (min)[1]			
			Alternative 1	Alternative 2	Alternative 3	Alternative 4		Alternative 1	Alternative 2	Alternative 3	Alternative 4
Northbound											
AM	15.7	17.9	21.8	24.4	21.8	18.7	36.0	44.2	62.6	44.2	35.8
PM	11.5	13.6	13.8	13.1	13.8	17.8	24.3	44.7	29.5	44.7	29.5
Southbound											
AM	12.5	13.4	15.7	19.1	15.7	13.4	13.0	19.2	28.9	19.2	13.6
PM	11.2	16.6	17.6	21.9	17.6	24.1	20.8	32.4	37.8	32.4	29.2

Source: Authority 2019c

[1] 2029 Plus Project and 2040 Plus Project travel times take into account trips generated by HSR stations.

While travel time would increase under all project alternatives along Monterey Road, the effect on emergency vehicle response times would be greatest under Alternative 2, which would result in an almost doubling of the travel time in the AM peak hours in both directions compared to the 2040 No Project condition. Alternative 2 would close and shorten more northbound and southbound turn lanes than Alternatives 1 and 3, which would cause longer delays on Monterey Road at intersections that experience those changes. Capitol Expressway, Senter Road, Branham Lane, Chynoweth Lane, Ford Way, and Flintwell Way all experience the closure or reduction of turn lane capacity under Alternative 2. Alternative 4 would have the least effect on travel time on Monterey Road because there is no lane reduction on Monterey Road. However, additional gate closures under Alternative 4 would result in some delays to emergency vehicle response times.

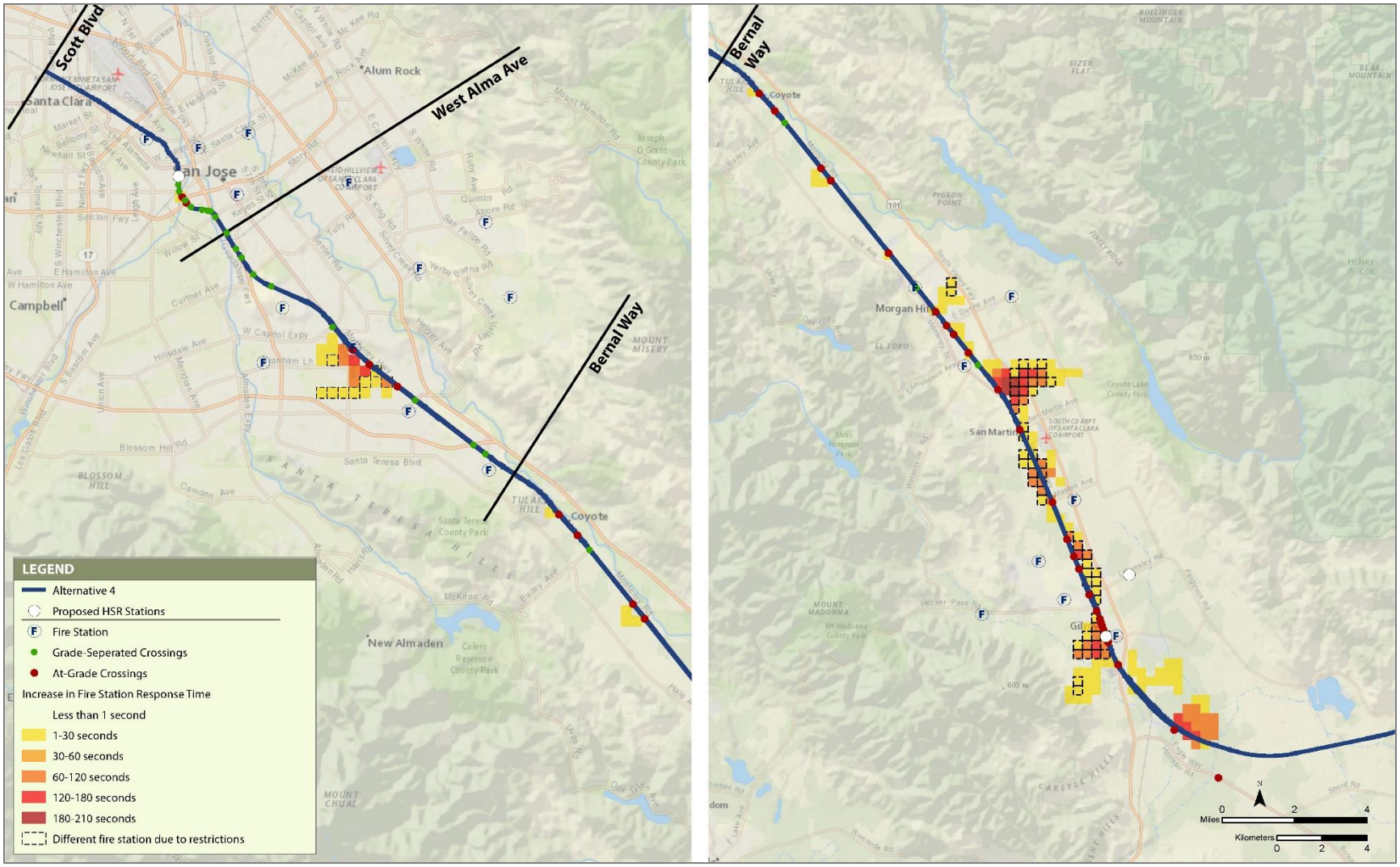
Under Alternatives 1, 2, and 4, the addition of HSR service at the Downtown Gilroy Station would generate a total of approximately 690 peak hour vehicle trips, causing a significant impact at multiple intersections in the station's general vicinity. The nearest fire station is at 7070 Chestnut Street. The addition of HSR service would increase traffic on study intersections along Chestnut Street, 10th Street, 9th Street, Monterey Road, and Alexander Street, which are primary access routes for this fire station. Additional traffic generated by HSR service operations would result in increases of more than 30 seconds to fire station emergency response times.

In addition to the analysis of Monterey Road travel times described above, the potential impacts of additional gate down time on emergency vehicle response times were assessed throughout the corridor for Alternative 4. Under Alternative 4, the addition of HSR trains would result in increased gate down times at at-grade rail crossings. The Authority evaluated potential impacts on emergency response times through a geospatial assessment of fire station/first responder response times along both sides of the rail corridor. The screening used ArcGIS to evaluate the potential impact on travel time between 0.25-mile grid cells and the nearest fire station under a worst-case scenario that every responding fire station vehicle or first responder ambulance was required to take an alternate route via an existing grade-separated crossing because of added gate down time at at-grade crossings. Figure 3.11-10 illustrates the results of the screening analysis, including areas that would experience added response times of 1 second or more under the full closure scenario.

At-Grade Crossing Gate Technology

An at-grade crossing is an intersection of railroad tracks, roadways, walkways, or combination of these at the same level. All other crossings in the study corridor are grade-separated, meaning that roadways, walkways, and railroads cross at nonconflicting elevations. Gates on both sides of the tracks are in place at all at-grade crossing locations. When no train is present at a crossing, the gates are up or inactive. A gate down event occurs when these gates come down at the crossing because of a train passing, crossing, or stopping at a nearby upstream station. It can also result from simultaneous passing of two trains in opposite directions. Gate down time is a key measurement for the performance of both existing and future operations at these locations. Gate down time is a summation of multiple actions that occur in sequence so that all modes can cross safely. These actions are listed and explained in chronological order as follows:

- Gate flashers, located on gate arms to increase visibility, are triggered by a gate crossing event.
- Gate arms descend, moving from vertical to horizontal position, indicating that all vehicular, bicycle, and pedestrian traffic must stop at the crossing to allow the train(s) to pass safely.
- Train passes and fully clears the crossing.
- Gate arms rise, moving from horizontal to vertical position.



Source: Authority 2019a

MARCH 2019

Figure 3.11-10 Fire Station Emergency Vehicle Response Times

After this sequence is complete, pedestrian, bicycle, and vehicular traffic can resume regular movement through the crossing. Per Caltrain specifications, the existing crossing control systems are designed to provide 25–30 seconds of right-of-way clearance between the time the gates come down and warning lights turn on and the arrival of the train at the crossing. This is more than the federally required 20-second minimum for right-of-way clearance time set forth in the *Manual on Uniform Traffic Control Devices* (FHWA 2012). The total gate down time at the crossing includes the time for the train to pass through the crossing and the gates to come up once the train has been detected to have exited the crossing. Total time is governed by the speed of the train, geometric configuration of the specific crossing, and other site-specific characteristics.

Signalized intersections near at-grade crossings typically have traffic signal preemption connected to the crossing gate and warning light systems. The signal preemption process generally provides for 5–15 seconds of green time to allow queues between the grade crossing and traffic signal to dissipate. During this period, the crossing gates are down, thus prohibiting vehicles from entering the crossing. After the track clearance interval, signals either flash red for all movements (acting as an all-way stop-controlled intersection) or by selectively dwelling on a green phase for movements that do not contribute volume to the grade crossing (i.e., movements parallel to the rail line). After the train passes through the crossing, the signal resumes regular phasing and timing patterns.

Caltrain is currently controlled by a wayside block signal system comprised of signals alongside the track that convey to the train engineer occupancy and routing status ahead. It controls train separation to match safe braking needs for Caltrain's diesel-hauled trains. As part of the Caltrain Modernization Program, PTC will be fully operational by 2020, and will be compatible with HSR requirements (Caltrain 2018).

The HSR project would modify and improve all at-grade crossings within the corridor. These improvements would include the installation of quad gates at grade crossings along the corridor with new train detection and control equipment. Quad gates would entail gate mechanisms on both sides of the tracks for both directions of automotive traffic. The exit gates blocking the road leading away from the tracks in this application would be equipped with a delay, beginning the descent to their horizontal position several seconds after the entrance gates, to avoid trapping roadway vehicles on the crossing. Four-quadrant gates are safer than two-quadrant gates because they prevent drivers from illegally driving their vehicles around lowered gates to try to beat a train.

The new at-grade crossing control and traffic preemption equipment would be designed to minimize the total period of gate down time at crossings, while satisfying mandatory requirements and providing for safe warning and clearance intervals. The total time that the warning lights are on and the crossing gates are down would vary by location because of site-specific factors, such as train speed and the crossing's geometric configuration. In the transportation assessment, the total gate down time is calculated and incorporated based on those parameters for the specific configuration of the crossing. The calculated 95th percentile gate down time with the HSR project, per single-train event, is 54 seconds.

Fire Station/First Responder Response Areas

Delays in fire station/first responder emergency vehicle response time at at-grade crossings are caused by a combination of an increase in gate down events generated by added HSR trains and an increase in vehicle traffic generated by Bay Area population and employment growth. The screening analysis indicates a potential for impacts of 30 seconds or more on emergency response times to fire station response areas at 26 at-grade crossings along the project extent. At buildout, the HSR project would add up to eight new gate-down events at these at-grade crossings with a 95th percentile gate down time per single-train event of 54 seconds. Traffic volumes at the 26 at-grade crossings would increase, based on a comparison of forecast 2040 No Project volumes to existing traffic counts, by approximately 10 to 60 percent during the weekday PM peak hour.

The screening analysis indicated a potential for impacts of 30 seconds or more on emergency vehicle response times for fire station vehicles and ambulances at the following locations along the corridor:

- **Monterey Corridor Subsection**—The fire station at 4430 Monterey Road is just east of the rail corridor and sits on the northeast corner of Monterey Road and Skyway Drive. Access to properties west of the rail tracks is provided by the at-grade rail crossings on Skyway Drive, Branham Lane, and Chynoweth Avenue. The nearest grade-separated crossing of the rail corridor is more than 0.5 mile north and 1.5 miles south. Three nearby fire stations on the west side of the rail tracks could respond; however, travel time would still increase. These areas on the west side of the rail corridor could experience an increase in response times of up to 180 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire station at 6027 San Ignacio Avenue is west of the rail tracks. Access to properties on Blanchard Road, Fox Lane and Palm Avenue is provided by Monterey Road. These areas could experience an increase in response times of up to 30 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire station at 18300 Old Monterey Road is immediately west of the rail tracks. Access from the rail tracks to properties west of Monterey Road at Tilton Avenue is provided most directly by Monterey Road but can also be provided by Hale Avenue. Access from the rail tracks to properties east of Monterey Road between Madrone Parkway and East Dunne Avenue is provided by Monterey Road. One nearby fire station on the east side of the rail tracks could respond; however, travel time would still increase. These areas could experience an increase in response times of up to 30 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire station at 15670 Monterey Road is west of the rail tracks. Access from the rail tracks to properties east of Monterey Road between East Dunne Avenue and San Martin Avenue is provided by Butterfield Boulevard, East Middle Avenue, and San Martin Avenue. Butterfield Boulevard is grade-separated, but East Middle Avenue and San Martin Avenue are at-grade rail crossings. Two nearby fire stations on the west side of the rail tracks could respond; however, travel time would still increase. These areas on the east side of the rail corridor could experience an increase in response times of up to 210 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire station at 10810 No Name Uno is east of the rail tracks. Access from the rail tracks to properties east and west of Monterey Road between San Martin Avenue and Masten Avenue is provided by Monterey Road. Vehicles must cross the at-grade rail crossing at Masten Avenue to access Monterey Road. Two nearby fire stations on the west side of the rail tracks could respond; however, travel time would still increase. These areas on the west side of the rail corridor could experience an increase in response times of up to 120 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire stations at 880 Sunrise Drive and 8383 Wren Avenue are west of the rail tracks. Access from the rail tracks to properties east of Monterey Road between Masten Avenue and First Street is provided by Monterey Road. Vehicles must cross the at-grade rail crossings at Buena Vista Avenue, Cohansey Avenue, Las Animas Avenue, or Leavesley Avenue to access the area east of Monterey Road. Two nearby fire stations on the east side of the rail tracks could respond; however, travel time would still increase. These areas on the east side of the rail corridor could experience an increase in response times of up to 180 seconds.
- **Morgan Hill and Gilroy Subsection**—The fire station at 7070 Chestnut Street is on east side of the rail tracks. Access from the rail tracks to properties west of Monterey Road between First Street and Luchessa Avenue and between Luchessa Avenue and Santa Teresa Boulevard is provided by Monterey Road. Vehicles must cross the at-grade rail crossings at IOOF Avenue, Lewis Street, Martin Street, Sixth Street, 10th Street, or Luchessa Avenue to access the area west of Monterey Road. Two nearby fire stations west of the rail

tracks could respond; however, travel time would still increase. These areas on the west side of the rail corridor could experience an increase in response times of up to 180 seconds.

- **Morgan Hill and Gilroy Subsection**—The fire station at 7070 Chestnut Street is east of the rail tracks. Access from the rail tracks to properties east of Bolsa Road between US 101 and just south of Bloomfield Avenue is provided by Bolsa Road. Vehicles must cross the at-grade rail crossing at Bloomfield Avenue to access the areas east of Bolsa Road. These areas on the east side of the rail corridor could experience an increase in response times of up to 180 seconds.

CEQA Conclusion

The impact under CEQA would be significant for all project alternatives. The narrowing of Monterey Road under Alternatives 1, 2, and 3 would result in increased travel time on Monterey Road, which would result in delays in emergency vehicle response times. The additional gate down time at-grade crossings under Alternative 4 would result in delays in emergency vehicle response times greater than 30 seconds at the locations indicated. Mitigation measures to address this impact are identified in Section 3.11.9, CEQA Significance Conclusions. Section 3.11.7, Mitigation Measures, describes these measures in detail.

3.11.6.3 Community Safety and Security

Construction and operations of the project alternatives would result in temporary and permanent changes to community safety and security within the RSA. Potential impacts from construction of the project include temporary exposure to construction site hazards, temporary and permanent exposure to traffic hazards, and temporary exposure to Valley fever. Operations of the trains, stations, and facilities could also result in continuous permanent operational safety impacts, interference with airport safety, and safety hazards to schools.

No Project Impacts

The conditions describing the No Project Alternative are the same as those described in Section 3.11.6.2, Emergency Response and Services. Under the No Project Alternative, existing safety conditions related to motor vehicle drivers, pedestrians, and bicyclists would not change, and existing emergency response plans and procedures would not be affected. Projections through 2040 show continued population growth in Santa Clara, San Benito, and Merced Counties. Development projects to accommodate projected population growth, including residential, commercial, industrial, recreational, and transportation projects, would continue under the No Project Alternative and could result in direct and indirect impacts on safety and security, including community safety and security.

Project Impacts

Construction Impacts

Project construction would involve clearing and grubbing; handling, storing, hauling, excavating, and placing fill; possible pile driving; and construction of bridges, tunnels, road modifications, and utility upgrades and relocations, including reconductoring of electric utilities that may involve use of helicopters. Building the project would also involve construction of HSR electrical systems, stations, maintenance facilities, and railbeds. The amount of construction effort for the design variants would be approximately the same and would occur in the same locations as the alternatives without the DDV and TDV; therefore, construction period effects on safety and security would be the same. Chapter 2, Alternatives, further describes construction activities.

Impact S&S#5: Temporary Exposure to Criminal Activity at Construction Sites

Criminal activity at and around HSR construction sites could include theft of equipment and materials, or vandalism committed after work hours. Construction contractors will institute security measures common to construction sites, including securing equipment and materials in fenced and locked storage areas. The Authority will implement the project-specific SSMP, which will include security lighting, fencing, and monitoring measures to provide security to construction sites and protect the security of construction workers and equipment both during and after work

hours (SS-IAMF#2). Security lighting will be required to be focused on the site, thereby minimizing light spillage onto neighboring property. These measures will minimize temporary security impacts of construction and will not result in additional demands on emergency services.

CEQA Conclusion

There would be a less than significant impact under CEQA on safety and security from criminal activities at construction sites for all project alternatives because the risk of criminal activity on construction sites would be minimized by storing equipment and materials in secured areas and using security personnel and security lighting to monitor equipment after work hours. These security measures will minimize the potential for theft and vandalism and, therefore, will not result in a safety or security hazard or cause an increased demand on emergency services. Therefore, CEQA does not require mitigation.

Impact S&S#6: Temporary Exposure to Construction Site Hazards

Project construction would require excavation, construction of elevated guideways, and installation of electrical systems. These construction activities would involve operation of heavy equipment on-site, earthwork, and other major construction activities, including the transportation of overweight and oversized materials and the use of helicopters to access work areas for reconductoring of overhead electric transmission lines (construction activities are described in Section 2.9.3, Major Construction Activities). Helicopters would be used to transport equipment for the reconductoring activities. PG&E and the helicopter operator would comply with applicable FAA regulations for all helicopter use for construction activities. Throughout construction of the project, workers could be exposed to hazards associated with construction site equipment and activities. Refer to Section 3.10, Hazardous Materials and Waste, for an analysis of the potential health and safety risks to the public and workers from the exposure to hazardous wastes and hazardous materials generated during construction.

Construction would increase the risk of exposure of construction workers to construction equipment and activity hazards that could result in workplace accidents, potentially resulting in accidental injuries and deaths to construction workers and also potentially to the public in the event a workplace accident such as a fire or explosion results in off-site consequences. Construction activities could also result in exposure of construction workers to hazardous chemicals.

Electrical network upgrades required to support the project include the reconductoring of three existing 115-kilovolt power lines for all project alternatives. All PG&E network upgrades would be implemented pursuant to CPUC General Order 131-D (Rules Relating to the Planning and Construction of Electric Generation, Transmission Power Distribution Line Facilities, and Substations Located in California). Reconductoring activities during project construction may require the use of up to two helicopters at one time to facilitate access to the work areas for reconductoring electric transmission lines. Operation of helicopters could result in workplace accidents and accidents resulting from flying over residences when transporting material and crews. It is not anticipated that residents would be required to temporarily vacate their homes; however, in the unlikely event that final construction plans require otherwise, all FAA requirements would be met and PG&E would coordinate with potentially affected residents (providing a minimum of 30 days' advance notice) to minimize the necessary work duration and any resultant inconvenience.

Worksite safety in California, including construction worksite safety, is regulated by provisions of Title 8 of the Cal. Code Regs. and overseen by Cal-OSHA. Title 8 requires compliance with standard procedures to prevent construction worksite accidents and requires a written workplace injury and illness prevention program to be in place (Cal. Code Regs., tit. 8, § 1502 et seq.; Ca-OSHA 2013, 2015).

The Authority will develop and implement an SSMP (SS-IAMF#2), which includes construction worker safety standards, worker safety and health plans, fire/life safety programs, construction on-site security plans, and emergency response and evacuation procedures to maintain the safety of all construction workers and the public during HSR construction. The contractor will document in a TM how plans, programs, and guidelines were considered and incorporated in the

design and construction of the project and how they will comply with standard operating procedures to reduce construction site hazards and minimize the potential for construction worksite accidents. The TM will also document how safety measures, site-specific health and safety plans, and site-specific security plans establish minimum safety and security guidelines for contractors of, and visitors to, the construction site. The contractor will comply with and be responsible for implementing a written workplace injury and illness prevention program (Cal. Code Regs., tit. 8, § 1502 et seq.; Cal-OSHA 2013, 2015), thereby reducing the potential for accidents at construction sites. Contractors will be required to develop and implement site-specific measures that address regulatory requirements to protect human health and property at construction sites. Sites requiring these measures include any sites involved in construction activities, and workers will therefore be trained in safety and security measures. Through safety programs and safety standards, impacts from construction site hazards and accident risks that could compromise the safety or health of workers or visitors would be minimized.

The Authority prepared a preliminary hazard analysis (PHA) to determine risks to project construction from the presence of oil and natural gas wells adjacent to the project footprint. The PHA assessed the probability and the consequences of the risks with a primary focus on well blowouts. Blowouts occur when a pressurized underground zone is encountered during drilling and the weight of the drilling mud in the wellbore is insufficient to hold back the pressure. A well blowout could result in a spray of crude oil over the surrounding area, the displacement of earth around the wellbore, or a large-scale explosion and fire. There have been no recent incidents from these facilities involving explosions or catastrophic failures that have resulted in off-site injuries or property damage.

Construction site hazards include the potential for operation of tunnel boring machines or other excavation activities to encounter subsurface in-situ gas that could represent an explosion hazard (see the discussion of Impact GEO#3 in Section 3.9, Geology, Soils, Seismicity, and Paleontological Resources, for more information on subsurface tunnel boring and excavation activities). The design-build contractor will reduce or eliminate the potential for encountering hazardous in-situ gas following strict federal and state OSHA regulatory requirements and consultation with agencies, including the California DOGGR and California Environmental Protection Agency, Department of Toxic Substances Control, to identify known areas of in-situ gas concern prior to commencement of construction (GEO-IAMF#3: Gas Monitoring).

The risk of encountering in-situ gas is limited to the Morgan Hill and Gilroy and Pacheco Pass Subsections where portions of the alignment are in tunnels through bedrock. In-situ gas can have direct and short-term impacts during project construction. In-situ gases containing hydrogen sulfide and methane are health hazards for construction workers during tunneling because they can cause asphyxiation or trigger explosions. Depending on the level of exposure to in-situ gas, the health impacts may be temporary or permanent. In-situ gas may be encountered intermittently as the tunneling work progresses through different geologic layers. The design-build contractor would prepare a construction management plan that would include procedures for conducting gas monitoring procedures best management practices (BMP).

Operating oil and natural gas wells were not identified within 200 feet of the footprint for any of the project alternatives. There is one plugged oil well within 0.1 mile of the footprint under all project alternatives in the San Joaquin Valley Subsection (near the intersection of Henry Miller Road and Box Car Road). There are 18 wells, all plugged and abandoned, within 2 miles of the footprint for all of the project alternatives (DOGGR 2017). The Authority will develop and implement design standards that require the contractor to identify and inspect all active and abandoned oil and natural gas wells prior to construction (SS-IAMF#4). In the event that active or abandoned oil and natural gas wells are discovered during construction activities, any active wells that were not previously identified would be abandoned or relocated in accordance with the California DOGGR standards and in coordination with the well owners. Abandoned wells within 200 feet of the project footprint that were not previously identified would be inspected and re-abandoned, where necessary, in accordance with DOGGR standards and in coordination with the well owner. The design standards and requirements of SS-IAMF#4 will minimize the risk of

accidents associated with encountering oil or natural gas wells such as well fires or explosions that could compromise the safety of construction workers, visitors, and the public.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety and security from workplace hazards during construction and reconductoring activities for all project alternatives because project features will reduce exposure of workers, visitors, or the public to potential construction site hazards and accident risks during construction activities through compliance with legal requirements and implementation of effective safety plans that would reduce the potential of construction site hazards and accidents. In the event that an oil or natural gas well is discovered during construction, steps would be taken to inspect and abandon all wells in accordance with state standards. Through effective planning and compliance, project features will minimize temporary exposure of workers and the public to construction site hazards.

Impact S&S#7: Temporary Exposure to Construction-Related Traffic Hazards

Project construction would require some roads be temporarily closed, and traffic detours would be established around these construction sites under all of the project alternatives (refer to Chapter 2 for more details regarding the road design features for the project alternatives). The operation of construction vehicles during these temporary road closures and detours adds an increased risk of traffic accidents. Motor vehicle drivers, bicyclists, and pedestrians may not react in a timely manner when encountering a new detour, road closure, or realignment, and could cause an accident. Drivers, bicycles, and pedestrians may also encounter traffic hazards caused by construction vehicles and equipment entering and exiting the work areas.

During construction, temporary road closures and detours could distract motor vehicle drivers, pedestrians, or bicyclists traveling in the area, leading to an increased risk to safety from traffic hazards. Drivers, cyclists, and pedestrians distracted or unfamiliar with the detour or new route created as a result of temporary construction could affect motor vehicle, bicyclist, or pedestrian behaviors, and increase the risk of accidents. Existing and proposed public road crossings of the project are listed in Volume 2, Appendix 2-A, Roadway Modifications and Road Crossings.

During construction, some Caltrans facilities would be temporarily reconfigured and some local roads would be either temporarily reconfigured or temporarily closed where they cross or are affected by the HSR alignment construction. Table 2-12 shows the Caltrans facilities that would be temporarily reconfigured during construction. Local roads would be closed, realigned, or modified during construction of each alternative.

Under all alternatives, temporary local road closures and realignments would occur, including for construction or upgrading of grade-separated crossings, construction of new roads, and extensions of existing roads. While it is likely that there would be differences among the project alternatives in number of temporary road closures and detours, it is unknown at the present stage of project design what the differences would be. Permanent road closures and permanent road realignments are separately discussed under Impact S&S#8: Permanent Exposure to Traffic Hazards. For each of the project alternatives except Alternative 4, there would be 10 temporary reconfigurations affecting Caltrans facilities. Under Alternative 4, eight temporary roadway reconfigurations would affect Caltrans facilities.

Roads crossing the HSR alignment for Alternative 1 would be fully grade-separated, and there would be no at-grade crossings. Alternatives 2 and 3 would operate on dedicated viaduct from Scott Boulevard through the San Jose Diridon Station Approach Subsection, and there would be no at-grade crossings in the San Jose Diridon Station Approach Subsection or in the other subsections to Carlucci Road for Alternative 2 or Alternative 3.

Alternative 4 would transition from a blended track system to a fully grade-separated system in Gilroy. Under Alternative 4, there would be 2 at-grade crossings in the San Jose Diridon Station Approach Subsection, 5 at-grade crossings in the Monterey Corridor Subsection, and 22 at-grade crossings in the Morgan Hill and Gilroy Subsection. The Pacheco Pass and San Joaquin Valley Subsections for all project alternatives would be fully grade separated.

Grade-separated crossings are typically built with a road overcrossing or, in some cases, an undercrossing. Fully grade-separated crossings throughout the project would eliminate the possibility of vehicles, pedestrians, or bicycles crossing the tracks at an at-grade crossing and being hit by trains. The road crossings would be built at the same general locations as the existing roads. Existing roads would have to be temporarily closed and traffic would have to be detoured onto other roads during construction of the grade-separated road crossings. These temporary closures would typically last 8 to 10 months but could last up to 18 months. Three fully grade-separated pedestrian and bicycle crossings would also be built within the Monterey Corridor Subsection under Alternatives 1 and 3 and one fully grade-separated pedestrian crossing would be built within the Monterey Corridor Subsection under Alternative 2.

Under Alternative 4, quad gates would be installed on all at-grade crossings between Scott Boulevard in Santa Clara and Gilroy in the San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections. Chapter 2, Alternatives, provides design information for quad gates.

The Authority has incorporated SS-IAMF#1 and TR-IAMF#2 (described in Impact S&S#1) into project design to avoid and minimize impacts of traffic hazards associated with construction. Therefore, through design features, the potential for vehicular, pedestrian, and bicycle traffic accidents from construction of the project alternatives will be minimized.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety resulting from temporary road closures and detours during construction under all project alternatives because temporary road closures and detours that could result in an increased exposure of motor vehicle drivers, pedestrians, and bicyclists to traffic hazards would effectively be minimized through a construction safety transportation management plan. The plan will establish procedures for the contractor to coordinate with local jurisdictions to maintain emergency vehicle access during construction and implement traffic safety measures (e.g., safety barriers, signage, flag persons) for reducing exposure to traffic hazards during temporary road closures and detours. Construction of road closures will also be staggered, so that the next adjacent road to the north and south of a road temporarily closed for construction would remain open to accommodate detoured traffic. This would typically limit out-of-direction travel to 1 or 2 miles during temporary road closures. Through effective coordination with local jurisdictions, emergency vehicle access procedures and a traffic control plan, staggered road closures, and vehicle and bicycle traffic and pedestrian safety project features, temporary construction impacts on the safety of motor vehicle drivers, pedestrians, and bicyclists exposed to traffic hazards will be minimized. Therefore, CEQA does not require mitigation.

Impact S&S#8: Permanent Exposure to Traffic Hazards

Construction activities for the project alternatives would require permanent roadway improvements, such as new fully grade-separated overpasses and underpasses (Chapter 2), as well as permanent road closures and realignments. Existing and proposed public road crossings of the project are listed in Volume 2, Appendix 2-A, Roadway Modifications and Road Crossings. In addition, Caltrans facilities would be permanently realigned and local roads would be permanently closed or permanently realigned as a result of project construction. Alternative 1 would require 17 permanent road closures and 27 permanent local road realignments. Alternative 2 would require 29 permanent road closures and 59 permanent local road realignments. Alternative 3 would require 17 permanent road closures and 32 permanent local road realignments, and Alternative 4 would require 15 permanent road closures and 39 permanent local road realignments. Table 2-12 shows permanent realignments of Caltrans facilities, and Table 2-8 shows permanent closures and permanent realignments of local roads. Figure 2-47 through Figure 2-52 illustrate local roadway modifications that would be necessary under the project alternatives.

Project design involves the construction of grade-separated crossings, which would allow the safe crossing of the alignment by motor vehicle drivers, pedestrians, and bicyclists and minimize their exposure to increased traffic hazards. Design specifications for the dedicated sections of HSR

tracks would not have any separate at-grade crossings for any type of traffic, including motor vehicles, pedestrians, and bicycles, with the exception of pedestrian access to the San Jose Diridon and Gilroy Stations, to reduce the potential for train collisions. All motor vehicle, bicycle, and pedestrian crossings of the alignment would be by way of overcrossings or undercrossings. Construction of overpasses and underpasses and related road improvements (e.g., local street widening, new traffic signals, and new traffic restrictions) would increase motor vehicle, pedestrian, and bicycle safety by removing existing at-grade crossings of railroad tracks and also by minimizing existing traffic hazards. There would be a beneficial effect on traffic safety from the construction of grade-separated crossings and road improvements.

Design specifications for the blended sections of tracks for the project would include at-grade roadway crossings. At-grade roadway crossings in the project would be controlled by quad gates and roadway channelization.

Design specifications for the dedicated sections of HSR tracks for the project would not require any at-grade crossings for any type of traffic, including vehicles, bicycles, and pedestrians, with the exception of pedestrian access at the San Jose Diridon and Gilroy Stations. All pedestrian access to the project would be controlled at the two HSR stations in San Jose and Gilroy. The station designs could be at surface, elevated, or subterranean level. All station designs for the San Jose Diridon and Gilroy Stations would include controlled access to the station platforms for all pedestrian traffic.

The roadway improvements included in project construction would comply with the Caltrans *Highway Design Manual* (Caltrans 2018) design standards for pedestrian and bicycle safety (Volume 2, Appendix 2-D, Applicable Design Standards). Therefore, through effective design features, traffic hazard exposure impacts on motor vehicle drivers, pedestrians, and bicyclists will be minimized.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety from implementation of roadway improvements constructed as part of the project for all project alternatives because traffic hazards from permanent road closures and realignments would be minimized through construction of overpasses and underpasses to route traffic over or under the HSR tracks, local road widening, new traffic signals, new traffic restrictions, improvement of intersections, and new road construction. The resulting roadway improvements implemented during the construction of the overpasses and underpasses would provide traffic safety benefits for motor vehicle drivers, pedestrians, and bicyclists by eliminating at-grade crossings and thereby eliminating the possibility of train collisions with motor vehicles, bicycles, and pedestrians crossing the tracks. The roadway improvements would also provide benefits through improvements in traffic flow. Through effective implementation of roadway improvements, project features will minimize permanent construction impacts on the exposure of motor vehicle drivers, pedestrians, and bicyclists to traffic hazards, and these users will benefit from construction of overpasses and underpasses, local street widening, traffic restrictions, new traffic signals, and intersection improvements. Therefore, CEQA does not require mitigation.

Impact S&S#9: Permanent Interference with Airport Safety

Safety hazards to aviation can result from the development of land uses that are incompatible with airport operations or the imposition of airspace obstructions or structures that represent hazards to aviation. FAA conducts aeronautical studies of proposed construction of structures that would exceed structure height limits established by FAR Part 77 to determine whether the proposed structures would obstruct airspace or represent navigation hazards to aircraft and hazards to people on the ground in areas exposed to aircraft overflight. The airport hazards analysis (Volume 2, Appendix 3.11-B, Airport Obstructions) evaluates whether construction of the project alternatives would impinge upon the AIAs for any of the five public or public-use airports in the RSA, thus constituting a potential impact under CEQA. The online FAR Part 77 Notice Criteria Tool (FAA 2018) also was used to assess FAA notification requirements for proposed construction of the alternatives.

The potential for the project alternatives to result in safety hazards in relation to airports within the RSA has been analyzed to assess whether the project footprint would encroach into the AIA of any airport, heliport, or airstrip. AIA maps that are included in the CLUPs for each airport were considered in the analysis, including *Comprehensive Land Use Plan Santa Clara County: South County Airport* (San Martin Airport) (County of Santa Clara 2016b), *Comprehensive Land Use Plan Santa Clara County: Norman Y. Mineta-San Jose International Airport* (County of Santa Clara 2016a), *Frazier Lake Airpark Comprehensive Land Use Plan* (County of San Benito 2001), and *Merced County Airport Land Use Compatibility Plan* for Los Banos Municipal Airport (County of Merced 2012).

Four public-service airports—Norman Y. Mineta San Jose International Airport, San Martin Airport, Frazier Lake Airpark, and Los Banos Municipal Airport—and three heliports in Santa Clara County are within 2 miles of the project footprint. No private airstrips were identified within 2 miles of the project footprint. One public-service airport, Merced Regional Airport, is more than 2 miles from the project footprint. The footprint for each project alternative encroaches into the AIA of San Jose International Airport and South County (San Martin) Airport in Santa Clara County, and Frazier Lake Airpark in San Benito County. The encroachment area (total acreage) within the AIA for the footprint for each project alternative includes the area of the right-of-way, newly constructed or relocated roads and utility easements for the project alternative, and electric power distribution network equipment for the alternative. Temporary encroachment areas for each project alternative include areas that would be used during construction of the project alternative but that would be returned to other uses after construction is completed.

Table 3.11-13 summarizes the AIA encroachment area (acres) for each project alternative for each of the three airports. In addition, construction of the project would not affect operation of the three rooftop heliports in Santa Clara County. The three heliports are all located on the roofs of high-rise structures and would not be affected by the height of structures constructed for the project. Neither the DDV nor TDV would increase structure elevation in areas of concern for aviation.

Table 3.11-13 Airport Influence Area Encroachment Area for Each Project Alternative

Airport	Encroachment Area (acres)							
	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.	Temp.	Perm.
San Jose International Airport	55.0	97.9	96.5	86.4	96.5	86.4	15.2	70.5
South County (San Martin) Airport	24.3	38.7	165.9	123.1	50.2	49.6	36.1	44.9
Frazier Lake Airpark	42.0	98.8	42.0	98.8	23.4	120.6	42.0	98.8
Total	**121.3**	**235.4**	**304.4**	**308.4**	**170.1**	**256.6**	**93.4**	**214.4**

Note:
Temp. = temporary
Perm. = permanent

As explained in Section 3.11.2.2, The AIA is a composite of the areas surrounding the airport that are affected by noise, height, and safety considerations. The AIA is an area around the airport within which actions must be evaluated determine whether the development meets the conditions specified for height restrictions and noise and safety protection to the public. Encroachment into the AIA is not inherently an issue of airplane operational safety. Instead, the AIA is defined as an area of interest in which encroachments require further analysis of potential effects on airplane operations and airspace associated with the airport. Consequently, as described below, analysts examined the potential effects of the project on airspace.

FAR Part 77 defines imaginary surfaces that are used to identify potential airspace obstructions and safety hazards to air navigation. All four project alternatives fall within the FAR Part 77 defined horizontal surface zone for San Jose International Airport, South County (San Martin) Airport, Los Banos Airport, and Frazier Lake Airpark. The FAR Part 77 zone for Los Banos Airport is larger in area than the AIA for Los Banos Airport. The project alternatives fall within the Los Banos Airport FAR Part 77 zone, but not within its AIA.

The proposed elevations of the track and other structures that would be built as part of the project within the FAR Part 77 zone were assessed using the online FAR Part 77 Notice Criteria Tool (FAA 2018). Project structures including radio towers that would be constructed within the FAR Part 77 notification surface would require FAR Part 77 notification for all project alternatives. Eight radio towers would require FAR Part 77 notification under Alternative 1, six radio towers would require notification under Alternatives 2 and 3, and three radio towers would require notification under Alternative 4. The San Jose International Airport Department has informed the Authority that the Part 77 notification surface over the project alignment ranges from approximately 70 feet North American Vertical Datum of 1988 (NAVD 88) at the Santa Clara Caltrain Station to 140 feet NAVD 88 at the San Jose Diridon Station.

According to airport land use plans for the affected airport AIAs, any project submitted for airport land use compatibility review for reasons of height-limit issues is required to include a copy of the FAA's evaluation and reply to proponent's notification to the FAA using FAA Form 7460-1, Notice of Proposed Construction or Alteration (County of Santa Clara 2016a). The FAA San Francisco Airports District Office for the Bay Area region is responsible for initiating the coordination of aeronautical studies for airports in Santa Clara County (FAA 2019). The aeronautical study for each proposed structure consists of FAA:

- Evaluating the effect of the construction or alteration on existing and planned airport operating procedures.
- Determining the potential hazardous effect of the proposed construction on air navigation.
- Identifying mitigating measures to enhance safe air navigation.

The FAA airspace review determinations distinguish between *obstructions*, which FAA may consider permissible subject to application of appropriate mitigating measures, and aviation safety *hazards*, which FAA generally would not consider to be permissible (FAA 2019). At the conclusion of the review, FAA could issue a *determination of no hazard* for the proposed structure or identify mitigating measures for the proposed structure to mitigate an identified obstruction or an identified aviation hazard.

Locations of proposed communications structures identified as requiring FAR Part 77 notification are based on the current design process, and alternative locations have been identified for these communications structures that would not affect project operations. Additional analysis of proposed structure locations and development of information associated with an FAA application and registration for proposed project structures would be undertaken as part of the final design phase of the project, including communications structures, lighting/communication poles and catenary lines, power substations, station roofs, and elevated grade crossing structures. During the final design phase, the Authority would contact FAA regarding individual site-specific assessment of proposed project structures requiring FAR Part 77 notification, including identification of potential alternative locations for consideration in FAA's site-specific aeronautical study for each structure. The Authority has begun coordinating with the FAA San Francisco Airports District Office concerning proposed structures based on the current project design and locations of structures requiring FAR Part 77 notification (Greene 2019).

Based on assessment of the proposed locations of the communications towers and the airport locations and AIA boundaries, the Authority expects the aeronautical studies that the FAA would conduct under the FAR Part 77 notification process would not identify safety hazards that would result in the FAA recommending the relocation of a proposed communications tower location. The Authority expects that in some cases the FAA may recommend some form of mitigation (e.g., attaching specific types of lighting or other visual markings to the communication tower poles)

that could be implemented without affecting the location or the function of the communications tower. The Authority would work with the FAA to implement FAA-proposed (if any) mitigation measures for FAR Part 77 notification structures. Project construction activities include reconductoring 11.5 miles of the Spring to Llagas and Green Valley to Llagas 115-kilovolt power lines from Morgan City to Gilroy. The existing, single-circuit lines are supported by 62 lattice steel towers (i.e., four footings and no guy wires/rods), three lattice steel poles (i.e., one footing and four guy wires/rods), and two tubular steel poles, which range from 82 to 102 feet tall, with the average height being approximately 95 feet. The lattice steel towers/poles would be raised or replaced with new lattice steel towers/poles, resulting in an approximately 25-foot taller structure. These support structures are more than 2 miles from San Martin Airport and are outside of the San Martin Airport AIA, and therefore a change in height of the support structures would not affect airport operations.

CEQA Conclusion

There would be a less than significant impact under CEQA on aviation safety under all four project alternatives resulting from the construction of structures that exceed height limits within FAR Part 77 zones. Project structures (including proposed radio towers) would exceed FAR Part 77 height notification limits under all project alternatives; therefore, notification to the FAA would be required. However, such structures would conform to the recommendations of the FAA aeronautical study and aviation safety requirements. The Authority expects that the aeronautical studies that FAA would conduct under the FAR Part 77 notification process would not identify safety hazards that would result in FAA recommending the relocation of a proposed communications tower or other structure location. The Authority expects that in some cases the FAA may recommend some form of mitigation (e.g., attaching specific types of lighting or other visual markings to the communications tower poles) that could be implemented without affecting the location or function of the communications tower. Locations of communications towers and other structures that would be built would therefore not result in a safety hazard for people residing or working in the project vicinity in an area where there is an airport land use plan, and thereby would represent a less than significant impact under CEQA. Therefore, CEQA does not require mitigation.

Impact S&S#10: Temporary Exposure to Valley Fever

Construction activities for the project alternatives would require grading and excavation and landscaping that could temporarily disrupt soil containing the fungus (coccidioides) that causes Valley fever. Disrupting soil that contains this fungus could cause airborne dust, which could be inhaled by construction workers and visitors to the site. The public could be exposed to the fungus that causes Valley fever from off-site transport of fill material on public roads and from fugitive dust outside the boundaries of the construction sites. Inhalation of airborne dust that contains the fungus that causes Valley fever could pose a threat to health if a fungal infection is contracted. People who contract the fungal infection develop flu-like symptoms, including fever, chest pain, muscle or joint aches, and coughing. Between 2011 and 2015, there were at least a dozen cases per 100,000 people reported annually in Santa Clara County and at least 48 cases per 100,000 people reported annually in Merced County. During the same time period, there were fewer than 2 cases per 100,000 people reported annually in San Benito County. The highest annual rate of Valley fever—more than 76 cases per 100,000 people—occurred in Merced County in 2015 (CDPH 2015, 2016, 2018).

The project design contains measures to prevent the spread of Valley fever during construction by managing fugitive dust emissions through a fugitive dust control plan (AQ-IAMF#1). The fugitive dust control plan will be prepared and implemented by the contractor for each distinct construction area and would describe how the plan's measures are employed and who is responsible for implementing them. As part of the fugitive dust control plan measures, during construction, all vehicles transporting construction fill material on public roads will be covered; trucks and equipment transporting construction fill material will be washed prior to leaving construction work areas and traveling on public roads. Exposed surfaces and unpaved roads in construction areas will be watered as needed to control fugitive dust, in accordance with the fugitive dust control plan developed and implemented by the contractor for each construction

work area. Application of water for dust control will depend on the weather (e.g., rainfall events) and site conditions. Vehicle travel speeds on unpaved roads in construction areas will be limited as specified in the fugitive dust control plan for the construction work area. Disturbed areas and on-site and off-site unpaved roads will be stabilized by watering or presoaking disturbed lands, washing exterior surfaces of buildings during demolition, and removing any accumulation of mud or dirt from public streets.

The project design also includes preparation and application of an SSMP (SS-IAMF#2) by the contractor prior to construction. The SSMP will include information on causes, preventive measures, symptoms, and treatments for Valley fever; outreach and coordination with CDPH and county health departments to make information on Valley fever readily available to residents, schools, and businesses; and dedication of a qualified person who will oversee implementation of the Valley fever prevention measures, including fugitive dust control measures and construction worker protection measures. A Valley Fever Health and Safety designee will coordinate with the county Public Health Officer to determine what measures will be required by the Authority as part of the SSMP (SS-IAMF#2) to prevent Valley fever exposure. The Valley Fever Health and Safety designee will manage implementation of the Valley fever control measures, which will include training workers and supervisors on how to recognize symptoms of illness and ways to minimize exposure; providing washing facilities; providing vehicles with enclosed air-conditioned cabs; equipping heavy equipment cabs with high-efficiency particulate air filters; and making National Institute for Occupational Safety and Health–approved respiratory protection with particulate filters available to workers who request them. Through effective coordination, education, and prevention measures, temporary impacts on construction workers and the public from exposure to Valley fever will be minimized.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety from exposure of construction workers and the public to Valley fever from temporary ground-disturbing activities and operation of vehicles and equipment on unpaved roads during construction because construction activities that could result in exposure to the fungus that causes Valley fever would effectively be minimized through a fugitive dust control plan and an SSMP. These plans will include dust control measures to limit the spread of dust that could contain the coccidioides fungus which causes Valley fever, outreach and coordination with state and county departments to make information on Valley fever available to the public, and Valley fever prevention measures. Through effective coordination, planning, and implementation of control and prevention measures, project features will minimize impacts on the temporary exposure of the public or construction workers to Valley fever. Therefore, CEQA does not require mitigation.

Impact S&S#11: Temporary Exposure to Risk from High-Risk Facilities

Project construction would occur in areas of rural and urban Santa Clara, San Benito, and Merced Counties in which high-risk facilities (e.g., oil and natural gas pipelines, dams, electrical substations, and bulk fuel storage facilities) are within the high-risk facilities RSA. High-risk facilities represent a potential hazard to the project and could be affected by construction activities (e.g., excavation, overhead crane operation). Table 8 in Volume 2, Appendix 3.11-A, Safety and Security Data, identifies high-risk utilities within the RSA for each project alternative. High-risk utility facilities within the RSA include 129 facilities under Alternative 1, 123 facilities under Alternative 2, 127 facilities under Alternative 3, and 173 facilities under Alternative 4.

High-risk utility facilities, including pipelines and other utilities within the project footprint, would be removed, relocated, abandoned in place, realigned, or protected in place during construction. The SSMP developed under SS-IAMF#2 will include procedures for removal, relocation, or protection of high-risk facilities within the project footprint. Pursuant to utility agreements negotiated between the Authority and the utility service providers, the Authority will work with utility owners during final engineering design and construction of the project alternatives to remove, realign, or relocate utilities within the right-of-way or protect them in place or abandon them in place within the right-of-way. In addition to implementing the SSMP, the Authority will conduct a PHA (SS-IAMF#3) that will evaluate the potential impacts of high-risk facilities on the project. The Authority will

incorporate project features into the design and construction of the project. The SEPP developed under SS-IAMF#2 will identify potential hazards from high-risk facilities within the RSA that will be removed, relocated, or protected in place during construction and will identify methods to mitigate or eliminate hazards associated with high-risk facilities.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety from exposure to high-risk facilities during construction because project features will minimize the potential for high-risk facilities, including oil and natural gas pipelines, bulk fuel storage facilities, and other high-risk utility facilities, to be affected by project construction. The Authority will conduct a PHA that will evaluate the potential effects of high-risk facilities on the project, identify potential hazards associated with high-risk facilities, and identify and implement measures to minimize hazards prior to commencement of construction. The SSMP will include measures to minimize potential impacts of high-risk facilities, including management plans for identifying high-risk facilities that could be affected by construction and removing, relocating, or protecting in-place pipelines, electrical systems, and other buried and overhead high-risk facilities within the project footprint. Therefore, CEQA does not require mitigation.

Operations Impacts

Project operations would involve scheduled train travel along the HSR tracks through the RSA, as well as inspection and maintenance along the track and railroad right-of-way; at stations; and on structures, fencing, power systems, ATC systems, and communications. The DDV and TDV alignments would be designed to safely operate at the proposed increased speeds and thus no change in the safety of HSR operations would occur. Operations and maintenance activities are described in Chapter 2, Alternatives.

Impact S&S#12: Permanent Exposure to Rail-Related Hazards

Within this Project Section, HSR service would operate within sections that would be owned by the Authority from Control Point Lick (approximately 1 mile south of the Caltrain Tamien Station) south to Gilroy and then to the Central Valley; this portion of the route is referred to as the “HSR corridor.” North of Control Point Lick, the tracks are owned by the PCJPB (also referred to as Caltrain), and this section is referred to as the “Caltrain Corridor.” This distinction is noted below where appropriate because the responsibility for the railroad systems in the HSR corridor would be the Authority’s, and responsibility for the railroad systems in the Caltrain Corridor would be Caltrain’s.

The project would use three different track profiles: at-grade (low, near-the-ground tracks), elevated or retailed fill (higher tracks), and below-grade tracks (retained cut or tunnel). During operations, trains would travel through several tunnels in the Pacheco Pass Subsection and across bridges, which could include full channel spans, large box culverts, and, for wider river crossings, limited piers below the ordinary high-water mark of the established channel. Depending on the location of the train along the track, operations could lead to safety impacts from rail incidents, including train-to-train collisions, collisions with nontrain objects, and derailments, and result in safety impacts on passengers, employees, and the public.

Rail incidents could occur during operations and could include train-to-train collisions, which could include a collision between two HSR trains operating on the same track. Collision of two HSR trains could result from one train overtaking another or one train stopped on the tracks. Rail incidents could also include collision of a train with nontrain objects such as vehicles, pedestrians, or bicycles, which could enter and obstruct the tracks, or collision with an object (e.g., rockfall) or an animal obstructing the track. Derailment could entail incidents in which an HSR train leaves the track and train components (i.e., railcars) either remain contained within the guideway or leave the guideway.

The project is a blended system that transitions to a fully grade-separated railbed and an access-controlled guideway. For Alternatives 2 and 3, the system would transition from a blended system to a dedicated system south of Scott Boulevard, and the system would be a dedicated system from south of Scott Boulevard to Carlucci Road. Alternative 1 would transition to a fully dedicated

track system at I-880 (south of Scott Boulevard). Alternative 4 would transition to a fully dedicated track system in Gilroy. Table 3.11-14 shows the lengths of dedicated track and the lengths of blended track for each project alternative.

Table 3.11-14 Blended System and Dedicated System Track for Each Alternative (miles)

	San Jose Diridon Station Approach	Monterey Corridor	Morgan Hill and Gilroy	Pacheco Pass	San Joaquin Valley	Total
Alternative 1						
Blended	2.6	0	0	0	0	2.6
Dedicated	3.3	8.7	32.3	24.4	17.6	86.3
Total	5.9	8.7	32.3	24.4	17.6	**88.9**
Alternative 2						
Blended	0	0	0	0	0	0
Dedicated	5.9	8.7	32.0	24.4	17.6	88.6
Total	5.9	8.7	32.0	24.4	17.6	**88.6**
Alternative 3						
Blended	0	0	0	0	0	0
Dedicated	5.9	8.7	30.8	24.4	17.6	87.4
Total	5.9	8.7	30.8	24.4	17.6	**87.4**
Alternative 4						
Blended	6.0	8.8	20.5	0	0	35.3
Dedicated	0	0	11.5	24.4	17.6	53.4
Total	6.0	8.8	32.0	24.4	17.6	**88.7**

Source: Authority 2019a

Within the project section, the freight railway corridor is shared with Caltrain (UPRR/Caltrain Corridor). For Alternative 1, the HSR would be a blended operation from Scott Boulevard in Santa Clara to Virginia Street in San Jose in the San Jose Diridon Station Approach Subsection, and would transition from blended operation to dedicated track just south of Virginia Street. Alternatives 2 and 3 would be entirely dedicated track from Scott Boulevard to Carlucci Road in the San Joaquin Valley Subsection; Alternative 4 would transition from a blended operation to dedicated track in Gilroy. The San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections would include installation of 7 new at-grade quad gates and upgrades to 74 existing gates. There would be no at-grade crossings in the Pacheco Pass Subsection or the San Joaquin Valley Subsection. Appendix 2-A, Roadway Modifications and Road Crossings, in Volume 2 summarize road–rail crossings for each project alternative.

At-grade crossings within each subsection for each project alternative are summarized as follows.

San Jose Diridon Station Approach

Two roadway at-grade crossings in the subsection (Auzerais Avenue and Virginia Street in San Jose) and one pedestrian-only at-grade crossing (at College Park Caltrain Station) would require installation of quad gates to improve safety under Alternative 4.

Monterey Corridor
Safety improvements, such as the installation of quad gates and median barriers, would be necessary at five at-grade crossings within the subsection under Alternative 4.

Morgan Hill and Gilroy
Safety improvements, such as the installation of quad gates and median barriers, would be necessary at 22 at-grade crossings within the subsection under Alternative 4.

Pacheco Pass
There would be no at-grade crossings within the Pacheco Pass Subsection for any project alternative.

San Joaquin Valley
There would be no at-grade crossings within the San Joaquin Valley Subsection for any project alternative.

Only HSR trains would use the fully grade-separated track section. Other passenger trains (Caltrain/Amtrak/ACE) and freight trains would use the same right-of-way, but would not use the same track within the dedicated track section. As a result, for Alternative 2 and Alternative 3, train-to-train collisions between an HSR train and a non-HSR train could not occur within the fully grade-separated and dedicated track section between Scott Boulevard and Carlucci Road. There would also be no risk of collision between HSR trains and vehicles, pedestrians, or bicycles at road-railroad crossings within the fully grade-separated and dedicated track section because there would be no at-grade crossings in the dedicated track section.

Under Alternative 1, approximately 2.6 miles of track within the San Jose Diridon Approach Subsection would be blended track. Under Alternatives 2 and 3, there would be no blended track within the subsection. Alternative 4 would have approximately 35.3 miles of blended track, including 6.0 miles within the San Jose Diridon Station Approach Subsection, 8.8 miles within the Monterey Corridor Subsection, and 20.5 miles within the Morgan Hill and Gilroy Subsection. The addition of the HSR to the San Jose to Gilroy rail corridor under Alternative 4 (and for the segment of blended track under Alternative 1) is expected to increase the number and frequency of trainsets, and number of passengers, operating within the blended system, while reducing the distance between trains. These factors would increase the potential for collisions and derailments and the potential for accidents and incidents involving trains, other objects, and people. HSR and other trains operating in the corridor would be controlled by the same systems that make use of PTC and collision avoidance technology, and would run at lower speeds than in the most other sections because of geometric alignment limitations and shared use of the route. These features will reduce the potential for train-to-train collisions. Lower speeds will also serve to reduce the kinetic energy involved in collisions between trains; freight trains and non-HSR passenger trains would be heavier than HSR trains but also would be traveling at slower speeds than HSR trains. Both of these factors would reduce the kinetic energy involved in collisions.

Potential collisions between HSR trains and freight trains in the blended system would be avoided because dispatching would separate freight and passenger trains in time. Operation times of HSR trains and freight trains would be regulated by train control systems to avoid freight trains and HSR trains operating at the same time on blended system tracks.

Portions of the project include at-grade track (i.e., not on viaduct and not in trench or tunnel) including portions of the San Jose Diridon Station Approach Subsection, Monterey Corridor Subsection, and Morgan Hill and Gilroy Subsection, in which the HSR would operate on tracks that are adjacent to tracks used by UPRR or Caltrain or both. The interaction with the UPRR right-of-way would vary by alternative:

- Alternative 1 would require acquisition of 28 acres of UPRR right-of-way and another 34 acres for temporary construction easements for UPRR relocations or crossings and the Downtown Gilroy Station.

- Alternative 2 would require 36 acres of UPRR right-of-way and 257 acres for temporary construction easements for UPRR relocations or crossings, roadway grade separations, and the Downtown Gilroy Station.
- Alternative 3 would require 8 acres of UPRR right-of-way and 13 acres for temporary construction easements.
- Alternative 4 would require the most longitudinal encroachments or acquisition of UPRR right-of-way. From Communications Hill to the MOWF south of Gilroy, the project would install two electrified blended HSR tracks and one nonelectrified freight track predominantly within existing UPRR right-of-way. An additional 2,500-foot-long freight siding track would be provided. A dedicated freight track would also be provided from De La Cruz Boulevard to Communications Hill within the Caltrain right-of-way. UPRR spur and industrial tracks would be maintained from De La Cruz Boulevard to the MOWF, and a dedicated freight connection to the Gilroy MOWF would be provided within the HSR right-of-way. The UPRR Hollister subdivision would be realigned to accommodate the MOWF and associated freight and HSR tracks. Within the UPRR right-of-way (south of Communications Hill) along the Coast line, there would be 99.8 miles of realignment. An additional 1.7 miles of the UPRR Hollister subdivision would be realigned.

From Tamien Station to Bloomfield Avenue in Gilroy, the UPRR and HSR run parallel for 24.4 miles under Alternative 1, 31.4 miles under Alternative 2, and 16.4 miles under Alternative 3. The HSR would run on blended track for 35.3 miles between San Jose and Gilroy under Alternative 4. While these sections contain dedicated HSR tracks, collision of an HSR train with an obstruction could occur as a result of intrusion of a motor vehicle or an object (e.g., derailed train components, train cargo) from adjacent transportation systems as a result of a motor vehicle, derailed train components, or cargo penetrating the barrier system that would be built to protect at-grade HSR track from intrusions. Derailment of a train operating on an adjacent track within the right-of-way could result in train components or cargo from the derailed train intruding on the HSR track. Vehicles could also intrude on the HSR track from adjacent highways. The Authority assessed train and vehicle intrusion protection for the HSR and adjacent transportation systems in TM 2.1.7, *Rolling Stock and Vehicle Intrusion Protection for High-Speed Rail and Adjacent Transportation Systems* (Authority 2013b). The TM identified safety considerations in the design of the HSR alignments with respect to the proximity of the HSR railbed to adjacent transportation facilities including rail lines and highways. Project design, including barrier systems constructed between the HSR right-of-way and adjacent transportation rights-of-way, are intended to prevent derailed trains, vehicles, or objects from an adjacent rail line or highway from entering the HSR trackway and obstructing the track.

Protection of the HSR tracks from potential intrusion of other trains on adjacent tracks would be achieved through physical separation of the HSR and conventional rail systems, or through construction of physical barriers between the HSR and conventional rail systems. TM 2.1.7 establishes a minimum 102-foot separation distance between the HSR and adjacent freight rail lines operating at-grade to prevent potential intrusion into the HSR tracks from a freight railcar derailment or cargo (Authority 2013b). The 102-foot minimum distance is based on the length of the longest type of freight rail car (89 feet) and an additional 13-foot length to account for the length of railway overhead contact system (OCS) poles. The OCS would consist of a series of mast poles approximately 23.5 feet higher than the top of the rail, with contact wires suspended from the mast poles 17 to 19 feet from the top of the rail.

In areas where a 102-foot at-grade physical separation cannot be achieved, physical protective barriers would be implemented. Protective barrier structures would be needed for existing or relocated rail lines less than 102 feet from the HSR tracks and where both the HSR tracks and the existing or relocated rail lines are at-grade. Protective barrier structures could include earth berms, swales, or reinforced concrete walls, which would be designed to withstand the force of a derailed freight or passenger car. Additional protective measures such as check rails (i.e., rails laid parallel to a running rail to guide wheels through points, rail crossings, and around curves, to reduce wear and the risk of derailments) could be applied for particularly high-risk locations such

as bridge piers in areas where the HSR would be operating in a shared corridor with conventional trains (Authority 2013b). The specific design of the protective barrier structures and other measures will depend upon the separation distance between the HSR and other rail lines. Portions of the project would require protective barrier structures, including the San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections, where the HSR and other trains operate on adjacent tracks.

TM 2.1.7 also identifies recommended vertical separation distances between the HSR and adjacent rail lines for areas in which the project is at-grade and an adjacent rail line is elevated on an aerial structure, or an adjacent rail line is at-grade and the HSR is elevated on an aerial structure. Intrusion protection would be required where the closest HSR track elevation is less than 10 feet from the elevation of the closest conventional rail track. Intrusion protection would not be required where the difference in elevation is greater than 10 feet, which would be achieved when the HSR is on an aerial structure, an embankment, or retained fill. Protective structures may also be required for piers, abutments or retaining walls if the side clearance from the HSR is less than 25 feet (Authority 2013b).

Recommended separation distances between at-grade rail lines and adjacent highways are also identified in TM 2.1.7. These separation requirements were developed specifically for the HSR and do not directly adopt existing criteria for separation requirements. The recommended separations for the HSR would consider factors such as geometric conditions, collision history, traffic volumes, and speeds in selection of the specific type(s) of roadside protection that may be needed in accordance with TM 2.1.7 (Authority 2013b).

Protective barrier structures would be needed for existing or relocated highways that are less than 52 feet from the HSR where both the HSR and the highway are at-grade. TM 2.8.1 identifies design standards for installation of walls and concrete or metal traffic barriers where the HSR right-of-way abuts public and private roads and highways and at highway overpasses where there is a potential for vehicles to accidentally enter the right-of-way. Protective barrier structures for adjacent at-grade highways could include conventional concrete highway barriers (up to 7.5 feet) or additional taller structures in areas where there is a greater risk of intrusion by highway trucks (Authority 2013a). Trucks and heavier vehicles represent a greater risk because they weigh more than passenger cars and therefore have a greater potential to penetrate protective barriers if they leave the highway right-of-way.

Barriers, grade separations, and other project features are shown in Volume 2, Appendix 2-E, Project Impact Avoidance and Minimization Features. Application of these design elements would minimize the potential for intrusion of trains, vehicles, pedestrians, bicyclists, or objects into the HSR trackway and thereby minimize the potential for train collisions.

Historically, derailments of high-speed trains have been caused by overspeed, seismic events, and equipment design (SNCF 2015). The severity of a train derailment is influenced by whether the affected train remains upright and stays within its operating envelope. The consequences increase when a derailed train deviates significantly from its operating envelope and could include collision with a structure (e.g., a bridge), a fall of railcars from a bridge or aerial structure, or a secondary collision with a train traveling in the opposite direction (Authority 2013a).

The HSR design would include an ATC system that would include automatic train protection functions of train detection, collision and overspeed prevention, broken rail detection, interlocking control, hazard detection, train separation, and work zone protection; automatic train operation information and control functions; automatic train supervision functions to provide central supervisors with rail operation status information and the ability to control train operations; and PTC that would provide a proactive train control system to prevent train collision and derailments due to overspeeding, and protection of work zones. These features (as described in TM 3.3.1 (*Automatic Train Control Concept of System*) (Authority 2010a) will protect against overspeed derailments and would include containment systems (as described in TM 2.1.7) designed to contain a derailed train upright within the trackway in the event of a derailment. Containment systems could include check rails, parapets, undercar guards, and alternate barrier systems (Authority 2010b). These systems would serve to contain the railcar within the train guideway in

the event of a derailment and minimize the potential for derailed railcars to affect non-access controlled areas outside of the right-of-way. The design of the HSR system will also include an SSMP (SS-IAMF#2) that will describe the procedures, processes, and programs the Authority has implemented that will support the safety and security goals. These procedures, processes, and programs will include a maintenance, inspection, and repair program; a rules compliance and procedures review program; and an employee and contractor training program that will maintain system safety to minimize the potential for derailment. The HSR contractor will conduct a supplemental PHA and a threat and vulnerability assessment (TVA) to identify potential collision hazards and other facility hazards and vulnerabilities, including security vulnerabilities in rail vehicles, that then can either be eliminated or minimized by the HSR design (SS-IAMF#3).

The operation of the HSR system in the HSR corridor would meet and/or exceed federal safety requirements for train operations for all at-grade crossings. The project would upgrade all existing at-grade rail crossings through the installation of four-quadrant gates (reducing potential vehicle intrusion) and median channelization where not present (also reducing potential vehicle intrusion). The project would also include integration of at-grade crossing gate functions with nearby traffic signals where not present (increasing traffic control approaching crossing) and intrusion detection (to warn rail operators of intrusion at crossings). The project would also include integrated train control and signal systems (allowing for real-time feedback between on-the-ground detectors, train operators, and system operators).

At-grade crossing operations from south of the Tamien Station and Gilroy would be integrated with the new signaling/ATC system. A train would not be granted movement authority to proceed through a grade crossing in a specified section of the ATC system without first receiving positive identification from each crossing in that section that the barriers have been lowered successfully. In the event of a barrier failure or a lack of communication from a crossing to the main ATC system equipment at the operational control center that the barriers are down, the train would not be allowed to proceed through the crossings and would be required to come to a stop. The crossings with existing barriers would be modified because the existing positioning of the trackside equipment triggering the closure of the barriers would not account for the increased line speeds and longer train lengths of HSR trains.

Studies (Cooper and Ragland 2012; FRA 2015) have shown that a large portion of accidents that occur at at-grade crossings are due to driver behavior or inattention. FRA estimates that 94 percent of train-vehicle collisions can be attributed to driver behavior or poor judgement (FRA 2015). A 2012 Caltrans study indicated that a key solution to rail crossing crashes is to remove the ability for the driver to engage in a potentially faulty decision-making process by making it more difficult for the driver to bypass lowered gates. Median separators and long-arm gates or four-quadrant gates have been shown to reduce the potential for collisions by removing or substantially deterring the ability of vehicles to bypass two-quadrant gates. The addition of a four-quadrant gate system was indicated in one study as providing a reduction of the likelihood of a collision by 82 percent compared to at-grade crossings with only two-quadrant gates (Cooper and Ragland 2012).

A further upgrade to the at-grade crossings from south of Tamien Station to south of Gilroy would be the addition of obstacle detection. Obstacle detection usually takes the form of local radar and sometimes light detection and ranging (LIDAR) (i.e., low-level radar detection using lasers) installed at each crossing. The detection system uses radio waves (radar) and LIDAR to scan the area of the crossing road/rail interface to detect the presence or absence of road vehicles, people, animals, and other objects that could otherwise obstruct the crossing and cause a potential collision with an oncoming train. Obstacle detection would be integrated into the ATC system and would report to the ATC system so that when an approaching train requests movement authority from the ATC system to proceed along the railroad through a section containing crossings, the obstacle detection at each crossing in the section reports back through the ATC system that the crossing is clear of obstacles. Only when each crossing in that section has positively confirmed that (1) the barriers are down and (2) the crossing is clear of obstacles, then the train is given movement authority by the ATC system to proceed.

The ATC system would cover all functions of a train control system for the HSR-owned corridor, including both safety critical and non-safety critical operations, and would incorporate PTC in compliance with FRA regulations. A hazard detection system will be applied throughout the system where supported by hazard analyses that will be conducted prior to commencement of operations (SS-IAMF#3). The hazard detection system will alert the system operating control center of natural events such as seismic activity, excessive wind speeds, high water levels, and excessive ambient temperature levels that could result in conditions that could result in an accident. The ATC system would respond to identified incidents. Natural events would trigger a system response such as slowing or halting train operation. The hazard detection system would also include systems for detection of vehicle or rail car intrusion, and trespassers where supported by hazard analyses (Authority 2013b). Cross wind detectors would be installed where supported by hazard analysis based on area wind and weather patterns, topography (e.g., mountain passes), and proximity to bodies of water. Wind speed data shall be transmitted continuously to the operating control center (Authority 2013a).

Within the Caltrain Corridor portion of the Project Section, Caltrain is the host railroad and is responsible for compliance with all applicable state and federal safety regulations in regard to dispatch, at-grade crossings, track conditions, and signal operations.

Caltrain has contracted with Wabtec Corporation to implement the Interoperable Electronic Train Management System (I-ETMS) PTC solution (this takes the place of the previously planned Communications Based Overlay Signal System). I-ETMS is a signal system overlay-based solution that is being implemented now to meet the FRA requirements for PTC; therefore, this system will be in place before HSR operations commence (Bouchard 2020). Wabtec describes I-ETMS generally as follows (Wabtec n.d.):[19]

- I-ETMS integrates new technology with existing train control and operating systems to enhance train operation and safety.
- I-ETMS prevents track authority violations, speed-limit violations, unauthorized entry into work zones, and train movement through a switch left in the wrong position, all of which reduce the potential for train accidents.
- With I-ETMS, the crew remains in control of the train. The system monitors and ensures the crew's compliance with all operating instructions, while the I-ETMS display screen provides operating information to the train crew.
- As the train moves down the track, the I-ETMS on-board computer, with the aid of an on-board geographic database and global positioning system, continuously calculates warning and braking curves based on all relevant train and track information, including speed, location, movement authority, speed restrictions, work zones, and consist restrictions.
- I-ETMS communicates with wayside devices checking for broken rails, proper switch alignment, and signal aspects.
- All information is combined and analyzed in real time to provide a safety net for improved train operation.

The PCJPB has also identified that the basic wayside systems for preemption (e.g., the systems that provide preemption of local traffic signals when trains are arriving at the at-grade crossings) that are currently in place should be assumed to be in place in the future. PCJPB has a policy to implement grade crossing preemption systems as funding allows. PCJPB also stated that Caltrain has aggressively pursued safety upgrades, including signage, pavement markings, and medians at most vehicular and pedestrian crossings. Caltrain uses a hazard analysis tool that is updated periodically to determine whether a particular crossing will receive upgrades (Bouchard 2020).

[19] This is a generic description from the Wabtec website; the system features for the Caltrain Corridor may vary from those described.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety from rail-related hazards such as train collisions or derailments during operation for all the project alternatives because the project design (and the HSR system as a whole) would include safety elements to prevent train-to-train collisions, as well as collisions between trains and objects, vehicles, pedestrians, and bicyclists. These safety elements would include grade separations, quad gates, barriers, and roadway channelization installed at at-grade crossings, physical separations including separation distances and vertical separations, physical protection in the form of barrier structures, PTC features, and derailment containment. Alternative 4 would involve installation of seven new quad gates and improvements to 74 existing gates, in addition to right-of-way fencing, traffic signalization (where not currently present), traffic signal preemption (where not currently present), obstacle detection, and integration of at-grade crossing functions with the ATC system. In addition, the HSR design would include an operations and maintenance plan that includes schedules and procedures for the periodic maintenance of the track, right-of-way, power systems, train control systems, and signalizing, communications, and safety systems required for operations of the HSR system. Scheduled maintenance of operations and safety systems would minimize the potential for failure of systems that could lead to derailment.

Within the blended system for Alternative 1 and Alternative 4, dispatching would separate freight and passenger trains in time, thereby avoiding potential collisions. Scheduled maintenance of operations and safety systems would minimize the potential for failure of systems that could lead to derailment.

The Authority would also prepare hazard and threat vulnerability analyses to identify hazards ahead of operations and plan solutions to eliminate or minimize risks. Through effective planning and design, impacts on safety from collisions and derailments that could expose passengers, employees, and the public to risks of rail-related hazards would be minimized. Therefore, CEQA does not require mitigation.

Impact S&S#13: Continuous Permanent Exposure to High-Risk Facilities and Tall Structures

Project operations would occur in areas of rural and urban Santa Clara, San Benito, and Merced Counties in which high-risk facilities (e.g., oil and natural gas pipelines, dams, electrical substations, cement and lime plants, bulk fuel storage facilities) and tall structures are within the RSA. High-risk facilities represent a potential hazard to operation of the project; an incident (e.g., fire, explosion) at a high-risk facility could affect operations. Tall structures (including bridges, pedestrian bridges, and signal overcrossing structures overarching the track) also represent a potential hazard to operation of the project; a tall structure affected by an incident (e.g., severe weather) could deposit debris in the right-of-way and obstruct operation of trains. High-risk utility facilities that would remain within the RSA after HSR construction for each project alternative and high-risk facilities within 2 miles of the project footprint are identified in Volume 2, Appendix 3.11-A, Table 8, and tall structures within the RSA are identified in Volume 2, Appendix 3.11-A, Table 7. High-risk utility facilities remaining within the RSA and protected in place after completion of construction for each project alternative are as follows: 41 high-risk utility facilities under Alternative 1 and Alternative 3, 37 high-risk utility facilities under Alternative 2, and 81 high-risk facilities for Alternative 4. Bridges include vehicle bridges, pedestrian bridges, and signal overcrossing structures. Tall structures other than bridges within the RSA include high-rise residential buildings and industrial plants (e.g., silos). Tall structures within the RSA include 16 bridges and no other tall structures for Alternative 1, 17 bridges and one other tall structure for Alternative 2, 16 bridges and one other tall structure for Alternative 3, and 27 bridges and 6 other tall structures for Alternative 4.

Oil and natural gas pipelines within the RSA are public utilities and energy resources and are therefore also identified and discussed in Section 3.6, Public Utilities and Energy. Section 3.10, Hazardous Materials and Wastes, identifies and discusses PEC sites within the RSA. These PEC sites potentially have contamination of hazardous materials and may contain aboveground and below-ground bulk storage tanks or other bulk hazardous material storage on-site. Additional analyses for potential impacts from high-risk PEC sites and oil and natural gas pipelines within

the RSA as they relate to construction and operations of the project alternatives are provided in Section 3.10.5.9, Petroleum Products Leaking from Oil and Gas Wells.

No changes to existing operations and maintenance activities associated with the reconductored electrical lines would be anticipated with implementation of the project.

There are 96 high-risk facilities within 2 miles of the project footprint for Alternative 1 and Alternative 3, including 1 cement plant, 3 electric power plants, 50 wastewater treatment plants, 34 active or closed landfills, and 8 dams and reservoirs. There are there are 95 high-risk facilities within 2 miles of the project footprint of Alternative 2 (7 dams and reservoirs and 88 other high-risk facilities, including 1 cement plant, 3 electric power plants, 50 wastewater treatment plants, and 34 landfills). There are 94 high-risk facilities within 2 miles of the Alternative 4 project footprint (8 dams and reservoirs and 85 other high-risk facilities including 1 cement plant, 3 electric power plants, 48 wastewater treatment plants, and 34 landfills). No information is available that indicates whether the high-risk facilities in the RSA have undergone a catastrophic failure in the past several decades. Propane, bulk fuel, and bulk chemical storage facilities are in industrial areas of the RSA, some of which are adjacent to airports, railroads, and highways within the RSA.

CEQA Conclusion

There would be a less than significant impact under CEQA on community safety from exposure to high-risk facilities and tall structures during operations for all project alternatives because project features will minimize the potential for high-risk facilities, including oil and natural gas pipelines, bulk fuel storage facilities, and tall structures (including bridges, buildings, and industrial plants), to affect project operations. The Authority will conduct a PHA that will evaluate the potential effects of high-risk facilities on the project, identify potential hazards associated with high-risk facilities, and identify and implement measures to minimize hazards prior to commencement of operation. The SSMP will include measures to minimize potential impacts of high-risk facilities, including management plans for removing, relocating, or protecting in-place pipelines, electrical systems, and other buried and overhead high-risk facilities within the project footprint. Removal, relocation, or protection in place of high-risk facilities during construction will reduce the potential impact of high-risk facilities on operations by avoiding the risk during operations (by removing the high-risk facility) or reducing the risk during operations (by protecting the high-risk facility in place). The Authority may also develop facility-specific measures for additional protection of high-risk facilities or to provide emergency response capability for high-risk facilities based on the results of the PHA. Therefore, CEQA does not require mitigation.

Impact S&S#14: Continuous Permanent Exposure to Criminal and Terrorist Activity

Criminal activity, such as theft and violence, could occur during operations on trains or at stations under all project alternatives. In addition, terrorists could target the HSR tracks or trains with the intent to inflict mass casualties and disrupt transportation infrastructure. Terrorist incidents involving urban and intercity passenger trains have occurred in the United Kingdom, Spain, Russia, India, and other countries in Europe and Asia. A coordinated terrorist attack on trains and train stations in Madrid in March 2004 resulted in 192 fatalities and more than 2,000 injuries (El Mundo 2004). A coordinated terrorist attack on passenger trains in Central London in July 2005 resulted in 52 fatalities and more than 700 injuries (CNN 2016).

During final design of the project, the contractor will perform TVAs, to supplement the TVA prepared by the Authority. The TVAs will establish provisions for the deterrence and detection of, as well as the response to, criminal or terrorist acts for HSR facilities and system operations (SS-IAMF#3). Specific provisions will include right-of-way fencing, intrusion detection, security lighting, security procedures and training, and closed-circuit televisions. Intrusion-detection technology could also alert the operator to the presence of inert objects, such as debris from tall structures or derailed freight trains that could be caused by terrorist activity, and stop HSR operations to avoid collisions. The Authority will oversee implementation of the recommendations from the TVA during design and operations to minimize identified threats through application of intrusion control and surveillance measures to prevent unauthorized access. The ATC and rail system design and operating systems will reduce the potential for train derailment in the event of an incident. The measures identified by the TVA will minimize the vulnerability to criminal and terrorist activity.

System security plans and a SEPP will be implemented prior to commencing operations as described in SS-IAMF#2. These plans address design features and standards and guidelines intended to maintain security at the stations and maintenance facilities, within the track right-of-way, and on trains. The SEPP will be implemented prior to commencement of HSR operations and will address TSA and Department of Homeland Security requirements for operation of railroads, including potential terrorist threats. The Authority will designate a primary and an alternate Security Coordinator and provide TSA with names and contact information for 24-hour/7-days-per-week availability. The Authority Security Coordinator will have a direct reporting relationship to the Authority Chief Executive Officer regarding matters of rail operations security.

The Authority has established a liaison with the TSA Mass Transit and Rail Department who reports directly to the project operations manager. This liaison has been established to meet all Department of Homeland Security and TSA requirements once the project is complete, and to provide coordinated transfer of information concerning security concerns, threats, best practices, and security regulations that may affect rail security during development and implementation of the HSR system and during project operations (Authority 2013b).

Construction design standards and HSR operating systems and procedures include provisions to reduce the potential for, and the impacts of, terrorism incidents and criminal activity. The design standards and guidelines for construction of the project require emergency walkways on both sides of the tracks for both elevated and at-grade sections. Adequate space would be present along at-grade sections of the alignment to allow emergency response access and evacuation in the event of a criminal or terrorist act. Ground access would be available for elevated tracks where access to ground equipment is required. Additional ground access would be considered, consistent with fire and rescue procedures. The entire project would be access-controlled with only authorized persons permitted access to the HSR right-of-way, HSR facilities, and nonpublic areas of stations. These systems would facilitate efficient evacuation of train passengers and employees in the event of a terrorism incident, and would also help deter criminal activity and prevent suicide attempts by deterring and increasing the difficulty for unauthorized persons entering the HSR right-of-way.

CEQA Conclusion

There would be a less than significant impact under CEQA on safety from criminal or terrorist activity on operations for all project alternatives because criminal or terrorist acts that could result in increased exposure to safety risks would be minimized through deterrence and detection systems and TVAs, and design standards and guidelines to allow emergency response access and evacuation in the event of a criminal or terrorist act. Through effective planning, coordination, and project features to minimize the risk for criminal and terrorist acts and provide safe procedures during operations, project features will minimize impacts on HSR trains, structures and facilities, passengers, employees, and the public. Therefore, CEQA does not require mitigation.

Impact S&S#15: Continuous Permanent Safety Hazards to Schools

In the event of a train accident during project operation, including derailment of a train during a seismic event or natural disaster, a substantial safety hazard to schools could occur should the train leave the HSR right-of-way and collide with other structures, including schools, or people on adjacent properties. The hazards to schools in the event of an HSR train derailment would include the train colliding with a school structure or people in occupied areas of school property, which could only occur adjacent to the right-of-way and could only occur if train components left the guideway as a result of a derailment incident.

As shown in Table 3.11-8, public schools and other educational facilities are within the RSA for all project alternatives. Within 0.25 mile of the project alternatives' footprints, there are 43 schools under Alternative 1, 47 schools under Alternative 2, 41 schools under Alternative 3, and 40 schools under Alternative 4. By subsection, 9 schools are within the RSA for the San Jose Diridon Station Approach Subsection under Alternatives 1, 2, and 3; 8 schools are in the San Jose Diridon Station Approach Subsection under Alternative 4. In the Monterey Corridor Subsection, 8 schools are within the RSA under Alternatives 1 and 3, 9 under Alternative 2, and 6 under Alternative 4. In the Morgan Hill and Gilroy Subsection, 25 school are within the RSA under

Alternatives 1 and 4, 28 under Alternative 2, and 23 under Alternative 3. There are no schools within the RSA in the Pacheco Pass Subsection, and 1 school within the RSA under all four alternatives in the San Joaquin Valley Subsection.

Of the schools within the RSA, one school within the San Jose Diridon Station Approach and two schools within the Morgan Hill and Gilroy Subsection are within the RSA for temporary construction easements for all project alternatives, but are not within the RSA for the permanent right-of-way for any project alternative. For Alternative 1 and Alternative 2 within the Morgan Hill and Gilroy Subsection, one school is adjacent to a permanent utility easement within the RSA, and one school is within the RSA for temporary construction easements, but is not within the RSA for the permanent right-of-way of any project alternative.

Two international HSR derailments in France (2015) and China (2011) were caused by excessive train speed resulting from late braking application and flawed control systems and signaling design and software (SNCF 2015). In both of these cases, neither HSR system was equipped with a PTC system designed to protect against overspeed derailment (BBC News 2011; Caixin Online 2011; South China Morning Post 2013). For the project alignment between Scott Boulevard and Carlucci Road, a computer-based, enhanced ATC system would control the trains. The ATC system reduces the potential for derailments and thereby reduces the potential for trains or parts thereof to affect a school structure. The enhanced ATC system would comply with the FRA-mandated PTC requirements, including safe separation of trains, overspeed prevention, and work zone protection. The HSR would also be equipped with an intrusion detection system that would detect intrusion of vehicles, bicycles, pedestrians, or objects onto the HSR tracks. The ATC system, intrusion detection system, natural event detection system, and inspection and maintenance programs would reduce the potential for derailments and thereby reduce the potential for derailed trains to affect a school structure.

Project design includes safety elements, such as containment parapets, check rails, guard rails, and derailment walls, which would be used in specific areas with a high risk of derailment occurrence or high impact from derailment occurrence, or both. These areas include elevated guideways (viaducts) where operating trains are elevated above grade (and above structures on the ground) and approaches to conventional rail and roadway crossings where a derailed train could enter another transportation right-of-way. Concrete derailment walls (tall curbs that run parallel to the HSR train wheels) would keep the train within the right-of-way and keep the railcars upright in the event of a derailment. The Authority will conduct a PHA (SS-IAMF#3) that will identify potential derailment hazards and will apply measures to reduce the potential incidence and consequences of derailments, including application of design features (e.g., barriers) to minimize the potential for a derailed train to leave the guideway and affect school structures or individuals outside of the right-of-way.

CEQA Conclusion

There would be a less than significant impact under CEQA on school safety for all project alternatives because project operations that could be subject to a derailment leading to safety hazards for schools would be effectively minimized through safety elements incorporated into the project design. Safety elements would include an ATC system, intrusion detection systems, and inspection and maintenance programs to minimize the risk of accidents, and derailment containment systems including check rails, parapets, undercar guards, and alternate barrier systems that would keep the train within the right-of-way and railcars upright in the event of a derailment. Through incorporation of safety elements into project design, project features will minimize the risk of accidents and safety hazards for schools. Therefore, CEQA does not require mitigation.

3.11.6.4 Wildfire Hazards

The potential for wildland fires represents a hazard where development is adjacent to open space or near wildland fuels or designated fire severity zones. New development located in any fire hazard severity zone within State Responsibility Areas, any very high fire hazard severity zone within Local Responsibility Areas, or any wildland-urban interface fire area must comply with the

California Government Code Section 65302 minimum requirements for building materials and construction methods to improve exterior wildfire exposure protection.

Potential impacts include exposing people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires.

No Project Impacts

The conditions under the No Project Alternative are the same as those described in Section 3.11.6.2.

Project Impacts

Impact S&S#16: Wildfire Hazards

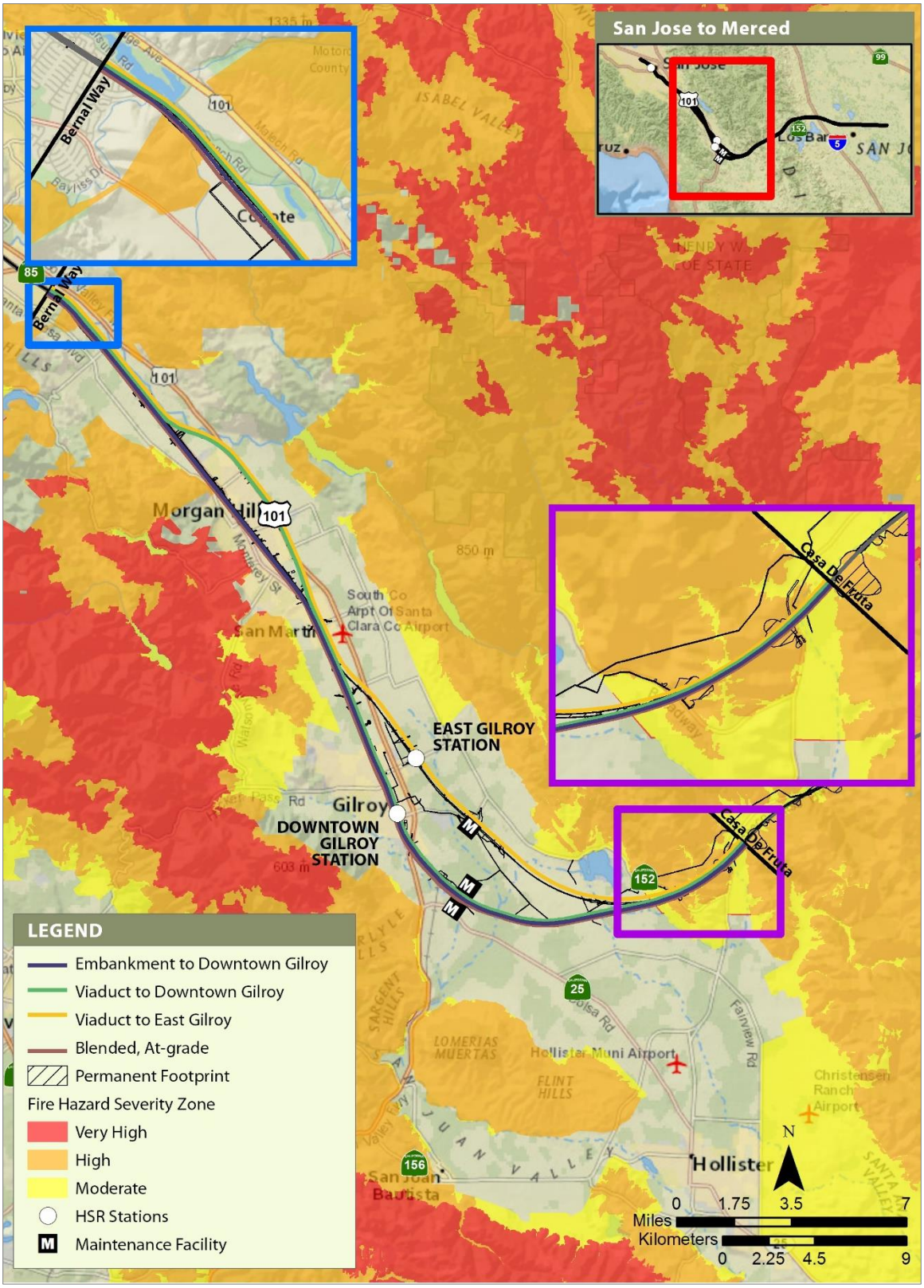
CAL FIRE provides wildfire hazard potential ratings for California. The RSA encompasses areas with wildfire hazard potentials ranging from moderate to very high (CAL FIRE 2007a, 2007b, 2007c, 2007d, 2007e, 2008). Areas of the RSA within Santa Clara, San Benito, and Merced Counties include moderate to very high wildfire hazard severity zones. As shown on Figure 3.11-11 and Figure 3.11-12, these areas are near Gilroy in Santa Clara County, and near Pacheco Pass and along SR 152 and SR 156 in San Benito and Merced Counties. These areas are crossed by all the project alternatives and are considered at risk for wildfires.

While the risks of wildfires are similar under all four project alternatives, the acreages by wildfire hazard rating vary under each alternative. All four alternatives would include 1,460 acres of moderate to high severity zones in the Pacheco Pass Subsection, because all four alternatives would follow identical alignments in that subsection. In the Morgan Hill and Gilroy Subsection, Alternative 1 would include 473 acres of moderate to very high severity zones, Alternative 2 would include 479 acres, Alternative 3 would include 469 acres, and Alternative 4 would include 469 acres, for totals of 1,933 acres, 1,940 acres, 1,930 acres, and 1,929 acres, respectively. Temporary construction and permanent acreages for each project alternative and in each fire hazard severity zone are shown in Table 3.11-15.

Because construction activities would comply with all required and recommended fire safety measures as per California Public Resources Code Title 14 and Title 19, risk of wildfire hazard would be minimal. In addition, alignments would be built in accordance with all requirements established by local jurisdictions and all other applicable fire code regulations. The amount of construction effort for the design variants would be approximately the same and would occur in the same locations as the alternatives without the DDV and TDV; therefore, construction period effects on safety and security would be the same.

Given the lack of combustible fuels and low volume of flammable materials associated with operation of an HSR system and project design, the permanent exposure of the public, passengers, or employees to wildfire hazards including wildland fires would be minimized. No changes to existing operations and maintenance activities associated with the electrical transmission lines would be anticipated with implementation of the project. Therefore, there would be no change from the baseline related to wildfire hazards from the reconductored electrical transmission lines.

The Authority will develop and incorporate fire and life safety programs into the design, construction, and operations of the project (SS-IAMF#2). The Authority will form a statewide Fire and Life Safety and Security Committee (FLSSC) composed of representatives from fire, police, and local building code agencies (Authority 2013b). The purpose of the FLSSC would be to review issues that are critical to fire and life safety and security, to acquire input and concurrence from the state and local authorities having jurisdiction over the proposed designs to meet code requirements, and to comply with state and local fire code standards or fire/life safety hazard mitigation measures during the design phase. The fire and life safety program would include Regional FLSSCs that would focus on the fire and life safety characteristics specific to each HSR project section, including underground and elevated structures, access methods, terminals, and maintenance facilities, to provide input on local building codes or requirements that are in line with the emergency response characteristics and capabilities of the local agencies.



Source: CAL FIRE 2007a

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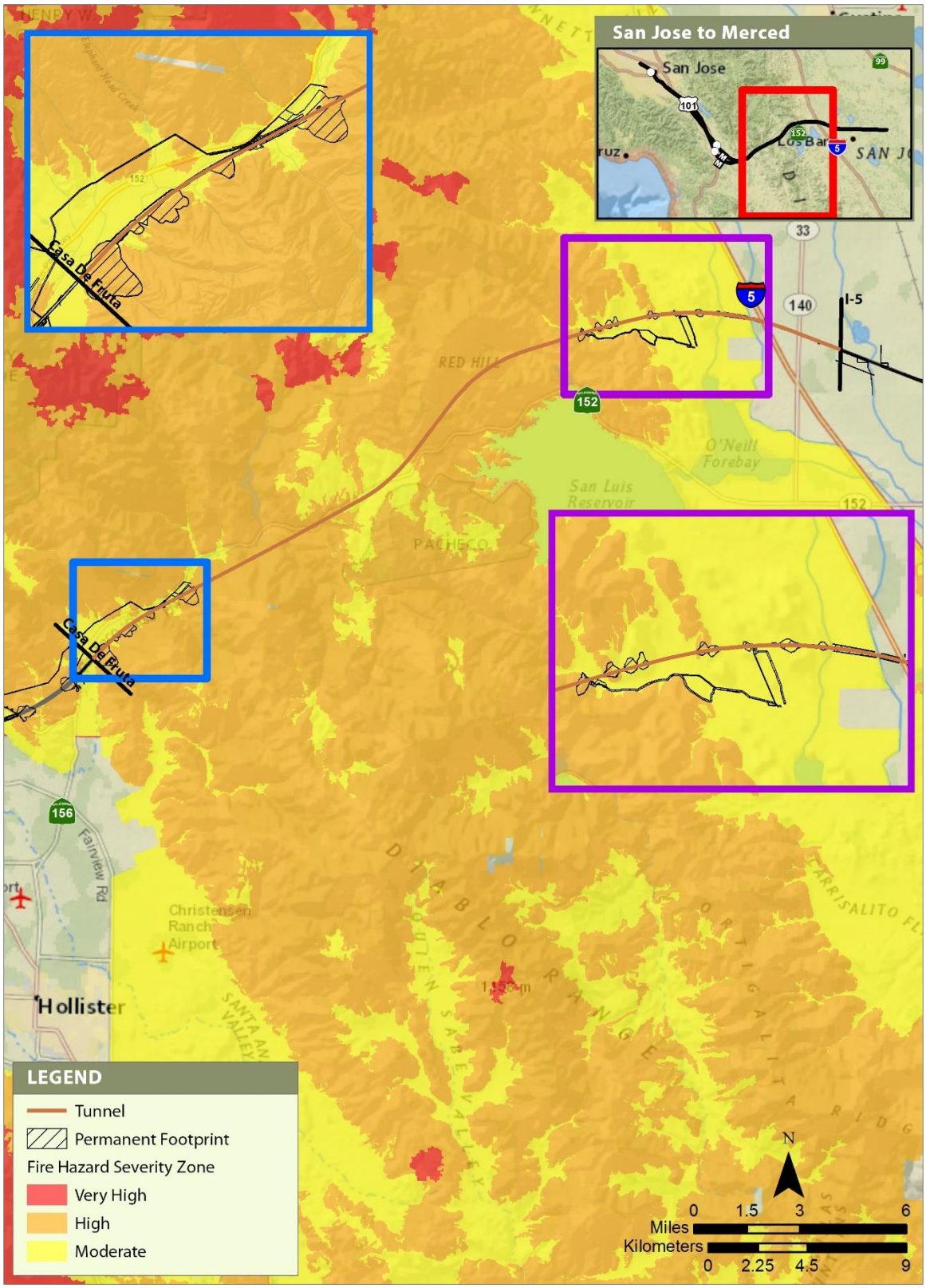
Figure 3.11-11 Fire Hazards—Morgan Hill and Gilroy Subsection



Source: CAL FIRE 2007b, 2007c

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Figure 3.11-12 Fire Hazards—Pacheco Pass Subsection

Table 3.11-15 State-Designated Fire Severity Zone Areas by Alternative (acres)

Fire Hazard Severity Zone	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Morgan Hill and Gilroy Subsection	Pacheco Pass Subsection	Morgan Hill and Gilroy Subsection	Pacheco Pass Subsection	Morgan Hill and Gilroy Subsection	Pacheco Pass Subsection	Morgan Hill and Gilroy Subsection	Pacheco Pass Subsection
Existing								
Moderate	130.25	722.52	130.25	722.52	127.19	722.52	130.24	722.52
High	339.42	737.79	345.98	737.79	339.32	737.79	335.51	737.79
Very High	2.96	0.00	2.96	0.00	2.90	0.00	2.96	0.00
Total	472.63	1,460.31	479.19	1,460.31	469.41	1,460.31	468.71	1,460.31
Permanent								
Moderate	72.89	550.61	72.89	550.61	65.09	550.61	72.89	550.61
High	233.67	660.20	239.17	660.20	233.99	660.20	235.92	660.20
Very High	0.31	0.00	0.31	0.00	0.25	0.00	0.31	0.00
Total	306.87	1,210.81	312.37	1,210.81	299.33	1,210.81	309.12	1,210.81
Temporary								
Moderate	57.35	171.91	57.35	171.91	62.10	171.91	57.35	171.91
High	105.76	77.59	106.82	77.59	105.33	77.59	99.59	77.59
Very High	2.65	0.00	2.65	0.00	2.65	0.00	2.64	0.00
Total	165.76	249.50	166.82	249.50	170.08	249.50	159.58	249.50

Sources: Authority 2019a; CAL FIRE 2007a, 2007b, 2007c, 2007d, 2007e

Representation and operation of the statewide FLSSC and regional FLSSCs would be coordinated with local emergency response organizations to provide an understanding of the HSR system, facilities, and operations, and to obtain their input for modifications to emergency response operations and facilities. These programs and coordination activities would allow for rapid response by local emergency responders in the case of an accident, reducing the potential for uncontrolled wildfire events.

CEQA Conclusion

The impact would be less than significant under CEQA for all four project alternatives because the risk of fires during construction and operations would be minimized. For construction activities in high or moderate fire hazard severity zones, all required and recommended fire safety measures will be implemented, as per California Public Resources Code Title 14 and Title 19. In addition, alignments would be constructed in accordance with all requirements established by local jurisdictions and all other applicable fire code regulations. With implementation of these requirements, construction of the project would not be expected to expose people or structures to a significant wildfire risk and would not exacerbate wildfire risks. Construction-related activities would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Operations of any of the project alternatives would include elements (e.g., HSR electrical systems, stations, maintenance facilities, and railbeds) that could increase the potential for wildfires. Although HSR trains would not carry fuel or large quantities of flammable materials, there is an inherent fire hazard during operations from electrical systems. The electrical interconnection facilities represent new electrical components that would increase risks above baseline conditions associated with electrical fire hazard. The surrounding landscape is maintained in active agricultural use, and these lands are typically irrigated and maintained with minimal excess dry fuel that could ignite. Therefore, the incremental increase in fire hazard from project operations would be minimized under all project alternatives. Therefore, CEQA does not require mitigation.

3.11.7 Mitigation Measures

There would be significant impacts under CEQA for all alternatives. Table 3.11-16 shows the safety and security–specific mitigation measures that will be implemented to address impacts on safety and security.

Table 3.11-16 Safety and Security-Specific Mitigation Measures

Mitigation Measure	Alternative 1	Alternative 2	Alternative 3	Alternative 4
SS-MM#1: Construct Permanent Access Roads and Driveways for Alternative 2 Skyway Drive Variant B	N/A	Yes	N/A	N/A
SS-MM#2: Construct Temporary Access Roads and Driveways for Morgan Hill Charter School	Yes	Yes	N/A	N/A
SS-MM#3: Install Emergency Vehicle Detection	Yes	Yes	Yes	Yes
SS-MM#4: Install Emergency Vehicle Response Improvements[1]	Yes	Yes	Yes	Yes

Source: Authority 2019b
N/A = not applicable
[1]SS-MM#4 applies to Alternatives 1, 2, and 3 in part and Alternative 4 in full.

There would be a significant impact under CEQA for all project alternatives from the permanent interference with emergency response times on Monterey Road between Bernal Road and Capitol Expressway.

SS-MM#1: Construct Permanent Access Road and Driveways for Alternative 2 Skyway Drive Variant B

Prior to commencing construction to depress Monterey Road and Skyway Drive under Alternative 2 Skyway Drive Variant B, the contractor will construct a permanent access road and driveway to San Jose Fire Station 18. The access road will be required to provide road access to and from the fire station using the proposed connector road through the adjacent mobile home park. A driveway also will be provided from this access road to provide access to and from the existing fire station. During final design, the Authority will assess whether the revised access will delay access by emergency response vehicles to southbound Monterey Road by more than 30 seconds. If such a delay is identified as probable, then the Authority will work with the San Jose Fire Department to modify the access to reduce the delay to less than 30 seconds or will relocate the fire station to the east to direct access to the Skyway Drive underpass and Monterey Highway as designed in Variant B.

This mitigation measure will be effective in reducing potential interference with emergency access resulting from construction and operations of the project by constructing permanent access roads and/or relocating the fire station prior to reconfiguring Monterey Road and Skyway Drive to maintain emergency vehicle access at all times.

Implementing the access road option in SS-MM#1 would not result in secondary impacts because the impacts of constructing the road are disclosed, and this mitigation measure only changes the sequence of construction, thereby avoiding access impacts and not resulting in any new impacts. If the fire station option is required, there will be additional construction for the relocated fire station, but the construction will occur entirely within the temporary construction easement area for Alternative 2 so is not expected to result in additional displacements. The additional construction-period effects will be controllable by the same construction period mitigation applied to construction of the HSR project.

SS-MM#2: Construct Temporary Access Roads and Driveways for Morgan Hill Charter School

Prior to commencing construction of the rail alignment, the contractor will construct temporary access roads and driveways to provide and maintain emergency vehicle access to the Morgan Hill Charter School (9530 Monterey Road, Morgan Hill) at all times during the construction period. The contractor will complete construction of temporary access roads and driveways to provide vehicle access prior to closing or relocating existing roads and driveways for rail alignment construction and will reconfigure temporary roads and driveways as required throughout the construction period to maintain emergency vehicle access to the school property at all times during the construction period. These temporary access roadways and driveways will provide equivalent emergency vehicle access to Monterey Road during all construction phases, including the provision of signalized left turn in and left turn out movements.

This mitigation measure will be effective in reducing potential interference with emergency access from construction activities near Morgan Hill Charter School by constructing temporary access roads to maintain emergency vehicle access. Implementing SS-MM#2 would not result in secondary impacts because the construction of temporary roads would occur within the construction footprint and would only change the timing of access improvements. The provision of modified access to the school site during construction would not result in secondary impacts on transportation facilities, including traffic using Monterey Road, as it would provide the same or a similar level of service as is currently provided.

SS-MM#3: Install Emergency Vehicle Detection

Prior to construction, the contractor will install emergency vehicle detection equipment at the following intersections on Monterey Road: Bernal Road northbound ramps, Flintwell Way, Ford Road, Monterey Plaza Driveway, Blossom Hill Road eastbound ramps, Chynoweth Avenue, Edenview Drive, Branham Lane, Skyway Drive, Senter Road, Capitol Expressway eastbound ramps and Capitol Expressway westbound ramps. The contractor will prepare all materials necessary for and seek the approval of the cities of San Jose, Morgan Hill, and Gilroy for the implementation of these improvements.

This mitigation measure will apply to areas of San Jose where EVP is not already in place and in Morgan Hill and Gilroy. This mitigation measure will be effective in improving emergency vehicle response times on Monterey Road by providing detection and preemption equipment at those intersections where it does not currently exist. Implementing this mitigation measure would not result in secondary impacts because the addition of vehicle detection equipment would occur during construction and would not disrupt new areas during operations.

SS-MM#4: Install Emergency Vehicle Response Improvements

This measure includes three components:

- San Jose Diridon Station Area: Emergency Vehicle Priority Plan and priority treatments (all alternatives);
- Downtown Gilroy Station Area Emergency Vehicle Priority Plan and priority treatments (Alternatives 1, 2, and 4); and
- At-Grade Crossing Emergency Vehicle Priority Treatment Plan and associated improvements (Alternative 4 only)

San Jose Diridon Station Area (All Alternatives)

Prior to construction, to mitigate fire station emergency access and response time impacts related to the San Jose Diridon Station, the Authority's contractor will develop an emergency vehicle priority plan and install emergency vehicle priority treatments and new traffic control devices as needed for San Jose Fire Station 30. It is anticipated that this may include installation of emergency vehicle priority treatments where they do not exist on Auzerais Avenue between Sunol Street and Delmas Avenue, West San Carlos Street between Bird Avenue and Delmas Avenue, and Bird Avenue between Park Avenue and West Virginia Street. The contractor will prepare all materials necessary for and obtain the approval of the City of San Jose for implementation of these emergency vehicle priority treatments. This mitigation measure will be effective in reducing impacts on emergency response time relative to the San Jose Diridon Station.

Downtown Gilroy Station Area (Alternatives 1, 2, and 4)

Prior to construction, to mitigate fire station emergency access and response time impacts related to the Downtown Gilroy Station, the Authority's contractor will develop an emergency vehicle priority plan and install emergency vehicle priority treatments and new traffic control devices as needed for the Gilroy fire station at 7070 Chestnut Street. It is anticipated that this may include installation of emergency vehicle priority treatments where they do not exist on 10th Street between Monterey Road and Camino Arroyo. The contractor will prepare all materials necessary for and obtain the approval of the City of Gilroy for implementation of these emergency vehicle priority treatments. This mitigation measure will be effective in reducing impacts on emergency response time relative to the Downtown Gilroy Station.

At-Grade Crossings (Alternative 4 only)

For Alternative 4 only, prior to operations that are expected to result in an exceedance of the 30-second delay threshold, to mitigate fire station/first responder emergency access impacts related to added travel time from increased gate down time at at-grade crossings, the Authority will conduct monitoring and make a fair-share contribution to implement phased emergency vehicle priority treatment strategies. Where impacts are identified based on monitoring or predicted to occur due to planned HSR service increases, the Authority will develop an Emergency Vehicle Priority Treatment Plan in conjunction with local agencies, including local cities, local fire departments, and local first responders. The Authority will make a fair share contribution toward emergency vehicle priority treatments related to the level of impact of increased gate down time associated with HSR train operations. The Authority's fair share contribution will take the form of providing capital funds for project implementation to local agencies, who will be responsible for implementation of capital improvements as well as ongoing operations and maintenance of any facilities constructed.

Monitoring will involve collecting travel time data for a 1-mile section (i.e., 0.5 mile on either side of the at-grade crossing) of the at-grade crossing street during weekday peak periods (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.). The data will be collected on 12 days during each monitoring year from Tuesday to Thursday over a 2-week period in early May and early October.

Travel time data will be collected at the following intervals:

- 1 year prior to initiation of new HSR service to establish baseline emergency response travel times for each corridor,
- Monthly for the first 6 months of initial operations[20] and annually thereafter for 3 years, and
- Starting approximately 6 months after initiation of any subsequent increase in HSR service, and annually thereafter for 3 years.

Travel time data will be collected at the following at-grade crossing locations:

- Branham Avenue (San Jose)
- Chynoweth Avenue (San Jose)
- Skyway Drive (San Jose)
- Blanchard Road (San Jose)
- Palm Avenue (San Jose)
- Live Oak Avenue (Morgan Hill)
- East Main Street (Morgan Hill)
- East Dunne Avenue (Morgan Hill)
- San Pedro Avenue (Morgan Hill)
- Tennant Avenue (Morgan Hill)
- East Middle Avenue (Morgan Hill)
- San Martin Avenue (San Martin)
- Church Avenue (Gilroy)
- Masten Avenue (Gilroy)
- Rucker Avenue (Gilroy)
- Buena Vista Avenue (Gilroy)
- Cohansey Avenue (Gilroy)
- Las Animas Avenue (Gilroy)
- Leavesley Road (Gilroy)
- IOOF Avenue (Gilroy)
- Lewis Street (Gilroy)
- Martin Street (Gilroy)
- 6th Street (Gilroy)
- 7th Street (Gilroy)
- 10th Street (Gilroy)

[20] Initial HSR operations would be more limited in scope than full operations expected by 2040. Chapter 2 identifies that initial operations would include a maximum of two trains per peak hour per direction, which corresponds to up to four one-way trains per hour or every 15 minutes on average and which would have much less effect on emergency vehicle response times than full Phase I operations. With full Phase I operations, the project would have up to seven trains per peak hour per direction, which corresponds to up to 14 one-way trains per hour on average at full service by 2040. The intent of monitoring initial operations is to identify the potential need for emergency vehicle response time improvements early enough to be in place prior to full operations.

An Emergency Vehicle Priority Treatment Plan will be developed for at-grade crossing locations where an increase in emergency response times of 30 seconds or more above baseline travel time will occur due to HSR service. The performance standard for the plan is to reduce the response time increases resulting from HSR train operation effects on gate down time to less than 30 seconds. If initial operations do not result in exceedance of the 30-second threshold, then, using monitoring data for initial operations, the Authority will evaluate whether future planned HSR service increases are likely to result in new or additional delays above the 30-second threshold. If such effects are predicted for planned HSR service increases, then the Authority will develop the Emergency Vehicle Priority Vehicle Treatment Plan to account for those effects and will coordinate with local cities, fire departments, and first responders to implement the appropriate treatments prior to the planned HSR service increases that will result in exceedance of the 30-second threshold.

Emergency vehicle priority treatment strategies may include constructing improvements to streets parallel to the HSR corridor to speed travel to adjacent grade-separated crossings of the rail line or to provide new emergency service facilities (i.e., new fire stations or ambulance/paramedic staging facilities) on the opposite side of the corridor where there are no adjacent grade-separated crossings. The strategies may include, but are not limited to, the following:

- EVP equipment at roadway traffic signals
- Route-based roadway traffic signal priority control systems
- Emergency vehicle and transit queue bypass lanes at roadway intersections
- Roadway capacity and operational improvements to facilities paralleling the rail line to improve access to adjacent grade-separated rail crossings
- Construction of new fire stations to reduce fire station response times in affected areas and provision of funding for the initial operating costs for up to 5 years for new fire stations (based on estimated impacts illustrated on Figure 3.11-10, this measure presumes that one new fire station may be required in South San Jose, one in south Morgan Hill/San Martin, and one in Gilroy)
- Provision of additional equipment for existing fire stations to expand the capacity of existing fire stations to respond to multiple emergency calls in affected areas
- Increase in contracted first responder ambulance services to reduce first responder ambulance response times in affected areas

For the Authority-owned railroad operations involving at-grade operations between CP Lick in San Jose to Gilroy, this measure will also include Authority partnership with local public emergency service providers and local jurisdictions to provide real-time information regarding train location and at-grade crossing gate operations to facilitate better emergency response route planning. This may be facilitated through one-way data output from the HSR operational control center and/or through installation of trackside equipment and hardwire connections. Implementation of any physical installations of trackside equipment or communication connections will be via Authority funding of local jurisdictions to install such equipment or communication connections and associated software.

As an alternative to these strategies, the Authority and a local agency may reach a mutual agreement to have the Authority make an in-lieu payment toward other infrastructure projects including nearby grade-separation projects. If the Authority and a local agency are seeking an agreement prior to operations, then the Authority will conduct additional modelling of potential HSR effects of emergency response utilizing emergency service provider response time data, as available, to validate the modelling. This additional modelling will be used to support the estimation of the need for, and potential extent of, one or more of the improvement measures noted above. The in-lieu payment will be the capital contribution that the Authority will have otherwise made to one or more of the above emergency vehicle priority treatment strategies.

This mitigation measure will be effective in improving emergency vehicle response times by providing funding for emergency vehicle priority treatments, where and when necessary. This mitigation measure will not mitigate certain fire station response time impacts in the affected jurisdictions if these cities choose not to implement and operate emergency vehicle priority treatments determined to be necessary using construction funds provided by HSR. Accordingly, these impacts are considered significant and unavoidable.

Building new fire stations or other emergency vehicle priority improvements may result in secondary impacts depending on their locations, which are presently not known; if the local agencies choose to implement and operate emergency vehicle priority treatments with funding provided by HSR, they may need to conduct environmental analysis prior to construction. Providing additional contracted emergency first responder ambulance services may result in secondary impacts depending on whether contracted ambulance services will require construction of new deployment facilities or whether their operations will only include deployment of additional ambulances on call in the affected areas; local agencies may need to conduct environmental analysis prior to construction. If the Authority and a local agency mutually agree for payment of an in-lieu fee used for other infrastructure projects, including grade-separation projects, the local agency may need to conduct environmental analysis prior to construction.

As noted above, if cities choose not to implement and operate emergency vehicle priority treatments using construction funds provided by the Authority, impacts will be considered significant and unavoidable. In that case, some of the site-specific traffic mitigation measures identified in Section 3.2 will be required to help reduce traffic congestion or delays at intersections adjacent to or near at-grade crossings during peak hours and at certain intersections where the project will affect emergency vehicle response times due to increased gate down time with Alternative 4. The following traffic mitigation measures will help to reduce peak-hour traffic delays at intersections adjacent to or near at-grade crossings with significant emergency vehicle response time delays under Alternative 4:

- TR-MM#1e: Monterey Road/Chynoweth Avenue-Roeder Road—Widen and Reconfigure
- TR-MM#1t: Monterey Road/San Martin Avenue—Restripe Southbound Approach
- TR-MM#1u: Monterey Road/IOOF Avenue—Widen and Reconfigure Southbound Approach
- TR-MM#1w: Chestnut Street/Luchessa Street—Reconfigure Southbound Approach
- TR-MM#1x.6: East Main Avenue/Depot Street—Install Traffic Signal
- TR-MM#1x.8: Llagas Road/San Martin Avenue—Install Traffic Signal
- TR-MM#1x.9: School Access/IOOF Avenue—Install Traffic Signal
- TR-MM#1x.10: SR 25/Bloomfield—Install Traffic Signal

The secondary effects of these measures are discussed in Section 3.2.7, Mitigation Measures. As discussed therein and in Volume 2, Appendix 3.2-C, Traffic Mitigation Measures Screening, none of the proposed traffic mitigation measures would have unmitigable secondary environmental effects.

Although these traffic mitigation measures will help to address traffic delays at adjacent or nearby intersections, they will not change gate-down times. As such, if cities choose not to implement and operate emergency vehicle priority treatments discussed above using construction funds provided by the Authority, then the impact will remain significant and unavoidable.

3.11.8 Impact Summary for NEPA Comparison of Alternatives

As described in Section 3.1.6.4, the effects of project actions under NEPA are compared to the No Project condition when evaluating the impact of the project on the resource. The determination of effect is based on the context and intensity of the change that would be generated by construction and operations of the project. Table 3.11-17 compares the project impacts by alternative, followed by a summary of the impacts.

Table 3.11-17 Comparison of Project Alternative Impacts for Safety and Security

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Emergency Response and Services				
Impact S&S#1: Temporary Impacts on Emergency Access and Response Times from Temporary Roadway and Highway Closures, Relocations, and Modifications	Travel time on Monterey Road would increase throughout construction areas for the duration of construction activities, resulting in delays in emergency vehicle access and response time. Access roads and driveways at Morgan Hill Charter School would be closed or modified, impeding emergency access to the school.	Temporary construction activity would result in the same road closures and relocations as Alternative 1. Construction of Skyway Drive Variant A would not impede vehicle access to San Jose Fire Station 18. Construction of Skyway Drive Variant B would impede vehicle access to San Jose Fire Station 18.	Same as Alternative 1, except no effects on Morgan Hill Charter School.	Travel time on Monterey Road would increase throughout construction areas for the duration of construction activities, resulting in delays in emergency vehicle access and response time. Effects under Alternative 4 would be less due to the lack of roadway narrowing on Monterey Road.
Impact S&S#2: Temporary Impacts on Emergency Access and Response Times from Construction Vehicles	Project features will manage construction vehicle traffic and the project would not affect emergency vehicle access and response.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1
Impact S&S#3: Permanent Impacts on Emergency Access and Response Times from Permanent Roadway and Highway Closures, Relocations, and Modifications	Travel time on Monterey Road would increase between Capitol Expressway and Bernal Road by 0 to 12 minutes in AM peak hours and 6 to 8 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time.	Travel time on Monterey Road would increase between Capitol Expressway and Bernal Road by 6 to 8 minutes in AM peak hours and by 2 to 12 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time.	Same as Alternative 1	Travel time on Monterey Road would not increase because of roadway modifications. However, because of additional gate down time, travel times between Bernal and Capitol Expressway would increase by less than 1 minute in AM peak hours, and 4 to 8 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#4: Continuous Permanent Impacts on Emergency Access and Response Times	Traffic generated by HSR riders at the San Jose Diridon Station and the Downtown Gilroy Station would result in an increase in emergency vehicle response times by 30 seconds or more. Travel time on Monterey Road would increase between Capitol Expressway and Bernal Road by 6 to 8 minutes in AM peak hours and 11 to 20 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time. These increases would be as a result of roadway modifications on Monterey Road. No delay because of additional gate down time.	Station traffic effects would be the same as Alternative 1. Travel time on Monterey Road would increase between Capitol Expressway and Bernal Road by 16 to 26 minutes in AM peak hours and by 5 to 17 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time. These increases would be as a result of roadway modifications on Monterey Road Same as Alternative 1.	Same as Alternative 1 except this alternative would not have station traffic effects on emergency vehicle response times relative to the East Gilroy Station.	Traffic generated by HSR riders at the San Jose Diridon Station and the Downtown Gilroy Station would result in an increase in emergency vehicle response times by 30 seconds or more. Additional gate down time would increase emergency vehicle response by 30 seconds or more in the Monterey Corridor and Morgan Hill and Gilroy Subsections. Travel time on Monterey Road would not increase because of roadway modifications. However, because of additional gate down time, travel times between Bernal and Capitol Expressway would increase by less than 1 minute in AM peak hours, and 4 to 8 minutes in PM peak hours depending on the direction of travel, resulting in delays in emergency vehicle access and response time.
Community Safety and Security				
Impact S&S#5: Temporary Exposure to Criminal Activity at Construction Sites	Construction sites would not result in criminal activity risks that would interfere with emergency services. The risk of criminal activity on construction sites would be minimized by storing equipment and materials in secured areas and using security personnel and security lighting to monitor equipment after work hours.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#6: Temporary Exposure to Construction Site Hazards	Construction equipment, construction activities, and high-risk facilities would not result in safety hazards. The project would comply with all legal requirements and include an effective safety plan to reduce the potential of construction site hazards and accidents.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.
Impact S&S#7: Temporary Exposure to Construction-Related Traffic Hazards	Temporary construction activities would result in 10 temporary road closures and realignments affecting Caltrans facilities. Emergency vehicle access would be maintained during construction and road closures would be staggered so that the next adjacent road to the north and south of a road temporarily closed for construction would remain open to accommodate detoured traffic.	Same as Alternative 1.	Same as Alternative 1.	Temporary construction activities would result in 8 temporary road closures and realignments affecting Caltrans facilities. Emergency vehicle access would be maintained during construction and road closures would be staggered so that the next adjacent road to the north and south of a road temporarily closed for construction would remain open to accommodate detoured traffic.
Impact S&S#8: Permanent Exposure to Traffic Hazards	The project would result in 17 permanent local road closures and 27 permanent local road realignments. The project would construct overpasses and underpasses to route traffic over or under the HSR tracks, widen local roads, add new traffic signals, implement new traffic restrictions, improve intersections, and build new roads to address traffic hazards.	The project would result in 29 permanent local road closures and 59 permanent local road realignments. Project improvements would be the same as Alternative 1.	The project would result in 17 permanent local road closures and 32 permanent local road realignments. Project improvements would be the same as Alternative 1.	Alternative 4 would include construction of 29 at-grade quad gates at road-rail crossings in the San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections. Closure of at-grade crossing gates would result in traffic delays at at-grade intersections.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#9: Permanent Interference with Airport Safety	Project structures including proposed radio towers would exceed FAR Part 77 height notification limits and therefore notification to FAA would be required for these structures. Eight radio towers would require FAA notification for Alternative 1. The Authority expects that the aeronautical studies that FAA would conduct under the FAR Part 77 notification process would not result in identification of safety hazards that would result in FAA recommending the relocation of a proposed communications tower or other proposed structure.	Same as Alternative 1, except six radio towers would require FAA notification for Alternative 2.	Same as Alternative 1, except six radio towers would require FAA notification for Alternative 3.	Same as Alternative 1, except three radio towers would require FAA notification for Alternative 4.
Impact S&S#10: Temporary Exposure to Valley Fever	Construction would not lead to increased risk of exposure to Valley fever. The fugitive dust control plan and SSMP would minimize the exposure of the public or construction workers to Valley fever.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#11: Temporary Exposure to Risk from High-Risk Facilities	There are 129 high-risk utility facilities within the RSA prior to construction. 75 high-risk facilities would be relocated or removed during construction. The SSMP would identify high-risk facilities that could be affected by construction and remove, relocate, or protect-in-place pipelines, electrical systems, and other buried and overhead high-risk facilities within the project footprint.	There are 123 high-risk utility facilities within the RSA prior to construction. 78 high-risk facilities would be relocated or removed during construction. Construction worker protection would be the same as Alternative 1.	There are 127 high-risk utility facilities within the RSA prior to construction. 69 high-risk facilities would be relocated or removed during construction. Construction worker protection would be the same as Alternative 1.	There are 173 high-risk utility facilities within the RSA prior to construction. 80 high-risk facilities would be relocated or removed during construction. Construction worker protection would be the same as Alternative 1.
Impact S&S#12: Permanent Exposure to Rail-Related Hazards	The project would permanently affect 120 acres of UPRR right-of-way and another 87 acres for temporary construction easements. From Tamien Station to Bloomfield Avenue in Gilroy, the UPRR and HSR run parallel for 24.4 miles. Alternative 1 would include 2.6 miles of blended track, 86.3 miles of dedicated track and would include no at-grade crossings. The project design includes grade separations, physical separations including separation distances and vertical separations, a physical protection barrier, PTC features, and derailment containment to maximize operational safety.	The project construction would permanently affect 127 acres of UPRR right-of-way and another 227 acres for temporary construction easements. From Tamien Station to Bloomfield Avenue in Gilroy, the UPRR and HSR run parallel for 31.4 miles. Alternative 2 would include 88.6 miles of dedicated track and no blended track and would include no at-grade crossings. The project design features would be the same as Alternative 1.	The project would permanently affect 81 acres of UPRR right-of-way and another 75 acres for temporary construction easements. From Tamien Station to Bloomfield Avenue in Gilroy, the UPRR and HSR run parallel for 16.4 miles. Alternative 3 would include 88.6 miles of dedicated track and no blended track and would include no at-grade crossings The project design features would be the same as Alternative 1.	The project would permanently affect 450 acres of UPRR right-of-way and another 4 acres for temporary construction easements. For Alternative 4, the HSR would run on blended track for 35.3 miles between San Jose and Gilroy. Alternative 4 would include 53.4 miles of dedicated track and 35.3 miles of blended track. Alternative 4 would include installation of 7 new quad gates and improvements to 74 existing gates at at-grade crossings in the San Jose Diridon Station Approach, Monterey Corridor, and Morgan Hill and Gilroy Subsections. The project design features would be the same as Alternative 1. At-grade crossings would be equipped with quad gates and barrier systems to prevent intrusion into the right-of-way.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#13: Continuous Permanent Exposure to High-Risk Facilities and Tall Structures	Following construction, 41 high-risk utility facilities would remain within the RSA. A total of 16 bridges and no other tall structures would remain within the RSA after completion of construction. There are 96 high-risk facilities including cement plants, electric power plants, wastewater treatment plants, dams and reservoirs, and landfills within 2 miles of the project footprint. The project would conduct a PHA and include the SSMP to minimize the potential for high-risk facilities, including oil and natural gas pipelines, bulk fuel storage facilities, and tall structures (including bridges).	Following construction, 37 high-risk utility facilities would remain within the RSA. A total of 17 bridges and one other tall structure would remain within the RSA after completion of construction. There are 95 high-risk facilities including cement plants, electric power plants, wastewater treatment plants, dams and reservoirs, and landfills within 2 miles of the project footprint. The project features would be the same as Alternative 1.	Following construction, 41 high-risk utility facilities would remain within the RSA. A total of 17 bridges and one other tall structure would remain within the RSA after completion of construction. There are 96 high-risk facilities including cement plants, electric power plants, wastewater treatment plants, dams and reservoirs, and landfills within 2 miles of the project footprint. The project features would be the same as Alternative 1.	Following construction, 81 high-risk utility facilities would remain within the RSA. A total of 27 bridges and six other tall structures would remain within the RSA after completion of construction. There are 93 high-risk facilities including cement plants, electric power plants, wastewater treatment plants, dams and reservoirs, and landfills within 2 miles of the project footprint. The project features would be the same as Alternative 1.
Impact S&S#14: Continuous Permanent Exposure to Criminal and Terrorist Activity	Operations would not lead to increased exposure to criminal or terrorist activity. The project includes deterrence and detection systems, and design standards and guidelines to accommodate emergency response access and provide for safe evacuation in the event of a criminal or terrorist act.	Same as Alternative 1.	Same as Alternative 1.	Same as Alternative 1.

Impact	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Impact S&S#15: Continuous Permanent Safety Hazard to Schools	The ATC system, intrusion detection system, and inspection and maintenance programs would minimize the risk of accidents, and derailment containment systems including check rails, parapets, undercar guards, and alternate barrier systems would keep the train within the right-of-way and railcars upright in the event of a derailment, minimizing the safety risk at the 43 schools in the RSA.	Same as Alternative 1 for the 47 schools in the RSA.	Same as Alternative 1 for the 41 schools in the RSA.	Same as Alternative 1 for the 40 schools in the RSA.
Wildfire Hazards				
Impact S&S#16: Wildfire Hazards	1,932 acres are within moderate to very high fire hazard severity zones, 1,518 acres of which are permanent area acreage. The risks of fires during operations would be minimized with the low use of flammable materials, and risks from wildfires that could result in safety hazards would be effectively minimized through fire and life safety programs during project design, construction, and operations.	1,940 acres are within moderate to very high fire hazard severity zones, 1,523 acres of which are permanent area acreage. The project design features would be the same as Alternative 1.	1,930 acres are within moderate to very high fire hazard severity zones, 1,510 acres of which are permanent area acreage. The project design features would be the same as Alternative 1.	1,929 acres are within moderate to very high fire hazard severity zones, 1,520 acres of which are permanent area acreage. The project design features would be the same as Alternative 1.

ATC = automatic train control
Caltrans = California Department of Transportation
FAA = Federal Aviation Administration
FAR = Federal Aviation Regulation
HSR = high-speed rail
PHA = preliminary hazard analysis
PTC = positive train control
RSA = resource study area
SSMP = Safety and Security Management Plan
UPRR = Union Pacific Railroad

3.11.8.1 Emergency Services

Project construction and operations would result in temporary and permanent impacts on emergency access and response time because of delays caused by changes in vehicle circulation and increased travel time from lane closures, increased gate down time, closures or rerouting or roadways and highways, and detours. Relocations or reconstruction would result in permanent changes in vehicle circulations, higher congestion, and delay at intersections along Monterey Road. These activities would cause permanent delays in emergency vehicle access and response times, although EVP would reduce the effect of such delays where it is in place in San Jose. Available mitigation includes installing emergency vehicle detection along Monterey Road (SS-MM#3) and installing emergency vehicle response improvements (SS-MM#4) and, for Alternative 4 only, traffic delay/congestion mitigation measures (Alternative 4: TR-MM#1e, TR-MM#1t, TR-MM#1u, TR-MM#1w, TR-MM#1x.6, TR-MM#1x.8, TR-MM#1x.9, and TR-MM#1x.10).

Project features will control and manage temporary impacts on emergency access and response time from construction vehicle operation, including a CTP, established construction truck routes, a restriction on construction hours, the use of remote parking areas for workers, and the designation of off-street parking for construction-related vehicles (TR-IAMF#1, TR-IAMF#2, TR-IAMF#5, and TR-IAMF#6).

Temporary interference with emergency response would affect San Jose Fire Station 18 under Alternative 2 Skyway Drive Variant B. Interference with emergency response would occur because permanent access would not be maintained for Station 18 under Skyway Drive Variant B, thereby compromising the fire station's ability to respond to local incidents. A mitigation measure (SS-MM#1) will reduce the effects on emergency response by providing access and driveway access to the fire station using a connector road through the mobile home park, maintaining emergency vehicle response through project construction and operations. Alternatives 1, 3, and 4 and Skyway Drive Variant A of Alternative 2 would not affect the San Jose Fire Station.

Alternatives 1 and 2 would result in temporary obstruction of emergency response access to Morgan Hill Charter School. Temporary closure or relocation of access roads and driveways to the school could result in inadequate emergency access to the schools. A mitigation measure (SS-MM#2) will reduce the effects on emergency access by relocating access roads to maintain emergency vehicle access through the construction period. The Morgan Hill Charter School is outside the RSA under Alternative 3. Construction of Alternative 4 would not affect access roads or driveways for the Morgan Hill Charter School.

3.11.8.2 Community Safety and Security

Project construction and operations would not result in temporary or permanent impacts on community safety and security. Construction of the project would not increase the exposure of passengers, employees, or the public to increased safety or security risks from criminal activity at construction sites; construction site hazards; or temporary or permanent traffic hazards. The SSMP will minimize the risk of criminal activity on construction sites, and will include security lighting, fencing, and monitoring measures to provide security to construction sites and protect the security of construction workers and equipment. Through compliance with legal requirements and implementation of effective safety plans, project features will minimize temporary exposure of workers and the public to construction site hazards. Through effective coordination with local jurisdictions, implementation of emergency vehicle access procedures and a traffic control plan, staggered road closures, and vehicle and bicycle traffic and pedestrian safety project features, temporary construction impacts on the safety of motor vehicle drivers, pedestrians, and bicyclists exposed to temporary or permanent traffic hazards will be minimized.

Construction of the project would not permanently interfere with airport safety, and would not increase exposure to Valley fever or exposure to risk from high-risk facilities. Construction of radio towers for the project would exceed established height limits within FAR Part 77 zones and therefore would require FAA notification. The Authority expects that the aeronautical studies that FAA would conduct under the FAR Part 77 notification process would not identify safety hazards

that would result in the FAA recommending the relocation of a proposed communications tower or other proposed structure and that the proposed structures would therefore not result in safety hazards to airport operations within the RSA. Through effective coordination, planning, and control and prevention measures, project features (a fugitive dust control plan and an SSMP) will minimize impacts on the exposure risk of the public or construction workers to Valley fever. Project features (a PHA and the SSMP) will minimize the potential for high-risk facilities, including oil and natural gas pipelines and bulk fuel storage facilities, to be affected by construction of the project.

Project operations would not result in continuous permanent impacts related to operational safety impacts, exposure to wildfire hazards, exposure to high-risk facilities and tall structures, criminal and terrorist activity, or safety hazards to schools. Through effective planning and design of the project, impacts on safety from collisions and derailments that could expose passengers, employees, and the public to risks of accidents would be minimized. The risks of fires during project operations would be minimized with the low use of flammable materials, and risks from wildfires that could result in safety hazards would be effectively minimized through fire and life safety programs implemented during design, construction, and operations of the project.

Project features, such as conducting a PHA and implementing the SSMP, will minimize the potential for high-risk facilities, including oil and natural gas pipelines, bulk fuel storage facilities, and tall structures (including vehicle bridges, pedestrian bridges, signal overcrossing structures, buildings, and industrial plants), to affect project operations. Criminal or terrorist acts that could result in increased exposure to safety risks would be minimized through deterrence and detection systems and TVAs, and implementation of design standards and guidelines to allow emergency response access and evacuation in the event of a criminal or terrorist act. Project operations that could be subject to a derailment leading to safety hazards for schools would be effectively minimized through safety elements as part of the design, including an ATC system, intrusion detection system and inspection and maintenance programs to minimize the risk of accidents, and derailment containment systems including check rails, parapets, undercar guards, and alternate barrier systems that would keep the train within the right-of-way and railcars upright in the event of a derailment.

3.11.9 CEQA Significance Conclusions

As described in Section 3.1.6.4, the impacts of project actions under CEQA are evaluated against thresholds to determine whether a project action would result in no impact, a less than significant impact, or a significant impact. Table 3.11-18 identifies the CEQA significance determinations for each impact discussed in Section 3.11.6, Environmental Consequences. A summary of the significant impacts, mitigation measures, and factors supporting the significance conclusion after mitigation follows the table.

Table 3.11-18 CEQA Significance Conclusions and Mitigation Measures for Safety and Security

	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Emergency Response			
Impact S&S#1: Temporary Impacts on Emergency Access and Response Times from Temporary Roadway and Highway Closures, Relocations, and Modifications	Significant for all alternatives: Project construction would result in delays in emergency vehicle access and response time through temporary road closures, relocations, modifications, and reconstructions, thereby resulting in inadequate emergency access.	SS-MM#1: Construct Permanent Access Roads and Driveways for Alternative 2 Skyway Drive Variant B SS-MM#2: Construct Temporary Access Roads and Driveways for Morgan Hill Charter School (Alternatives 1 and 2) SS-MM#3 Install Emergency Vehicle Detection	Less than Significant
Impact S&S#2: Temporary Impacts on Emergency Access and Response Times from Construction Vehicles	Less than significant for all alternatives: Project construction would not result in inadequate emergency vehicle access and response, because it would effectively control and manage construction vehicle traffic.	No mitigation measures are required.	N/A
Impact S&S#3: Permanent Impacts on Emergency Access and Response Times from Permanent Roadway and Highway Closures, Relocations, and Modifications	Significant for Alternatives 1, 2, and 3 because Monterey Road would be narrowed from 6 lanes to 4 lanes: Project construction would increase travel time on Monterey Road between Bernal Road and Capitol Expressway under Alternatives 1 and 3 by 6 to 20 minutes, and under Alternative 2 by 5 to 26 minutes, depending on peak hour and direction of travel. Alternative 4 would have no impact on Monterey Road travel times from road narrowing.	SS-MM #3: Install Emergency Vehicle Detection	Less than Significant

	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact S&S#4: Continuous Permanent Impacts on Emergency Access and Response Times	Significant for Alternative 4: Operations of the project would result in increased gate down time at at-grade crossings. This added delay would increase fire and emergency vehicle response times by more than 30 seconds. Significant for Alternatives 1, 2, and 3 because Monterey Road would be narrowed from 6 lanes to 4 lanes. Project construction would increase travel time on Monterey Road between Bernal Road and Capitol Expressway under Alternatives 1 and 3 by 6 to 20 minutes, and under Alternative 2 by 5 to 26 minutes, depending on peak hour and direction of travel. Alternatives 1, 2, and 3 would have no impact on emergency vehicle travel times from gate down events.	SS-MM#3: Install Emergency Vehicle Detection (Alternatives 1, 2, and 3) SS-MM#4: Install Emergency Vehicle Response Improvements (Alternatives 1, 2, and 3 in part; Alternative 4 in full) In addition, for Alternative 4: TR-MM#1e: Monterey Road/Chynoweth Avenue-Roeder Road—Widen and Reconfigure TR-MM#1t: Monterey Road/San Martin Avenue—Restripe Southbound Approach TR-MM#1u: Monterey Road/IOOF Avenue—Widen and Reconfigure Southbound Approach TR-MM#1w: Chestnut Street/Luchessa Street—Reconfigure Southbound Approach TR-MM#1x.6: East Main Avenue/Depot Street—Install Traffic Signal TR-MM#1x.8: Llagas Road/San Martin Avenue—Install Traffic Signal TR-MM#1x.9: School Access/IOOF Avenue—Install Traffic Signal TR-MM#1x.10: SR 25/Bloomfield—Install Traffic Signal	Less than Significant for Alternatives 1, 2 and 3 Significant and Unavoidable for Alternative 4 Travel times are impacted at the following locations: Monterey Corridor Fire Stations: ▪ 4430 Monterey Road Morgan Hill and Gilroy Fire Stations: ▪ 15670 Monterey Road ▪ 10810 No Name Uno ▪ 880 Sunrise Drive ▪ 8383 Wren Avenue ▪ 7070 Chestnut Street

	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Community Safety and Security			
Impact S&S#5: Temporary Exposure to Criminal Activity at Construction Sites	Less than significant for all alternatives: Project features will provide areas and methods to secure equipment and materials after hours and implement the use of security personnel and security lighting and monitoring.	No mitigation measures are required.	N/A
Impact S&S#6: Temporary Exposure to Construction Site Hazards	Less than significant for all alternatives: The project features will include safety plans and compliance with regulations and standards in addition to plans for managing oil and natural gas wells in the event of their discovery, which will minimize impacts from construction site hazards and accident risks that could compromise the safety of workers, visitors, or the public.	No mitigation measures are required.	N/A
Impact S&S#7: Temporary Exposure to Construction-Related Traffic Hazards	Less than significant for all alternatives: Project features such as the construction safety transportation management plan will minimize temporary construction impacts on the safety of motor vehicle drivers, pedestrians, and bicyclists.	No mitigation measures are required.	N/A
Impact S&S#8: Permanent Exposure to Traffic Hazards	Less than significant for all alternatives: The project features will minimize traffic hazards, and local roadway improvements implemented during construction will provide traffic safety benefits from construction of overpasses and underpasses, local street widening, new traffic restrictions, new traffic signals, and intersection improvements.	No mitigation measures are required.	N/A

	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact S&S#9: Permanent Interference with Airport Safety	Less than significant for all alternatives: Structures (radio towers) would exceed FAR Part 77 height limits and therefore would require FAA notification. The Authority expects that the aeronautical studies that FAA would conduct under the FAR Part 77 notification process would not identify safety hazards that would result in the FAA recommending the relocation of a proposed communications tower location.	No mitigation measures are required.	N/A
Impact S&S#10: Temporary Exposure to Valley Fever	Less than significant for all alternatives: Project features, such as effective fugitive dust control measures, will minimize the risk of exposure to Valley fever.	No mitigation measures are required.	N/A
Impact S&S#11: Temporary Exposure to Risk from High-Risk Facilities	Less than significant for all alternatives: A Safety and Security Management Plan would minimize the potential for impacts of high-risk facilities on community safety during construction.	No mitigation measures are required.	N/A
Impact S&S#12: Permanent Exposure to Rail-Related Hazards	Less than significant for all alternatives: Project features, including protective barrier structures, derailment containment, and hazard and threat vulnerability analyses, will minimize risks of collisions and derailments.	No mitigation measures are required.	N/A
Impact S&S#13: Continuous Permanent Exposure to High-Risk Facilities and Tall Structures	Less than significant for all alternatives: Project features including removal, relocation, or protection in place of high-risk facilities, development of facility-specific measures, and operational safety features including ATC will minimize the potential for high-risk facilities and tall structures to affect project operations.	No mitigation measures are required.	N/A
Impact S&S#14: Continuous Permanent Exposure to Criminal and Terrorist Activity	Less than significant for all alternatives: The project features will minimize safety risks through planning, coordination, and implementation of design features to minimize the risk of criminal or terrorist acts and provide safe access for emergency response and evacuation.	No mitigation measures are required.	N/A

	Impact Description and CEQA Level of Significance before Mitigation	Mitigation Measure	CEQA Level of Significance after Mitigation
Impact S&S#15: Continuous Permanent Safety Hazard to Schools	Less than significant for all alternatives: An ATC system, intrusion detection system, and inspection and maintenance programs will minimize the risk of accidents, and derailment containments will keep the train within the right-of-way and railcars upright in the event of a derailment.	No mitigation measures are required.	N/A
Wildfire Hazards			
Impact S&S#16: Wildfire Hazards	Less than significant for all alternatives: Project features will coordinate and plan for rapid emergency response during accidents to reduce the potential for uncontrolled wildfires.	No mitigation measures are required.	N/A

ATC = automatic train control
N/A = not applicable
SR = State Route

Impact S&S#1: Temporary Impacts on Emergency Access and Response Times from Temporary Roadway and Highway Closures, Relocations, and Modifications

There would be a significant impact under all four project alternatives on emergency response. The increase in travel time on Monterey Road from relocations or reconstruction of portions of the Monterey Road (all alternative) and the construction of the Monterey Road road diet (Alternative 1, 2, and 3) would result in temporary changes in vehicle circulations, temporary closures of roadways and highways, lane closures, road relocations, reduction of highway lane widths, reduced speed limits, temporary on/off road closures, detours, and congestion and delay along roadways and highways, and at intersections. Under Alternative 2, construction of Skyway Drive Variant B would impede emergency access to and from San Jose Fire Station 18. Under Alternatives 1 and 2, construction activities would entail closure or relocation of access roads and driveways at Morgan Hill Charter School. These activities would cause temporary delays in emergency vehicle access and response times.

The Authority would implement SS-MM#1, SS-MM#2, and SS-MM#3 during the course of construction. These measures will reduce emergency vehicle response times by constructing permanent access roads and driveways for Alternative 2, Skyway Drive Variant B; constructing temporary access roads and driveways for Morgan Hill Charter School; and providing signal priority when emergency vehicle detection is activated on Monterey Road, respectively. These measures will be implemented prior to and during construction; therefore, the impact would be less than significant.

Impact S&S#3: Permanent Impacts on Emergency Access and Response Times from Permanent Roadway and Highway Closures, Relocations, and Modifications

There would be a significant impact under Alternatives 1, 2, and 3 on emergency access and response times. Alternatives 1, 2, and 3 would reduce the capacity along Monterey Road, resulting in increased travel time along Monterey Road, although this impact would be greatest under Alternative 2. The increase in travel time on Monterey Road from relocations or reconstruction of portions of the Monterey Road and the construction of the Monterey Road road diet would result in permanent changes in vehicle circulations, higher congestion, and delay at intersections along Monterey Road. These activities would cause permanent delays in emergency vehicle access and response times, although EVP would reduce the effect of such delays where it is in place in San Jose.

The Authority would implement SS-MM#3 during the course of construction (Alternatives 1, 2, and 3). This mitigation measure will reduce emergency vehicle response times by providing signal priority when the vehicle detection is activated, which will reduce travel time for emergency vehicles on Monterey Road. Because mitigation will provide adequate emergency vehicle access, the impact would be less than significant.

Impact S&S#4: Continuous Permanent Impacts on Emergency Access and Response Times

There would be a significant impact under all project alternatives on emergency vehicle response times. Alternatives 1, 2, and 3 would reduce the capacity along Monterey Road, resulting in increased travel time along Monterey Road. Alternative 4 would result in increased travel time because of increased gate down events caused by HSR trains. In the Monterey Corridor Subsection, areas served by the fire station at 4430 Monterey Road would be affected. In the Morgan Hill and Gilroy Subsection, areas served by the fire stations at 15670 Monterey Road, 10810 No Name Uno, 880 Sunrise Drive, 8383 Wren Avenue, 7070 Chestnut Street would be affected.

The Authority would implement SS-MM#3 during the course of construction (Alternatives 1, 2, and 3). This mitigation measure will reduce emergency vehicle response times by providing signal priority when the vehicle detection is activated, which will reduce travel time for emergency vehicles on Monterey Road. Because mitigation will provide adequate emergency vehicle access, the impact under Alternatives 1, 2, and 3 would be less than significant.

The Authority would implement SS-MM#4 prior to operations under Alternative 4. This mitigation measure will reduce emergency vehicle response times by monitoring at-grade crossing conditions and providing a fair share contribution to emergency vehicle response improvements on key routes that serve affected fire stations/first responders as needed. This mitigation measure will fully mitigate the project's impacts on emergency vehicle response if implemented. While HSR can provide funding for the construction of emergency vehicle response improvements, it cannot compel the City of San Jose, Santa Clara County, or the City of Gilroy to construct and operate the improvements.

For Alternative 4 only, if local jurisdictions do not implement emergency vehicle response improvements with the Authority funding for construction, proposed site-specific traffic mitigation measures from Section 3.2 that address peak-hour delays at intersections adjacent or nearby to locations with significant emergency vehicle response time effects due to gate-down time (TR-MM#1e, TR-MM#1t, TR-MM#1u, TR-MM#1w, TR-MM#1x.6, TR-MM#1x.8, TR-MM#1x.9, and TR-MM#1x.10) will help to reduce congestion near at-grade crossings but will not eliminate delays at the at-grade crossings themselves.

The impact would be less than significant after mitigation under Alternatives 1, 2, and 3. The impact under Alternative 4 would be significant and unavoidable.