

Executive Summary

This executive summary presents the key findings of this environmental impact report (EIR) for the Tri-Valley—San Joaquin Valley Regional Rail Authority (Authority) Valley Link Project (Proposed Project). The Authority proposes to establish new passenger rail service along a 42-mile corridor between the existing Dublin/Pleasanton Bay Area Rapid Transit (BART) Station and the proposed Altamont Corridor Express (ACE) North Lathrop Station included in the ACE Extension Lathrop to Ceres/Merced project.¹

This section summarizes the project background, project goals and objectives, description of the Proposed Project, alternatives analyzed at an equal level of detail, operation and maintenance, costs and revenues, environmental impacts and mitigation, other alternatives considered, comparison of Alternatives and the Environmentally Superior Alternative, issues of controversy and issues to be resolved that are associated with the Proposed Project. In addition, this section contains a table summarizing the impacts of the project and the required mitigation measures.

ES.1 Project Background

The Authority is undertaking the planning, design, and environmental review of the Proposed Project, a proposed passenger rail service connecting the Dublin/Pleasanton BART Station in Alameda County to the approved ACE North Lathrop Station in San Joaquin County.

The Altamont Regional Rail Working Group (Working Group) was created in October of 2015 to support the advancement of an interregional rail connection between the San Joaquin Valley and the Tri-Valley region. After numerous meetings and extensive discussions over two years, the Working Group adopted a proposed project concept that identified the goal of rail connectivity between Northern San Joaquin County communities to the Tri-Valley and BART through frequent rail service through the Altamont Pass. The goal was supported through adopted resolutions of support by most member agencies. This mandate was reflected in Assembly Bill (AB) 758, which transitioned the efforts of the Working Group to the Authority. The AB 758 required the new Authority to provide a project feasibility report for review, which was published in October 2019, and included the elements shown in Figure ES-1 below.

¹ On August 2, 2018, the San Joaquin Regional Rail Commission Board certified the EIR and approved the ACE Extension Lathrop to Ceres/Merced project. The North Lathrop Station would be constructed on the southwest corner of Sharpe Army Defense Distribution Depot San Joaquin, just north of Lathrop Road. Operation of Phase I of the ACE Extension Lathrop to Ceres/Merced project (which includes the North Lathrop Station) is anticipated to begin between 2020 and 2023.

- 1 Recommendations for expediting the development of cost-effective and responsive connectivity between the BART and ACE rail systems in the Tri-Valley.
- 2 The identification of a preferred entity or entities to deliver transit connectivity, including the role each entity will play in planning, designing, financing, constructing, operating, maintaining, and the leasing, developing of land, facilities or equipment necessary to delivery transit connectivity.
- 3 A funding plan describing any grants, loans, allocations, fund transfers, or awards of local, regional, state, federal, or private funds that are proposed to be made available for achieving transit connectivity.
- 4 A description of any plan to finance the development of transit connectivity, including a description of any revenue source or sources to be pledged for financing, the duration of time to complete the financing, and the estimated total cost of financing.
- 5 A proposed schedule for completion of transit connectivity.
- 6 Preliminary design for the project or projects to complete transit connectivity, including the identification of right-of-way, routes, stations, equipment, and any other facilities necessary to achieve transit connectivity.

Figure ES-1. Draft Project Feasibility Report—Plan Elements

The *Draft Project Feasibility Report* was completed through a rigorous 22-month work program focused on key decisions within a highly structured timeframe (Tri-Valley – San Joaquin Valley Regional Rail Authority 2019). Key milestones included the adoption of the project goals and the identification of a preferred project concept with a plan for expediting project delivery and funding.

The Proposed Project would use existing transportation corridors as listed below.

- Existing Interstate (I-)580 corridor (11.7 miles) in the Tri-Valley
- Alameda County-owned former Southern Pacific Railroad corridor through the Altamont Pass (14.5 miles)
- Existing Union Pacific Railroad (UPRR) Corridor (16.1 miles) in Northern San Joaquin County

The Proposed Project would provide regular service throughout the day in both directions with timed connections to both BART and ACE services.

ES.2 Project Goals and Objectives

The major goals and objectives adopted by the Authority Board for the development of the Proposed Project and its environmental review in this EIR are described below.

ES.2.1 Improve connectivity within the Northern California Megaregion: connecting housing, people, and jobs.

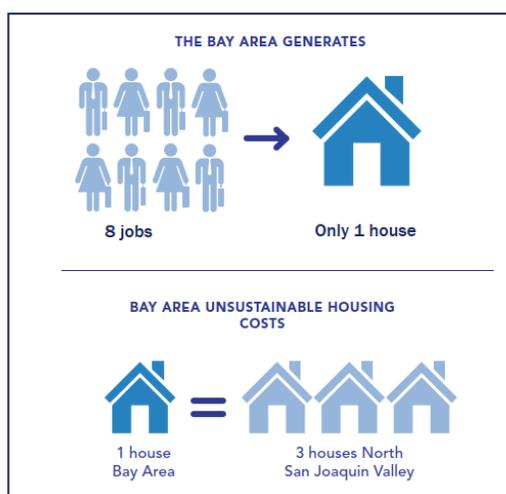
The Proposed Project would provide a reliable alternative to congestion for the more than 93,000 Bay Area workers now commuting daily from their homes in Northern San Joaquin County. Since 2015, San Joaquin County has had the second fastest population growth in the state. Some of the longest commutes in the megaregion originate in the communities of Tracy and Lathrop. San Joaquin County places in the “Top 10” nationally for its percentage of residents with a commute over 90 minutes long. These commuters spent an estimated collective total of over 5,000 hours stuck in traffic in each direction during an average day during 2017. These long commutes can be explained in part by the long distance traveled and by the growing amount of congestion on I-580. Overall traffic is projected to increase by an estimated 75 percent from 2016 to 2040 on I-580 and truck traffic is expected to increase by 58 percent. Adding to this congestion is the jobs-housing imbalance and cost of living in the Bay Area. Bay Area home prices are estimated to be three times higher than the median home price in Northern San Joaquin County.



Car and truck congestion on I-580.

Overall traffic is projected to increase by an estimated 75 percent from 2016 to 2040 on I-580 and truck traffic is expected to increase by 58 percent. Adding to this congestion is the jobs-housing imbalance and cost of living in the Bay Area. Bay Area home prices are estimated to be three times higher than the median home price in Northern San Joaquin County.

Housing affordability issues in the Bay Area have been one of the most significant causes of this congestion. Bay Area home prices are estimated to be three times higher than the median home price in Northern San Joaquin County. This is due in large part to the Bay Area’s housing shortage.



Source: Bay Area Council Economic Institute

ES.2.2 Establish rail connectivity between the Bay Area Rapid Transit District’s rapid transit system and the Altamont Corridor Express commuter service in the Tri-Valley.

The 42-mile, seven-station Valley Link project would link the Dublin/Pleasanton BART Station in the Tri-Valley with a major inter-modal ACE station in North Lathrop. Currently, there is a 5-mile gap between ACE service and the BART system in the Tri-Valley and, after decades of planning, the BART Board made a decision in May 2018 to no longer plan for expansion of the BART system to Livermore. Connecting BART and ACE with frequent, bidirectional service throughout the day, and providing expanded passenger rail connectivity between the San Joaquin Valley and the Bay Area, will increase interregional mobility and provide much-needed highway capacity for expanded goods movement to the Bay Area’s five seaports and the inland Port of Stockton. The connection of these two intermodal hubs would link nearly 500 miles of commuter and intercity rail with more than 130 stations in the Northern California Megaregion, providing an alternative to congested roads and highways.

ES.2.3 Pursue project implementation that is fast, cost-effective, and responsive to the goals and objectives of the communities it will serve.

The Authority’s adopted transit-oriented development policy supports the regional goals of both San Joaquin County and the Bay Area by encouraging the development of station area plans tailored to the goals and objectives of each community. At a minimum, these plans will define the land use plan for the area, zoning, design standards, parking policies, and station access plans. An initial step toward these station area plans included outreach to the local stakeholders and communities along the corridor to identify the high priority goals and objectives for the station(s) in their community.

The transit-oriented development policy, along with the Authority’s adopted sustainability policy and feasibility public outreach efforts presents strategies to create vibrant and livable station area communities within the proposed station environs.

ES.2.4 Be a model of sustainability in the design, construction, and operation of the system.

The Proposed Project will operate 74 daily round trips, providing an estimated 33,000 daily rides in 2040. This will result in the reduction of an estimated 99.4 million vehicle miles traveled (VMT) per year in 2040 and the reduction of an estimated 32,220 to 42,650 metric tons of greenhouse gas (GHG) emissions, depending on the final project configuration. In addition, through the Authority Board-adopted Sustainability Policy, Valley Link will further reduce VMT and GHG emissions for the system and within station environs through implementing strategies aimed to achieve a zero emissions system. Sustainable design and construction are also under consideration for the Proposed Project, including solar panels at several of the proposed stations and the operations and maintenance facility (OMF).

ES.2.5 Support the vision of the California State Rail Plan to connect the Northern California Megaregion to the State rail system.

The Proposed Project is designed to meet, serve, and expand on regional and State transportation goals as the project and other investments in the megaregion are developed over the next two decades. Valley Link closes critical transit gaps and improves connectivity within the Bay Area and the Northern California Megaregion by connecting two designated State Rail Hubs, the Stockton Area Hub and the Tri-Valley Hub and providing a potential early connection to High-Speed Rail.

ES.3 Proposed Project

ES.3.1 Overview of Project

The Authority proposes to establish new passenger rail service along a 42-mile corridor between the existing Dublin/Pleasanton BART Station and the proposed ACE North Lathrop Station, which is included in the ACE Extension Lathrop to Ceres/Merced project.

ES.3.1.1 Project Alignment, Stations, Maintenance Facilities, and Vehicles

Alignment Segments

The Proposed Project includes three project alignments within the following geographic segments: Tri-Valley (Dublin, Pleasanton, and Livermore); Altamont; and Tracy to Lathrop. The Tri-Valley segment extends from the western project limits at the Dublin/Pleasanton BART Station to just east of where the Alameda County-owned (former Southern Pacific) right-of-way (Alameda County Transportation Corridor right-of-way) passes under the UPRR bridge east of Greenville Road in Livermore. The Altamont segment extends from the eastern end of the Tri-Valley segment to approximately 0.5 mile east of the Delta-Mendota Canal west of Tracy. The Tracy to Lathrop segment extends from the eastern edge of the Altamont segment to the eastern project limits at the proposed ACE North Lathrop Station.

Tri-Valley Segment

In the Tri-Valley segment, the Proposed Project would operate in the median of I-580 from the existing Dublin/Pleasanton BART Station to Greenville Road. Near Greenville Road, the alignment would transition from the median of I-580 into the Alameda County Transportation Corridor right-of-way via an elevated viaduct. I-580 would be widened throughout this segment as necessary to accommodate the Proposed Project while maintaining existing freeway lane and interchange ramp configurations, including all existing express lane facilities. The majority of the Proposed Project alignment would be single-track in this segment to minimize impacts to the existing freeway configuration. However, to facilitate the passing of opposing trains, sidings would be constructed at the proposed stations in the Tri-Valley segment, between the Fallon Road/El Charro Road interchange and east of the proposed Isabel Station, and between the Las Colinas Road Overhead and the Vasco Road Interchange. To transition from the I-580 freeway median into the Alameda County Transportation Corridor right-of-way near Greenville Road, the alignment would use an aerial guideway.

Altamont Segment

Across the Altamont Pass, Valley Link would operate within the Alameda County Transportation Corridor right-of-way between the Greenville Station and the Alameda County/San Joaquin County line, and then continue east along the UPRR Owens-Illinois Industrial Lead to approximately .5 mile east of the Delta-Mendota Canal. All track work would be completed within existing Alameda County and UPRR right-of-way. However, temporary construction easements and improvements to existing access roads would be required.

There are two alignment variants for the portion of the Altamont segment in San Joaquin County that would operate along the existing UPRR Owens-Illinois Industrial Lead (described below). These two variants are under consideration to allow for flexibility in operations of the Valley Link service as well as in the final operating agreement between the Valley Link operator and UPRR.

Owens-Illinois Industrial Lead Variant 1, Single Track. Under Owens-Illinois Industrial Lead Variant 1, Single Track, the existing track would be upgraded between the Alameda County/San Joaquin County line and the proposed Mountain House Station.

Owens-Illinois Industrial Lead Variant 2, Double Track. Under Owens-Illinois Industrial Lead Variant 2, Double Track, the existing track would be upgraded between the Alameda County/San Joaquin County line and the proposed Mountain House Station.

Tracy to Lathrop Segment

In the Tracy to Lathrop segment, Valley Link would operate within the existing UPRR Owens-Illinois Industrial Lead and Tracy Subdivision. These two variants are under consideration to allow for flexibility in operations of the Valley Link service as well as in the final operating agreement between the Valley Link operator and UPRR.

Tracy to Lathrop Alignment Variant 1, Single Track Under Tracy to Lathrop Alignment Variant 1, Single Track, the existing Owens-Illinois Industrial Lead and Tracy Subdivision would be upgraded from the eastern edge of the Altamont segment to the eastern project limits at the proposed ACE North Lathrop Station.

Tracy to Lathrop Alignment Variant 2, Double Track Under Tracy to Lathrop Alignment Variant 2, Double Track, the existing Owens-Illinois Industrial Lead, and the Tracy Subdivision would be double tracked from the eastern edge of the Altamont segment to the eastern project limits at the proposed ACE North Lathrop Station.

Stations

The Proposed Project includes the construction of seven stations. All stations would include passenger amenities such as platform shelters, benches, lighting, security cameras, signage, ticketing machines, bicycle storage facilities, landscaping, and emergency call boxes. Electric car charging stations and photovoltaic panels to offset electricity requirements are identified at specific stations as well as areas for passenger drop off and pick up and bus bays. Passenger parking would be provided at all proposed stations with the exception of the Dublin/Pleasanton Station.²

² 2025 parking demand was based on an assumption that up to approximately 72 percent of Valley Link riders would drive to/from stations. 2040 parking demand was based on a reduced assumption that approximately 50

Dublin/Pleasanton Station

The Dublin/Pleasanton Station would be constructed in the median of I-580 north of and adjacent to the existing Dublin/Pleasanton BART Station. Valley Link passengers wishing to transfer to and from BART trains at the Dublin/Pleasanton Station would be required to go down to the station concourse level, exit the Valley Link or BART station, and then enter the desired transfer station. The Proposed Project does not include the construction of additional parking at the Dublin/Pleasanton BART Station.

Isabel Station

The Isabel Station would be constructed within the I-580 median on a 24-acre site currently owned by BART along East Airway Boulevard south of I-580 and east of the Isabel Avenue I-580 overcrossing in Livermore. Access to the station would be provided from the expansion of one existing driveway and the construction of two new driveways along East Airway Boulevard. Improvements to East Airway Boulevard would include restriping for left turn lanes at each of the three station driveways and a traffic signal at the East Airway Boulevard/Rutan Drive intersection. Surface parking is proposed to meet 2025 demand and a potential parking garage is proposed to meet 2040 demand.

Greenville Station

The Greenville Station would be constructed on a 12-acre site on the north side of I-580 between I-580 and Altamont Pass Road and along a portion of the Alameda County-owned (former Southern Pacific) right-of-way south of I-580 in Livermore. Access to the station would be provided by two driveways with left-turn lanes along Altamont Pass Road. The Valley Link alignment would transition from the I-580 median to the station platform via a single-track viaduct crossing over westbound I-580. Surface parking is proposed to meet 2025 and 2040 demand.

The Greenville Station would also include the construction of improvements necessary to accommodate transfers to and from ACE trains. A new, separate 1,000-foot-long by 15-foot-wide ACE platform would be constructed along the existing UPRR tracks southeast of the proposed Valley Link platform.

Mountain House Station

The Mountain House Station would be constructed southwest of I-580 on a 12.5-acre site (4.5 acres of UPRR property) south of Via Nicolo Road and east of Patterson Pass Road for 2025. Areas on an adjacent 2.25-acre site would be designated for future surface parking expansion to meet 2040 parking demand. Access to the station would be provided from a new driveway along Via Nicolo Road south of the existing UPRR tracks near the entrance to the Musco Family Olive Company.

Downtown Tracy Station

The Downtown Tracy Station would be constructed at the existing Tracy Transit Center at 50 East Sixth Street in downtown Tracy on an 8.7-acre site (7.2 acres of UPRR property and 1.1 acres of City of Tracy property). The existing transit center operates as a hub for local, commuter, and long-

percent of Valley Link riders would drive to/from stations based on the Authority's adopted transit-oriented development (TOD) policy and potential TODs around the proposed Isabel, Downtown Tracy, and River Islands Stations.

distance bus services provided by Tracy’s TRACER bus service, the San Joaquin Regional Transit District, and Greyhound Lines. Surface parking is proposed to meet 2025 demand and a potential parking garage is proposed to meet 2040 demand.

River Islands Station

The River Islands Station would be constructed on an 18-acre site along the Tracy Subdivision in the vicinity of the River Islands at Lathrop master-planned community (City of Lathrop 2002).^{3,4} Access to the south parking lot would be provided from a new access road connecting the lot to Manthey Road. Access to the north parking lot would be provided from various internal roadways to be constructed as part of the River Islands master-planned community. Surface parking is proposed to meet 2025 and 2040 demand.

North Lathrop Station

The North Lathrop Station would be constructed at the same site as the ACE North Lathrop station included in the ACE Extension Lathrop to Ceres/Merced project. The 30-acre site is presently vacant federal land that is part of the U.S. Department of Defense Sharpe Army Depot which is no longer in use.

The North Lathrop Station would be a transfer station between Valley Link and ACE, providing connecting service to and from Sacramento and Modesto. Passengers wishing to transfer between ACE and Valley Link trains would use stairs and ramps at both the Valley Link and ACE platforms to access a pedestrian overcrossing linking the two platforms. Surface parking is proposed to meet 2025 and 2040 demand. Of the 30-acre site, 10 acres would be required for the initial 2025 parking demand and 20 acres would be required for the expansion of parking in 2040.

Operations and Maintenance Facility

Tracy Operations and Maintenance Facility

To support train layovers, storage, maintenance, and operations associated with the Proposed Project, a new OMF would be constructed on an approximately 200-acre City of Tracy-owned property along West Schulte Road just west of the Owens-Brockway Glass Container plant. All vehicle storage and maintenance activities would take place at the proposed Tracy OMF. Access to the Tracy OMF would be provided from West Schulte Road.

Initial Operating Segments

Full implementation of the Proposed Project would be subject to available funding and design considerations. As such, two initial operating segments (IOSs) are also under consideration: one limited to the establishment of initial service between the Dublin/Pleasanton BART Station and the proposed Greenville Station; and one limited to the establishment of initial service between the

³ A *subdivision* is a portion of railroad or railway that operates under a single timetable (authority for train movement in the area).

⁴ The River Islands at Lathrop project is a mixed-use planned community development that proposes the construction of 11,000 homes, 5 million square feet of commercial space, and recreational areas on approximately 4,905 acres of agricultural land and open space along the eastern edge of the San Joaquin River. The River Islands at Lathrop project identified a potential future station along the Tracy Subdivision in the project area but did not include this element in the River Islands project.

Dublin/Pleasanton BART Station and the proposed Mountain House Station. This phased approach to construction would allow service improvements to be implemented based on funding availability. As such, the Proposed Project has been designed to accommodate implementation of one or both of the potential IOSs.

Should an IOS be implemented that only includes service between the Dublin/Pleasanton Station and the Greenville Station, an Interim OMF would be constructed on a 5-acre portion of the Alameda County-owned right-of-way approximately 2,250 feet east of Dyer Road. All vehicle storage and maintenance activities associated with the implementation of service between the Dublin/Pleasanton Station and the Greenville Station would take place at the Interim OMF.

Vehicles

Valley Link service would employ either multiple-unit train equipment or diesel locomotives hauling carriages. A multiple unit train is a self-propelled train composed of one or more passenger carriages joined, which when coupled to another multiple unit, can be controlled by a single driver. Proposed trains would be capable of operating at speeds of up to 79 miles an hour (mph). Top speeds along the alignment would be limited by track geometry.

Multiple units are classified by their power source. The preferred power source for the Authority would be one that would minimize air quality degradation and GHG emissions and would meet the desired performance criteria (including train speed and acceleration/deceleration rate). The choice of rolling stock that would be used for the Proposed Project depends on multiple factors, including the availability of the technology in the marketplace, the number of potential vehicle providers (e.g., the ability to obtain competitive bids), whether certain power sources can meet desired performance criteria (including transit over the Altamont Pass), and air quality, noise, and GHG emission considerations. Thus, the Authority is considering four train technology variants, identified below.

Diesel Multiple Unit (DMU) Variant

A DMU is a passenger rail vehicle that is self-propelled by on-board diesel engines. These diesel engines generate electricity which powers electric motors that drive the vehicle. The DMU train technology is a proven technology in widespread use worldwide and in a number of locations in the U.S., including for SMART rail, e-BART, and other U.S. passenger rail services. DMUs are expected to be able to meet Valley Link's performance criteria given that their in-service operational characteristics are known. DMUs used for Valley Link would meet the U.S. Environmental Protection Agency (USEPA) Tier 4 requirements, which would have lower criteria pollutant emissions than lower-tier equipment.⁵

Hybrid Battery Multiple Unit (HBMU) Variant

The HBMU train technology includes on-board diesel engines as well as on-board batteries for electrical power. The diesel engines can generate electricity for the electric motors directly or can charge on-board batteries that can also power the electric motors. HBMU model concepts often incorporate regenerative braking (like that in hybrid cars) to charge the electric batteries. Some HBMU concepts are designed to only use the electric batteries in close proximity to stations or

⁵ Tier 4 refers to the latest emission milestone established by USEPA and the California Air Resources Board applicable to new engines found in off-road equipment including locomotives.

depots; others are designed to use batteries more widely and then use diesel engines when under load (such as when climbing). At present, HBMU technology is in limited use for regular passenger service but vehicle manufacturers and rail service providers are exploring the technology. Hitachi has employed an HBMU in Japan since 2007; Deutsche Bahn and SNCF and Alstom are employing related systems in Germany and France. There are no known HBMUs in regular passenger service on the U.S. rail system at present.

It is currently unknown whether this HBMU technology could meet the performance criteria for the project site. If the performance criteria could be met by hybrid technology, the Authority could either procure vehicles utilizing this technology or if DMUs were procured initially, the Authority could transition to this technology as it evolves.

Battery-Electric Multiple Unit (BEMU) Variant

Full BEMUs is a technology that solely uses on-board batteries for electrical power. This technology is currently in use for streetcar and light rail passenger services in the U.S. There are no known BEMUs in regular rail passenger service on the U.S. rail system at present. However, they are being developed for possible deployment in the next few years. BEMUs have been in pilot testing in Europe in recent years, substantial orders for BEMUs have been made by several European rail services with rail vehicle manufacturers including Alstom and Stadler to commence service as early as 2022, and other rail vehicle manufacturers, like Bombardier have developed BEMU designs recently as well (Alstom 2020; Bombardier 2019; Railway Gazette 2020).

It is currently unknown whether the BEMU technology could meet the performance criteria for the Proposed Project. If the performance criteria could be met by the BEMU technology, the Authority could procure vehicles utilizing this technology; or if DMUs or HBMUs were procured initially, the Authority could transition to this technology as it evolves.

The BEMU variant includes construction of an Overhead Contact System (OCS) along the Altamont Alignment to provide electrical power to BEMU trains from just east of the Greenville Station to the Tracy OMF as well as traction power substations at certain locations along the route.

Diesel Locomotive Haul (DLH) Variant

The DLH variant would employ trainsets with (non-powered) passenger cars pulled or pushed by a diesel-electric locomotive, similar to conventional commuter rail operations such as ACE and Amtrak. Under this variant, operation of the Proposed Project would use engines that meet or exceed Tier 4 emissions standards. Tier 4 locomotives are compliant with the latest U.S. Environmental Protection Agency (EPA) emissions standards to reduce particulate matter and nitrogen oxide emissions compared to older locomotives.

ES.4 Alternatives Analyzed at an Equal Level of Detail

Four station alternatives, one alignment alternative, and one OMF alternative are analyzed in this EIR at an equal level of detail to the Proposed Project. They are described in greater detail in Chapter 2, *Project Description*, and their impacts are analyzed and compared to the Proposed Project in Chapters 3 and 4 and there is a summary of key impact differences in Chapter 5. These alternatives include the following.

1. *Southfront Road Station Alternative:* This station would be an alternative to the proposed Greenville Station and would be constructed south of I-580 on a 7.3-acre site (for 2025) along Southfront Road between McGraw Avenue and Franklin Lane in Livermore, would have up to 680 parking spaces in 2025 and four bus bays and a pedestrian overcrossing from parking area to the platform, which would be in the middle of I-580. Areas designated for future surface parking expansion of the station would be located on an adjacent 3.3-acre site to meet 2040 parking demand. Access to the station would be provided from Southfront Road. This alternative also includes the potential for an IOS to the Southfront Road Station Alternative. With the IOS to the Southfront Road Station Alternative, the amount of parking would be greater without the IOS, to accommodate the end-of-line parking demand.
2. *Stone Cut Alignment Alternative:* This 2.25-mile alignment would be an alternative to the proposed alignment that would bypass the existing railroad tunnel that passes under westbound I-580 along the Altamont Alignment. Under this alternative, a short segment of the Altamont Alignment would transition from the Alameda County-owned right-of-way to the UPRR right-of-way, parallel the existing UPRR tracks to cross I-580, and transition back to the Alameda County-owned right-of-way. The entire length of the Stone Cut Alignment Alternative would be double tracked. This alternative would include a new bridge over east-bound I-580 and would not include any changes to existing UPRR tracks.
3. *West Tracy OMF Alternative:* This OMF would be an alternative to the proposed Tracy OMF and would be constructed on an approximately 27-acre site south of Patterson Pass Road west of the proposed Mountain House Station. Access to the West Tracy OMF would be provided from Via Nicolo Road.
4. *Mountain House Station Alternative:* This station would be an alternative to the proposed Mountain House Station and would be constructed on an approximately 8-acre site (6 acres of UPRR property) in 2025 west of Hansen Road between the Owens Illinois Industrial Lead and the California Aqueduct. Areas designated for future surface parking expansion would be located on a 2.5-acre site (UPRR property) north of the tracks to meet 2040 parking demand. Access to the station would be provided by new station driveways along Hansen Road. This alternative also includes the potential for an IOS to the Mountain House Station Alternative. With the IOS to the Mountain House Station Alternative, the amount of parking would be greater than without the IOS, to accommodate the end-of-line parking demand.
5. *Downtown Tracy Station Parking Alternative 1:* This alternative includes construction of a three-level parking structure at the site of the existing Tracy Transit Center surface parking lot (4-acre site) at the corner of North Central Avenue and West 4th Street providing approximately 1,040 parking spaces for a net increase of approximately 925 spaces over the existing 115-space surface lot. This alternative does not include construction of a surface parking lot at the southwest corner of the North Central Avenue/West 6th Street intersection; parking for the station would only be provided at the new parking structure.
6. *Downtown Tracy Station Parking Alternative 2:* This alternative would include the construction of a three-level parking structure at the southwest corner of the North Central Avenue/West 6th Street intersection (5-acre site) providing approximately 930 parking spaces. No changes to the existing Tracy Transit Center parking lot are proposed as part of this alternative.

ES.5 Operation and Maintenance

Conceptual Operating Plan

At its western end, Valley Link would terminate at the existing Dublin/Pleasanton BART Station. Where BART operates daily with frequent, bi-directional service (multiple departures per hour). At its eastern terminus at the proposed North Lathrop Station and at the proposed Greenville Station (via the proposed ACE platforms adjacent to the station), Valley Link would connect with ACE, a commuter rail system operating during weekday peak periods only, with directional, approximately hourly service.

On weekdays, BART currently operates to and from the Dublin/Pleasanton Station at 15-minute headways until 8 p.m. BART intends to implement 12-minute headways (instead of 15-minute headways) at some time after 2025. In 2025, Valley Link would also operate at 12-minute headways during peak periods between the Dublin/Pleasanton and Mountain House Stations, thereby meeting every BART train at Dublin/Pleasanton Station in the peak direction of travel. Valley Link would operate at 24-minute headways during peak periods between the North Lathrop Station and the Dublin/Pleasanton Station in 2025. In 2040, Valley Link would operate at 12-minute headways during peak periods within the entire Dublin/Pleasanton to North Lathrop corridor. The conceptual operating plans for 2025 and 2040 operations are summarized in Table ES-1 and Table ES-2, respectively.

Table ES-1. Valley Link 2025 Conceptual Operating Plan

Hours of Service			Headways (minutes) Dublin/Pleasanton Station to Mountain House Station						
Weekdays	Saturdays	Sundays and Holidays	Weekdays						
5 a.m. to 8 p.m.	8 a.m. to 8 p.m.	8 a.m. to 8 p.m.	Morning (Start to 5 a.m.)	AM Peak (5 a.m. to 8 a.m.)	Midday (8 a.m. to 4 p.m.)	PM Peak (4 p.m. to 7 p.m.)	Evening (7 p.m. to 8 p.m.)	Late Evening (8 p.m. to 1 a.m.)	Weekends and Holidays
			N/A	12	36	12	24	N/A	36
			Headways (minutes) Dublin/Pleasanton Station to North Lathrop Station						
			N/A	24	72	24	48	N/A	72

Source: AECOM, 2020

Table ES- 2 Valley Link 2040 Conceptual Service Plan

Hours of Service			Headways (minutes) Dublin/Pleasanton Station to Mountain House Station						
Weekdays	Saturdays	Sundays and Holidays	Weekdays						
4 a.m. to 1 a.m.	6 a.m. to 1 a.m.	8 a.m. to 1 a.m.	Morning (Start to 5 a.m.)	AM Peak (5 a.m. to 8 a.m.)	Midday (8 a.m. to 4 p.m.)	PM Peak (4 p.m. to 7 p.m.)	Evening (7 p.m. to 8 p.m.)	Late Evening (8 p.m. to 1 a.m.)	Weekends and Holidays
			24	12	24	12	24	24	36
			Headways (minutes) Dublin/Pleasanton Station to North Lathrop Station						
			48	12	48	12	48	48	72

Source: AECOM, 2020

In 2025, the Proposed Project would facilitate peak period service at 24-minute headways across the full Valley Link route (meeting every other BART train at the Dublin/Pleasanton Station) and twice the frequency (12-minute headways) within the Tri-Valley area (service across the full Valley Link route would remain at 24-minute headways). In 2040, the Proposed Project would facilitate peak period service at 12-minute headways across the full Valley Link route (meeting every BART train at the Dublin/Pleasanton Station). Peak period service would operate from 5 a.m. to 8 a.m. and from 4 p.m. to 7 p.m. on weekdays. During off-peak periods (i.e., morning start, midday, weekday evening, late evening, and weekends and holidays), the operating plan assumes varying headways across the full route, as shown in the tables. The total travel time between the North Lathrop Station and the Dublin/Pleasanton Station is estimated at approximately 65 minutes.

Ridership

The ridership forecasts for the Proposed Project are summarized in Tables ES-3, ES-4, and ES-5, using multiple metrics to describe the directionality of trips and station-level activity. Total boardings are the number of riders who get on trains at each station throughout the day, which is equivalent to the total one-way riders. The ridership at each station is also described with productions and attractions at each station, which indicates the directionality of the trips. Productions are the total number of trips that are produced at each station, or the home end of the trip. Attractions are the other end of the trip, and typically refers to the non-home end of the trip, such as a work location. In this way, each round-trip comprises two productions at the home end of the trip and two attractions at the non-home end of the trip. Describing trips in this manner helps connect residential and employment areas, and allows for an accurate calculation of parking requirements, as parking is tied to the home end of the trip. Ridership for the Proposed Project is presented in more detail in Appendix F, *Valley Link Ridership Technical Memorandum - Revised*.

Table ES-3. Valley Link Average Weekday Ridership – 2025 IOS Scenarios

Station	Average Weekday (2025 IOS Scenarios)											
	IOS - Greenville (constrained)			IOS - Southfront Road Station Alternative			IOS - Greenville + Mountain House			IOS - Southfront Road Station Alternative + Mountain House		
	Boardings	Productions	Attractions	Boardings	Productions	Attractions	Boardings	Productions	Attractions	Boardings	Productions	Attractions
Dublin/Pleasanton	4,100	155	8,045	4,931	242	9,619	4,795	224	9,365	5,413	327	10,498
Isabel Avenue	1,130	2,051	209	538	846	230	589	892	286	639	942	336
Southfront Road Station Alternative	N/A	N/A	N/A	4,588	8,967	209	N/A	N/A	N/A	1,493	2,719	267
Greenville Road	3,142	6,165	118	N/A	N/A	N/A	683	1,072	293	N/A	N/A	N/A
Mountain House	N/A	N/A	N/A	N/A	N/A	N/A	3,878	7,755	0	3,557	7,113	0
Total	8,372	8,371	8,372	10,057	10,055	10,058	9,944	9,943	9,944	11,101	11,101	11,101

Table ES-4. Valley Link Average Weekday Ridership – 2025 Full Project Implementation

Station	Average Weekday (2040 Full Runs)					
	Proposed Project			Southfront Road Station Alternative		
	Boardings	Productions	Attractions	Boardings	Productions	Attractions
Dublin/Pleasanton	5,907	413	11,401	6,507	456	12,558
Isabel Avenue	816	1,178	454	832	1,186	478
Southfront Road Station Alternative				1,177	2,073	281
Greenville Road	1,030	1,248	811			
Mountain House	1,231	2,461	0	921	1,841	0
Downtown Tracy	1,107	2,213	0	1,067	2,134	0
River Islands	865	1,729	0	871	1,741	0
North Lathrop	1,750	3,459	41	1,982	3,924	40
Total	12,704	12,701	12,707	13,356	13,355	13,357

Table ES-5. Valley Link Average Weekday Ridership – 2040 Full Project Implementation

Station	Average Weekday (2040 Full Runs)					
	Proposed Project			Southfront Road Station Alternative		
	Boardings	Productions	Attractions	Boardings	Productions	Attractions
Dublin/Pleasanton	15,160	692	29,627	16,051	750	31,351
Isabel Avenue	3,532	6,064	1,000	3,561	6,015	1,106
Southfront Road Station Alternative				1,926	3,372	479
Greenville Road	1,814	2,601	1,027			
Mountain House	1,392	2,784	0	1,460	2,920	0
Downtown Tracy	3,006	6,011	0	3,095	6,190	0
River Islands	2,100	4,200	0	2,108	4,216	0
North Lathrop	4,707	9,359	54	4,793	9,530	56
Total	31,710	31,711	31,708	32,993	32,993	32,992

Maintenance Activities

Track Maintenance

In the portions of the right-of-way owned by UPRR, the Authority would enter into trackage rights agreements with UPRR to operate on portions of their tracks. Maintenance of way is typically the responsibility of the host railroad. In general, maintenance of way is the ongoing maintenance of track (e.g., tie replacement, switch greasing, ballast recontouring), track structures, bridges, drainage features, signal apparatus, and other signal infrastructure. Maintenance activities are both ongoing responses to daily issues and planned preventive maintenance. Depending on the corridor, host railroads would have other maintenance activities that are required, specific to the features located in the corridor.

Maintenance activities include annual vegetation trimming and herbicide application. UPRR would continue to conduct maintenance activities associated with the rail corridor in accordance with their current practices.

Station Maintenance

The proposed multi-modal stations at Dublin/Pleasanton, Greenville, and North Lathrop could be maintained cooperatively with other transit entities served by these stations. Maintenance crews would be located at the selected OMFs and would be dispatched as needed to the various stations. Typical maintenance activities include trash pickup, landscaping, painting, minor concrete work, and light bulb replacement. Contractors would be hired for more extensive maintenance activities, such as major concrete work, platform extension, and paving. Certain stations may be maintained under specific agreements with the local jurisdictions regarding maintenance activities that would be the responsibility of the local jurisdiction.

New stations would be established, including the following: Dublin/Pleasanton Station, Isabel Station, Greenville Station (or Southfront Road Station Alternative), Mountain House Station (or Mountain House Station Alternative), Downtown Tracy Station, River Islands Station, and North Lathrop Station. These stations would either be co-located at existing transit centers and the local jurisdiction owns the parcels identified for surface parking, property would be obtained for parking, or on-street parking would be used. Details regarding the maintenance of parking areas at these stations will be agreed to with the local jurisdictions or transit agencies during final design of the Proposed Project.

Fleet Maintenance

As described above, the Authority's proposed fleet maintenance activities for Valley Link would be conducted at the selected OMF. Regular train maintenance would consist of daily inspections of equipment (as required by the Federal Railroad Administration), cleaning, and servicing activities such as fueling, filling of sand boxes, emptying of toilet tanks, and replenishing of fluids, supplies, and consumables (including trail crew supplies). Train washing could occur up to several times per week, or as required for any special event trains. Preventive and periodic maintenance, including light and heavy repairs of passenger coaches and locomotives, would be conducted as needed.

ES.5.1.2 Construction Schedule and Durations

The Authority proposes to implement Valley Link service from Dublin Pleasanton to North Lathrop possibly as soon 2028. Table ES-6 identifies the duration for construction of each project improvement. The construction durations presented are not sequential; construction could occur simultaneously at several locations. The durations noted below are for actual construction activity. Project improvements would require permitting, contractor selection, and final design prior to construction and thus the total duration could be longer than the construction durations noted in the table.

Table ES-6. Construction Durations

Improvement	Construction Duration (Months)
Tri-Valley Segment	
Track Work	36
I-580 Modifications	48
Dublin/Pleasanton Station	24
Isabel Station	18
Greenville Station Base/IOS	16/18
Southfront Road Station Alternative Base/IOS	16/18
Altamont Segment	
Track Work (including Stone Cut Alignment Alternative)	30
Mountain House Station Base/IOS	12/16
Mountain House Station Alternative Base/IOS	12/24
Tracy OMF	36
West Tracy OMF Alternative	36
Interim OMF	18
Tracy to Lathrop Segment	
Track Work	36
Downtown Tracy Station	12
Downtown Tracy Station Parking Alternative 1	18
Downtown Tracy Station Parking Alternative 2	18
River Islands Station	16
North Lathrop Station	18

ES.5.1.3 Right-of-Way and Easement Needs

Appendix C, *Preliminary Right of Way Requirements*, provides a list of parcels that could be impacted by the Proposed Project including by acquisition, permanent easement, or temporary construction easement. Portions of these public and private parcels may be acquired or require easements for track right-of-way or rail support facilities.

ES.6 Costs and Revenues

Capital Costs

Project cost is based on 2018 pricing and includes contingency and markup. The preliminary cost estimate for the Proposed Project would be approximately \$2.335 to \$2.919 billion. For more detailed information on capital costs, please refer to Appendix G, *Valley Link Capital Cost Memorandum – Revised*.

Operations and Maintenance Costs and Revenues

Anticipated annual operations and maintenance costs associated with project operations would range from approximately \$10.283 to \$34.504 million in 2028, and from approximately \$55.344 to \$85.581 million in 2040, depending on the operational scenario. These costs are based on contracted services and fuel costs based on hybrid multiple unit operations with an annual escalation of 3.2 percent. While not yet determined, potential sources of revenue include farebox recovery (estimated at 50 percent by year three of operation), parking revenue, Congestion Mitigation and Air Quality Improvement funds, and Federal Transit Administration Section 5307/5337 funds. Further details are provided in Chapter 2, Project Description.

ES.7 Summary of Proposed Project Environmental Impacts and Mitigation

The potential impacts of the Proposed Project are presented in Chapter 3, *Environmental Impact Analysis*, and cumulative impacts are presented in Chapter 4, *Other CEQA-Required Analysis*, and are summarized in Table ES-7. Mitigation measures were also identified, where available and feasible, for significant impacts identified in this EIR. These mitigation measures are also listed in Table ES-7. Please note that in Table ES-7, the term “significant” refers to the level of impact and the term “considerable” refers to the Proposed Project’s contribution to a cumulative impact.

This EIR analyzes the construction impacts, operational impacts, and cumulative impacts for each separate subject area. The following summary describes the key conclusions in this EIR. This list is not a comprehensive list of impact conclusions; for a comprehensive review, please refer to Table ES-7, Chapter 3, and Chapter 4.

ES.7.1 Summary of Construction-Period Impacts

- *Aesthetics*: Construction of the Proposed Project would temporarily change aesthetic conditions for viewers along the Proposed Project corridor. This impact would be potentially significant. Mitigation measures to install visual barriers, limit construction near residential areas, minimize light and glare from construction, and implement fugitive dust controls would reduce these impacts to a less-than-significant level.
- *Agricultural Resources*: The Proposed Project would temporarily use small amounts of Prime Farmland, Farmland of Local Importance, Farmland of Statewide Importance, and Unique Farmland. Mitigation measures requiring restoration and conservation of farmlands, notification of agricultural property owners or leaseholders, providing temporary equipment and livestock crossings on access roads, implementation of a Transportation Management Plan, and coordinating irrigation and utility disruptions prior to construction would reduce impacts to less than significant levels.

- *Air Quality:* Construction activities with the potential to impact air quality include the use of heavy-duty construction equipment, worker vehicle trips, and truck hauling trips. These activities would result in potentially significant impacts to air quality from temporary increases in emissions of criteria pollutants, increased exposure of sensitive receptors to increased diesel particulate matter (DPM) or localized particulate matter concentrations, and increased risk for sensitive receptors to contract Valley Fever, or be exposed to asbestos-containing material. Mitigation measures including emission controls for equipment, maintenance and idling restrictions, use of a modern fleet for deliveries and hauling, implementation of dust controls, and purchasing emissions offsets. Regional criteria pollutant emissions would be mitigated to a less-than-significant level in the Bay Area Air Quality Management District and the San Joaquin Valley Air Pollution Control District. Construction would contribute DPM and particulate matter less than 2.5 microns in diameter (PM_{2.5}) emissions to a significant and unavoidable cumulative health risk impact in the Tri-Valley segment due to ambient conditions exceeding cumulative thresholds. Construction would also result in significant and unavoidable impact in the San Joaquin Valley portions of the project due to the effect on localized particulate matter less than 10 microns in diameter (PM₁₀) ambient air quality conditions after mitigation.
- *Biological Resources:* Construction of the Proposed Project would result in potentially significant impacts to special-status plants, wildlife, and fish species; associated habitat areas; aquatic resources; sensitive natural communities; species' migratory patterns; and conflicts with certain local biological resource policies or habitat conservation plans. Mitigation measures, including preconstruction surveys; construction limitations to accommodate certain species and habitats; obtaining coverage from applicable conservation strategies; and compensation for impacted species and habitats, would reduce each of these impacts to a less-than-significant level.
- *Cultural Resources:* Construction of the Proposed Project would have potentially significant impacts on built environment historical resources, archaeological resources, tribal cultural resources, and from the potential discovery of human remains. Mitigation measures would include preparation and submission of Historic American Engineering Record documentation of affected resources, implementation of an archaeological testing plan, cultural resources training for construction staff, use of avoidance and protection measures, archaeological monitoring, and establishing procedures to follow for any cultural resource discoveries. These measures would reduce each of these impacts to a less-than-significant level.
- *Energy:* Construction of the Proposed Project would require energy input, primarily in the form of fuel, for construction equipment and construction worker trips. However, the energy expenditure associated with construction would be temporary and limited to the duration of the construction period. Energy use benefits achieved through operations of the Proposed Project would offset the short-term construction energy.
- *Geology and Soils:* Geologic, soils, and seismic hazards are present in the Proposed Project; however, compliance with appropriate geotechnical and engineering design standards during construction would ensure that impacts from such hazards are reduced to the extent practicable. This impact would be less than significant. During construction, grading and excavating activities would result in potentially significant impacts to paleontological resources. Implementation of a mitigation measure requiring monitoring for paleontological resources and adherence to recovery plans for any resources discovered during construction would reduce these potentially significant impacts to a less-than-significant level.

- *Greenhouse Gas Emissions:* Construction of the Proposed Project would result in GHG emissions. However, these construction-period emissions are one-time and short-term emissions, which would be more than offset by the net operational GHG reduction associated with the Proposed Project due to the reduction of automobile emissions with increased ACE ridership.
- *Hazards and Hazardous Materials:* The Proposed Project footprint is located on or in close proximity to areas with hazardous materials contamination due to prior land use activities. Implementation of mitigation measures requiring site investigations, preparation of a construction risk management plan, and implementing fugitive dust controls would reduce these potentially significant impacts to a less-than-significant level.
- *Hydrology and Water Quality:* Construction of the Proposed Project could result in temporary degradation of water quality, particularly involved with construction activities adjacent to, within, or crossing over surface waters. Construction would also alter the existing drainage patterns. Construction impacts on hydrology and water quality can be reduced to less-than-significant levels with identified mitigation measures to implement a construction risk management plan, prevent construction materials from being exposed to storm flooding hazards, perform detailed hydraulic evaluations and implement new or modify existing stormwater controls, and perform hydrologic and hydraulic studies for project improvements to be located in floodplains.
- *Land Use and Planning:* Construction of the Proposed Project could result in temporary changes in land use but would not result in permanent loss of connectivity and division of communities.
- *Noise and Vibration:* Construction would be required during the day, and possibly during the night, to maintain freight and passenger rail service during construction. Although mitigation to implement a construction noise control plan could reduce construction noise in many locations, mitigation might not always reduce noise impacts during nighttime construction to a less-than-significant level. Therefore, impacts would be significant and unavoidable. Project mitigation would reduce construction vibration impacts to a less-than-significant level.
- *Population and Housing:* Construction of the Proposed Project would have the potential to temporarily induce local population growth through the employment of workers during the construction period; however, this impact would be less than significant. Construction of the Proposed Project would result in the displacement of one single-family home in Livermore; however, the impact from the displacement of housing or people would be less than significant. No mitigation would be required for construction-period impacts on population and housing.
- *Public Services:* Construction of the Proposed Project would not result in substantial population growth that would result in the need for new or physically altered public services or facilities. These impacts would be less than significant.
- *Recreation:* Construction impacts on recreational resources could include increased noise and dust caused by equipment and visual changes caused by construction activities, including exposed earth, and stockpiled materials. Construction would disrupt the use of certain recreational facilities and trails within the Proposed Project area, resulting in a potentially significant impacts to recreation. Mitigation measures minimizing construction-period visual, noise, and dust impacts and mitigation measures requiring coordination with relevant local agencies to notify the public about construction would reduce these impacts to a less-than-significant level.

- *Safety and Security:* Temporary interference with an adopted emergency response plan or emergency evacuation plan during construction of the Proposed Project would be minimized with incorporation of traffic control plans. The Proposed Project would have less-than-significant impacts on increasing hazards to workers, passenger, or adjacent human and environmental receptors along the Valley Link corridor during operation.
- *Transportation and Traffic:* Construction of the Proposed Project could result in temporary impacts to existing transportation facilities due to the potential for temporary detours and/or construction related closures. However, implementation of mitigation to implement a transportation management plan for project construction would reduce impacts to a less-than-significant level.
- *Utilities and Service Systems:* Construction of the Proposed Project could conflict with existing utilities infrastructure, requiring the relocation of some existing utilities. However, implementation of mitigation to implement a utility relocation plan to minimize service disruption would reduce impacts to a less-than-significant level.

ES.7.2 Summary of Operational Impacts

- *Aesthetics:* Implementation of the Proposed Project would have potentially significant impacts to aesthetics in the form of changing local visual character, conflicting with regulations governing scenic qualities, affecting scenic resource, and creating new sources of light and glare. These impacts would be due to the addition of new track alignments, stations, and OMFs. These impacts would be potentially significant. Implementation of measures requiring the application of and replacement of landscaping; aesthetic design and surface treatments to parking structures, bridges, and retaining walls; undergrounding new utilities; applying minimum lighting standards; and utilizing selective grading and planting standards would reduce each of these impacts to less-than-significant levels.
- *Agricultural Resources:* The implementation of the Proposed Project would result in the permanent conversion of Important Farmland to nonagricultural uses and in the creation of remnant parcels of Important Farmland. Mitigation measures requiring restoration and conversion of farmlands would be implemented, but this impact to Important Farmland is considered significant and unavoidable.
- *Air Quality:* Operation of the Proposed Project would have an overall beneficial impact to air quality due to a net reduction of criteria pollutant emissions because decreased automobile use and associated emissions would vastly exceed increases in emissions with train operations and maintenance activities. However, the Proposed Project with the DMU, HBMU, or DLH technology variant would contribute to significant cumulative health risks to sensitive receptors at certain locations along the Tri-Valley segment due to existing risks exceeding the cumulative thresholds already. The Proposed Project with the BEMU technology variant would not contribute to cumulative health risks due to train operations.

- *Biological Resources:* Operation and maintenance of the Proposed Project would result in potentially significant impacts to special status species, associated habitats, and wildlife movement. Mitigation measures, including implementing Proposed Project designs that protect species and improvements to wildlife crossings, would be implemented. However, operation of the Proposed Project would result in significant and unavoidable impacts from the potential interference with species movement/migration. In addition, implementation of the West Tracy OMF Alternative would also result in significant and unavoidable impacts from the potential interference with species movement/migration.
- *Cultural Resources:* Operation and maintenance of the Proposed Project would result in potentially significant impacts to built environment historical resources in some parts of the Proposed Project corridor. Mitigation measures requiring documentation and reporting of cultural resource findings prior to construction and the preparation of interpretive exhibits with historical information would be applied to affected areas. These measures would reduce these impacts to a less-than-significant level.
- *Energy:* Operations of the Proposed Project would result in a net energy savings due to the reduction of automobile VMT and consequently reduce energy consumption per passenger mile. Energy use benefits achieved through operations of the Proposed Project would offset the short-term construction energy and would be a beneficial impact.
- *Geology and Soils:* Geologic, soils, and seismic hazards are present in the Proposed Project area but would be minimized through compliance with appropriate geotechnical and engineering design standards. Operation and maintenance of the Proposed Project would take place on geologic units that had been disturbed during construction, so any operational impacts to geology and soils would be less than significant. No mitigation measures would be required.
- *Greenhouse Gas Emissions:* The Proposed Project would result in a net GHG reduction due to a far greater reductions in automobile emissions compared to increase emissions due to train operations and maintenance activities. GHG benefits achieved through operation of the Proposed Project would offset construction emissions and would be a beneficial impact.
- *Hazards and Hazardous Materials:* The Proposed Project footprint is located on or in close proximity to areas with hazardous materials contamination due to prior land use activities. Implementation of mitigation measures requiring preparation of a construction risk management plan and implementing fugitive dust controls would reduce these potentially significant impacts to a less-than-significant level and would reduce the impact on K-12 school children from contaminated dust generated during maintenance activities.
- *Hydrology and Water Quality:* Minor increases in impervious spaces and alterations to drainage patterns would occur with the Proposed Project; however, mitigation requiring detailed hydraulic evaluations and implementing new or modify existing stormwater controls to prevent storm drainage system capacity exceedance and reduce pollutant transport would reduce impacts to a less-than-significant level.
- *Land Use and Planning:* The Proposed Project could establish new stations and facilities that would be inconsistent with current planning for these areas. These inconsistencies with the Greenville Station and Mountain House Station could result in unplanned growth and urbanization of unincorporated lands with significant environmental resources. Even with mitigation measures, this impact would be significant and unavoidable if these stations are implemented.

- *Noise and Vibration:* Proposed Project operations could result in substantial permanent increases in ambient noise levels. Mitigation measures, including wayside horns, building sound insulation, and working with local jurisdictions to establish quiet zones, would help to reduce this impact, but may not be feasible to avoid significant impacts at all locations. Thus, operational noise associated with Proposed Project operations would be significant and unavoidable at certain locations. Operational groundborne vibration impacts would be less than significant.
- *Population and Housing:* The Proposed Project could result in unplanned population growth around the proposed Greenville Station and Mountain House Station. Mitigation measures would be implemented, encouraging collaboration with county and city officials on general plan amendments and other approvals that support transit-oriented development. However, the Authority has no land use authority and cannot mandate changes to local land use plans. Thus, the impact from unplanned population growth would be significant and unavoidable due to the proposed Greenville Station and Mountain House Station.
- *Public Services:* Impacts to public services resulting from Proposed Project operations would not substantially increase demand that would result in the need for new or physically facilities. These impacts would be less than significant.
- *Recreation:* Once the Proposed Project is operational, recreationalists would most likely be exposed to additional pollution, noise, and visual impacts from passing trains, but it is anticipated that these impacts would be minimal and would have a less-than-significant impact on the accessibility and quality of recreational resources. Mitigation measures would not be required.
- *Safety and Security:* The Proposed Project would have less-than-significant impacts on increasing hazards to workers, passenger, or adjacent human and environmental receptors along the Valley Link corridor during operation.
- *Transportation and Traffic:* Operation of the Proposed Project would reduce VMT by inducing a mode shift from personal (i.e., household) automobiles to public transit. While there would be localized vehicle traffic (and associated VMT) traveling to/from the proposed stations, including park-and-ride passengers and drop-off/pick-up (e.g., kiss-and-ride, taxi, and transportation network company) passengers, the Proposed Project would remove substantial vehicle traffic on the regional roadway network, particularly on the I-580 corridor within and between San Joaquin County and the Tri-Valley area, resulting in a net reduction in VMT.
- *Utilities and Service Systems:* Operation of the Proposed Project would not require the construction of new or expanded utilities or service systems. The installation of new water and wastewater facilities, or the expansion of existing facilities required to serve operations would be limited to utility connections adjacent to the specific site or within the Project footprint. Impacts are anticipated to be minimal and would have a less than significant impact.

ES.7.3 Summary of Cumulative Impacts

- *Aesthetics:* The Proposed Project's contributions to cumulative impacts related to aesthetics would be reduced to less-than-significant levels with mitigation measures.

- *Agricultural Resources:* Implementation of the Proposed Project could result in a considerable contribution to cumulative impacts to agricultural resources as a result of the Proposed Project's permanent impacts to Important Farmland. Mitigation measures would be applied to minimize these impacts to the extent practicable.
- *Air Quality:* The Proposed Project's construction criteria pollutant emissions would not contribute adversely to regional cumulative air quality impacts after mitigation. Construction in the San Joaquin Valley would contribute to localized PM 10 cumulative impacts. Construction emissions and operational emissions with the DMU, HBMU, or DLH technology variant would contribute to significant cumulative health risks at certain locations along portions of the Tri-Valley segment due to existing health risks exceeding cumulative thresholds. Operations with the BEMU technology variant would not contribute to cumulative health risks.
- *Biological Resources:* Operation of the Proposed Project could result in considerable cumulative impacts to biological resources. Mitigation measures would be applied to minimize these impacts to the extent practicable.
- *Cultural Resources:* The Proposed Project's contributions to cumulative impacts related to cultural resources can be reduced to less-than-significant levels with mitigation measures.
- *Energy:* The Proposed Project's contributions to cumulative impacts related to energy resources can be reduced to less-than-significant levels with mitigation measures. The Proposed Project would have beneficial impacts due to reduced automobile fuel consumption.
- *Geology and Soils:* The Proposed Project's contributions to cumulative impacts related to geology, soils and seismicity can be reduced to less-than-significant levels with mitigation measures.
- *Greenhouse Gas Emissions:* The Proposed Project would reduce GHG emissions and thus would not contribute to cumulative impacts related to GHG emissions.
- *Hazards and Hazardous Materials:* The Proposed Project's contributions to cumulative impacts related to hazards and hazardous materials can be reduced to less-than-significant levels with mitigation measures.
- *Hydrology and Water Quality:* The Proposed Project's contributions to cumulative impacts related to hydrology and water quality can be reduced to less-than-significant levels with mitigation measures.
- *Land Use and Planning:* The Proposed Project's contributions to cumulative impacts related to land use and planning can be reduced to less-than-significant levels with mitigation measures.
- *Noise and Vibration:* Construction and operation of the Proposed Project would result in considerable contributions to cumulative impacts from noise. Mitigation measures would be applied to minimize these impacts to the extent practicable.
- *Population and Housing:* Operation of the Proposed Project would result in considerable contributions to cumulative impacts on population and housing. Mitigation measures would be applied to minimize these impacts to the extent practicable.
- *Public Services:* The Proposed Project would not contribute considerably to any cumulative impacts related to population and housing.

- *Recreation*: The Proposed Project’s contributions to cumulative impacts related to recreation can be reduced to less-than-significant levels with mitigation measures.
- *Safety and Security*: The Proposed Project would not contribute considerably to any cumulative impacts related to safety and security.
- *Transportation and Traffic*: The Proposed Project’s contributions to cumulative impacts related to transportation and traffic can be reduced to less-than-significant levels with mitigation measures.
- *Utilities and Service Systems*: The Proposed Project’s contributions to cumulative impacts related to utilities and service systems can be reduced to less-than-significant levels with mitigation measures.

ES.8 Other Alternatives Considered

ES.8.1 Programmatic Alternatives Originally Included in the Notice of Preparation

The 2018 Notice of Preparation (NOP) described certain “Phase II improvements,” including several “infill” station options (Southfront Road, Grant Line Road, and Ellis) and an extension to Stockton. The NOP described that the Phase II improvements would be analyzed at a programmatic, more conceptual level of detail. As noted in the NOP, CEQA permits analysis of improvements at a programmatic level of detail provided that a fully detailed project-level of analysis is done before any final decisions or commitments are made. Subsequent to the NOP, the Authority decided to focus only on project-level analysis in this EIR.

The Southfront Road Station option was originally described in the NOP as a potential future infill station to be analyzed programmatically. After identifying a number of challenges for implementation as well as the environmental effects of the proposed Greenville Station, the Authority decided instead to analyze the Southfront Road Station as an alternative to the Greenville Station and to analyze it at an equal project-level of detail as the Proposed Project.

The Authority also decided that the other programmatic station options (i.e., Grant Line Road and Ellis) and the programmatic extension to Stockton would not be the focus of this EIR and would instead be considered later separately as potential future additions to Valley Link. If the Authority advances these options, it will prepare a separate CEQA evaluation prior to making any decisions as to whether to add these improvements to the Valley Link system. The Grant Line Road and Ellis stations may be potential future infill station but are not located in areas where they would serve as alternatives to any proposed stations and thus can be considered separately in the future. The Proposed Project from Lathrop to Dublin/Pleasanton can operate independent of any potential future extension to Stockton. As such, the potential separate consideration of these station options and this extension is allowed under CEQA.

ES.8.2 Alternatives Screening Process and Other Alternatives Considered and Dismissed

The Authority considered a wide range of alternatives before selecting the alternatives to be analyzed in this EIR. The Authority conducted ongoing meetings with local agencies, communities, stakeholders, organizations, working groups, and resource agencies to formulate the initial set of alternatives. Alternatives were also identified through input from the public, agencies, and stakeholders during scoping.

Alternatives were screened based on the following criteria.

- **Tier 1**—does the alternative meet the purpose and need?
- **Tier 2**—is the alternative technically, logistically, and financially feasible?
- **Tier 3**—would the alternative avoid or substantially lessen one or more significant impacts of the project?

Alternatives determined not to meet all or most of the purpose and need, to be infeasible, or not to avoid or substantially reduce one or more significant impacts of the project, were dismissed from further analysis in this EIR. All of the alternatives considered, but dismissed from analysis, are discussed in Chapter 5, *Other Alternatives Considered*, along with the rationale for their dismissal.

All of the alternatives analyzed in detail in this EIR (i.e., the Southfront Road Station Alternative, Stone Cut Alignment Alternative, West Tracy OMF Alternative, Mountain House Station Alternative, and Downtown Tracy Station Parking Alternatives 1 and 2) were determined to meet the purpose and need and to be potentially feasible. Their environmental impacts are disclosed in Chapters 3 and 4. In addition, the No Project Alternative and two additional alternatives, the Bus/Bus Rapid Transit (BRT) Alternative and the Electrical Multiple Unit/Overhead Catenary System (EMU/OCS) Alternative are analyzed at a lesser level of detail in Chapter 5.

ES.8.3 Alternatives Analyzed at a Lesser Level of Detail

The No Project Alternative and three technology alternatives are analyzed in this EIR at a lesser level of detail to the Proposed Project. They are described and their impacts are analyzed and compared to the Proposed Project in Chapter 5. These alternatives include the following.

- *No Project Alternative*: Under this alternative, Valley Link would not be constructed or operated. Other planned transportation projects would proceed as planned.
- *Bus/BRT Alternative with Managed Lanes*: This alternative would use buses to connect San Joaquin County, the Tri-Valley, and the Dublin/Pleasanton BART Station. This alternative would start at the Manteca Family Entertainment Zone and then mirror the stops of the Proposed Project including North Lathrop, River Islands, Tracy Transit Center, West Tracy, Mountain House, Greenville, Isabel Avenue, and Dublin/Pleasanton BART Station. Buses would use widened freeway shoulders on I-5, I-205, and I-580 during heavy traffic conditions and would use the I-580 Express Lanes in the Tri-Valley area. Passenger platforms would be built in the median of I-580 at Isabel Avenue and at the Dublin/Pleasanton BART Station. This alternative would use battery-electric buses.

- *Electric Multiple Unit/EMU/OCS Alternative:* This alternative would be similar to the Proposed Project in terms of alignment, stations, ancillary facilities and train service, but would use electric multiple units with an OCS from Lathrop all the way to the Dublin/Pleasanton BART station. The Proposed Project includes a BEMU technology variant with an OCS over the Altamont segment. This alternative would include an OCS for the entire alignment for continuous EMU operations. The EMU vehicles would be similar to those planned for use by Caltrain.

ES.9 Comparison of Alternatives and the Environmentally Superior Alternative

CEQA Guidelines require a comparison of alternatives analyzed in an EIR and identification of an environmentally superior alternative. The environmentally superior alternative is the alternative (other than the Proposed Project) that would avoid or substantially lessen, to the greatest extent, the environmental impacts associated with the Proposed Project while feasibly obtaining most of the major project objectives. If the alternative with the least environmental impact is determined to be the No Project Alternative, the EIR must also identify an environmentally superior alternative among the other alternatives.

The environmental impacts of the alternatives analyzed in detail are presented in Chapters 3 and 4 and these chapters describe notable differences in impacts between the alternatives and the Proposed Project. Chapter 5 presents an analysis of the environmental impacts of the No Project Alternative and three other alternatives at a lesser level of detail. Chapter 5 also provides a tabular comparison of the key environmental impact discriminators between the alternatives.

The No Project Alternative would avoid all of the identified construction impacts of the Proposed Project, but would have increased operational impacts in several critical resource areas, including air quality, greenhouse gases, energy, and transportation and traffic because it would perpetuate existing interregional transportation patterns and not provide new passenger rail service to reduce automobile use. While avoidance of the construction related impacts is noteworthy, the No Project Alternative would have no ameliorative effect on VMT, criteria pollutant emissions, GHG emissions, and energy use compared to the other build alternatives, so the No Project Alternative would not be the environmentally superior alternative.

The Stone Cut Alignment Alternative is the only alignment alternative analyzed in the detail in the EIR and thus is the environmentally superior alignment alternative among the alternatives. The Stone Cut Alignment Alternative would have slightly higher construction impacts than the Proposed Project due to a greater amount of earthwork. Operationally, the Stone Cut Alignment Alternative would result in lower train fuel use and greater ridership (due to shorter service times) and thus would have greater criteria pollutant, GHG emission, and energy use reductions. The Stone Cut Alignment Alternative would have greater visual effects because it would be more visible along eastbound I-580 at one location.

Of the station alternatives analyzed in this EIR, the Southfront Road Station Alternative and the Mountain House Station Alternative are the only alternatives at their respective locations and thus would be environmentally superior station alternatives at their locations. The Southfront Road Station Alternative would have a lower impact on wildlife movement than the proposed Greenville

Station north of I-580. The Southfront Road Station Alternative would also result in higher ridership than the Proposed Project, which would result in greater improvements in air quality, lower energy use, and greater reductions in GHG emissions than the Proposed Project. The Mountain House Station Alternative would have lower impacts on biological resources and wildlife movement, important farmland, and land use and planning compared to the Mountain House Station included in the Proposed Project.

The West Tracy OMF is the only OMF alternative considered. However, the proposed Tracy OMF would be environmentally superior to the West of Tracy OMF Alternative because it would result in lower impacts related to biological resources and wildlife movement, but it would result in higher impacts to important farmland.

Downtown Tracy Parking Alternatives 1 and 2 have similar environmental impacts such that it is difficult to identify which one is environmentally superior. Both of the parking alternatives would require less grading than the Proposed Downtown Tracy Station but would have similar construction emissions. While the parking structures included in the parking alternatives would have greater aesthetic impacts than the Proposed Downtown Tracy Station, their aesthetic impact would still be less than significant because the area around the Transit Center is an urban area and not a sensitive visual setting.

Of the technology/modal alternatives analyzed in this EIR, there are notable tradeoffs between the Bus/BRT Alternative and the EMU/OCS Alternative.

The Bus/BRT Alternative would require substantially less construction and thus would have the lowest construction period environmental impacts among the technology/modal alternatives for aesthetics, biological resources, cultural resources, geology and soils, noise, and recreation. The Bus/BRT Alternative would have the lowest operational impacts related to noise and land use and planning. The Bus/BRT Alternative would reduce operational criteria pollutant emissions, GHG emissions, and energy use compared to No Project conditions, but would not reduce them as much as the other technology/modal alternatives. The Bus/BRT Alternative would also result in less reduction in operational risks of petroleum and hazardous material spills and water quality effects compared to the other technology/modal alternatives.

The EMU/OCS Alternative would have greater construction period criteria pollutant emissions, GHG emissions, and energy use than the Bus/BRT Alternative and the Proposed. The EMU/OCS Alternative would have greater operational visual aesthetic and biological resources impacts than the Bus/BRT Alternative but similar effects to the Proposed Project with the BEMU technology variant. However, the EMU/OCS Alternative would reduce operational criteria pollutant emissions, GHG emissions, and energy use, and risks of petroleum and hazardous material spills and water quality effects more than the Bus/BRT Alternative and the Proposed Project. The EMU/OCS Alternative would have higher operational noise impacts than the Bus/BRT Alternative and similar noise impacts as the Proposed Project with the BEMU technology variant.

The Bus/BRT Alternative and the EMU/OCS Alternative have different comparative environmental outcomes, as summarized below.

- The Bus/BRT Alternative would have lower impacts related to visual aesthetics, biological resource and wildlife movement, noise, and land use and planning (in regard to the Mountain House Station). This alternative would have less reductions of criteria pollutant emissions, GHG emissions, energy use, VMT and associated safety concerns and potential for petroleum and hazardous material spills and water quality effects.
- The EMU/OCS Alternative would have greater reductions of operational criteria pollutant emissions, GHG emissions, energy use, VMT and associated safety concerns as well as potential for petroleum and hazardous material spills and water quality effect. However, this alternative would have higher operational impacts related to visual aesthetics, biological resources and wildlife movement, and noise.

While there are tradeoffs in the different environmental impacts of these two technology/modal alternatives and individuals may assign different weights to different resource topics and choose different ways of balancing tradeoffs, the Authority has identified the EMU/OCS Alternative as the Environmentally Superior Alternative among the alternatives to the Proposed Project with regard to technology/mode choice. The long-term benefits of the EMU/OCS Alternative in terms of operational reductions in air pollution, GHG emissions, energy use, VMT and associated safety risks, and the reduced risk of petroleum and hazardous materials and water quality effects compared to the Bus/BRT Alternative are considered to outweigh the higher impacts to visual aesthetics, biological resources, noise and local land use/planning (specific to the Mountain House Station). This determination is based, in particular, on the importance in regional and state planning in addressing the current health effects of air pollution and the current and future effects of climate change which will require substantial reductions in transportation and other sources of emissions that cannot be achieved without shifting as many trips as possible from single-occupancy vehicles to more efficient means of travel, like electrically powered trains.

The overall environmentally superior alternative among the alternatives to the Proposed Project would be a combination of the Stone Cut Alignment Alternative, the Southfront Road Station Alternative, the West Tracy Alternative, the West Tracy OMF, and the EMU/OCS Alternative for the reasons discussed above. The Proposed Project, BEMU technology variant would have nearly the same air quality, GHG emissions reduction, and energy use benefits as this combined alternative with the EMU/OCS but would require less construction of the OCS in areas outside the Altamont Pass.

The overall environmentally superior alternative including consideration of the Proposed Project would be the combination of the Stone Cut Alignment Alternative, the Southfront Road Station Alternative, the Mountain House Station Alternative, the Tracy OMF, and either the BEMU technology variant or the EMU/OCS technology variant for the reasons discussed above. The BEMU technology variant would have nearly the same air quality, GHG emissions reduction, and energy use benefits as the EMU/OCS Alternative but would require less construction of the OCS in areas outside the Altamont Pass. In addition, if UPRR does not accept installation of an OCS in their right-of-way, then the EMU/OCS Alternative would be infeasible and the BEMU technology variant would be environmentally superior.

CEQA does not require a lead agency to select the environmentally superior alternative as its Proposed Project. Implementing the project (or an alternative) will have adverse environmental impacts regardless of which alternative is selected.

ES.10 Issues of Controversy and Issues to be Resolved

There are some areas of controversy for the Proposed Project as summarized below.

- **Aesthetics**—Scoping comments expressed concern over electrical OCS in the Altamont Pass. The EIR discusses impacts of the OCS included in the Proposed Project with the BEMU technology variant (as well as associated with the EMU/OCS Alternative) on Altamont Pass views and identifies mitigation.
- **Agricultural Farmland**—Scoping comments expressed concern over the impact on Important Farmland. The EIR discusses impacts on agricultural lands and potential mitigation measures.
- **Biological Resources**—Scoping and agency comments expressed concern over the impact of new infrastructure on special-status species in the Altamont Pass area and in the area between Paradise Cut and the San Joaquin River. Comments expressed concern about wildlife movement across the rail corridor in the Altamont Pass and in particular about Proposed Project impacts to the existing wildlife undercrossing east of Greenville Road. Comments also asked the Proposed Project to ensure facilitation of wildlife movement in the Paradise Cut area to be consistent with habitat planning. The EIR analyzes impacts to biological resources for all of the above and proposes mitigation to address significant impacts.
- **Hydrology**—Scoping comments expressed concern over the potential for additional flooding due to new infrastructure. The EIR discusses impacts on flooding for the Proposed Project.
- **Traffic**—Scoping comments expressed concern over the impact of the project on traffic due to new stations and additional gate-down time at the at-grade roadway crossings along the Proposed Project route. Per SB 743, traffic delays are no longer considered a significant impact under CEQA and thus this issue is not analyzed in this EIR. Comments also expressed concern over construction disruption of traffic, particularly along I-580 in the Tri-Valley area.
- **Transportation**—Transportation agencies have expressed concern over construction and operational impacts to existing transit services and the I-580 express lanes. The EIR discusses these potential impacts of the Proposed Project.
- **Consideration of Alternatives**—While the EIR considers a wide range of alternatives, some may desire that other alternatives should be evaluated in the same detail as the Proposed Project. Multiple alternatives are analyzed at an equal level of detail in Chapters 3 and 4 and several additional alternatives are analyzed at a lesser level of detail in Chapter 5. Chapter 5 discusses all alternatives considered and why some alternatives were not carried forward for detailed evaluations.

The following issues remain to be resolved.

- **Consideration of Comments on this Draft EIR**—The Authority will consider and respond to substantive comments on this Draft EIR in the Final EIR scheduled for completion later in 2020.
- **Certification of the EIR and Project Adoption** —The Authority will need to consider the final EIR, once prepared, and decide whether to certify the document. If certified, then the Authority Board would need to decide whether to approve the Proposed Project as is or to adopt one of the alternatives.
- **Design of the Project**—The final design of project would be completed following the environmental review process.

- **Regulatory Permitting**—Permits from a wide range of local, state, and federal agencies would need to be obtained to implement the Proposed Project.
- **National Environmental Policy Act (NEPA) Compliance**—Compliance with NEPA will be necessary for any associated federal actions necessary to implement the project. Federal actions could include future federal funding (if identified) as well as regulatory permitting concerning waters/wetlands and threatened and endangered species, modifications of federal facilities (such as aqueducts), and/or potential temporary or permanent encroachment on federally owned lands.
- **Funding**—Funding to construct and operate the Proposed Project would need to include previously identified funding for the BART to Livermore Extension Project and Tri-Valley Transit Access Improvements (i.e., Alameda County Transportation Commission Measure BB, AB 1171, and Metropolitan Transportation Commission [MTC] Regional Measures 1 and 3), developer impact fees from the City of Livermore, dedicated funding from new sales tax measures in the Bay Area and San Joaquin County, and other local and State sources. The Alameda County Transportation Commission re-allocated the \$400 million in Measure BB funds from the BART to Livermore project to the Valley Link project in their Transportation Expenditure Plan. Since local, state and federal funding for transit service is limited, scenarios have been developed that include IOSs with lower capital costs and operating expenses.

Table ES-7. Summary of Impacts and Required Mitigation Measures

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
3.1 Aesthetics			
Impact AES-1: Construction of the Proposed Project could substantially degrade the existing visual character or quality of public views of the site and its surroundings, including scenic vistas and scenic highways, and create a new source of substantial light or glare that would adversely affect daytime or nighttime views.	Potentially significant	AES-1.1: Install visual barriers between construction work areas and sensitive residential and recreational receptors AES-1.2: Limit construction near residences to daylight hours AES-1.3: Minimize fugitive light from portable sources used for construction AQ-2.5: Implement fugitive dust controls during construction	Less than significant
Impact AES-2: Operation of the Proposed Project could substantially degrade the existing visual character or quality of public views of the site and its surroundings in non-urbanized areas, including scenic vistas.	Potentially significant	AES-2.1: Landscape parking facilities at stations AES-2.2: Apply aesthetic design treatments to parking structures, pedestrian overcrossings, Interim OMF, viaduct structures, and retaining walls with high visibility along I-580 and from roadways within the Altamont Hills AES-2.3: Utilize selective grading and planting techniques in the Altamont Hills AES-2.4: Underground new electric transmission lines in visually sensitive areas AES-2.5: Apply aesthetic surface treatments to certain structures in visually sensitive areas	Less than significant
Impact AES-3: Operation of the Proposed Project could conflict with applicable zoning and other regulations governing scenic quality in urbanized areas, including scenic vistas.	Potentially significant	AES-2.1: Landscape parking facilities at stations AES-2.2: Apply aesthetic design treatments to parking structures, pedestrian overcrossings, Interim OMF, viaduct structures, and retaining walls with high visibility along I-580 and from roadways within the Altamont Hills AES-2.3: Utilize selective grading and planting techniques in the Altamont Hills AES-2.4: Underground new electric transmission lines in visually sensitive areas	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact AES-4: Operation of the Proposed Project could substantially damage scenic resources within a State Scenic Highway.	Potentially significant	AES-2.5: Apply aesthetic surface treatments to certain structures in visually sensitive areas AES-3.1: Replace disturbed vegetation along landscaped freeways	Less than significant
Impact AES-5: Operation of the Proposed Project could create a new source of substantial light or glare that would adversely affect daytime or nighttime views.	Potentially significant	AES-2.1: Landscape parking facilities at stations AES-2.2: Apply aesthetic design treatments to parking structures, pedestrian overcrossings, Interim OMF, viaduct structures, and retaining walls with high visibility along I-580 and from roadways within the Altamont Hills AES-2.3: Utilize selective grading and planting techniques in the Altamont Hills AES-2.4: Underground new electric transmission lines in visually sensitive areas AES-2.5: Apply aesthetic surface treatments to certain structures in visually sensitive areas AES-3.1: Replace disturbed vegetation along landscaped freeways	Less than significant
Impact C-AES-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on aesthetics	Significant	AES-1.1: Install visual barriers between construction work areas and sensitive residential and recreational receptors AES-1.2: Limit construction near residences to daylight hours	Less than considerable contribution

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>AES-1.3: Minimize fugitive light from portable sources used for construction</p> <p>AES-2.1: Landscape parking facilities at stations</p> <p>AES-2.2: Apply aesthetic design treatments to parking structures, pedestrian overcrossings, Interim OMF, viaduct structures, and retaining walls with high visibility along I-580 and from roadways within the Altamont Hills</p> <p>AES-2.3: Utilize selective grading and planting techniques in the Altamont Hills</p> <p>AES-2.4: Underground new electric transmission lines in visually sensitive areas</p> <p>AES-2.5: Apply aesthetic surface treatments to certain structures in visually sensitive areas</p> <p>AES-3.1: Replace disturbed vegetation along landscaped freeways</p> <p>AES-5.1: Apply minimum lighting standards</p> <p>AQ-2.5: Implement fugitive dust controls during construction</p>			
3.2 Agricultural Resources			
Impact AG-1a. The Proposed Project could result in conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance to nonagricultural use because of temporary use.	Potentially significant	AG-1.1: Restore Important Farmlands used for temporary staging areas	Less than significant
Impact AG-1b. Construction of the Proposed Project could result in direct permanent conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance to nonagricultural use.	Potentially significant:	AG-1.2: Conserve Important Farmlands (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)	Significant and unavoidable (Proposed Project and West Tracy OMF Alternative)
Impact AG-1c: Construction of the Proposed Project could convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance to nonagricultural use	Potentially significant	AG-1.2: Conserve Important Farmlands (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)	Significant and unavoidable (Proposed Project and West Tracy OMF Alternative)

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
because of parcel severance or creation of remnant parcels.			
Impact AG-2. Construction of the Proposed Project would conflict with existing zoning for agricultural use or a Williamson Act contract.	Less than significant/No Impact	None required	--
Impact AG-3a. Construction and operation of the Proposed Project could result in the conversion of Farmland to nonagricultural use through temporary or permanent disruption of agricultural infrastructure.	Potentially significant	AG-3.1: Notify agricultural property owners or leaseholders AG-3.2: Coordinate with utility and energy service providers AG-3.3: Verify new irrigation facilities are operational before disconnecting the original facility AG-3.4: Maintain access to Important Farmlands AG-3.5: Provide permanent equipment crossings on affected access roads TRA-1.1: Transportation Management Plan for Project Construction	Less than significant
Impact AG-3b: Construction and operation of the Proposed Project would not result in conversion of Farmland to nonagricultural use through temporary or permanent displacement or severance of confined animal agriculture capital improvements.	Less than significant/No Impact	None required	--
Impact AG-3c: Construction and operation of the Proposed Project would not result in conversion of Farmland to nonagricultural use through temporary or permanent noise and vibration impacts on confined farm animals.	Less than significant/No Impact	None required	--
Impact C-AG-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a	Significant	AG-1.1: Restore Important Farmlands used for temporary staging areas AG-1.2: Conserve Important Farmlands (Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, and Unique Farmland)	Significant considerable contribution (permanent impacts on Important Farmland only)

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
significant cumulative impact on agricultural resources.		AG-3.1: Notify agricultural property owners or leaseholders AG-3.2: Coordinate with utility and energy service providers AG-3.3: Verify new irrigation facilities are operational before disconnecting the original facility AG-3.4: Maintain access to Important Farmlands AG-3.5: Provide permanent equipment crossings on affected access roads	
3.3 Air Quality			
Impact AQ-1: Construction of the Proposed Project could conflict with or obstruct implementation of the applicable air quality plans. Operation of the Project would not conflict with or obstruct implementation of the applicable air quality plans.	Potentially significant	AQ-2.1: Implement advanced emissions controls for off-road equipment during construction AQ-2.2: Implement off-road engine maintenance and idling restrictions during construction AQ-2.3: Implement advanced emissions controls for trains during construction AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction AQ-2.5: Implement fugitive dust controls during construction AQ-2.6: Offset Project Construction Emissions in the SFBAAB AQ-2.7: Offset Project Construction Emissions in the SJVAB	Less than significant
Impact AQ-2a: Construction of the Proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated a nonattainment area under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	Potentially significant	AQ-2.1: Implement advanced emissions controls for off-road equipment during construction AQ-2.2: Implement off-road equipment engine maintenance and idling restrictions during construction AQ-2.3: Implement advanced emissions controls for trains during construction AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction AQ-2.5: Implement fugitive dust controls during construction	Less than significant (Proposed and Alternative Facilities within Bay Area Air Quality Management District jurisdiction) Significant and unavoidable (Proposed and Alternative Facilities within San Joaquin Valley)

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact AQ-2b: Operation of the Proposed Project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated a nonattainment area under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors).	Less than significant	AQ-2.6: Offset Project Construction Emissions in the SFBAAB AQ-2.7: Offset Project Construction Emissions in the SJVAB	Air Pollution Control District jurisdiction)
Impact AQ-3a: Operation of the Proposed Project could expose sensitive receptors to substantial carbon monoxide concentrations from increased passenger rail traffic.	Less than significant	None required	--
Impact AQ-3b: Construction of the Proposed Project could expose sensitive receptors to substantial DPM or localized PM concentrations.	Significant (All proposed and alternative facilities with nearby sensitive receptors) Less than significant (Proposed and alternative facilities without nearby sensitive receptors)	AQ-2.1: Implement advanced emissions controls for off-road equipment during construction AQ-2.2: Implement off-road equipment engine maintenance and idling restrictions during construction AQ-2.3: Implement advanced emissions controls for trains during construction AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction	Less than significant
Impact AQ-3c: Diesel-powered train service operations could expose sensitive receptors to health risks from increased exposure to DPM and PM2.5 concentrations.	Less than significant	None required	--
Impact AQ-3d: Proposed Project operations could expose sensitive receptors adjacent to Valley Link transit stations and maintenance	Less than significant	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
facilities to health risks from increased exposure to DPM and PM2.5 concentrations		None required	--
Impact AQ-3e: Realignment of I-580 in the Tri-Valley could expose sensitive receptors to health risks from increased exposure to roadway pollutants	Less than significant	None required	--
Impact AQ-3f: The Proposed Project could expose sensitive receptors to health risks from increased exposure to DPM and PM2.5 concentrations from multiple emission sources	Less than significant	None required	--
Impact AQ-3g: The Proposed Project could expose sensitive receptors to cumulative health risks from increased exposure to DPM and PM2.5 concentrations	<p>Significant (Proposed Project [construction and DMU/HBMU/ DLH operation in the Tri-Valley segment]; All alternatives [construction and DMU/HBMU/ DLH operation in the Tri-Valley segment])</p> <p>Less than Significant: (Proposed Project [BEMU operations in the Tri-Valley segment; construction and operation outside the Tri-Valley segment]; All other alternatives [BEMU operations in the Tri-Valley segment; construction and</p>	<p>AQ-2.1: Implement advanced emissions controls for off-road equipment during construction</p> <p>AQ-2.2: Implement off-road equipment engine maintenance and idling restrictions during construction</p> <p>AQ-2.3: Implement advanced emissions controls for trains during construction</p> <p>AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction</p>	<p>Significant and unavoidable [Proposed Project (construction and DMU/HBMU/DLH operation in the Tri-Valley segment); Alternatives (Construction and DMU/HBMU/DLH operation in the Tri-Valley segment)]</p> <p>Less than significant [Proposed Project (BEMU operations in the Tri-Valley segment; construction and operation outside the Tri-Valley segment); All other alternatives (BEMU operations in the Tri-Valley segment; construction and operation outside the Tri-Valley segment)]</p>

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
	operation outside the Tri-Valley segment])		
Impact AQ-3h: Construction of the Proposed Project could expose sensitive receptors to increased risk of contracting Valley Fever or exposure to asbestos-containing material.	Potentially significant	AQ-2.5: Implement fugitive dust controls during construction	Less than significant
Impact AQ-4: Construction and operation of the Proposed Project could result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.	Less than significant	None required	--
Impact C-AQ-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would result in a significant cumulative impact on air quality.	Construction and Operations: Less than Significant (Criteria Pollutants) Significant (TAC emissions)	AQ-2.1: Implement advanced emissions controls for off-road equipment AQ-2.2: Implement off-road engine maintenance and idling restrictions AQ-2.3: Implement advanced emissions controls for trains AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks AQ-2.5: Implement fugitive dust controls during construction AQ-2.6: Offset Project Construction Emissions in the SFBAAB AQ-2.7: Offset Project Construction Emissions in the SJVAB	Criteria Pollutants: Less than considerable contribution (beneficial) TAC emissions: significant considerable contribution
3.4 Biological Resources			
Impact BIO-1. Construction of the Proposed Project would remove or degrade special-status plants and their habitat.	Potentially Significant	BIO-1.1: Conduct preconstruction surveys for special-status plant species BIO-1.2: Prepare a salvage, relocation, or propagation and monitoring plan for special-status plant species BIO-1.3: Document affected special-status plant species BIO-1.4: Prevent introduction or spread of invasive plant species	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact BIO-2. Construction of the Proposed Project would injure or kill special-status wildlife species and remove or degrade their habitat.	Potentially significant	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible BIO-2.2: Conduct worker environmental training program for construction personnel BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible BIO-2.4: Implement seasonal restrictions for in-water work as feasible BIO-2.5: Protect wetlands during construction BIO-2.6: Protect sensitive natural communities, including riparian habitat, during construction BIO-2.7: Protect vernal pool–endemic species BIO-2.8: Protect valley elderberry longhorn beetle BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog BIO-2.10- Protect foothill yellow-legged frog BIO-2.11: Protect western pond turtle and giant garter snake BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip BIO-2.13: Protect special-status and non-special-status nesting birds BIO-2.14: Protect golden eagles BIO-2.15: Protect Swainson’s hawk nests BIO-2.16: Compensate for Swainson’s hawk foraging habitat loss BIO-2.17: Protect burrowing owls and burrowing owl habitat BIO-2.18: Compensate for burrowing owl habitat loss BIO-2.19: Protect special-status and non-special-status roosting bats BIO-2.20: Protect riparian brush rabbit	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		BIO-2.21: Compensate for riparian brush rabbit habitat loss BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss	
Impact BIO-3. Construction of the Proposed Project would injure or kill special-status fish and remove or degrade their habitat.	Potentially Significant	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible BIO-2.2: Conduct a worker environmental training program for construction personnel BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible BIO-2.4: Implement seasonal restrictions for in-water work as feasible BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish BIO-7.1: Compensate for loss of riparian habitat	Less than significant
Impact BIO-4. Operation and maintenance of the Proposed Project could injure or kill special-status wildlife species.	Potentially significant	BIO-4.1: Protect nesting birds during maintenance activities BIO-4.2: Protect roosting bats during maintenance activities BIO-4.3: Minimize permanent intermittent impacts on avian wildlife species BIO-4.4: Implement removal of carrion that may attract raptors and carnivores BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement BIO-8.2: Install station lighting controls and fencing limitations	Significant and Unavoidable (Proposed Project [Greenville Station and Mountain House Station] and West Tracy OMF Alternative)

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact BIO-5. Operation and maintenance of the Proposed Project would affect special-status fish species and their associated habitat.	Less than significant	BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment	--
Impact BIO-6. Construction of the Proposed Project would remove or degrade state or federally regulated wetlands and other aquatic resources.	Potentially Significant	BIO-2.5: Protect wetlands during construction BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction	Less than significant
Impact BIO-7. Construction of the Proposed Project would remove or degrade sensitive natural communities, including riparian habitat, identified in local or regional plans, policies, and regulations or by California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS)	Potentially Significant:	BIO-2.5: Protect wetlands during construction BIO-2.6: Protect sensitive natural communities, including riparian habitat and salt grass flats, during construction BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction BIO-7.1: Compensate for loss of riparian habitat BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)	Less than significant
Impact BIO-8. Construction of the Proposed Project could substantially interfere with the movement of native resident or migratory fish or wildlife species, established migration corridors, or the use of nursery areas.	Potentially Significant	BIO-2.2: Conduct a worker environmental training program for construction personnel BIO-2.3: Implement noise reduction measures for pile driving in or adjacent to streams and wetlands as feasible BIO-2.4: Implement seasonal restrictions for in-water work as feasible	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>BIO-2.5: Protect wetlands during construction</p> <p>BIO-2.6: Protect sensitive natural communities, including riparian habitat, during construction</p> <p>BIO-2.7: Protect vernal pool–endemic species</p> <p>BIO-2.8: Protect valley elderberry longhorn beetle</p> <p>BIO-2.9: Protect California tiger salamander, western spadefoot toad, and California red-legged frog</p> <p>BIO-2.10: Protect foothill yellow-legged frog</p> <p>BIO-2.11: Protect western pond turtle and giant garter snake</p> <p>BIO-2.12: Protect California legless lizard, California glossy snake, coast horned lizard, and San Joaquin coachwhip</p> <p>BIO-2.14: Protect golden eagle</p> <p>BIO-2.15: Protect Swainson’s hawk nests</p> <p>BIO-2.16 Compensate for Swainson’s hawk foraging habitat loss</p> <p>BIO-2.17: Protect burrowing owls and burrowing owl habitat</p> <p>BIO-2.18: Compensate for burrowing owl habitat loss</p> <p>BIO-2.19: Protect special-status and non-special-status roosting bats</p> <p>BIO-2.20: Protect riparian brush rabbit</p> <p>BIO-2.21: Compensate for riparian brush rabbit habitat loss</p> <p>BIO-2.22: Protect American badger, San Joaquin kit fox, mountain lion, and their habitat</p> <p>BIO-2.23: Compensate for American badger, San Joaquin kit fox, and mountain lion habitat loss</p> <p>BIO-2.24: Protect Crotch bumble bee and western bumble bee nesting habitat and floral resources</p> <p>BIO-2.25: Compensate for Crotch bumble bee and western bumble bee habitat loss</p>	

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish</p> <p>BIO-6.1: Compensate for impacts on jurisdictional wetlands and non-wetland waters of the United States (aquatic resources) prior to impacts during construction</p> <p>BIO-7.1: Compensate for loss of riparian habitat</p> <p>BIO-7.2: Compensate for loss of sensitive natural communities (excluding riparian and wetland habitat)</p> <p>BIO-8.1: Install curbs to permit California tiger salamander and California red-legged frog movement</p> <p>BIO-8.2: Install station lighting controls and fencing limitations</p> <p>BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road</p> <p>BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative</p> <p>BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment</p>	
<p>Impact BIO-9. Operation of the Proposed Project could substantially interfere with the movement of native resident or migratory fish or wildlife species, established migration corridors, or the use of nursery areas.</p>	<p>Potentially Significant:</p>	<p>BIO-8.1: Design curbs to permit California tiger salamander and California red-legged frog movement</p> <p>BIO-8.2: Install station lighting controls and fencing limitations</p> <p>BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road</p> <p>BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Altamont Alignment and the Stone Cut Alignment Alternative</p>	<p>Significant and Unavoidable (Proposed Project [Greenville Station and Mountain House Station] and West Tracy OMF Alternative)</p>

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact BIO-10. Construction of the Proposed Project would conflict with local biological resource policies, including tree preservation policies or ordinances.	Potentially Significant:	<p>BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment</p> <p>BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible</p> <p>BIO-10.1 Compensate for tree removal during construction</p>	Less than Significant
Impact BIO-11. Operation of the Proposed Project would conflict with local biological resource policies, including tree preservation policies or ordinances.	Less than significant	None required	--
Impact BIO-12. Construction of the Proposed Project would conflict with provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or approved local, regional, or state habitat conservation plans	Potentially Significant	BIO-2.1: Obtain coverage from, be consistent with, and tier from existing conservation strategies as feasible.	Less than significant
Impact BIO-13. Operation of the Proposed Project would conflict with provisions of adopted Habitat Conservation Plans, Natural Community Conservation Plans, or approved local, regional, or state habitat conservation plans.	No impact	None required	--
Impact C-BIO-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on biological resources.	Significant	<p>AES-1.3: Minimize fugitive light from portable sources used for construction</p> <p>BIO-2.3: Implement noise reduction measures for pile driving</p> <p>BIO-2.4: Implement seasonal restrictions for in-water work</p> <p>BIO-2.5: Protect wetlands during construction</p> <p>BIO-2.6: Protect sensitive natural communities, including riparian habitat and salt grass flats, during construction</p> <p>BIO-3.1: Develop and implement a hydroacoustic monitoring plan to minimize noise effects on fish</p>	<p>Construction: Less than considerable contribution</p> <p>Operations: Significant considerable contribution</p>

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		BIO-7.1: Compensate for loss of riparian habitat BIO-8.2: Install station lighting controls and fencing limitations BIO-8.3: Revise Greenville Station design and install wildlife crossing improvements near the existing underpass east of Greenville Road BIO-8.4: Improve existing wildlife crossings and/or implement new wildlife crossing options along the Altamont Alignment and the Stone Cut Alignment Alternative BIO-8.5: Improve existing wildlife crossings and/or implement new wildlife crossing options along certain portions of the Tracy to Lathrop Alignment BIO-10.1: Compensate for tree removal during construction	
3.5 Cultural Resources			
Impact CUL-1. Construction and operation of the Proposed Project would directly or indirectly cause a substantial adverse change in the significance of a built environment historical resource.	Potentially significant	CUL-1.1: Prepare and submit Historic American Engineering Record documentation CUL-1.2: Prepare interpretive exhibits	Less than significant
Impact CUL-2. Construction and operation of the Proposed Project could cause a substantial adverse change in the significance of an archaeological resource or tribal cultural resource.	Potentially significant	CUL-2.1: Develop and implement an Archaeological Testing Plan CUL-2.2: Conduct cultural resources awareness training CUL-2.3: Develop an Archaeological Monitoring Plan CUL-2.4: Implement avoidance and protection measures CUL-2.5: Conduct archaeological monitoring CUL-2.6: Implement procedures in case of inadvertent discoveries	Less than significant
Impact CUL-3. Construction of the Proposed Project would disturb human remains, including those interred outside of formal cemeteries.	Potentially significant	CUL-3.1: Comply with state laws relating to Native American remains	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact C-CUL-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on cultural resources	Construction: Significant Operations: Less than significant	CUL-1.1: Prepare and submit Historic American Engineering Record documentation CUL-1.2: Prepare interpretive exhibits CUL-2.1: Develop and implement an Archaeological Testing Plan CUL-2.2: Conduct cultural resources awareness training CUL-2.3: Implement cultural resources monitoring plan CUL-2.4: Implement avoidance and protection measures CUL-2.5: Conduct archaeological monitoring CUL-2.6: Implement procedures in case of inadvertent discoveries	Less than considerable contribution
3.6 Energy			
Impact EN-1: Construction, operation, and maintenance of the Proposed Project could result in wasteful, inefficient, and unnecessary consumption of energy.	Less than significant (beneficial)	None required	--
Impact EN-2: Construction, operation, and maintenance of the Proposed Project could result in a substantial increase in energy demand that would affect local or regional energy supplies and require additional capacity during peak and base period demands for electricity to meet that increased demand.	Less than significant (beneficial)	None required	--
Impact C-EN-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would not result in a significant cumulative impact on energy resources.	Construction and Operations: Less than significant	AQ-2.1: Implement advanced emissions controls for off-road equipment during construction AQ-2.2: Implement off-road equipment engine maintenance and idling restrictions during construction AQ-2.3: Implement advanced emissions controls for trains during construction AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction	--
3.7 Geology and Soils			

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact GEO-1. Construction or operation of the Proposed Project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving surface fault rupture, strong seismic ground shaking, liquefaction, seiches, landslides, subsidence and settlement, expansive soils, corrosive soils, and erosion.	Less than significant	None required	--
Impact GEO-2. Construction or operation of the Proposed Project would occur in soils that are incapable of adequately supporting the use of conventional septic systems and could also result in degradation of groundwater quality.	Less than significant/ No Impact	None required	--
Impact GEO-3. Construction or operation of the Proposed Project would not result in a loss of availability of regionally or locally important mineral resources.	Less than significant/ No Impact	None required	--
Impact GEO-4: Construction or operation of the Proposed Project could directly or indirectly destroy a unique paleontological resource or site or unique geological feature.	Potentially Significant:	GEO-4.1: Monitor for discovery of paleontological resources, evaluate found resources, and prepare and follow a recovery plan for found resources	Less than significant
Impact C-GEO-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on geology, soils, and unique paleontological/geologic resources.	Construction: Significant Operations: Less than significant	GEO-4.1: Monitor for discovery of paleontological resources, evaluate found resources, and prepare and follow a recovery plan for found resources	Less than considerable contribution

3.8 Greenhouse Gas Emissions

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact GHG-1: Construction and operation of the Proposed Project could generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	Less than significant (beneficial)	None required	--
Impact GHG-2: Operation of the Proposed Project could conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.	Less than significant (beneficial)	None required	--
Impact C-GHG-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would result in a significant GHG emissions impact.	Construction and Operations: Less than significant	AQ-2.1: Implement advanced emissions controls for off-road equipment during construction AQ-2.2: Implement off-road equipment engine maintenance and idling restrictions during construction AQ-2.3: Implement advanced emissions controls for trains during construction AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks during construction	--
3.9 Hazards and Hazardous Materials			
Impact HAZ-1a. Construction of the Proposed Project would not create a significant hazard to the public or the environment through routine transport, use, or disposal, or accidental release of hazardous materials.	Less than significant	None required	--
Impact HAZ-1b. Operation and maintenance of the Proposed Project would not create a significant hazard to the public or the environment through routine transport, use, or disposal, or accidental release of hazardous materials.	Less than significant	None required	--
Impact HAZ-2. The Proposed Project is located on sites that are included on a list of hazardous materials sites and, as a result, could create a significant hazard to the public or the environment during	Potentially significant	HAZ-2.1: Conduct site investigations HAZ-2.2: Implement construction risk management plan AQ-2.5: Implement fugitive dust controls during construction	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
construction due to disturbance of hazardous materials.			
Impact HAZ-3. Construction, operation, and maintenance of the Proposed Project would create a potentially significant hazard for children at nearby schools from emissions or handling of hazardous or acutely hazardous materials.	Potentially significant	HAZ-2.2: Implement construction risk management plan AQ-2.5: Implement fugitive dust controls during construction	Less than significant
Impact C-HAZ-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would not result in a significant cumulative impact from hazardous materials	Significant	HAZ-2.1: Implement voluntary oversight agreement HAZ-2.2: Conduct site investigations HAZ-2.3: Implement construction risk management plan AQ-2.5: Implement fugitive dust controls during construction	Less-than-considerable contribution
3.10 Hydrology and Water Quality			
Impact HYD-1a. Construction of the Proposed Project could violate water quality standards or waste discharge requirements, provide substantial additional sources of polluted runoff, or otherwise substantially degrade surface or ground water quality.	Potentially significant	HAZ-2.2: Implement construction risk management plan	Less than significant
Impact HYD-1b. Operation and maintenance of the Proposed Project could violate water quality standards or waste discharge requirements, provide substantial additional sources of polluted runoff, or otherwise substantially degrade surface or ground water quality.	Potentially significant	HAZ-2.2: Implement construction risk management plan	Less than significant
Impact HYD-2a. Construction of the Proposed Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.	Less than significant	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact HYD-2b. Operation and maintenance of the Proposed Project would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin.	Less than significant	None required	--
Impact HYD-3a. Construction of the Proposed Project would substantially alter the existing drainage patterns, in a manner that would result in substantial erosion or siltation on- or off-site; or provide substantial additional sources of polluted runoff; or risk release of pollutants due to Project inundation.	Potentially Significant	HYD-3a.1: Prevent construction materials from being exposed to storm flooding hazards	Less than significant
Impact HYD-3b. Operation of the Proposed Project would substantially alter the existing drainage patterns, including through the addition of impervious surfaces, in a manner that would result in substantial erosion or siltation on- or off-site; create or contribute runoff	Potentially significant	HYD-3b.1: Perform detailed hydraulic evaluations and implement new or modify existing stormwater controls as required to prevent storm drainage system capacity exceedance and reduce pollutant transport	Less than significant
Impact HYD-4: Construction and operation of the Proposed Project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that could result in onsite or offsite flooding, and could impede flood flows.	Potentially significant	HYD-3b.1: Perform detailed hydraulic evaluations and implement new or modify existing stormwater controls as required to prevent storm drainage system capacity exceedance and reduce pollutant transport HYD-4.1: Perform hydrologic and hydraulic studies for project improvements to be located in floodplains, coordinate with regulatory agencies, and obtain required permits	Less than Significant
Impact C-HYD-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a	Significant	HAZ-2.3: Implement construction risk management plan HYD-3a.1: Prevent construction materials from being exposed to storm flooding hazards	Less than considerable contribution

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
significant cumulative impact on hydrology and water quality.		HYD-3b.1: Perform detailed hydraulic evaluations and implement new or modify existing stormwater controls as required to prevent storm drainage system capacity exceedance and reduce pollutant transport HYD-4.1: Perform hydrologic and hydraulic studies for project improvements located in floodplains, coordinate with regulatory agencies, and obtain required permits	
3.11 Land Use and Planning			
Impact LU-1. The Proposed Project would not physically divide an established community.	Less than significant	None required	--
Impact LU-2: Construction and operation of the Proposed Project could result in an impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	Potentially significant	None feasible	Significant and unavoidable (Proposed Project)
Impact C-LU-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would not result in a significant cumulative impact on land use and planning.	Less than considerable contribution	--	--
3.12 Noise and Vibration			
Impact NOI-1a: Construction of the Proposed Project would expose sensitive receptors to substantial temporary increases in ambient noise levels.	Potentially significant	NOI-1.1a: Implement a construction noise control plan	Significant and unavoidable (Proposed Project and alternatives analyzed at an equal level of detail)
Impact NOI-1b: Operation of the Project would result in a substantial permanent increase in ambient noise levels.	Potentially significant	NOI-1.1b: Implement a phased program to reduce train noise along the Valley Link corridor as necessary to address noise increases over FTA's severe impact thresholds	Significant and unavoidable (Proposed Project and alternatives analyzed at an equal level of detail)

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact NOI-2a: Construction of the Proposed Project would expose sensitive receptors to substantial increases in groundborne vibration levels.	Potentially significant:	NOI-2.1a: Implement a construction vibration control plan	Less than Significant
Impact NOI-2b: Operation of the Proposed Project could expose sensitive receptors to substantial increases in groundborne vibration levels.	Less than Significant	None required	--
Impact NOI-3: The Proposed Project would be located within an airport land use plan area or, where such a plan has not been adopted, be within 2 miles of a public airport or public-use airport, but would not result in a safety hazard for people residing or working in the study area.	No Impact	None required	--
Impact C-NOI-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would result in a significant cumulative impact from noise and vibration.	Significant	NOI-1.1a: Implement a construction noise control plan NOI-1.1b: Implement a phased program to reduce train noise along the Valley Link corridor as necessary to address noise increases over FTA's severe impact thresholds NOI-2.1a: Implement a construction vibration control plan	Cumulatively significant and unavoidable construction and operational noise impacts Less than considerable contribution from vibration impacts
3.13 Population and Housing			
Impact POP-1. Construction and operation of the Proposed Project could substantially induce, either directly or indirectly, unplanned population growth in an area.	Potentially significant	None feasible	Significant and unavoidable (Proposed Project)
Impact POP-2. Construction and operation of the Proposed Project could displace a substantial number of existing housing units or people, necessitating the construction of replacement housing elsewhere.	Less than significant/ No impact	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact C-POP-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on population and housing	Significant (operation)	None feasible	Significant considerable contribution
3.14 Public Services			
Impact PS-1: Construction and operation of the Proposed Project could increase service ratios and response times for fire protection, emergency response, and law enforcement, resulting in unmet performance objectives and the need for new or physically altered fire protection or law enforcement facilities.	Less than significant	None required	--
Impact PS-2: Construction and operation of the Proposed Project could change service ratios and performance objectives resulting in the need for new or physically altered schools or other public facilities.	Less than significant	None required	--
Impact C-PS-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on public services	Less than significant cumulative impact	None required	--
3.15 Recreation			
Impact REC-1. Construction and operation of the Proposed Project could substantially impair access to and/or the quality of existing recreational facilities.	Potentially Significant	REC-1.1: Coordinate with the East Bay Regional Park District to provide advance notice of construction activities and maintain safe access to the Iron Horse Regional Trail during construction REC-1.2: Coordinate with San Joaquin County to provide advance notice of construction activities and maintain a	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		<p>safe open channel in the San Joaquin River during construction</p> <p>AES-1.1: Install visual barriers between construction work areas and sensitive residential and recreational receptors</p> <p>AQ-2.1: Implement advanced emissions controls for off-road equipment</p> <p>AQ-2.2: Implement off-road engine maintenance and idling restrictions</p> <p>AQ-2.3: Implement advanced emissions controls for trains</p> <p>AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks</p> <p>AQ-2.5: Implement fugitive dust controls during construction</p> <p>NOI-1.1a: Implement construction noise control plan</p>	
Impact REC-2. Operation of the Proposed Project could increase the use of existing recreational resources such that substantial physical deterioration of the facilities would occur or be accelerated.	Less than Significant	None required	--
Impact REC-3. The Proposed Project would not include recreational facilities or require the construction or expansion of recreational facilities that might have adverse physical effects on the environment.	No impact	None required	--
Impact C-REC-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would not result in a significant cumulative impact on recreational resources	Significant	<p>AES-1.1: Install visual barriers between construction work areas and sensitive residential and recreational receptors</p> <p>AQ-2.1: Implement advanced emissions controls for off-road equipment</p> <p>AQ-2.2: Implement off-road engine maintenance and idling restrictions</p> <p>AQ-2.3: Implement advanced emissions controls for trains</p>	Less than considerable contribution

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
		AQ-2.4: Utilize modern fleet for on-road material delivery and haul trucks AQ-2.5: Implement fugitive dust controls during construction NOI-1.1a: Implement construction noise control plan	
3.16 Safety and Security			
Impact SAF-1: Construction and operation of the Proposed Project could impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan or substantially impair an adopted emergency response plan or emergency evacuation plan.	Less than significant	None required	--
Impact SAF-2: Construction and operation of the Proposed Project would not expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires or would exacerbate wildfire risks due to slope, prevailing winds, and other factors and thereby expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.	Less than significant	None required	--
Impact SAF-3: The Proposed Project could be located within 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, resulting in a safety hazard or excessive noise for people residing or working in the Project area.	Less than significant	None required	--
Impact SAF-4: Construction and operation of the Proposed Project would not substantially increase hazards to workers, passengers, or adjacent human and	Less than significant	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
environmental receptors along rail routes due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses.	Less than significant	None required	--
Impact SAF-5: Construction and operation of the Proposed Project would require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate the fire risk or result in temporary or ongoing impacts on the environment.	Less than significant	None required	--
Impact SAF-6: Construction and operation of the Proposed Project could 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.	Less than considerable contribution	None required	--
Impact C-SAF-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, would not result in a significant cumulative impact on safety and security.	3.17 Transportation and Traffic		
Impact TRA-1: Construction and operation of the Proposed Project could conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities.	Potentially significant	TRA-1.1: Transportation management plan for project construction TRA-1.2: Mainline railway disruption control plan for project construction TRA-1.3: BART disruption control plan for project construction	Less than significant

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
Impact TRA-2: The Proposed Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b).	Less than significant	None required	--
Impact TRA-3: The Proposed Project would not substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than significant	None required	--
Impact TRA-4: The Proposed Project would not result in inadequate emergency access.	Less than significant	None required	--
Impact C-TRA-1 Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on transportation and traffic	Significant	TRA-1.1: Transportation management plan for project construction TRA-1.2: Mainline railway disruption control plan for project construction TRA-1.3: BART disruption control plan for project construction	Less than considerable contribution
3.18 Utilities and Service Systems			
Impact USS-1: Construction or operation of the Proposed Project could result in relocation or construction of new or expanded electric power, natural gas, or telecommunication facilities, the construction of which could cause significant environmental effects.	Potentially significant	USS-1: Implement Utility Relocation Plan	Less than significant
Impact USS-2a: Construction of the Proposed Project could result in relocation or construction of new or expanded water or wastewater treatment facilities, the construction of which could cause significant environmental effects; would not have sufficient water supplies available to serve the Proposed Project and reasonably foreseeable future development during normal, dry, and multiple dry years; or	Less than significant	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
<p>would result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it does not have adequate capacity to serve the Proposed Project’s projected demand in addition to the providers existing commitments.</p>	Less than significant	None required	--
<p>Impact USS-2b: Operation of the Proposed Project would result in relocation or construction of new or expanded water or wastewater treatment facilities, the construction of which could cause significant environmental effects; would not have sufficient water supplies available to serve the Proposed Project and reasonably foreseeable future development during normal, dry and multiple dry years; or would result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it does not have adequate capacity to serve the Proposed Project’s projected demand in addition to the providers existing commitments.</p>	Less than significant	None required	--
<p>Impact USS-3: Construction and operation of the Proposed Project could result in relocation or construction of new or expanded stormwater drainage facilities, the construction of which could cause significant environmental effects.</p>	Less than significant	None required	--
<p>Impact USS-4a: Project construction could generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; and/or violate federal, state, and local</p>	Less than significant	None required	--

Impacts	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
management and reduction statutes and regulations related to solid waste.			
Impact USS-4b: Project operation could generate solid waste in excess of State or local standards or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals; and/or violate federal, state, and local management and reduction statutes and regulations related to solid waste.	Less than significant	None required	--
Impact C-USS-1: Implementation of the Valley Link Project, in combination with other foreseeable projects in the surrounding area, could result in a significant cumulative impact on utilities and service systems	Potentially significant	USS-1: Implement a Utility Relocation Plan HAZ-2.3: Implement Construction Risk Management Plan	Less-than-considerable contribution