METROPOLITAN TRANSPORTATION COMMISSION

Southern Alameda County Integrated Rail Analysis

Phase 2 Report

July 20, 2023

In partnership with:

San Joaquin Regional Rail Commission

Alameda County Transportation Commission

CalSTA

Capitol Corridor

Caltrans

Executive Summary

What is the Purpose of the SoCo Rail Study?

Passenger rail is an essential element of the Bay Area's and California's surface transportation system. In collaboration with project partners and stakeholders, the Southern Alameda County Integrated Rail Analysis (SoCo Rail Study) builds on the foundation of the 2018 California State Rail Plan (CSRP), which established a 2040 statewide vision for an integrated statewide passenger rail and express bus network. As part of this vision, the 2018 CSRP identified numerous rail-to-rail hub stations around the state, including an East Bay Hub located in Southern Alameda County within the Tri-Cities area (i.e., the Cities of Union City, Fremont, and Newark) which sits at the nexus of the megaregional rail services from Sacramento and Central Valley and the Bay Area rail and bus services.

What is the SoCo Rail Study?

The Southern Alameda County Integrated Rail Analysis (SoCo Rail Study) evaluates passenger rail needs in Southern Alameda County and the Northern California Megaregion and opportunities for seamless rail and bus service connectivity with a goal of identifying and developing **a Rail-to-Rail Intermodal Station in the Mid-Term Horizon**

During Phase 1 of the SoCo Rail Study, Metropolitan Transportation Commission (MTC) and its partners identified the existing Union City Intermodal Station, which includes the San Francisco Bay Area Rapid Transit (BART) Station, as the best location for the rail-to-rail East Bay Hub as identified in the 2018 CSRP. In partnership with BART and AC Transit, the City of Union City adopted the *Intermodal Station District Plan* in 2002 to create a pedestrian- and transit-oriented community surrounding the Union City BART Station with future rail and transit connections. The Intermodal Station, with the new rail-to-rail connection, is at the center of Union City's Station District. **Figure ES-1** shows the area in proximity to the existing east entrance to the Union City BART Station. **Figure ES-2** shows a rendering of affordable housing development in the Station District.

Figure ES-1: East Entrance to the Union City BART Station

Source: City of Union City, 2023

Figure ES-2: Rendering of Affordable Housing Development in the Station District

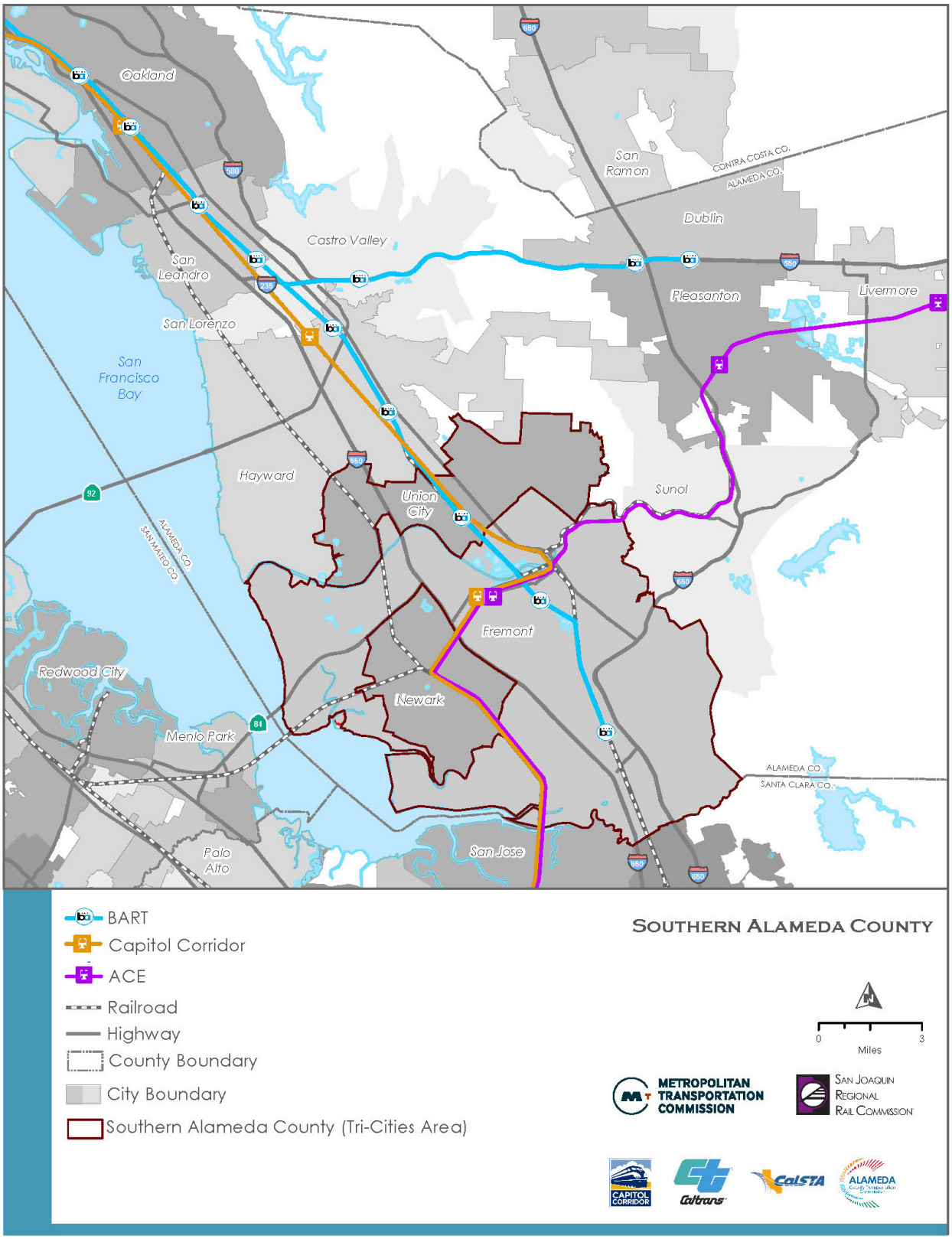
Source: City of Union City, 2023

The goals described in **Figure ES-3**, developed in collaboration with the project partners and stakeholders, guided development of the SoCo Rail Study from the conclusion of Phase 1 into and through Phase 2.

Figure ES-3. Goals and Objectives of the SoCo Rail Study

The general study area is in Southern Alameda County, including the rail services in the area, is shown in **Figure ES-4**. In the Mid-Term Horizon (around 2030), the Union City Intermodal Station will allow for additional intercity passenger rail round trips into the Bay Area, provide a connection between BART, local and regional bus service, and intercity passenger rail, and facilitate a high level of connectivity to key travel markets throughout the Bay Area. The recommendation of Union City Intermodal Station as the location for the previously identified East Bay Hub has been incorporated into the Draft 2023 CSRP (published March 10, 2023).

Figure ES-4. Southern Alameda County and Major Rail Lines



Source: HDR, 2023

In strong collaboration with the Cities of Union City, Fremont, and Newark, and the California State Transportation Agency (CalSTA), Caltrans, Alameda County Transportation Commission (Alameda CTC), San Joaquin Regional Rail Commission (SJRRC), Capitol Corridor Joint Powers Authority, and other project partners, MTC led Phase 2 of the SoCo Rail Study advanced planning and conceptual design of the intercity rail connection at the Union City Intermodal Station. The proposed Mid-Term service plan for proposed extension of ACE rail service to the proposed Union City Intermodal Station consists of three daily round trips, including one round trip serving Chico (Natomas in the Mid-Term Horizon)[1] and two round trips serving Merced, connecting with high-speed rail (HSR) trains.

This service plan is designed to broaden the range of potential riders by focusing intercity rail to serve several markets along the planned routes. This intercity service covers a large swath of the Sacramento and San Joaquin Valleys, providing intercity service to the demographically diverse Central Valley of California. Providing this rail service improves geographic equity by connecting key locations in the Central Valley including Sacramento, San Joaquin, Stanislaus, and Merced Counties to each other, the Bay Area, and the greater California rail network via future high-speed rail (HSR) connections in Merced.

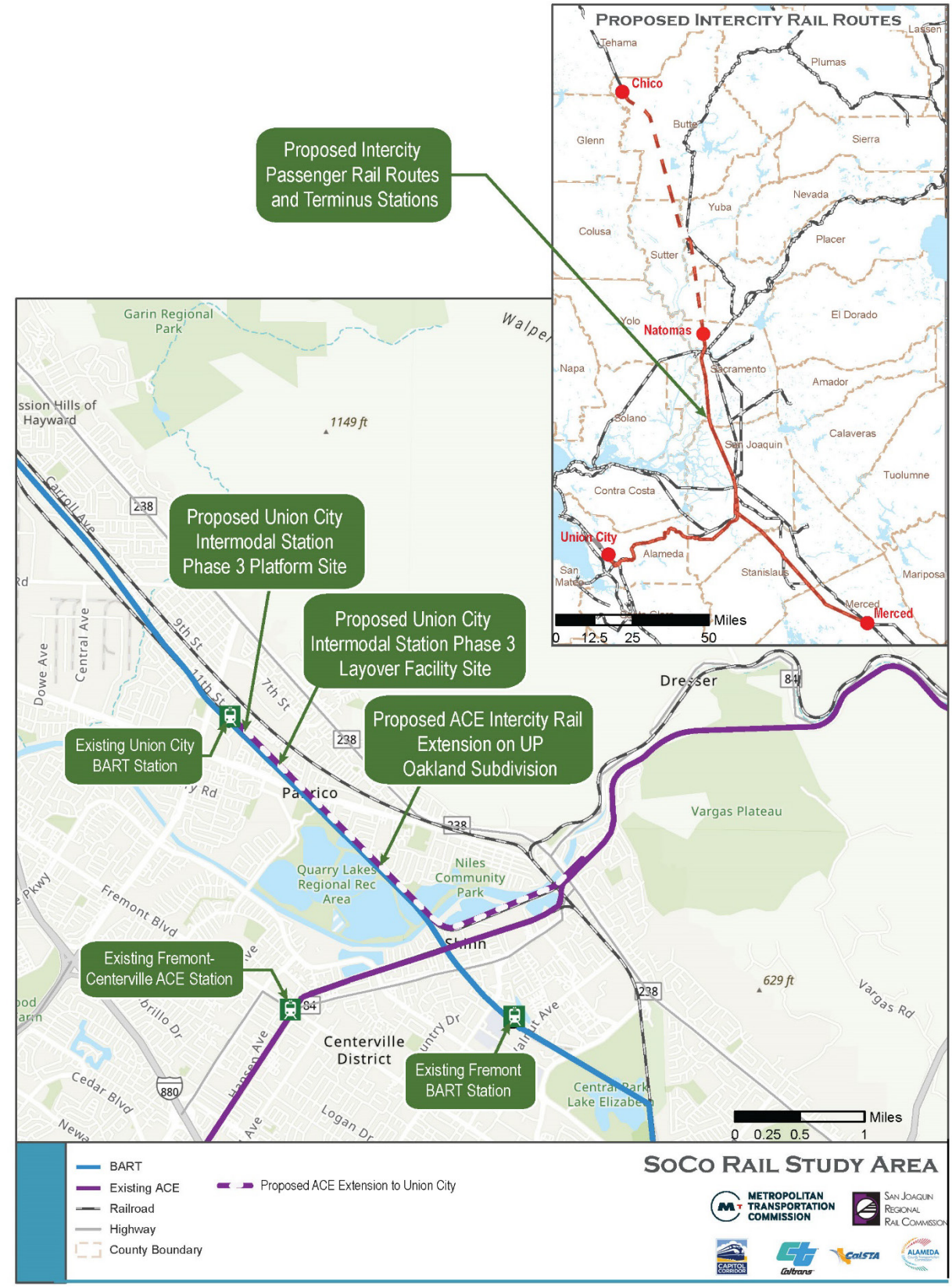
What Project is Proposed by the SoCo Rail Study?

Based on the location of the rail-to-rail hub connection, as per the 2018 CSRP, and in coordination with the City of Union City, the proposed project is referred to as the **"Union City Intermodal Station Phase 3 Project"**. The Union City Intermodal Station Phase 3 Project includes necessary infrastructure improvements to deliver three intercity rail round trips to and from the Union City Intermodal Station. **Figure ES-5** provides an overview of the key elements of the proposed project.

The SoCo Rail Study Area includes the Cities of Union City, Fremont, and Newark (Tri-City Area) within the South County Planning Area of Alameda County (as shown in **Figure ES-1),** as well as much of the Central Valley of California Between Merced to the south and Chico to the north (see **Figure ES-5**). The limits of the proposed project's service improvements, and the resulting areas that would receive the benefits of the project, encompass much of the Northern California Megaregion, which can be seen in the inset in **Figure ES-5**. With a timed connection to HSR in Merced, project benefits extend beyond the region into southern California.

[1] Note that the Union City Intermodal Station Phase 3 Project proposes service to Natomas with an extension to Chico, which is under concurrent study by SJRRC as part of the North Valley Rail Corridor Study. The operating plan described herein assumes service extended to Chico; however, the extension from Natomas to Chico will be advanced as a separate project.

Figure ES-5. Elements of the Union City Intermodal Station Phase 3 Project



Source: HDR, 2023

Proposed Operating Plan

A preliminary operating schedule for the Mid-Term Horizon for the SJRRC and San Joaquin Joint Powers Authority (SJJPA) Valley Rail Program has been developed with the incorporation of the three additional round trips each day (same on weekdays and weekends) to and from Union City.

The operating schedule provides the ability for travel between multiple origins and destinations in the Bay Area, Tri-Valley, Central Valley, and beyond – *including Southern California* – with connections to high-speed rail in Merced and BART in Union City. This service will provide travelers throughout the Central Valley with rail access to/from Southern Alameda County where connections can be made to bus and rail services spanning the Bay Area.

Inbound Trains (toward the San Francisco Bay Area, terminating at Union City)

- Originates in Chico at 6:02 AM and arrives in Union City at 10:09 AM
- Originates in Merced (with a connection to HSR) at 9:50 AM and arrives in Union City at 12:24 PM
- Originates in Merced (with a connection to HSR) at 6:50 PM and arrives in Union City at 9:24 PM

Outbound trains (toward the Central Valley, originating at Union City)

- Departs Union City at 7:14 AM and arrives in Merced (with a connection to HSR) at 9:56 AM
- Departs Union City at 3:40 PM and arrives in Chico at 7:49 PM
- Departs Union City at 4:14 PM and arrives in Merced (with a connection to HSR) at 6:56 PM

Proposed Infrastructure

EXISTING FACILITIES

The Union City Intermodal Station is located immediately south of Decoto Road and west of 11th Street in Union City. BART is a heavy-rail public transit system that connects the San Francisco Peninsula with communities in the East Bay and South Bay. The Union City Intermodal Station is served by BART's Orange Line (Richmond – Berryessa/North San Jose) and Green Line (Berryessa/North San Jose – Daly City) routes. The Union City Intermodal Station is also served by AC Transit bus routes (including the Dumbarton Express bus service between the Union City Intermodal Station and the City of Palo Alto) and local Union City Transit bus routes, along with other bus services.

The Union City Intermodal Station and surrounding area have been designated as a Priority Development Area (PDA) and Transit-Oriented Community (TOC) and have been the focus of extensive planning efforts by the City of Union City to support transit-oriented development (TOD). Residential development and a public plaza are located immediately to the north and east of the station, while vacant lots are available south of the station for future development. One vacant parcel is the site of a Waste Consolidation Area (WCA) containing contaminated waste slag from a former steel mill site that would need to be remediated prior to any development.

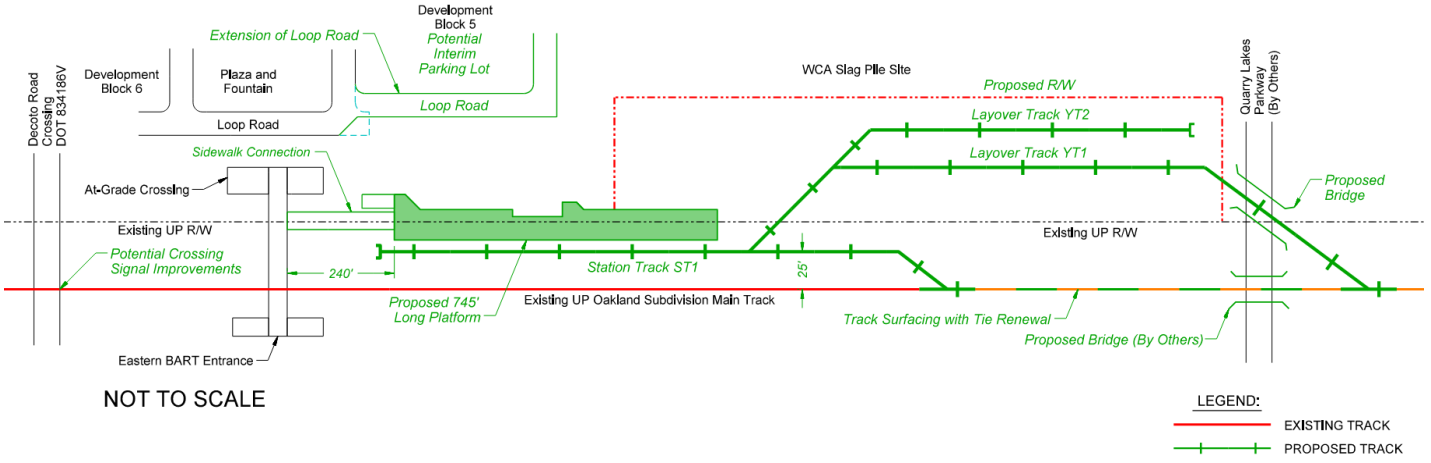
The Union Pacific Railroad (UP) Oakland Subdivision is located just east of and adjacent to the Union City BART Station. This rail corridor provides freight services to local customers and is proposed to be used by the Union City Intermodal Station Phase 3 Project for the operation of the intercity rail service to Union City.

INTERCITY RAIL PLATFORM

The Union City Intermodal Station Phase 3 Project would be located along the UP Oakland Subdivision and would include a 745-foot-long platform located between the UP Oakland Subdivision to the west and a municipal park / plaza and Union City-owned vacant lot to the east. The platform would

accommodate the initial operations (three round trips in the Mid-Term Horizon) and future expansion (hourly service in the long-term scenario). The platform would accommodate any of three trainset types under consideration for the proposed service. **Figure ES-6** shows a plan view of the proposed Union City Hub platform in the Mid-Term Horizon.

Figure ES-6. Union City Intermodal Station Intercity Rail Station, Platform, and Layover Facility – Initial Operations Configuration



Source: HDR, 2023

INTERCITY RAIL STATION TRACKS

The recommended design maximizes operational flexibility at Union City by allowing for a two-track station in the long-term, which adequately addresses the 2040 vision for hourly service, with one station track constructed in the Mid-Term Horizon for the initial three daily round trips.

INTERCITY RAIL LAYOVER FACILITY

The layover facility, to accommodate train storage when not in service, would be located just south of the Union City Intercity Rail station platform (see **Figure ES-6)**. Two layover tracks are included in the project design. In order to construct the layover facility, a portion of the City of Union City-owned WCA site will need to be removed and remediated. Either the full site would be removed in collaboration with the City of Union City, which would fund the removal of the portion not necessary for the Union City Intermodal Station Phase 3 Project, or a two-phase approach would be implemented if the City is unable to secure funding and therefore only the necessary portion for the Union City Intermodal Station Phase 3 Project would be removed in the first phase.

ADDITIONAL INFRASTRUCTURE IMPROVEMENTS

The proposed Union City Intercity Rail Service would operate on UP-owned rail lines. The proposed project includes upgrades to the UP Oakland Subdivision between the Union City Intermodal Station and Niles Junction to accommodate intercity rail service at speeds appropriate for desirable service.

SJRRC and SJJPA are implementing major UP infrastructure improvements throughout the Central Valley as part of the Valley Rail Program, including the Stockton Diamond Grade Separation Project that will

address freight and passenger rail congestion and delays. However, there is a possibility that the proposed project may result in Potential impacts to the rail network and UP may require infrastructure improvements at other locations along the routes of Union City Intercity Rail Service route required to support the service. Potential additional infrastructure requirements will be examined in detail in the next phase of project development, which is environmental clearance. During this phase, early and routine coordination with host railroad UP will be critical to confirming the project definition and scope and the project development approach and schedule, as well as other items requiring further study and analysis.

Intermodal Passenger Connectivity

The proposed project uses a California Public Utilities Commission (CPUC) and UP-approved at-grade pedestrian crossing across the UP tracks for connectivity between the intercity rail service and BART. **Figure ES-7** illustrates this pedestrian crossing and the sidewalk proposed as part of the Union City Intermodal Station Phase 3 Project that would be used to connect intercity rail passengers to BART. This design also provides the Union City TOD east of the station convenient access to the transit facilities.

Figure ES-7. Approved At-Grade Pedestrian Crossing

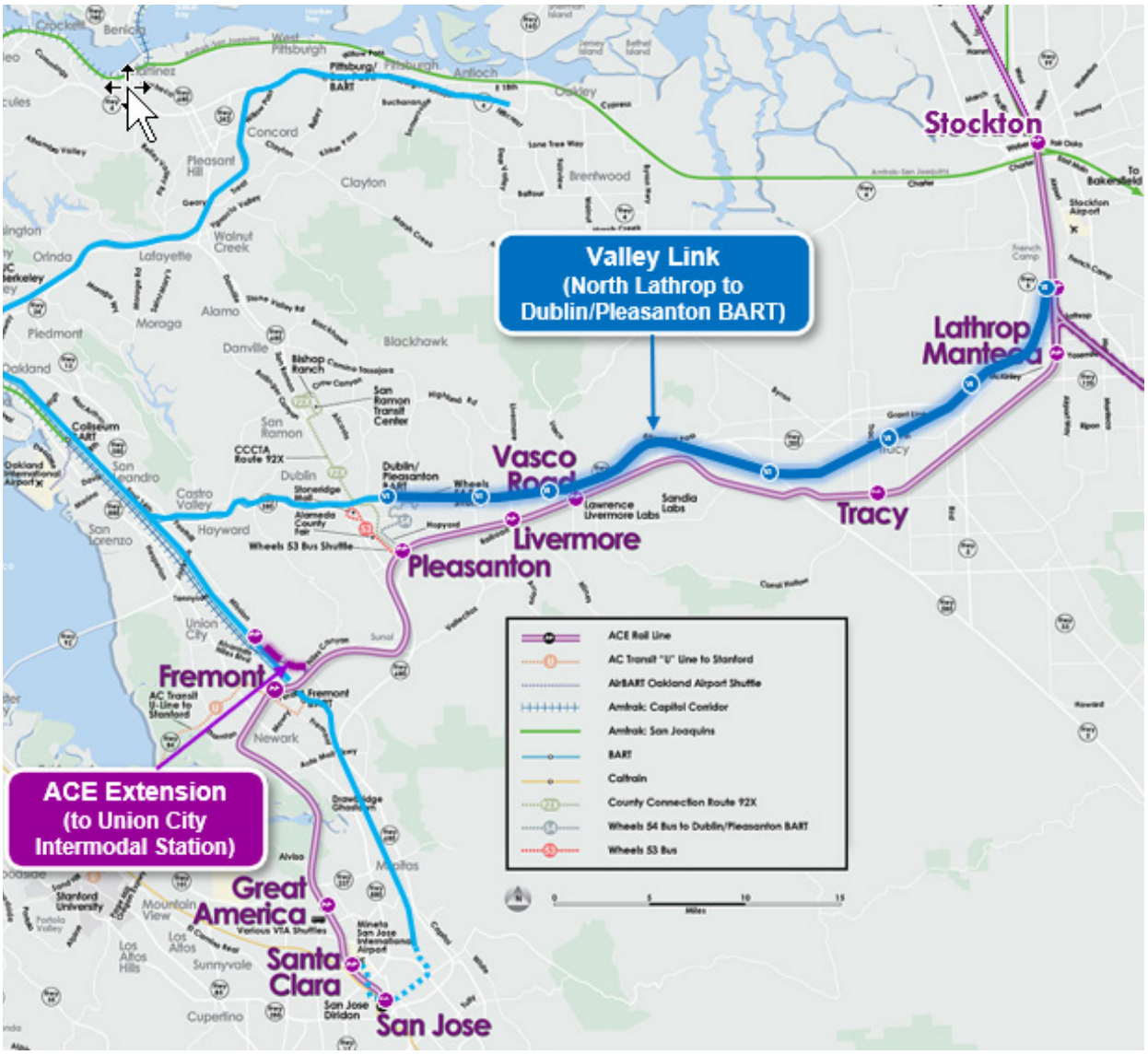
Source: HDR, 2023

In addition, the proposed Union City Intermodal Station Phase 3 Project includes an extension of Duncan Way, a local roadway parallel and adjacent to the UP Oakland Subdivision, to allow for a pick-up and drop-off area just east of the platform and efficient connectivity with parking, the plaza area, the TOD development area, and bus transit options.

Compatibility with Valley Link

The Valley Link passenger rail service being developed between Dublin/Pleasanton BART Station and North Lathrop will complement the extension of ACE's Union City Intercity Service (see **Figure ES-8**). Both rail systems are envisioned in the Draft 2023 CSRP. Valley Link will provide connections to the Tri-Valley and areas such as Oakland and San Francisco, whereas the ACE connection to Union City BART will provide links to the Tri-City area and markets in the South Bay, as well as the Peninsula (via connection to Transbay bus services). Valley Link will run medium-distance service with high frequencies to match BART service, while ACE will run less frequent intercity service with longer-distance connections throughout the Northern California Megaregion, including to high-speed rail service in Merced.

Figure ES-8. Proposed Valley Link Project



What Are the Benefits of the Proposed Project?

Consistency with California State Rail Plan

The Draft 2023 CSRP Passenger Network Strategy articulates service goals, phased implementation, and capital investments needed to achieve the Vision for a fully integrated statewide passenger network. The Union City Intermodal Station Phase 3 Project is consistent with this objective by providing rail integration at Union City (transfers to BART and bus services), Merced (transfers to HSR), and other intermediate stations that facilitate intermodal connectivity.

The 2018 CSRP called for the study of potential East Bay Rail Hub locations to identify a rail-to-rail hub linking the Central Valley rail services in Southern Alameda County with the extensive Bay Area transit services. The 2021 SoCo Rail Study Phase 1 Report[2] recommended the Union City Intermodal Station Phase 3 Project as the only "rail-to-rail" hub concept for the Mid-Term Horizon and this recommendation was integrated into the Draft 2023 CSRP. [3] A Near-Term Plan goal of the Draft 2023 CSRP is to finalize service planning, design, and operational analysis for the identified East Bay Rail Hub, which is part of Phase 2 of the SoCo Rail Study.

The Draft 2023 CSRP is reimagining the role of transit and how to equitably serve historically marginalized and excluded populations. The intercity rail service that is part of the Union City Intermodal Station Phase 3 Project is consistent with this vision, providing new daily service routes, including weekends, that would appeal to a variety of users for different types of travel, including, but not limited to, leisure and family travel, recreation, access to health services, access to education, and other non-commuter business travel.

KEY BENEFITS OF THE UNION CITY INTERMODAL STATION PHASE 3 PROJECT

- ***Consistency with 2018 CSRP's vision for an East Bay Hub***
- ***Consistency with the Draft 2023 CSRP's focus on Equity in Rail***
- ***Consistency with Union City's TOD vision, building on 20 years of ongoing transit-focused investments***
- ***7-day-a-week, intercity rail service to support a variety of trip purposes***
- ***Increase in overall ACE system ridership, reducing megaregional Vehicle Miles Traveled***
- ***Access to Bay Area destinations through BART and bus services at the Union City Intermodal Station***
- ***Timed connections with HSR in Merced***
- ***Opportunities for improved multimodal connectivity***

[2] https://mtc.ca.gov/sites/default/files/documents/2021-11/SoCo-Rail-Study-Phase-1-Report.pdf
[3] See California State Rail Plan available at dot.ca.gov available online for public comment (as of March 10, 2023).

Integration of Service Offering

The proposed Mid-Term service plan for intercity rail service to the Union City Intermodal Station Phase 3 consists of one round trip serving Chico (via Stockton, Sacramento, and the future North Valley Rail Project) and two round trips serving Merced (via the Lathrop to Ceres and Ceres to Merced Extensions to provide a connection with HSR). The Chico round trip and one of the Merced round trips would begin at the outer terminus (Chico or Merced), while the remaining Merced round trip would begin in Union City. The round trip to / from Chico will provide service to / from Stockton, Midtown Sacramento and Natomas (via the Sacramento Extension), and Marysville–Yuba City and Chico[4] (via the North Valley Rail Corridor).

The proposed new intercity service to / from Union City would consist of trains operating daily and not specifically timed to serve commute periods or travel patterns. The proposed trains would serve longer-distance interregional markets, with two of the round trips providing timed connections with HSR in Merced. Passengers on multi-day itineraries would take the train in one direction and return on a subsequent day, as many intercity passengers currently do on the existing *San Joaquins* (Amtrak) service.

In addition to the distinct focus on longer-distance travel, the proposed Union City Intercity Rail service will provide important transit connections to Transbay bus services (primarily via Dumbarton Express buses) for access to the Peninsula and to BART primarily for access to the South Bay. It is anticipated that the majority of riders transferring from the intercity rail service to BART will be traveling to destinations south of the Union City Intermodal Station given the general orientation of ACE service as it enters and operates in the Bay Area. Given this, the Valley Link Project will be complementary, in that it provides a more direct connection to BART from the Central Valley and will be the main connection point to access much of the Bay Area, including the San Francisco and Oakland markets.

Provision of Service for Disadvantaged and Marginalized Populations

The proposed additional trains during the midday and evening hours would provide improved transportation for lower income riders, providing increased access to a variety of destinations, including education, health care services, recreation, and personal / leisure activities, as well as job opportunities. The proposed intercity rail service would even benefit disadvantaged and marginalized communities of the San Joaquin Valley (even if these residents do not ride the train themselves) by the anticipated increase in transit mode share which will benefit air quality and provide opportunities for affordable housing and improved economies.

A 2019 SJJPA market survey determined that only 11% of respondents were riding on a weekly basis. For intercity rail passengers, Fridays, weekends, and holidays tend to be the busiest days, whereas commuter rail ridership is busiest during weekdays. Nearly 60% of riders reported annual household incomes below $50,000 and 48% of respondents noted that they were not employed, illustrating the fact that the service provides for purposes other than business or commuting. Moreover, 76% of respondents reported that they were traveling for personal events and leisure. The proposed SoCo Rail project, proposed as the Union City Intermodal Station Phase 3 Project with intercity passenger rail

[4] Chico is currently the preferred terminus for the NVPR Project, but an Oroville terminus is also being considered in the event that Chico is determined to be infeasible.

service and necessary infrastructure, would provide a service similar to the *San Joaquins* service, appealing to the needs of the diverse riders, including historically underserved populations.

The proposed intercity rail service to and from Merced and Chico would connect to the Union City BART Station area, its connected BART communities, and many underserved and marginalized communities throughout the Megaregion, improving the mobility of those needing access to a variety of destinations in the Bay Area, Stockton, Sacramento, Chico, Modesto, and Merced, as well as points south (e.g., Fresno and Bakersfield) through HSR connections in Merced.

Consistency with Union City's Development and Transportation Plans

The City of Union City is an active participant in the planning process for the proposed Union City Intermodal Station Phase 3 Project. The development of the platform, track, and layover facility design has been advanced in coordination with Union City and with consideration of their development and transportation plans. Implementing the East Bay Hub at the Union City Intermodal Station is consistent with the Union City *Station District Specific Plan* for the 470-acre area surrounding the Union City BART Station. The *Station District Specific Plan* provides one of the largest opportunities for new transit-oriented development in the Bay Area. The *Station District Specific Plan* includes 1,700 recently built or entitled housing units, as well as 1.2 million square feet of planned office space. The plan notes the importance of a passenger rail connection at Union City that would make it a "transit-rich node with options for connectivity to the rest of the region."

This third phase of the City's vision for a Union City Intermodal Station builds on the earlier phases that focused improvements in the Station District, including the creation of an enhanced bus terminal with improved multimodal access and parking in Phase 1 and the expansion of the BART Station east access to better integrate the station with the surrounding transit-oriented development east of the station.

The City of Union City is advancing two transportation projects in close proximity to the Union City Intermodal Station and within the *Station District Specific Plan* area. In 2017, the California Public Utilities Commission (CPUC) and UP approved a project to construct an at-grade crossing of the UP Oakland Subdivision at the rear of the Station to provide direct connectivity between the BART Station and Union City's development, including BART parking, east of the station. The City is also advancing Quarry Lakes Parkway, a new four-lane multimodal corridor with bicycle lanes and a separated Class I multi-use trail. Running parallel to Decoto Road, Quarry Lakes Parkway will provide congestion relief to nearby Decoto Road, as well as secure critical multimodal access to the east side of the Union City Intermodal Station through a direct 11th Street connection.

Increase in Passenger Rail Ridership

Ridership forecasts produced for the SoCo Rail Study indicate very strong ridership potential as a result of the implementation of the Union City Intercity Rail Service as part of the Union City Intermodal Station Phase 3 Project. Additionally, strong ridership is forecasted at the Union City Intermodal Station. Even when accounting for post-pandemic recovery trends, the Union City Intercity Rail Service trains would attract strong overall ridership across the Northern California Megaregion, spanning from Chico in the Northern Central Valley to the HSR transfer hub at Merced. The busiest ridership travel markets to/from Union City would include passengers traveling to and from HSR in

Merced, the Tri-Valley (Pleasanton and Livermore), and the San Joaquin Valley (Tracy, Stockton, Modesto, and Merced).

Overall ridership across the combined ACE and *San Joaquins* system as a result of the Union City Intermodal Station Phase 3 Project is estimated to increase by approximately 1.26 million passengers annually. The three roundtrip trains associated with the Union City Intercity Rail Service are projected to carry 1.86 million passengers annually. This higher ridership number than that of the systemwide increase is a result of a small portion of riders being pulled from other trains by new Union City Intercity Rail Service. The average daily ridership at the Union City Intermodal Station (total of boardings and alightings) would be approximately 1,650 passengers.

The increased ridership from the Union City Intermodal Station Phase 3 Project would result the avoidance of a significant amount of vehicle miles travelled, thereby benefit the region by reducing greenhouse gas emissions and traffic congestion.

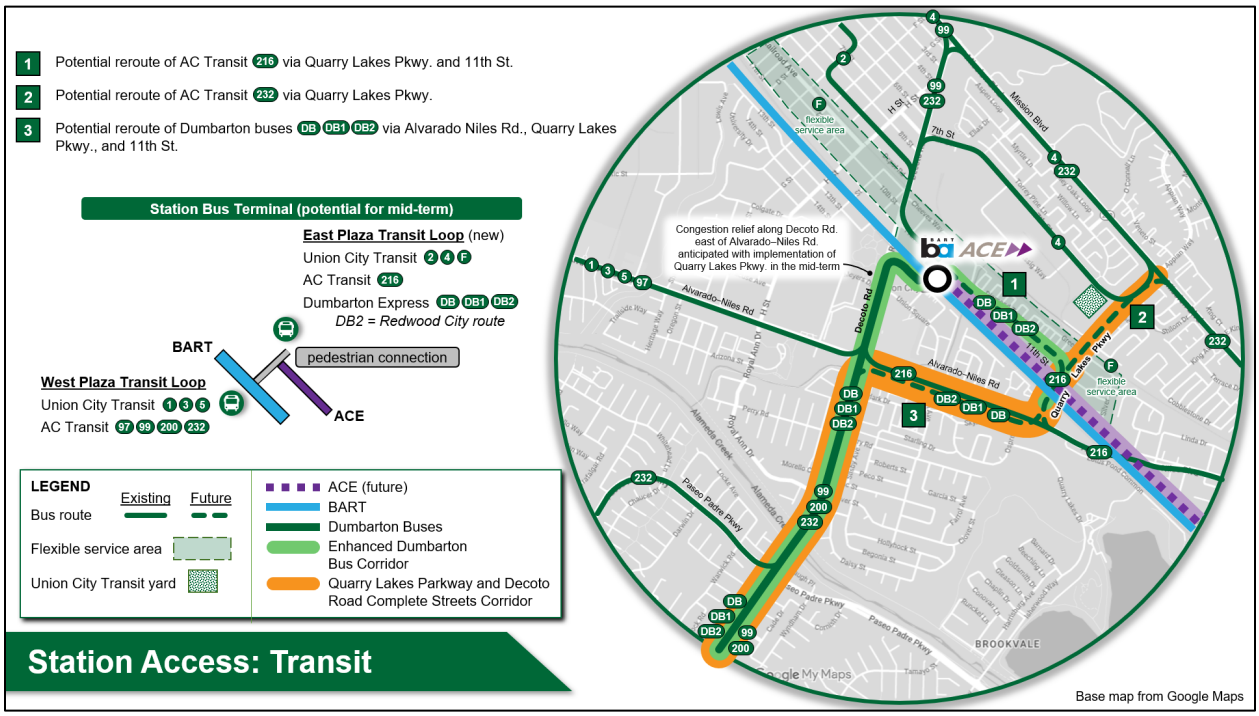
Opportunities for Improved Multimodal Connectivity in Union City

The SoCo Rail Study is coordinating the development of the Union City Intermodal Station Phase 3 Project with local plans for bicycle and pedestrian access to provide greater multimodal connectivity. In addition, the already-completed segment of Duncan Way (also referred to a "Loop Road") outside the station's east entrance has curb space available for future bus bays, and the design concept proposed with the Union City Intermodal Station Phase 3 Project includes extension of Duncan Way south along the east edge of the platform to provide additional space for general pick-up / drop-off. In addition, with the City of Union City's plans to construct Quarry Lakes Parkway to connect with Alvarado-Niles Road (further extension of this facility southward is also under consideration with stakeholders on its configuration and timing). In the mid-term, the benefits of Quarry Lakes Parkway to buses serving the Union City Intermodal Station are potentially two-fold.

First, is anticipated that some relief in congestion along Decoto Road east of Alvarado-Niles Road will be realized as some traffic will divert to Quarry Lakes Parkway from Decoto Road. This may help buses serving the west entrance to the Union City Intermodal Station operate more efficiently as they navigate in and out of the station. Secondly, there is an opportunity to utilize Quarry Lakes Parkway as an alternative route for some local and Transbay Dumbarton Express buses that may serve the planned bus bays on the eastside of the Union City Intermodal Station in the future[5] to bypass the congested section of Decoto Road east of Alvarado-Niles Road where it is infeasible to add bus-only lanes in the mid-term due to right-of-way constraints. **Figure ES-9** illustrates one possible scenario where Dumbarton Express buses would be relocated to the east side, along with several routes for AC Transit and Union City Transit.

[5] During the development of this study, stakeholders have indicated a need to further study the exact nature of providing any bus service on the east side of the Union City Intermodal station.

Figure ES-9. Possible Bus Configuration at the Union City Intermodal Station and Mid-Term Utilization of Quarry Lakes Parkway



Source: AECOM, 2023

The addition of intercity rail service at the Union City Intermodal Station and the additional riders using the station as a result of this service may warrant additional bus service routes to serve the needs of the transit riders. The additional bus service may include express routes, new local routes, or just minor adjustments to existing routes to provide times connections to the intercity rail service at the Union City Intermodal Station.

Promotion of Sustainability and Resiliency

The Union City Intermodal Station Phase 3 Project would provide tangible benefits in GHG emissions reduction over the No-Build condition by increasing the overall ridership across the entire ACE system by approximately 1.26 million passengers annually[6]. With connections to BART in Union City, multiple bus services in Union City, HSR in Merced, and additional transit connections along its service routes, the new transit service provides a sustainable alternative to driving. The Union City Intercity Rail Service would provide direct rail-to-rail connections with HSR for Bay Area residents and visitors and is therefore critical to ensuring the success of the HSR EOS.

[6] This is based on ridership forecasts that included a round trip train running all the way to Chico from Union City, which is beyond the proposed project area. Ridership forecasts and VMT calculations will be updated during environmental clearance to reflect a project area with a northern boundary of the Natomas/Sacramento Station.

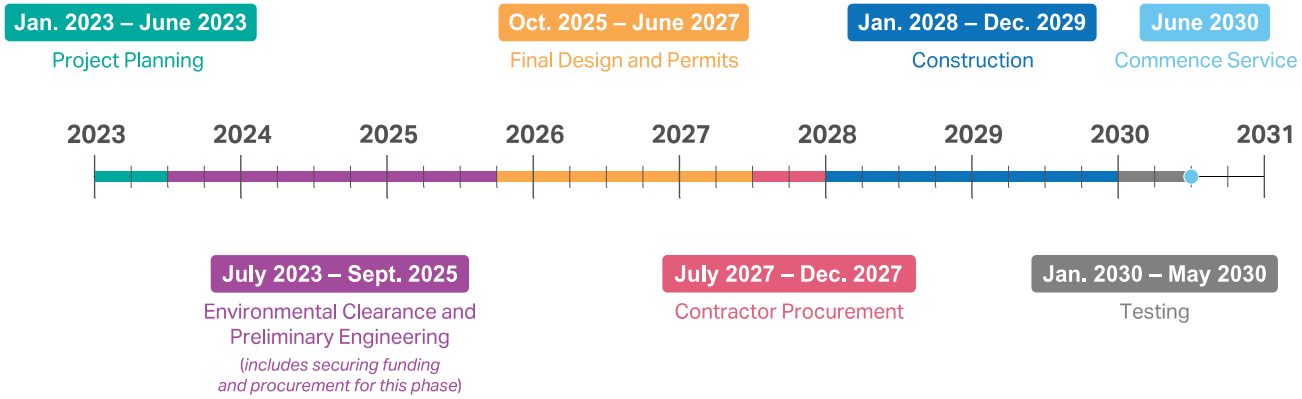
What's Next for the Union City Intermodal Station Phase 3 Project?

To achieve initiation of service by the Mid-Term Horizon (around 2030), the project must progress through a sequential series of phases following the conclusion of this planning-phase study:

- Environmental clearance and preliminary engineering
- Final design and permits
- Contractor procurement
- Construction
- Testing
- Commence Service

A conceptual project timeline illustrating the sequence and approximate duration of these key phases is shown in **Figure ES-10**.

Figure ES-10. Union City Intermodal Station Phase 3 Project Implementation Timeline



Source: AECOM, 2023

In the next phase of project development, SJRRC as the project owner would advance State-level environmental clearance through the California Environmental Quality Act (CEQA). Should SJRRC desire to use or maintain the option to use Federal funding, a National Environmental Policy Act (NEPA) clearance would also be required. To satisfy these requirements for CEQA and NEPA, the project should include all improvements necessary for its operation and the environmental analysis should cover both construction of any necessary infrastructure and the effects of operations of the project (e.g., air quality, greenhouse gas emissions, and noise). Engagement with UP on the Union City Intermodal Station Phase 3 Project will be essential once the environmental phase is underway to determine what additional improvements may be required and where.

As the owner and operator of ACE, SJRRC is assumed to be the CEQA lead agency for the Union City Intermodal Station Phase 3 Project. It should be noted that the City of Union City may participate as a funding partner and has discretionary authority on elements of the proposed station that are located

within the City's jurisdiction. Because the City may take discretionary actions (decisions) related to the project, the City may also choose to participate in the project's CEQA process as a Responsible Agency.

The NEPA lead agency must be a Federal agency. Recognizing that the proposed intercity rail service would use UP's freight lines for the service, the Federal Railroad Administration (FRA) may be the lead agency. In 2019, FRA delegated NEPA assignment to the California High-Speed Rail Authority (CHSRA), with oversight by the California State Transportation Agency (CalSTA), for the statewide HSR system and projects connecting to HSR stations. While two of three proposed trains serving the Union City Intermodal Station Phase 3 Project would directly connect to a HSR station (Merced), the remaining train would operate between Chico and Union City and would not have a direct connection to a HSR station. As the Union City Intermodal Station Phase 3 Project moves towards the environmental phase, coordination between FRA and CHSRA is required to determine which agency would participate as the NEPA lead agency.

During project development, it will be imperative to secure a sustainable funding stream to support the project. The project is more likely to be delivered on schedule and within budget if the program continues to secure funding commitments in advance of each stage. Therefore, the program should engage in all necessary outreach and achieve buy-in from technical, State, Federal, executive, and legislative decision makers in advance of the construction and operations phases.

For the next stage (environmental clearance), project partners are already exploring possible regional funding sources such as Alameda CTC's Measure BB. . For subsequent phases of project development (Final Design and Construction), funding opportunities such as the State's Solutions for Congested Corridors Program (SCCP) and Transit and Intercity Rail Capital Program (TIRCP) programs should be considered, as well as Federal funding programs such as the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) and the Federal–State Partnership for Intercity Passenger Rail. The project should also consider securing a local match from partner jurisdictions and identifying future sources of local or regional funding, such as inclusion in transportation sales tax measures.

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List of Acronyms

AC Transit	Alameda-Contra Costa Transit District
ACCMA	Alameda County Congestion Management Agency
ACE	Altamont Corridor Express
ACE JPA	Altamont Commuter Express Joint Powers Authority
ACE Model	ACE Ridership Forecasting Model
ADA	Americans with Disabilities Act
Alameda CTC	Alameda County Transportation Commission
AVT	Autonomous Vehicle Transport
BART	Bay Area Rapid Transit
BLVX	BART to Livermore Extension
BRT	Bus Rapid Transit
CalSTA	California State Transportation Agency
CCJPA	Capitol Corridor Joint Powers Authority
CE	Categorical Exclusion
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHSRA	California High-Speed Rail Authority
CMAQ	Congestion Mitigation and Air Quality
CP	Control Point
CPUC	California Public Utilities Commission
CRISI	Consolidated Rail Infrastructure and Safety Improvements
CSRP	California State Rail Plan
CSU	California State University
CY	Cubic Yards
DB	Dumbarton Express
DBROC	Dumbarton Bridge Regional Operations Consortium
DRMT	Division of Rail and Mass Transportation
DTSC	Department of Toxic Substances Control
EA	Environmental Assessment
EB	East Bay Express
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EOS	Early Operating Segment
ETO	Early Train Operator
FASTER	Bay Area Sales Tax Measure
FEMA	Federal Emergency Management Agency
FLIRT	Fast Light Innovative Regional Train
FRA	Federal Railroad Administration
FRA	Federal Railroad Administration
GHG	Greenhouse Gas

GIS	Geographic Information System
GTFS	General Transit Feed Specification
HSR	High-Speed Rail
IIJA	Infrastructure Investment and Jobs Act / Bipartisan Infrastructure Law
LEHD	Longitudinal Employer Household Dynamics
LEP	Limited English Proficiency
LRT	Light Rail Transit
MOU	Memorandum of Understanding
MTC	Metropolitan Transportation Commission
NEPA	National Environmental Policy Act
NFPA	National Fire Protection Agency
NVRP	North Valley Rail Project
O&M	Operations and Maintenance
OD	Origin-Destination
PDA	Priority Development Area
PMT	Project Management Team
PMT	Passenger Miles Traveled
PSSC	Pacific States Steel Corporation
PTC	Positive Train Control
RAISE	Rebuilding American Infrastructure with Sustainability and Equity
RMF	Rail Maintenance Facility
ROM	Rough Order of Magnitude
RRIF	Railroad Rehabilitation and Improvement Financing
SB	Senate Bill
SCCP	Solution for Congested Corridors Program
SJCOG	San Joaquin Council of Governments
SJJPA	San Joaquin Joint Powers Authority
SJRRC	San Joaquin Regional Rail Commission
SR	State Route
SRA	State Rail Assistance
TIFIA	Transportation Infrastructure Finance and Innovation Act
TIRCP	Transit and Intercity Rail Capital Program
TNC	Transportation Network Company
TOC	Transit-Oriented Community
TOD	Transit-Oriented Development
TSP	Transit Signal Priority
TWG	Technical Working Group
UCSDSP	Union City Station District Specific Plan
UP	Union Pacific
VMT	Vehicle Miles Traveled
VTA	Santa Clara Valley Transportation Authority
WCA	Waste Consolidation Area
ZEMU	Zero Emissions Multiple Unit

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1.0 Project Overview

Phase 1 of the Southern Alameda County Integrated Rail Analysis (SoCo Rail Study) identified the existing Union City Intermodal Station as the location for a rail-to-rail East Bay Hub as identified in the 2018 California State Rail Plan (CSRP) and re-enforced by the Draft 2023 CSRP. The proposed project resulting from the SoCo Rail Study would enhance the Union City Intermodal Station, serving the San Francisco Bay Area Rapid Transit District (BART) and multiple bus services, to become a key connection between intercity rail, BART, and regional and local bus services.

What is the SoCo Rail Study?

The Southern Alameda County Integrated Rail Analysis (SoCo Rail Study) evaluates passenger rail needs in Southern Alameda County and the Northern California Megaregion and opportunities for seamless rail and bus service connectivity with a goal of identifying and developing

an East Bay Rail-to-Rail Intermodal Station in the Mid-Term Horizon.

The purpose of the Southern Alameda County Integrated Rail Analysis Phase 2 Report is to document the advanced planning related to the development of the proposed Union City Intermodal Station Phase 3 Project that would be implemented in the Mid-Term Horizon (approximately 10 years). This documents planning work done to a sufficient level to begin environmental review and preliminary engineering. The following areas are discussed herein: Operations, Layover Facility Planning, Station Platform and Layover Facility Design, Ridership, Equity Considerations, Multi-Modal Connectivity including Complementary Bus Service Planning, Long-Term Planning Considerations, and Project Implementation. This report provides the basis for information needed to have the project included in regional transportation plans.

1.1. Project Background Summary

Passenger rail is an essential element of the Bay Area's and California's surface transportation system. As highway congestion within the San Francisco Bay Area and Northern California Megaregion has grown, and so has rail's role as an alternative to driving. Increased rail service fosters transit-oriented development (TOD) in areas served by passenger rail stations, which stimulates the local economy while promoting walkable communities and energy-efficient lifestyles.

In collaboration with project partners and stakeholders, the SoCo Rail Study builds on the foundation of the 2018 CSRP, which established a 2040 statewide vision for an integrated statewide passenger rail and express bus network that would be implemented in near-term, mid-term, and long-term phases. As part of this vision, the 2018 CSRP identified numerous rail-to-rail hub stations around the state, including an East Bay Hub located in Southern Alameda County within the Tri-Cities area (i.e., the Cities of Union City, Fremont, and Newark) which sits at the nexus of the megaregional rail services from Sacramento and Central Valley and the Bay Area rail and bus services.

During Phase 1 of the SoCo Rail Study, the Metropolitan Transportation Commission (MTC) and its partners identified the existing Union City Intermodal Station (which includes Union City BART service), as the best location for the rail-to-rail East Bay Hub as identified in the 2018 CSRP. In partnership with BART and the Alameda-Contra Costa Transit District (AC Transit), the City of Union City adopted the *Intermodal Station District Plan* in 2002 to create a pedestrian- and transit-oriented community (TOC) surrounding the Union City Intermodal Station with future rail and transit connections. The Intermodal Station, with the future rail-to-rail connection, is at the center of Union City's Intermodal Station District. **Figure 1-1** shows the area in proximity to the existing east entrance to the Union City BART Station. **Figure 1-2** shows a rendering of affordable housing development in the Station District.

Figure 1-1: East Entrance to the Union City BART Station

Source: City of Union City, 2023

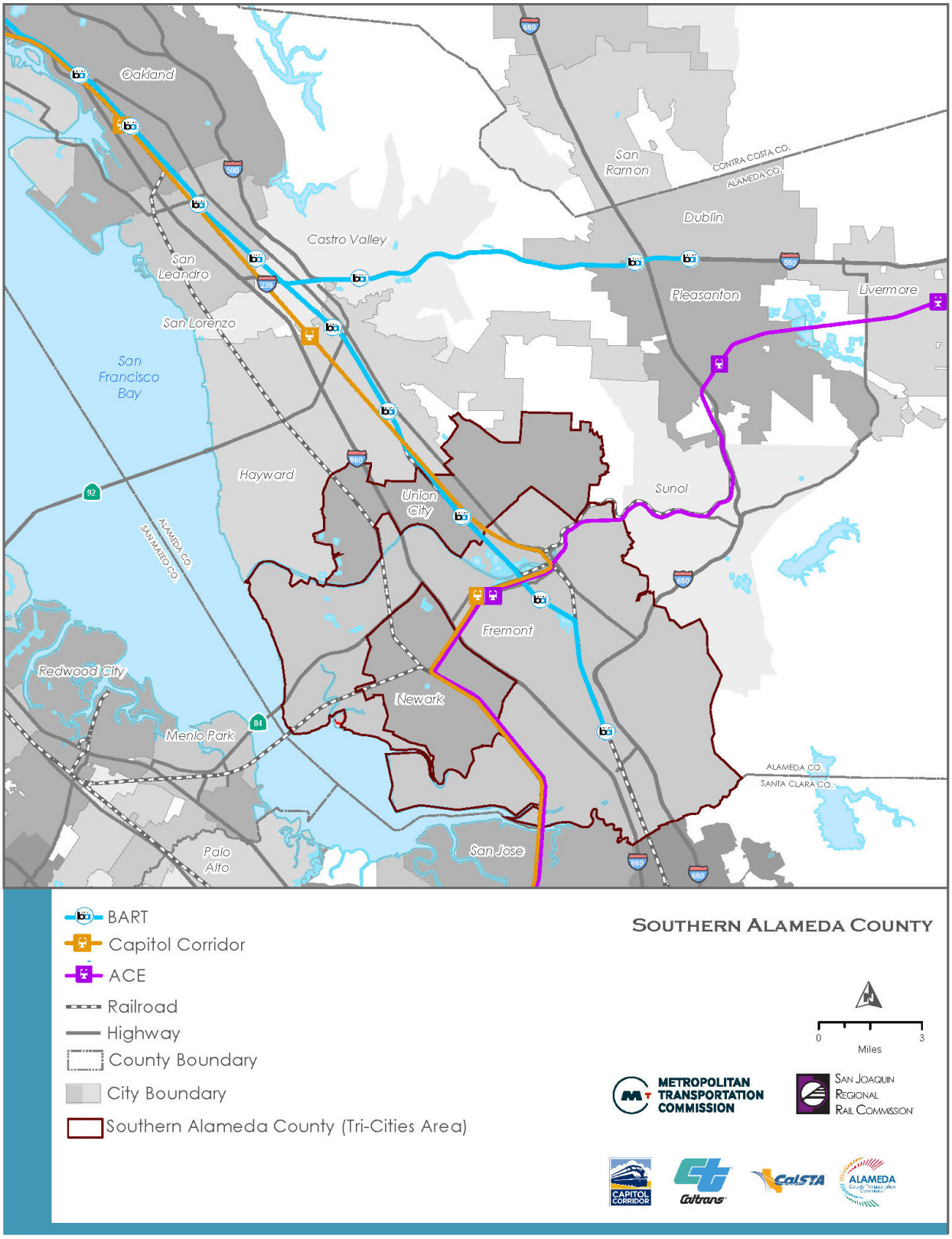
Figure1-2: Rendering of Affordable Housing Development in the Station District

Source: City of Union City, 2023

The general study area in Southern Alameda County, including the rail services in the area, is shown in **Figure 1-3**. In the Mid-Term Horizon, the Union City Intermodal Station will allow for new Altamont Corridor Express (ACE) intercity passenger rail round trips into the Bay Area, provide a connection between BART and intercity passenger rail, and facilitate a high level of connectivity to key travel markets throughout the Bay Area. The recommendation of Union City BART Station as the Mid-Term East Bay Rail Hub (and now referred to as the Union City Intermodal Station Phase 3 Project) has been incorporated into the Draft 2023 CSRP, published on March 10, 2023.

Phase 2 of the SoCo Rail Study advances planning and conceptual design of the intercity rail connection at the Union City BART Station. The proposed Mid-Term service plan for the Union City Intermodal Station Phase 3 Project consists of three daily round trips, including one round-trip serving Chico and two round trips serving Merced. This would broaden the range of potential riders by focusing service on intercity, non-commuter trips that include shift workers and other off-peak travelers that are not well served with current peak-oriented ACE trains operated by the San Joaquin Regional Rail Commission (SJRRC). This intercity service covers a large swath of the Sacramento and San Joaquin Valleys, providing intercity service to the demographically diverse Central Valley of California. Providing this rail service improves geographic equity by connecting key locations in the Central Valley including Sacramento, San Joaquin, Stanislaus, Merced Counties to each other and beyond to the Bay Area and the greater California rail network via future high-speed rail (HSR) connections in Merced and San Jose.

Figure 1-3. Southern Alameda County and Major Rail Lines



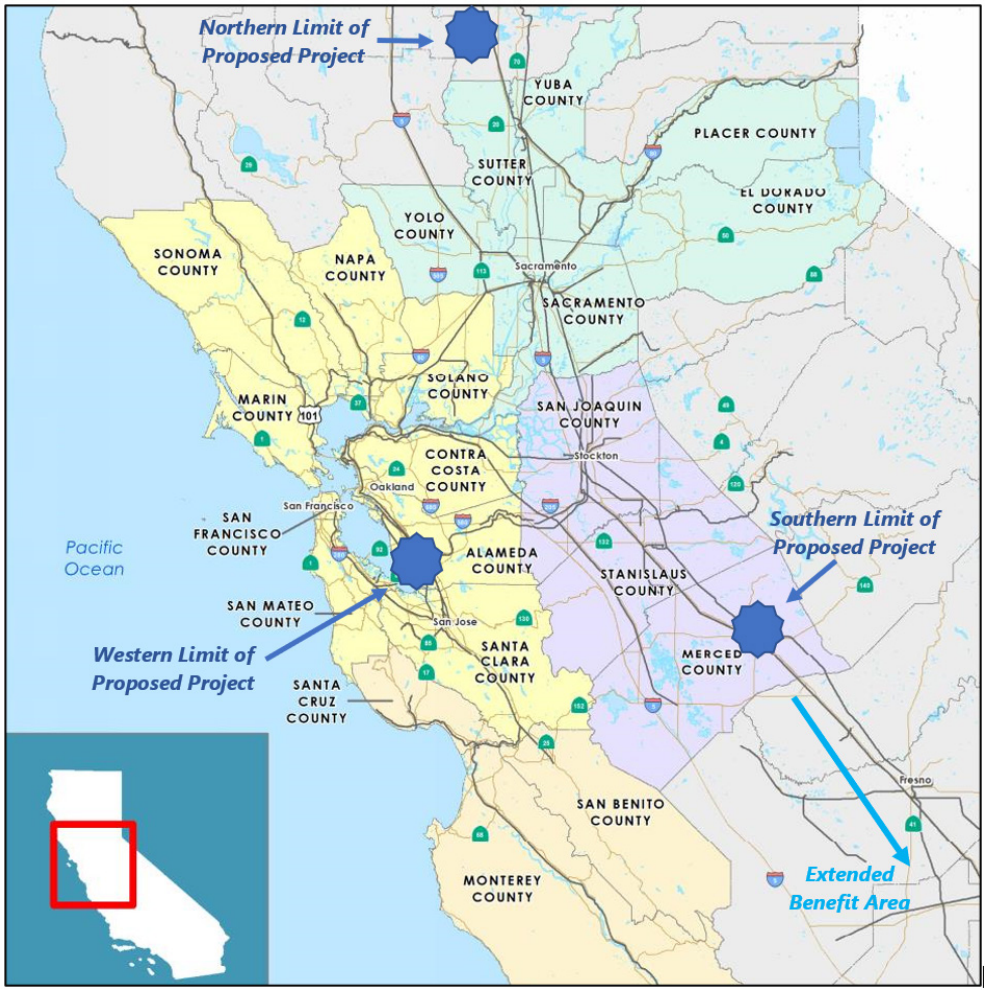
Source: HDR, 2023

1.2. Overview of the Proposed Project

1.2.1. Project Study Area

The SoCo Rail Study Area (for the purpose of project development) includes the Cities of Fremont, Union City, and Newark within the South County Planning Area of Alameda County (shown in **Figure 1-3**), as well as much of the Central Valley of California Between Merced to the south and Chico to the north (see **Figure 1-4**). The limits of the proposed project's service improvements, and the resulting areas that would receive the benefits of the project, encompass much of the 21-county Northern California Megaregion. In addition to the connectivity in Southern Alameda County to BART, opening up destinations throughout the Bay Area to rail riders from up and down the San Joaquin and Sacramento Valleys, including a timed connection to HSR in Merced that extends benefits to Southern California.

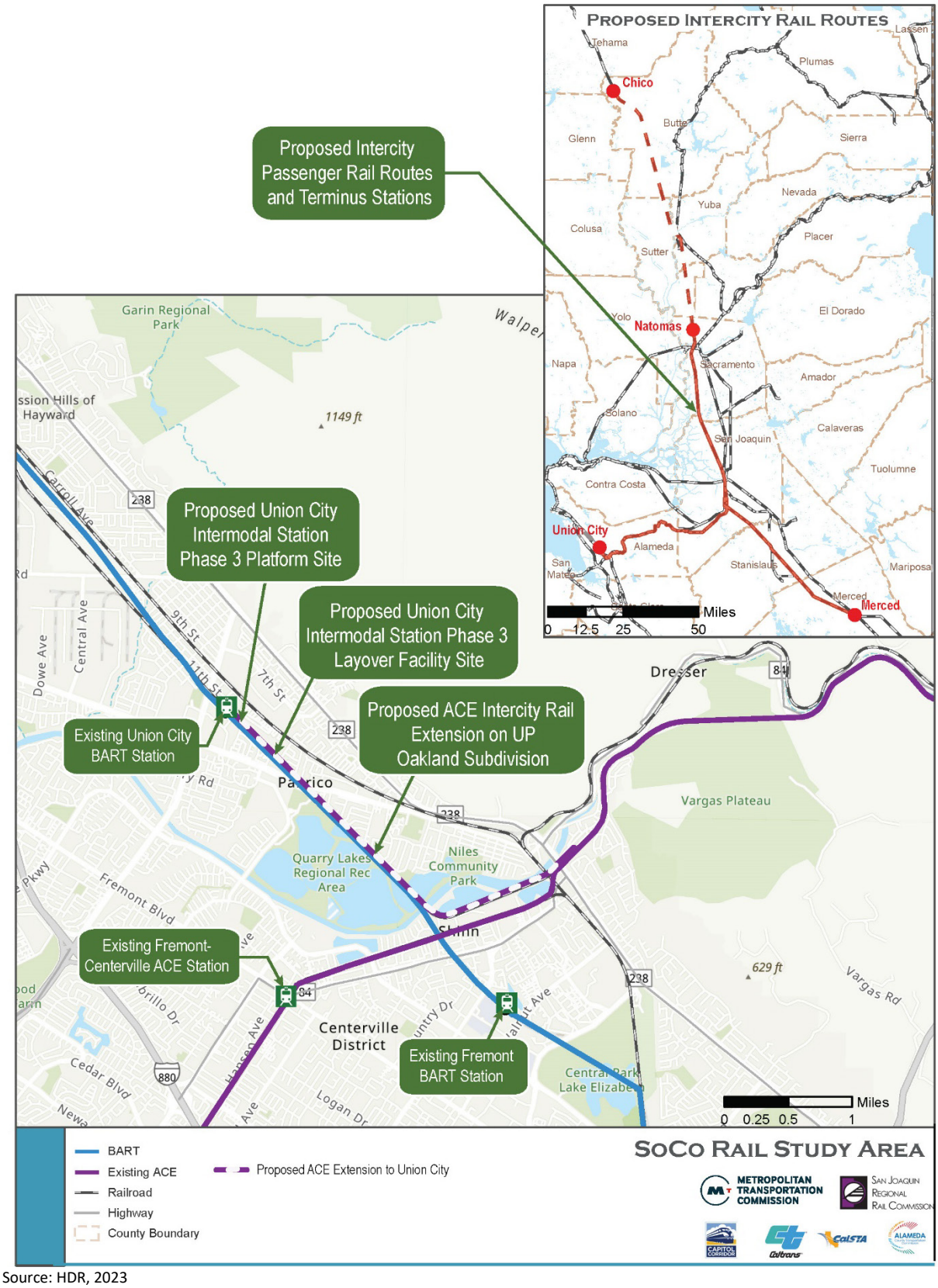
Figure 1-4. Northern California Megaregion



Source: HDR, 2023

Figure 1-5 highlights both the Southern Alameda County Study Area within which infrastructure improvements are proposed, as well as the larger proposed intercity rail service area that would benefit from the proposed Union City Intermodal Station Phase 3 Project.

Figure 1-5. SoCo Rail Study Area and Elements of the Union City Intermodal Station Phase 3 Project



Source: HDR, 2023

1.2.2. Proposed Service and Operating Plans

A preliminary overall service schedule for ACE and *San Joaquins* (Amtrak) has been developed that incorporates the planned three additional round trips each day to and from Union City in the Mid-Term Horizon. The proposed weekday and weekend service schedule for the three Union City trains would be the same, as described in **Table 1-1**.

TABLE 1-1. OVERVIEW OF UNION CITY INTERCITY RAIL SERVICE SCHEDULE

Direction	Origin	Time of Departure	Destination	Time of Arrival	Stations Served
INBOUND to Union City	Chico	6:02 am	Union City	10:09 am	17
	Merced*	9:50 am	Union City	12:24 pm	12
	Merced*	6:50 pm	Union City	9:24 pm	12
OUTBOUND from Union City	Union City	7:14 am	Merced*	9:56 am	12
	Union City	3:40 pm	Chico	7:49 pm	17
	Union City	4:14 pm	Merced*	6:56 pm	12

*With connection to HSR

The service schedule provides the ability for travel between multiple origins and destinations along the Valley Rail[7] system and beyond – including Southern California – with connections to HSR in Merced and BART in Union City. This service will provide travelers throughout the Central Valley with rail access to/from Southern Alameda County where connections can be made to transit services (bus and rail) spanning the Bay Area.

A new layover facility adjacent to the new passenger rail platform would allow for midday and overnight layover of trains at Union City. Some minor repairs and light cleaning could be undertaken at Union City, but general maintenance of the Union City trains would be handled at other facilities elsewhere in the ACE system, including the existing facility in Stockton and a planned facility in Merced.

Detailed descriptions of the proposed service and operating plans are included in Chapter 3.

1.2.3. Proposed Infrastructure

Figure 1-5 identifies general location and key elements of the proposed Union City Intermodal Station Phase 3 Project. Detailed descriptions of the proposed infrastructure are included in Chapter 4.

EXISTING FACILITIES

The Union City Intermodal Station is located immediately south of Decoto Road and west of 11th Street in Union City. BART is a heavy-rail public transit system that connects the San Francisco Peninsula with communities in the East Bay and South Bay. The Union City Intermodal Station is served by BART's Orange Line (Richmond – Berryessa/North San Jose) and Green Line (Berryessa/North San Jose – Daly City) routes. The Union City Intermodal Station is served by AC Transit bus routes (including the Dumbarton Express bus service between the Union City BART Station and the City of Palo Alto), local Union City Transit bus routes, and other transit services. The station has two parking lots with a

[7] Valley Rail is the joint expansion program for ACE and San Joaquins services.

combined capacity of 706 vehicles (additional Union City-operated paid parking is located on the other side of the station on 11th Street and Decoto Road). The station includes bike racks and 20 electronic BikeLink lockers.

The Union City Intermodal Station and surrounding area have been designated by the MTC as a Priority Development Area (PDA)[8] and TOC and have been the focus of extensive TOD-related planning efforts by the City of Union City. There is residential development and a new public plaza east of the station, as well as vacant lots south of the station for future development. One vacant parcel is the site of a Waste Consolidation Area (WCA) containing approximately 750,000 cubic yards (CY) of contaminated waste slag from a former steel mill site that would need to be remediated prior to any development.

The UP Oakland Subdivision is located just east of and adjacent to the Union City Intermodal Station. This rail corridor provides occasional, infrequent freight services to local customers and is proposed to be used by the Union City Intermodal Station Phase 3 Project for the operation of the intercity rail service to Union City.

INTERCITY RAIL STATION PLATFORM

The Union City Intercity Rail station platform would be located along the UP Oakland Subdivision and would include a 745-foot-long platform located between the UP Oakland Subdivision to the west and Union City-owned vacant land to the east. The platform would accommodate the initial operations (three round trips in the Mid-Term Horizon) and future expansion (hourly service in the Long-Term Horizon – by 2050). The 745-foot-long platform would accommodate any of three trainset types under consideration for the proposed service.

INTERCITY RAIL STATION TRACKS

The recommended design maximizes operational flexibility at Union City by allowing for an expansion to two-tracks at the intercity station platform in the Long-Term Horizon, which adequately addresses the 2018 CSRP's 2040 vision for hourly service, with one station track constructed in the Mid-Term Horizon for the initial three daily round trips.

INTERCITY RAIL LAYOVER FACILITY

The proposed layover facility, which is needed to accommodate the storage of trains when not in service, would be located just south of the Union City Intercity Rail Station platform. The City of Union City-owned WCA site provides required space for facilities and train operations. Two layover tracks are included in the project design. Moreover, the proximity to the intercity station platform facilitates operations between the platform and layover area with minimal deadhead movements and impacts to UP operations. The platform and layover tracks will include connections to the landside electrical grid to minimize emissions and noise impacts during extended layovers.

In order to construct the layover facility, a portion of the slag in the WCA site will need to be remediated and removed. It is preferred that the full site is removed at the same time, in collaboration with Union

[8] According to the Association of Bay Area Governments (2023), "Priority Development Areas are places near public transit planned for new homes, jobs, and community amenities. Located in downtowns, along main streets and around rail stations, PDAs help the Bay Area reduce greenhouse gas emissions and solve our housing crisis." https://abag.ca.gov/our-work/land-use/pda-priority-development-areas#:~:text=About%20Priority%20Development%20Areas,and%20solve%20our%20housing%20crisis.

City being responsible for removing the portion not necessary for the Union City Intermodal Station Phase 3 Project; however, if the timing of the removal of the remaining portion does not coincide with the construction of the Union City Intermodal Station Phase 3 Project, a two-phase approach will be implemented whereby only the necessary portion will be removed in the first phase when the rail project is constructed.

ADDITIONAL INFRASTRUCTURE IMPROVEMENTS

The proposed Union City Intercity Rail Service would operate on UP-owned rail lines. The proposed project includes upgrades to the UP Oakland Subdivision between the Union City Intermodal Station and Niles Junction to accommodate intercity rail service at speeds appropriate for desirable service.

SJRRC and SJJPA are implementing major UP infrastructure improvements throughout the Central Valley as part of the Valley Rail Program, including the Stockton Diamond Grade Separation Project that will address freight and passenger rail congestion and delays. However, there is a possibility that the proposed project may result in Potential impacts to the rail network and UP may require infrastructure improvements at other locations along the routes of Union City Intercity Rail Service route required to support the service. Potential additional infrastructure requirements will be examined in detail in the next phase of project development, which is environmental clearance. During this phase, early and routine coordination with host railroad UP will be critical to confirming the project definition and scope and the project development approach and schedule, as well as other items requiring further study and analysis.

1.2.4. Passenger Connectivity

The proposed project will utilize an at-grade pedestrian crossing being implemented by the City of Union City across UP for connectivity between the intercity rail service and BART which has been approved by California Public Utilities Commission (CPUC). **Figure 1-6** depicts a photo-simulation of the planned crossing of UP, along with the sidewalk proposed as part of the Union City Intermodal Station Phase 3 Project that would be used to connect intercity rail passengers to BART and buses. This design also provides access between the transit facilities and the Union City *Station District Specific Plan*, a TOD project where one-quarter of the 1,000 planned housing units will be affordable.

The SoCo Rail Study is coordinating the development of the Union City Intermodal Station Phase 3 Project with local plans for bicycle and pedestrian access to provide greater multimodal connectivity. The already-completed segment of Duncan Way (also known as “Loop Road”) outside the station’s east entrance has curb space available for future bus bays, and the design concept for the Union City Intermodal Station Phase 3 Project includes an extension of Duncan Way south along the east side of the platform to provide additional space for general pick-up/drop-off.

Figure 1-6. Approved At-Grade Pedestrian Crossing

Source: HDR, 2023

1.3. Benefits of the Proposed Project

1.3.1. Consistency with California State Rail Plan

Rail can be one of the most spatially, economically, and environmentally efficient modes to move people and goods, and is an essential element of California's multimodal transportation network. The Draft 2023 CSRP Passenger Network Strategy articulates service goals, phased implementation, and capital investments needed to achieve the Vision for a fully integrated statewide passenger network. The State supports local connectivity as critical to providing a door-to-door platform for statewide mobility. The Union City Intermodal Station Phase 3 Project is consistent with this objective by providing rail integration at Union City (transfers to BART and bus services), Merced (transfers to HSR), and other intermediate stations that facilitate intermodal connectivity.

The 2018 CSRP called for the study of potential East Bay Rail Hub locations to identify a rail-to-rail hub linking the Central Valley rail services in Southern Alameda County with the extensive Bay Area transit services. The recommendations were integrated with the Draft 2023 CSRP [9] and a near-term Plan goal of the Draft 2023 CSRP is to finalize service planning, design, and operational analysis for the identified East Bay Rail Hub. The 2021 Southern Alameda County Integrated Rail Analysis Phase 1 Report[10] recommended the Union City Intermodal Station Phase 3 Project as the only "rail-to-rail" hub concept in Southern Alameda County.

[9] See California State Rail Plan available at dot.ca.gov available online for public comment (as of March 10, 2023).
[10] https://mtc.ca.gov/sites/default/files/documents/2021-11/SoCo-Rail-Study-Phase-1-Report.pdf

The establishment of the Union City Rail Intermodal Station Phase 3 Project would facilitate better transit mobility and service connectivity. The Union City Intermodal Station Phase 3 Project allows intercity trains to terminate short of the constrained sections of the UP Coast Subdivision, which have capacity limitations and require large-scale improvements that would not be accommodated in the Mid-Term Horizon, A Union City Intercity Rail station would allow travelers to connect to other rail and bus services and enable travelers from origins east of Southern Alameda County, including the Central Valley, to access destinations around the Bay Area.

The Draft 2023 CSRP is reimagining the role of transit and how to equitably serve historically marginalized and excluded populations. The intercity rail service developed in the SoCo Rail Study and described herein is consistent with this vision, providing new daily service routes, including weekends, that would appeal to a variety of users for different types of travel, including but not limited to leisure and family travel, recreation, access to health services, access to education, and other non-commuter business travel.

1.3.2. Integration of Service Offering

The proposed Mid-Term service plan for Union City consists of three daily round trips, including one round-trip serving Chico (via Stockton, Sacramento, and the future North Valley Rail Project) and two round trips serving Merced (via the Lathrop to Ceres and Ceres to Merced Extensions to provide a connection with HSR). The Chico round-trip and one of the Merced round trips would begin at the outer terminus (Chico or Merced), while the remaining Merced round-trip would begin in Union City.

The proposed new ACE intercity service to/from Union City would consist of trains operating daily and not specifically timed to serve commute periods or travel patterns. The proposed trains would serve longer-distance interregional markets, with two of the round trips providing timed connections with HSR in Merced.

One of the round trips will provide service to/from Stockton, Midtown Sacramento and Natomas (via the Sacramento Extension), and Marysville–Yuba City and Chico[11] (via the North Valley Rail Corridor). Passengers on multi-day itineraries would take the train in one direction and return on a subsequent day, as many intercity passengers currently do on the existing *San Joaquins* service. Two round trips would provide service between Union City and Merced, where passengers would have timed connections with the HSR early operating segment (EOS) between Merced and Bakersfield. The round-trip slots proposed provide sufficient spread over the course of the day to allow for a flexibility itinerary for passengers.

In addition to the distinct focus on HSR connections at Merced and other longer-distance travel, the proposed Union City Intercity Rail service will also serve an important role in expanding transit connectivity for the Peninsula (via Dumbarton Corridor buses) and the South Bay (via BART). Together, these key markets will ensure that the Union City Intermodal Phase 3 Project will be complementary to other future transit investments in the Altamont Corridor, including the Valley Link project.

[11] Chico is currently the preferred terminus for the NVPR Project, but an Oroville terminus is also being considered in the event that Chico is determined to be infeasible.

1.3.3. Provision of Service for Disadvantaged and Marginalized Populations

Improvements that result from the proposed Union City Intermodal Station Phase 3 Project better integrate passenger rail services and provide rail connectivity between Southern Alameda County, the Bay Area, the Northern California Megaregion, and statewide with the planned HSR connection in Merced. The proposed additional trains during the midday and evening hours would provide improved transportation for lower income riders, providing increased access to a variety of destinations, including education, health care services, recreation, and personal/leisure activities, as well as job opportunities. The proposed intercity rail service would even benefit disadvantaged and marginalized communities of the San Joaquin Valley even if these residents do not ride the train themselves. The anticipated increase in transit mode share will benefit air quality as well as provide opportunities for affordable housing and improved economies.

A 2019 SJJPA market survey of the *San Joaquins* service passengers determined that only 11% of respondents were riding on a weekly basis. For intercity rail passengers, Fridays, weekends, and holidays tend to be the busiest days, whereas commuter rail ridership is busiest during weekdays. Nearly 60% of riders reported annual household incomes below $50,000 and 48% of respondents noted that they were not employed, illustrating the fact that the service provides for purposes other than business or commuting. Moreover, 76% of respondents reported that they were traveling for personal events and leisure. The proposed Union City Intermodal Station Phase 3 Project, proposed as the Union City BART Station with intercity passenger rail service and necessary infrastructure, would provide a service similar to the *San Joaquins* service, appealing to the needs of the diverse riders, including historically underserved populations.

The proposed intercity rail service to and from Merced and Chico would connect the Union City BART station area, its connected BART communities, and many underserved and marginalized communities throughout the Megaregion, improving the mobility of those needing access to a variety of destinations in the Bay Area, Stockton, Sacramento, Chico, Modesto, and Merced, as well as points south (e.g., Fresno and Bakersfield) through HSR connections in Merced.

1.3.4. Consistency with Union City's Development and Transportation Plans

The City of Union City has actively participated in the planning process for the proposed Union City Intermodal Station Phase 3 Project. The development of the platform, track, and layover facility design has been advanced in coordination with Union City and with consideration of their development and transportation plans. The East Bay Hub at this location is consistent with the current "Union City *Station District Specific Plan* for the 470-acre area surrounding the Union City BART Station. The *Station District Specific Plan* provides one of the largest opportunities for new transit-oriented development in the Bay Area. The *Station District Specific Plan* includes 1,700 recently built or entitled housing units, as well as 1.2 million square feet of planned office space. The plan states that, "the (East Bay Rail) hub will continue to grow with the planned extension of BART to Silicon Valley and connection to the ACE commuter rail, making Union City a transit-rich node with options for connectivity to the rest of the region."

The City of Union City is advancing two transportation projects in close proximity to the Union City BART Station and within the Station District. In 2017, the CPUC and UP approved a project to construct an at-

grade crossing of the UP Oakland Subdivision at east side of the BART Station to provide direct connectivity between the BART Station and Union City's development, including TOD, parking, and pick-up/drop-off zones east of the station.

The second important transportation project advanced by the City is Quarry Lakes Parkway, a new four-lane multimodal corridor with bike lanes and a separated Class I multi-use trail, running parallel to Decoto Road between Paseo Padre Parkway in Fremont and Mission Boulevard in Union City. Quarry Lakes Parkway will provide congestion relief to nearby Decoto Road, particularly for local traffic, as well as secure critical multimodal access to east side of the Union City BART Station through a direct connection to 11th Street.

1.3.5. Increase in Passenger Rail Ridership

Ridership forecasts produced for the SoCo Rail Study indicate very strong intercity ridership potential as a result of the extension of ACE to Union City/BART, even with the inclusion of conservative assumptions about post-pandemic travel behavior trends. Additionally, strong ridership is forecasted at the Union City Intermodal Station.

Overall ridership across the combined ACE and *San Joaquins* system as a result of the Union City Intermodal Station Phase 3 Project is estimated to increase by approximately 1.26 million passengers annually, or approximately 3,450 passengers daily (average across weekdays and weekends/holidays). The three roundtrip intercity trains to/from Union City are projected to carry slightly more than the overall systemwide increase in ridership with 1.86 million passengers annually. This is a result of a small portion of riders being pulled from other trains, including the *San Joaquins* service (which would see annual ridership decrease slightly by approximately 184,000 passengers). The average daily ridership at the Union City Intermodal Station (total of boardings and alightings) would be approximately 1,650 passengers, including approximately 1,575 passengers on weekdays and approximately 1,800 passengers on weekends.

The increased ridership from the Union City Intermodal Station Phase 3 Project would result in the avoidance of a substantial amount of vehicle miles travelled, thereby benefitting the region by reducing traffic congestion and the emission of greenhouse gases into the environment.

2.0 Summary of Phase 1 of the SoCo Rail Study

Phase 1 of the SoCo Rail Study included a review of existing conditions (including community characteristics, land use conditions, existing transportation networks, and existing travel markets), the development of potential feasible service scenarios, and an assessment of possible station locations for an East Bay Hub as identified in the 2018 CSRP. Phase 1 concluded with the identification of the Union City BART Station as the preferred rail-to-rail East Bay Hub concept for further development.

The Phase 1 Report (published November 4, 2021) can be found and reviewed in its entirety on the SoCo Rail Study webpage on the MTC website[12]. A summary of the service planning process and assessment of potential hub locations that informed the development of Phase 2 is provided in the sections that follow.

2.1. Phase 1 Operational and Service Planning Assumptions

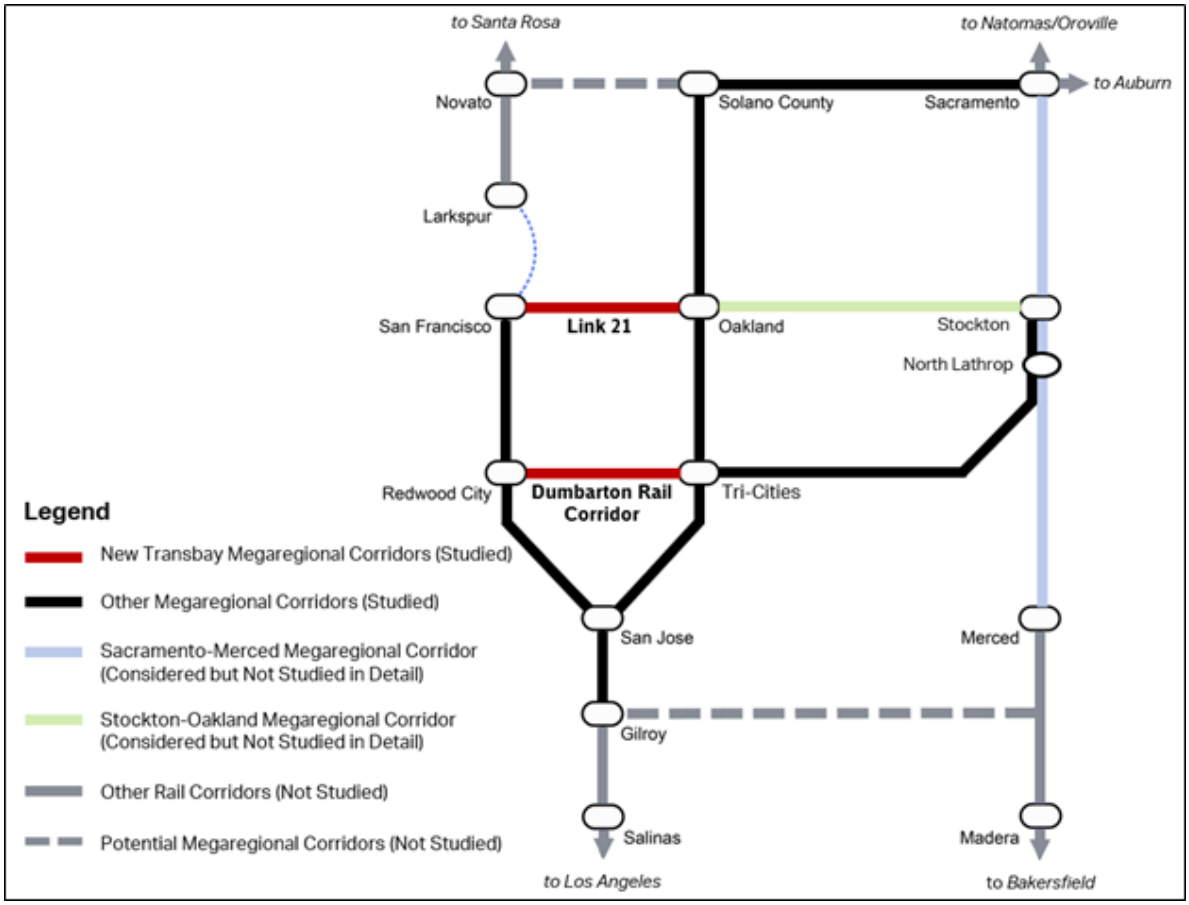
Operational and service plans were analyzed in detail to identify the East Bay Hub concepts. The effort included a review of service levels, equipment, infrastructure needs, and Long-Term visions for existing and potential intercity and commuter rail services, plus potential connections to the BART system. The planning process began with the ultimate Long-Term Vision (approximately 2050), then worked backwards toward the Mid-Term Horizon (approximately 10 years), developing assumptions and identifying East Bay Hub concepts that meet the Mid-Term needs while not precluding the Long-Term Vision.

The framework for the Long-Term Vision is illustrated in **Figure 2-1**. The framework was developed with the following considerations:

- Planning efforts that would have a direct effect on the SoCo Study Area were included in the scenarios; Link21 (Transbay) and the Dumbarton Rail Corridor were key to differentiating travel patterns and scenarios.
- Four scenarios were reviewed – Link 21 (Transbay) Focused, Dumbarton Focused, Transbay Connections Focused, and Link21 and Dumbarton Focused.
- All scenarios were determined as viable for the Long-Term horizon and were considered context for the development of the potential Mid-Term East Bay Hubs.

[12] https://mtc.ca.gov/planning/transportation/regional-transportation-studies/southern-alameda-county-integrated-rail-analysis-soco-rail-study

Figure 2-1. Framework for Development of Long-Term Scenarios

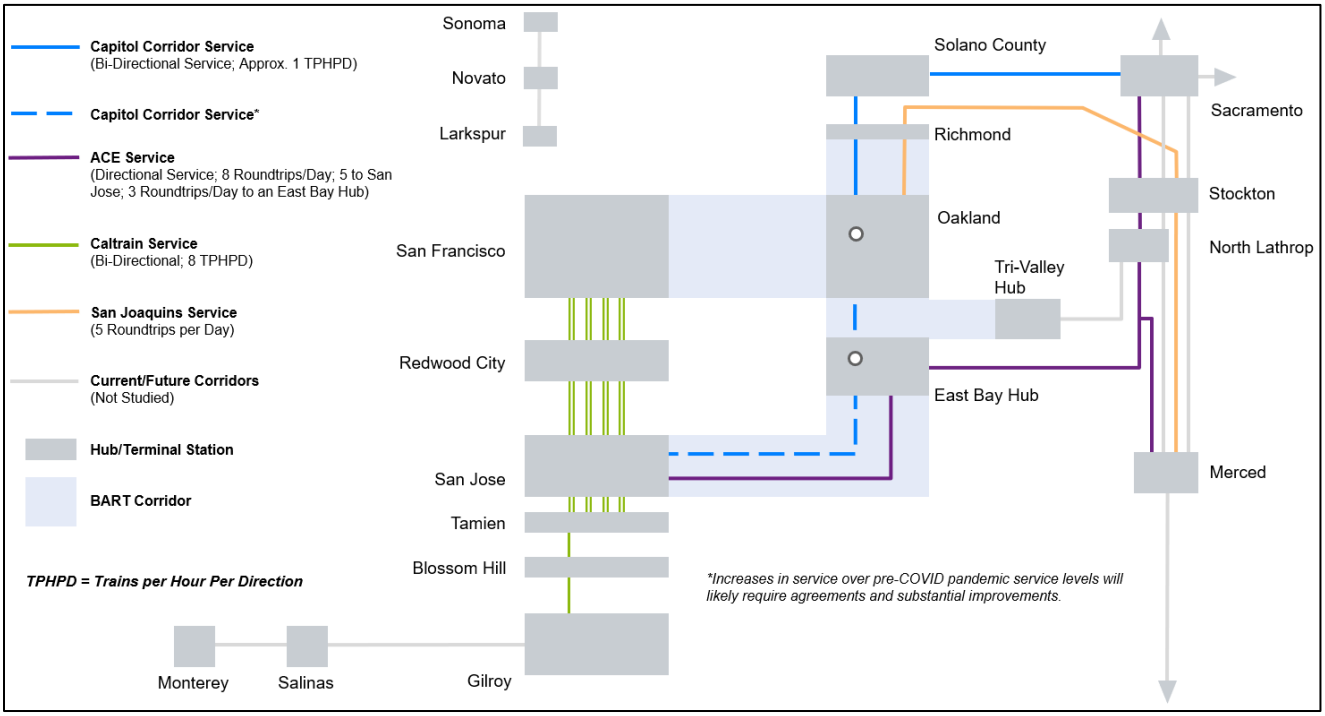


The framework illustrated in **Figure 2-2** provides the service assumption for the 10-year Mid-term horizon. The framework was developed with the following considerations:

- Based on infrastructure constraints along the existing UP Coast Subdivision between Newark and Santa Clara via the Alviso Wetlands, the ability to provide additional passenger rail service to San Jose beyond the planned one additional round-trip for ACE is not possible without extensive upgrades to the Coast Subdivision. This is unlikely in the Mid-Term Horizon due to cost, complexity, constructability, and environmental constraints.
- Given capacity constraints along the UP Coast Subdivision and the lengthy time it would require for capacity improvements, an East Bay Hub would provide a great opportunity to run additional passenger rail trains that could terminate in Southern Alameda County without having to trigger large-scale improvements along the Coast Subdivision, while still having access to the South Bay via BART.
- An East Bay Hub would provide regional connections to rail and bus networks, allowing Megaregional rail services to have additional regional connectivity around the Bay Area.
- The SJRRC supports turning back ACE or other intercity rail trains in Southern Alameda County at an East Bay Hub as a strategy for increasing service in the Mid-Term Horizon.

- The Capitol Corridor Joint Powers Authority (CCJPA) is planning to move operations of the *Capitol Corridor* service to the UP Coast Subdivision (between southern Oakland and Newark) from the UP Niles Subdivision in the Mid-Term Horizon as part of the South Bay Connect Project and to construct a new station at the Ardenwood Park-and-Ride near State Route (SR) 84 and the Dumbarton Bridge.
- A new passenger rail service along the Dumbarton Corridor, while currently being studied, is unlikely to be implemented in the Mid-Term Horizon due to constraints in Redwood City, significant infrastructure costs involved in rebuilding or rehabilitating the rail bridge across San Francisco Bay, mitigating environmental impacts, and a lack of progress in project development.
- In the Mid-Term Horizon, enhanced Transbay bus services via the Dumbarton Bridge to the Peninsula market would provide connectivity to both ACE and *Capitol Corridor* services in Southern Alameda County. These enhanced Transbay bus services could serve the East Bay Hub(s).

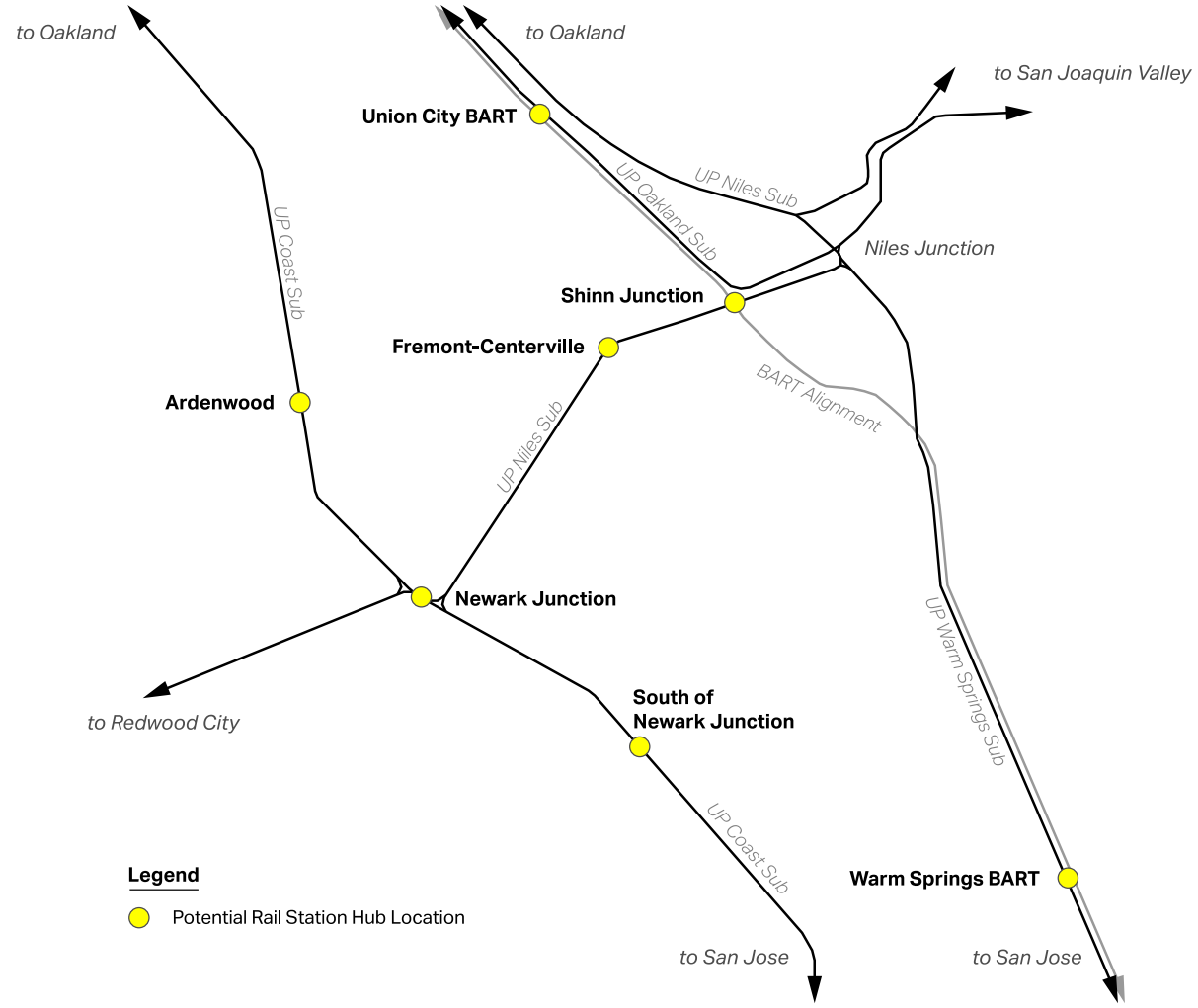
Figure 2-2. Framework for Development of Mid-Term Scenarios



2.2. Identification of East Bay Hub Concepts

Based on the operational and service planning summarized above, seven concepts for the East Bay Hub were identified and considered, as shown in **Figure 2-3**. Locations were selected based on their ability to provide Mid-Term benefits, compatibility with the Draft 2023 CSRP, and practicality in the Long-Term. These locations included: Union City BART Station, Shinn Junction, Fremont-Centerville, Ardenwood, Newark Junction, and South of Newark Junction.

Figure 2-3. Locations Considered for East Bay Hub



2.3. Goals and Objectives of the SoCo Rail Study

During Phase 1, the SoCo Rail team collaboration with the project partners and stakeholders to define five key goals and several supporting objectives to guide development of the SoCo Rail Study. These goals and objectives, shown in **Figure 2-4**, helped to identify the East Bay Rail Hub location called for in the Draft 2023 CSRP and lay a framework for project definition advanced in Phase 2. The five key goals are:

1 – Enhance Regional Connectivity and Increase Equitable Access

2 – Enhance Service Reliability and Safety

3 – Promote Sustainability and Resilience

4 – Serve Surrounding Communities and Shape Growth

5 – Develop Feasible Infrastructure Improvements

Figure 2-4. Goals and Objectives of the SoCo Rail Study

2.1. Recommendations from Phase 1

A thorough assessment of the seven hubs was conducted, comparing each potential hub location against several factors based on the goals and objectives of the SoCo Rail Study described in Section 2.3. This assessment is summarized in the matrix shown in **Table 2-1**, which details the evaluation criteria considered. The evaluation determined that the Union City Intermodal Station Phase 3 concept was the highest performing hub concept, and as such, the Union City BART Hub was recommended as the "rail-to-rail" hub concept for the approximately 10-year Mid-Term Horizon to advance to Phase 2 of the SoCo Rail Study.

The Union City BART Intermodal Station Project would allow for additional intercity passenger rail service into the Bay Area, operated by SJRRC, provide a connection between BART and intercity passenger rail, and ensure the highest level of connectivity to key travel markets throughout the Bay Area. The other East Bay Hub concepts studied during Phase 1 of the SoCo Rail Study for the Mid-Term

Horizon – which include Ardenwood[13], Fremont-Centerville, Newark Junction, South of Newark, Shinn Junction and Warm Springs BART – were not recommended for further study as part of Phase 2 of the SoCo Rail Study.

TABLE 2-1. PHASE 1 EAST BAY HUB CONCEPTS ASSESSMENT MATRIX

	ACE–BART Hubs			ACE–*Capitol Corridor* Hubs			ACE-only Hub
	Union City BART	Shinn	Warm Springs BART	Ardenwood	Newark Junction	South of Newark Junction	Centerville
Connecting Regional Services							
Operators Serving Hub	High	Medium	Medium	High	Medium	Medium	Low
Connectivity to Key Travel Markets and Destinations							
Regional Connectivity	High	High	High	Medium	Medium	Medium	Low
Local Connectivity and Land Use	High	Low to Medium	High	Medium to High	Low	Medium	Medium to High
Equity Considerations							
Benefits to Surrounding Disadvantaged Populations	Medium	Low	Medium	Medium	Low	Low to Medium	Low
Service Reliability							
Travel time to key destinations	Medium to Fast	Medium to Fast	Medium	Medium	Slow to Medium	Slow	Medium
Level of Difficulty Accommodating Service Levels and Hub Facilities	Low	Low to Medium	Low	Medium	Medium	Low to Medium	Medium
Potential Capital Improvement Cost							
Potential Cost	Medium	High	Medium	Medium	Medium	Medium	Low
Consistency with Operator Plans for Mid-term Horizon							
Consistency with Mid-Term Operator Plans	High	Low to Medium	High	High	Low	Low	Low

[13] While the Ardenwood Hub concept is not recommended for further study as part of the SoCo Rail Study, it is noted that a "rail-bus" hub is currently being pursued by CCJPA as part of the South Bay Connect Project. Along with a new *Capitol Corridor* rail station at Ardenwood, an intermodal bus facility on SR 84 is under study by CCJPA and Caltrans to speed travel times between the East Bay and the Peninsula and enhancing connectivity with the planned *Capitol Corridor* Station at Ardenwood.

3.0 Service and Operations Planning

This chapter discusses service and operations planning related to the proposed intercity passenger rail service, which is a key component of the Union City Intermodal Station Phase 3 Project. This proposed service is referred to as the "Union City Intercity Rail Service" in this document. The service planning section defines the basic parameters of this proposed intercity rail service for the Mid-Term Horizon, including the number of round trips, the proposed routes and stations served, and the conceptual timetable. The operations planning section delves into train operations to support the new service in more detail, including train crews, infrastructure needs, rolling stock maintenance, and operating and maintenance (O&M) cost estimates.

3.1. Service Planning

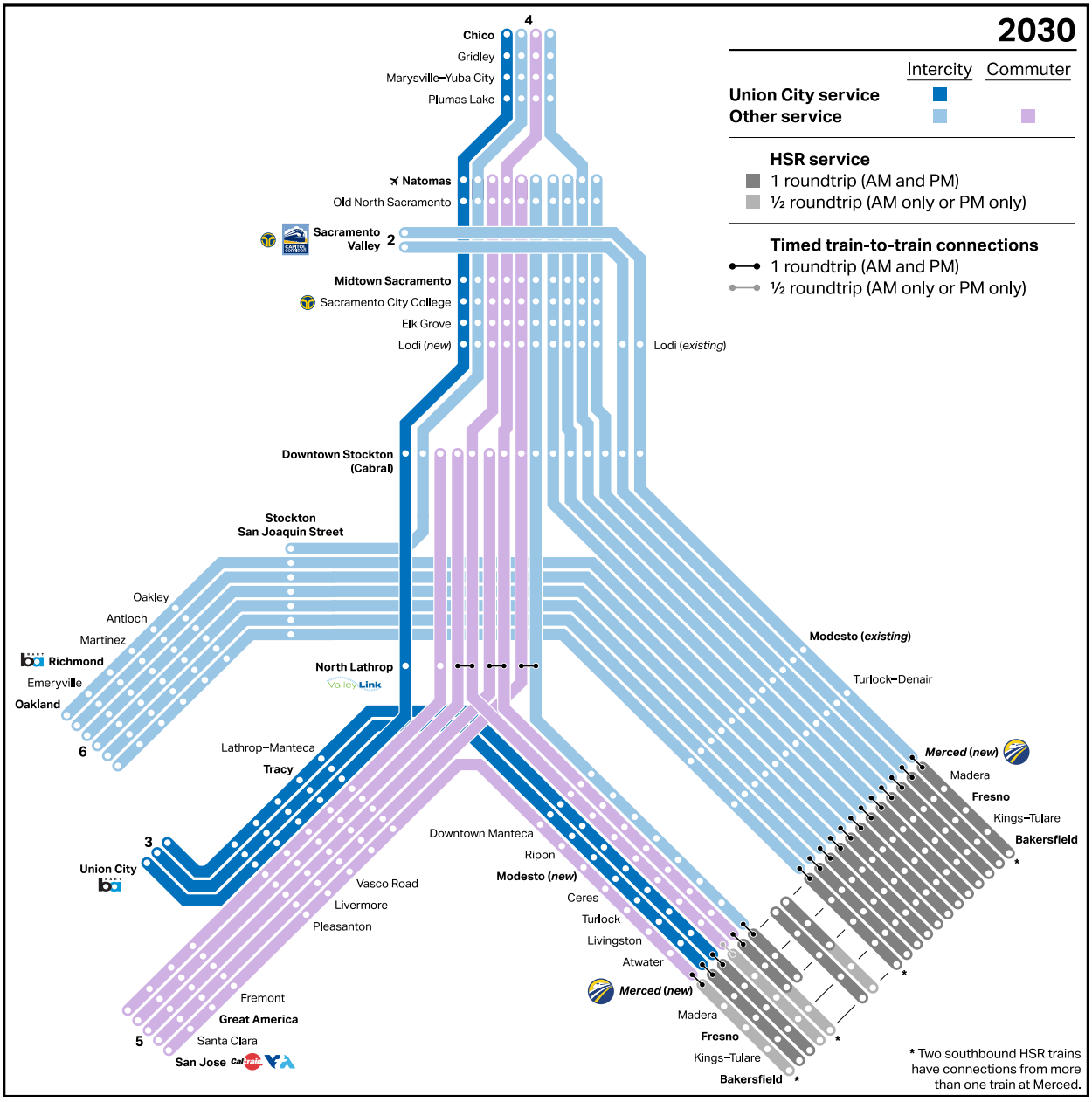
3.1.1. Overview

The implementation of the HSR EOS Service and the timeline for implementing the initial service to Union City in the Mid-Term Horizon are closely aligned. The opportunity to provide a direct rail connection between the Bay Area and the planned HSR Merced Station is a major contributing factor in pursuing a rail service designed primarily to facilitate intercity travel (typically longer distances than commuter service and not limited to peak hours). Providing a direct rail connection to another new rail corridor under development for the Mid-Term Horizon – the *North Valley Rail corridor* – is another key factor in pursuing an intercity service. With limited trains, having the BART-ACE connection at Union City facilities megaregional travel to/from the Bay Area, including the critical connection to HSR in Merced. Additional commuter rail service at the peak hours is more constrained than adding service during off peak hours (ACE's existing commuter service of four round trips currently runs during peak hours to the South Bay, with planning for a fifth commuter round trip in progress). Taken together, these factors and the travel market analysis conducted in Phase 1 of the SoCo Rail Study determined it is feasible to pursue an intercity rail service with the very limited number of trains that can be running in the Mid-Term Horizon. As train frequencies expand beyond three daily round trips, implementation of peak-hour commuter service to Union City will be studied.

The proposed Union City Intercity Rail Service consists of three daily round trips, including one round trip serving Chico, via Stockton, Sacramento, and the future North Valley Rail Project (NVRP)[14], and two round trips serving Merced via the ACE Lathrop to Ceres and ACE Ceres to Merced Extensions. The Chico round trip and one of the Merced round trips would begin in the morning at the outer terminus (Chico or Merced), while the remaining Merced round trip would begin in Union City (see **Figure 3-1**). The proposed intercity service would not be timed to serve commute periods or travel patterns in the Bay Area (though the one round trip serving Chico would be timed to serve the commute market in Sacramento). The proposed trains would serve longer-distance interregional markets, with two of the round trips providing timed connections with HSR in Merced. More detail on the conceptual timetable is provided in the following subsections.

[14] The NVRP is being led by the Butte County Association of Governments, in partnership with SJRRC, SJJPA, and Caltrans.

Figure 3-1. Proposed Union City Intercity Rail Service and Other Valley Rail Passenger Rail Services



Source: AECOM, 2023

A baseline service level was established with the goal of getting the new service up and running as quickly as possible. The goal of three daily, round trips is achievable for the Mid-Term Horizon, given the availability of funding and the limitations imposed by operating in the context of the rights-of-way and infrastructure almost entirely owned by Union Pacific. It is acknowledged that Draft 2023 CSRP envisions passenger rail service to Union City that would operate every two hours in the Mid-Term Horizon. SJRRC and project partners aspire to this level of service and beyond as soon as feasible; however, the three additional round trips is a more attainable service level for the Mid-Term Horizon. As rail corridor capacity infrastructure improvements are determined in the next phase of project development (to enable the initial three round trips associated with the Union City Intercity Service), SJRRC will

coordinate closely with the State to ensure mid-term investments can be leveraged for future higher service levels and avoid stranding any assets. Additionally, SJRRC and other project partners have a strong interest to engage in further planning on the next steps to realizing higher levels of service that are more consistent with levels identified in the Draft 2023 CSRP.

It is also acknowledged that the Draft 2023 CSRP supports a "pulsed" or "clock-face" scheduling (i.e., trains that depart and arrive at the same time within a given hour). Based on feedback from the State, the project team has slightly adjusted the time points of one of the trains operating to Merced to create a fully-pulsed schedule for the trains running along the Union City-Merced route. The one round trip route between Union City and Chico traverses several segments of the rail network in the Northern California Megaregion, making it difficult to achieve the pulsed schedule with other trains in the network. The Union City Intercity Rail Service conceptual timetable shown in **Table 3-1** will be reviewed and additional optimizations considered in the next phase of project development. Also, it is anticipated that as the service grows, beyond the Mid-Term Horizon, it would be operating under a pulsed schedule.

The proposed intercity rail service to/from Union City for the Mid-Term Horizon is planned to be operated by SJRRC (owner/operator of ACE). Historically, ACE has been operated exclusively as a commuter service. With the addition of the proposed intercity service to/from Union City the ACE network in the mid-term timeframe can been grouped into one of two buckets:

- *Commuter service:* Designed primarily for commuters, providing inbound service in the morning period and outbound service in the afternoon/evening period during the weekdays. One example is ACE's existing weekday commute service between Stockton and San Jose, which is designed to get commuters to jobs and schools in the Tri-Valley and South Bay.
- *Intercity service:* Daily service (including weekends and holidays) designed primarily to facilitate intercity travel (typically longer distances than commuter service), such as by providing connections with HSR in Merced. This intercity service would be similar to the *San Joaquins*[15] intercity passenger rail service, providing a daily service focused primarily on carrying longer-distance, non-commuter passengers (though as mentioned above, one of the three round trip trains will serve the Sacramento commute market). This intercity rail service will also be extended by connecting Thruway Bus services linked to major metropolitan areas and regions across the entire state. Thruway Bus services are currently operated by Amtrak in California with the purpose of extending the reach beyond the territory of the state-supported rail lines, including the *San Joaquins*.

The Draft 2023 CSRP calls for a half-hourly service on the ACE trunk route through the Altamont Pass and Niles Canyon, with Bay Area trains alternating between the existing San Jose route and future Union City branch, serving each branch with hourly service in the Long-Term Horizon. While the SoCo Rail Study is focused on service planning analysis for a Mid-Term Horizon (with three daily roundtrips serving Union City), a brief analysis of long-term service and operations planning was conducted based on the assumptions from the Draft 2023 CSRP. This analysis is summarized in Section 3.1.3 and more detail is

[15] SJRRC was selected by the San Joaquin Joint Powers Authority (SJJPA) to be its managing agency in 2013. SJRRC oversees the operations of both the ACE and *San Joaquins* services.

provided in Chapter 8, which also includes discussion of relevant issues in terms of the design and future expandability of the station and layover facility to accommodate additional service.

TABLE 3-1. UNION CITY SERVICE CONCEPTUAL TIMETABLE

Inbound			Read Down	HSR EOS Service	Read Up	Outbound		
	106	124				109		127
	8:19	17:19	▼	Bakersfield	▲	11:30		20:30
	8:53	17:53	▼	Kings–Tulare	▲	10:58		19:58
	9:09	18:09	▼	Fresno	▲	10:41		19:41
	9:21	18:21	▼	Madera	▲	10:30		19:30
	9:42	18:42	▼	Merced	▲	10:08		19:08
	↓	↓				↑		↑
W01	V01	U01		Union City Intercity Rail Service		U02	W02	V02
	9:50	18:50	▼	Merced (*new*)	▲	9:56		18:56
	9:58	18:58	▼	Atwater	▲	9:47		18:47
	10:06	19:06	▼	Livingston	▲	9:40		18:40
	10:18	19:18	▼	Turlock	▲	9:27		18:27
	10:28	19:28	▼	Ceres	▲	9:17		18:17
	10:35	19:35	▼	Modesto (*new*)	▲	9:10		18:10
	10:49	19:49	▼	Ripon	▲	8:57		17:57
	10:58	19:58	▼	Downtown Manteca	▲	8:48		17:48
6:02	|	|	▼	Chico	▲	|	19:49	|
6:26	|	|	▼	Gridley	▲	|	19:25	|
6:44	|	|	▼	Marysville–Yuba City	▲	|	19:06	|
6:54	|	|	▼	Plumas Lake	▲	|	18:57	|
7:17	|	|	▼	Natomas	▲	|	18:34	|
7:33	|	|	▼	Old North Sacramento	▲	|	18:25	|
7:39	|	|	▼	Midtown Sacramento	▲	|	18:19	|
7:44	|	|	▼	Sacramento City College	▲	|	18:14	|
7:54	|	|	▼	Elk Grove (*new*)	▲	|	18:05	|
8:20	|	|	▼	Lodi (*new*)	▲	|	17:39	|
8:34	|	|	▼	Downtown Stockton (Cabral)	▲	|	17:24	|
8:44	|	|	▼	North Lathrop	▲	|	17:13	|
8:51	11:06	20:06	▼	Lathrop–Manteca	▲	8:41	17:07	17:41
9:03	11:18	20:18	▼	Tracy	▲	8:22	16:48	17:22
9:32	11:47	20:47	▼	Vasco Road	▲	7:53	16:19	16:53
9:37	11:52	20:52	▼	Livermore	▲	7:48	16:14	16:48
9:45	12:00	21:00	▼	Pleasanton	▲	7:39	16:05	16:39
10:09	12:24	21:24	▼	Union City	▲	7:14	15:40	16:14

Source: AECOM, 2022

Notes:

Infrastructure improvements east of Niles Junction may be required for some trains to achieve the conceptual timetable shown here, including the running times and desired slots (times of day). The exact location and scope of such improvements will be determined in coordination with UP as part of more detailed operations planning in later phases of the project.

3.1.2. Routes and Service Frequency

In conjunction with SJRRC it was determined that a maximum of three round trips per day is feasible for the Mid-Term Horizon. This is based on and an understanding of what is realistic in the Mid-Term Horizon given the capacity constraints in the rail network, which consists entirely of corridors owned and managed by freight railroads. These constraints affect how much new intercity rail service is reasonably achievable for the Mid-Term Horizon.

Starting with the baseline assumption of three daily round trips, the proposed Union City Intercity Service Mid-Term plan includes the following parameters:

- Two round trips inbound (westbound) in the mid-morning (one from Chico and one from Merced, connecting with HSR) and returning outbound (eastbound) in the afternoon/evening.
- One round-trip outbound (to Merced, connecting with HSR), leaving in the early morning and returning inbound in the afternoon/evening.
- Service is assumed to be daily (i.e., 7 days a week, 365 days a year).

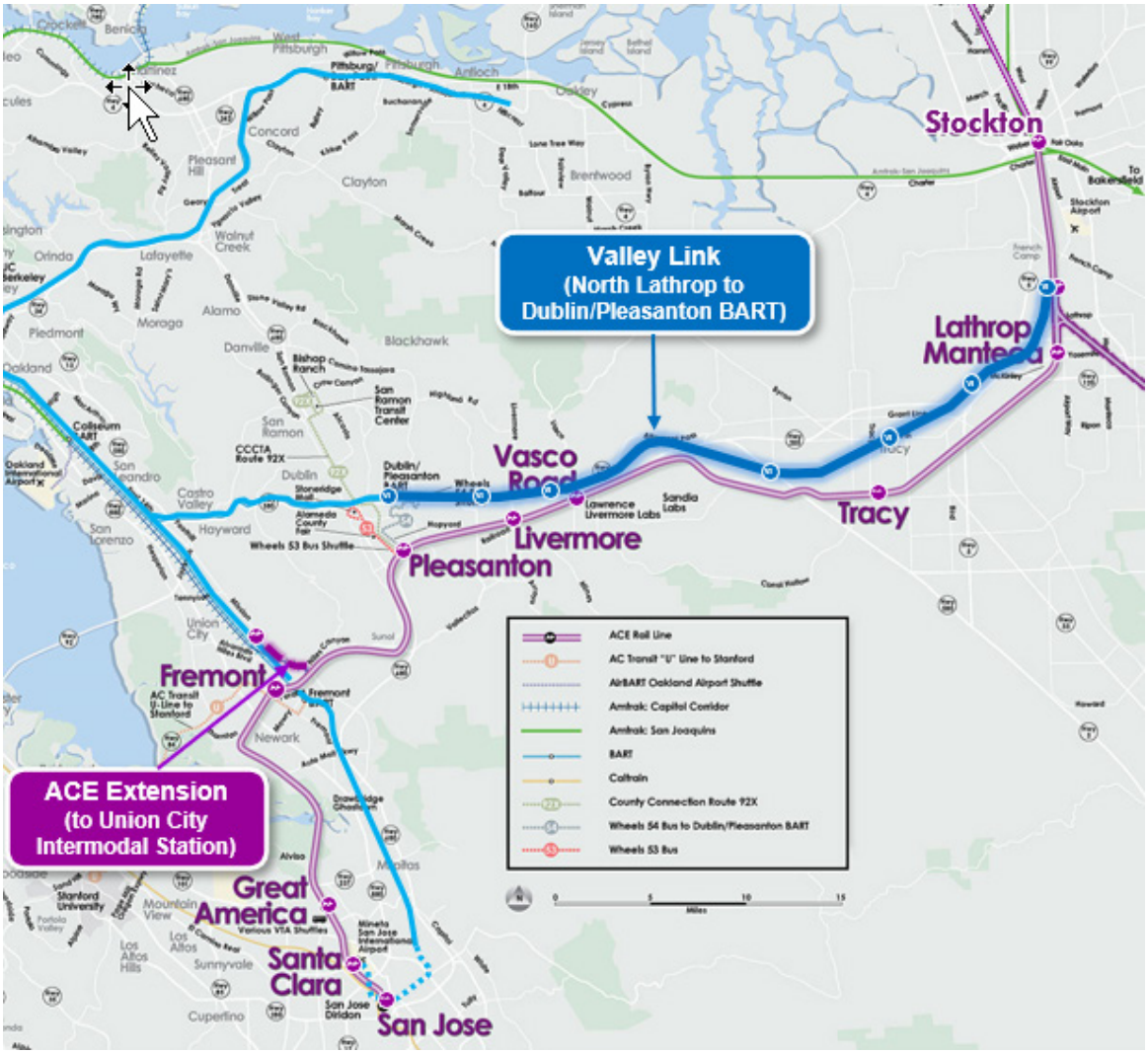
The proposed Union City Intercity Rail Service, in the context of the larger service plan for the mid-term for the combined SJRRC and SJJPA system, is illustrated in **Figure 3-1**. This broader service plan spans the entire existing and planned ACE and *San Joaquins* "Valley Rail" expansion program, including the ACE Lathrop to Ceres Extension, ACE Ceres to Merced Extension, and ACE/*San Joaquins* Sacramento (Natomas) Extension. Also illustrated in **Figure 3-1** is the NVRP, which will extend ACE and the *San Joaquins* from the future Natomas station (planned under the Valley Rail Program) further north into Yuba County and Butte County, with stations at Plumas Lake, Marysville–Yuba City, Gridley, and Chico. Planning for the Union City Intercity Service carefully considered the context of these service expansions to ensure a comprehensive and complementary vision that benefits both the Union City Intermodal Station Phase 3 Project and these other projects.

It is likely that additional refinements will continue to be incorporated as more progress is made on detailed planning for the various service expansions currently underway. Future service branding may also evolve from the current "ACE" and "*San Joaquins*" brands as the combined system expands into new geographies and ridership markets; however, for the mid-term Union City Intercity Rail Service, the basic concept focusing on an intercity service (instead of a commuter service) will remain unchanged.

COMPATIBILITY WITH VALLEY LINK

The proposed Valley Link passenger rail service, which is being developed by the Tri-Valley – San Joaquin Valley Regional Rail Authority between Dublin/Pleasanton BART Station and North Lathrop, will complement the extension of ACE's Union City Intercity Service (see **Figure 3-2**). Both rail systems are envisioned in the Draft 2023 CSRP. Valley Link will provide connections to the Tri-Valley and areas such as Oakland and San Francisco, whereas the ACE connection to Union City BART will provide links to the Tri-City area and markets in the South Bay, as well as the Peninsula (via connection to Transbay bus services). Valley Link will run medium-distance service with high frequencies to match BART service, while ACE will run less frequent intercity service with longer-distance connections throughout the North California Megaregion, including to high-speed rail service in Merced.

Figure 3-2. Proposed Valley Link Project



3.1.3. Conceptual Timetable

In conjunction with planning for the Union City Intercity Rail Service and the larger service expansions described above, a systemwide timetable for the entire ACE and *San Joaquins* network was developed for the Mid-Term Horizon in coordination with SJRRC/SJJPA staff. This was required to understand how best to integrate the three additional Union City round trips within the larger service expansions of ACE and the *San Joaquins* associated the Valley Rail Program. While initial service planning for much of the future ACE network has been completed by SJRRC in previous planning work, several refinements were incorporated as part of the SoCo Rail Study to facilitate integration of the three round trips serving the intercity rail platform at the Union City Intermodal Station.

In addition to including both the Valley Rail trains and Union City trains, this conceptual systemwide timetable incorporates refinements to reflect recent ongoing planning related to the NVRP, as well as statewide rail planning work being done by the California High-Speed Rail Authority's (CHSRA's) Early

Train Operator (ETO). An excerpt from this conceptual timetable showing the Union City service (including connections with HSR in Merced) is summarized in **Table 3-1** and discussed in further detail below. The entire conceptual timetable for the combined system in **Figure 3-1** is included in **Appendix A.**

It should be noted that the Union City Intercity Rail Service timetable in **Table 3-1** is conceptual at this stage and indicates the general slots (times of day) when service to and from Union City is proposed to operate. While timepoints are based on runtimes from recent and previous operations modeling analyses, the timetable will continue to be refined through more detailed operations planning and modeling for the entire combined system illustrated in **Figure 3-1**.

The timetable for trains going to/from Merced is optimized to provide efficient connections to the HSR Early Operating Segment (EOS) service in Merced. At the top of **Table 3-1**, the HSR trains that would meet Union City trains are shown (in grey text) and are derived from the schedule for the HSR EOS service developed by the ETO.

UNION CITY / STOCKTON / SACRAMENTO / CHICO SERVICE

One of the round trips (trains W01 + W02 as shown in **Table 3.1**) will provide service to/from Stockton, Midtown Sacramento and Natomas (via the Sacramento Extension), and Marysville–Yuba City and Chico (via the NVRP Corridor). The service would begin in Chico (depending on which alignment is selected for the NVRP) in the early morning during the 6:00 a.m. hour, reach Sacramento around 7:30 a.m. and Stockton around 8:30 a.m., and arrive at Union City during the late morning around 10:00 a.m. The return trip would depart during the mid-afternoon, prior to the start of the typical evening commute, arriving in Stockton around 5:30 p.m., Sacramento before 6:30 p.m., and Chico before 8:00 p.m.

Passengers on multi-day itineraries would take the train in one direction and return on a subsequent day, as many passengers currently do on the existing *San Joaquins* service. For a long weekend in the Bay Area, one example itinerary might involve arriving in Union City on a Thursday or Friday morning and departing on the return leg on a Sunday or Monday afternoon. For a long weekend in the Chico area, passengers might arrive in Chico on a Thursday or Friday evening and depart for the return leg on a Sunday or Monday morning.

However, the timetable also secures a 5½-hour block of downtime at the Union City end to allow for some flexibility in accommodating single-day itineraries into the Bay Area. Assuming approximately 1 hour each way for local connections via BART or other modes, day-trip passengers would have a minimum window of approximately 3 hours for passengers heading to the inner core of the Bay Area (San Francisco–Oakland–Berkeley) or the Peninsula (Redwood City–Palo Alto), which would be sufficient for 1–2 meetings or errands over lunch.

As initial planning for the NVRP recommended supplementary Thruway bus trips north of Natomas, passengers may be able to secure additional time at the Bay Area end of their trip by using those Thruway buses or by making some connections via the current ACE route (e.g., at San Jose Diridon or Fremont Centerville) or via other services (e.g., *San Joaquins*, *Capitol Corridor*, or the *Coast Starlight*). Phase 2 of Santa Clara Valley Transportation Authority's (VTA's) BART Silicon Valley Extension Program will provide a fast, high-frequency connection between San Jose Diridon Station and Union City, allowing passengers additional flexibility to use these two intercity rail terminals interchangeably.

With only a limited number of trains to work with, the selected slots are designed to balance service needs at Union City with those elsewhere in the system:

- The departure time for train W01 out of Chico serves the North Valley commuter market into Sacramento, a key target market for the NVRP. As shown in **Appendix A**, southbound trains W01 and D01 are scheduled approximately an hour apart, arriving at Midtown Sacramento during the morning commute period at approximately 7:39 a.m. and 8:39 a.m. This ensures that commuters into Sacramento have two options for arrival time during the morning peak period, providing a minimum level of flexibility to account for different work start times, day-to-day variability in work schedules, and potential unforeseen circumstances (e.g., delays getting to the station due to traffic congestion). Shifting train W01 into a substantially different slot would have a major effect on the NVRP's ability to effectively capture the commuter market into Sacramento.
- Similarly, the return trip in the outbound direction (train W02) captures commuters heading back home from Sacramento to communities in the North Valley (northbound train D02 and train W02 are scheduled approximately 80 minutes apart, as shown in **Appendix A**). Shifting train W02 to a later departure out of Union City would result in a less attractive commuter service for the NVRP. A later slot for train W02 would also mean later arrival times into Marysville–Yuba City and Chico that may be less attractive (for both commuters and regional/intercity passengers) when considering last-mile connections.

UNION CITY / MERCED SERVICE

Two round trips would provide service between Union City and Merced, where passengers would have timed connections with the HSR EOS between Merced and Bakersfield. The two round trips would be timed for slots in the late morning and early evening, providing two time-of-day options for passengers and allowing time for additional connections with Thruway buses in Merced, Hanford (Kings–Tulare), and Bakersfield.

One of the round trips (trains V01 + V02) originates in Merced, departing just before 10:00 a.m. and arriving at Union City around 12:30 p.m., with the return trip departing Union City a little after 4:00 p.m. and arriving at Merced just before 7:00 p.m. The other round-trip (trains U01 + U02) originates in Union City, departing a little after 7:30 a.m. and arriving at Merced around 10:00 a.m., with the return trip departing Merced a little before 7:00 p.m. and arriving back at Union City around 9:30 p.m.

For both round trips, assumed transfer windows to/from HSR at Merced would be 8 minutes in the northbound direction and 12 minutes in the southbound direction (a larger window is provided in the southbound direction to account for greater variability in on-time performance for conventional rail vs. HSR due to mixed operations with freight trains). In both cases, however, a sufficient window is provided to allow passengers to easily make the connection at Merced between the ground-level ACE platform and the elevated HSR platforms.

These particular slots were selected to provide sufficient spread over the course of the day and maximize itinerary flexibility for passengers. While there is some flexibility in selecting different slots for these trains, there are some constraints that may limit the availability of alternative slots:

- An earlier morning departure from Merced for train V01 is partially limited by northbound ACE service from Merced to Stockton and Sacramento (Natomas). Those trains would already provide connections from HSR trains and have timed connections at North Lathrop to the existing ACE trains traveling from Stockton to San Jose, minimizing the need for a (potentially competing) service from Merced to Union City.
- Similarly, a later evening departure from Union City for train V02 is partially limited by southbound ACE service from Sacramento (Natomas) and Stockton to Merced. Just as for the morning period, those trains would already provide connections from HSR, together with timed connections at North Lathrop with trains from San Jose.
- An earlier morning slot for train U02 and later evening slot for train U01 would potentially put these services beyond the reach of most transit-dependent passengers at Union City, particularly those heading to/from the inner core (San Francisco–Oakland–Berkeley) and other parts of the Bay Area that may require more time for local connections.

With a morning option and an afternoon/evening option in both the inbound (to Union City) and outbound (to Merced) directions, passengers on multi-day itineraries would have some level of flexibility when choosing trains. Given the substantial travel time required at the Merced and Bakersfield ends, opportunities for rail-only day trips would likely be substantially limited, particularly for passengers originating in the Central Valley and Southern California. Passengers originating in the Bay Area would have slightly more flexibility to do day trips in shorter-distance markets such as Fresno and Bakersfield; however, as mentioned earlier for the Stockton / Sacramento / Chico service, opportunities for day trips would increase when considering supplemental Thruway bus service and existing ACE service out of San Jose.

SATURDAY, SUNDAY, AND HOLIDAY SERVICE

Figure 3-1 shows how the planned Union City trains will be an intercity service. As a result, it is desirable to operate these trains daily, including weekends and holidays and the timetable shown in **Table 3-1** is assumed to be daily service. Generally, intercity services realize higher ridership during weekends and holidays than on weekdays, and this is expected to be the case for Union City Intercity Rail Service based on the ridership results for this service as reported in Chapter 5. The weekend/holiday timetable, while currently set to be the same as the weekday timetable, would have more flexibility to tailor train service to different times of the day to accommodate weekend travel patterns if that is determined to be desirable in the future, particularly in the afternoon/evening periods. For example, the Union City trains could be shifted to timeslots on weekends and holidays that would normally already be filled on weekdays by ACE's other trains to San Jose. Therefore, Union City trains operating on weekends and holidays would not necessarily be tied to the weekday-specific slots indicated in **Table 3-1.**

LONG-TERM SERVICE VISION

Additional service beyond three round trips a day is envisioned in a longer-term timeframe. As articulated in the Draft 2023 CSRP, the Long-Term Vision for passenger rail service in the Altamont Corridor includes separate hourly services to/from Union City and to/from San Jose by 2050. Service on the shared segment between Niles Junction and the Lathrop Wye would therefore be half-hourly. Like the rest of the future rail network described in the CSRP, these services would operate on a "pulsed", or "clockface", schedule at regular intervals.

The Union City Intermodal Station Phase 3 Project would be a critical first step towards achieving the CSRP's goals by establishing a baseline service of three daily round trips to/from of Union City and allowing for future incremental service expansion to reach the ultimate vision of hourly service. As **Table 3-1** shows, service on the two Merced round trips is designed to allow for eventual expansion of the hourly clockface schedule established for the initial mid-term service, with trains arriving and departing at the same times each hour. This is possible because these trains operate on the same route pattern and are anchored at Merced to allow for timed connections with HSR, which will also operate on an hourly clockface schedule. In contrast, the one Chico round trip is designed for clockface scheduling on the segment north of Stockton, where it shares fixed minute timepoints with other trains proposed on the UP Sacramento Subdivision; as a result, its timepoints in **Table 3-1** do not necessarily line up with the two Merced round trips on the shared trunk segment west of the Lathrop Wye.

Subsequent phases of the Project will involve further coordination with UP and with the State to refine the proposed service plan and timetable concept and to better define the required infrastructure improvements. A key focus of those efforts will be ensuring infrastructure investments are streamlined for efficiency and cost-effectiveness, building towards hourly service and the overall long-term vision while reducing the potential for stranded investments.

In the Long-Term Horizon, hourly service to and from Union City will also open up more ridership markets to the service. Trains that line up with typical commute periods on weekdays can be expected to attract commuter ridership, similar to existing ACE service between Stockton and San Jose, while still serving longer-distance intercity markets. As more trains are added throughout the day, passengers will also have more time-of-day options and the service as a whole will also become more attractive for shorter-distance markets, which would be more sensitive to longer wait times due to less frequent service.

3.1.4. Travel Time Analysis to Key Destinations

Table 3-2 summarizes approximate travel times between key megaregional station pairs via the Union City Intermodal Station Phase 3 Project. As shown in **Table 3-2**, travel times to/from the South Bay and Peninsula via Union City would offer an attractive option for intercity passengers (including day-trip markets and business travelers from the Central Valley who do not require an early morning arrival into their destination). For example:

- Downtown San Jose to/from Downtown Stockton: 2 hours 20 minutes
- Downtown Palo Alto to/from Midtown Sacramento: 3 hours 20 minutes
- Downtown Redwood City to/from Modesto: 2 hours 40 minutes
- Union City Station District to/from Merced: 2 hours 40 minutes

Travel times to/from destinations in other parts of the Bay Area would be similar or slightly longer.

TABLE 3-2. APPROXIMATE TRAVEL TIMES FOR KEY STATION PAIRS

Bay Area trip end (area and location) → / ACE and HSR trip end ↓		—	via local bus	via BART and local bus [a]	via BART	via DB [b]		
		Union City *Station District*	Union City/ Hayward *Whipple Road Industrial District*	Milpitas *Milpitas Boulevard Office Parks*	San Jose *Downtown*	Palo Alto *Downtown*	Palo Alto *Stanford Research Park*	Redwood City *Downtown*
		Union City Intermodal Station	Whipple Road at Huntswood Avenue	Milpitas Boulevard at Yosemite Drive	Downtown San Jose Station	Palo Alto Transit Center	Page Mill Road at Hanover Street	Redwood City Caltrain Station
ACE	Fresno [c]	—	0:15	0:35	0:30	0:35	0:35	0:40
	Livermore	0:35	0:55	1:15	1:15	1:20	1:20	1:20
	Tracy	1:05	1:30	1:50	1:45	1:55	1:55	1:55
	Downtown Stockton (Cabral)	1:40	2:05	2:25	2:20	2:25	2:25	2:30
	Midtown Sacramento	2:35	3:00	3:20	3:15	3:20	3:20	3:25
	Marysville–Yuba City	3:25	3:50	4:10	4:05	4:10	4:10	4:15
	Chico	4:10	4:30	4:50	4:50	4:55	4:55	4:55
	Modesto	1:55	2:15	2:35	2:35	2:40	2:40	2:40
	Turlock	2:10	2:35	2:55	2:50	2:55	2:55	3:00
	Merced	2:40	3:00	3:20	3:20	3:25	3:25	3:25
HSR	Fresno [c]	3:20	3:45	4:05	4:00	4:05	4:10	4:10
	Bakersfield [c]	4:10	4:35	4:55	4:50	4:55	5:00	5:00
Thruway	Los Angeles [d]	7:05	7:30	7:50	7:45	7:50	7:55	7:55
	San Bernardino [d]	8:40	9:05	9:25	9:20	9:25	9:25	9:30
	Santa Barbara [d]	8:35	9:00	9:20	9:15	9:20	9:20	9:20

Source: AECOM, 2022

Notes: Times in hours:minutes (h:mm), rounded to nearest 5 minutes. A uniform transfer penalty of 10 minutes is assumed at Union City when transferring between ACE and connecting transit modes.

a. Includes an additional transfer penalty of 10 minutes when transferring between BART and local bus at Milpitas.

b. Travel times for Dumbarton Express buses may be reduced some if current improvement plans, plus additional time savings recommendations generated for the SoCo Rail Study, are implemented.

c. The assumed transfer window at Merced between ACE and HSR is 8 minutes in the northbound direction and 12 minutes in the southbound direction.

d. Thruway bus transfer windows and travel times based on current timetables for existing *San Joaquins* Thruway bus service out of Bakersfield.

Travel times to/from key Bay Area destinations for longer-distance intercity markets would be approximately 5 hours for Chico, Fresno, and Bakersfield and 7 to 9 hours for Los Angeles and other Southern California markets. For Bakersfield, Los Angeles, and other Southern California markets, the HSR EOS introduces a time savings of approximately 1 hour, 50 minutes compared to the existing *San Joaquins* service, even with the required transfer at Merced.

Additional reduction in travel times would make the Union City Intercity Rail Service more competitive against personal automobiles and intercity buses; however, this could potentially require substantial infrastructure investment to allow for faster speeds. This could include increased track maintenance, more double-tracking of railroad, curve realignments, superelevation improvements, new (e.g., straighter, or more direct) alignments, and higher-performance rolling stock (e.g., multiple-unit trains).

3.2. Operations Planning

Operations planning topics covered in this report includes examination of train movements, the management of crew and staff facilities, maintenance of rolling stock, rolling stock requirements, and operations and maintenance cost estimates. Each topic is discussed below.

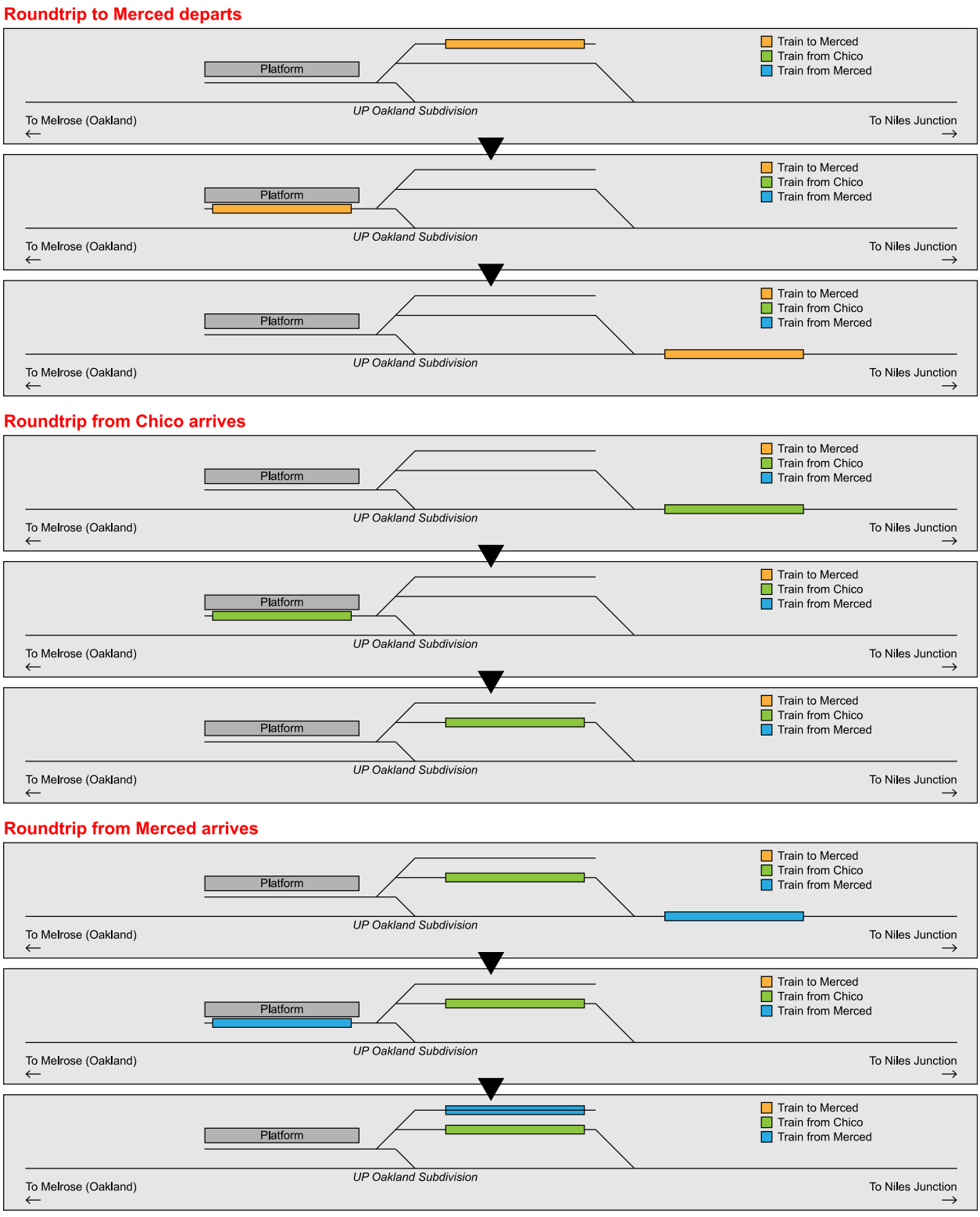
3.2.1. Train Movements

Figure 3-3 shows train movements at the proposed Union City Intermodal Station and the Union City Layover Facility[16] during the morning period, from start of service until midday layover. For the afternoon and evening period, train movements would be the reverse of **Figure 3-2**, except that the train returning to Chico would depart *before* the train returning to Merced.

The schematic is provided for reference only to illustrate the general pattern of train movements at Union City over a typical day. Train positioning on the layover tracks may vary from actual operations and may vary from day-to-day. In addition, this schematic diagram only applies to the service plan/timetable as shown in **Table 3-1** and does not apply to any different sequence of train arrivals and departures or a different service plan. With two layover tracks and the station track, there is flexibility in the design to operate the train service in several different ways, and SJRRC would not be restricted to the timetable shown in **Table 3-1** should they desire an alternative scheme.

[16] This report focuses in detail on the proposed Union City Layover Facility as it is the one such facility that is included in the project definition related to the SoCo Rail Study and future project development. While Union City trains will utilize several other facilities, these are not covered in detail in terms of design and train movements in this report since they either exist or are being developed as part of the other projects. Details on the characteristics of the Merced Layover and Maintenance Facility in Merced can be found in the in the *ACE Ceres-Merced Extension Project Environmental Impact Report* at https://acerail.com/ace-ceres-merced-eir/. Details on the characteristics of a potential future layover facility in Butte County associated with the North Valley Rail Project will be provided in a forthcoming *North Valley Passenger Rail Strategic Plan*, which is under development by Butte County Association of Governments. Information on this project can be found at http://www.bcag.org/Planning/North-Valley-Passenger-Rail-Strategic-Plan/index.html/. The other facility likely to be used by Union City trains will be the existing ACE Rail Maintenance Facility in Stockton. Information can be found on this facility at the ACE at https://acerail.com/rmf/.

Figure 3-3. Train Movements Schematic



Source: AECOM, 2023

3.2.2. Crew / Staff Facilities and Management

The planning related to crew/staff facilities and management was planned in close coordination with SJRRC operations staff. Based on this coordination, the proposed service plan for the Mid-Term Horizon (i.e., the three intercity round trips to/from the Union City Intermodal Station) would require a total of three train crews and two cleaning/maintenance crews at the proposed Union City Layover Facility. No other employees are envisioned working at the facility, but service expansion beyond the three round trips proposed in the mid-term would require additional train crews and may require additional cleaning and maintenance crews.

TRAIN CREWS

A typical train crew will consist of two persons (one locomotive engineer and one conductor) and one SJRRC staff person who is not a crew member (i.e., a Passenger Service Representative or "PSR"). Crew bases will generally reflect the service plan for the mid-term, which consists of 2 round trips with midday layover at Union City (one starting from Chico and the other from Merced) and 1 round-trip starting at Union City with midday layover at Merced.

Union City Crew

For the round-trip starting in Union City (trains U01 + U02), one crew will be based out of Union City, reporting for duty each morning at the layover facility. This crew will bring the trainset north out of the layover facility and position it on the station track. After boarding passengers at the station platform, the train will reverse direction and exit the station southbound, beginning its revenue run to Merced.

This crew will layover midday at the planned Merced Layover and Maintenance Facility in Merced, which will be shared between ACE and *San Joaquins* trains. The Merced facility is being designed with midday crew accommodations, including lockers, showers, beds, desks (with 'telcom' connections), a kitchenette (including a refrigerator and microwave), and restrooms, among other things.

In the afternoon, the crew will return the trainset to Union City, pulling into the station platform, deboarding passengers, and then reversing direction into the layover facility. This trainset will then overnight at the layover facility.

Merced and Chico Crews

The remaining two crews will be based elsewhere, one out of Merced (for trains V01 + V02) and one out of Chico (for trains W01 + W02). Each morning, the Merced-based crew will report to the planned Merced Layover and Maintenance Facility, while the Chico-based crew will report to the proposed Chico layover facility, which is being planned and designed as part of the NVRP. These crews will then layover midday at Union City after unloading passengers at the platform and pulling the train into the layover facility. Midday layover for the crews will be accommodated at a local hotel near the Union City Intermodal Station. In the afternoon, the crews will then return to the layover facility to pull the trains out of the layover facility and head back to either Merced or Chico.

CLEANING CREWS

A typical cleaning crew will consist of no more than three workers. Two crews will be needed at Union City, one for the midday layover period (two trains) and one for the overnight layover period (one train).

Cleaning crews will also be present at other terminal locations in the ACE system, such as Stockton, Natomas, Chico, and Merced. These crews would support operations for the entire system and would have capacity to handle the added demand of the three trainsets for the Union City Intercity Service. Therefore, additional cleaning for the Union City trains could be conducted at Chico and Merced, as needed. This would include midday cleaning in Merced for the train with midday layover in Merced, as well as overnight cleaning in Chico and Merced for the trains with overnight layover in those locations.

ON-SITE CREW FACILITIES

The main crew facility envisioned for the Union City Layover Facility will be a simple modular unit measuring 10 feet by 40 feet or similar in size. The unit will be furnished with lockers for the train crews and cleaning crews, desks with 'telcom' connections, a storeroom for cleaning and maintenance supplies, a kitchenette (including a refrigerator and a microwave), and restrooms, among other things.

The Union City Layover Facility will also require automobile parking for employees (train crews and cleaning/maintenance crews) working there. As shown in **Table 3-3**, the estimated requirement is approximately 13 parking spaces based on the service plan for the mid-term, but the actual demand may be less if employees use transit (e.g., BART) or other modes when traveling to/from the layover facility.

TABLE 3-3. UNION CITY LAYOVER FACILITY PARKING NEEDS

Description	Parking spaces	Notes
Train crew parking	3	One space per employee for the Union City-based train crew
Cleaning/light maintenance crew parking	6	One space per employee (for the two midday crews); overnight layover requires only one crew
Hotel transportation	2	One vehicle per crew (for the two midday crews)
Miscellaneous	1	Allowance for visitors, contractors, deliveries, etc.
Multi-purpose ADA	1	ADA-accessible space
Total	13	

Source: AECOM 2023

OFF-SITE MIDDAY ACCOMMODATIONS FOR TRAIN CREWS

As shown in **Table 3-1**, midday layovers for the Union City service would be on the order of 4–5 hours (potentially more on weekends and holidays if schedules are eventually adjusted to be different from the weekday service). For existing ACE operations between Stockton and San Jose, midday layover in San Jose for train crews is accommodated through local hotel rooms. This analysis assumes a similar arrangement for the two crews arriving from Merced and Chico.

There are multiple quality hotel options in or near the Union Landing Shopping Center (approximately 3 to 4 miles northwest of the station), including the following locations:

- Crowne Plaza Silicon Valley North – Union City (32083 Alvarado–Niles Road)
- Holiday Inn Express Union City (31140 Alvarado–Niles Road)

- Hampton Inn Union City (31040 Alvarado–Niles Road)
- Extended Stay America Union City – Dyer St. (31950 Dyer Street)

Additional budget hotel options are also available along Whipple Road near Interstate 880 and along Alvarado Boulevard in northern Fremont. If future build-out in the Station District area surrounding the station includes a hotel, that would also offer an attractive midday lodging option potentially within walking distance of the layover facility.

The contracted train operator would be expected to negotiate with nearby hotels to secure favorable room rates (e.g., through group booking discounts) and ensure that rooms are available every day and acceptable to the crews. Hotels must provide a quiet/do not disturb environment for federally regulated employees.

Transportation arrangements are also necessary for train crews moving between the station and the selected hotel. This could come in the form of fleet vehicles owned or made available by the contracted train operator or for-hire vehicles such as taxis or transportation network company (TNC) vehicles (e.g., Uber, Lyft).

Alternative Accommodations

An alternative arrangement was also considered with midday crews accommodated at the City of Union City ("City") Public Works Maintenance Facility instead of a nearby hotel. Under this alternative, ACE would need to reach an agreement with the City to permit shared use of this facility by ACE crews.

The City's Public Works Maintenance Facility is located at 34650 7th Street near the southern end of the proposed Union City Layover Facility and accommodates the storage and maintenance of Union City Transit buses, among other functions related to the City's Public Works Department. The facility includes a small administrative building, two bus maintenance structures, a bus fueling station, bus and ancillary vehicle parking, and employee parking. The bus maintenance facility is well utilized by Union City Transit, and there is likely little dedicated space available for midday accommodations for ACE crews.

The bus maintenance facility is located adjacent to where the future Quarry Lakes Parkway will be sited and is approximately one-quarter mile from the southern end of the proposed Union City Layover Facility. The portion of the Quarry Lakes Parkway Project within the City of Union City[17] is currently scheduled for completion within the next 10 years, possibly prior to construction of the SoCo Rail Project.

If a connection via Quarry Lakes Parkway is not available prior to the completion of the Union City Layover Facility, ACE crews would need to detour north via Decoto Road (the closest available crossing of the UP Niles Subdivision) when traveling to/from the bus maintenance facility. The distance between the bus maintenance facility and the north end of the Union City Layover Facility along this route (11th Street ↔ Decoto Road ↔ 7th Street) is approximately 1.5 miles.

[17] The first four phases of the Quarry Lakes Parkway project are located within Union City: Phase 1 (7th Street connection), Phase 2 (Gateway connection), Phase 3 (11th Street connection), and Phase 4 (grade separations and Alvarado–Niles connection). Phase 5 would be located within Fremont, but the design and timeline of this final phase are still being determined.

Given these considerations, shared use of the bus maintenance facility can continue to be explored with City of Union City representatives; however, this should only be pursued for implementation if there is demonstrable potential for operating cost savings for SJRRC.

ACCESS, LAYOVER TRACKS, AND SECURITY

The Union City Layover Facility will consist of two tracks, separated by a 16-foot-wide service road running the length of the layover tracks. Each layover track would be capable of accommodating an 8-car Bombardier Bi-Level trainset (with one locomotive), a 7-car Siemens Venture single-level trainset (with one locomotive), or a 3-unit Stadler FLIRT (single-level) trainset (no locomotive).[18] See Section 4.2.2 for more information on the various trainsets under consideration for this service.

The facility will be lighted, as train crews and cleaning/maintenance crews will be present during early mornings and nighttime. At both its north and south ends, the service road will tie into a 20-foot-wide emergency access road running along the east edge of the facility. The emergency access road will in turn tie into 11th Street to provide access to/from the facility: the north end of the emergency access road will tie into the southern extension of Duncan Way west of the intersection of 11th Street and Aquamarine Terrace (part of the Pacific Terrace residential development), while the south end of the emergency access road will tie into a planned maintenance road for Quarry Lakes Parkway (to be constructed by others). The emergency access road would also provide general access for the layover facility, as well as be a route for the inspection and maintenance of the remaining WCA site (assuming the WCA is only partially removed). The service road, which would run between the two layover tracks, would connect to city-constructed streets rather than an emergency access road in the event the WCA is fully removed.

To prevent unauthorized access into the Union City Layover Facility, fencing would be placed around the perimeter of the layover facility (encompassing the layover tracks and service road), with gates located at either end of the service road and across the layover tracks.

Double-Ended Layout

The primary access into and out of the two layover tracks would be at the north end via the station track. Under normal operations, intercity rail trains arriving at Union City would pull off the UP mainline and enter the station track, stop at the platform to offload passengers, and then reverse direction into the layover facility. One of the layover facility tracks (the western track), however, has been designed with a secondary access point at the south end for occasional use only in the event of emergencies (e.g., equipment failure).

In the event that a train arriving at Union City must be taken out of service, the trainset could be moved from the station track into the layover facility in the following manner:

1. Serviceable Trainset A at the layover facility would move northbound out of the facility and couple with disabled Trainset B on the station track.

[18] For locomotive-based trainsets, the westernmost layover track would also be able to accommodate an additional locomotive coupled to the maximum base (8-car Bombardier Bi-Level or 7-car Siemens Venture) trainset in the event that the primary locomotive is disabled.

2. Trainset A would then reverse movement and pull Trainset B into the western track of the layover facility, decouple, and exit the layover facility using the "emergency exit" at the south end of the western layover track to re-enter the UP Oakland Subdivision mainline.
3. Trainset A would then reverse movement again and pull into the station track.
4. Emergency repairs to Trainset B could possibly be made at the Union City Layover Facility if simple enough. If an emergency repair is more complicated, then Trainset B would be towed to either the Rail Maintenance Facility (RMF) in Stockton or to Merced Layover and Maintenance Facility.

The eastern layover track would be a stub track and would only be accessible from the north end via the station track.

UTILITIES

The Union City Layover Facility will require utility hook-ups (e.g., wayside power/electrical) to allow for the engines of trains to turn off and avoid polluting and noisy idling, facilitate cleaning activities, as well as to accommodate train crews and their needs.

3.2.3. Maintenance of Rolling Stock

MINOR REPAIRS AND INTERIOR CLEANING

Five facilities would be located on the planned routes for the Union City trains that would have capabilities to conduct cleaning activities and minor repairs to rolling stock. These facilities include:

- The Union City Layover Facility (as proposed in this document);
- The Natomas Layover Facility (currently under development as part of the Valley Rail Sacramento Extension Project);
- The Merced Layover and Maintenance Facility (currently under development as part of the ACE Ceres-Merced Extension Project);
- The existing ACE RMF in Stockton; and,
- A layover facility that would be located for Butte County (location is still not determined) associated with the NVRP.

The two planned round trips between Union City and Merced would primarily use the Union City Layover Facility and Merced Layover and Maintenance Facility for cleaning and minor repairs, while the one round trip between Chico and Union City train would primarily use the planned layover facility in Butte County and the Union City Layover Facility (but would also have the option on an as-needed basis to use the Natomas Layover Facility and the RMF in Stockton).

Minor repairs of rolling stock are limited to small items mainly related to interior maintenance of the trains and do not require a maintenance shop. Given this, all five facilities could be utilized for minor repairs, even at the Union City and Natomas facilities, neither of which will have a shop (a shop is not planned for the Union City Layover Facility due to space constraints and limited levels of service in the mid-term). Cleaning activities at the Union City Layover Facility will be limited to interior cleaning. Cleaning related to the washing of train exteriors and toilet dumping are not planned for the Union City

Layover Facility, as it will not have train washing facility or a toilet dump. However, in emergencies, a pumping truck can be brought into the Union City Layover Facility via the planned service road to empty toilet retention tanks. The Merced Layover and Maintenance Facility will have these facilities, so these heavier types of cleaning can take place at that facility. The planned Natomas Layover Facility and the planned Butte County Layover Facility will be similar in capabilities as the Union City Layover Facility.

As noted earlier, wayside power (electric hook-ups) and water service will be provided at all layover facilities. These utilities will be used for interior cleaning and minor repairs. These cleaning activities would be performed while trains are laying over, typically on the layover tracks within the layover facility (but, in some potential cases, also on the station track). Cleaning of trains would be performed as needed during the midday and overnight periods using the service road between the two layover facility tracks for site access.

LIGHT MAINTENANCE AND HEAVIER CLEANING

Light maintenance of rolling stock would include an extensive range of repairs that would require the location of shop on site within one of the layover facilities but would not include the heaviest types of repairs. Light maintenance will be done either at the RMF in Stockton (typically for the Chico-Union City train) or the Merced Layover and Maintenance Facility (typically for the two Union City-Merced trains). As mentioned above, heavier cleaning (i.e., train car washing and toilet dumps) will typically take place at the Merced Layover and Maintenance Facility for the trains running between Union City and Merced. For the one train running between Chico and Union City, the primary location heavy cleaning would be at the RMF in Stockton, though toilet dumps will also be able to take place the layover facility in Butte County. The facility in Butte County is planned to include fueling capabilities.

HEAVY MAINTENANCE

Regular heavy maintenance (i.e., major repairs) of rolling stock used for all Union City trains will be performed at the existing RMF in Stockton.

3.2.4. Rolling Stock Requirements

Based on the proposed timetable concept shown in **Table 3-1**, the service plan for the mid-term for the Union City Intercity Rail Service would require three trainsets to operate, plus one spare trainset. Similar to most other mainline rail operations elsewhere in California, ACE's current fleet consists of low-emissions diesel locomotives operating in a push–pull configuration with a series of passenger coaches. With the various expansions to the ACE system currently underway, it is expected that SJRRC will need to substantially expand its fleet, with funding and procurement assistance from the State.

Trainsets for the Union City Intercity Rail Service would likely be secured through a joint procurement process led by the State (via Caltrans), in conjunction with SJRRC. Similar to the existing intercity rail services within California, the Union City fleet would be owned by the State. The exact technology for this fleet has not yet been determined but could include additional locomotives and passenger coaches for conventional locomotive-powered operations[19] or higher-performance solutions such as zero-

[19] SJRRC is working with the State on converting its diesel locomotives to zero-emissions operations and is currently seeking funding for these conversions. If the conversions are completed within the mid-term timeframe, these locomotives could be used with existing or future passenger coaches on the Union City services.

emissions multiple-unit (ZEMU) trains. The proposed locomotive and passenger rail equipment and technologies used for the Union City Intercity Rail Service will need to be approved by applicable Federal and State regulatory agencies and host railroad UP for operation over the UP shared-use network.

Given passenger rail equipment and technologies utilized for the Union City Intercity Service is not yet determined, planning for the Union City Intermodal Station Phase 3 Project was approached to accommodate a variety of trainset types most likely to be considered. Three trainset types were considered in the SoCo Rail Study: 1) existing bi-level trainsets currently used by ACE; 2) single-level, ZEMU Stadler Fast Light Intercity and Regional Trains (FLIRTs); and 3) single-level Siemens Venture trainsets.

Through extensive coordination with the City of Union City and analysis conducted on needed train capacity (based on the ridership of the intercity service envisioned), it was determined that a shorter trainset than the 10-car bi-level trainsets currently used for the existing ACE service between Stockton and San Jose is the preferred solution for the Union City Intercity Rail Service. Running shorter trainsets allows for a shorter platform to be implemented as part of the Union City Intermodal Station Phase 3 Project. A major benefit of a shorter platform is that conflicts are minimized with the existing east-side station plaza and future TOD development of the remainder of the WCA site. As discussed in detail in Chapter 4, it was determined that a platform with a length of 745 feet, which could accommodate 8-car bi-level trainsets, is sufficient to minimize the conflicts of concern. In particular, the implementation of a platform limited to 745 feet in length reduces the area required for the station and layover facility, minimizing physical impacts to the station plaza, Duncan Way, and other adjacent parcels. Therefore, a shorter trainset with eight bi-level passenger coaches (or an equivalent length if another type of rolling stock is used) avoids substantial impacts to the design of the station plaza area and maximizes the amount of developable area (and, consequently, potential dwelling units) that could be developed on the remaining WCA site. Based the proposed platform length, the following would be accommodated for each of the three trainset types being consider:

- 8-car (plus one locomotive) bi-level, similar to what is currently utilized for the existing ACE service;
- 3-unit ZEMU Stadler FLIRTs coupled together (no locomotive); and
- 7-car, Siemens Venture (with one locomotive) trainset.

Another major benefit of a shorter platform and running shorter trainsets is a reduction in project construction costs and ongoing O&M costs. As discussed in more detail in Chapter 5, the ridership forecasts show that the assumed bi-level 8-car trainsets will not constrain ridership for the Union City service. Ridership is also not likely to be constrained significantly utilizing the FLIRT single-level rolling stock. However, there is likely the need to constrain ridership significantly if single-level Venture cars are employed.

3.2.5. Operations and Maintenance Cost Estimates

The methodology for estimating future Operations and Maintenance (O&M) costs does not represent a detailed financial analysis of fixed and variable costs; however, an effort has been made to develop a preliminary evaluation of fixed and variable costs likely to increase as a result of the service expansion to

Union City. While the service is considered intercity, the cost model would follow the current ACE O&M model.

DEVELOPMENT OF THE ACE O&M COST MODEL

To project O&M costs for the planned service expansion to Union City, specific modifications to the fixed and variable costs elements were applied. For example, most fixed costs were increased by 25% to reflect an expanded operation. Variable costs related to train operations and bus shuttles were increased by the increase in train-miles[20]. Assumptions were made for the new management personnel required to staff the expanded operation. Station maintenance costs were increased by the number of stations, and insurance costs were increased in relation to ridership which reflect greater exposure to risk. Rail maintenance facility expenses were increased to account for the costs of maintaining more trainsets and to accommodate a new layover facility in Union City.

Following this approach, annual O&M costs that were developed for the proposed Merced Extension (from Lathrop) and Sacramento Extension (from Stockton) were then updated to reflect the additional train service to Union City. The scenarios outlined below represent how the O&M costs were generated.

- **Existing Service-Levels (including 2022):** This scenario represents the existing service-levels, with the four trains (round trip) between Stockton and San Jose.
- **With Merced & Sacramento Extensions (Base):** This scenario represents two extensions currently being implemented, with three trains (round trip) between Stockton and San Jose; one train (round trip) between Merced and San Jose; one train (round trip) between Natomas and San Jose (round trip); three trains (round trip) between Merced and Natomas (with a transfer to San Jose-bound trains at the North Lathrop Transfer Station); and one train (round trip) between Natomas and Stockton.
- **With Union City Service (Project):** This scenario represents the Proposed Project operation, with three trains (round trip) between Stockton and San Jose; one train (round trip) between Merced and San Jose; one train (round trip) between Natomas and San Jose (round trip); three trains (round trip) between Merced and Natomas (with a transfer to San Jose-bound trains at the North Lathrop Transfer Station); one train (round trip) between Natomas and Stockton; one train (round trip) between Natomas and Union City; and two trains (round trip) between Merced and Union City. . While the service north from Union City is anticipated to go to Chico, the O&M costs north of Natomas will be estimated are part of the North Valley Rail project.

O&M COST FINDINGS

As of 2022, ACE's four round trips between Stockton and San Jose on weekdays generated 174,064 annual train-miles and an annual O&M cost of $26.7 million. **Table 3-4** identifies incremental and total train-miles and incremental and total O&M costs for the Merced & Sacramento Extensions (Base) and the Union City Service (Project). The total O&M reported at the bottom of the table has been escalated to $2023.

For a more detailed table of O&M cost calculations, please see **Appendix B**.

[20] A train-mile is generated by a train moving one mile. A train running 200 miles, for example, generates 200 train-miles.

TABLE 3-4. ANNUAL O&M COST ESTIMATE FOR PROPOSED UNION CITY INTERCITY RAIL SERVICE

Metrics	Stockton – San Jose (Existing)	With Merced & Sacramento Extensions (Base)	With Union City Service (Proposed Project)
Pre-Extensions Train-Miles	174,064	174,064	174,064
Incremental Train-Miles	0	241,514	494,824
Total Train-Miles	174,064	415,578	668,888
Pre-Extensions O&M Cost ($2022)	$26,710,062	$26,710,062	$26,710,062
Incremental O&M Cost ($2022)	0	$27,108,695	$51,918,617
Project O&M Cost ($2022)	0	0	$24,809,922
Total O&M Cost ($2022)	$26,710,062	$53,818,757	$78,628,679
Total O&M Escalated ($2023)	**$28,312,666**	**$57,047,882**	**$83,346,400**
Project O&M Escalated ($2023)	**$0**	**$0**	**$26,298,517**

Source: AECOM, 2023

4.0 Infrastructure Improvements to Accommodate Operating Plan

4.1. Layover Facility Location Planning

For trains to remain at the Union City Intermodal Station for varying durations a layover facility is a required component of the Union City Intermodal Station Phase 3 Project. This chapter summarizes the identification and analysis of potential options for a layover facility in conjunction with the Union City Intermodal Station as the East Bay Hub. The layover facility accommodates train storage when they are not in service as well as light maintenance on the trains. A full description of all options and analyses is included in the Layover Site Feasibility Analysis Memorandum included in **Appendix C**.

4.1.1. Layover Site Feasibility Analysis Process

REQUIREMENTS AND ASSUMPTIONS

Spatial and operational planning considerations were identified, including the approximate footprint required to accommodate facilities, train storage, tracks, and access. The layover site facilities are for the train operating crews and other staff include parking, a break room, an administration office, restrooms, and storage rooms. The spatial requirements for the trainsets to operate efficiently included the number of layover tracks, an access road, wayside power, and water service. Also, preliminary assumptions were made regarding the intercity rail service characteristics, including the number and length of service trains based on the SJRRC/SJJPA Mid-Term Horizon service configuration plan, as shown in **Figure 3-1**.

Summary of Key Layover Facility Considerations

All options assume the East Bay Hub location at Union City Intermodal Station

- *Operations to and from the station site to the layover facility are key to the analysis*

All options are located on or adjacent to Union Pacific right-of-way

- *UP coordination and approval will be key to project success*

Operations are assumed to begin in the mid-term horizon

- *Station, layover facility, and any additional necessary infrastructure improvements need to be constructed within this time frame*

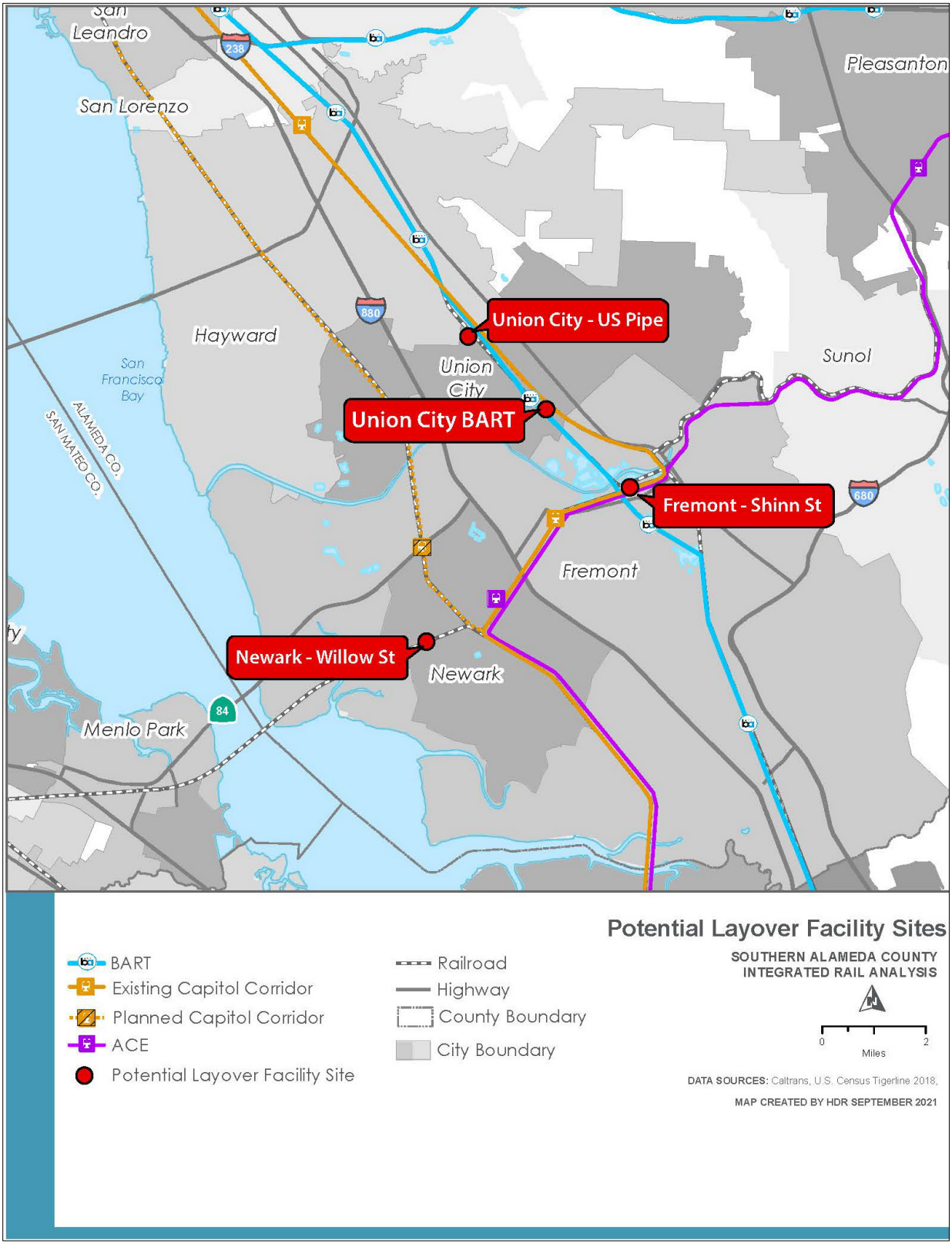
IDENTIFICATION OF POTENTIALLY FEASIBLE LAYOVER OPTIONS

Four potential sites in the vicinity of the Union City Intermodal Station were identified for further analysis based on the requirements and assumptions outlined above. The sites include:

- Union City BART (now referred to as the “Union City Intermodal Station”)
- Union City – U.S. Pipe
- Fremont – Shinn Street
- Newark – Willow Street

Figure 4-1 presents the locations of these sites in relation to the location of the Union City Intermodal Station.

Figure 4-1. Potential Layover Facility Sites



Source: HDR, 2022

4.1.1. Methodology

The layover site feasibility analysis was based on a high-level assessment of the following four considerations: Project Complexity, Land Use Compatibility, Environmental Constraints, and Operational Feasibility. Based on an assessment of reasonably foreseeable benefits and impacts, each site was given a rating of one through five – with one being the most feasible (and most favorable) and five being the least feasible (and least favorable).

Project complexity was assessed by examining the following considerations:

- Infrastructure needs – the level of investment required for new infrastructure and capital improvements in order to accommodate the proposed service and intercity rail travel.
- Physical constraints – the presence of physical elements which increase the challenges associated with the project, such as at-grade road crossings, railway crossings, supplemental rail infrastructure, hydrological features, and others.
- Rough-order-of-magnitude (ROM) capital costs – very high-level ROM cost estimates of proposed elements such as the layover facility, station platform, mainline capacity improvements, remediation, owner costs, and contingencies.

Land use compatibility was assessed to get a better understanding of the adjacent existing and planned land uses, site access, and right-of-way ownership. A layover facility would generally be considered an industrial land use and would therefore generally be more compatible when located adjacent to other industrial uses. Uses with higher concentrations of people, such as commercial (office/retail) and residential, would generally be less compatible with the layover facility.

Based on readily available data and site visits, **environmental constraints** were assessed through a high-level analysis of various California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) resource areas, such as aesthetics, air quality, biological resources, cultural resources, and hazards & hazardous materials, just to name a few. For each resource area, a preliminary analysis of the CEQA Appendix G checklist was conducted to help identify potential environmental constraints associated with each layover facility site.

Three considerations were used to assess the **operational feasibility** of the potential layover sites:

- Compatibility with service plan – evaluation to confirm if each site could satisfy the consequential space and facility requirements
- Effects on infrastructure and design – identification of additional impacts, such as track, signal, and right-of-way improvements that may be required by UP to allow for operation of the proposed service.
- Operational considerations – estimation of one-way, non-revenue deadhead mileage and running times for each layover facility, as deadhead movements may impact crew scheduling and layover/maintenance windows, operational costs, and general service functionality and reliability.

4.1.2. Layover Facility Analysis Results

The Union City Intermodal Station site was selected to move forward with further design and development based on the analysis described below. A brief overview of the analysis results for the three sites that were not selected to advance – *Union City – U.S. Pipe, Fremont - Shinn Street, and Newark - Willow Street* – is included below. For additional details, please refer to **Appendix C.**

The Union City Intermodal Station layover facility location is located approximately 0.25 mile south of the partially constructed and CPUC-approved at-grade pedestrian crossing across the UP Oakland Subdivision at the Union City BART Station. The site is just east of the existing UP Oakland Subdivision and totally enclosed within a Waste Consolidation Area, in what has been identified by Union City as part of "The Core" of their Station District TOD in the *Station District Specific Plan.* **Figure 4-2** identifies the location of this site.

PROJECT COMPLEXITY

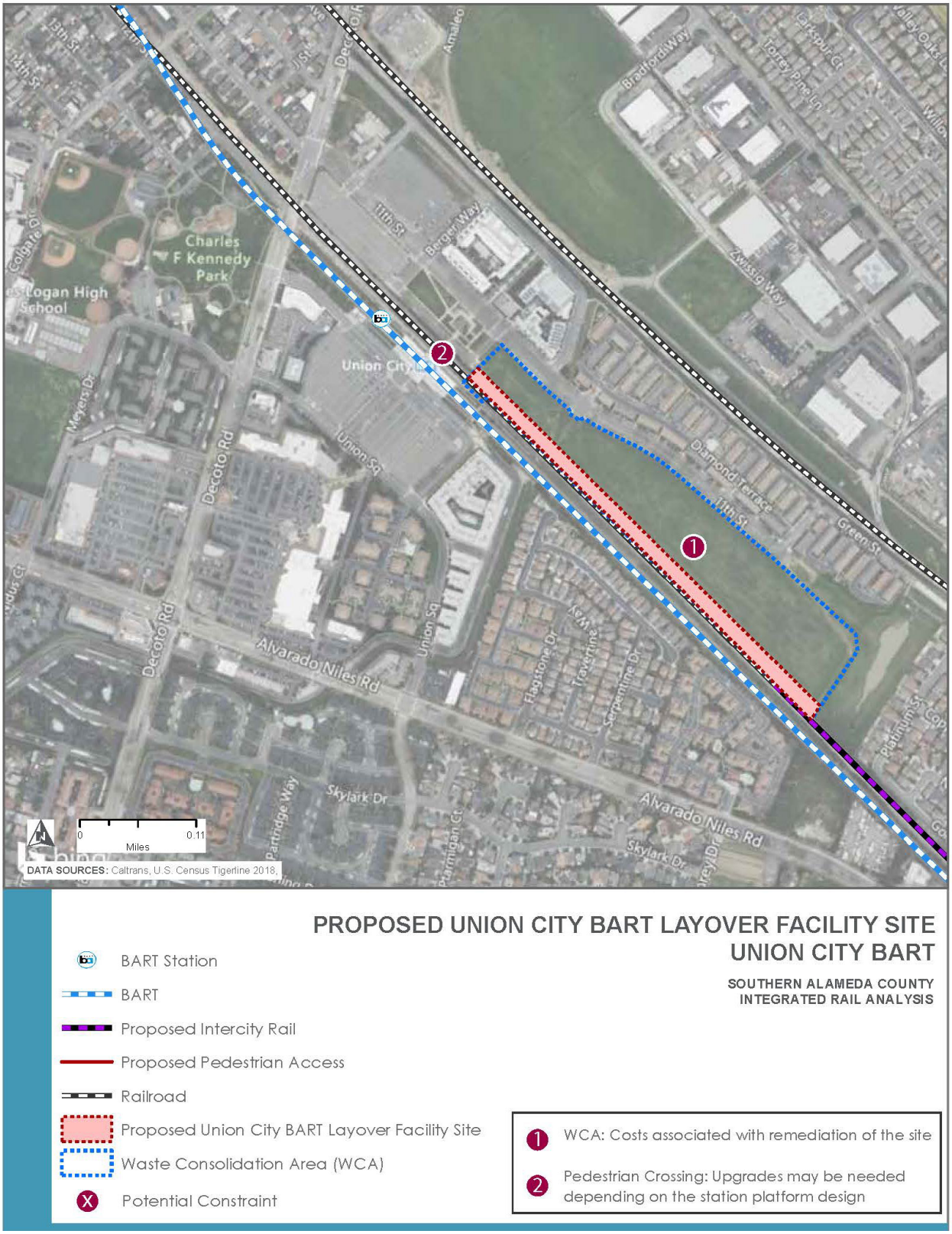
As shown in **Figure 4-2**, two major constraints were identified for the potential layover facility at the Union City BART site:

- *WCA remediation*: The WCA is a 15.94-acre capped landfill at the former Pacific States Steel Corporation (PSSC) Site that contains steel slag, impacted contaminated soil, and other debris. Full waste removal, disposal, and site restoration (Clean Closure) would require excavation of approximately 1,000,000 tons of materials and an estimated cost around $200 million or more. The layover site at this location would only require the removal of roughly one-third of the WCA material and the Union City Intermodal Station Phase 3 Project would not have to bear the cost of full removal and restoration.
- *Planned pedestrian crossing*: The City of Union City is advancing a CPUC- and UP-approved at-grade pedestrian crossing across the UP Oakland Subdivision main rail line to provide access between the Union City BART Station and development east of the station, including the east side plaza, Duncan Way, a new public park and sculpture garden, and housing.

Consideration was given that the Union City Intermodal Station Phase 3 track would need to be a single-ended spur as a result of coordination with Union City, and that the western layover facility track would have access at both ends. It is also assumed that any main line track work in the vicinity of the Union City Intermodal Station Phase 3 Project would have to be done regardless of the location of the layover facility, so UP main line track improvements were only examined outside of the station and layover facility.

A high-level ROM capital cost estimate for the Union City BART layover facility in concert with the construction of the adjacent station platform and tracks was developed as part of the layover facility analysis and updated as additional design details became available. The estimated total construction cost is between $140 and $160 million, with approximately $70 million required for the remediation of portion of the WCA site needed for the rail project.

Figure 4-2. Proposed Union City BART (Intermodal) Station Layover Facility Location



Source: HDR, 2022

Summary of Analysis Results of Other Sites

- **Union City – U.S. Pipe:** This site is located approximately 1.5 miles north of the Union City BART Station, just west of the UP Oakland Subdivision enclosed within the 66-acre U.S. Pipe production facility in the City of Union City. This site would require crossing Whipple Road, which is currently at-grade and would require greater gate downtimes than exist already and cause more congestion on that roadway. There are also geometric constraints related to the BART straddle bents located near 12th Street and I Street, which create insufficient space to preserve capacity for the UP Oakland Subdivision operations and provide an independent running track for deadhead movements. The high-level ROM costs for the Union City – U.S. Pipe site is $210,000,000 with a majority of that cost being tied to main line track improvements, which would include track work needed to maintain UP's capacity.
- **Fremont – Shinn Street:** This site is located approximately 2.5 miles southeast of the Union City BART Station and would occupy a portion of the UP Fremont Yard. There is minimal space between the existing tracks and the Shinn Pond embankment, making it difficult to add an additional track to accommodate UP's future capacity needs. In order to preserve future capacity for UP, it may be necessary to provide an additional main track between Union city and Fremont, which would require the widening of the existing UP bridge over Alameda Creek or the construction of a new bridge. Since the layover facility would occupy a portion of the UP Fremont Yard, that capacity would need to be re-created elsewhere. The high-level ROM for the Fremont – Shinn Street site is $170,000,000 with the highest cost categories related to the preservation of main line capacity and likely need for an additional track to preserve UP's existing corridor, including the Alameda Creek bridge construction.
- **Newark – Willow Street**: This site is located approximately 7.5 miles southeast of the Union City BART Station. In order for trains to access the Newark – Willow Street layover facility from Union City, a new track connection between the Oakland Subdivision and the Niles Centerville Line, including a tunnel under the BART tracks, would need to be constructed to allow for this necessary movement. Use of this site would also require significant additional trackage or a flyover connection at the Newark Junction, potentially requiring significant right-of-way acquisition. In order to preserve future capacity for UP, it may be necessary to provide an additional main track between Union City and Fremont, which would require the widening of the existing UP bridge over Alameda Creek or the construction of a new bridge. In addition, there are heavy traffic volumes along Fremont Boulevard (SR 84) and the UP Coast Subdivision at Newark Junction, which would complicate layover facility access, absent grade separations. The high-level ROM for the Newark – Willow Street site is $270,000,000, reflecting the high cost of the main line capacity improvements (i.e., likely new tracks and bridges) needed to preserve UP's existing corridor and the tunnel under BART needed to connect the Oakland Subdivision to the Niles Centerville Line.

LAND USE COMPATIBILITY

The Union City Intermodal Station site is located southeast of the BART Station, within an area that is zoned for "Station Mixed Use Commercial" by the City of Union City and designated for TOD under the Station District Specific Plan. Some general pros and cons related to the site's land use compatibility are described below.

Pros:

- The site is adjacent to the existing Union City Intermodal Station minimizing deadheading distance, in is a compatible existing land use
- The site is adjacent to existing transit and rail rights-of-way for the UP Oakland Subdivision and BART; and road access exists.
- The site is currently undeveloped and only Union City- and railroad-owned property would be impacted.

Cons:

- The WCA is surrounded by existing and/or planned residential and mixed-use development complicating land-use compatibility
- The future Quarry Lakes Parkway will be a grade-separated corridor, adding complexity to the layover facility, requiring construction of an additional bridge.

Overall, land use compatibility was determined to be high for the Union City Intermodal Station site. It is bounded by the UP and BART rights-of-way and would be adjacent to the future intercity rail station in Union City. There is also the opportunity for excellent accessibility via the future Quarry Lakes Parkway and new access roads within the WCA as well as future roads constructed as part of the transit-oriented development by Union City.

Summary of Analysis Results of Other Sites

- **Union City – U.S. Pipe:** The site is located on an existing, active industrial property and is situated within an area that is zoned as "General Industrial" by the City of Union City. Nearby parcels within the City of Hayward are zoned as "Industrial Park". However, there are heavy traffic volumes along Decoto Road and Whipple Road which would complicate layover facility access, absent a grade separation. The deadhead movements between Union City Station and the U.S. Pipe site would traverse through a fairly dense residential neighborhood between Decoto Road and Whipple Road, where several homes are less than 100 feet from the existing track centerline along the UP Oakland Subdivision.
- **Fremont – Shinn Street:** The site is located immediately south of Kaiser Pond and Alameda Creek and is situated within an area that is zoned as "Industrial and Innovation" (specifically, "Service") by the City of Fremont. The area is also designated as a "Special Study Area" by the City's General Plan Map. Overall, the land use compatibility is low for the Fremont – Shinn Street site. Although there are some compatible land uses surrounding the site, there are also substantial issues with the site, including limited roadway access and proximity to existing residential neighborhoods and recreation areas.
- **Newark – Willow Street**: The site is situated on vacant, undeveloped land zoned as "Business and Technology Park" and "Limited Industrial" by the City of Newark. The entirety of the areas south of the Dumbarton Line at this location are targeted for TOD by the City of Newark as part of the Bayside Newark plan (formerly known as the Dumbarton TOD plan). The proposed layover facility would require a new connection of the UP Oakland Subdivision with the Niles Subdivision/Centerville Line (near Shinn Street), requiring a tunnel through the BART embankment and a new bridge across Alameda Creek, impacting an existing residential neighborhood immediately to the west of the BART right-of-way, south of Alameda Creek. In addition, there are heavy traffic volumes along Fremont Boulevard (SR 84) and the UP Coast

Subdivision at Newark Junction, which would complicate layover facility access, absent grade separations. The layover facility could conflict with the vision established in the Bayside Newark plan, which includes a Dumbarton Transit Station at this location and supporting mixed-use TOD immediately south of the Dumbarton Rail Line. This site has been proposed in the past for the Dumbarton Rail Line layover facility. The proposed layover facility may also require property acquisition from the adjacent Ohlone Humane Society Wildlife Rescue Center.

ENVIRONMENTAL CONSTRAINTS

Key environmental constraints that could impact the development of a potential layover facility at the Union City Intermodal Station site include:

- *Hazards & hazardous materials:* The entire area is a brownfield site (former PSSC steel mill), and the proposed layover facility would be constructed on a former slag heap rising 22 feet above ground level. The site has been capped with an engineered system of clay and other materials designed to prevent the infiltration of water into the slag and the exposure of the hazardous materials. While the site is currently otherwise vacant, construction of the layover facility may require (potentially costly) additional site mitigation/remediation to remove hazardous materials.
- *Hydrology & water quality:* A small portion of the site immediately southeast of the existing Union City Intermodal Station falls within a Federal Emergency Management Agency (FEMA) Special Flood Hazard Area and is susceptible to flooding during a 100-year flood.
- *Noise & vibration:* The proposed layover facility would result in increased train operations in close proximity to existing residences, particularly at the southeast corner of the layover site.

Overall, the Union City Intermodal Station site performs well in terms of environmental constraints, with the largest potential concern associated with hazardous materials stemming from the site's previous use as a slag heap. Potential constraints in other resource areas are generally less critical and are unlikely to pose substantial risks or concerns if this site is selected for the proposed layover facility.

Summary of Analysis Results of Other Sites

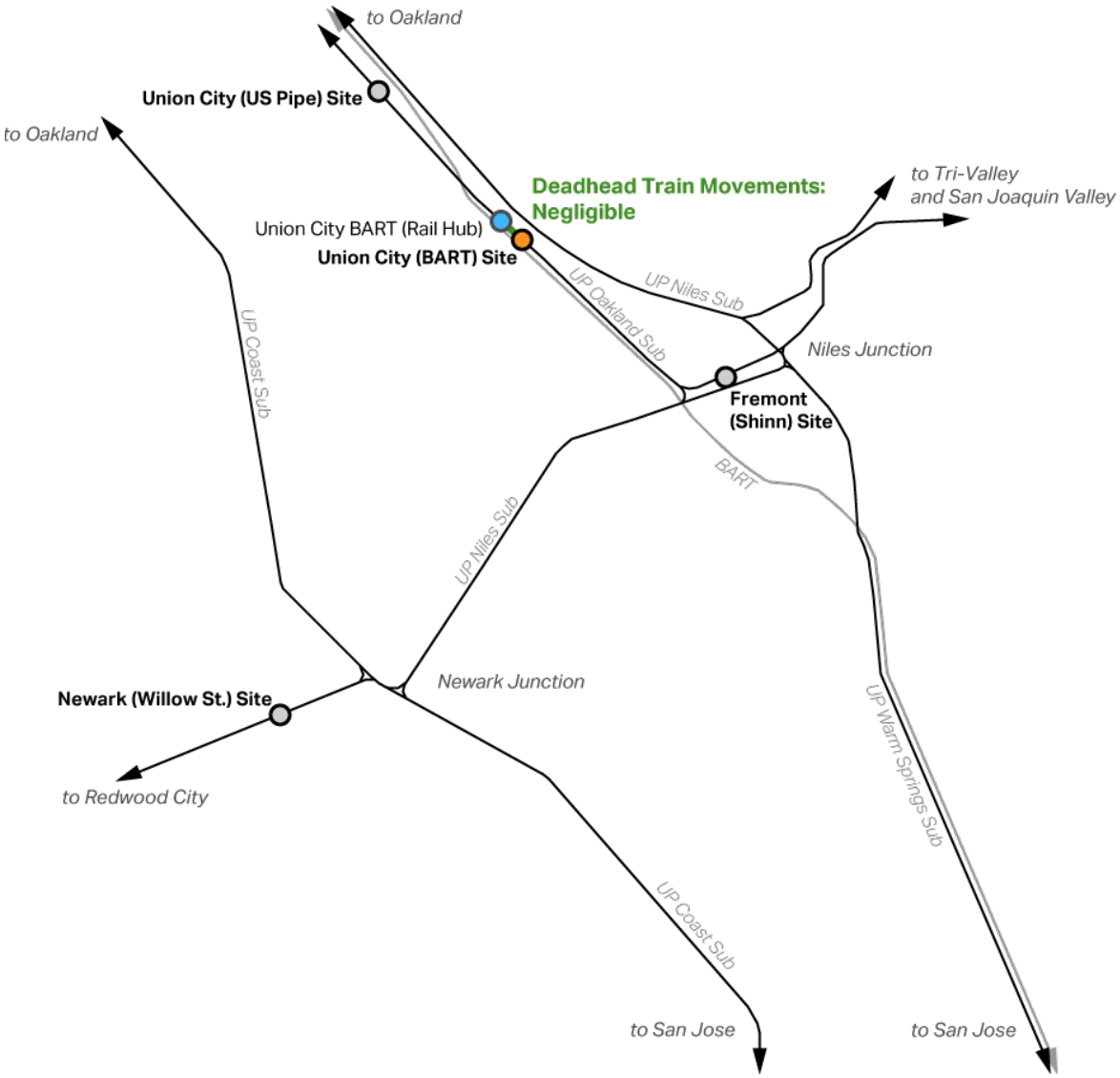
- **Union City – U.S. Pipe:** Given the extensive industrial history of the site, construction of the proposed layover facility may require (potentially costly) additional site mitigation/remediation to remove hazardous materials. The proposed layover facility would also result in increased train operations in close proximity to existing residences. Several residences between Whipple Road and Decoto Road would be located as close as 100 feet from the existing track centerline along the UP Oakland Subdivision. In addition, there are heavy traffic volumes along Decoto Road and Whipple Road which would complicate layover facility access, absent a grade separation.
- **Fremont – Shinn Street:** Given the distance between the station and potential layover facility and the likely need for improvements to the rail corridor, environmental impacts under the Fremont – Shinn Street option could be spread over a larger geographical area than under the Union City options. The need for a potential new bridge crossing Alameda Creek may result in impacts to biological resources, hydrology, and water quality and require multiple environmental permits. The preliminary analysis of hazards and hazardous materials also shows concerns related to earthquakes, liquefaction, and flooding.

- **Newark – Willow Street**: Overall, this site performs the worst among the four options. It shares many of the potential environmental constraints identified for the Fremont – Shinn Street option, with additional potential impacts related to transportation and property acquisition across a larger geographical extent, including requiring a tunnel through the BART embankment. In addition, there are heavy traffic volumes along Fremont Boulevard (SR 84) and the UP Coast Subdivision at Newark Junction, which would complicate layover facility access, absent a grade separation.

OPERATIONAL FEASIBILITY

Figure 4-3 illustrates the existing rail lines in the SoCo Rail study area, and the potential Union City BART site layover facility in relation to the proposed Intercity Rail Station at the Union City Intermodal Station. The Union City Intermodal Station site would be located along the UP Oakland Subdivision immediately south of the station.

Figure 4-3. Union City BART (Intermodal) Station Phase 3 Project in Relation to Layover Facility



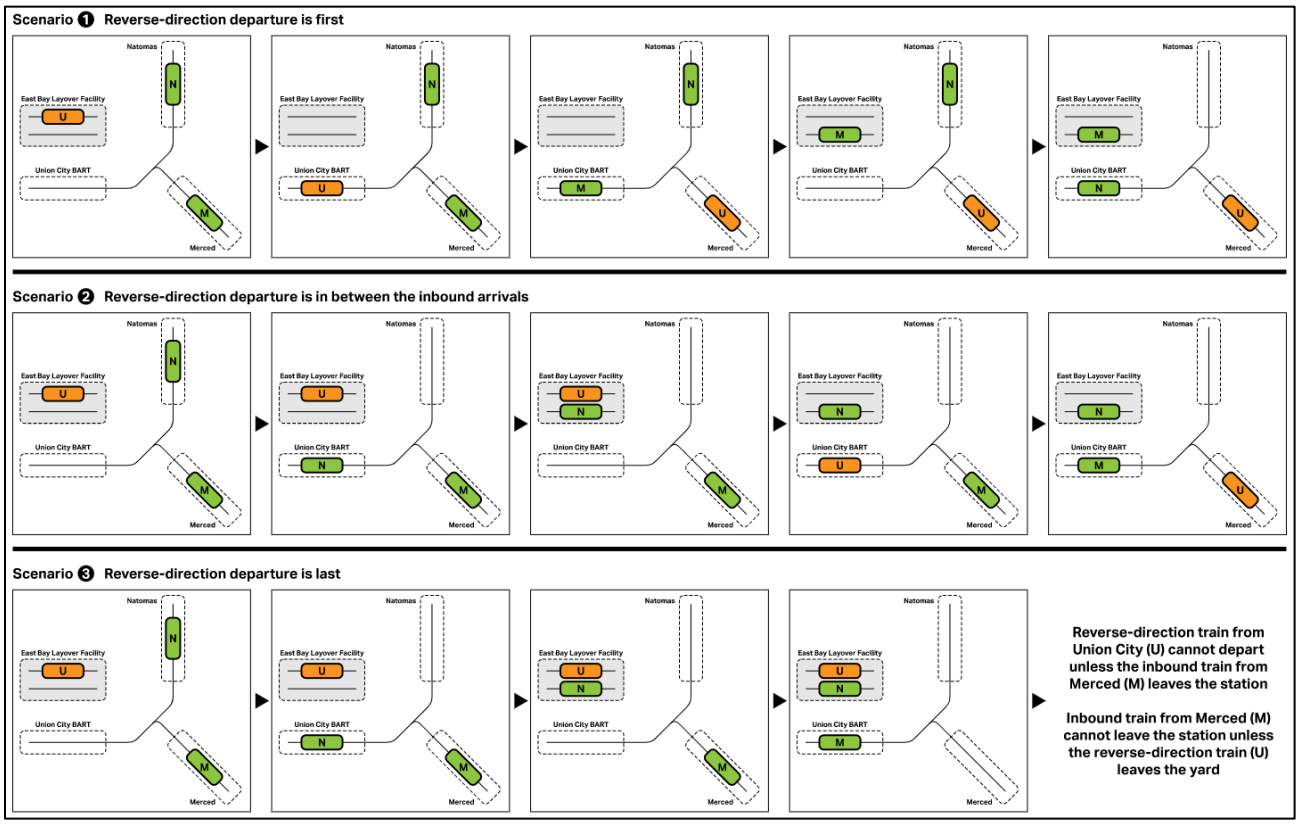
Source: AECOM, 2022

The Union City Intermodal Station layover facility site would be located just east of the UP Oakland Subdivision. Given the location on the east side of the UP mainline tracks, the intercity rail station track and platform would also need to be located on the east side of the UP mainline track to allow intercity rail trains to move between them without having to cross UP mainline tracks. These deadhead movements between the intercity rail station and layover facility would be negligible at this layover site.

Two layover tracks are assumed for the Union City Intermodal Station layover facility site, though there is enough space to the east to allow for additional tracks in the future, with the caveat that adding additional layover tracks would reduce the amount of space available for redevelopment, contrary to the City's preferences.

Figure 4-4 shows a progression of diagrams demonstrating how the train movements could be performed based on the three scheduling scenarios, with the assumption of two layover tracks being present within the layover facility footprint. This assumption applies to the Union City Intermodal Station layover facility, as well as the Union City – U.S. Pipe and Fremont – Shinn sites. This assumption (and therefore these diagrams) does not apply to the Newark – Willow Street layover facility site since the assumption for that site is three layover tracks, which would provide capacity that avoids the need to plan for how the reverse train would integrate with the two inbound trains. Note, given there is a reversion-direction train, careful planning is needed to understand how trains interact in the vicinity of the station and layover facilities.

Figure 4-4. Train Movements Diagram to/from Layover Facility



The purpose of developing these scheduling scenarios is to gain an understanding of what schedule configuration would work best given the layover facilities in terms of train movements, which will then inform the development the overall systemwide schedule update for the ACE system, including the three Union City Intercity Rail trains.

The three scheduling scenarios compared include:

1. Reverse-direction train departs the Union City Intermodal Station intercity rail platform prior to the arrival of the two inbound trains from Central Valley;
2. Reverse-direction train departs the Union City Intermodal Station intercity rail platform after the first inbound train arrives and before the second inbound train arrives from the Central Valley; and
3. Reverse-direction train departs the Union City Intermodal Station intercity rail platform after the two inbound trains from Natomas and Merced arrive.

Based on this operational configuration and proximity of the Union City Intermodal Station layover facility site to the station location, the operational pros and cons of this site used for the layover facility are provided below:

Pros:

- Required deadhead mileage and running time to/from the layover facility is negligible. This eliminates the potential need for additional main track or other major corridor improvements and maximizes operational efficiencies by reducing non-revenue movements and avoiding conflicts with freight and other passenger trains.
- The proximity of the layover facility to the station introduces substantial operational efficiencies with co-location of the station and layover site, making it possible to use the station track for both boarding/alighting and storage. This offers substantial benefits in reducing potential risk and cost associated with additional remediation for the WCA site, as a track layout only needing to accommodate one or two trains reduces the required site area and soil excavation. Crews would be able to easily walk between the station and the layover facility to perform light maintenance and cleaning for trains as needed.
- The platform location at the station would need to be on the east side of the UP right-of-way, given the location of the layover facility site is also envisioned to be immediately east of the UP right-of-way, where there is more space than a location west of the UP right-of-way to accommodate the necessary facilities and amenities without obstructing or complicating BART station access. An east-side platform also provides intercity rail with better access and visibility to/from the street.
- No need to cross congested streets at-grade, eliminating traffic delays.

Cons:

- The location south of the station necessitates train reversal at the platform when pulling into and out of the layover facility, which may result in increased dwell times at the platform and reduced operating flexibility.
- An east-side platform results in longer, potentially more complicated paths of travel for passengers transferring between intercity rail and BART. In addition, it is possible that a larger

number of people would be using the at-grade pedestrian crossing to access BART as a result of the Union City Intermodal Station Phase 3 Project, which may potentially warrant a pedestrian tunnel or bridge in lieu of an at-grade crossing, requiring substantially more vertical circulation elements than would be necessary for a west-side platform.

- Only the western layover track would have southern access point to the existing UP Oakland Subdivision, reducing flexibility in case of a train being removed from service for mechanical reasons.

Overall, the Union City BART site performs well in terms of operational feasibility. While there are some cons associated with this location, they are substantially outweighed by the pros, including a minimal need for deadheading and no need for additional improvements to the rail corridor.

Summary of Analysis Results of Other Sites

- **Union City – U.S. Pipe:** This site is located west of the UP mainline tracks, requiring the Intercity rail station track and platform at the Union City Intermodal Station Phase 3 Project to be located on the west side of the UP Oakland Subdivision mainline track to allow intercity rail trains to move between them without having to cross the UP mainline. In each direction, these deadhead movements between the station and the layover facility would be approximately 1.5 miles long and roughly five minutes in duration. UP may require an additional main track between the station and the layover site to minimize conflicts with freight trains, which would involve substantial engineering challenges, including modifications to existing straddle bents supporting the BART aerial guideway and a potential grade separation at Decoto Road and Whipple Road.
- **Fremont – Shinn Street:** Increased deadhead mileage and running times under this option would result in poorer operating efficiencies and reliability. In addition, a potential additional main track comes with the significant engineering and environmental challenges of a new bridge over Alameda Creek.
- **Newark – Willow Street**: This site would be located either immediately north or immediately south of the Dumbarton Rail Corridor and currently no trains operate along the Dumbarton Rail Corridor. Given a new track connection, including a tunnel under the BART tracks and a bridge across Alameda Creek, would be needed between the UP Oakland Subdivision and UP Niles Subdivision that would likely be built on the west side of the UP mainline (along the Oakland Subdivision), the intercity rail station track and platform at the Union City Intermodal Station would need to be located on the west side of the UP mainline track as well to allow trains to move between them without having to cross UP mainline tracks. In addition, there are heavy traffic volumes along Fremont Boulevard (SR 84) and the UP Coast Subdivision at Newark Junction, which would complicate layover facility access, absent potential grade separations. Deadhead movements between the station and the layover facility, traveling on portions of the UP Oakland, Niles, and Coast Subdivisions, would be approximately 7.5 miles long and 15 minutes or more in travel time in each direction.

ANALYSIS SUMMARY

Table 4-1 provides a comparison of the results of the layover facility feasibility analysis. Each of the four potential layover facility sites are analyzed for Project Complexity, Land Use Compatibility, Environmental Constraints, and Operational Feasibility. Across each category, each site is provided a rating from 1 to 5, with 1 being the most feasible/favorable and 5 being the least feasible/favorable. As the table shows, the Union City Intermodal Station site is the most feasible and most favorable location

for the SoCo Rail Layover Facility in the Mid-Term Horizon. Therefore, the other sites were not carried forward for further consideration.

TABLE 4-1. LAYOVER FACILITY SITE COMPARISON MATRIX

Site	Project Complexity	Land Use Compatibility	Environmental Constraints	Operational Feasibility
Union City BART (Intermodal) Station	1	3	1	1
Union City – U.S. Pipe	3	2	2	2
Fremont – Shinn St.	2	2	3	3
Newark – Willow St.	5	4	4	5

Source: HDR, 2022

Note: Scoring was determined for each criterion based on an independent evaluation of how it met the analysis objectives and avoided impacts, with 1 indicating a site was least desirable/preferred and 5 being a site most desirable/preferred.

4.2. Conceptual Design Considerations

This section describes the station and platform design concept developed in coordination with the City of Union City, SJRRC, and MTC and the process to refine these designs to a single preferred design for the proposed Union City Intermodal Station Phase 3 Project. This section presents the set of assumptions and requirements needed for a based on the preferred design and discusses the design implications of different rolling stock types.

4.2.1. Coordination with Union City

Understanding that the City of Union City is advancing the *Station District Specific Plan*, including the at-grade pedestrian crossing at the Union City Intermodal Station and Quarry Lakes Parkway, the SoCo Rail team engaged the City in the development of design options for the Union City Intermodal Station Phase 3 Project to maintain consistency across the various projects in the vicinity of the Union City BART Station. Through coordination, the City of Union City noted the following key design considerations as important to their vision for the area and consistency with their plans:

- Any proposed improvements as part of the Union City Intermodal Station Phase 3 Project should not impact the CPUC- and UP-approved at-grade pedestrian crossing;
- The entire intercity rail platform should be located south of Duncan Way and the east side Plaza to avoid impacts on those properties;
- The initially constructed (Mid-Term Horizon) station track should be constructed on the west side of the platform adjacent to the existing UP Oakland Subdivision Main Track to minimize impacts to City-owned properties, and also deferring the construction of an intermediate emergency access egress underpass;
- The project should provide a southern extension of Duncan Way connecting to 11th Street opposite Aquamarine Terrace just east of the platform for general pick-up/drop-off; and,

- The project should consider the feasibility of remediating and removing the full WCA site at the same time (this is the City's preference).

The infrastructure proposed as part of the Union City Intermodal Station Phase 3 Project was developed in collaboration with the City based on these considerations. One design concept is advancing based on these considerations; however, it is important to note that multiple other concepts may be possible and would be explored in the next phase of project development should any components of the proposed design concept prove to be infeasible or impractical.

4.2.2. Design Requirements and Assumptions

This section examines the station platform design assumptions applied in the development of the City-preferred design concept, based on an understanding of Union City's requirements and requests, UP design standards, and SJRRC's operating requirements.

SERVICE ASSUMPTIONS

A more detailed discussion of the service planning for the Union City Intermodal Station Phase 3 Project is discussed in Chapter 3; however, there are two important service assumptions that informed the design:

- *Mid-Term Horizon:* The initial Operations assume three daily intercity rail round trips at the Union City Intermodal Station by around 2030, one train would stay overnight prior to starting its round trip from Union City, while the other two trains are planned to originate elsewhere, with one in Merced connecting with HSR trains and the third originating from Natomas, with the possibility of being extended farther north.
- *Long-Term Horizon:* It is assumed that by 2050, there would be hourly intercity rail service at the Union City Intermodal Station; therefore, the station would need to accommodate two trains at the station at the same time throughout the day, 7-days-a-week.

UNION PACIFIC RAILROAD RIGHT-OF-WAY CONSIDERATIONS

The new intercity rail service would utilize the UP Oakland Subdivision to access the Union City Intermodal Station. At the intercity rail station, where trains would be stopped and movements to and from the layover facility would be necessary, disruption to UP operations must be avoided. The designs assume minimal encroachment into the UP right-of-way at the station and layover area which are on tracks separate from the UP Oakland Subdivision Main Track.

POTENTIAL IMPROVEMENTS TO THE UP OAKLAND SUBDIVISION

The UP Oakland Subdivision between Niles Junction and the Union City Intermodal Station Phase 3 Project location is presently a freight-only corridor with a speed limit of 10 miles per hour for all trains. The new intercity rail service would need to upgrade the line to support intercity passenger trains operating at higher speeds. Where feasible, the UP Oakland Subdivision would be upgraded to accommodate operating speeds between 50 and 60 mph; however, speeds would be likely be limited to 30 mph between the Alameda Creek bridge and Niles Junction, east of the Mission Boulevard underpass due to geometric constraints.

TRAINSET TYPES

The revisions to the initial design concept were also based on the need to accommodate the following trainset types, as described below.

The bi-level trainset used by ACE has one low-emissions diesel locomotive and eight bi-level cars, for an overall trainset length of 755 feet The bi-level trainset, shown in **Figure 4-5,** can accommodate 1,056 passengers.

Figure 4-5. ACE Bi-Level Trainset

The Siemens Venture is a single-level train expected to be used by the Amtrak *San Joaquins* for service between Oakland, Stockton, and Bakersfield. It has one low-emissions diesel locomotive and seven passenger cars, for a total trainset length of 670 feet. The train set, shown in **Figure 4-6**, can accommodate 456 passengers.

Figure 4-6. Siemens Venture Single-Level Trainset

The Stadler FLIRT (Fast, Light, Innovative, Regional Train) is a multiple-unit single-level train similar to those used on TexRail between Fort Worth, Texas, and Dallas-Fort Worth Airport. Each individual unit would consist of one power car and four passenger cars, and units can be coupled together to form longer trainsets. For the Union City Intercity Rail Service, three of these units would be coupled together for a total trainset length of 798 feet to accommodate 672 passengers (see **Figure 4-7**). However, there is a possibility of the northernmost doorway being unusable due to its being located beyond the

platform limits due to the total train length being greater than the platform length. Caltrans and CalSTA ordered similar hydrogen-powered FLIRTs in September 2022 which will be used on intercity rail services.

Figure 4-7. Stadler FLIRT Trainset

It is important to note that all three types of passenger trains would likely initially use low-emissions Tier IV diesel-electric locomotives. However, in the future, the low-emissions Tier IV diesel-electric locomotives would be replaced by zero-emissions power, likely utilizing either battery power or hydrogen fuel-cell power which are currently undergoing research and development. The proposed locomotive and passenger rail equipment and technologies used for the Union City Intercity Rail Service will need to be approved by applicable federal and state regulatory agencies and host railroad UP for operation over the UP shared-use network.

Table 4-2 summarizes the trainsets considered in the infrastructure needs to accommodate the service and operating plan, including number of cars, total length, capacity, typical usage, and source of power.

TABLE 4-2. SUMMARY OF TRAINSETS USED FOR ANALYSIS

	ACE Bi-Level Train		Siemens Venture Single-Level Train	Stadler FLIRT
Passenger Cars	Ten cars	Eight cars	Seven cars, but could be expanded up to ten cars	Three units coupled together in one consist, with each unit comprising one power car and four passenger cars
Total Train Length	925 feet	755 feet	670 feet	798 feet
Total Passenger Capacity	1,320 Passengers	1,056 Passengers	456 Passengers	672 Passengers
Typical Current Trainset Usage	ACE trains between San Jose and Stockton		Amtrak *San Joaquin* trains between Oakland, Stockton, and Bakersfield	TexRail in Texas and ordered by California
Source of Power	Initially low emissions Tier IV diesel-electric but would later be replaced by zero-emissions power, likely either battery or hydrogen fuel cell			

Source: HDR, 2023

STATION PLATFORM STANDARD DESIGN

The recommended design described in this Phase 2 Report incorporates the standard SJRRC Valley Rail Project station platform design criteria to the maximum extent feasible. To be compliant with the 2011 Department of Transportation Platform Rule (Federal Register Volume 76, Number 181), the recommended platform design accommodates Americans with Disabilities Act (ADA) access to the trains by using mini-high platforms raising up portions of the platform to match the passenger car floor heights. The recommended design concept has a platform length of 745 feet, to accommodate the City's requests and is designed for future expandability to 30-foot width to accommodate dual-sided boarding and alighting (i.e., with station tracks on both sides of a center platform), as anticipated to be required in the Long-Term Horizon.

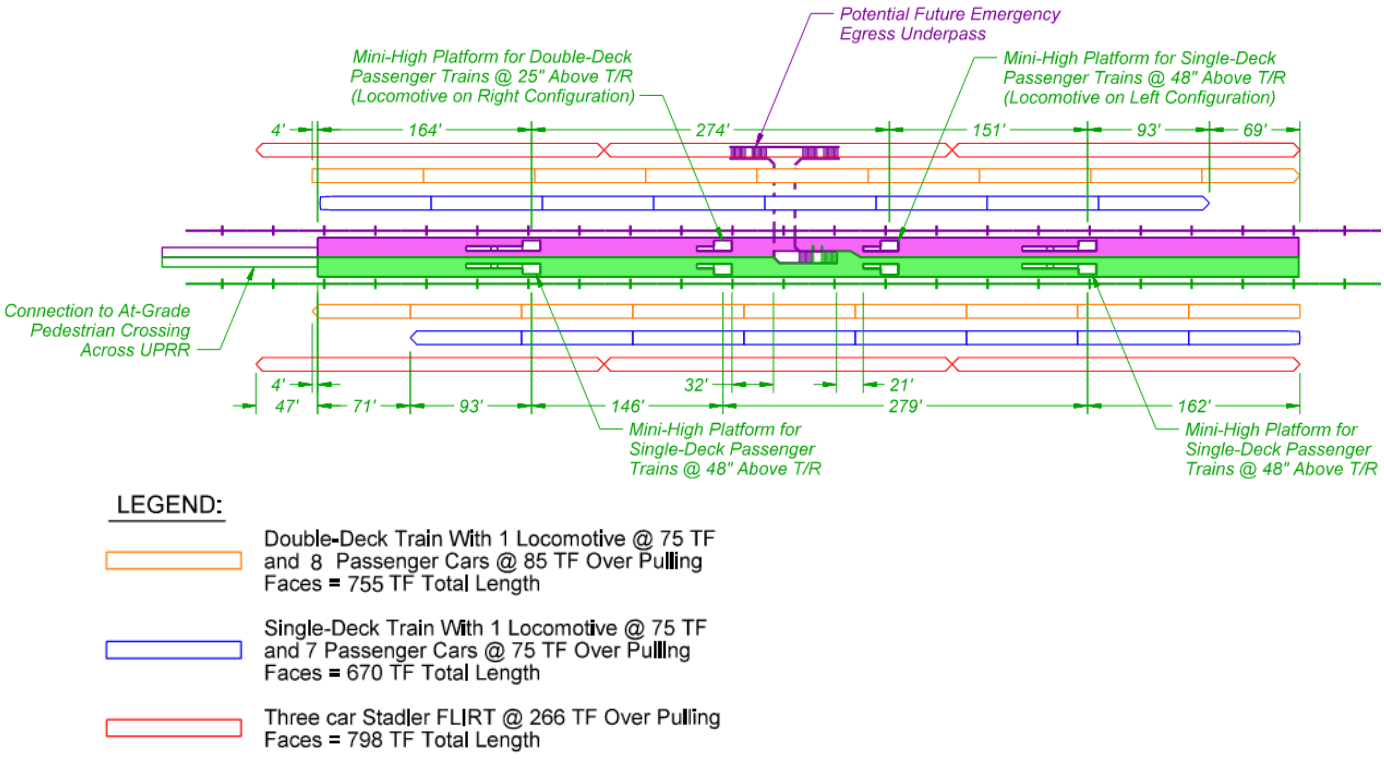
4.3. City-Preferred Design Concept

Based on the criteria and assumptions outlined above, and in coordination with Union City, a design concept was developed that responded to City concerns and would be able to accommodate the Mid-Term service and operating plan without precluding expansion in the future.

4.3.1. General Platform Design

The schematic presented in **Figure 4-8** depicts the 745-foot long platform included in the City-preferred design concept with the locations of mini-high platforms for ADA accessibility and the locations of the alternative ACE Bi-Level, Siemens Venture Single-Level and Stadler FLIRT trainsets along the platform.

Figure 4-8. General Platform Configuration of City-Preferred Design Concept



4.3.2. Pedestrian Access to BART

For the City-preferred design concept, ADA-accessible pedestrian access is provided from the east side Plaza and Duncan Way on the east to the Union City BART Station on the west. This east-west connection across the UP Oakland Subdivision is vital to the City's vision for their intermodal and interconnected *Station District Specific Plan*.

There is a CPUC- and UP-approved at-grade pedestrian crossing across the UP track for this east-west connection currently being implemented and the City of Union City has expressed a strong preference to utilize this at-grade crossing for access from BART to the intercity rail platform; therefore, the design incorporates a connection between the intercity rail station platform and the Union City BART Station via the approved at-grade pedestrian crossing. The rendering depicted in **Figure 4-9** shows the City-preferred design concept's pedestrian access to BART utilizing the at-grade pedestrian crossing, as well as to the City's development on the east side of the station. The at-grade pedestrian crossing shown is identical to the design approved by UP and CPUC in 2017 with the addition of a sidewalk connecting to the intercity rail platform.

Figure 4-9. Connectivity to BART: Approved At-Grade Pedestrian Crossing

Source: HDR, 2023

Figure 4-10 further illustrates the connectivity between the intercity rail station platform and the BART Station, looking west. The track shown toward the west (closer to the top of the rendering) is the UP Oakland Subdivision Main Track, and the track to the east (below the UP track) is the intercity rail station track, terminating approximately 240 feet south of the at-grade pedestrian crossing. The rendering also shows a protected sidewalk at track level that would be used for access between the intercity rail station platform and BART.

Figure 4-10. Connectivity to BART: Connection between Intercity Rail Platform and BART

Source: HDR, 2023

4.3.3. Full City-Preferred Design Concept

The City-preferred design concept combines the general platform design and BART connectivity described above with a layover facility at the WCA site as described in Section 4.1 and additional required trackwork to accommodate operations. **Figure 4-11** illustrates the Mid-Term Horizon (initial operations) configuration, and **Figure 4-12** illustrates the Long-Term horizon configuration, with the future expansion shown in purple.

Figure 4-11. City-Preferred Design Concept – Initial Operations Configuration

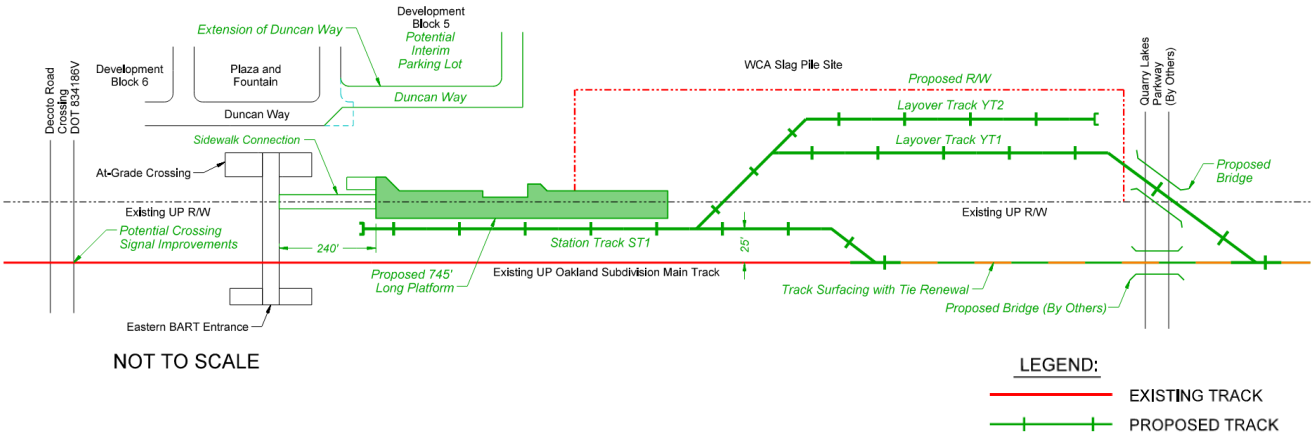
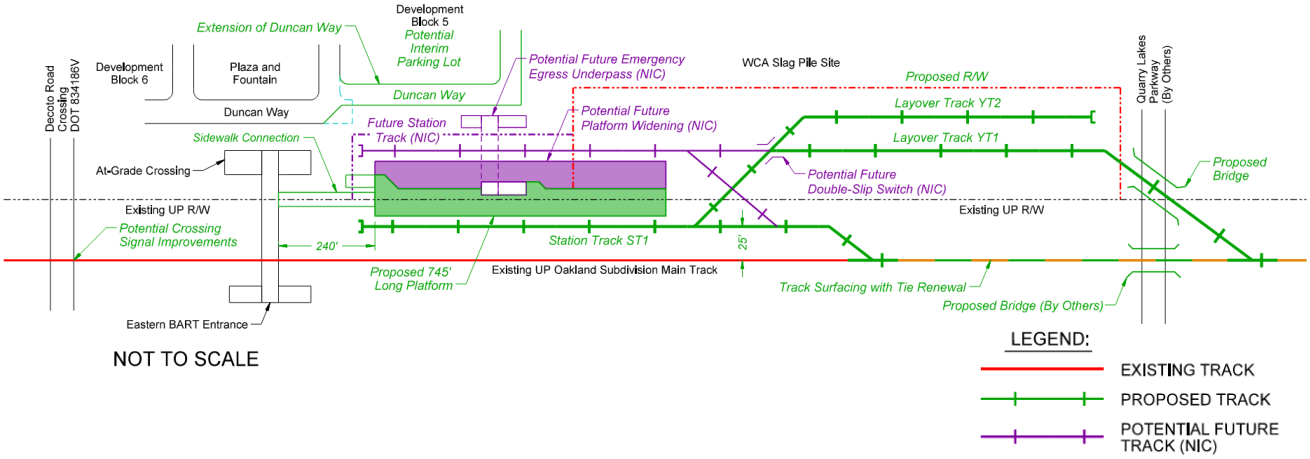


Figure 4-12. City-Preferred Design Concept – Potential Future Expansion Configuration



The design concept places the initially (Mid-Term Horizon) constructed station track, shown in green, adjacent to the existing UP Oakland Subdivision Main Track and the platform inside the UP right-of-way. The potential future second station track would be constructed on the east side adjacent to Duncan Way in space left vacant during the initial operations scenario. Also, this option places the north end of a 745-foot-long platform approximately 240 feet to the south of the at-grade crossing avoiding impacts to Duncan Way and the Plaza, consistent with the City's preferences.

Additional detailed design drawings, including cross-sections, of the City-preferred design concept can be found in **Appendix D. Appendix D** also includes design drawings for an alternative concept for the intercity rail station which utilizes a pedestrian undercrossing rather than an at-grade crossing, along with greater impacts to City-owned property and Duncan Way, which is considered a worst case scenario should the at-grade crossing not be feasible.

4.3.4. Benefits and Challenges of the City-Preferred Design Concept

The advantages (benefits) and challenges of the City-preferred design concept are summarized below.

BENEFITS OF THE CITY-PREFERRED DESIGN CONCEPT

A key benefit of the City-Preferred Design Concept is that it was developed in collaboration with the City of Union City; therefore, it is consistent with the City's vision in the Union City *Station District Specific Plan*. Consistent with the City's requests, the intercity rail station uses the CPUC- and UP-approved at-grade pedestrian crossing which reduces construction costs, avoids impacts to the existing 365-foot-long drop-off lane along the west side of Duncan Way in both the initial operations and potential future expansion scenarios, and avoids impacts to the parking lot north of the plaza and Berger Way, which maximizes TOD potential.

Additional benefits to the operations of the service include:

- Both the initial and potential future platform faces are independent of the UP Oakland Subdivision so trains can remain on the platform, as required by operations.
- Both the initial operations and potential future platform faces can access both layover tracks, increasing operational flexibility.

- The initial operations platform accommodates a direct connection to the City-owned parcel on the east side, deferring construction of an intermediate pedestrian egress underpass along the platform and reducing the initial costs.
- Minimal impacts to the planned Quarry Lakes Parkway, requiring only an additional two-span single-track bridge required to the east of the UP Oakland Subdivision bridge and modifications to the retaining walls on both ends of the bridge.
- The 25-foot track center spacing is consistent with the UP requirements for a passenger-only track not used by UP trains
- The 25-foot track center spacing is also proposed at the Natomas/Airport Station, which is a terminal station on another part of the Valley Rail Project with a similar configuration to what is proposed in Union City.

CHALLENGES OF THE CITY-PREFERRED DESIGN CONCEPT

While the City-Preferred Design Concept addresses many design requirements and preferences of both Union City and SJRRC, there are a few design challenges that will be reviewed in greater detail in the next phase of project development, in coordination with SJRRC, UP, BART, and Union City.

Platform

One challenge with the design is that the 745-foot-long platform is shorter than the platform lengths planned for most other stations along the Valley Rail Project, reducing operational flexibility and passenger capacity. In addition, with the platform located approximately 240 feet to the south of the at-grade crossing currently being implemented, passengers would need to walk close to a quarter mile from the southern end of the intercity rail train to the BART fare gates. The approximately 240-foot distance between the end of the platform and the at-grade crossing violates the 300-foot-long minimum UP separation standards, requiring coordination with UP to ensure its feasibility.

The design also requires two separate ADA mini-high platforms at 25 inches above top-of-rail for bi-level trains along each platform face to accommodate trains facing in opposite directions, contrary to the standard platform configuration. This option also requires the construction of an additional egress with stairways along the platform to comply with National Fire Protection Association (NFPA) Standard 130 egress requirements. This stairway would then be replaced by a pedestrian egress underpass in the potential future operations scenario to maintain usage. However, these egress points also provide direct access to the pick-up and drop-off lanes along Duncan Way.

Tracks

The track design has a few challenges. The potential future layover track configuration would require the use of a “double slip” switch, which could increase construction and maintenance costs. Its usage could require extending the signal system into the layover tracks, potentially requiring approval from UP operations to access the layover tracks. Another track design challenge is that only the western layover track has access to the UP Main Line on the south end, while the eastern layover track can only be accessed only from the north end, reducing operational flexibility.

There is also the potential that, as a result of the Union City Intermodal Station Phase 3 Project and TOD construction on the east side, a greater number of people would be using the at-grade pedestrian

crossing to access the BART Station, potentially necessitating a grade-separated pedestrian crossing. In the event a pedestrian underpass connection to BART is required in the future, it would require removing the primary platform access point for an extended duration during construction.

4.4. Additional Track Improvements

In order to accommodate the proposed Mid-Term Horizon service plan of 3 daily round trips and the proposed timetable concept shown in **Table 3-1**, some track improvements on the UP Oakland Subdivision west of Niles Junction and beyond the station track and layover tracks would be required. These track improvements include:

- A new railroad signal control point and power-operated turnout at MP 27.5 at Union City to allow trains to access the station track at the station
- A hand-throw "secondary exit" switch at the south end of the layover facility at MP 27.7 (intended to provide operational flexibility and service continuity in unusual circumstances)
- Signal upgrades, including Positive Train Control (PTC) installation to comply with federal regulations
- Track upgrades along approximately 2.3 miles of the UP Oakland Subdivision to upgrade the track from the current 10 mph speed limit to accommodate intercity trains operating at speeds up to 60 mph, where feasible
- Highway–rail grade crossing signal, interconnection, and surface improvements
- Track upgrades, potentially including surfacing, tie, and rail replacement
- Turnout installation and/or replacement
- Potential improvements and/or modifications in and around the UP rail yard at Fremont

Similar to several other intercity passenger rail operations elsewhere in the state, UP is the owner of the existing track and right-of-way along the Oakland Subdivision. As the host railroad, UP therefore has final discretion in approving the proposed track improvements. As a tenant railroad in this situation, SJRRC will coordinate and negotiate with UP in subsequent stages of the project to finalize the physical scope of the required track improvements. A line item has been added to the cost estimate to account for these unknown additional items.

The proposed three daily round trips in the Mid-Term Horizon may require additional UP infrastructure improvements east of Niles Junction, which will be determined in coordination with UP during the environmental clearance phase of the project. As discussed in Section 3.1.3, this process will include coordination with the State to maximize the efficiency and cost-effectiveness of infrastructure improvements and avoid the potential for stranded investments.

4.5. Remediation of the WCA Site

As noted above, the Union City layover facility would be located on the site of a 15.94-acre WCA, a California Department of Toxic Substance Control (DTSC)-approved capped landfill that contains 750,000 CY of steel slag, impacted soil, and debris removed from the Pacific States Steel Corporation industrial

facility in 2006. Generally, the WCA was configured with top deck surfaces ranging up to 25 feet above surrounding grade level and side slopes of 3:1 (horizontal to vertical) or less.

The City of Union City has conducted past engineering studies to determine the feasibility of removing the material from the WCA and remediating the area for future development. The SoCo Rail Study has identified the necessity to remove approximately one-third of the WCA site to construct the Union City Intermodal Station Phase 3 Project and operate the intercity rail service to and from Union City. The Union City Intermodal Station Phase 3 Project does not require any portion of the remaining two-thirds of the WCA for construction of the intercity rail station nor operation of the rail service; however, the City of Union City has indicated a preference to remove the entire WCA site at the same time. Therefore, this section presents two options for the remediation of the site for the Union City Intermodal Station Phase 3 Project:

1. Total removal of WCA material and remediation of the site, in coordination with Union City for the removal of the portion of the site not required for the Union City Intermodal Station Phase 3 Project.
2. A two-stage approach:
    i. Stage 1: The Union City Intermodal Station Phase 3 Project only removes what is necessary to construct the layover facility (approximately one-third of the volume) and other project features that require WCA property.
    ii. Stage 2: City of Union City removes the remainder of the materials at a later date.

It is preferred that the full site is removed at the same time, in collaboration with Union City removing the portion not necessary for the Union City Intermodal Station Phase 3 Project (Option 1); however, if the timing of the removal of the remaining portion does not coincide with the construction of the Union City Intermodal Station Phase 3 Project, the two-stage approach would be implemented whereby only the necessary portion will be removed in the first phase when the rail project is constructed (Option 2). These two options are described in greater detail below. It is important to note that the approach to remediation will be identified in the next phase of project development upon the completion of additional studies and coordination among SJRRC, Union City, UP, and DTSC.

4.5.1. Total Removal and Remediation of the WCA

With the option of total removal of the contaminated WCA site, the rail and WCA material loadout facility would be configured in a manner very similar to that indicated in the report "*Feasibility Report: Technical /Cost Analysis of Off-Haul and Redevelopment Potential: Waste Consolidation Area, Union City, California*" prepared by SCS Engineers (2018) for the City of Union City. Excavation and removal of the WCA material would occur prior to initiation of passenger service.

The full removal of the WCA site would likely be achieved through the following steps:

1. Protection, replacement, and/or relocation of three groundwater monitoring wells
2. Removal of the concrete stormwater conveyance channel along the southwest and southeast sides of the WCA

3. Construction of two new loading tracks generally parallel to the east side of the existing UP main line
    i. These tracks would initially be used for staging railcars and loading them with material from the WCA
    ii. These tracks would be configured in a manner that they could be incorporated into the subsequent station layover facility tracks with only minor temporary trackwork
4. Installation of turnouts connecting the loading tracks to the UP main track and associated signal work
5. Excavation and stockpile of the clean cover materials to be reused as cover materials
6. Complete excavation of the WCA materials
7. Transportation and disposal of excavated materials
8. Replacement of the concrete stormwater conveyance channel along the southwest and southeast sides of the WCA
9. Removal of small portions of temporary trackwork and construction of new rail improvements and associated support facilities required for the intercity rail station and layover facility
10. After all contaminated materials are removed and the site is remediated, restoration of the site to the original configuration, ready for redevelopment

Full removal of the WCA site would require the following:

- Removal of the entire 750,000 CY WCA material
- Shipping approximately 12,000 railcars to a disposal facility
- Each off-haul train would remain in the layover facility for approximately 2 to 3 days before being hauled off
- Approximately $170 million cost, not including contingency
- Duration of removal activities would be approximately 2 years

4.5.2. Two-Stage Approach

As noted above, if the City of Union City is not able to secure funding for their portion of the WCA site to allow for full removal at the same time, a two-staged approach would be implemented. With this option, the Union City Intermodal Station Phase 3 Project would remove only the portion of the WCA material needed to implement intercity rail service in the Mid-Term Horizon, providing space for two layover tracks, access roads, and required tracks for operations. At some later time, the City of Union City could remove and remediate the remainder of the site to be ready for development. Conceptual design drawings illustrating the two-stage approach are included in **Appendix D**.

STAGE 1

Stage 1 would consist of the partial removal of the WCA to accommodate an area sufficiently large for the planned layover facility. The rail and WCA material loadout facility would be configured in a manner very similar to that indicated in the report by SCS Engineers (2018), although only approximately one-third of the WCA material would be removed in Phase 1. The excavation and removal of portions of the WCA material as part of Phase 1 would occur prior to initiation of passenger service.

The partial removal of the WCA would likely be achieved through the following steps:

1. Protection, replacement, and/or relocation of three groundwater monitoring wells
2. Removal of the concrete stormwater conveyance channel along the southwest and southeast sides of the WCA
3. Construction of two new loading tracks generally parallel to the easy side of the existing UP main line
    i. These tracks would initially be used for staging railcars and loading them with material from the WCA
    ii. These tracks would be configured in a manner that they could be incorporated into the subsequent station layover facility tracks with only minor temporary trackwork
4. Installation of turnouts connecting the loading tracks to the main line and associated signal work
5. Excavation and stockpile of the clean cover materials to be reused as cover materials
6. Partial excavation of approximately 35% of the WCA in the area to be used for the layover facility
7. Transportation and disposal of excavated materials
8. Recontouring the southwestern and southeastern slopes of the WCA
9. Replacement of the protective cap along the southwestern and southeastern sides of the WCA reusing excavated cover materials
10. Replacement of the concrete stormwater conveyance channel along the southwest and southeast sides of the WCA
11. Re-establishment (remove protective measures or replace) of groundwater monitoring wells along the southwest side of the WCA
12. Removal of small portions of temporary trackwork and construction of new rail improvements and associated support facilities required for the intercity rail station and layover facility

Stage 1 would include the following:

- Removal of approximately 266,000 CY out of the total 750,000 CY of WCA material (35%)
    - This excavation would affect approximately 50% of the WCA surface area due to the 3:1 cut slopes
- Shipping approximately 4,300 railcars of material to a disposal facility
- Each off-haul train would remain in the layover facility for approximately 2 to 3 days before being hauled off
- Approximately $70 million cost for slag removal related to rail project, not including contingency
- Duration of removal activities would be approximately 9 months

STAGE 2

Stage 2 would allow for the off-haul of the remaining WCA material by Union City. This would occur while the station and layover facility are in operation, and it is anticipated ***that there would be no impact to intercity rail operations during Phase 2 WCA removal***. Similar to many short-term rail shipping operations, Phase 2 would involve installation of temporary trackwork to allow loading of material from the WCA while passenger service continues uninterrupted. Upon completion of the WCA

removal, the temporary trackwork would be removed and the original track connections to the layover facility restored.

The removal of the remaining WCA would likely be achieved through the following steps:

1. Construction of two temporary staging tracks extending south of Quarry Lakes Parkway, extending beyond the Alvarado – Niles Road overpass
    i. These tracks would be located east of the existing UP main line, between the UP main line and the sound wall on the eastern side of the UP right-of-way
2. Temporarily shift the UP main line south of Quarry Lakes Parkway approximately ten feet to the west in order to accommodate the temporary staging tracks
3. Use of the eastern layover track for loading of the WCA material
    i. It would be possible to add yet another temporary track on top of the access road (which is east of the easternmost layover track), in the event that the second layover track were needed for intercity rail operations
    ii. This additional temporary track could be used to provide the contractor removing the WCA material additional operational flexibility
4. Upon completion of the removal of the WCA material, removal of the temporary trackwork and restoration of the layover tracks and main line connections to the original configuration

Stage 2 would involve the following:

- Removal of the remaining 485,000 CY of WCA material
- Shipping approximately 7,700 railcars of material to a disposal facility
- Temporary trackwork for staging tracks:
    - Two temporary staging tracks to the south of Quarry Lakes Parkway and extending beyond the Alvarado – Niles Road overpass
    - A temporary shift of the Union Pacific main line approximately ten feet to the west to make space for the two staging tracks
    - Temporary turnouts and signal work
    - Any cars stored on these tracks would be sealed with covers in accordance with applicable regulations
- Each off-haul train would remain in the layover facility for approximately 2 to 3 days before being hauled off
- Approximately $125 million cost, not including contingency
- Duration of removal activities would be approximately 18 months

4.6. Capital Cost Estimates

Table 4-3 summarizes the high-level cost capital cost estimations for the City-preferred design concept in the Mid-Term Horizon, based off of the engineering design drawings and track improvements needed. More detail of the capital cost estimation is available in **Appendix B**.

TABLE 4-3. ESTIMATED CAPITAL COSTS FOR THE CONSTRUCTION OF CITY-PREFERRED DESIGN CONCEPT IN THE MID-TERM HORIZON

Cost Item	Estimated Cost
Track Construction Items [a]	$18,000,000
Remove Track Items	$150,000
Partial WCA Excavation, Rail-Haul, Disposal, and Remediation	$70,000,000
Civil Construction	$19,000,000
Quarry Lakes Parkway Bridge	$2,000,000
Remove Civil Items	$330,000
Miscellaneous Items	$5,400,000
Station and Layover Facility Fixtures and Utilities	$4,200,000
Other Railroad Infrastructure [b]	$34,000,000
Subtotal	$153,000,000
30% Contingency	$46,000,000
Planning, Environmental, Engineering, Right-of-Way Acquisition, Construction Management [c]	21,000,000
Estimated Total Cost	**$220,000,000**

Source: HDR, 2023

Notes:

a. The estimated costs only include the Union City Station and layover facility tracks, as well as other track improvements on the UP Oakland Subdivision. This line item does not include any track, signal, or roadway improvements outside of this area.

b. This line item considers potential costs associated with additional railroad infrastructure required by UP.

c. This estimate is subject to change based on property acquisitions and/or easement costs to be determined as design advances.

It is important to note that some City-owned property would be required to construct the Union City Intermodal Station Phase 3 Project. The value of the property will be determined during the environmental phase of the project. However, it is expected that the City of Union City would donate the required property as a local cost match for the project.

5.0 Ridership

5.1. Ridership Approach

Ridership forecasts for the proposed extension of intercity rail service to the Union City Intermodal Station, as well as for the overall ACE and *San Joaquins* rail system with the Union City Intermodal Station Phase 3 Project in place, were developed using a joint model based on two existing models:

- The ACE Ridership Forecasting Model ("ACE Model"), which has been used to forecast ridership for recent and ongoing plans and projects to implement service improvements for ACE and the *San Joaquins*, including the Valley Rail Program (including ACE extensions to Sacramento and Merced), as well as for the future Valley Link service between BART's Dublin/Pleasanton Station and North Lathrop.
- A modified version of the Alameda CTC travel demand forecasting model ("ACTC Model") refined specifically for use in the BART to Livermore Extension ("BLVX") Draft EIR.

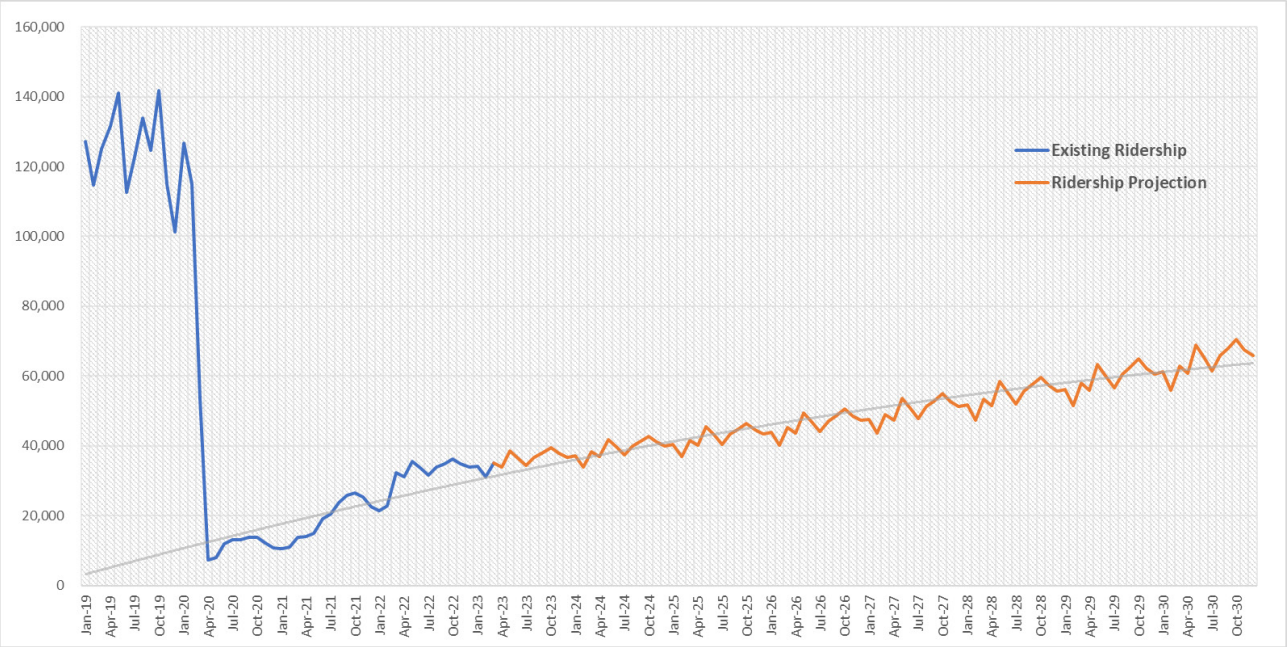
This approach combines a localized focus area (primarily in the Bay Area) produced by the ACTC Model with the larger geographic coverage (primarily the Central Valley) and ACE-calibrated parameters of the ACE Model. Demographic forecasts for each of the models were updated to the most recent datasets available from Caltrans's Transportation Economics Branch (for the ACE Model) and from Plan Bay Area 2040 and the San Joaquin Council of Governments (SJCOG) 2018 RTP (for the ACTC Model).

The base-year ACE Model was first calibrated to pre-pandemic (2019) conditions, followed by application of an adjustment factor to account for the long-term effects of the pandemic on ridership (e.g., increase in work-from-home activity). Trendlines were extrapolated out to the horizon year (2030) by observing actual ridership performance for ACE and the *San Joaquins* during the pre-pandemic and pandemic-recovery phases, from 2019 through to early 2023. These trendlines are illustrated in **Figure 5-1** and **Figure 5-2**.

As shown in **Figure 5-1** and **Figure 5-2**, the existing ACE commuter rail service continues to suffer a much worse impact from COVID-19 than the existing *San Joaquins* intercity rail service, with ACE ridership in March 2023 still less than 30 percent of the pre-pandemic level. In contrast, the *San Joaquins* saw total ridership by the end of FY20 recovering to 56 percent of the FY19 level, and FY22 ridership recovering to 66% of the FY19 level. For the first four months of 2023, the *San Joaquins* are at 75% of the FY19 level (while still running one less round-trip than before the pandemic).

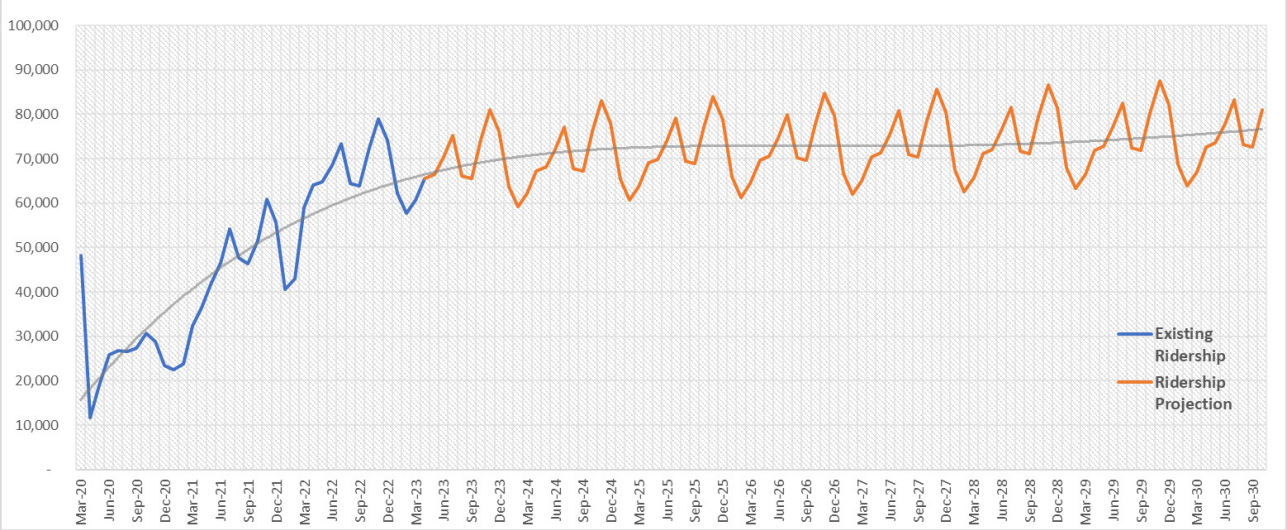
Based on these trendlines, the SoCo Rail Team developed separate factors for long-term post-pandemic ridership recovery rates for intercity rail service (0.84) and commuter rail service (0.52). These long-term ridership recovery factors reflect the percentages (84% and 52%, respectively) of annual ridership recovery for the forecast year of 2030 compared to pre-pandemic (2019) levels. The proposed Union City trains would be operated as an intercity service, and ridership for those trains is therefore forecasted to align with the higher recovery levels assumed for intercity trains.

Figure 5-1. ACE Monthly Ridership – Actual Performance and Future Projections through 2030



Source: AECOM, 2023

Figure 5-2. *San Joaquins* Monthly Ridership – Actual Performance and Future Projections through 2030



Source: AECOM, 2023

The ridership forecasts in this study are preliminary and intended only for the purposes of informing project planning and development. Further ridership analysis will be conducted during the next phase of project development, which is environmental clearance.

More information on the joint-model approach, base-year model development and validation, post-pandemic ridership trends, and demographic assumptions can be found in **Appendix E**.

5.2. Ridership Forecasts

Ridership forecasts for both ACE and the *San Joaquins* in 2030 without the project (No Build) and with the project (Build) are summarized in **Table 5-1**. For the Build scenario, separate numbers are presented for the combined ACE and *San Joaquins* system as a whole and for the three round trips associated with the Union City Intercity Rail Service specifically.

TABLE 5-1. RIDERSHIP FORECASTS IN 2030 HORIZON YEAR – SYSTEM SUMMARY

	No Build	Build		
		Total	% change	Union City trains only
Combined System (ACE + *San Joaquins*)				
Annual Ridership	**7,218,100**	**8,475,200**	**17%**	**1,861,200**
Train only (non-transfers)	5,004,600	6,204,200	24%	1,612,200
Transfers with HSR	2,007,700	2,056,900	2%	244,500
Transfers between ACE and *San Joaquins*	114,800	108,200	−6%	—
Transfers with Thruway bus	91,000	105,900	16%	4,500
Average Daily Ridership (total)	**19,776**	**23,220**	**17%**	**5,099**
Union City Only	—	1,647	—	1,647
Weekday average daily ridership	—	*1,575*	—	*1,575*
Weekend average daily ridership	—	*1,811*	—	*1,811*
ACE Only				
Annual Ridership	**3,976,600**	**5,410,700**	**36%**	**1,861,200**
Train only (non-transfers)	3,602,000	4,803,000	33%	1,612,200
Transfers with HSR	222,300	445,200	100%	244,500
Transfers with *San Joaquins*	114,800	108,200	−6%	—
Transfers with Thruway bus	37,500	54,300	45%	4,500
Average Daily Ridership (total)	**10,895**	**14,824**	**36%**	**5,099**
Union City Only	—	1,647	—	1,647
Weekday average daily ridership	—	*1,575*	—	*1,575*
Weekend average daily ridership	—	*1,811*	—	*1,811*
***San Joaquins* Only**				
Annual Ridership	**3,356,300**	**3,172,700**	**-5%**	—
Train only (non-transfers)	1,402,600	1,401,200	0%	—
Transfers with HSR	1,785,400	1,611,700	-10%	—
Transfers with ACE	114,800	108,200	−6%	—
Transfers with Thruway bus	53,500	51,600	-4%	—
Average Daily Ridership (total)	**9,195**	**8,692**	**-5%**	—
Weekday average daily ridership	8,573	8,105	—	—
Weekend average daily ridership	10,601	10,001	—	—

Source: AECOM, 2023

Note: Ridership forecasts conservatively assume slightly slower running times for some trains than what is shown in Table 3-1 , with no significant infrastructure improvements east of Niles Junction.

Overall, the ridership forecasts produced for the SoCo Rail Study indicate very strong ridership potential as a result of the implementation of the Union City Intercity Rail Service, even under more conservative assumptions about post-pandemic travel behavior trends. Additionally, strong ridership is forecasted at the Union City Intermodal Station. As shown in **Table 5-1**, the overall ridership across the combined ACE and *San Joaquins* system would increase by approximately 1.26 million passengers in 2030, or approximately 3,450 passengers daily (average across weekdays and weekends/holidays).

The three Union City Intercity Rail Service roundtrips would carry more than these numbers (1.86 million passengers) by pulling a relatively small portion of riders from other trains, including the *San Joaquins* service (which would see annual ridership decrease slightly by approximately 184,000 passengers). Overall, average daily ridership at the Union City Intermodal Station (total across boardings and alightings) would be approximately 1,650 passengers, including approximately 1,575 passengers on weekdays and approximately 1,800 passengers on weekends. The total 2030 passengers using the Union City Intermodal Station is forecast to be a little more than 600,000 (boardings/alightings).

Table 5-2 summarizes annual travel market-level ridership flows between the Union City Intermodal Station and several regions (defined in **Table 5-2**) throughout the Northern California Megaregion. With a service area that is megaregional in scope, the trains are able to attract ridership from multiple travel markets, including the Northern Central Valley (in conjunction with the future North Valley Rail project), as well as long-distance markets to and from Fresno, Bakersfield, and Southern California via HSR at Merced. The busiest ridership travel markets to/from Union City would include passengers traveling to and from HSR in Merced, the Tri-Valley (Pleasanton and Livermore), and the San Joaquin Valley (Tracy, Stockton, Modesto, and Merced).

TABLE 5-2. RIDERSHIP FORECASTS – TRAVEL MARKET SUMMARY

Travel Market		Annual Ridership
Union City to/from	**North Valley** Chico, Gridley, Marysville–Yuba City, Plumas Lake	25,800
	Sacramento Area Natomas, Old North Sacramento, Midtown Sacramento, Sacramento City College, Elk Grove	61,900
	San Joaquin Valley North Lodi (new), Downtown Stockton, North Lathrop, Lathrop–Manteca, Tracy	83,900
	San Joaquin Valley Central Merced (new), Atwater, Livingston, Turlock, Ceres, Modesto (new), Ripon, Downtown Manteca	184,600
	Tri-Valley Vasco Road, Livermore, Pleasanton	114,100
	HSR [a] Madera, Fresno, Kings–Tulare, Bakersfield, Southern California	131,000
	Southern California *Los Angeles and other Thruway bus connections in Southern California*	18,600
Total		**601,300**

Source: AECOM, 2023
Note: a. Includes Thruway bus transfers to/from Los Angeles and other locations in Southern California.

More detailed ridership information for both ACE and the *San Joaquins* can be found in **Appendix E**, which includes station-level and more detailed market-level ridership forecasts, as well as estimates of annual fare revenue, passenger miles traveled (PMT), and avoided vehicle miles traveled (VMT).

5.3. Train Capacity Analysis

In addition to the ridership forecasts, the ridership modeling effort also included a sensitivity analysis to determine seating capacity for potential future rolling stock options for the Union City Intercity Rail Service and their differing trainset seating capacities.[21] Due to several factors discussed in more detail in Section 3.2.4 (including the desire to retain as much land in the WCA site as possible for future development), the City of Union City has indicated a preference for a platform and layover tracks that are designed for trainsets shorter than the design standard being used elsewhere in the Valley Rail Program.

For this analysis, three trainset types were selected. For each trainset type, a number of train cars or units was assigned that correspond to the planned length of the proposed Intercity Rail Station Platform at the Union City Intermodal Station, which is 755 feet long. The trainset types and the number of cars/units and their corresponding capacity include the following: existing ACE 8-car bi-level trainset with a total capacity of 1,056 passengers; 7-car Siemens Venture trainset with a total capacity of 456 passengers, and 3-unit Stadler FLIRT trainset with a total capacity of 672 passengers.

Based on the ridership forecasts at the origin–destination (OD) (i.e., station pair) level, a link load analysis was conducted to determine the maximum train loads for each of the Union City trains and compare these loads against the capacity of each trainset type. The results of this link load analysis are summarized below in **Table 5-3.**

TABLE 5-3. LINK LOAD ANALYSIS

Train	Average Daily Ridership	Maximum Link Load	Capacity Utilization at Maximum Link Load		
			ACE Bi-level (8-car)	Siemens Venture (7-car)	Stadler FLIRT (3-unit)
W01 (Chico → Union City)	919	682	65%	150%	101%
U01 (Merced → Union City, morning)	909	593	56%	130%	88%
V01 (Merced → Union City, evening)	891	685	65%	150%	102%
W02 (Union City → Chico)	785	519	49%	114%	77%
U02 (Union City → Merced, evening)	695	444	42%	97%	66%
V02 (Union City → Merced, morning)	898	756	72%	166%	113%

Source: AECOM, 2023

Note: Because the maximum link load reflects an average daily value, the actual load on a given day may be higher or lower due to day-to-day variability and other factors.

[21] All passengers are assumed to be seated as regional and longer distance train travel is not generally set up for standees.

As shown in **Table 5-3**, all six trains would have very high capacity utilization with the Siemens Venture trainset, with five of the six trains well above the trainset capacity and the remaining train effectively at capacity. With the Stadler FLIRT trainset, three of the trains would exceed the trainset capacity. With the ACE 8-car bi-level trainset, capacity utilization on the six trains would generally range between 42% and 72%, but none of the trains would exceed the trainset capacity.

More details on the overall methodology of this train capacity analysis can be found in **Appendix E**.

6.0 Equity Considerations

Improvements that result from the SoCo Rail Study would better connect passenger rail services, improve intercity passenger rail ridership in Southern Alameda County, the Bay Area, the Northern California Megaregion, and statewide, and accommodate anticipated growth more sustainably. This section considers the benefits of the proposed new intercity passenger rail service on disadvantaged communities, focusing on how the proposed service has the potential to improve the quality of life in the many communities across the Northern California Megaregion and the state with access to the new service.

This section provides a summary of the demographic, social, and travel characteristics of the various communities in the SoCo Rail Study Area as defined for this report – expanded beyond the Southern Alameda County Planning Area – as well as the potential benefits as a result of the improvements proposed as part of the Union City Intermodal Station Phase 3 Project. The full Equity Report prepared for the SoCo Rail Study is included as **Appendix F**.

6.1. Operating Assumptions and Equity Study Area

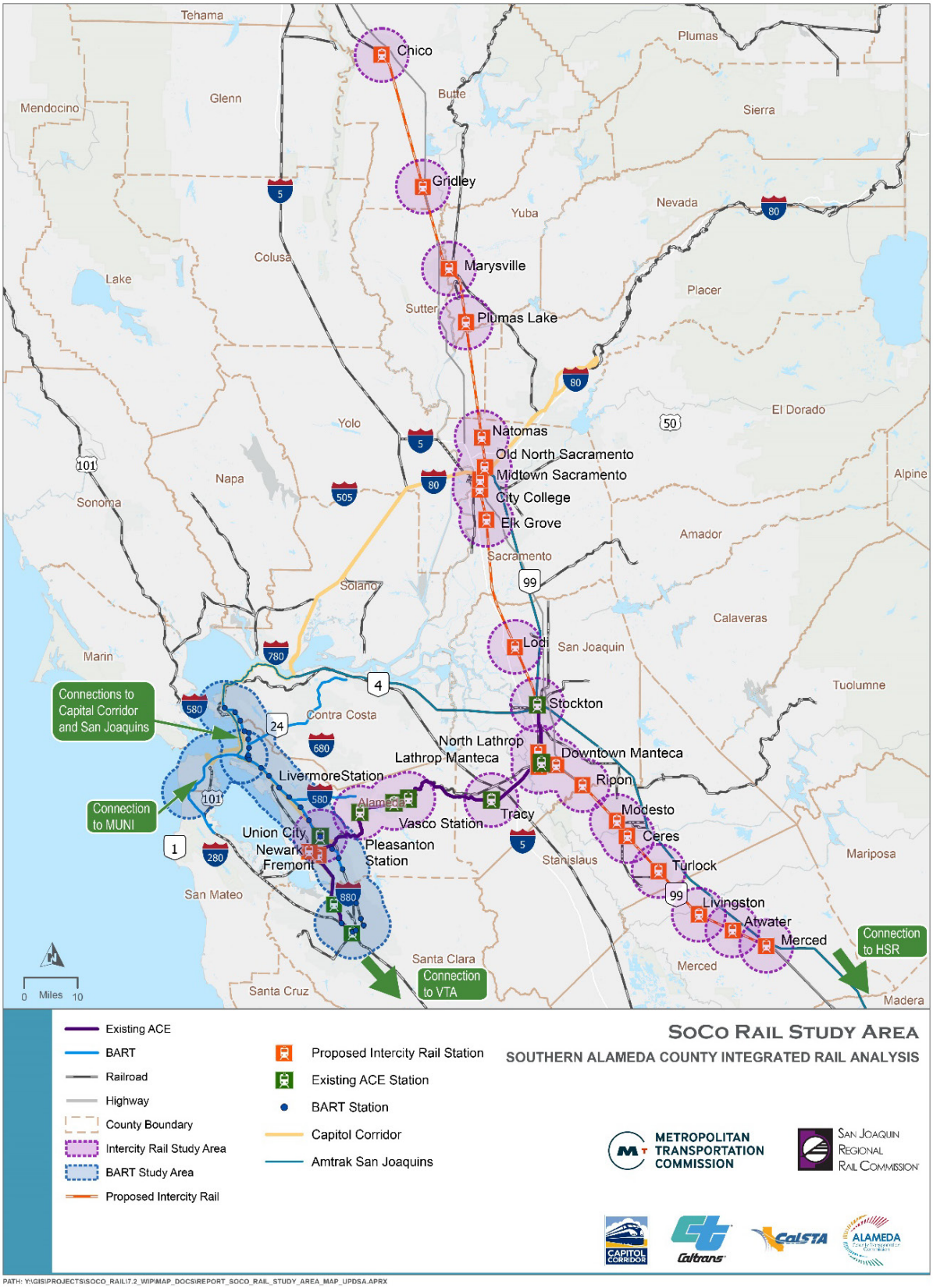
With the development of improvements at the Union City Intermodal Station in the Mid-Term Horizon, three additional round trips would be operated by SJRRC (owner/operator of ACE) or SJJPA (responsible for the management of the *San Joaquins*[22]) between Merced and Union City (2 daily trains) and between Natomas, or Chico with a northerly extension, and Union City (1 daily train).

The Equity Study Area, as shown in **Figure 6-1**, is defined based on an Intercity Rail Study Area and the BART Study Area. The Intercity Rail Study Area includes a 5-mile buffer around every existing and proposed station along the SJRRC/SJJPA Valley Rail intercity passenger rail system that would be served by the three new round trips. The BART Study Area includes a similar 5-mile buffer around every station along BART's two rail lines that currently stop at Union City – Richmond to Berryessa/North San Jose (the orange line) and Daly City to Berryessa/North San Jose (the green line).

The operating schedule provides the ability for travel between multiple origins and destinations along the Valley Rail system and beyond, including Southern California, with connections to high-speed rail in Merced and BART in Union City. Additional express and local bus services at the Union City BART Station provide additional integration of the transportation network.

[22] SJRRC is also the Managing Agency for the SJJPA.

Figure 6-1. SoCo Rail Equity Study Area



6.2. *SJJPA Passenger and Market Research Report*

The types of trips served by the SJJPA *San Joaquins* and SJRRC ACE services are completely different, with ACE serving daily commuters (with peak period/peak direction trains) and the intercity *San Joaquins* serving a more diverse travel market and a wide variety of rider needs, such as family visits and access to healthcare, education, and recreation, through 7-day-a-week long-haul routes which do not provide in-commute peak-period arrival times for the Bay Area travel markets. With new intercity rail service throughout the day, including weekend and holidays service, the rider profile of the proposed intercity rail service is expected to be similar to the Amtrak *San Joaquins* intercity service. Therefore, understanding the ridership characteristics of the *San Joaquins* is key to understanding the potential riders of the proposed intercity rail service due to the similarity in the type of service offered.

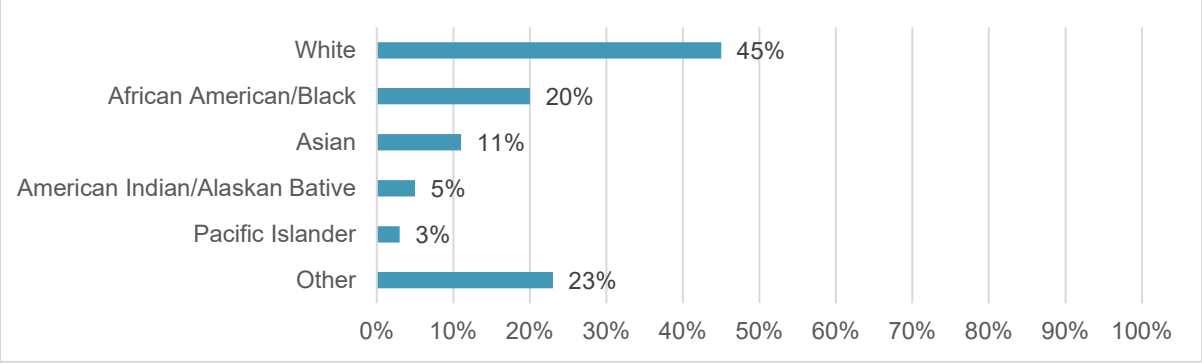
In the summer of 2019, the SJJPA conducted a market survey and an onboard survey to establish baseline levels of awareness, gauge rider perceptions, and understand the potential market of Amtrak *San Joaquins* service. The survey also collected a detailed profile of existing riders, including their home ZIP code, trip details, and sociodemographic information.

The Market Survey collected 499 complete questionnaires from respondents living in four regions that account for about 75% of *San Joaquins* ridership: the San Joaquin Valley, the Bay Area/Silicon Valley, the Sacramento Area, and the Los Angeles Area. The Onboard Survey was administered to riders aboard *San Joaquins* trains using tablet computers. The Onboard Survey collected 1,131 valid questionnaires from riders as they traveled. However, respondents ride the *San Joaquins* infrequently, with only 11% riding on a weekly basis and 21% riding on a monthly basis. By comparison, most ACE users ride frequently (and buy multi-ride or monthly passes).

6.2.1. Rider Profile

Forty percent (40%) of respondents were of Spanish, Hispanic, or Latino origin which is similar to California and the Intercity Rail Study Area overall. In total, 55% of respondents were people of color (**Figure 6-2**). The SJJPA Passenger and Market Research survey did not report on people with disabilities. The survey also did not report on nation of birth or nationality.

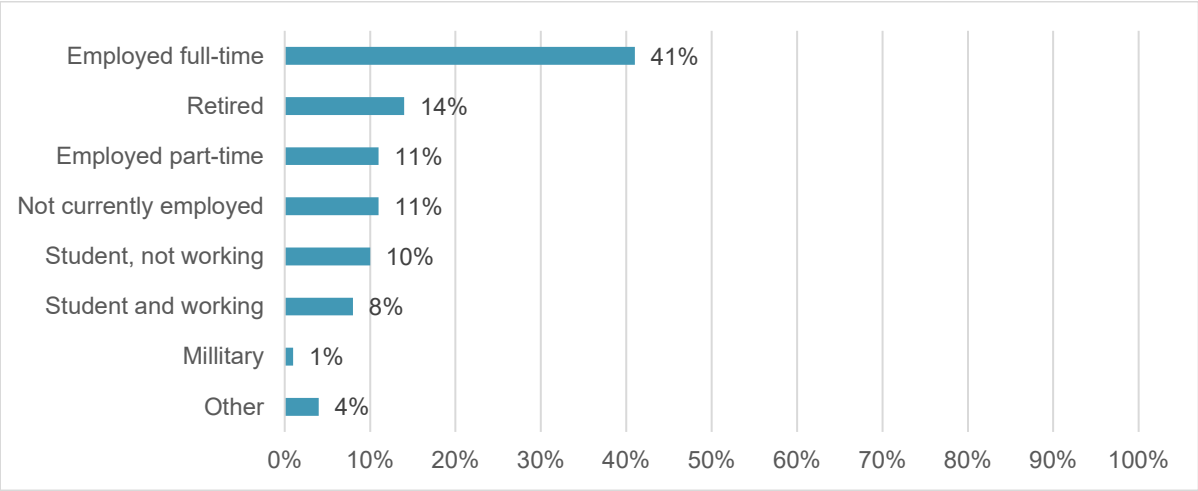
Figure 6-2. *San Joaquins* Riders - Race



The onboard survey showed that 48% of Amtrak *San Joaquins* riders were not employed (**Figure 6-3**). This further illustrates that *San Joaquins* riders use the service for purposes other than business or

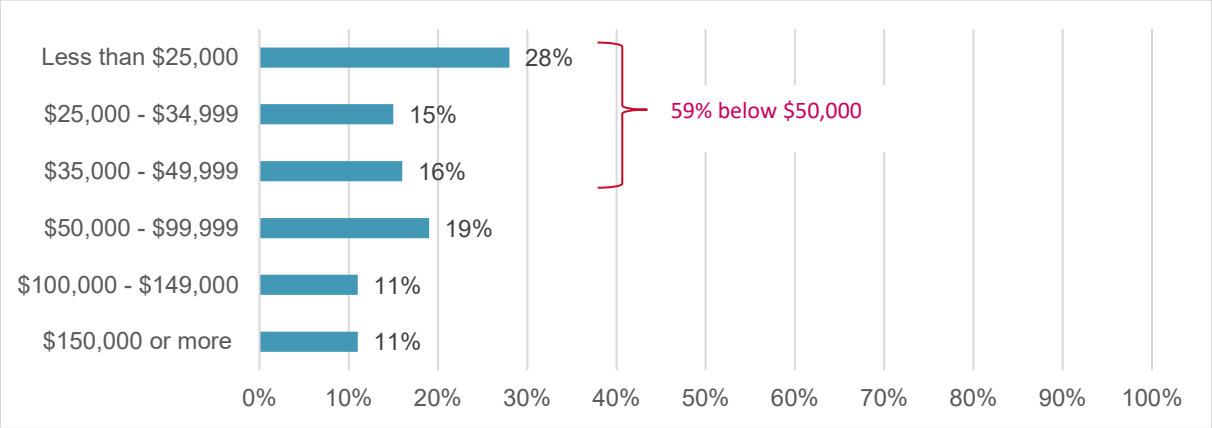
commuting. There are several universities in the *San Joaquins* service area and 18% of the users are students. A few universities in the service area include University of Pacific in Stockton, University of California, Merced, and California State University, Fresno.

Figure 6-3. *San Joaquins* Riders - Employment Status



Reported household incomes were substantially lower for *San Joaquins* riders compared to the ACE riders. Fifty-nine (59%) percent of riders reported an annual household income below $50,000 (**Figure 6-4**). Only 11% of *San Joaquins* riders reported annual household income more than $150,000. The survey also showed 53% of riders aged 34 or younger and 24% of riders aged 55 or older.

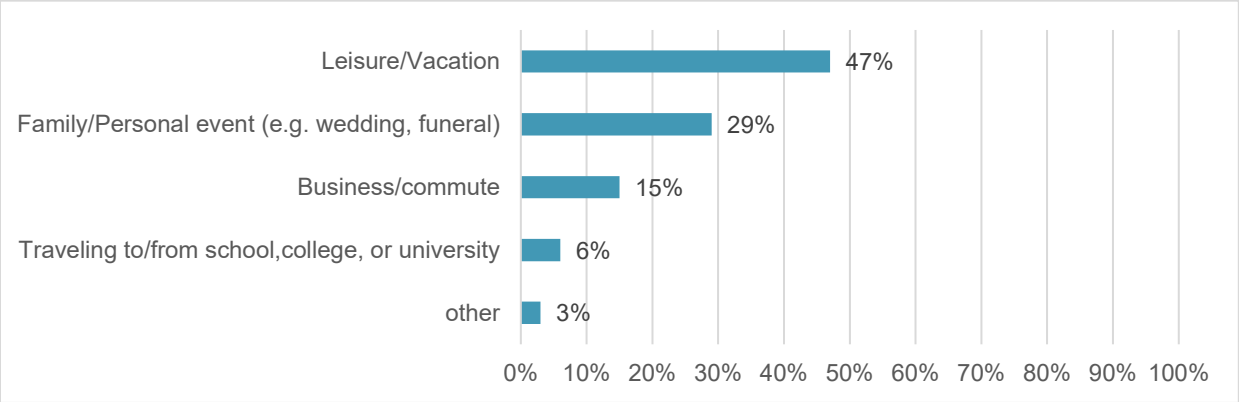
Figure 6-4. Household Income



6.2.2. Trip Purpose and Details

Figure 6-5 provides the distribution of trip purposes of *San Joaquins* users responding to the survey. Most riders (76%) were traveling for either personal events such as a wedding or funeral or for leisure. Only 15% of riders were traveling for business. Six percent (6%) were traveling to or from school.

Figure 6-5. Primary Purpose of Trip



6.2.3. Travel Market

Ticket sales data and onboard survey results show that the Bay Area, Northern San Joaquin Valley, and Central San Joaquin Valley were the top 2019 travel markets for the Amtrak *San Joaquins* service with 41% of riders. Amtrak *San Joaquins* ridership serves the entire San Joaquin Valley (and has Thruway bus connections to Southern California and the Northern Central Valley) compared to ACE ridership.

About half of the *San Joaquins* riders live in the San Joaquin Valley. **Table 6-1** shows the distribution of riders' home location by region.

TABLE 6-1. SJJPA *SAN JOAQUINS* RIDERS

HOME REGION	SURVEY %
San Joaquin Valley	54.1%
Bay Area/Silicon Valley	11.1%
Los Angeles Area	6.2%
Sacramento Area	6.9%
Inland Empire/High Desert	3.0%
North Coast	1.6%
Central Coast	1.6%
San Diego Area	0.8%
Northern CA (Butte, Shasta, and Tehama counties)	0.4%
All Other Markets	14.5%
Total	100.0%

Most passengers (39%) were dropped off at the Amtrak station. A similar portion (35%) used public transportation including local transit, long-distance bus such as Amtrak Thruway service, or another Amtrak train to access a station. Around 5% walked or biked to the station. The SJJPA Passenger and Market Research survey did not question riders about household vehicles available.

The survey showed that nearly half (47%) of *San Joaquins* riders use an Amtrak Thruway bus for either station access or egress. Many of these bus connections to and from Southern California and Las Vegas occur at the Bakersfield Station. Excluding respondents who traveled to or from Bakersfield station on an Amtrak Thruway Bus, the most commonly used stations are Fresno, Stockton, and Hanford.

6.3. Demographics and Equity Populations

An overview of baseline demographic information in the Equity Study Area, focusing on the typical characteristics of traditionally marginalized communities, also considered equity populations, is summarized below.

6.3.1. Race and Ethnicity

Historically, infrastructure projects have negatively affected people of color[23] and systemically disadvantaged communities through direct and indirect displacement, construction impacts, disruptions to community cohesion, and environmental degradation. These communities are often left out of the decision-making process and receive fewer project benefits. People of color make up 62.8% of the BART Study Area and 49.2% of the Intercity Rail Study Area.

6.3.2. Median Household Income

According to a study by the American Public Transportation Association, individuals with lower incomes are more likely to use public transit than those with higher incomes. This is because lower-income individuals are more likely to rely on transit as their primary mode of transportation due to a lack of access to a personal vehicle. Median income in the Intercity Rail Station Study Area ($77,417) is significantly lower than in the BART Study Area ($110,620).

6.3.3. Women

A growing number of studies have shown gender-based disparities and differences regarding transportation, with most current studies focusing on transportation needs of women.[24] Among such differences, women are more likely to chain or combine trips, take more trips overall, to travel at non-commute peak hours, and to choose more flexible modes.[25] In the BART Study Area and Intercity Rail Study Area, 49.9% and 50% of the population is female, respectively.

6.3.4. Older Adults

According to the National Center for Mobility Management,[26] older adults make up a large portion of the population who rely on community transportation and have diverse transportation needs, often intersecting with other key population characteristics, such as race and ethnicity, LEP, and disability

[23] Overview of Socioeconomic Indicators in EJScreen | US EPA: People of color are defined as the percent of individuals in a block group who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word "alone" in this case indicates that the person is of a single race, not multiracial.
[24] Wei-Shiuen Ng & Ashley Acker, 2018. "Understanding Urban Travel Behaviour by Gender for Efficient and Equitable Transport Policies," International Transport Forum Discussion Papers 2018/01, OECD Publishing.
[25] L.A. Metro, Understanding How Women Travel, August 30, 2019. http://libraryarchives.metro.net/DB_Attachments/2019-0294/UnderstandingHowWomenTravel_FullReport_FINAL.pdf
[26] https://nationalcenterformobilitymanagement.org/by-topic/by-topic-older-adults/

status. Nearly 13% of the Intercity Rail Study Area's populations is over 65 years old, and 14.2% of the BART Study Area is over 65 years old.

6.3.5. Persons with a Disability

People with disabilities face multiple barriers in travel, access to services, and opportunities. According to the Institute of Medicine,[27] people with disabilities report more mobility challenges and barriers in travel than those without disabilities. In the Intercity Rail Study Area 11.6% of the population have a disability and 9.4% of population in the BART Study Area have a disability.

6.3.6. Limited English Proficiency

Limited English Proficiency (LEP) refers to people who have a limited ability to read, write, speak, or understand English, creating potential barriers for accessing services and information, such as public transportation, employment, education, and other resources. In the Intercity Station Study Area approximately 16% of households have members over 5 who have some difficulty with English and are considered LEP households, and in the BART Study Area 20% of the households are LEP.

6.3.7. Foreign-Born Population

People born outside of the U.S. may face challenges including barriers to employment, access to health and human services, and complex government processes. Over 25% of the population in the overall Study Area is foreign born. In the Intercity Rail Study Area and BART Study Area, 25% and 37% of the population is foreign born, respectively.

6.4. Equity Evaluation of Potential Benefits

Potential benefits to the communities across the Equity Study Area, especially the equity populations described above, are identified across four general categories – transit access, economic vitality, health and safety, and housing affordability.

6.4.1. Transit Access

Making transportation more accessible to the equity populations in the Study Area would facilitate connections to cultural and economic centers, major hospitals, colleges and universities, airports, and areas for tourist and recreational uses. This is beneficial to communities that have faced prior systematic struggles to earn a steady wage, receive a quality education, be treated with reliable healthcare, and have access to safe, reliable, and affordable transportation. Furthermore, enhancing the region's interconnected transportation system would spur overall economic growth.

A priority of the proposed new rail service is to offer a transit option throughout the day to midday, evening, and weekend travelers who in the past have had to rely on other modes of transportation or experience longer wait, transfer, and travel times to travel via rail. An article published by the National Academies of Science, Engineering, and Medicine discusses the role of transit, shared modes, and public policy, and discusses some of the equity implications involved. Specifically, it acknowledges that

[27] https://www.ncbi.nlm.nih.gov/books/NBK11420/

extending transit service to off-peak hours can be a reliable substitute for fixed-route service and will benefit lower-income individuals and service workers by reducing wait, transfer, and travel times throughout the day.[28] Another National Academies article indicates that transit-dependent groups often travel more frequently during off-peak hours and make more transfers between modes of transit than non-transit-dependent groups do.[29] Moreover, this article reveals that transit-dependent groups are disproportionally represented by minorities and low-income households.

For many people, public transit provides access to extended family, education, and other destinations necessary for living a healthy life. Transit is an essential mobility service, particularly for those who cannot afford or do not wish to own a car. Transit is especially important for low-income households and people with disabilities. In addition to expected beneficial outcomes of increased access, other potential benefits of public transit include increased physical activity, reduced vehicle miles travelled, and reduced emissions.

Based on these findings, the proposed new service that provides 7-day-a-week services throughout the day would enhance travel and provide greater access to destinations that would improve quality of life for transit-dependent populations and others for whom transportation costs are very high in the Equity Study Area.

6.4.2. Economic Vitality

Through the expanded passenger rail service proposed, the investment in public transportation can potentially benefit the economy in the following ways:[30]

- travel and vehicle ownership cost savings for riders who use public transit instead of other modes, including driving, taxis, and ride-share services;
- reduced traffic congestion for those traveling by automobile and truck, leading to direct travel cost savings for businesses and households; and
- business productivity gained from access to broader labor markets with more diverse skills, enabled by expanded public transit service areas and reduced traffic congestion.

In the Equity Study Area, communities with many low-income households, low-wage workers, or unemployed workers would be provided an opportunity to improve the quality of life for themselves and their families. This new transit service would provide 7-day-a-week services throughout the day to residents in the San Joaquin Valley, Sacramento Region, and Alameda County, unlocking greater opportunities for travel between regions to access education, healthcare, recreation, and some job opportunities that follow non-traditional work hours, such as hospitality and education. Similar to *San Joaquins* service, the primary trip purposes for this proposed service would also be for personal reasons, such as family visits, family or friend events, or other leisure activities. In addition, when more people ride transit their travel costs are lowered and funds are freed for housing, entertainment, and other living expenses – all components of an improved quality of life.

28 "The Role of Transit, Shared Modes, and Public Policy in the New Mobility Landscape", National Academies, 2021.
29 "Resource Guide for Improving Diversity and Inclusion Program for the Public Transportation Industry", National Academies, 2021.
30 American Public Transportation Association, Economic Impact of Public Transportation Investment 2020 Update. https://www.apta.com/wp-content/uploads/APTA-econ-impact-transit-investment-2020-ES.pdf

6.4.3. Health and Safety

The health and safety benefits to the Equity Study Area's communities are realized through reduced air pollution; fewer traffic crashes; improved access to medical care, healthy food, and vital services; and increased physical activity.

Transit's ability to reduce solo drivers and auto emissions improves the environment. Motor vehicles are a leading source of air pollutants that affect human health. Vehicle emissions, including $PM_{2.5}$, can trigger health problems such as asthma, reduced lung capacity, and greater susceptibility to pneumonia and bronchitis.[31] Public transportation systems produce significantly lower emissions per passenger mile than private vehicles, especially when operating with full passenger loads.[32] The proposed new service would operate across long distances, providing travelers with a convenient and healthier transit alternative to driving, thus decreasing regional vehicle miles traveled and emissions with fewer automobiles on the road across both long and short distances.

Trips shifted from cars to transit also reduce traffic-related injuries and deaths on highways (a substantial societal cost). As the movement toward Vision Zero[33] grows, public transit is increasingly recognized as a core strategy to support safe mobility for all. Public transportation is one of the safest ways to travel. It is ten times safer per mile than traveling by car because it has less than a tenth the per-mile traffic casualty (injury or death) rate as automobile travel.[34]

Transit can also improve quality of life and mental health. According to research, high-quality public transit can reduce emotional stress by improving people's access to education and employment opportunities, improving community cohesion, and improving access to social and recreational activities.[35] Transit also provides basic mobility for those who are unable, cannot afford, or choose not to drive a car. This access to essential services, such as medical care, healthy food, shopping, banking, etc. helps improve the quality of life for equity populations.[36]

Transit increases opportunities for active transportation as a result of the frequent need for walking or biking at the beginning or end of a transit trip. [37] While transit is linked to higher rates of active travel and physical activity, the physical health benefits of a more active lifestyle are weighed against potential health threats, such as exposure to vehicle traffic or emissions, walking and bicycling to transit can be riskier travel options than other modes due to their higher levels of physical and environmental exposure. For example, active travelers suffer from injuries and fatalities at a higher rate than drivers.[38]

[31] https://www.transportation.gov/mission/health/cleaner-air
[32] Public Transportation's Role in Reducing Greenhouse Gas Emissions (January 2010) (dot.gov)
[33] According to the USDOT; the zero deaths vision acknowledges that even one death on our transportation system is unacceptable and focuses on safe mobility for all road users. This idea was first adopted in Sweden in 1997 as "Vision Zero" and since then has spread around the world (https://highways.dot.gov/safety/zero-deaths).
[34] Public Transit's Safety Benefits - American Public Transportation Association (apta.com)
[35] Heather Allen, Sit Next to Someone Different Every Day - How Public Transport Contributes to Inclusive Communities, 2008. www.thredbo.itls.usyd.edu.au/downloads/thredbo10_papers/thredbo10-plenary-Allen.pdf
[36] Todd Litman, Evaluating Public Transportation Health Benefits, 2020. https://www.vtpi.org/tran_health.pdf
[37] Ipek N. Senera, Richard J. Leea, and Zachary Elgartb, Potential Health Implications and Health Cost Reductions of Transit-Induced Physical Activity, 2016. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4917017/pdf/nihms763600.pdf
[38] Elvik R. The Non-Linearity of Risk and the Promotion of Environmentally Sustainable Transport. Accident Analysis and Prevention, 2009

To better understand and develop strategies to minimize potential risks associated with increased active transportation to and from the rail stations offering the proposed new service, it is recommended that a traffic impact study be conducted as the proposed project advances, including a study of the activity at the highway-grade crossings.

6.4.4. Housing Affordability

Combined housing and transportation costs for most households in the Equity Study Area are over half of the household income, with a large proportion of those costs coming from transportation. The proposed new service has the potential to lower transportation costs by proving a rail transit alternative to driving. Providing new transit service to communities that can most benefit comes with challenges. Sustainable, enhanced public transportation not only can spur development near rail stations, but is also attractive to new residents who prefer to live close to transit. Many cities also encourage transit-oriented development that creates conditions for real estate investment that results in increased land values. This may "price-out" low-income groups from accessing housing and maintaining their current residential locations.

In the Equity Study Area, Transit Priority Areas (TPAs) and Priority Development Areas (PDAs) are established in multiple locations along the BART Study Area, and in Livermore and Sacramento. In these locations, transit and sustainable community planning are prioritized, which would facilitate renters and lower-income residents to remain in their neighborhood so they can enjoy the benefits of being close to transit.

The Equity Study Area has renter-occupied households scattered across the area with some but not all proposed station locations with high percentages of renters. Based on existing trends, renter-occupied households are predominantly occupied by lower income residents. With existing affordable housing policies in cities in the Equity Study Area, there is lower risk that low-income renters would be displaced due to the proposed new service. On the other hand, low-income households in the Study Area, including those without access to a vehicle, would remain in their neighborhoods and benefit from increased access to transit to improve the quality of their lives. However, it is important to note that some actions may need to be taken in future phases of project development to maintain a low risk of residential displacements, including but not limited to: coordination with cities on updating affordable housing policies; development of community benefits agreements; and development guidelines to foster equitable transit-oriented development.

6.5. Intercity Rail Station Area Equity Analysis

Each of the 26 proposed stations along the intercity rail service routes proposed by the SoCo Rail Study would benefit from the project. Based on an analysis of each station area, defined for this purpose as an approximately 10-minute drive time from the proposed station location, to be inclusive of walking, biking, and automobile access, several area-specific benefits are identified.

The proposed intercity rail service to and from Merced and Chico would provide rail access for communities that are traditionally underserved and more socially disadvantaged. Similar to *San Joaquins*

service users, the primary purpose of most travel along this proposed intercity rail service would be for leisure and recreation, family visits, and for school. The communities would benefit from new connections to an array of cultural, open space, historical, educational, and other destinations in Stockton, Sacramento, Chico, Modesto, and Merced, as well as points south (e.g., Fresno and Bakersfield) through HSR connections in Merced. With its connection to the BART system, this station would provide access to the San Francisco Bay Area to families, residents, and visitors up and down the proposed intercity service.

Households in poverty in the station areas experience many burdens related to transportation cost and general economic stability. The proposed intercity rail service may help to improve the quality of life for these residents by providing a lower-cost transportation option for access to many needed services, personal and family activities, and even potentially some job opportunities. Station areas with at least 15% of households considered to be in poverty include: Stockton, City College, Midtown Sacramento, Old North Sacramento, Atwater, and Merced.

Station areas with large percentages of residents that do not have access to a personal vehicle would benefit from additional public transportation that would provide access to a wide variety of destinations in the Central Valley and Bay Area. Stations with at least 4% of the population in the station area with no access to a personal vehicle include: Stockton, City College, Midtown Sacramento, Old North Sacramento, Marysville-Yuba City, Chico, Modesto, Ceres, Turlock, Livingston, Atwater, and Merced.

In station areas with large percentages of workers employed in service industries, which may include a large share of shift workers, the proposed intercity rail service has the potential to provide transportation to current or new job opportunities. Stations with at least 15% of the population in the station area employed in service industries include: Stockton, Elk Grove, Old North Sacramento, Marysville-Yuba City, Chico, and Merced.

7.0 Bus, Shuttle, and Other Multi-Modal Connectivity

The purpose of examining bus/shuttle and other multi-modal connectivity is to enhance the utility of the proposed Union City Intermodal Station by increasing access and making access more efficient and convenient. The ultimate goal is to increase usage of the Union City Intermodal Station and increase use of public transportation (and the BART and intercity rail system), while discouraging driving. This section summarizes existing, planned, and recommended bus/shuttle and multi-modal connectivity related to the Union City Intermodal Station Phase 3 Project. The rail-to-rail connection between the existing BART service and the proposed extension of intercity rail service to the Union City Intermodal Station Phase 3 Project is a fundamental connection and focus of the SoCo Rail Study. This topic is discussed in greater detail in the Phase 1 Report and operational and conceptual design information are included in Chapters 3 and 4, respectively, of this Phase 2 Report.

The majority of passengers using the intercity rail service at the Union City Intermodal Station are expected to be transferring to/from other transit modes and, of those, the majority are expected to be making their connection via BART. However, some passengers will also be connecting via buses, shuttles, and active transportation, including walking and bicycling. While this section seeks to discuss potential multi-modal enhancements and non-automobile connections to encourage less driving overall, there is still a need to accommodate automobile access at the Union City Intermodal Station, including some park-and-ride parking and designated curbside pick-up/drop-off zones (for private automobile users and for TNC and taxi users).

In terms of other connectivity concepts, the focus of the Phase 2 Report is to provide sufficient detail to advance development of the Union City Intermodal Station Phase 3 Project facilities and extend intercity rail service to Union City Intermodal Station. Enhancements to bus and shuttle routes serving the Union City Intermodal Station, as well as other multi-modal connectivity improvements not directly related to the new intercity passenger rail platform itself (e.g., bikeway improvements around the station and the creation of additional curb space for general pick-up / drop-off), are not considered part of the emerging project definition that will be carried forward to environmental clearance. Rather, this section will provide ideas and concepts for improvements to enhance connectivity; increase bus, intercity rail, and BART ridership; and support the overall success of the Union City Intermodal Station. This section serves as a starting point for decision-makers to consider future improvements as part of separate projects to support the Union City Intermodal Station Phase 3 Project and to build on the improvements to connectivity that have already been accomplished or are currently being pursued.

This section first describes existing bus and shuttle services that provide connectivity to the existing Union City Intermodal Station (these include transit services operated by AC Transit, Union City Transit, Dumbarton Express, and the Stanford Marguerite Shuttle, as well as private shuttles currently serving the Union City Intermodal Station). Following a summary of existing bus and shuttle services, a description is provided of current improvements that are either underway or in the planning stages. Then, the following sections summarize concepts for enhancing bus/shuttle services and other multi-modal connectivity in the Mid-Term Planning Horizon that will coincide with the commencement of intercity rail service at the Union City Intermodal Station. The focus of the discussion is on bus and

shuttle connectivity, but strategies for bicycle, pedestrian, and automobile access (including parking) are also discussed.

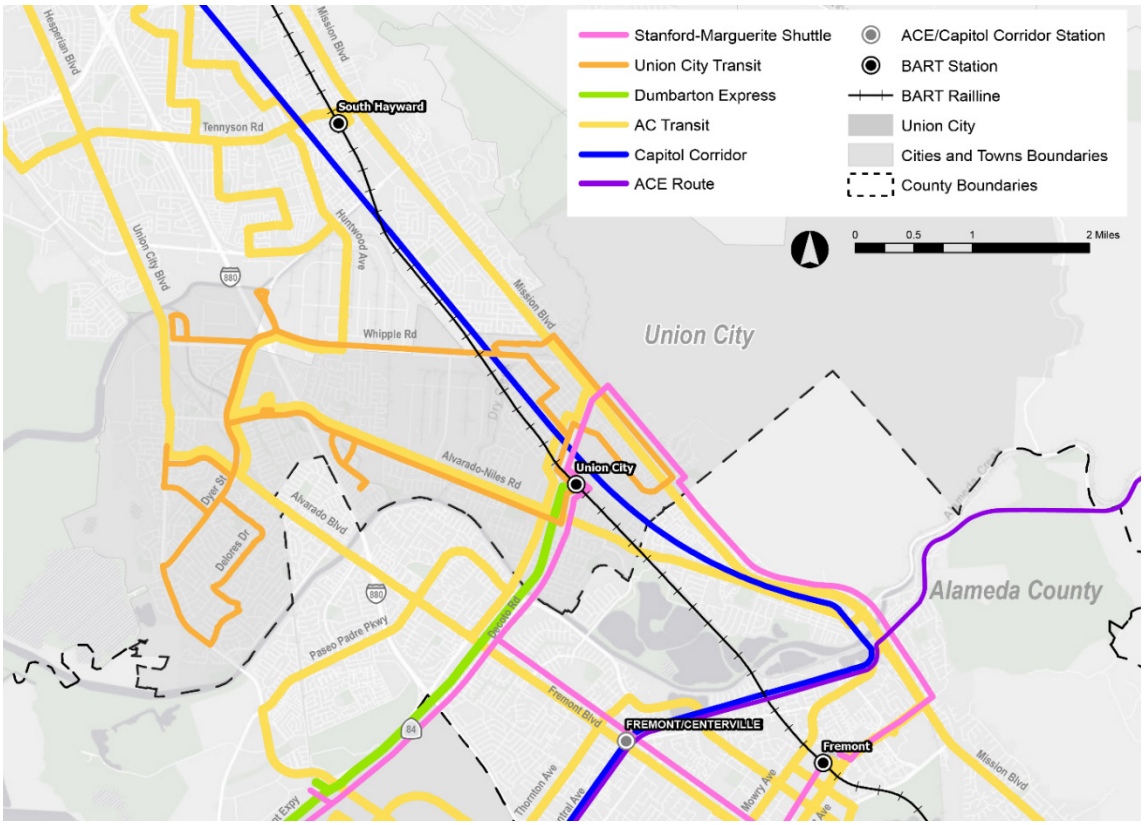
Parking for the Union City Intermodal Station Phase 3 Project will involve coordination with the City of Union City and other project partners to define what elements of parking should be included in the project description (beyond constructing additional street curb space along the southern extension of Duncan Way for temporary parking related to pick-up and drop-off of passengers on the east side of the Union City Intermodal Station). As discussed below, the approach to parking will likely be to leverage surrounding future development for parking for rail passengers, or, if development is not in place, to explore temporary surface parking solutions. While parking estimates have not been studied in this phase of planning due to the limited parking demand expected, it is acknowledged that some parking will need to be accommodated. Future ridership forecasting work during the environmental clearance phase of the project will therefore include an assessment of parking needs, at which time a more detailed examination of parking at the Union City Intermodal Station will be undertaken.

7.1. Existing Bus and Shuttle Services

7.1.1. Existing Bus Services

Numerous bus routes currently service the existing Union City Intermodal Station and the surrounding area. These routes, together with BART, are illustrated in **Figure 7-1**.

Figure 7-1. Transit Services in the Union City Area



Source: GTFS (General Transit Feed Specification) feeds

The existing Union City Intermodal Station is primarily served by three bus operators: AC Transit, Union City Transit, and Dumbarton Express. The station is also served by Stanford's Marguerite Shuttle (one route operating one round-trip only) and private shuttles operated by employers. **Table 7-1** presents the basic service parameters (routes and frequencies) for BART and public bus operators serving the Union City Intermodal Station.

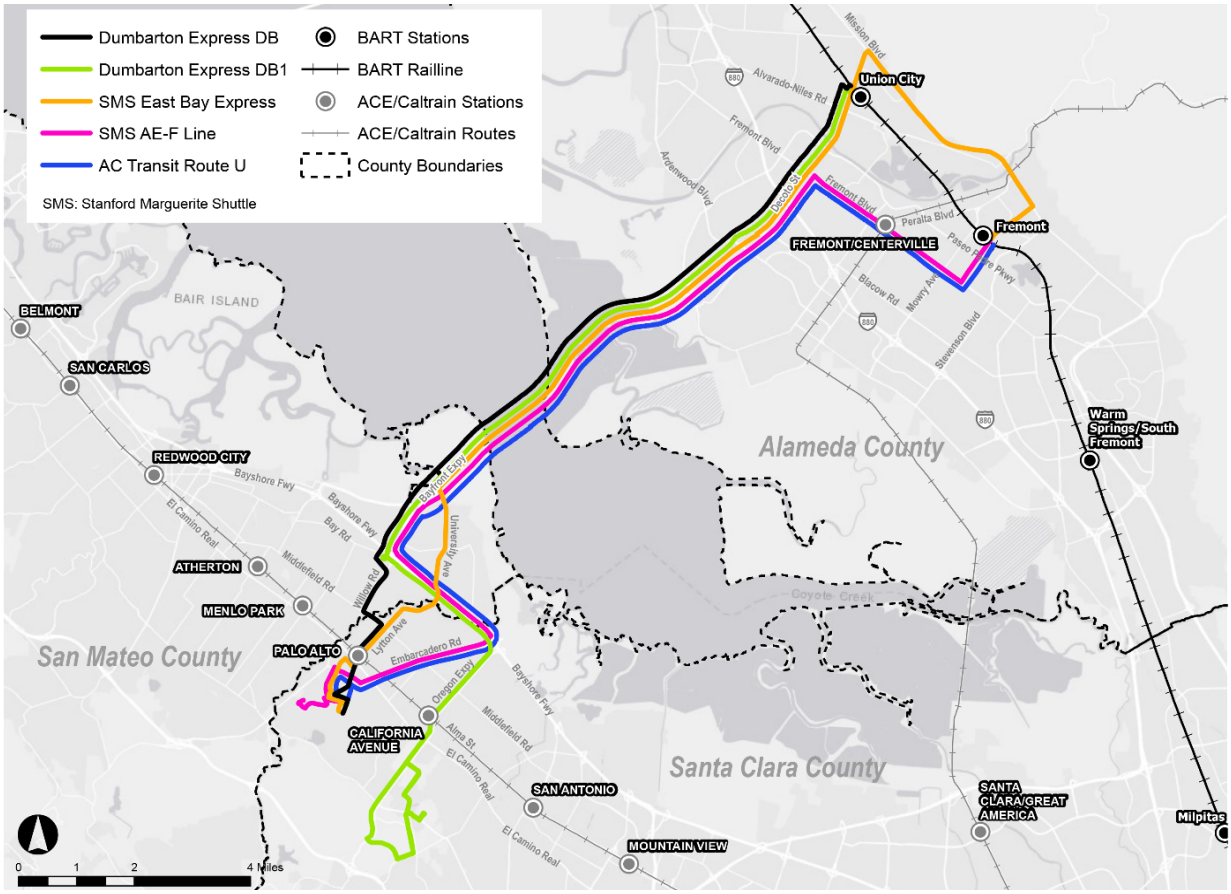
TABLE 7-1. SUMMARY OF CURRENT BUS SERVICE AT THE UNION CITY BART STATION

Operator	Route	Headways (minutes)				Notes
		Weekday		Saturday	Sunday	
		Peak	Off-Peak			
BART	Orange (Richmond–Berryessa)	15	15	30	30	
	Green (Daly City–Berryessa)	15	15	30	30	
Union City Transit	1 (Delores)	20	30	60	60	
	2 (Whipple)	20	30	30	30	
	3 (Almaden)	60	60	60	60	
	4 (Tamarack)	60	60	60	60	
	5 (Dyer)	20	30	60	60	
	Flea	20	—	—	—	Flexible microtransit
AC Transit	97 (Hesperian–Alvarado–Decoto)	15	20	30	30	
	99 (Mission–Decoto–Fremont Blvd)	20	20	25	25	
	200 (Decoto–Newark Blvd–Mowry)	20	20	20	20	
	216 (Niles–Stevenson–NewPark)	60	60	60	60	
	232 (Mission–Decoto–NewPark)	60	60	60	60	
	801 (East 14th–Mission All-Nighter)	—	30	30	30	Late evening and early morning only
Dumbarton Express	DB	30	30	—	—	
	DB1	30	30	—	—	
Stanford Marguerite	EB (East Bay Express)	—	—	—	—	1 roundtrip only per day

Source: Public Timetables from BART, Union City Transit, AC Transit, Dumbarton Express and the Stanford Marguerite Shuttle

Transbay bus service across the Dumbarton Bridge is provided by AC Transit, Dumbarton Express, and Stanford Marguerite Shuttle. In the East Bay, these buses connect to either the Union City BART Station or the Fremont BART Station. In the Peninsula, most of these services connect to the Stanford Oval with different routes serving different areas in Palo Alto. **Figure 7-2** provides an overview of the Transbay bus services.

Figure 7-2. Existing Transbay Bus Services



Source: GTFS feeds

A brief description of each of the public transit operators at the Union City Intermodal Station is provided below.

BART provides regional heavy rail services within the Bay Area. Two BART lines serve Union City: the Green Line between Daly City and Berryessa/North San Jose by way of Downtown San Francisco and the Orange Line between Richmond and Berryessa/North San Jose by way of Downtown Oakland and Berkeley.

AC Transit is the primary bus transit provider in 13 cities and unincorporated areas of Alameda and Contra Costa Counties. AC Transit service at the Union City BART Station includes five daytime routes (Lines 97, 99, 200, 216, and 232) and one All-Nighter (late evening and early morning only) route (Line 801). An additional "Transbay" route, Line U, operates in the Dumbarton Corridor but serves the Fremont BART Station. Due to its similar route and termini, AC Transit Line U is planned to be converted into a Dumbarton Express route sometime in the near future.

Union City Transit is a municipal transit service that provides service entirely within Union City, connecting neighborhoods throughout the city with Union Landing and the Union City BART Station. Union City Transit operates five fixed routes and a microtransit service.

Dumbarton Express is a service provider that connects Palo Alto and Union City across the Dumbarton Bridge. According to the 511.org website[39], the Dumbarton Express "is administered and governed by AC Transit, with oversight by the Dumbarton Bridge Regional Operations Consortium (DBROC), comprised of AC Transit, Santa Clara Valley Transportation Authority (VTA), BART, San Mateo County Transit District (SamTrans), and Union City Transit." Service is provided by MV Transportation, a private contractor that also operates the Union City Transit service (both services operate out of the Union City Transit yard near the southern end of the proposed layover facility along the future Quarry Lakes Parkway). There are two Dumbarton Express routes—one serving Stanford University (DB Route) and another serving the Stanford Research Park (DB1 Route)—with terminating in the East Bay at Union City BART Station.

The **Stanford Marguerite Shuttle** is the shuttle bus service for Stanford University. Two routes cross the Dumbarton Bridge, but only one (the East Bay Express) serves Union City BART Station. The other route, Line AE-F, serves the Fremont BART Station. For the purposes of this SoCo Rail Study, the Stanford Marguerite Shuttle is considered a full public transit service and not a shuttle, given that it is open to the general public and has publicly-available schedules.

7.1.2. Existing Shuttle Services

In addition to the Stanford Marguerite, other college shuttle bus services are operated in the East Bay and may have relevance to the future Union City Intermodal Station Phase 3 Project. California State University (CSU) East Bay provides a shuttle connecting its main campus (located in the Hayward Hills) with the Hayward BART station. This shuttle is open to both students and the general public. The route operates every 15 minutes Mondays through Thursdays, every 30 minutes on Fridays, and every 40 minutes on weekends. This shuttle serves one stop on the Hayward Hills campus and four stops in the Downtown Hayward area, including the Hayward BART station.

Ohlone College provides a shuttle bus, marketed as the "Shuttle to Success," that connects the college's Fremont Campus and Newark Center Campus to the Warm Springs/South Fremont BART Station. Four roundtrips operate on Mondays through Thursdays, with no service on Fridays and on weekends. The service is only open to Ohlone College students.

Information regarding corporate shuttles is not publicly available, but many companies are known to provide commuter shuttles for their employees, with some larger companies operating inter-campus shuttles. While schedules for these types of shuttles are not public, a search through news articles does show that Facebook (now Meta) operates Transbay service into the Union City Intermodal Station. It is unknown if this service only connects to Meta's main campus in Menlo Park or if it also serves Meta's Fremont campus in the Ardenwood Business Park. Field observations on a typical weekday also confirmed other private shuttles serving the Union City Intermodal Station, including vehicles marked for "Menlo Park Labs" and "BioMed Realty". Tesla provides a shuttle bus that connects the Warm Springs/South Fremont BART Station to the Tesla factory in Fremont. Apple shuttles were confirmed during field observations at the Ardenwood Transit Center and the Fremont BART Station but were not

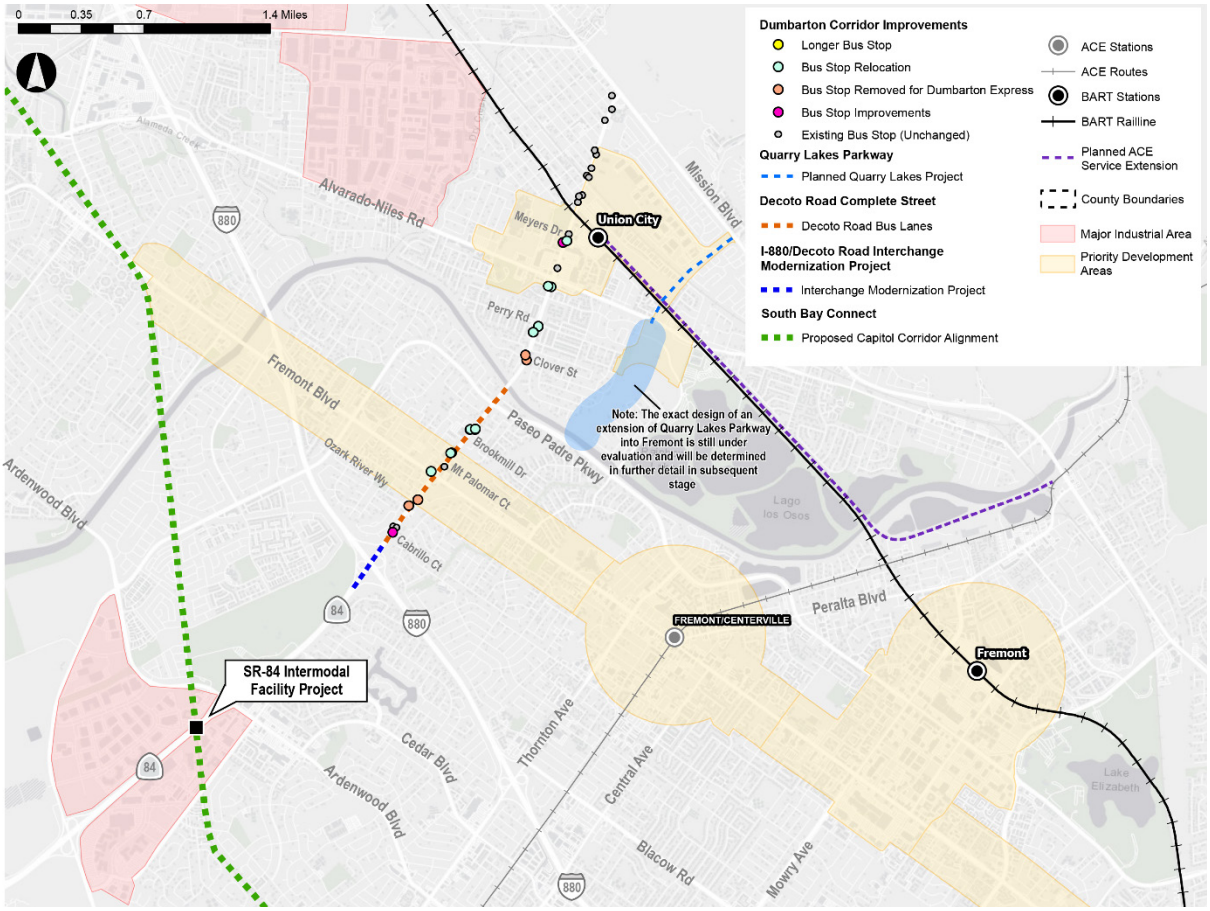
[39] 511.org (https://511.org/transit/agencies/dumbarton-express)

verified at the Union City Intermodal Station. It is unknown if other shuttle services operate at the Union City Intermodal Station.

7.2. Planned Bus- and Shuttle-Related Improvements

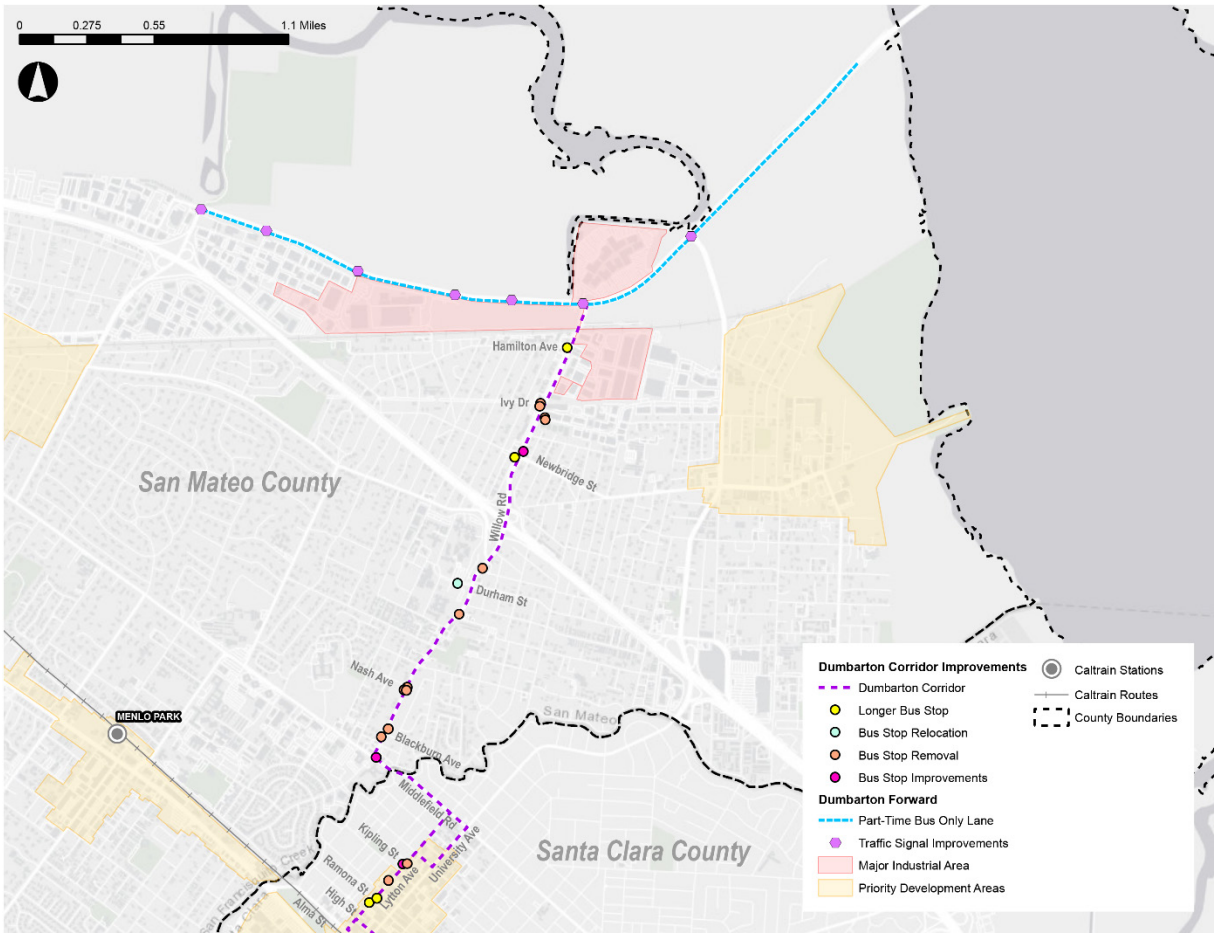
The Tri-Cities and MTC have prioritized significant improvements to Transbay bus services in the Dumbarton Corridor, with a focus on improving the Decoto Road/SR 84 corridor, which is the East Bay portion of the Dumbarton Corridor. Decoto Road/SR 84 connects the Tri-Cities to the Peninsula via the Dumbarton Bridge and is the spine for Dumbarton Corridor buses. There are several planning efforts underway at various phases of implementation that have identified infrastructure improvements to enhance this Transbay corridor. Projects working to improve this critical corridor include AC Transit's Dumbarton Corridor Improvement Project, MTC's Dumbarton Forward Project, City of Fremont's Decoto Road Complete Streets and I-880/Decoto Road Interchange Modernization Projects, and CCJPA's State Route 84 Intermodal Facility Project. Additionally, the Quarry Lakes Parkway Project, being developed by the City of Union City, is emerging a new roadway corridor that could accommodate bus service in the future. All of these projects are described below and illustrated together in **Figure 7-3** and **Figure 7-4**.

Figure 7-3. Planned Bus-Related Improvements along the Dumbarton Corridor – East Bay



Source: AECOM (based on numerous resources cited herein)

Figure 7-4. Planned Bus-Related Improvements along the Dumbarton Corridor – Peninsula



Source: AECOM (based on numerous resources cited herein)

Other relevant plans and projects, including the Dumbarton Transportation Corridor Study and *Capitol Corridor*'s South Bay Connect Project, are discussed in the Phase 1 Report.

7.2.1. Dumbarton Corridor Improvement Project

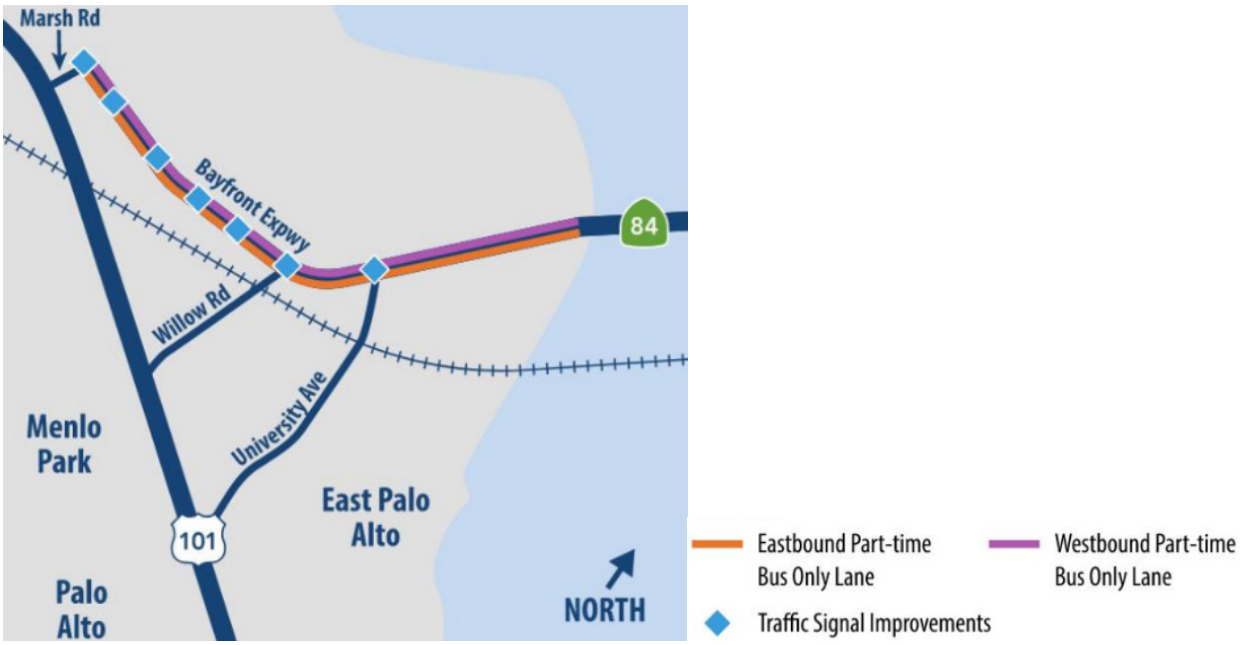
The purpose of the Dumbarton Corridor Improvement Project, led by AC Transit, is to improve reliability and reduce travel times for transit service in the immediate term through implementation of a Transit Signal Priority (TSP) system, bus queue-jumps, and bus stop improvements (including lengthening, removals, and relocations). The improvements include locations in Fremont and Union City in the East Bay (running from Union City Intermodal Station to Cabrillo Drive in Fremont), as well as Menlo Park and Palo Alto on the Peninsula (where the Dumbarton Express routes operate). See **Figure 7-3** and **Figure 7-4** for the specific locations of the various bus stop modifications. Construction is currently scheduled for completion in late May or early June 2023.

7.2.2. Dumbarton Forward

The Dumbarton Forward project is part of MTC's short-term improvements in the Dumbarton Corridor, consisting of a series of near-term strategies to improve efficiency and reduce delays in the Dumbarton

Bridge area and along the SR 84 corridor. While additional improvements were originally planned for the SR 84 corridor within the East Bay, improvements are now focused in Menlo Park on the Peninsula, including part-time bus-only lanes at peak periods and TSP treatments along Bayfront Expressway (the road that becomes the Dumbarton Bridge), and dedicated bus signals on Bayfront Expressway at Willow and Marsh Roads (see **Figure 7-5)**. Currently the project is in the final design phase, with construction slated to begin on the first package of work related to Bayfront Expressway sometime in the Winter of 2023.[40]

Figure 7-5. Dumbarton Forward Improvements



Source: MTC (https://mtc.ca.gov/sites/default/files/images/Dumbarton_Forward_Project_Map_crop_v5.jpg)

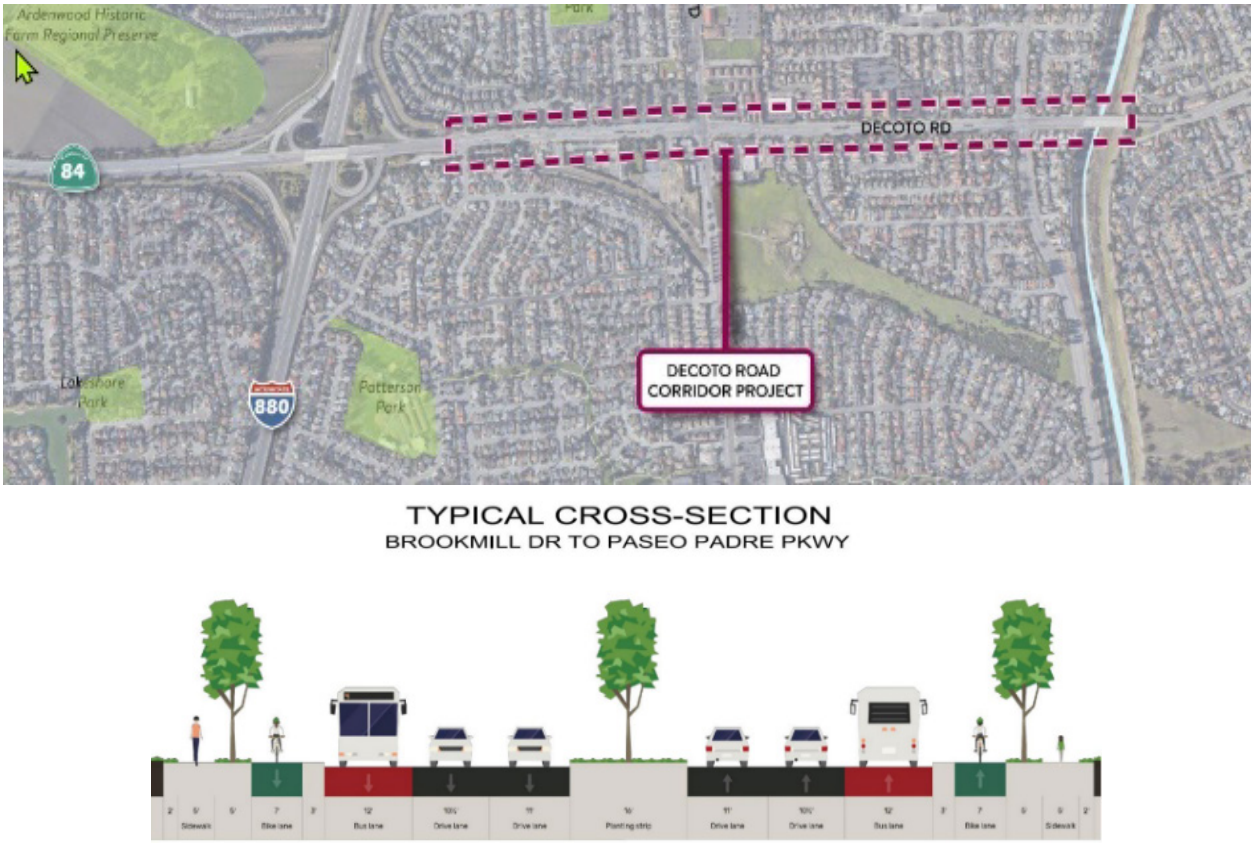
7.2.3. Decoto Road Complete Streets Project

The Decoto Road Complete Streets Project led by the City of Fremont, will improve transit reliability, provide congestion relief, and increase active transportation safety along Decoto Road between Interstate 880 and Paseo Padre Parkway. The project will change the cross-section of Decoto Road to allow for the implementation of TSP treatments and will provide "complete street" upgrades to improve safety and access for bicyclists and pedestrians.

The key improvement is the establishment of bus-only lanes along Decoto Road between Paseo Padre Parkway Drive to the east and Cabrillo Court to the west (see **Figure 7-6**). The new bus-only lanes are planned to continue further west from Cabrillo Court along SR 84 through the I-880 interchange as part of the I-880/Decoto Road Interchange Modernization Project (described further in the next subsection). These bus lanes are anticipated to significantly reduce travel times for all Transbay bus services, as well as any local bus services running along Decoto Road.

[40] MTC (https://mtc.ca.gov/operations/programs-projects/forward-commute-initiatives/dumbarton-forward).

Figure 7-6. Decoto Complete Streets Project



Source: City of Fremont (https://www.fremont.gov/government/departments/public-works/public-works-projects/decoto-road-complete-streets)

Bus lanes are not proposed along the segment of Decoto Road within Union City (i.e., north of Paseo Padre Parkway), as the right-of-way is too narrow to accommodate additional travel lanes. While this section of Decoto Road is currently congested (especially at peak hours), the development of Quarry Lakes Parkway to the east of Decoto Road could provide an alternative route for buses in the future.

The Decoto Complete Streets Project is currently in the final design phase with construction currently scheduled to begin late winter of 2024, subject to funding availability.[41] The critical-path task for project implementation is to begin property acquisition, though this is on hold until funding is more solidified.

7.2.4. I-880 / Decoto Road Interchange Modernization Project

The I-880 / Decoto Road Interchange Modernization Project led by the City of Fremont connects with the City's Decoto Road Complete Streets Project and extends those multimodal improvements west through the I-880/Decoto Road interchange, including the dedicated bus-only lanes and a separated path for pedestrians and cyclists (see **Figure 7-7**). The project will provide center-running bus-only lanes through the project area, transitioning from the side-running configuration to the east as part of the Decoto Complete Streets Project. The improved interchange will relieve a current bottleneck for east–west travel in the Decoto Road/SR 84 corridor and enhance access to the existing trail leading to

[41] City of Fremont (https://www.fremont.gov/government/departments/public-works/public-works-projects/decoto-road-complete-streets)

Ardenwood Historic Farm, which will also be extended to the Ardenwood Transit Center. This project is currently in the approval/environmental clearance phase and is slated to commence construction in the fall of 2026, subject to funding availability.

Figure 7-7. I-880 / Decoto Road Interchange Modernization Project

Source: City of Fremont (https://www.fremont.gov/government/departments/public-works/public-works-projects).

7.2.5. State Route 84 Intermodal Facility

The State Route 84 Intermodal Facility project, led by CCJPA, will optimize the connection between Dumbarton Corridor buses and the proposed Ardenwood *Capitol Corridor* Station (being planned as part of CCJPA's South Bay Connect Project), as well as other buses/shuttles serving the existing Ardenwood Park-and-Ride facility. The major feature of the project is the construction of a bus station in the median of SR 84, immediately south of the planned *Capitol Corridor* station.

Currently, Dumbarton Corridor buses exit SR 84 at Ardenwood Boulevard and circulate along surface streets when traveling to or from the Ardenwood Park-and-Ride. The new bus station will eliminate the need to exit SR 84 to access the park-and-ride facility, resulting in a travel time savings of several minutes for each bus trip. There will also be direct pedestrian connections from the bus station to the proposed *Capitol Corridor* station immediately north of SR 84 and to a pedestrian pathway to nearby office parks located immediately south of SR 84. See **Figure 7-8** for an illustration of the proposed improvements.

This project has independent utility, and its implementation is not dependent on the new *Capitol Corridor* station in Ardenwood. Ideally, however, both the rail station and bus station would be constructed within a short timeframe of each other (although this is not a strict requirement for implementation). CCJPA currently plans to complete environmental clearance for the State Route 84 Intermodal Facility and then work with project partners to determine a project lead for subsequent design and construction. No funding has been identified to complete implementation of this project beyond the environmental clearance phase.

Given the importance of this new bus facility and the potential travel time savings to Dumbarton Corridor buses, it should be supported by project partners and other entities with an interest in the success of the Union City Intermodal Station Phase 3 Project. The immediate project need is to determine a clear path forward in terms of completing the final phases of this project and to begin seeking the necessary funding.

Figure 7-8. State Route 84 Intermodal Facility

Source: CCJPA (https://www.capitolcorridor.org/projects)

7.2.6. Quarry Lakes Parkway

Quarry Lakes Parkway is a planned four-lane, landscaped multimodal corridor that would connect Mission Boulevard and Alvarado-Niles Road within Union City in the mid-term. An extension to Paseo Padre Parkway in Fremont in the longer-term is still being planning and details on its design and timeline for implementation are being coordinated with various agencies and stakeholders. Concept renderings are provided in **Figure 7-9**.

For the initial phases within Union City, Quarry Lakes Parkway will parallel Decoto Road and create a new access point to the Station District Area and to the east side of the Union City Intermodal Station with a direct connection to 11th Street. The roadway will be designed as a complete street with buffered bike lanes and a separated Class-I multi-use trail (see **Figure 7-9**). This new roadway corridor will also create new intersections at Quarry Lakes Drive, Alvarado–Niles Boulevard, 11th Street, and 7th Street in Union City, as well as grade separations under BART, the UP Oakland Subdivision, and the UP Niles Subdivision.

Figure 7-9. Quarry Lakes Parkway – Concept Renderings

Source: Union City (https://www.unioncity.org/499/Quarry-Lakes-Parkway-Project)

Source: Union City (https://www.unioncity.org/DocumentCenter/View/9453/Item5biii---QLP-Annual-Progress-Report-101722)

The formation of this new four-lane roadway through Union City will provide another access point to the Union City Intermodal Station, strengthening connectivity to the eastside. The implementation of a new route parallel to Decoto Road is anticipated to lead to the redistribution of local traffic and ease traffic congestion along Decoto Road within Union City, improving conditions for buses operating along Decoto

Road while also providing an opportunity to consider operating some bus service along Quarry Lakes Parkway to bypass the congested sections of Decoto Road.

The Quarry Lakes Parkway Project is being implemented in phases. Phases 1-4 planned for the mid-term and Phase 5 envisioned for the longer-term:

- Phase 1 will construct the first segment between Mission Boulevard and 7th Street in Union City.
- Phase 2 (not contiguous with Phase 1) will span from Alvarado–Niles Road to Quarry Lakes Drive and the Union City/Fremont boundary, providing access and utility infrastructure to the City's Gateway development site.
- Phases 3 and 4 will provide access to the east side of the Union City Intermodal Station (via 11th Street) by closing the gap between Phases 1 and 2. Phases 3 and 4 are currently envisioned to be complete within 10 years, roughly corresponding with the arrival of intercity rail service at the Union City Intermodal Station and planned bus improvements described earlier in this plan.
- Phase 5, being led by the City of Fremont, would complete the final segment between Quarry Lakes Drive and potentially to Paseo Padre Parkway. This phase is slated for completion on a longer-term timeframe, between 10 and 20 years from now. The exact design and character of Phase 5 is still under evaluation and will be determined in further detail in subsequent stages.

7.3. Concepts for Additional Bus and Shuttle Improvements

An analysis of unserved and underserved areas and travel markets was conducted to inform planning for additional bus and shuttle improvements beyond those described above. This analysis evaluated potential markets for intercity rail connections, looking at population and employment in Southern Alameda County and nearby areas on the Peninsula.

Following this review of potential markets for additional bus and shuttle improvements, service and physical bus and shuttle improvement concepts are discussed to assist in developing improved bus and shuttle service.

7.3.1. Evaluation of Potential Markets for Bus and Shuttle Services

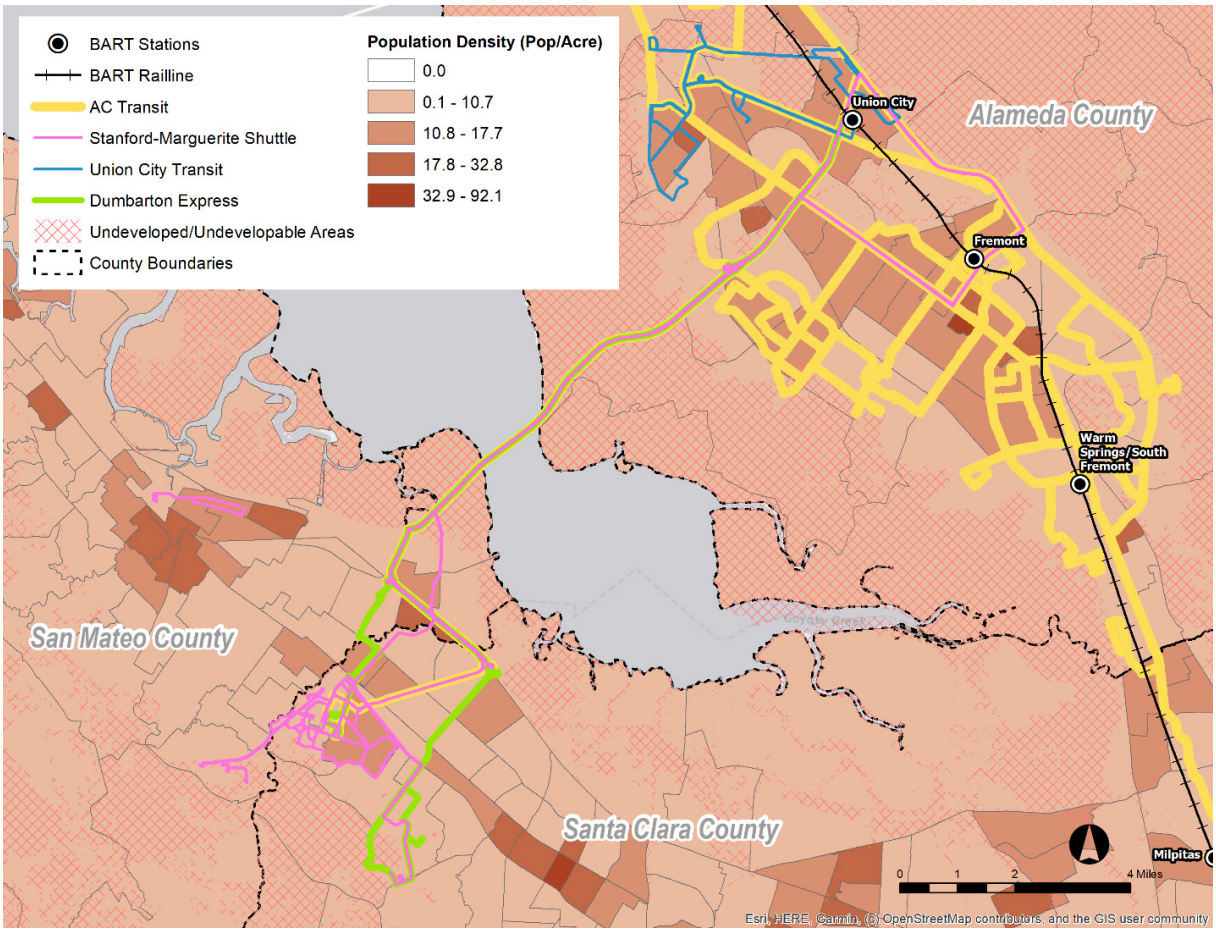
To help identify potential improvements to bus service to support intercity rail at the Union City Intermodal Station, the analysis looked at population and employment in Southern Alameda County and in nearby areas of the Peninsula in southern San Mateo County and northern Santa Clara County. This analysis mapped key markets, development areas, and trip generators to determine where transit service is needed or, if these areas are already served, where transit service may need to be improved. The key findings from this section were used to develop the service recommendations in subsequent sections.

RESIDENTIAL MARKETS

The residential markets represent the home markets of people that could use intercity rail service at the Union City Intermodal Station to travel to points in the Central Valley (including the connection to HSR in Merced) and beyond. Residential areas are located throughout the analysis area and existing transit services, including Dumbarton Corridor buses, cover many of these areas. The residential markets,

shown as population density, are presented on **Figure 7-10**. Residential areas that are not currently well-connected to the Union City Intermodal Station include newer development areas in Newark, portions of Hayward, and Redwood City in San Mateo County.

Figure 7-10. Residential Markets



Source: LEHD (Longitudinal Employer Household Dynamics)

Note: Areas hatched as "undeveloped/undevelopable" consist of areas where land use is classified as "natural riparian" or "natural vegetation" (i.e., natural habitat or preserved open space) or "urban industrial" (e.g., salt ponds).

EMPLOYMENT MARKETS

The bus network in the Union City area connects to many employment areas in both the East Bay and the Peninsula. East Bay Major employment areas not currently well-connected to the Union City Intermodal Station include Ardenwood (for which the City of Fremont approved a substantial upzoning in 2016) and nearby portions of western Newark. More distant areas in northern San Jose are also not directly connected to the Union City Intermodal Station. Along the Peninsula, areas of higher employment that are not directly connected to the Union City Intermodal Station include Redwood City, Mountain View, and Sunnyvale.

TRANSBAY MARKETS

The current Transbay services in the Dumbarton Corridor connect to major markets at Stanford University and the Stanford Research Park in Palo Alto. Redwood City is another market with a mix of employment and residential, and improvements are being planned for the Redwood City Caltrain Station and adjoining transit center. A major office park area is located in Redwood Shores outside of Downtown Redwood City, and while at the outer limits of a Transbay market via the Dumbarton Corridor, the employment density there may warrant consideration of a connection.

GENERAL CONCEPTS AND RECOMMENDATIONS

Connections between the planned Union City Intermodal Station Phase 3 Project and final origins/destinations should be on routings with travel times of 45 minutes or less to effectively attract users. In the East Bay, there are several markets where connections to the Union City Intermodal Station should be improved:

- **Ardenwood** – The existing Ardenwood Park-and-Ride is served by Transbay routes (Dumbarton Express and AC Transit Line U) and one local AC Transit route, all providing service to the periphery of the large office park, which includes Meta's Fremont campus. The need of Transbay buses to exit SR 84 to access the Ardenwood Park and Ride bus stop is time consuming and detrimental to bus passenger traveling from the Union City Intermodal Station and the Peninsula. The SR 84 Intermodal Facility Project (see Section 7.2.5) will improve this situation, saving several minutes for each bus. Prioritizing this project is a key element to improving Transbay bus service. In addition, a *Capitol Corridor* station is proposed at this location as part of the South Bay Connect Project.
- **Newark** – Western Newark is home to numerous office parks and industrial areas and a growing residential community, all located beyond the reach of AC Transit's Line 200. Coverage in Newark should be increased to serve these areas.
- **Hayward** – A shuttle bus service, potentially utilizing Union City's Transit Flea microtransit (on-demand service), could be implemented to connect the extensive office parks and other industrial areas within Hayward. However, there are significant jurisdictional challenges to implementing Union City Transit bus service outside of the City of Union City. Further exploration on how to better integrate connecting bus services to the surrounding industrial and office parks in the vicinity of the Union City Intermodal Station, including those located in Southern Hayward, should be prioritized.

In addition to expanding the coverage area as described above, frequency along existing AC Transit and Union City Transit bus routes should be increased to better connect with both BART and intercity rail at the Union City Intermodal Station. Spans should also be adjusted on certain routes to allow for connections to later trains.

7.3.2. Route and Stop Improvements

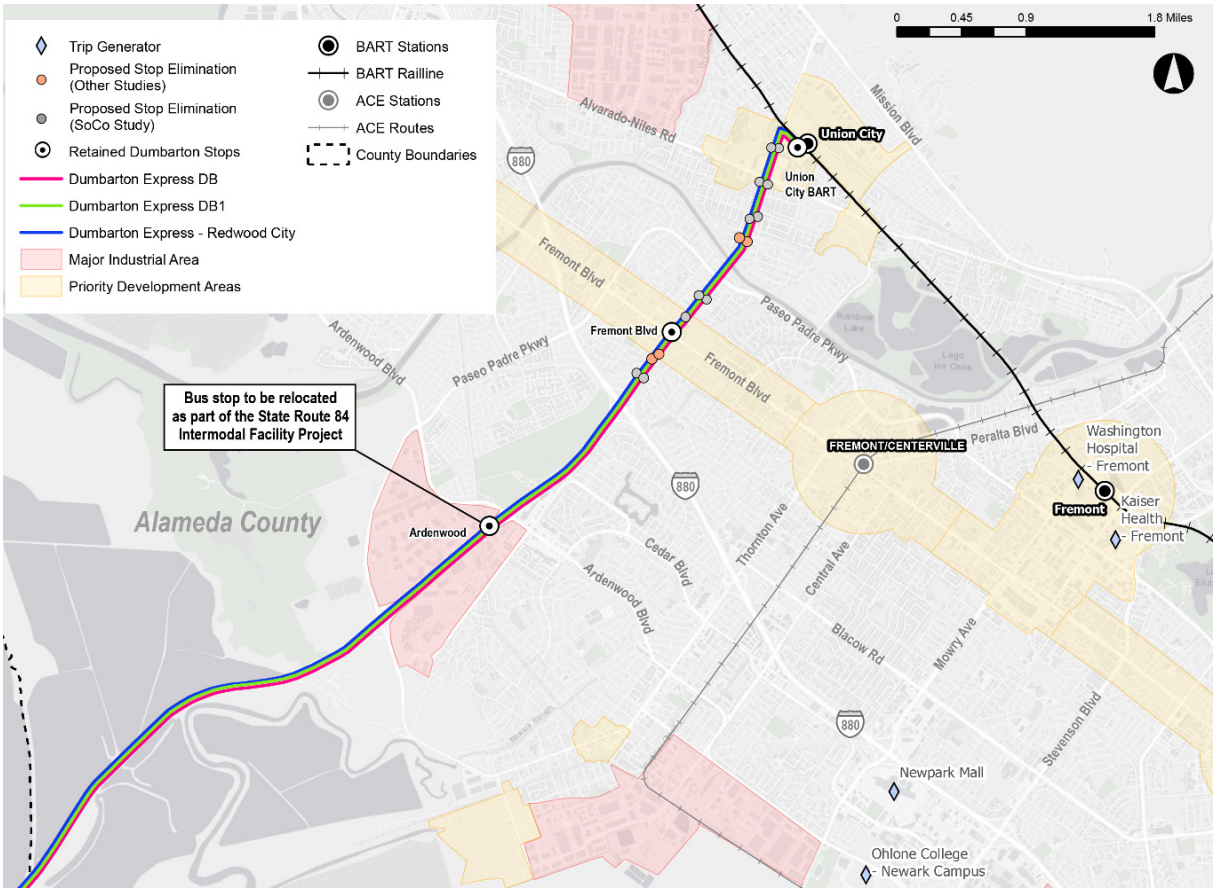
This section describes several potential improvements to bus and shuttle routings and stops. Potential reroutes of bus and shuttle services via the planned Quarry Lakes Parkway are discussed separately in detail in Section 7.4.5.

DUMBARTON EXPRESS BUS STOP CONSOLIDATION

The Dumbarton Corridor Improvement Project proposes some bus stop consolidation and other changes, but additional stop consolidation could be considered to improve travel times and reliability for the Dumbarton Express and other Transbay buses. Faster travel times are essential to realize a large mode shift toward Transbay bus service between the Peninsula and the Union City Intermodal Station. Under this concept, the total number of stops would be reduced to a total of three in each direction on the East Bay side. On the Peninsula side, the total number of stops would be reduced to nine in each direction for the DB and 10 in each direction for the DB1.

The total number of discontinued stops could be up to 6 on the East Bay side (for both the DB and DB1 routes), with an additional 4 on the Peninsula side (for the DB route). These changes could generate a travel time savings (in each direction) of up to 10–20 minutes for DB buses and 6–12 minutes for DB1 buses, in addition to travel time savings from already planned improvements.[42] The potential bus stop consolidation is illustrated in **Figure 7-11** (East Bay) and **Figure 7-12** (Peninsula).

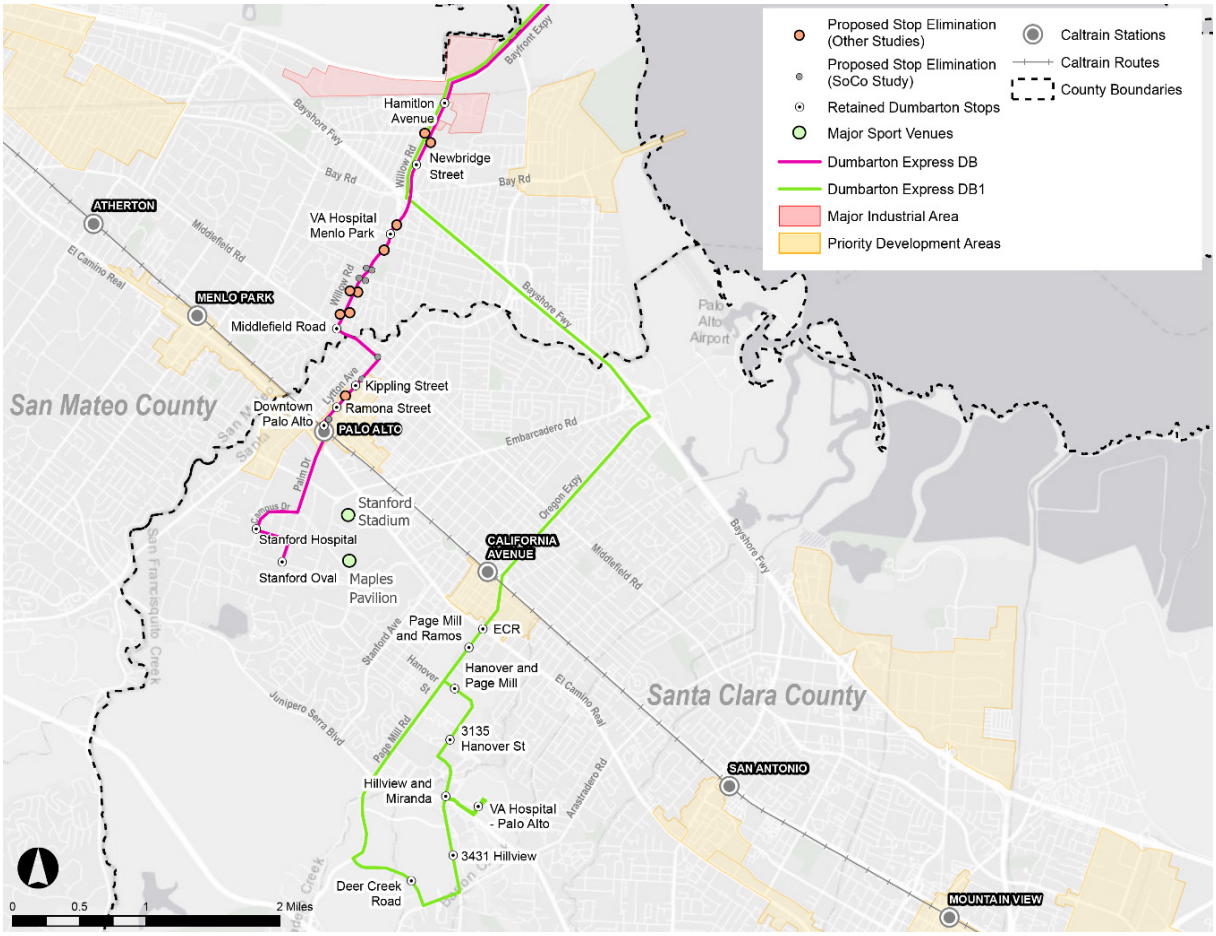
Figure 7-11. Dumbarton Express Stop Concepts – East Bay



Source: AECOM, 2023

[42] Note, heavy traffic congestion could deteriorate these improvements, though the planed bus lanes on a portion of Decoto Road should help mitigate the slowing of buses during heavy traffic.

Figure 7-12. Dumbarton Express Stop Concepts – Peninsula



Source: AECOM, 2023

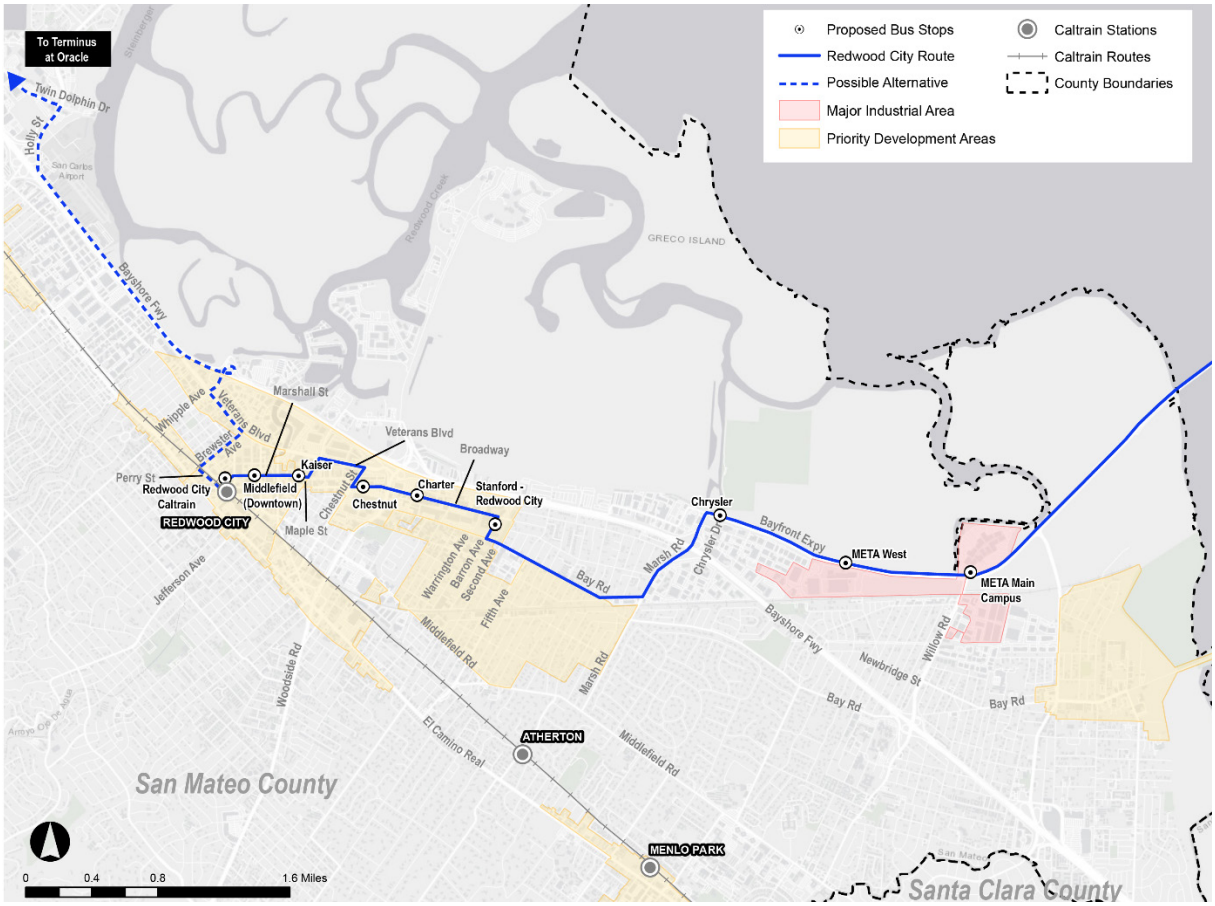
DUMBARTON EXPRESS REDWOOD CITY ROUTE CONCEPT

A new Dumbarton Express route connecting the Union City Intermodal Station and Redwood City had been identified in the Dumbarton Corridor Transportation Study. As part of the SoCo Rail Study, a concept was developed for a new Dumbarton Express line between the proposed Union City Intermodal Station and the Redwood City Caltrain Station in downtown Redwood City (see **Figure 7-13**).

On the Peninsula, the concept includes an enhanced bus stop with platforms for the Meta Main Campus stop and a new stop to the north where the Meta campus continues on the west side of Bayfront Expressway. These stops will be coordinated with the peak-hour bus lanes planned as part of the Dumbarton Forward Project. Other key stops include Stanford's Redwood City campus (see **Figure 7-14**), Kaiser's Redwood City campus, Middlefield Road in downtown Redwood City, and Redwood City Caltrain Station.[43] The City of Redwood City's Transportation Department and Stanford University were closely consulted to develop this concept. A potential extension of this service could also be considered to serve office parks in Redwood Shores, with a possible terminal at the Oracle campus.

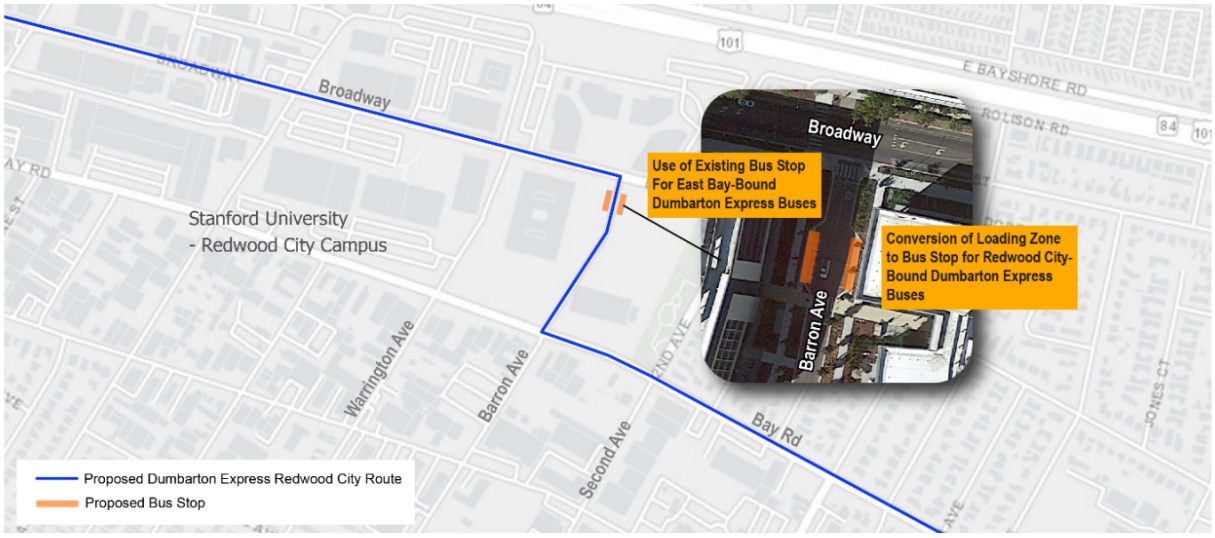
[43] There are proposals to upgrade the existing Caltrain station to a four-track, elevated station (where express and local trains could meet) and redesign the adjacent transit center.

Figure 7-13. Potential Dumbarton Express Redwood City Route – Overview Map



Source: AECOM, 2023

Figure 7-14. Potential Dumbarton Express Redwood City Route – Stanford Redwood City Campus



Source: AECOM, 2023

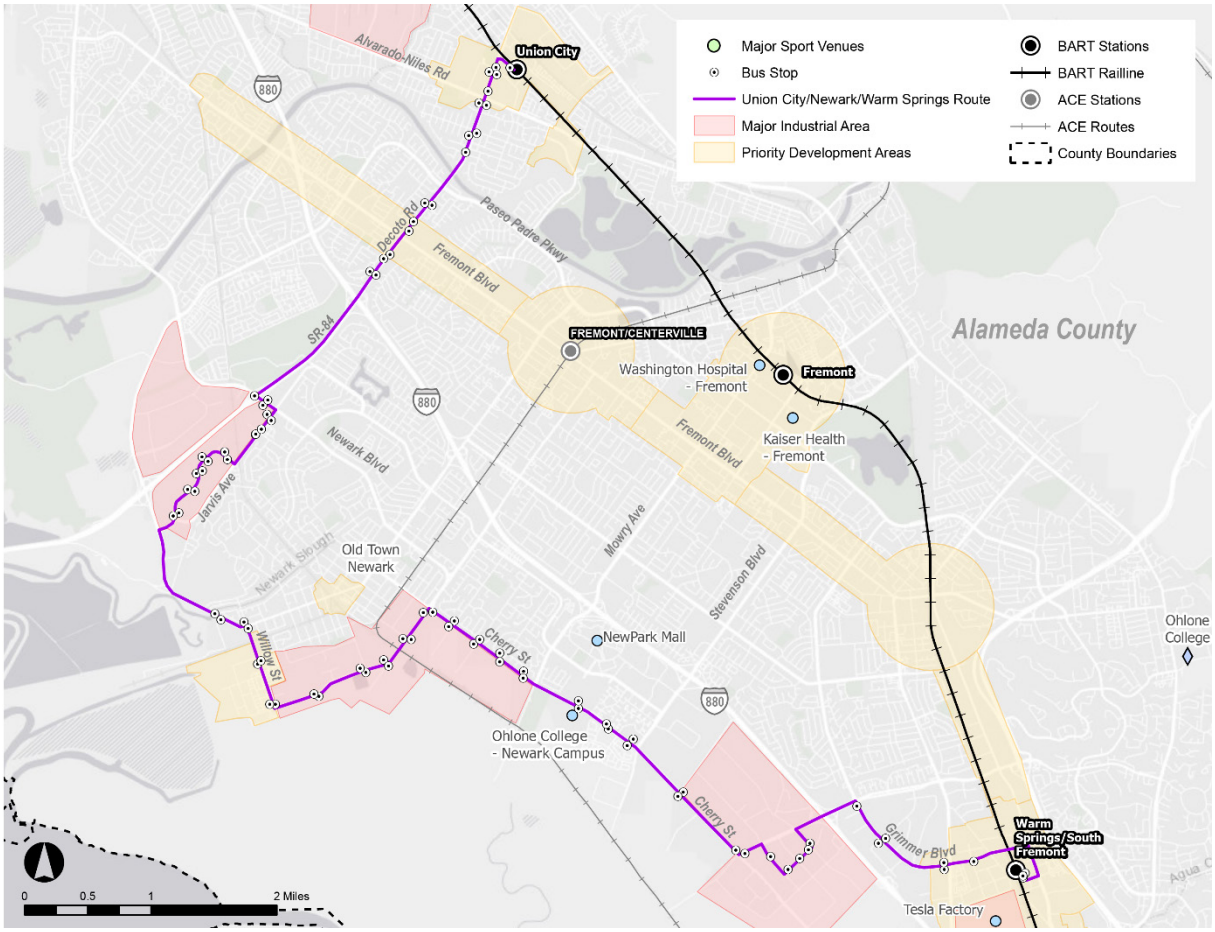
DUMBARTON EXPRESS "SUPER EXPRESS" CONCEPT

A "super express" service could be implemented with timed connections to/from intercity rail trains serving the Union City Intermodal Station. These trips would hold for late trains and would run non-stop between the Union City Intermodal Station and the Peninsula. This would allow for faster Transbay service to/from the Peninsula for connecting intercity rail and BART passengers. Currently, the DB route (serving Stanford University) has the highest ridership and would be the first candidate for the super express service.

UNION CITY–NEWARK–WARM SPRINGS AC TRANSIT BUS ROUTE CONCEPT

A new AC Transit bus route could be considered to address poor connections between the Union City Intermodal Station and destinations in Newark, as well as a need for improved connections between the Warm Springs/South Hayward BART Station and points to the west in Fremont and Newark. **Figure 7-15** shows the new route would be crescent-shaped, with the Union City Intermodal Station as the northern terminus and the Warm Springs/South Fremont BART Station as the southern terminus. Part of the route would restore bus service that was discontinued during the COVID-19 pandemic, including restoration of service for the large office park located between SR 84 and Jarvis Avenue.

Figure 7-15. Potential AC Transit Route (Union City Intermodal Station –Newark–Warm Springs/South Fremont BART)



Source: AECOM, 2023

The new route would connect this large office park, as well as other office parks and existing and new residential neighborhoods, in Newark, along with existing and new residential neighborhoods, also in Newark. On the way to Newark from the Union City Intermodal Station, the bus line could also function as local service along Decoto Road before diverting off at Ardenwood Blvd/Newark Boulevard. The route would also connect the Union City Intermodal Station to the Newark campus of Ohlone College. From Ohlone College, the route could continue south and east through Newark and Fremont to address the need for more efficient connections to office parks and other destinations emanating west from the Warm Springs/South Fremont BART Station.

AC Transit has recently started work on AC Transit Realign, a network redesign process to evaluate and realign service, and the proposed Union City Intermodal Station–Newark–Warm Springs/South Fremont BART route described above could be considered as part of that process. The City of Newark has also expressed interest in better transit service for the Old Town Newark area (a designated PDA) and NewPark Mall (currently undergoing a mixed-use transformation and redevelopment). The exact route alignment and stop locations for the proposed new bus route can be explored in further depth during the AC Transit Realign process.

CONCEPTS FOR IMPROVING CONNECTIVITY TO CSU EAST BAY CAMPUS

Three concepts have been identified for consideration in terms of improving connections between CSU East Bay campus and the Union City Intermodal Station as follows:

- **Concept 1:** Reroute AC Transit Line 99 to serve the CSU East Bay campus. This would result in Line 99 no longer operating along Mission Boulevard between Harder Road and Carlos Bee Boulevard/Orchard Avenue and may delay some riders on Line 99 that are not traveling to or from the campus. However, for passengers going to or from the campus, this could save a transfer as it eliminates the need to take the existing campus shuttle out of the Hayward BART Station.
- **Concept 2:** Create a variant of AC Transit Line 99 that serves the CSU East Bay campus (e.g., Line 99A). Improved frequency on Line 99 could be achieved through this route variant that serves CSU East Bay campus. This alternate route would be useful in eliminating a transfer to BART (and then to the existing CSU East Bay shuttle out of the Hayward BART Station) for intercity rail riders, as they could just take this Line 99 variant directly from the Union City Intermodal Station to the campus. These variant trips could either terminate at the campus or continue to Hayward BART Station. Unlike Option 1, this option maintains service along Mission Boulevard between Harder Road and Carlos Bee Boulevard/Orchard Avenue via the main Line 99 service.
- **Concept 3:** Implement a dedicated non-stop or limited-stop shuttle between the Union City Intermodal Station and the CSU East Bay campus. This would provide the fastest connection for riders. The drawback for this proposal is that it would likely require shifting the current campus shuttle operation (via Hayward BART Station) to the Union City Intermodal Station. The one-way route distance to campus is about 7 miles from the Union City BART Station via Carlos Bee Boulevard, compared to approximately 2 miles from the Hayward BART Station. However, the existing route weaves through windy residential streets in the hills just north of the campus, meaning that the longer shuttle route from Union City Intermodal Station may end up with a comparable travel time to the campus. Further study is warranted, as a more direct route via Carlos Bee Boulevard may not be feasible for shuttles due to the steep grade.

AC Transit and CSU East Bay have also had initial discussions about potentially partnering to provide bus service that better meets the needs of the CSU campus community, and AC Transit intends to continue these discussions after CSU has determined its transportation needs.

7.3.3. Headway and Span Improvements

In addition to minor improvements to the service span for several routes, headway (i.e., service frequency) enhancements would support improved connectivity at the Union City Intermodal Station and improved connections with intercity rail. These headway and span improvements reflect that the expected opening year for the Union City Intermodal Station Phase 3 Project is approximately 2030, with the assumption that background ridership on buses should increase some by then (despite the current pandemic influenced lower trends).

Table 7-2 presents routes that could have improved headways and spans, including the new routes presented above. Together, these routes serve important trip generators and key employment and residential areas and would support and benefit from improved connections with intercity rail and BART.

TABLE 7-1. POTENTIAL HEADWAY IMPROVEMENTS FOR CONNECTING BUS SERVICE

Operator	Route	Current Headways (minutes)			Recommended Headways (minutes)		
		Weekdays		Weekends	Weekdays		Weekends
		Peak	Off-Peak		Peak	Off-Peak	
Union City Transit	1 (Delores)	20	30	60	15	20	60
	2 (Whipple)	20	30	30	15	20	30
	3 (Almaden)	60	60	60	20	30	60
	4 (Tamarack)	60	60	60	20	30	60
	5 (Dyer)	20	30	60	15	20	60
AC Transit	97 (Hesperian–Alvarado–Decoto)	15	20	30	15	15	30
	99 (Mission–Decoto–Fremont Blvd.)	20	20	25	15	15	15
	200 (Decoto–Newark Blvd.–Mowry)	20	20	20	20	20	20
	216 (Niles–Stevenson–NewPark)	60	60	60	30	30	30
	232 (Mission–Decoto–NewPark)	60	60	60	30	30	30
	Union City–Newark–Warm Springs (new)	—	—	—	30	30	—
	801 (East 14th– Mission All-Nighter)	—	30	30	—	30	30
Dumbarton Express	DB	30	60	—	20	30	60
	DB1	30	60	—	20	30	—
	Redwood City (new)	—	—	—	20	30	60
	DB Super Express (new)	—	—	—	3 roundtrips timed for intercity rail connections		

Source: AECOM, 2023

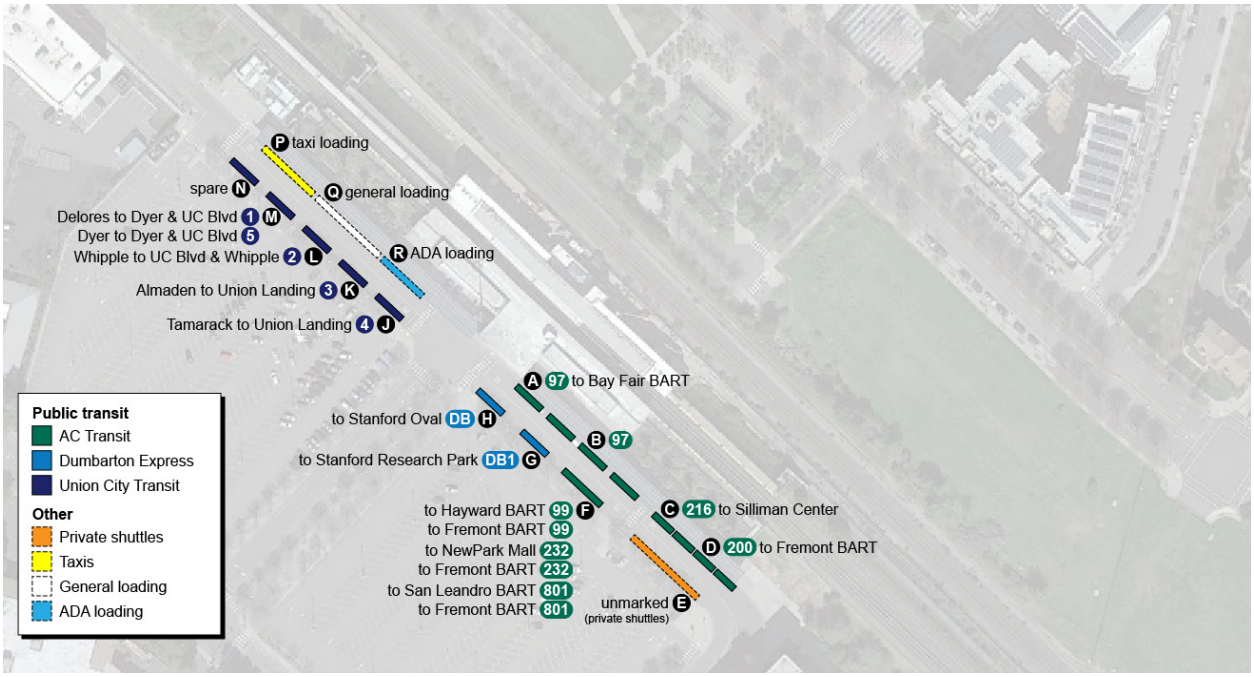
Some of these headway improvements are based on current schedules not meeting the operator's current standards for minimum headways (such as AC Transit Route 97). The suggested headway improvements are geared to both peak and off-peak periods to facilitate connections with intercity rail trains at the Union City Intermodal Station. In general, routes with frequencies of every 20 minutes or better should operate at their regular headways and would not need to be coordinated around specific train times. Routes that operate less frequently than every 20 minutes, however, should coordinate schedules to facilitate connections with BART and intercity rail services.

7.3.1. Union City Intermodal Station Phase 3 Facility Improvements

The completed segment of Duncan Way includes curb space that can be designated in the future for use as dedicated bus bays. Providing bus bays on the east side of the Union City Intermodal Station was explored in concept only due to the possibility of a larger volume of buses serving the station in the future, to ensure good transit access for developing TOD on east side of the station, and to leave open the possibility of having some buses use Quarry Lakes Parkway and Alvarado-Niles Road in the mid-term to bypass sections of congestion along Decoto Road (see Section 7.4.5 for further discussion).[44]

With construction of the new intercity rail platform and additional build-out of the east-side station area (additional curb space could be designated for station-specific uses such as pick-up / drop-off zones for taxis and automobiles along the planned extension of Duncan Way southward, though any bus bays would be limited to the existing segment of Duncan Way). **Figure 7-16** illustrates how bus bays are currently limited to the area in front of the west-facing side of the Union City Intermodal Station.

Figure 7-16. Union City Intermodal Station Curb Access Zones – Existing

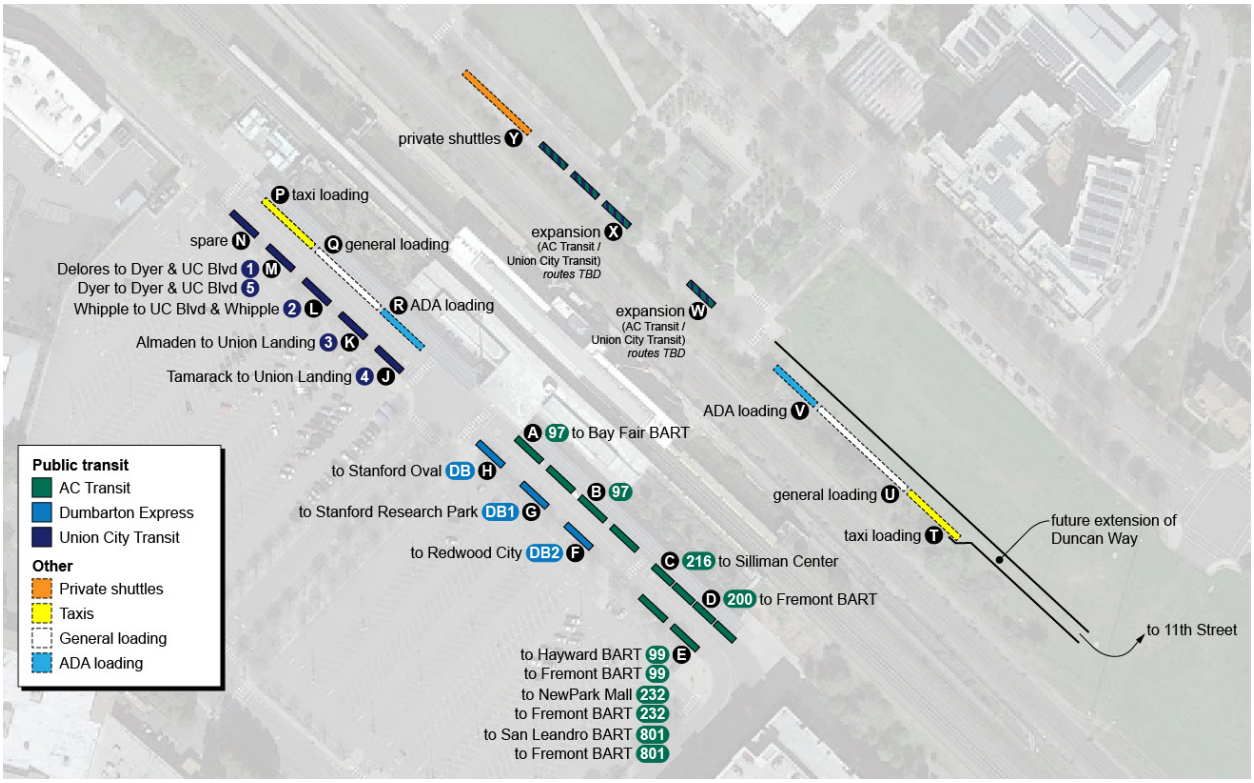


Source: AECOM, 2023

[44] "During the development of this study, stakeholders have indicated a need to further study the exact nature of providing any bus service on the east side of the Union City Intermodal Station."

Figure 7-17 shows a future concept that includes additional curb access on the east side of station. Under this concept, private shuttles would be shifted to the east side of the station (zone "Y" in **Figure 7-17**.) to provide space for the new Dumbarton Express Redwood City route and accommodate enhanced frequencies on the DB and DB1 routes (zones "F", "G", and "H"). AC Transit through routes would be shifted to the area previously used by private shuttles (zone "E"), giving them additional space to accommodate more frequent service. Four expansion bus bays would be available for AC Transit and Union City Transit on the east side (zones "W" and "X"), and new areas for curbside loading would be designated adjacent to the intercity rail platform (zones "T", "U", and "V"). Note, this is just one concept that could be considered; future planning efforts will need to study concepts for multi-modal access on the east side of the Union City Intermodal Station.

Figure 7-17. Union City Intermodal Station Curb Access Zones – Future Concept



Source: AECOM, 2023

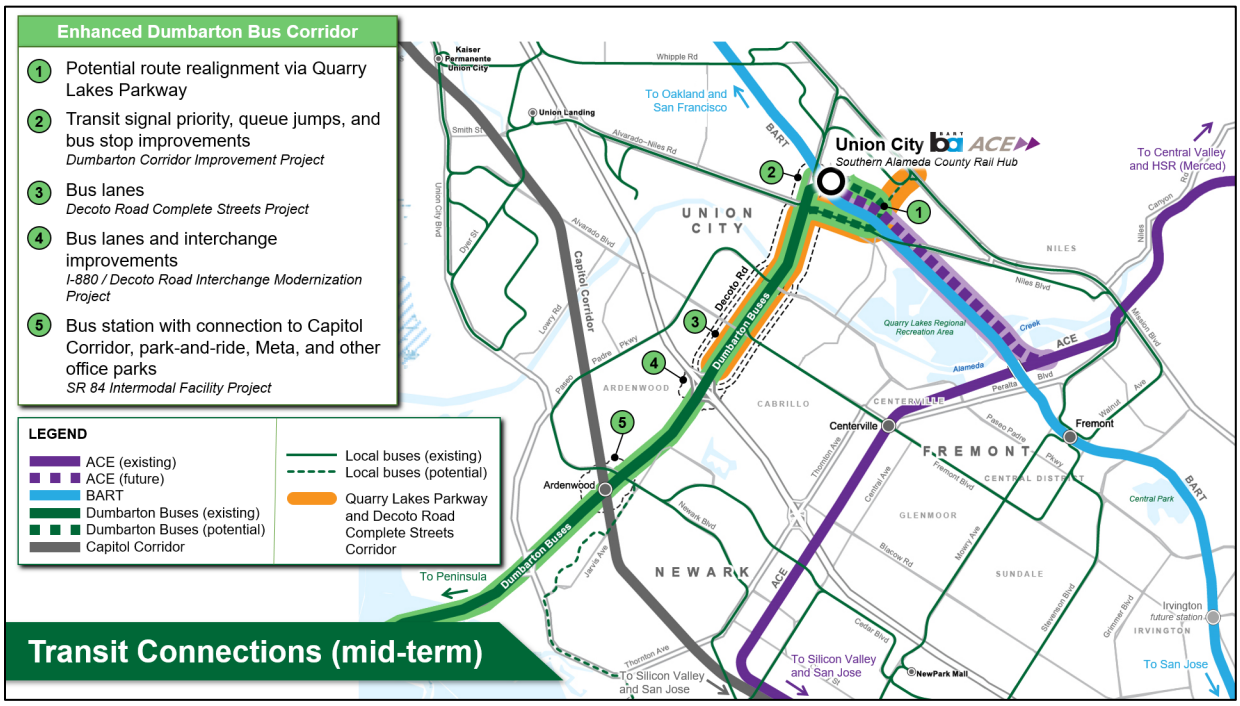
7.3.2. Potential Utilization of Quarry Lakes Parkway for Bus Services

In the mid-term, there is a potential opportunity for some Dumbarton Corridor and other buses to operate to and from the east side of the Union City Intermodal Station[45] and to use Quarry Lakes Parkway in conjunction with Alvarado-Niles Road to bypass sections of congestion along Decoto Road (see **Figure 7-18**). The benefits that Quarry Lakes Parkway could provide buses serving the Union City Intermodal Station are potentially two-fold. First, it is anticipated that some relief in congestion along Decoto Road east of Alvarado-Niles Road will be realized as traffic will divert to Quarry Lakes Parkway

[45] "During the development of this study, stakeholders have indicated a need to further study the exact nature of providing any bus service on the east side of the Union City Intermodal Station."

from Decoto Road. This may help buses serving the west entrance to the Union City Intermodal Station operate more efficiently as they navigate in and out of the station. Second, for any buses that may operate out of the east side of the Union City Intermodal Station, general operational improvements and potentially higher operating speeds could be realized by avoiding the congested section of Decoto Road east of Alvarado-Niles Road, where it is infeasible to add bus-only lanes in the mid-term without property acquisition due to right-of-way constraints.

Figure 7-18. Quarry Lake Parkway/Decoto Rd. Complete Streets Corridor



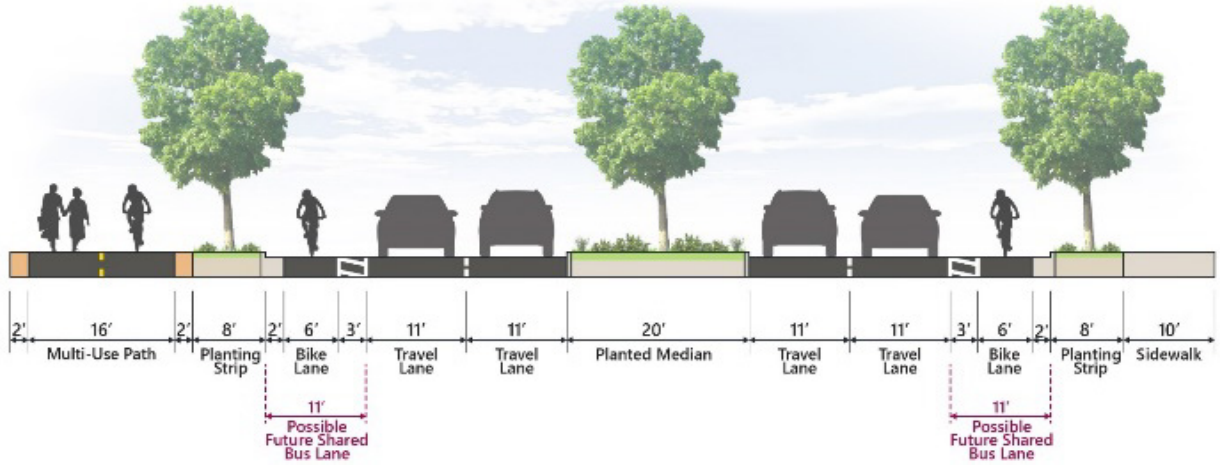
Source: AECOM, 2023

Rerouting some bus services in this fashion could first be considered after completion of Phase 3 of Quarry Lakes Parkway (envisioned for completion within the next 10 years). With the connection into 11th Street provided by Phase 3 of Quarry Lakes Parkway, buses serving Mission Boulevard and other areas east of the station could shift from Decoto Road to Quarry Lakes Parkway, which would provide a more direct route to and from the Union City Intermodal Station. Routes that might benefit from this configuration include AC Transit Route 232 and Union City Transit Route 4.

Upon the completion of Phase 4 of Quarry Lakes Parkway (also envisioned within the next 10 years), buses south and east of the station could also be considered for potential rerouting to Quarry Lakes Parkway. This could include Dumbarton Corridor buses, which would be able to use Alvarado–Niles Road to transition between Decoto Road and Quarry Lakes Parkway. This potential reroute avoids acute peak-period congestion along Decoto Road north of Alvarado–Niles Road due to traffic associated with the BART parking lot, the two shopping centers flanking Decoto Road on the northwest and northeast quadrants (El Mercado Center and Union Square Marketplace), and the nearby James Logan High School. As shown in **Figure 7-19**, the planned on-street buffered bike lanes along Quarry Lakes Parkway

could also be converted to shared bus–bike lanes if needed, while still preserving the dedicated off-street Class I bikeway (multi-use path) for bicycles and other non-motorized transportation.

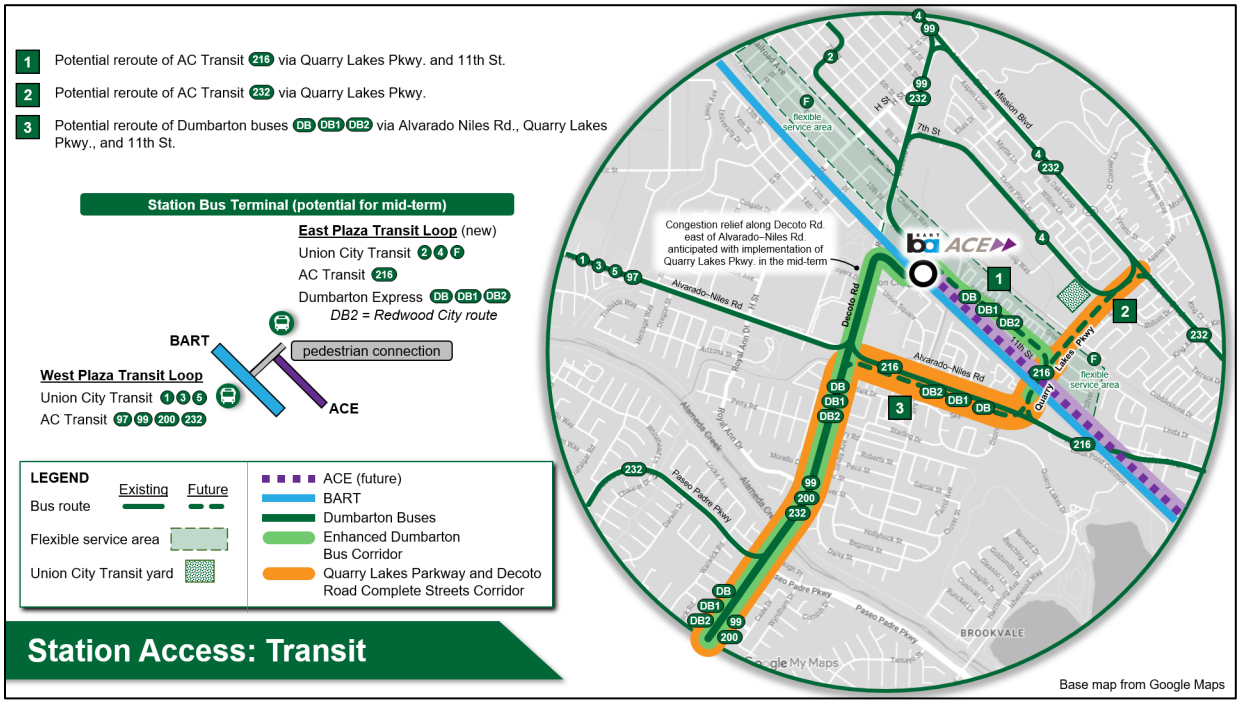
Figure 7-19. Quarry Lakes Parkway – Typical Cross-Section



Source: City of Union City, 2023

More study is needed to determine which bus routes are best suited for possible relocation to Quarry Lakes Parkway and/or the east side of the Union City Intermodal Station. **Figure 7-20** illustrates one possible scenario for the mid-term timeframe where Dumbarton Express buses would be relocated to the east side, along with several routes for AC Transit and Union City Transit.

Figure 7-20. Possible Bus Configuration at the Union City Intermodal Station and Mid-Term Utilization of Quarry Lakes Parkway



Source: AECOM, 2023

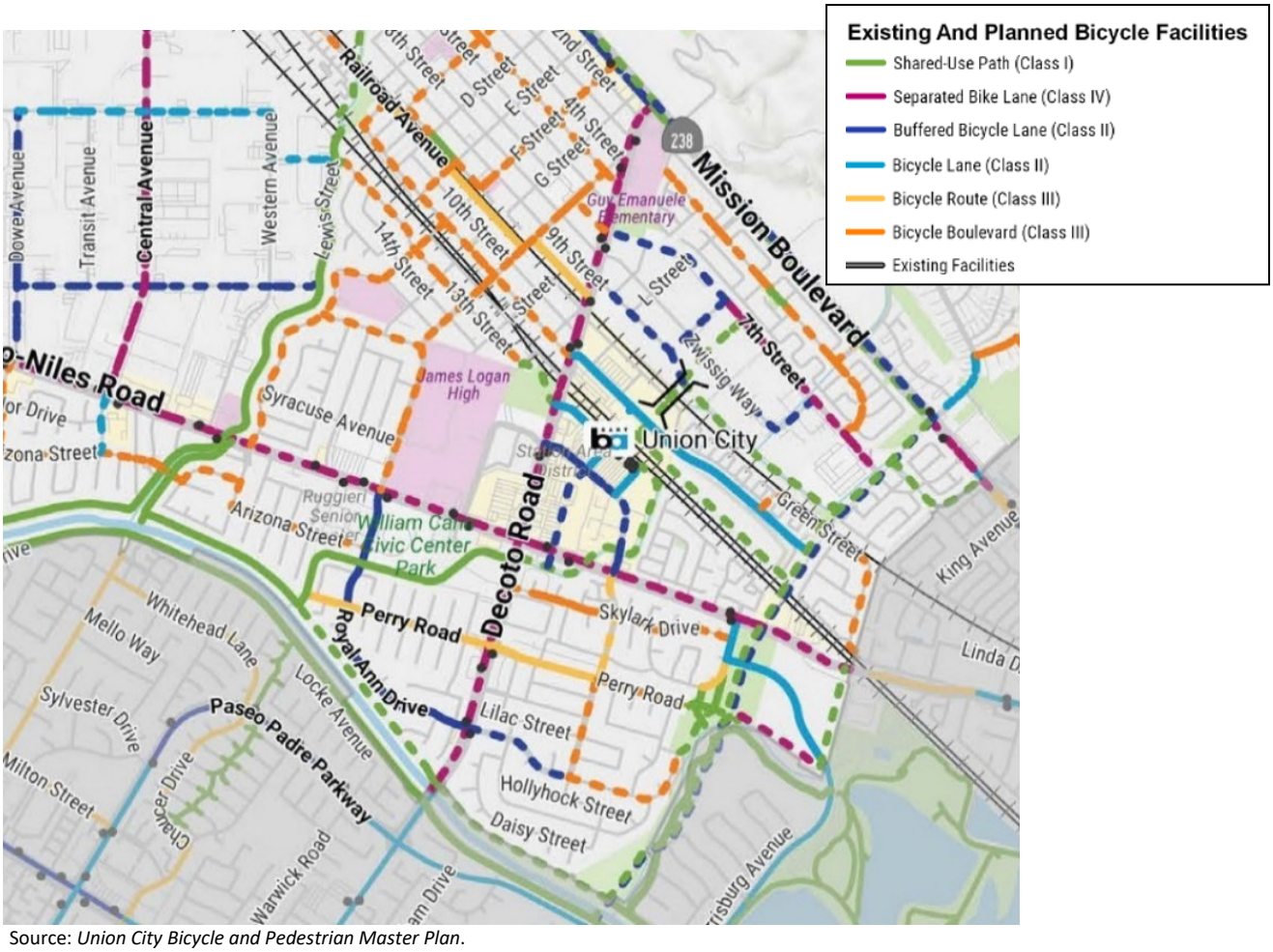
Long-term implications related to the use of buses along Quarry Lakes Parkway is beyond the scope of this study, as the configuration and timing of any further southward extension of Quarry Lakes Parkway beyond Union City is under consideration with stakeholders.

7.4. Existing and Planned Bicycle and Pedestrian Improvements

Existing bicycle routes that currently provide direct connection to the west side of the Union City Intermodal Station include Class II bike lanes along Union Square and BART Road. There are also existing Class II bicycle lanes running along 11th Street. These bicycle lanes currently do not directly connect the station; however, once the east entrance to the station opens following completion of the at-grade crossing across the UP tracks, they will provide connectivity. Other bikeways including the 9th Street bicycle route (Class III bikeway) come close to the Intermodal Station, but do not connect directly with it.

Existing bikeways in the vicinity of the Union City Intermodal Station are limited; however, the *Union City Bicycle and Pedestrian Master Plan (*November 2021) identifies many future bikeways (see **Figure 7-21**).

Figure 7-21. Bikeway Network near Union City Intermodal Station



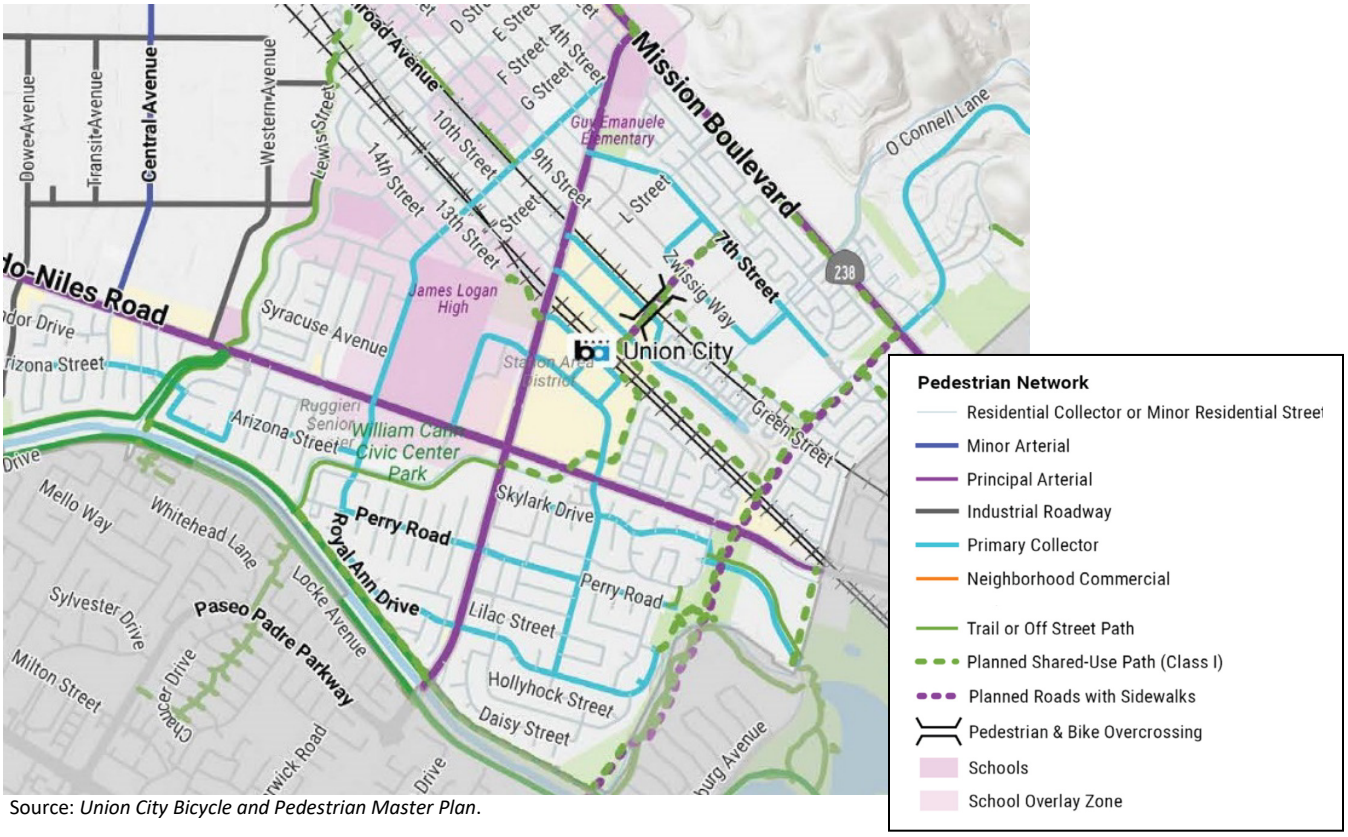
Source: *Union City Bicycle and Pedestrian Master Plan*.

The most significant proposed route would be a new shared-used path (Class I bikeway) that would run north from the planned Quarry Lakes Parkway parallel to the UP Oakland Subdivision, providing access to the eastern entrance of the Union City BART Station. A bikeway connection along this alignment can be achieved through use of Duncan Way and the project's proposed emergency access road (along the east side of the layover facility), providing a similar level of functionality and safety to a shared-use path (although not meeting the strict definition of a Class I bikeway). A connection at the south end into Quarry Lakes Parkway would be complicated by grade differences and potential conflicts with maintenance access for interim phases of the Quarry Lakes Parkway project. As a result, this bikeway will require more detailed design and engineering and is assumed to be implemented as part of a separate project by the City of Union City.

Another key planned bicycle facility is a new separated bike lane (Class IV bikeway) along Decoto Road within the entirety of Union City, which would provide efficient access to the west side of the Union City Intermodal Station via existing connector routes, including routes along Union Square (Class II) and BART Road (Class II). BART Road leads directly to west entrance to the station, which is flanked by bicycle lockers and bike racks.

Existing pedestrian access is generally poor around the Union City Intermodal Station. As a result, the *Union City Bicycle and Pedestrian Master Plan* envisions improvements to the pedestrian realm in the vicinity of the station. In the Plan, Decoto Road is defined as a Principal Arterial and many of the connecting streets near the BART station are defined as Primary Collector streets (see **Figure 7-22**).

Figure 7-22. Pedestrian Network near Union City Intermodal Station



Source: *Union City Bicycle and Pedestrian Master Plan*.

On the east side of the Union City Intermodal Station, a pedestrian spine is planned to extend from the future east station entrance to the existing plaza once the UP- and CPUC-approved at-grade crossing is constructed across the UP tracks. Going east from the plaza, a new pedestrian crossing is planned at 11th Street, allowing pedestrians to continue along the existing promenade to Cheeves Way, where a shared-use (bicycle and pedestrian) overcrossing would be built above the UP Niles Subdivision to provide further connections eastward to 7th Street and new development taking place in that area.

7.5. Bicycle and Pedestrian Access Improvements

This Phase 2 Report defers to the recommendations for bicycle and pedestrian improvements contained within the *Union City Bicycle and Pedestrian Plan* for projects that would connect to the Union City Intermodal Station (see Section 7.3). The proposed shared bicycle–pedestrian facility that would run adjacent to the proposed Union City Layover Facility will require close coordination to ensure these two facilities are not in conflict with one another. Coordination with the City of Union City will continue into subsequent stages of the project, where more detailed design of the layover facility will be undertaken to ensure compatibility with the proposed shared-use path.

This Phase 2 Report uses the City of Union City's plan for a CPUC-approved pedestrian at-grade crossing of the UP track to connect BART with the Station District to the east. The basic station concept dovetails with this at-grade crossing (see Section 4.3.2). Transfers between intercity rail and BART will be facilitated by a walkway linking the intercity rail platform and the planned at-grade crossing on the east side of the station, making transfers to or from BART convenient and direct.

Finally, the proposed intercity rail service will allow cyclists to bring their bikes onboard trains (just as the *Capitol Corridor* and *San Joaquins* services currently do). New bike parking will also be integrated into the design in subsequent phases of Union city Intermodal Phase 3 Project. Potential options for adding secure bicycle parking on the east side of the Union City Intermodal Station for ACE passengers (as well as other station users), including bicycle lockers and racks, will be explored in coordination with the City of Union City and BART. As the bikeway network around the station area is improved and expanded as described in the *Union City Bicycle and Pedestrian Plan*, bicycles will become a more attractive option for passengers, reducing the need for driving and parking.

7.6. Automobile Access and Parking Concepts

7.6.1. Pick-up / Drop-off Areas

The proposed design for the Union City Intermodal Station Phase 3 Project will provide sufficient space for curbside pick-up/drop-off on both sides of the Union City Intermodal Station. This will accommodate both for-hire services (e.g., TNCs and taxis) and personal vehicles (e.g., pick-up/drop-off of passengers), thereby reducing the need for parking. On the east side of the Union City Intermodal Station, the extension of Duncan Way south to parallel the proposed intercity rail platform presents a valuable opportunity to designate curb space specifically for these activities.

7.6.2. Parking Considerations

For the new intercity rail service at the Union City Intermodal Station in the mid-term, providing some amount of parking for use by passengers will need to be considered. However, the amount of parking needed will likely be smaller than other terminal stations due to the mid-term service plan at the Union City Intermodal Station. Two of the three round trips will be oriented more heavily towards "inbound" passengers coming to the Bay Area, so the need for parking for them is likely small. These passengers, as well as a substantial share of passengers for the round-trip that will depart *from* Union City in the morning and return in the evening, will likely be using transit (e.g., BART, Dumbarton Express) or automobile pick-up / drop-off for the first / last leg of their trips.

That said, the train going outbound in the morning to connect with HSR in Merced could generate a significant level of parking demand. Further study is warranted to gain a deeper understanding of the geographic distribution of trip origins and destinations to determine how many of the intercity rail passengers are “local” (i.e., Union City/Tri-City Area) vs. “regional” (i.e., other parts of the Bay Area), which can inform the expected mode shares when traveling to or from the station. In addition to the discussion of parking for the mid-term, anticipated service increases in the longer-term would likely generate additional parking needs, which will also require further study.

Strategies to provide parking, whether for the mid-term or long-term, will need to closely align with the City of Union City’s policies and plans related to parking and TOD development for the site. The *Union City Station District Specific Plan* encourages the sharing of off-street parking facilities; Policy P-M-24 (“Shared Parking for New Developments”) encourages mixed-use developments to provide shared parking with minimal assigned parking, to minimize the total amount of new parking constructed.[46] Shared parking allows complementary land uses with different demand profiles over the course of the day (e.g., residential and office) to share parking, thereby increasing the overall efficiency of the parking supply and reducing the amount of parking required. The *Station District Specific Plan* also recommends consideration of shared and public off-street parking facilities for larger developments that incorporate multiple uses and buildings.

Based on these polices from the *Station District Specific Plan*, as well as ongoing discussion with the City of Union City, the following parking strategies are provided for consideration:

- **Explore a parking arrangement with private property owners** in the surrounding area who have on-site parking. It is very likely that some of the surface lots and vacant land that exist today on the east side of the Union City BART Station may be redeveloped by the time intercity rail service commences. It is also possible that development could take place on existing surface parking lots on the west side of the station, which are owned by BART. Arrangements to share parking with intercity rail passengers should be considered for developments within short walking distance of the platform. Because many intercity rail passengers would likely be traveling on multi-day itineraries, a substantial share of the potential demand for parking will be for long-term spaces. As a result, there is less need to focus on “complementary” land uses for shared passenger parking, and such arrangements can therefore be explored regardless of the

[46] *Station East Residential / Mixed Use Project Specific Plan Amendment*, Dyett & Bhatia and Fehr & Peers, May 2021 https://www.unioncity.org/DocumentCenter/View/8010/Appendix-B

development type (residential or commercial). Any solution involving shared parking with TOD located on BART property would need to comply with BART's adopted TOD Policy and Station Access Policy.

- If development is not in place at the commencement of intercity rail service to the Union City Intermodal Station, **explore the use of surface parking on the east side of the station** in the vicinity of the new intercity rail platform.
- Depending on demand for BART parking at the time intercity rail service commences, **explore a possible parking arrangement with BART** to lease some of its spaces as dedicated parking for intercity rail passengers.

The subsequent environmental phase of the project will provide an opportunity to investigate and quantify the potential need for passenger parking in further detail.

7.7. Implementation Considerations

Connectivity improvement concepts presented in this Phase 2 Report are, for the most part, assumed to be implemented in partnership with relevant stakeholders as separate projects distinct from the new intercity rail platform, layover facility, and associated train service. Depending on the specific improvement in question, the lead agency may be a transit agency or other entity that operates buses and shuttles, or, for bicycle and pedestrian improvements, is likely to be the City of Union City. As mentioned above, the proposed project will include some connectivity elements within the Union City Intermodal Station Phase 3 Project footprint or the immediate vicinity, such as the creation of additional curb space along an extended Duncan Way for pick-up/drop-off activities and bicycle parking. However, for the majority of the connectivity concepts presented in the preceding sections, project development will be a focus of the partners. This includes identifying and securing funding, as well as other tasks required to implement these improvements.

Given the preliminary nature of the concepts developed and the need to continue to refine such concepts in the future, detailed cost estimates are not being provided as part of this Phase 2 Report. Stakeholders who reviewed these connectivity concepts expressed a high level of interest in the potential costs and funding strategies for these improvements over the course of the SoCo Rail Study. Therefore, further study is recommended to develop estimates of both capital and operating costs, as well as to refine these initial concepts.

8.0 Long-Term Considerations

The primary purpose of the SoCo Rail Study and this Phase 2 Report is to lay out a plan for the implementation of new intercity rail service and associated infrastructure improvements at the Union City Intermodal Station in the Mid-Term Horizon. However, it is also important to consider plans for the Long-Term Horizon and the associated implications to the Union City Intermodal Station Phase 3 Project and the overall rail network in Southern Alameda County and the South Bay. Service levels in the Mid-Term Horizon for intercity rail to Union City will be limited, but the intent is to increase this service substantially for the Long-Term Horizon. In addition, the Dumbarton Rail Project, while not feasible in the mid-term, is still being considered for the long-term and would likely serve the Union City Intermodal Station. Finally, major service expansion to San Jose is envisioned for both ACE and the *Capitol Corridor*; given the proximity of the South Bay to Union City, combined with the access via BART, it is useful to view the rail network in a more holistic and integrated fashion.

This section summarizes long-term planning considerations for ACE and the *Capitol Corridor*, and the potential for a Dumbarton Rail Project.

8.1. ACE Service Expansion

SJRRC envisions significant increases in ACE service to the Bay Area in the long-term over the current four round trips to San Jose (plus a planned fifth round trip) and the three intercity rail round trips to the Union City Intermodal Station planned for the Mid-Term Horizon. The recently released Draft 2023 CSRP includes target frequencies for rail service within the Altamont Corridor (from CP Hicks just south of Lathrop to Niles Junction in Fremont) rail service in the Long-Term Horizon (defined as 2050), with hourly service to San Jose and hourly service to the Union City Intermodal Station. This service pattern has trains running every 30 minutes in each direction along the Altamont Corridor and through Niles Canyon to Niles Junction, at which point the service frequency would split, with half of the trains going to Union City, and the other half going to San Jose. For reference, SJRRC has previously explored the possibility of even higher levels of service in the long-term in the Altamont Corridor.

In addition to the two Bay Area terminals in Union City and San Jose identified in the Draft 2023 CSRP, additional terminal destinations in the Bay Area in the long-term timeframe could be explored by SJRRC, including possible service to the Peninsula via a rebuilt Dumbarton rail bridge. While SJRRC continues to look to potentially higher levels of service and additional destinations in the Bay Area than documented in the Draft 2023 CSRP for long-term planning purposes, the establishment of hourly service to Union City and San Jose would be a significant milestone in the development a robust rail service to serve the Altamont Corridor, one of the largest travel corridors in the entire Northern California Megaregion.

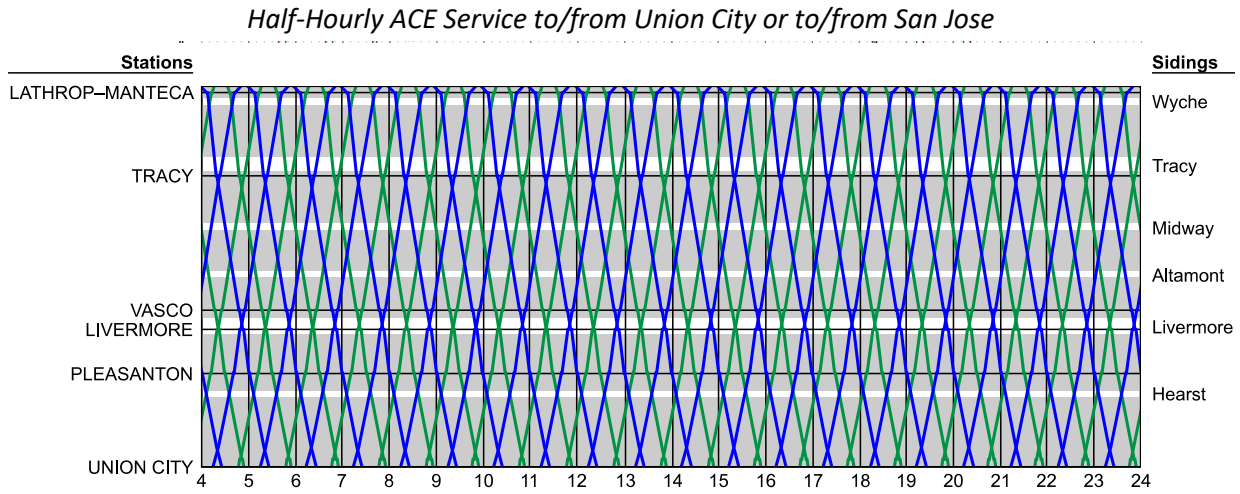
Rail service traversing the Altamont Corridor in the Long-Term Horizon is discussed in more detail in the following subsections, starting with an operational analysis of half-hourly service in the corridor, followed by further analysis of hourly service to both the proposed Union City Intermodal Station and San Jose Diridon Station (and the associated implications). Finally, consideration is given to the possibility of operating trains that run along the Altamont Corridor to continue over a rebuilt Dumbarton rail bridge to the Peninsula.

8.1.1. Altamont Corridor

The half-hourly, bi-directional intercity rail service envisioned in the Long-Term Horizon is beyond the current capacity of the existing Altamont Corridor and Niles Canyon based on existing siding locations and lengths, and significant investment would be needed to accommodate this level of passenger service and to avoid impacts to UP's freight operations along the UP Oakland Subdivision, which operates through the entire length of the Altamont Corridor.

The constraints associated with more frequent service in the Altamont Corridor can be illustrated using a simple stringline analysis of a potential train service plan, as shown in **Figure 8-1**.

Figure 8-1. Stringline Charts of Higher-Frequency ACE Service



Source: AECOM, 2023

Note: San Jose is not shown in the station list because it lies below the chart's *x*-axis, which is set at Union City.

Figure 8-1 shows a half-hourly, bi-directional intercity rail service from Union City or San Jose (blue and green, respectively) to Control Point (CP) Hicks (south of Lathrop). The segments beyond CP Hicks are not shown because service plans in the long-term going north from this point toward Stockton or south toward Merced have not yet been established.

The stringlines shown in **Figure 8-1** represent just passenger service without taking into account freight service. The level of schedule adherence required to achieve this service with a mostly single-track alignment is likely incompatible with the realities of at-grade, mixed (passenger and freight) operations and unelectrified rolling stock with slower acceleration.

To holistically address some of these issues, previous planning efforts such as ACE*forward* and the Altamont Corridor Vision have identified opportunities for transformative investments in the corridor to accommodate high-levels of service. Further planning will be required as the State and SJRRC pursue major intercity rail service-level increases in the Altamont Corridor and beyond.

8.1.2. Additional Intercity Rail Service to Union City Intermodal Station

While the preceding subsection briefly touches on the constraints in the Altamont Corridor, the multitude of issues surrounding the entirety of the existing ACE route are beyond the purview of this study and would need to be explored in more depth as part of separate efforts. For its part, this study has considered closely the implications of additional ACE or other intercity rail service in the long-term at the Union City Intermodal Station and recommends a platform design for the intercity rail service that maximizes operational flexibility by allowing for a two-track station in the Long-Term Horizon (upgraded from a single-track configuration for the Mid-Term Horizon). This widened platform would accommodate the future hourly service identified in the Draft 2023 CSRP. An initial stringline analysis of hourly operations with the Union City Intermodal Station indicates that a single-track station would likely be very restrictive in terms of operating flexibility and reliability.

Assuming hourly service between Union City and Merced (serving as an HSR feeder), for example, the timepoints for the service would be effectively anchored at Merced. The timepoints at Union City are dependent on a series of assumptions, such as the HSR timetable and terminal turnaround times, the transfer windows with HSR at Merced, and ACE train performance and running times. These inputs cannot be known with full certainty at this stage, and even minor changes in these basic operating assumptions may result in timepoints at Union City that would make hourly service with a single-track terminal at Union City infeasible without substantial tradeoffs in terms of travel times (e.g., if the inbound arrival and next outbound departure are less than the minimum turnaround time cited above).

Furthermore, in the context of hourly service to/from Merced, sufficient variability must be accommodated at Union City if the desire is to have guaranteed HSR connections. In the event that a northbound HSR train is delayed and ends up arriving at Merced later than scheduled, the intercity rail train should be able to hold at Merced for connecting passengers before departing for Union City, as many of the passengers are expected transfer to ACE train bound for Union City. Stranding these passengers for close to an hour (to wait for the next potential connection) or forcing a shift to the Thruway bus (Merced–San Jose) or the *San Joaquins* connection (if one is provided) are not ideal solutions. In this situation, it is entirely possible that the delayed intercity rail train would arrive at Union City while a departure out to the Central Valley is already waiting at the platform. As such, the platform for ACE at the Union City Intermodal Station would need to accommodate two trains simultaneously to accommodate variability of the arrival of the ACE trains due to delays from the HSR connection or other delays elsewhere along the line.

With all the moving parts potentially affecting future intercity rail operations, a two-track station at Union City is considered necessary to provide the required operating flexibility and avoid fatal-flaw constraints for the hourly service envisioned for the Long-Term Horizon of in the Draft 2023 State Rail Plan.

It is not expected that additional capacity would be needed at the layover facility in Union City in the long-term with an hourly service. Under this situation, turnaround times for the Union City trains would be kept to a minimum to maximize operational efficiency and minimize the number of vehicles required to operate the service. As a general rule, trains arriving at Union City would, for example, be turned around at the platform and sent back out to the Central Valley on the first or second departure after

arrival and would therefore not need layover space at the Union City end. The exceptions to this rule would be associated with early morning departures from Union City, late evening arrivals into Union City, and potentially less-frequent service patterns that may desire midday or overnight storage at Union City.

With the layover facility (two trains) and the station platform (two trains), the Union City terminal would have capacity to store up to four intercity rail trains at any one time. As travel times in revenue service from Merced (where a substantial share of the remaining intercity rail fleet would be stored overnight) would be on the order of 2 hours and 30 minutes, a strict hourly service pattern between Union City and Merced would only need 2 to 3 departures from Union City before the first train arrives from Merced and could fill the next scheduled departure. This leaves 1 to 2 spaces of overnight storage at Union City that could be used by less-frequent service patterns (e.g., if one of the hourly Merced slots is shifted to a Stockton–Midtown Sacramento–Chico pattern). This situation also holds in the reverse direction during the late evening, when trains arrive at Union City after the last departure for the Central Valley.

8.1.3. Additional ACE Service to San Jose

Both SJRRC and CCJPA envision increased rail service along the UP Coast Subdivision to San Jose Diridon Station. However, in order to implement either of these increased services along this shared corridor, critical issues along the UP Coast Subdivision south of Newark will need to be addressed. Major investments to address capacity and resiliency concerns on the portions of the route from Newark Junction and through the Alviso Wetlands to San Jose Diridon Station, have already been explored at a conceptual level as part of the *Capitol Corridor Vision Implementation Plan*. Improvements south of Newark Junction identified in the *Capitol Corridor Vision Implementation Plan* (discussed in Appendix B of the Phase 1 Report) include the following:

- New storage and maintenance facility near Tamien Station
- San Jose Diridon Station hub improvements (primarily funded / implemented as part of HSR)
- Additional tracks in segment near San Jose Diridon Station shared with Caltrain and HSR
- Reconstruction of existing stations in Santa Clara
- Replacement of existing single-track berm segment through Alviso Wetlands with new rail bridge built to accommodate sea level rise

The replacement of the existing single-track berm was studied in 2020 in *The Alviso Wetland Railroad Adaptation Alternatives Study* prepared by CCJPA. CCJPA studied four options that would provide resiliency and additional rail capacity, with initial cost estimates ranging from $800 million to $2 billion.

The scale and cost of these investments are beyond the scope of this study and will require extensive coordination with UP and CCJPA, as well as Caltrain and CHSRA given the interface with San Jose Diridon Station. In addition, extensive coordination and consultation with environmental regulatory agencies (e.g., California Department of Fish and Wildlife, Regional Water Quality Control Board, Bay Conservation and Development Commission, etc.) will be required. Nevertheless, SJRRC is expecting to continue exploring opportunities to move these projects forward in collaboration with other partners in order to achieve the long-term vision of hourly ACE service to/from San Jose.

Given sea level rise, pursuing improvements in the Alviso Wetlands section of the UP Coast Subdivision will be required if the rail line is to remain open. Given the scale of the effort and likely long project development timelines, embarking on further studies and elevating planning of improvements to the UP Coast Subdivision is recommended.

8.1.4. Possible ACE Service to the Peninsula

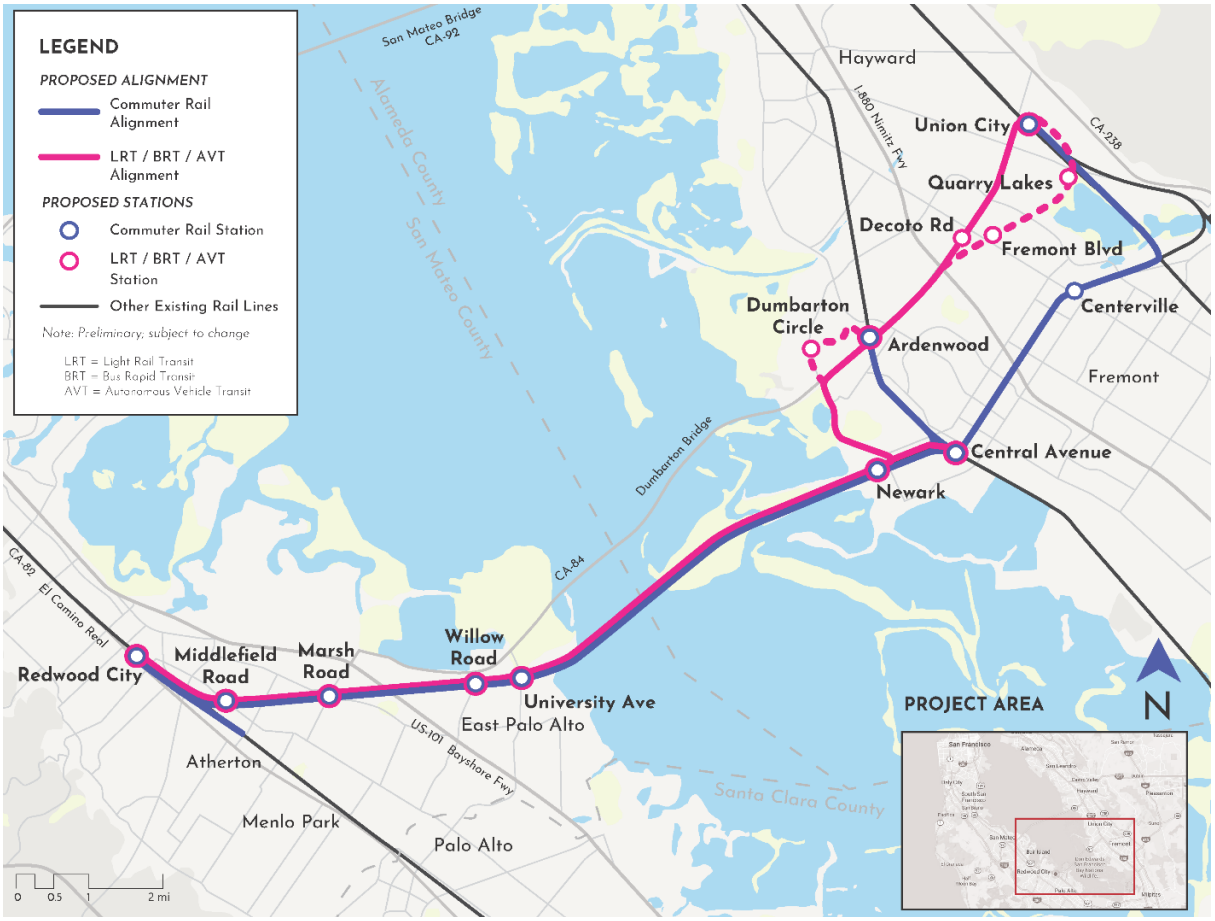
As the ACE alignment enters the inner Bay Area from Niles Canyon, trains cross over to the UP Niles Subdivision, lining it up for a direct connection to a potentially restored Dumbarton Rail Corridor (including a re-built Dumbarton Rail Bridge). ACE service traveling over a future re-built Dumbarton Rail Bridge could provide a key megaregional connection by providing efficient and direct access for passengers from the Central Valley and Tri-Valley to the Peninsula. Given the difficulties of the Dumbarton Rail Project to make significant progress after many years of study, a regional connection via ACE could provide more impetus to move the project forward by opening up large travel markets not included in previously envisioned project concepts, which were more limited in scope.

8.2. Dumbarton Rail Project

As described in Section 5.7.2 of the Phase 1 Report, some preliminary planning has been conducted for a potential high-capacity transit solution in the Dumbarton Corridor. However, several potential alternative technologies are being examined, including light rail transit (LRT), bus rapid transit (BRT), and autonomous vehicle transport (AVT). These three technologies are likely to have little to no impact on the intercity rail service to Union City, as they would generally not be able to share facilities with intercity rail trains. In particular, any solution that does not use mainline rail technology would not be tied to using the UP Oakland Subdivision infrastructure or right-of-way to reach Union City and would, instead, likely use local street alignments or other alignments. This has been acknowledged in the alternatives development process for the Dumbarton Rail Corridor Project led by SamTrans, which show an LRT / BRT / AVT alignment transitioning between the Dumbarton Rail Corridor and Decoto Road on the East Bay side (see **Figure 8-2**). For instance, LRT or AVT systems would likely need to access the Union City Intermodal Station on the west side of the existing Union City Intermodal Station. BRT could utilize either the existing west-side bus bays or the potential east-side bus bays at the Union City Intermodal Station.

A mainline rail solution (the “commuter rail alignment” shown in **Figure 8-2**) would involve use of UP-owned infrastructure and rights-of-way on the UP Coast, UP Niles, and UP Oakland Subdivisions, including shared use of the UP Oakland Subdivision with the proposed intercity rail service between the BART crossing and Union City (as well as shared use of the portion of the UP Niles Subdivision between Newark Junction and the BART crossing currently used by existing ACE service to / from San Jose). Under this scenario, a two-track intercity rail station at Union City would provide critical operating flexibility by allowing potential cross-platform transfers between intercity rail and Dumbarton Rail trains at Union City or, if intercity rail or ACE is interlined with the Dumbarton Rail Corridor, by providing an additional much-needed location for potential train meets. This flexibility would not be possible under a single-track station design proposed in the Mid-Term Horizon.

Figure 8-2. Dumbarton Rail Corridor Project



Source: SamTrans, Dumbarton Rail Corridor Project Fact Sheet: 2023

At the Union City Intermodal Station terminus, Dumbarton Rail trains every 15 minutes would likely require a minimum of two station tracks to account for layover / recovery time and potential service disruptions. As stated earlier, the Union City Intermodal Station Phase 3 Project includes future expandability to two station tracks at Union City in order to allow for sufficient intercity rail operating flexibility in the Long-Term Horizon, when intercity rail service could operate as frequently as hourly. As such, there is not anticipated to be sufficient space to accommodate both intercity rail and Dumbarton Rail trains at the proposed Union City Intermodal Station with currently contemplated service levels. If a balance of intercity rail and Dumbarton service could be established with the two systems sharing slots, sharing the intercity rail platform may be possible. However, detailed operations planning would be necessary to determine how much frequency could be provided in total with two rail systems sharing the platform at the Union City Intermodal Station.

In addition to the constraints associated with the platform, the proposed intercity rail layover facility at Union City would likely be unable to accommodate Dumbarton Rail layover needs. The facility would likely be fully or close to fully-utilized for just Union City Intercity Rail Service in the Long-Term Horizon. While some Dumbarton trains could potentially be accommodated on an interim basis before then (depending on SJRRC's operations at that time), layover space would not be guaranteed for Dumbarton

trains. As such, the Dumbarton Rail Project would likely require a separate maintenance and / or layover facility, perhaps at Willow Street in Newark, or somewhere on the Peninsula side of the route.

Given the current state of uncertainty regarding the Dumbarton Rail Project and the various alternatives on the table, expressly designing the Union City Intermodal Station Phase 3 Project with Dumbarton Rail service in mind would be extremely speculative. A mainline rail solution for a Dumbarton Rail service, for example, would likely face significant engineering challenges: through Newark Junction (e.g., potential need for a new flyover grade separation); at the Fremont-Centerville Station (e.g., potential need for a second platform); at Shinn (e.g., new junction between the Niles and Oakland subdivisions crossing through the BART embankment; a potential new Alameda Creek bridge; and a potential additional platform at the Union City Intermodal Station. These issues would need to be addressed and overcome before Dumbarton trains could even reach the intercity rail platform at the Union City Intermodal Station.

8.1. Capitol Corridor

As mentioned in the SoCo Rail Phase 1 Report and noted above, CCJPA envisions significant service increases to San Jose in the Long-Term Horizon via the UP Coast Subdivision. As part of these changes, *Capitol Corridor* service along the UP Niles Subdivision (including at the existing Hayward and Fremont-Centerville stations) would be discontinued and a new *Capitol Corridor* station would be constructed at the Ardenwood Park-and-Ride in the Mid-Term Horizon.

The recently released Draft 2023 CSRP envisions hourly *Capitol Corridor* service to/from San Jose in the long-term timeframe. As is the case with increasing ACE service to San Jose, significantly expanding *Capitol Corridor* service to San Jose will require addressing the key constraints and challenges to upgrading the UP Coast Subdivision. For a discussion of issues on the UP Coast Subdivision, including the Alviso Wetlands, please refer to Section 8.1.3.

9.0 Implementation Strategies

This chapter presents strategies to advance the Union City Intermodal Station Phase 3 Project through project development and implementation. The following topics related to project implementation are included, providing the necessary context and framework for critical agency coordination and decision-making in the steps immediately following the conclusion of this study effort:

- Environmental clearance and preliminary engineering
- Funding and financing
- Governance and operations
- Fleet considerations
- Immediate next steps

9.1. Implementation Overview

The project proposed to advance to the next phase of development consists of an extension of intercity rail service to a new intercity platform on the east side of the existing Union City Intermodal Station. The proposed intercity rail platform would be located south of the existing BART station and would be part of the Union City Intermodal Station. The extension of intercity rail to the Union City Intermodal Station is a component of the larger Valley Rail Program of rail expansion being undertaken jointly by SJRRC and SJJPA, which includes ACE and *San Joaquins* expansion in the Central Valley. The Union City Intermodal Station Phase 3 Project includes three daily intercity roundtrips trains serving the proposed intercity rail platform at the Union City Intermodal Station in the Mid Term Horizon.

Fundamental to the Valley Rail Program, the extension of ACE intercity service to Union City supports the expansion and restructuring of the ACE and *San Joaquins* passenger rail systems to work seamlessly together in the North California Megaregion and as integral feeder systems to extend the reach of the HSR EOS, which is planned to be in operation by 2030–2033. The 2030 horizon year for implementation of the full Valley Rail Program and the extension of intercity service to the Union City Intermodal Station ensures that this critical train-to-train connectivity will be available from the very first day of HSR service.

As the intercity rail connection at Union City Intermodal Station is an element of a larger framework of connected capital and operational investments, several variables exist in determining the proper course of action and sequence of events related to implementation of the project. In order for the Union City Intermodal Station Phase 3 Project to be operable by 2030, the project must move expeditiously into the environmental clearance phase following the conclusion of the planning phase (i.e., the SoCo Rail Study).

To achieve initiation of service by the Mid-Term Horizon, the project must be included in key plans and documents, as well as progress through a sequential series of phases following the conclusion of this study.

Key documents include but are not limited to:

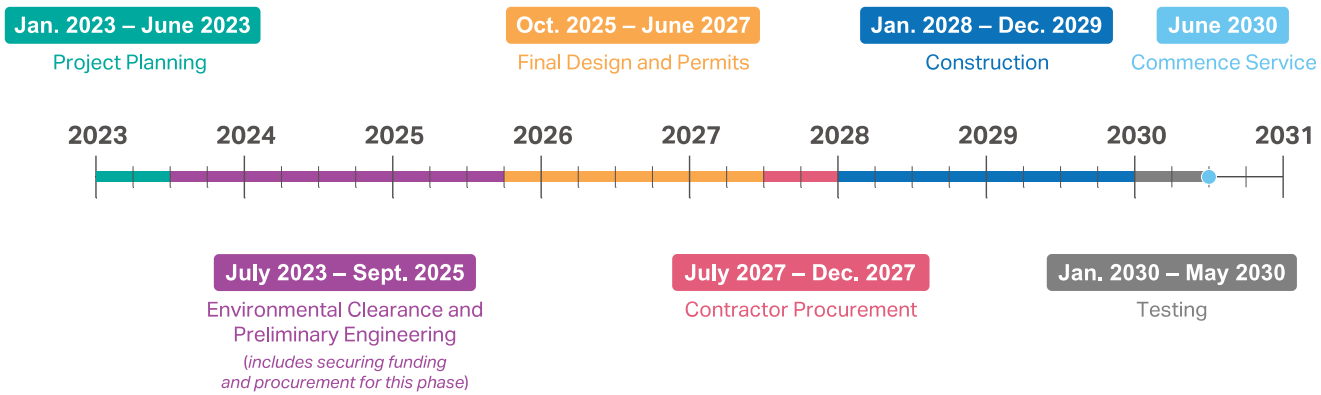
- *2023 SJJPA Business Plan*, SJJPA (completed)
- *2023 SJRRC Work Program*, SJRRC (completed)
- *Draft* 2023 *California State Rail Plan*, Caltrans (completed – see Section 9.6 for next steps related to this document)
- *Plan Bay Area 2050*, Metropolitan Transportation Commission (complete – see Section 9.6 for next steps related to this document)
- Other local city and county documents (see Section 9.6 for next steps related to this document)

Future phases of project development include:

- Environmental clearance and preliminary engineering
- Final design and permits
- Contractor procurement
- Construction
- Testing

A conceptual project timeline illustrating the sequence and approximate duration of these key phases (including the project planning phase) is provided below in **Figure 9-1**.

Figure 9-1. Implementation Timeline



Source: AECOM: 2023

The immediate project phases following the conclusion of the SoCo Rail Study involve more comprehensive project planning (including project definition) and environmental clearance (including preliminary engineering to facilitate the environmental review process). These phases are discussed in further detail in the following sections.

9.2. Environmental Clearance and Preliminary Engineering

At minimum, implementation would require State-level environmental clearance through the California Environmental Quality Act (CEQA). If the implementing agency desires to utilize or have the option to utilize Federal funding, a National Environmental Policy Act (NEPA) clearance is also required. Given

recent funding opportunities at the Federal level due to the passage of the Infrastructure Investment and Jobs Act (IIJA), which contained high levels of funding for rail systems of all types, there is a strong case to pursue NEPA clearance for this project.

9.2.1. Determining the Lead Agency

CEQA

As CEQA is a state law, CEQA decisions are undertaken by the public agency that has the responsibility for approving the project. The lead agency is charged with determining and preparing the appropriate level of CEQA documentation. As the owner and operator of ACE (which utilizes UP track throughout the Altamont Corridor), SJRRC is assumed to be the CEQA lead agency for the Union City Intermodal Station Phase 3 Project as an ACE extension to Union City/BART.

It should be noted that the City of Union City may participate as a funding partner and has discretionary authority on elements of the proposed station that are located within the City's jurisdiction. Because the City may take discretionary actions (decisions) related to the project, the City may also choose to participate in the project's CEQA process as a Responsible Agency. Under that situation, the City would be required to independently review and approve the CEQA document.

NEPA

The NEPA lead agency must be a Federal agency. Similar to the role of the CEQA lead agency, the NEPA lead agency will determine the appropriate level of NEPA review, known as the "Class of Action," and is responsible for overseeing and approving the environmental document.

Recognizing that the proposed intercity rail service would utilize UP's freight lines for the service, the Federal Railroad Administration (FRA) could be the lead agency. In 2019, FRA delegated NEPA assignment as the lead agency to the CHSRA as part of what is referred to as the "NEPA Assignment Memorandum of Understanding (MOU)", with oversight by the California State Transportation Agency (CalSTA), for the statewide HSR system and projects connecting to HSR stations.[47]

Under the NEPA Assignment MOU, CHSRA is deemed to be acting as FRA for the purposes of NEPA clearance. While the MOU lists specific individual projects or specific HSR system segments for which delegation of NEPA responsibilities applies, it also includes ACE expansion (ACE*forward*) and provisions to allow NEPA delegation for additional projects, pending mutual agreement by FRA and the State.

As the Union City Intermodal Station Phase 3 Project moves towards the environmental phase, coordination between FRA and CHSRA is required to determine which agency would participate as the NEPA lead agency. While 2 of the 3 proposed trains serving the Union City Intermodal Station Phase 3 Project would directly connect to a HSR station (Merced), the remaining train would operate between Chico and Union City and would not have a direct connection to a HSR station. As such, CHSRA and FRA would need to come to a consensus on whether the entirety of the Union City Intermodal Station Phase 3 Project and associated rail service falls within the provisions of the MOU. CHSRA has served as NEPA

[47] See https://hsr.ca.gov/programs/environmental-planning/nepa-assignment-mou/ for more information.

lead agency for at least one project not directly connected to the statewide HSR system—namely, the Stockton Diamond Project, sponsored by the SJRRC (since this project is critical for ACE expansion).

As explicitly stated in the MOU, "any railroad project that is not assumed by the State… remains the responsibility of the FRA". Thus, if an agreement is not reached with FRA whereby CHSRA would be designated as the lead agency for the Union City Intermodal Station Phase 3 Project, then NEPA responsibilities would default back to FRA.

9.2.2. CEQA and NEPA Clearance Options

CEQA and NEPA processes and documents may be combined or separated, depending on decisions made by the identified lead agencies. The primary factor in determining to combine or separate CEQA and NEPA clearance is the timing and availability of funding. As an example, if it is understood that State funding is available in the near term, an agency may decide to focus on CEQA first, avoiding time-consuming Federal requirements.

Historically, Federal funds available for intercity and commuter rail have been limited at best, prompting many lead agencies for California projects to pursue CEQA documents only. However, with the signing of the IIJA in 2021, Federal funding totaling over $102 billion for commuter rail, Amtrak, and other passenger rail has been made available over a 5-year period.[48] As discussed in further detail in Section 9.3, a conceptual funding strategy for the project also includes a sizeable share of money from Federal funding sources. Given that Federal funding is highly dependent on the wider fiscal context and other factors, a final decision can be made later as the project progresses into the project definition and environmental clearance phases. Moving forward with an initial CEQA clearance and, if warranted by potential Federal funding availability, a subsequent NEPA clearance as part of a separate process, is a sound approach at this stage.

Based on discussions with SJRRC, the desired environmental clearance strategy for the project is a focused project-level clearance isolated to the Union City Intermodal Station Phase 3 Project. This project-level approach provides transparency to the public on the defined project and allows for a focused public outreach effort. It also engages UP in a clearly defined process, allowing time for targeted discussions and formulation of agreements.

This recommended approach involves a project-level clearance of all infrastructure improvements necessary for the Union City Intermodal Station Phase 3 Project and associated train service operations, including the proposed intercity rail platform at the Union City Intermodal Station, the proposed Union City Layover Facility, and track improvements within UP rights-of-way (to be determined in coordination with Union Pacific at the outset of the environmental clearance process). For the segment of the Chico–Union City roundtrip north of Natomas, however, UP right-of-way improvements, station improvements, and operational impacts would be evaluated separately through the NVRP.

Given the overall scope of the Union City Intermodal Station Phase 3 Project, it is assumed that the required level of environmental documentation under this approach is likely to be a CEQA EIR and NEPA

[48] See https://www.apta.com/advocacy-legislation-policy/bipartisan-infrastructure-law-hub/ for more information.

EA. However, a final decision on the required NEPA class of action would be reached through future coordination with the identified NEPA lead agency.

9.2.1. Environmental Considerations Related to the Union City Intermodal Station Phase 3 Project

The primary focus of the environmental clearance will be the improvements to implement the Union City Intermodal Station Phase 3 Project, including a new station platform for proposed Union City Intercity Rail Service, as well as the layover facility to store trains when needed. Clearance will also be needed for the facilities to extend ACE from Niles Junction to the Union City Intermodal Station, which will include various track infrastructure to take trains to the new platform. Finally, environmental clearance will be needed in some areas where track improvements are deemed necessary to operate the trains according to the service plan developed for the project.

STATION FACILITES

Station facilities, including the intercity rail platform, connections to the at-grade crossing currently being implemented, and other facilities related to the adjacent street to accommodate connecting buses, shuttles, automobiles, bicycles, etc. will need to be cleared.

LAYOVER FACILITY AND RELATED WASTE CONSOLIDATION AREA REMEDIATION

A two-track layover facility is proposed immediately south of the Union City Intermodal Station. In addition to the two storage tracks and connecting tracks to the station platform and to the UP mainline, the layover facility includes access roads, crew facilities and parking.

In addition to the specific infrastructure for the layover facility itself, a partial remediation of the WCA slag pile site is needed to allow for construction and operation of the proposed station and layover facility. The extent of disturbance under this partial remediation approach would cover the physical extent of the intercity rail station and layover facility, as well as any additional areas of disturbance to allow for necessary modifications (e.g., re-grading) of the remainder of the slag pile. Details on the design of this can be found in **Appendix D** and described in more detail in Section 4.5.

However, the City of Union City has expressed a strong interest in remediating the entire WCA site in a single remediation phase that covers both the portions affected by the intercity rail station and layover facility and the remainder of the WCA site. SJRRC is open to a partnership with the City that would allow for such an approach if the City agrees to take on funding / financing responsibility for the incremental cost increase associated with full remediation over partial remediation. This agreement is necessary to ensure that the project meets Federal and State restrictions for transportation funding, which require that such funds cannot be used for non-transportation projects. The agreement would also alleviate concerns from SJRRC about increased risk for the project's environmental review and clearance due to inclusion of the entirety of the WCA site under the project, as described in more detail in Section 4.5.

TRACK INFRASTRUCTURE IMPROVEMENTS

Engagement with UP on the Union City Intermodal Station Phase 3 Project will be essential once the environmental phase is underway to determine what additional improvements would be needed to provide sufficient capacity to operate the three proposed round trips between the Union City

Intermodal Station and the planned outer termini in Chico and Merced. In the immediate vicinity of the Union City Intermodal Station, the major track improvements are anticipated to involve construction of the station siding track that would connect the UP mainline to the intercity rail platform and signal upgrades; however, additional improvements could be required. In addition, various track and signal improvements would also be required along the UP Oakland Subdivision west of Niles Junction, as described in more detail in Section 4.4.

9.2.2. Environmental Clearance Schedule

A CEQA / NEPA process for an EIR / EA, whether combined or separate, would likely require 2 years to complete. Understanding the UP improvements in advance of the environmental phase would clarify the scope of work and expedite the schedule; therefore, full engagement with UP is essential for the identification of improvements upon initiation of the environmental clearance process. Given this, the project development schedules as included time for this portion of the project definition. A preliminary schedule for this environmental clearance approach is shown in **Table 9-1**.

TABLE 9-1. PRELIMINARY ENVIRONMENTAL CLEARANCE SCHEDULE

Phase	Approximate Start Date	Approximate Finish Date
Scoping, Planning, and Project Definition	January 2023	July 2023
Procurement – Environmental and Preliminary Design	September 2023	December 2023
10% UP Design (with UP Coordination)	January 2024	September 2024
15% Station Design (with Union City, BART, and Other Stakeholder Coordination	January 2024	December 2025
CEQA and NEPA Clearance	January 2024	December 2025
Procurement - Final Design	September 2025	December 2025
Final Design: 25% to 100% UP Design and 30% to 100% Station Design (with UP and Other Stakeholder Coordination)	January 2026	June 2027
Right-of-Way Acquisition	January 2026	June 2027
Permitting	January 2026	June 2027
Advertisement for Bids	July 2027	October 2027
Award and Mobilization	November 2027	December 2027
Construction	January 2028	December 2029
Testing	January 2030	June 2030
Commence Service	June 2030	

Source: AECOM: 2023

9.3. Funding and Financing

9.3.1. Overview

The general funding strategy for the project has been developed based on the chronological project phases described in **Table 9-1**. The Planning and Project Definition phase has been funded and is completed with the publication of this Phase 2 Report. The three stages for the purpose of funding include the following:

- **Project Development:** This stage includes any subsequent project planning, as well as environmental clearance and preliminary engineering phases, anticipated to end in December 2025. This stage should include, but is not necessarily limited to, the following milestones for the purposes of the funding and financing strategy: final environmental clearance, preliminary engineering / design, risk assessment, and establishment of the project delivery approach.
- **Final Design and Construction:** This stage includes the final design and permit acquisition, contractor procurement, and construction phases, and is anticipated to begin in January 2026 and end in December 2029. Key milestones in this stage include land and right-of-way acquisition, vehicle acquisition, final design, and construction.
- **Operations and Maintenance (O&M):** This is the final stage of the project, following final design and construction.

Table 9-2 provides a summary of the key elements and strategy involved to support the project through each of the three stages.

TABLE 9-2. OVERALL FUNDING STRATEGY

	Project Development	Final Design / Construction	O&M
Timeline	Present – December 2025	December 2025 – December 2029	December 2030 – Future
Length of Stage	5 years, including Planning Phase	Final Design: 1.75 years Construction: 2 years	Indefinitely following construction
Scope	Environmental Clearance (CEQA and NEPA) Preliminary Engineering/Design Procurement (Environmental) Coordination with UP	Land / right-of-way Acquisition Vehicles Final Design Procurement Construction	O&M
Strategy	Support project development through State and local funding	Support design and construction through a long-term funding stream (local, State, and Federal) and issue debt as needed to cover capital deficits during the construction stage	Support as needed
Cost	$3.5 M	$216.5 M	Ongoing O&M costs

Source: HDR, 2023

In addition, the proposed funding strategy must include multiple, parallel outreach efforts to mobilize support that will lead to committed funding from Federal, State, regional, private, and local funding sources. To this end, the key factors in achieving project success include the following:

- Continuing discussions with involved State/local stakeholders to mobilize support and secure funding contributions that are readily available to support the project initiation stage
- Continuing discussions with involved stakeholders that can champion additional, substantial State/local and Federal funding to support the project development stage
- Continuing to identify and secure sustainable funding mechanisms that will support the project's construction and O&M costs

9.3.2. General Approach

The general approach to securing funding considers both grants/discretionary funding sources and non-grant funding sources. The first category includes Federal and State grant programs such as Rebuilding American Infrastructure with Sustainability and Equity (RAISE), Congestion Mitigation and Air Quality (CMAQ), Consolidated Rail Infrastructure and Safety Improvements (CRISI), and Transit and Intercity Rail Capital Program (TIRCP). The second category includes non-grant funding, such as a future local and regional sources, including sales tax measures.

The initial steps under each of the two funding source categories are summarized below in **Table 9-3**. All of these steps assume defined estimate ranges for scope and cost. More detailed information on each of the initial steps is provided in the Funding Strategy technical memorandum included as **Appendix G**.

TABLE 9-3. INITIAL STEPS TO SECURE FUNDING

Grants / Discretionary Funding	Non-Grant Funding
1. Identification of discrete project elements to pursue grant funding	1. Estimate local funding match required for each project element by stage, in alignment with grant funding objectives
2. Definition of scope, schedule, and budget for each project element	2. Selection of preferred mix of local funding options
3. Identification of lead or co-applicants for the grant and management / reporting to a Federal agency	3. Discussion with State and local policy makers and elected officials to support approval and implementation of local funds
4. Discussion with State and local policy makers and elected officials to ensure sponsorship and buy-in from stakeholders to secure a local match	
5. Preparation of benefit–cost analysis and other technical evaluations to support grant applications	

Source: HDR, 2023

9.3.3. Funding Opportunities by Project Stage

Potential State, Federal, and local funding sources under each of the three project stages are summarized in **Table 9-4**. The funding strategy through each of the project phases is discussed in further detail in the following subsections. More detailed information on each of the potential funding sources is provided in the Funding Strategy technical memorandum included in **Appendix G**.

TABLE 9-4. POTENTIAL FUNDING SOURCES BY PROJECT STAGE

		Project Development	Final Design / Construction	O&M
State	TIRCP Transit and Intercity Rail Capital Program	✓	✓	✓
	SCCP Solution for Congested Corridors Program		✓	
	SRA State Rail Assistance		✓	✓
Federal	RAISE (USDOT) Rebuilding American Infrastructure with Sustainability and Equity	✓	✓	
	Federal–State Partnership for Intercity Passenger Rail (FRA)	✓	✓	
	Corridor Identification and Development Program (FRA)	✓		
	CMAQ (USDOT) Congestion Mitigation and Air Quality	✓	✓	✓
	CRISI (FRA) Consolidated Rail Infrastructure and Safety Improvements	✓	✓	
Local	Local and Regional Transportation Sales Tax Measures, including Regional Measure 3	✓	✓	✓
	Local assistance (Partner jurisdictions)	✓	✓	✓

Source: HDR, 2023

PROJECT DEVELOPMENT

A key aim of the Project Development stage is to secure a sustainable funding stream to support the project. The project is more likely to be delivered on schedule and within budget if the program continues to secure funding commitments in advance of each stage. Therefore, the program should engage in all necessary outreach and achieve buy-in from local, regional, State, Federal, officials and decision makers in advance of final design, construction, and O&M stages, described later.

For the project development stage, the effort to obtain Measure BB funding is already underway for environmental clearance. Additional matching funds are available from SJRRC and SJJPA. During this stage, finding for the next stages of project development should be identified and secured. These may include programs such as TIRCP at the State level and the Federal–State Partnership for Intercity Passenger Rail at the Federal level, as described below.

FINAL DESIGN / CONSTRUCTION

Final design may be funded through TIRCP at the State level and the Federal–State Partnership for Intercity Passenger Rail at the Federal level. The project must also consider securing a local match from partner jurisdictions or future sources. Project partners should also take note of the development of the FRA Corridor Identification and Development Program.

The funding stream necessary to fund construction would likely include programs such as RAISE and the Federal–State Partnership for Intercity Passenger Rail at the Federal level, and TIRCP, Solutions for Congested Corridors Program (SCCP), and State Rail Assistance (SRA) at the State level, based on the current project scope. Regional Measure 3 (RM3) which finances a comprehensive suite of highway and transit improvements through an increase of tolls, can also be used to help fund construction.

OPERATIONS AND MAINTENANCE (O&M)

The project will need to consider all long-term funding streams available for O&M. Intercity services within California are typically funded by the State. In addition to fare revenues, which should cover a significant portion of the O&M costs, the project should consider technical, executive, and legislative outreach similar to the Project Development stage to develop funding stream(s) that can also contribute to O&M costs.

Based on the current scope, the project should consider TIRCP and SRA as potential sources for the O&M stage. Other sources for O&M could include securing a local match from partner jurisdictions or future sources such as local and regional transportation sales tax measures.

9.3.4. Financing

While the project should seek to develop funding mechanisms on a pay-as-you-go basis, financing could also provide funding for the Project. Federal financing provides flexible loans at low interest rates which will improve the feasibility of a project's financial plan.

If the project seeks financing, programs such as Railroad Rehabilitation & Improvement Financing (RRIF) and Transportation Infrastructure Finance and Innovation Act (TIFIA) will require a dedicated repayment funding stream. The project will need to have commitment from partners to repay the amount financed, as well as any costs associated with borrowing. Therefore, this report recommends the project consider funding strategies before financing. More detailed information on potential financing options is provided in the Funding Strategy technical memorandum included in **Appendix G**.

9.3.5. Summary of Funding Strategy

Based on a strategic evaluation of all funding and financing options, the following programs are most likely to provide meaningful financial support for the project and merit further consideration:

State, regional, and local:

- SCCP: The project partners should continue their discussions with CalSTA as the next grant cycle is expected sometime in 2023 for final design and construction
- TIRCP: The project partners should continue discussions with CalSTA prior to the 2024 cycle for final design and construction
- Local and regional measures such as Alameda County Measure BB for environmental clearance
- Local and regional measures such as Regional Measure 3 for final design, right-of-way, and/or construction
- Other local and regional transportation sales tax measures: Project advocates must meet and dialogue with policy-makers, as well as demonstrate project viability and necessity, to ensure directed spending for the project is within potential measures
- State Rail Assistance (SRA)
- Non-monetary local sources, such as land donation

Federal:

- RAISE
- Federal–State Partnership for Intercity Passenger Rail
- CRISI
- Building Resilient Infrastructure and Communities (BRIC)

A funding strategy for capital costs based on the available opportunities, the current project scope and cost estimate, and the project schedule by phase is summarized in **Table 9-5**. The funding strategy includes a healthy mix of federal and state as well as local funding. This funding strategy assumes $96.5 million, or 45% of the funds needed for future phases, in federal funding. Federal funding assumptions include a variety of sources from agencies such as the Federal Railroad Administration (CRISI, Federal-State Partnership for Intercity Rail), the US Department of Transportation (RAISE), and the Federal Emergency Management Agency (BRIC). The funding strategy assumes $120 million, or 55% of the remaining funding gap, in state and local funding with contributions from TIRCP, SCCP, RM3, and SRA awards.

Many of the Federal funding sources require a match of 20% in State or local funds. Some Federal programs have an award limit, such as RAISE. Conversely, the project could utilize more funding than assumed above for some of the programs, such as the Federal–State Partnership for Intercity Passenger Rail. These funding sources are subject to change based on conversations with local jurisdictions to satisfy the match required for Federal funding agreements.

Below is a high-level summary of the recommended next steps for pursuing funding to advance the project:

- Secure funding to advance to environmental clearance phase; obtain environmental clearance
- Further quantify and present benefits of project to make a strong case for federal funding
- At the State and local level, continue advocacy for the project with key stakeholders

- Prepare and apply for upcoming competitive grants
- Secure funding agreements with local jurisdictions

TABLE 9-5. UNION CITY INTERMODAL STATION PHASE 3 PROJECT FUNDING STRATEGY

Project Phase And Funding Source	Environmental and Preliminary Engineering	Final Design and Right-of-Way	Construction	Total
State and Local				
Alameda CTC Measure BB Transportation Expenditure Plan Funds	$3,000,000			$3,000,000
San Joaquin Regional Rail Commission (Committed)	$250,000			$250,000
San Joaquin Joint Powers Authority (Committed)	$250,000			$250,000
Transit and Intercity Rail Capital Program (TIRCP)			$60,000,000	$60,000,000
Solutions for Congested Corridors Program (SCCP)			$25,000,000	$25,000,000
Regional Measure 3 (RM3)		$17,500,000	$2,500,000	$20,000,000
State Rail Assistance (SRA)			$15,000,000	$15,000,000
Federal				
Consolidated Rail Infrastructure and Safety Improvements (CRISI) Grants			$30,000,000	$30,000,000
Rebuilding American Infrastructure With Sustainability and Equity (RAISE) Program			$25,000,000	$25,000,000
Federal-State Partnership for Intercity Passenger Rail			$31,500,000	$31,500,000
Building Resilient Infrastructure and Communities (BRIC)			$10,000,000	$10,000,000
Total	$3,500,000	$17,500,000	$199,000,000	$220,000,000

Source: HDR, 2023

9.4. Governance and Operations

SJRRC serves as the owner, operator, and policy-making body for ACE. SJRRC was created in 1995 through a joint powers agreement between San Joaquin County and the county's seven cities (Escalon, Lathrop, Lodi, Manteca, Ripon, Stockton, and Tracy), with the express purpose of improving existing rail service, establishing a rail system in San Joaquin County, and pursuing agreements for commuter rail service with Alameda County and Santa Clara County. SJRRC subsequently pursued a separate joint powers agreement with the Alameda County Congestion Management Agency (ACCMA) and VTA in 1997 to establish the Altamont Commuter Express Joint Powers Authority ("ACE JPA"). ACE service then commenced a year later in 1998.

Since 2013, SJRRC has also served as the managing agency for SJJPA, which is the managing agency for the Amtrak *San Joaquins* service (since June 2015). The SJJPA itself was established in 2012 to take over administration and management of the *San Joaquins* service from the State.

Currently, SJRRC's Board of Directors consists of six full-voting members from San Joaquin County and two special-voting members from Alameda County. As ACE expands into new geographies as part of the larger Valley Rail program—including Stanislaus County, the Sacramento area, and the North Valley area—it may be necessary to consider restructuring the Board of Directors by adding or reallocating seats to improve committee representation for these new service areas, particularly if the program relies on local sales taxes or other local funding sources from these areas to support the capital or operating budgets for the new service. As Union City falls within Alameda County (which is already represented on the SJRRC Board), there is likely not a need for board restructuring expressly due to the Union City Intermodal Station Phase 3 Project.

Current operations for ACE and the *San Joaquins* are contracted out to Herzog Transit Services, Inc. and to Amtrak, respectively. SJRRC's plans for the larger Valley Rail Program, however, envision a universal operator that would potentially operate the planned HSR EOS between Merced and Bakersfield, the existing ACE commuter service, the existing *San Joaquins* intercity rail services, Valley Link, and planned intercity services that would connect to the Union City Intermodal Station and to HSR in Merced. A universal operator that encompasses all of these services also aligns with the sharing of corridors, stations, maintenance and layover facilities, and potentially even trainsets for intercity and commuter services. Further governance planning is needed to determine the exact nature of how these services would be governed and managed with a universal operator.

9.5. Fleet Considerations

As discussed in Section , the trainsets for the Union City service are expected to be secured through a joint procurement process with the State of California. Like the existing fleet used on the *San Joaquins* and other intercity services within California, the intercity rail fleet serving Union City would be owned by the State, who would provide funding and procurement assistance for the new trainsets.

The exact fleet to be used on the Union City Hub Project will depend on several competing factors and is not yet known at this time with certainty. The existing fleets for both ACE and the *San Joaquins* are quite different from each other, reflecting the fundamental differences between the two services and their key existing markets, and there are separate procurement processes underway to deliver new rolling stock for both services.

As the various service expansions under the Valley Rail Program come online and the HSR EOS begins service out of Merced, ACE and the *San Joaquins* will become much more similar and complementary in nature. ACE and *San Joaquins* trains will both function as key feeder services for HSR sharing corridors, stations, and maintenance/layover facilities, and operating in an integrated fashion whereby passengers may have the option of taking an ACE train in one direction and a *San Joaquins* train on the return trip.

An ultimate decision about the exact rolling stock to be used is dependent on several competing factors and will likely not be made until later stages of the project. Key considerations for rolling stock to be used on the Union City service include the following:

- Types of markets served: Intercity services such as the Union City trains typically warrant food and beverage options, more legroom, and baggage storage areas, which may be lower priorities for commuter services.
- Availability of zero-emissions models: Zero-emissions locomotives are still under development and testing, and available ZEMU models currently have limited operating ranges that may not be suited for the proposed Union City services.
- Passenger capacity: Single-level trainsets such as the Siemens Venture and Stadler FLIRT models have less capacity than bi-level trainsets. Some analysis of trainset capacity relative to the forecasted ridership demand can be found in Section 5.3.

Given the considerations described above, it is recommended that SJRRC continue close coordination efforts with the State on outlining an overarching fleet strategy for the larger Valley Rail program, including the Union City Intermodal Station Phase 3 Project and other planned extensions. While these efforts are expected to culminate in a procurement process that will be led by the State (via CalSTA and Caltrans), SJRRC will continue to play an important role as an agency partner and a recipient of new rolling stock from that process.

For reference, a fleet based on locomotive-hauled passenger coaches would cost approximately $48 million per trainset, including $40 million for the passenger cars (at $5 million per car) and $8 million for the locomotive. This puts the entire order of four trainsets for the Union City service at approximately $200 million. Given the cost, a joint procurement process spearheaded at the State level, whereby the Union City trainsets are part of a larger contract (e.g., one that covers the overall Valley Rail program or includes other service expansions elsewhere in the state), could offer a major opportunity for cost efficiencies over individual (agency-driven) procurement due to economies of scale.

9.6. Immediate Next Steps

Part of moving the Union City Intermodal Station Phase 3 Project forward is to ensure that the project is identified within key planning documents. Throughout the course of the SoCo Rail Study, coordination with the State was conducted to ensure this project was identified in the Draft 2023 CSRP. Coordination will continue with the State to ensure consistency between this Phase 2 Report and the Final 2023 CSRP.

At the regional level, inclusion into MTC's Plan Bay Area 2050 has been completed. While the document is identified with Plan Bay Area 2050, there is additional information about the details Union City Intermodal Station Phase 3 Project that need to be provided in the near-term to MTC so the proposes project could be included in an upcoming revision of Plan Bay Area 2050. Information that will be provided will include clarification about the nature of the service plan (i.e., it is an intercity service that will reduce the need for local/regional funds for operations as well as addressing equity), how the three round trips of service to Union City are being coordinated with the implementation of an additional round trip to San Jose, and more details about the long-term service planning to Union City.

At the County and City level, MTC and SJRRC will continue to work with ACTC, the City of Union City and other key agency stakeholder to ensure the Union City Intermodal Station Phase 3 Project is identified in all necessary plans and documents to continue to advance planning for the project.

In terms of funding, the City of Union City, in coordination with SJRRC and other project partners, have begun working to secure funds for the environmental clearance phase. Securing funding in the near-term is a high-priority so the project can maintain its momentum. Approximately $3.5 million in funding is needed to cover more detailed project planning, as well as an environmental review to prepare clearance under CEQA and NEPA.

To the extent possible, SJRRC should also begin coordination on project implementation with external parties and stakeholders, such as UP. This includes working with local and regional agencies to ensure that the project is included in the next Bay Area regional measures and is eligible to receive an allocation of the funds generated through this measure. Coordination with UP should define the required infrastructure improvements east of Niles Junction to facilitate the Union City service.

As part of the environmental clearance, ridership forecasts will be refined, focusing on the more definitive project description, considering a longer-term horizon year and the impact of recent trends (as a result of data on the post-Pandemic work and travel patterns and adjustments to demographic growth projections in California).

10.0 Stakeholder Engagement

The SoCo Rail team initiated Phase 1 of the study in 2019 to identify the location of the East Bay Hub, consistent with the 2018 CSRP's vision for an integrated statewide rail network. By the conclusion of Phase 1 in 2021, the Union City Intermodal Station was identified and recommended to advance to Phase 2, based on coordination with rail operators and other stakeholders. During Phase 2, coordination with stakeholders continued as the study team advanced the development of the proposed intercity rail service and the Union City Intermodal Station Phase 3 Project. These combined efforts, in collaboration with project partners, stakeholders, and other interested parties, has resulted in a proposed project that is poised to advance to the next phase of project development- environmental review and preliminary engineering.

This chapter describes the engagement with stakeholders that was conducted part of the study.

10.1. Project Management Team

Throughout Phase 1 and Phase 2, a Project Management Team (PMT) met regularly to discuss the study progress. The PMT is comprised of the consultant team as well as representatives from MTC (project sponsor), SJRRC (rail operator), Caltrans' Division of Rail and Mass Transportation (DRMT, project funding agency), CCJPA (rail operator), and Alameda County Transportation Commission (Alameda CTC, county congestion management agency and funding agency).

During Phase 2, the full PMT met monthly and a subset of the PMT – the consultant team, MTC, and SJRRC – met bi-weekly to advance the project through several critical milestones.

10.2. Engagement with Transit Operators

Recognizing that any proposed rail improvements recommended by the SoCo Rail Study need to integrate into existing and planned transit in Southern Alameda County, the SoCo Rail team engaged rail and bus operators throughout the planning process.

Early in Phase 1, the SoCo Rail team met with the already established northern California **Rail Operators Working Group** three times to coordinate on regional and megaregional rail activities and initiatives. The Rail Operators Working Group consisted of representatives of the following agencies/rail services: MTC, CCJPA, SJRRC, BART, CalSTA, VTA, Valley Link, SamTrans, Caltrain, Caltrans, and Facebook. SoCo Rail presented updates to this group and received valuable feedback to inform the study on January 24, 2019, August 27, 2019, and September 3, 2020.

At the conclusion of Phase 1, the SoCo Rail team provided a general update of the SoCo Rail Study to the **SJRRC Board** at their November 5, 2021 meeting. A rail operator **Technical Working Group (TWG)** formed as part of Phase 1, helped advance the service planning studies conducted in the identification and selection of the East Bay Intermodal Station. The TWG was comprised of representatives of the following agencies: Caltrans Division of Mass Transportation and Rail, CCJPA, SJRRC, and SJJPA.

A **Steering Committee** was also set up in Phase 1, comprised of representatives of MTC, SJRRC, CCJPA, BART, SamTrans, Caltrain, CalSTA, and Caltrans. The group met on January 30, 2020 to identify operator service assumptions and goals and on May 28, 2020 to discuss the Mid-Term concepts developed as part of the service planning studies. On February 11, 2021, the group met to review the findings of Phase 1 of the SoCo Study and initiate collaboration for Phase 2 as the project would be further defined.

The SoCo Rail team also met individually with rail and bus operators, as well as other stakeholder partners with an interest in the Union City Intermodal Station Phase 3 Project and concepts for connecting services to share Study information at critical milestones. These meetings included:

- BART: February 27, 2019; July 13, 2022; March 6, 2023
- CCJPA: September 6, 2022
- SamTrans: November 6, 2020
- AC Transit: August 18, 2022; September 7, 2022;
- AC Transit and Union City Transit: July 19, 2022
- Union City Transit: July 28, 2022; December 7, 2022
- Stanford (operator for the Marguerite Shuttle): November 11, 2022

During Phase 2 of the study, the SoCo Rail team provided a general update of the SoCo Rail Study to the **Central Valley Rail Working Group** on October 28, 2022. The conclusions of the SoCo Phase 2 Report were presented to the Central Valley Rail Working Group on June 23, 2023, and to the SJRRC Board on July 7, 2023.

In the development of the Phase 2 Report, the SoCo Rail Team also maintained coordination with BART, AC Transit, and Stanford on transit considerations and recommendations in the report that would affect or be affected by the services their services. The SoCal Rail team held a meeting on May 11, 2023 with representatives from AC Transit, Union City Transit, City of Union City, City of Fremont, and SJRRC to discuss several transit and multimodal connectivity concepts to build consensus among the bus service providers and city stakeholders on recommendations to advance.

10.3. City Engagement

The SoCo Rail team engaged key staff from the Tri-Cities to keep them abreast of planning activities and project milestones. In addition, the team solicited input from these local jurisdictions that would directly be affected – both positively and negatively – from the implementation of a rail-to-rail hub at the Union City Intermodal Station and the necessary layover facility. Below is a summary of these coordination meeting dates:

- Tri-Cities Meetings: September 9, 2021; October 4, 2022; April 20, 2023
- Additional Meetings with Union City staff: November 5, 2021; November 17, 2021 (in person); March 9, 2022; April 15, 2022; October 19, 2022; December 19, 2022; January 31, 2023; March 21, 2023; March 30, 2023, and April 18, 2023

The SoCo Rail team presented at several city council meetings, as summarized below:

- July 8, 2021 - Newark
- July 13, 2021 – Fremont
- July 27, 2021 – Union City
- May 10, 2022 – Union City
- November 22, 2022 – Union City

The SoCo Rail team met with the City of Redwood City on October 10, 2022 to review the proposed new Dumbarton Express Redwood City Line concept.

Prior to publication of the Phase 2 Report, the SoCo Rail team presented the project in a public forum at the Union City Council Meeting on May 23, 2023. The SoCo Rail team also presented the Phase 2 findings to the Union City Bicycle and Pedestrian Advisory Committee on June 20, 2023, at City Hall.

10.4. Other Stakeholder Engagement

As discussed in Chapter 4, a WCA has been identified as the preferred site for the Union City Intermodal Station Phase 3 Project's layover facility. The SoCo Rail team convened a meeting on June 23, 2022 to engage the DTSC during the early stages of the layover facility analysis and design to ensure that this project was feasible from their standpoint and that the steps to their regulatory compliance were captured.

10.5. SoCo Rail Study Webpages

Prior to publication of the SoCo Rail Study's Phase 1 Report, in 2021, a study webpage was set up on the MTC website: https://mtc.ca.gov/planning/transportation/regional-transportation-studies/southern-alameda-county-integrated-rail-analysis-soco-rail-study. The webpage hosts information on the study's goals and progress, provides links to the Phase 1 Report and its appendices, and summarizes the recommendations that emerged from Phase 1 of the study. With the conclusion of Phase 2 of the study, the webpage also provides links to this Phase 2 Report and its appendices.

The SJRRC has also provides a webpage dedicated to the SoCo Rail Study: https://www.sjrrc.com/soco-rail-study. The SJRRC webpage also includes both the Phase 1 and Phase 2 Reports, and their appendices.

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Appendices

Appendix A: Valley Rail Conceptual Timetable

Appendix B: Cost Estimates

Appendix B1: O&M Cost Estimates

Appendix B2: Construction Costs

Appendix C: Layover Facility Feasibility Memorandum

Appendix D: Conceptual Design Plans and Drawings

Appendix E: Ridership Memorandum

Appendix F: Equity Report

Appendix G: Funding Strategy Memorandum