TRANSPORTATION TECHNICAL REPORT

Brightline West Cajon Pass High-Speed Rail Project

October 2022

Prepared for
Federal Railroad Administration

Prepared by
HNTB

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Abbreviations and Acronyms

a.m.	ante meridiem (before midday)
AM	morning
ARRIVE	Advanced Regional Rail Integrated Vision – East
AVO	average vehicle occupancy
Caltrans	California Department of Transportation
CHP	California Highway Patrol
CMP	Congestion Management Program
EB	eastbound
EBL	eastbound left
EBR	eastbound right
EBT	eastbound through
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
HSR	high-speed rail
I-	Interstate
LDIGR	Local Development Intergovernmental Review
LOS	level of service
MOU	memorandum of understanding
mph	miles per hour
NB	northbound
NBL	northbound left
NBR	northbound right
ONT	Ontario International Airport
OWSC	one-way stop-controlled
p.m.	post meridiem (after midday)
PM	afternoon
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
SANBAG	San Bernardino Associated Governments
SB	southbound
SBCTA	San Bernardino County Transportation Authority
SBL	southbound left

SBR	southbound right
SBT	southbound through
SCAG	Southern California Association of Governments
SCORE	Southern California Optimized Rail Expansion
SCRRA	Southern California Regional Rail Authority
SR	State Route
TCA	temporary construction areas
TRB	Transportation Research Board
US/U.S.	United States
USDOT	United States Department of Transportation
VMT	vehicle miles traveled
VVTA	Victor Valley Transit Authority
WB	westbound
WBL	westbound left
WBR	westbound right
WBT	westbound through

1. Introduction

DesertXpress Enterprises, LLC (dba “Brightline West”) proposes to construct and operate the Cajon Pass High-Speed Rail Project (Project), a 49-mile train system reaching a top speed of approximately 140 miles per hour (mph) between Victor Valley and Rancho Cucamonga, California. The Project includes two railway stations—one in Hesperia, and one in Rancho Cucamonga. The station in Victor Valley would be constructed as part of a separate project that was evaluated in the DesertXpress Final Environmental Impact Statement (Final EIS; FRA 2011).

The Project would be powered by overhead electric catenary within the I-15 right-of-way for 48 miles and on existing transportation corridors for the last mile into the proposed Rancho Cucamonga station. The Project would require construction of one new substation in the Hesperia area. The maintenance facility that was evaluated for the Brightline West Victor Valley to Las Vegas High-Speed Passenger Rail Project would provide the primary maintenance functions, although layover tracks are anticipated at the Rancho Cucamonga station, which could include light maintenance capability, such as interior cleaning and daily inspection (FRA 2020).

Trains are expected to operate daily on 45-minute headways between Victor Valley and Rancho Cucamonga. The trip between Victor Valley and Rancho Cucamonga would be approximately 35 minutes. Service would be coordinated with existing and planned Metrolink service at the Rancho Cucamonga station to provide a convenient connection between the high-speed rail (HSR) and commuter rail systems.

The Project would be constructed and operated under a lease agreement with the California Department of Transportation (Caltrans) for the use of the I-15 right-of-way and the station at Hesperia. Brightline West would secure additional agreements for Right-of-Way Use, Design & Construction Oversight and Reimbursement, and Operations & Maintenance, as necessary. For the last mile of the Project, from I-15 to the Rancho Cucamonga station, there will be agreements with the City of Rancho Cucamonga and the San Bernardino County Transportation Authority (SBCTA) for land rights, construction, and operations and maintenance.

2. Project Description

DesertXpress Enterprises, LLC (dba "Brightline West") proposes to construct and operate the Cajon Pass High-Speed Rail Project (Project), a 49-mile train system reaching a top speed of approximately 140 miles per hour (mph) between Victor Valley and Rancho Cucamonga, California. The Project includes two railway stations—one in Hesperia, and one in Rancho Cucamonga. The connecting station in Victor Valley would be constructed as part of a separate project that was evaluated in the DesertXpress Final Environmental Impact Statement (Final EIS, FRA 2011).

The Project would be constructed within the Interstate 15 (I-15) right-of-way for 48 miles and on existing transportation corridors for the last mile into the proposed Rancho Cucamonga station. The Project would be powered by overhead electric catenary and require construction of one new traction power substation (TPSS) in the Hesperia area. The maintenance facility that was evaluated for the Brightline West Victor Valley High-Speed Rail (HSR) Passenger Project would provide the primary maintenance functions, although layover tracks are anticipated at the Rancho Cucamonga station, which could include light maintenance capability, such as interior cleaning and daily inspection.

Trains are expected to operate daily on 45-minute headways between Victor Valley and Rancho Cucamonga. The trip between Victor Valley and Rancho Cucamonga would be approximately 35 minutes. Service would be coordinated with existing and planned Metrolink service at the Rancho Cucamonga station to provide a convenient connection between the HSR and commuter rail systems.

The Project would be constructed and operated under a lease agreement with the California Department of Transportation (Caltrans) for the use of the I-15 right-of-way and the station at Hesperia. Brightline West would secure additional agreements with Caltrans for Right-of-Way Use, Design & Construction Oversight and Reimbursement, and Operations & Maintenance, as necessary. For the last mile of the project from I-15 to the Rancho Cucamonga Station, there will be Agreements with the City of Rancho Cucamonga and the San Bernardino County Transportation Authority (SBCTA) for land rights, construction, operations and maintenance.

2.1. Background

Early Project coordination for HSR service from Victor Valley to Rancho Cucamonga began in 2020, with Brightline West meeting with the San Bernardino County Transportation Authority (SBCTA) to examine a connection between Victor Valley and Rancho Cucamonga. This meeting resulted in a memorandum of understanding (MOU) that was fully executed in July 2020 between Brightline West and SBCTA to study the potential of building HSR within the I-15 right-of-way between Victor Valley and Rancho Cucamonga. A separate MOU was executed in September 2020 between Brightline West and the Southern California Regional Rail Authority, which operates Metrolink, for connection to the existing Metrolink station in Rancho Cucamonga. Additionally, the California State Transportation Agency (CalSTA), Caltrans, the California High-Speed Rail Authority, and Brightline West have executed an MOU regarding the Project. These MOUs reflect both the regional and statewide interest and value in the Project, including interconnectivity opportunities, and outlines how the parties will work together to advance their shared interest in the success of the Project.

2.2. Project Area

The Project would construct and operate a 49-mile train system capable of speeds up to approximately 140 mph between Victor Valley, California, and Rancho Cucamonga, California. The Project includes two new railway stations: one Hesperia and one in Rancho Cucamonga. The proposed rail alignment would be located within the median of the I-15 freeway between Victor Valley and Rancho Cucamonga, except for the last mile approaching the proposed Rancho Cucamonga station. The Project area is depicted in

Figure 1.

2.3. Purpose of and Need for the Project

2.3.1. Purpose

The purpose of the Project is to provide reliable and safe passenger rail transportation between the Los Angeles metropolitan region and the High Desert of San Bernardino County. The Project would provide a convenient, efficient, and environmentally sustainable alternative to automobile travel on the highly congested I-15 freeway. The Project would add capacity to the overall transportation system by introducing a new HSR service from Victor Valley to Rancho Cucamonga. The Project would reduce travel time, improve reliability, and increase the mobility options for travel between metropolitan regions. Travel time from Victor Valley to Rancho Cucamonga for Project users would be approximately 30 percent faster during normal conditions and at least twice as fast during congestion peak periods. The Project would reduce automobile vehicle miles traveled (VMT), resulting in a corresponding reduction in greenhouse gas (GHG) and air quality emissions.

2.3.1.1. Multi-Modal Use of the I-15 Corridor

Operation of the Project would significantly increase the capacity of I-15 as a multi-modal corridor in Southern California. This increase in capacity would benefit freeway operations by providing an alternative to automobile travel that would reduce travel time. This shift of people from automobile to train travel along the I-15 corridor would reduce the need for programmed and/or planned freeway improvement and widening projects.

2.3.2. Need

The Project is needed to address transportation capacity deficiencies, major points of congestion, limited travel mode choices, safety deficiencies, and reduce GHG emissions.

Travel demand analysis completed on behalf of the Project forecasts 49.1 million one-way trips between Southern California and Las Vegas in 2025, with approximately 85 percent of travelers making the trip by automobile. Most of these trips use the Cajon Pass segment of the I-15, which is capacity-constrained. Further, the freeway system leading into the I-15 from points west, east, and south, including I-10, State Route 210 (SR-210), I-215 and SR-60 have similar delays and capacity constraints. The Project would address this demand by providing a transportation alternative to vehicle travel, and it would allow access to the Brightline West service from the Greater Los Angeles and the Riverside-San Bernardino-Ontario Metropolitan areas, as well as points beyond, with a connection to the Metrolink system in Rancho Cucamonga.

The Project would also support federal and state policies focused on climate change and the need to reduce VMT and associated GHG emissions.

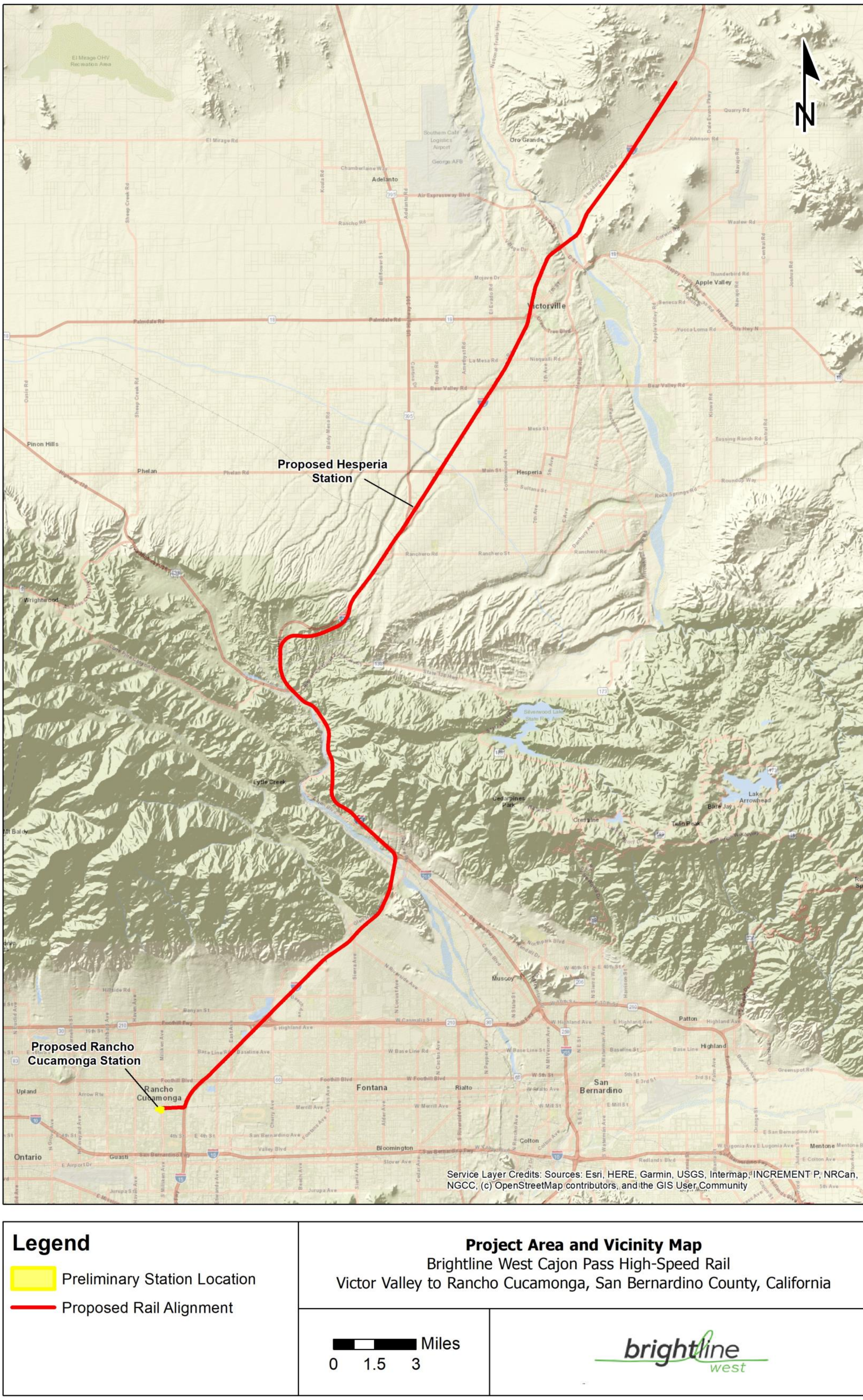

Figure 1. Project Area and Vicinity Map

2.3.2.1. *Capacity Constraints*

I-15 through the Cajon Pass is one of the most congested segments of I-15, with no alternative routes that provide comparable direct road travel capability because of the mountainous topography. Through the Cajon Pass, I-15 supports daily workforce commuters, recreational travel, and regional and interstate freight and goods movement. According to the traffic study prepared for the I-15 Corridor Project Initial Study/Environmental Assessment (Caltrans and SBCTA 2018), unreliability in travel time along segments of I-15 and surrounding roadways is caused by roadway capacity constraints, frequent accidents, and various factors that cause unanticipated congestion. Travelers using the Project would no longer need to drive through the most congested parts of the corridor in the Cajon Pass for interstate or commuter trips, thereby avoiding driving next to many large freight trucks, idling and inefficient stop-and-go traffic conditions.

By 2045, travel speeds are expected to decrease on all but one segment of I-15 between the San Bernardino Valley and Apple Valley in the AM peak period, and travel speeds on most segments would also decrease—some by more than 10 mph—in the PM peak period (SCAG 2020). Based on the Project Report for the I-15 Corridor Study (addition of express lanes), traffic volumes on I-15 between I-10 and SR 210 are expected to increase in the range of 31 to 38 percent from 2014 to 2045. The Project Report states the existing level of service (LOS) is acceptable in most locations but that there are bottlenecks in each direction of travel that degrade traffic operation, especially between Baseline Road and SR 210. Because the express lane project is increasing capacity by adding express lanes, the traffic volumes are projected to increase by an additional 27 percent. The Project Report further mentions that, although the express lane project would improve conditions in the general purpose lanes in many segments, it would cause the segment between the I-10 and Fourth Street to worsen in the PM peak hour (both directions). In the AM peak hour, the segment between Arrow Route and Fourth Street would worsen in the southbound direction. The segment between Baseline Road and SR-210 would continue to operate at over capacity conditions in all scenarios.

SCAG's Connect SoCal Goods Movement Technical Report identifies I-15 as part of the U.S. Department of Transportation's (USDOT) Primary Highway Freight Network and among the network segments that carry the highest volumes of truck traffic in the region. It also identifies the entirety of the Cajon Pass as a truck bottleneck, with over 15,000 annual vehicle hours of delay.

As documented above, given the attractiveness of the origins and destinations, the transportation capacity constraints on I-15 as described in current and predicted average daily traffic (ADT) and LOS limit reasonable highway access between Rancho Cucamonga, Hesperia, and Victor Valley.

2.3.2.2. *Travel Demand*

The anticipated substantial increases in population, housing, and employment in San Bernardino County will result in greater demand for transportation facilities and services, including increased travel demand that will result in congestion on roadways if capacity does not keep up with the demand. The proposed Hesperia station would provide convenient connections between High Desert communities and the more urbanized San Bernardino Valley and Metropolitan Los Angeles. The High Desert provides lower cost housing options for Southern California residents, while the Rancho Cucamonga/Ontario area around Ontario International Airport (ONT) has become a significant employment center.

SCAG forecasts, in its 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), that the population of San Bernardino County will grow to 2,815,000 by 2045, a 29 percent increase from the U.S. Census Bureau's 2018 population estimate of 2,180,085, and that the number of households will grow to 875,000, a 39 percent increase over the 2018 household estimate of 630,633 (U.S. Census Bureau 2020). Additionally, the 2020-2045 RTP/SCS forecasts employment in San Bernardino County will increase to 1,064,000 by 2045, a 72 percent increase from the U.S. Census Bureau's estimate of 617,828 in 2018.

While the proposed Victor Valley station site would be located at the convergence of all the highways *en route* to Las Vegas for Southern California travelers, the Rancho Cucamonga station would be closer to major population centers in Southern California. Compared to the Victor Valley station, the proposed HSR station in Rancho Cucamonga, located about 45 miles east of Downtown Los Angeles, would provide more direct access to the densely populated centers in Southern California for both drivers and Metrolink riders; 87 percent of the potential market for trips between Las Vegas and Southern California (equivalent to 42.7 million of the one-way, in-scope trips in 2025) live within 75 miles of the location of the proposed Rancho Cucamonga station. The Rancho Cucamonga station would also provide a connection to the Tunnel to ONT project, facilitating access to ONT for air travelers traveling to and from the High Desert.

The proposed station in Rancho Cucamonga, with a Metrolink connection to Los Angeles, would further meet the forecasted demand of the 49.1 million one-way trips between Las Vegas and Southern California estimated in 2025. Similarly, the proposed Hesperia station would be at the convergence of US Highway 395 (US-395) and I-15, so it would serve commuters to Greater Los Angeles from the major corridors in the Victor Valley.

The Project would also support SCAG's Connect SoCal Passenger Rail Technical Report, which identifies closing connectivity gaps as a major strategy to increase mobility and improve sustainability. The Project would facilitate transit connections and would allow residents of the Greater Los Angeles and the Riverside-San Bernardino-Ontario Metropolitan areas to travel exclusively by mass transit and passenger rail to and from the High Desert of San Bernardino and connect to the BLW station at Victor Valley for a connection to Las Vegas. Southern California residents could take the Los Angeles Metro rail, regional bus systems, Amtrak, or Metrolink to Los Angeles Union Station to connect via the Metrolink San Bernardino Line to the Rancho Cucamonga station. Residents could also take the planned West Valley Connector Bus Rapid Transit service that will operate between the Pomona station on the Metrolink Riverside Line in eastern Los Angeles County and the Rancho Cucamonga station. While still in early planning and design stages, the planned Tunnel to ONT project may provide an additional connection from the Rancho Cucamonga station to the Ontario International Airport.

Additionally, SBCTA and SCAG's 2015 Advanced Regional Rail Integrated Vision – East (ARRIVE) Corridor plan proposes strategies for transitioning the Metrolink San Bernardino Line, which would serve the Rancho Cucamonga station, from a traditional commuter rail line to one that promotes transit-oriented development. Improvements to Metrolink, its transit connections, and additional development of the station areas with transit-supportive uses at greater densities and intensities will encourage the formation of areas that are walkable and that provide mobility options in the region. The Project would further the goals of the ARRIVE Corridor plan by increasing the activity centers that can be accessed by Southern California's rail network. Additionally, the Southern California Optimized Rail Expansion (SCORE) program is intended to increase speeds, reliability, and capacity on Metrolink lines, including on the San Gabriel Subdivision which serves the Rancho Cucamonga station.

In 2010, the San Bernardino Associated Governments (the predecessor agency to SBCTA) completed the Victor Valley Long Distance Commuter Needs Assessment, which identified a phased set of commuter improvement projects. Those projects ranged from expanded park and ride facilities to an express bus service linking the Victor Valley area of the High Desert to the Rancho Cucamonga Metrolink station. In 2017, SCAG and SBCTA amended the Transportation Improvement Program to include an expansion of the Hesperia Park & Ride area at Joshua Street from 188 spaces to nearly 400 spaces in 2022. The Joshua Street Park & Ride is next to the Project's proposed station in Hesperia. Such commuter-focused planned improvements highlight the need for travel options that reduce the number of single occupancy automobiles on I-15 in San Bernardino County, particularly through the Cajon Pass.

FHWA's Southern California Regional Freight Study (USDOT 2020) identifies I-15 as a major interstate highway corridor that provides access to the interior of the United States for goods arriving at the ports of the Los Angeles region and ranks it among the highest truck volume corridors in the western United States. Caltrans' 2015 Interregional Transportation Strategic Plan identifies I-15 as a high priority corridor, among six nationally identified "Corridors of the Future," and a "vital link between Mexico, Southern California, and locations to the north and east of the region." I-15 also connects Southern California and the southwestern United States to the San Joaquin Valley's agricultural goods via SR-58. By providing passenger rail capacity in the corridor, the Project would help maintain freeway capacity for truck freight use by removing passenger vehicles from the roadway network.

2.3.2.3. Safety

Alternatives to automobile travel would provide improved safety conditions on the I-15 corridor with diversion of vehicle trips to HSR. On a national level, comparing miles traveled via commercial aircraft, train, and automobiles on highways, auto travel on highways has by far the highest rate of passenger fatalities per mile traveled. In 2019, the average rate of passenger fatalities from highway travel was more than 75 times the comparable rate for travel by air and 34 times the comparable rate by rail. For 2016, the Bureau of Transportation Statistics' National Transportation Statistics (USDOT 2018) reported a rate of passenger fatalities per 100 million passenger miles traveled by highway nearly 10 times greater than the rates for travel by air or rail. HSR is one of the safest forms of travel.

The California Office of Traffic Safety ranks San Bernardino County 16^{th}-worst out of 58 counties for total fatal and injury crashes in 2018 (the most recent year of data available). According to the University of California, Berkeley, and SafeTREC's Transportation Injury Mapping System, there were 819 collisions with one or more deaths or injuries along I-15 in San Bernardino County in 2019. Of these, nearly one quarter (199) occurred in the 12 miles of the Cajon Pass, although the Cajon Pass accounts for only 6.5 percent of the length of I-15 in the county.

A study by the I-15 Mobility Alliance found that the segment of I-15 from I-215 in San Bernardino to I-40 in Barstow had a fatality rate 0.009 per million VMT, well above the alliance’s performance goal of 0.003 fatalities per million. By connecting the Victor Valley to Rancho Cucamonga, the Project would allow more travelers to stay off segments of I-15.

3. Alternatives

3.1. Build Alternative

The Build Alternative (i.e., the Project) consists of a proposed HSR passenger railway with associated infrastructure, including two proposed passenger stations. Nearly all of the Project would be built within the I-15 right-of-way. Near the proposed southern terminus station in Rancho Cucamonga, approximately 1 mile of the rail alignment would be in city street, railroad, or utility rights-of-way.

The proposed rail alignment would be located in the median of the I-15 freeway between Victor Valley and Rancho Cucamonga except at the approach to the proposed Rancho Cucamonga station. The rail alignment would be predominately at grade (the same elevation as the existing freeway), with select segments of the alignment on aerial structures or in a trench to allow for grade separations (including 4 BNSF and 3 UP railroad crossings) and to provide a safe incline for train operation. The rail alignment would be predominantly single-track, with limited double-track segments in Victor Valley (2.6 miles including 0.9 miles constructed as part of the DesertXpress High-Speed Passenger Train Project), Hesperia (5.5 miles), and Rancho Cucamonga (2 miles). This would allow for 45-minute headways in the opening year between Victor Valley and Rancho Cucamonga and with additional infrastructure, 22.5-minute headways by year 11. These headways, along with the ability to couple trains (double passenger capacity), would address projected ridership needs for the foreseeable future.

For analytical purposes, the Build Alternative is described in three sections. Sections were developed to reflect similarly developed areas with similar environmental sensitivity. The sections include:

- **Section 1:** High Desert – from the Victor Valley station, continuing south along I-15, to the I-15/Oak Hill Road interchange in Hesperia
- **Section 2:** Cajon Pass – from the I-15/Oak Hill Road interchange, continuing south along I-15, through the Cajon Pass, to the I-15/Kenwood Avenue interchange
- **Section 3:** Greater Los Angeles – from the I-15/Kenwood Avenue interchange in San Bernardino, continuing south along I-15, through the existing Metrolink station in Rancho Cucamonga to Haven Avenue

3.1.1. Section 1 – High Desert

The proposed rail alignment would connect to the DesertXpress High Speed Train alignment approximately one mile south of the Victor Valley station in Apple Valley. The Victor Valley station was proposed by the DesertXpress High Speed Train Project (DesertXpress Project) and approved in 2011 and modified by the re-evaluation in 2020. The rail alignment throughout Section 1 would be predominantly single track; however, the rail alignment would be double-track for approximately 2.6 miles north of Stoddard Wells Road to the northern terminus of the alignment as it approaches the train platforms of the Victor Valley station. The Project would include a new structure over the existing CEMEX railroad bridge. Based on future discussion with CEMEX, the existing railroad bridge may be reconstructed as part of the DesertXpress project, in which case the alignment would run at-grade in the median under the railroad bridge.

Brightline West would build a new Southbound on-ramp and bridge at South Stoddard Wells Road to replace similar existing facilities further south.[1] This in-turn would require modifications of I-15 up to and including the Mojave River crossing.

At the Mojave River, a new rail bridge would be constructed within the median of I-15. the existing I-15 bridge would be widened to accommodate the rail line. The alignment would then continue at grade in the I-15 median with minor roadway widenings for the remainder of Segment 1. This portion of the alignment would interface with the following interchanges: Stoddard Wells Road North, Stoddard Wells Road South, D Street/E Street, Mojave Drive, Roy Rogers Drive/Hook Road, Palmdale Road, La Mesa Road/Nisqualli Road, Bear Valley Road, Main Street/Phelan Road, Joshua Street, US-395, Ranchero Road, and Oak Hill Road.

A new substation would be constructed to support the Project along I-15, between Mesa Street and Mojave Street. The area is currently largely undeveloped, other than existing overhead power lines and utility access.

Hesperia Station

Section 1 includes a new passenger station in Hesperia, at the I-15/Joshua Street interchange. This station would serve daily travelers between the High Desert of San Bernardino County and the Los Angeles Basin. This would be a limited service for select southbound AM and northbound PM weekday on selected Brightline train coaches. The northbound on-ramp to Joshua Street would be realigned closer to the freeway, and station parking would be on the north side of Joshua Street. Parking would be accessed at the location of the existing northbound ramp intersection. To accommodate the rail alignment, the existing US-395 northbound connector and the existing Joshua Street bridge would be replaced. The Joshua Street bridge would be reconstructed at a higher elevation, requiring raising of the I-15 ramps and Mariposa Road. The passenger platform would be located within the I-15 median, with direct access from the reconstructed Joshua Street bridge at the southern end of the 5.5-mile double-track segment in Hesperia. Parking for the Hesperia station is proposed to the southwest of the station platform, between US-395 and I-15. The Project design includes adequate parking areas to accommodate parking demand in the opening year.

Design Elements

Segment 1 of the Project includes the following design elements.

- Reconstructions/Interchange Modifications: Widening portions of the I-15 freeway and modifications to interchanges at Stoddard Wells Road southbound off-ramp, D Street/E Street, Mojave Drive, Roy Rogers Drive/Hook Road, Palmdale Road, La Mesa Road/Nisqualli Road, Bear Valley Road, Main Street, Phelan Road, US-395, Ranchero Road, Oak Hill Road, and Joshua Street

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[1] These improvements would be consistent with Caltrans' planned Interstate 15 Interchange Reconstruction (D Street, E Street, Stoddard Wells Road, and Mojave River Bridge) project, which was originally analyzed under an Initial Study / Environmental Assessment in 2008.

- New Substation: Construction of a new substation along I-15 between Mesa Street and Mojave Street
- Station Area: Hesperia station platform, station access/infrastructure, surface parking lot accommodating approximately 360 vehicles in addition to the existing 400-space parking lot, bus pick up/drop off areas, Kiss and Ride

3.1.2. Section 2 – Cajon Pass

Beginning at the I-15/Oak Hill Road interchange and traveling south, the alignment would run on the west side of the I-15 northbound lanes at grade and within the existing I-15 right-of-way. In this area, the I-15 runs through the San Bernardino National Forest for approximately 12 miles. The rail alignment throughout Section 2 would be entirely single-track. The Project would require replacement of California Highway Patrol (CHP) emergency crossovers where the new guideway would block existing crossovers. Four new crossovers would be placed to take advantage of existing CHP access between the separated I-15 alignments in the following locations:

- West of Forestry Road crossing the northbound lanes.
- Approximately 1.25 miles in the southbound direction along I-15 from the crossover near Forestry Road, across the northbound lanes.
- West of the Baldy Mesa (Trestles) OHV Staging Area, across the northbound lanes.
- West of Perdew Canyon and approximately 1.25 miles north of Mathews Ranch Road, across both the north and southbound lanes.

The alignment would remain at grade throughout Segment 2.

Where I-15 northbound and southbound lanes reconnect at the foot of the Cajon Pass, the rail alignment would be within the I-15 median. This would require widening portions of the I-15 freeway and minor realignment of ramps at the I-15/SR-138 interchange.

Design Elements

Segment 2 of the Project includes the following design elements.

- Bridges/Viaducts: None
- Reconstructions/Interchange Modifications: Widening portions of the I-15 freeway including several miles of retained fill, and realignment of ramps at the I-15/SR-138 interchange
- Other Facilities: CHP emergency crossovers

3.1.3. Section 3 – Greater Los Angeles

Beginning at the Kenwood Avenue interchange, the proposed rail alignment would continue at grade in the I-15 median. At the I-15/I-215 interchange, the alignment would continue between the divided I-15 freeway at the same elevation as the freeway including the Devore interchange viaduct, curving to the southwest parallel to freeway. The rail alignment would require I-15 freeway and interchange ramp modifications at Baseline Avenue, SR-210, Beech Avenue, Duncan Canyon Road, Sierra Avenue, and Glen Helen Parkway.

The rail alignment would transition to an aerial alignment and elevate over the I-15 southbound lanes south of Church Street and cross at Foothill Boulevard. The alignment would continue along the west side of the I-15 freeway on an elevated alignment to enter the San Gabriel Subdivision and Eighth Street corridor. The alignment would transition onto an aerial structure and would turn west, running parallel to and partially within the existing rail corridor and partially within the Eighth Street right-of-way before entering the existing Rancho Cucamonga Metrolink station area on an elevated structure. The rail alignment would maintain a single-track configuration prior to the existing the freeway median south of Church Street, where it would transition to a double-track configuration for the remaining distance of 2 miles to the Rancho Cucamonga station. At the Rancho Cucamonga station, an elevated station with a center platform and tracks on either side would be constructed parallel to and above the existing eastbound Metrolink platform, extending over Milliken Avenue. A new parking structure is proposed at Rancho Cucamonga station and would replace existing surface parking to accommodate increased parking demand. The Project design includes adequate parking areas to accommodate parking demand in the opening year.

Design Elements

Segment 3 of the Project includes the following design elements.

- Bridges/Viaducts: Viaduct of approximately 3.5 miles to cross I-15 southbound lanes and along existing rail corridor near Rancho Cucamonga station
- Reconstructions/Interchange Modifications: I-15 freeway and interchange ramp modifications at SR 210, Beech Avenue, Duncan Canyon Road, and Glen Helen Parkway
- Station: Dedicated Brightline station adjacent to the existing Rancho Cucamonga Metrolink station, with vertical circulation down to the platform, shared access with existing Metrolink station, a shared parking structure for vehicles, and a bus plaza

3.2. Construction

In general, construction activities would consist of clearing, grading, excavation, placing fill, stockpiling materials, constructing bridges and walls, installing drainage, installing sub-ballast and subgrade, placing and anchoring railroad ties, placing ballast material, and tamping ballast, constructing stations, substations, mobilization and demobilization. Construction equipment would likely include dump trucks, excavators, loaders, cranes, water trucks, backhoes, scrapers, rollers, ballast tampers, concrete trucks, and drill rigs.

For new and reconstructed overpasses and bridges, construction activities would include clearing, grubbing, demolition of existing structures, excavation and drilling for foundations, concrete pouring, formwork and rebar placement for foundations, falsework installation, construction of bridge decking, placement of ballast and ties, mobilization and demobilization.

Most construction activities would occur on Caltrans right-of-way. Some, for the rail stations and power substations, would occur on public property owned by the City of Rancho

Cucamonga, SBCTA, or State of California. Temporary construction areas, or TCAs, are properties that would be temporarily utilized for construction staging and storage. The Project would require TCAs along the alignment between Victor Valley and Rancho Cucamonga.

4. Methodology

4.1. Relevant Regulations, Plans, and Policies

The following Federal, state, and local regulations, policies, and plans were reviewed to evaluate potential project-related effects on transportation:

Traffic Safety Bulletin 20-02-R1 Interim Local Development Intergovernmental Review Safety Review (LDIGR) Practitioners Guidance (Caltrans 2020)

The guidance provided in this bulletin is for practitioners and consultants conducting safety reviews for proposed projects affecting the State Highway System. The guidance notes that "if the Project adds two or more car lengths to the ramp queue in the peak hour that will extend into the freeway mainline, then the location must be reviewed for traffic safety impacts which include a review for speed differential between the off-ramp queue and the mainline of the freeway during the same peak hour."

San Bernardino County Congestion Management Program (CMP): The San Bernardino County Congestion Management Program (SANBAG 2016), most recently updated in 2016, prescribes a uniform approach for the analysis of traffic impacts for jurisdictions within the County. Since its inception in 1992, the CMP has recognized that traffic delay and congestion are the result of both existing traffic and new development. Therefore, in addition to establishing standardized analysis methodologies, the CMP has always included procedures for calculating the "fair share" contribution that a proposed project should make toward the mitigation of traffic impacts. Initially, this process included identification of conceptual improvements, development of cost estimates for those improvements, and then an allocation to project its fair share of those costs, based on the Project's contribution to traffic growth. The mitigation for project impacts was the payment of the fair share amount.

With the renewal of the Measure I transportation sales tax in 2004, San Bernardino Associated Governments (SANBAG), the predecessor agency to SBCTA, prepared a Nexus Study that identified regional transportation improvements necessary to reduce traffic congestion and delay in the county (SBCTA 2018). The Nexus Study recognized that traffic impacts are not confined within jurisdictional boundaries. Therefore, it established a procedure by which projects in San Bernardino Valley and Victor Valley jurisdictions would be required to make fair share contributions for capacity enhancements to the regional transportation system, including freeway interchanges, railroad grade separations, and regional arterial roadways, based on how much they would contribute to traffic growth for each improvement whose "traffic sheds" they are in. In calculating fair-share contributions, local jurisdictions may follow any "approach that is consistent with California law and that achieves the minimum fair share development contribution levels specified in the Nexus Study." The Nexus Study (Appendix G to the CMP) was last updated in 2018, and both Rancho Cucamonga and Hesperia have adopted qualifying development mitigation programs.

City of Rancho Cucamonga Traffic Impact Analysis Guidelines: These guidelines, updated in June 2020, describe the elements required for preparing traffic impact analyses consistent with the San Bernardino County CMP. The adopted LOS standard is LOS E for all roadway segments and intersections included in the CMP. The guidelines also incorporate the city's General Plan standard of LOS D for segments and intersections in the city not included in the CMP (Rancho Cucamonga 2021).

City of Hesperia General Plan: The City of Hesperia's General Plan Circulation Element Implementation Policy CI-2.1 establishes the City's LOS standard as LOS D for most roadway segments and intersections (Hesperia 2010). Consistent with the CMP, this policy also states that LOS E is acceptable during peak hours at freeway interchanges and on Bear Valley Road, Main Street/Phelan Road, and US 395.

4.2. Study Area

The transportation analysis examines the potential effects of the Project on traffic patterns, VMT, parking, regional rail service, public transit service, and active transportation. The study area for each mode of transportation has been determined by where effects to each mode or metric might occur along parallel travel routes and in station areas as the result of the provision of new service, or near physical improvements where transportation facilities might be modified.

The traffic analysis evaluates the I-15 freeway mainline as well as the local roadway and ramp intersections serving the proposed station sites in Rancho Cucamonga and Hesperia.

The station areas around the Brightline West High-Speed Passenger Train Project between Victor Valley and Las Vegas are not included in the study area. With the addition of the Cajon Pass High-Speed Rail Project, vehicular traffic at the Victor Valley station would be reduced, as many passengers would opt to access the rail system at Rancho Cucamonga rather than at Victor Valley. Vehicular traffic would not change at the Las Vegas station during the peak periods included in the traffic study because, with the Victor Valley to Las Vegas project alone, trains would arrive and depart Las Vegas station at full capacity.

The study area for the intersection analysis includes the following 16 intersections around the Hesperia and Rancho Cucamonga stations. Figure 2 and Figure 3 illustrate the location of the intersections near the two stations.

1. US 395/Joshua Street (Hesperia station)
2. I-15 southbound off-ramp/Joshua Street (Hesperia station)
3. I-15 northbound on-ramp/Joshua Street (Hesperia station)
4. Mariposa Road/Joshua Street (Hesperia station)
5. Milliken Avenue/SR 210 westbound ramps (Rancho Cucamonga station)
6. Milliken Avenue/SR 210 eastbound ramps (Rancho Cucamonga station)
7. Milliken Avenue/Foothill Boulevard (Rancho Cucamonga station)
8. Milliken Avenue/Azusa Court (Rancho Cucamonga station)
9. Milliken Avenue/7th Street (Rancho Cucamonga station)

10. Milliken Avenue/4th Street (Rancho Cucamonga station)
11. Milliken Avenue/I-10 westbound ramps (Rancho Cucamonga station)
12. Milliken Avenue/I-10 eastbound ramps (Rancho Cucamonga station)
13. I-15 southbound ramps/Foothill Boulevard (Rancho Cucamonga station)
14. I-15 northbound ramps/Foothill Boulevard (Rancho Cucamonga station)
15. I-15 southbound ramps/4th Street (Rancho Cucamonga station)
16. I-15 northbound ramps/4th Street (Rancho Cucamonga station)

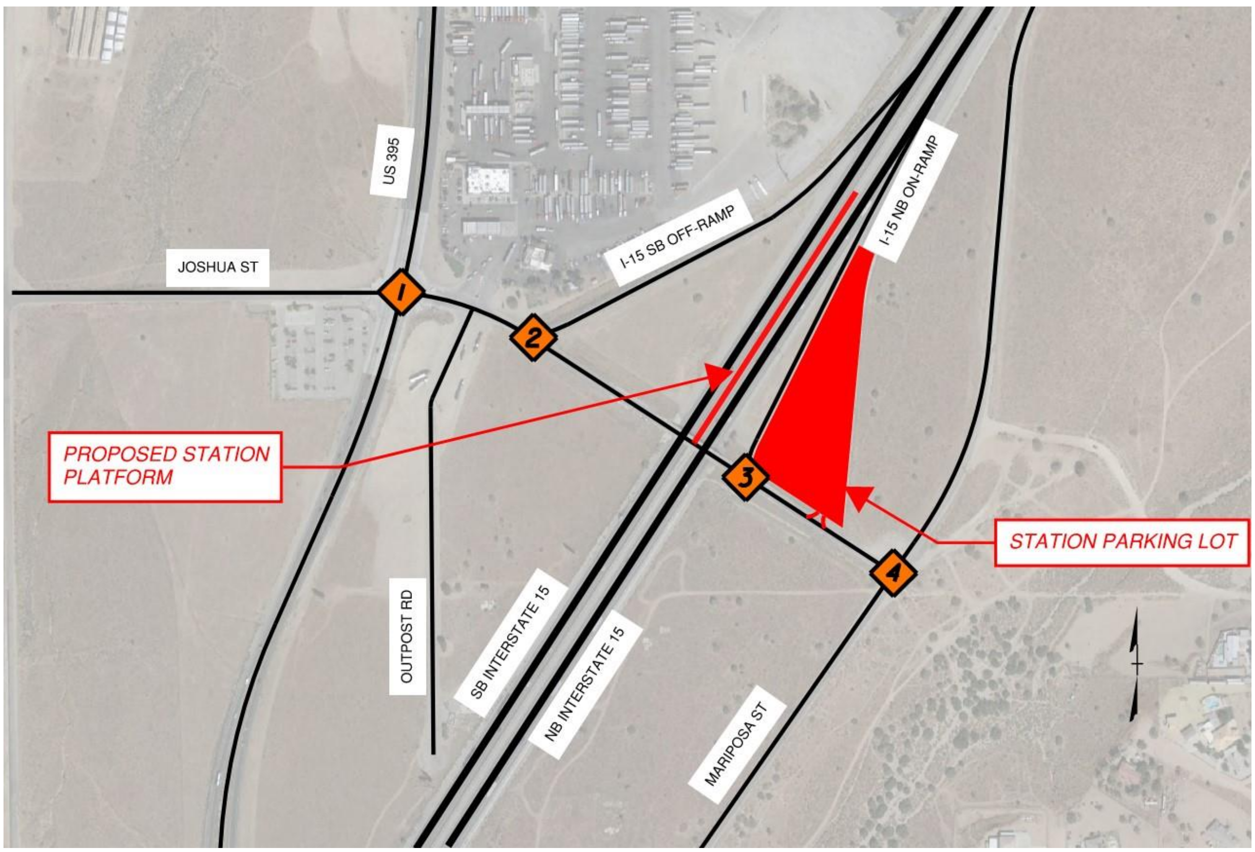

Figure 2. Hesperia Station Study Intersections

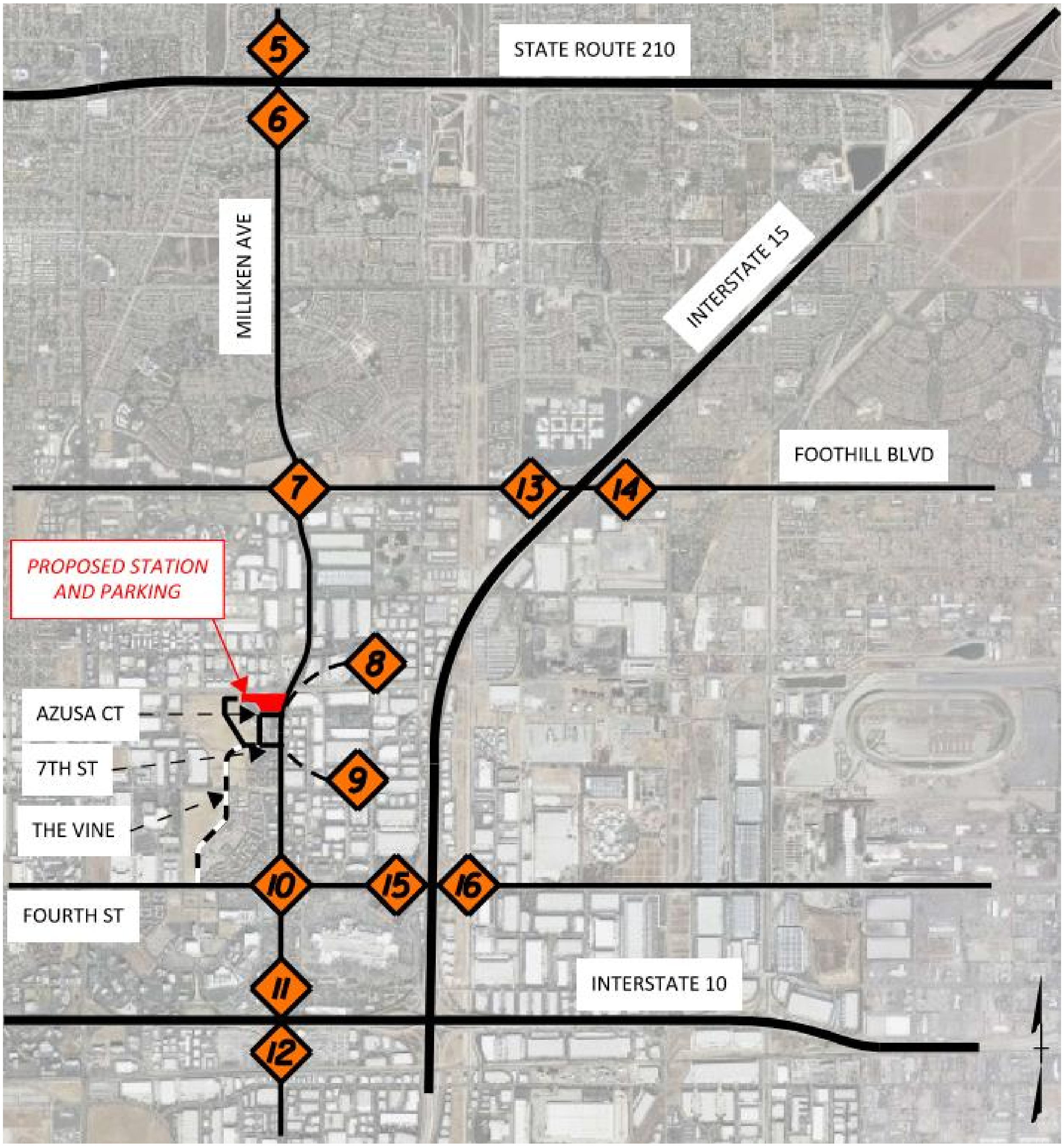

Figure 3. Rancho Cucamonga Station Study Intersections

The analysis of the two station sites also includes effects on parking, transit, regional rail, and active transportation. Both stations would include areas for public parking and passenger drop-off/pick-up activity, including "kiss-and-ride" and taxi/transportation network company loading and idling. Bus bays and curb space would also be provided to accommodate public transit boarding/alighting and layover.

The study area for transit and regional rail includes routes, stations, and stops with a direct interface with project stations or that provide a parallel service to the Project. These include any bus or rail services that stop at or within walking distance (0.25 mile) of the proposed Hesperia or Rancho Cucamonga stations or that use the I-15 corridor. The "Resort" master-planned community will construct a new residential community west of the Rancho Cucamonga station, extending south from the Metrolink corridor across 6th Street to 4th Street. The community includes an internal roadway ("The Vine") that will be a two-lane roadway with multiple roundabouts. Since most of the traffic to the Rancho Cucamonga station will be regional traffic, and 6th Street does not have connections to either I-10 or I-15, traffic accessing the station from the west is expected to use either I-10 or 4th Street and then Milliken Avenue. For this reason, no analysis is included for this new potential connection or associated intersections.

The study area for active transportation includes roadways and paths with direct access to the station sites. For the Rancho Cucamonga station, these include Milliken Avenue, 7th Street, Azusa Court, and "The Vine" (a future roadway serving the planned development adjacent to the station). For the Hesperia station, these include Joshua Street and US 395.

4.3. Methods Used

4.3.1. Traffic Analysis

The Project has an anticipated Opening Year of 2025; hence, a future Horizon Year of 2045 has been chosen for analysis as it would be 20 years after the Project opens. The LOS analysis for intersections evaluates 2025 Opening Year and 2045 Horizon Year conditions under No Build and Build scenarios. Analysis periods include typical weekday AM and PM peak hours, as well as Friday and Sunday PM peak hours, to capture conditions that combine commuter traffic with peak traffic to and from Las Vegas. In addition, this technical report includes a discussion of the VMT-related effects of the Project. Some data on traffic volumes, background growth, and operations have been sourced from traffic analyses conducted by David Evans and Associates in November 2020.

4.3.1.1. Level of Service

Roadway operations and the relationship between capacity and traffic volumes are generally expressed in terms of LOS, which are reported as letter grades A through F. Table 1 shows the relationship between control delay and LOS for unsignalized and signalized intersections. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control. A complete description of LOS is presented in the Transportation Research Board's (TRB) *Highway Capacity Manual*. For all study area intersections, the *Highway Capacity Manual*, 6th edition (TRB 2016), analysis methodologies were used to determine intersection LOS.

Table 1. Intersection Level of Service Description

Level of Service	Signalized Intersections Delay Thresholds, Seconds Per Vehicle	Unsignalized Intersections Delay Thresholds, Seconds Per Vehicle
A	≤ 10	≤ 10
B	> 10 and ≤ 20	> 10 and ≤ 15
C	> 20 and ≤ 35	> 15 and ≤ 25
D	> 35 and ≤ 55	> 25 and ≤ 35
E	> 55 and ≤ 80	> 35 and ≤ 50
F	> 80	> 50

Source: Highway Capacity Manual, 6th edition (TRB 2016)

4.3.1.2. Analysis Time Periods

The time periods evaluated in this study include the weekday AM and PM commute peak hours (between 6:00 a.m. and 9:00 a.m. and 4:00 p.m. and 6:00 p.m.), as well as Friday PM (2:00 to 5:00 p.m.), and Sunday PM (1:00 to 3:00 p.m.), corresponding to the primary times for leisure travel to Las Vegas.

4.3.1.3. Analysis Scenarios

This study evaluates analysis scenarios for the Cajon Pass High-Speed Rail Project for existing conditions, Project 2025 Opening Year No Build and Build conditions, and 2045 Horizon Year No Build and Build conditions. Each analysis scenario is described below.

- **Existing Condition (2020)** – Existing year 2020 roadway configurations and traffic counts.
- **2025 Opening Year No Build Condition** – 2025 Opening Year background forecasts of population and employment through 2025 with existing roadway configurations without the Cajon Pass High-Speed Rail Project. No surface street or highway improvements are assumed to be implemented within the study area between Existing 2020 and 2025 Opening Year conditions.
- **2025 Opening Year Build Condition** – 2025 Opening Year background forecasts of population and employment through 2025 plus Opening Year traffic generated by the Cajon Pass High-Speed Rail Project train stations at Hesperia and Rancho Cucamonga. The transportation network is assumed to be the same as 2025 Opening Year No Build conditions, but with the addition of the Project. The environmental consequences of the Project under this scenario are discussed under the Opening Year (2025) Effects section (Section 6.1.1).
- **2045 Horizon Year No Build Condition** – 2045 Horizon Year background forecasts of population and employment through 2045 with existing and planned roadway configurations without the Cajon Pass High-Speed Rail Project. This scenario includes the existing transportation network along with improvements that have been

committed and identified in the constrained plans in the SCAG 2020-2045 RTP/SCS, including the "Resort" planned development located west of the Rancho Cucamonga Metrolink station. One of the major projects included in the 2045 Horizon Year No Build conditions is the I-15 Express Lanes project that consists of two express lanes in each direction from Cantu-Galleano Ranch Road to SR 210 and one express lane in each direction from SR 210 to Duncan Canyon Road.

- **2045 Horizon Year Build Condition** – 2045 Horizon Year background forecasts of population and employment through 2045 plus Horizon Year traffic generated by the Cajon Pass High-Speed Rail Project stations at Hesperia and Rancho Cucamonga. The transportation network is assumed to be the same as 2045 Horizon Year No Build conditions, but with the addition of the Project. Since this scenario includes traffic generated by population and employment growth through 2045 and has a 20-year horizon from the opening year of the Project, the environmental consequences of the Project under this scenario are discussed under the Horizon Year (2045) Effects section (Section 6.1.2).

4.3.1.4. Existing and Forecast Traffic Volumes

Existing traffic volumes are based on traffic counts conducted in August 2020, except for the intersection of US 395/Joshua Street, which was counted in October 2019. The counts were conducted for four peak periods: weekday AM (6:00 to 9:00 a.m.), weekday PM (4:00 to 6:00 p.m.), Friday PM (4:00 to 6:00 p.m.), and Sunday PM (4:00 to 6:00 p.m.).

The year 2045 traffic No Build forecasts were derived using data from a variety of sources, including the SBCTA travel demand forecasting model and planning documents related to proposed improvements to I-15, including the I-15 Express Lanes project. The primary sources of data used in this study include:

- SBCTA Travel Demand Forecasting Model
- Caltrans' Performance Measurement System (PeMS) Data
- I-15 Comprehensive Corridor Study (SCAG, SANBAG, and Caltrans 2005)
- I-15 Corridor Project PA/ED (i.e., Project Approval/Environmental Document) Project Report, Volume I (SBCTA and Caltrans 2018)
- Brightline West System Ridership Estimate (Rancho Cucamonga, Hesperia, Victor Valley) (Brightline West 2021)

2025 Opening Year No Build forecasts were estimated from the annual growth rates derived from SBCTA's travel demand forecasting model's base year (2016) and horizon year (2040) applied to existing 2020 counts, then balanced along adjacent intersections within study corridors.

Appendix A includes existing traffic count sheets and 2025 Opening Year and 2045 Horizon Year volume development worksheets.

4.3.1.5. *Freeway Off-ramp Queuing Analysis (Safety Review)*

Since the Project is a transit project, it is expected that freeway mainline segments of I-15 would experience a reduction in regional traffic due to the introduction of HSR service. Hence, the size of the reduction in freeway traffic volumes has been quantified, but no detailed freeway operational analysis has been conducted for the freeway mainline segments in the study area.

Rail station areas are likely to experience increased traffic as the result of passengers arriving and departing the stations. To account for that potential effect on the state highway system, this report follows the guidance provided in a bulletin issued by Caltrans in December 2020 for practitioners and consultants conducting safety reviews for proposed projects affecting the State Highway System. Appendix A of the Caltrans *Traffic Safety Bulletin 20-02-R1: Interim Local Development Intergovernmental Review (LDIGR) Safety Review Practitioners Guidance* (Caltrans 2020) was utilized as the methodology for the safety review.

A freeway off-ramp queueing analysis was conducted to evaluate the operational safety effects of newly generated station traffic at ramp terminal intersections. Since the Project is expected to generate new trips that would use the state highway system (I-10, I-15, and SR 210) to access the proposed stations, there is a potential for existing queues at off-ramp locations to lengthen, spillback to mainline lanes, and pose a safety hazard related to speed differentials. The guidance notes that "if the Project adds two or more car lengths to the ramp queue in the peak hour that will extend into the freeway mainline, then the location must be reviewed for traffic safety impacts which include a review for speed differential between the off-ramp queue and the mainline of the freeway during the same peak hour."

Synchro (version 10) traffic modeling software was used to determine the 95th percentile queues (in feet) for each peak hour of all scenarios based on the intersection LOS evaluations. The 95th percentile queues were compared to the measured available storage (in feet) to determine if the projected queues would extend to the mainline lanes. If the projected 95th percentile queues were found to be accommodated within the available off-ramp storage, then a safety concern was not identified.

4.3.2. Station Ridership and Vehicular Trip Generation

Train station vehicular trip generation has been derived from station-specific ridership and employee projections prepared for Brightline West. Ridership projections were developed separately for commuters traveling between Hesperia and Rancho Cucamonga and for leisure and business passengers traveling between Las Vegas and Rancho Cucamonga. Ridership data was provided for the Hesperia and Rancho Cucamonga stations by year of operation, day of the week, time of day (peak hours), and direction (i.e., boardings [departures] and alightings [arrivals]).

The peak weekday, Friday, and Sunday hourly ridership projections were used to estimate peak hour vehicular trip generation and take into account passengers arriving in, or departing from, Rancho Cucamonga via the Metrolink San Bernardino line.

Converting number of passengers to various modes of transportation was accomplished using mode share factors and average vehicle occupancies (AVOs). Mode types include self-drive and park, pick-up and drop-off, taxi and Transportation Network Companies (TNC), public transportation (bus), and walk and bicycle. The mode and mode share vary by origin and destination station, but AVOs by mode are assumed to be constant between stations. Station employees are all assumed to self-drive and park. The trip generation estimation tables are provided in the Build scenario analysis sections. The detailed peak hour trip generation, distribution, and mode share data are included in Appendix B for reference.

4.3.3. Transit and Regional Rail Analysis

Transit and regional rail service providers near the project alignment and stations were determined by reviewing transit data from SBCTA and regional transit operators. This includes SBCTA planned transit projects and applicable service provider operating plans, service plans, planned improvements, and any other relevant studies available.

Information on service frequencies, vehicle capacities, spans of service, ridership, and proposed changes to operations was collected where available. This information was compared to the Cajon Pass High-Speed Rail Project's ridership forecast to determine potential issues related to capacity, duplication of service, or gaps in service.

5. Affected Environment

This section provides an assessment of the existing conditions (2020) in the study area. The existing conditions section and all future scenarios are divided into subsections corresponding to different modes. These subsections include Local Intersections, Local Transit, Regional Rail, Active Transportation, Parking, Freeway Mainline, and VMT.

In addition to the existing conditions assessment, this section also includes an assessment of the No Build conditions (2025 and 2045) to provide context, and as a basis to assess the environmental consequences and resulting mitigations, if any.

5.1. Existing Conditions

5.1.1. Local Intersections

Existing intersection lane configurations (also used for the future scenarios) for study intersections in Hesperia and Rancho Cucamonga are shown in Appendix C. Existing turning movement volumes for study intersections in Hesperia and Rancho Cucamonga are provided in Appendix D.

5.1.1.1. Hesperia Station

There are four intersections in the vicinity of the Hesperia station that have been analyzed as part of the existing conditions analysis. Table 2 provides the LOS and delay results of the analysis. Intersection LOS calculation worksheets are provided in Appendix E.

Table 2. City of Hesperia Existing 2020 Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(1) US 395/ Joshua Street	Signal	13.1	B	10.8	B	15.4	B	12.0	B
(2) Joshua Street/ I-15 SB ramp	OWSC	9.5	A	9.2	A	9.4	A	9.3	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.1	A	7.8	A	8.1	A	7.9	A
(4) Joshua Street/ Mariposa Road	OWSC	9.7	A	9.6	A	9.8	A	9.9	A

Notes:

Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual,* 6th Edition (TRB 2016).

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

OWSC = one-way stop-controlled

As shown in Table 2, none of the intersections are currently operating at an unsatisfactory LOS based on City of Hesperia LOS standards.

5.1.1.2. Rancho Cucamonga Station

There are 12 intersections in the vicinity of the Rancho Cucamonga station that have been analyzed as part of the existing conditions analysis. Table 3 provides the LOS and delay results of the analysis. Intersection LOS calculation worksheets are provided in Appendix E.

Table 3. City of Rancho Cucamonga Existing 2020 Intersection Level of Service

		Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
(No.) Intersection[a]	Traffic Control	Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	14.1	B	9.8	A	10.1	B	10.1	B
(6) Milliken Avenue/ SR 210 EB ramps	Signal	8.7	A	8.7	A	16.8	B	13.0	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	13.3	B	28.4	C	27.2	C	22.4	C
(8) Milliken Avenue/ Azusa Court	OWSC	11.0	B	12.4	B	13.2	B	11.6	B
(9) Milliken Avenue/ 7th Street	Signal	8.0	A	8.3	A	9.1	A	7.2	A
(10) Milliken Avenue/ 4th Street	Signal	25.3	C	57.5	E	42.6	D	19.7	B
(11) Milliken Avenue/ I-10 WB ramps	Signal	37.7	D	42.2	D	51.7	D	37.7	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.1	C	19.4	B	26.9	C	22.9	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	15.3	B	9.4	A	16.2	B	8.5	A
(14) Foothill Boulevard/ I-15 NB ramps	Signal	18.1	B	12.8	B	12.3	B	22.3	C
(15) 4th Street/ I-15 SB ramps	Signal	29.5	C	28.9	C	27.2	C	46.5	D
(16) 4th Street/ I-15 NB ramps	Signal	43.3	D	26.5	C	27.5	C	29.8	C

Notes:

Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle
EB = eastbound
WB = westbound

As shown in Table 3, none of the intersections are currently operating at an unsatisfactory LOS (in any of the peak hours) based on City of Rancho Cucamonga LOS standards.

5.1.2. Local Transit

The Project would be entirely within San Bernardino County, California. Different areas of San Bernardino are served by different bus transit providers. The San Bernardino Valley is served primarily by Omnitrans, with a few lines from Foothill Transit and the Riverside Transit Agency serving the county near the borders of Los Angeles and Riverside counties, respectively. Mountain Transit serves communities in the San Bernardino National Forest and connects to the San Bernardino Valley but does not operate routes in the Cajon Pass, Fontana, or Rancho Cucamonga. The High Desert is served by the Victor Valley Transit Authority (VVTA) and Needles Area Transit. The VVTA primarily serves the cities of Adelanto, Barstow, Hesperia, Victorville, and the Town of Apple Valley, with some routes connecting to the San Bernardino Valley and more remote communities in the High Desert. According to National Transit Database agency profiles (FTA 2021), annual unlinked trips on Omnitrans buses decreased by 30 percent between 2014 and 2019, and unlinked trips on VVTA buses decreased by 18 percent.

5.1.2.1. Hesperia Station

The site of the planned Hesperia station is not served by bus transit. Victor Valley Route 15 (also called the B-V Link) and Route 25 pass the site without stopping. Route 15 connects the cities of Barstow and Victorville to the cities of Colton, Fontana, and San Bernardino via I-15 on weekdays and Saturdays, operating both northbound and southbound at a headway of approximately 2 hours from 6:40 a.m. to 6:20 p.m. on weekdays and from 8:00 a.m. to 4:00 p.m. on Saturdays (VVTA 2021). Route 25 serves the Hesperia and the Oak Hills neighborhood southwest of Hesperia every day, operating both eastbound and westbound at a headway of 2 hours every day from 8:00 a.m. to 8:00 p.m. on weekdays, and Saturdays, and from 8:00 a.m. to 6:00 p.m. on Sundays (VVTA 2022).

In 2016, Route 15 had an average daily ridership of 271 passengers on weekdays and 19 passengers on Saturdays. On average, Route 15 was on-time 63 percent of the time, late 31 percent of the time, and early 6 percent of the time. Automatic passenger count data showed low to moderate activity at stops in the High Desert and comparatively high activity at stops in San Bernardino Valley (VVTA 2020).

At the time that VVTA conducted its most recent comprehensive operational analysis, Route 25 was not in existence. However, the route that most closely matched its geographic coverage, former Route 48, had an average daily ridership of 233 passengers on weekdays, 147 passengers on Saturdays, and 81 passengers on Sundays (VVTA 2020).

5.1.2.2. Rancho Cucamonga Station

The Rancho Cucamonga station is served by one bus route, Omnitrans Route 82. Route 82 serves the cities of Fontana, Ontario, and Rancho Cucamonga, operating at 60-minute headways every day, but it only serves the Rancho Cucamonga Metrolink station on weekdays. The route that passes closest to the Rancho Cucamonga station without stopping is Route 81, nearly 1 mile away. According to the West Valley Connector Project Final Environmental Impact Report/Finding of No Significant Impact, Route 82 has a daily weekday ridership of just over 1,000 passengers (SBCTA 2020). In 2014, there were an average 22 daily bus boardings at the Rancho Cucamonga Metrolink station (SBCTA and SCAG 2015), approximately 2 percent of Route 82’s 2020 daily ridership.

The West Valley Connector project is planned to link Rancho Cucamonga to major activity centers in Ontario and Pomona, including Downtown Pomona, and will stop at the Rancho Cucamonga Metrolink station. Planned headways are 10 minutes during the peak commute period and 15 minutes off peak, Monday through Friday. Weekend service may be provided subject to the availability of operating funds. Phase 1 of the West Valley Connector project, including stops at 21 locations over a 19-mile route, is planned to begin service in 2023 with an opening year daily ridership forecast of 5,800 passengers (SBCTA 2020). Phase 2, serving an additional 12 locations and extending the route to a total of 35 miles, is expected to open in 2040, with a daily ridership forecast of 10,170 passengers.

5.1.3. Regional Rail

Metrolink commuter rail service is operated by the SCRRA, connecting the San Bernardino Valley area of San Bernardino County to Los Angeles, Orange, and Riverside counties. The Metrolink San Bernardino Line connects stations at Los Angeles Union Station (serving downtown Los Angeles), Cal State Los Angeles, El Monte, Baldwin Park, Covina, North Pomona, Claremont, Montclair, Upland, Rancho Cucamonga, Fontana, Rialto, and two San Bernardino stations (Depot and Downtown). While Downtown Los Angeles is the largest economic center in Southern California, residential and economic development is increasing throughout San Bernardino County, including the cities along the Metrolink San Bernardino Line. The San Bernardino Line has the highest ridership of all Metrolink lines, with 9,736 average daily boardings (SCRRA 2019).

Metrolink is in the process of implementing its SCORE program. With $10 billion of improvements identified, SCORE is intended to increase speeds, reliability, and capacity on Metrolink lines, including on the San Gabriel Subdivision that serves the Rancho Cucamonga station. The SCORE program includes capital improvements within the Metrolink corridor that would improve service to Rancho Cucamonga, including the Marengo Siding Extension, El Monte Siding Extension/Tyler and Cogswell Grade Crossing Improvements, Rancho Siding Extension, and Lone Hill to White Double Track. These projects are anticipated to be complete by 2025 (SCRRA 2022b). With these and other improvements, the California State Rail Plan envisions half-hourly all-day service between Los Angeles and San Bernardino commencing in 2028 (Caltrans 2018), but funding sources have not been identified for all other projects in the SCORE program.

The Redlands Passenger Rail (Arrow) Project is currently under construction by SBCTA and is expected to enter service in 2022 (SBCTA 2021). Arrow, which will be operated by Metrolink, will provide Diesel Multiple Unit service to five stations along a 9-mile route extending east from downtown San Bernardino to Redlands. Trains will operate every 30 minutes during peak periods and every 60 minutes during off-peak periods, with weekday and weekend service planned to operate between 5:00 a.m. and 10:00 p.m. In addition, a Metrolink locomotive-hauled coach will be used to provide weekday express service between Redlands and Los Angeles.

5.1.3.1. Hesperia Station

No existing regional rail service exists at the proposed Hesperia station site.

5.1.3.2. Rancho Cucamonga Station

Currently, due to pandemic-related declines in ridership, 30 Metrolink trains, 15 in each direction, stop at the Rancho Cucamonga station between 4:06 a.m. and 8:52 p.m. on weekdays (SCRRA 2022a). As Metrolink is a commuter rail service, 12 of the 15 trains toward Los Angeles stop at Rancho Cucamonga before 12:30 p.m., and 12 of the 15 trains toward San Bernardino stop at Rancho Cucamonga after 12:30 p.m. On Saturdays, nine trains in each direction stop at Rancho Cucamonga between 7:04 a.m. and 10:52 p.m. On Sundays, seven trains in each direction stop at Rancho Cucamonga between 7:04 a.m. and 10:52 p.m. The Rancho Cucamonga station has the most boardings of all stations on the San Bernardino Line, (except for Los Angeles Union Station) with about 770 boardings each day, on average, between July 2018 and June 2019.

5.1.4. Active Transportation

Currently the Rancho Cucamonga Metrolink station can only be accessed from Milliken Avenue, which has sidewalks and dedicated bicycle lanes in both directions. These dedicated bicycle lanes extend about 1 mile south and 4 miles north of the station access point and intersect dedicated bicycle lanes on (from south to north) 4th Street, Jersey Boulevard, Arrow Route, an unnamed bike path that generally parallels Elm Avenue, Terra Vista Parkway, Base Line Road, the Pacific Electric Trail, Victoria Park Lane, and Banyan Street.

The “Resort” master-planned community will construct a new residential community, including local-serving retail, west of the Rancho Cucamonga station, extending south from the Metrolink corridor across 6th Street to 4th Street. An internal north-south roadway (“The Vine”) is planned to include protected bicycle lanes and a 16-foot “pedestrian realm” on each side. The Vine will provide bicycle and pedestrian connectivity to the station via 7th Street and Azusa Court.

The planned Hesperia station site is currently exclusively auto-oriented, with a park and ride and truck stop west of I-15 and vacant land to the east. Neither Joshua Street nor US 395, its nearest cross street, have sidewalks.

5.1.5. Parking

5.1.5.1. Hesperia Station

Caltrans operates a park and ride lot at the southwest corner of US 395 and Joshua Street to allow commuters to form carpools. The capacity of the lot, as of January 2022, is being increased from approximately 200 spaces to approximately 400 spaces. The walking distance from the lot to the proposed station is approximately 0.25 mile. However, there are no sidewalks on Joshua Street to facilitate walking. As Joshua Street and Mariposa Road are two-lane roadways with rural character, there is no on-street parking currently allowed on either of these roadways.

5.1.5.2. Rancho Cucamonga Station

The Metrolink station in Rancho Cucamonga has a current parking capacity of 960 spaces. Currently, daily permits are $4.50, and monthly permits are $20 for Rancho Cucamonga residents and $30 for non-residents. Weekend parking is free. Additionally, vehicle charging stations are available for an hourly rate. There is no on-street parking allowed in the vicinity of the station on Milliken Avenue, Jersey Boulevard, or 6th Street.

5.1.6. Freeway Mainline

I-15 traverses San Bernardino County from the Riverside County line, south of the project limits, to the Nevada state line. Within the project limits, I-15 generally has four travel lanes in each direction south of US 395 in Hesperia and three travel lanes in each direction north of US 395. Auxiliary lanes and merge lanes are provided at major interchanges.

5.1.7. Vehicle Miles Traveled

The Project would affect VMT on I-15 within the project limits between Rancho Cucamonga and Victor Valley, as well as between Victor Valley and Las Vegas, because most HSR passengers between Rancho Cucamonga and Victor Valley would otherwise drive the entire distance between Rancho Cucamonga and Las Vegas. The Project would also affect VMT on local roads in the vicinity of the Rancho Cucamonga, Hesperia, and Victor Valley stations. According to PeMS, in 2019 the total annual VMT on I-15 within the project limits was approximately 3.3 billion miles.

5.2. 2025 Opening Year No Build Conditions

2025 Opening Year No Build turning movement volumes for study intersections in Hesperia and Rancho Cucamonga are shown in Appendix D.

Table 4 summarizes 2025 Opening Year weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 5 summarizes the 2025 Opening Year No Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga. Intersection LOS calculation worksheets are provided in Appendix E.

In Hesperia, all study intersections are projected to operate at LOS D or better in both weekday and weekend peak hours in 2025 under the No Build scenario.

In Rancho Cucamonga, all study intersections are projected to operate at LOS D or better during the 2025 Opening Year No Build, with the exception of the following intersections:

- Milliken Avenue/Foothill Boulevard (LOS E in the weekday PM peak hour)
- Milliken Avenue/4th Street (LOS E in the Friday PM peak hour and LOS F in the weekday PM peak hour)
- Milliken Avenue/I-10 westbound ramps (LOS E in the Friday PM peak hour)

Table 4. City of Hesperia 2025 Opening Year No Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(1) US 395/ Joshua Street	Signal	14.2	B	11.8	B	35.6	D	14.2	B
(2) Joshua Street/ I-15 SB ramp	OWSC	9.9	A	9.4	A	9.6	A	9.5	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.3	A	7.9	A	8.3	A	8.1	A
(4) Joshua Street/ Mariposa Road	OWSC	10.4	B	9.9	A	10.2	B	10.0	B

Notes:

Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 5. City of Rancho Cucamonga 2025 Opening Year No Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	14.0	B	9.5	A	9.8	A	9.7	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	8.9	A	9.5	A	17.6	B	14.2	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	14.1	B	75.4	E	40.7	D	33.6	C

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(8) Milliken Avenue/ Azusa Court	OWSC	11.6	B	12.5	B	13.2	B	11.7	B
(9) Milliken Avenue/ 7th Street	Signal	8.7	A	9.4	A	10.4	B	7.7	A
(10) Milliken Avenue/ 4th Street	Signal	26.5	C	80.8	F	55.5	E	26.7	C
(11) Milliken Avenue/ I-10 WB ramps	Signal	48.5	D	46.9	D	60.7	E	52.4	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.9	C	26.3	C	34.2	C	24.0	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	23.6	C	11.4	B	25.9	C	13.9	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	17.8	B	19.3	B	11.4	B	23.8	C
(15) 4th Street/ I-15 SB ramps	Signal	30.1	C	30.3	C	28.2	C	35.4	D
(16) 4th Street/ I-15 NB ramps	Signal	47.6	D	27.2	C	32.6	C	38.1	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Rancho Cucamonga's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 6 presents a summary of the 95th percentile queueing analysis conducted for the study intersection off-ramp approaches for 2025 No Build conditions. Queueing calculation worksheets are provided in Appendix F. All turning movements are projected to generate queues that can be accommodated within the available lane storage, except for the southbound right-turn movement at the I-15 southbound ramps/Foothill Boulevard during the weekday AM/PM and Friday PM peak hours. Although the storage is exceeded for this single turning movement, the queueing spillback is projected to be accommodated in the upstream adjacent lane on the off-ramp and well within off-ramp storage without extending onto the southbound I-15 mainline lanes.

Table 6. 2025 Opening Year No Build Ramp Queueing Summary

(No.) Intersection[a]	Movement	Available Storage feet)	95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
(2) Joshua Street/ I-15 SB ramp	SBL	1,495	14	8	7	8
	SBR	1,495	14	8	7	8
(13) I-15 SB ramps/ Foothill Blvd	SBL	1,780	228	142	392*	116
	SBR	225	391*	268*	367*	164
(14) I-15 NB ramps/ Foothill Blvd	NBL	1,700	209	344	158	490
	NBR	1,700	180	269	147	283
(15) I-15 SB ramps/ 4th Street	SBL	320	187	119	116	137
	SBT	1,640	136	148	123	202
	SBR	320	74	46	45	80
(16) I-15 NB ramps/ 4th Street	SBL	430	372*	155*	212*	91
	SBT	430	380*	149	203*	96
	SBR	1,185	57	52	52	54
(5) Milliken Avenue/ SR 210 WB ramps	WBL	1,155	63	78	87*	74
	WBT	265	62	80	84	73
	WBR	265	13	27	31	24
(6) Milliken Avenue/ SR 210 EB ramps	EBL	1,155	55	89*	57	64
	EBT	485	45	79	68	58
	EBR	410	36	35	84*	48
(11) Milliken Avenue/ I-10 WB ramps	EBL	1,420	28	91	92	231*
	EBT	1,420	48	233*	343*	335*
	EBR	300	0	0	53	51
(12) Milliken Avenue/ I-10 EB ramps	EBL	1,475	131	156	283	176
	EBR	510	45	48	46	51

Notes:

1. Available storage measures in feet from the stop bar to the beginning of a lane addition and/or ramp gore point.
2. Shaded cells represent locations where the 95th percentile queue length exceeds the available storage for the movement.
3. Queues reported are maximum after two cycles.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.
* 95th percentile volume exceeds capacity, queue may be longer.
EBL/EBT/EBR = eastbound left, eastbound right, eastbound through, respectively
NBL/NBR = northbound left, northbound right, respectively
SBL/SBR/SBT = southbound left, southbound right, southbound through, respectively
WBL/WBR/WBT = westbound left, westbound right, westbound through, respectively

5.3. 2045 Horizon Year No Build Conditions

2045 Horizon Year No Build turning movement volumes for study intersections in Hesperia and Rancho Cucamonga are shown in Appendix D.

Table 7 summarizes the 2045 Horizon Year No Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 8 summarizes 2045 Horizon Year No Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga. Intersection LOS calculation worksheets are provided in Appendix E.

All of the study intersections in Hesperia are projected to operate at LOS D or better during the 2045 Horizon Year No Build with the exceptions of the following intersections:

- US 395/Joshua Street (LOS F in the Friday PM peak hour)
- Joshua Street/Mariposa Road (LOS F in the weekday PM, Friday PM, and Sunday PM peak hours)

In Rancho Cucamonga, all study intersections are projected to operate at LOS D or better during the 2045 Horizon Year No Build, with the exception of the following intersections:

- Milliken Avenue/Foothill Boulevard (LOS E in the weekday PM, Friday PM, and Sunday PM peak hours)
- Milliken Avenue/4th Street (LOS F in the weekday PM, Friday PM, and Sunday PM peak hours)
- Milliken Avenue/I-10 westbound ramps (LOS E in the weekday PM peak hour and LOS F in the Friday PM peak hour)

Table 7. City of Hesperia 2045 Horizon Year No Build Intersection Level of Service

		Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
(No.) Intersection[a]	Traffic Control	Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(1) US 395/ Joshua Street	Signal	21.6	C	43.0	D	234.9	F	46.3	D
(2) Joshua Street/ I-15 SB ramp	OWSC	10.0	B	14.5	B	16.2	C	17.5	C
(3) Joshua Street/ I-15 NB ramp	OWSC	8.0	A	9.1	A	10.2	B	9.1	A
(4) Joshua Street/ Mariposa Road	OWSC	12.6	B	113.2	F	132.7	F	86.5	F

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

2. Shaded cells represent locations that exceed Hesperia's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figure 2 and 3.

[b] Control delay in seconds per vehicle

Table 8. City of Rancho Cucamonga 2045 Horizon Year No Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	12.2	B	8.9	A	12.8	B	9.3	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	11.3	B	11.0	B	28.7	C	14.8	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	16.0	B	63.5	E	63.8	E	59.4	E
(8) Milliken Avenue/ Azusa Court	OWSC	12.1	B	12.7	B	13.2	B	11.6	B
(9) Milliken Avenue/ 7th Street	Signal	16.9	B	12.0	B	13.8	B	9.4	A
(10) Milliken Avenue/ 4th Street	Signal	40.6	D	112.4	F	208.2	F	216.9	F
(11) Milliken Avenue/ I-10 WB ramps	Signal	44.1	D	77.1	E	118.3	F	54.8	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	17.3	B	19.4	B	23.6	C	19.2	B
(13) Foothill Boulevard/ I-15 SB ramps	Signal	17.8	B	17.6	B	25.0	C	10.4	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	8.0	A	46.1	D	5.6	A	24.6	C
(15) 4th Street/ I-15 SB ramps	Signal	35.3	D	29.5	C	30.8	C	42.2	D
(16) 4th Street/ I-15 NB ramps	Signal	44.6	D	27.4	C	33.2	C	38.6	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Rancho Cucamonga's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 9 is a summary of the 95th percentile queueing analysis conducted for the study intersection off-ramp approaches for the 2045 No Build. Queueing calculation worksheets are provided in Appendix F. All turning movements are projected to generate queues that can be accommodated within the available lane storage with the exception of the southbound right turn movement at the I-15 southbound ramps/Foothill Boulevard during the weekday PM and Friday PM peak hours. Although the storage is exceeded for this single turning movement, the queueing spillback is projected to be accommodated in the upstream adjacent lane on the off-ramp and well within off-ramp storage without extending onto the SB I-15 mainline lanes.

Table 9. 2045 Horizon Year No Build Ramp Queueing Summary

(No.) Intersection[a]	Movement	Available Storage (feet)	95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
(2) Joshua Street/ I-15 SB ramp	SBL	1,495	11	46	44	74
	SBR	1,495	11	46	44	74
(13) I-15 SB ramps/ Foothill Blvd	SBL	1,780	244	244	484*	152
	SBR	225	217	370*	408*	164
(14) I-15 NB ramps/ Foothill Blvd	NBL	1,700	86	848*	64	475
	NBR	1,700	75	794*	55	389
(15) I-15 SB ramps/ 4th Street	SBL	320	195	139	154	169
	SBT	1,640	122	123	128	214
	SBR	320	78	57	78	89
(16) I-15 NB ramps/ 4th Street	SBL	430	289*	141	195*	74
	SBT	430	296*	141	183*	75
	SBR	1,185	91	54	93	57
(5) Milliken Avenue/ SR 210 WB ramps	WBL	1,155	71	74	52	74
	WBT	265	59	75	62	76
	WBR	265	30	30	201	26
(6) Milliken Avenue/ SR 210 EB ramps	EBL	1,155	88	118*	270	124*
	EBT	485	79	115*	272	62
	EBR	410	38	48	55	47
(11) Milliken Avenue/ I-10 WB ramps	EBL	1,420	35	71	411*	107
	EBT	1,420	59	297*	451*	446*
	EBR	300	0	0	48	51
(12) Milliken Avenue/ I-10 EB ramps	EBL	1,475	147	155	452	105
	EBR	510	102	41	6	38

Notes:

1. Available storage measures in feet from the stop bar to the beginning of a lane addition and/or ramp gore point.

2. Shaded cells represent locations where the 95th percentile queue length exceeds the available storage for the movement.
3. Queues reported are maximum after two cycles.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

*95th percentile volume exceeds capacity, queue may be longer.

5.4. Station Trip Generation

Station vehicular trip generation is based on projected weekday, Friday and Sunday arriving and departing passengers and expected AVO by mode of ingress or egress and divided into high-speed train passenger traveling between Rancho Cucamonga and Las Vegas, commuters traveling between Rancho Cucamonga and Hesperia, and employees who self-drive and park at the station where they are employed. Passengers who transfer to or from the Metrolink San Bernardino line at the Rancho Cucamonga station are not included in the vehicular trip generation estimates.

Table 10 presents the estimated 2025 Opening Year and 2045 Horizon Year vehicular trip generation at the Hesperia station, and Table 11 presents the estimated 2025 Opening Year and 2045 Horizon Year vehicular trip generation at the Rancho Cucamonga station. Friday and Sunday AM peak hour trip generation is presented for informational purposes; the higher generating PM peak hours are included in the capacity analyses in this study.

Appendix B includes mode share, trip generation, and trip distribution details.

Table 10. Hesperia Station Vehicular Trip Generation

Day of Week	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
2025 Opening Year Trip Generation						
Weekday	97	42	139	32	117	149
Friday	97	42	139	32	75	107
Sunday	13	15	28	20	20	40
2045 Horizon Year Trip Generation						
Weekday	233	78	311	58	229	287
Friday	234	79	313	58	213	271
Sunday	17	20	37	27	28	55

Source: Brightline West 2021

Note:

This table represents vehicular trip generation at stations. Therefore, an inbound vehicle trip generally corresponds to a departing rail passenger, and an outbound vehicle trip generally corresponds to an arriving rail passenger.

Table 11. Rancho Cucamonga Station Vehicular Trip Generation

Day of Week	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
2025 Opening Year Trip Generation						
Weekday	155	69	224	234	155	389
Friday	82	186	268	224	185	409
Sunday	73	175	248	182	179	361
2045 Horizon Year Trip Generation						
Weekday	293	135	428	453	293	746
Friday	220	390	610	678	401	1,079
Sunday	140	391	531	406	514	920

Source: Brightline West 2021

Note:

This table represents vehicular trip generation at stations. Therefore, an inbound vehicle trip generally corresponds to a departing rail passenger, and an outbound vehicle trip generally corresponds to an arriving rail passenger.

6. Environmental Consequences and Mitigation

This section presents the environmental effects of the Project related to traffic and transportation. The analysis of the Project's effects is based on a comparison of conditions under the Build Alternative to the No Build alternative as described in Section 5 Affected Environment.

6.1. Proposed Action

6.1.1. Opening Year (2025) Effects

This section discusses the Project's effects under 2025 Opening Year conditions.

6.1.1.1. Local Intersections

2025 Opening Year Build intersection traffic volumes were developed by adding the estimated 2025 Opening Year station trip generation to the 2025 Opening Year No Build traffic projections. 2025 Opening Year Build turning movement volumes for study intersections in Rancho Cucamonga and Hesperia are provided in Appendix D.

Table 12 summarizes the 2025 Opening Year Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 13 summarizes 2025 Opening Year Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga. Intersection LOS calculation worksheets are provided in Appendix E.

All of the study intersections in Hesperia are projected to operate at LOS D or better during the 2025 Opening Year Build for the weekday AM/PM, Friday PM, and Sunday PM peak hours.

In Rancho Cucamonga, all study intersections are projected to operate at LOS D or better during the 2025 Opening Year Build, with the exception of the following intersections:

- Milliken Avenue/Foothill Boulevard (LOS E in the weekday PM peak hour)
- Milliken Avenue/4th Street (LOS E in the weekday PM and Friday PM peak hours)
- Milliken Avenue/I-10 westbound ramps (LOS E in the Friday PM peak hour)

Table 12. City of Hesperia 2025 Opening Year Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(1) US 395/ Joshua Street	Signal	15.2	B	13.7	B	37.6	D	14.2	B
(2) Joshua Street/ I-15 SB ramp	OWSC	10.6	B	10.0	B	10.1	B	9.7	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.5	A	8.1	A	8.4	A	8.1	A
(4) Joshua Street/ Mariposa Road	OWSC	11.1	B	10.4	B	10.6	B	10.1	B

Notes:

Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 13. City of Rancho Cucamonga 2025 Opening Year Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	14.4	B	9.8	A	10.1	B	9.9	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	9.0	A	9.7	A	20.4	C	14.6	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	14.2	B	78.2	E	44.6	D	38.8	D
(8) Milliken Avenue/ Azusa Court	OWSC	12.5	B	13.6	B	14.9	B	12.7	B
(9) Milliken Avenue/ 7th Street	Signal	12.8	B	23.5	C	24.7	C	15.6	B
(10) Milliken Avenue/ 4th Street	Signal	26.2	C	79.8	E	56.4	E	31.9	C
(11) Milliken Avenue/ I-10 WB ramps	Signal	46.4	D	48.1	D	59.7	E	54.7	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.8	C	27.3	C	36.3	D	24.4	C

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(13) Foothill Boulevard/ I-15 SB ramps	Signal	23.7	C	12.0	B	29.3	C	14.4	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	17.8	B	19.4	B	11.4	B	23.8	C
(15) 4th Street/ I-15 SB ramps	Signal	37.9	D	30.5	C	28.3	C	38.6	D
(16) 4th Street/ I-15 NB ramps	Signal	52.0	D	29.4	C	32.6	C	38.1	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Rancho Cucamonga's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 14 compares the 2025 Opening Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 15 compares the 2025 Opening Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga.

Table 14. City of Hesperia 2025 Opening Year Intersection Level of Service Comparison (No Build vs. Build Conditions)

(No.) Intersection[a]	Traffic Control	No Build Weekday AM Peak Hour Control Delay[b]	LOS	No Build Weekday PM Peak Hour Control Delay	LOS	Build Weekday AM Peak Hour Control Delay	LOS	Build Weekday PM Peak Hour Control Delay	LOS	No Build Weekend Friday PM Peak Hour Control Delay	LOS	No Build Weekend Sunday PM Peak Hour Control Delay	LOS	Build Weekend Friday PM Peak Hour Control Delay	LOS	Build Weekend Sunday PM Peak Hour Control Delay	LOS
(1) US 395/ Joshua Street	Signal	14.2	B	11.8	B	15.2	B	13.7	B	35.6	D	14.2	B	37.6	D	14.2	B
(2) Joshua Street/ I-15 SB ramp	OWSC	9.9	A	9.4	A	10.6	B	10.0	B	9.6	A	9.5	A	10.1	B	9.7	A
(3) Joshua Street/ I-15 NB ramp	OWSC	8.3	A	7.9	A	8.5	A	8.1	A	8.3	A	8.1	A	8.4	A	8.1	A
(4) Joshua Street/ Mariposa Road	OWSC	10.4	B	9.9	A	11.1	B	10.4	B	10.2	B	10.0	B	10.6	B	10.1	B

Notes:

Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 15. City of Rancho Cucamonga 2025 Opening Year Intersection Level of Service Comparison (No Build vs. Build Conditions)

(No.) Intersection[a]	Traffic Control	No Build				Build				No Build				Build			
		Weekday				Weekday				Weekend				Weekend			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	14.0	B	9.5	A	14.4	B	9.8	A	9.8	A	9.7	A	10.1	B	9.9	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	8.9	A	9.5	A	9.0	A	9.7	A	17.6	B	14.2	B	20.4	C	14.6	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	14.1	B	75.4	E	14.2	B	78.2	E	40.7	D	33.6	C	44.6	D	38.8	D
(8) Milliken Avenue/ Azusa Court	OWSC	11.6	B	12.5	B	12.5	B	13.6	B	13.2	B	11.7	B	14.9	B	12.7	B
(9) Milliken Avenue/ 7th Street	Signal	8.7	A	9.4	A	12.8	B	23.5	C	10.4	B	7.7	A	24.7	C	15.6	B
(10) Milliken Avenue/ 4th Street	Signal	26.5	C	80.8	F	26.2	C	79.8	E	55.5	E	26.7	C	56.4	E	31.9	C
(11) Milliken Avenue/ I-10 WB ramps	Signal	48.5	D	46.9	D	46.4	D	48.1	D	60.7	E	52.4	D	59.7	E	54.7	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	24.9	C	26.3	C	24.8	C	27.3	C	34.2	C	24.0	C	36.3	D	24.4	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	23.6	C	11.4	B	23.7	C	12.0	B	25.9	C	13.9	B	29.3	C	14.4	B

(No.) Intersection[a]	Traffic Control	No Build Weekday AM Peak Hour Control Delay[b]	LOS	No Build Weekday PM Peak Hour Control Delay	LOS	Build Weekday AM Peak Hour Control Delay	LOS	Build Weekday PM Peak Hour Control Delay	LOS	No Build Weekend Friday PM Peak Hour Control Delay	LOS	No Build Weekend Sunday PM Peak Hour Control Delay	LOS	Build Weekend Friday PM Peak Hour Control Delay	LOS	Build Weekend Sunday PM Peak Hour Control Delay	LOS
(14) Foothill Boulevard/ I-15 NB ramps	Signal	17.8	B	19.3	B	17.8	B	19.4	B	11.4	B	23.8	C	11.4	B	23.8	C
(15) 4th Street/ I-15 SB ramps	Signal	30.1	C	30.3	C	37.9	D	30.5	C	28.2	C	35.4	D	28.3	C	38.6	D
(16) 4th Street/ I-15 NB ramps	Signal	47.6	D	27.2	C	52.0	D	29.4	C	32.6	C	38.1	D	32.6	C	38.1	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).

2. Shaded cells represent locations that exceed Rancho Cucamonga's standard of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

In Hesperia, for the 2025 Build weekday AM/PM, Friday PM, and Sunday PM peak hours, all intersections are projected to operate at LOS D or better; therefore, the project trips would not cause any unacceptable operational effects.

In Rancho Cucamonga, for the 2025 Build weekday PM and Friday PM peak hours, the Project would contribute traffic to three intersections that are projected to operate at LOS E or LOS F without the Project:

- Milliken Avenue/Foothill Boulevard (weekday PM peak hour, when 104 project trips are added to this intersection)
- Milliken Avenue/4th Street (weekday PM and Friday PM peak hours, when between 279 and 294 project trips are added to this intersection)
- Milliken Avenue/I-10 westbound ramps (Friday PM peak hour, when 235 project trips are added to this intersection)

In summary, the addition of project traffic to the Hesperia and Rancho Cucamonga intersections does not cause intersections to degrade from an acceptable LOS D in the No Build conditions to LOS E or LOS F in the weekday and weekend peak hour Build conditions. Based on the criteria listed in Section 4.1, there are no adverse effects at the intersections under 2025 Opening Year 2025 conditions. However, in Rancho Cucamonga, the Project does contribute to the already unsatisfactory LOS conditions at three intersections.

Table 16 compares the 2025 Opening Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour off-ramp queueing at study intersections in Hesperia and Rancho Cucamonga. In all cases the calculated 95th percentile queues are projected to fit within off-ramp storage without extending onto mainline lanes. For the southbound right turning movement at the I-15 SB ramps/Foothill Boulevard intersection, although the storage is exceeded for this single turning movement, the queueing spillback is projected to be accommodated on the off-ramp in the upstream adjacent lane in all peak hours.

Table 16. 2025 Opening Year Ramp Queuing Comparison (No Build vs. Build Conditions)

(No.) Intersection[a]	Movement	Available Storage (feet)	2025 No Build 95th Percentile Queue (feet)				2025 Build 95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour	AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
(2) Joshua Street/ I-15 SB ramp	SBL	1,495	14	8	7	8	21	10	10	10
	SBR	1,495	14	8	7	8	21	10	10	10
(13) I-15 SB ramps/ Foothill Blvd	SBL	1,780	228	142	392*	116	228	142	392*	116
	SBR	225	391*	268*	367*	164	398*	284*	389*	174
(14) I-15 NB ramps/ Foothill Blvd	NBL	1,700	209	344	158	490	209	344	158	490
	NBR	1,700	180	269	147	283	180	269	147	283
(15) I-15 SB ramps/ 4th Street	SBL	320	187	119	116	137	187	119	116	137
	SBT	1,640	136	148	123	202	136	148	123	202
	SBR	320	74	46	45	80	73	48	45	80
(16) I-15 NB ramps/ 4th Street	SBL	430	372*	155*	212*	91	372*	155*	212*	91
	SBT	430	380*	149	203*	96	380*	149	203*	96
	SBR	1,185	57	52	52	54	57	52	52	54
(5) Milliken Avenue/ SR 210 WB ramps	WBL	1,155	63	78	87*	74	64	84*	95*	74
	WBT	265	62	80	84	73	63	82	90*	76
	WBR	265	13	27	31	24	13	27	31	24
(6) Milliken Avenue/ SR 210 EB ramps	EBL	1,155	55	89*	57	64	55	89*	88	64
	EBT	485	45	79	68	58	46	81*	89*	58
	EBR	410	36	35	84*	48	37	40	78	49

(No.) Intersection[a]	Movement	Available Storage (feet)	2025 No Build 95th Percentile Queue (feet)				2025 Build 95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour	AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
(11) Milliken Avenue/ I-10 WB ramps	EBL	1,420	28	91	92	231*	39*	116	116	292*
	EBT	1,420	48	233*	343*	335*	48	233*	343*	335*
	EBR	300	0	0	53	51	0	0	53	51
(12) Milliken Avenue/ I-10 EB ramps	EBL	1,475	131	156	283	176	138	185	320	183
	EBR	510	45	48	46	51	45	48	46	46

Notes:

1. Available storage measures in feet from the stop bar to the beginning of a lane addition and/or ramp gore point.
2. Shaded cells represent locations where the 95th percentile queue length exceeds the available storage for the movement.
3. Queues reported are maximum after two cycles.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.
*95th percentile volume exceeds capacity, queue may be longer.

6.1.1.2. Local Transit

While the Project would increase transit demand at all stations, local transit is expected to be a small share of overall project demand. Local bus transit would potentially be a means of access to stations for commuters between the San Bernardino Valley and Hesperia. However, because the travel market between the San Bernardino Valley and the High Desert is currently served by bus transit, specifically VVTA Route 15, the overall miles traveled by bus may decrease as the Project attracts a share of that market, potentially resulting in a net reduction of bus operation and maintenance costs.

Hesperia Station

As there is no local transit that directly serves the site of the Hesperia station, the Project could create demand for local transit within the High Desert to the Hesperia station for commuters. As Routes 15 and 25 currently pass the station site, a stop could be added at the station with minimal impact to the operation of these routes. VVTA would make the final determination how to best serve this demand in collaboration with Brightline West. According to the mode split for the 2025 ridership forecasts for the Project, about 15 percent of commuters using the Hesperia station would access it by public bus. With a weekday PM peak hour of 130 total commuters getting off the train in Hesperia, this would amount to approximately 20 passengers using bus transit.

VVTA operates Route 15 with a 40-foot bus. According to the VVTA's Comprehensive Operational Analysis, all VVTA 40-foot buses have a capacity of 33 passengers. With an average ridership of about 11 passengers per hour (VVTA 2020), Route 15 buses have an average excess capacity of 22 passengers per hour, 2 more than the 20 forecasted bus transit users at the station were a bus to serve it. Equivalent data was not available for Route 25, as it was not in existence at the time of the Comprehensive Operational Analysis. However, because both Routes 15 and 25 operate at approximately 2-hour headways and along different routes, the hourly volume of passengers desiring to depart the station via bus would likely exceed the available bus capacity during any single hour, so the Project would have an adverse effect on local transit at the Hesperia station.

Rancho Cucamonga Station

The forecast mode split for ridership indicates that 15 percent of non-rail access travelers to and from Las Vegas would access the Rancho Cucamonga station by public bus and 34 percent of commuters between Rancho Cucamonga and Hesperia would access it by public bus. The forecast indicates that Fridays would have the highest ridership for all stations and types of service (commuter and long-distance). With 322 non-rail access long-distance travelers and 63 commuters arriving at the Rancho Cucamonga station during the Friday PM peak hour, this amounts to approximately 70 passengers transferring from bus to rail during the hour. (Only arriving passengers are analyzed because there would be more arriving than departing passengers and arriving and departing passengers would not be on the bus at the same time.) The Rancho Cucamonga station would be located in the middle of the West Valley Connector project, which will provide six articulated buses in each direction during peak hours, each with a capacity of 96 passengers, resulting in a capacity of 1,152 passengers per hour. As the forecast total daily ridership on the West Valley Connector project is 5,800 passengers along the entire 19-mile Phase 1 alignment, the West Valley Connector project will provide sufficient capacity to serve passengers boarding and alighting at the Rancho Cucamonga station on weekdays.

As a commuter rail service, the Rancho Cucamonga Metrolink station sees the least activity on Sundays. Currently the station is not served by local bus transit on Sundays because Omnitrans Route 82 operates a modified route on Sundays. The new long-distance market that the Project would create would slightly increase demand for public bus on Sundays. If the West Valley Connector project provides Sunday service, it could serve that demand. To meet demand for local bus service on Sundays, coordination would be required with SBCTA and Omnitrans concerning their plans for Sunday service on routes serving the station.

6.1.1.3. Regional Rail

As regional rail typically traverses longer distances more quickly than bus transit, Metrolink ridership is expected to increase under year 2025 Build conditions in response to the Project.

Hesperia Station

As no existing regional rail service exists at the proposed Hesperia station site, effects on regional rail are not anticipated at this location.

Rancho Cucamonga Station

The forecast mode split for ridership indicates that 23 percent of travelers to and from Las Vegas would access the Rancho Cucamonga station by regional rail, but no commuters between Rancho Cucamonga and Hesperia would access it by regional rail, resulting in approximately 96 passengers transferring between rail lines during the Friday PM peak hour. As of April 2022, the existing Rancho Cucamonga Metrolink station is served by six eastbound Metrolink trains from Los Angeles and two westbound trains from San Bernardino that originate between 3:57 p.m. and 5:57 p.m. (corresponding to the peak commute period of 4:00 p.m. to 6:00 p.m.) Each Metrolink train consists of six cars with a capacity of at least 120 passengers each, resulting in a minimum capacity of 720 passengers per train, or 2,880 passengers per hour at the station. In 2019, prior to the COVID-19 pandemic, when Metrolink was operating 38 weekday trains on the San Bernardino Line, the agency reported an average weekday ridership of 9,736 passengers on the line (SCRRA 2019), for an average of 256 passengers per train. Therefore, existing weekday Metrolink service is sufficient to accommodate the additional demand.

Forecast demand from travelers to and from Las Vegas for Metrolink service on Sunday afternoon is identical to Friday afternoon, but in the opposite direction. While Metrolink serves the Rancho Cucamonga Metrolink station on Sundays, service is less than it is on weekdays, and there is a 5-hour period in the late afternoon/early evening with only one train in each direction. Because Metrolink service does not allow for sufficient connections for Brightline West passengers, the Project would have an adverse effect on passengers who would utilize regional rail at the Rancho Cucamonga station. While planned SCORE improvements will likely not support increased weekday peak period service, Brightline West shall coordinate with SCRRA to provide additional Metrolink service on Sunday if necessary.

6.1.1.4. Active Transportation

As the Project is almost entirely in existing transportation rights-of-way not intended for bicycle or pedestrian use (such as the railroad and freeway), it is not anticipated to affect active transportation. While the expanded rail corridor may encroach on the north side of 8th Street in Rancho Cucamonga, the north side of 8th Street does not have a sidewalk. This segment of 8th Street is less than 1,500 feet long and terminates at Rochester Avenue, immediately west of I-15, and primarily serves large warehouses and industrial supply shops, making it unlikely to attract pedestrians or bicyclists. Additionally, the alignment would be on viaduct in this area, preventing any potential conflict between trains and pedestrians or bicyclists. As the railroad would be a sealed, grade-separated corridor, sidewalks and bike lanes of cross streets, such as Milliken Avenue, would not be affected.

The forecast mode split for ridership indicates none of the Project's riders would access the Rancho Cucamonga and Hesperia stations by walking or bicycling, and, thus, would not affect the existing active transportation network.

6.1.1.5. Parking

Hesperia Station

A parking facility is proposed for the Hesperia station on the south side of Joshua Street. This facility is proposed to be designed to accommodate 360 parking spaces. Based on the ridership estimates provided by Brightline West, by 2025 Opening Year, the number of daily departures at the Hesperia station is projected to be 573 from Monday-Thursday, 575 on Friday, 267 on Saturday, and 217 on Sunday. Based on an AVO of 1.18 for commuter trips, and a 70 percent mode share for self-drive and park, the 575 riders would result in 340 automobiles parking at the Hesperia station. Since all the riders accessing the Hesperia station are daily commuters, the number of vehicles that will potentially be parked overnight at the station is insignificant. Additionally, since some morning commuters would return to the station before evening travelers arrive at the station, the number of parking spaces planned at this station should be able to accommodate the highest demand.

Rancho Cucamonga Station

At the Rancho Cucamonga station, a parking structure is proposed to replace approximately two thirds of the existing surface parking on property owned by the City of Rancho Cucamonga at the existing Metrolink station, with a total capacity of 4,100 parking spaces, including 650 reserved for Metrolink passengers. All vehicles entering the parking structure would be required to have either a Metrolink or a Brightline West permit. Metrolink passengers would continue to purchase permits at the station or online. Brightline West passengers would purchase parking permits at the same time as they purchase their train tickets. Brightline West parking permits are anticipated to be electronic, either displayed on a smartphone or enforced by license plate recognition once the vehicle is inside the parking structure.

Based on the ridership estimates provided by Brightline West, by 2025 Opening Year, the capacity constrained number of daily passenger departures to Las Vegas from the Rancho Cucamonga station is projected to be 4,938 on Friday, followed by 4,225 on Saturday, 4,148 on

Sunday, and 3,851 on Thursday. Since all of these riders are destined for Las Vegas, it can be expected that the large majority of them would stay in Las Vegas for more than one day. The peak parking demand would be expected on Saturday, when few vehicles that parked on Friday will have departed, and more vehicles will arrive and need to park. The total combined ridership departing Rancho Cucamonga for Las Vegas on Friday and Saturday is forecast to be 9,163 passengers. Based on an AVO of 1.85 for leisure travelers, and a 66 percent mode share for self-drive and park, the 9,163 riders would result in approximately 3,269 automobiles parking at the Rancho Cucamonga station. In addition, on Friday, there would be 640 intercity rail passengers to Hesperia with an AVO of 1.18 and a 1 percent mode share for self-drive and park. These passengers would generate demand for an additional six parking spaces. Finally, there would be a requirement of 100 employee parking spaces and 650 parking spaces dedicated to Metrolink riders, bringing the total demand to 4,025 parking spaces. Since the parking facility is planned to be designed with 4,100 parking spaces, adequate parking will be available in the 2025 Opening Year.

6.1.1.6. Freeway Mainline

Based on the ridership estimates for the Project between Rancho Cucamonga and Hesperia (including passengers continuing to Las Vegas), Table 17 provides an estimate of the reduction in automobile volumes on I-15 between Rancho Cucamonga and Hesperia during peak hours with implementation of the Project. For the discussion of traffic volumes and VMT, passengers have been classified as either “long-distance” (traveling between Rancho Cucamonga and Las Vegas) or “commuters” (traveling between Rancho Cucamonga and Hesperia). The Project’s service would reduce demand on I-15 by up to 166 vehicles in the peak direction during the highest peak hour by the year 2025. These calculations take into account that 74.8 percent of the long-distance riders would be diverted from automobiles, and 90.1 percent of the commuters would be diverted from automobiles.

Table 17. 2025 Opening Year Calculation of Vehicles Removed from I-15 Under Build Conditions

	Ridership					Vehicles			
	Weekday		Friday			Weekday		Friday	
Trip Ends and Direction	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour	AVO	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
From Rancho Cucamonga to Las Vegas (NB)	62	200	81	241	2.5	25	80	32	96
From Las Vegas to Rancho Cucamonga (SB)	162	204	196	241	2.5	65	81	78	96
From Rancho Cucamonga to Hesperia (NB)	16	102	16	57	1.18	13	86	13	48
From Hesperia to Rancho Cucamonga (SB)	48	14	48	14	1.18	41	12	41	12
Total Vehicles Removed from I-15 NB						**38**	**166**	**46**	**145**

Trip Ends and Direction	Ridership				AVO	Vehicles			
	Weekday		Friday			Weekday		Friday	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Total Vehicles Removed from I-15 SB						**106**	**93**	**119**	**108**

6.1.1.7. Vehicle Miles Traveled

This section provides an analysis of the anticipated changes in VMT with the implementation of the Project in the 2025 Opening Year. The Project would result in a net reduction in annual VMT. As noted in Section 5.1.7, the VMT benefits of the Project would occur both within the project limits and between Victory Valley and Las Vegas.

The Project's effect on VMT is closely tied to that of the Victor Valley to Las Vegas project because many passengers using the Project's service would travel to Las Vegas. Therefore, the most straightforward way to calculate the Project's net effect on VMT is first to calculate the combined effect of both projects and then to subtract the effect of just the Victor Valley to Las Vegas project alone, which has previously been calculated (for year 2045) for the transportation analysis of the National Environmental Policy Act reevaluation of that project (FRA 2020).

The net change in VMT resulting from the two projects combined includes three components:

1. Reduction of VMT due to diversion of automobile trips to the projects
2. Addition of VMT due to induced demand (trips that would not have occurred without the projects)
3. Addition of VMT due to trips made by employees of both projects

Various assumptions went into calculating the net VMT reduction. All these assumptions are either documented or have been calculated from operating assumptions provided in *Brightline West Cajon Pass Project Operating Assumptions Memo* (Brightline West 2022). These are:

1. An AVO of 2.5 has been assumed for all long-distance auto trips due to diversion of automobiles due to rail. This AVO has been assumed based on a behavioral survey of travelers (between Las Vegas and Southern California) conducted by Steer Davies and Gleave between March and May 2016, as part of *High Desert Corridor: Investment Grade Ridership & Revenue Forecasts* (March 2017).
2. An AVO of 1.85 has been assumed for all long-distance auto trips due to induced demand.
3. An AVO of 1.18 has been assumed for all auto commuter and employee trips (diversion plus induced).
4. Of the total long-distance ridership, 74.8 percent of the riders would be diverted from automobiles, 15.3 percent of the riders would be diverted from air travel, and 9.9 percent of the riders would be because of induced demand.

5. The commuter ridership estimates include an assumption of induced demand of 9.9 percent.
6. Of the total long-distance trips, 73 percent of the trips are traveling between Rancho Cucamonga and Las Vegas and 27 percent are traveling between Victor Valley and Las Vegas.
7. At the Hesperia station, 15 percent of the riders are assumed to arrive by public transit or shuttle.
8. At the Rancho Cucamonga station, 11.5 percent of the long-distance riders are assumed to arrive by public transit or shuttle, and 34 percent of the commuters are assumed to arrive by public transit or shuttle.

The first component of the two projects' aggregate change to VMT is the reduction associated with diversion from automobiles to rail. The calculation of this component is shown in Table 18. As shown, the projects together would result in an annual reduction in VMT of 358,092,937 miles because of the diversion of automobile trips to the projects. As noted in the assumptions, 15.3 percent of the riders would be diverted from air travel. Diverted airport access trip are assumed to be equivalent to rail station access trips, and thus their net VMT change has not been included in this calculation. Vehicle travel to and from airports is assumed to be replaced by an equivalent amount of vehicle travel to and from rail stations.

Table 18. Aggregate Annual VMT Reduction from Diversion from Automobiles (2025 Opening Year)

Trip Ends	Driving Distance (miles)	Annual Ridership	Reduction in Passenger Miles Traveled by Auto	Average Vehicle Occupancy	VMT Reduction
Rancho Cucamonga to Las Vegas	220	3,080,140	677,630,787	2.5	271,052,315
Rancho Cucamonga to Hesperia	33	342,307	11,296,132	1.18	9,572,993
Victor Valley to Las Vegas	170	1,139,230	193,669,073	2.5	77,467,629
Total		**4,561,677**	**882,595,992**		**358,092,937**

Notes:

1. Annual ridership excludes induced travel shown in Table 19.
2. VMT is calculated as Passenger Miles Traveled divided by AVO.
3. Ridership estimates are from the Brightline West Cajon Pass Project Operating Assumptions Memo (Brightline West 2022).
4. Ridership and VMT for the Victor Valley to Las Vegas project are shown for informational purposes only.

The second component of the projects' change to VMT is the increase in VMT resulting from induced traffic of two types. With the added option of HSR transportation between Southern California and Las Vegas, some people who would not otherwise have traveled between the two areas would choose to do so. In addition, there would be some commuters who live in the High Desert and would commute to the San Bernardino Valley who would not do so without the option of HSR travel. Passengers making either type of trip would make automobile trips to and from the rail stations at either end of their trips. As noted in the assumptions 9.9 percent of total trips are assumed to consist of such induced travel.

An estimate of the increase in annual VMT associated with induced demand generated by the projects is shown in Table 19. The average driving distance noted in the table for long-distance travelers at Rancho Cucamonga station and Las Vegas station is consistent with the assumption in the ridership model. For the Hesperia station, the average commuter driving distance is based on distance to Victorville, which represents anticipated typical trip origin for commuters to the station. As shown, the projects together would result in an annual increase in VMT of 12,050,030 miles because of induced travel.

Table 19. Aggregate Annual VMT from Induced Travel (2025 Opening Year)

Trip Ends	Driving Distance (miles)	Annual Induced Auto Trips	Increase in Passenger Miles Traveled by Auto	Average Vehicle Occupancy	VMT Increase
Rancho Cucamonga to Las Vegas	35	360,866	12,630,310	1.85	6,827,195
Rancho Cucamonga to Hesperia	16	31,970	511,520	1.18	433,492
Victor Valley To Las Vegas	35	150,815	5,278,525	1.85	2,853,257
Rancho Cucamonga/Hesperia Station (access by transit)	-	52,534	0	0	0
Total		**543,651**	**18,420,355**		**10,113,944**

Notes:

1. Induced auto trips for trips starting or ending at Rancho Cucamonga do not include trips made by transit.
2. The total annual induced auto trips do not include the 52,534 trips that access the station by transit.
3. VMT is calculated as Passenger Miles Traveled divided by AVO.
4. Ridership estimates are from the Brightline West Cajon Pass Project Operating Assumptions Memo (Brightline West 2022).
5. Average driving distance to and from Victor Valley and Rancho Cucamonga stations is assumed to be 35 miles. To account for both trips ends, 35 miles has been used as the average driving distance for each one-way trip. Average driving distance to and from Hesperia and Rancho Cucamonga stations is assumed to be 8 miles, because those trips are made by commuters. To account for both trips ends, 16 miles has been used as the average driving distance for each one-way trip.
6. Ridership and VMT for the Victor Valley to Las Vegas project are shown for informational purposes only.

The final component of the projects' change to VMT is the increase resulting from trips made by employees of both projects:

183 employees (daily employees in 2025)
× 365 days/year
× 25 miles (assumed one-way average travel distance from home to work)
× 2 one-way trips/employee
÷ 1.18 passengers/vehicle (AVO for work commute trips)
≈ 2,830,297 miles (increase)

Accounting for all components of vehicular traffic, the two projects would result in a reduction in annual VMT of approximately 345 million miles. Although the previous study did not estimate the Opening Year 2025 reduction in VMT of the Victor Valley to Las Vegas project, that can be estimated based on the proportion of net reduction of the Project in Opening Year 2025 vs. Horizon Year 2045 (the Horizon Year 2045 net VMT reduction of the Project is provided in Section 6.1.2.7). Based on that proportional analysis, the VMT reduction in Opening Year 2025 of the Victor Valley to Las Vegas project alone would be approximately 252 million miles, and the reduction attributable to the Cajon Pass High-Speed Rail Project would be 93 million miles.

6.1.2. Horizon Year (2045) Effects

This section discusses the Project's effects under 2045 Horizon Year conditions.

6.1.2.1. Local Intersections

2045 Horizon Year Build intersection traffic volumes were developed by adding the estimated 2045 Horizon Year station trip generation to the 2045 Horizon Year No Build traffic projections. 2045 Horizon Year Build turning movement volumes for study intersections in Hesperia and Rancho Cucamonga are provided in Appendix D.

Table 20 summarizes the 2045 Horizon Year Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 21 summarizes existing weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga. Intersection LOS calculation worksheets are provided in Appendix E.

All of the study intersections in Hesperia are projected to operate at LOS D or better during the 2045 Horizon Year Build with the exceptions of the following intersections:

- US 395/Joshua Street (LOS F in the Friday PM peak hour)
- Joshua Street/Mariposa Road (LOS F in the weekday PM, Friday PM, and Sunday PM peak hours)

In Rancho Cucamonga, all study intersections are projected to operate at LOS D or better during the 2045 Horizon Year Build, with the exception of the following intersections:

- Milliken Avenue/Foothill Boulevard (LOS E in the weekday PM, Friday PM, and Sunday PM peak hours)
- Milliken Avenue/7th Street (LOS F in the weekday PM, Friday PM, and Sunday PM peak hours)
- Milliken Avenue/4th Street (LOS F in the weekday PM, Friday PM, and Sunday PM peak hours)
- Milliken Avenue/I-10 westbound ramps (LOS E in the weekday PM peak hour and LOS F in the Friday PM peak hour)

Table 20. City of Hesperia 2045 Horizon Year Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(1) US 395/ Joshua Street	Signal	2.75	C	50.5	D	239.4	F	52.5	D
(2) Joshua Street/ I-15 SB ramp	OWSC	12.3	B	18.8	C	22.2	C	18.5	C
(3) Joshua Street/ I-15 NB ramp	OWSC	8.8	A	9.7	A	11.0	B	9.2	A
(4) Joshua Street/ Mariposa Road	OWSC	15.8	C	276.4	F	259.2	F	113.0	F

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Hesperia's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 21. City of Rancho Cucamonga 2045 Horizon Year Build Intersection Level of Service

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	12.7	B	9.4	A	13.6	B	9.9	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	11.5	B	12.4	B	29.0	C	15.6	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	16.8	B	72.1	E	66.0	E	62.9	E
(8) Milliken Avenue/ Azusa Court	OWSC	14.6	B	15.2	C	17.8	C	15.4	C
(9) Milliken Avenue/ 7th Street	Signal	42.8	D	130.0	F	137.7	F	106.4	F
(10) Milliken Avenue/ 4th Street	Signal	41.5	D	118.1	F	212.1	F	203.5	F
(11) Milliken Avenue/ I-10 WB ramps	Signal	44.8	D	75.9	E	152.6	F	52.1	D
(12) Milliken Avenue/ I-10 EB ramps	Signal	17.5	B	21.3	C	34.9	C	21.2	C

(No.) Intersection[a]	Traffic Control	Weekday				Weekend			
		AM Peak Hour		PM Peak Hour		Friday PM Peak Hour		Sunday PM Peak Hour	
		Control Delay[b]	LOS	Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
(13) Foothill Boulevard/ I-15 SB ramps	Signal	18.0	B	20.1	C	32.1	C	11.3	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	8.0	A	46.3	D	5.6	A	24.7	C
(15) 4th Street/ I-15 SB ramps	Signal	40.6	D	29.4	C	33.1	C	42.4	D
(16) 4th Street/ I-15 NB ramps	Signal	51.2	D	27.5	C	33.3	C	38.7	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the Highway Capacity Manual, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Rancho Cucamonga's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 22 compares the 2045 Horizon Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Hesperia. Table 23 compares the 2045 Horizon Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour intersection LOS at study intersections in Rancho Cucamonga.

In Hesperia, for the 2045 Build weekday PM, Friday PM, and Sunday PM peak hours, the Project would contribute traffic to two intersections that are operating at LOS E or LOS F without the Project:

- US 395/Joshua Street (Friday PM peak hour where 98 project trips are added to this intersection)
- Joshua Street/Mariposa Road (weekday PM, Friday PM, and Sunday PM peak hours where between 19 and 94 project trips are added to this intersection)

In Rancho Cucamonga, for the 2045 Build weekday PM and Friday PM peak hours, the Project would contribute traffic to three intersections that are operating at LOS E or LOS F without the Project:

- Milliken Avenue/Foothill Boulevard (weekday PM, Friday PM, and Sunday PM peak hours where between 201 and 291 project trips are added to this intersection)
- Milliken Avenue/4th Street (weekday PM, Friday PM, and Sunday PM peak hours where between 535 and 771 project trips are added to this intersection)
- Milliken Avenue/I-10 westbound ramps (weekday PM and Friday PM peak hours where between 422 and 609 project trips are added to this intersection)

The addition of project traffic to the Hesperia and Rancho Cucamonga intersections do not cause intersections to degrade from an acceptable LOS D in the No Build conditions to a LOS E or LOS F in the weekday and weekend peak hour Build conditions, with the exception of the Milliken Avenue/7th Street intersection. This intersection is projected to degrade from an acceptable LOS A to LOS F in the Sunday PM peak hour and from an acceptable LOS B to LOS F in the weekday PM and Friday PM peak hours where the station adds between 643 and 926 vehicles to this intersection (depending on day and time period) as the primary access to the existing Metrolink and future proposed Brightline West station.

In summary, the addition of project traffic to the Hesperia and Rancho Cucamonga intersections does not cause intersections to degrade from an acceptable LOS D in the No Build conditions to LOS E or LOS F in the weekday and weekend peak hour Build conditions, with the exception of the Milliken Avenue/7th Street intersection. Based on the criteria listed in Section 4.1, there are no adverse effects at intersections under year 2045 conditions other than Milliken Avenue/7th Street. However, both in Hesperia and Rancho Cucamonga, the Project would contribute to the already unsatisfactory LOS conditions at five intersections. To mitigate these conditions, the Project shall comply with the San Bernardino County CMP policies to make fair-share contributions to regional traffic improvements identified in the latest Nexus Study (2018). The Project's fair-share contribution may be offset by the value of improvements that the Project would make at locations at which it is only partially responsible for the increased delay.

Table 24 compares the 2045 Horizon Year No Build and Build weekday AM and PM peak hour, Friday PM peak hour, and Sunday PM peak hour off-ramp queueing at study intersections in Hesperia and Rancho Cucamonga. In all cases the calculated 95th percentile queues are projected to extend within off-ramp storage without extending onto mainline lanes. For the southbound right turning movement at the I-15 SB ramps/Foothill Boulevard intersection, although the storage is exceeded for this single turning movement, the queueing spillback is projected to be accommodated in the upstream adjacent lane in all peak hours.

Table 22. City of Hesperia 2045 Horizon Year Intersection Level of Service Comparison (No Build vs. Build Conditions)

(No.) Intersection[a]	Traffic Control	No Build Weekday AM Peak Hour Control Delay[b]	LOS	No Build Weekday PM Peak Hour Control Delay	LOS	Build Weekday AM Peak Hour Control Delay	LOS	Build Weekday PM Peak Hour Control Delay	LOS	No Build Weekend Friday PM Peak Hour Control Delay	LOS	No Build Weekend Sunday PM Peak Hour Control Delay	LOS	Build Weekend Friday PM Peak Hour Control Delay	LOS	Build Weekend Sunday PM Peak Hour Control Delay	LOS
(1) US 395/ Joshua Street	Signal	21.6	C	43.0	D	27.5	C	50.5	D	234.9	F	46.3	D	239.4	F	52.5	D
(2) Joshua Street/ I-15 SB ramp	OWSC	10.0	B	14.5	B	12.3	B	18.8	C	16.2	C	17.5	C	22.2	C	18.5	C
(3) Joshua Street/ I-15 NB ramp	OWSC	8.0	A	9.1	A	8.8	A	9.7	A	10.2	B	9.1	A	11.0	B	9.2	A
(4) Joshua Street/ Mariposa Road	OWSC	12.6	B	113.2	F	15.8	C	276.4	F	132.7	F	86.5	F	259.2	F	113.0	F

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Hesperia's policy of LOS D.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 23. City of Rancho Cucamonga 2045 Horizon Year Intersection Level of Service Comparison (No Build vs. Build)

(No.) Intersection[a]	Traffic Control	No Build Weekday AM Peak Hour Control Delay[b]	No Build Weekday AM Peak Hour LOS	No Build Weekday PM Peak Hour Control Delay	No Build Weekday PM Peak Hour LOS	Build Weekday AM Peak Hour Control Delay	Build Weekday AM Peak Hour LOS	Build Weekday PM Peak Hour Control Delay	Build Weekday PM Peak Hour LOS	No Build Weekend Friday PM Peak Hour Control Delay	No Build Weekend Friday PM Peak Hour LOS	No Build Weekend Sunday PM Peak Hour Control Delay	No Build Weekend Sunday PM Peak Hour LOS	Build Weekend Friday PM Peak Hour Control Delay	Build Weekend Friday PM Peak Hour LOS	Build Weekend Sunday PM Peak Hour Control Delay	Build Weekend Sunday PM Peak Hour LOS
(5) Milliken Avenue/ SR 210 WB ramps	Signal	12.2	B	8.9	A	12.7	B	9.4	A	12.8	B	9.3	A	13.6	B	9.9	A
(6) Milliken Avenue/ SR 210 EB ramps	Signal	11.3	B	11.0	B	11.5	B	12.4	B	28.7	C	14.8	B	29.0	C	15.6	B
(7) Milliken Avenue/ Foothill Boulevard	Signal	16.0	B	63.5	E	16.8	B	72.1	E	63.8	E	59.4	E	66.0	E	62.9	E
(8) Milliken Avenue/ Azusa Court	OWSC	12.1	B	12.7	B	14.6	B	15.2	C	13.2	B	11.6	B	17.8	C	15.4	C
(9) Milliken Avenue/ 7th Street	Signal	16.9	B	12.0	B	42.8	D	**130.0**	**F**	13.8	B	9.4	A	**137.7**	**F**	**106.4**	**F**
(10) Milliken Avenue/ 4th Street	Signal	40.6	D	112.4	F	41.5	D	118.1	F	208.2	F	216.9	F	212.1	F	203.5	F
(11) Milliken Avenue/ I-10 WB ramps	Signal	44.1	D	77.1	E	44.8	D	75.9	E	118.3	F	54.8	D	152.6	F	52.1	D

(No.) Intersection[a]	Traffic Control	No Build Weekday AM Peak Hour Control Delay[b]	No Build Weekday AM Peak Hour LOS	No Build Weekday PM Peak Hour Control Delay	No Build Weekday PM Peak Hour LOS	Build Weekday AM Peak Hour Control Delay	Build Weekday AM Peak Hour LOS	Build Weekday PM Peak Hour Control Delay	Build Weekday PM Peak Hour LOS	No Build Weekend Friday PM Peak Hour Control Delay	No Build Weekend Friday PM Peak Hour LOS	No Build Weekend Sunday PM Peak Hour Control Delay	No Build Weekend Sunday PM Peak Hour LOS	Build Weekend Friday PM Peak Hour Control Delay	Build Weekend Friday PM Peak Hour LOS	Build Weekend Sunday PM Peak Hour Control Delay	Build Weekend Sunday PM Peak Hour LOS
(12) Milliken Avenue/ I-10 EB ramps	Signal	17.3	B	19.4	B	17.5	B	21.3	C	23.6	C	19.2	B	34.9	C	21.2	C
(13) Foothill Boulevard/ I-15 SB ramps	Signal	17.8	B	17.6	B	18.0	B	20.1	C	25.0	C	10.4	B	32.1	C	11.3	B
(14) Foothill Boulevard/ I-15 NB ramps	Signal	8.0	A	46.1	D	8.0	A	46.3	D	5.6	A	24.6	C	5.6	A	24.7	C
(15) 4th Street/ I-15 SB ramps	Signal	35.3	D	29.5	C	40.6	D	29.4	C	30.8	C	42.2	D	33.1	C	42.4	D
(16) 4th Street/ I-15 NB ramps	Signal	44.6	D	27.4	C	51.2	D	27.5	C	33.2	C	38.6	D	33.3	C	38.7	D

Notes:

1. Delay and LOS are calculated using the operations methodology of the *Highway Capacity Manual*, 6th Edition (TRB 2016).
2. Shaded cells represent locations that exceed Rancho Cucamonga's policy of LOS D.
3. Bold text cells represent locations where a significant impact has been identified.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

[b] Control delay in seconds per vehicle

Table 24. 2045 Horizon Year Ramp Queueing Comparison (No Build vs. Build Conditions)

(No.) Intersection[a]	Movement	Available Storage (feet)	2045 No Build 95th Percentile Queue (feet)				2045 Build 95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour	AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
(2) Joshua Street/ I-15 SB ramp	SBL	1,495	11	46	44	74	31	70	77	82
	SBR	1,495	11	46	44	74	31	70	77	82
(13) I-15 SB ramps/ Foothill Blvd	SBL	1,780	244	244	484*	152	249	244	532*	152
	SBR	225	217	370*	408*	164	224	431*	457*	187
(14) I-15 NB ramps/ Foothill Blvd	NBL	1,700	86	848*	64	475	86	848*	64	475
	NBR	1,700	75	794*	55	389	75	794*	55	389
(15) I-15 SB ramps/ 4th Street	SBL	320	195	139	154	169	199	141	154	169
	SBT	1,640	122	123	128	214	119	123	128	214
	SBR	320	78	57	78	89	75	61	79	89
(16) I-15 NB ramps/ 4th Street	SBL	430	289*	141	195*	74	289*	141	195*	74
	SBT	430	296*	141	183*	75	296*	141	183*	75
	SBR	1,185	91	54	93	57	89	55	121	57
(5) Milliken Avenue/ SR 210 WB ramps	WBL	1,155	71	74	52	74	71	78	57	78
	WBT	265	59	75	62	76	61	80	70	79
	WBR	265	30	30	201	26	30	30	201	26
(6) Milliken Avenue/ SR 210 EB ramps	EBL	1,155	88	118*	270	124*	91	118*	270	124*
	EBT	485	79	115*	272	62	76	119*	279	64
	EBR	410	38	48	55	47	38	52	60	50
(11) Milliken Avenue/ I-10 WB ramps	EBL	1,420	35	71	411*	107	50	117	547*	158*
	EBT	1,420	59	297*	451*	446*	59	297*	427*	446*

(No.) Intersection[a]	Movement	Available Storage (feet)	2045 No Build 95th Percentile Queue (feet)				2045 Build 95th Percentile Queue (feet)			
			AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour	AM Peak Hour	PM Peak Hour	Friday PM Peak Hour	Sunday PM Peak Hour
	EBR	300	0	0	48	51	0	0	47	51
(12) Milliken Avenue/ I-10 EB ramps	EBL	1,475	147	155	452	105	157	213	581	136
	EBR	510	102	41	6	38	96	41	6	34

Notes:

4. Available storage measures in feet from the stop bar to the beginning of a lane addition and/or ramp gore point.
5. Shaded cells represent locations where the 95th percentile queue length exceeds the available storage for the movement.
6. Queues reported are maximum after two cycles.

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

* 95th percentile volume exceeds capacity; queue may be longer.

6.1.2.2. Local Transit

Under year 2045 conditions, the Project is expected to increase transit demand at all stations, although local transit is expected to be a small share of overall project demand.

Hesperia Station

As there is no local transit that directly serves the site of the Hesperia station, the Project could create demand for local transit within the High Desert to the Hesperia station for commuters. As Routes 15 and 25 currently pass the station site, a stop could be added at the station with minimal impact to the operation of these routes. VVTA would make the final determination how to best serve this demand in collaboration with Brightline West. According to the mode split for the 2045 ridership forecasts for the Project, about 15 percent of commuters using the Hesperia station would access it by public bus. With a weekday PM peak hour of 260 total commuters getting off the train in Hesperia, this would amount to approximately 39 passengers using bus transit.

VVTA operates Route 15 with a 40-foot bus. According to the VVTA's Comprehensive Operational Analysis, all VVTA 40-foot buses have a capacity of 33 passengers. In 2019, Route 15 buses had an average ridership of about 11 passengers per hour (VVTA 2020). Based on growth forecasts in the 2020-2045 RTP/SCS, population in Victorville is anticipated to increase by 52 percent between 2019 and 2045; therefore, average ridership could be expected to increase to 17 passengers per bus. Equivalent data were not available for Route 25, as it was not in existence at the time of the Comprehensive Operational Analysis. However, since both Route 15 and Route 25 operate at approximately 2-hour headways, and the hourly volume of passengers desiring to depart the station via bus would exceed the capacity of a single bus, the Project would have an adverse effect on local transit at the Hesperia station.

Rancho Cucamonga Station

The forecast mode split for ridership indicates that 15 percent of non-rail access travelers to and from Las Vegas would access the Rancho Cucamonga station by public bus and 34 percent of commuters between Rancho Cucamonga and Hesperia would access it by public bus. The forecast indicates that Fridays would have the highest ridership for all stations and types of service (commuter and long-distance). With 968 non rail access long-distance travelers and 212 commuters arriving at the Rancho Cucamonga station during the Friday PM peak hour, this amounts to approximately 217 passengers transferring from bus to rail during the hour. Only arriving passengers are analyzed because there would be more arriving than departing passengers and arriving and departing passengers would not be on the same buses.

The proposed Rancho Cucamonga station would be located in the middle of the West Valley Connector project, which will provide six articulated buses in each direction during peak hours, each with a capacity of 96 passengers, resulting in a capacity of 1,152 passengers per hour. As the forecast total daily ridership on the West Valley Connector project in 2040 is 10,170 passengers *along the entire 35-mile alignment*, the West Valley Connector project will provide more than enough capacity to serve passengers boarding and alighting at the Rancho Cucamonga station on weekdays.

As a commuter rail service, the Rancho Cucamonga Metrolink station sees the least activity on Sundays. Currently the station is not served by local bus transit on Sundays, as Omnitrans

Route 82 operates a modified route on Sundays. The new long-distance market that the Project would create would slightly increase demand for public bus on Sundays. If the West Valley Connector project provides Sunday service, it could serve that demand. Coordination would be required with SBCTA and Omnitrans to understand their plans for Sunday service on routes serving the station in order to meet demand for local bus service on Sunday.

6.1.2.3. Regional Rail

Under year 2045 Build conditions ridership on Metrolink is expected to increase in response to the Project.

Hesperia Station

As there is no existing regional rail service at the proposed Hesperia station site, effects on regional rail are not anticipated at this location.

Rancho Cucamonga Station

The forecast mode split for ridership indicates that 23 percent of travelers to and from Las Vegas would access the Rancho Cucamonga station by regional rail, but no commuters between Rancho Cucamonga and Hesperia would access it by regional rail, resulting in approximately 289 passengers transferring between rail lines during the Friday PM peak hour. Even with SCORE improvements, in the absence of additional operating funds, the Rancho Cucamonga station in 2045 will likely still be served by four Metrolink trains (three eastbound, one westbound) that are suitably timed for Brightline West departures during the 4:00 p.m. to 5:00 p.m. and 5:00 p.m. to 6:00 p.m. hours. Each Metrolink train consists of six cars with a capacity of at least 120 passengers each, resulting in a minimum capacity of 720 passengers per train, or 2,880 passengers per hour at the station. Metrolink's 10-Year Strategic Plan (SCRRA 2015) forecasts approximately 13 percent growth per decade on the San Bernardino Line (although ridership actually declined from 2015 to 2019 per National Transit Database data), which would result in approximately 14,000 passengers per day on the San Bernardino Line—still well below the capacity of the line. Therefore, the expected weekday Metrolink service is sufficient to accommodate the additional demand.

Forecast demand from travelers to and from Las Vegas for Metrolink service on Sunday afternoon is identical to Friday afternoon, but in the opposite direction. While Metrolink serves the Rancho Cucamonga Metrolink station on Sundays, service is less than on weekdays, and there is a 5-hour period in the late afternoon/early evening with only one train in each direction. Because Metrolink service does not allow for sufficient connections for Brightline West passengers, the Project would have an adverse effect on passengers who would utilize regional rail at the Rancho Cucamonga station. While planned SCORE improvements will likely not support increased weekday peak period service, Brightline West shall coordinate with SCRRA to provide additional Metrolink service on Sunday if necessary.

6.1.2.4. Active Transportation

As the Project is almost entirely in existing transportation rights-of-way not intended for bicycle or pedestrian use (such as the railroad and freeway), it is not anticipated to affect active transportation.

6.1.2.5. Parking

Hesperia Station

A parking facility is proposed for the Hesperia station on the south side of Joshua Street. This facility is proposed to be designed to accommodate 360 parking spaces. Based on the ridership estimates provided by Brightline West, by year 2045, the number of daily departures at the Hesperia station is projected to be 1,252 from Monday-Thursday, 1,260 on Friday, 534 on Saturday, and 334 on Sunday.

Of the 1,260 riders projected to depart daily from Hesperia, almost 1,012 riders would depart in the morning (2:00 a.m. until 4:00 p.m.). With the assumption that few daytime commuters would return to the station before evening travelers arrive at the station, the parking facility needs to accommodate at least 1,012 commuters.

Based on an AVO of 1.18 for commuter trips and a 70 percent mode share for self-drive and park, the 1,012 riders would result in 600 automobiles parking at the Hesperia station. Since the parking facility is designed for only 360 parking spaces, mitigation measures would be required to accommodate and manage parking demand at this station.

Rancho Cucamonga Station

At the Rancho Cucamonga station, a parking structure is proposed on property owned by the City of Rancho Cucamonga at the existing Metrolink station, with a total capacity of 4,100 parking spaces, including 650 reserved for Metrolink passengers. Access would remain from Azusa Court.

Based on the ridership estimates provided by Brightline West, by year 2045, the maximum number of daily departures to Las Vegas from the Rancho Cucamonga station is projected to be 13,499 on Friday, followed by 8,799 on Sunday, 8,657 on Saturday, and 7,653 on Thursday. Since all of these riders are destined for Las Vegas, it can be expected that the large majority of them would stay in Las Vegas for more than one day. The peak parking demand would be expected on Saturday, when few vehicles that parked on Friday will have departed, and more vehicles will arrive and need to park. The total combined ridership departing Rancho Cucamonga for Las Vegas on Friday and Saturday is forecast to be approximately 22,156 passengers. Based on an AVO of 1.85 for leisure travelers, and a 66 percent mode share for self-drive and park, the 22,156 riders would result in approximately 7,904 automobiles parking at the Rancho Cucamonga station. In addition, on Friday, there would be 1,445 intercity rail passengers to Hesperia. With an AVO of 1.18 and a 1 percent mode share for self-drive and park, these passengers would generate demand for an additional 12 parking spaces. Finally, there would a requirement of 100 employee parking spaces and 650 parking spaces dedicated to Metrolink riders, bringing the total demand to 8,654 parking spaces. Since the parking facility is designed for only 4,100 parking spaces, mitigation measures would be required to accommodate and manage parking demand at this station.

Total daily ridership forecasts in 2045 for Monday to Thursday range from 6,106 to 7,653 passenger departures to Las Vegas from the Rancho Cucamonga station. This would result in a demand for 2,178 to 2,730 parking spaces, based on an AVO of 1.85 for leisure travelers and a 66 percent mode share for self-drive and park. Since most trips to Las Vegas will include at least one overnight stay, the proposed parking facility would not be able to accommodate the demand generated by any two consecutive days' departures for Las Vegas. Therefore, mitigation measures would be required to accommodate and manage weekday parking demand at this station.

6.1.2.6. *Freeway Mainline*

Based on the ridership estimates for the Project between Rancho Cucamonga and Hesperia (including passengers continuing to Las Vegas), Table 25 provides an estimate of the reduction in automobile volumes on I-15 between Rancho Cucamonga and Hesperia during peak hours with implementation of the Project.

The Project's service would reduce demand on I-15 by up to 452 vehicles in the peak direction during the highest peak hour by the year 2045. These calculations take into account that 74.8 percent of the long-distance riders would be diverted from automobiles, and 90.1 percent of the commuters would be diverted from automobiles.

Table 25. Year 2045 Calculation of Vehicles Removed from I-15 Under Build Conditions

Trip Ends and Direction	Ridership				AVO	Vehicles			
	Weekday		Friday			Weekday		Friday	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
From Rancho Cucamonga to Las Vegas (NB)	115	371	244	724	2.5	46	148	97	290
From Las Vegas to Rancho Cucamonga (SB)	300	378	363	524	2.5	120	151	145	210
From Rancho Cucamonga to Hesperia (NB)	35	207	36	191	1.18	30	176	30	162
From Hesperia to Rancho Cucamonga (SB)	136	32	137	32	1.18	115	27	116	27
Total Vehicles Removed from I-15 (NB)						**76**	**324**	**128**	**452**
Total Vehicles Removed from I-15 (SB)						**235**	**178**	**261**	**237**

6.1.2.7. *Vehicle Miles Traveled*

This section provides an analysis of the anticipated changes in VMT with the implementation of the Project in the 2045 Horizon Year. The Project would result in a net reduction in annual VMT. All the assumptions described in Section 6.1.1.7 have also been applied for Horizon Year 2045 VMT analysis.

As described earlier, the first component of the projects' change to VMT is the reduction associated with diversion from automobiles to rail. The calculation of this component is shown in Table 26. As shown, the projects together would result in an annual reduction in VMT of 731,043,226 miles because of the diversion of automobile trips to the projects.

Table 26. Aggregate Annual VMT Reduction from Diversion from Automobiles (2045)

Trip Ends	Driving Distance (miles)	Annual Ridership	Reduction in Passenger Miles Traveled by Auto	Average Vehicle Occupancy	VMT Reduction
Rancho Cucamonga to Las Vegas	220	6,284,476	1,382,584,665	2.5	553,033,866
Rancho Cucamonga to Hesperia	33	713,381	23,541,578	1.18	19,950,490
Victor Valley to Las Vegas	170	2,324,395	395,147,174	2.5	158,058,870
Total		**9,322,252**	**1,801,273,417**		**731,043,226**

Notes:

1. Annual ridership excludes induced travel shown in Table 27.
2. VMT is calculated as Passenger Miles Traveled divided by AVO.
3. Ridership estimates are from the Brightline West Cajon Pass Project Operating Assumptions Memo (Brightline West 2022).
4. Ridership and VMT for the Victor Valley to Las Vegas project are shown for informational purposes only.

The second component of the projects' change to VMT is the increase in VMT resulting from induced traffic. An estimate of the increase in annual VMT associated with induced demand generated by the projects is shown in Table 27. As shown, the projects together would result in an annual increase in VMT of 24,604,886 miles because of induced travel.

Table 27. Aggregate Annual VMT from Induced Travel (2045)

Trip Ends	Driving Distance (miles)	Annual Induced Auto Trips	Increase in Passenger Miles Traveled by Auto	Average Vehicle Occupancy	VMT Increase
Rancho Cucamonga to Las Vegas	35	736,283	25,769,905	1.85	13,929,678
Rancho Cucamonga to Hesperia	16	66,627	1,066,032	1.18	903,417
Victor Valley to Las Vegas	35	307,710	10,769,850	1.85	5,821,541
Rancho Cucamonga/Hesperia Station (access by transit)	-	107,433	0	0	0
Total		**1,110,620**	**37,605,787**		**20,654,636**

Notes:

1. Induced auto trips for trips starting or ending at Rancho Cucamonga do not include trips made by transit.
2. The total annual induced auto trips do not include the 107,433 trips that access the station by transit
3. VMT is calculated as Passenger Miles Traveled divided by AVO.
4. Ridership estimates are from the Brightline West Cajon Pass Project Operating Assumptions Memo (Brightline West 2022).
5. Average driving distance to and from Victor Valley and Rancho Cucamonga stations is assumed to be 35 miles. To account for both trips ends, 35 miles has been used as the average driving distance for each one-way trip. Average driving distance to and from Hesperia and Rancho Cucamonga stations is assumed to be 8 miles, because those trips are made by commuters. To account for both trips ends, 16 miles has been used as the average driving distance for each one-way trip.
6. Ridership and VMT for the Victor Valley to Las Vegas project are shown for informational purposes only.

The final component of the projects' change to VMT is the increase resulting from trips made by employees of both projects:

1,430 employees (daily employees in 2045)
× 365 days/year
× 25 miles (assumed one-way average travel distance from home to work)
× 2 one-way trips/employee
÷ 1.18 passengers/vehicle (AVO for work commute trips)
≈ 22,116,525 miles (increase)

Accounting for all components of vehicular traffic, the two projects would result in a reduction in annual VMT of approximately 688 million miles. Since the VMT reduction of the Victor Valley to Las Vegas project alone would be approximately 502 million miles, the reduction attributable to the Cajon Pass High-Speed Rail Project is 186 million miles.

6.2. Avoidance, Minimization, and/or Mitigation Measures

6.2.1. Local Intersections

6.2.1.1. Intersection Mitigations Under 2025 Opening Year Build Conditions

The Project would not result in any adverse effects on the study area intersections under 2025 Opening Year conditions. Therefore, no mitigation is required.

6.2.1.2. Intersection Mitigations Under 2045 Horizon Year Build Conditions

During project design, Brightline West shall coordinate with SBCTA, Caltrans, Rancho Cucamonga, and Hesperia to incorporate intersection improvements to lessen or avoid at effects at local intersections to the extent feasible, including optimizing signal timing to reflect changes in traffic flows in station areas. The analysis identified one intersection that would be adversely affected by the Project, the intersection of Milliken Avenue/7th Street. The addition of project traffic is projected to cause the intersection of Milliken Avenue/7th Street to degrade from LOS D or better to an unacceptable LOS E or F. The following recommended feasible mitigation measures would eliminate the adverse effect at the intersection.

- Modify the intersection of Milliken Avenue/Azusa Court (located about 680 feet north of 7th Street) to permit left turns into Azusa Court from northbound Milliken Avenue. This would require modification of the existing 14-foot-wide, raised median to include an uncontrolled permissive left-turn lane, approximately 150 feet long, plus a 90-foot-long transition. A 35 percent diversion of left turns to Milliken Avenue/Azusa Court from Milliken Avenue/7th Street is projected for balanced traffic operations at both ingress intersections.
- A focused engineering study is recommended to assess the intersection geometrics and ensure a safe ingress to the proposed station via the Milliken Avenue/Azusa Court.

6.2.1.3. Project Fair Share Contribution Under 2045 Horizon Year Build Conditions

Table 28 presents the Project’s year 2045 contribution to total traffic using intersections that are projected to operate at LOS E or LOS F under No Build conditions, but at which the Project would not have an adverse effect. The Project shall comply with the San Bernardino County CMP policies to make fair-share contributions to regional traffic improvements identified in the latest Nexus Study (2018). The Project’s fair-share contribution may be offset by the value of improvements that the Project would make at locations at which it is only partially responsible for the increased delay.

Table 28. Project Fair Share Contribution to Intersections Operating at LOS E or F in No Build Condition

(No.) Intersection[a]	Peak Hour	Fair Share Computation Variables			
		A (Existing Traffic Volumes)	B (Future Year 2045 Build Traffic Volumes)	C (Future Year 2045 Project Traffic Volumes)	D (Fair Share Percentage) = C/(B-A)
(1) US 395/Joshua Street	Friday PM	2,590	4,538	98	5.0%
(4) Joshua Street/ Mariposa Road	PM	231	1,167	94	10.0%
	Friday PM	286	1,285	89	8.9%
	Sunday PM	257	1,068	19	2.3%
(7) Milliken Avenue/ Foothill Boulevard	PM	4,139	5,145	201	20.0%
	Friday PM	4,937	6,158	291	23.8%
	Sunday PM	4,043	5,046	247	24.6%
(10) Milliken Avenue/ 4th Street	PM	3,730	5,844	535	25.3%
	Friday PM	5,163	9,157	771	19.3%
	Sunday PM	3,126	5,117	659	33.1%
(11) Milliken Avenue/ I-10 WB ramps	PM	3,680	5,443	422	23.9%
	Friday PM	3,766	7,235	609	17.6%

[a] (No.) Intersection corresponds with what is shown on Figures 2 and 3.

6.2.2. Local Transit

The effect on local transit at the Hesperia station could be mitigated by adding a transit stop at the Hesperia station to be served by routes 15 and 25 with minimal effect on the operation of these routes and by increasing service on these routes or operating additional routes during hours of peak demand. Therefore, Brightline West shall coordinate with the VVTA and SBCTA to best serve the needs of transit users at the Hesperia station without adversely affecting other transit services. Such coordination shall include a focus on increasing weekday peak period service at the Hesperia station.

Brightline West shall coordinate with SBCTA and Omnitrans to provide sufficient bus service to serve Brightline West passengers at the Rancho Cucamonga station on Sundays.

In addition, Brightline West shall coordinate with Omnitrans to monitor load factors and the number of Brightline West passengers on Omnitrans buses serving the Rancho Cucamonga station. If necessary, Brightline West shall coordinate with Omnitrans to provide additional Omnitrans service during the applicable time periods.

6.2.3. Regional Rail

As no regional rail service is proposed at the Hesperia station site, effects on regional rail are not anticipated at this location.

At the Rancho Cucamonga station, the Project would have an adverse effect on passengers utilizing regional rail on Sunday, when there is a 5-hour period in the late afternoon/early evening with only one train in each direction. Brightline West shall coordinate with SBCTA and SCRRA to provide additional Metrolink service sufficient to serve Brightline West passengers on Sundays.

In addition, Brightline West shall coordinate with SCRRA to monitor load factors and the number of Brightline West passengers on Metrolink trains serving the Rancho Cucamonga station on weekdays, Saturdays, and Sundays. If necessary, Brightline West shall coordinate with SCRRA to provide additional Metrolink service during the applicable time periods.

6.2.4. Active Transportation

Because the Project would be almost entirely in existing railroad and freeway rights-of-way not intended for bicycle or pedestrian use, it is not anticipated to affect active transportation. Hence, no mitigation measures are required.

6.2.5. Parking

As ridership and parking demand increase, the initial parking supply will not be sufficient to satisfy anticipated demand at either the Rancho Cucamonga or Hesperia stations.

6.2.5.1. Parking Mitigations at the Hesperia Station

Commencing with the opening of the Project, Brightline West shall monitor parking occupancy (occupied spaces as a share of total spaces) at the Hesperia station with sufficient detail to identify the hour during which the peak occupancy occurs each day and the percentage of parking spaces occupied during that hour. Brightline West shall implement a parking demand management plan that includes one or more of the following elements:

- Providing discounted fares for Brightline West passengers who arrive at the station by bus
- Directly subsidizing transit operators to provide reduced transit fares for Brightline West passengers
- Directly subsidizing bus transit operators to provide additional transit service to the station during the peak arrival and departure times of Brightline West passengers
- Working with the City of Hesperia to institute a neighborhood parking protection plan for existing or future neighborhoods near the station, including parking policies such as a residential permit parking program and/or time limits to encourage turnover
- Constructing additional parking facilities or expanding existing parking facilities
- Providing commuter service between the Victor Valley station and Rancho Cucamonga to provide an additional location to serve passengers from the area

If any element of the parking demand management plan requires environmental review, Brightline West shall implement other elements sufficient to manage parking demand until the environmental review has been completed.

If, after implementation of the parking demand management plan, additional parking needs are still necessary, Brightline West shall implement additional parking demand management measures from the list above.

6.2.5.2. Parking Mitigations at the Rancho Cucamonga Station

Prior to the opening of the Project, Brightline West shall prepare draft agreements with one or more off-site parking facilities within 5 miles of the Rancho Cucamonga station for the use of their parking by Brightline West passengers.

Commencing with the opening of the Project and annually thereafter, Brightline West shall prepare a parking demand management plan that includes the following:

- Monitoring parking occupancy (occupied spaces as a share of total spaces) at the Rancho Cucamonga station with sufficient detail to identify the hour during which the peak occupancy occurs each day and the percentage of parking spaces occupied by vehicles with Metrolink and Brightline West parking permits during that hour.
- Forecasts of parking demand for the next 5 years
- Measures that Brightline West will implement to accommodate anticipated parking demand, which may include one or more of the following elements:

– Providing discounted fares for Brightline West passengers who arrive at the station by rail or bus transit

– Directly subsidizing SCRRA or bus transit operators to provide reduced transit fares for Brightline West passengers

– Directly subsidizing bus transit operators to provide additional transit service to the station during the peak weekday arrival and departure times of Brightline West passengers.

– Directly subsidizing SCRRA or bus transit operators to provide additional transit service to the station on Sunday afternoons, as the lack of Sunday service to return home may discourage passengers from using transit to access the station on other days

– Providing off-site parking at existing underutilized parking facilities within 5 miles of the station, including a free shuttle for passengers who park at an off-site parking facility, and identifying any additional off-site parking facilities that are anticipated to be required within the next five years based on ridership forecasts.

– Implementing a differential charge for on-site and off-site parking to match the demand for each type of parking to the supply.

– Working with the City of Rancho Cucamonga to institute a neighborhood parking protection plan for existing or future neighborhoods near the station, including parking policies such as a residential permit parking program and/or time limits to encourage turnover

– Expanding existing parking facilities or constructing additional parking facilities on City-owned property adjacent to the station

If any element of the parking demand management plan requires environmental review, Brightline West shall implement sufficient elements not requiring such review until the review has been completed.

If, after implementation of the parking demand management plan, additional parking needs are still necessary, Brightline West shall implement additional parking demand management measures from the list above.

6.2.6. Freeway Mainline

Because the Project would have a beneficial effect (reduction) on total freeway mainline traffic volumes, no mitigation measures are required.

6.2.7. Vehicle Miles Traveled

The Project would have a beneficial effect (reduction) on VMT. Therefore, no mitigation measures are required.

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