C

Attachment C

Baseline Conditions Report for Focused Hot Spot Areas

Table of Contents

List of Figures

List of Tables

1.0 Executive Summary

Purpose of this Study

Metro received a 2018 Transit and Intercity Rail Capital Program (TIRCP) grant award of $1.08B from Caltrans for new transit capital improvements and the development of regional rail network integration. Metro received $7M of TIRCP funding for "Network Integration" to implement features of the *2018 California State Rail Plan*, aiming to create a seamless and safe travel experience across rail and public transit in California.

In August 2021, Metro began preparing a Los Angeles County Rail Network Integration Study (Study) for integrating Metro's existing and planned transit corridors with SCRRA/Metrolink's programs and the anticipated California High-Speed Rail (CAHSR) project investments.

The Study will:

- Establish **baseline understanding** of needs and priorities for network integration
- Identify policy recommendations, infrastructure improvements and operational enhancements **for targeted rail station locations with potential high intermodal transfers**
- Connect to **existing rail corridors** such as Los Angeles San Diego (LOSSAN) corridor and other corridors
- Explore opportunities for new express transit services leveraging HOV/Express Lanes (e.g., FlyAway).

Metro has embarked on several network integration studies, including Link Union Station, the Metrolink San Bernardino Line/L Line (Gold) Study, and the High Desert Intercity Rail Corridor and Service Development Plan.

The Rail Network Integration Study will focus on three regional hubs with the most significant opportunities for transfers between the state and regional rail systems outside of DTLA, including:

- Van Nuys
- Burbank (Burbank Airport North, Burbank Airport South, and Downtown Burbank)
- Norwalk (C Line terminus and Metrolink Norwalk/Santa Fe Springs Station)

The Study areas are highlighted in **Figure 1**.

Existing community profiles within a 1-mile buffer of the three study locations are estimated as follows:

- Metrolink Norwalk Station Areas (includes two stations): 91% people of color and 12% in EFCs
- Metrolink Van Nuys Station (includes one station): 81% people of color and 46% in EFCs

- Metrolink Burbank Station Areas (includes three stations): 51% people of color and 28% in EFCs

The Study will identify gaps and opportunities for enhanced mobility and improved regional access for vulnerable and marginalized populations in LA County.

Purpose of This Document

This document summarizes the methodology and analysis of Task 3 - Baseline Conditions Report for Focused Hot Spot Areas.

Task 3 examines the potential near-term improvements for connectivity at the station hot spots, new express bus routes on freeway express lanes, and improvements to system frequencies. This examination expands upon the findings of Task 2 for Systemwide Opportunity and Gap Analysis.

Figure 1 - Rail Network Integration Study Areas

Source: CR Associates and DB

The Task 3 analysis found a range of improvements that offer improved access and connectivity. These improvements could be implemented at a low cost in the near term as well as those that can be implemented at a higher cost in the long term. A few significant infrastructure improvements are analyzed in Task 3, including a potential extension of the Metro C Line (Green) to Norwalk/Santa Fe Springs Station and universal access (all users/all abilities) at the Van Nuys Station. For these two capital improvements, a high-level environmental risk assessment was conducted. These are documented in **Section 3.0** of this document.

Multiple benefit criteria and high-level order-of-magnitude (OOM) costs were developed to provide a cost/benefit assessment of potential improvements for further design considerations in Task 4 or for implementation recommendation and identification of funding/financing in Task 5.

A few major infrastructure improvements are analyzed for costs and impacts in Task 3, including an extension of the C Line to Norwalk/Santa Fe Springs Station, and improved pedestrian/bike access at the Van Nuys station.

Key Findings

The Task 3 analysis resulted in a range of near-term improvements that offer improved access and connectivity for the study areas and that could be implemented at low cost. These improvements include:

- Amtrak service with additional stops at Norwalk/Santa Fe Springs station and Downtown Burbank This can be implemented with little to no impact on schedule or operating costs and can be implemented in the near term. This service expands on the current joint operations between Metrolink and Amtrak at select stations.
- Select pedestrian and bike first/last mile (FLM) connectivity improvements at each of the three study station areas to improve access for those living, working, and visiting the area. The opportunities at Norwalk C Line (Green) Terminus station to increase access are notable for their potentially low cost and high benefit.
- Improved wayfinding at and around all three station areas
- Select station improvements, such as signage and shade.
- More frequent Amtrak service

List of Appendices

The following items are recommended to examine in more detail in Task 4 for long-term implementation as they require more extensive funding, policy changes, or interagency agreements:

- Improved transit service between Norwalk C Line (Green) Station and Norwalk/Santa Fe Springs Stations through increased and improved bus service or extension of the light rail line.
- Metrolink “Tripper” between Chatsworth Station and Laguna Niguel Station or similar station pairs. Promising conditions exist for attracting riders through increased frequency and accessibility of rail and express bus service, removal of barriers to accessing the system through improved first/last mile, wayfinding, station amenities, and fare integration. The increased frequency of Metrolink and the addition of Amtrak service stops, can provide a regional “S-Bahn” type regional trunk line service within Los Angeles and Orange Counties.
- Improved bicycle and pedestrian access to all study stations

- Station amenities including lighting, benches, shelters, and access ramps at all study stations.
- Express bus on potential High Occupancy Toll (HOT) lanes to serve markets in the I-605 and I-405 corridors.

The following sections provide a summary of the findings that are described in greater detail in the attached appendices.

2.0 Policy Assessment

There are several policy considerations that are recommended to be explored further in Task 4 to help determine their feasibility. These policy areas include sharing of platforms for Amtrak and Metrolink, common wayfinding signage, fare exchange and policies, and the implementation and funding of FLM projects.

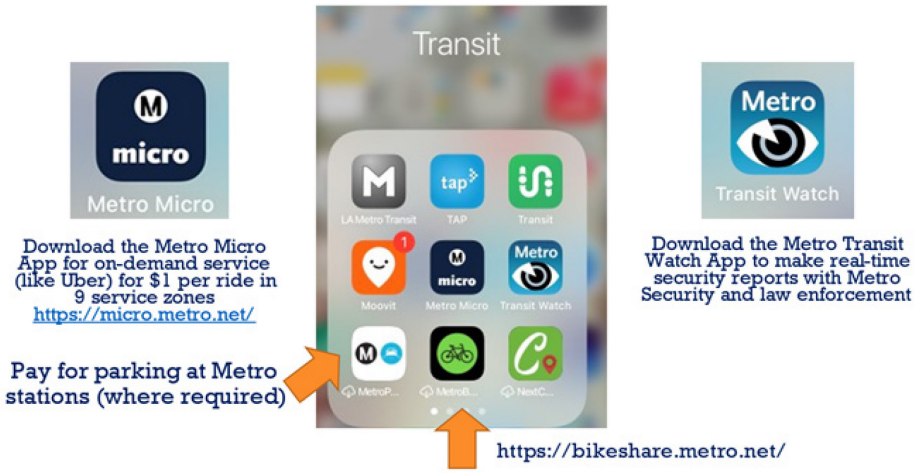
2.1 Fare Policies

Fare policies were examined to determine areas where adjustments could improve conditions for passenger comprehension of the system and remove barriers to ridership. In Task 4, it is proposed to examine the potential near-term and long-term improvements and the potential for gaining riders measured against additional or saved operations and maintenance costs.

Challenges

Given the multitude of fares required to board and to transfer, it is recognized that fare instrument is a barrier to riding transit for new and occasional riders. For example, at the Downtown Burbank station, there are six bus operators in addition to Metrolink and Amtrak – all with different fares – even for similar length trips. (Fares currently required at each station are documented in the station assessment documentation in Task 2). The applications used by Metro and one municipal operator are shown in **Figure 2** below. More accessible and integrated payment systems to purchase tickets at vending machines at the stations should be provided. Yet, the customer can only currently access a Metrolink ticket vending machine, as Amtrak and TAP machines are not at the transit center. Further, cash riders make up 27% of Metro's bus/rail passengers. 43% of LA Metro's bus boardings are paid with cash, which is substantially higher than the national average of approximately 21% (Source: US Boardings Study, APTA, 2017). Since fare capping requires a TAP card, customers who pay with cash will not be able to take advantage of fare capping benefits. Therefore, Metro is implementing a series of efforts to increase TAP usage for cash-dominant riders, including an educational "Cash to TAP" Marketing Campaign, and free TAP Card distribution. Metro is also looking into developing an open payment, account-based TAP system, to address the challenge of using TAP as an unbanked or underbanked rider (Metro Board Report #: 2023-0002).

Figure 2 - Metro Transit Apps



Source: Metro, 2021

Potential solutions

Potential fare policy solutions should work to increase ridership by making the system more accessible and convenient to new and existing riders.

Caltrans' Mobility Newsletter:

"The Capitol Corridor line is a vital route, connecting communities from Sacramento to the Bay. 200 riders were selected to participate as part of the first phase of the project, making them the first riders on any Amtrak trains to tap their credit or debit card onboard to pay. Tap2Pay riders will be charged $1 less than the price of the existing 10-ride single-route pass for 10 equivalent Tap2ride trips, and get exclusive access to a 6-ride weekly fare cap for repeat journeys on the same route." In addition, transit agencies in Florida (PSTA, HART, TheBus), Rhode Island (RIPTA), Washington Spoken Transit are deploying contactless payments to create flexible and personalized rider experiences."

Near term

- Developing new and creative strategies (such as regional and local "Cash to TAP" awareness campaigns to reach riders not on TAP and promote cash to TAP conversion for receiving the benefit of farecapping
- Examine policies that could allow for more seamless and universal fare media, such as TAP cards for Metrolink and Amtrak
- Examine policies for locating TAP fare machines at all transit centers/transit hubs
- Consider adding QR codes to signages around stations to conveniently synchronize with the TAP app.
- Integrate ticketing to consolidate all the transportation apps into one app and cap fares for all TAP card users
- Examine ways to enhance Metrolink's Rail2Rail program that allows Metrolink Monthly Pass holders to travel on Amtrak Pacific Surfliner trains at no additional charge.
- Develop an open payment, account-based TAP system

Long term

The long-term recommendation is to explore contact less payments to create flexible and personalized rider experiences. The California Integrated Travel Project (Cal-ITP) has examined the issue of making riding by rail and bus less complicated and more cost-effective for providers and riders. The project has identified credit cards for fare payment to be the simplest approach. This will enable media to be readily available to the entire population – with planned solutions for people without credit cards, varied pass prices for different systems, transfers, and discounted fares (such as student, senior and disabled). In the long term, this system could significantly benefit the riders and operators to remove barriers to riding.

Metro has also prioritized its investments in anticipation of the 2028 Olympics and is seeking state and federal funds for 2028 Olympics Mobility Concept Plan prioritized projects, including Metro Micro Expansion, First/Last Mile, Active Transportation, Customer Information System Integration/Technology Systemwide, Universal Basic Mobility Expansion Systemwide, and Universal Fare and Ticketing Integration Systemwide. Projects were scored based on their ability to provide benefits during the Olympics, their legacy in the region, as well as their capacity to enhance the quality of life for disadvantaged communities.

Additional considerations include an Integrated Mobility Strategy (inspired by Sustainable Urban Mobility Plans in European Regional Areas) applied to multiple metropolitan areas (Los Angeles County, Orange County, San Diego County, and others); Cobranding (including interchange agreements and operating/service partnerships and joint ventures); City Ticketing (commuter/intercity rail to urban transit on the same ticket); and an expanded travel rewards program/participation and other innovative strategies to increase customer patronage.

2.2 Additional Rail Stops and Station Dwell Time

In Task 3, the potential for additional stops of Amtrak and Metrolink in coordination with other transportation investments was examined considering anticipated frequency in the long-term horizon (year 2047). Additional service was tested on top of Metrolink's Southern California Optimized Rail Expansion (SCORE), California State Rail Plan, and future potential of Metrolink Short Line (Metrolink Los Angeles – Glendale – Burbank Feasibility Study (2019)). Dwell times and operating assumptions are also shown in **Figure 3** below. LA Metro Rail dwell times are currently 20 seconds for inline stations and 30 seconds for terminal and transfer stations. An example of station access times analyzed for Task 3 and instructions on how to read a connection clock is shown in **Figure 4** below. Refer to **Appendix A.1** for more details of this methodology and analysis.

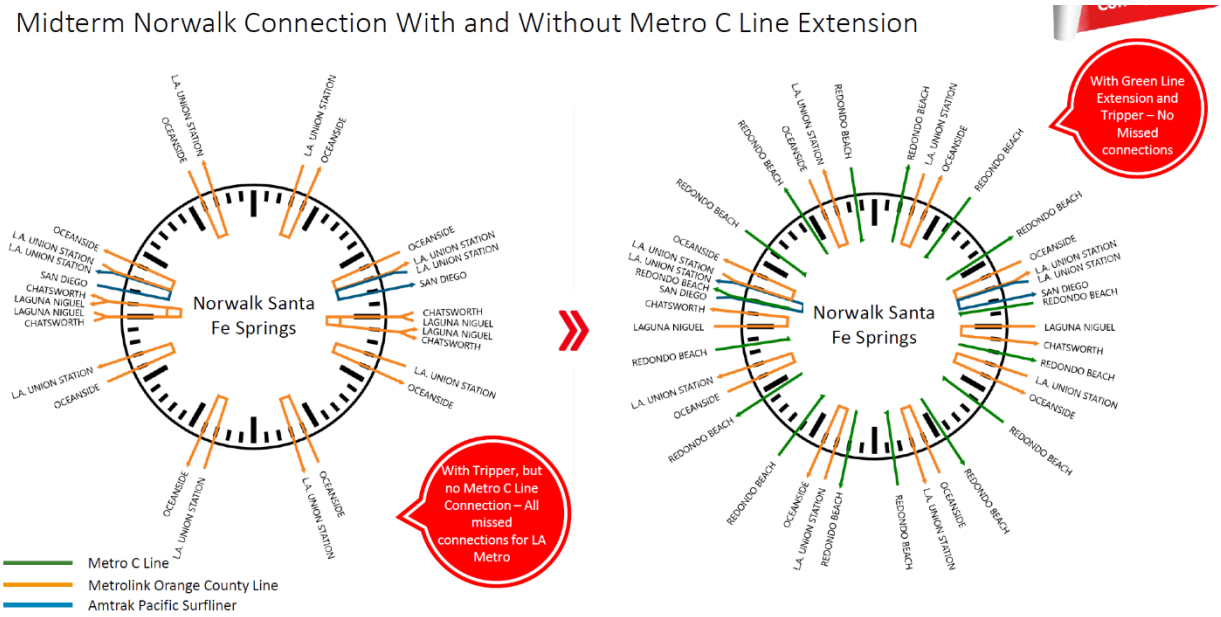
Figure 3 - Operating Parameter Assumptions

LA Metro Technical Analysis Compendium
Operating Parameters

	Near Term	Long Term
Rolling Stock assumptions	Surfliner: Diesel Hauled + Coaches Metrolink: Diesel Hauled + Coaches LA Metro: EMU	Surfliner: Diesel Hauled + Coaches Metrolink: Diesel Hauled + Coaches LA Metro: EMU High-Speed Rail: AGV
Train Separations	3 minutes 10 minutes for PAX following freight	3 minutes 10 minutes for PAX following freight
Dwell	Surfliner: 1 minute Metrolink: 1 minute Metro: 20 seconds inline; 30 seconds terminal/transfer	Surfliner: 1 minute Metrolink: 1 minute Metro: 20 seconds inline; 30 seconds terminal/transfer
Recovery	10 Percent distributed vs at meets and terminals	10 Percent distributed vs at meets and terminals
Infrastructure Assumptions	Existing speeds and assumed directions *Constraints of infrastructure may flag location for additional capacity improvement*	Assumes completion of high speed rail and SCORE infrastructure *Constraints of infrastructure may flag location for additional capacity improvement*

Source: CR Associates and DB

Figure 4 - Norwalk-Santa Fe Springs Conceptual Connection Clock

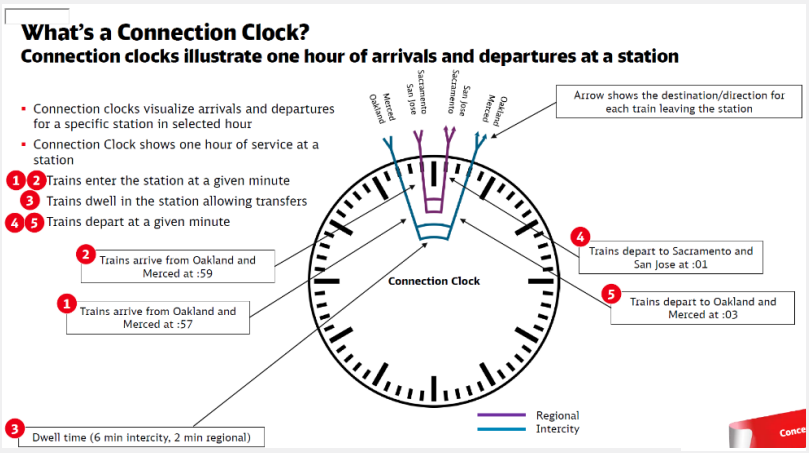


Source: CR Associates and DB

The findings of Task 3 resulted in the following:

- Analysis of an additional Metrolink "Tripper" between Chatsworth and Laguna Niguel indicated that there is sufficient capacity to operate this additional service with little to no impacts to station dwells in practice for Amtrak or Metrolink. This improvement shows promising ridership and connectivity benefits in the near and long term.
- Increased Amtrak service stops at Norwalk/Santa Fe Springs Station and Downtown Burbank station provide significant benefits to ridership due to frequency improvements and significantly increased connection opportunities. This improvement requires small capital improvements in wayfinding and station signage but is anticipated to have minimal impact to operations and operating costs.
- It is recommended that additional feedback be solicited from existing riders, potential riders, and operators on the current dwell time practices.

Figure 4.1 - How to Read a Connection Clock



Source: CR Associates and DB

2.3 Interagency Agreements

Regional transit ridership could improve by reducing the complexity of navigating the transit system between operators. Some improvements could be facilitated by interagency agreements. It is recommended that the following items be further analyzed in Tasks 4, 5 and 7 for improved integration:

- Wayfinding – policy coordination is needed between operators for common signage for wayfinding to stations. The Wayfinding findings are summarized in **Section 5.0** of this document, and the detailed assessment can be found in **Appendix B.2**.
- Station amenities and signage – station-specific amenities, like furniture, are governed by agency guidelines. Shared amenities, such as signage, should be negotiated between agencies to coordinate branding and guidelines to provide consistent customer wayfinding and information.
- First/Last Mile – align policies recently adopted by Metro, state, and FTA for improvements in safety and equitable access and share resources for improvements. The First/Last Mile findings are summarized in **Section 5.0**, and the detailed assessment can be found in **Appendix B.3**.
- Fares – interagency agreements needed for common fare instruments in the short term, with longer term details in process, as mentioned above in *Section 2.1 Fare Policies*.
- Transfer Connections – pedestrian infrastructure and wayfinding between transit modes, such as the connection between Burbank South Rail Station and the Regional Intermodal Transfer Center (RITC), should be coordinated between the applicable agencies and municipalities.

3.0 Benefit-Cost Analysis (BCA) High-Level Assessment

Multiple criteria for measuring the cost-benefit of projects for the Rail Network Integration Study were previously developed during Task 2. The methodology and criteria informed which projects were pursued and further studied in Task 3. The methodology and BCA score for each station area are included in the section below.

3.1 Methodology

The major criteria categories and associated metrics were developed in consultation with the Metro Project Development Team and key agency stakeholders. The criteria and metrics for measurement were identified through a review of Metro, state, and federal policies and alignment with potential state and/or federal grant funding categories. Of the eight (8) major criteria categories, Task 3 provided a high-level analysis focusing on 6 primary criteria categories.

- Customer Experience
- Mode Shift
- Sustainability
- Equity
- Economy
- Stakeholders
- Risk
- Costs

The high-level screening in Task 3 provides a data-driven measurement assessment of conditions and solutions to rank potential solutions. In Task 3, over 28 projects, or packages of projects (such as multiple wayfinding improvements to a station) were identified and scored for cost or impact and potential improvement over existing conditions. Scores ranged from -3 to indicate the highest cost and +3 to indicate the highest potential benefit. A list of the projects that are recommended to move forward for additional study can be found in Section 6. See Appendix **B.10** to see the progression of projects concepts for each station.

Table 1 - Project Progression for Van Nuys Study Area

Initial tracking # in Task 2	Evaluated as part of Task 3 BCA Per recommendation of findings in Task 2	Expansion/Merging/Removal Task 3 tracking #'s	Task 3 Analysis - Report or Appendix	Task 4 Advancement Reference
V1	*Merged - V1 & V3*	V1 & V3	Appendix B.4	Station Drawing Package
V3	*Merged - V1 & V3*	V1 & V3	Appendix B.4	Station Drawing Package
V2	*V2*	V2	Appendix B.2	*Mapping*
V4	Not Advanced	No further analysis	NA	NA
V5	*V5*	*V5.D*	*Appendix B.3*	*CRA Drawing*
		V5.A	*Appendix B.3*	CRA Drawing
		V5.B - No further analysis go to V5.A	Not Advanced	Not Advanced
		V5.C	*Appendix B.3*	CRA Drawing
V6	V6	No further analysis due to BCA	Not Advanced	Not Advanced
V7	V7	Part of V5.B	*Appendix B.3*	CRA Drawing
V8	Researched, not scored as a project	No further analysis	NA	

3.2 Summary of Findings

The summary tables of findings, organized by station area, are below in **Tables 2 through 7**. The detailed BCA analysis can be found in **Appendix C**. The findings are ranked by a cumulative score of each metric area and compared within each station study area. The numerical assessments of the benefit-to-cost ratio are broken into a 3-level score of Lowest (under 4), Medium (4 to 7), and Highest benefit-to-cost (above 7).

Van Nuys Station Area

Projects shown in **Table 2** are scored by category and summarized as a total improvement score. The project in the high range that will move forward in the study in Task 4 and 5 is the First/Last Mile & Safety Improvements. Projects that are in the medium range that will move forward in the study in Tasks 4 and 5 are Station Assessments and Wayfinding. Existing conditions photos at the station are shown in **Figure 23**.

Table 2 - Van Nuys Station Area BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Van Nuys Station										
V1 & V3	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**1.50**	**1.00**	**0.80**	**2.00**	**3.00**	**-1.50**	**6.80**	
V2	Wayfinding	*Wayfinding signage to the Station*	**1.00**	**1.33**	**0.40**	**1.50**	**3.00**	**-1.00**	**6.23**	
V5	FLM	*First/Last Mile & Safety Improvements*	**1.17**	**1.67**	**1.20**	**2.00**	**2.33**	**-1.00**	**7.37**	
V6	FLM	*ADA Switchback Access*	**1.17**	**1.33**	**0.40**	**1.00**	**1.33**	**-1.50**	**3.73**	
V7	New Routes	*Bike connection to G-Line (Orange) Station*	**1.67**	**2.00**	**0.80**	**0.00**	**2.67**	**0.00**	**7.13**	

Burbank Airport North Station Area

Source: CR Associates

Projects shown in **Table 3** are scored by category and summarized as a total improvement score. The project in the high range that will move forward in the study in Tasks 4 and 5 is Wayfinding. The project in the medium range that will move forward in the study in Tasks 4 and 5 is Station Assessment. The projects in the low range that will move forward in the study in Tasks 4 and 5 are First/Last Mile & Safety Improvements, Airport Shuttle Route, North and South, and HSR Pedestrian Connectivity. Existing conditions photos at the station are shown in **Figure 27**.

Table 3 - Burbank Airport North Station Area BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Burbank Airport North										
BN1 to BN5	FLM	*First/Last Mile & Safety Improvements*	**0.83**	**1.00**	**0.80**	**0.00**	**0.00**	**-1.50**	**1.13**	
BN6	Wayfinding	*Wayfinding signage to the Station*	**1.17**	**1.33**	**1.20**	**1.50**	**3.00**	**-1.00**	**7.20**	
BN7	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**0.67**	**0.67**	**0.40**	**0.00**	**3.00**	**0.00**	**4.73**	
BN8 & BN10	New Routes	*Airport shuttle, including Burbank Airport South, HSR and RITC*	**0.33**	**0.67**	**0.40**	**0.00**	**2.00**	**-1.50**	**1.90**	
BN9 & BN11	FLM	*HSR ped connectivity*	**1.00**	**1.67**	**1.20**	**0.00**	**1.33**	**-2.00**	**3.20**	

Source: CR Associates

Burbank Airport South Station Area

Projects shown in **Table 4** are scored by category and summarized as a total improvement score. The project in the high range that will move forward in the study in Tasks 4 and 5 is Amtrak Double Stop. Projects that are in the medium range and that will move forward in the study in Tasks 4 and 5 are Station Assessment, Wayfinding, FLM Improvements and Auto Access. Existing conditions photos at the station are shown in **Figure 31**.

Table 4 - Burbank Airport South Station Area BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Burbank Airport South										
BS1	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**2.50**	**2.33**	**1.00**	**0.00**	**2.67**	**-1.00**	**7.50**	✓
BS2.2	Wayfinding	*Wayfinding signage to the Station*	**1.17**	**1.33**	**1.20**	**1.50**	**2.00**	**-1.00**	**6.20**	!
BS3	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists*	**1.17**	**1.67**	**1.40**	**0.00**	**2.00**	**-1.50**	**4.73**	!
BS4 & BS5	Operations	*Amtrak - double stop at Airport and Downtown, as well as Downtown-only stop*	**2.67**	**2.33**	**1.20**	**1.50**	**3.00**	**0.00**	**10.70**	✓
BS6	Auto Access	*Auto access for routing of cars to southern parking lot and along roadway - Pick-up/Drop-off and parking*	**1.17**	**0.33**	**0.40**	**2.00**	**2.67**	**0.00**	**6.57**	!

Source: CR Associates

Downtown Burbank Station Area

Projects shown in **Table 5** are scored by category and summarized as a total improvement score. Projects that are in the high range and that will move forward in the study in Tasks 4 and 5 are Wayfinding, and Pedestrian First/Last Mile Connectivity Improvements. Projects that are in the medium range and that will move forward in the study in Tasks 4 and 5 are Auto Access onto Front Street and Station Assessment. Existing conditions photos at the station are shown in **Figure 35**.

Table 5 - Downtown Burbank Station Area Summary BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Downtown Burbank										
DB2	FLM	*First/Last Mile – Ped connectivity to NoHo-Pas BRT Station and Downtown Burbank*	**1.50**	**2.00**	**1.00**	**1.50**	**2.00**	**-1.00**	**7.00**	
DB3.1	Auto Access	*Parking circluation access & Signal onto Front Street*	**1.67**	**0.33**	**0.60**	**0.00**	**2.67**	**-1.00**	**4.27**	
DB4	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**0.83**	**1.00**	**0.40**	**0.00**	**3.00**	**-1.00**	**4.23**	
DB5	Wayfinding	*Wayfinding signage to the Station*	**1.33**	**1.67**	**1.20**	**1.50**	**3.00**	**-1.00**	**7.70**	

Source: CR Associates

Norwalk C Line (Green) Terminus Station Area

Projects shown in **Table 6** are scored by category and summarized as a total improvement score. Projects that are in the high range and that will move forward in the study in Tasks 4 and 5 are pedestrian/bike access on Studebaker, pedestrian/bike access Gates to community, and Wayfinding improvements. Projects that are in the medium range and that will move forward in the study in Tasks 4 and 5 are Freeway Ramps, Bike Amenities, Circulation Improvements for autos/ped/bike, First/Last Mile improvements for bike/ped, Station Assessment, C Line (Green) Extension, and TSM bus/shuttle alternative between stations. Existing conditions photos at the station are shown in **Figure 39**.

Table 6 - Norwalk C Line (Green) Terminus Station Area BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Metro C-Line Terminus										
C1	FLM	*Pedestrian/bike access - Studebaker*	**2.00**	**2.33**	**0.80**	**1.00**	**2.00**	**-1.00**	**7.13**	✓
C2	FLM	*Pedestrian/bike access - Gates to community*	**1.83**	**2.33**	**0.80**	**1.00**	**2.00**	**0.00**	**7.97**	✓
C3	Auto Access	*Freeway Ramps*	**1.33**	**0.33**	**0.40**	**1.00**	**2.67**	**-1.50**	**4.23**	!
C4	FLM	*Bike Lockers, Parking, Bike Share*	**1.50**	**1.67**	**0.40**	**1.00**	**3.00**	**-1.00**	**6.57**	!
C5	Auto Access	*Circulation for autos/ped/bike – prioritize safety for vulnerable ped/bike*	**2.17**	**1.33**	**0.40**	**0.00**	**2.33**	**-0.50**	**5.73**	!
C7	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists (not included in C1 to C5)*	**1.83**	**2.00**	**1.40**	**1.00**	**1.67**	**-1.00**	**6.90**	!
C8	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**1.50**	**1.00**	**0.80**	**1.00**	**3.00**	**-1.00**	**6.30**	!
C9	New Routes	*Green Line extension - grade sep, at-grade, tunnel: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined*	**2.17**	**1.67**	**1.60**	**2.00**	**0.67**	**-2.00**	**6.10**	!
C10	New Routes	*TSM bus/shuttle alternative between stations: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined*	**1.00**	**1.67**	**0.80**	**1.00**	**3.00**	**-1.00**	**6.47**	!
C11	Wayfinding	*Wayfinding signage to the Station*	**1.33**	**1.33**	**1.20**	**1.50**	**3.00**	**-1.00**	**7.37**	✓

Source: CR Associates

Norwalk-Santa Fe Springs Station Area

Projects shown in **Table 7** are scored by category and summarized as a total improvement score. Projects that are in the high range and that will move forward in the study in Tasks 4 and 5 are Station Assessment and Ridership. Projects that are in the medium range and that will move forward in the study in Tasks 4 and 5 are Wayfinding and First/Last Mile Improvements. One project that was not scored that will move forward in the study in Tasks 4 and 5 is a First/Last Mile Pedestrian Connection to Zimmerman Park. Existing conditions photos at the station are shown in **Figure 42**.

Table 7 - Norwalk/Santa Fe Springs Station Area BCA Summary

Proj #	Category	*Improvement*	Customer Experience Score (Mean)	Mode Shift Score (Mean)	Sustainability Score (Mean)	Equity Score (Mean)	Risk Score (Mean)	Cost Score (Mean)	Improvement Score (*Sum of Category Means*)	Low (<4), Med (4-7), High (7<)
Norwalk-Santa Fe Springs										
NSFS1	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists*	**1.17**	**1.33**	**0.80**	**1.00**	**2.67**	**-1.50**	**5.47**	
NSFS2	Wayfinding	*Wayfinding signage to the Station*	**1.33**	**1.33**	**1.20**	**1.00**	**3.00**	**-1.00**	**6.87**	
NSFS3	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	**2.33**	**1.67**	**0.80**	**1.00**	**3.00**	**-0.50**	**8.30**	
NSFS6 & 7	Ridership	*Ridership/benefits/impacts of added stops Amtrak - test stop at Norwalk - all trains*	**2.33**	**2.67**	**1.20**	**2.00**	**3.00**	**0.00**	**11.20**	

Source: CR Associates

Project Considered, but not Advanced

There were several projects identified in Task 2, but not advanced based on the Task 3 analysis, which are listed in **Table 8** below.

Table 8 - Considered Projects, Not Advanced

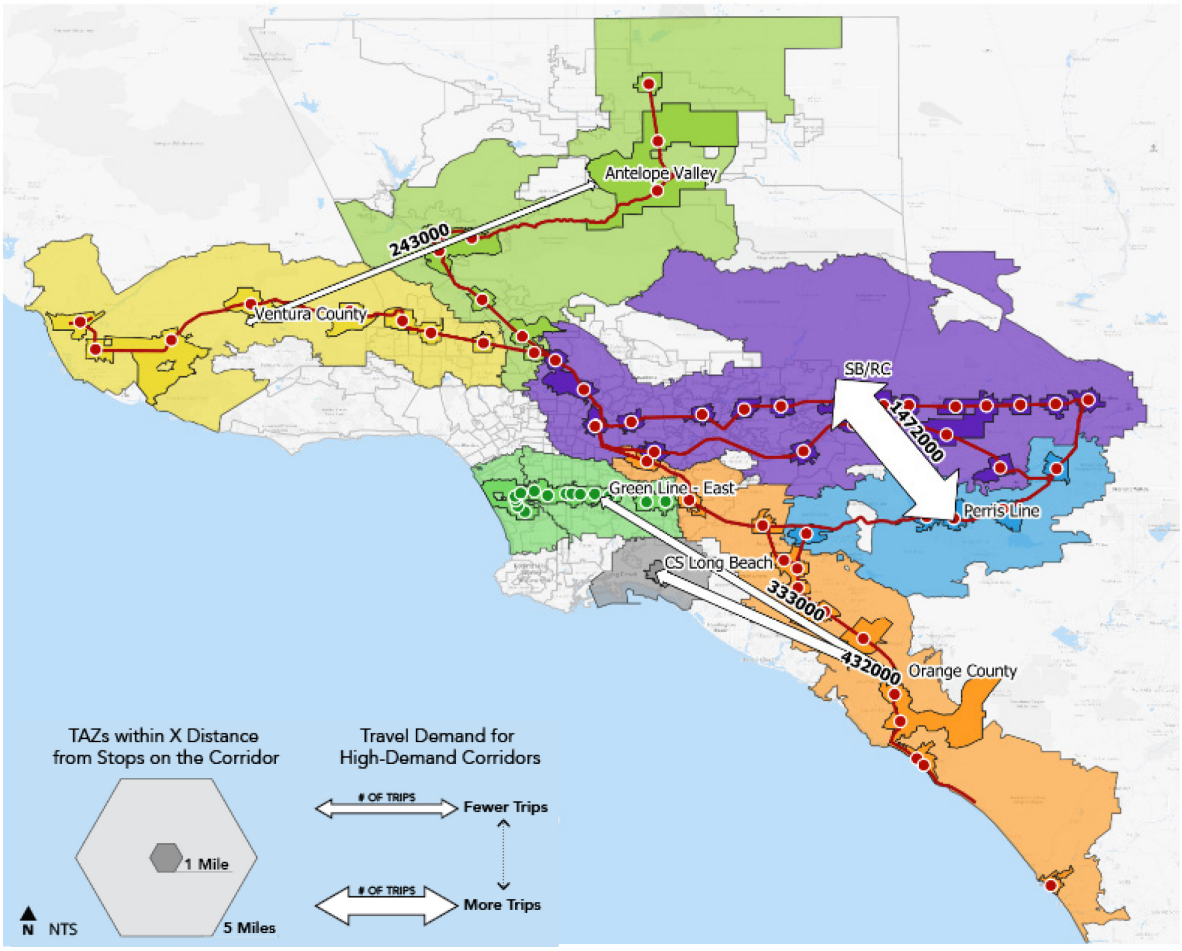
Project #	Location and project description	Task 3 Analysis	Next step
	Van Nuys Station Area		
V8	Relocate proposed ESFV LRT Station - test for connectivity assessment	Previous analysis determined this change too costly due to reconstruction of rail overpass, and grades on Van Nuys Boulevard	No further action for RNI Study
	Burbank Airport North		
BN1	Access to the community, north of RR Tracks	This project will be completed as part of the Metro's Brighton to Roxford Double Track (Regional Rail) Project	No further action for RNI Study
	Downtown Burbank Station		
DB1	Vertical circulation access - Improved elevator at Magnolia Boulevard	Project underway as part of La Terra development at 777 N Front Street	No further action for RNI Study
DB6	NoHo to Pasadena BRT stop on Olive Avenue. Olive Avenue Reconstruction for BRT stop	RNI Task 3 found that complete reconstruction of Olive Avenue bridge would be required due to the condition of bridge. The need to mitigate traffic speed through traffic calming measures and to enhance pedestrian movements were examined. Project identified in Burbank Complete Streets Plan and Metro's LRTP Strategic Project List. It is not anticipated that this project will be funded by Metro, however a BRT stop on the Olive Bridge can be considered for long-term contingent upon the widening of the Olive Bridge.	No further planning or design work for RNI, but keep in list of projects for potential funding for Task 5.
	Metrolink Norwalk/Santa Fe Springs Station		
NSFS5	Pedestrian connection to Zimmerman Park	Path is identified in the Norwalk Transit Village plan.	No further planning or design work for RNI, but keep in list of projects for potential funding for Task 5.

4.0 Regional Connectivity Assessment

Several regional travel markets were identified in Task 2 for rail and/or express bus connectivity that warranted further analysis in Task 3. Task 3 considered solutions for near-term and/or long-term implementation. Near-term solutions could be implemented with potentially low capital and operating costs. Travel model analysis years are consistent with Metro's 2020 Long Range Transportation Plan (LRTP), with near-term existing conditions for 2017, and long-term solutions are analyzed for the forecast year of 2047. A detailed summary of the ridership and cost methodology and analysis can be found in **Appendix A.2**.

Table 9 below lists the analyzed travel market areas and potential rail connectivity solutions.

Figure 5 - Travel Demand by Corridor



Source: CR Associates, Cambridge Systematics

Table 9 - Rail Connectivity Solutions

Market areas identified in Task 2	Rail connectivity solutions examined in Task 3
Between Antelope Valley and Ventura Metrolink corridors	**Near Term:** • Add Amtrak stops at downtown Burbank to increase frequency of transfer between Antelope Valley and Ventura, *and/or* • Add Metrolink "Tripper" for added frequency (tripper from Chatsworth to Laguna Niguel
Between northwestern Orange County LOSSAN and southeastern L.A County (Norwalk-Long Beach area)	**Near Term:** • Add additional bus service between Norwalk C Line (Green) Terminus and Norwalk/Santa Fe Springs Metrolink stations • Extension of regular Long Beach Transit bus service 172/173 for added frequency via Imperial Highway **Long Term:** • Traffic signal improvements and dedicated shuttle bus service on Imperial Highway in addition to regular fixed-route services from Norwalk Transit (also referred to as Transportation System Management – TSM – or Best Bus Alternative), *or* • Extension of C Line (Green) LRT between the C Line (Green) Norwalk terminus station and the Metrolink Norwalk/Santa Fe Springs station (a future CAHSR station). For a high-level planning analysis, the study identified four potential alternatives – two alternatives with a combination of below-grade and at-grade configuration, and two alternatives with all-tunnel (or below-grade segments), including opportunities for new stations at either Firestone, City Hall, or both.

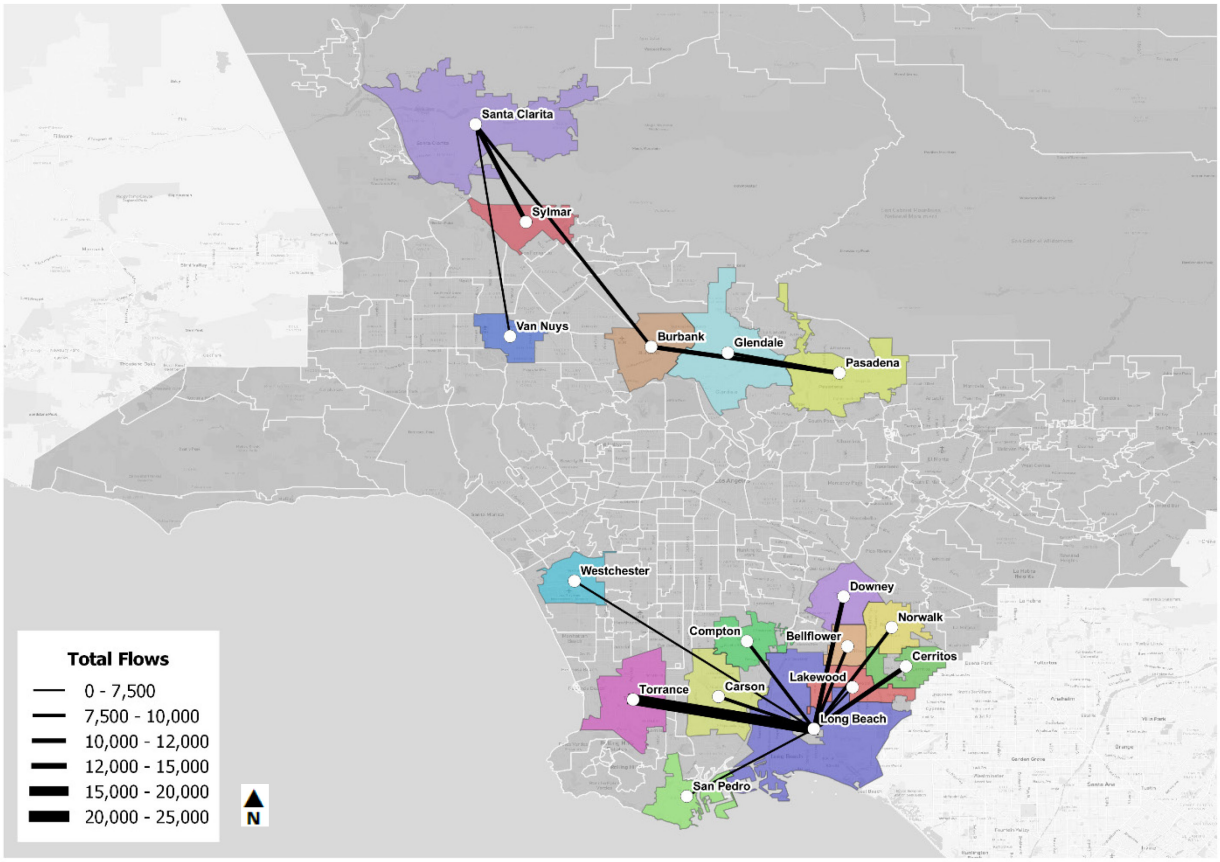
New express bus service to market areas on HOV lanes were examined for potential travel time savings, and potential costs. In Task 3, Near Term and Long-Term service were examined separately, with near term buses routed in existing HOV lanes and routing off the freeway to make stops. Long-Term service was examined with a major capital improvement, such as a direct access ramp (DAR), which would allow buses to service the same stop locations as Tear Term "No-Build," but with significant time savings, as they would have direct service to/from the stop exclusive to bus (similar to Harbor Gateway Transit Center) as shown in **Figure 6** below.

Figure 6 - Harbor Gateway Transit Center Bus Route

Source: Google Maps

Figure 7 illustrates the major markets analyzed as part of Task 2 for potential new express bus connectivity. These are the top 5 daily travel flow markets outside of downtown Los Angeles. **Table 10** lists these analyzed express bus travel markets and potential connectivity solutions for markets that have existing or planned express lanes, and do not have current or planned express bus or rail service.

Figure 7 - Potential Express Bus Travel Markets



Source: CR Associates and Cambridge Systematics

Table 10 - Express Bus Connectivity Solutions

Market areas identified in Task 2	Express Bus connectivity solutions examined in Task 3
Between East Long Beach and LAX in the I-405 Corridor	*Note: This corridor currently has express bus service provided by Long Beach Transit on the I-405 Corridor, it runs only in am and pm peaks and serves only downtown Long Beach and UCLA.* The express bus service tested includes stops at: • CSULB/VA, 7th and Channel • Wardlow A Line (Blue)Station • Artesia Blvd/ Hawthorne Blvd – connecting to future C Line (Green) Norwalk Extension • Aviation/LAX C Line (Green) Station • Aviation/Century Boulevard

Between East Long Beach and El Monte Metrolink Station on the I-605 Corridor	*Note: This corridor is served by Metro express bus route 577. This service does not stop at Metrolink and passes future connections to the West Santa Ana Branch and L Line (Eastside) routes.* The express bus service tested includes stops at: • CSULB/VA, 7th and Channel • Pioneer and South Street - connecting to future West Santa Ana Branch • C Line terminus – connect to C Line (which will provide connections to the K Line and future Airport Metro Connector (AMC) station) • Washington Boulevard and Norwalk Boulevard • El Monte Transit Center • El Monte Metrolink Station

4.1 Travel Demand/Operations Analysis Findings

Travel Demand

A travel demand analysis compared ridership forecasts for the four project alternatives in 2017 and 2047. Compared to the no build model, Alternative A includes the addition of two Amtrak stops at Burbank and Norwalk stations, a bus shuttle service between the Norwalk station and the Metrorail C Line east terminus, and a Metrolink tripper bus service between Laguna Niguel and Chatsworth stations. Alternative B includes all of Alternative A's changes and two bus express lines: one connecting CSU Long Beach to LAX and the other connecting CSU Long Beach to El Monte. Alternative C is the same as Alternative B, except the lines run on the freeways rather than local streets. A detailed version of the travel demand analysis can be found in **Appendix A.2**, including peak, off-peak linked trips, passenger miles, and VMT.

Travel demand analysis was conducted in 2017 and 2047 conditions. Unlike the 2017 comparisons, where several improvements were included in the model test, the 2047 comparisons only tested the LRT versus the TSM Alternatives – daily boardings are shown in **Table 12**. The comparisons of the LRT and TSM examined a subset of the criteria applied to all projects for the Task 3 Benefit-Cost Analysis. The findings for this analysis are shown in **Table 13** below, and the detailed analysis of costs and environmental risks can be found in **Appendix B.8**.

The proposed network improvements for service frequency and First/Last mile address demand areas discovered in Task 2, including between Antelope Valley and Ventura and between North Orange County and SW LA County for regional movements. Additionally, improvements are proposed to address First/Last Mile deficiencies in network connectivity for potential passengers at all stations. The strongest benefits for EFCs are around Van Nuys and Norwalk station areas.

Table 11 - Modeling Scenarios

Modeling Scenarios		2017 Model Runs				2047 Model Runs		
		2017 Base	2017 A	2017 B	2017 C	2047 Base	2047 A	2047 B
Type	Alternative Options	*Base*	*Test of Amtrak and Metrolink*	*All alternatives - off freeway stops*	*All alternatives - select freeway stops inline*	*Base Metro run*	*Test of Best Bus for Shuttle*	*Test of C-Line extension only*
Base Model								
Metrolink	N/A	■	■	■	■	■	■	■
Amtrak	N/A	■	■	■	■	■	■	■
HSR - 2047 - Anaheim to SF	N/A	--	--	--	--	■	■	■
LRT Metro 2047 Network	N/A	--	--	--	--	■	■	■
Bus Metro 2047 Network	N/A	--	--	--	--	■	■	■
Alternatives								
Metrolink Tripper	Tripper between Laguna Niguel and Chatsworth - Ventura Line	--	■	■	■	--	--	--
	DMU - Union Station to Burbank North - AV Line	--	--	--	--	--	--	--
Amtrak xtra stops	Stops at Burbank and Norwalk	--	■	■	■	--	--	--
LRT C-Line Extension	Extend C-Line to Norwalk/SFS	--	--	--	--	--	--	■
New Freeway Express	I-405 - LBSU to Atlantic, Harbor Gateway, Rosecrans, LAX	--	--	■	■	--	--	--
New Freeway Express	I-605 - LBSU to 91/Cerritos College, C-Line Norwalk Station, Washington, El Monte	--	--	■	■	--	--	--
Local routes - Norwalk Shuttle	C-Line Norwalk to Norwalk/SFS BUS via Imperial - 2017 extend LBT 172/173; 2047 - dedicated shuttle	--	■	■	■	--	■	--

■ = Included in the Model Run Option -- = Not Included in the Model Run Option

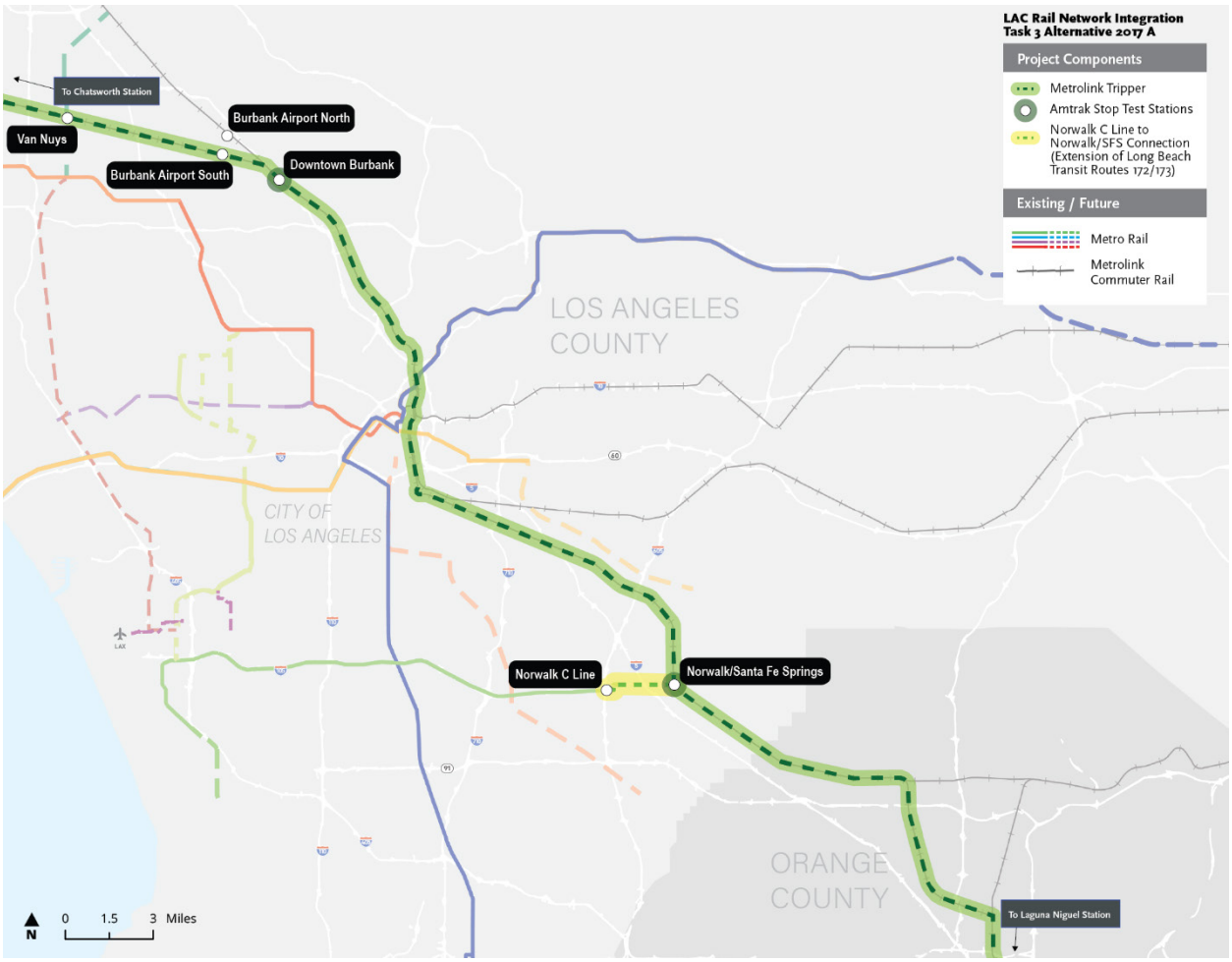
Source: CR Associates

2017 Alternatives A, B and C

As shown in **Table 11**, three Alternatives were run for the 2017 Near Term analysis. These include:

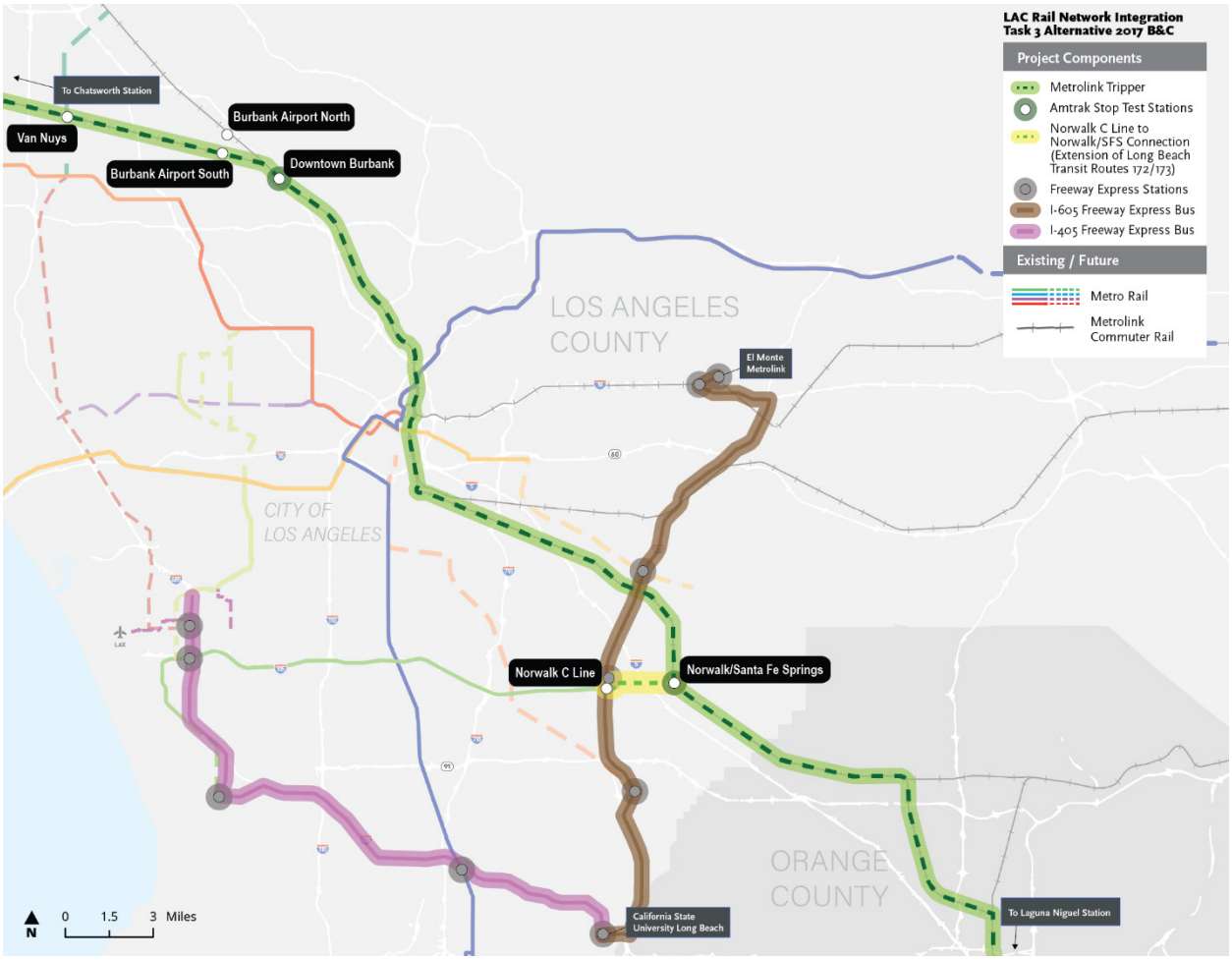
- Alternative 2017 A (see **Figure 8**)
  - Amtrak service stopping at all stations between Downtown Burbank and Norwalk/Santa Fe Springs Station; and Metrolink Tripper between Chatsworth and Laguna Niguel Stations
- Alternative 2017 B (see **Figure 9**)
  - All services in Alternative A
  - New Express Bus services in the I-405 and I-605 corridors (described in **Table 10)**
- Alternative 2017 C (see **Figure 9**)
  - All services in Alternative B, with new express buses stopping in-line along the I-405 and I-605 corridors, rather than pulling off freeway.

Figure 8 - 2017 Model Run Alternative A



Source: CR Associates

Figure 9 - 2017 Model Run Alternatives B & C



Source: CR Associates

2017 Ridership Summary

The summary below (**Table 12**) shows only the changes in daily systemwide boardings between the options tested in the ridership model. The results show a strong increase in ridership with the improvements in the LOSSAN corridor alone (Alternative A), with additional modest increases in ridership with the addition of express bus service in Alternatives B and C.

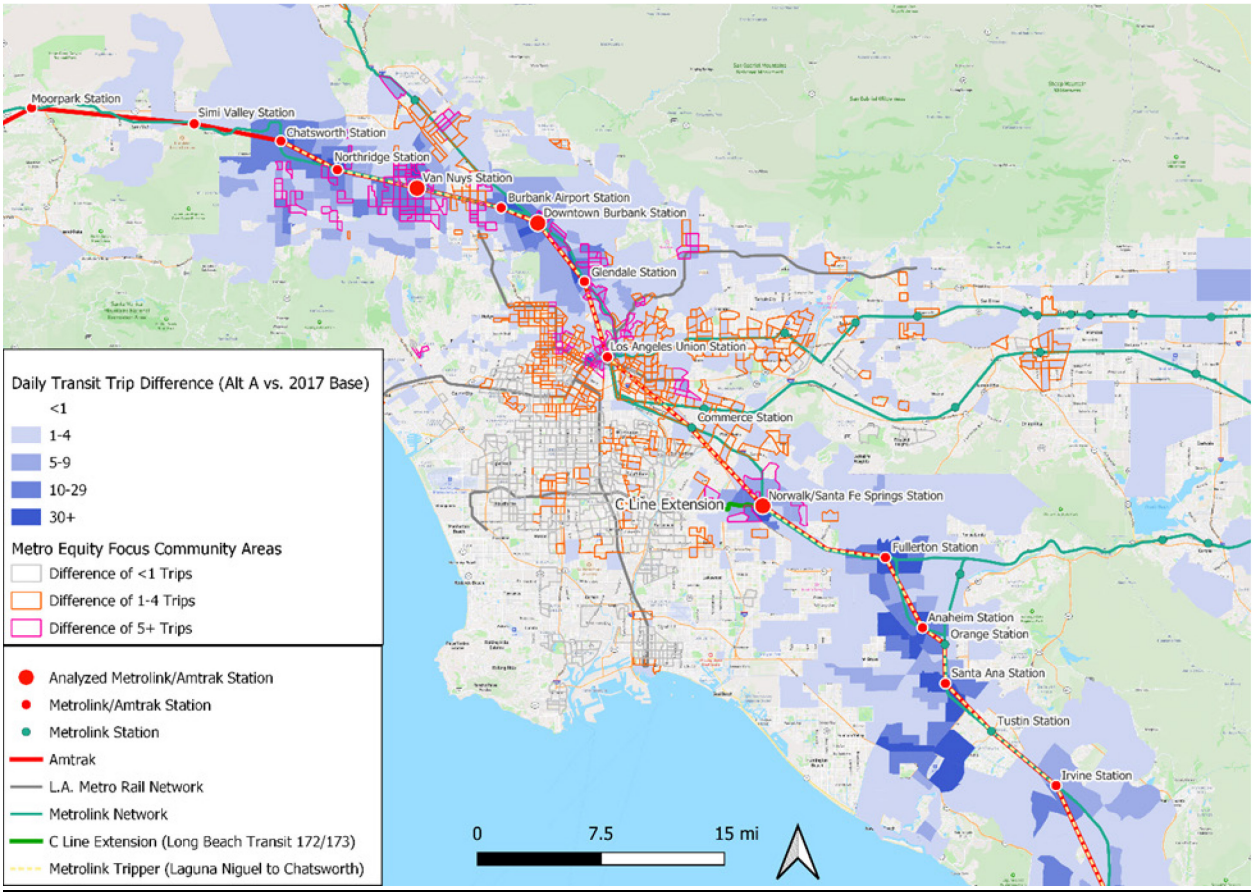
Table 12 - Changes in Daily Boardings for 2017

Daily boarding increase in Alternative A compared to Base 2017	6,790
Daily boarding increase in Alternative B compared to Base 2017	7,626
Daily boarding increase in Alternative C compared to Base 2017	8,035

Equity Focus Communities Benefits

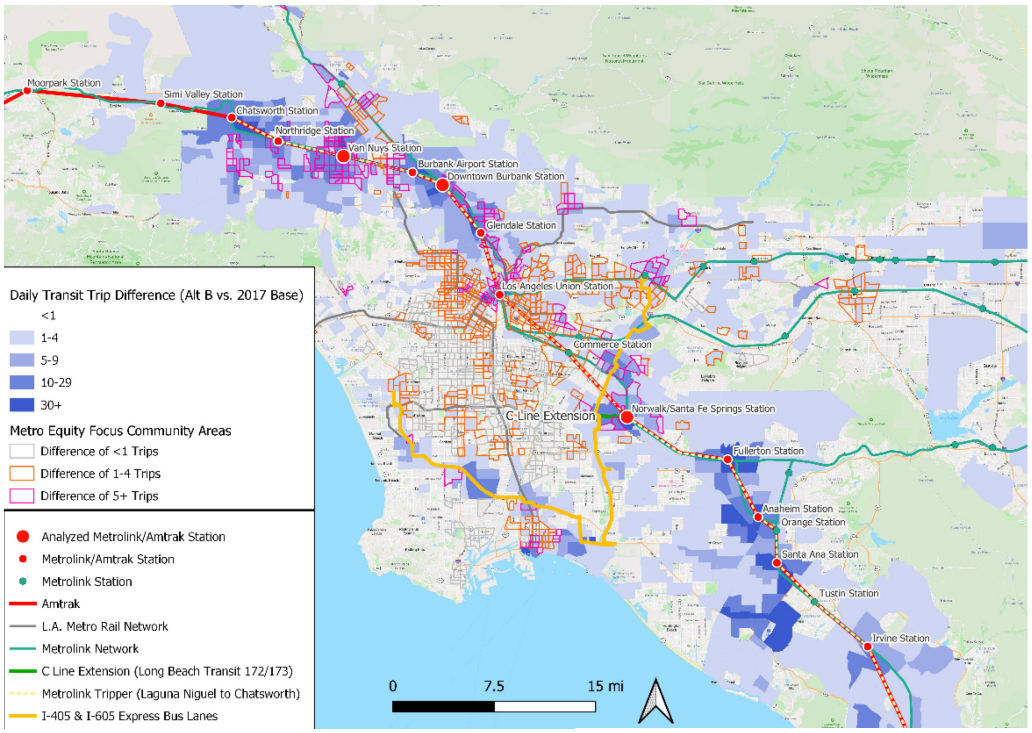
As shown in **Figures 10, 11, and 12,** the majority of Equity Focus Communities (EFCs) benefitting from the improved access from Alternative 2017 A, are in the areas directly surrounding Van Nuys and Norwalk Study areas. For Alternatives 2017 B and 2017 C, several additional EFCs show benefits from the improved express bus service – in west Long Beach south of the I-405, and near Pico Rivera northwest of the I-605.

Figure 10 - Changes in Trips in Comparison to Equity Focus Communities – 2017 Alternative A



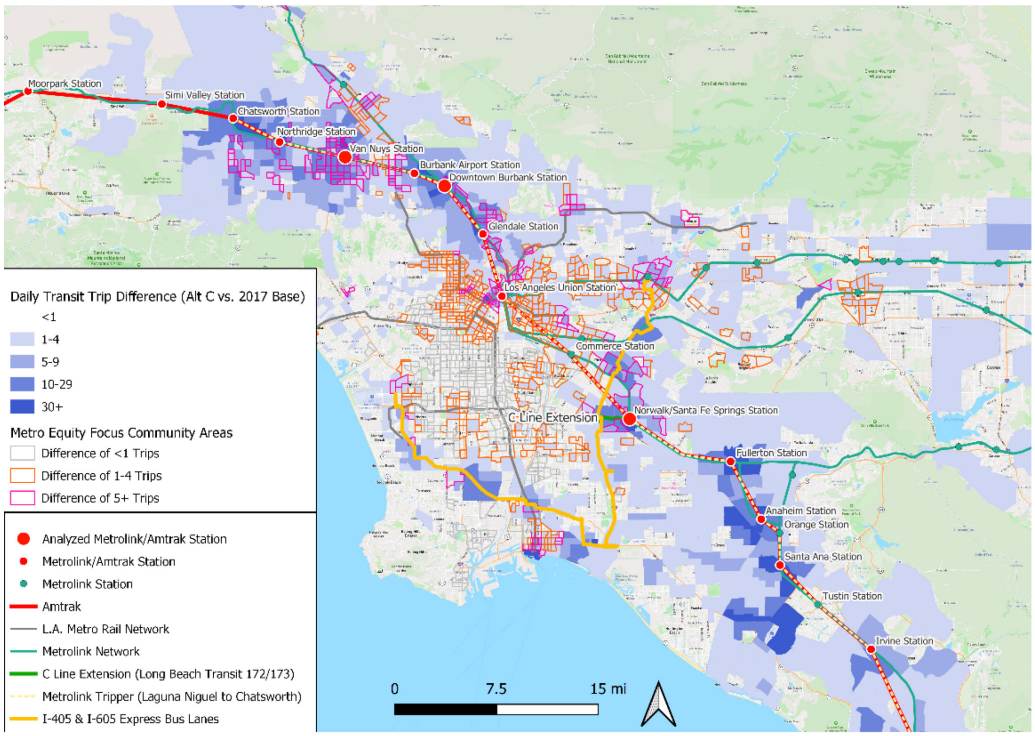
Source: CR Associates and Cambridge Systematics

Figure 11 - Changes in Trips in Comparison to Equity Focus Communities – 2017 Alternative B



Source: CR Associates and Cambridge Systematics

Figure 12 - Changes in Trips in Comparison to Equity Focus Communities – 2017 Alternative C



Source: CR Associates and Cambridge Systematics

These results can be summarized for each scenario. **Table 13** shows the total number of EFCs, the population living in EFCs along the corridor, and the number of EFCs that have a change in trips of at least +5 between the base scenario and three alternative scenarios.

Table 13 - EFC Population and Number of EFCs with Change of Five or More Trips Relative to Base for Each Alternative Scenario

Metric	Alternative A	Alternative B	Alternative C
Number of EFCs	1,396	1,396	1,396
Number of EFCs where trip change relative to Base is 5 or more	146	182	194
Share of EFCs where trip change relative to Base is 5 or more	10%	13%	14%
Total 2017 Population in EFCs	6,628,994	6,628,994	6,628,994
2017 Population of EFCs where trip change relative to Base is 5 or more	786,613	986,777	1,056,059
Share of Population in EFCs where trip change relative to Base is 5 or more	12%	15%	16%
Total Change in Daily Trips for EFCs	2,922	3,467	3,663

Metrolink Tripper Analysis

The Metrolink Tripper Alternative was included as part of all the 2017 Alternative scenarios A, B, and C. The Tripper was included after discussions with Metrolink resulted in feedback that added service in the greater Los Angeles region, showing promising results in potential ridership. Indeed, as Metrolink service begins to approach urban rail frequency, the LOSSAN Corridor can provide an urban trunkline (S-Bahn style) service. The ridership results in the Alternatives cannot be isolated from Metrolink, but the combined results from increased Metrolink service and Amtrak service stops show promising results. The additional service for Metrolink is potentially costly, as shown in **Table 14**, for both the equipment and operating estimated costs, and therefore may be categorized as a longer-term solution. Capital costs include 5 equipment sets (assumes 1 locomotive and 4 bi-level coaches per equipment set). Each equipment set is estimated at $39.6 million. Operating costs include 4,700 revenue vehicle hours and $725 in operating costs per vehicle hour. It is noted that the Task 3 analysis does not include costs related to potentially necessary maintenance yard expansion or additional improvements for stations, tracks, or signals.

Two key findings from the operations analysis are:

- The tripper at 60-minute all-day headway can fit within the existing and planned frequencies of all operators on the LOSSAN corridor.
- The turn-back at Laguna Niguel is potentially more practical than a turn-back at Irvine, as trains can continue in service, rather than dwell, while maintaining the same frequency.

Table 14 - Metrolink Tripper Estimated Costs

Service	Annual Operations Cost (millions of 2022$'s)	Total Equipment Cost (millions of 2022$'s)
Chatsworth – Laguna Niguel	**$19.9**	**$238**
Chatsworth – Irvine	**$18.5**	**$238**

Additional Amtrak stops at downtown Burbank and Norwalk/Santa Fe Springs Station

2017 Alternatives A, B, and C tested the travel demand and functionality of adding all Amtrak train stops at Downtown Burbank and Norwalk/Santa Fe Springs stations. This service pattern provides significant frequency improvements to these stations. A key finding is that additional stops do not significantly disrupt operations in the LOSSAN corridor and can potentially be implemented at very low capital and minimal anticipated operational costs. This is recommended to be studied further in Task 4.

Express Bus Analysis

The addition of express bus service to the network had minimal benefits to ridership regionally, based on the 2017 Alternatives B and C results. However, EFCs benefitted disproportionately in comparison to non-EFCs. Table 13 shows the EFC results, where the increase in trips from EFCs relative to the Base scenario was 19 and 25 percent higher in Alternatives B and C, respectively, as compared to Alternative A (3,467 and 3,663 added EFC trips in Alternatives B and C relative to 2,922 added EFC trips in Alternative A). Nonetheless, the difference between buses that served stops off the freeway compared to buses stopping in line with major capital improvements was negligible. The estimated travel time savings for in-line express bus routes is approximately 25 minutes each direction for the 40-mile I-605 route and 16 minutes each direction for the 25-mile I-405 route.

2047 Alternatives A and B

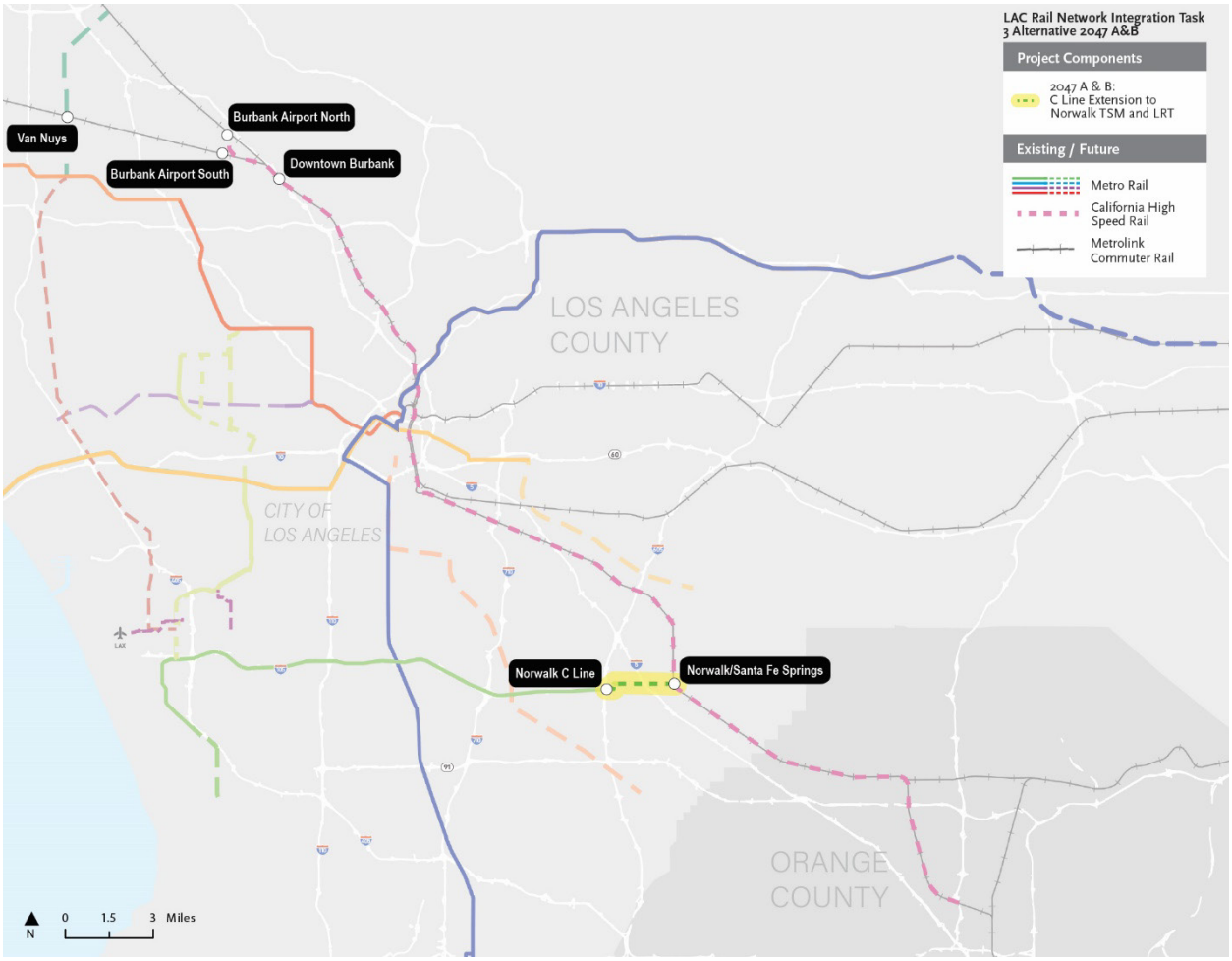
Norwalk Extensions Analysis – 2047

Two alternatives were modeled for the Norwalk Extension between the Metro C Line terminus and Norwalk/Santa Fe Springs stations. These alternatives included a LRT Alternative and a “Best Bus” or transportation systems management (TSM) alternative.

- Alternative 2047 A (LRT)– includes the extension of LRT from the C Line terminus to Norwalk/Santa Fe Springs station

- Alternative 2047 B (TSM)– includes the addition of shuttle buses with signal improvements between the C Line terminus and Norwalk/Santa Fe Springs stations

Figure 13 - 2047 Model Run Alternatives A and B: C Line (Green) Extension to Norwalk TSM and LRT



Source: CR Associates

2047 Ridership Summary

Table 15 - Systemwide Changes in Daily Boardings for 2047

Systemwide Increase over No Build 2047	Daily Boardings	Linked Trips
LRT Alternative	2,659	1,015
TSM "Best Bus" Alternative	1,647	634

Equity Focus Communities Benefits

Two methods to connect the C Line (Green) terminus better and more efficiently to Norwalk/Santa Fe Springs station were tested: LRT and TSM. These improved transit connections benefited EFCs near the Norwalk Study area. Benefits are quantified in **Table 16**.

Figure 14 - Changes in Trips in Comparison to Equity Focus Communities – 2047: Alternative A

Source: CR Associates and Cambridge Systematics

Figure 15 - Changes in Trips in Comparison to Equity Focus Communities – 2047: Alternative B

Source: CR Associates and Cambridge Systematics

Table 16 shows the quantitative results of the extension for both scenarios, which are generally modest. About 1 percent of EFCs and about 1 percent of the population in EFCs see access benefits large enough to shift trip-making by five trips or more. And a total of about 500-600 trips are added through the extension.

Table 16 - 2047 EFC Population and Number of EFCs with Change of Five or More Trips Relative to No-Build for Each Alternative Scenario

Metric	Alternative A	Alternative B
Number of EFCs	1,396	1,396
Number of EFCs where trip change relative to No-Build is 5 or more	11	12
Share of EFCs where trip change relative to No-Build is 5 or more	1%	1%
Total 2047 Population in EFCs	7,716,429	7,716,429
2047 Population of EFCs where trip change relative to No-Build is 5 or more	64,074	69,470

Share of Population in EFCs where trip change relative to No-Build is 5 or more	1%	1%
Total Change in Trips for EFCs	506	572

LRT and TSM Alternatives

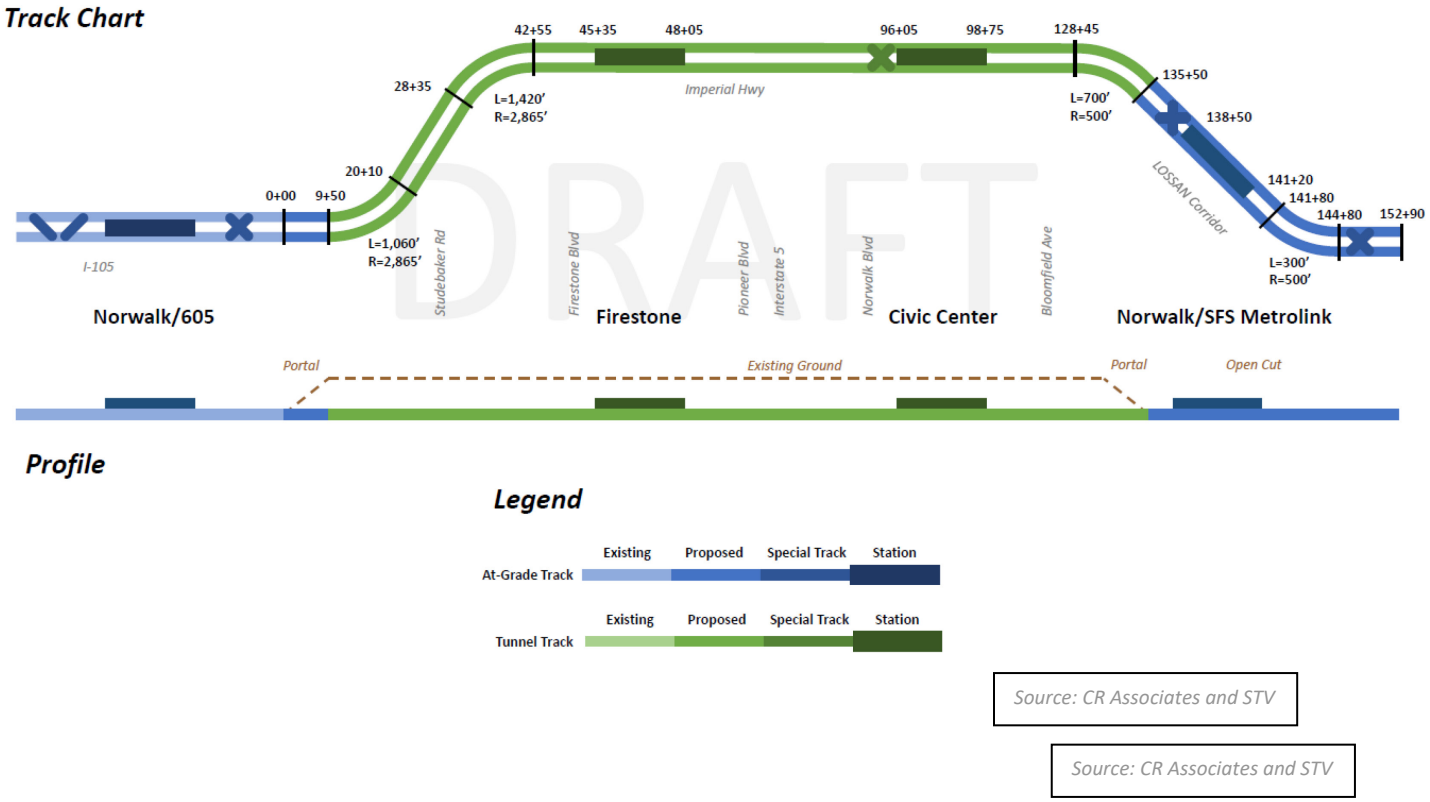
To understand the ridership benefits of the C Line (Green) Norwalk extension, four potential LRT Alternatives were developed to help determine which potential alternative concept might be preferable to move forward for Task 4 analysis. The three LRT alternatives and one TSM alternative were evaluated by their costs, environmental risks, and ridership. This resulted in a quantitative score that could be compared to Alternative 3 – the base case.

The study of alternatives was supported by an initial high-level, conceptual study started in 2017 by SCAG in conjunction with the cities of Norwalk and Santa Fe Springs to bridge the 2.8-mile gap between the terminus of the C Line Station and the Norwalk/Santa Fe Springs Metrolink Station.

Measure M, passed by LA County voters in 2016, funds projects to ease traffic, repair local streets and sidewalks, expand public transportation, earthquake retrofit bridges and subsidize transit fares for students, seniors and persons with disabilities. The 40 year funding plan for Measure M extends from FY 2018 to FY 2057, though the half-cent sales tax will be collected in perpetuity. Measure M is expected to generate $120 billion over the next 40 years. Under Measure M, an extension of the C Line is slated to receive $200 million for groundbreaking in 2047 and opening in 2052.

- The LRT Alternatives 1-2 are below-grade/all-tunnel, and Alternatives 3-4 are a combination of below-grade/tunnel and at-grade/surface. The number of stations and tunnel area are shown in Figures **16 to 19** below.
- The TSM Alternative (**Figure 20**) includes signal improvements at several intersections and assumes the shuttle buses would only stop at the rail stations and Firestone and Civic Center stations.

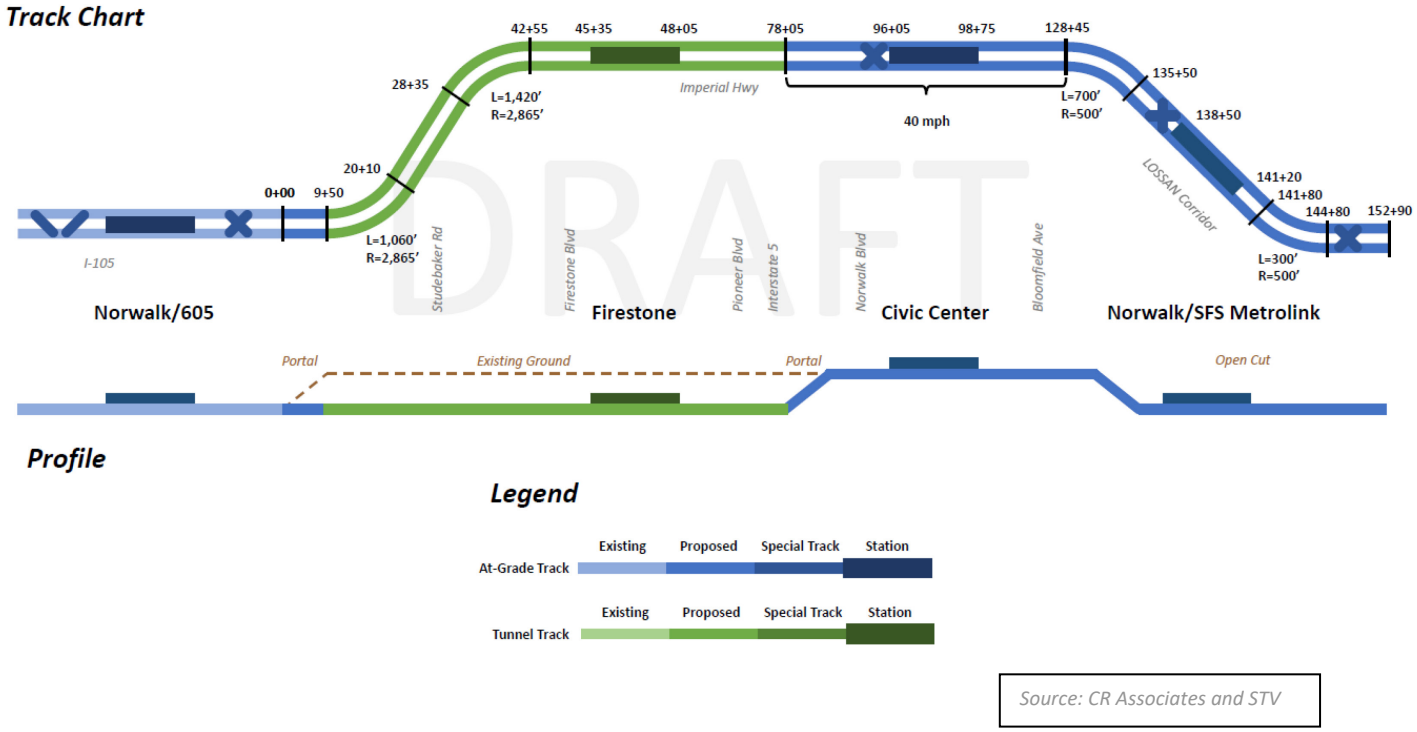
Figure 16 - Norwalk C Line (Green) Extension, Alternative 1: Tunnel, 3 Stations



Source: CR Associates and STV

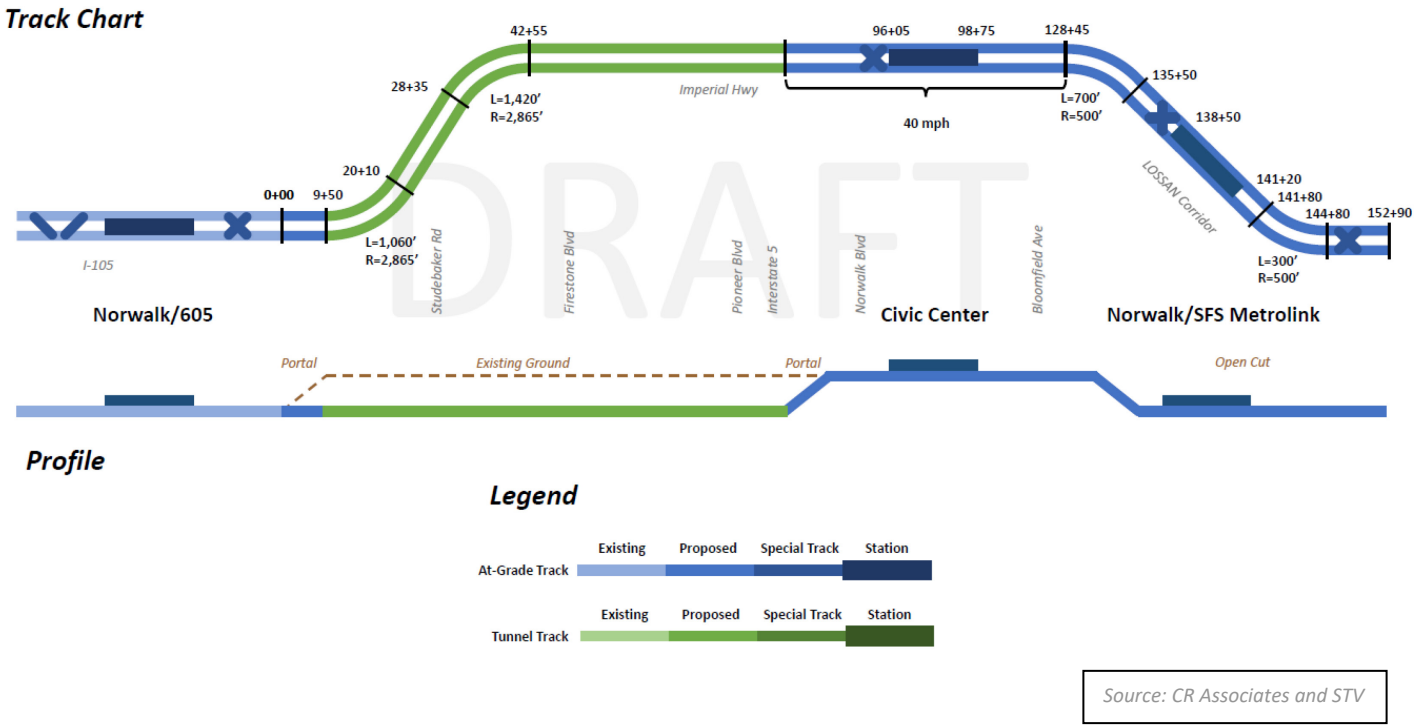
Figure 17 - Norwalk C Line (Green) Extension, Alternative 2: Tunnel, 2 Stations

Figure 18 - Norwalk C Line (Green) Extension, Alternative 3: Tunnel/At-Grade, 3 Stations



Source: CR Associates and STV

Figure 19 - Norwalk C Line (Green) Extension, Alternative 4: Tunnel/At-Grade, 2 Stations



Source: CR Associates and STV

Figure 20 - TSM Best Bus Alternative

Source: CR Associates

LRT and TSM Summary of Findings

The analysis results of the LRT and TSM alternatives are shown below in **Table 17**. The high-level examination results show that there is no clear "ideal" LRT alignment at this early stage of analysis, but does indicate that Alternative 4, which has the lowest cost and lowest risk alternative, might also have the lowest benefits and potentially be more difficult to construct. Based on the transportation analysis found in **Appendix B.8**, Alternative 1 demonstrates the highest ridership potential, while Alternatives 2 and 3 demonstrate moderate ridership potential. The preliminary assessment of environmental impacts of the alternatives found that Alternative 4 had the lowest anticipated environmental impacts relative to the other alternatives. The TSM Alternative shows significantly lower capital and operating costs while also offering the lowest potential benefits An analysis of grade separation requirements, (applying Metro's Milestone 1 screening for grade crossings, from *MTA Grade Crossing Policy for Light Rail Transit, 2003*) found that at-grade crossings on Imperial should be feasible between Norwalk C Line and Norwalk/Santa Fe Springs Stations, with the exception of Studebaker Road, which was found to possibly. Additional alternative analysis, engineering study, and environmental clearance process are needed for this corridor.

Details on the C Line (Green) Extension design, costs, and risk assessment can be found in **Appendix B.8**.

Table 17 - Norwalk C Line (Green) Extension Alternative Comparisons

		Estimated Capital Costs in billions (2022$'s)	Estimated Annual Operational Costs in millions	Ridership potential (pop and employment) of Bus and Rail Compared to Base (#3)	*Benefits to Equity Focus Communities*	*Environmental Risk Assessment*	Feasibility (construction, community impacts, etc.)
	Rail						
Alternative	**1. Tunnel, 3 Stations**	**$2.6**	**$7.1**	**Highest potential ridership**	**High**	**High**	**Fewer feasibility constraints**
	2. Tunnel, 2 Stations	**$2.2**	**$7.0**	**Moderate potential ridership**	***Higher***	***Higher***	**Fewer feasibility constraints**
	3. Tunnel/At-Grade, 3 stations (base)	**$1.6**	**$7.1**	**Base** *(2,659 Systemwide Daily Boardings; 1,015 Systemwide Daily Linked Trips)*	**Base** *(see map and memo)*	**Base** *(see map and memo)*	**More feasibility constraints**
	4. Tunnel/At-Grade, 2 stations	**$1.3**	**$7.0**	**Lower potential ridership**	***Lower***	***Lower***	**More feasibility constraints**
	Bus						
	TSM Best Bus	**$0.013**	**$2.9**	**Lowest Potential Ridership** *(1,647 Systemwide Daily Boardings; 634 Systemwide Daily Linked Trips)*	**Lowest**	**Lowest**	**Most feasible**

5.0 Operational Assessment and Infrastructure in the Station Study Areas

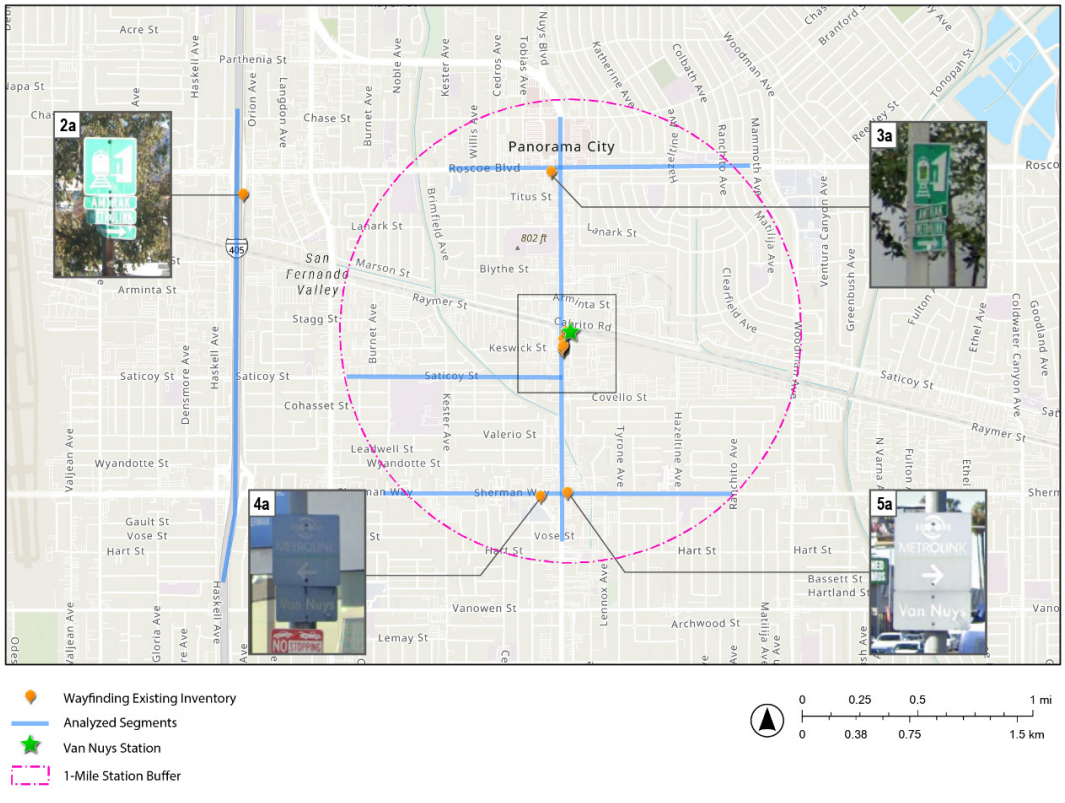
This section includes findings from the Task 3 analysis, including sections on Wayfinding, Station Assessments and First/Last Mile Analysis for each project area.

5.1 Van Nuys Station Area

Wayfinding to/from the Station

There is wayfinding signage directing cars to the Van Nuys station, but this signage is in poor condition and is sparsely spaced. There is no wayfinding signage from the rail platform towards the nearby buses (Metro routes 169, 233, 761, and the Panorama City/Van Nuys DASH) and no station area map. There is a lack of consistency in the signage, with some indicating Metrolink or the station's name but with no signage indicating that there is a single Van Nuys Station with Amtrak, Metrolink, and Metro and DASH buses. The signage pointing toward trains is generally small. Details on existing wayfinding can be found in **Appendix B.2.**

Figure 21 - Van Nuys Existing Wayfinding Inventory



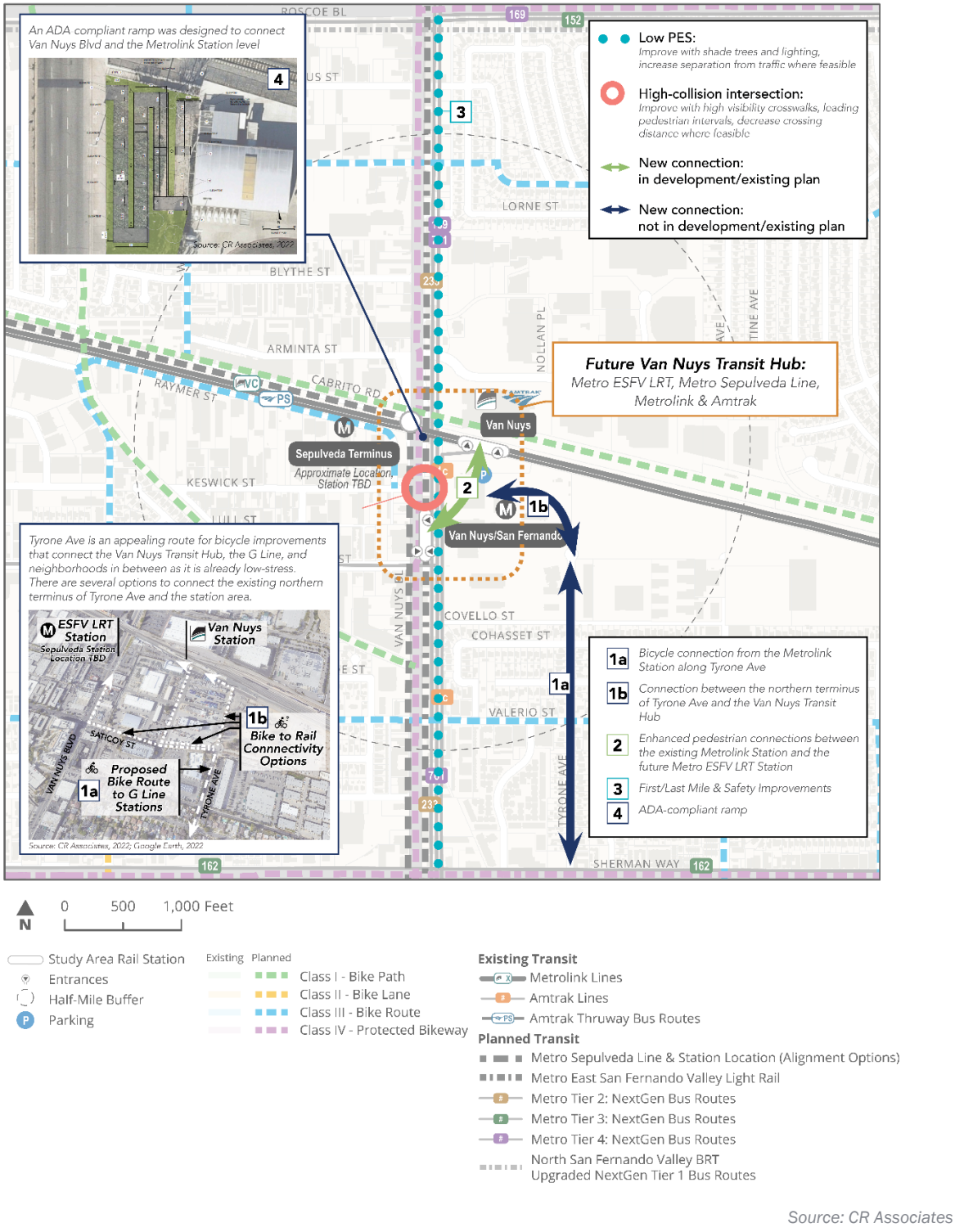
Source: CR Associates

First/Last Mile

The Van Nuys Station was observed to have a number of access challenges for pedestrians and cyclists. For instance, the station is not connected to the existing bike routes, the closest infrastructure being a north-south Class II bike route on Woodman Avenue, about one mile east of the station. Existing sidewalk conditions result in low pedestrian comfort due to a lack of shade, pedestrian lighting, and wide crossings. Additionally, the Van Nuys Study Area has numerous records of collisions involving pedestrians, bicycles, and automobiles. There is a potential to increase pedestrian connections to the future East San Fernando Valley Light Rail (ESFV LRT) at Van Nuys Boulevard/Keswick Street intersection. There is an anticipated increase in multimodal connectivity with the future Sepulveda Transit Corridor project. Van Nuys Boulevard is identified as a Pedestrian Enhanced District in the City of Los Angeles' *Mobility Plan 2035,* adopted by City Council in September 2016. The Pedestrian Enhanced Districts (PED) are an analysis of a snapshot of areas where pedestrian improvements are prioritized relative to other modes. These areas may be located near schools, transit stations, areas of high pedestrian activity, areas with high collision frequency, or other placemaking opportunity areas. Additionally, Metro conducted an FLM study for the station area as part of the ESFV LRT First/Last Mile Plan, 2020. Additional information on the high-level existing and proposed first/last mile improvements can be found in **Appendix B.3.**

An ADA-compliant ramp connecting Van Nuys Boulevard near the rail bridge and the station access level was examined in Task 3 and is noted as #4 in **Figure 22.** The ramp was found to have low environmental risk but also low travel time benefit. Details can be found in **Appendix B.5.**

Figure 22 - Van Nuys First/Last Mile Analysis



Source: CR Associates

Station Assessment

Wayfinding and signage within the Van Nuys station area need to be improved. There are accessibility and infrastructure issues, such as a lack of continuous sidewalk connections. There are tactile features on the northeast corner of Van Nuys/Keswick, but not the other corners of the intersection; there is also no curb cut on the NW corner of the intersection. The Keswick intersection does not provide a walk signal for the crosswalks during its green cycle unless the pedestrian crossing button is pressed. Improvements, such as pedestrian leading intervals, pedestrian lighting, and accessible sidewalks, should be coordinated with the East San Fernando Valley Light Rail (ESFV LRT) project.

The Van Nuys station platform does not meet Metrolink's *SCRRA Design Criteria Manual* standards which state that "*the preferred canopy coverage is 50 percent of the platform length, however canopies shall cover a minimum of 30 percent of the platform length to accommodate passenger usage. Additionally, 15% of the total platform square footage shall be covered.*" The Van Nuys station meets the square footage requirements for platform coverage at 21%, but the existing length is 14%, under the 30% required (ArcGIS base map aerials, 2023).

A summary of costs for the station FLM/access improvements can be found in **Table 18** below; Details on the station assessment can be found in **Appendix B.4**.

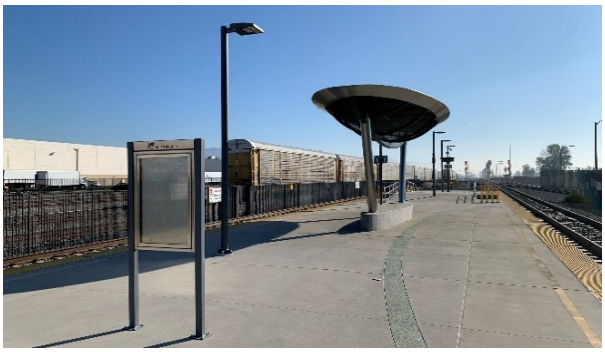
Table 18 - Van Nuys Summary of Station Improvement Cost Estimates

ID	Van Nuys Station	Cost Estimates
8	Customer Information (ex. station area map, static directional signage) Total	$537,200
13	Station Accessibility (ex. bike racks, bike center/hub) Total	$421,600
22	Station Boarding Area (ex. public art, seating, Wi-Fi) Total	$1,028,500
23	**Station Total**	**$1,987,300**

Source: CRA, Appendix B.4

Figure 23 - Van Nuys Existing Conditions Photos

Improved signage and wayfinding needed at station



Much of the platform is exposed to sun

Improved signage and wayfinding would benefit people transferring between transit modes, as current signage is weathered

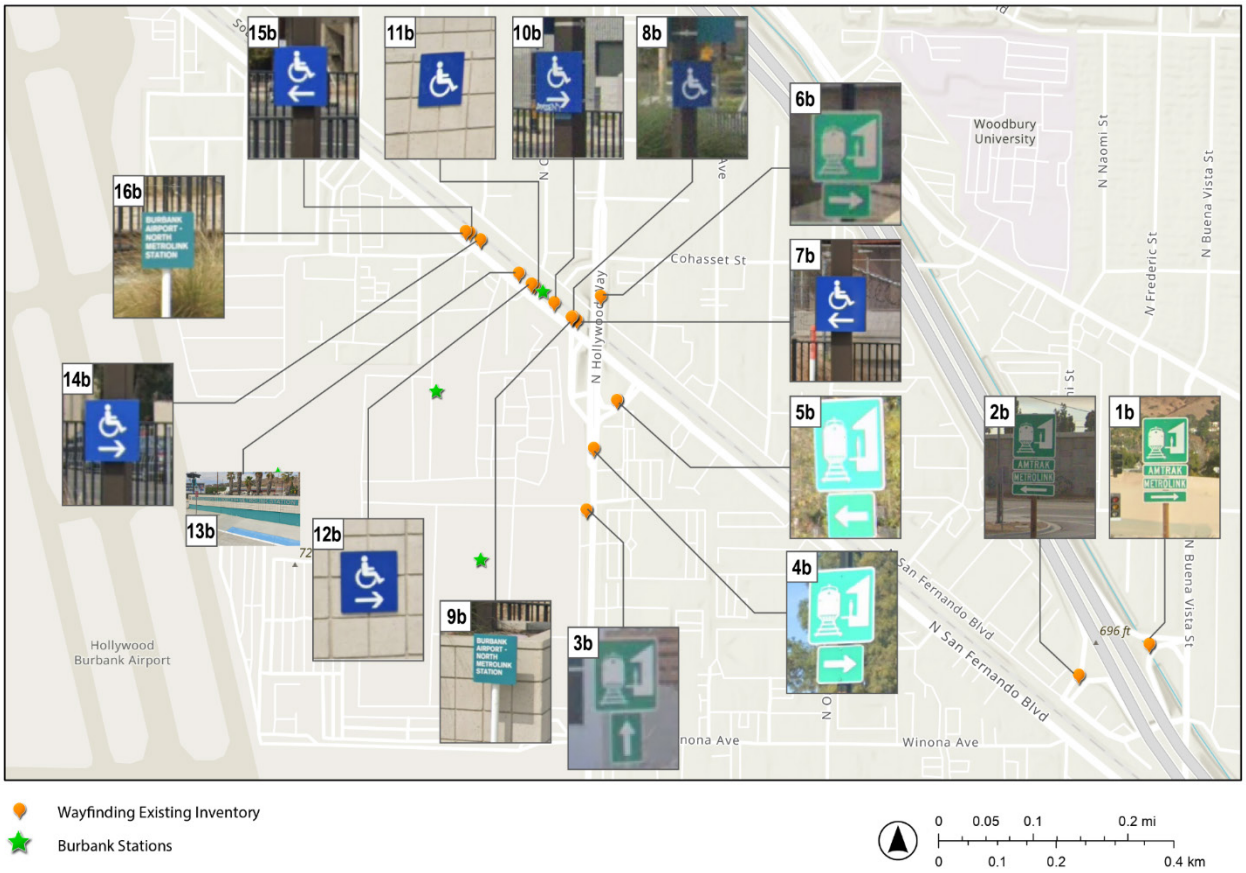
5.2 Burbank Study Area

Burbank Airport North Station

Wayfinding

Wayfinding in the Burbank Airport North Station area surrounding the station is limited to small, auto-oriented signs, as shown in **Figure 24**. The type of rail service is not clearly indicated as Metrolink on most of the signs. Additional details on existing wayfinding can be found in **Appendix B.2.**

Figure 24 - Burbank Airport North Existing Wayfinding Inventory



Source: CRA, Appendix B.2

First/Last Mile

The Burbank Airport North Station area is not currently well connected for pedestrians or cyclists, as shown in **Figure 26**. However there are plans to improve access to the station via the implementation of pedestrian and bicycle connections to the south, associated with Hollywood Burbank Airport (HBA), and to the north, associated with Metro's Brighton to Roxford Double Track Project. *Burbank Airport Connectivity Analysis Study (*2022) identified long-term pedestrian and bicycle enhancements on San Fernando Road, between the Burbank Airport North Metrolink Station and the Burbank

Airport. Additional information on the high-level existing and proposed first/last mile improvements can be found in **Appendix B.3.**

FLM - Shuttle Examination

Currently, the Airport operates an on-demand shuttle between the Burbank Airport North Station and the existing terminal. The connectivity is proximate to connecting the Burbank North and Burbank South rail stations.

As part of the development agreement between the City of Burbank and the Burbank-Glendale-Pasadena Airport Authority for the Airport's replacement terminal, the Airport Authority is required to provide a dedicated passenger shuttle between the airport terminal and the Regional Intermodal Transportation Center (RITC). The Burbank Airport South Station is directly across from the RITC, so riders will be able to access the airport shuttle stop at the RITC by crossing Empire Avenue. However, a connection between the terminal and the Burbank Airport North Station is still needed.

An extension of the shuttle service was calculated to be over $2.3 million for vehicles and $1.2 million for frequent 18 hours/day service, 365 days. The Task 3 analysis of this connection determined that utilizing Metrolink and Amtrak provides potentially superior connectivity than a dedicated shuttle.

Metrolink Operations for Airport Access

The RNI Task 3 analysis found that utilizing existing rail connectivity to the Airport can efficiently provide existing and future circulation between the rail stations, the existing terminal, the future relocated terminal, and the future high-speed rail station. A diagram of connections is shown in **Figure 25** below.

Figure 25 - Operational Analysis: Metrolink Burbank Station Areas

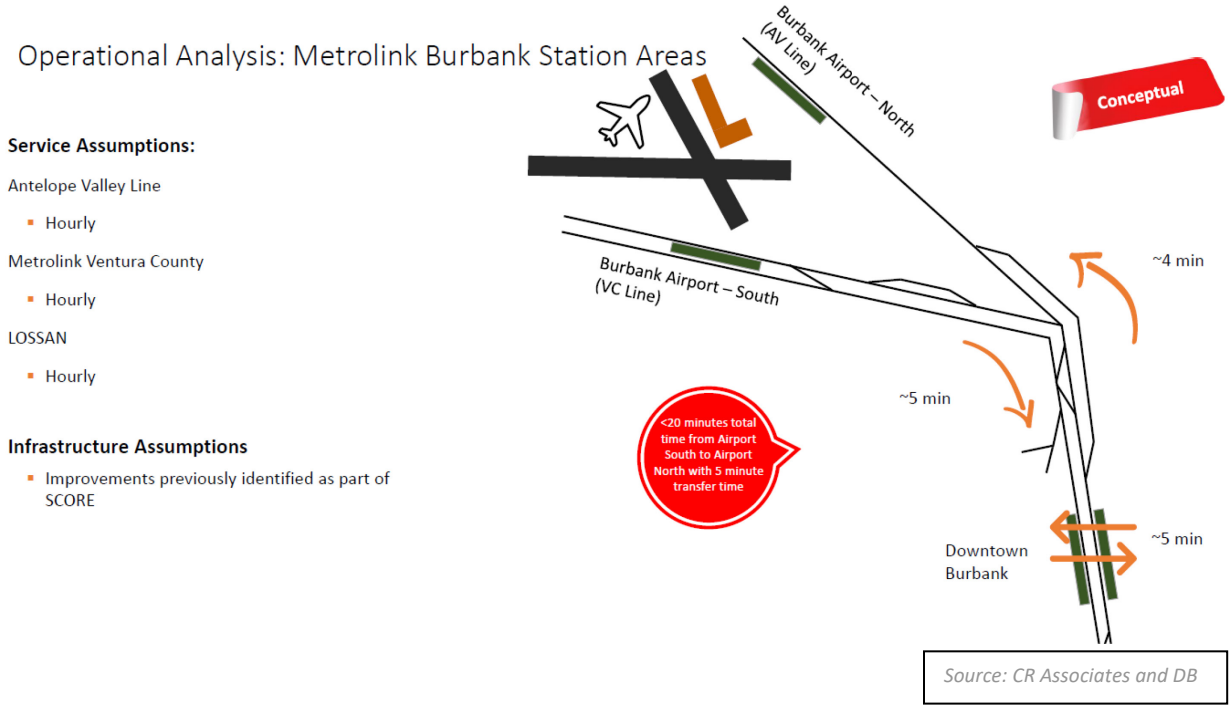
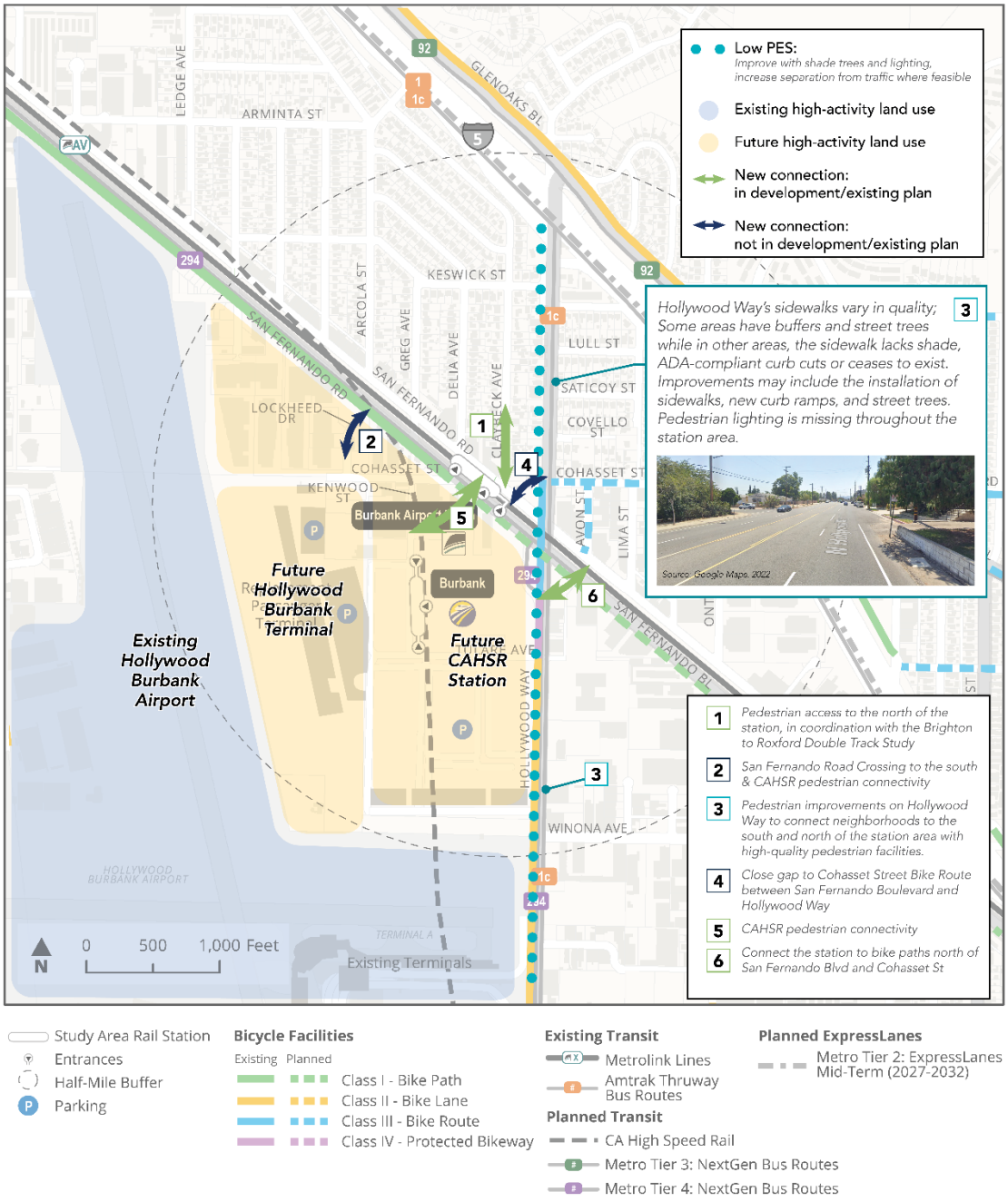


Figure 26 - Burbank Airport North First/Last Mile Analysis



Source: CR Associates

Station Assessment

The station is constrained by a single platform on the southern side of the tracks. Platform station access is open at the north and south ends of platform, but pedestrian infrastructure to support access is only available at south end of platform. At the station, customer information was not observed to be conducted in real-time. Additional observed shortcomings included accessibility challenges and infrastructure issues.

The Burbank Airport North station platform does not meet Metrolink's *SCRRA Design Criteria Manual* standards which state that "the preferred canopy coverage is 50 percent of the platform length, however canopies shall cover a minimum of 30 percent of the platform length to accommodate passenger usage. Additionally, 15% of the total platform square footage shall be covered." The Burbank Airport North station does not meet the square footage requirements for platform coverage at 12%, and the existing length is 21% which is under the 30% required (ArcGIS base map aerials, 2023).

A summary of costs for station improvements can be found in **Table 19** below; Details on the station assessment can be found in **Appendix B.4**.

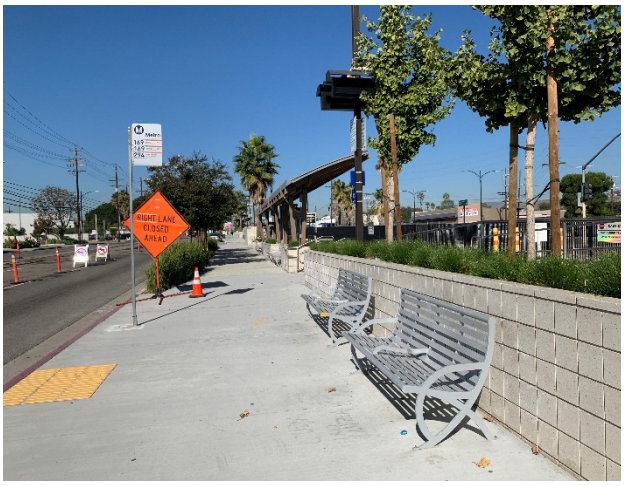
Table 19 - Burbank Airport North Summary of Station Improvement Cost Estimates

ID	Burbank Airport North Station Improvements	Cost Estimates
30	Customer Information (ex. customer service kiosk, audio wayfinding) Total	$555,300
37	Station Accessibility (ex. car share, bike center/hub) Total	$1,051,800
46	Station Boarding Area (ex. public art, restrooms, Wi-Fi) Total	$1,271,600
47	**Station Total**	**$2,878,700**

Source: CRA, Appendix B.4

Figure 27 - Burbank Airport North Existing Conditions Photos

Lack of bus stop amenities



Lack of shade structures in some parts of station

Burbank Airport South

Wayfinding to/from the Station

There are few wayfinding signs pointing towards the station. The signage does not clearly indicate the types of services at the station and does not indicate that Amtrak and Metrolink both stop at the station. The signs that do exist are small and primarily auto-oriented, as shown in **Figure 28**. Additional details on existing wayfinding can be found in **Appendix B.2.**

Figure 28 - Burbank Airport South Existing Wayfinding Inventory

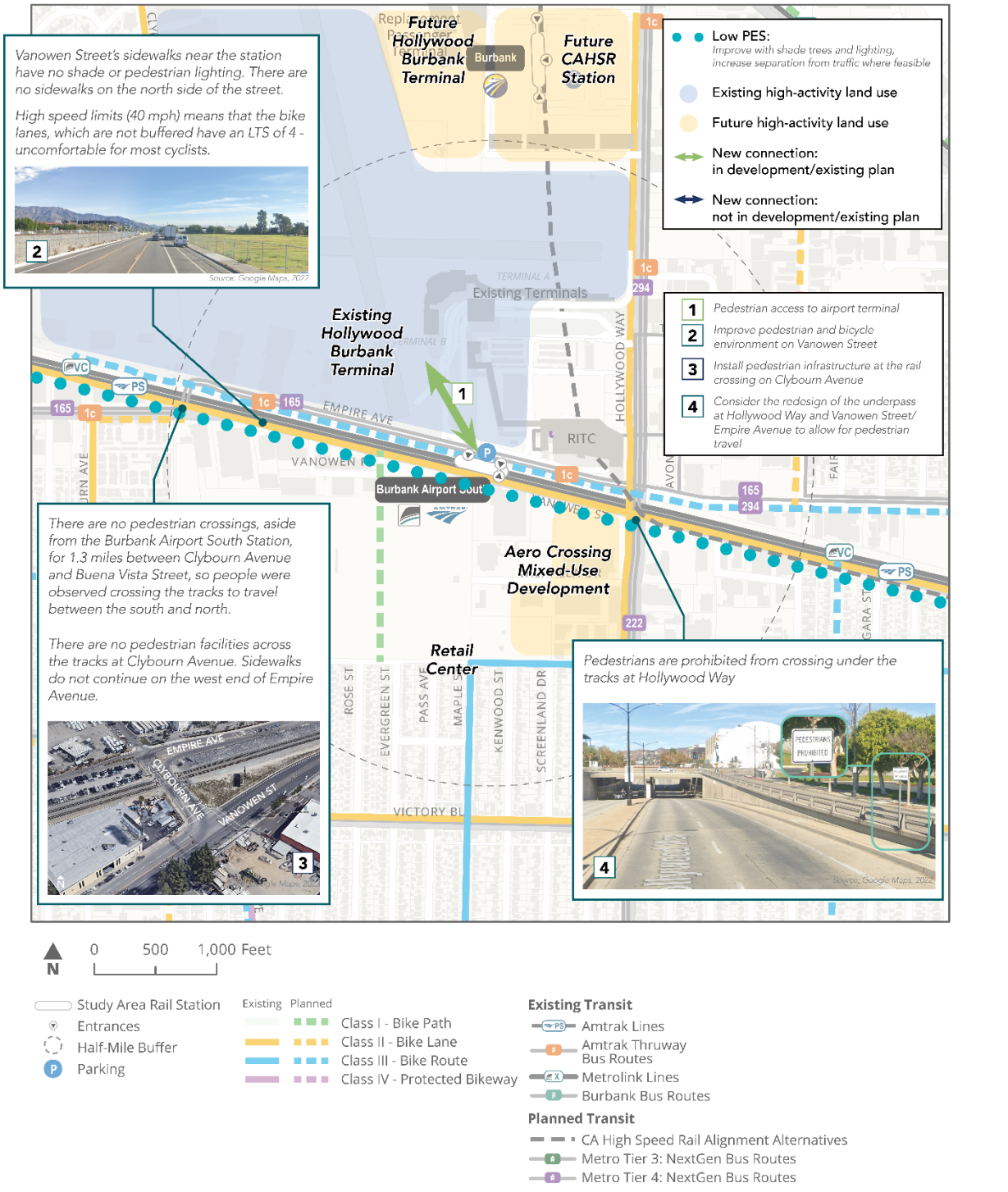
Source: CR Associates, Appendix B.2

First/Last Mile

First/last mile access to the Burbank Airport South Station is shown in **Figure 29**. Pedestrian access to Burbank Airport South is challenging due to the rail tracks; the station is the only crossing within a 1.3-mile stretch, so passengers and non-passengers use it to cross between southern and northern areas. A raised pedestrian bridge connecting the existing Metrolink station on Empire Ave to the Regional Intermodal Transfer Center (RITC) was studied to reduce the need for pedestrians to cross at-grade roadways or railroad tracks (linkBURBANK, 2013). CAHSR is planned to be constructed to the north of the station; pedestrian access at Burbank Airport is considered as part of the CAHSR plan. There are eastbound bike lanes on Vanowen Place and unprotected bike lanes on both sides of

Hollywood Way. *Burbank Airport Connectivity Analysis Study,* 2022, identified near-term pedestrian and bicycle enhancements on Empire Avenue, between the Burbank Airport South Metrolink Station and the Burbank Airport, and pedestrian crossings south of Vanowen Street. Metro Micro has service at the Burbank South Station, which will need to be accommodated at pick-up/drop-off or transit locations. Additional information on the high-level existing and proposed first/last mile improvements can be found in **Appendix B.3.**

Figure 29 - Burbank Airport South First/Last Mile Analysis



Source: CR Associates

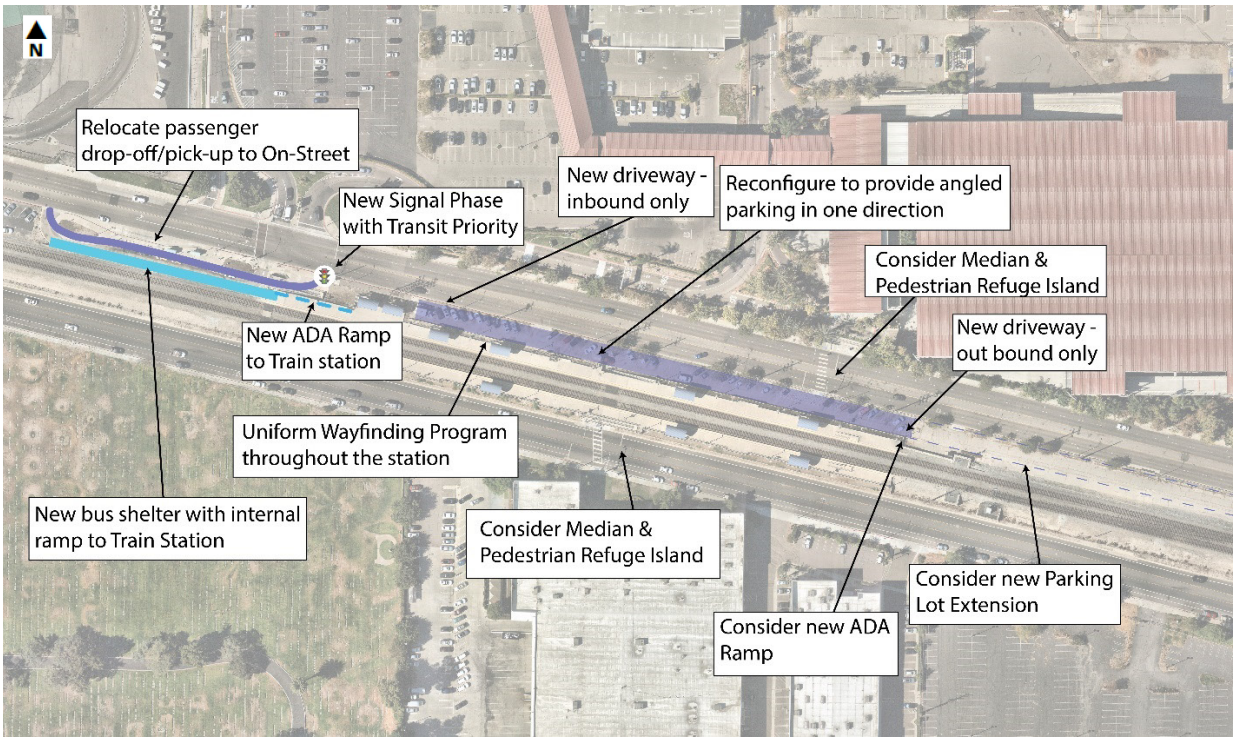
Improved Station Access

Access to the station for buses and personal vehicles was studied for potential redesign and shown in **Figure 30**.

It is recommended that the bus station be redesigned to provide a more welcoming environment with transit priority signals so that buses can exit the area safely. The redesign of the bus station should include an ADA compliance ramp that extends to/from the training stations. A refresh of the bus waiting area and rail station's look and feel should also be considered; this would create a cohesive transit experience for those transferring between rail and bus or those arriving at the station to use the multiple transit options available.

In addition, the parking lot should be restriped so that all parking stalls face the same direction, including an inbound-only driveway on the northern end and an outbound-only driveway at the southern end. This would improve the operation and pedestrian environment around the parking lot. Raised medians with pedestrian refuge areas are recommended on both sides of the train station, as well as on Vanowen Street and Empire Avenue.

Figure 30 - Conceptual Design for Improved Access and Parking



Source: CR Associates

Station Assessment

Field observations indicated that the existing bus transit center waiting area in the RITC has full weather protection and is well lit, thus providing a decent customer environment. There are existing restrooms located on the second level of the RITC with direct access to the bus transit center located on the ground level.

The wayfinding signage throughout the train stations is a mix of different programs, making it harder for transit users to find their way to the nearest bus stop or the airport. There are many signs available pointing riders from the rail platform to RITC and the buses serving it, but wayfinding is still tricky for riders. For example, patrons expect a connection from the east end of the platform to cross Empire Ave at the RITC pedestrian crossing, as opposed to the access provided in the middle of the platform currently. A comprehensive wayfinding program, including digital signage of train delays, will improve the environments around the stations.

The Burbank Airport South Station platform does not meet Metrolink's *SCRRA Design Criteria Manual* standards which state that "*the preferred canopy coverage is 50 percent of the platform length, however canopies shall cover a minimum of 30 percent of the platform length to accommodate passenger usage. Additionally, 15% of the total platform square footage shall be covered*." The Burbank Airport South station does not meet the square footage requirements for platform coverage at 10%, and the existing length is 12%, under the 30% required (ArcGIS base map aerials, 2023).

Coordination with Burbank Airport for improvements is needed, as well as systemwide coordination with Metrolink. A summary of the costs for station improvements can be found in **Table 20** below. Details on the station assessment can be found in **Appendix B.4**.

Table 20 - Burbank Airport South Summary of Station Improvement Cost Estimates

ID	Burbank Airport South Improvements	Cost Estimates
55	Customer Information (ex. digital information kiosk, station area map) Total	$669,700
62	Station Accessibility (ex. bi-directional access ramps) Total	$249,200
73	Station Boarding Area (ex. public art, sound barrier, shade trees) Total	$1,252,600
74	**Station Total**	**$2,171,500**

Source: CRA, Appendix B.4

Figure 31 - Burbank Airport South Existing Conditions Photos

Parking signage is weathered.

Station lacks adequate shade structures

ADA ramp is too narrow for bidirectional use

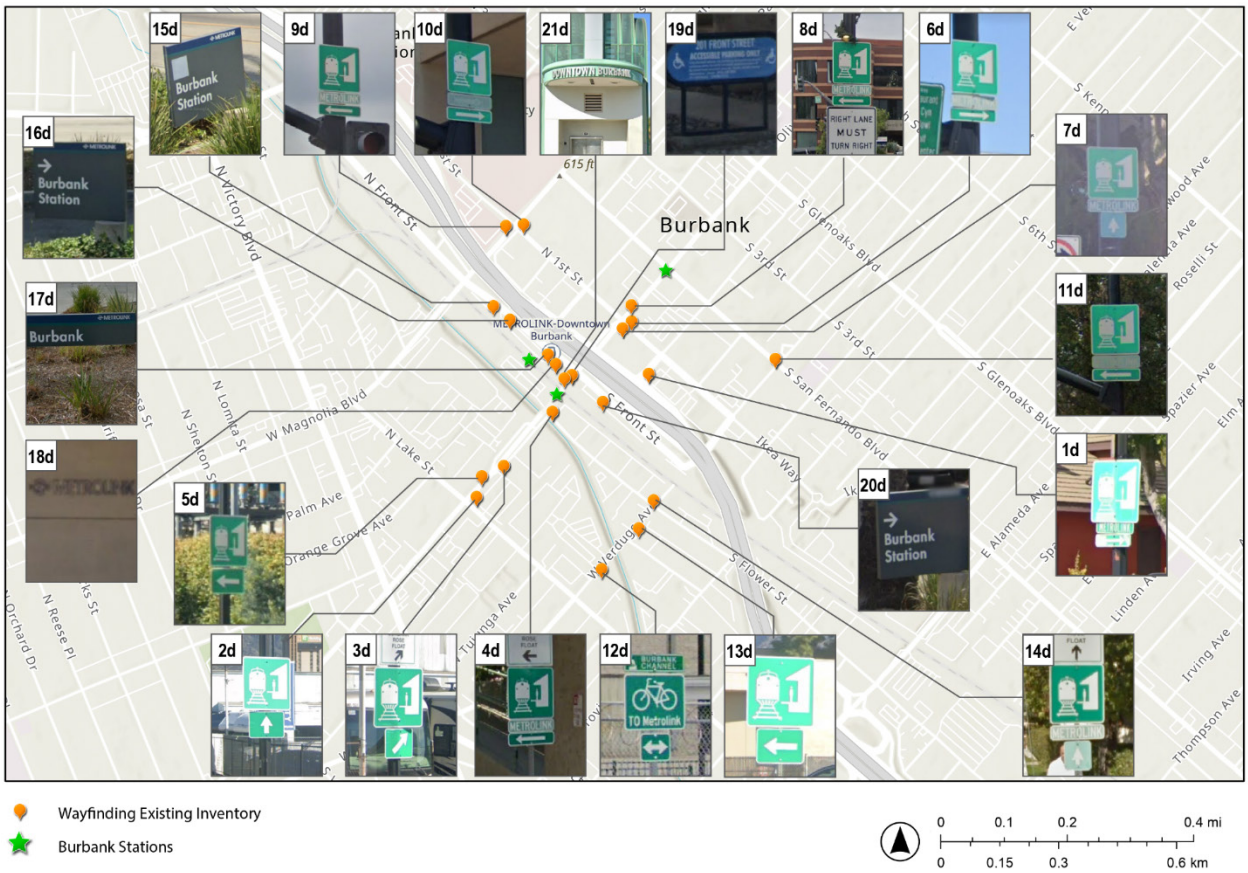
"Bob Hope Airport Station" signage, which is not the name of the station.

Downtown Burbank

Wayfinding to/from the Station

Wayfinding is prevalent but auto-oriented between the station and downtown Burbank as shown in **Figure 32**. There is no indication of the multitude of transit services available at the station, including Amtrak, Metrolink, and buses. Additional details on existing wayfinding can be found in **Appendix B.2.**

Figure 32 - Downtown Burbank Wayfinding Inventory

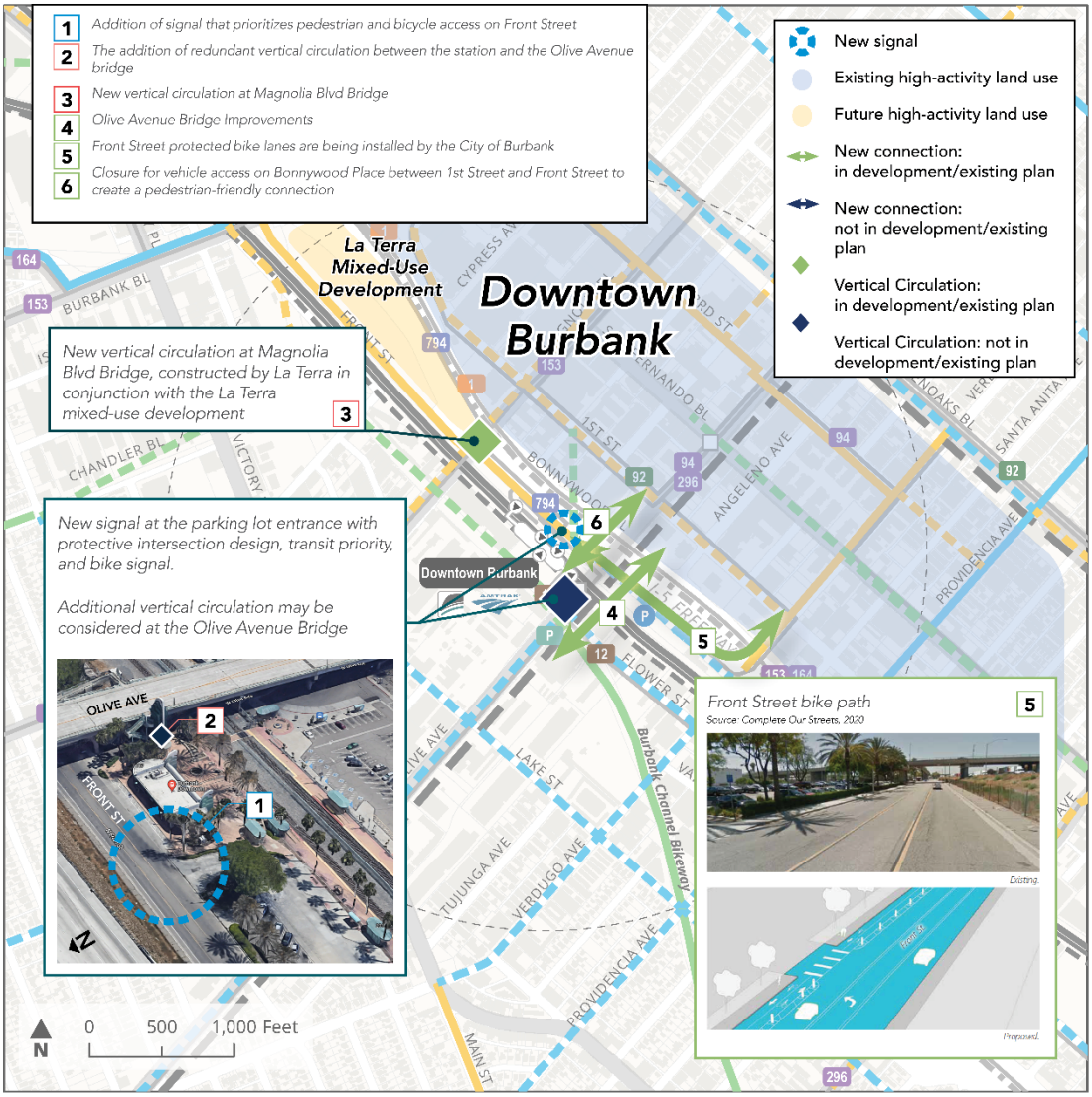


Source: CR Associates, Appendix B.2

First/Last Mile

Downtown Burbank is challenged by low pedestrian and bike comfort; however, the City of Burbank has recently completed its complete streets plan, *Complete Our Streets* (2020). Based on the plan, the City of Burbank is implementing a number of bicycle and pedestrian projects in the area, including Front Street Class IV Bikeway as a short-term priority project, which is currently in the development stage. The FLM analysis is shown in **Figure 33**. Additional information on the high-level existing and proposed FLM improvements can be found in **Appendix B.3.**

Figure 33 - Downtown Burbank First/Last Mile Analysis



Source: CR Associates

Improved Station Access

Improved station access is shown in **Figure 34**. Buses are challenged to exit the station onto Front Street. A proposed Front Street Traffic Signal would serve to provide bus transit priority at this intersection of North Front Street and Burbank Downtown Station, along with increased safety for pedestrian crossings. The proposed improvements include the construction of a new traffic signal at the intersection of North Front Street and the egress of Burbank – Downtown Station. Additional work includes ADA complaint ramps, concrete pavement, curb, sidewalk, signing and marking, relocation of a streetlight, and misc. landscape/irrigation.

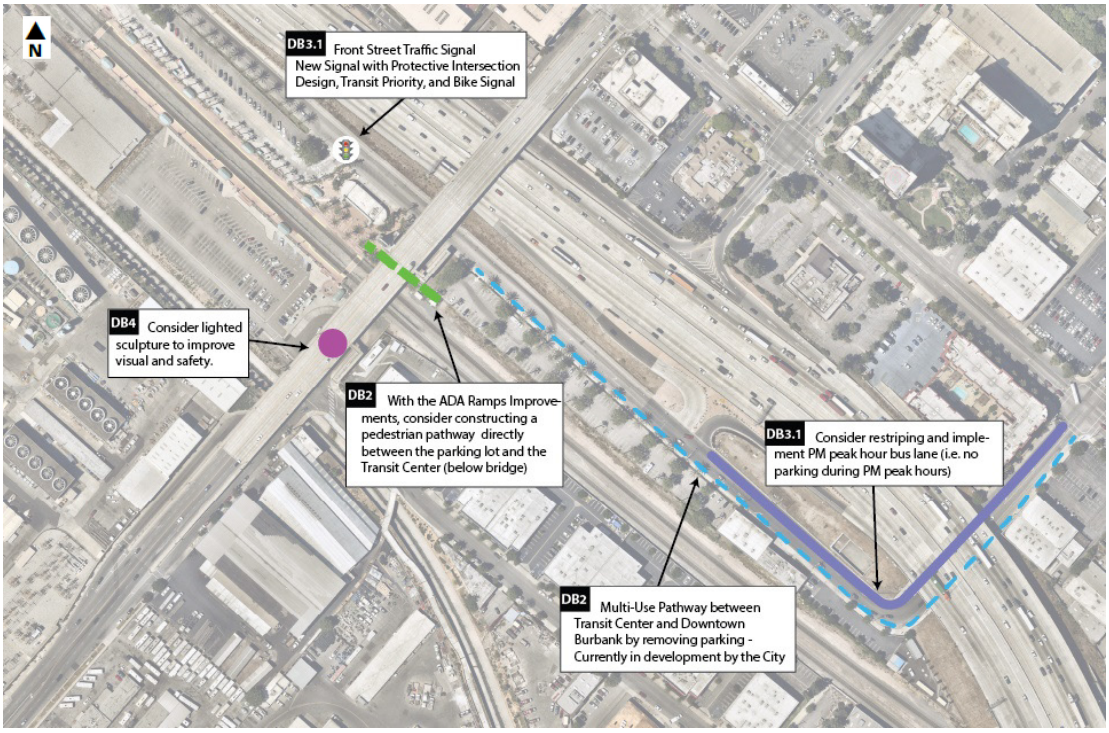
Additional improvements to the bridge were considered, including traffic calming, enhanced sidewalks, and improved crossing. It was determined that no improvements would be made to the existing bridge in the near-term, due to the findings that previous analysis determined that any improvement would involve a bridge replacement.

There are several Olive Bridge underpass pedestrian and cyclist improvements included in the City of Burbank's Complete our Streets plan, including the closure of the adjacent Bonnywood Place roadway to automobile access, the addition of a two-way Class IV Bikeway on Front St, and the addition of pedestrian amenities like high visibility crosswalks and upgraded ADA curb cuts at the base of the bridge.

Additionally, this area is within the North Hollywood/Burbank Metro Micro Service Zone and is thus serviced by Metro's on demand rideshare service in addition to the transit services.

Additional details can be found in **Appendix B.7**.

Figure 34 - Downtown Burbank Proposed Access Improvements



Source: CR Associates

Station Assessment

More signage is needed at the station to indicate the location of connecting services and destinations accessible from the station, including Downtown Burbank. Sidewalks need improvements, and some areas present ADA challenges.

The Burbank Downtown station platform does not meet Metrolink's *SCRRA Design Criteria Manual* standards which state that "the preferred canopy coverage is 50 percent of the platform length, however canopies shall cover a minimum of 30 percent of the platform length to accommodate passenger usage. Additionally, 15% of the total platform square footage shall be covered." The Burbank Downtown station does not meet the square footage requirements for platform coverage at 13%, and the existing length is 14%, which is under the 30% required (ArcGIS base map aerials, 2023).

A summary of costs for station improvements can be found in **Table 21** below; Details on the station assessment can be found in **Appendix B.4**.

Table 21 - Downtown Burbank Summary of Station Improvement Cost Estimates

ID	Burbank Downtown Metrolink Station improvements	Cost Estimates
83	Customer Information (ex. static directional signage, customer service kiosk) Total	$738,800
90	Station Accessibility (ex. tactile warning features) Total	$266,100
100	Station Boarding Area (ex. pedestrian lean bar, shade structures, sound barrier) Total	$2,646,000
101	**Station Total**	**$3,650,900**

Source: CRA, Appendix B.4

Figure 35 - Downtown Burbank Existing Conditions Photos

Station lacks adequate shade structures

Ramp may be too steep for ADA access

Improved signage and wayfinding are needed at station

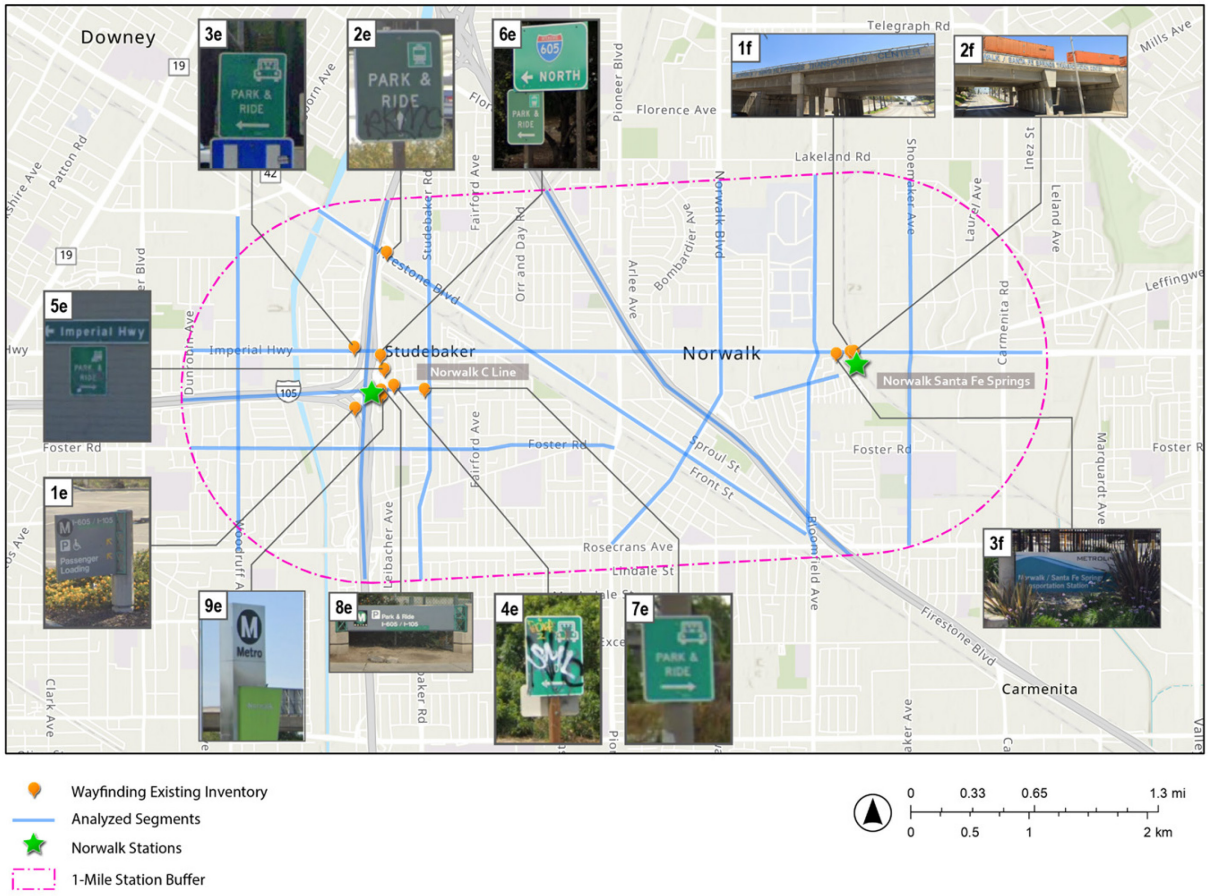
5.3 Norwalk Study Area

Norwalk C Line (Green) Terminus Station

Wayfinding to/from the Station

The station is not integrated with the surrounding communities and is primarily commuter-oriented with vast parking facilities. This is reflected in the surrounding area's wayfinding signs, which cater exclusively to drivers shown in **Figure 36**. Additional details on existing wayfinding can be found in **Appendix B.2.**

Figure 36 - Norwalk C Line Terminus Wayfinding Signage



Source: CR Associates, Appendix B.2

First/Last Mile

High-level findings for the Norwalk C Line (Green) Terminus station are summarized in **Figure 37**. The station is heavily used but the I-5 Freeway and Imperial Highway constrain access for pedestrians and cyclists. Potential connections to the surrounding community exist but are fenced off, so there is an opportunity to connect neighborhoods to the south and southwest by opening gates and creating pedestrian-friendly pathways. It is recommended that bicycle connectivity be improved via Foster Avenue and potentially San Antonio Drive to Civic Center Drive or similar routing. Additional

information on the high-level existing and proposed first/last mile improvements can be found in **Appendix B.3.**

Figure 37 - Norwalk C Line (Green) Terminus First/Last Mile Analysis

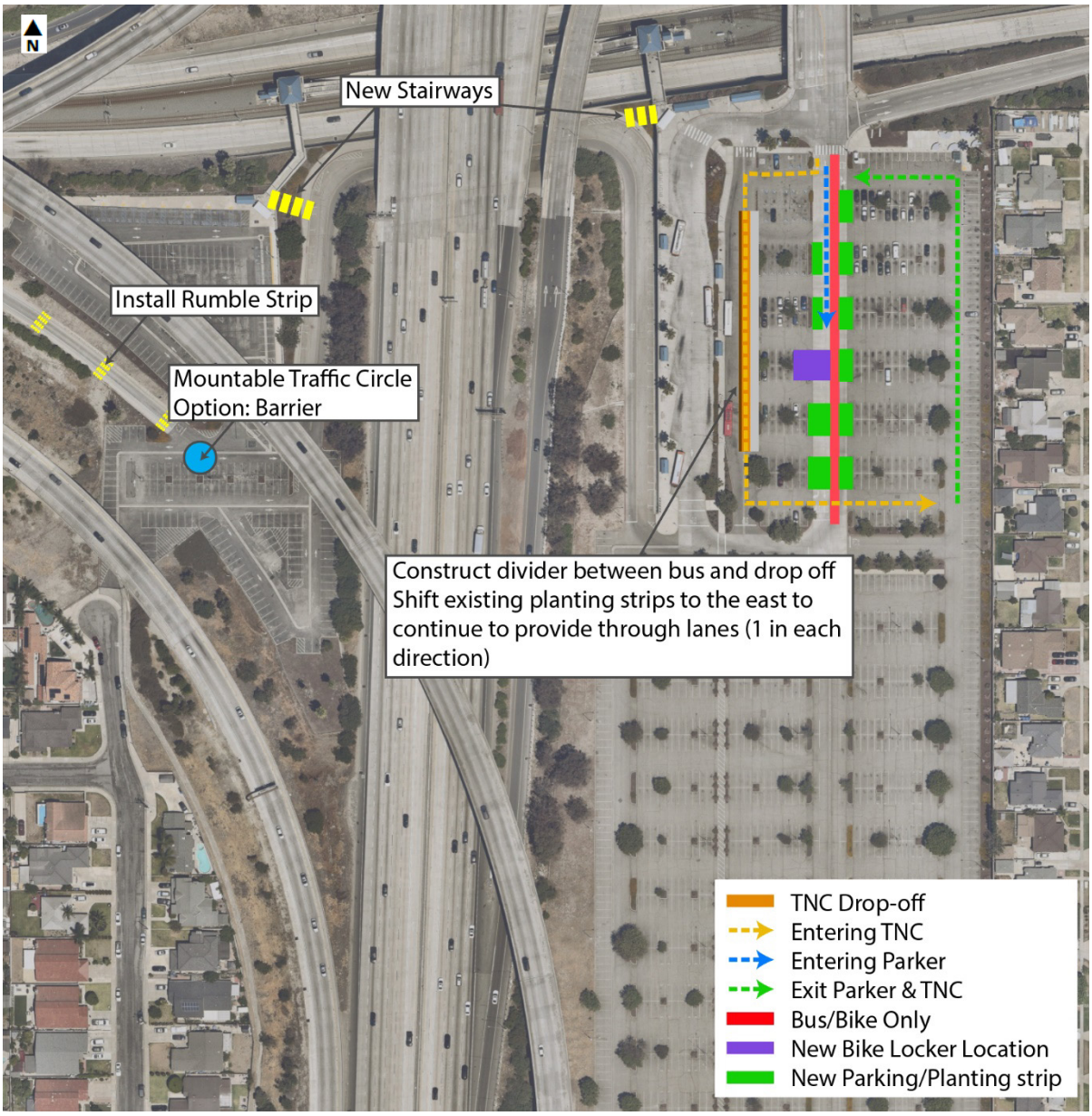
Source: CR Associates

Station Assessment

Site access in the station's proximity can be challenging as listed below and shown in **Figure 38**. Additional details can be found in **Appendix B.4** and **Appendix B.9**.

- Bike Parking (Main Parking Lot): the current bicycle storage location is located on the northeast corner of the parking lot. This is an inconvenient location, as cyclists entering the parking lot would have to cut across traffic, lock their bikes, and then walk to the station area. The project should consider relocating the bike lockers closer to the station area. This can be done by shifting a few parking spaces, especially by repurposing the existing southbound lane.
- Pedestrian Access (Southwest Parking Lot): If feasible, consider providing a wide multi-use path (north side) and stairway either on the eastern or western side of the loop between the Backup Parking Lot and the Main Parking Lot.
- Additional signage: While there are signs to indicate nearby buses from the LRT platform, there are no signs from the bus plaza to indicate nearby trains.
- Main Parking Lot Vehicle Access: Currently, there are two southbound lanes and two northbound lanes at the main parking lot. The two southbound lanes don't seem to serve any purpose as there is only one southbound lane at the Hoxie Avenue/Century Freeway intersection. It is recommended that the Project consider removing 1 southbound through lane and re-stripe/reconstruct the parking lot to provide ride-hail (taxi) ride-share (Uber, Lyft, etc.) pickup/drop off area, new bike lockers area, additional planting strip or parking. See markup for clarification.
- For the northbound approach, consider making the right-most northbound lane bus only. This would help buses exit the parking lot during peak hours.
- Metro conducted a proposal to build several additional Electric Vehicle (EV) charging station spaces for passengers in parking structures at this station in the future.

Figure 38 - Norwalk C Line (Green) Terminus Station Assessment



Source: CR Associates

A summary of costs for additional station improvements can be found in **Table 22** below; Details on the station assessment can be found in **Appendix B.4**.

Table 22 - Norwalk C Line (Green) Terminus Summary of Station Improvement Cost Estimates

ID	Metro Norwalk C Line (Green) Station improvements	Cost Estimates
110	Customer Information (ex. customer service kiosk, real-time arrival information) Total	$3,622,200
118	Station Accessibility (ex. car share, bike center/hub, bike share) Total	$1,636,100
124	Station Boarding Area (ex. bus stop amenities, restrooms, sound barrier) Total	$1,869,000
125	**Station Total**	**$7,127,300**

Source: CRA, Appendix B.4

Figure 39 - Norwalk C Line (Green) Terminus Existing Conditions Photos

Lack of signage directing passengers from the bus bays to the train station

Real time information is inconsistent and not included throughout the station

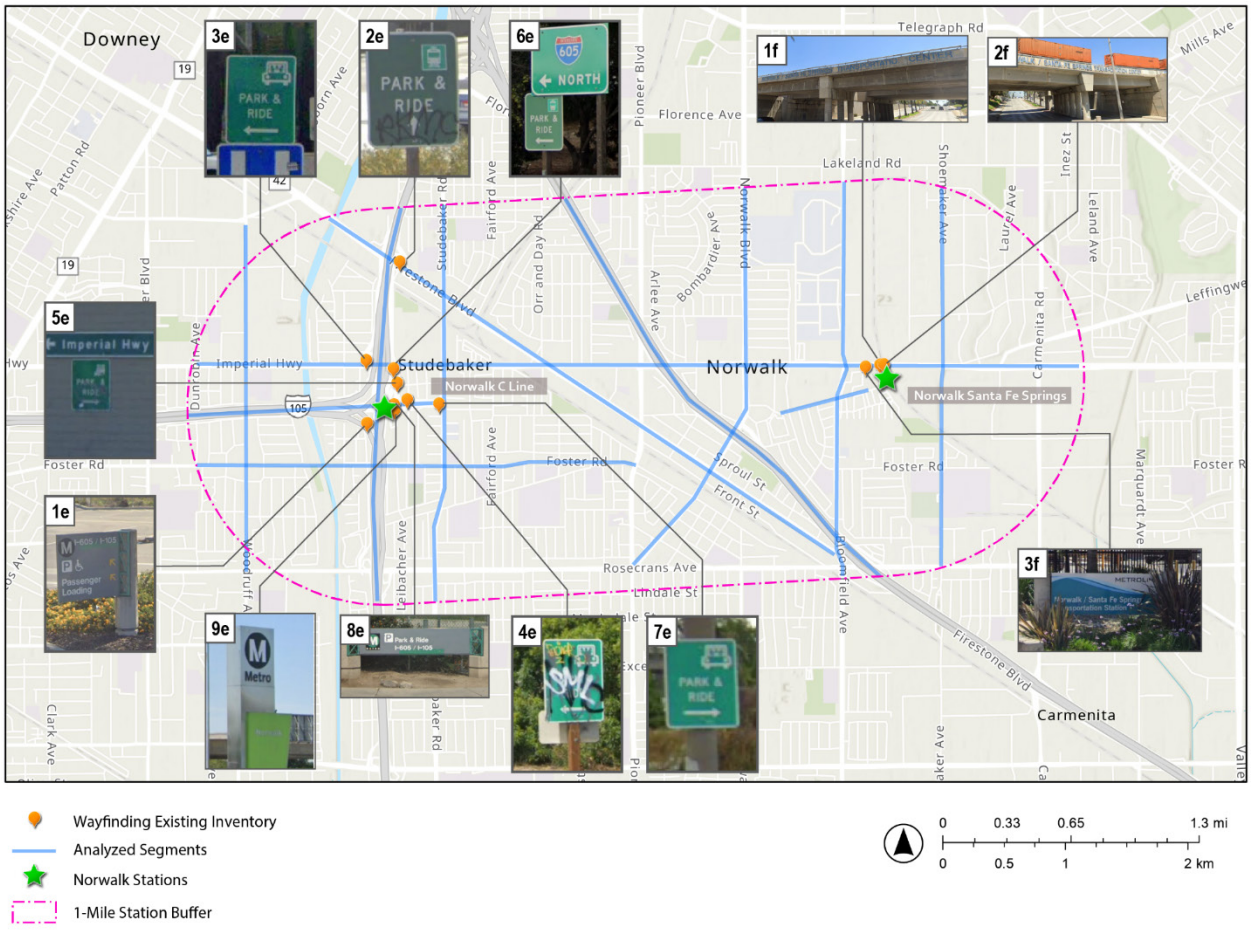
Pedestrian connections to the surrounding neighborhood are cut off

Norwalk/Santa Fe Springs Station

Wayfinding

The limited wayfinding around the Norwalk/Santa Fe Springs Station, as shown in **Figure 40** below, is vehicle-oriented. Additional details on existing wayfinding can be found in **Appendix B.2.**

Figure 40 - Norwalk/Santa Fe Springs Station Wayfinding Signage



Source: CR Associates, Appendix B.2

First/Last Mile

The Metrolink Norwalk/Santa Fe Springs Station has opportunities for first/last mile improvement identified in **Figure 41**. The Norwalk Transit System maintenance yard is adjacent to the station, which may be used to create a bike connection to the station area. The future California High-Speed station will be located in this area. Potential Amtrak stops at the station for increased frequency in the LOSSAN corridor are considered. Bicycle connectivity will be improved via Foster Avenue and potentially San Antonio Drive to Civic Center Drive or similar routing. A planned connection to Zimmerman Park is under study as part of the Norwalk Transit Village Plan. Additional information on the high-level existing and proposed first/last mile improvements can be found in **Appendix B.3.**

Figure 41 - Norwalk/Santa Fe Springs Station First/Last Mile Analysis

Source: CR Associates

Station Assessment

The wayfinding signage at the station is of a variable quality. The bus plaza is immediately adjacent to the west platform, with easy access and wayfinding. However, the east platform needs clear signage to the buses on the west side. There is an opportunity to connect the community south/southwest of the station with a path to the south of the west platform. Train directional signage needs updating, as southbound (SB) and northbound (NB) trains may arrive on opposite platforms due to operational conflicts with BNSF trains. Directional/destination signage on platforms appears reversed, and real-time arrival info was available only by audio PA, not digital signs. The bicycle network is noncontiguous, and the closest facility is a north-south class II bike lane one half-mile east of the Imperial Highway station entrance on Bloomfield Avenue, which is slated to become a buffered bike lane in the future (Norwalk Bicycle Master Plan, pg. 5-6).

Additional priority projects for the City of Norwalk near the station include:

- The future construction of various bicycle infrastructure types along Civic Center Drive, extending from the future transit hub to San Antonio Drive (Classes I, II, IV)
- An extension of the future Class II buffered bike lane on Bloomfield Avenue south of Imperial Highway (Norwalk Bicycle Master Plan, pg. 7)

The Norwalk/Santa Fe Springs station platform does not meet Metrolink's *SCRRA Design Criteria Manual* standards which state that "*the preferred canopy coverage is 50 percent of the platform length, however canopies shall cover a minimum of 30 percent of the platform length to accommodate passenger usage. Additionally, 15% of the total platform square footage shall be covered*." The Norwalk/Santa Fe Springs station meets the square footage requirements for platform coverage at 21%, but the existing length is 14%, which is under the 30% required (ArcGIS base map aerials, 2023).

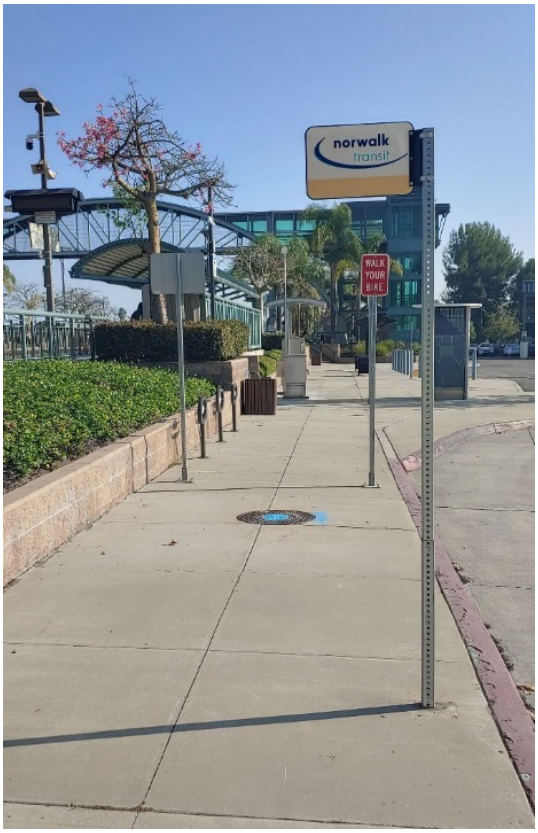
A summary of costs for station improvements can be found in **Table 23** below; Details on the station assessment can be found in **Appendix B.4**.

Table 23 - Norwalk/Santa Fe Springs Station Summary of Station Improvement Cost Estimates

ID	Norwalk/Santa Fe Springs Metrolink Station improvements	Cost Estimates
137	Customer Information (ex. digital information kiosk, real-time arrival information) Total	$806,800
148	Station Accessibility (ex. bi-directional access ramps, bike center/hub,) Total	$499,600
156	Station Boarding Area (ex. pedestrian lean bar, restrooms, Wi-Fi) Total	$418,200
157	**Station Total**	**$1,724,600**

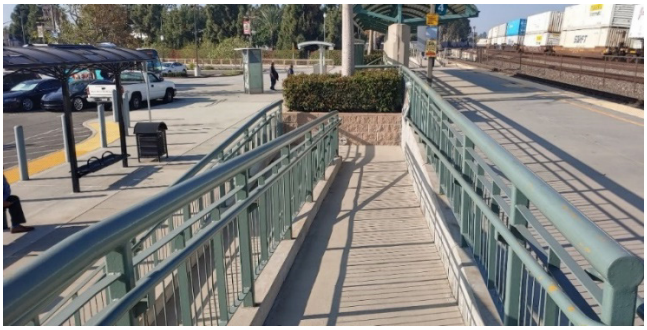
Source: CRA, Appendix B.4

Figure 42 - Norwalk/Santa Fe Springs Station Existing Conditions Photos



Station lacks amenities at some bus bays

There is a lack of adequate signage/wayfinding and information resources at the station



ADA ramp is too narrow for bidirectional use

6.0 Recommendations for Projects to Advance to Tasks 4 and 5

Tasks 4 and 5 will be coordinated to determine the advancement of potential projects in the RNI Study. Task 4 will provide further detail of recommended projects, services, policies, and agreements necessary to implement projects. Task 5 will identify potential funding and financing plans for the recommended projects. Recommendations for projects to advance to Tasks 4 and 5 are noted in **Tables 24 through 30** on the following pages.

Promising conditions exist for attracting riders through increased frequency and accessibility of rail and express bus service, removal of barriers to accessing the system through improved first/last mile, wayfinding, station amenities, and fare integration. The increased frequency of Metrolink and the addition of Amtrak service stops, can provide a regional “S-Bahn” type regional trunk line service within Los Angeles and Orange Counties.

Table 24 - Van Nuys - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement- able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Van Nuys										
V1 & V3	Station Assessment Improvements	*B.4*	RNI	$ 1,987,300	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	Yes
V2	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
V5	FLM And Safety	*B.3*	RNI and others, including ESFV LRT	Not estimated	Not estimated	Highest	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Varies
V6	ADA Switchback	*B.5*	RNI	Not estimated	Not estimated	Lowest	None	None	None	No

Table 25 - Burbank Airport North - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Burbank Airport North										
BN7	Station Assessment Improvements	*B.4*	RNI	$ 2,878,700	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	Yes
BN6	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Highest	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
BN1 to BN5	FLM And Safety	*B.3*	RNI and others	Not estimated	Not estimated	Lowest	Cost/benefit - determination per selected projects	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Varies

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Burbank Airport North										
BN9 & BN11	FLM And Safety - HSR Ped Connectivity	*B.3*	RNI and others	Not estimated	Not estimated	Lowest	Cost/benefit - determination per selected projects	Examine implementation strategies between operators and jurisdictions	List funding opportunities	No
BN8 & BN10	Airport Shuttle Route: north and south station - New *Note - since existing, no additional analysis for north - train connectivity for the south is recommended*	--	RNI and others	Not estimated	Not estimated	Lowest - (for a new route)	Examine connectivity with train double stop	None	None	No

Table 26 - Burbank Airport South - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Burbank Airport South										
BS1	Station Assessment Improvements	*B.4*	RNI	$ 2,171,500	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	Yes
BS2.2	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
BS3	FLM And Safety - HSR Ped Connectivity	*B.3*	RNI and others	Not estimated	Not estimated	Medium	Cost/benefit - determination per selected projects	Examine implementation strategies between operators and jurisdictions	List funding opportunities	No
BS4 & BS5	Amtrak double-stop	*A.1*	RNI	$0.00	$0.00	Highest	Cost/Benefit further analysis	Amtrak, LOSSAN and Metrolink agreement and policies	None	Yes
BS6	Auto Access - parking and pick-up/drop off	*B.6*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per selected projects	Examine maintenance and operation agreements	List funding opportunities	Yes

Table 27 - Downtown Burbank - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement- able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Burbank Downtown Metrolink Station										
DB4	Station Assessment Improvements	*B.4*	RNI	$ 3,650,900	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	Yes
DB5	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Highest	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
DB2	First/Last Mile – Ped connectivity between Metrolink and NoHo-Pas BRT Station	*B.3*	RNI and City of Burbank's Complete Our Streets Plan (2020)	Varies	Not estimated	Highest	Cost/benefit - determination per selected projects	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Varies
DB 3	Traffic Calming on Olive Avenue Bridge	--	RNI and Others	$ 36,125,000	Not estimated	Not advanced	None	Document implementation strategies by the City of Burbank	List funding opportunities	No

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement- able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Burbank Downtown Metrolink Station										
DB3.1	Parking circulation access & Signal onto Front Street	*B.7*	RNI	$ 458,000	Not estimated	Medium	Operational analysis	Examine implementation strategies between operators and the City of Burbank	List funding opportunities	No

Table 28 - Norwalk C Line (Green) Terminus - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Metro Norwalk C Line Station										
C8	Station Assessment Improvements	*B.4*	RNI	$ 7,127,300	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	No
C11	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Highest	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
C1	FLM - Pedestrian/bike access - to Studebaker on Adoree	*B.3*	RNI	$ 2,420,000	Not estimated	Highest	5% Design and risk assessment	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
C2	FLM - Pedestrian/bike access - Gates to community	*B.3*	RNI	Potentially some capital cost	Potentially some operational costs	Highest	Discussion with stakeholders	Examine implementation strategies with stakeholders, Metro and the City of Norwalk	No funding anticipated	Yes
C3	Auto Access - Freeway Ramps	*B.8*	RNI	Not estimated	Not estimated	Medium	5% Design	Examine implementation strategies with Metro and Caltrans	List funding opportunities	Yes

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Metro Norwalk C Line Station										
C4	FLM - Bike Lockers/Parking	*B.8*	RNI	$ 20,000	Not estimated	Medium	Planning level design and costing	Examine implementation strategies with Metro	List funding opportunities	Yes
C5	Auto Access - Circulation for autos/ped/bike/transit – prioritize safety for vulnerable ped/bike	*B.8*	RNI	$ 1,730,000	Not estimated	Medium	Planning level design and costing	Examine implementation strategies with Metro	List funding opportunities	Yes
C7	FLM - Improvements for Pedestrians and Cyclists (not included in C1 to C5)	*B.3*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies with Metro and the City of Norwalk	List funding opportunities	Yes
C9	C Line extension - grade separated, at-grade, tunnel: Metrolink Connection	*B.8*	RNI	$1.3 - 2.6 billion	$6.99-7.13 million	Medium	5% design and risk assessment for preferred Alternative (TBD)	Examine implementation strategies with Metro and the City of Norwalk	List funding opportunities	No
C10	TSM bus/shuttle alternative between stations	*B.8*	RNI	$13.3 million	$2.93 million	Medium	5% design and risk assessment	Examine implementation strategies with Metro and the City of Norwalk	List funding opportunities	Yes

Table 29 - Norwalk/Santa Fe Springs Metrolink - Recommended projects to advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Norwalk/Santa Fe Springs Metrolink Station										
NSFS3	Station Assessment Improvements	*B.4*	RNI	$ 1,724,600	Not estimated	Highest	Cost/benefit - determination per detailed project	Examine implementation strategies between operators	List funding opportunities	Yes
NSFS2	Wayfinding to the Station	*B.2*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Yes
NSFS1	FLM And Safety	*B.3*	RNI	Not estimated	Not estimated	Medium	Cost/benefit - determination per detailed project	Examine implementation strategies between operators and jurisdictions	List funding opportunities	Varies
NSFS5	FLM Ped connection to Zimmerman Park	--	RNI; will be addressed as part of the Norwalk Transit Village project	Not estimated	Not estimated	Not scored	No further RNI work	Examine implementation strategies with Metro and the City of Norwalk	List funding opportunities	Yes
NSFS6 & 7	Add Amtrak Stop at Norwalk/SFS	*A.1*	RNI	$0.00	$0.00	Highest	Cost/Benefit further analysis	Amtrak, Lossan and Metrolink agreement and policies	None	Yes

Table 30 - Regional Projects, Policies, and Agreements to Advance to Tasks 4 & 5

Overview				Task 3 Summary			Next Steps			Low Hanging Fruit *(Implement-able in 5 years)*
							Task 4		Task 5	
ID	**Project**	***Appx.***	**RNI Project or by others**	**OOM Capital Costs (2022)**	**OOM Annual Operating Costs (2022)**	**High-Level BCA**	**Further design and/or analysis**	**Policy and/or Partnership**	**Investigate funding**	
Regional Projects and Policies										
RPP1	I-405 Express Bus CSULB - LAX on HOV	*A.2*	RNI	Not estimated	Not estimated	Not scored	Examine potential of using HOT lanes	TBD	TBD, pending further analysis	No
RPP2	I-605 Express Bus CSULB - El Monte Metrolink on HOV	*A.2*	RNI	Not estimated	Not estimated	Not scored	Not recommended	No action	None	No
RPP3	Metrolink Tripper between Laguna Niguel and Chatsworth Stations	*A.2*	RNI	$18.5 - $19.9 million	$238k	Not scored	Discuss results with Metrolink for possible additional cost benefit	Coordination with Metrolink	Potentially list funding opportunities	Yes
RPP4	Fare Integration and Cobranding	--	RNI, Rail2Rail, Cal-ITP	n/a	n/a	n/a	n/a	Coordination with Cal-ITP/ Metrolink/ Amtrak/Metro	Coordinate with partners	Potentially

Appendix A.1
Operations Assessment

Technical Work

LA Metro Network Integration

DB E.C.O. North America | November 11, 2022

LA Metro Technical Analysis Compendium
Service Goals

	Near Term	Long Term
Agency	LOSSAN, Metrolink, LA Metro	LOSSAN, Metrolink, LA Metro, High Speed Rail
Service	Pre-Covid Service Volumes	SCORE, CA State Rail Plan, Measure M
Frequency	Metrolink: Hourly Surfliner: Hourly	Metrolink: Every 15 minutes Surfliner: Hourly HSR: Every 15 Minutes
Source	Metrolink Surfliner	Metrolink Surfliner HSR

* - operational, freight coordination impacts, capital needs would require further analysis

LA Metro Technical Analysis Compendium
Operating Parameters

	Near Term	Long Term
Rolling Stock assumptions	Surfliner: Diesel Hauled + Coaches Metrolink: Diesel Hauled + Coaches LA Metro: EMU	Surfliner: Diesel Hauled + Coaches Metrolink: Diesel Hauled + Coaches LA Metro: EMU High-Speed Rail: AGV
Train Separations	3 minutes 10 minutes for PAX following freight	3 minutes 10 minutes for PAX following freight
Dwell	Surfliner: 1 minute Metrolink: 1 minute Metro: 20 seconds inline; 30 seconds terminal/transfer	Surfliner: 1 minute Metrolink: 1 minute Metro: 20 seconds inline; 30 seconds terminal/transfer
Recovery	10 Percent distributed vs at meets and terminals	10 Percent distributed vs at meets and terminals
Infrastructure Assumptions	Existing speeds and assumed directions *Constraints of infrastructure may flag location for additional capacity improvement*	Assumes completion of high speed rail and SCORE infrastructure *Constraints of infrastructure may flag location for additional capacity improvement*

LA Metro Technical Analysis Compendium
Infrastructure Availability

Near Term

Long Term

Design Guidelines

Development of the statewide network is guided by *Design Principles*, inspired by best practice and applied to meeting community needs across California

Service-led design means putting service goals and customer experience first, only identifying infrastructure needed to support the network.

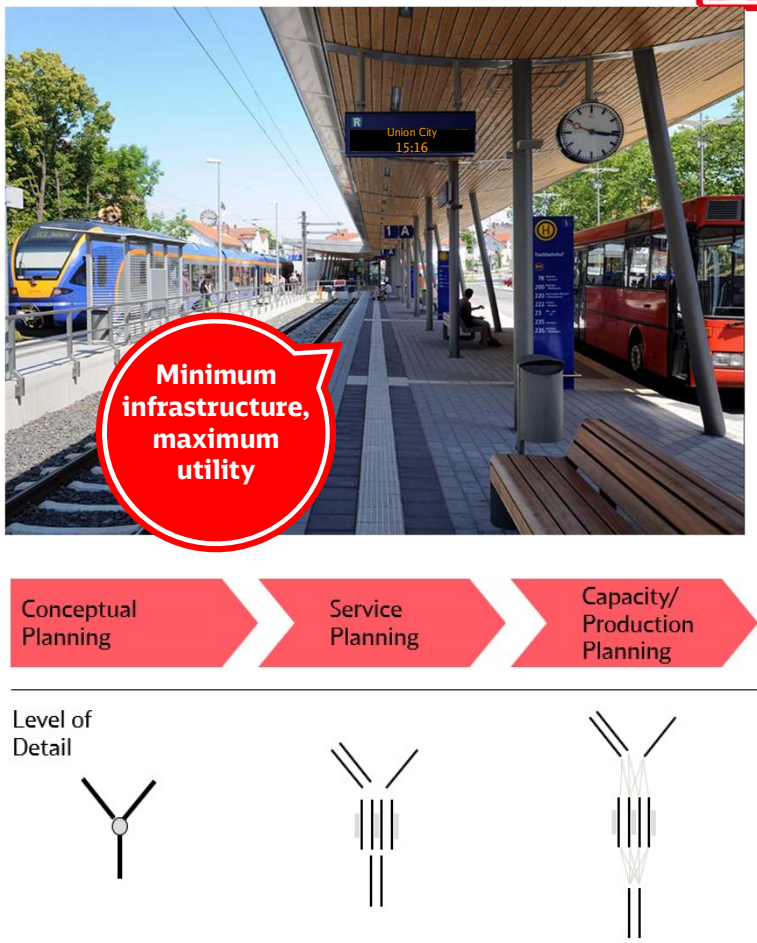
An intuitive network means simplifying and standardizing service patterns.

Direct connections mean minimizing physical and temporal distance so passengers can transfer across a platform or a bus.

Hub stations mean service is organized to meet at stations at regular intervals. This ensures connectivity throughout the network, minimizes capital investment, and increases accessibility throughout the region.

Pulsed scheduling means a repeating schedule at regular intervals (hourly, half-hourly, etc.) throughout the day. This ensures easy understanding for customers, regular connections at hubs, simplified operations, and minimized infrastructure.

Timed transfers means quick connections for passengers at hub stations, reducing travel time and expanding network connectivity.



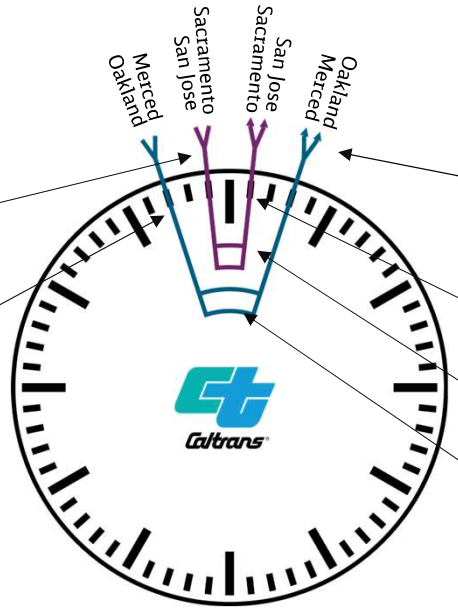
What's a Connection Clock?

Bidirectional transfers at top of the hour (:00)

Connection clocks display arrivals and departures for a specific station in selected hour

Trains arrive from Oakland and Merced at :59

Trains arrive from Oakland and Merced at :57



Trains depart to Oakland and Merced at :03

Trains depart to Sacramento and San Jose at :01

Dwell time: 2 min

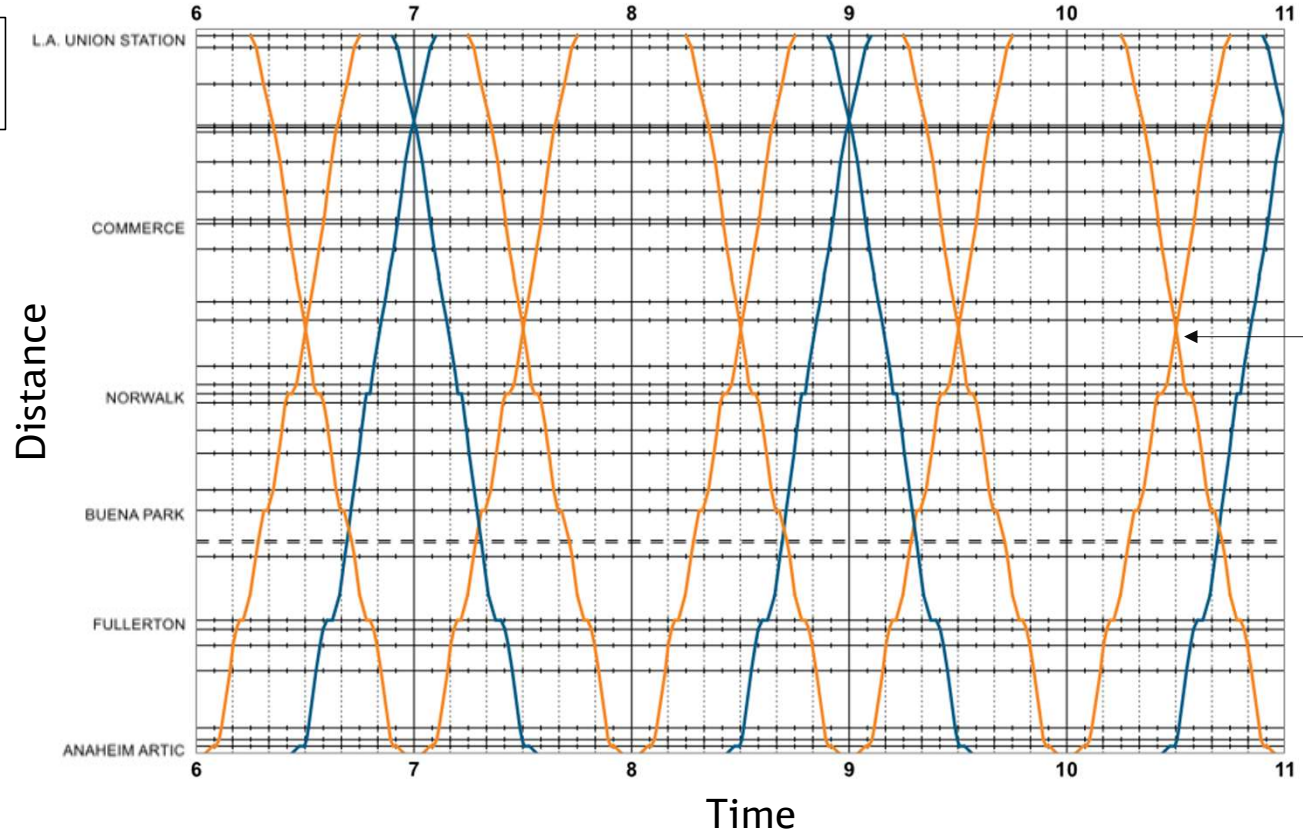
Dwell time: 6 min

Regional
Intercity

Connection Clock shows one hour of service at a station

What's a stringline?

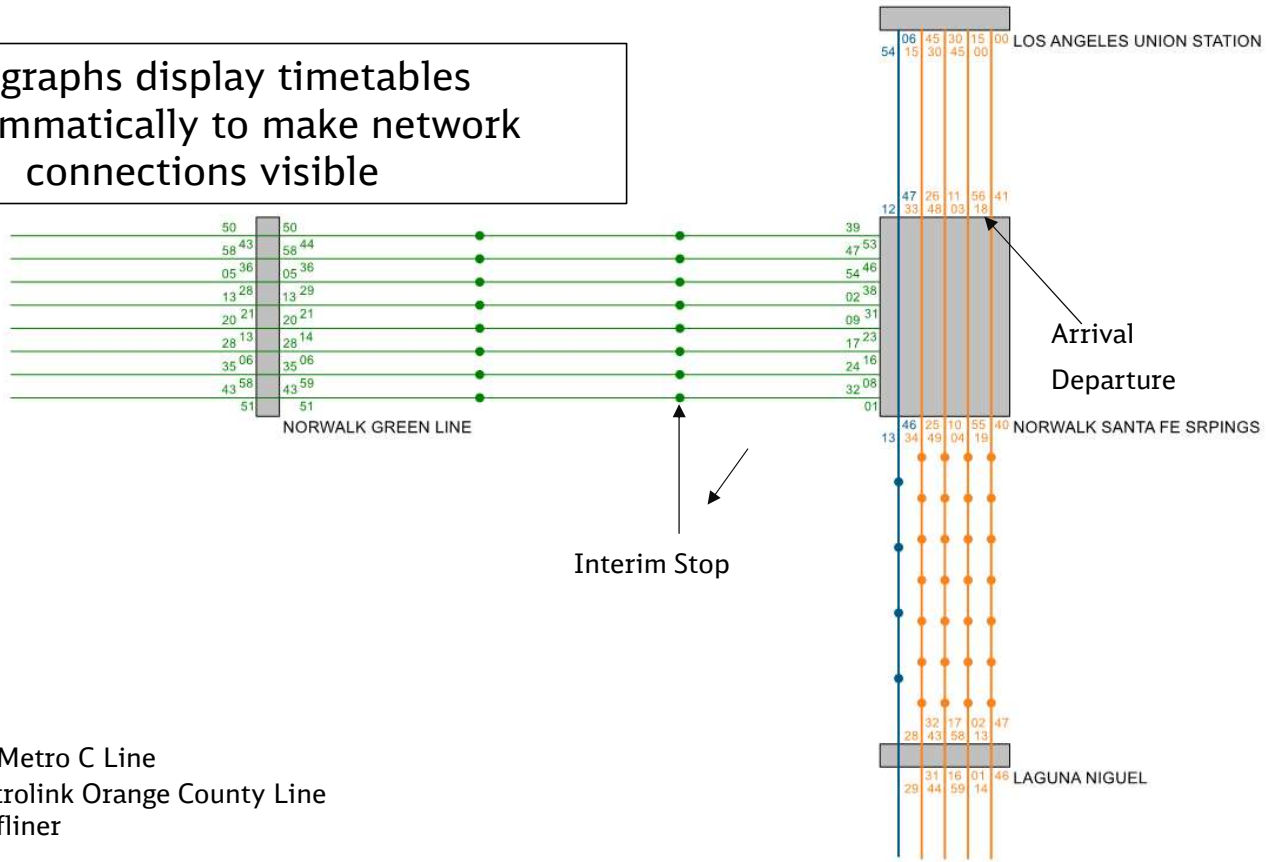
Stringlines show train locations over time



Metrolink Orange County Line
LOSSAN

What's a netgraph?

Netgraphs display timetables diagrammatically to make network connections visible



LA Metro C Line
Metrolink Orange County Line
Surfliner

Adding stop in Norwalk had insignificant affect on LOSSAN runtime

Technical Question:

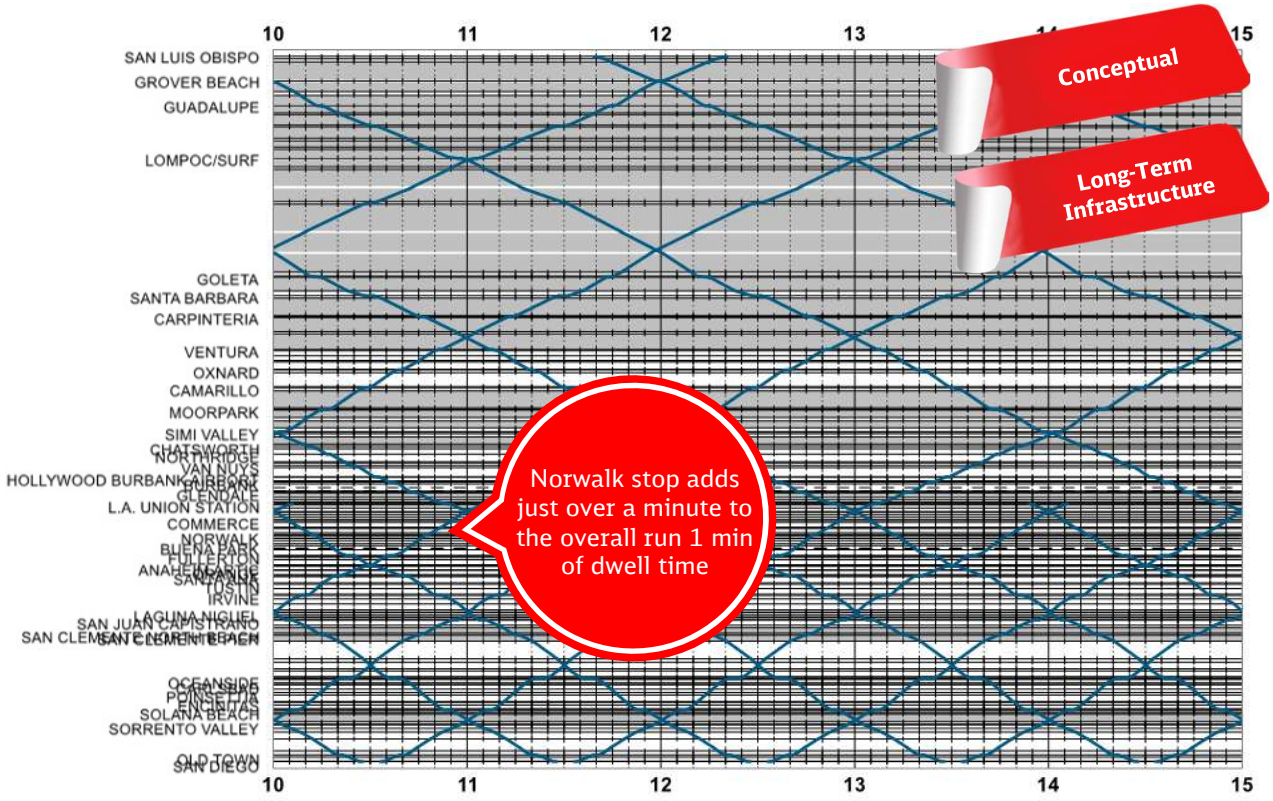
- What is the run-time impact of adding a Surfliner stop at Norwalk Santa Fe Springs?

Relevant Parameters:

- Charger + 5 bilevel
- Hourly bi-directional service
- 1-minute standard dwell

Result:

- Modelled run-time difference: +1.5 minutes



* - operational, freight coordination impacts, capital needs would require further analysis

Near-Term Norwalk Connection

Technical Question:

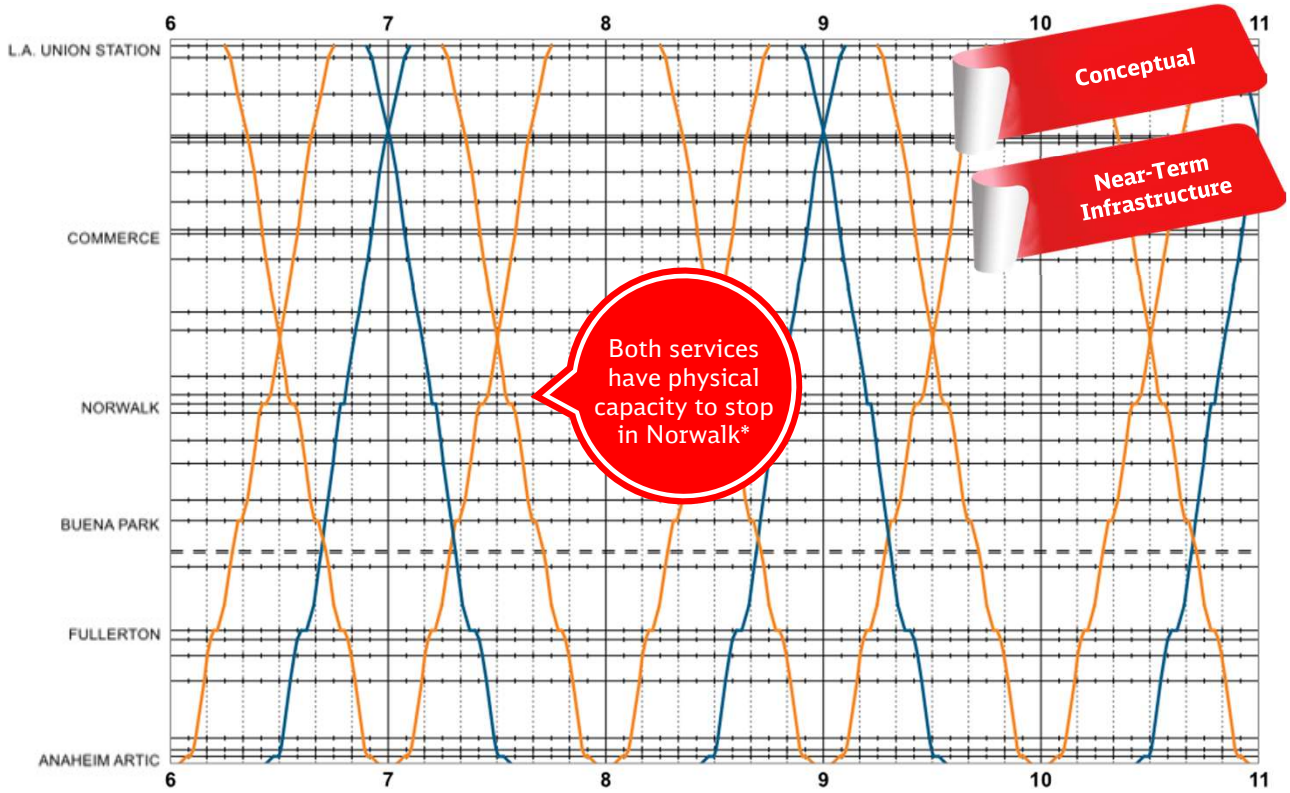
- Is there a capacity constraint with bi-hourly Surfliner and hourly Orange County Line service at Norwalk?

Relevant Parameters:

- Charger + 5 bilevel
- Hourly bi-directional service
- 1-minute standard dwell

Result:

- Physical capacity allows sufficient line separation / platform occupancy for both service patterns



* - operational, freight coordination impacts, capital needs would require further analysis

Long-Term Norwalk Connection

Technical Question:

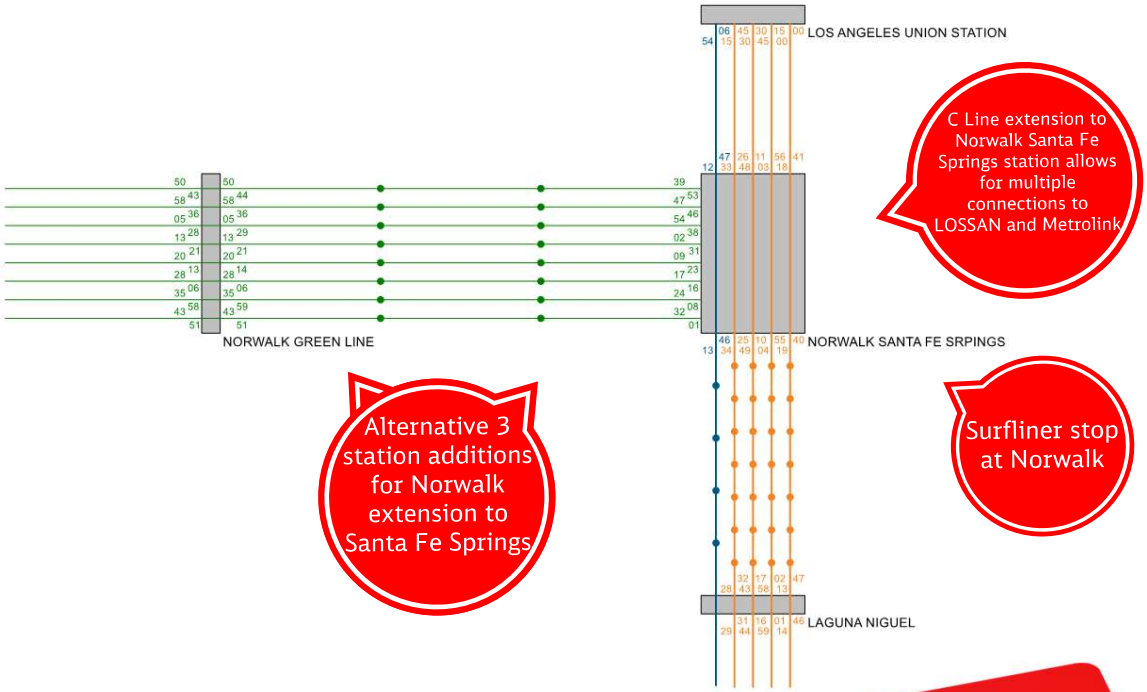
- How would a C-Line extension integrate connectivity at Norwalk Santa Fe Springs?

Relevant Parameters:

- Assumes Surfliner Norwalk stop
- Assumes stops at two newly proposed C-Line stops

Result:

- ~10-minute ride on C-Line extension, no transfer
- Connections to Metrolink and Surfliner



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Long-Term Norwalk Connection

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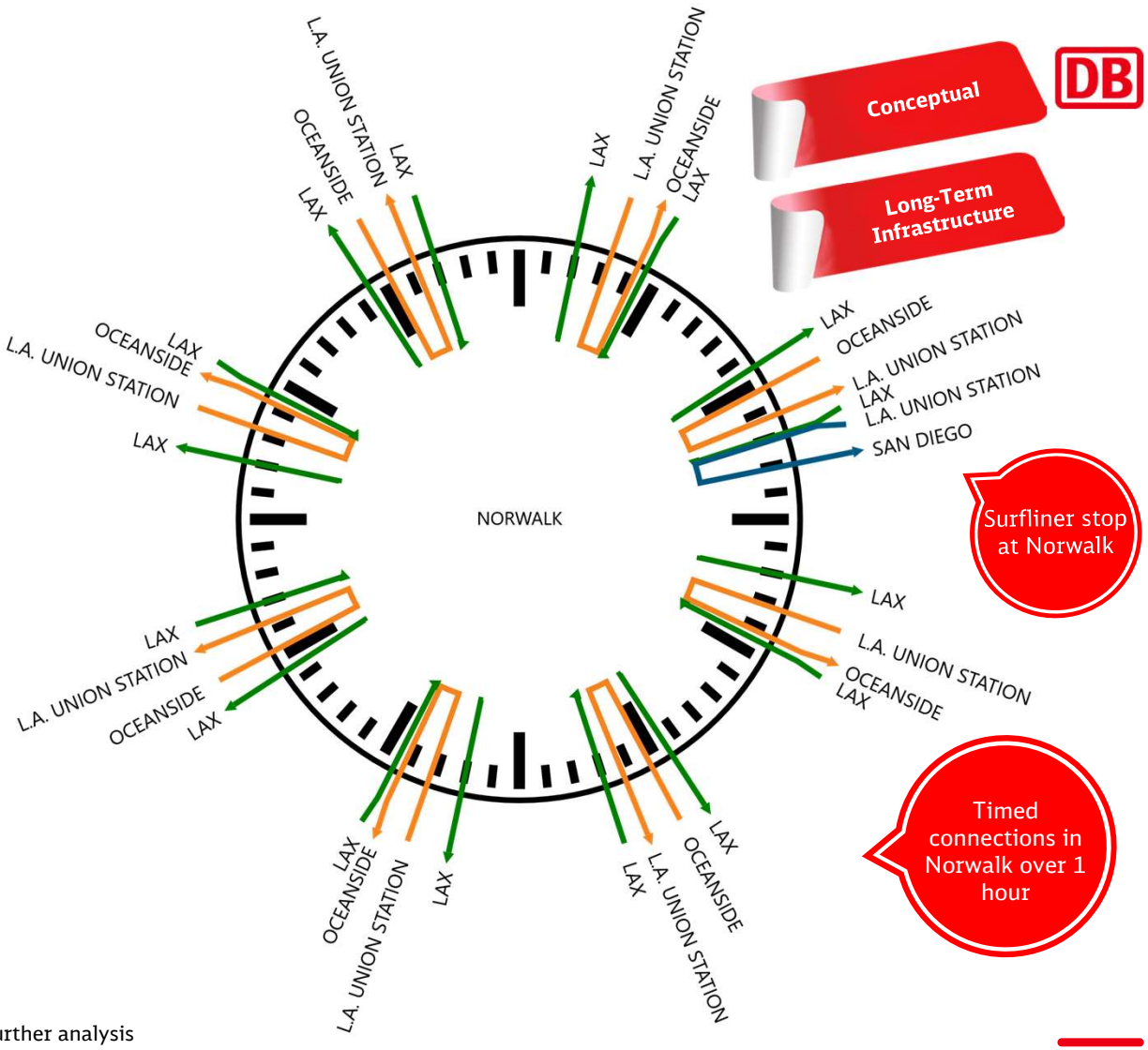


* - operational, freight coordination impacts, capital needs would require further analysis

Long-Term Norwalk Connection

Conceptual

Long-Term Infrastructure

Technical Question:

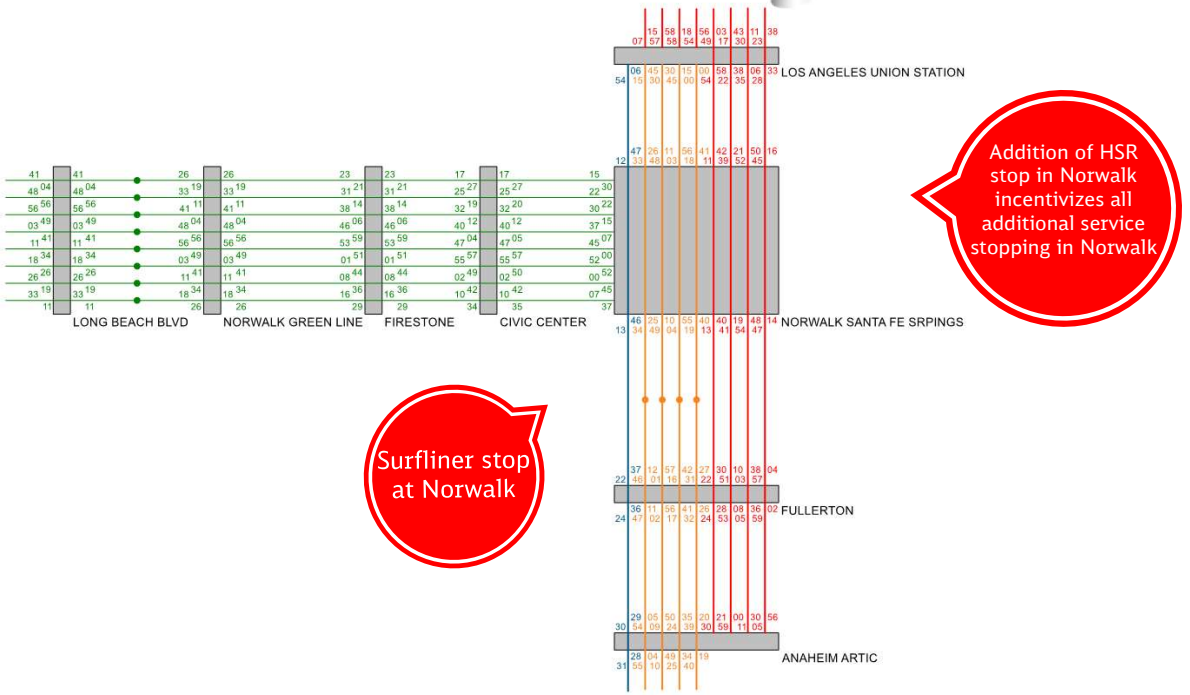
- How would a C-Line extension integrate connectivity at Norwalk Santa Fe Springs?

Relevant Parameters:

- Assumes Surfliner Norwalk stop
- Assumes stops at two newly proposed C-Line stops

Result:

- ~10 minute ride on C-Line extension, no transfer
- Connections to Metrolink, Surfliner and High Speed Rail



* - operational, freight coordination impacts, capital needs would require further analysis

Long-Term Norwalk Connection

Technical Question:

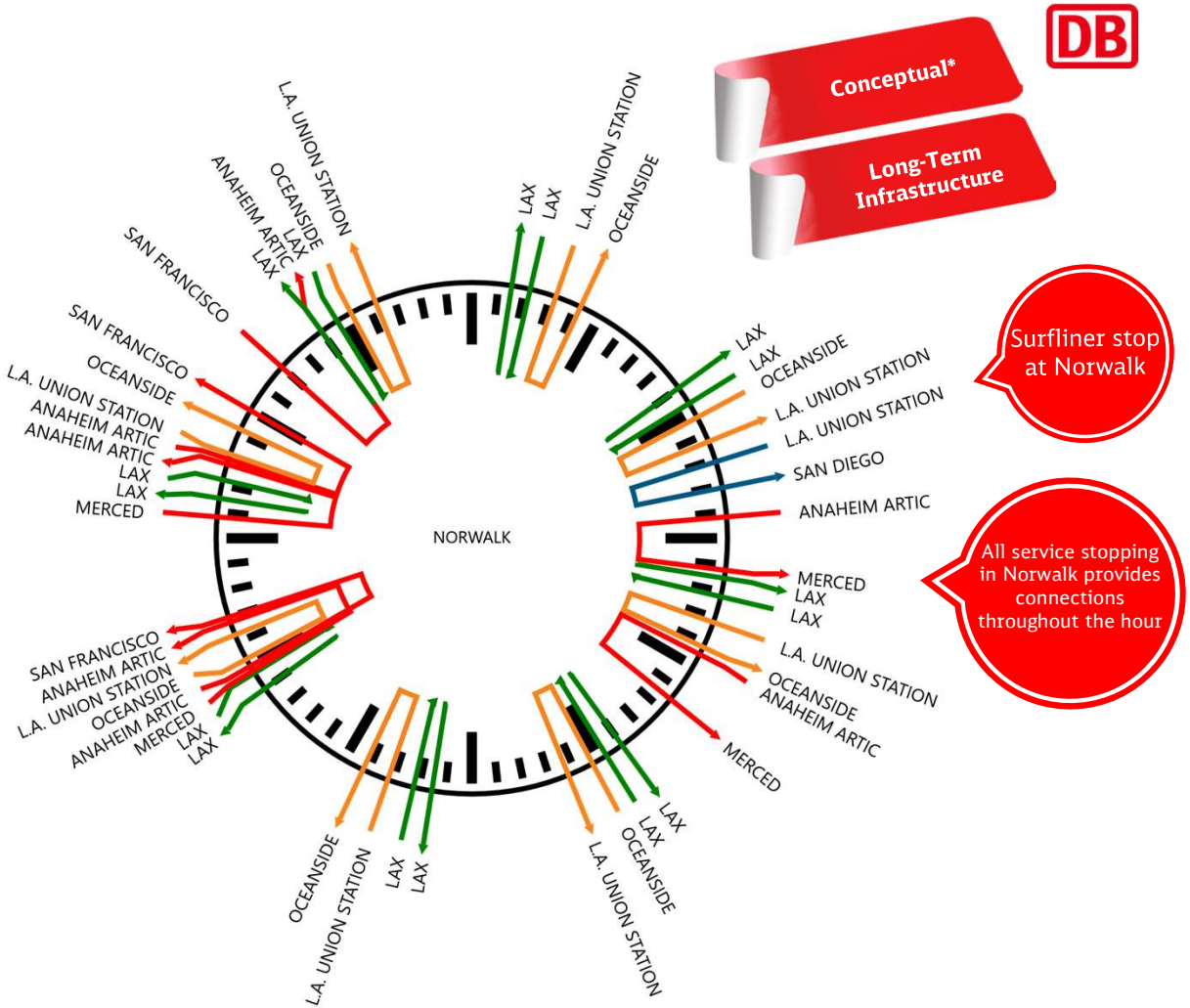
- How would a C-Line extension integrate connectivity at Norwalk Santa Fe Springs?

Relevant Parameters:

- Assumes Surfliner Norwalk stop
- Assumes stops at two newly proposed C-Line stops

Result:

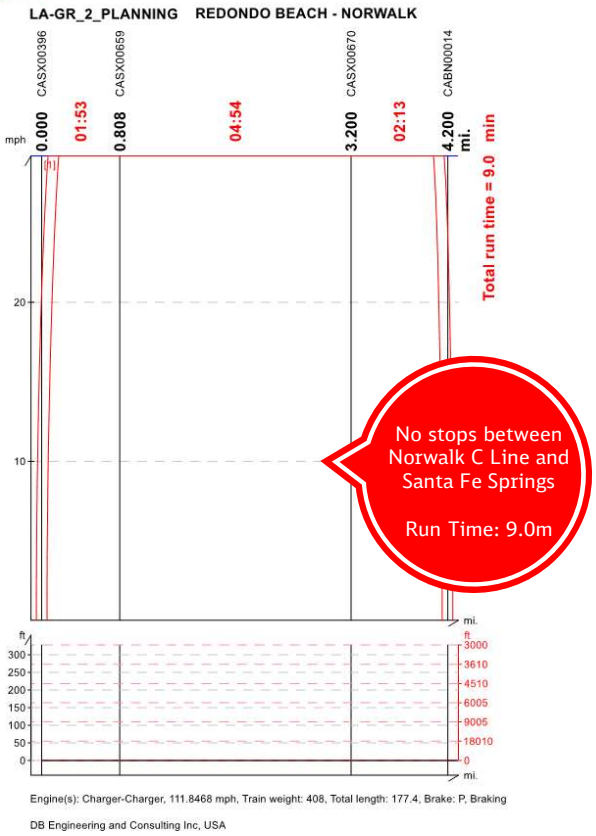
- ~10 minute ride on C-Line extension, no transfer
- Connections to Metrolink, Surfliner, High Speed Rail

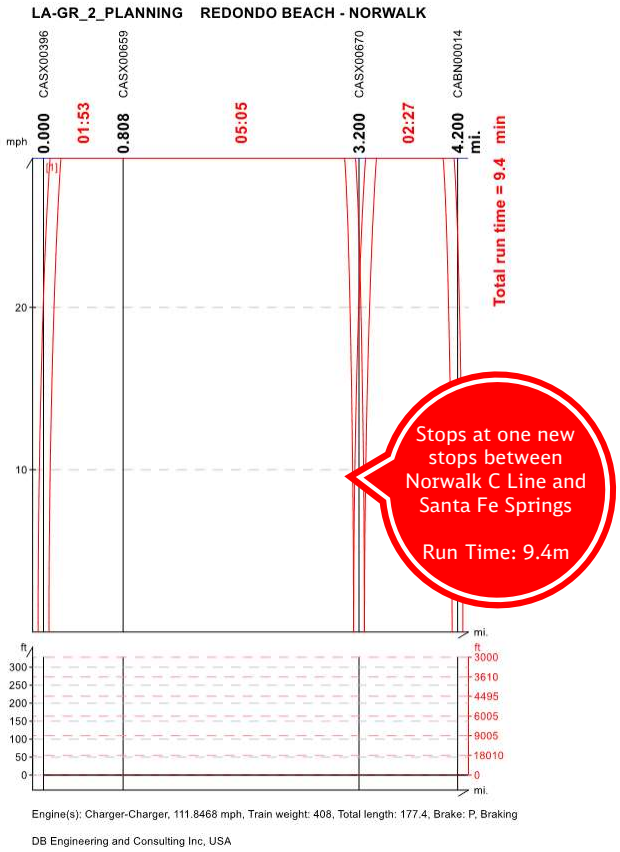


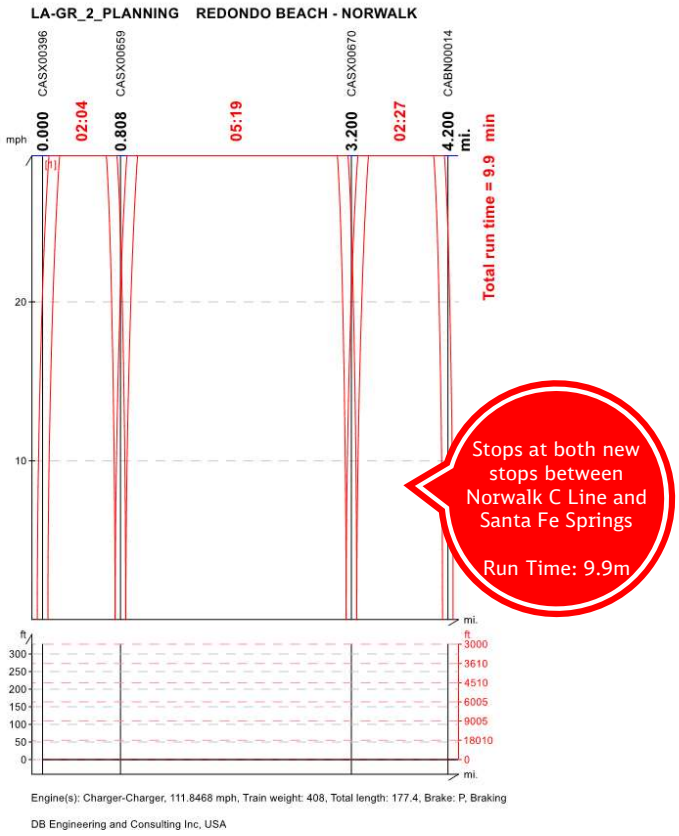
* - operational, freight coordination impacts, capital needs would require further analysis

Trip times between current C Line terminus and Norwalk Santa Fe Springs

Conceptual*

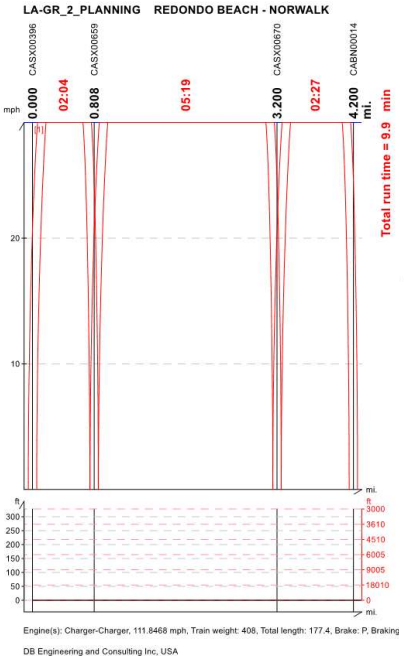


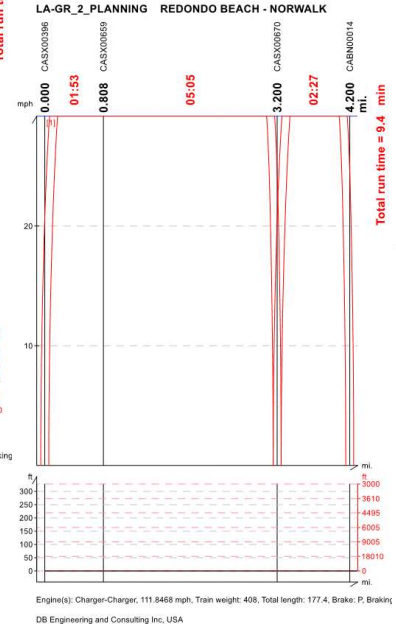


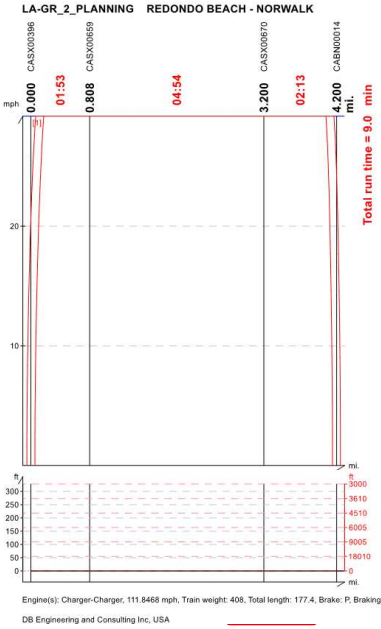


Trip times between current C Line terminus and Norwalk Santa Fe Springs

# Stops between Norwalk Stations	Trip Time (minutes)
2 Stops	9.9
1 Stop	9.4
0 Stops	9.0



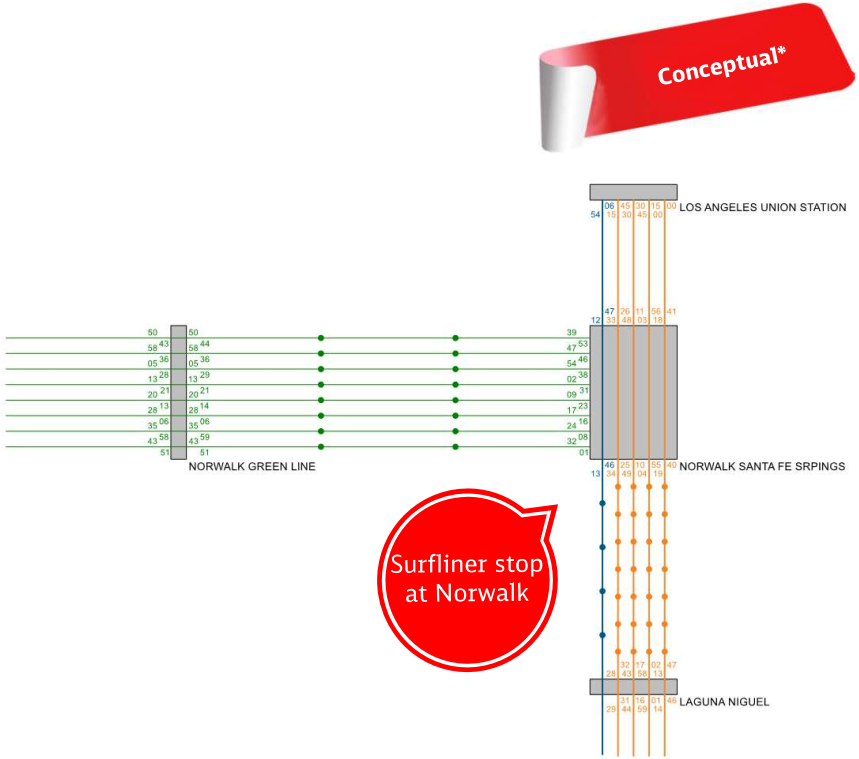




Conceptual*

Average trip duration between LA Metro C Line and Metrolink Orange County Line with SCORE assumptions

Highlighted Connections	Current Trip Time	Trip Duration (minutes)
Norwalk Metro Station – Norwalk Santa Fe Springs	17	11
Anaheim - LAX	100	69
Santa Ana - LAX	110	79

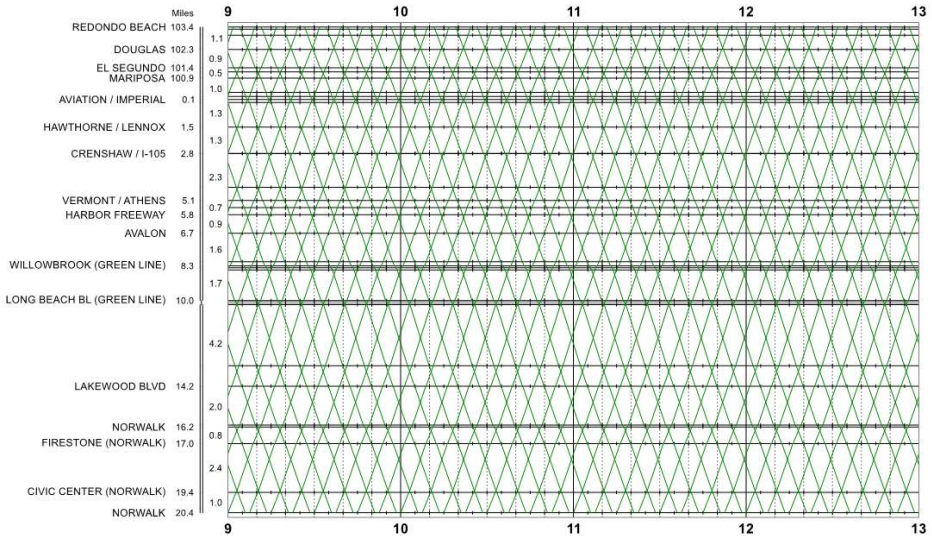


* - operational, freight coordination impacts, capital needs would require further analysis

Expo – Norwalk Santa Fe Springs Equipment Summary (Based on Metro C3 Operating Plan Alternative)

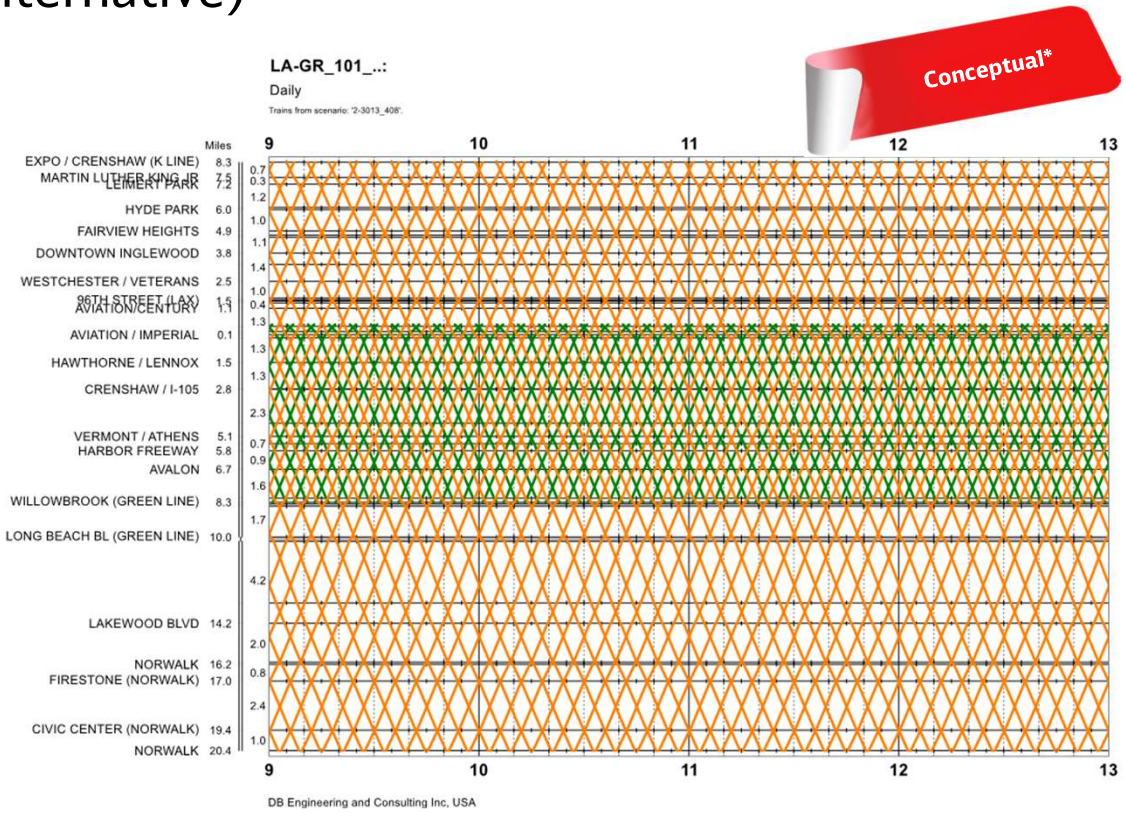
Conceptual*

Corridor	Estimated Equipment Count	Estimated Equipment Hours per day	Estimated Annual Miles
Redondo – Norwalk without Extension	16	15.8	2,785,924
Redondo – Norwalk with Extension	19	16.5	2,787,457



Expo – Norwalk Santa Fe Springs Equipment Summary (Based on Metro C3 Operating Plan Alternative)

Corridor	Estimated Equipment Count	Estimated Equipment Hours per day	Estimated Annual Miles
Expo Crenshaw – Norwalk without Extension	23	18.9	3,579,484
Expo Crenshaw with Extension	27	18.5	4,194,360



Operational Analysis
Metrolink Burbank Station Areas

Technical Question:

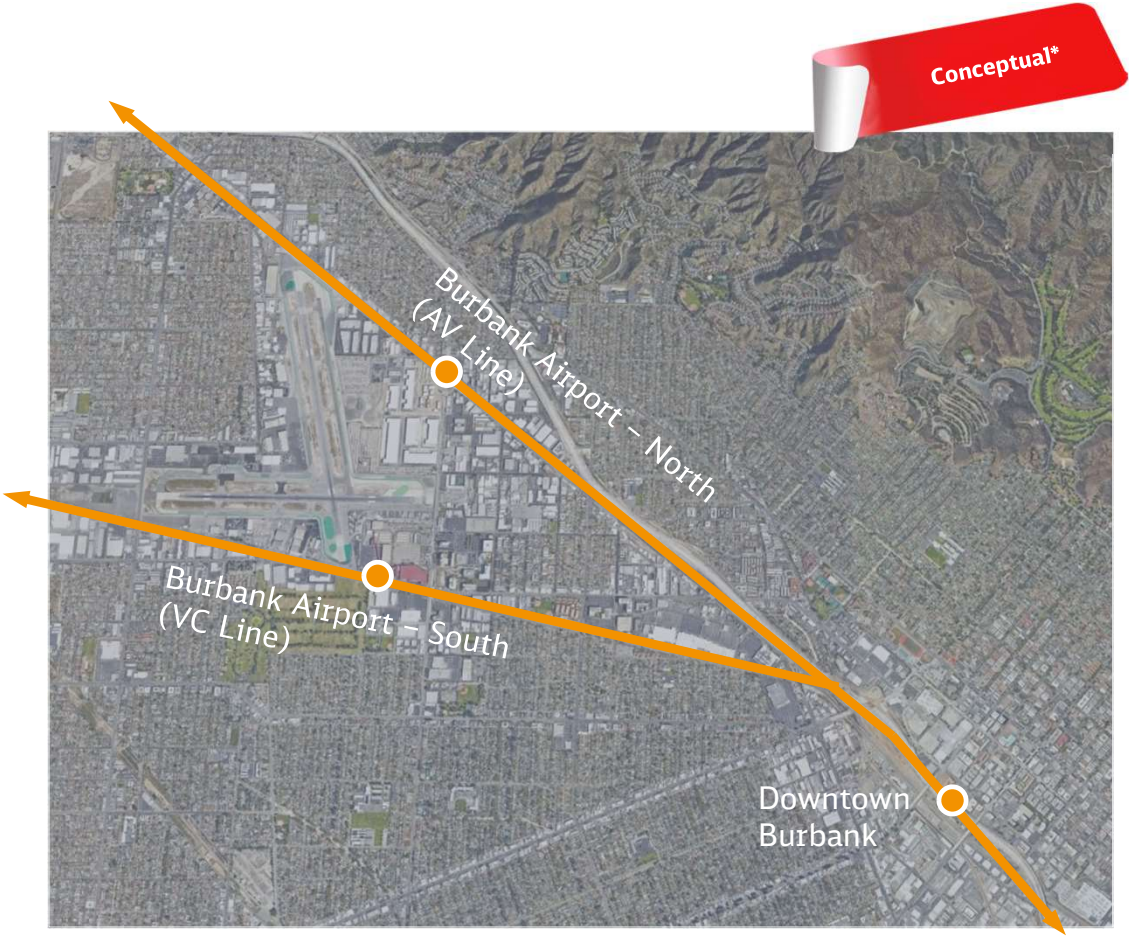
- How can connectivity to Burbank Airport be improved?
- Burbank Airport North to terminals requires 15-20 minute on-demand van connection

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South; roughly equal to van connection



* - operational, freight coordination impacts, capital needs would require further analysis

Operational Analysis
Metrolink Burbank Station Areas

Technical Question:

- How can connectivity to Burbank Airport be improved?
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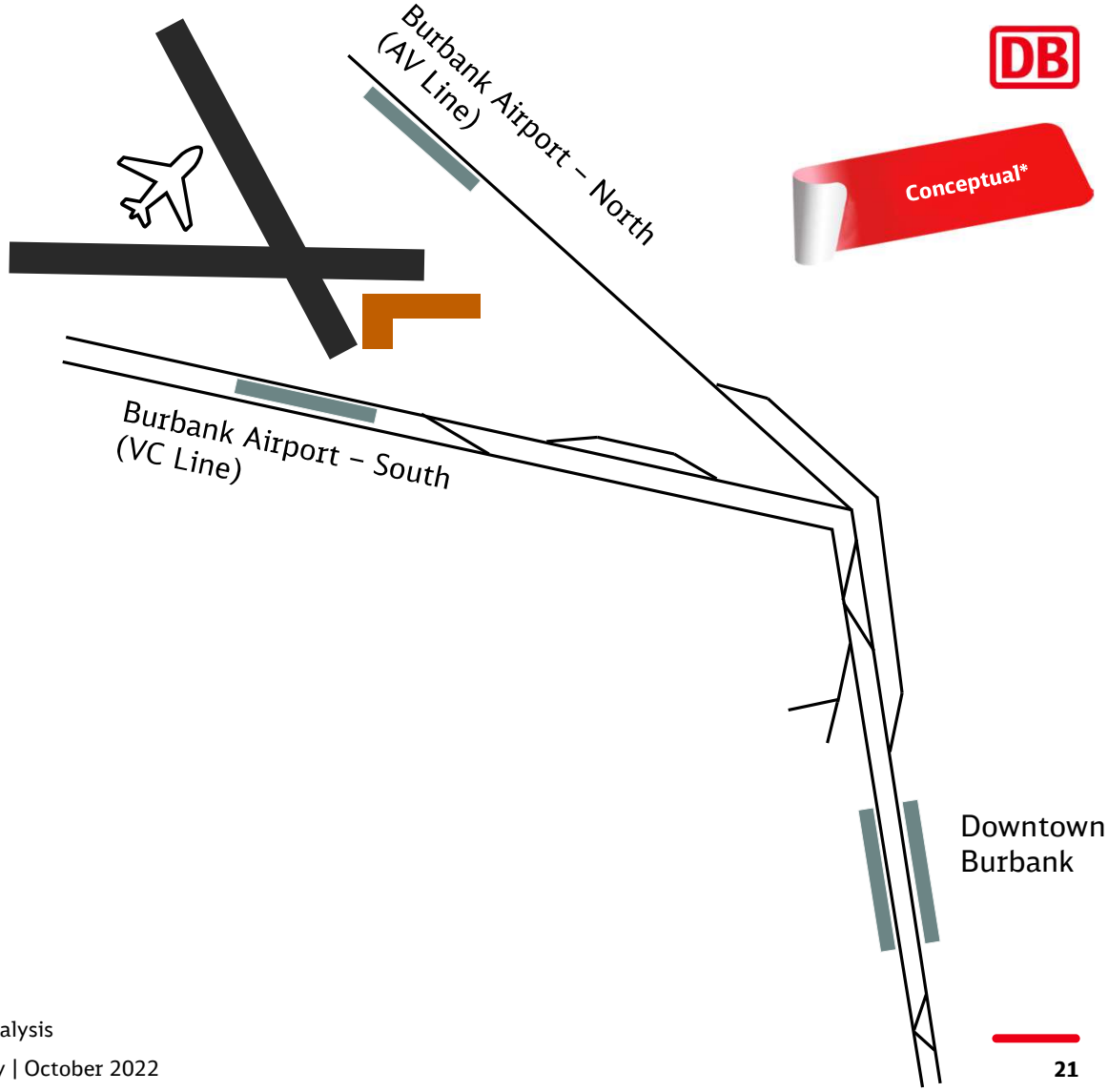


* - operational, freight coordination impacts, capital needs would require further analysis

Operational Analysis
Metrolink Burbank Station Areas

Technical Question:

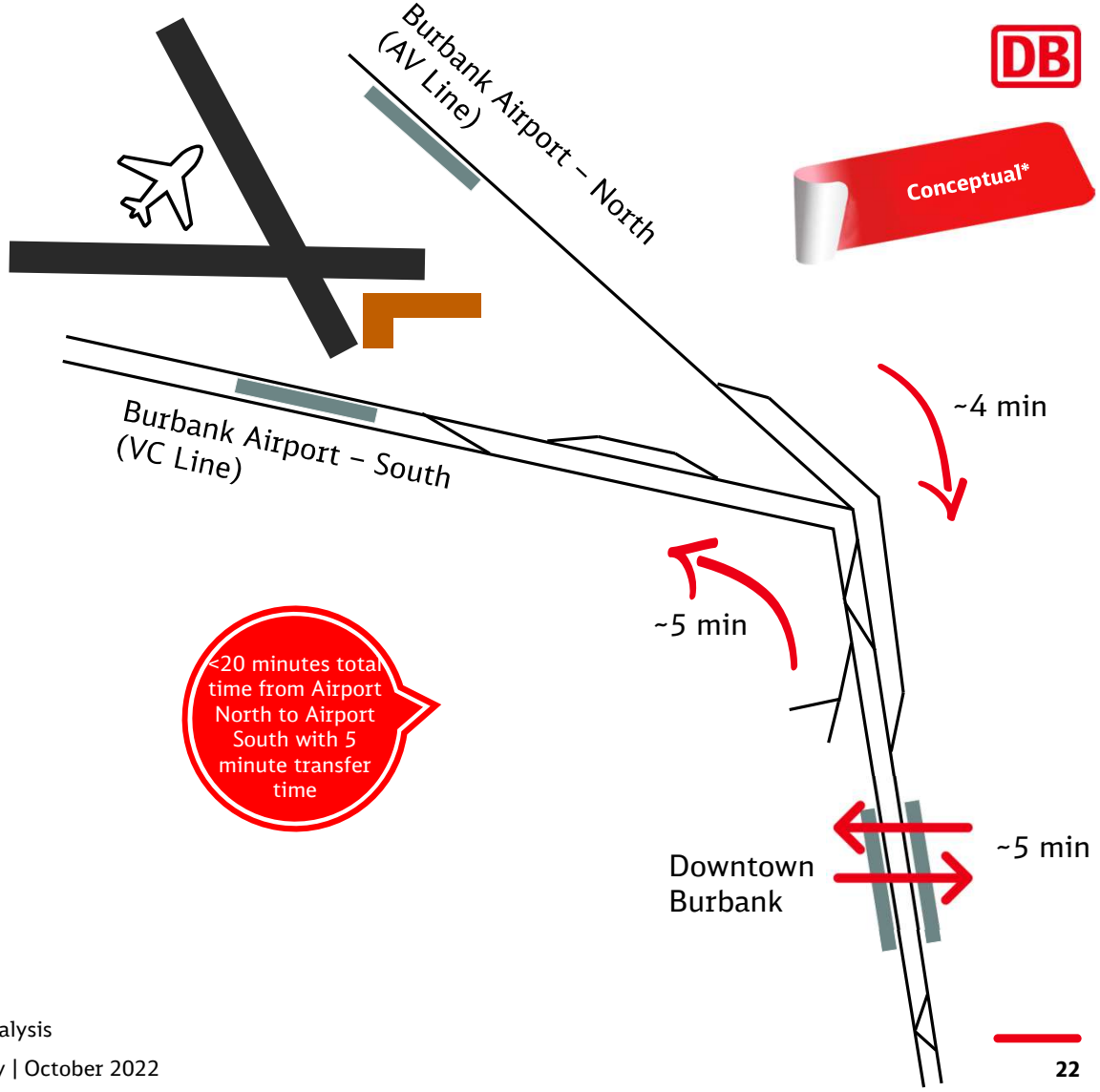
- How can connectivity to Burbank Airport be improved?
- Burbank Airport North to terminals requires 15-20 minute on-demand van connection

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South; roughly equal to van connection



* - operational, freight coordination impacts, capital needs would require further analysis

Operational Analysis
Metrolink Burbank Station Areas

Technical Question:

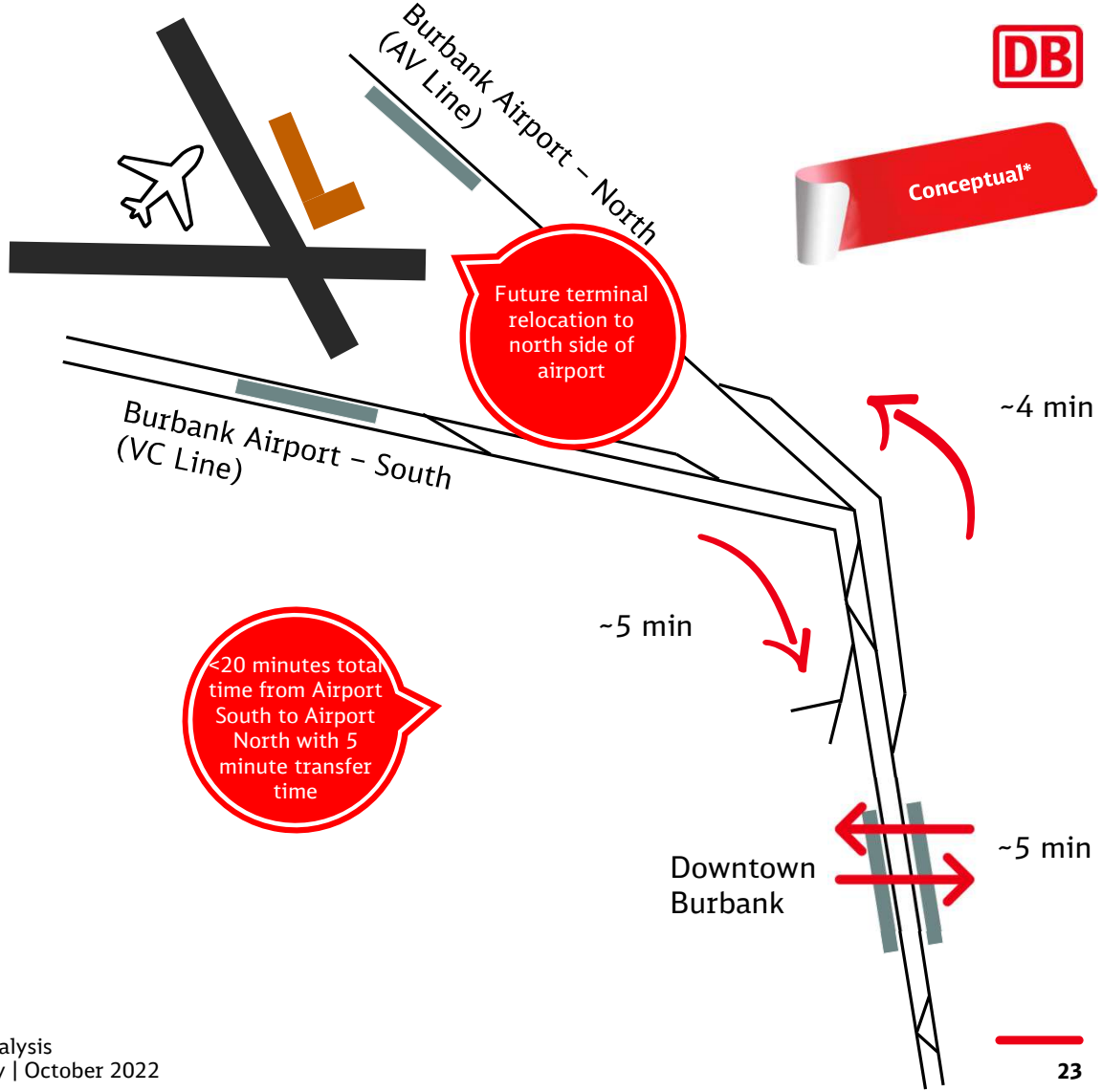
- How can connectivity to Burbank Airport be improved?
- Burbank Airport South to terminals would require 15-20 minute on-demand van connection following terminal relocation

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South
- When terminal shifts north of airfield, same methodology applies to opposite direction



* - operational, freight coordination impacts, capital needs would require further analysis

Operational Analysis
Metrolink Burbank Station Areas

Technical Question:

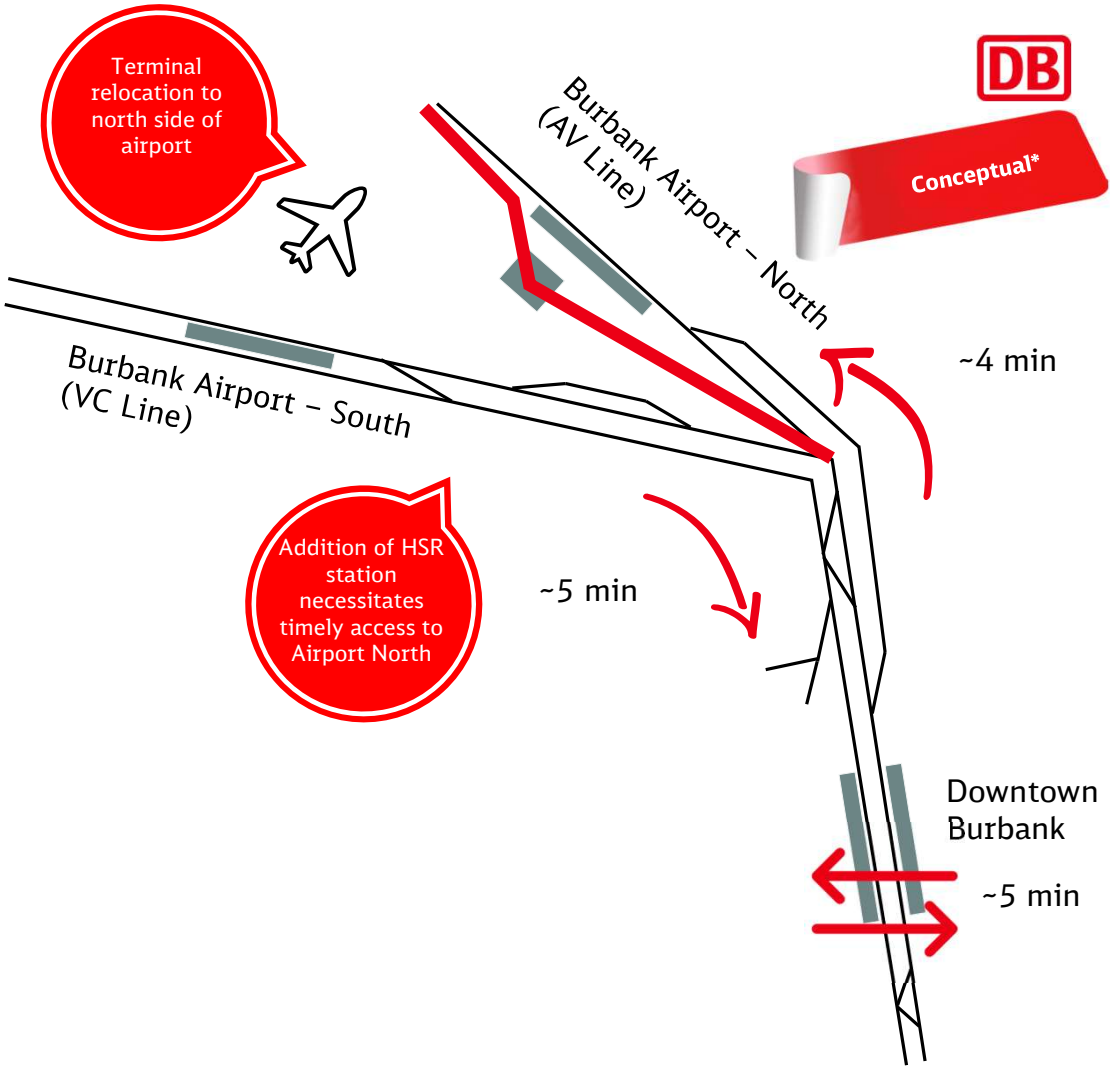
- How can connectivity to Burbank Airport be improved?

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South
- When terminal shifts north of airfield, same methodology applies to opposite direction



* - operational, freight coordination impacts, capital needs would require further analysis

Timed transfers at Downtown Burbank allow for transfers between Antelope Valley Line and Ventura County Line to access Burbank Airport

Technical Question:

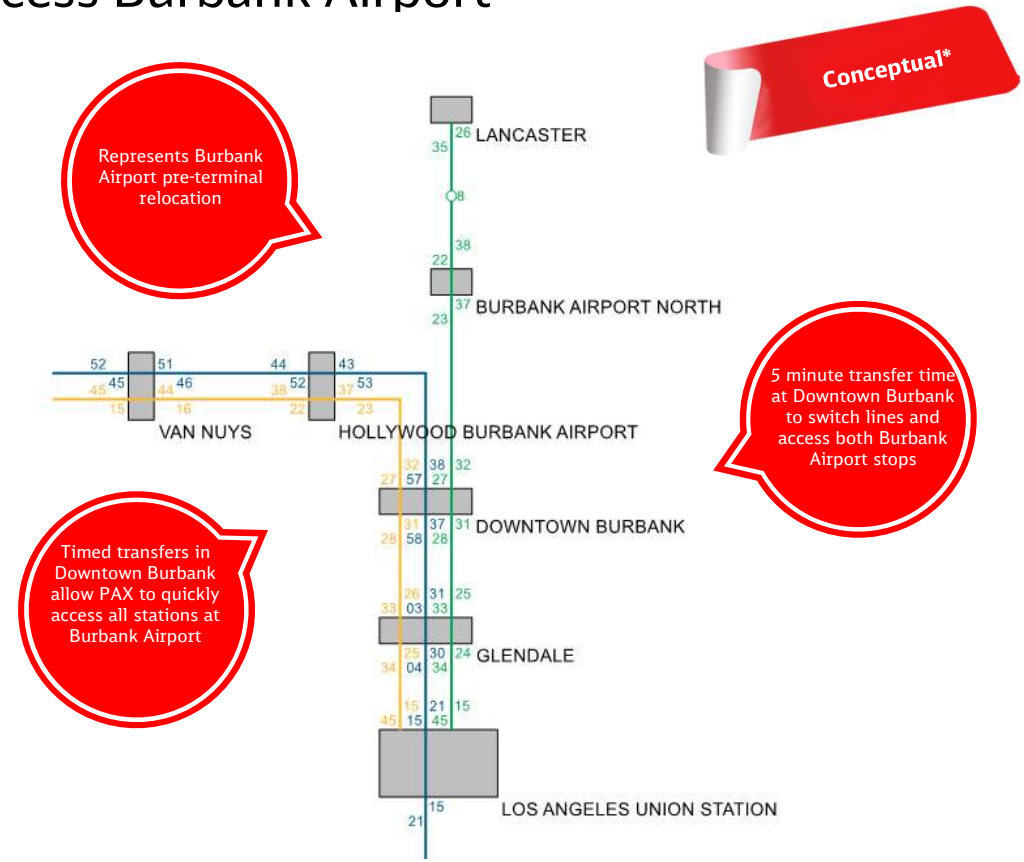
- How can connectivity to Burbank Airport be improved?
- Burbank Airport North to terminals requires 15-20 minute on-demand van connection

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South



* - operational, freight coordination impacts, capital needs would require further analysis

Timed transfers at Downtown Burbank allow for transfers between Antelope Valley Line and Ventura County Line to access Burbank Airport

Technical Question:

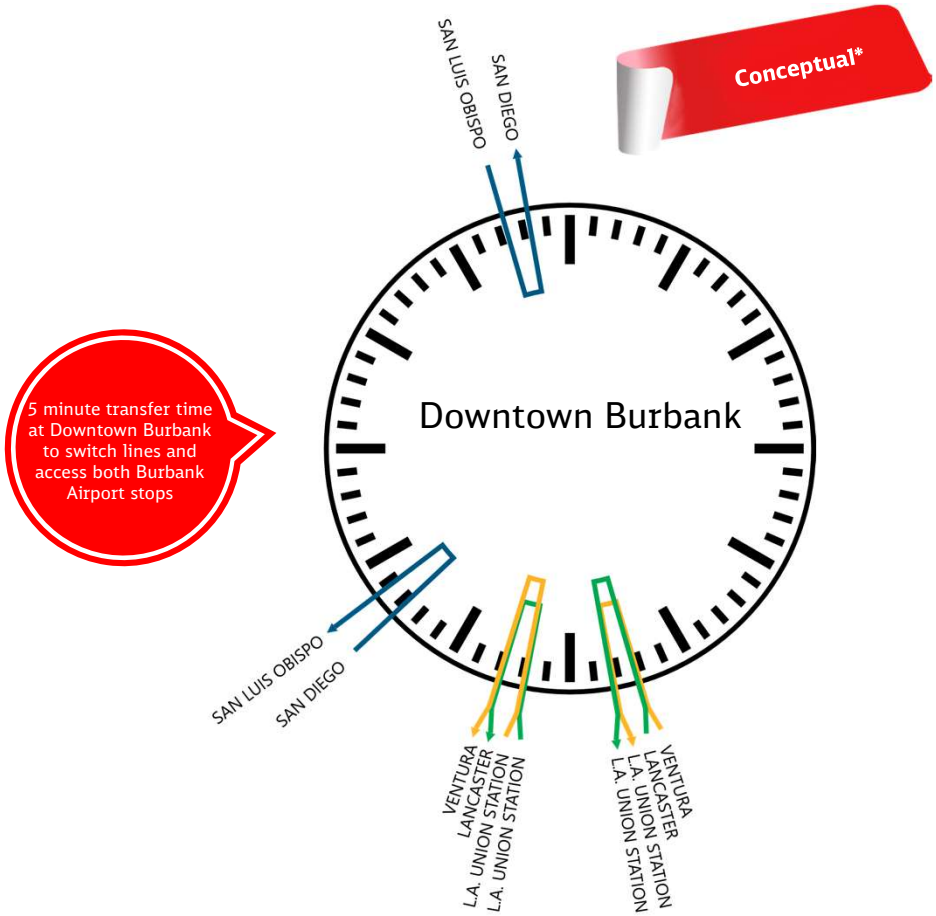
- How can connectivity to Burbank Airport be improved?

Relevant Parameters:

- Current infrastructure requires van service to airport from Burbank Airport North
- Currently, no connection between Burbank Airport North and South

Result:

- Timed connections at Downtown Burbank provide 20 minute travel time (including 5 minute transfer) between Airport-North and Airport-South



* - operational, freight coordination impacts, capital needs would require further analysis

Ventura County to Orange County Through Runs

Technical Question:

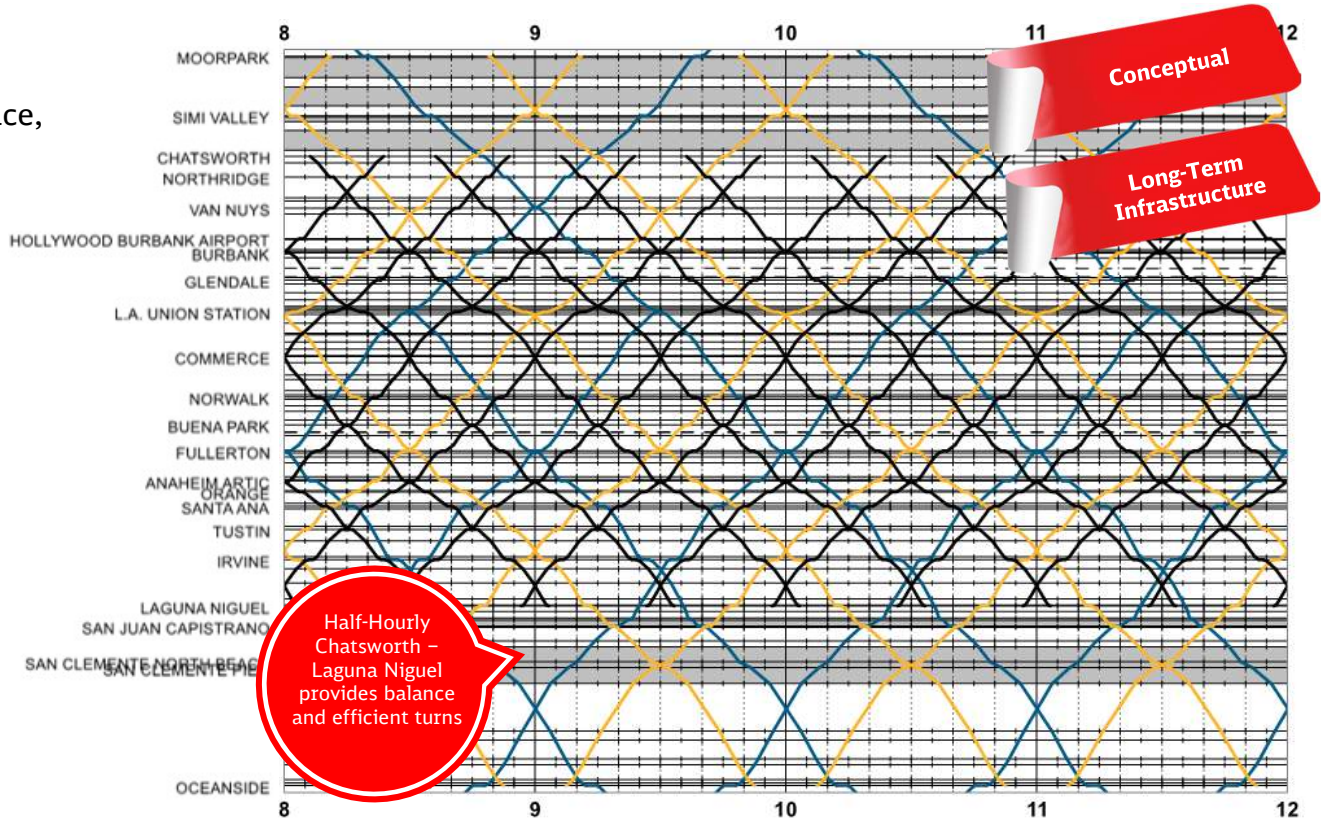
- With SCORE / Link-US infrastructure in place, how does through-service integrate in the corridor?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Score infrastructure allows for regularized through patterns serving the core of the network within a broader pulse pattern.



* - operational, freight coordination impacts, capital needs would require further analysis

Ventura County to Orange County Through Runs

Technical Question:

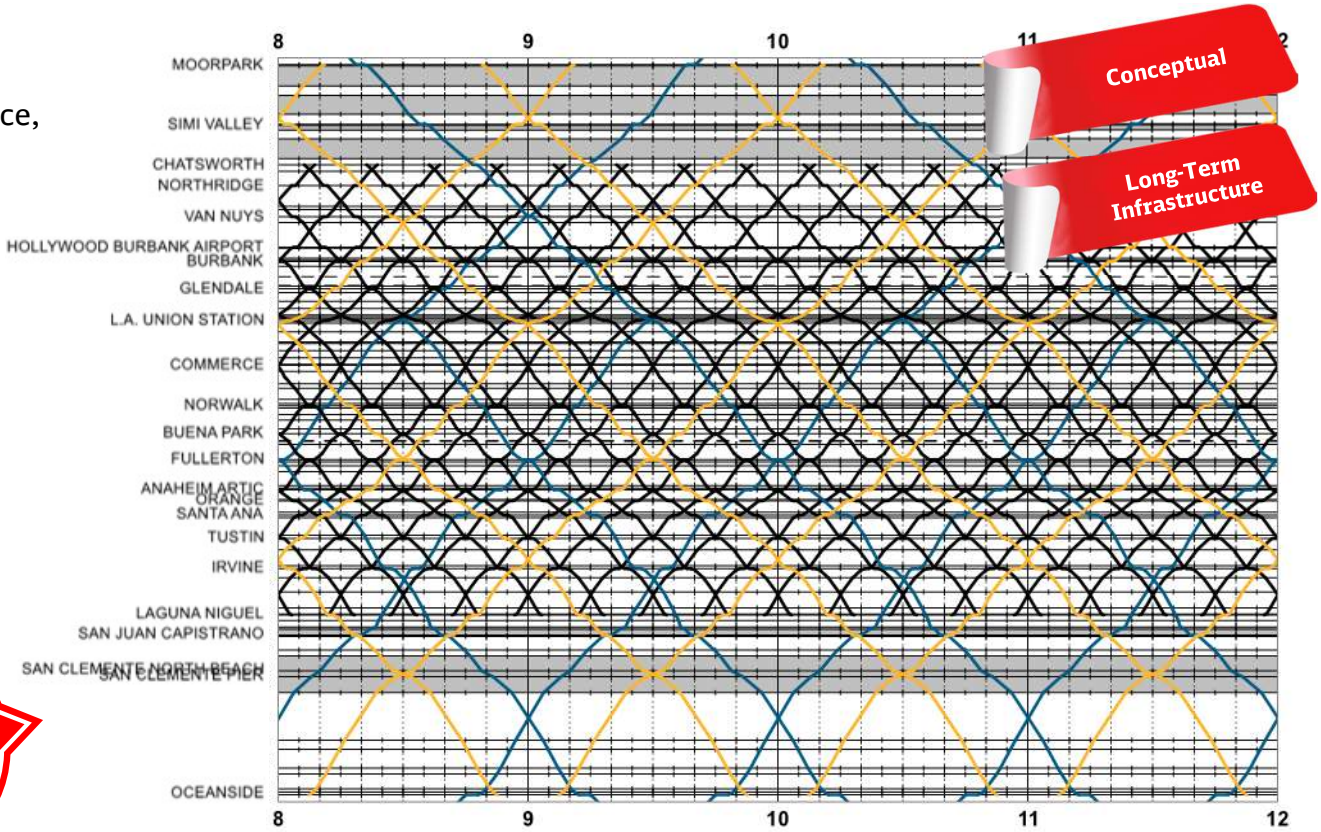
- With SCORE / Link-US infrastructure in place, how does through-service integrate in the corridor?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Score infrastructure allows for regularized through patterns serving the core of the network within a broader pulse pattern.



Every-15-Minute service fits but with less spacing between trains

*** - operational, freight coordination impacts, capital needs would require further analysis**

Antelope Valley to San Bernardino Through Runs

Technical Question:

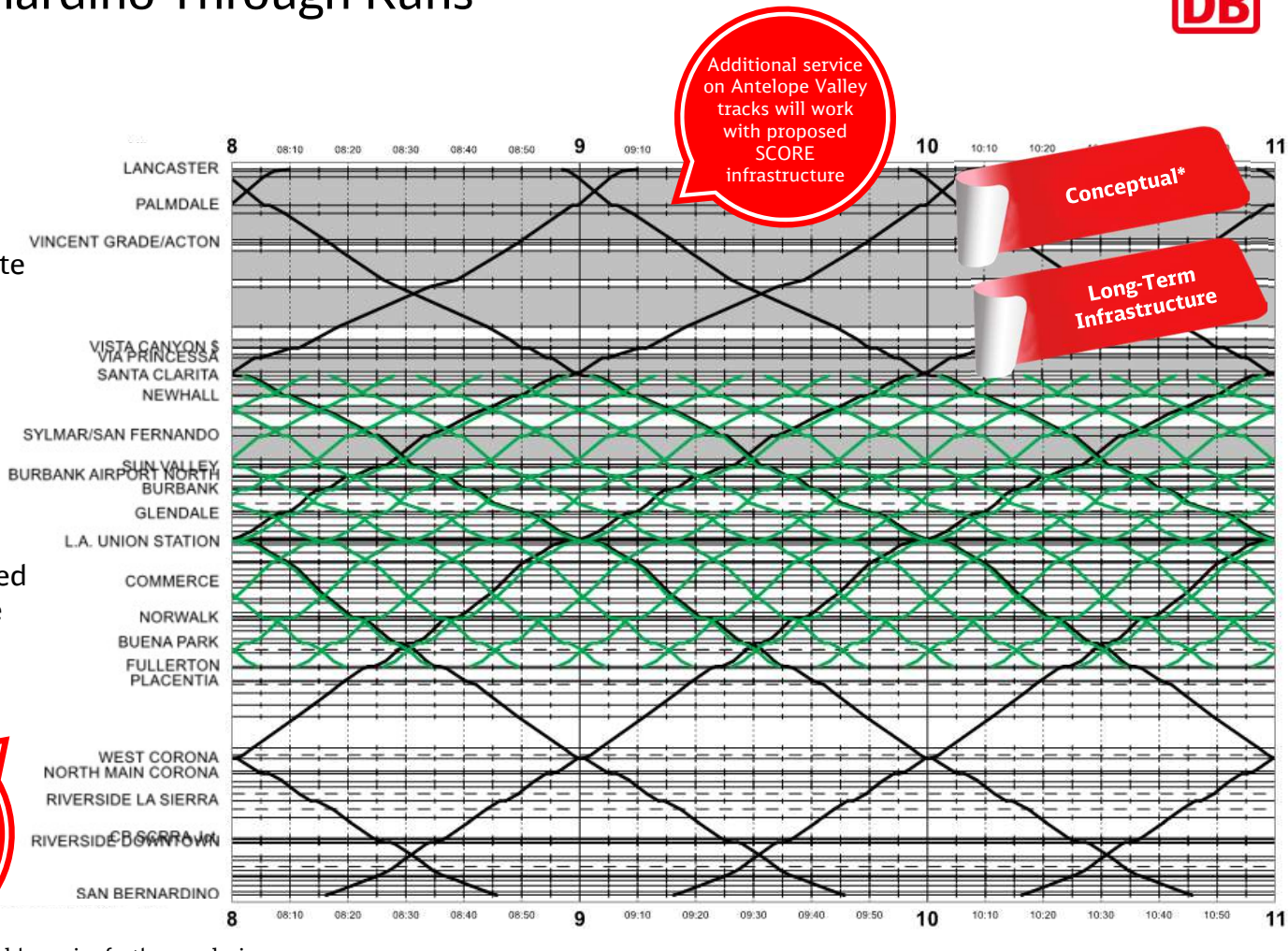
- With SCORE / Link-US infrastructure in place, how does through-service integrate in the corridor?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Score infrastructure allows for regularized through patterns serving the core of the network within a broader pulse pattern.



* - operational, freight coordination impacts, capital needs would require further analysis

Every 15 Minute Burbank Airport North Shuttle

Technical Question:

- With SCORE / Link-US infrastructure in place, how does through-service integrate in the corridor?

Relevant Parameters:

- Assumes SCORE Infrastructure

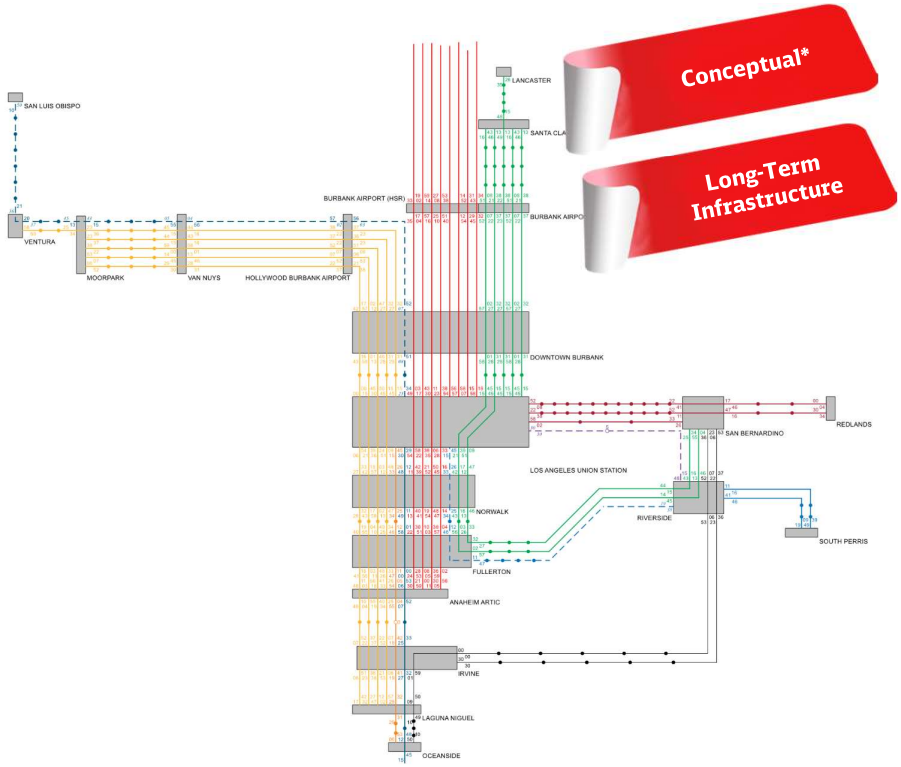
Result:

- Score infrastructure allows for regularized through patterns serving the core of the network within a broader pulse pattern.

* - operational, freight coordination impacts, capital needs would require further analysis

Equipment Summary

Corridor	Estimated Equipment Count	Estimated Average Equipment Hours per day	Estimated Annual Miles
LA – San Bernardino (incl. express)	13	16.5	2,356,847
LA – Riverside - Hemet	8	12.8	1,554,324
Ventura County – LA – Orange County	24	14.8	6,473,084
Antelope Valley	21	15.5	4,506,539
Inland Empire – Orange County	5	16.8	1,390,792



* - operational, freight coordination impacts, capital needs would require further analysis

Corridor Overview: LA – San Bernardino

Technical Question:

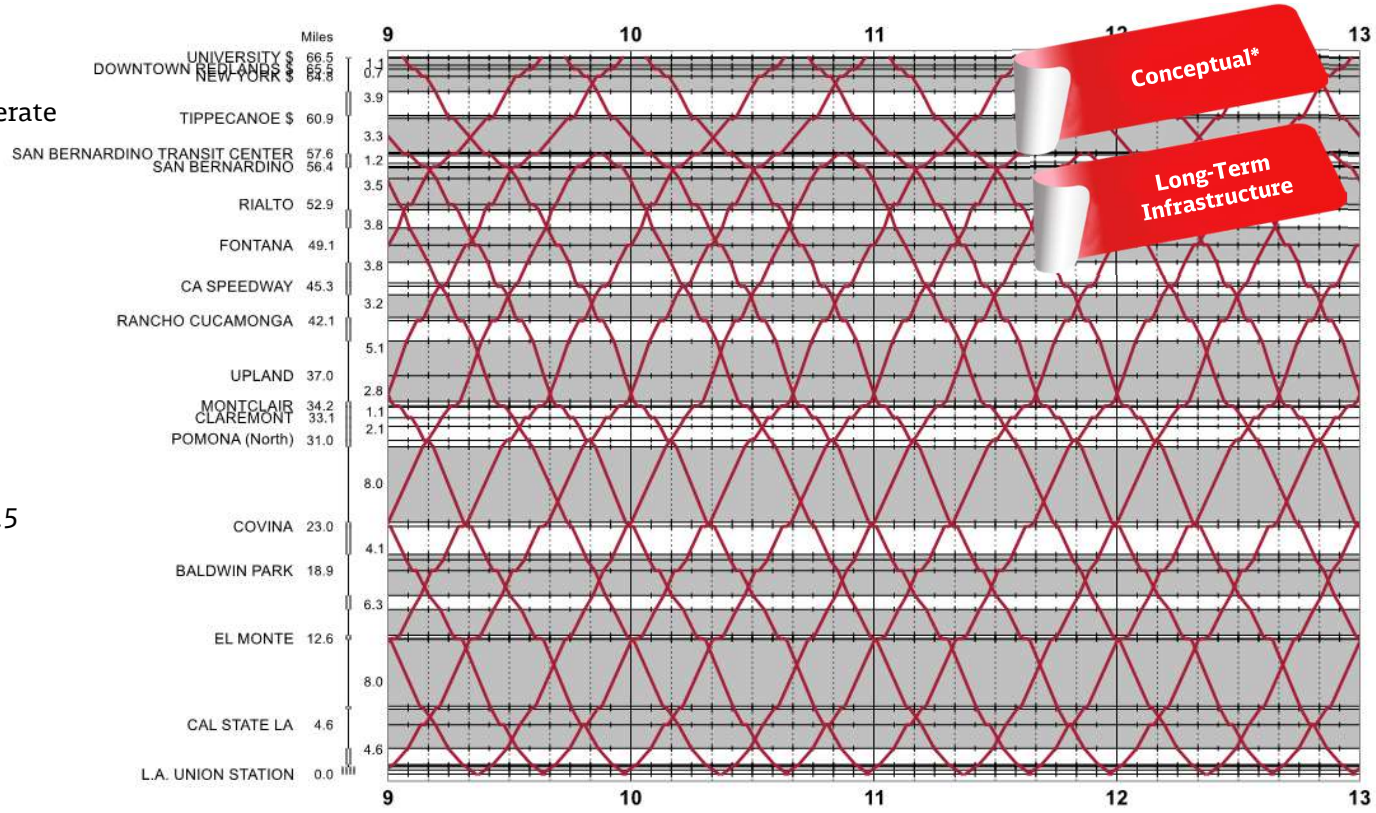
- How much equipment would be required to operate high service volumes on LA – San Bernardino service?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Estimated Daily Revenue Equipment Count: 13
- Estimated Daily Revenue Equipment Hours: 16.5
- Estimated Annual Revenue Equipment Miles: 2,356,847



* - operational, freight coordination impacts, capital needs would require further analysis

Corridor Overview: LA – Riverside

Technical Question:

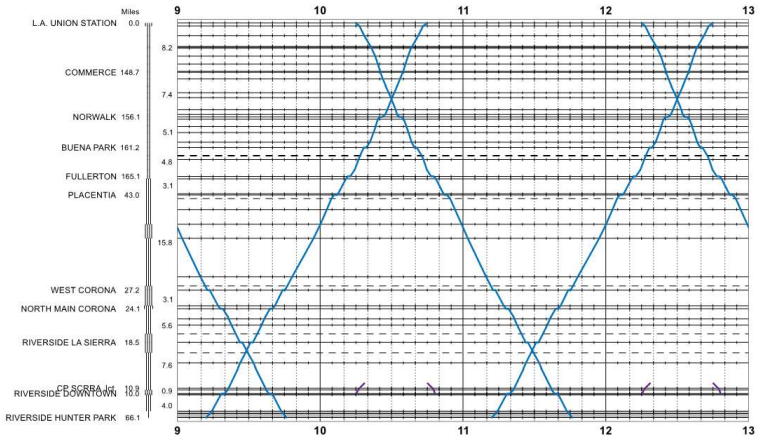
- How much equipment would be required to operate high service volumes on LA - Riverside service?

Relevant Parameters:

- Assumes SCORE infrastructure

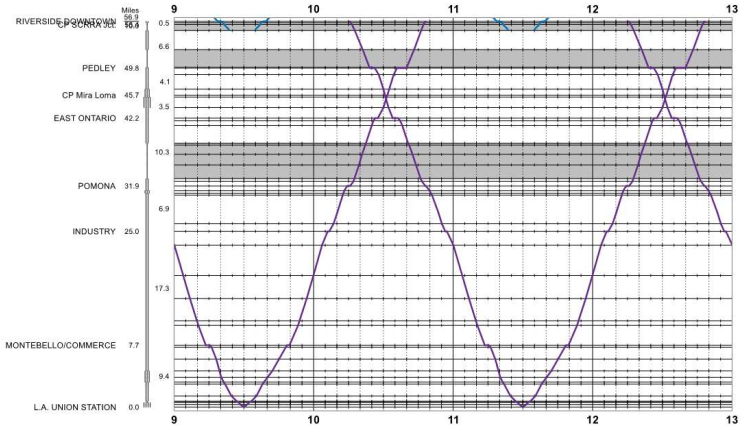
Result:

- Estimated Daily Revenue Equipment Count: 8
- Estimated Daily Revenue Equipment Hours: 12.8
- Estimated Annual Revenue Equipment Miles: 1,554,324



Conceptual*

Long-Term Infrastructure



* - operational, freight coordination impacts, capital needs would require further analysis

Corridor Overview: Oceanside – LA – Ventura

Technical Question:

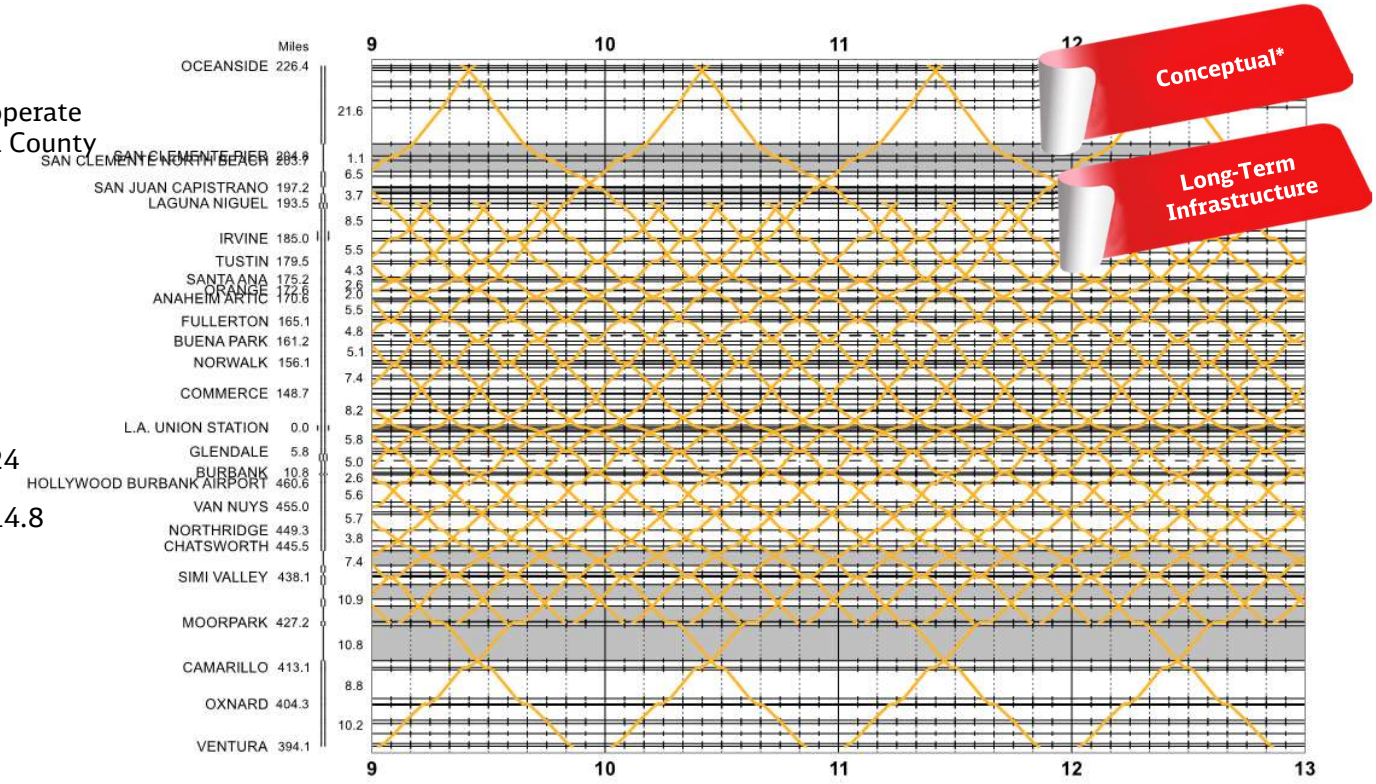
- How much equipment would be required to operate high service volumes on Oceanside – Ventura County through service?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Estimated Daily Revenue Equipment Count: 24
- Estimated Daily Revenue Equipment Hours: 14.8
- Estimated Annual Revenue Equipment Miles: 6,473,084



* - operational, freight coordination impacts, capital needs would require further analysis

Corridor Overview: Lancaster – LA – San Bernardino

Technical Question:

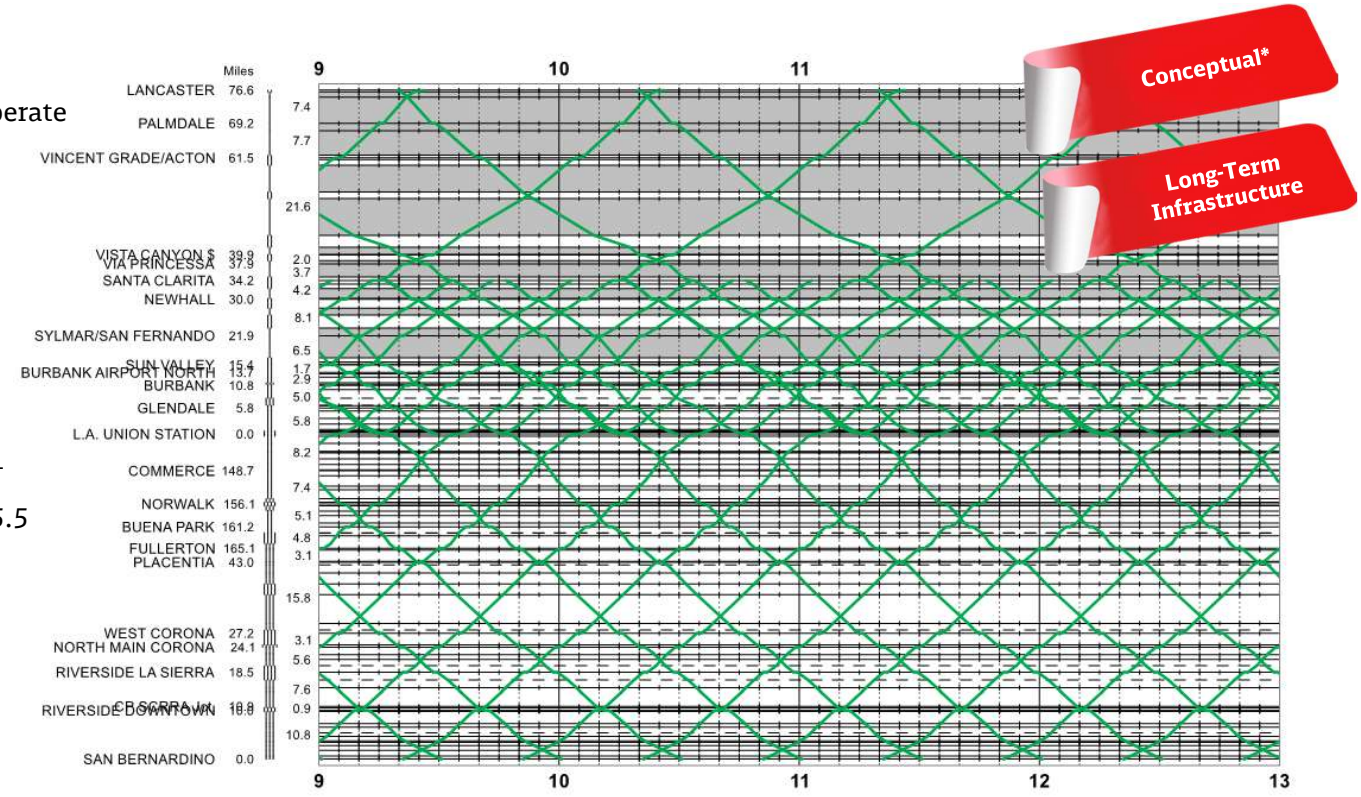
- How much equipment would be required to operate high service volumes on Antelope Valley – San Bernardino through service?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Estimated Daily Revenue Equipment Count: 21
- Estimated Daily Revenue Equipment Hours: 15.5
- Estimated Annual Revenue Equipment Miles: 4,506,539



* - operational, freight coordination impacts, capital needs would require further analysis

Corridor Overview: Inland Empire – Orange County

Technical Question:

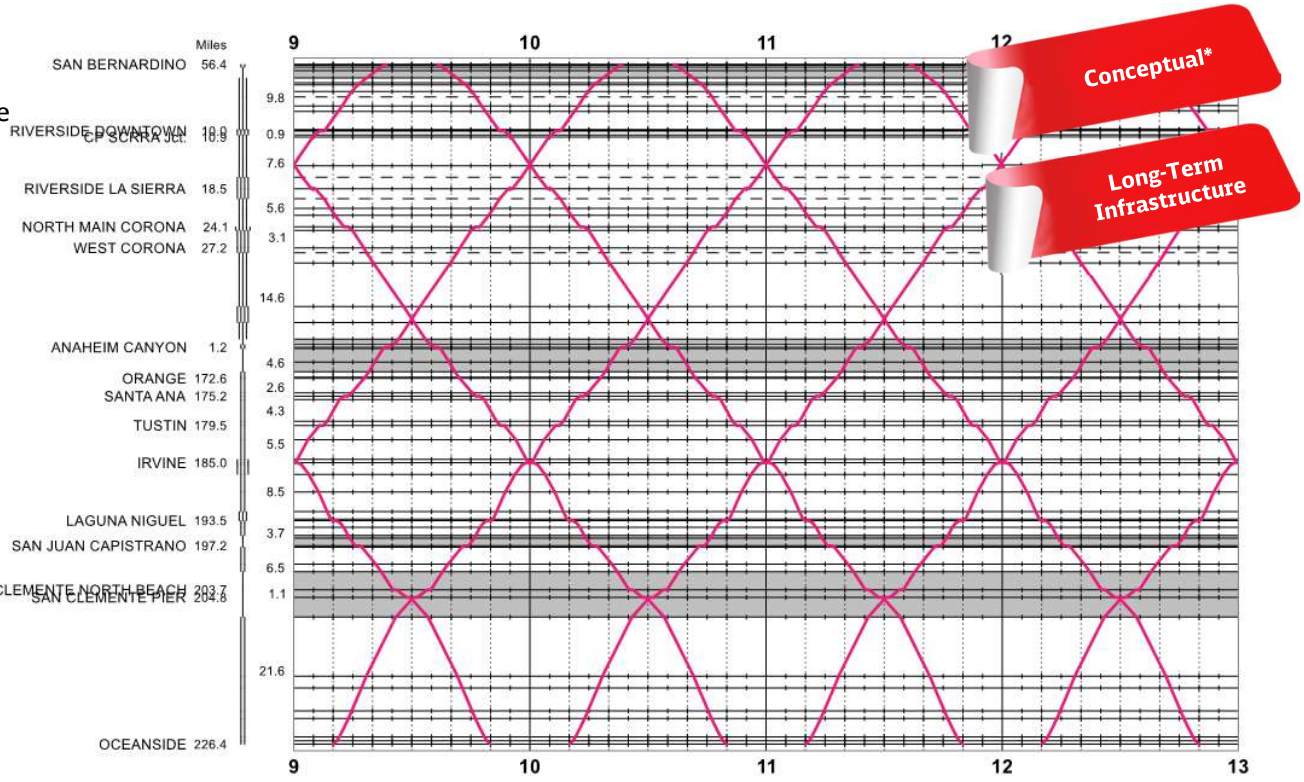
- How much equipment would be required to operate high service volumes on Inland Empire to Orange County service?

Relevant Parameters:

- Assumes SCORE infrastructure

Result:

- Estimated Daily Revenue Equipment Count: 5
- Estimated Daily Revenue Equipment Hours: 16.8.5
- Estimated Annual Revenue Equipment Miles: 1,390,792



* - operational, freight coordination impacts, capital needs would require further analysis

Appendix A.2
Ridership Modeling

Memorandum

TO: CRA

FROM: Cambridge Systematics

DATE: November 2, 2022

RE: Transit methodology details in MRNI Project – DRAFT

This memorandum documents our approach to generating forecasts of transit demand for the Metro Rail Network Integration (MRNI) study, including technical details and assumptions that were used.

Base Year Model

The LA Metro travel demand model provides a detailed representation of the transportation system in the region for both base year 2017 and future year 2047. The base year model has been calibrated and validated using a collection of ground truth data to ensure trip distribution patterns are reasonable, transit demand matches ridership data, and roadway traffic volumes are consistent with base year traffic counts.

While Metro provided a fully functioning and validated base year model for use in this project, it is always worthwhile to verify that the model includes key service and infrastructure projects relevant to the study at hand. For the MRNI study, this required checking that both Amtrak and Metrolink services were included in the model. Upon inspection of the model, it was discovered that Amtrak service was not coded into the transit network. Amtrak service was added to the base year and future year transit networks from E. Ventura to San Clemente. Peak and off-peak frequencies are obtained from 2017/2018 schedules and coded into the model service.

In addition to adding Amtrak service to the model, another key component missing from the original base year model was long distance train travel into the region. In particular, a portion of long-distance train trips into/out of the region use the local transit system to access or egress the long-distance train system. To account for these trips, we analyzed outputs from the California Statewide travel demand model. The process to integrate these trips with the base year model was as follows:

- Due to differences in the zone systems for the two different models, the statewide model zone system was overlayed on the Metro model zone system to generate a correspondence between trip origins and destinations for the two models.

- Statewide model long-distance rail trips with one trip end inside the Metro model geographic boundaries were then extracted from the statewide model. These trips have associated with them both an egress (access) station and a final trip destination zone (origin zone). The also

have a predicted egress (access) mode from the statewide model. Only long-distance rail trips with an egress (access) mode of transit were retained.

- The result was a trip table of egress (access) station to destination zone (origin zone) flows that used transit as the local mode. Each station was coded to a unique model zone to establish zone-to-zone flows.

- Zone-to-zone flows from above were then added to the transit trip table in the Metro model after the mode choice component of the Metro model is applied, but before the transit assignment component of the Metro model is applied. This means that the volume of local transit journeys coming from the statewide model is fixed for each scenario, but the assignment to the transit network may differ based upon the specific transit services that are provided in each scenario that was analyzed.

After making the necessary changes to the base year model, the base year model was run and results were summarized to ensure the model changes were working appropriately.

Base Year Scenario Specifications

Three alternative scenarios were run using the base year model. These three scenarios represent service changes that could be easily made in the near term without any infrastructure investment. The intent of these scenarios was to get an idea of how travelers' behavior would respond to service changes similar to those that might be envisioned in the future to improve network connectivity and overall service. Table 1 highlights the specifications of the three alternative base year scenarios.

Table 1: 2017 Model Scenario Specifications

Modeling Scenarios		2017 Model Runs			
Type	**Alternative Options**	**2017 – RNI Base**	**2017 – RNI Alt A**	**2017 – RNI Alt B**	**2017 – RNI Alt C**
Base Model					
Metrolink	N/A	■	■	■	■
Amtrak	N/A	■	■	■	■
Alternatives					
Metrolink Tripper	**Tripper between Laguna Niguel and Chatsworth - Ventura Line**	--	■	■	■
Amtrak Extra stops	**Stops at Burbank and Norwalk**	--	■	■	■
New Freeway Express	**I-405 - LBSU to Atlantic, Harbor Gateway, Rosecrans, LAX**	--	--	Coded as off-freeway stops	Coded as inline freeway stops
New Freeway Express	**I-605 - LBSU to 91/Cerritos College, C-Line Norwalk Station, Washington, Rose Hills, Elmonte TC**	--	--	Coded as off-freeway stops	Coded as inline freeway stops
Local routes - Norwalk Shuttle	**C-Line Norwalk to Norwalk/SFS BUS**	--	■	■	■

■ = Included in the Model Run Option
-- = Not Included in the Model Run Option

2017 Alternative A Scenario

In the first base year alternative scenario, several network changes were made to the base year model as follows:

- Amtrak stops were added at Burbank and Norwalk stations.

- A bus shuttle service was added between the Norwalk station on the Metrorail C-Line (the C-Line terminus to the east) and the Norwalk/Santa Fe Springs station on the Metrolink Orange County Line (about 2.5 mile distance). Shuttle headways were assumed to be 7.5 minutes in the peak periods and 15 minutes in the off-peak periods, consistent with the existing Metrorail C-Line headways. Two additional stops were considered between the shuttle termini.

- A Metrolink tripper bus service was added providing service between Laguna Niguel and Chatsworth stations. This service was assumed to provide headways of 60 minutes in both peak and off-peak periods.

2017 Alternative B Scenario

In the second base year alternative scenario, all of the changes made for Alternative A were included and two additional express lines were added.

- The first line provided express bus service between California State University – Long Beach (CSLB) and LAX.

- The second provided express bus service between CSLB and El Monte.

Both new services are assumed to have 15 minute headway in the peak period and 30 minute headway in the off-peak period. Moreover, they are both assumed to make all stops on local roads off of the freeway. Full service settings for each express bus line are shown in Table 2.

Table 2: Stoppage Criteria for I-405 and I-605 Express Bus Services

Route	Stations	Off-freeway intersection	Travel distance off-freeway feet	Time in minutes added at stops
I-605	Cal State Long Beach	7th and Channel	NA	NA
	Pioneer Blvd	Pioneer and South St.	11,065.50	10.5
	Norwalk/C-Line Terminus	Norwalk TC - Hoxie/105	7,009.50	6.6
	Washington	Washington Blvd and Norwalk	9,107.50	8.6
	El Monte Transit Center	Ramona Blvd/Santa Anita Ave	NA	NA
	El Monte Metrolink Station	Center Ave/Railroad Street	NA	NA
				-
I-405	Cal State Long Beach	7th and Channel	NA	NA
	Wardlow	Pacific Avenue and Warlow Rd	6,440.00	6.1
	Artesia	Artesia Blve/Hawthorne Blvd	10,049.50	9.5
	Aviation/LAX via Imperial/105	Aviation/LAX Station	NA	NA
	Aviation/Century	Aviation Blvd/Century Blvd	NA	NA

2017 Alternative C Scenario

Similar to Alternative B, Alternative C includes all of the changes made for Alternative A and similar changes used for Alternative B. The difference between Alternative B and Alternative C is that Alternative C assumes that stops made on the express lines are made on the freeway facility itself using special inline stations. This was implemented in the model by reducing the additional amount of time needed for each stop (final column of Table 2) to zero. In other words, Alternative C is identical to Alternative B except that the express bus lines provide faster service in Alternative C. The same set of stops and the same headways are used for both scenarios.

Table 3 shows a comparison of boardings among these three scenarios on some important lines.

Base Year Scenario Results

Table 3 provides high level comparisons of each alternative against the base scenario in the form of differences between key metrics, including total boardings, daily linked trips, passenger miles traveled (PMT) on transit, and highway vehicle miles traveled (VMT). Each alternative scenario sees an increase in transit boardings, daily transit linked trips, and PMT and a corresponding decrease in highway VMT. The differences are larger for alternatives B and C as expected.

Table 3: Comparison of Alternative Scenarios Against Base Model

	Alt A - Base	Alt B - Base	Alt C - Base
Transit Boardings and Linked Trips			
Peak Boarding	5,224	5,717	5,939
Off-Peak Boarding	1,566	1,909	2,096
Daily Boarding	6,790	7,626	8,035
Daily Transit Linked Trips	3,054	3,589	3,760
Passenger-mile Comparison			
Peak Passenger Mile	76,870	83,664	84,789
Off-Peak Passenger Mile	29,028	34,472	36,007
Daily Passenger Mile	105,898	118,136	120,796
Highway-Auto VMT Comparison			
Peak Highway VMT	-53,026	-63,825	-66,634
Off-Peak Highway VMT	-21,072	-24,271	-25,412
Daily Highway VMT	-74,098	-88,096	-92,046

Table 4 compares boardings by line forecast results for the three scenarios against boardings modeled for the base scenario. As shown in the table, total boardings increase from about 84,000 in the base scenario to 90,000 in Alternative A and 91,000 in both Alternatives B and C (with Alternative C boardings being a few hundred greater than Alternative B). The Tripper line added for each alternative scenario generates the majority of new boardings (about 6,000 in each alternative) while the C-Line shuttle generates about 500 new boardings and the express bus lines generate between 300 and 600 new boardings each. These results are generally consistent with expectations.

Table 4: Boarding Comparison Between 2017 Base and Three Alternative Scenarios

Route Name	2017_Base	2017_AltA	2017_AltB	2017_AltC
460-5Th/La-Disney La Sb	7,399	7,233	7,225	7,216
ID='701-E.Ventura-LAUS	2,251	2,646	2,646	2,644
ID='702-Lancaster-LAUS	8,259	8,190	8,187	8,190
ID='703-San Bernardino-LAUS	9,973	10,094	10,105	10,109
ID='704-Riverside-LAUS	2,764	2,817	2,817	2,816
ID='706-San Clemente-LAUS	6,578	5,247	5,248	5,242
ID='707-91 Line Eastbound	2,007	1,909	1,907	1,905
ID='708-S.Bernardino-Irvine	4,865	4,825	4,828	4,824
ID='709-Burbank-LAUS	754	833	832	833
AMTRAK E.Ventura-LA	4,436	3,920	3,920	3,919
AMTRAK LAUS-San Clemente	541	1,347	1,351	1,352
Green Line C-Line	34,351	34,387	34,364	34,369
803-C-Line Shuttle	0	497	497	489
Chatsworth-Laguna Tripper	0	6,211	6,200	6,203
I405-L.Beach-LAX/Aviation	0	0	485	572
I-605-L.Beach-El Monte	0	0	352	606
Total Daily Boardings	**84,178**	**90,156**	**90,964**	**91,289**

Station boardings at Burbank and Norwalk stations are provided in Table 5. Each station sees approximately the same number of boardings and alightings in each alternative scenario, corresponding to increases over the base model of about 49 percent at Burbank and 47 percent at Norwalk.

Table 5: Station Boardings and Alightings by Scenario

Station Name	Base 2017		Alt A		Alt B		Alt C	
	Daily On	Daily Off	Daily On	Daily Off	Daily On	Daily Off	Daily On	Daily Off
Burbank	994	994	1,480	1,480	1,481	1,481	1,481	1,481
Norwalk	441	441	648	648	649	649	650	650

Future Year No-Build Scenario

For the no-build future year model, we started from Metro's 2047 LRTP model. Like the base year model, Amtrak service needed to be added to the 2047 Future Year transit network also. Also like the base year model, the local portion of long-distance rail trips using transit to access/egress the rail system were added to the regional model's forecast estimates of transit trips prior to transit assignment.

For the 2047 model, it is anticipated that California's high-speed rail network will be complete, which will generate additional long-distance rail trips to/from the Los Angeles region. As a result, it was determined that these trips should be considered in the analysis in addition to the conventional rail long-distance trips already accounted for. To do this, a similar procedure as that used for the statewide model was used, but with two key differences:

- Trips were taken from the High-Speed Rail travel model rather than the statewide model.
- Only long-distance trips using high-speed rail as the primary mode were considered.

Like the long-distance conventional rail trips, the long-distance high-speed rail trips were filtered to keep only those with a trip end in the Los Angeles region and where the egress (access) trip was made by local transit mode. The high-speed rail egress (access) station was coded to the appropriate zone, and zone-to-zone local transit flows from the model were added to the regional model's transit flows prior to transit assignment.

Future Year Scenario Specifications

Two alternative scenarios were run using the future year model. Table 6 highlights the specifications of the two alternative future year scenarios.

Table 6: 2047 Model Scenario Specifications

Modeling Scenarios		2047 Model Runs		
Type	**Alternative Options**	**2047 Base**	**2047 Alt A**	**2047 Alt B**
Base Model				
Metrolink	N/A	■	■	■
Amtrak	N/A	■	■	■
HSR - 2047 - Anaheim to SF	N/A	■	■	■
LRT Metro 2047 Network	N/A	■	■	■
Bus Metro 2047 network	N/A	■	■	■
Alternatives				
Metrolink Tripper	**Tripper between Laguna Niguel and Chatsworth - Ventura Line**	--	--	--
Amtrak xtra stops	**Stops at Burbank and Norwalk**	--	--	--
LRT C-Line Extension	**Extend C-Line to Norwalk/SFS**	--	--	■
New Freeway Express	**I-405 & I-605**	--	--	--
Local routes - Norwalk Shuttle	**C-Line Norwalk to Norwalk/SFS BUS**	--	■	--

■ = Included in the Model Run Option
-- = Not Included in the Model Run Option

2047 Alternative A Scenario

In the first future year alternative scenario, the only change from the no-build 2047 scenario was to add shuttle bus service between the Norwalk station on the Metrorail C-Line and the Norwalk/Santa Fe Springs station on the Metrolink Orange County Line. This change is similar to one of the changes made in each of the 2017 alternative scenario. In the case of 2047 Alternative A, two additional stops are included between the start and end points at Firestone Blvd. and the Civic Center, and headways were assumed to be 5 and 10 minutes for peak and off-peak periods, respectively.

2047 Alternative B Scenario

In the second future year alternative scenario, a similar change was made, but instead of providing shuttle bus service between the Metrorail C-Line and the Metrolink Orange County Line, the Metrorail C-Line was extended to the Norwalk/Santa Fe Springs Metrolink Station. Like Alternative A, two additional stops are included at Firestone Blvd. and Civic Center, and headways were assumed to be 5 and 10 minutes for peak and off-peak periods, respectively.

Future Year Scenario Results

Table 7 provides high level comparisons of each alternative against the future year no-build scenario in the form of differences between key metrics, including total boardings, daily linked trips, PMT on transit, and highway VMT. Both alternative scenarios see an increase in transit boardings, daily transit linked trips, and PMT and a corresponding decrease in highway VMT. The impact of extending the C-Line rail service (Alternative B) compared to providing shuttle bus service (Alternative A) is significant. The change in the number of daily boardings is 60 percent higher under Alternative B, the change in the number of linked transit trips is also 60 percent higher, and the change in PMT is 400 percent higher under Alternative B. The differences in boardings versus PMT is the result that the added transit journeys tend to be longer distance trips under Alternative B.

Table 7: Comparison of Alternative Scenarios Against Base Model

	Alt A – No-Build	Alt B – No-Build
Transit Boardings and Linked Trips		
Peak Boarding	1,072	1,630
Off-Peak Boarding	575	1,029
Daily Boarding	1,647	2,659
Daily Transit Linked Trips	634	1,015
Passenger-mile Comparison		
Peak Passenger Mile	3,904	12,255
Off-Peak Passenger Mile	666	11,086
Daily Passenger Mile	4,570	23,341
Highway-Auto VMT Comparison		
Peak Highway VMT	-2,282	-3,021
Off-Peak Highway VMT	-670	-800
Daily Highway VMT	-2,952	-3,821

Table 8 compares boardings by line forecast results for the two 2047 scenarios against boardings modeled for the 2047 no-build scenario. As shown in the table, total boardings increase from about 192,000 in the no-build scenario to 194,000 in Alternative A and 195,000 in Alternative B. These results are generally consistent with expectations.

Table 8: Boarding Comparison Between 2047 No-Build and Two Alternative Scenarios

Route Name	2047 No Build	2047 Alt A	2047 Alt B
460-5Th/La-Disney La SB	16,303	16,226	16,455
ID='701-E.Ventura-LAUS	15,706	15,710	15,712
ID='702-Lancaster-LAUS	43,098	43,095	43,094
ID='703-San Bernardino-LAUS	18,869	18,866	18,862
ID='704-Riverside-LAUS	6,868	6,869	6,867
ID='706-San Clemente-LAUS	10,362	10,360	10,355
ID='707-91 Line Eastbound	6,221	6,223	6,224
ID='708-S.Bernardino-Irvine	10,822	10,824	10,824
ID='709-Burbank-LAUS	1,288	1,290	1,292
AMTRAK E.Ventura-LA	6,942	6,942	6,940
AMTRAK LAUS-San Clemente	7,490	7,487	7,490
Green Line C-Line	48,437	48,756	48,912
803-Green Line Shuttle/Extension	0	1,455	1,702
Total Daily Boarding	**192,406**	**194,103**	**194,729**

Finally, station boardings at Burbank and Norwalk stations are provided in Table 9. As expected, there is effectively no change in boardings at Burbank for either of the 2047 alternative scenarios because no improvements were coded at the Burbank station in either scenario. Norwalk station sees an increase in boardings of about 140 in Alternative A and about 320 in Alternative B.

Table 9: Station Boardings and Alightings by Scenario

Station Name	No-Build 2047		Alt A		Alt B	
	Daily On	Daily Off	Daily On	Daily Off	Daily On	Daily Off
Burbank	4,037	4,037	4,038	4,038	4,041	4,041
Norwalk	1,083	1,083	1,226	1,226	1,405	1,405

Appendix B.1
Capital and Operating Costs

DRAFT - Metrolink Tripper OOM Cost Estimate

Service	Total Operations Cost	Estimated Daily Equipment Hours per Equipment Set	Estimated Minimum Equipment Sets (assumes 1 locomotive and 4 bi-level coaches per equipment set)	Annualization Factor	Annual Vehicle Revenue Hours	2020 Operating Expense per Vehicle Hour	2020 to 2022 Cost Factor	2022 Operating Expense per Vehicle Hour
Chatsworth – Laguna Niguel	**$19,854,680**	15	5	365	27375	$653.41	1.1	$725.29
Chatsworth – Irvine	**$18,531,034**	14	5	365	25550	$653.41	1.1	$725.29

Service	Total Equipment Cost	Estimated Minimum Equipment Sets (including one spare)	2018 Locomotive Cost	2018 Bi-Level Coach Cost	2018 to 2022 Cost Factor	2022 Locomotives Cost	2022 Bi-Level Coach Cost	Total Equipment Set Cost
Chatsworth – Laguna Niguel	**$237,888,000**	6	$11,400,000.00	$6,000,000.00	1.12	$12,768,000.00	$6,720,000.00	$39,648,000.00
Chatsworth – Irvine	**$237,888,000**	6	$11,400,000.00	$6,000,000.00	1.12	$12,768,000.00	$6,720,000.00	$39,648,000.00

**Note that no added costs are anticipated for maintenance facility expansion, station, or track improvements.*

Appendix B.2
Wayfinding Assessment

Table of Contents

Table of Figures

Table of Tables

Introduction

This document assesses regional wayfinding to the station areas in Van Nuys, Burbank and Norwalk. Policy guidelines and best practices from Metro, Metrolink and Amtrak, LOSSAN, and TIRCP were referenced to determine whether existing wayfinding was in sync with current guidelines and best practices.

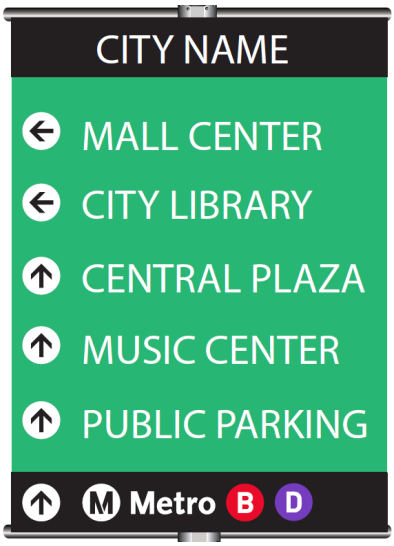
1.0 General Policy Guidelines

Metro Signage & Environmental Trailblazing Standards, 2019

The Trailblazing section of the Metro Signage & Environmental Graphic Design Standards provides guidance on how to appropriately use Metro assets in the context of trailblazing signage and wayfinding. Following these standards ensures that messaging is consistent with Metro's family of wayfinding assets and is instantly recognized, understood, and helpful to people who are riding Metro's system across Los Angeles County. Metro has developed these Standards for use by local jurisdictions, municipalities, local transit operators, business improvement districts, Caltrans, seaports, airports, and any other entity that may need them.

The Trailblazing Standards serve as a comprehensive guide for any entity that is implementing wayfinding signage on a non-Metro property that guides customers to and from Metro stations. Trailblazing is the signage that helps people find a Metro station when walking, rolling, or driving down a street, or connecting from another mode of transportation. Any signage that is communicating the direction and/or distance to a Metro station is a trailblazing sign.

From these standards, “Metro information being incorporated into another jurisdiction’s signage should always be contained within the spaced of a horizontal bar, using a black background, approved Metro logos, pictograms, symbols, and colors.” Two examples are shown below:



Metro Signage & Environmental Trailblazing Standards, 2019

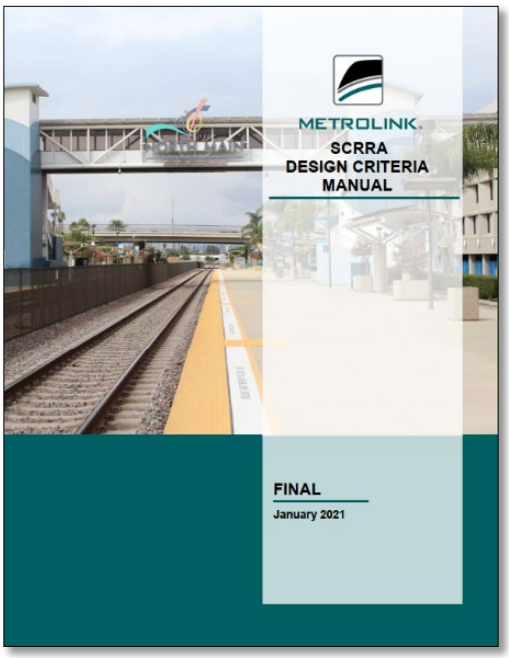
Local Precedent: Expo Line, Santa Monica

Metro’s Transfers Design Guide, 2018

Metrolink SCRRA Design Criteria Manual, 2021

This Southern California Regional Rail Authority (SCRRA) Design Criteria Manual (DCM) serves to define the criteria that governs the design of projects for SCRRA.

The design of an SCRRA signage layout, outlined in the Signage chapter of the DCM, is site-specific and is intended to reflect the surrounding community. However, the functionality of SCRRA signage must be practical and consistent in order to communicate effectively and to serve SCRRA train crews and passengers. The preferred criteria included in the Signage chapter is intended to ensure that all signs are designed and placed to meet the minimum requirements for a SCRRA commuter train station, highway-rail crossing, pedestrian rail crossing, or railroad corridor.

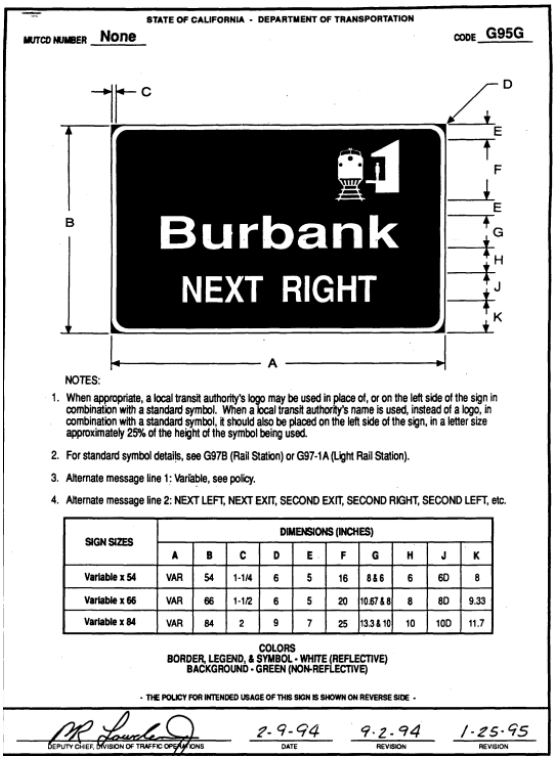


Criteria on the following topics is provided in the document:

- Sign Placement
- Sign Schedule
- Project Sign During Construction
- Right-of-Way Signage/Rail Corridor Signage
- Highway Rail Grade Crossing Signage
- Pedestrian Rail Grade Crossing Signage
- Wayfinding Station Signage
- Wayfinding Signage (Off-site Signs)
- Monument Signage

All signage and graphics are intended to fully conform to the most current version of the SCRRA Engineering Standards ES 3301 through ES 3340. For off-site wayfinding signage, Metrolink's guidelines state:

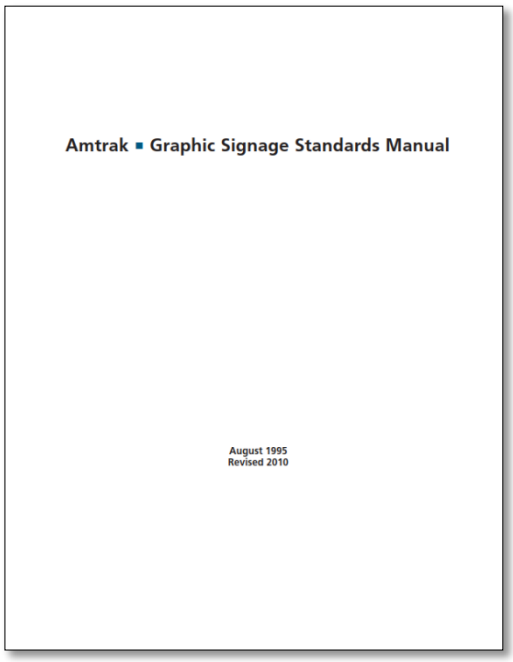
"Trailblazer signs are used to direct patrons from freeway off-ramps and major arterial highways to the stations. Station owners should coordinate with Caltrans for the installation of Caltrans trailblazers when appropriate. White-on-green Caltrans guide signs (G95G – train station next exit) are used to indicate the freeway exit for a station. White-on-green Caltrans guide signs (G97– train station with supplemental SCRRA plate) are at the bottom of freeway off-ramps and on major arterial highways to direct motorists to the station. Trailblazer signs on local roads shall be per ES 3306. SCRRA can provide full-color SCRRA trailblazers to cities for installation by city forces on local streets, at the local agency's expense. Such signs will be maintained by city forces. If signs are posted in areas of poor lighting project owner may choose to light signs."



Source: Caltrans California Sign Specification Drawings

Amtrak Graphic Signage Standards Manual, 2010

The goal of the Amtrak Graphic Signage Standards Manual is to convey a consistent corporate image of strength and reliability, reflecting a brand that puts the safety, comfort and enjoyment of every passenger first. Applied consistently, the signage stands for Amtrak and its role in the travel marketplace. The use of a consistent graphic system enhances the passenger experience, providing both real and perceived reassurances at all phases of the station experience.



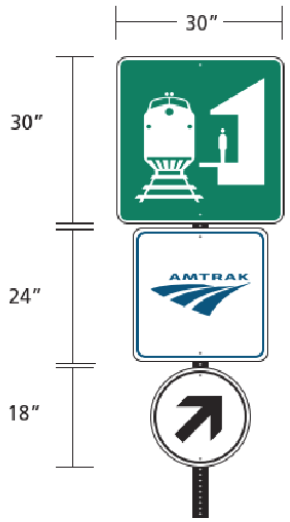
This manual is a corporate identity program created to establish an Amtrak system for national sign installation and placement guidelines. The policies in this manual are required to detail the use of the Amtrak brand signature as applied to all Amtrak stations.

The 2010 revision incorporates new Amtrak branded Sign Types, Acela Express Sign Types, vehicular trailblazer signs and completely updated electronic Sign Types. This revision also contains an overview of the new Americans with Disabilities Act (ADA) design guidelines.

This manual includes the following topics:

- Information on the building blocks of Amtrak's sign system
- Sign Overview, Mounting Options, Sign Size and Layout, and Design Intent Drawing
- Description of where the various Amtrak sign types should be located at various types of platforms and stations
- Sign maintenance procedures
- Sign fabrication and installation
- Sign ordering process

Example of a wayfinding trailblazing off-platform sign

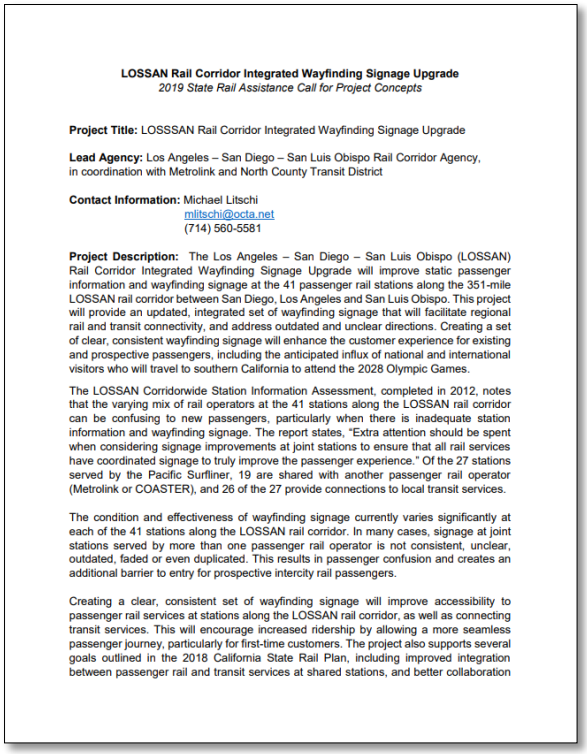


C19 Sign Type (Kit #5) with arrow panel in Diagonal Right position

Source: Amtrak

LOSSAN Signage Study

The Los Angeles – San Diego – San Luis Obispo (LOSSAN) Rail Corridor Integrated Wayfinding Signage Upgrade will improve static passenger information and wayfinding signage at the 41 passenger rail stations along the 351-mile LOSSAN rail corridor running between San Diego, Los Angeles and San Luis Obispo. This project will provide an updated, integrated set of wayfinding signage that will facilitate regional rail and transit connectivity and address outdated and unclear directions. Creating a set of clear, consistent wayfinding signage will enhance the customer experience for existing and prospective passengers, including the anticipated influx of national and international visitors who will travel to southern California to attend the 2028 Olympic Games.



LOSSAN Rail Corridor Integrated Wayfinding Signage Upgrade
2019 State Rail Assistance Call for Project Concepts

Project Title: LOSSSAN Rail Corridor Integrated Wayfinding Signage Upgrade

Lead Agency: Los Angeles – San Diego – San Luis Obispo Rail Corridor Agency, in coordination with Metrolink and North County Transit District

Contact Information: Michael Litschi
mlitschi@octa.net
(714) 560-5581

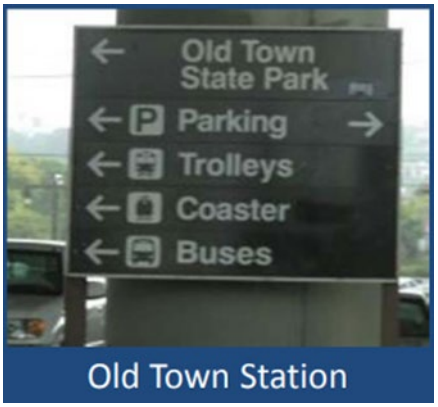
Project Description: The Los Angeles – San Diego – San Luis Obispo (LOSSAN) Rail Corridor Integrated Wayfinding Signage Upgrade will improve static passenger information and wayfinding signage at the 41 passenger rail stations along the 351-mile LOSSAN rail corridor between San Diego, Los Angeles and San Luis Obispo. This project will provide an updated, integrated set of wayfinding signage that will facilitate regional rail and transit connectivity, and address outdated and unclear directions. Creating a set of clear, consistent wayfinding signage will enhance the customer experience for existing and prospective passengers, including the anticipated influx of national and international visitors who will travel to southern California to attend the 2028 Olympic Games.

The LOSSAN Corridorwide Station Information Assessment, completed in 2012, notes that the varying mix of rail operators at the 41 stations along the LOSSAN rail corridor can be confusing to new passengers, particularly when there is inadequate station information and wayfinding signage. The report states, "Extra attention should be spent when considering signage improvements at joint stations to ensure that all rail services have coordinated signage to truly improve the passenger experience." Of the 27 stations served by the Pacific Surfliner, 19 are shared with another passenger rail operator (Metrolink or COASTER), and 26 of the 27 provide connections to local transit services.

The condition and effectiveness of wayfinding signage currently varies significantly at each of the 41 stations along the LOSSAN rail corridor. In many cases, signage at joint stations served by more than one passenger rail operator is not consistent, unclear, outdated, faded or even duplicated. This results in passenger confusion and creates an additional barrier to entry for prospective intercity rail passengers.

Creating a clear, consistent set of wayfinding signage will improve accessibility to passenger rail services at stations along the LOSSAN Rail Corridor, as well as connecting transit services. This will encourage increased ridership by allowing a more seamless passenger journey, particularly for first-time customers. The project also supports several goals outlined in the 2018 California State Rail Plan, including improved integration between passenger rail and transit services at shared stations, and better collaboration between service delivery agencies. In addition, this project will complement the larger statewide vision articulated in the 2018 California State Rail Plan for coordinated trip planning and ticketing. If successful, this program could serve as a pilot project that could be replicated at passenger rail stations on California's other two intercity passenger rail corridors.

Example of good signage noted in this analysis

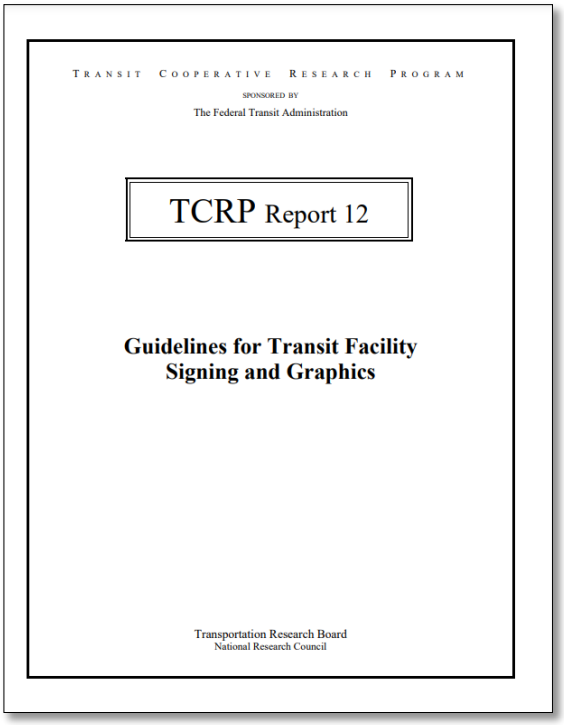


Source: LOSSAN Corridorwide Strategic Implementation Plan, 2012

TCRP Guidelines for Transit Facility Signing and Graphics, 1996

The TCRP Guidelines for Transit Facility Signing and Graphics assists transit operators in the use of appropriate signs and symbols for their facilities. The guidelines describe the use of signs and symbols that provide for the safe and efficient movement of passengers to and through transit facilities. These guidelines also assist transit operators in providing passenger information systems that encourage the use of transit by new users, infrequent riders, and individuals with disabilities.

These guidelines provide an understanding of the three principal elements for signage system design: (1) defining and understanding the needs of users; (2) applying the principles of wayfinding design; and (3) providing basic guidelines for copy style and size, terminology, symbol uniformity, color and shape uniformity, and sign placement. Thus, these guidelines assist transit operators in moving passengers safely from their origin to destination along the most efficient route available, using a concise and comprehensible system of directional, informational, regulatory, and identification messages.



2.0 Existing Inventory

1. Methodology

An inventory of the existing wayfinding signage was compiled in ArcGIS Online to assess the identifiability of the stations to users arriving at or passing by each station.

A desktop review was conducted to identify existing signage along primary streets within one mile of each of the six stations within the Van Nuys, Burbank, and Norwalk Study Areas. The Burbank Study Area contains Burbank Airport North, Burbank Airport South and Burbank Downtown stations; the Norwalk Study Area contains the Metro Norwalk C-Line Terminus and Norwalk/Santa Fe Springs Metrolink stations.

Google Maps Street View was utilized as a tool for desktop review to identify and verify wayfinding sign locations along the main roads (studied roads are identified as blue lines in the map figures) as well as any station signs that were visible from the street. Wayfinding signs with any reference to a station, parking or pick-up/drop-off were included in the inventory. The sign locations were added into an ArcGIS Online map as point features, along with descriptive attributes such as transit agency, sign condition, information provided (direction, distance), target users (vehicles, bicycles, pedestrians), compliancy, installation place (utility post, stand-alone post), ADA, and other attributes. Images of the signs were attached to each point feature.

The mapped and tabulated results of the analysis are organized by study area in the sections below.

2. Van Nuys Study Area

Van Nuys Station

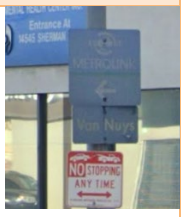
It was found that wayfinding signage leading to the Van Nuys station was not sufficient, with only 5 wayfinding signs within a 1-mile radius. In addition, the existing signs were in poor condition, as they were either worn or graffitied, and were not compliant with applicable Amtrak and/or Metrolink guidelines.

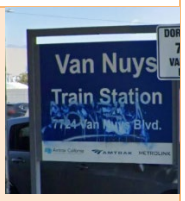
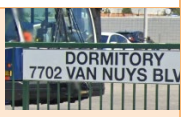
Wayfinding around the station included 3 monument signs, 1 sign placed on the station building wall, and 1 built-in station name in the façade, most of them worn or with graffiti. A couple of ADA signs were identified as well, which showed the way to an accessible route.

It is recommended that new signage be installed around the two stations that is consistent and serves cyclists, pedestrians, and drivers. Wayfinding signage should point clearly to the station and be placed at all key pedestrian and bicycle decision making points, as well as any major roadway intersections.

An inventory of existing wayfinding signage in the Van Nuys study area can be found in **Table 1** and **Figures 1 and 2**.

Table 1 - Van Nuys Study Area Wayfinding Inventory

ID	Station	Transit Facility Information	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
1a	Van Nuys	Amtrak/Metrolink	Worn, graffiti	Not Compliant, outdated design, lacking LADOT and parking information	Yes	Amtrak and Metrolink station direction sign	Yes	Yes	Yes	SE corner of Van Nuys Blvd and Keswick St	Traffic Signal Post	
2a	Van Nuys	Amtrak/Metrolink	Worn, dented	Not Compliant, outdated design, lacking LADOT and parking information	Yes	Amtrak and Metrolink directional sign	Yes	Yes	Yes	Fwy 405 NB Off-Ramp	Stand Alone	
3a	Van Nuys	Amtrak/Metrolink	Worn	Not Compliant, outdated design, lacking LADOT and parking information	Yes	Directional Amtrak and Metrolink sign	Yes	Yes	Yes	Roscoe Blvd West of Van Nuys Blvd EB	Lighting Post	
4a	Van Nuys	Metrolink	Worn	Not Compliant, outdated design, lacking Amtrak, LADOT and parking information	Yes	Metrolink directional sign	Yes	Yes	Yes	Sherman Way between Sherman Cir and Van Nuys Blvd	Lighting Post	

ID	Station	Transit Facility Information	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
5a	Van Nuys	Metrolink	Worn, faded	Not Compliant, outdated design, lacking Amtrak, LADOT and parking information	Yes	Metrolink Directional Sign	Yes	Yes	Yes	Sherman Way East of Van Nuys Blvd WB	Lighting Post	
6a	Van Nuys	Around Station	Good	Not Compliant, per Amtrak monument signing guidelines	No	Amtrak and Metrolink Van Nuys Station Monument Sign	Yes	Yes	Yes	Northeast corner of Van Nuys Blvd and Keswick St	Monument	
7a	Van Nuys	Around Station	Graffiti	Not Compliant, per Amtrak monument signing guidelines	No	Van Nuys Train Station Sign	Yes	Yes	Yes	Northeast corner of Van Nuys Blvd and Keswick St	Stand Alone	
8a	Van Nuys	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	Van Nuys Blvd North of Keswick St NB	Fence	
9a	Van Nuys	Around Station	Good	NA – documentation, only	No	Dormitory Van Nuys Sign	Yes	Yes	Yes	Van Nuys Blvd North of Keswick St NB	Fence	

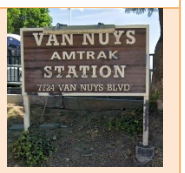
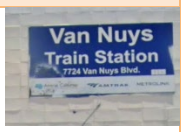
ID	Station	Transit Facility Information	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
10a	Van Nuys	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	Van Nuys Blvd North of Keswick St NB	Fence	
11a	Van Nuys	Around Station	Worn	Not Compliant, per Amtrak monument signing guidelines	No	Van Nuys Amtrak Station Sign	Yes	Yes	Yes	Van Nuys Blvd North of Keswick St NB	Monument	
12a	Van Nuys	Around Station	Worn	NA – documentation, only	No	Van Nuys Train Station Sign	Yes	No	No	Van Nuys Train Station building West facade	Train Station Building	
13a	Van Nuys	Around Station	Good	NA – documentation, only	No	Van Nuys Train Station Sign	Yes	No	No	Van Nuys Train Station building West facade	Building Wall	

Figure 1 - Existing Wayfinding Inventory – Van Nuys Study Area

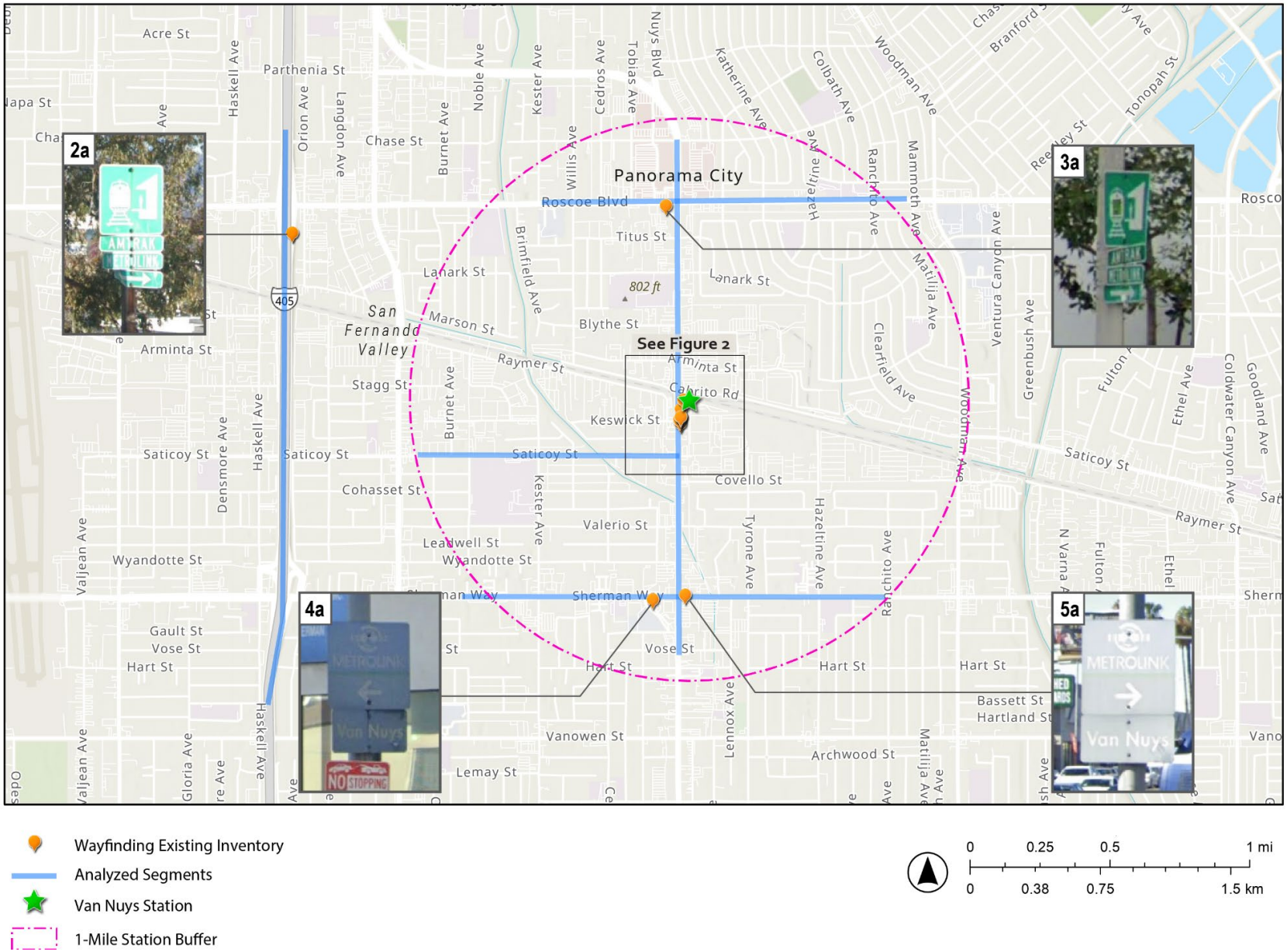


Figure 2 - Existing Wayfinding Inventory – Van Nuys Station

3. Burbank Study Area

Burbank Airport North Station

It was found that the wayfinding signage leading to the Burbank Airport North station was insufficient with only 6 wayfinding signs within a 1-mile radius. All the signs were found to be in good physical condition. However, none of them can be considered compliant with applicable Amtrak and/or Metrolink guidelines.

Signage surrounding the station included a built-in station name and 2 additional stand-alone station name signs. Clear ADA signage was found around the station facing the sidewalk and signaled an accessible route. The 7 ADA signs were mostly in good condition.

Burbank Airport South Station

It was found that wayfinding signage leading to the Burbank Airport South station was insufficient with only 6 wayfinding signs within a 1-mile radius. All the signs were found to be in good physical condition. However, none of them can be considered compliant with applicable Amtrak and/or Metrolink guidelines.

Besides the built-in station name in the station structure, 3 additional signs indicating the rail station location were found. Only one worn ADA sign pointing out an accessible route was identified.

Burbank Downtown Station

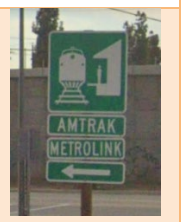
It was found that wayfinding signage leading to the Burbank Downtown station was more extensive than the other two Burbank stations, with 14 wayfinding signs within a 1-mile radius. However, most of the existing signs were in bad condition, and none of them were compliant with applicable Amtrak and/or Metrolink guidelines.

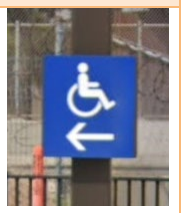
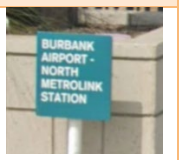
Four monument signs in good condition were found surrounding the station parking, indicating the access points. In addition, 2 built-in signs were identified in an elevator and the station building wall. Only one ADA sign referring to ADA parking was found.

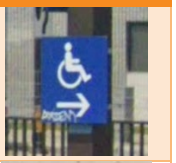
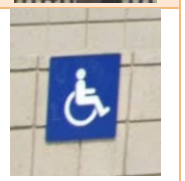
It is recommended that new signage be installed around the 3 stations that is consistent and serves cyclists, pedestrians, and drivers. Wayfinding signage should point clearly to the station, include distance to the station, and be placed at all key pedestrian and bicycle decision making points, as well as any major roadway intersections. On-site wayfinding should be clear and compliant with the corresponding agency's guidelines.

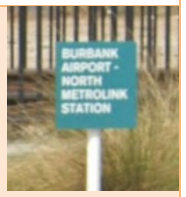
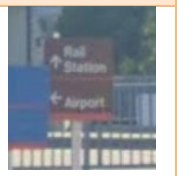
An inventory of existing wayfinding signage in the Burbank study area can be found in **Table 2** and **Figures 3 through 6**.

Table 2 - Burbank Study Area Wayfinding Inventory

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
Burbank Airport North Station												
1b	Burbank Airport North	Amtrak/Metrolink	Good	Not accurate, no Amtrak service at this station	Yes	Directional Amtrak and Metrolink Sign	Yes	No	No	Freeway 5 NB Off-Ramp Exit 148	Stand Alone	
2b	Burbank Airport North	Amtrak/Metrolink	Good	Not accurate, no Amtrak service at this station	Yes	Directional Amtrak and Metrolink Sign	Yes	No	No	Freeway 5 SB Off-Ramp Exit 148	Stand Alone	
3b	Burbank Airport North	Metrolink	Good	No Metrolink information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Hollywood Way South of Tulare Ave SB	Lighting Post	
4b	Burbank Airport North	Metrolink	Good	No Metrolink information	Yes	Rail Station Graphic Directional Sign	Yes	No	No	Hollywood Way North of Tulare Ave NB	Lighting Post	

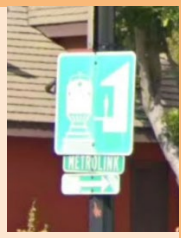
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
5b	Burbank Airport North	Metrolink	Good	No Metrolink information	Yes	Rail Station Graphic Directional Sign	Yes	No	No	Hollywood Way South of San Fernando Blvd NB	Stand Alone	
6b	Burbank Airport North	Metrolink	Good	No Metrolink information	Yes	Rail Station Graphic Directional Sign	Yes	No	No	Hollywood Way North of San Fernando Blvd SB	Lighting Post	
7b	Burbank Airport North	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	San Fernando Blvd West of Hollywood Way WB	Lighting Post	
8b	Burbank Airport North	Around Station	Good	NA – documentation, only	No	ADA Sign	No	Yes	Yes	San Fernando Blvd West of Hollywood Way WB	Lighting Post	
9b	Burbank Airport North	Around Station	Good	No Metrolink logo	No	Burbank Airport North Metrolink Station Sign	No	Yes	Yes	San Fernando Blvd West of Hollywood Way WB	Stand Alone	

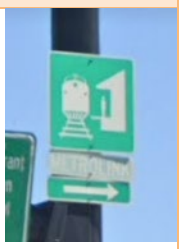
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
10b	Burbank Airport North	Around Station	Graffiti	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	San Fernando Blvd West of Hollywood Way WB	Lighting Post	
11b	Burbank Airport North	Around Station	Worn	NA – documentation, only	No	ADA Sign	No	Yes	Yes	San Fernando Blvd between Cohasset St and Hollywood Way WB	Station Wall	
12b	Burbank Airport North	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	San Fernando Blvd between Cohasset St and Hollywood Way WB	Station Wall	
13b	Burbank Airport North	Around Station	Good	NA – documentation, only	No	Burbank Airport North Metrolink Station Sign	Yes	Yes	Yes	San Fernando Blvd between Cohasset St and Hollywood Way WB	Station Wall	
14b	Burbank Airport North	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	San Fernando Blvd, intersection with Cohasset St WB	Lighting Post	

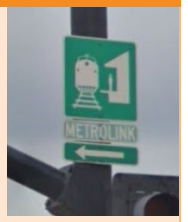
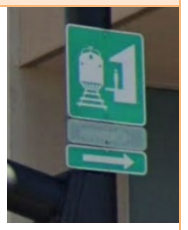
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
15b	Burbank Airport North	Around Station	Good	NA – documentation, only	Yes	ADA Sign	No	Yes	Yes	San Fernando Blvd West of Cohasset St WB	Lighting Post	
16b	Burbank Airport North	Around Station	Good	No Metrolink logo	No	Burbank Airport North Metrolink Station Sign	No	Yes	Yes	San Fernando Blvd West of Cohasset St WB	Stand Alone	
Burbank Airport South Station												
1c	Burbank Airport South	Amtrak/Metrolink	Good	Not Compliant with Amtrak standards	Yes	Metrolink and Amtrak Directional Sign	Yes	Yes	Yes	Northwest corner of Hollywood Way and Valhalla Dr	Stand Alone	
2c	Burbank Airport South	Metrolink	Good	Not Compliant – no information about Metrolink or Amtrak	Yes	Rail Station and Airport directional sign	Yes	Yes	Yes	Southwest corner of Empire Ave and Airport	Stand Alone	

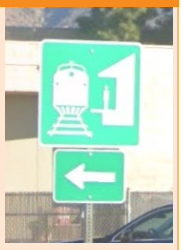
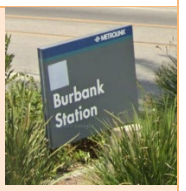
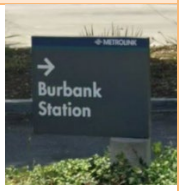
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
3c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Hollywood Way South of Vanowen St NB	Stand Alone	
4c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Hollywood Way North of Empire Ave SB	Lighting Post	
5c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Graphic Directional Sign	Yes	No	No	Hollywood Way between Thorton Ave and Avon St SB	Lighting Post	
6c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Hollywood Way South of Burton Ave SB	Lighting Post	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
7c	Burbank Airport South	Around Station	Good	Wrong Airport Name	No	Bob Hope Airport Train Station Sign	Yes	Yes	Yes	Empire Ave West of Hollywood Way EB	Station Structure	
8c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Sign	Yes	Yes	Yes	Empire Ave West of Hollywood Way EB	Stand Alone	
9c	Burbank Airport South	Unnamed Rail	Good	No Metrolink or Amtrak information	Yes	Rail Station Sign	Yes	Yes	Yes	Empire Ave West of Hollywood Way EB	Stand Alone	
10c	Burbank Airport South	Around Station	Worn	NA – documentation, only	Yes	ADA Sign	Yes	Yes	Yes	Empire Ave West of Hollywood Way EB	Stand Alone	
11c	Burbank Airport South	Metrolink/Amtrak	Worn	Not Compliant with Amtrak monument guidelines	No	Amtrak and Metrolink Sign	Yes	Yes	Yes	Vanowen St West of Hollywood Way EB	Station Wall	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
Burbank Downtown Station												
1d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Directional Metrolink Sign	Yes	Yes	Yes	Angeleno Ave East of Bonnywood Pl EB	Lighting Post	
2d	Burbank Downtown	Unnamed rail	Good	No Metrolink, Amtrak, bus or parking information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Olive Ave East of Lake St EB	Lighting Post	
3d	Burbank Downtown	Unnamed rail	Slightly folded	No Metrolink, Amtrak, bus or parking information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Olive Ave 375ft East of Lake St EB	Lighting Post	
4d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	Yes	Yes	Southeast corner of Olive Ave and Flower St	Stand Alone	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
5d	Burbank Downtown	Unnamed rail	Good	No Metrolink, Amtrak or parking information	No	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Olive Ave East of Lake St WB	Lighting Post	
6d	Burbank Downtown	Unnamed rail	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	No	No	Southeast corner of Olive Ave and 1st St	Traffic Signal	
7d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	No	No	Southwest corner of Olive Ave and 1st St	Traffic Signal	
8d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	Yes	Yes	Olive Ave East of 1st St WB	Lighting Post	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
9d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	No	No	Northwest corner of Magnolia Blvd and 1st St	Traffic Signal	
10d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	No	No	Southeast corner of Magnolia Blvd and 1st St	Traffic Signal	
11d	Burbank Downtown	Metrolink	Worn	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	No	No	Northeast corner of San Fernando Blvd and Verdugo Ave	Traffic Signal	
12d	Burbank Downtown	Metrolink	Good	No Amtrak, bus or parking information	Yes	Bikeway to Metrolink Directional Sign	Yes	Yes	Yes	Verdugo Ave between Lake St and Varney St	Stand Alone	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
13d	Burbank Downtown	Unnamed rail	Good	No Metrolink, Amtrak, bus or parking information	Yes	Rail Station Graphic Directional Sign	Yes	Yes	Yes	Verdugo Ave East of Varney St EB	Stand Alone	
14d	Burbank Downtown	Metrolink	Worn, faded	No Amtrak, bus or parking information	Yes	Metrolink Directional Sign	Yes	Yes	Yes	Northeast corner of Verdugo Ave and Flower St	Stand Alone	
15d	Burbank Downtown	Metrolink	Good	No Amtrak, bus or parking information	No	Burbank Station Sign	Yes	Yes	Yes	Front St South of Magnolia Bl SB	Monument Sign	
16d	Burbank Downtown	Metrolink	Good	No Amtrak, bus or parking information	Yes	Burbank Station Sign	Yes	Yes	Yes	Front St south of Magnolia Ave SB	Monument Sign	
17d	Burbank Downtown	Metrolink	Good	No Amtrak, bus or parking information	No	Burbank Sign	Yes	Yes	Yes	Front St north of Olive Ave SB	Monument Sign	

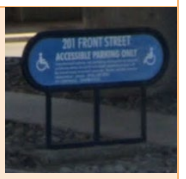
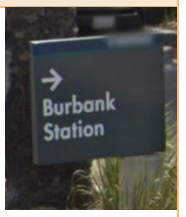
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
18d	Burbank Downtown	Metrolink	Good	No Amtrak, bus or parking information	No	Metrolink Sign	No	Yes	Yes	Front St North of Olive Ave SB	Wall	
19d	Burbank Downtown	Around Station	Worn	NA – documentation, only	No	ADA Parking Sign	Yes	No	No	Front St under Olive Ave bridge SB	Stand alone	
20d	Burbank Downtown	Around Station	Good	No Amtrak, bus or parking information	Yes	Burbank Station Sign	Yes	Yes	Yes	Front St south of Olive Ave SB	Monument Sign	
21d	Burbank Downtown	Around Station	Good	NA – documentation, only	No	Downtown Burbank Elevator Sign	Yes	Yes	Yes	Olive Ave bridge over I-5 WB	Elevator Wall	

Figure 3 - Existing Wayfinding Inventory – Burbank Study Area

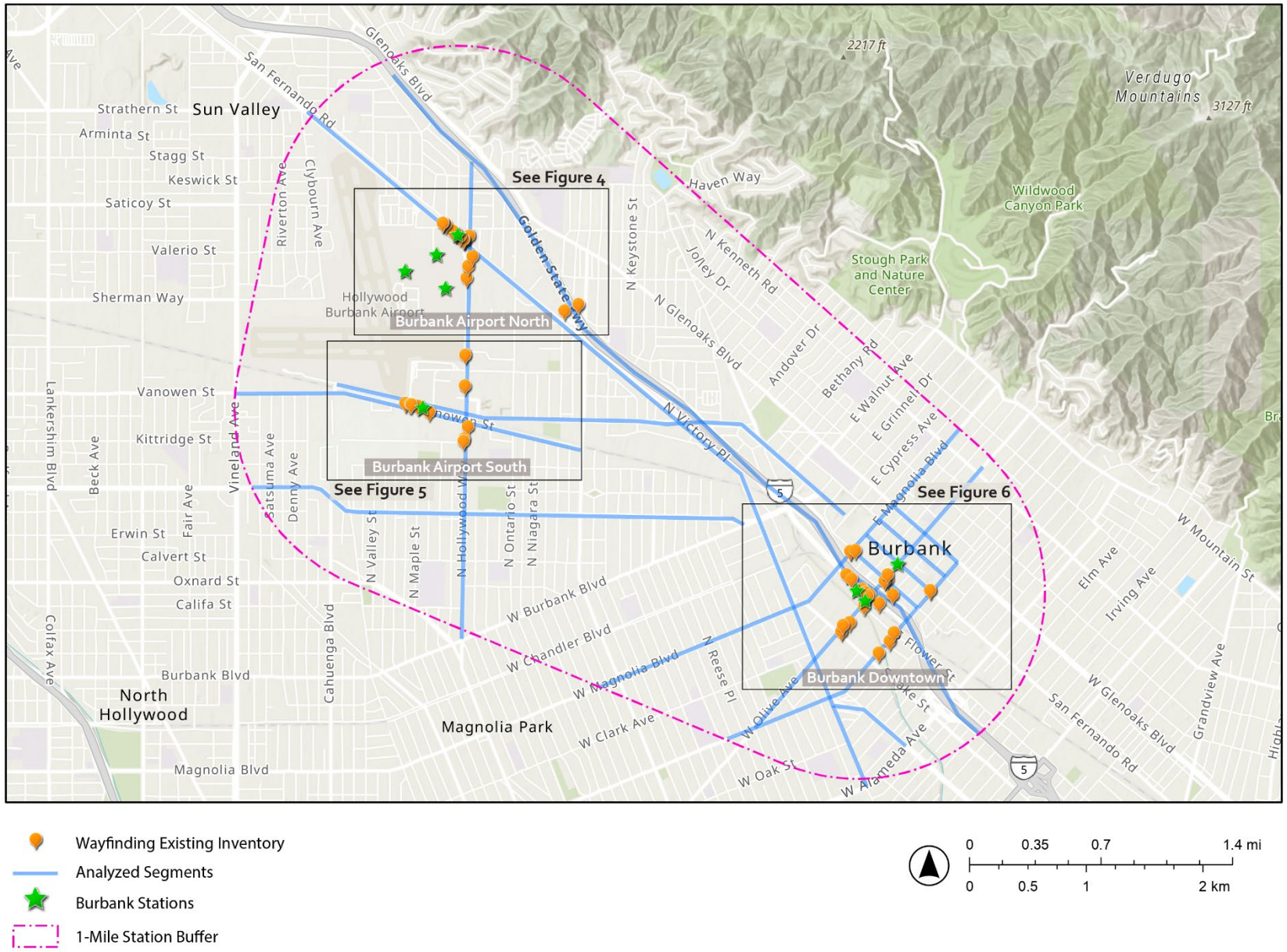


Figure 4 - Existing Wayfinding Inventory – Burbank Airport North Station

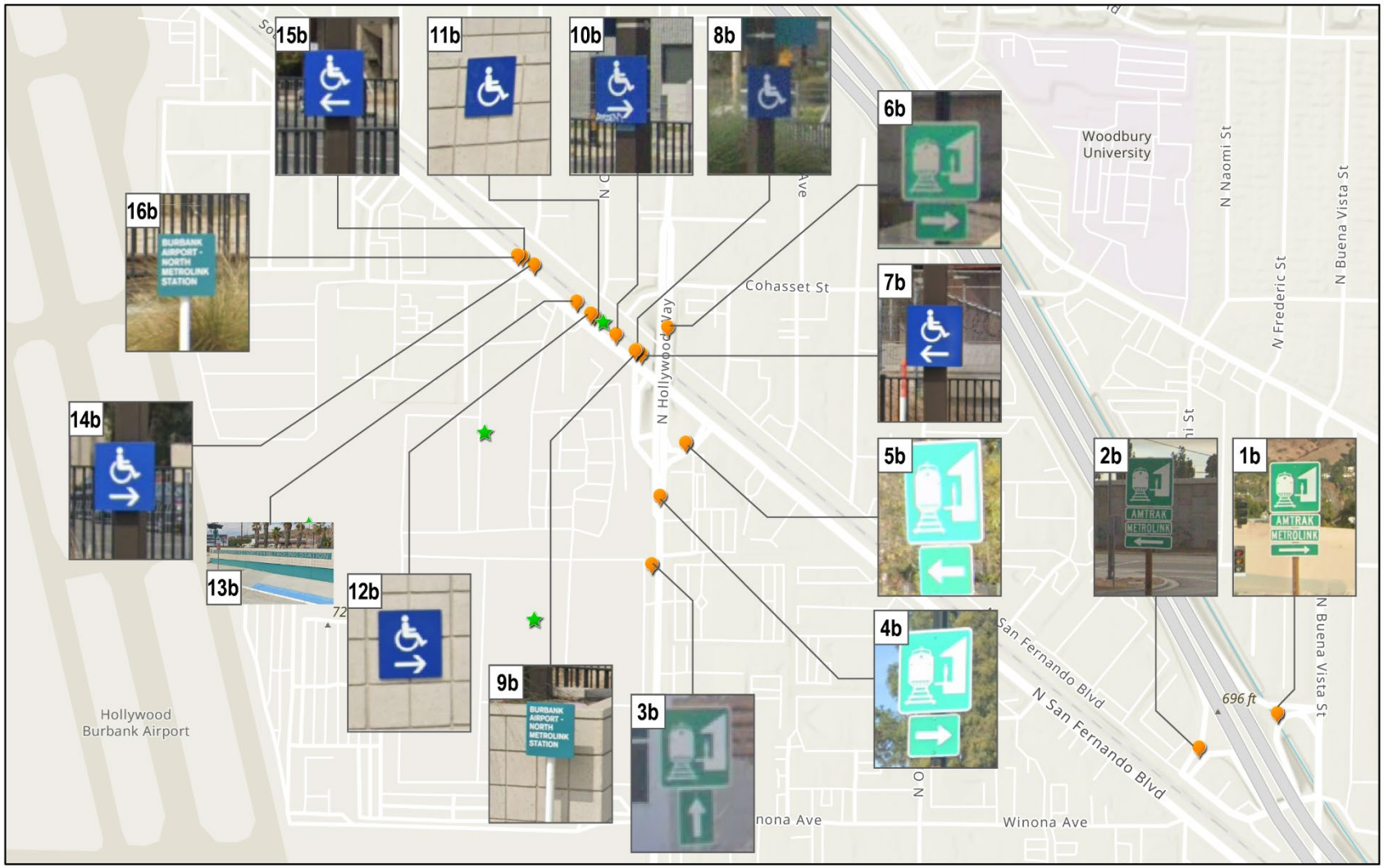


Figure 5 - Existing Wayfinding Inventory – Burbank Airport South Station

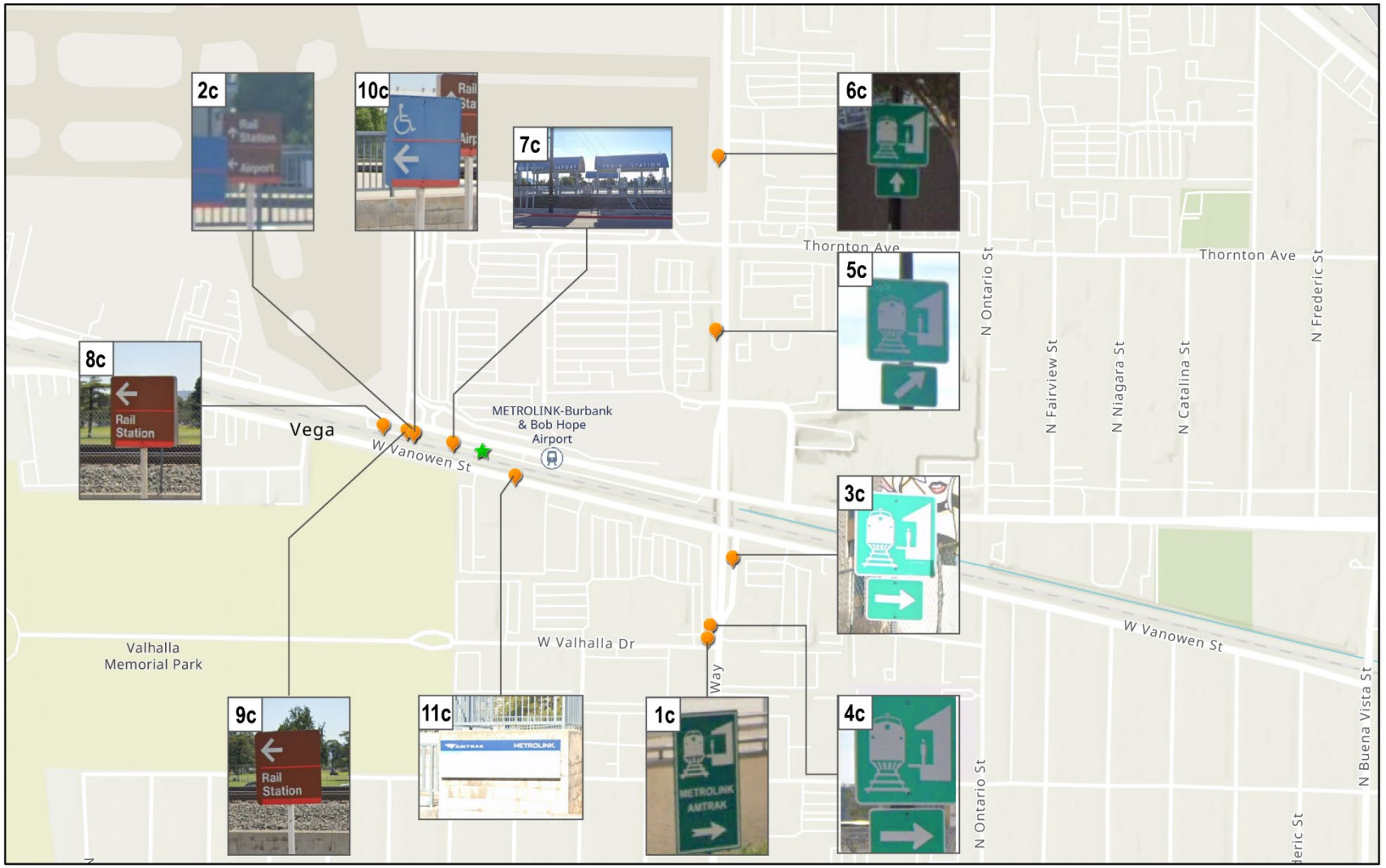
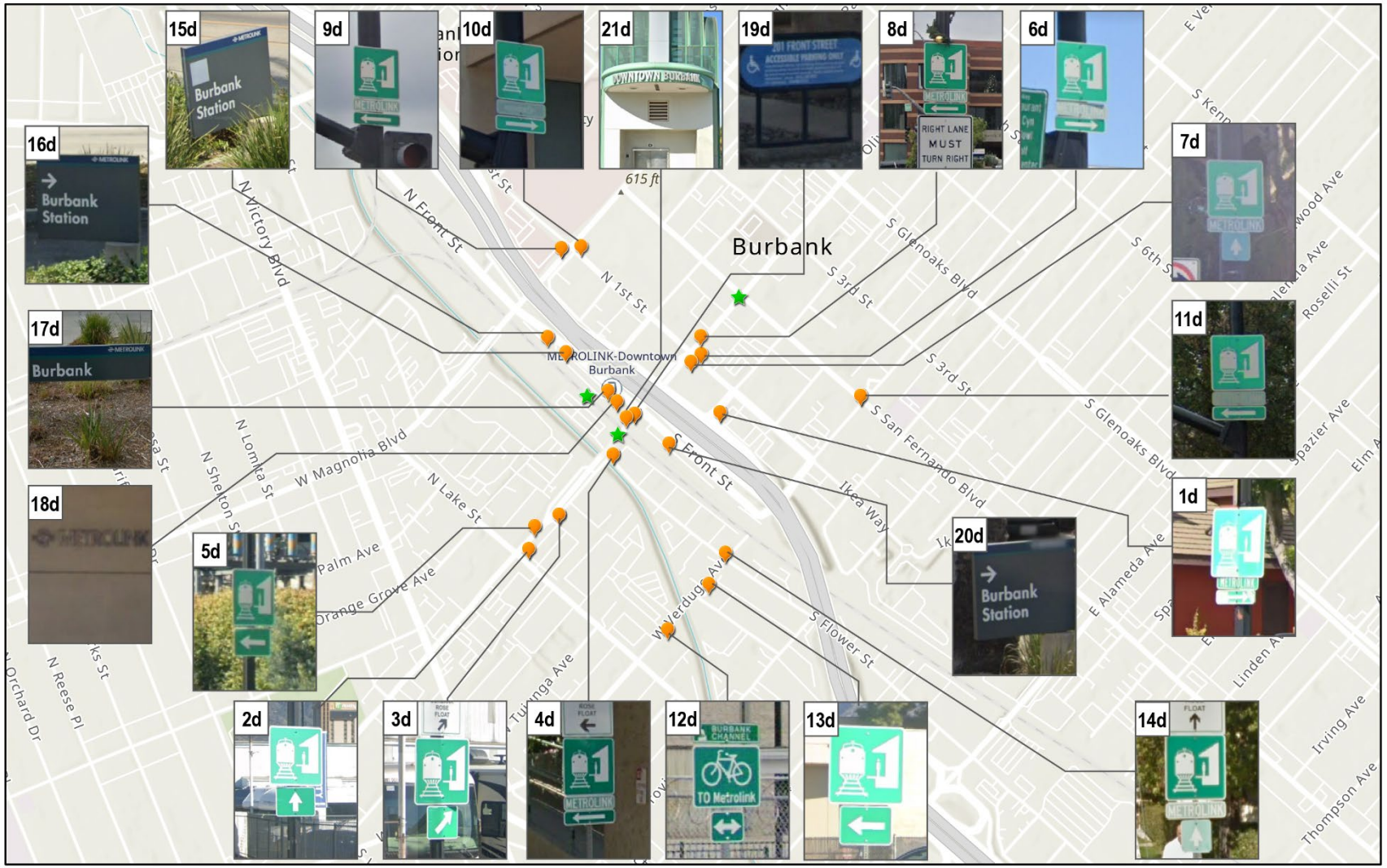


Figure 6 - Existing Wayfinding Inventory – Burbank Downtown Station



4. Norwalk Study Area

Norwalk C Line Station

Wayfinding signage leading to the Norwalk C Line station includes only 7 wayfinding signs within a 1-mile radius. In addition, the existing signs were either worn or graffitied and were not compliant with Amtrak and/or Metrolink guidelines. Only 2 Metro monument signs were identified in the surroundings, located in the parking access.

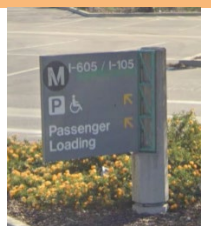
Norwalk Santa Fe Springs Station

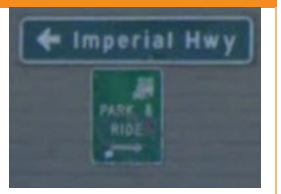
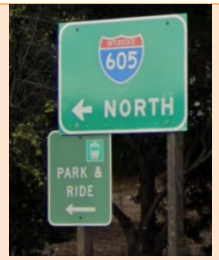
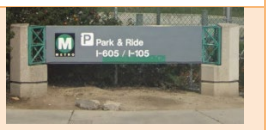
No wayfinding signage was found leading to the Norwalk Santa Fe Springs Station within a 1-mile radius. Around the station, two built-in signs were identified in the underpass of the railroad bridge structure along Imperial Highway. Only one monument sign was found in the station access with the station name.

It is recommended that new signage be installed around the 2 stations that is consistent and serves cyclists, pedestrians, and drivers. Wayfinding signage should point clearly to the station, include distance to the station, and be placed at all key pedestrian and bicycle decision making points, as well as any major roadway intersections.

An inventory of existing wayfinding signage in the Norwalk study area can be found in **Table 3** and **Figure 7**.

Table 3 - Norwalk Study Area Wayfinding Inventory

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
Norwalk C Line Station												
1e	Norwalk C Line	Metro Rail/Parking	Worn	Outdated	Yes	Metro and Parking Directional Sign	Yes	No	No	Freeway 105 EB Off-Ramp	Stand Alone	
2e	Norwalk C Line	Parking	Worn, Graffiti	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Freeway 605 NB Off Ramp onto Firestone Blvd	Stand Alone	
3e	Norwalk C Line	Parking	Worn	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Freeway 605 SB Off Ramp and Imperial Hwy	Stand Alone	
4e	Norwalk C Line	Parking	Worn, graffiti	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Freeway 105 WB Off Ramp East of Hoxie Ave	Stand Alone	

ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
5e	Norwalk C Line	Parking	Worn, graffiti	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Freeway 605 NB Off Ramp and Hoxie Ave	Wall	
6e	Norwalk C Line	Parking	Worn	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Southwest corner of Imperial Hwy and Hoxie Ave	Stand Alone Freeway Sign	
7e	Norwalk C Line	Parking	Worn	No transit information or Metro logo	Yes	Park & Ride Directional Sign	Yes	No	No	Studebaker Rd and Freeway 105	Freeway Sign Structure	
8e	Norwalk C Line	Around Station	Good	NA – documentation, only	No	Park & Ride Sign	Yes	Yes	Yes	Hoxie Ave and I-105 EB On-Ramp	Monument	
9e	Norwalk C Line	Around Station	Good	NA – documentation, only	No	Metro Norwalk Sing	Yes	Yes	Yes	Hoxie Ave and I-106 EB On-Ramp	Monument	

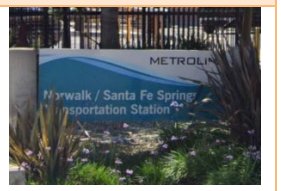
ID	Station	Transit Facility	Condition	Compliance with Applicable Guidelines	Directional	Description	For Vehicles	For Bicyclists	For Pedestrians	Location Description	Post Type	Existing Condition
Norwalk Santa Fe Springs Station												
1f	Norwalk Santa Fe Springs	Around Station	Worn	NA – documentation, only	No	Norwalk Santa Fe Springs Transportation Center	Yes	No	No	Imperial Hwy Railroad bridge structure EB	Bridge	
2f	Norwalk Santa Fe Springs	Around Station	Worn	NA – documentation, only	No	Norwalk Santa Fe Springs Transportation Center	Yes	No	No	Imperial Hwy railroad bridge structure WB	Bridge	
3f	Norwalk Santa Fe Springs	Around Station	Worn	NA – documentation, only	No	Norwalk Santa Fe Springs Transportation Station	Yes	Yes	Yes	Imperial Hwy East of Bloomfield Ave EB	Monument	

Figure 7 - Existing Wayfinding Inventory – Norwalk Study Area

Wayfinding Existing Inventory
Analyzed Segments
Norwalk Stations
1-Mile Station Buffer

0 0.33 0.65 1.3 mi
0 0.5 1 2 km

Appendix B.3
First/Last Mile Assessment

Contents

B.3.1 First/Last Mile Overview

Access to transit stops is often accomplished by foot, wheelchair, bike, scooter, skateboard, and other active transportation modes – particularly when people live, work, go to school, or run errands near a stop. According to LA Metro data, 76 percent of Metro Rail customers and 88 percent of Metro Bus customers arrive at their station or stop by walking, biking, or rolling. (Source: *Metro Board Motion 14.1*, 2016)

This memo outlines the policy context, existing infrastructure, planned developments, potential projects and recommendations to improve first/last mile active transportation improvements conditions for station accessibility with the goal of removing barriers to accessing the transit system and increasing ridership.

B.3.2 Metro's Policy Guidelines

Metro has developed polices and guidelines for first/last mile improvements. Metro's policy is guided by *Vision 2028 (2018)*, *the Customer Experience Plan (2022)*, *Transfers Design Guide (2018)*, *First/Last Mile (FLM) Guidelines (2021)*, *First/Last Mile Safety Analysis Tool (2021),* the *2020 Long Range Transportation Plan (LRTP)*. These are informed by regional, state and federal guidance outlined in the *Los Angeles County Rail Network Integration Study Task 2 Report* and include *Connect SoCal* (SCAG, 2020).

First/Last Mile Guidelines, 2021

In 2021, Metro adopted the *First/Last Mile (FLM) Guidelines*, which describe the process by which Metro and local jurisdictions partner on the planning, design, construction, maintenance, and funding of FLM improvements for new rail transit and BRT corridor projects. The FLM Guidelines address the Board's direction (Motions 14.1 and 14.2 (2016)) to facilitate and implement FLM networks around transit stations and stops countywide. Motion 14.1 calls for Metro to: "Incorporate Countywide First-Last Mile Priority Network project delivery into the planning, design, and construction of all MTA transit projects. These Countywide First-Last Mile Priority Network elements shall not be value engineered out of any project."

First/Last Mile Safety Analysis Tool, 2021

The *First/Last Mile Safety Analysis Tool (2021)* was designed to find holistic, targeted ways to improve traffic safety across all communities in Los Angeles County. The tool uses a series of recommended questions to guide the FLM planning process and arrive at a list of FLM projects to address safety concerns for a station area plan. The methodology includes identifying low-safety hotspots, infrastructure and activity factors, and equity implications to target network improvements that align with local planning.

Long Range Transportation Plan, 2020

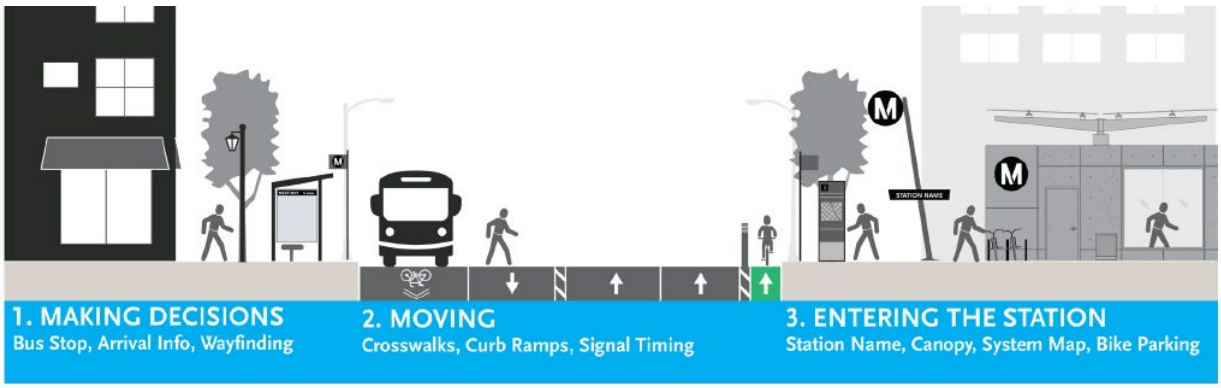
Metro's LRTP ("Our Next LA") outlines an aspirational vision for the future transportation system using four priority areas: Better Transit, Less Congestion, Complete Streets, and Access to Opportunity. The LRTP also describes major transit projects, including a new light rail system that connects to the Van Nuys Metrolink Station.

Transfers Design Guide, 2018

Metro's *2018 Transfers Design Guide* provides guidance for transfers to increase legibility, efficiency, and comfort for riders and includes a framework for multi-jurisdictional coordination and local and regional growth. The Guide provides a Design Checklist and Design Toolbox that can be used to assess and develop improvements for a range of transit conditions. When transfers take place at a "sidewalk stop to sidewalk

stop" or "sidewalk stop to station" the path that people travel on is often part of the first/last mile network. The first three steps of the "sidewalk stop to station" transfer experience are shown in **Figure 1**.

Figure 1 - First Three Steps of Sidewalk Stop to Station Transfer Experience



Vision 2028, 2018

The goals and metrics identified in *Vision 2028 (2018)* were considered in the development of Metro's LRTP priority areas. These goals include: 1. Provide high-quality mobility options that enable people to spend less time traveling; 2. Deliver outstanding trip experiences for all users of the transportation system; 3. Enhance communities and lives through mobility and access to opportunity.

Active Transportation Strategic Plan, 2016

Metro's *2016 Active Transportation Strategic Plan (ATSP),* currently in the process of being updated, provides regional priorities for active transportation across Los Angeles County and first/last mile connectivity to transit.

First Last Mile Strategic Plan & Planning Guidelines, 2014

The planning guidelines outline a specific infrastructure improvement strategy designed to facilitate easy, safe, and efficient access to the Metro system. These guidelines help facilitate the integration of mobility solutions in a complex, multi-modal environment.

First/Last Mile Planning for Micromobility, 2020

Metro's *First/Last Mile Planning for Micromobility was adopted in 2014. Since then, micromobility has emerged as a viable way to get to and from transit. This document builds on the 2014 plan to present new recommendations and considerations for Metro's FLM planning in light of the emerging trends in micromobility.*

Complete Streets Policy, 2014

Metro's *2014 Complete Streets Policy* provides guidelines for multimodal streets with the goal of maximizing the benefits of infrastructure investments for all users.

B.3.3 First/Last Mile Analysis

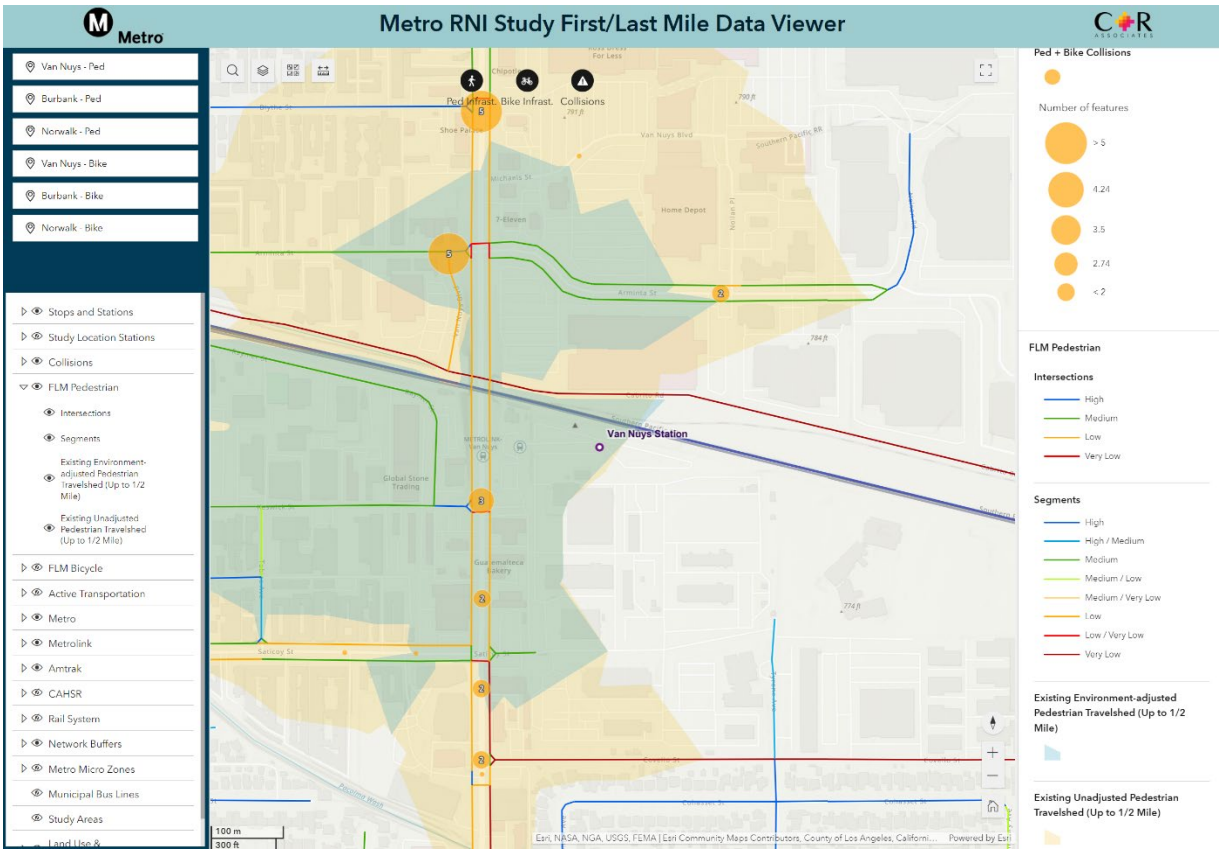
Methodology

Pedestrian Environment Score

The quality of the pedestrian environment along roadway segments and designated crossing locations within a half-mile study area of transit stations were evaluated using a performance measure called Pedestrian Environment Score (PES) developed by CR Associates. PES classifies roadway segments and street crossing legs into one of four categories: High, Medium, Low, and Very Low, through an inventory of variables that can influence a pedestrian's perception of the walking environment. These variables include the presence of a sidewalk, separation from vehicular travel, lighting, posted speed limit of the adjacent roadway, the type of traffic control, crossing distance, curb ramps, and other operational and physical features at the crossing locations.

The scored segments, intersections, and travelsheds, along with pedestrian collisions and planned and existing transit, were assembled into an interactive mapping FLM Data Viewer tool (link) that allowed for detailed analysis of each study and station area. A screenshot of the application is in **Figure 2** below. The example screenshot shows the pedestrian segments and intersections, filtered for low quality along with pedestrian collisions and travelsheds (unadjusted pedestrian travelshed in yellow and existing environment adjusted pedestrian travelshed in green) adjacent to the Van Nuys study area. The adjusted travelshed methodology is described in a subsequent section.

Figure 2 - Screenshot of the Metro RNI Study First/Last Mile Data Viewer – Pedestrian Infrastructure Shown



Source: CR Associates, 2022

Bicycle Level of Traffic Stress

The quality of the bicycling environment along roadways within a one-mile study area of FLM transit stations was evaluated with Bicycle Level of Traffic Stress (LTS) methodology for characterizing cycling environments, as developed by Mekuria, et al. (2012) of the Mineta Transportation Institute. LTS classifies the street network according to the estimated level of stress it causes cyclists. The measure considers a cyclist's physical separation from vehicular traffic, posted speed limits, and the number of travel lanes along a roadway, in addition to factors present at intersection approaches such as right-turn-only lanes and uncontrolled crossings. LTS scores range from 1 (lowest stress) to 4 (highest stress) and correspond to roadway conditions that different cycling demographics would find suitable for riding based on stress tolerance. LTS 2 or lower is considered suitable for most user groups. These classifications can be found in **Table 1**.

Table 1 - Level of Traffic Stress Classifications and Descriptions

LTS Category	LTS Description	Description of Environment	Acceptability to Populations
LTS 1	Presents little traffic stress and demands little attention from cyclists; suitable for almost all cyclists, including children trained to cross intersections safely.	• Facility that is physically separated from traffic or an exclusive cycling zone next to a slow traffic stream with no more than one lane per direction • A shared roadway where cyclists only interact with the occasional motor vehicle with a low-speed differential • Ample space for a cyclist when alongside a parking lane • Intersections are easy to approach and cross	Interested but Concerned – Vulnerable Populations
LTS 2	Presents little traffic stress but demands more attention than might be expected from children.	• Facility that is physically separated from traffic or an exclusive cycling zone next to a well-confined traffic stream with adequate clearance from parking lanes • A shared roadway where cyclists only interact with the occasional motor vehicle (as opposed to a stream of traffic) with a low-speed differential • Unambiguous priority to the cyclist where cars must cross bike lanes (e.g., at dedicated right-turn lanes); design speed for right-turn lanes comparable to bicycling speeds • Crossings are not difficult for most adults	Interested but Concerned – Mainstream Adult Populations
LTS 3	Presents enough traffic stress to deter the Interested but Concerned demographic	• An exclusive cycling zone (lane) next to moderate-speed vehicular traffic • A shared roadway that is not multilane and has moderately low automobile travel speeds • Crossings may be longer or across higher-speed roadways than allowed by LTS 2 but are still considered acceptably safe to most adult pedestrians	Enthused & Confident
LTS 4	Presents enough traffic stress to deter all but the Strong & Fearless demographic	• An exclusive cycling zone (lane) next to high-speed and multilane vehicular traffic • A shared roadway with multiple lanes per direction with high traffic speeds • Cyclists must maneuver through dedicated right-turn lanes containing no dedicated bicycling space and designed for turning speeds faster than bicycling speeds	Strong & Fearless

Source: Mekuria, et al. (2012)

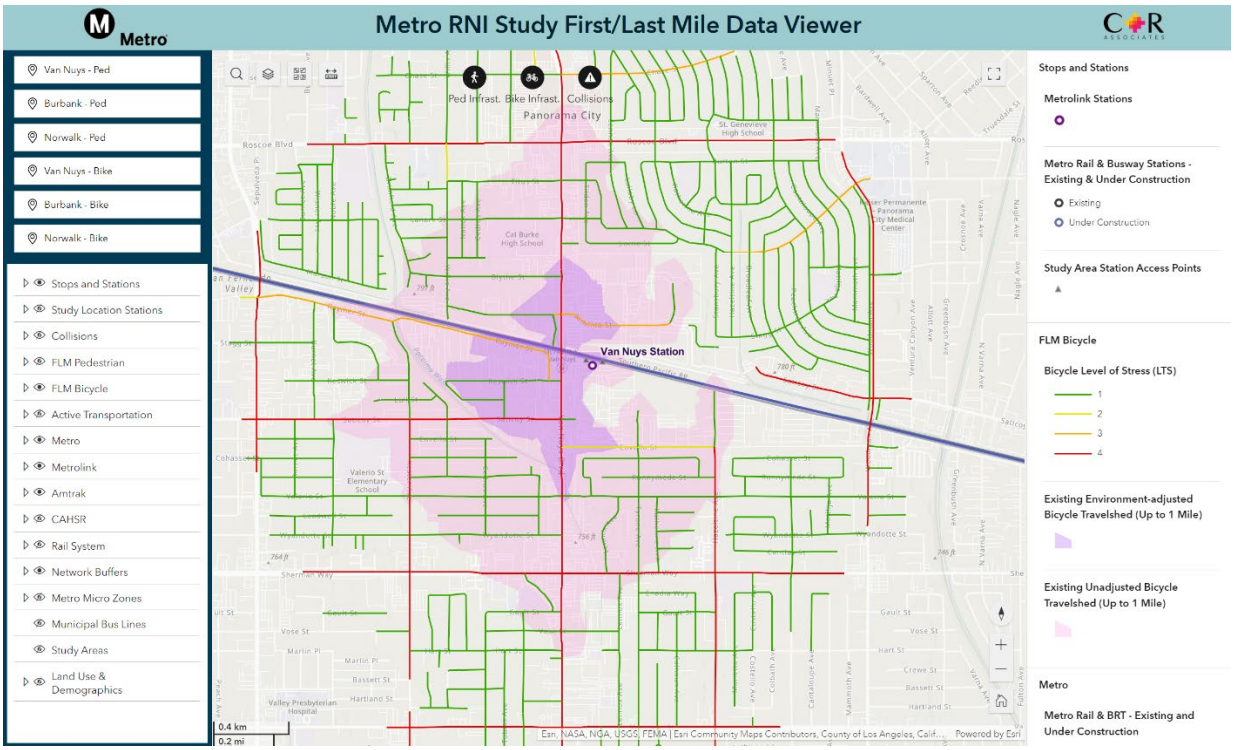
Travelshed Proximity by Network and Environment-Adjusted Network from FLM Stations

Half-mile pedestrian and one-mile bicycle travelsheds were generated to measure the size of the surrounding coverage area from each FLM station. A regular travelshed approximates accessibility to the surrounding area based on the connectivity and geometry of the street network. These network attributes alone, however, do not factor in the sensitivity pedestrians and cyclists experience from the conditions of the roadway environment, which may alter the perception of travel time. Often, the harsh conditions found within auto-centric environments deter non-motorized trips and make trips within harsh environments feel more taxing to the traveler (e.g., short trips feel longer). To account for this phenomenon, a second environment-adjusted travelshed was developed based on the existing network conditions in order to understand how the roadway environment may influence surrounding area accessibility and the users' perceptions.

For environment-adjusted travelsheds, performance measures were assigned time penalties, which resulted in a modified travelshed. The worst category of travel conditions, "Very Low" for PES and LTS 4, was given a travel time penalty of three (3) times the length of the segment. The next worst category of travel conditions, "Low" for PES and LTS 3, was assigned a travel time penalty of two (2) times the length of the segment. Adequate and good travel conditions, "Medium" and "High" PES and LTS 2 or 1, were not assigned any travel time penalty.

The scored bicycle segments and travelsheds, along with pedestrian collisions and planned and existing transit, were developed into an interactive mapping tool (link) that allowed for a detailed analysis of each study and station area. A screenshot of the application is in **Figure 3** below. The example screenshot shows the LTS of bicycle facilities adjacent to the Van Nuys study area as well as the unadjusted bicycle travelshed (pink) and existing environment adjusted bicycle travelshed (purple).

Figure 3 - Screenshot of the Metro RNI Study First/Last Mile Data Viewer – Bicycle Infrastructure Shown



Source: CR Associates, 2022

Identified Improvements

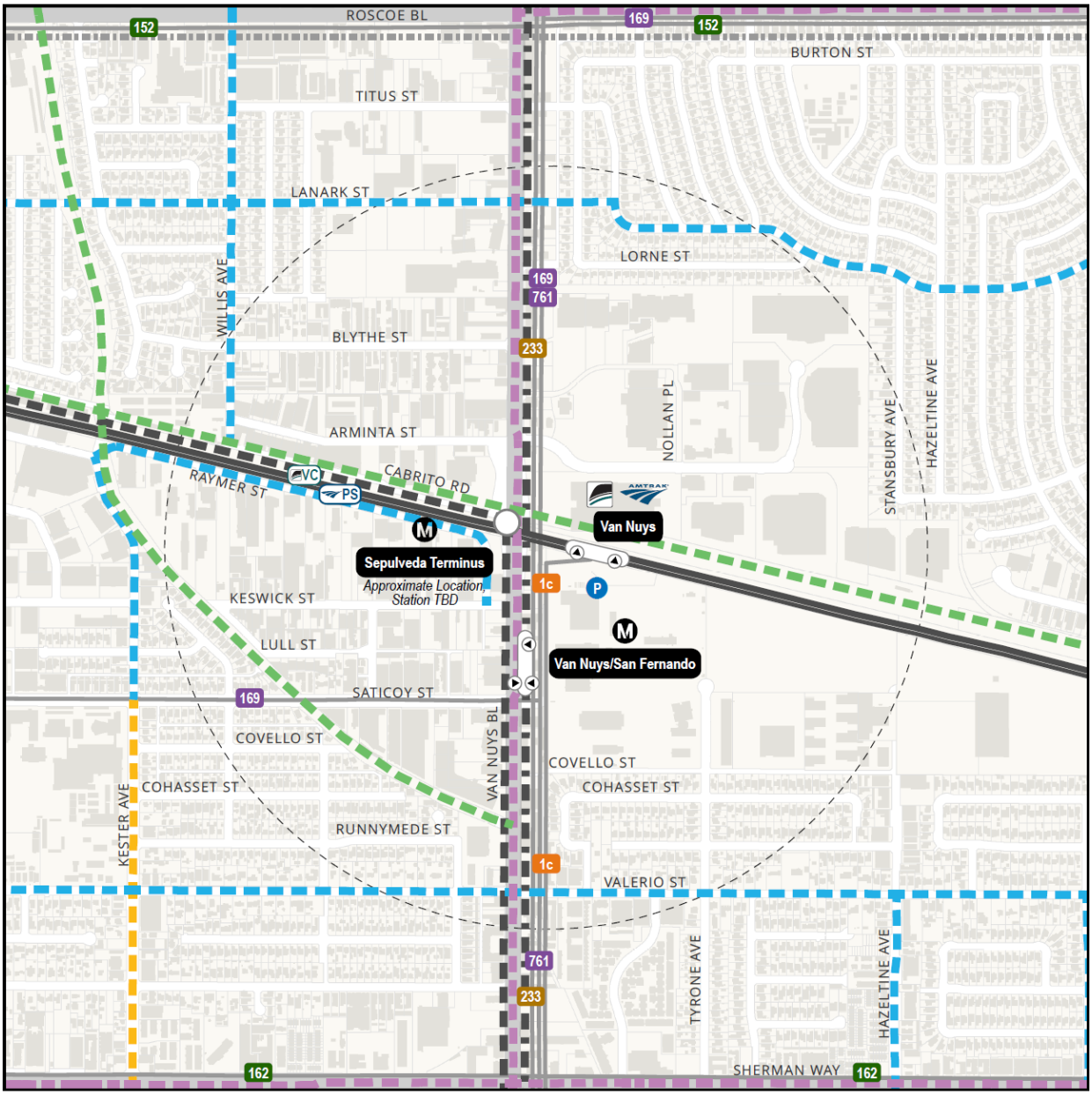
Based on a review of the above conditions and the existing conditions study conducted in Task 2, projects were examined in Task 3 or identified for further evaluation in later tasks. These are outlined in a table and map for each study area.

Van Nuys Station

As noted in Task 2, the Van Nuys Station is not connected to existing bike routes. Existing sidewalk conditions result in low pedestrian comfort due to a lack of shade, pedestrian lighting, and wide crossings. Additionally, the Van Nuys Study Area has numerous collisions involving pedestrians, bicycles, and automobiles. Van Nuys Boulevard, and the nearby roads, Roscoe Boulevard and Sherman Ways, are part of LADOT's High Injury Network for all modes. Pedestrian and bicycle collisions are concentrated along Van Nuys Boulevard, particularly at intersections – there are multiple severe collisions at the intersections along Lanark and Valerio Streets. There was one fatal bicycle collision adjacent to the station on Van Nuys Boulevard at Keswick Street. Multiple pedestrian collisions and severe bicycle collisions occurred at the intersection of Saticoy Street and Kester Avenue. There are additional locations, notably at intersections, where multiple pedestrian and bicycle collisions occurred. Automobile collisions are evenly distributed throughout the major corridors in the study area.

The Van Nuys Station currently serves Metrolink and Amtrak. In the future, the Metro East San Fernando Valley light rail (ESFV LRT) will stop at the station area. More distantly, the Sepulveda Metro Line, whose alignment has yet to be determined, will terminate at the station area, creating a high-volume transit and mobility hub. Refer to **Figure 4** for a summary of the existing and planned bicycle facilities and planned transit network.

Figure 4 - Van Nuys Station - Existing and Planned Bicycle Facilities with Planned Transit Network



N

0 500 1,000 Feet

Study Area Rail Station
Entrances
Half-Mile Buffer
Parking

	Existing	Planned
Class I - Bike Path		
Class II - Bike Lane		
Class III - Bike Route		
Class IV - Protected Bikeway		

Existing Transit
- Metrolink Lines
- Amtrak Lines
- Amtrak Thruway Bus Routes

Planned Transit
- Metro Sepulveda Line & Station Location (Alignment Options)
- Metro East San Fernando Valley Light Rail
- Metro Tier 2: NextGen Bus Routes
- Metro Tier 3: NextGen Bus Routes
- Metro Tier 4: NextGen Bus Routes
- North San Fernando Valley BRT
  Upgraded NextGen Tier 1 Bus Routes

Source: CR Associates, 2022

Pedestrian Analysis

At the Van Nuys station, there are the following constraints:

- Van Nuys Boulevard primarily has a low PES
- The area southeast of the station has low pedestrian connectivity
- Van Nuys Boulevard, and the nearby roads, Roscoe Boulevard and Sherman Ways, are part of LADOT's High Injury Network for all modes
- Pedestrian and bicycle collisions are concentrated along Van Nuys Boulevard, particularly at intersections – there are multiple severe collisions at the intersections along Lanark and Valerio Streets.

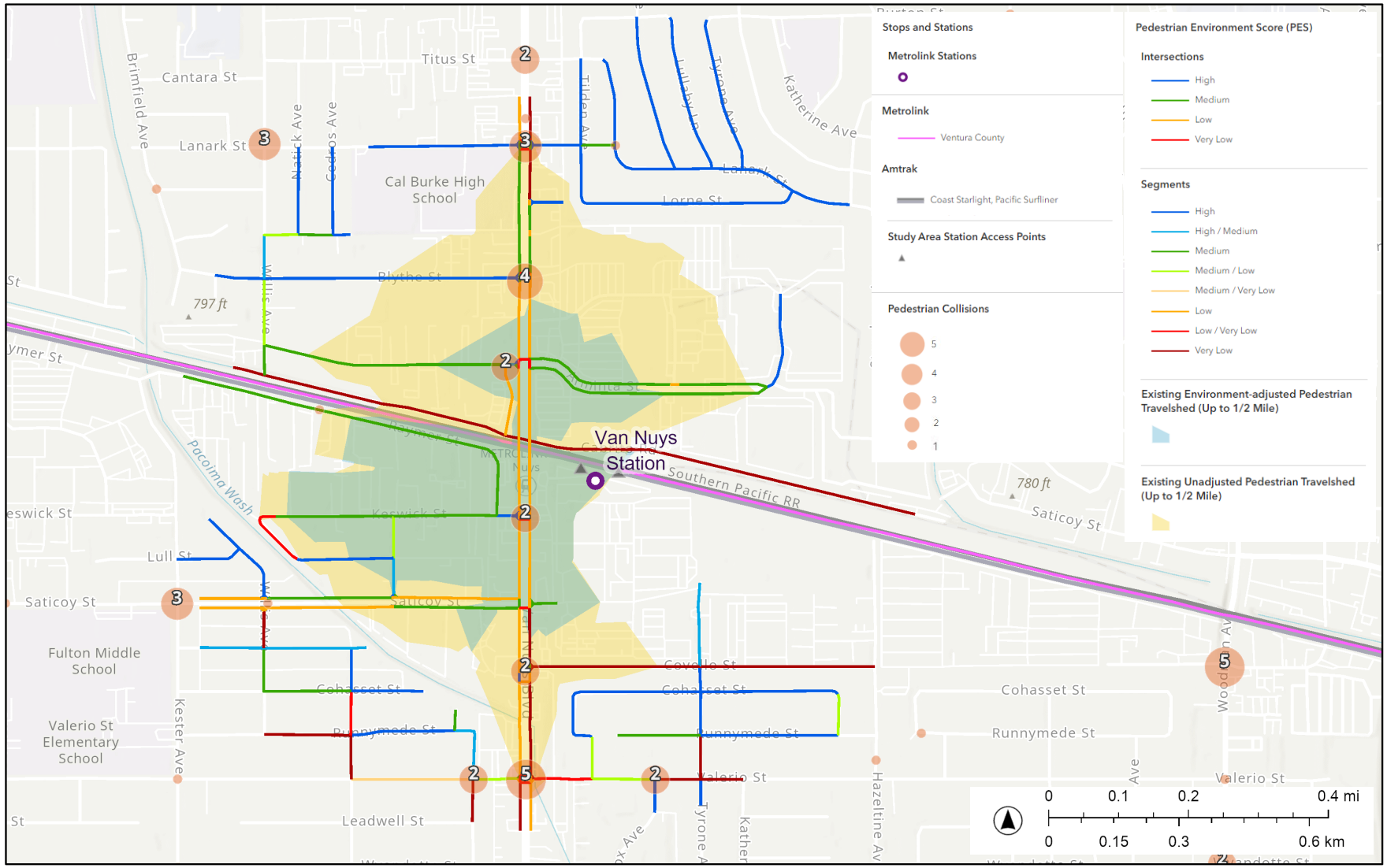
There are also opportunities to improve the station by implementing the following projects:

- There is a potential to increase pedestrian connections to future ESFV LRT at Van Nuys Boulevard/Keswick Street intersection ◆
- Potential increase in multimodal connectivity with future Sepulveda Transit Corridor project ◆
- Van Nuys Boulevard is identified as a Pedestrian Enhanced District in the City of Los Angeles' Mobility Plan 2035, 2016. The Pedestrian Enhanced Districts (PED) are an analysis of a snapshot in time of areas where pedestrian improvements are prioritized relative to other modes. These areas may be located near schools, transit stations, areas of high pedestrian activity, areas with high collision frequency, or other placemaking opportunity areas. ◆

Refer to **Figure 5** for the pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 5 - Van Nuys Station Pedestrian Analysis



Source: CR Associates, 2022

Van Nuys Station Bicycle Analysis

The bicycling environment in the study area was assessed using the Bicycle Level of Traffic Stress (LTS) performance measure, where LTS 1-2 indicates the most comfortable environments and LTS 4 indicates the most stressful.

At the Van Nuys station, there are the following constraints:

- Van Nuys Boulevard is a high-bicycle-collision corridor
- Sherman Way is a high-bicycle-collision corridor
- The main roads surrounding the station resulted in LTS 4
- The area east of the station has low bicycle connectivity
- There are no existing bicycle facilities surrounding the station

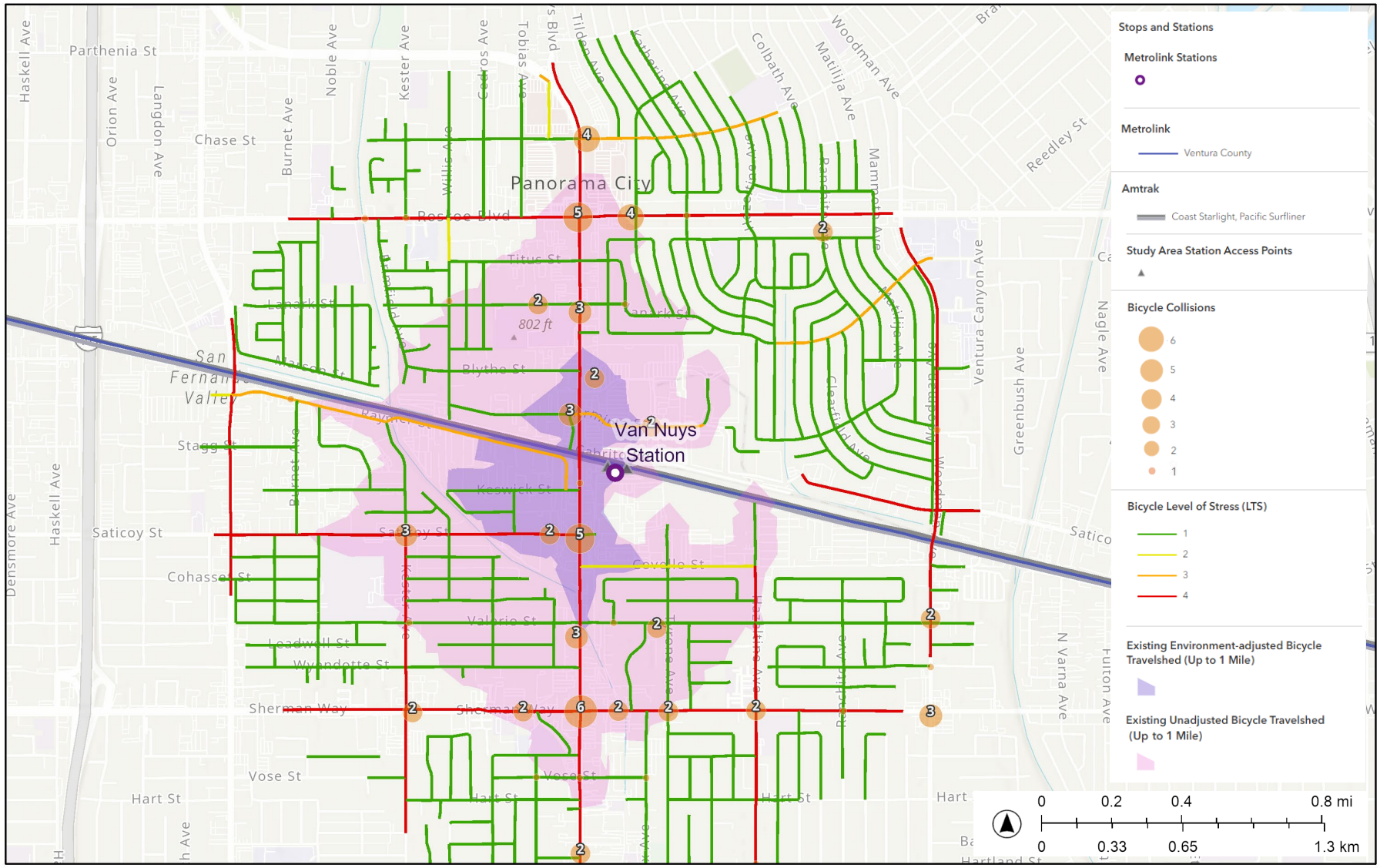
There are also opportunities to improve the station by implementing the following projects:

- Future improvements will make intersection approaches safer for cyclists
- Potential bicycle connection at Covello Street to Tyrone Boulevard
- Explore partnerships with the Department of Water and Power for bicycle access via Saticoy through the existing gated alley
- There is a potential to install planned bicycle facilities and improve the overall network surrounding the station

Refer to **Figure 6** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 6 - Van Nuys Station Bicycle Analysis



Source: CR Associates, 2022

Van Nuys Station Study Area Bicycle Connection to G Line

At the Van Nuys station, there are the following constraints:

- Van Nuys Boulevard is a high-bicycle-collision corridor
- The arterial roads within the study area are LTS 4
- The area east of the station has low bicycle connectivity

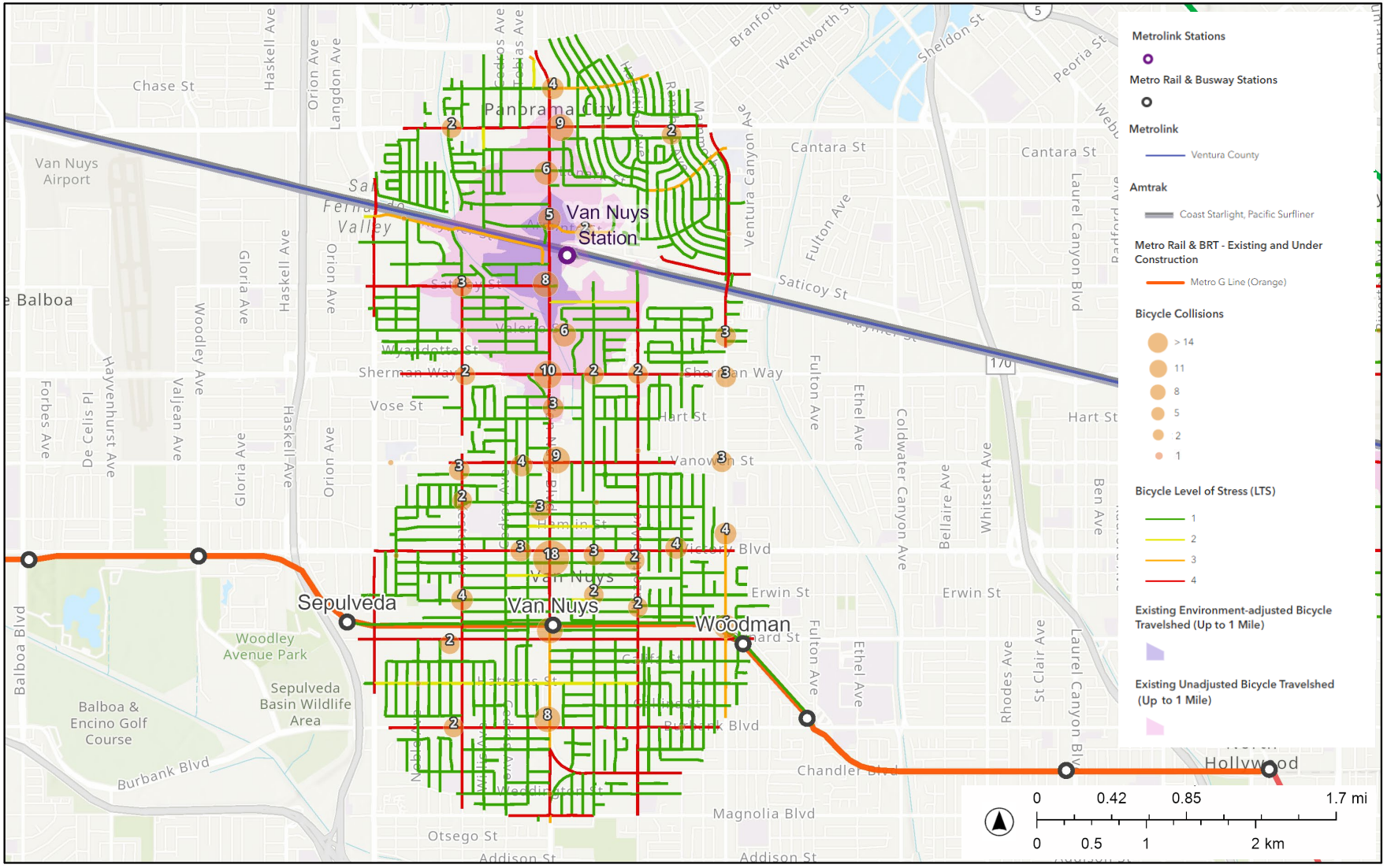
There are also opportunities to improve the station by implementing the following project:

- Connect to G Line (Orange) BRT Station via low-stress bikeways on Kester Avenue and Tyrone Avenue. Tyrone has been identified as a "bike-friendly street" in the East San Fernando Valley Light Rail First/Last Mile Plan (ESFV LRT FLM Plan), 2020. The ESFV LRT FLM Plan also identified an "off-street path" connection on Cohasset Street to connect Van Nuys Avenue and Tyrone Avenue. Potential alternative routes identified as #1 in **Table 2** and **Figure 8**.
    - Note: This is an alternative to the planned (Mobility Plan 2035, City of Los Angeles) bicycle route on Van Nuys Avenue, which has been deemed by Metro to be infeasible due to right of way, cost, and infrastructure constraints.

Refer to **Figure 7** for the bicycle connection to G Line analysis.

Note: ◆ indicates projects by others

Figure 7 - Van Nuys Station Study Area Bicycle Connection to G Line Analysis



Source: CR Associates, 2022

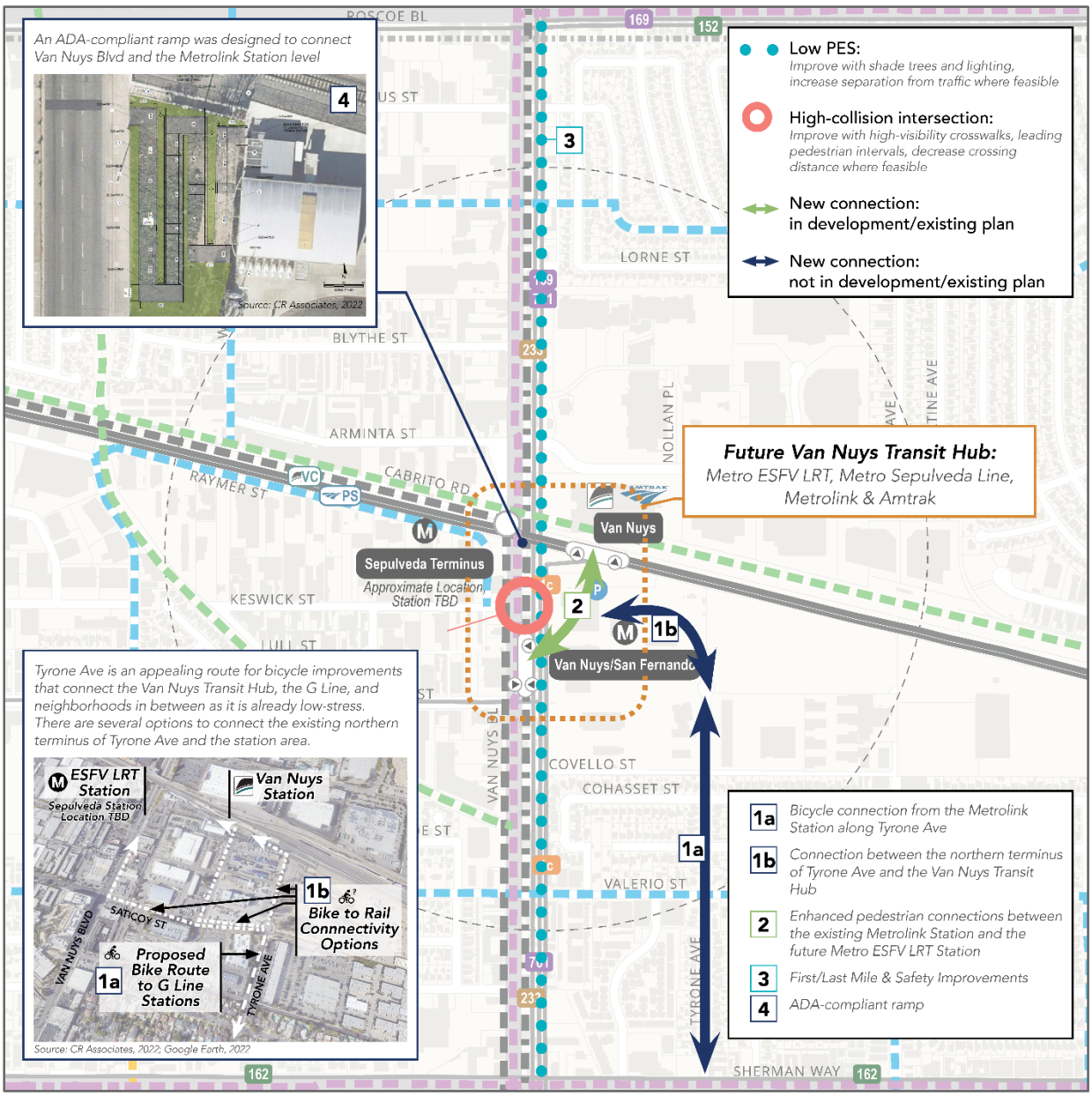
Van Nuys Station Identified Improvements

Constraints, challenges, and opportunities were examined based on the analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figures 8 and 8B** and **Table 2**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 2 - Van Nuys Station Identified Improvements

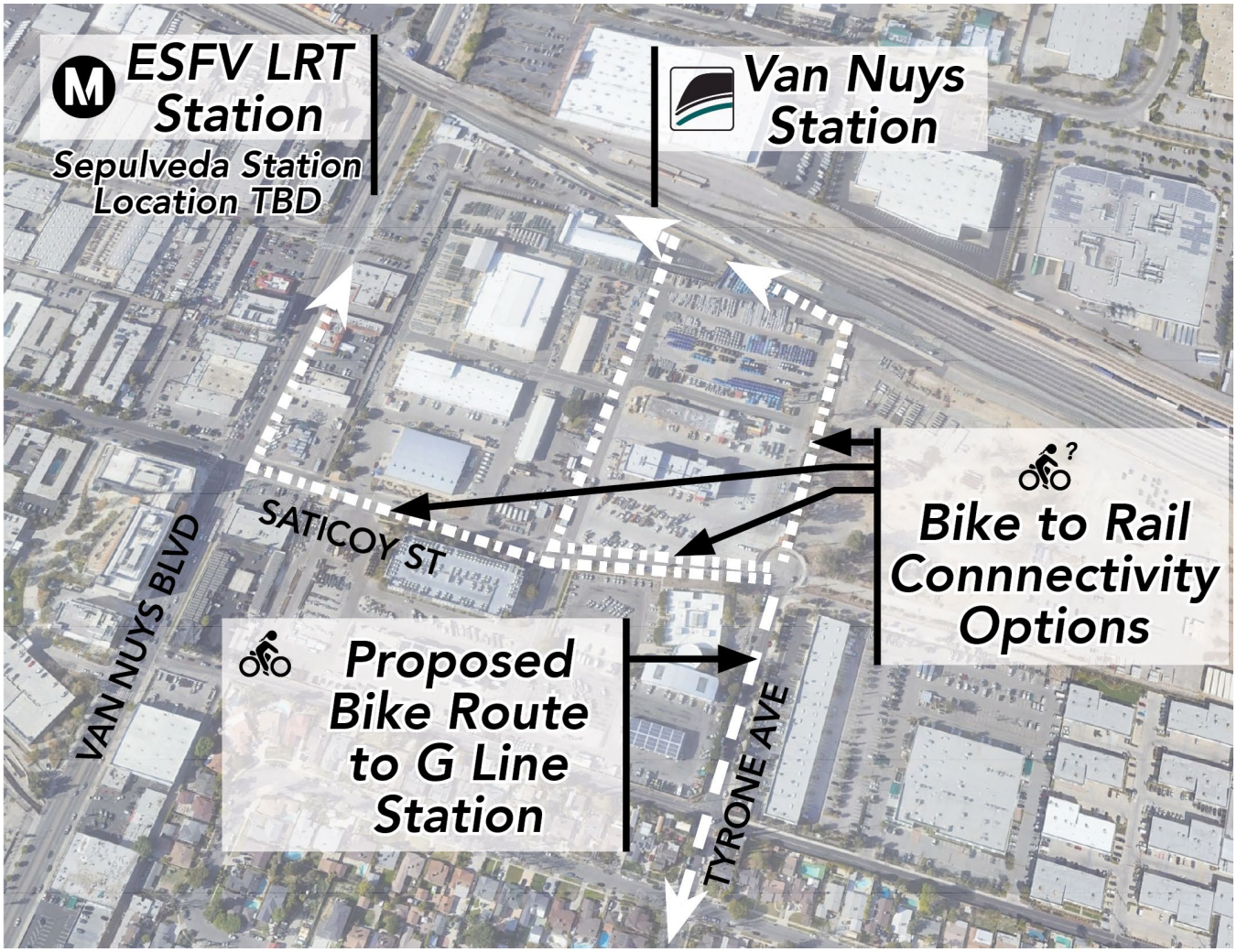
Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
V5.A	1a. Bicycle connection from the Metrolink Station along Tyrone Ave (see **Figure 8.B**)	➧	➡	Yes	Tyrone Avenue is identified as a "bike-friendly street" in the ESFV LRT FLM Plan	Preliminary Design
V5.B	1b. Connection between the northern terminus of Tyrone Ave and the Van Nuys Transit Hub, potentially along Cohasset Street or Saticoy Street (see **Figure 8.B**)	➧	➡	Yes	Cohasset Street is identified as an "off-street path" in the ESFV LRT FLM Plan	Preliminary Design
V5.C	2. Enhanced pedestrian connections between the existing Metrolink Station and the future Metro ESFV LRT Station, which may include shade, lighting, and wayfinding signage		➡	Yes	ESFV LRT FLM Plan	Examine for funding in Task 5
V5.D	3. First/Last Mile & Safety Improvements: Improved pedestrian environment along Van Nuys Boulevard, including the implementation of shading, pedestrian-scaled lighting, wayfinding, high-visibility crosswalks, narrower crossings where feasible, and leading pedestrian intervals	➧	➡	Yes	ESFV LRT FLM Plan	Examine for funding in Task 5
V6	4. An ADA-compliant ramp was designed to connect Van Nuys Blvd and the Metrolink Station level (see **Appendix B.5**). The solution was found to have low cost-benefit potential.	➧	➡	Yes	--	No

Figure 8 - Van Nuys Station - Existing and Planned Bicycle Facilities with Planned Transit Network



Source: CR Associates, 2022

Figure 8B – Enlargement of Recommendation #1



Source: CR Associates, 2022

Figure 8B shows the potential routes a future bicycle connection could take between the end of Tyrone Avenue and the Van Nuys Station area to create a link to the G Line (Orange).

Burbank Airport North Station Area

Burbank Airport North connects to the existing Burbank Hollywood Airport (HBA) Terminal. The area is served by the existing Metrolink Antelope Valley Line and will be within walking transfer distance of the future CAHSR station and the relocated HBA terminal. The station area is not currently well connected for pedestrians or cyclists; however, there are plans to implement pedestrian and bicycle connections to the south, associated with HBA improvements, and the north, associated with Metro's Brighton to Roxford Double Track Project, which will improve access to the station. Refer to **Figure 9** for the existing and planned bicycle facilities with planned transit.

Figure 9 - Burbank Airport North Station - Existing and Planned Bicycle Facilities with Planned Transit

Source: CR Associates, 2022

Pedestrian Analysis

At the Burbank Airport North station, there are the following constraints:

- Most of the roads have a low/very low PES
- The north area of the station has low pedestrian connectivity
- Pedestrian crossings south of N. San Fernando Boulevard are missing

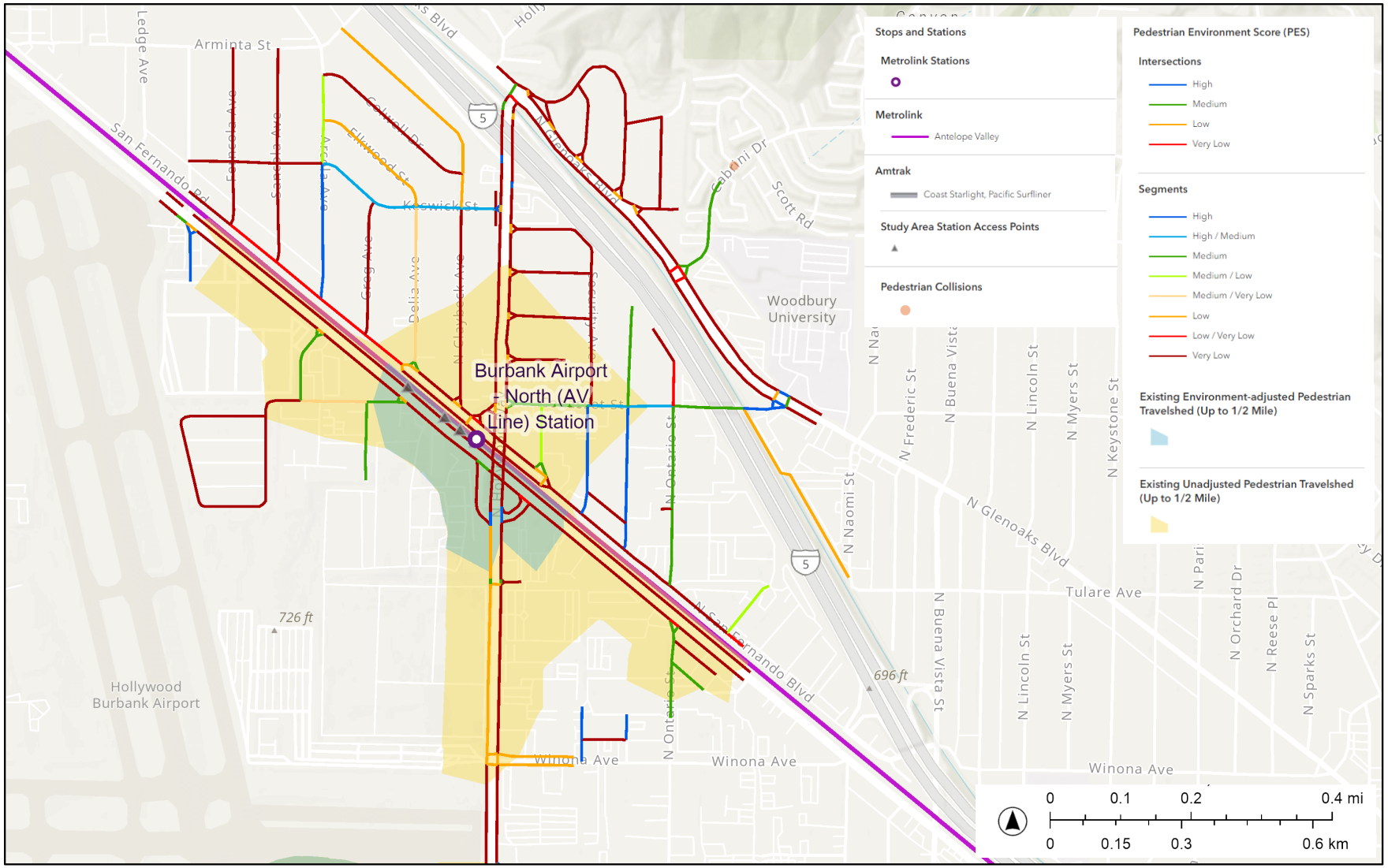
There are also opportunities to improve the station by implementing the following projects:

- These connections are planned to be improved in Metro's Brighton to Roxford Double Track Project ◆
- Burbank Airport Connectivity Analysis Study, 2022, identified long-term pedestrian and bicycle enhancements on San Fernando Road, between the Burbank Airport North Metrolink Station and the Burbank Airport ◆

Refer to **Figure 10** for pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 10 - Burbank Airport North Station Pedestrian Analysis



Source: CR Associates, 2022

Bicycle Analysis

At the Burbank Airport North station, there are the following constraints:

- The primary roads with access to the Metrolink station, Victory Pl, Hollywood Way, and San Fernando Road, have low comfort for cyclists (LTS 4)
- The area northeast of the Burbank Airport North Station has low bicycle connectivity

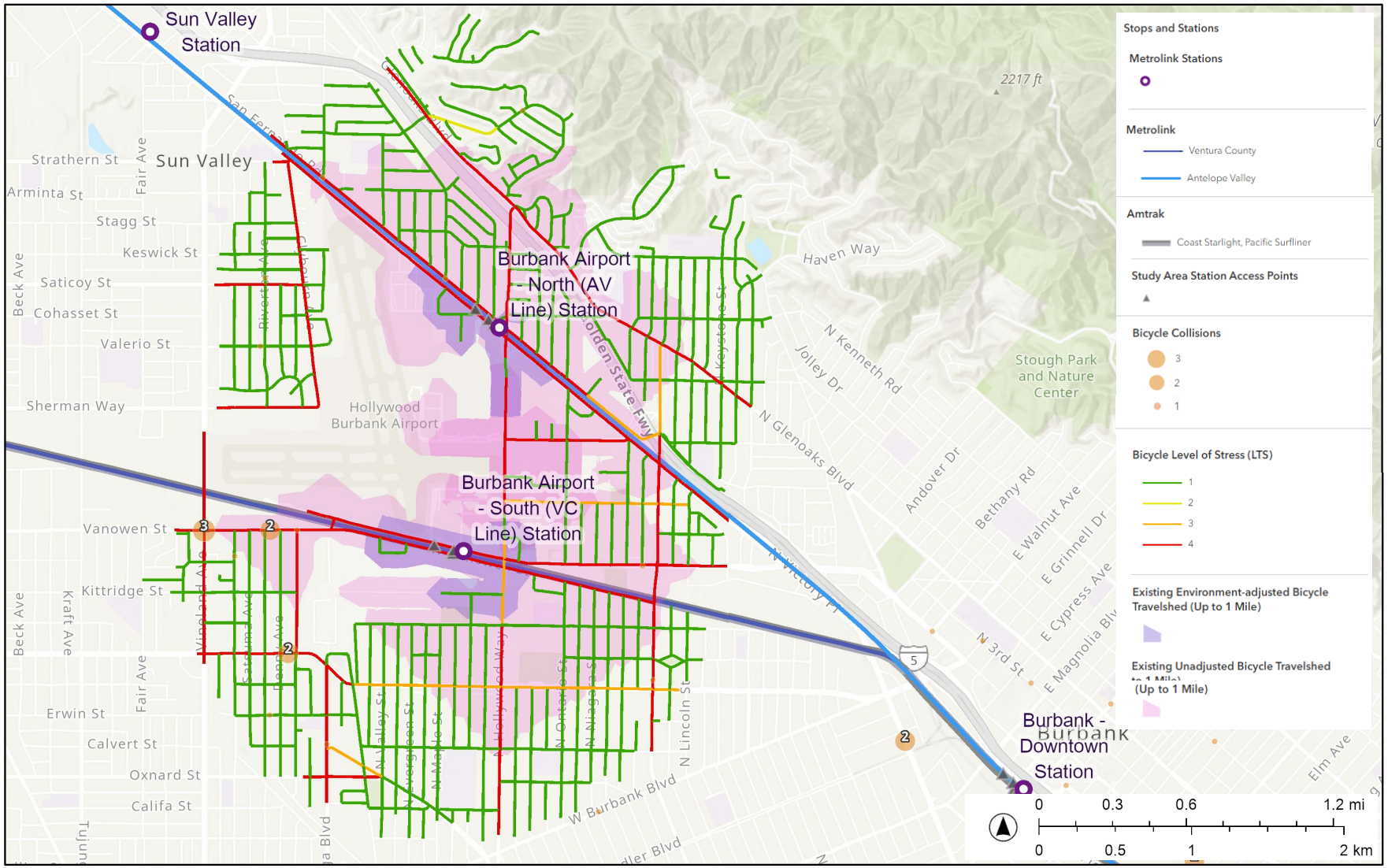
There are also opportunities to improve the station by implementing the following project:

- Burbank Airport Connectivity Analysis Study, 2022, identified long-term pedestrian and bicycle enhancements on San Fernando Road, between the Burbank Airport North Metrolink Station and the Burbank Airport ◆

Refer to **Figure 11** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 11 - Burbank Airport North Study Area Bicycle Analysis



Source: CR Associates, 2022

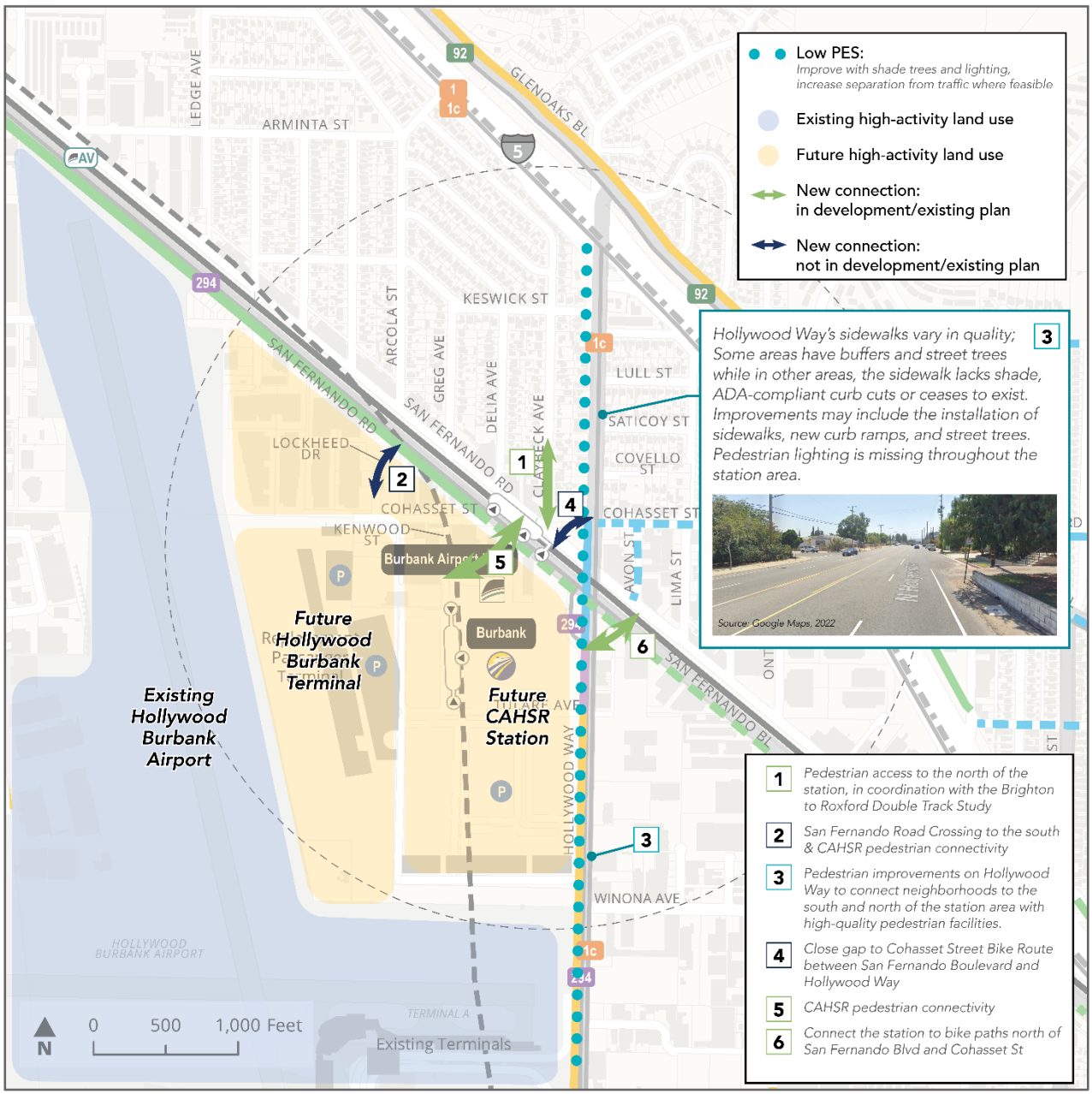
Burbank Airport North Identified Improvements

Constraints, challenges, and opportunities were examined based on analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figure 12** and **Table 3**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 3 - Burbank Airport North Station Identified Improvements

Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
BN2	1. Pedestrian access to the north of the station, in coordination with the Brighton to Roxford Double Track Study		➡	Yes	Brighton to Roxford Double Track Study	Determine timeline of improvement and potential funding
BN4	2. San Fernando Road Crossing to the south	➡		Yes	-	Examine design and cost
BN1.A	3. Pedestrian improvements on Hollywood Way to connect neighborhoods to the south and north of the station area with high-quality pedestrian facilities.	➡	➡	Yes	Areas in Burbank are in the Burbank Airport Connectivity Study	Coordinate with Metrolink Airport study
BN3	4. Close gap to Cohasset Street Bike Route between San Fernando Boulevard and Hollywood Way	➡	➡	Yes	Burbank Airport Connectivity Study	Examine design and cost
BN9	5. CAHSR pedestrian connectivity	➡		Yes	Burbank Airport Connectivity Study CAHSR EIR	Examine design and cost
BN3.A	6. Connect the station to bike paths north of San Fernando Blvd and Cohasset St	➡		Yes	Burbank Airport Connectivity Study	Examine design and cost

Figure 12 - Burbank Airport North Station Identified Improvements



Study Area Rail Station
Entrances
Half-Mile Buffer
Parking

Bicycle Facilities

	Existing	Planned
Class I - Bike Path		
Class II - Bike Lane		
Class III - Bike Route		
Class IV - Protected Bikeway		

Existing Transit
Metrolink Lines
Amtrak Thruway Bus Routes

Planned Transit
CA High Speed Rail
Metro Tier 3: NextGen Bus Routes
Metro Tier 4: NextGen Bus Routes

Planned ExpressLanes
Metro Tier 2: ExpressLanes Mid-Term (2027-2032)

Source: CR Associates, 2022

Burbank Airport South Station Area

The Burbank Airport South station connects to the existing HBA Terminal, the newly approved mixed-use development Aero Crossing. The existing Metrolink Ventura County (VCL) Line and Amtrak's Pacific Surfliner (APS) serve the area. Pedestrian access is challenging due to the rail tracks; the station is the only crossing within a 1.3-mile stretch, so people use it to cross between southern and northern areas. There are eastbound bike lanes on Van Owen Place and unprotected bike lanes on both sides of Hollywood Way. Refer to **Figure 13** for the existing and planned bicycle facilities with planned transit.

Figure 13 - Burbank Airport South Station - Existing and Planned Bicycle Facilities with Planned Transit

Pedestrian Analysis

At the Burbank Airport South station, there are the following constraints:

- Most of the roads adjacent to the station have a low/very low PES; the crossings vary from medium to low PES
- The north area of the station has low pedestrian connectivity

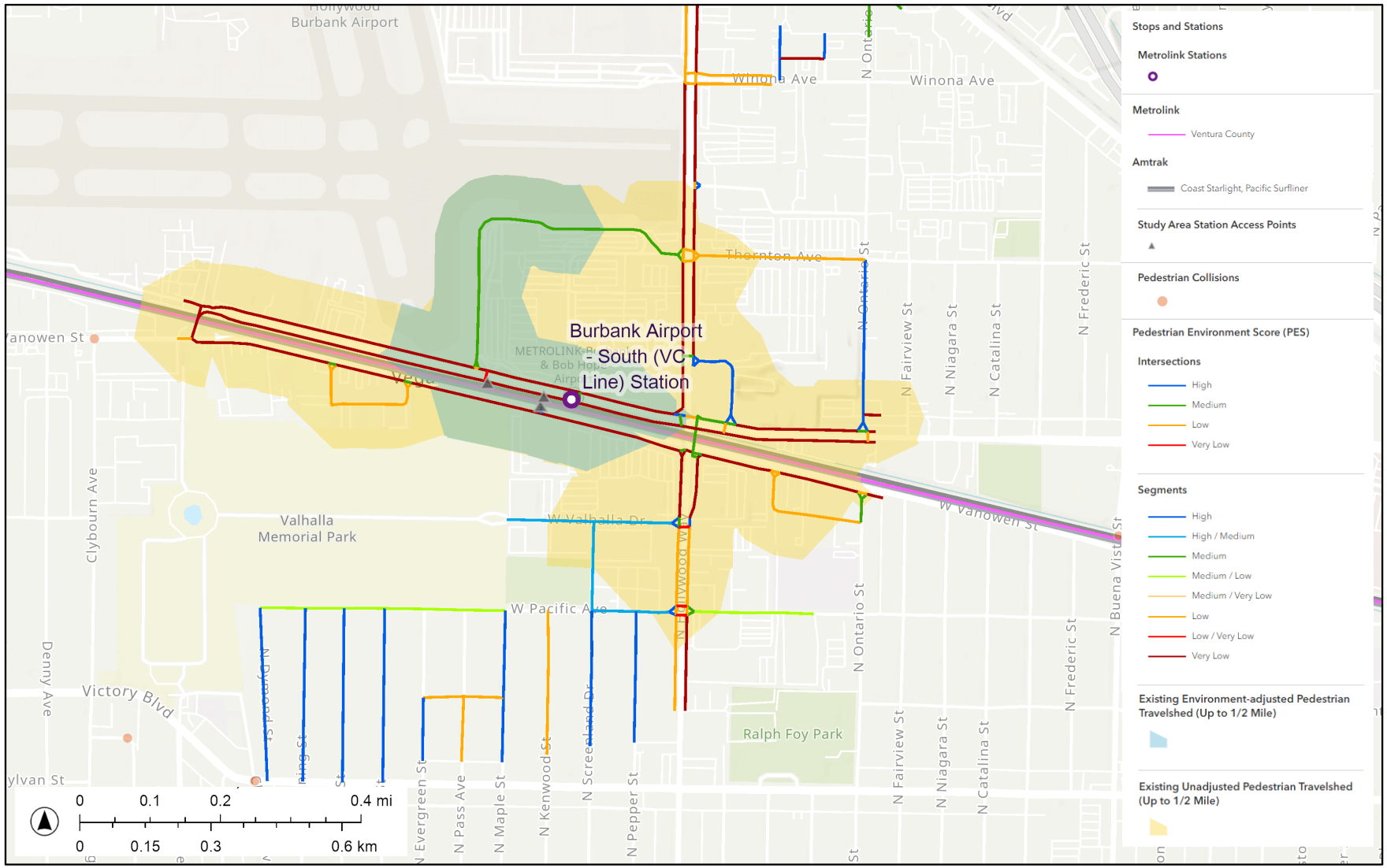
There are also opportunities to improve the station by implementing the following projects:

- Burbank Airport Connectivity Analysis Study, 2022, identified pedestrian crossings south of Vanowen Street ◆
- Burbank Airport Connectivity Analysis Study, 2022, identified near-term pedestrian and bicycle enhancements on Empire Avenue, between the Burbank Airport South Metrolink Station and the Burbank Airport ◆

Refer to **Figure 14** for the pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 14 - Burbank Airport South Pedestrian Analysis



Source: CR Associates, 2022

Bicycle Analysis

At the Burbank Airport South station, there are the following constraints:

- The primary roads with access to the Metrolink station, Empire Ave and Vanowen St, have low comfort for cyclists (LTS 4)
- The areas northwest and east of the Burbank Airport South Station have low bicycle connectivity

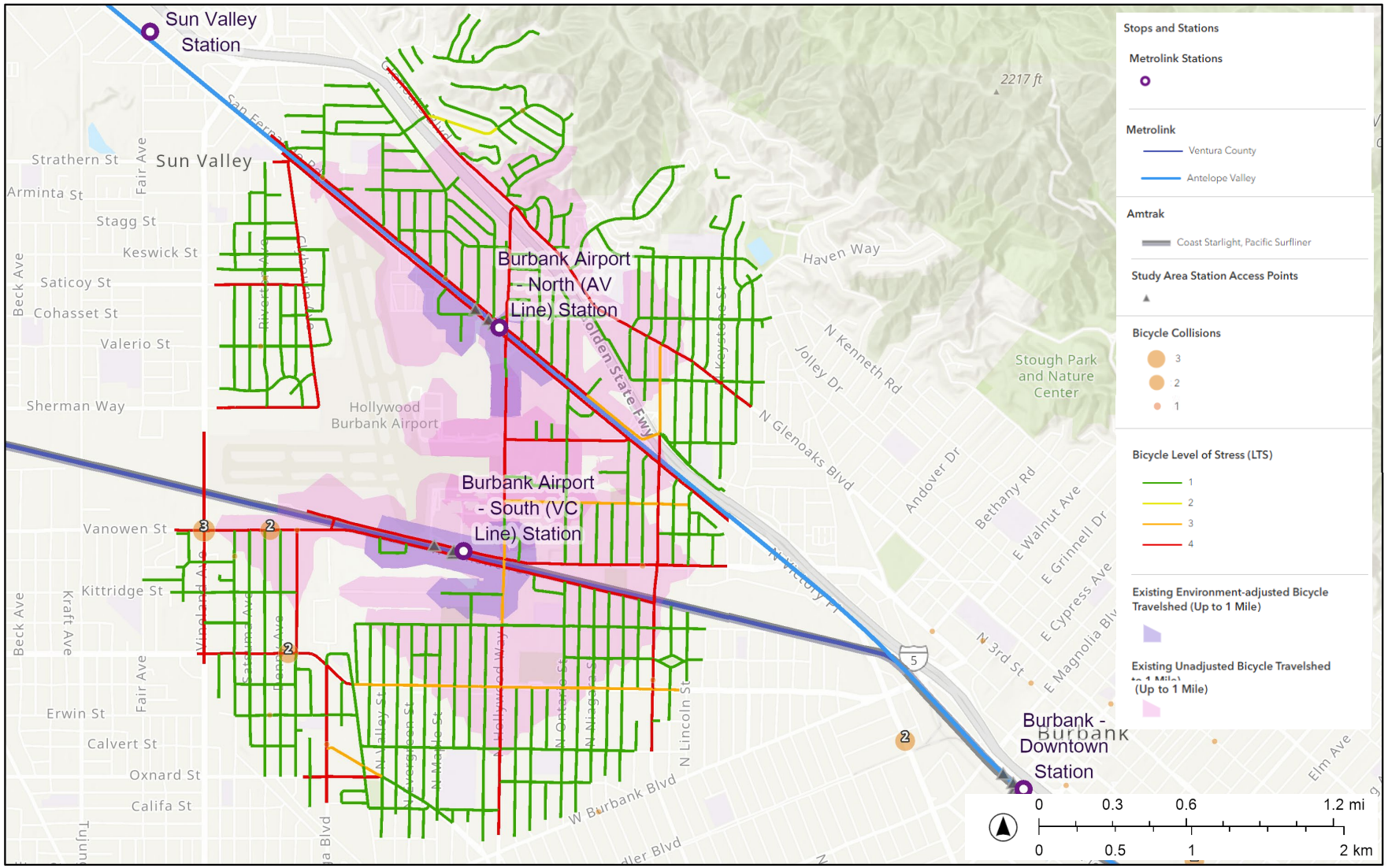
There are also opportunities to improve the station by implementing the following project:

- The *Burbank Airport Connectivity Analysis Study*, 2022 identified near-term pedestrian and bicycle enhancements on Empire Avenue, between the Burbank Airport South Metrolink Station and the Burbank Airport ◆

Refer to **Figure 15** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 15 - Burbank Airport South Study Area Bicycle Analysis



Source: CR Associates, 2022

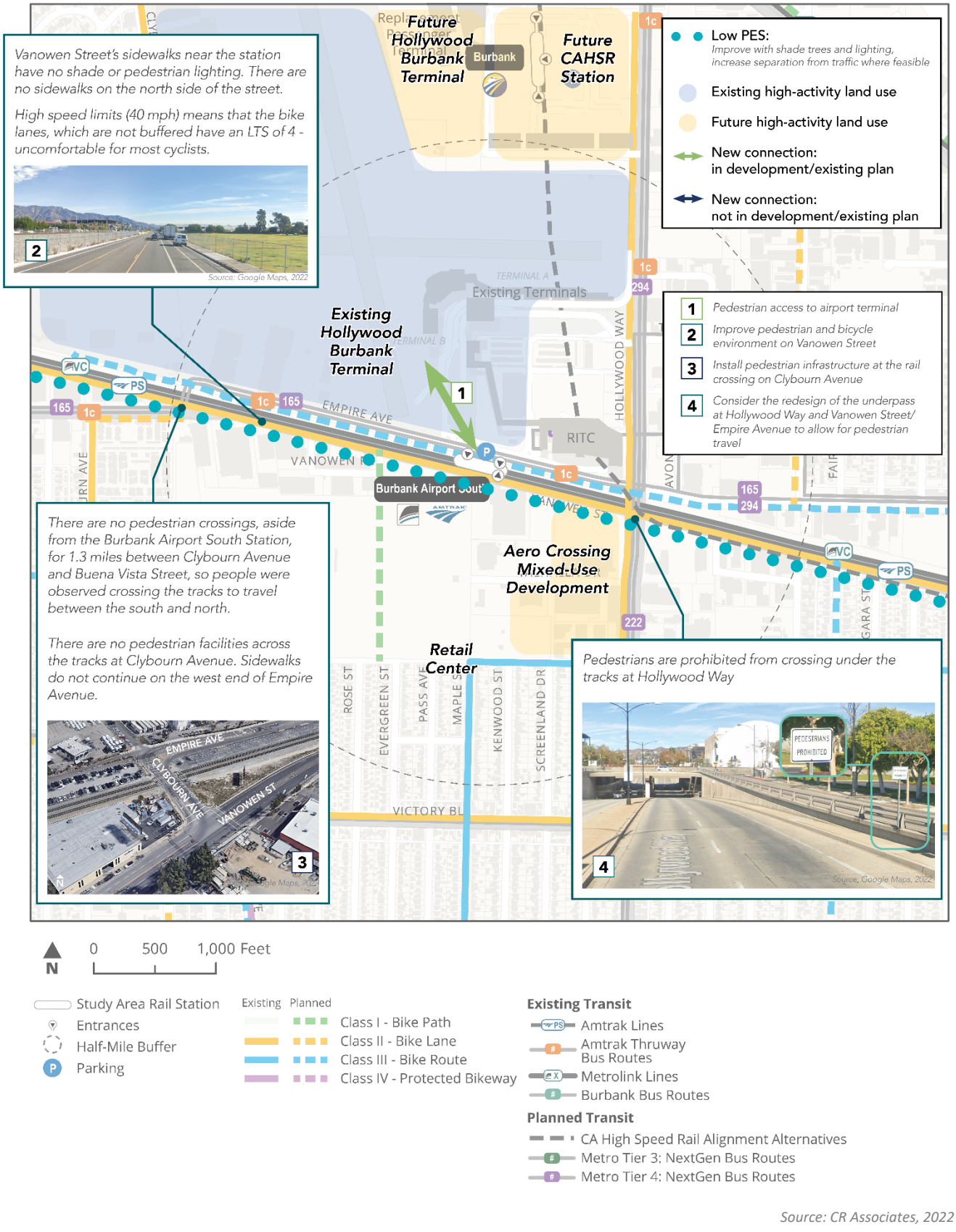
Burbank Airport South Identified Improvements

Constraints, challenges, and opportunities were examined based on the analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figure 16** and **Table 4**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 4 - Burbank Airport South Identified Opportunities

Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
BS3.A	1. Improved pedestrian access to the existing and relocated airport terminal	➧	➡	Yes	Burbank Airport Connectivity Study	Examine opportunities for funding in Task 5 Coordinate Access recommendations (RNI Project # BS6) and Burbank Airport
BS3.B	2. Improve pedestrian environment on Van Owen Street and Empire Avenue with street trees and pedestrian lighting and the bicycle environment by installing a buffer	➧	➡	Yes	Burbank Airport Connectivity Study identifies Empire Street for pedestrian and bicycle improvements	Examine opportunities for funding in Task 5
BS3.C	3. Install pedestrian infrastructure at the rail crossing on Clyborne Avenue	➧	➡	No	--	Examine opportunities for funding in Task 5
BS3.D	4. Consider the redesign of the underpass at Hollywood Way and Van Owen Street/Empire Avenue to allow for pedestrian travel.		➡	No	Burbank Complete Streets Plan (long-term project)	Examine opportunities for funding in Task 5

Figure 16 - Burbank Airport South Station - Existing and Planned Bicycle Facilities with Planned Transit

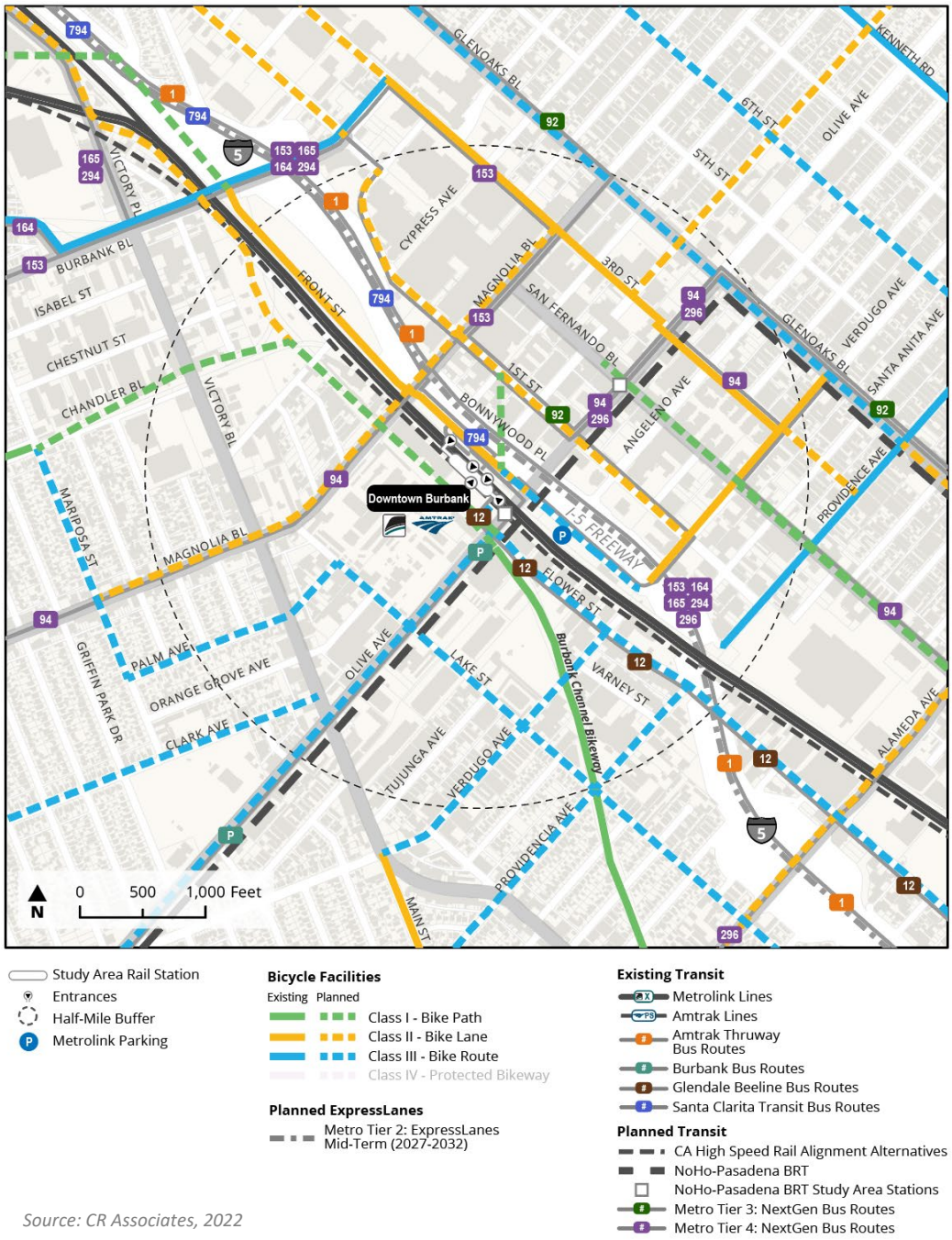


Source: CR Associates, 2022

Downtown Burbank Station

Burbank Downtown Station is an employment and commuter center within the City. It is currently served by a multi-operator bus hub that connects to Metrolink and limited joint-service by Amtrak/Metrolink. In the future, there are planned North Hollywood to Pasadena bus rapid transit (NoHo to Pasadena BRT) stops at both ends of the Olive Avenue Bridge. The station is challenged by low pedestrian and bike comfort; however, the City of Burbank has recently completed and is implementing a number of bicycle and pedestrian projects in the area based on their complete streets plan, *Complete Our Streets* (2020). Refer to **Figure 17** for the existing and planned bicycle facilities with planned transit.

Figure 17 - Burbank Downtown Station - Existing and Planned Bicycle Facilities with Planned Transit Network



Source: CR Associates, 2022

Pedestrian Analysis

At the Burbank Downtown station, there are the following constraints:

- Front Street, Magnolia Boulevard, and Olive Avenue show a very low PES surrounding the station
- The west area of the station has low pedestrian connectivity

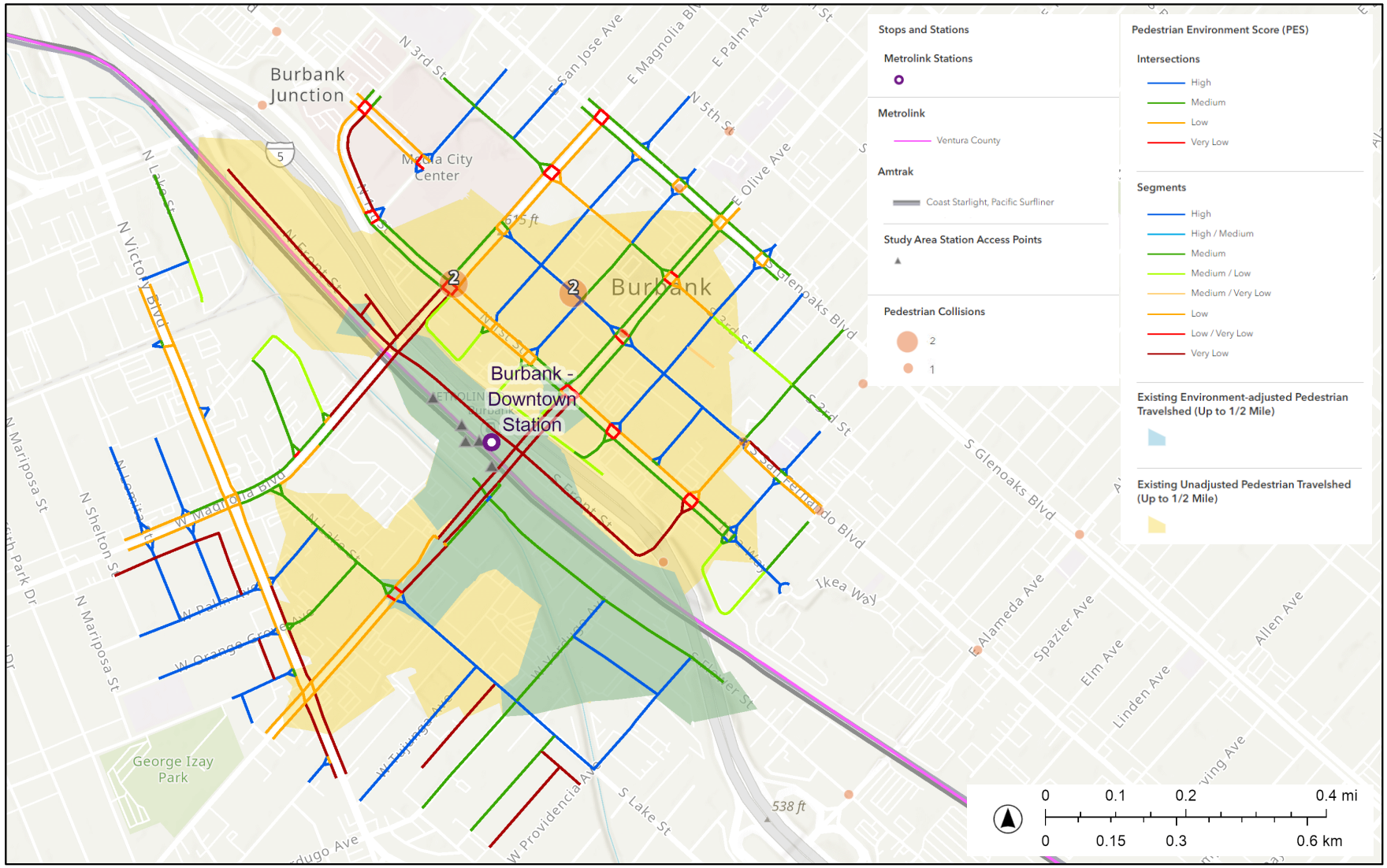
There are also opportunities to improve the station by implementing the following projects:

- Pedestrian connectivity to downtown Burbank via Olive Avenue will be improved
- Vertical pedestrian access to Olive Avenue is planned to be enhanced. Improvements may include a future NoHo to Pasadena BRT stop if the Olive Street Bridge is renovated ◆
- An examination of the station area has identified an opportunity to provide transit, bicycle, and pedestrian priority access into the Metrolink Parking Lot on Front Street (see **Appendix B.8**)
- La Terra, an 8-acre mixed-use development at 777 N Front Street, includes vertical circulation elements that connect the Metrolink Station to the Magnolia Boulevard bridge ◆
- The City is closing Bonnywood Place between 1st Street and Front Street to vehicular traffic to create a pedestrian promenade ◆

Refer to **Figure 18** for the pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 18 - Burbank Downtown Station Pedestrian Analysis



Source: CR Associates, 2022

Bicycle Analysis

At the Burbank Downtown station, there are the following constraints:

- The main roads with access to the station (Olive Ave, Magnolia Blvd, 1st St, and Bonnywood Pl) resulted in LTS 4
- There is a low PES score on the bridges (Olive and Magnolia) adjacent to the station

There are also opportunities to improve the station by implementing the following projects:

- The City of Burbank completed the construction of the Burbank Channel Bikeway, a Class I bike and pedestrian path, to the southeast of the study area with a controlled crossing over the rail bridge at Olive Ave and Flower St. in 2021. The bikewau directly connects the station to neighborhoods to the southeast. ◆
- The Burbank Complete Streets Plan, Complete Our Streets, 2020, identified Olive Street Bridge improvements as a long-term project ◆
- The Burbank Complete Streets Plan, Complete Our Streets, 2020, identified Front Street Class IV Bikeway as a short-term priority project, which is currently in the development stage (see **Figure 19** below) ◆
- An examination of the station area has identified an opportunity to provide transit, bicycle, and pedestrian priority access into the Metrolink Parking Lot on Front Street (see **Appendix B.8**)

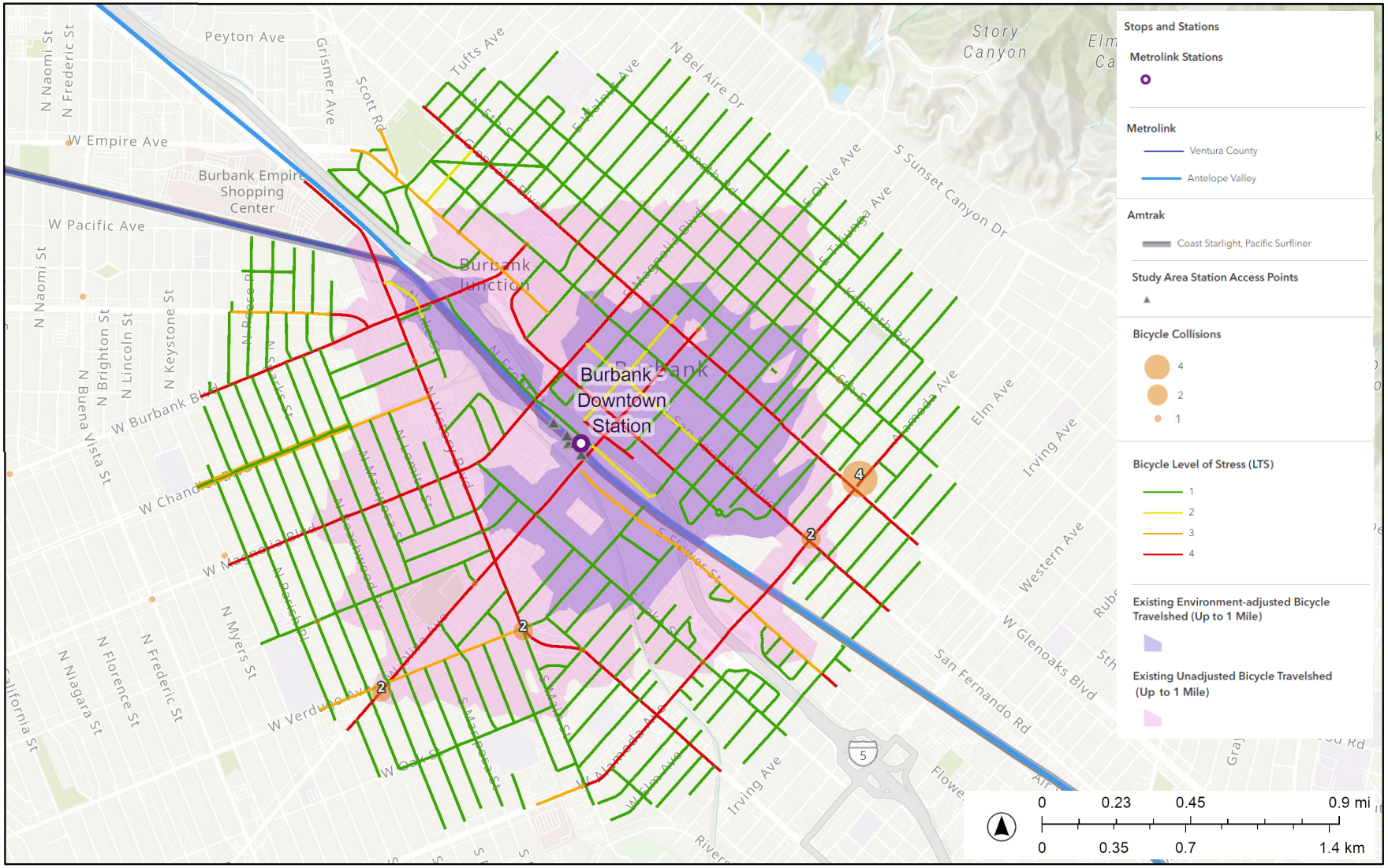
Refer to **Figure 20** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 19 - Front Street Class IV Bikeway Project

Source: Complete Our Streets, 2022

Figure 20 - Burbank Downtown Station Bicycle Analysis



Source: CR Associates, 2022

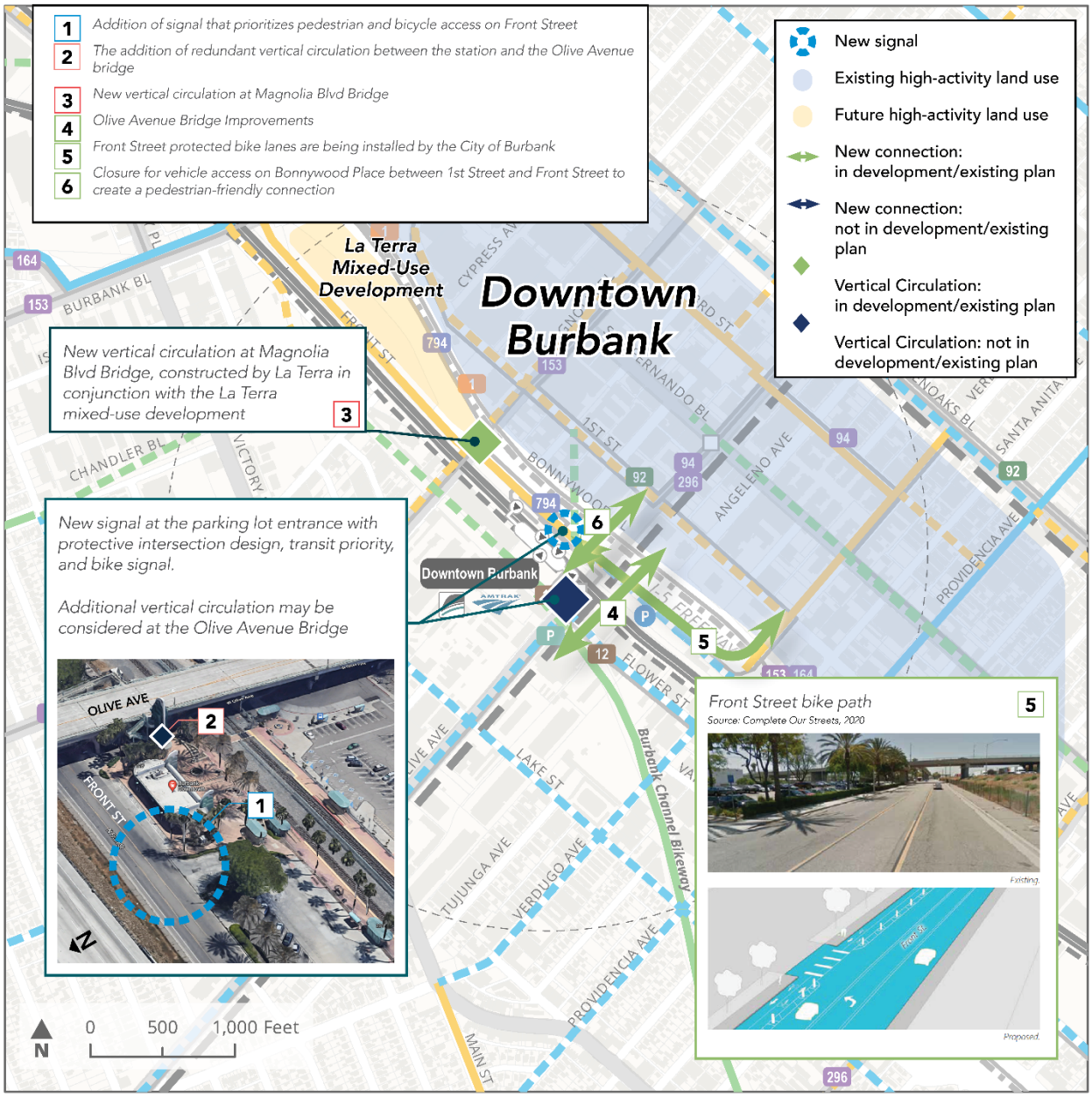
Downtown Burbank Identified Improvements

Constraints, challenges, and opportunities were examined based on the analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figure 21** and **Table 5**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 5 - Downtown Burbank Station Identified Improvements

Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
DB3.1	1. Addition of signal that prioritizes pedestrian and bicycle access on Front Street	➔		No	--	Plan sheets in Task 4 Examine opportunities for funding in Task 5
DB2.B	2. The addition of redundant vertical circulation between the station and the Olive Street bridge	➔	➡	Yes	--	In coordination with City, potential for complete rebuild of bridge
DB1	3. New vertical circulation at Magnolia Blvd Bridge, constructed by La Terra in conjunction with the La Terra mixed-use development	➔		Yes	La Terra Mixed Use Development	No
DB3	4. Olive Street Bridge rebuild		➡	Yes	Burbank Complete Streets Plan; Metro LRTP	In coordination with City, potential for complete rebuild of bridge
DB2.D	5. Front Street protected bike lanes are being installed by the City of Burbank	➔		Yes	Burbank Complete Streets Plan	No
DB2.E	6. The City of Burbank is closing through access for vehicles on Bonnywood Place between 1st Street and Front Street to create a pedestrian-friendly connection between the station and downtown	➔		Yes	Burbank Complete Streets Plan	No

Figure 21 - Downtown Burbank Identified Improvements



Study Area Rail Station
Entrances
Half-Mile Buffer
Metrolink Parking

Bicycle Facilities

Existing Planned
Class I - Bike Path
Class II - Bike Lane
Class III - Bike Route
Class IV - Protected Bikeway

Planned ExpressLanes

Metro Tier 2: ExpressLanes Mid-Term (2027-2032)

Existing Transit

Metrolink Lines
Amtrak Lines
Amtrak Thruway Bus Routes
Burbank Bus Routes
Glendale Beeline Bus Routes
Santa Clarita Transit Bus Routes

Planned Transit

CA High Speed Rail Alignment Alternatives
NoHo-Pasadena BRT
NoHo-Pasadena BRT Study Area Stations
Metro Tier 3: NextGen Bus Routes
Metro Tier 4: NextGen Bus Routes

Source: CR Associates, 2022

Norwalk C Line Station

The Norwalk C Line Norwalk Station is the current terminus of the Metro C Line, formerly Green Line, light rail station. It is a heavily accessed station with extensive surface parking but is constrained in access by the I-5 Freeway and Imperial Highway. Refer to **Figure 22** for the existing and planned bicycle facilities with planned transit.

Figure 22 - Norwalk C Line Station - Existing and Planned Bicycle Facilities with Planned Transit

Source: CR Associates, 2022

Pedestrian Analysis

At the Norwalk C Line station, there are the following constraints:

- Hoxie Avenue, Imperial Highway, and Studebaker Road have a very low PES in the area surrounding the station
- The west, south, and east area of the station have low pedestrian connectivity – it can take 30 minutes (1.5 miles) for someone to walk from neighborhoods in the southwest to the station, which could be less than a 5-minute walk (0.25 miles) if the gate at the end of Flatbush was accessible.
- Travel distances to southern neighborhoods are very long
- Pedestrian collisions within a half-mile of the station are concentrated on Imperial Highway and Studebaker Road.

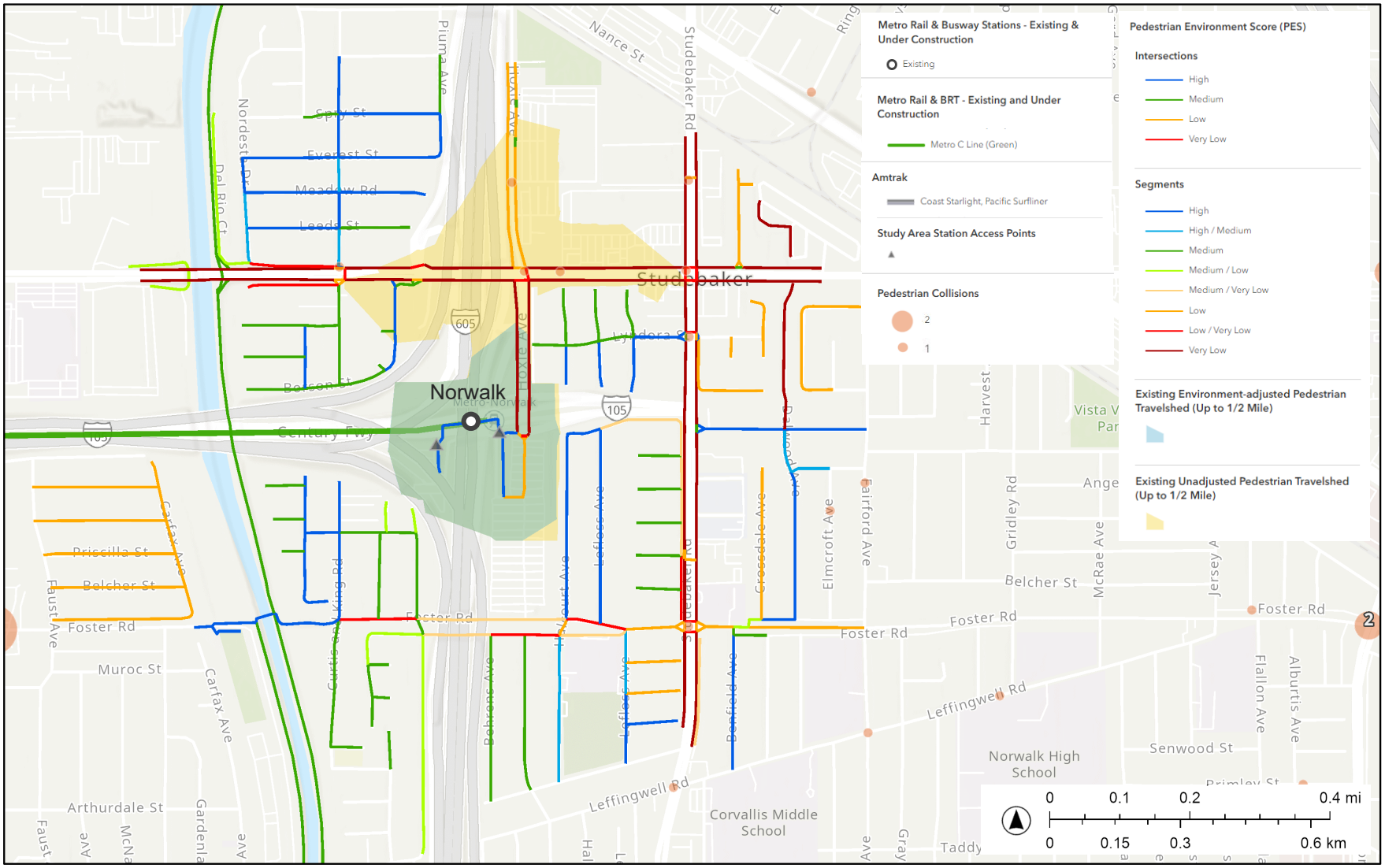
There are also opportunities to improve the station by implementing the following projects:

- There is an opportunity to connect neighborhoods to the south and southwest by opening gates and creating pedestrian-friendly pathways
- The parking lot can be restructured to allow for comfortable pedestrian travel

Refer to **Figure 23** for the pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 23 - Norwalk Station Pedestrian Analysis



Source: CR Associates, 2022

Bicycle Analysis

At the Norwalk C Line station, there are the following constraints:

- Imperial Highway and Rosecrans Ave are high-bicycle-collision corridors. There are seven bicycle collisions on Imperial Highway, with a concentration at the intersection of Hoxie Avenue and Studebaker
- Some of the main roads within 1 mile from the station (Imperial Hwy, Hoxie Ave, Firestone Blvd, Studebaker Rd) resulted in LTS 4
- The area south of the station has low bicycle connectivity

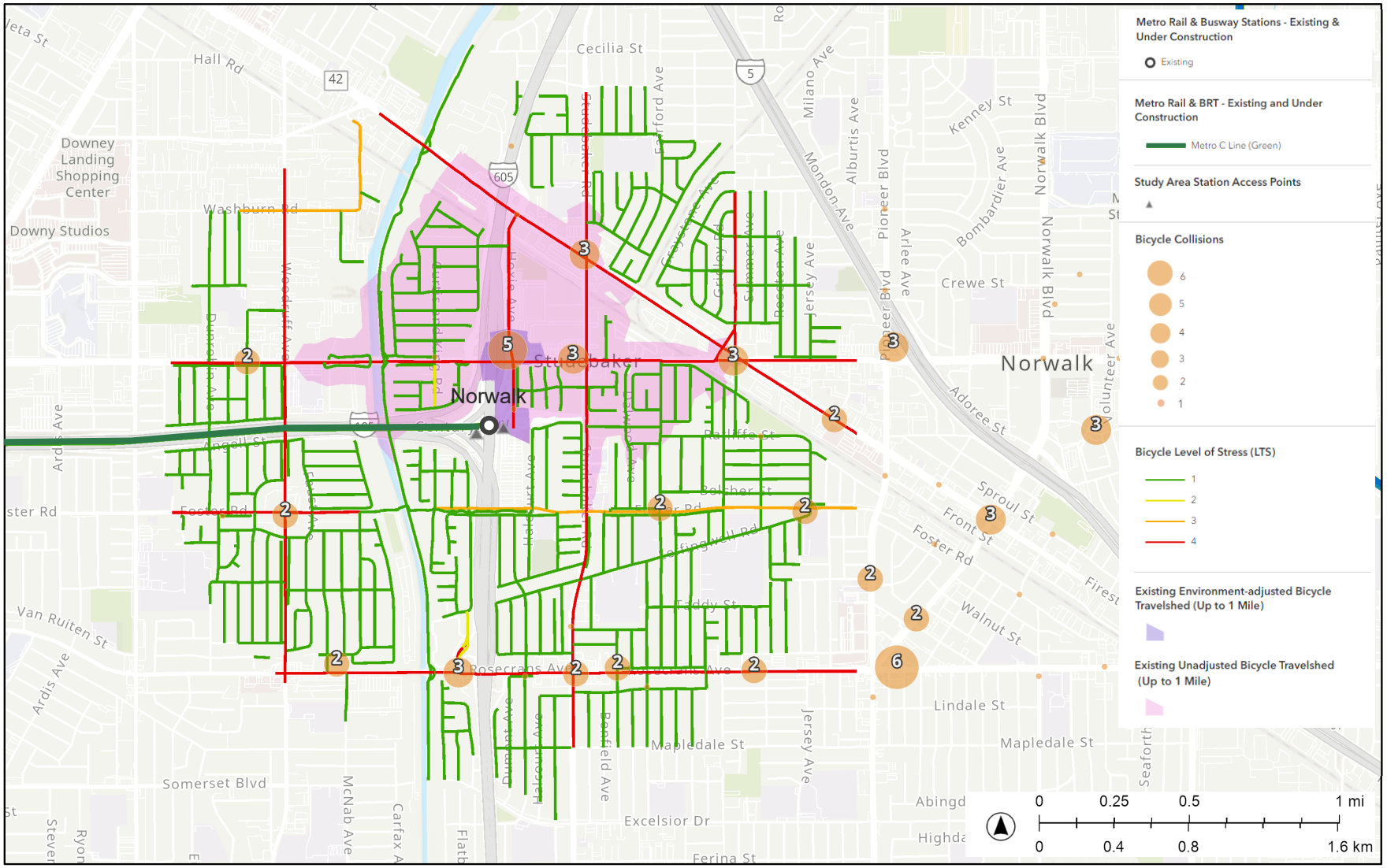
There are also opportunities to improve the station by implementing the following project:

- Bicycle connectivity will be improved via Foster Avenue and potentially San Antonio Drive to Civic Center Drive, or similar routing

Refer to **Figure 24** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 24 - Norwalk C Line Station Bicycle Analysis



Source: CR Associates, 2022

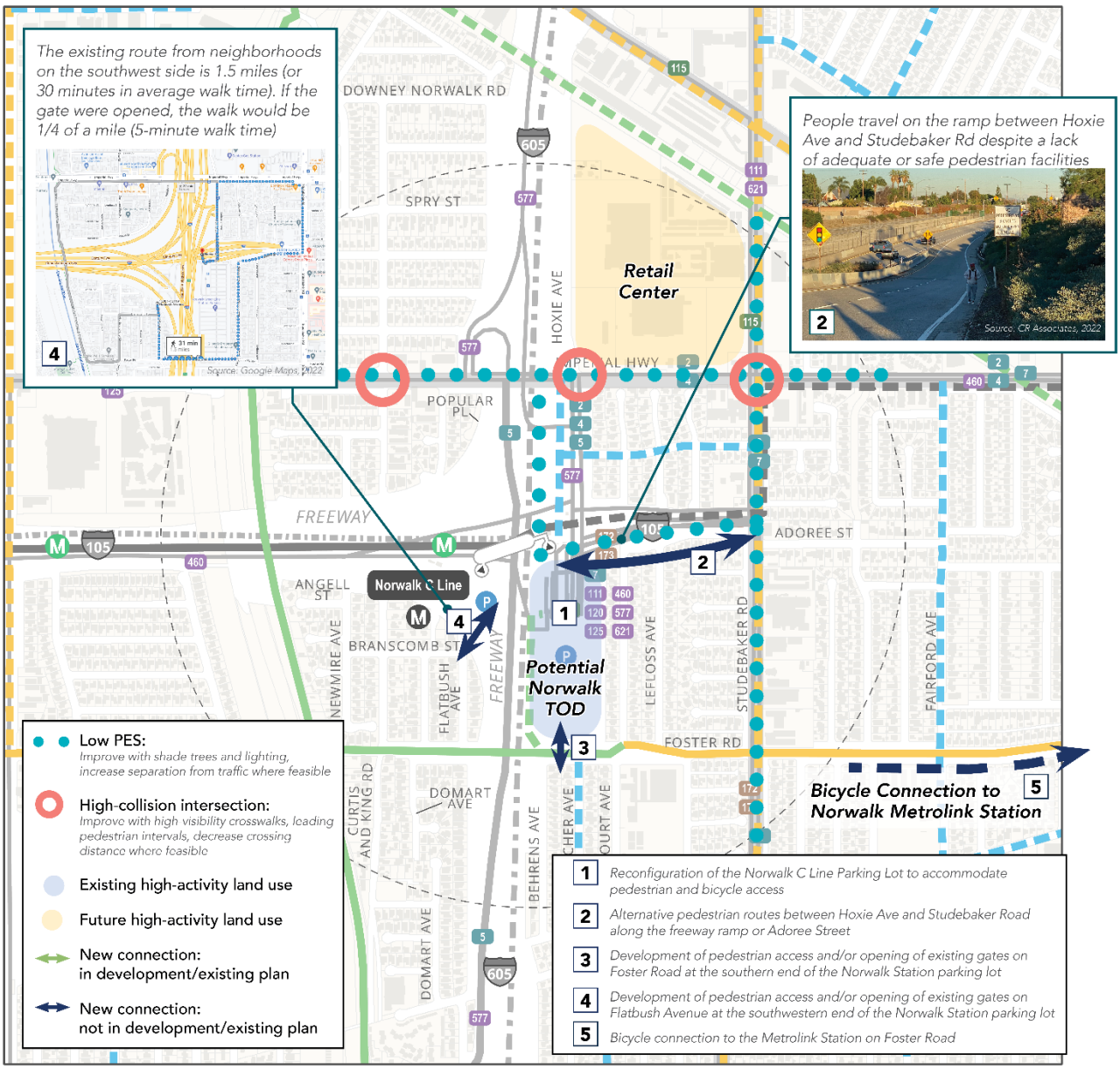
Norwalk C Line Identified Improvements

Constraints, challenges, and opportunities were examined based on the analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figure 25** and **Table 6**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 6 - Norwalk C Line Station Area Identified Improvements

Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
C5	1. Reconfiguration of the Norwalk C Line Parking Lot to accommodate pedestrian and bicycle access as well as bicycle parking; Long-term, consider development of Norwalk transit-oriented development (TOD)	➧	➡	Yes	No	Plan sheets in Task 4 Examine opportunities for funding in Task 5
C1	2. Alternative pedestrian routes between Hoxie Ave and Studebaker Road along the freeway ramp or Adoree Street	➧	➡	Yes	No	Plan sheets in Task 4 Examine opportunities for funding in Task 5
C2.A	3. Development of pedestrian access and/or opening of existing gates on Foster Road at the southern end of the Norwalk Station parking lot	➧		Yes	Bike path through parking lot shown in Norwalk Bicycle Master Plan	Develop policy/ partnership approach with the City of Norwalk in Task 4
C2.B	4. Development of pedestrian access and/or opening of existing gates on Flatbush Avenue at the southwestern end of the Norwalk Station parking lot	➧		Yes	No	Develop policy/ partnership approach with the City of Norwalk in Task 4
C7	5. Bicycle Connection to Norwalk C Line Station via Civic Center Drive, San Antonio Drive, and Foster Road	➧	➡	Yes	Norwalk Bicycle Master Plan	Examine opportunities for funding in Task 5

Figure 25 - Norwalk C Line Station Identified Improvements

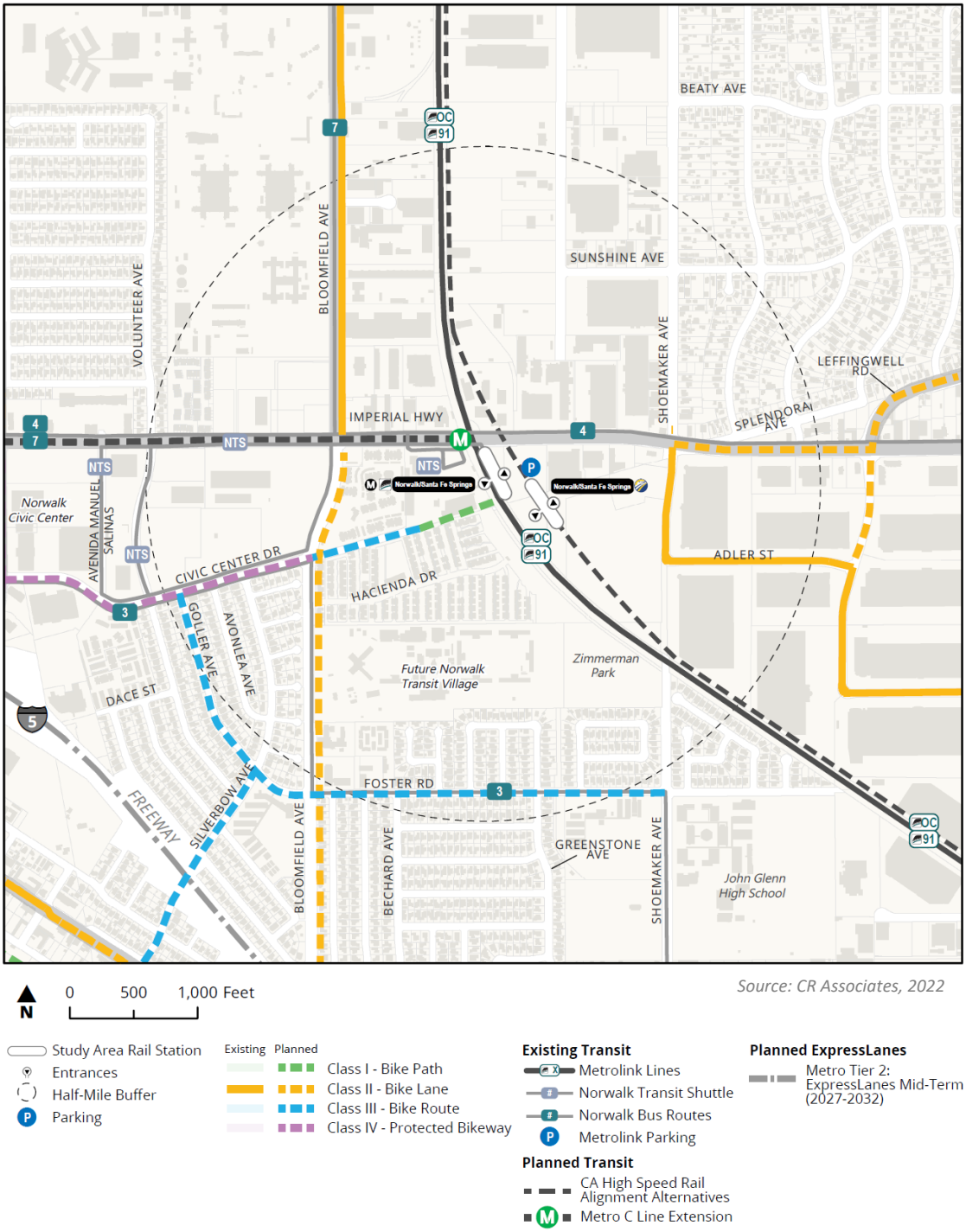


Source: CR Associates, 2022

Norwalk/Santa Fe Springs Metrolink Station Area

The Norwalk/Santa Fe Springs Metrolink Station will be the future location of the California High-Speed Rail Norwalk Station. The station has extensive parking on both the Norwalk and Santa Fe Springs sides. The Norwalk Transit System maintenance yard is adjacent to the station, which could be considered for a bike connection to the station area. Refer to **Figure 26** for the existing and planned bicycle facilities with planned transit.

Figure 26 - Norwalk Metrolink Station - Existing and Planned Bicycle Facilities with Planned Transit Network



Pedestrian Analysis

At the Norwalk/Santa Fe Springs Line station, there are the following constraints:

- Imperial Highway, Bloomfield Avenue, and Shoemaker Avenue, as well as other roads connecting to these, have a very low PES
- There is no easy access to destinations in the surrounding area, including the Civic Center, Norwalk State Hospital, and Zimmerman Park
- Pedestrian collisions are located on Imperial Highway and Bloomfield Avenue south of Imperial Highway. There is a concentration of pedestrian collisions at the intersection of Bloomfield Avenue and Civic Center Drive.

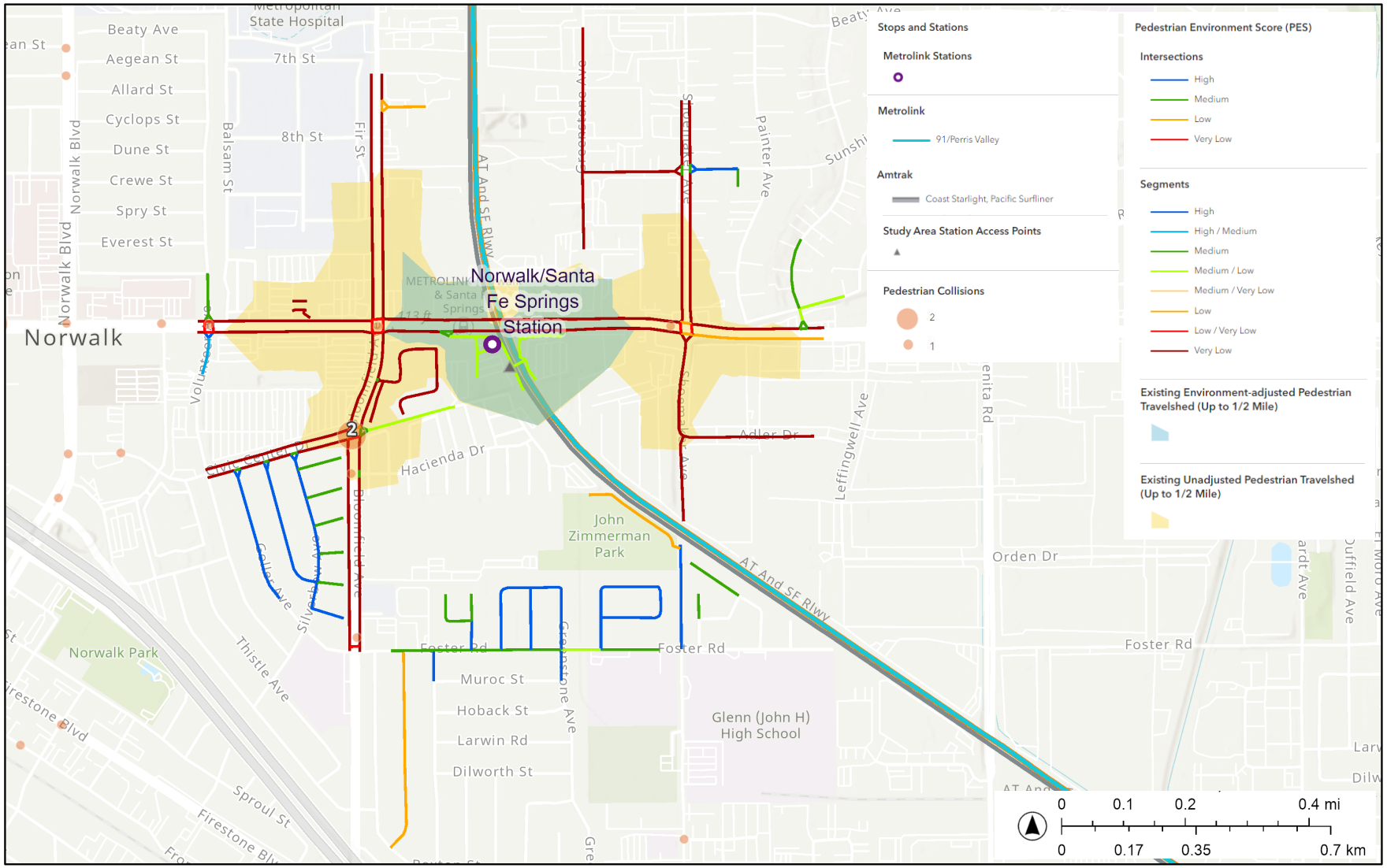
There are also opportunities to improve the station by implementing the following projects:

- The Santa Fe Springs General Plan Circulation Element prioritizes streets within a half mile of transit stations for pedestrian comfort. The policy is as follows: “The immediate half-mile radius around the Metrolink and future L Line stations must be designed to allow pedestrians to walk comfortably to shops, homes, and parking areas (for those that use the station as part of their journeys). Wayfinding signage will help visitors.” ◆
- A high-speed rail station is planned adjacent to the existing Metrolink Norwalk/Santa Fe Springs station. Access between the stations is anticipated as part of the development. ◆
- Potential Amtrak stops at the station to decrease headways at the station and increase connectivity to the LOSSAN corridor
- The future Norwalk Transit Village, to the west of Zimmerman Park, will develop bicycle and pedestrian connectivity between Bloomfield Avenue and the Norwalk/SFS Metrolink Station via Zimmerman Park ◆
- The redevelopment of the Civic Center with mixed use development will provide increased desirability for connection to the Metrolink Station ◆

Refer to **Figure 27** for the pedestrian collisions and PES analysis from 2015-2019.

Note: ◆ indicates projects by others

Figure 27 - Norwalk/Santa Fe Springs Station Pedestrian Analysis



Source: CR Associates, 2022

Bicycle Analysis

At the Norwalk/Santa Fe Springs station, there are the following constraints:

- Imperial Hwy, Bloomfield Ave, and Shoemaker Ave, the closest roads to the station, are LTS 4
- Areas north and south of the station have low bicycle connectivity
- Bicycle collisions are primarily on Bloomfield Avenue and Imperial Highway. There is a severe bicycle collision west of the Imperial Highway/Shoemaker Avenue intersection

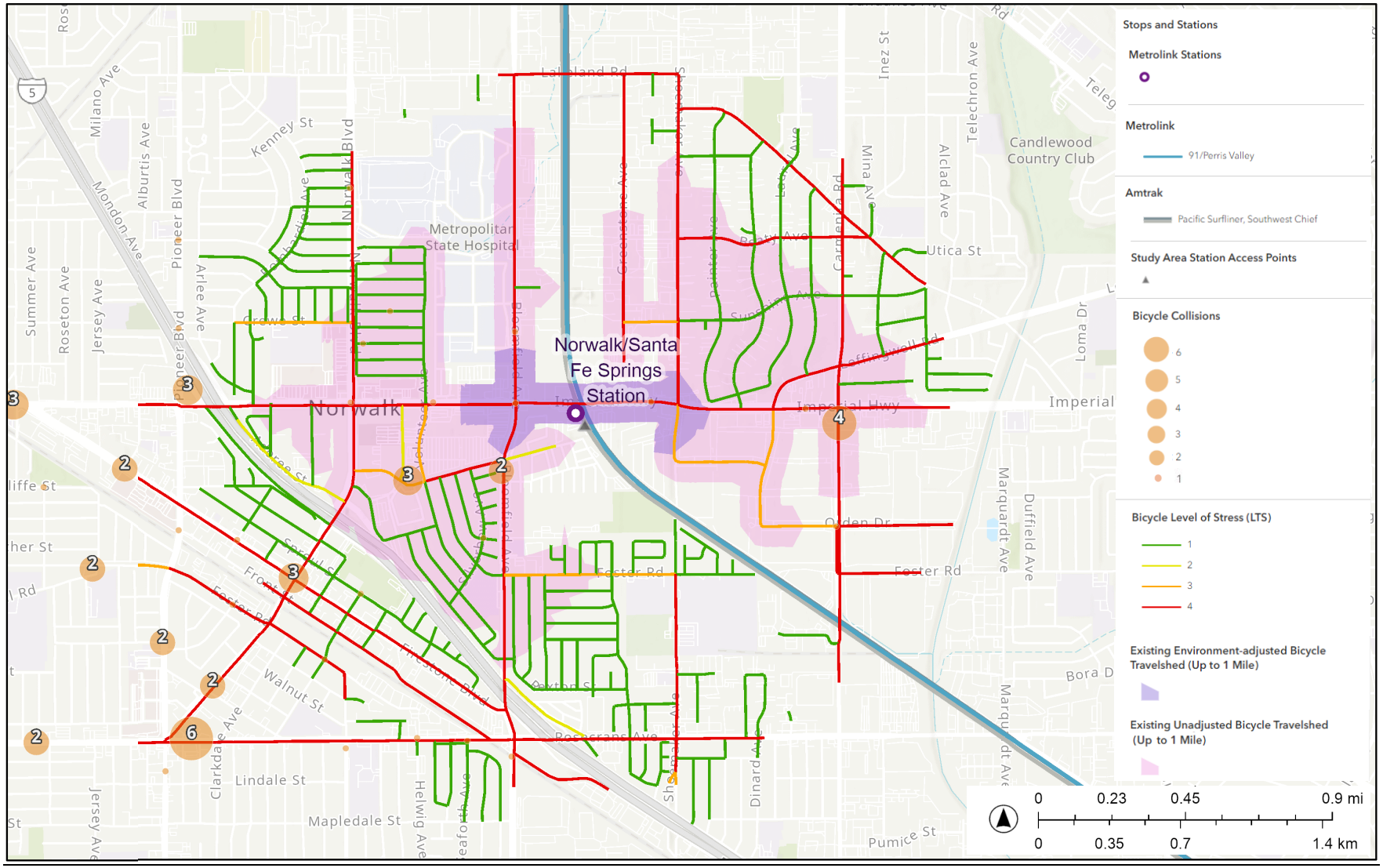
There are also opportunities to improve the station by implementing the following projects:

- There is an opportunity to install planned bicycle facilities and improve the overall network surrounding the station ◆
- The future Norwalk Transit Village, to the west of Zimmerman Park, is planning to develop bicycle and pedestrian connectivity between and Bloomfield Avenue and the Norwalk/SFS Metrolink Station via Zimmerman Park ◆
- Bicycle improvements will make the intersections safer for cyclists ◆

Refer to **Figure 28** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 28 - Norwalk Metrolink Station Bicycle Analysis



Source: CR Associates, 2022

Norwalk Study Area Bicycle Connection

At the Norwalk Study Area, there are the following constraints:

- Imperial Hwy, Firestone Blvd, and Rosecrans Ave, which are the main roads connecting both station areas, have an LTS score 4
- The north and south areas to both stations have low bicycle connectivity

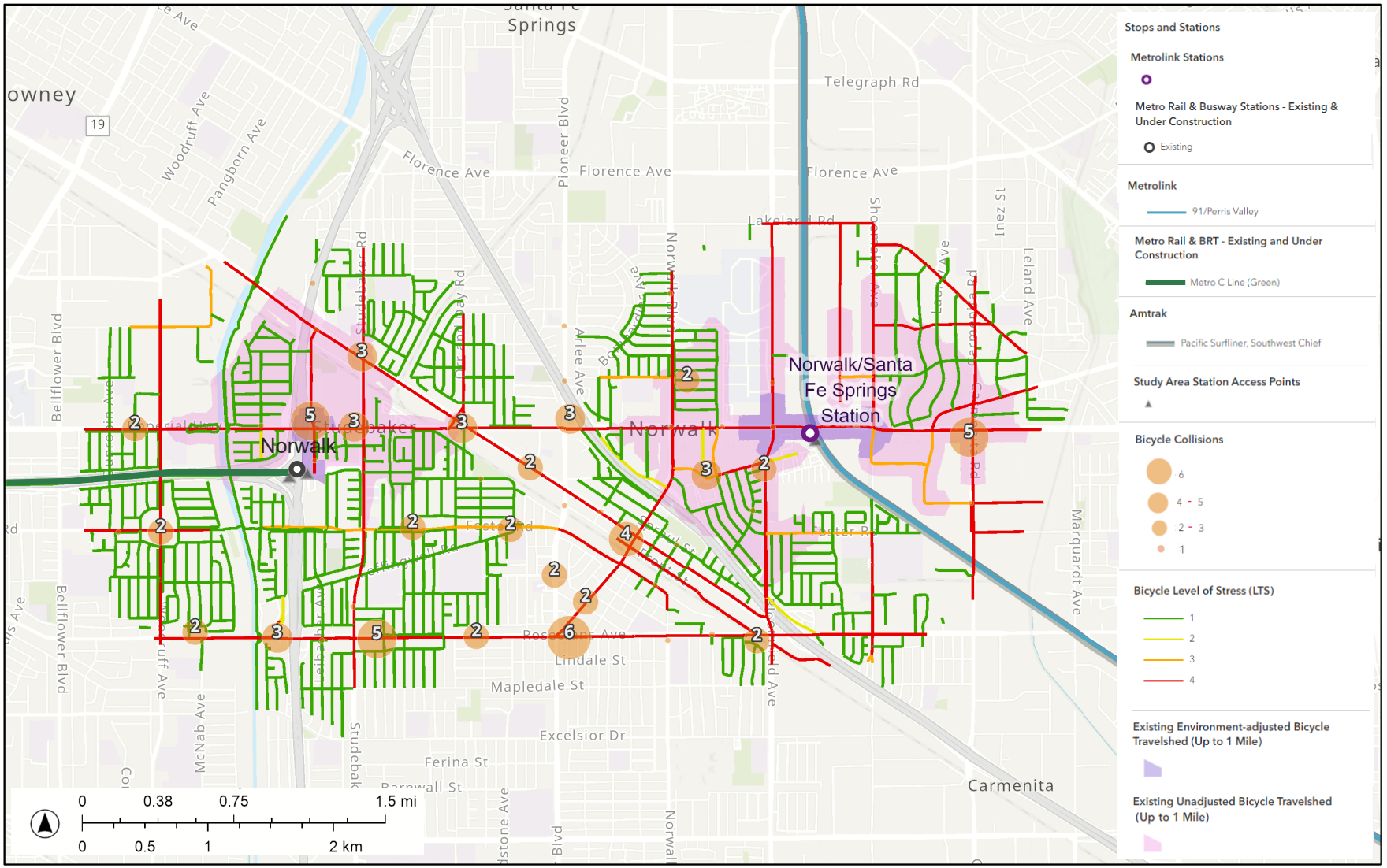
There are also opportunities to improve the station by implementing the following project:

- Bicycle connectivity will be improved via Foster Avenue and potentially San Antonio Drive to Civic Center Drive, or similar routing

Refer to **Figure 29** for the bicycle level of stress and bicycle collisions from 2015-2019.

Note: ◆ indicates projects by others

Figure 29 - Norwalk Study Area Bicycle Analysis



Source: CR Associates, 2022

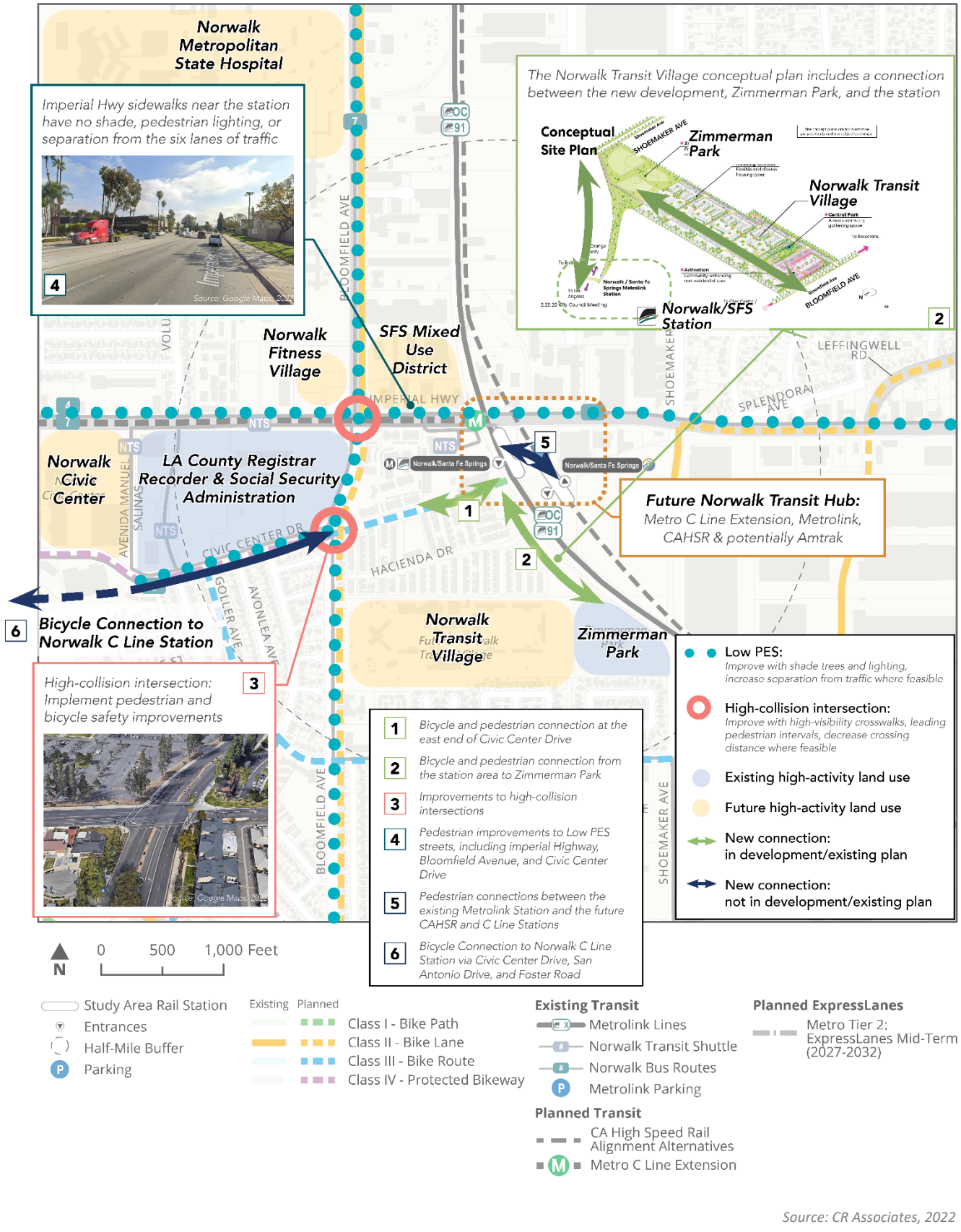
Norwalk Metrolink Station Identified Improvements

Constraints, challenges, and opportunities were examined based on the analysis of existing conditions in Task 2 and the planned conditions. The following projects, shown in **Figure 30** and **Table 7**, were examined in Task 3. The projects that are recommended for further study are identified in the column entitled "enhanced study in later task."

Table 7 - Norwalk Metrolink Station Identified Improvements

Proj. #	Improvement	Near Term	Long Term	Identified in Task 2	Related Plans/ Programs	Enhanced Study in Later Task
NSFS1.A	1. Bicycle and pedestrian connection at the east end of Civic Center Drive	➧	➡	No	Norwalk Bicycle Master Plan	Preliminary Design Examine opportunities for funding in Task 5
NSFS5	2. Bicycle and pedestrian connection from the station area to Zimmerman Park	➧	➡	Yes	Norwalk Transit Village Plan will conduct this improvement	Examine opportunities for funding in Task 5
NSFS1.B	3. Improvements to high-collision intersections	➧	➡	No	Norwalk Bicycle Master Plan	No
NSFS1.C	4. Pedestrian improvements to Low PES streets, including imperial Highway, Bloomfield Avenue, and Civic Center Drive	➧	➡	No	--	No
NSFS1.D	5. Pedestrian connections between the existing Metrolink Station and the future CAHSR and C Line Stations		➡	Yes	HSR station concepts under development	No
NSFS1.E	6. Bicycle Connection to Norwalk C Line Station via Civic Center Drive, San Antonio Drive, and Foster Road	➧	➡	Yes	Norwalk Bicycle Master Plan	Examine opportunities for funding in Task 5

Figure 30 - Norwalk Metrolink Station Identified Improvements



Source: CR Associates, 2022

Appendix B.4
Station Assessment

Systemwide Opportunity & Gap Analysis

Station Assessments

The project team conducted field assessments at each of the station areas between November 2021 and February 2022. Each visit included a team of two who separately evaluated each station against a checklist to identify any possible station improvements that could be implemented. The field assessment checklists were created to evaluate the current conditions at each station and determine opportunities for improvements, with the checklists focusing on three major categories:

a) customer information resources and infrastructure
b) station accessibility
c) station boarding area amenities

The team also assessed any operational constraints for trains, BRT, or buses at the stations. The checklist drew recommendations from Metro's 2020 Transit Service Policy & Standards, 2020 Bus Rapid Transit (BRT) Design Guidelines, and 2018 Transfers Design Guide as well as Metrolink's 2021 Accessibility and Affordability Study.

Following the field assessments, the project team used both the checklists and any other noted mobility or access constraints to propose a series of improvements at each station to increase rider comfort and accessibility. Any features from the field checklist that were not identified at the stations were recommended for future implementation. High-level cost estimates were then prepared to accompany the proposed improvements and to help inform future funding priorities. The cost estimates utilized industry standard practices, protocols, procedures, methodologies, and sources commonly used in cost estimating. Primary sources for labor and materials data included RSMeans construction cost estimating software, costs published by the National Electrical Contractors Association, and Los Angeles Prevailing Wage Rates. At this level of analysis, unit costs were generated based on current wage and materials pricing without escalation.

RAIL NETWORK INTEGRATION STUDY

Draft List of Station Improvements

NO.	WORK DESCRIPTION	#	UNIT	UNIT COST		NOTES
1	**Van Nuys Station**					
2	**Customer Information**					
3	Static Directional Signage	6	EA	$4,200	$25,200	directional bars on the station platform (assumed to include station area map)
53	Station Area Map	1	EA	$19,400	$19,400	
4	Real-Time Arrival Information	1	LS	$50,100	$50,100	digital signs at platform area, (LED monitor), conduits, wiring, software
5	Visual Wayfinding to Other Transit Service	1	EA	$25,100	$25,100	digital display case at platform, conduit, wiring software
6	Audio Wayfinding to Other Transit Service	1	LS	$167,000	$167,000	set of colored pixelated tags at walls (similar to QR codes) / Bluetooth Low Energy (BLE) beacons and an accompanying smartphone app
7	Tactile Wayfinding to Other Transit Service	1	LS	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to the directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
8				Customer Information Total	$537,200	
9	**Station Accessibility**					
10	Bike Center/Hub	1	LS	$250,400	$250,400	Staffed or unstaffed structures that provide bike storage and services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle-related classes and activities.
11	Bike Racks	1	LS	$4,200	$4,200	
12	Shared Dockless Micromobility Parking	1	LS	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
13				Station Accessibility Total	$421,600	
14	**Station Boarding Area**					
15	Bus Stop Amenities	1	LS	$33,400	$33,400	benches, shelter, proper signage, garbage cans, appropriate sidewalks and ramps, and proper lighting
16	Pedestrian lean bar	1	EA	$3,800	$3,800	
17	Public Art	1	LS	$83,500	$83,500	cost generally provided by owner
18	Seating (at least 3 seats per bay at bus facilities)	1	LS	$19,000	$19,000	
19	Shade Structures (approx. 6 linear feet per bus bay at bus facilities)	18	SF	$300	$5,400	cost per SF area, incl. structural framing fabrication & installation, roofing, lighting, etc.
20	Sound Barrier	250	LF	$3,400	$850,000	assume, 8'(H), steel/glass construction, assume 250 linear ft (LF) for each sound wall as a starting point
21	Wifi	1	LS	$33,400	$33,400	
22				Station Boarding Area Total	$1,028,500	
23				Station Total	$1,987,300	
24	**Burbank Airport North Station**					
25	**Customer Information**					
27	Customer Service Kiosk	1	EA	$137,900	$137,900	
28	Audio Wayfinding to Other Transit Service	1	LS	$167,000	$167,000	set of colored pixelated tags at walls (similar to QR codes) / Bluetooth Low Energy (BLE) beacons and an accompanying smartphone app
29	Tactile Wayfinding to Other Transit Service	1	LS	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to the directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
30				Customer Information Total	$555,300	
31	**Station Accessibility**					
32	Bike Center/Hub	1	LS	$250,400	$250,400	Staffed or unstaffed structures that provide bike storage and services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle-related classes and activities.
33	Bike Share (within service area)	1	LS	$133,600	$133,600	assume, 50 bikes plus bike parking area/bike racks, labor to install, etc.
34	Car Share	1	LS	$500,800	$500,800	parking lot area, incl barriers, signs, security items, etc. (cars not included)
35	Shared Dockless Micromobility Parking	1	LS	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
37				Station Accessibility Total	$1,051,800	
38	**Station Boarding Area**					
39	Bus Stop Amenities	1	LS	$33,400	$33,400	benches, shelter, proper signage, garbage cans, appropriate sidewalks and ramps, and proper lighting
40	Pedestrian lean bar	1	EA	$3,800	$3,800	
41	Public Art	1	LS	$83,500	$83,500	cost provided by owner
42	Restrooms	1	LS	$129,600	$129,600	assume (2) new bathrooms in existing bldg
43	Security Kiosk	1	EA	$137,900	$137,900	prefabricated kiosk, incl delivery, foundation, bollards, electrical, lighting, AC/heating, etc.
44	Sound Barrier	250	LF	$3,400	$850,000	assume, 8'(H), steel/glass construction, assume 250 linear ft (LF) for each sound wall as a starting point
45	Wifi	1	LS	$33,400	$33,400	
46				Station Boarding Area Total	$1,271,600	
47				Station Total	$2,878,700	

NO.	WORK DESCRIPTION	#	UNIT	UNIT COST		NOTES
48	**Burbank Airport South (Bob Hope Airport)**					
49	**Customer Information**					
50	Static Directional Signage	**30**	**EA**	$4,200	$126,000	directional bars on the station platform
51	Digital Information Kiosk	**1**	**EA**	$97,200	$97,200	
52	Customer Service Kiosk	**1**	**EA**	$137,900	$137,900	
53	Station Area Map	**3**	**EA**	$19,400	$58,200	
54	Tactile Wayfinding to Other Transit Service	**1**	**LS**	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to the directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
55				**Customer Information Total**	**$669,700**	
56	**Station Accessibility**					
57	Bi-Directional Access Ramps	**1**	**LS**	$82,200	$82,200	assume, concrete ramp & railings
61	Shared Dockless Micromobility Parking	**1**	**LS**	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
62				**Station Accessibility Total**	**$249,200**	
63	**Station Boarding Area**					
64	Pedestrian lean bar	**1**	**EA**	$3,800	$3,800	
66	Public Art	**1**	**LS**	$83,500	$83,500	cost provided by owner
67	Restrooms	**1**	**LS**	$129,600	$129,600	assume (2) new bathrooms in existing bldg
68	Security Kiosk	**1**	**EA**	$137,900	$137,900	prefabricated kiosk, incl delivery, foundation, bollards, electrical, lighting, AC/heating, etc.
70	Sound Barrier	**250**	**LF**	$3,400	$850,000	assume, 8'(H), steel/glass construction
71	Trees Providing Shade	**12**	**EA**	$1,200	$14,400	assume, 3"(dia) common tree, incl. planting. Generally, # of shade trees assumed to be one tree per seating area e.g. one per bus shelter, or one per rail platform bench. For this station, there are many shade structures, but the platform is so large that they do not cover 50% of the platform. An equal amount of shade trees would greatly help close that gap to 50% shade.
72	Wifi	**1**	**LS**	$33,400	$33,400	
73				**Station Boarding Area Total**	**$1,252,600**	
74				**Station Total**	**$2,171,500**	
75	**Burbank Downtown Metrolink Station**					
76	**Customer Information**					
50	Static Directional Signage	**4**	**EA**	$4,200	$16,800	directional bars on the station platform
77	Digital Information Kiosk	**1**	**EA**	$97,200	$97,200	
78	Customer Service Kiosk	**1**	**EA**	$137,900	$137,900	
79	Real-Time Arrival Information	**1**	**LS**	$50,100	$50,100	digital signs at platform area, (LED monitor), conduits, wiring, software
80	Station Area Map	**1**	**EA**	$19,400	$19,400	
81	Audio Wayfinding to Other Transit Service	**1**	**LS**	$167,000	$167,000	set of colored pixelated tags at walls (similar to QR codes) / Bluetooth Low Energy (BLE) beacons and an accompanying smartphone app
82	Tactile Wayfinding to Other Transit Service	**1**	**LS**	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to th directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
83				**Customer Information Total**	**$738,800**	
84	**Station Accessibility**					
85	Bi-Directional Access Ramps	**1**	**LS**	$82,200	$82,200	assume, concrete ramp & railings
88	Shared Dockless Micromobility Parking	**1**	**LS**	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
89	Tactile Warning Features (textured pavers at curb cuts)	**1**	**LS**	$16,900	$16,900	assume, sidewalk ADA ramp, incl demo existing sidewalk & install ADA ramp
90				**Station Accessibility Total**	**$266,100**	
91	**Station Boarding Area**					
92	Pedestrian lean bar	**1**	**EA**	$3,800	$3,800	
93	Lighting	**8**	**EA**	$600	$4,800	assume, regular area light fixtures. Field checklist suggested parking area may be less lit than the rail/bus boarding area, so this proposes lighting at approx. the same intervals as seen on the platform.
94	Public Art	**1**	**LS**	$83,500	$83,500	cost provided by owner
95	Security Kiosk	**1**	**EA**	$137,900	$137,900	prefabricated kiosk, incl delivery, foundation, bollards, electrical, lighting, AC/heating, etc.
97	Shade Structures (Bus - approx. 6 linear feet per bus bay at bus facilities)	**72**	**SF**	$300	$21,600	cost per SF area, incl. structural framing fabrication & installation, roofing, lighting, etc.
98	Sound Barrier	**700**	**LF**	$3,400	$2,380,000	assume, 8'(H), steel/glass construction
99	Trees Providing Shade	**12**	**EA**	$1,200	$14,400	assume, 3"(dia) common tree, incl. planting. Generally, # of shade trees assumed to be one tree per seating area e.g. one per bus shelter, or one per rail platform bench. For this station, there are many shade structures, but the platform is so large that they do not cover 50% of the platform. An equal amount of shade trees would freatly help close that gap to 50% shade.
100				**Station Boarding Area Total**	**$2,646,000**	
101				**Station Total**	**$3,650,900**	

NO.	WORK DESCRIPTION	#	UNIT	UNIT COST		NOTES
102	**Metro Norwalk C Line Station**					
103	**Customer Information**					
104	Static Directional Signage	**4**	**EA**	$4,200	$16,800	directional bars on the station platform
79	Real-Time Arrival Information	**1**	**LS**	$50,100	$50,100	digital signs at platform area, (LED monitor), conduits, wiring, software
105	Customer Service Kiosk	**1**	**EA**	$137,900	$137,900	
107	Public Announcement Speakers	**1**	**LS**	$250,000	$250,000	assumes stationwide PA system, including material/installation/testing/spares
108	Audio Wayfinding to Other Transit Service	**1**	**LS**	$167,000	$167,000	set of colored pixelated tags at walls (similar to QR codes) / Bluetooth Low Energy (BLE) beacons and an accompanying smartphone app
109	Tactile Wayfinding to Other Transit Service	**1**	**LS**	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to th directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
110				**Customer Information Total**	**$872,200**	
111	**Station Accessibility**					
112	Bike Center/Hub	**1**	**LS**	$250,400	$250,400	Staffed or unstaffed structures that provide bike storage and services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle-related classes and activities.
113	Bike Share (within service area)	**1**	**LS**	$133,600	$133,600	assume, 50 bikes plus bike parking area/bike racks, labor to install, etc.
114	Car Share	**1**	**LS**	$500,800	$500,800	parking lot area, incl barriers, signs, security items, etc. (cars not included)
115	Shared Dockless Micromobility Parking	**1**	**LS**	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
116	Pick-Up/Drop-Off Zone	**1**	**LS**	$83,500	$83,500	assume, pavement markings, ADA ramp, signage
117	Vertical Circulation – Escalators (for multi-level facilities) (at least 2 bi-directional escalators for each vertical circulation core	**1**	**LS**	$500,800	$500,800	2 bi-directional escalators
118				**Station Accessibility Total**	**$1,636,100**	
119	**Station Boarding Area**					
120	Bus Stop Amenities	**1**	**LS**	$33,400	$33,400	benches, shelter, proper signage, garbage cans, appropriate sidewalks and ramps, and proper lighting
121	Restrooms	**1**	**LS**	$129,600	$129,600	assume (2) new bathrooms in existing bldg
122	Sound Barrier	**500**	**LF**	$3,400	$1,700,000	assume, 8'(H), steel/glass construction, generally extending length of rail platform
123	Trees Providing Shade	**5**	**EA**	$1,200	$6,000	assume, 3"(dia) common tree, incl. planting
124				**Station Boarding Area Total**	**$1,869,000**	
125				**Station Total**	**$4,377,300**	
126	**Norwalk/Santa Fe Springs Metrolink Station**					
127	**Customer Information**					
128	Static Directional Signage	**3**	**EA**	$4,200	$12,600	
129	Digital Information Kiosk	**1**	**EA**	$97,200	$97,200	
130	Customer Service Kiosk	**1**	**EA**	$137,900	$137,900	
131	Real-Time Arrival Information	**1**	**LS**	$50,100	$50,100	digital signs at platform area, (LED monitor), conduits, wiring, software
132	Station Area Map	**2**	**EA**	$19,400	$38,800	
133	Sidewalk Stop Pole	**1**	**EA**	$2,600	$2,600	
134	Visual Wayfinding to Other Transit Service	**2**	**EA**	$25,100	$50,200	digital display case at platform, conduit, wiring software
135	Audio Wayfinding to Other Transit Service	**1**	**LS**	$167,000	$167,000	set of colored pixelated tags at walls (similar to QR codes) / Bluetooth Low Energy (BLE) beacons and an accompanying smartphone app
136	Tactile Wayfinding to Other Transit Service	**1**	**LS**	$250,400	$250,400	provides a pathway for visually impaired patrons that starts at each rail station entrance and leads to th directional bars on the station platform that identify safe waiting areas, lead to fare machines and at least one emergency intercom
137				**Customer Information Total**	**$806,800**	
138	**Station Accessibility**					
139	Bi-Directional Access Ramps	**1**	**LS**	$82,200	$82,200	assume, concrete ramp & railings
140	Bike Center/Hub	**1**	**LS**	$250,400	$250,400	Staffed or unstaffed structures that provide bike storage and services: parking, repair, valet, parts or accessories, bicycle rental or share, showers, and bicycle-related classes and activities.
147	Shared Dockless Micromobility Parking	**1**	**LS**	$167,000	$167,000	specific demarcating areas where users park their dockless bikes and scooters
148				**Station Accessibility Total**	**$499,600**	
149	**Station Boarding Area**					
150	Pedestrian lean bar	**1**	**EA**	$3,800	$3,800	cost provided by owner
151	Public Art	**1**	**LS**	$83,500	$83,500	assume (2) new bathrooms in existing bldg
152	Restrooms	**1**	**LS**	$129,600	$129,600	prefabricated kiosk, incl delivery, foundation, bollards, electrical, lighting, AC/heating, etc.
153	Security Kiosk	**1**	**EA**	$137,900	$137,900	cost per SF area, incl. structural framing fabrication & installation, roofing, lighting, etc.
154	Shade Structures (approx. 6 linear feet per bus bay at bus facilities)	**100**	**SF**	$300	$30,000	
155	Wifi	**1**	**LS**	$33,400	$33,400	
156				**Station Boarding Area Total**	**$418,200**	
157				**Station Total**	**$1,724,600**	

Appendix B.5
Van Nuys ADA Ramp

Summary of Work: Van Nuys ADA Connectivity Project

The proposed improvements would create an additional ADA compliant path of travel that would provide a more direct connection between Van Nuys Blvd and the Van Nuys Transit Station. Improvements include construction of several ADA compliant ramps and landings along an existing landscaped slope to form the ADA compliant access. Work also includes removal of two trees, relocating a manhole, clearing and grubbing, replacing landscaping, removal of existing lighting system, installation of new lighting system with service connections, retaining walls, and additional decorative features.

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METRO NETWORK INTEGRATION

VAN NUYS ADA CONNECTIVITY PROJECT

GENERAL NOTES:

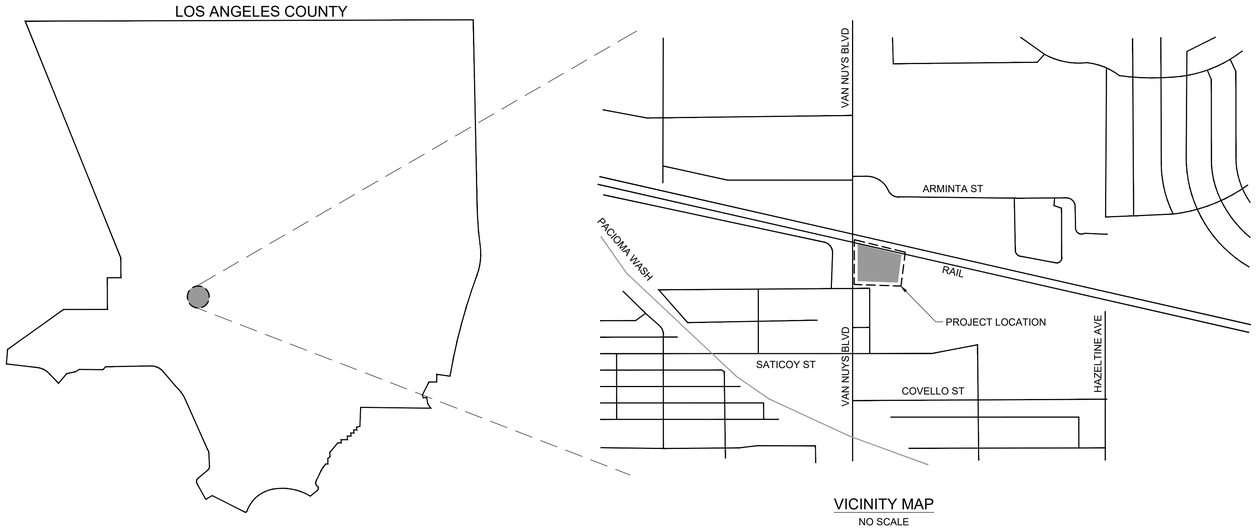
PROJECT WILL BE SUBJECTED TO ENVIRONMENTAL REGULATIONS. OVERALL PROJECT COSTS OVER $2 MILLION IN ENVIRONMENTAL PERMITTING, PRELIMINARY AND FINAL DESIGN, CONSTRUCTION, INSPECTION, AND ADMINISTRATION.

CONSTRUCTION ITEMS MAY INCLUDE:

- ADA PCC CONCRETE RAMPS AND LANDINGS, HANDRAILS
- RETAINING WALL SYSTEM
- DRAINAGE IMPROVEMENTS
- EARTHWORK, EXCAVATION AND EXPORT MATERIALS
- LANDSCAPING AND IRRIGATION
- TREE REMOVALS
- UTILITY MODIFICATIONS, INCLUDING SEWER MANHOLES
- SAFETY LIGHTING ON PATH
- DECORATIVE FEATURES

CONSTRUCTION NOTES

1. ADA LANDING WITH GRADES LESS THAN 2% IN ANY ONE DIRECTION.
2. ADA RAMP WITH LONGITUNDINAL SLOPES NO GREATER THAN 8% MAX, WITH A CROSS SLOPE OF 1.5%. RAMP SHALL NOT EXCEED MORE THAN 2.5 VERTICAL FEET BETWEEN LANDINGS.
3. ADA RAMP PER CALIFORNIA BUILDING CODE AND LOS ANGELES METRO STANDARDS. RAMP SHALL INCLUDE RETAINING TIERED RETAINING WALLS BETWEEN CHANGE IN DIRECTION WITH HANDRAILS.
4. REMOVE TREE COMPLETE IN PLACE.
5. RELOCATE MANHOLE AND UTILITIES AROUND RAMP LOCATION.
6. REMOVE LANDSCAPE AND IRRIGATION.
7. CLEAR AND GRUB OVERALL SITE.
8. REPLACE LANDSCAPING WITH APPROVED MATERIALS.
9. ELECTRICAL LIGHTING SYSTEM WITH SERVICE CONNECTIONS.
10. REMOVE ELECTRICAL LIGHTING SYSTEM.



VICINITY MAP
NO SCALE

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DRAFT Risk Assessment
Van Nuys Transit ADA Connectivity Project

Introduction

The following memorandum is a preliminary assessment of the potential impacts of the Van Nuys Transit ADA Connectivity Project. The preliminary assessment includes potential construction-related and operational impacts of the proposed Project, and potential Recognized Environmental Conditions.

The Van Nuys Transit Station is located on the southeastern corner of the intersection of Van Nuys Boulevard (north-south) and the Railroad crossing (east-west). The nearest cross streets are Arminta St to the north and Keswick St to the south.

The proposed Project includes the construction of an ADA-compliant access ramp to the Van Nuys Transit Station. Under existing conditions, ADA accessibility to the station is inadequate.

Existing Conditions

The proposed Project site exists in an urban built-up setting within the Van Nuys neighborhood in the central San Fernando Valley region of Los Angeles. The station is elevated approximately 17 feet above Van Nuys Boulevard. The slope down to the street is comprised of ornamental trees, ornamental ground cover vegetation, and approximately 25% exposed soil. Adjacent parcels include commercial and industrial land uses. There are no residences or other sensitive receptors in the immediate vicinity.

Notable information from East San Fernando Valley Transit Corridor Project DEIS/DEIR:

- Currently, the Metro Orange Line is a BRT that operates in a dedicated right-of-way with an average of 30,000 boardings per day. The Metro Orange Line Van Nuys Station is also a major transfer point.
- Based on Metrolink data from 2011, the Antelope Valley Line has an average weekday boardings total of 5,885, of which 509 occur at the Sylmar/San Fernando Metrolink Station. The Ventura County Line has an average weekday boardings total of 4,141, of which 184 boardings occur at the Van Nuys station.
- According to Amtrak, the Pacific Surfliner route is the second busiest corridor in the United States, with approximately 200 daily boardings at the Van Nuys Station, in addition to those accessing Metrolink at this location.
- Pedestrian activity:
    - 818 AM pedestrians
    - 594 PM pedestrians
- Although there is a lack of natural plant communities within the biological resources study area, the ornamental landscaping, including mature trees, provides marginal foraging and nesting habitat for a small number of small mammals, reptiles, and invertebrates. The ornamental

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landscaping could provide a source of prey for a variety of common and special-status birds (including passerines and both local and wintering raptors) and large mammal species.

Impact Assessment

For the proposed Project, there is the potential to qualify for an exemption. CEQA Ministerial exemptions would apply for projects that only require basic building or similar permits. CEQA includes multiple categorical exemptions for the modification of existing structures and/or land uses. CEQA also includes multiple statutory exemptions for public transit projects. CEQA § 21080, subd. (b)(10) states that a project may be exempt if:

- A project for the institution or increase of passenger or commuter services on rail or highway rights-of-way already in use, including modernization of existing stations and parking facilities.

The proposed ADA ramp may increase ridership of the Metro Orange line due to increased accessibility. More analysis would be needed to determine if this exemption would be relevant to the proposed Project.

If no exemptions are available for the proposed Project, an Initial Study would be required. Table 1 shows the potential Construction and Operational Impacts for the proposed Project.

Table 1: CEQA Resource Categories and Significance Determinations

Resource Category	Construction Impact	Operational Impact	Comments
Aesthetics	Less than significant	Less than significant	No scenic highways or scenic vistas.
Agriculture and Forestry Resources	No Impact	No Impact	No important Agricultural land.
Air Quality	Less than significant (BMPs)	Less than significant	Temporary emissions BMPs during construction.
Biological Resources	Less than significant (potential for mitigation)	Less than significant	Trees could provide habitat for nesting birds. May require clearance surveys.
Cultural Resources	Less than significant (discovery protocols)	Less than significant	Project would be on previously disturbed land.
Geology /Soils	Less than significant	Less than significant	Project would be on previously disturbed land. Low risk of unstable soil.
Greenhouse Gas Emissions	Less than significant (BMPs)	Less than significant	Temporary emissions BMPs during construction.
Hazards & Hazardous Materials	Less than significant (BMPs)	Less than significant	BMPs for materials handling during construction.

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Hydrology / Water Quality	Less than significant (BMPs)	Less than significant	Area is relatively small. BMPs to reduce potential runoff from slope.
Land Use / Planning	No Impact	No Impact	Would not conflict with current land use.
Mineral Resources	No Impact	No Impact	No mineral resources.
Noise	Less than significant (BMPs)	Less than significant	Temporary noise BMPs during construction.
Population / Housing	No Impact	No Impact	Would not affect housing or population.
Public Services	No Impact	No Impact	Would not affect public services.
Recreation	No Impact	No Impact	Would not affect recreation areas.
Transportation / Traffic	Less than significant (BMPs)	No Impact	Temporary traffic BMPs during construction.
Tribal Cultural Resources	Less than significant (discovery protocols)	No Impact	Project would be on previously disturbed land.
Utilities	No Impact	No Impact	Would not affect utilities.
Wildfire	No Impact	No Impact	Would not affect Wildfire risk.

Recognized Environmental Conditions

Table 2 shows a review of publicly available agency databases that yielded the following results.

Table 2: Regulatory Database Search Results

Distance from Target Property (miles)	Target Property	< 1/8	1/8 – 1/4	1/4 - 1/2	1/2 - 1	> 1	Total
Total	2	75	103	35	12	0	227

The Target Property was present in the database search under “VAN NUYS NORTH PLATFORM PROJECT”. The NPDES database shows that the site was entered on 10/02/2017 for regulatory measures (stormwater) and was terminated as of 03/16/2020. This does pose a potential threat to the proposed Project.

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Other results in the area show potential groundwater contamination, various permits for the transport and use of hazardous materials, and hazardous waste cleanup efforts. While these records are present in the area, they do not pose a threat to the proposed Project.

Conclusion

After review, it is unlikely for the Van Nuys Transit ADA Connectivity Project to have a significant impact on the surrounding environment. If an exemption is unavailable, an Initial Study would likely yield no potentially significant impacts, non-standard BMPs, or non-standard mitigation measures. It is also unlikely that hazardous materials in the immediate vicinity of the proposed Project would pose a threat to individuals involved in the construction or operation of the proposed Project.

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APPENDIX A: EDR Radius Detail Map

DETAIL MAP - 7153537.2S

Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

Sensitive Receptors

National Priority List Sites

Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Van Nuys ADA Switchback	CLIENT:	Soar Environmental Consulting, Inc.
ADDRESS:	7720 Van Nuys Blvd Van Nuys CA 91405	CONTACT:	Joe Bashore
LAT/LONG:	34.211014 / 118.448404	INQUIRY #:	7153537.2s
		DATE:	October 19, 2022 5:17 pm

Appendix B.6
Burbank South Access Improvements

Summary of Work: Burbank – Burbank Airport (Burbank South)

Field observations indicated that the wayfinding signage throughout the train stations is a mix of different programs, making it harder for transit users to find their way to the nearest bus stop or the airport. A comprehensive wayfinding program, including digital signage of train delays, will improve the environments around the stations. It is also recommended that the bus station be redesigned to provide a more welcoming environment with transit priority signals so that buses can exit the area safely. The redesign of the bus station should include an ADA compliance ramp that extends to/from the training stations, and should also consider refreshing the train stations so that both the bus waiting area and the train stations are of similar feel and design. In addition, the parking lot should be restriped so that all parking stalls are facing the same direction, including an inbound-only driveway on the northern end and an outbound-only driveway at the southern end. This would improve the operation and pedestrian environment around the parking lot.

Raised medians with pedestrian refuge areas are recommended on both sides of the train station.

Relocate passenger drop-off/pick-up to On-Street

New Signal Phase with Transit Priority

New driveway - inbound only

Reconfigure to provide angled parking in one direction

Consider Median & Pedestrian Refuge Island

New driveway - out bound only

New ADA Ramp to Train station

Uniform Wayfinding Program throughout the station

New bus shelter with internal ramp to Train Station

Consider Median & Pedestrian Refuge Island

Consider new ADA Ramp

Consider new Parking Lot Extension

Appendix B.7
Downtown Burbank Access Improvements

Summary of Work: Burbank - Downtown Station Improvements

Downtown Traffic Signal

The purpose of this project will serve to provide bus transit priority at this intersection of North Front Street and Burbank Downtown Station, along with increase safety for pedestrian crossings. The proposed improvements include the construction of a new traffic signal at the intersection of North Front Street and the egress of Burbank – Downtown Station. Additional work includes ADA complaint ramps, concrete pavement, curb, sidewalk, signing and marking, relocation of a street light, and misc. landscape/irrigation.

Existing Crosswalk.
La Terra Project proposed to improve this to RRFB
Due to High Speed, consider installing PHB instead

New elevator by others

Front Street Traffic Signal
New Signal with Protective Intersection Design, Transit Priority, and Bike Signal

New Bus Stops on Bridge
New High Visibility Pedestrian Crosswalk to connect Bridge Ramp and Elevator.
Supplement crosswalk with New Pedestrian Hybrid Beacon (PHB) with Advanced Flashing Beacons (both directions).

Consider lighted sculpture to improve visual and safety.

With the ADA Ramps Improvements, consider constructing a pedestrian pathway directly between the parking lot and the Transit Center (below bridge)

Consider restriping and implement PM peak hour bus lane (i.e. no parking during PM peak hours)

Multi-Use Pathway between Transit Center and Downtown Burbank by removing parking - Currently in development by the City

Project: MetroLink Burbank Station - Downtown Traffic Signal
Estimator: Kevin Roque
Phase: Conceptual
Date: 2022.09.13

Opinion of Probable Construction Cost

General					
Item No.	Description	Unit	Quantity	Unit Price	Total
G1	Mobilization	LS	1	$ 19,500.00	$ 19,500.00
G2	Maintain Construction Schedule	LS	1	$ 8,000.00	$ 8,000.00
G3	Erosion Control	LS	1	$ 19,500.00	$ 19,500.00
G4	Construction Staking	LS	1	$ 11,500.00	$ 11,500.00
G5	Traffic Control	LS	1	$ 15,500.00	$ 15,500.00
				Sub-Total	$ 74,000.00

Demolition					
Item No.	Description	Unit	Quantity	Unit Price	Total
1	Sawcut	LF	500	$ 3.00	$ 1,500.00
2	Remove Striping	LS	1	$ 1,500.00	$ 1,500.00
3	Remove Sign & Post	EA	3	$ 200.00	$ 600.00
4	Remove Concrete Pavement	SF	300	$ 8.00	$ 2,400.00
5	Remove Sidewalk	SF	250	$ 5.00	$ 1,250.00
6	Remove Curb Ramp	EA	1	$ 5.00	$ 5.00
7	Remove Curb	LF	30	$ 7.00	$ 210.00
				Sub-Total	$ 7,465.00

Infrastructure					
Item No.	Description	Unit	Quantity	Unit Price	Total
8	6" Concrete Curb	LF	45	$ 33.60	$ 1,512.00
9	Construct Concrete Pavement	SF	200	$ 15.00	$ 3,000.00
10	Concrete Sidewalk	SF	500	$ 10.00	$ 5,000.00
11	ADA Curb Ramp	EA	2	$ 3,750.00	$ 7,500.00
12	Misc Landscape/Irrigation	LS	1	$ 10,000.00	$ 10,000.00
13	Signing and Marking	LS	1	$ 5,000.00	$ 5,000.00
14	Relocate Street Light	EA	1	$ 10,000.00	$ 10,000.00
15	New Traffic Signal	LS	1	$ 340,000.00	$ 340,000.00
				Sub-Total	$ 382,012.00

Total Construction	$ 463,477.00
Contingency (20%)	$ 92,695.40
Construction Grand Total	$ 556,172.40

Appendix B.8
C Line Extension & TSM Bus Alternatives

Metro Rail Network Integration Feasibility Study

C Line Extension Alternative Evaluation – Methodologies

Capital Cost

Capital costs for each of the four alternatives were calculated across three general categories: alignment construction costs, station construction costs, and vehicle costs. All estimated dollar values were escalated to 2022 dollars using the Engineering News-Record's Construction Cost Index. A summary of 2022 cost and unit assumptions used in this analysis is shown in Table 1 below.

For alignment costs, a separate cost assumption was generated for each type of alignment: at-grade, tunnel, and trench. While generally the alternatives are designated either "fully below-grade" or "partially below-grade and partially at-grade," all four alternatives include a segment of alignment which would descend into a trench to connect to the Norwalk/Santa Fe Springs Station. A trench alignment would carry a different cost from either tunnel or at-grade alignments. Alignment costs for each alternative were estimated by determining the length in miles for each of the three alignment types and multiplying by their respective estimated unit costs.

Station costs were calculated by determining an estimated cost for each of the three types of stations: at-grade, tunnel, and trench. These costs were then multiplied by the number of each type of station proposed with each alternative to determine a total station cost for each alternative.

Finally, vehicle costs were estimated using Metro's standard 2-car train estimated cost. Each unit of vehicle cost includes one 2-car train. Vehicle costs for each alternative would be the same, as each alternative requires the same number of new vehicles.

Table 1. Capital Units and Costs

			Unit Amounts			
		2022 Unit Cost	Alt 1	Alt 2	Alt 3	Alt 4
Alignment	At-Grade	$133,200,000.00/mi	0.20 mi	0.20 mi	1.36 mi	1.36 mi
	Tunnel	$704,900,000.00/mi	2.35 mi	2.35 mi	1.18 mi	1.18 mi
	Trench	$349,800,000.00/mi	0.35 mi	0.35 mi	0.35 mi	0.35 mi
Station	At-Grade	$8,344,184.77/station	0	0	1	1
	Underground	$311,516,231.57/station	2	1	1	0
	Trench	$111,255,796.99/station	1	1	1	1
Vehicles		$8,000,000/2-car train	3	3	3	3

Operational Cost

Operational costs for each C Line extension alternative were estimated with a simple calculation of operating expenses per vehicle revenue hour multiplied by the estimated number of vehicle revenue hours. Operating expenses per vehicle revenue hour for light rail were obtained via the Federal Transit Administration's (FTA) National Transit Database 2020 profile of Metro. Estimated annual vehicle revenue hours for the C Line extension described in this section were pulled from this study's

transportation model. All four alternatives are assumed to have the same annual vehicle revenue hours, so all four alternatives would have the same operational costs. For Alternatives 1 and 3, which include one more station than Alternatives 2 and 4, a lump sum of $150,000 was added to the operational cost estimates.

Ridership Potential

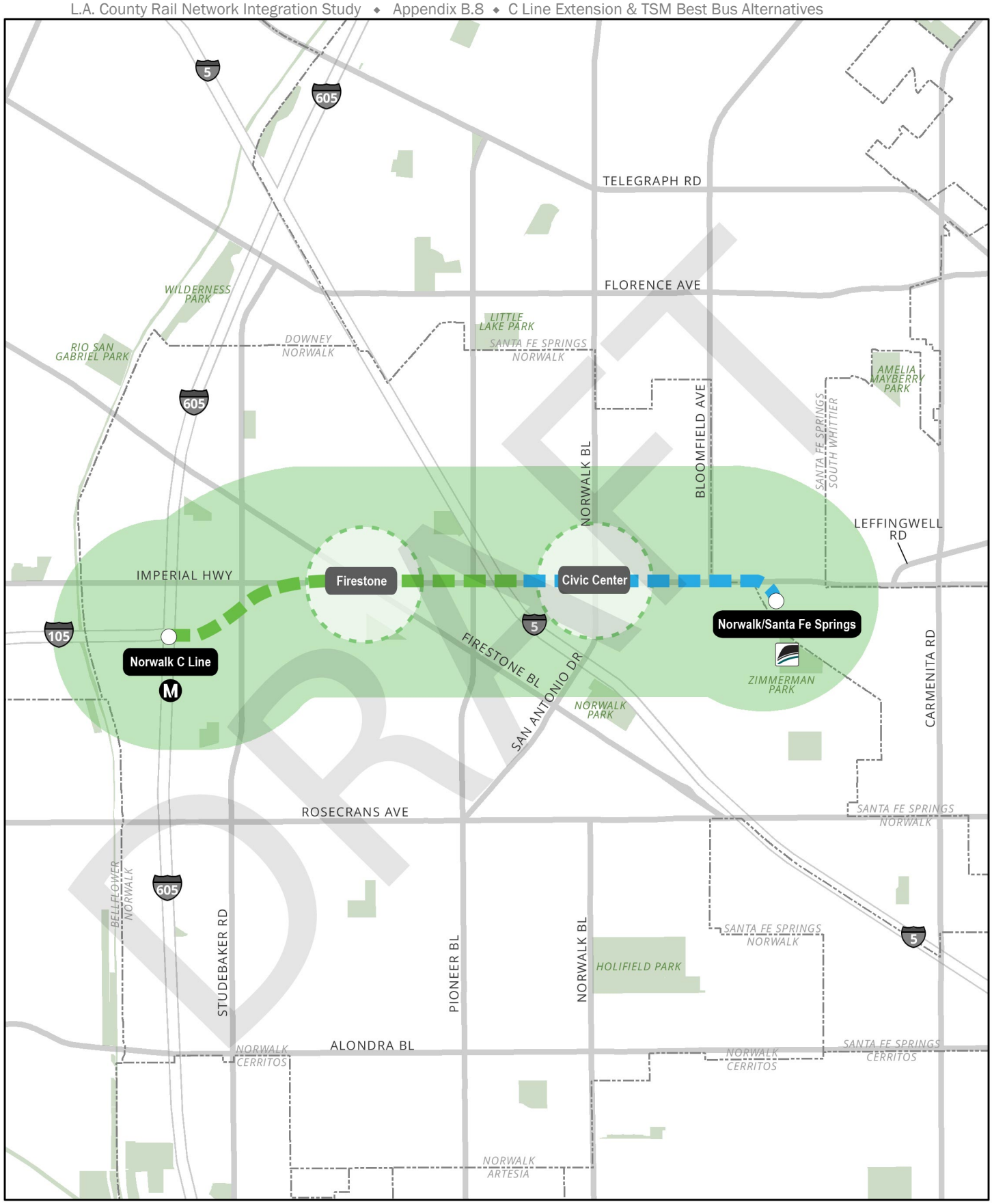
To compare ridership potential across the four alternatives, the analysis first considered 2047 population and employment projection levels. Using transportation analysis zones (TAZ) from Metro's Travel Demand Forecasting Model, 2047 population and employment levels were calculated within a 1/2-mile radius around each of the proposed new stations: (1) Imperial Highway at Firestone Boulevard and (2) Imperial Highway at Norwalk Boulevard. This showed that projected population and employment levels were approximately the same for the two stations. Imperial Highway at Firestone Boulevard showed approximately 12,663 people and jobs in 2047, and Imperial Highway at Norwalk Boulevard showed approximately 11,600 people and jobs. With such similar numbers, the two stations were weighed equally in determining ridership potential: generally, more stations indicate higher ridership potential, and fewer stations indicate lower ridership potential. The alternatives that included three stations (the two proposed stations and the existing Norwalk/Santa Fe Springs Station) were given a Station Score of "1". The alternatives without all three stations were assigned a Station Score of "0".

The next stage of analysis scored the four alternatives based on expected speed. Travel speed is considered an important factor in generating transit ridership, so alternatives with a higher assumed speed received a higher score. Between the two types of alignments proposed among these four alternatives (fully below-grade or a combination of below-grade and at-grade), the alternatives with a fully below-grade alignment are considered faster. An at-grade alignment is assumed slower because of necessary coordination with stoplights traveling along Imperial Boulevard. Therefore, the fully below-grade alternatives were assigned a Speed Score of "1", while the partially below-grade and partially at-grade alternatives were assigned a Speed Score of "0".

As shown in the evaluation table, Alternative 1 demonstrates the highest ridership potential because it includes three stations and a fully below-grade alignment. Alternative 2 demonstrates moderate ridership potential because it includes a fully below-grade alignment, but does not include three stations. Alternative 3 demonstrates moderate ridership potential due to including three stations, but the slower alignment option. Alternative 4 demonstrates the lowest ridership potential in this analysis due to including only two of the three potential stations and the partially at-grade alignment.

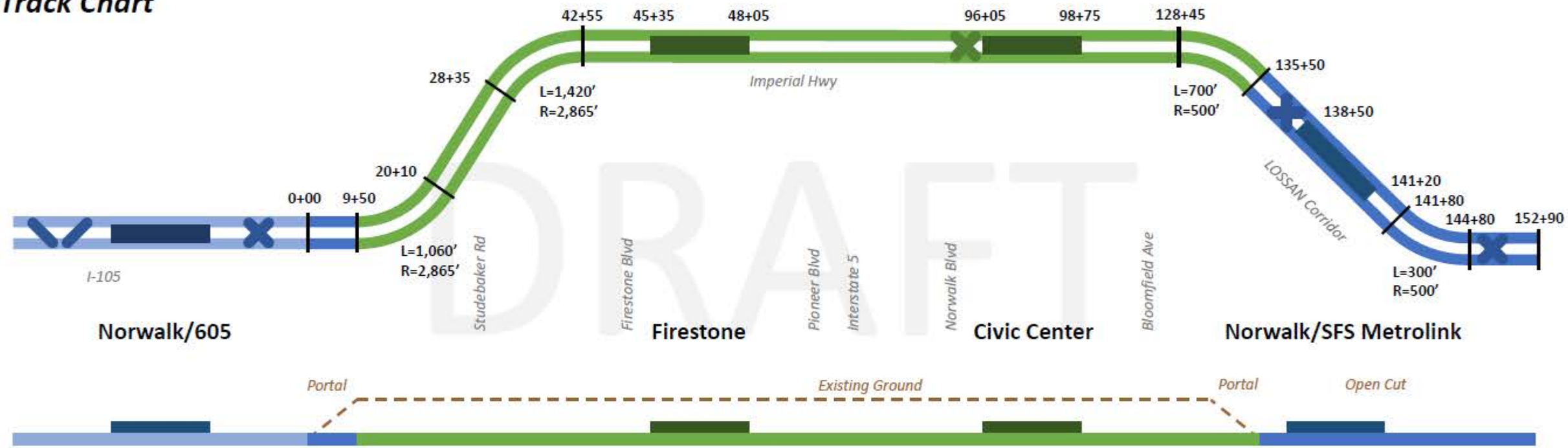
Feasibility

The potential feasibility of each of the four alternatives was determined via a high-level examination of the existing conditions surrounding the proposed C Line extension alignment and identifying potential construction issues that could arise. Of the 12 potential feasibility issues identified, feasibility was estimated based on how many issues corresponded with each alternative. Generally, Alternatives 3 and 4 are expected to experience slightly more feasibility issues due to the transition to an at-grade alignment.


TELEGRAPH RD
FLORENCE AVE
WILDERNESS PARK
RIO SAN GABRIEL PARK
DOWNEY
NORWALK
LITTLE LAKE PARK
SANTA FE SPRINGS
NORWALK
AMELIA MAYBERRY PARK
SANTA FE SPRINGS
SOUTH WHITTIER
BLOOMFIELD AVE
NORWALK BL
LEFFINGWELL RD
IMPERIAL HWY
Firestone
Civic Center
Norwalk/Santa Fe Springs
Norwalk C Line
FIRESTONE BL
SAN ANTONIO DR
ZIMMERMAN PARK
NORWALK PARK
CARMENITA RD
ROSECRANS AVE
SANTA FE SPRINGS
NORWALK
BELLFLOWER
NORWALK
STUDEBAKER RD
PIONEER BL
NORWALK BL
HOLIFIELD PARK
ALONDRA BL
NORWALK
CERRITOS
SANTA FE SPRINGS
CERRITOS
NORWALK
ARTESIA
5
605
105
M
N
0
0.25
0.5 Miles
Study Area Rail Stations
Proposed C Line (Green) Station Options
Proposed C Line (Green) Alignment: Below-Grade
Proposed C Line (Green) Alignment: Below-Grade or At-Grade
Half-Mile Buffer

Alternative 1: Tunnel, 3 Stations

Track Chart

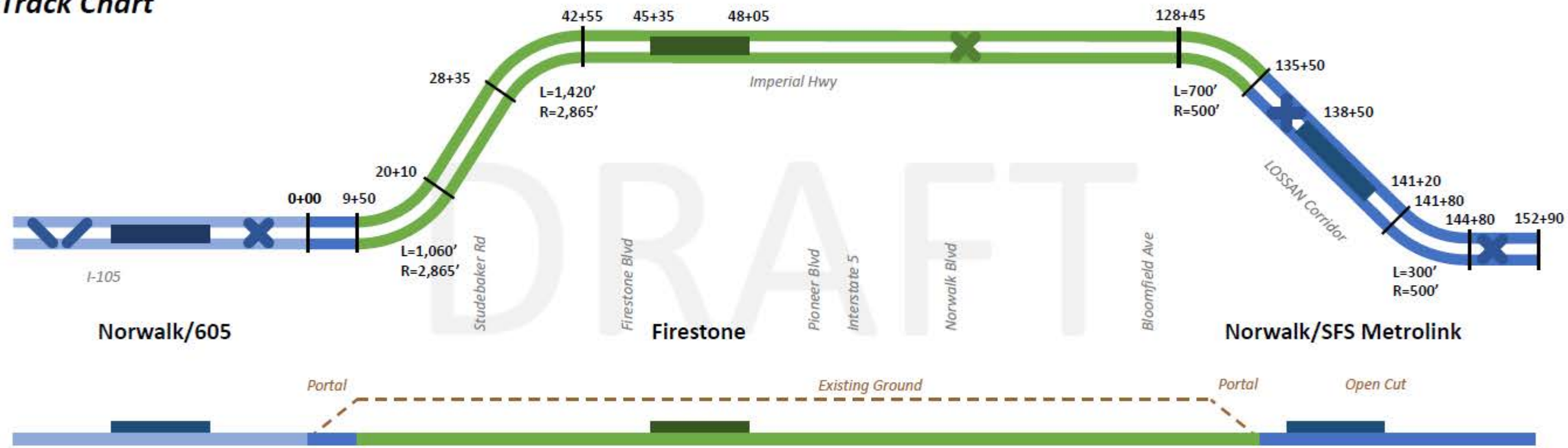


Profile

Legend

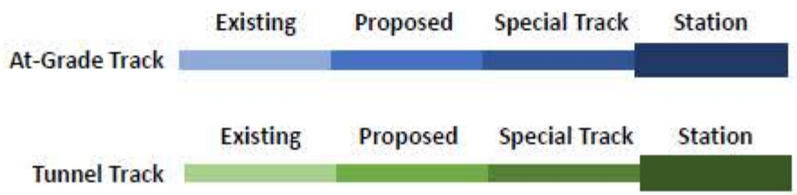
Alternative 2: Tunnel, 2 Stations

Track Chart



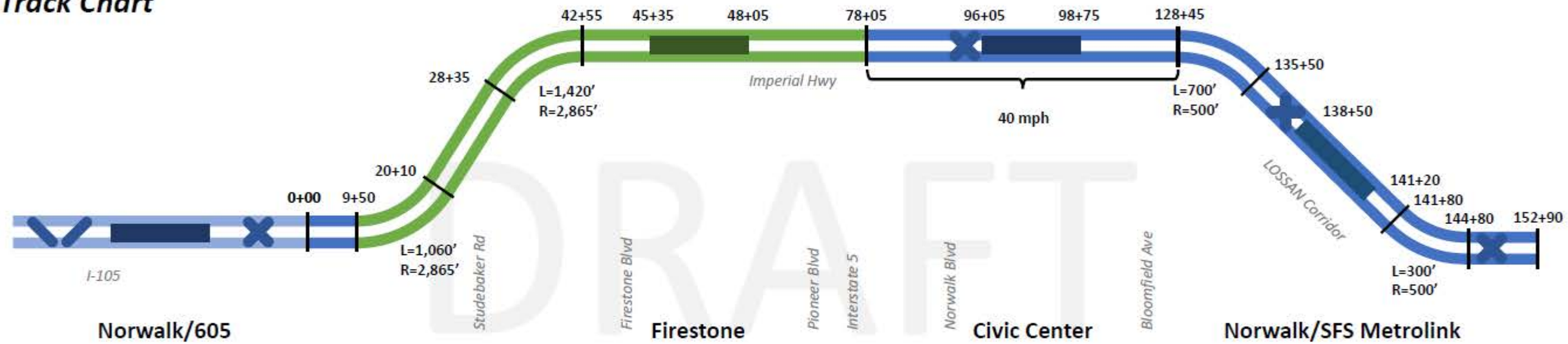
Profile

Legend



Alternative 3: Tunnel/At-Grade, 3 Stations

Track Chart

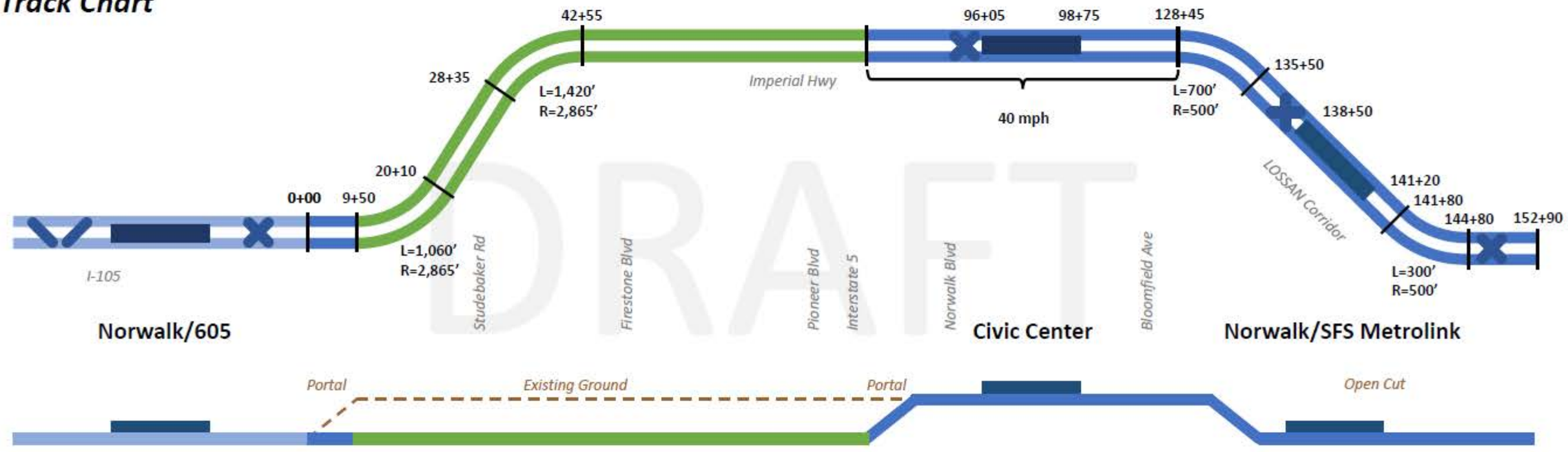


Profile

Legend

Alternative 4: Tunnel/At-Grade, 2 Stations

Track Chart

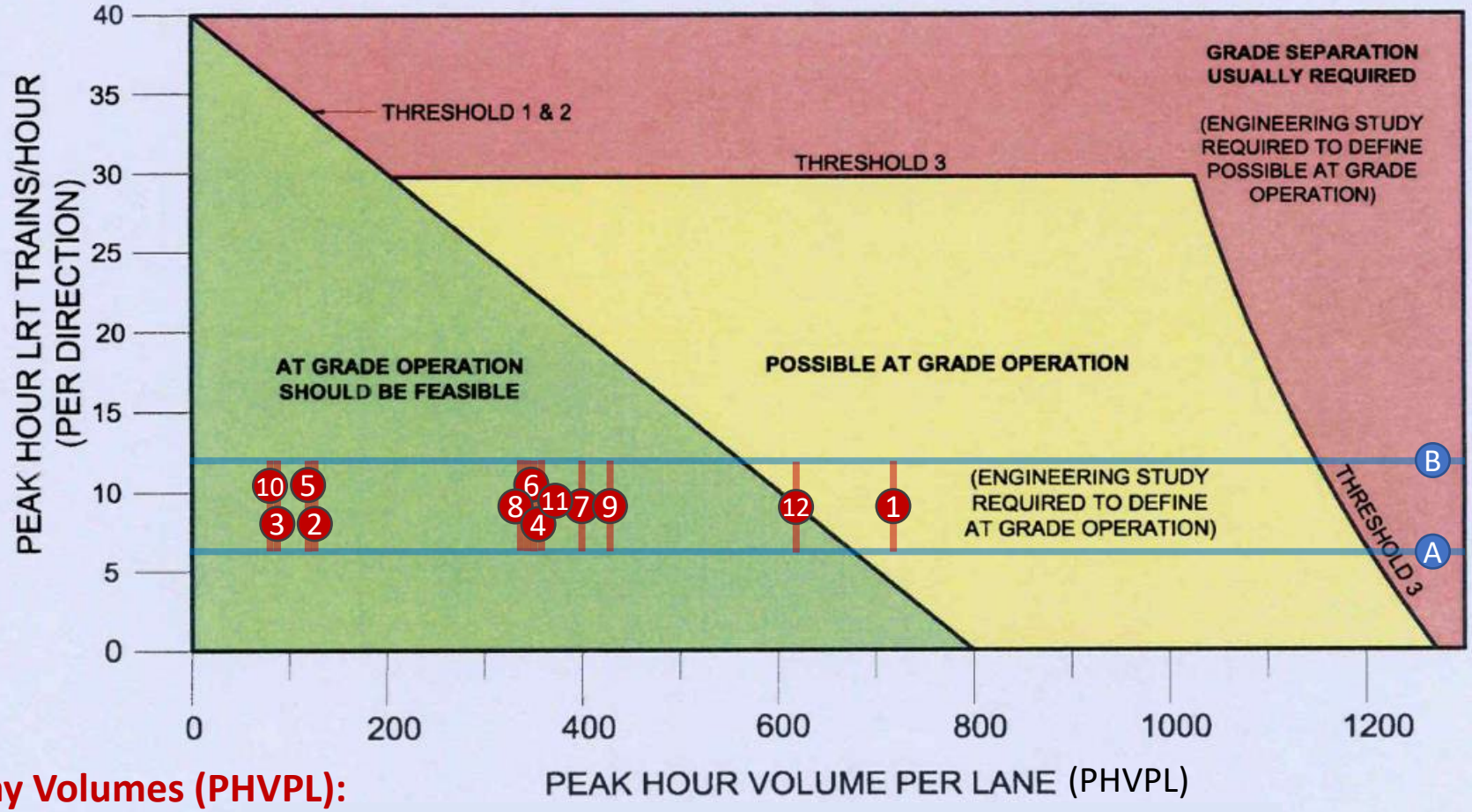


Profile

Legend

Transit Priority Signal Improvements Cost Estimate				
Description	**Unit**	**Quantity**	**Unit Price**	**Total**
Per Corridor Costs (Connected TSP Corridor)	LS	1	$ 907,800.00	$907,800.00
Per Signalized Intersection with Queue Jump (Physical Roadway Costs Not Included)	EA	16	$ 223,600.00	$3,577,600.00
Per Signalized Intersection to be Implemented with TSP (Wireless or Existing Comm)	EA	16	$ 22,300.00	$356,800.00
General Lump Sum Items	LS	1	$ 1,210,550.00	$1,210,550.00
			Total	$6,052,750.00
			Contingency (25%)	$ 1,513,187.50
			Grand Total	**$ 7,570,000.00**

Figure 3 – Nomograph for Initial Screening



Roadway Volumes (PHVPL):

1. Studebaker Rd (715)
2. Fairford Ave (127)
3. Orr & Day (88)
4. Firestone Blvd (348)
5. Woods Ave (110)
6. Pioneer Blvd (334)
7. I-5 SB (400)
8. I-5 NB (330)
9. Norwalk Blvd (423)
10. Volunteer Ave (87)
11. Bloomfield Ave (335)
12. Imperial Hwy (613)

Train Volumes:

- A: 6 trains per hour per direction (TPHPD) (10 min headways - Existing)
- B: 12 TPHPD (5 min headways - MRDC)

#	Roadway	Max ADT near LRT Crossing	Lanes at Crossing	Peak Hour Per Lane Volume
1	Studebaker Rd	35,757	5	715
2	Fairford Ave	2,534	2	127
3	Orr and Day	1,757	2	88
4	Firestone Blvd	24,359	7	348
5	Woods Ave	3,286	3	110
6	Pioneer Blvd	20,062	6	334
7	I-5 SB	12,000	3	400
8	I-5 NB	6,600	2	330
9	Norwalk Blvd	29,590	7	423
10	Volunteer Ave	2,603	3	87
11	Bloomfield Ave	16,735	5	335
12	Imperial Highway	42,937	7	613

Note: Assumes 10% conversion factor from ADT to peak hour volume

Summary of Work: Norwalk Transit Priority Route 4 Shuttle:

This project would improve transit along with pedestrian and bicycle connectivity between Metrolink Green Line Station and the Santa Fe Springs Transportation Center. The Distance between these two facilities is approximately 2.8 miles. Work includes Transit Priority Signals at 16 intersections, as well as the following:

Parking Lot Improvements at Metrolink Greenline Station:
The parking lot improvements will serve to provide greater functionality to vehicle access, safety, and pedestrian pathways. Work includes removal and relocation of landscaped medians, widening AC pavement for additional 14' through lane, irrigation and planting for replaced landscaped medians, signing and striping, installing bike lockers, construction of raised curb divider and sidewalk, construction of two stairways, construction of a mountable traffic circle, and construction of rumble strips.

Connection from Imperial Hwy to Class I Bikeway:
This connection will serve to provide direct access from the existing pathway leading to the Transit Station to the adjacent street public right of way. Work includes the construction of 75' of ADA compliant bike ramp from the station's bike lane to the existing sidewalk along Imperial Hwy, installation of handrails, and reconstruction of sidewalk.

Class IV Cycle Track along Adoree St:
Adoree Street has available cross-sectional space that is ideal to include ADA and bicycle connectivity to make a direction connection through the local neighborhood to the main intersections. Work includes construction of a raised cycle track, construction of a Class IV bike lane, construction of three bike ramps, grading to accommodate bike facilities, construction of fencing and variable height retaining walls, reconstruction of existing sidewalk, signing and striping, and various intersection improvements.

Bus Only Left Turn Lane at Hoxie Ave and Adoree St:
A Bus only left turn lane will serve to provide bus transit priority at this intersection. The left turn lane will separate heavy vehicular volumes to increase travel time performance. Work includes widening existing pavement by 24' to the north, reconstruction of curb & gutter, construction two ADA ramps, relocation of existing storm drain inlets and connections, relocation of existing street lights, signing and striping, and construction of a retaining wall

IMPROVEMENTS

(1) PARKING LOT IMPROVEMENTS
- REMOVE AND RELOCATE LANDSCAPED MEDIANS
- WIDEN AC PAVEMENT FOR ADDITIONAL 14' THROUGH LANE
- IRRIGATION AND PLANTING FOR REPLACED LANDSCAPED MEDIANS
- INSTALL SIGNING AND STRIPING
- INSTALL AND FURNISH BIKE LOCKER
- CONSTRUCT RAISED CURB DIVIDER AND SIDEWALK
- CONSTRUCT TWO STAIRWAYS
- CONSTRUCT MOUNTABLE TRAFFIC CIRCLE
- CONSTRUCT RUMBLE STRIPS

ESTIMATED COST: $1,730,000

(2) CONNECTION FROM IMPERIAL HWY TO CLASS I BIKEWAY
- CONSTRUCT 75' OF ADA BIKE RAMP FROM BIKE LANE TO EXISTING SIDEWALK ALONG IMPERIAL HWY
- INSTALL HANDRAILS
- RECONSTRUCT SIDEWALK

ESTIMATED COST: $190,000

(3) CLASS IV CYCLE TRACK ALONG ADOREE ST
- CONSTRUCT RAISED CYCLE TRACK
- CONSTRUCT CLASS IV BIKE LANE
- CONSTRUCT THREE BIKE RAMPS
- GRADING TO ACCOMMODATE BIKE FACILITIES
- CONSTRUCT FENCING/RETAINING WALL
- RECONSTRUCT SIDEWALK
- INSTALL SIGNING AND STRIPING
- MISC. INTERSECTION IMPROVEMENTS

ESTIMATED COST: $2,420,000

(4) BUS ONLY LEFT TURN LANE
- WIDEN PAVEMENT BY 24' TO THE NORTH
- RECONSTRUCT CURB AND GUTTER
- CONSTRUCT TWO ADA RAMPS
- RELOCATE EXISTING STORM DRAIN INLETS AND CONNECTIONS
- RELOCATE EXISTING STREET LIGHTS
- INSTALL SIGNING AND STRIPING
- CONSTRUCT RETAINING WALL

ESTIMATED COST: $3,410,000

TRANSIT PRIORITY SIGNAL

ESTIMATED COST: $7,570,000

LEGEND

EASTBOUND BUS ROUTE

WESTBOUND BUS ROUTE

Norwalk Transit Priority Route 4 Shuttle

C+R
3900 Fifth Avenue, Suite 310 • San Diego, CA 92103 • 619.795.6086

N

0' 1000' 2000'

7/26/2022
Sheet 1 of 1

DRAFT Preliminary Risk Analysis Memo

Prepared for:

Chen Ryan Associates

Prepared by:

July 2022

Introduction

The following memorandum is a preliminary assessment of the potential impacts of the LA Metro RNI C-Line extension project. The preliminary assessment includes the viability of coverage of the 1992 EIR, viability of the provided alternatives, potential construction related and operational impacts of the proposed project, and potential environmental risks.

Viability of Coverage of the 1992 EIR

The easterly extension on the Metro Green Line was assessed in the 1992 EIR prepared for the LA County Transportation Commission. The proposed project was included in the 30-Year Integrated Transportation Plan adopted by LACTC in 1992. Although the project is exempt under Section 15275 (b) of the State CEQA Guidelines, an EIR was prepared in an act of transparency by the lead agency. Section 15275 (b) of the State CEQA Guidelines states:

"Facility extensions not to exceed four miles in length which are required for transfer of passengers from or to exclusive public mass transit guideway or busway public transit services."

While the exemption still applies under the 2022 CEQA Guidelines, if LACTC would like to continue under the umbrella of the 1992 EIR, A supplemental document could be prepared showing a good faith effort to address potential baseline changes in the surrounding environment. In addition to potential baseline changes, the CEQA Appendix G checklist has since added both Energy and Wildfire impact categories. While Energy was discussed in the 1992 EIR, it was officially added to the Appendix G checklist in 2019.

CEQA is subject to the "fair argument" standard. The fair argument standard creates a low threshold for requiring an EIR, reflecting a legislative preference for resolving doubts in favor of environmental review. Potential challenges to a project, albeit an exempt one, could create unnecessary delays and roadblocks to successful implementation. This is a decision that the lead agency will need to make based o how much risk they are willing to take on.

Passed in 2013, SB 743 updated the way transportation impacts are measured under CEQA. SB 743 changed the metric of traffic assessment from Level of Service to Vehicle Miles Traveled. It also allows lead agencies to use two CEQA exemptions for infill projects that can only be used when a project will not have significant transportation/traffic impacts. These are Public Resources Code section 21159.25's statutory exemption for housing projects in unincorporated areas and the Class 32 categorical exemption for infill projects within city limits. Additionally, note that SB 743 also discusses impacts from parking, stating that "the adequacy of parking for a project shall not support a finding of significance." (See Pub. Resources Code, § 21099(b)(3).) While it changes the way that traffic impacts are assessed, these exemptions are likely unnecessary for this project.

(See Pub. Resources Code, § 21159.25,subd. (b)(5), CEQA Guidelines, § 15332, subd. (d).)

SB 288, passed in 2020, created a statutory exemption from environmental review pursuant to CEQA. The new statutory exemption took effect on January 1, 2021, and expires on January 1, 2023. The exemption applies to the following: pedestrian and bicycle facilities; wayfinding and customer information projects for transit riders, bicyclists or pedestrians; transit prioritization projects; designation of highway lanes or shoulders for bus-only lanes; new or increased light rail, bus, or bus rapid transit service on existing public rights-of-way; and charging or refueling infrastructure for zero-emission transit buses. With the expiration of this coming at the end of this year, it is unlikely to be usable for this project.

Viability of Project Alternatives

The range of alternatives in an EIR is governed by a "rule of reason" that requires an EIR to set forth only those alternatives necessary to permit a reasonable choice. An EIR need not consider every conceivable alternative to a project. Rather, the alternatives must be limited to ones that meet the project objectives, are feasible, and would avoid or substantially lessen at least one of the significant environmental effects of the project. "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors.

Offsite alternatives should be considered. Zoning, environmental conditions, and availability are significant factors in evaluating an offsite alternative. To be analyzed in the EIR, the offsite alternative must be "feasible", and it must be possible for the project proponent to acquire the property. The proposed uses on the property should either be consistent with the applicable general plan designation for the property, or it should be reasonable to expect that a general plan amendment would be successful. There may be situations, however, where an offsite alternative is not feasible, for example, because the primary objective of the project is a modification of an existing facility. (California Native Plant Society v. City of Santa Cruz (2009)).

Not all changes made to a project should be considered as separate alternatives. For example, minor changes in methods used (or rejected) in carrying out the project are typically not considered alternatives to the project (Town of Atherton v. California High-Speed Rail Authority (2014)). However, a number or group of such minor changes taken together, especially if they result in changes to the types or intensity of environmental impacts, may be considered an alternative.

Legal standards concerning alternatives analysis is one of the more settled areas of CEQA law. The two key issues in most CEQA decisions considering the adequacy of an EIR's analysis of alternatives are whether the EIR included a "reasonable range" of alternatives, including for example an alternative project site, and whether the level of detail of the alternatives analysis

is sufficient. There is not "bright-line" rule for either of these issues, and the results tend to be fact-driven. It is critically important to not short-change the alternatives analysis in the EIR, however, either in terms of the number of alternative considered or the depth of analysis. The ultimate determination whether an alternative is actually feasible should be made by the decision-making body as part of its findings rather than in the EIR itself, which should present the information regarding alternatives in a clear and impartial way.

Feasibility: Construction Impacts

Aesthetics

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Underground construction, entry from only one staging area, and fewer stations would limit impact to public viewshed. Staging areas would be shielded.

Agriculture and Forestry Resources

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

No Ag or Forestry resources in project area.

Air Quality

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Increased amount of tunneling would require more heavy construction equipment powered by fossil fuels.

Biological Resources

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Tunneling would impact less potential habitat for sensitive species at ground level (trees for nesting birds, etc.). Fewer stations would lessen the total project footprint.

Cultural Resources

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Tunneling would increase chances of finding previously undiscovered archaeological resources and/or human remains.

Geology /Soils

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Tunneling would increase the amount of soil removed from the project area and increase risk to workers by exposing them to potentially unstable earth.

Greenhouse Gas Emissions

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Tunneling would increase the amount of heavy machinery used powered by fossil fuels therefore increasing emissions of GHGs.

Hazards & Hazardous Materials

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Tunneling would lessen the probability of potential contamination to surrounding residences during construction of the rail.

Hydrology / Water Quality

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Tunneling would lessen the effect of altered drainage patters in the project area due to construction staging areas and erosion of topsoil.

Land Use / Planning

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project would not divide an established community or conflict with current land uses.

Mineral Resources

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Increased tunneling could potentially disturb previously unknown mineral resources.

Noise

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Increased tunneling construction activity could lead to higher levels of ground borne vibrations to surrounding land uses.

Population / Housing

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

Approximately 17 residential parcels would be acquired and approximately 54 people would be displaced. However, the 4 alternatives would be similar in this regard.

Public Services

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Public services could be disrupted during project construction. One church would be displaced. Increased tunneling would potentially lessen impacts of fire and police response times due to concentrated construction and staging areas redirecting traffic.

Recreation

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project would have no impact on recreation areas.

Transportation / Traffic

Alternative	Impact
1	Lower
2	Lower

3	Base
4	Lower

Notes:

Increased Tunneling would lessen construction impacts to traffic due to concentrated staging areas and construction in the roadway.

Tribal Cultural Resources

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Tunneling would increase chances of finding previously undiscovered archaeological resources and/or human remains.

Utilities

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Construction may result in utility disruption. New underground utilities may exist built after 1992. Increased Tunneling may result in more solid wastes to dispose of during to construction.

Wildfire

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project area is not in a high wildfire risk zone.

Feasibility: Operation Impacts

Aesthetics

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Increased lighting may impact viewshed. Increased tunneling would lessen impacts to the viewshed of the area.

Agriculture and Forestry Resources

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

No Agriculture or Forestry resources exist in the project area.

Air Quality

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

All Alternatives would likely be beneficial to air quality due to decreased personal vehicle usage.

Biological Resources

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Increased tunneling would impact less potential habitat for sensitive species at ground level (trees for nesting birds, etc.). Fewer stations would lessen the total project footprint.

Cultural Resources

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

There are no known archaeological resources within the project footprint. Increased tunneling could lessen impacts to Paddish Ranch Property.

Geology /Soils

Alternative	Impact
1	Higher
2	Higher
3	Base
4	Lower

Notes:

Increased tunneling could potentially increase risk of failure due to earthquake.

Greenhouse Gas Emissions

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

All project Alternatives would likely be beneficial to GHG emissions due to lessened use of personal vehicles.

Hazards & Hazardous Materials

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Increased tunneling would lessen the probability of potential contamination to surrounding residences during operation of the rail.

Hydrology / Water Quality

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Increased tunneling would lessen the effect of altered drainage patters in the project area due to construction staging areas and erosion of topsoil.

Land Use / Planning

Alternative	Impact

1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project would not divide an established community or conflict with current land uses.

Mineral Resources

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

Operation of the rail would not affect mineral resources.

Noise

Alternative	Impact
1	Lower
2	Lower
3	Base
4	Lower

Notes:

Increased tunneling would expose less surrounding land uses to noise from the rail above ground.

Population / Housing

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

Operation of the Green Line extension would not be likely to cause population growth.

Public Services

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

None of the project alternatives would affect fire or police response times during operation of the Green Line extension.

Recreation

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project would have no impact on recreation areas.

Transportation / Traffic

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

All alternatives would likely have a beneficial effect on traffic due to fewer personal vehicles on the road.

Tribal Cultural Resources

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

Here are no known tribal resources in the project area.

Utilities

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project would not require additional utility demand or new facilities.

Wildfire

Alternative	Impact
1	N/A
2	N/A
3	Base
4	N/A

Notes:

The project area is not in a high wildfire risk zone.

Potential Environmental Risks

An EDR report was ordered for the proposed Green Line extension project to determine if any potential environmental risks were present in the area. The following was found:

Facility	TOP LINE AUTOMOTIVE
Address	11742 E IMPERIAL HWY NORWALK, CA 90650 77008
Database(s)	CUPA Listings, CUPA Listings: A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.
Distance (ft)	6336 ft
Elevation to Site	106 ft Higher
Comments	Violation found by CERS. Violation Description: Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date. This does not pose a REC.

Sources

Metro Green Line Easterly Extension Final Environmental Impact Report. 1993.
Dorothy Peyton Gray Transportation (metro.net)

No Supplemental EIR Required Where Previous EIR Analyzed Environmental Effects. 2013.
https://www.californiaenvironmentallawblog.com/ceqa/no-supplemental-eir-required-where-previous-eir-analyzed-environmental-effects/

Swan Hall Renovation and Addition Draft EIR. 2010.
https://planning.lacity.org/eir/SwanHall/DEIR/Chapters/7_Alternatives.pdf

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Appendix B.9
Norwalk C Line Station Improvements

Metro C-Line Terminus

Site Access

Bike Access (Main Parking Lot): Based on aerial and field review, it is observed that the current bicycle storage location is located on the northeast corner of the parking lot. This is an inconvenient location, as cyclists entering the parking lot would have to cut across traffic, lock their bikes, and then walk to the station area.

The project should consider relocating the bike lockers closer to the station area. This can be done by shifting a few parking spaces, especially by repurposing the existing southbound lane (see markup).

Bike Access (Backup Parking Lot): Currently, the backup parking lot only serves vehicles; no bike access improvements are recommended.

Pedestrian Access (Main Parking Lot): See Operation

Pedestrian Access (Backup Parking Lot): If feasible, consider providing a wide multi-use path (north side) and stairway either on the eastern or western side of the loop between the Backup Parking Lot and the Main Parking Lot.

Operation

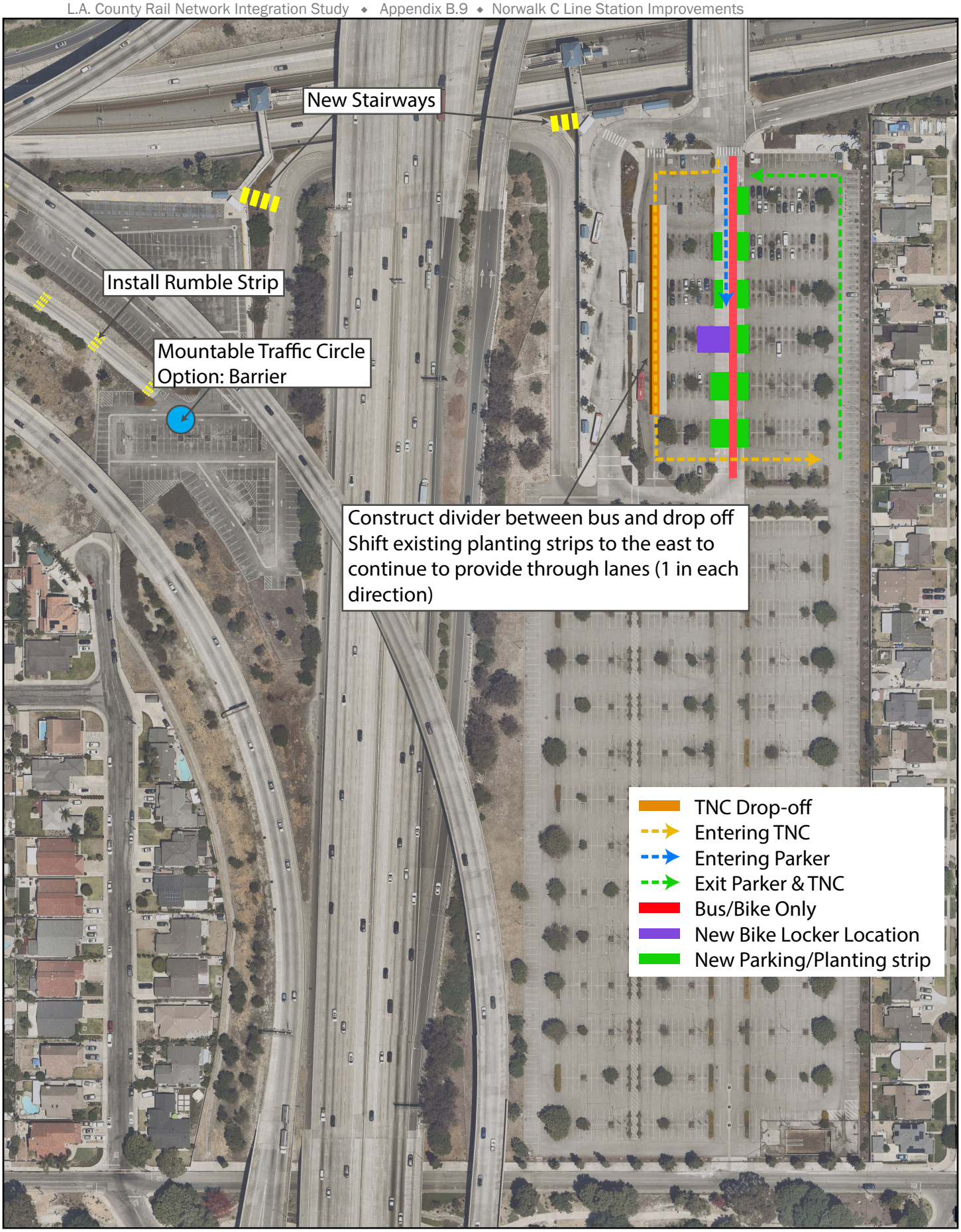
Main Parking Lot: Currently, there are two southbound lanes and two northbound lanes at the main parking lot. The two southbound lanes don't seem to serve any purpose as there is only one southbound lane at the Hoxie Avenue/Century Freeway intersection.

It is recommended that the Project consider removing 1 southbound through lane and re-stripe/reconstruct the parking lot to provide TMC pickup/drop off area, new bike lockers area, additional planting strip or parking. See markup for clarification.

For the northbound approach, consider making the right-most northbound lane bus only. This would help buses exit the parking lot during peak hours.

Backup Parking Lot: Consider removing some parking spaces and creating a physical barrier (or median) at the Century Freeway exit. This would provide a physical barrier in case of speeding vehicles.

Coordinate with Caltrans to install rumble strips (See SR-125 NB Ramps) to warn drivers.


New Stairways
Install Rumble Strip
Mountable Traffic Circle
Option: Barrier
Construct divider between bus and drop off
Shift existing planting strips to the east to continue to provide through lanes (1 in each direction)
TNC Drop-off
Entering TNC
Entering Parker
Exit Parker & TNC
Bus/Bike Only
New Bike Locker Location
New Parking/Planting strip

Norwalk Parking Lot Improvements Cost Estimate				
Description	**Unit**	**Quantity**	**Unit Price**	**Total**
Removal of Asphalt	SF	11,110	$ 3.50	$38,885.00
Unclassified Excavation	CY	129	$ 20.00	$2,581.48
Removal of Curb	LF	1,733	$ 3.50	$6,063.75
Construction of Curb	LF	1,733	$ 33.60	$58,212.00
Construction of PCC Pavement	SF	11,110	$ 15.00	$166,650.00
Striping	LS	1	$ 20,000.00	$20,000.00
Irrigation	SF	4,305	$ 3.50	$15,067.50
Planting (Including Soil Prep and Mulch)	SF	4,305	$ 10.00	$43,050.00
New Bike Locker	EA	10	$ 1,500.00	$15,000.00
Construct Raised Curb Divider	LF	500	$ 50.50	$25,250.00
Construct Sidewalk for Raised Curb Divider	SF	750	$ 14.00	$10,500.00
Construct Stairways (West of I-605)	LS	1	$ 150,000.00	$150,000.00
Construct Raised Stairways (East of I-605)	LS	1	$ 300,000.00	$300,000.00
Construct Mountable Traffic Circle	LS	1	$ 250,000.00	$250,000.00
Construct Rumble Strip	EA	3	$ 500.00	$1,500.00
General Lump Sum Items	LS	1	$ 275,689.93	$275,689.93
			Total	$1,378,449.66
			Contingency (25%)	$ 344,612.42
			Grand Total	**$ 1,730,000.00**

Bus Only Left Turn Lane Cost Estimate				
Description	**Unit**	**Quantity**	**Unit Price**	**Total**
Earthwork/Grading	SF	740	$ 52.25	$38,665.00
Demo Curb and Gutter	SF	625	$ 3.00	$1,875.00
Demo AC Berm	SF	200	$ 3.00	$600.00
Demo Sidewalk	SF	820	$ 2.00	$1,640.00
Remove Existing Storm Drain	LF	75	$ 120.00	$9,000.00
Remove Drainage Structure	EA	5	$ 1,500.00	$7,500.00
Demo Existing Signs	EA	6	$ 150.00	$900.00
Construct HMA Pavement over Aggregate Base	TON	114	$ 170.00	$19,411.88
Construct Sidewalk	SF	850	$ 12.00	$10,200.00
Construct ADA Ramp	EA	2	$ 3,000.00	$6,000.00
Construct Retaining Wall	LF	6,000	$ 170.00	$1,020,000.00
Signing and Marking	LS	1	$ 35,000.00	$35,000.00
Construct 6" Curb and Gutter	LF	11,350	$ 50.00	$567,500.00
Construct Catch Basin	EA	5	$ 4,000.00	$20,000.00
Construct Storm Drain	LF	150	$ 200.00	$30,000.00
Street Light Relocation	LS	1	$ 60,000.00	$60,000.00
Traffic Signal	LS	1	$ 350,000.00	$350,000.00
General Lump Sum Items	LS	1	$544,572.97	$544,572.97
			Total	$2,722,864.84
			Contingency (25%)	$ 680,716.21
			Grand Total	**$ 3,410,000.00**

Class IV Cycle Track Along Adoree St Cost Estimate				
Description	**Unit**	**Quantity**	**Unit Price**	**Total**
Earthwork/Grading	SF	400	$ 52.25	$20,900.00
Demo Sidewalk	SF	12,000	$ 2.00	$24,000.00
Remove Drainage Structure	EA	1	$ 15,000.00	$15,000.00
Construct HMA Pavement over Aggregate Base	TON	33	$ 170.00	$5,610.00
Construct Sidewalk	SF	12,000	$ 12.00	$144,000.00
Construct ADA Bike Ramp	EA	3	$ 3,000.00	$9,000.00
Construct Retaining Wall	LF	4,200	$ 170.00	$714,000.00
Signing and Marking and Misc Intersection Imp	LS	1	$ 400,000.00	$400,000.00
Construct Curb and Gutter	LF	550	$ 50.00	$27,500.00
Construct Fencing	LF	400	$ 125.00	$50,000.00
Flexpost	EA	50	$ 150.00	$7,500.00
Construct Concrete Swales	SF	80	$ 14.00	$1,120.00
Construct 60MG Concrete Barrier	LF	180	$ 250.00	$45,000.00
Lighting	LS	1	$ 100,000.00	$100,000.00
General Lump Sum Items	LS	1	$ 365,907.50	$365,907.50
			Total	$1,929,537.50
			Contingency (25%)	$ 482,384.38
			Grand Total	**$ 2,420,000.00**

Connection from Imperial Hwy to Class I Bikeway Cost Estimate				
Description	**Unit**	**Quantity**	**Unit Price**	**Total**
Connection Improvements	LS	1	$ 150,000.00	$150,000.00
			Contingency (25%)	$ 37,500.00
			Grand Total	**$ 190,000.00**

Appendix B.10
Project Progression by Task Number

Project Note: **Bold** - Identified in Task 2	**Initial tracking # in Task 2**	**Evaluated as part of Task 3 BCA** Per recommendation of findings in Task 2	**Expansion/Merging/ Removal Task 3 tracking #'s**	**Task 3 Analysis - Report or Appendix**	**Task 4 Advancement Reference**
Van Nuys Station					
Station Assessment - Pedestrian Access Wayfinding signage within the Station	V1	*Merged - V1 & V3*	V1 & V3	Appendix B.4	Station Drawing Package
Station Assessment - Signage, platform conditions	V3	*Merged - V1 & V3*	V1 & V3	Appendix B.4	Station Drawing Package
Wayfinding signage to the Station	V2	*V2*	V2	Appendix B.2	*Mapping*
Relocate LRT Station test for connectivity assessment	V4	Not Advanced	No further analysis	NA	NA
First/Last Mile & Safety Improvements	*V5*	*V5*	*V5.D*	*Appendix B.3*	*CRA Drawing*
Bicycle connection from station to Tyrone only			V5.A	*Appendix B.3*	CRA Drawing
Connection between the northern terminus of Tyrone Ave and the Van Nuys Transit Hub, potentially along Cohasset Street or Saticoy Street (see Figure 8.B)			V5.B - No further analysis go to V5.A	Not Advanced	Not Advanced
Enhanced pedestrian connections between the existing Metrolink Station and the future Metro ESFV LRT Station			V5.C	*Appendix B.3*	CRA Drawing
ADA Switchback Access	V6	V6	No further analysis due to BCA	Not Advanced	Not Advanced
Bike connection to G-Line (Orange) Station	V7	V7	Part of V5.B	*Appendix B.3*	CRA Drawing
Relocate LRT Station Land Uses	V8	Researched, not scored as a project	No further analysis	NA	
Burbank Airport North					
Access to the community, north of RR Tracks- Designs	BN1	Merged BN1-BN5	BN1.A	*Appendix B.3*	Station Drawing Package - FLM
Pedestrian improvements on Hollywood Way to connect neighborhoods to the south and north of the station area with high-quality pedestrian facilities			BN1.A	*Appendix B.3*	Refernce to other plans
Pedestrian access to the north of the station, in coordination with the Brighton to Roxford Double Track Study	BN2	Merged BN1-BN5	BN2	*Appendix B.3*	Station Drawing Package - FLM
Access to the community, north of RR Tracks - Ped/bike access	BN3	Merged BN1-BN5	BN3	*Appendix B.3*	Station Drawing Package - FLM
Connect the station to bike paths north of San Fernando Blvd and Cohasset St			BN3.A	*Appendix B.3*	Station Drawing Package - FLM
north of San Fernando Blvd and	BN4	Merged BN1-BN5	BN4	*Appendix B.3*	Station Drawing Package - FLM
Cohasset St	BN5	Merged BN1-BN5	BN5	*Appendix B.3*	Station Drawing Package - FLM
Wayfinding signage to the Station	BN6	BN6	BN6	Appendix B.2	Mapping
Station Assessment	BN7	BN7	BN7	Appendix B.4	Station Drawing Package
Airport shuttle, including Burbank Airport South, HSR and RITC	BN8, BN9 & BN10	BN8 & BN10 for existing terminal and RITC	BN8 & BN10	Appendix A.1	Timed Transfer Analysis
HSR ped connectivity	BN11	Evaulated as BN9 and BN11 for HSR	BN11	*Appendix B.3*	Timed Transfer Analysis
TOD Land Use and Future Plans	BN12	Researched, not scored as a project	No further analysis		

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Burbank Airport South					
Station Assessment	BS1	BS1	BS1	Appendix B.4	Station Drawing Package
Access to terminal/RITC	BS2	Merged into BS1 and BS3	BS1	Appendix B.4	Station Drawing Package - FLM
Wayfinding signage to the Station		BS2.2	BS2.2	Appendix B.2	Mapping
First/Last Mile Improvements for Pedestrians and Cyclists	BS3	BS3	BS3	*Appendix B.3*	FLM
Improved pedestrian access to the existing and relocated airport terminal			BS3.A	*Appendix B.3*	Timed Transfer Analysis
Improve pedestrian environment on Van Owen Street and Empire Avenue with street trees and pedestrian lighting and the bicycle environment by installing a buffer			BS3.B	*Appendix B.3*	Station Drawing Package - FLM
Install pedestrian infrastructure at the rail crossing on Clyborne Avenue where no pedestrian infrastructure exists (closest track crossing to the west of the station)			BS3.C	*Appendix B.3*	Station Drawing Package - FLM
Consider the redesign of the underpass at Hollywood Way and Van Owen Street/Empire Avenue to allow for pedestrian travel. (closest track crossing to the east of the station)			BS3.D	*Appendix B.3*	Station Drawing Package - FLM
Amtrak - double stop feasibility at Airport and Downtown, as well as Downtown-only stop	BS4	Merged BS4 & BS5	BS4 & BS5	Appendix A.1	Operations and ridershiop analysis
Amtrak - double stop Ridership/benefits/impacts of added stops	BS 5	Merged BS4 & BS6	BS4 & BS5	Appendix A.1	Operations and ridership analysis
Auto access for routing of cars to southern parking lot and along roadway - Pick-up/Drop-off and parking	BS6	BS6	BS6	Appendix B.6	CRA Drawing
TOD Land Use and Future Plans	BS7	Researched, not scored as a project	No further analysis	NA	
Downtown Burbank					
First/Last Mile – Ped connectivity to NoHo-Pas BRT Station and Downtown Burbank	DB2	DB2	DB2	*Appendix B.3*	FLM
Front Street producted bike lanes			DB2.D	*Appendix B.3*	CRA Drawing
Addition of redundant veritical circulation to Olive Bridge			DB2.B	*Appendix B.3*	FLM
Closing through access for vehicles on Bonnywood Place between 1st and Front Streets			DB 2.D	*Appendix B.3*	FLM
Examine traffic calming on Olive Bridge	DB3	Not Advanced, too many impacts	No further analysis	NA	
Parking circulation access & Signal onto Front Street	DB3.1	DB3.1	DB3.1	Appendix B.7	CRA Drawing
Pedestrian Pathway under bridge			DB3.1A	Appendix B.7	FLM
Station Assessment	DB4	DB4	DB4	Appendix B.4	Station Drawing Package
Wayfinding signage to the Station	DB5	DB5	DB5	Appendix B.2	Mapping
Vertical circulation access - Improved elevator at Magnolia Boulevard	DB1	Not Advanced, project by others	No further analysis	NA	~~NA~~
TOD Land use and Future Plans	DB6	Researched, not scored as a project	No further analysis	NA	

Project Note: **Bold** - Identified in Task 2	**Initial tracking # in Task 2**	**Evaluated as part of Task 3 BCA** Per recommendation of findings in Task 2	**Expansion/Merging/ Removal Task 3 tracking #'s**	**Task 3 Analysis - Report or Appendix**	**Task 4 Advancement Reference**
Metro C-Line Terminus					
Pedestrian/bike access - Studebaker	C1	C1	C1	Appendix B.3	CRA Drawing
Pedestrian/bike access - Gates to community	C2	C2	C2	Appendix B.3	CRA Drawing
Development of pedestrian access and/or opening of existing gates on Foster Road at the southern end of the Norwalk Station parking lot			C2.A	Appendix B.3	CRA Drawing
Development of pedestrian access and/or opening of existing gates on Flatbush Avenue at the southwestern end of the Norwalk Station parking lot			C2.B	Appendix B.3	CRA Drawing
Freeway Ramps	C3	C3	C3	Appendix B.9	CRA Drawing
Bike Lockers, Parking, Bike Share	C4	C4	C4	Appendix B.9	CRA Drawing
Circulation for autos/ped/bike – prioritize safety for vulnerable ped/bike	C5	C5	C5	Appendix B.9	CRA Drawing
Bike connection to Norwalk/SFS	C6	Not Advanced, project by others	No further analysis	NA	NA
Bicycle Connection to Norwalk C Line Station via Civic Center Drive, San Antonio Drive, and Foster Road	C7	C7	C7	Appendix B.3	Document Norwalk Bike Plan
Station Assessment	C8	C8	C8	Appendix B.4	Station Drawing Package
Green Line extension - grade sep, at-grade, tunnel: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined	C9	C9	C9	Appendix B.8	Concept Drawings
TSM bus/shuttle alternative between stations: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined	C10	C10	C9	Appendix B.8	CRA Drawing
Land Use and Future Plans	C11	Researched, not scored as a project	No further analysis	NA	
Wayfinding signage to the Station		C11	C11	Appendix B.2	Mapping
Pick-up/Drop-off			C12	Appendix B.9	CRA Drawing
Electric Car Charging Stations			C13	Appendix B.9	CRA Drawing
Norwalk-Santa Fe Springs					
First/Last Mile Improvements for Pedestrians and Cyclists	NSFS1	NSFS1	NSFS1	Appendix B.3	FLM
Bicycle and pedestrian connection at the east end of Civic Center Drive			NSFS1.A	Appendix B.3	Document Norwalk Bike Plan
Improvements to high-collision intersections			NSFS1.B	Appendix B.3	Document Norwalk Bike Plan
Pedestrian improvements to Low PES streets, including imperial Highway, Bloomfield Avenue, and Civic Center Drive			NSFS1.C	Appendix B.3	Document Norwalk Bike Plan
Pedestrian connections between the existing Metrolink Station and the future CAHSR and C Line Stations			NSFS1.D	Appendix B.3	Document Norwalk Bike Plan
Bicycle Connection to Norwalk C Line Station via Civic Center Drive, San Antonio Drive, and Foster Road			NSFS1.E	Appendix B.3	Document Norwalk Bike Plan
Wayfinding signage to the Station	NSFS2	NSFS2	NSFS2	Appendix B.2	Mapping
Station Assessment	NSFS3	NSFS3	NSFS3	Appendix B.4	Station Assessment Drawing
C-Line Connection – shuttle, extending LBT (EV for LBT and/or Norwalk), and fixed guideway	NSFS4	Same as C9, scored as C9	C9	Appendix B.8	CRA Drawing
Bicycle and pedestrian connection from the station area to Zimmerman Park	NSFS5	Not Advanced, project by others	No further analysis	NA	

Project Note: **Bold** - Identified in Task 2	**Initial tracking # in Task 2**	**Evaluated as part of Task 3 BCA** Per recommendation of findings in Task 2	**Expansion/Merging/ Removal Task 3 tracking #'s**	**Task 3 Analysis - Report or Appendix**	**Task 4 Advancement Reference**
Amtrak - test stop at Norwalk - all trains, feasibility	NSFS6	Merged NSFS6 & 7	NA	NA	
Amtrak - test stop at Norwalk - all trains Ridership/benefits/impacts of added stops	NSFS 7	Merged NSFS6 & 7	NSFS6 & 7	A.1	STV Drawing
Determine time and frequency - Connections to CSULB	NSFS8	Analysis only - not advanced as separage project	No further analysis	NA	
Determine potential costs - Connections to CSULB	NSFS9	Analysis only - not advanced as separage project	No further analysis	NA	
TOD Land Use and Future Plans	NSF10	Researched, not scored as a project	No further analysis	NA	
Island Platform			NSFS10	For Task 4	STV Drawing
Regional Projects, Policies, and Agreements					
I-405 Express Bus CSULB - LAX on HOV			RP1	Appendix A.2	HOT Analysis
I-605 Express Bus CSULB - El Monte Metrolink on HOV			RP2	Appendix A.2	NA - project not advanced
Metrolink Tripper between Laguna Niguel and Chatsworth Stations			RP3	Appendix A.2	Document ridership
Fare Integration			RP4	Task 3 Narrative	Document

Appendix C
Benefit-Cost Assessment and Methodology

Proj #	Category	Improvement	Customer Experience							Mode Shift				Sustainability						Equity			Economy		Stakeholders			Risk				Costs			Improvement Score (Sum of Category Means)	Low (<4), Med (4-7), High (7<)
			Increase transit access to destinations	Reduce transit travel times	Enhance transit service reliability	Improve station area accessibility	Improve customer comfort (seating, lighting, shade, etc)	Improve customer safety	CE Score (Mean)	Increase transit ridership	Increase active transportation	Reduce vehicle travel	MS Score (Mean)	Reduce GHG emissions	Improve energy efficiency (lighting / operating equipment)	Reduce VMT	Increase permeability / decrease stormwater runoff	Increase shade / decrease heat hisland effect	Su Score (Mean)	Increase transit access for EFCs	Reduce transportation burdens w/in EFCs	Eq Score (Mean)	Increased gross regional prodcut (GRP)	Ec Score (Mean)	Supported by operators & Stakeholders	Supported by the community	SH Score (Mean)	Implementability	ROW	CEQA / NEPA	Risk Score (Mean)	Capital	O & M	Cost Score (Mean)		
Van Nuys Station																																			
V1 & V3	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	1	0	0	2	3	3	**1.50**	1	1	1	**1.00**	1	1	1	0	1	**0.80**	2	2	**2.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-2	**-1.50**	**6.80**	
V2	Wayfinding	*Wayfinding signage to the Station*	2	0	0	2	1	1	**1.00**	1	2	1	**1.33**	1	0	1	0	0	**0.40**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**6.23**	
V5	FLM	*First/Last Mile & Safety Improvements*	1	0	0	3	1	2	**1.17**	1	2	2	**1.67**	1	0	2	1	2	**1.20**	2	2	**2.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	2	**2.33**	-1	-1	**-1.00**	**7.37**	
V6	FLM	*ADA Switchback Access*	2	1	0	3	1	0	**1.17**	1	2	1	**1.33**	1	0	1	0	0	**0.40**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	0	2	2	**1.33**	-2	-1	**-1.50**	**3.73**	
V7	New Routes	*Bike connection to G-Line (Orange) Station*	2	0	2	2	1	3	**1.67**	2	2	2	**2.00**	2	0	2	0	0	**0.80**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	3	**2.67**	1	-1	**0.00**	**7.13**	
Burbank Airport North																																			
BN1 to BN5	FLM	*First/Last Mile & Safety Improvements*	1	0	0	2	1	1	**0.83**	1	1	1	**1.00**	1	0	1	1	1	**0.80**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	0	0	0	**0.00**	-2	-1	**-1.50**	**1.13**	
BN6	Wayfinding	*Wayfinding signage to the Station*	1	0	0	3	1	2	**1.17**	1	1	2	**1.33**	1	0	2	1	2	**1.20**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**7.20**	
BN7	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	1	0	0	1	1	1	**0.67**	1	0	1	**0.67**	1	0	1	0	0	**0.40**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	0	0	**0.00**	**4.73**	
BN8 & BN10	New Routes	*Airport shuttle, including Burbank Airport South, HSR and RITC*	1	0	0	1	0	0	**0.33**	1	0	1	**0.67**	1	0	1	0	0	**0.40**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	1	2	3	**2.00**	-1	-2	**-1.50**	**1.90**	
BN9 & BN11	FLM	*HSR ped connectivity*	2	0	0	2	1	1	**1.00**	2	1	2	**1.67**	2	1	1	1	1	**1.20**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	1	1	2	**1.33**	-2	-2	**-2.00**	**3.20**	
Burbank Airport South																																			
BS1	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	2	2	2	3	3	3	**2.50**	2	3	2	**2.33**	2	0	2	0	1	**1.00**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	3	**2.67**	-1	-1	**-1.00**	**7.50**	
BS2.2	Wayfinding	*Wayfinding signage to the Station*	1	0	0	3	1	2	**1.17**	1	1	2	**1.33**	1	0	2	1	2	**1.20**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	2	3	1	**2.00**	-1	-1	**-1.00**	**6.20**	
BS3	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists*	2	0	0	2	1	2	**1.17**	2	2	1	**1.67**	2	0	1	2	2	**1.40**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	1	2	3	**2.00**	-2	-1	**-1.50**	**4.73**	
BS4 & BS5	Operations	*Amtrak - double stop at Airport and Downtown, as well as Downtown-only stop*	3	3	3	3	3	1	**2.67**	3	1	3	**2.33**	3	0	3	0	0	**1.20**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	0	0	**0.00**	**10.70**	
BS6	Auto Access	*Auto access for routing of cars to southern parking lot and along roadway - Pick-up/Drop-off and parking*	2	0	0	3	0	2	**1.17**	1	-1	1	**0.33**	1	0	1	0	0	**0.40**	2	2	**2.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	3	**2.67**	0	0	**0.00**	**6.57**	
Downtown Burbank																																			
DB2	FLM	*First/Last Mile – Ped connectivity to NoHo-Pas BRT Station and Downtown Burbank*	3	0	0	2	2	2	**1.50**	2	2	2	**2.00**	2	0	2	0	1	**1.00**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	1	2	3	**2.00**	-1	-1	**-1.00**	**7.00**	
DB3.1	Auto Access	*Parking circluation access & Signal onto Front Street*	2	3	3	2	0	0	**1.67**	1	0	0	**0.33**	1	1	1	0	0	**0.60**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	3	**2.67**	-1	-1	**-1.00**	**4.27**	
DB4	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	1	0	0	1	2	1	**0.83**	1	1	1	**1.00**	1	0	1	0	0	**0.40**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**4.23**	
DB5	Wayfinding	*Wayfinding signage to the Station*	2	0	0	3	1	2	**1.33**	1	2	2	**1.67**	1	0	2	1	2	**1.20**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**7.70**	

Proj #	Category	Improvement	Customer Experience							Mode Shift				Sustainability							Equity			Economy		Stakeholders			Risk				Costs			Improvement Score (Sum of Category Means)	Low (<4), Med (4-7), High (7<)
			Increase transit access to destinations	Reduce transit travel times	Enhance transit service reliability	Improve station area accessibility	Improve customer comfort (seating, lighting, shade, etc)	Improve customer safety	CE Score (Mean)	Increase transit ridership	Increase active transportation	Reduce vehicle travel	MS Score (Mean)	Reduce GHG emissions	Improve energy efficiency (lighting / operating equipment)	Reduce VMT	Increase permeability / decrease stormwater runoff	Increase shade / decrease heat hisland effect	Su Score (Mean)	Increase transit access for EFCs	Reduce transportation burdens w/in EFCs	Eq Score (Mean)	Increased gross regional prodcut (GRP)	Ec Score (Mean)	Supported by operators & Stakeholders	Supported by the community	SH Score (Mean)	Implementability	ROW	CEQA / NEPA	Risk Score (Mean)	Capital	O & M	Cost Score (Mean)		
Metro C-Line Terminus																																				
C1	FLM	*Pedestrian/bike access - Studebaker*	3	0	0	3	3	3	**2.00**	2	3	2	**2.33**	2	0	2	0	0	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	1	2	3	**2.00**	-1	-1	**-1.00**	**7.13**	✓
C2	FLM	*Pedestrian/bike access - Gates to community*	3	0	0	3	2	3	**1.83**	2	3	2	**2.33**	2	0	2	0	0	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	0	3	3	**2.00**	0	0	**0.00**	**7.97**	✓
C3	Auto Access	*Freeway Ramps*	2	0	0	2	1	3	**1.33**	1	-1	1	**0.33**	1	0	1	0	0	**0.40**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	2	3	3	**2.67**	-2	-1	**-1.50**	**4.23**	!
C4	FLM	*Bike Lockers, Parking, Bike Share*	2	0	0	3	1	3	**1.50**	1	3	1	**1.67**	1	0	1	0	0	**0.40**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**6.57**	!
C5	Auto Access	*Circulation for autos/ped/bike – prioritize safety for vulnerable ped/bike*	2	2	1	2	3	3	**2.17**	1	2	1	**1.33**	1	0	1	0	0	**0.40**	0	0	**0.00**	0	**0.00**	TBD	TBD	**TBD**	1	3	3	**2.33**	-1	0	**-0.50**	**5.73**	!
C7	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists (not included in C1 to C5)*	3	0	0	3	2	3	**1.83**	2	2	2	**2.00**	2	0	2	1	2	**1.40**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	1	1	3	**1.67**	-1	-1	**-1.00**	**6.90**	!
C8	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	1	0	0	2	3	3	**1.50**	1	1	1	**1.00**	1	2	1	0	0	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**6.30**	!
C9	New Routes	*Green Line extension - grade sep, at-grade, tunnel: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined*	3	3	3	3	0	1	**2.17**	2	1	2	**1.67**	2	2	2	2	0	**1.60**	2	2	**2.00**	0	**0.00**	TBD	TBD	**TBD**	0	0	2	**0.67**	-3	-1	**-2.00**	**6.10**	!
C10	New Routes	*TSM bus/shuttle alternative between stations: Metrolink Connection – shuttle, bus and fixed guideway (LRT) - C-line west connection options to be examined*	2	2	1	1	0	0	**1.00**	2	1	2	**1.67**	2	0	2	0	0	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**6.47**	!
C11	Wayfinding	*Wayfinding signage to the Station*	2	0	0	3	1	2	**1.33**	1	1	2	**1.33**	1	0	2	1	2	**1.20**	2	1	**1.50**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**7.37**	✓
Norwalk-Santa Fe Springs																																				
NSFS1	FLM	*First/Last Mile Improvements for Pedestrians and Cyclists*	2	0	0	2	1	2	**1.17**	1	2	1	**1.33**	1	0	1	0	2	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	2	3	**2.67**	-2	-1	**-1.50**	**5.47**	!
NSFS2	Wayfinding	*Wayfinding signage to the Station*	2	0	0	3	1	2	**1.33**	1	1	2	**1.33**	1	0	2	1	2	**1.20**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	-1	**-1.00**	**6.87**	!
NSFS3	Station Assessment	*Comfort/Shade/platform information/fare collection equipment, Emergency/evacuation*	3	0	2	3	3	3	**2.33**	2	1	2	**1.67**	2	0	2	0	0	**0.80**	1	1	**1.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	-1	0	**-0.50**	**8.30**	✓
NSFS6 & 7	Ridership	*Ridership/benefits/impacts of added stops Amtrak - test stop at Norwalk - all trains*	3	3	3	3	1	1	**2.33**	3	2	3	**2.67**	3	0	3	0	0	**1.20**	2	2	**2.00**	0	**0.00**	TBD	TBD	**TBD**	3	3	3	**3.00**	0	0	**0.00**	**11.20**	✓

Criteria	BCA?	Quantifiable?	Tools/Data	Initial Screening Approach
Increase transit access to destinations		●	GIS isochrones (travelsheds)	+ if increases transit access travelshed, or reduces transfer times
Reduce transit travel times	●	●	Travel demand model, operations model	+ if reduces in-vehicle travel times OR transfer times
Enhance transit service reliability		●	Operations model	+ if improvement has potential to improve on-time performance, real-time information, or other reliability measure
Improve station area accessibility		●	GIS isochrones (travelsheds) within X mins	+ if improvement expands travelshed of transit station
Improve customer comfort (seating, lighting, shade, etc)				+ if improvement includes seating, lighting, shade, or other identified customer comfort enhancement.
Improve customer safety	●	●	SWITRS / TIMS, GIS	+ If addresses safety hot spot, or creates new enhancement to customer safety
Increase transit ridership	●	●	Travel Demand Model	+ if improvement has potential to result in significant increase in transit ridership
Increase active transportation				+ if improvement expands AT facilities, provides increased protection to AT users, or otherwise has potential to expand active transportation travel
Reduce vehicle travel	●	●	Travel Demand Model	+ if improvement has potential to significantly reduce vehicle travel
Reduce GHG emissions	●	●	Travel Demand Model	+ if improvement has potential to significantly reduce GHG
Improve energy efficiency (lighting / operating equipment)				+ if improvement has potential to improve energy efficiency
Reduce VMT	●	●	Travel Demand Model	+ if improvement reduces VMT
Increase permeability / decrease stormwater runoff				+if improvement has potential to increase permeability
Increase shade / decrease heat island effect				+ if improvement has potential to decrease heat island effect
Increase transit access for EFCs		●	GIS analysis	+ if improvement expands EFC households with access to transit
Reduce transportation burdens within EFCs		●	GIS analysis	+ if improvement reduces travel times, travel costs or other barriers for EFC households
Increased gross regional product (GRP)	●	●	REMI analysis (potentially out of scope)	+ if improvement greatly reduces vehicle hours of delay, improves job access, or other significant improvement to GRP
Supported by operators & Stakeholders				Qualitative.
Supported by the community				Qualitative.
Implementability				+ if improvement can be implemented within one year
ROW				+ if improvement requires no ROW take
CEQA / NEPA				+ if improvement requires no CEQA/NEPA analysis
Capital	●	●	Cost estimate	+ if improvement can be accomplished at low cost (<$500,000)
O & M	●	●	Cost estimate	+ if improvement results in little to no increase in estimated O&M costs

		Estimated Capital Costs in billions (2022$'s)	Estimated Annual Operational Costs in millions	Ridership potential (pop and employment) of Bus and Rail Compared to Base (#3)	*Benefits to Equity Focus Communities*	*Environmental Risk Assessment*	Feasibility (construction, community impacts, etc.)
	Rail						
Alternative	**1. Tunnel, 3 Stations**	**$2.6**	**$7.1**	**Highest potential ridership**	**High**	**High**	**Fewer feasibility constraints**
	2. Tunnel, 2 Stations	**$2.2**	**$7.0**	**Moderate potential ridership**	***Higher***	***Higher***	**Fewer feasibility constraints**
	3. Tunnel/At-Grade, 3 stations (base)	**$1.6**	**$7.1**	**Base** *(2,659 Systemwide Daily Boardings; 1,015 Systemwide Daily Linked Trips)*	**Base** *(see map and memo)*	**Base** *(see map and memo)*	**More feasibility constraints**
	4. Tunnel/At-Grade, 2 stations	**$1.3**	**$7.0**	**Lower potential ridership**	***Lower***	***Lower***	**More feasibility constraints**
	Bus						
	TSM Best Bus	**$0.013**	**$2.9**	**Lowest Potential Ridership** *(1,647 Systemwide Daily Boardings; 634 Systemwide Daily Linked Trips)*	**Lowest**	**Lowest**	**Most feasible**

Appendix D.1
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Appendix D.2
Acronyms

Appendix D.2: List of Acronyms

AMC Metro's Airport Metro Connector Transit Station

APS Amtrak Pacific Surfliner

AVL Metrolink Antelope Valley Line

BNSF Burlington Northern Santa Fe

BRT Bus Rapid Transit

CAHSR California High-Speed Rail

Cal-ITP California Integrated Travel Project

CAPTI Climate Action Plan for Transportation Investments

CARB California Air Resources Board

CSRP Caltrans' California State Rail Plan

CSULB California State University Long Beach

CTP California Transportation Plan

ESFV East San Fernando Valley

EV Electric Vehicle

FLM First/Last Mile

GGRF Greenhouse Gas Emission Reduction Fund

HBA Hollywood Burbank Airport

HSR High Speed Rail

ITS Intelligent transportation system

LAWA Los Angeles World Airports

LAX Los Angeles International Airport

LBT Long Beach Transit

LCTOP California Low-Carbon Transit Operations Program

LRT Light Rail

LRTP Long Range Transportation Plan

Muni Municipal transit operator, ex. BurbankBus

NoHo North Hollywood

NTS Not to Scale

OC Metrolink Orange County Line

OOM Order of magnitude

PV Metrolink Perris Valley Line

RAISE Federal Rebuilding American Infrastructure with Sustainability and Equity discretionary grant program

RC Metrolink Riverside County Line

RHNA Regional Housing Needs Allocation

RITC Regional Intermodal Transportation Center

RTP Regional Transportation Plan

SBC Metrolink San Bernardino County Line

SCAG Southern California Association of Governments

SCORE Southern California Optimized Rail Expansion Impact Study, 2018

SCRRA Southern California Regional Rail Authority

SRTP Short Range Transportation Plan

TIRCP Caltrans' Transit and Intercity Rail Capital Program

TMO Transportation management organization

TSA LADOT *Transit Service Analysis Plan*

VCL Metrolink Ventura County Line

VMT Vehicle miles traveled