Chapter 2
Project Description/Alternatives Considered

This chapter describes the alternatives evaluated in this Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR) for the East San Fernando Valley Transit Corridor Project and outlines the process used to identify, evaluate, and refine the alternatives. The alternatives analysis was performed in compliance with NEPA and the environmental impact–related procedures (23 CFR 771).

The Los Angeles County Metropolitan Transit Authority (Metro) followed the alternative selection process outlined in the Alternative Analysis Report (included as Appendix F to this document) to identify the alternatives and issues to be analyzed, including seeking input from the public, corridor stakeholders, and other affected parties. The alternatives described provide a reasonable range of possible alternatives that meet the project purpose and need described in Chapter 1, Introduction and Purpose and Need, of this DEIS/DEIR. Metro will consider all reasonable alternatives, besides those that have previously been eliminated from consideration in the Alternatives Analysis Report, before selecting a preferred alternative that provides improved public transportation services in the East San Fernando Valley Transit Corridor.

Alternatives were evaluated according to their:

- Effectiveness;
- Environmental impacts;
- Efficiency:
- Financial feasibility; and
- Equity.

2.1 Alternatives Screening and Selection Process

The alternatives screening and selection process began with the Metro East San Fernando Valley Transit Corridor Alternatives Analysis (AA) report, which was the precursor to this DEIS/DEIR. The AA evaluated 26 build alternatives plus the Transportation Systems Management (TSM) and No-Build Alternatives. Route segments were also evaluated to determine feasible alignments in the study area. A segment was deemed infeasible if the right-of-way (ROW) width is insufficient to accommodate the considered project modes, even with roadway widening or if a segment failed to contribute to a reasonable route alignment. Some segments that are considered crucial to maintain a viable alignment, like San Fernando Road between the Sylmar/San Fernando Metrolink Station and Van Nuys Boulevard, were considered feasible even if buses must operate in mixed-flow operation. However, segments that currently lack Metro Rapid bus service and are too narrow for BRT, LRT, or streetcar, like Fox Street in the northern portion of the study area, were deemed infeasible. Of the route segments that were evaluated, 14 route alignment options were determined to be feasible. These north-south alignments would be located within the existing ROW on Van Nuys Boulevard, Sepulveda Boulevard/Brand Boulevard, or use a hybrid combination of both the Van Nuys Boulevard and Sepulveda Boulevard/Brand Boulevard corridors.

As part of the Alternatives Analysis (AA) Report completed in December 2012, most of Sepulveda Boulevard/Brand Boulevard corridor was eliminated as an alignment option based on the fact that there would not be substantial improvements to mobility and connectivity along this alignment, the route would not have included key areas along Van Nuys Boulevard that have higher transit dependent populations and transit ridership, and there was high public opposition to a project on Brand Boulevard due to the historic characteristic of the corridor and potential vibration and parkland impacts on the San Fernando Mission and Brand Park properties. Furthermore, there was strong community support for an alignment on Van Nuys Boulevard. As a result of the Alternatives Analysis, modal recommendations were for BRT and LRT. As part of the March 2013–May 2013 DEIS/DEIR scoping period, there were four public scoping meetings held, and 258 scoping comments received. Many of the comments reflected the following:

- Preference for LRT;
- Support for bicycle facilities; and
- Opposition to a dedicated guideway south of the Metro Orange Line.

In June 2013, Metro held meetings with the Cities of Los Angeles and San Fernando to review the alternatives being analyzed in light of the scoping comments received, and the alternatives being carried forward for analysis in this DEIS/DEIR. These refined alternatives were then received by and filed with the Metro Planning and Programming Committee in November 2013.

It should be noted that during the AA process the curbside bus alternative was eliminated from further consideration because it failed to achieve several of the operational efficiencies that were called for in the project's Purpose and Need. After further analysis, this alternative is being reconsidered as it could meet most of the project's Purpose and Need and because it could have the least impact on existing traffic, and has the potential to be constructed within the budget reserved for this project in the Metro Board-adopted 2009 LRTP. In addition, this alternative allows for bicycles to travel in the proposed curbside lanes, sharing the lane with buses only, in response to comments received on the AA in support of bicycle facilities along the corridor. The other alternatives being considered would require bicycles to travel in the regular automotive lanes, due to right-of-way constraints.

Tram technology was also not included in the AA Study because the rail alternative was presumed to be modeled on the standard Los Angeles LRT lines already in operation. Los Angeles LRT vehicles often require grade separations or subway segments to fit into the urban environment. The street-running Low-Floor LRT/Tram Alternative was introduced for further study in the DEIS/DEIR because it could have a much higher carrying capacity than a BRT system and allow for mixed-flow traffic, while avoiding some of the potential property acquisition and grade separations that could be needed with an LRT system. Therefore, as a result of the alternatives screening process and feedback received during the public scoping period, a Curb-Running BRT, Median-Running BRT, median-running Low-Floor LRT/Tram, and a median-running LRT, were the four build alternatives, along with the TSM and No-Build Alternatives that were carried forward for analysis in the technical studies prepared in support of this DEIS/DEIR. For the purposes of this DEIS/DEIR, the four build alternatives have been organized as follows:[1]

[1] In the technical studies prepared in support of this DEIR/DEIS, the alternatives were defined as follows: No-Build Alternative, TSM Alternative, Build Alternative 1 – Curb-Running BRT, Build Alternative 2 – Median-Running BRT, Build Alternative 3 – Low-Floor LRT/Tram Alternative, and Build Alternative 4 – LRT.

- BRT Alternatives;
  - Alternative 1: Curb-Running BRT;
  - Alternative 2: Median-Running BRT;
- Rail Alternatives;
  - Alternative 3: Low-Floor LRT/Tram; and
  - Alternative 4: LRT.

2.1.1 What Project Alternative Modes/Routes Are Included in This Analysis?

The following alternatives are being evaluated as part of this study:

- No-Build Alternative;
- TSM Alternative;
- BRT Alternatives;
  - Alternative 1: Curb-Running BRT;
  - Alternative 2: Median-Running BRT;
- Rail Alternatives;
  - Alternative 3: Low-Floor LRT/Tram; and
  - Alternative 4: LRT.

All of the BRT and rail alternatives would operate over 9.2 miles, either in a dedicated bus lane or guideway (6.7 miles) and/or in mixed-flow traffic lanes (2.5 miles), from the Sylmar/San Fernando Metrolink Station to the north to the Van Nuys Metro Orange Line Station to the south, with the exception of Alternative 4, which includes a 2.5-mile segment within Metro-owned railroad right-of-way adjacent to San Fernando Road and Truman Street and a 2.5-mile underground segment beneath portions of the communities of Panorama City and Van Nuys. All of the build alternatives would serve the City of San Fernando and the City of Los Angeles communities of Sylmar, Pacoima, Arleta, Panorama City, and Van Nuys. The project study area is currently served by the Van Nuys Metro Rapid Line 761 and Metro Local Line 233. The project study area is also currently served by Metro Rapid Line 794, which runs along Truman Street and San Fernando Road, as well as by Metro Rapid Line 734, which runs along Truman Street.

It should be noted that modifications were made in December 2014 to one of the primary Metro bus routes operating on Van Nuys Boulevard after this project analysis was already underway. Metro Rapid Line 744 was added connecting Pacoima in the east to Northridge in the west, and traveling for a large portion of the route (north-south) along Van Nuys Boulevard, replacing the Metro Rapid Line 761. For the purposes of this study, the evaluation was based on the routes (Metro Rapid Line 761 and Metro Local Line 233) that were already in place in 2012 when the transportation modeling for this study began.

2.2 Alternatives

This section provides a detailed description of the alternatives and their main components.

2.2.1 No-Build Alternative

The No-Build Alternative represents projected conditions in 2040 without implementation of the project. No new transportation infrastructure would be built within the project study area, aside from related transportation projects that are currently under construction or funded for construction and operation by 2040. These projects include highway and transit projects funded by Measure R and specified in the current constrained element of the Metro 2009 LRTP and the 2016 Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS). Existing infrastructure and future planned and funded projects assumed under the No-Build Alternative include:[2]

- Existing Freeways – Interstate (I) 5, State Route (SR) 118, and US 101;
- Existing Transitway – Metro Orange Line;
- Existing Bus Service – Metro Rapid and Metro Local; Los Angeles Department of Transportation Commuter Express, and DASH;
- Existing and Planned Bicycle Projects – Bicycle facilities on Van Nuys Boulevard, Class I bike lane on the north side of San Fernando Road, and connecting east/west facilities; and
- Other Planned Projects – Various freeway and arterial roadway upgrades, upgrades to the Metrolink system, and the proposed California High Speed Rail Project.

This alternative establishes a baseline for comparison to other alternatives in terms of potential environmental effects, including adverse and beneficial environmental effects. The existing conditions (i.e., existing street and transit network) under the No-Build Alternative are shown in Figure 2-1.

2.2.2 TSM Alternative

The Transportation Systems Management (TSM) Alternative proposes enhancements to the existing transit system and would focus on relatively low-cost, efficient, and feasible transit service improvements and transportation systems upgrades, such as increased bus frequencies and minor modifications to the roadway network. Additional transit improvements that would be considered under the TSM Alternative include, but are not limited to, traffic signalization improvements, bus stop amenities/improvements, and bus schedule restructuring. Specifically, the TSM Alternative would include enhanced operating hours and increased bus frequencies for the existing Metro Rapid Line 761[3] and Metro Local Line 233. It would not change the existing bus operations on San Fernando Road, including those of Metro Local Line 244 and Metro Rapid Line 794. The route of the TSM Alternative is shown in Figure 2-2.

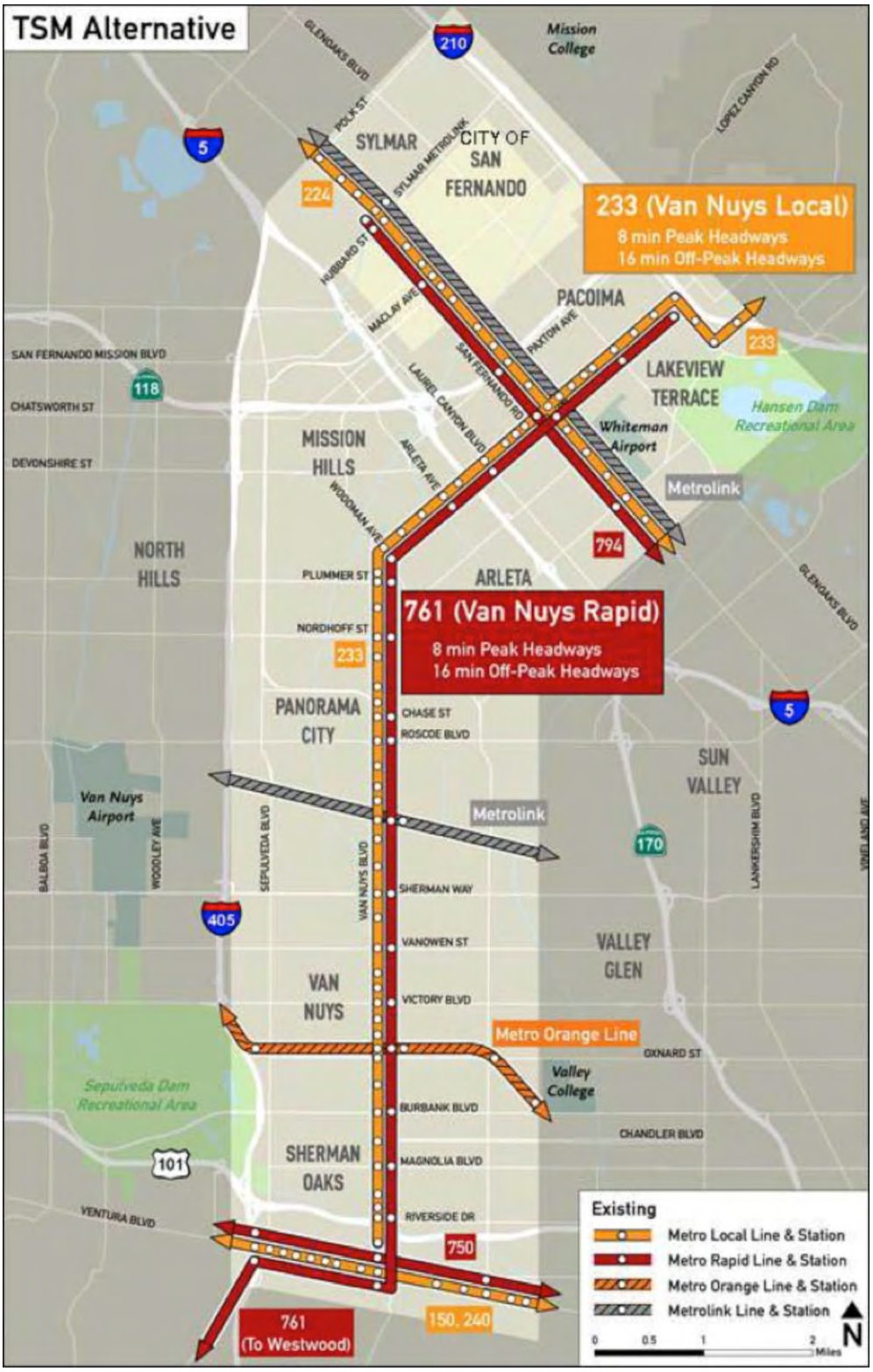
[2] Metro has identified a need for capacity improvements through the Sepulveda Pass and is considering conducting further studies to evaluate the feasibility of a transit project that would carry passengers between the San Fernando Valley and West Los Angeles over the Sepulveda Pass. However, as the project is not yet defined and is subject to further feasibility studies, it is not included as part of the No-Build Alternative.

[3] Subsequent to initiation of the analyses for this EIS/EIR, Metro Rapid Line 761 was replaced by Metro Rapid Line 744.

Figure 2-1: Existing Conditions under No-Build Alternative

Source: STV, 2014.

Figure 2-2: TSM Alternative



Source: STV, 2014.

It should be noted that modifications were made in December 2014 to one of the primary Metro bus routes operating on Van Nuys Boulevard after this project analysis was already underway. Metro Rapid Line 744 was added connecting Pacoima in the east to Northridge in the west, and traveling for a large portion of the route (north-south) along Van Nuys Boulevard, and replacing the Metro Rapid Line 761. For the purposes of this study, the evaluation was based on the routes (Metro Rapid Line 761 and Metro Local Line 233) that were already in place in 2012 when the transportation modeling for this study began.

Only a few changes were made to Metro's bus system between 2012 and 2017 within the study area. These include:

1. Combining the Van Nuys Boulevard portion of the Line 761 with Line 741 to form Line 744.
2. Combining the non-Van Nuys Boulevard portion of Line 761 with Line 734 and then extending it to the Exposition Rail Station.
3. Combining the non-Van Nuys Boulevard portion of Line 233 during the late night/weekend service period to Line 234 and extending it to the Exposition Rail Station.
4. Separating Line 237 from Line 236 and combining it with Line 156.
5. Adding Line 788 which runs from Arleta to Westwood during just the weekday peak periods.

Aside from adding Line 788, the rest of the changes were limited to a reorganization of seven lines. Transit service levels in 2017 for the study area are very similar to those in 2012. Over that same time period, the number of bus stops changed from 1,089 to 1,093, a net increase of only four stops.

2.2.2.1 Alignment and Bus Stops

Under the TSM Alternative, the Metro Rapid Line 761 and Metro Local Line 233 bus routes would retain existing stop locations.

The Metro Rapid Line 761 stop locations from north to south (along Van Nuys Boulevard unless otherwise noted) are:

1. Foothill Boulevard;
2. Glenoaks Boulevard;
3. San Fernando Road;
4. Laurel Canyon Boulevard;
5. Arleta Avenue;
6. Woodman Avenue;
7. Plummer Street;
8. Nordhoff Street;
9. Chase Street;
10. Roscoe Boulevard;
11. Blythe Street;
12. Van Nuys Metrolink Station;
13. Sherman Way;
14. Vanowen Street;
15. Victory Boulevard;
16. Bessemer Street/Oxnard Boulevard;
17. Burbank Boulevard;
18. Magnolia Street;
19. Huston Street;
20. Ventura Boulevard (at Van Nuys Boulevard);
21. Ventura Boulevard (at Sepulveda Boulevard); and
22. Existing Metro Rapid Line 761 stops within Sepulveda Pass and Westwood.

2.2.2.2 Vehicles

The TSM Alternative would add 20 additional buses to the existing Metro Local Line 233 and Metro Rapid Line 761 bus routes. These buses would be similar to existing Metro 60-foot articulated buses, and each bus would have the capacity to serve up to 75 passengers (57 seats x 1.30 passenger loading standard). Buses would be equipped with transit signal priority equipment to allow for improved operations and on-time performance.

2.2.2.3 Supporting Facilities

The 20 additional buses required under the TSM Alternative would be accommodated at the existing Metro Division 15 Maintenance and Storage Facility (MSF) located in Sun Valley. No major modifications would be required to this facility to accommodate the additional 20 buses.

2.2.2.4 Operations

Under the TSM Alternative, operational changes would include reduced headway (elapsed time between buses) times for Metro Rapid Line 761 and Metro Local Line 233, as follows:

- Metro Rapid Line 761 would operate with headways reduced from 10 minutes to 8 minutes during peak hours (7 a.m. to 9 a.m. and 4 p.m. to 7 p.m. on weekdays) and from 17.5 minutes to 12 minutes during off-peak hours.
- Metro Local Line 233 would operate with headways reduced from 12 minutes to 8 minutes during peak hours and from 20 minutes to 16 minutes during off-peak hours.

2.2.3 BRT Alternatives

2.2.3.1 Alternative 1: Curb-Running BRT

Under the Curb-Running BRT Alternative, 6.7 miles of existing curb lanes (i.e., lanes closest to the curb) along Van Nuys Boulevard between San Fernando Road and the Metro Orange Line would be converted to dedicated bus lanes. This Alternative would be similar to the Metro Wilshire BRT Project with a dedicated bus lane that could operate 24-hours a day or only during peak periods. The hours during which the curb lane would be used as a dedicated BRT lane may be limited to the period extending from 7:00 a.m. to 7:00 p.m. (further refinement of the operating hours and days for the Curb-Running BRT could occur, if necessary, based on passenger demand and community input after operation of this alternative commences). The existing asphalt lane along Van Nuys Boulevard, Truman Street, and San Fernando Road would be replaced with a concrete lane; similar to what was done for the Wilshire BRT Project. The lanes would be dedicated curb-running bus lanes for Metro Rapid Line 761 and Metro Local Line 233, and for other transit lines that operate on short segments of Van Nuys Boulevard. In addition, this Alternative would incorporate 2.5 miles of mixed-flow lanes, where buses would operate in the curb lane along San Fernando Road and Truman Street between Van Nuys Boulevard and Hubbard Avenue for Metro Rapid Line 761. Metro Local Line 233 would continue north on Van Nuys Boulevard to Lakeview Terrace. These improvements would result in an improved Metro Rapid Line 761 (hereafter referred to as 761X) and an improved Metro Local Line 233 (hereafter referred to as 233X). The route of the Curb-Running BRT Alternative is illustrated in Figure 2-3.

Figure 2-3: BRT Alternatives – Alternative 1: Curb-Running BRT

Source: KOA and ICF International, 2014.

Alignment

The Curb-Running BRT Alternative would operate as follows from the Sylmar/San Fernando Metrolink Station:

- Metro Rapid Line 761X would operate within mixed-flow roadway travel lanes on Truman Street and San Fernando Road.
- At Van Nuys Boulevard, Metro Rapid Line 761X would turn southwest and travel south within a curb-running dedicated bus lane along Van Nuys Boulevard.
- The BRT alignment would continue to be curb running along Van Nuys Boulevard until reaching the Van Nuys Metro Orange Line Station where Metro Rapid Line 761X service would be integrated into mixed-flow traffic.
- Metro Rapid Line 761X would then continue south to Westwood as under existing conditions, though it should be noted that in December 2014 the Metro Rapid Line 761 was re-routed and replaced with Metro Rapid Line 744, which travels from Van Nuys Boulevard to Ventura Boulevard, and then to Reseda Boulevard, while a new Metro Rapid Line 788 travels from Van Nuys Boulevard through the Sepulveda Pass to Westwood and provides peak period freeway express service.

Metro Local Line 233X would operate similar to how it currently operates between the intersections of Van Nuys and Glenoaks Boulevards to the north and Van Nuys and Ventura Boulevards to the south. However, operation of Metro Local Line 233X would improve compared to existing service because it would utilize the dedicated BRT lanes where its route overlaps with the curb-running BRT lanes along Van Nuys Boulevard.

Transit service would not be confined to only the dedicated curb lanes. Buses would still have the option to operate within the remaining mixed-flow lanes to bypass right-turning vehicles, a bicyclist, or another bus at a bus stop.

Bus Stops

All current Metro Rapid bus stops within the proposed alignment would be upgraded and have design enhancements that would be Americans with Disabilities Act (ADA) compliant, including compliance with the dimensions and requirements pertaining to bus boarding and alighting areas, bus shelters, and bus stops as described in sections 8.10.2, 8.10.3, and 8.10.4 of the 2010 ADA Standards. The proposed BRT stations would be consistent with Metro's Systemwide Station Design Criteria. Bicycle parking would be provided at or near Metro stations, as required by Metro's Design Criteria. The Curb-Running BRT Alternative would include the following bus stops from north to south:

1. Sylmar/San Fernando Metrolink Station
2. Hubbard Station
3. Maclay Station
4. Paxton Station
5. Van Nuys/San Fernando Station
6. Laurel Canyon Station
7. Arleta Station
8. Woodman Station
9. Plummer Station
10. Nordhoff Station
11. Chase Station
12. Roscoe Station
13. Blythe Station
14. Van Nuys Metrolink Station
15. Sherman Way Station
16. Vanowen Station
17. Victory Station
18. Van Nuys Metro Orange Line Station

The Curb-Running BRT Alternative would operate in dedicated bus lanes, sharing the lanes with bicycles and right turning vehicles. However, on San Fernando Road and Truman Street, buses would share lanes with other motor vehicles and no dedicated bus lanes would be provided. Bus stops for Metro Rapid Line 761 on Van Nuys Boulevard, which are typically combined with local bus stops, would remain in the same locations as they are now. Due to the narrow sidewalk width, the Truman Street bus stop for southbound (the City of San Fernando refers to this as "eastbound") travel near Hubbard Avenue would be shifted farther away from Hubbard Avenue, to Meyer Street in order to provide space for station amenities at this bus stop location. This bus stop relocation would need to be coordinated with and approved by the City of San Fernando. Any bus stop relocations within the City of Los Angeles would have to coordinated and approved by the City of Los Angeles. Some curbside parking on San Fernando Road would be prohibited to provide for extended bus stop lengths, which would range between 80 feet and 150 feet. Bus stop widths (similar to sidewalk widths) would range from ten feet to 16 feet from the outside curb lane. Sidewalk widening would be required on Truman Street at Hubbard Avenue (Meyer Street) and both directions at Maclay Avenue -- where the existing sidewalk is less than 10 feet wide. Off-board fare collection and TAP card validators would be provided at all stations. In addition, Metro is moving to a fare gate system and such a system may be integrated into station design. Figure 2-4 illustrates a typical station with a canopy that would be constructed under this BRT alternative, though final design could be different, as any bus stations within the City of Los Angeles and City of San Fernando would have to be coordinated with, and approved by each respective city.

Figure 2-4: BRT Alternatives – Alternative 1: Curb-Running BRT (Typical Curb-Running BRT Station)

Source: Metro, John Kaliski Architects, 2015.

Vehicles

The buses operating under the Curb-Running BRT Alternative would be similar to existing Metro high-capacity, articulated 60-foot buses, as shown in Figure 2-5. Each bus would have the capacity to serve up to 75 passengers (57 seats x 1.30 passenger loading standard). Buses would be equipped with transit signal priority equipment to allow for improved operations and on-time performance.

Supporting Facilities

The Curb-Running BRT Alternative would not include the construction of an MSF. It is anticipated that Metro's Division 15 MSF, located in Sun Valley, would accommodate the 10 additional buses needed for this alternative, without any modification to the existing facility. This alternative would require fewer vehicles than the TSM Alternative because it would operate in dedicated bus lanes and therefore, would have faster run-times.

Figure 2-5: Example of Metro 60-Foot Articulated Bus

Source: Metro Transportation Library and Archives, 2015.

Operations

Under the Curb-Running BRT Alternative, Metro Rapid Line 761X would operate with 6-minute peak and 12-minute off-peak headways. Metro Local Line 233X would operate with 8-minute peak and 16-minute off-peak headways.

Based on Metro's Operations Plan for the East San Fernando Valley Transit Corridor Project, the Curb-Running BRT Alternative is anticipated to result in speed improvements of 18 percent during the peak hour/peak direction and 15 percent during other times of the day.

Parking Loss and Lane Loss

Under the Curb-Running BRT Alternative, curbside parking would be prohibited in both directions, resulting in a loss of on-street parking. If exclusive use of the curb lane by buses is limited to the period of the day extending from 7:00 a.m. to 7:00 p.m., then on-street parking and stopping could be allowed during nighttime hours. The curbside parking prohibition during the daytime would result in a net increase in lane capacity for motor vehicles and buses in some cases, while in other cases, a mixed-flow travel lane would be replaced by a bus lane.

Van Nuys Boulevard between San Fernando Road and Parthenia Street

Along this segment, curbside parking is currently permitted throughout the day and at night. Under this alternative, parking would be prohibited. If exclusive use of the curb lane is limited to the period from 7:00 a.m. to 7:00 p.m., parking could continue to be permitted during the nighttime period along this segment.

Van Nuys Boulevard between Parthenia Street and Roscoe Boulevard

Along this segment, parking is currently prohibited. The roadway is striped for three travel lanes each way. The curbside travel lane would be converted to a dedicated bus lane and through traffic would not be allowed in the curbside lane from 7:00 a.m. to 7:00 p.m.

Van Nuys Boulevard between Roscoe Boulevard and Valerio Street

On this segment of Van Nuys Boulevard, the curbside lane, which currently functions as a travel lane during peak hours, would become a dedicated bus-only lane.

Along this segment, the roadway is currently striped to provide three lanes each way and allows parking throughout the day (except during peak periods). One travel lane would be removed in each direction, resulting in two travel lanes each way, and parking would be prohibited. If exclusive use of the curb lane by buses is limited to the period from 7:00 a.m. to 7:00 p.m., then parking could be permitted during nighttime hours.

Between Vose Street South of Sherman Way to Metro Orange Line

Along this segment, curbside parking would be removed and/or prohibited to accommodate a curbside bus lane. Nighttime parking could be permitted if exclusive use of the curb lane is limited to the period extending from 7:00 a.m. to 7:00 p.m.

Bicycle Facilities

Bicycle parking would be provided at or near Metro stations, as required by Metro's Design Criteria. On Van Nuys Boulevard between the Metro Orange Line and San Fernando Road, with one exception (between Parthenia Street and Roscoe Boulevard), the curbside lane would be 12 feet wide or greater. The curb lane would be restricted to buses and bicyclists, with other vehicles allowed in the lane only for right-turns.

The existing Class II bike lanes on Van Nuys Boulevard north of Parthenia Street would be removed under this alternative.

On Van Nuys Boulevard between Parthenia Street and Roscoe Boulevard, the curbside lane would be 11 feet wide. Parking is currently prohibited on the segment. A permanent curbside bus lane would be provided on this segment so that bicyclists would share the curbside lane only with buses and right-turning vehicles and not the general public.

Accessibility

Pedestrian

All current pedestrian movements across roadways would be maintained under this alternative, including all existing mid-block crossing opportunities. Canopies at upgraded bus stations would be designed to meet accessibility requirements.

Adjacent Businesses and Residents

All current motor vehicle turns into and out of cross streets and driveways would be maintained. No prohibitions on left turns or right turns would be necessary.

2.2.3.2 Alternative 2: Median-Running BRT

The Median-Running BRT Alternative would provide approximately 6.7 miles of dedicated median-running bus lanes between San Fernando Road and the Metro Orange Line, and would have operational standards similar to the Metro Orange Line. Similar to Alternative 1, this Alternative would also remove the existing asphalt lane and replace it with a concrete lane, similar to what was done for the Wilshire BRT Project. The remaining 2.5 miles would operate in mixed-flow traffic between the Sylmar/San Fernando Metrolink Station and San Fernando Road/Van Nuys Boulevard. The Median-Running BRT Alternative is illustrated in Figure 2-6.

Alignment

Similar to the Curb-Running BRT Alternative, the Median-Running BRT Alternative (Metro Rapid Line 761X) would operate as follows from the Sylmar/San Fernando Metrolink Station:

- Within mixed-flow lanes on Truman Street and San Fernando Road.
- At Van Nuys Boulevard, the route would turn southwest and travel south within the median of Van Nuys Boulevard in a new dedicated guideway.
- Upon reaching the Van Nuys Metro Orange Line Station, the dedicated guideway would end and the Metro Rapid Line 761X service would then be integrated into mixed-flow traffic.
- The route would then continue south to Westwood, similar to the existing route, though it should be noted that in December 2014, Metro Rapid Line 761 was re-routed and replaced with Metro Rapid Line 744, which travels from Van Nuys Boulevard to Ventura Boulevard, and then to Reseda Boulevard, while a new Metro Rapid Line 788 travels from Van Nuys Boulevard through the Sepulveda Pass to Westwood and provides peak period freeway express service.

Metro Local Line 233 would operate similar to existing conditions between the intersections of Van Nuys and Glenoaks Boulevards to the north and Van Nuys and Ventura Boulevards to the south. Metro Local Line 233 would not operate in the dedicated guideway within the median of Van Nuys Boulevard, but it would operate as it currently does, with mixed flow traffic.

Figure 2-6: BRT Alternatives – Alternative 2: Median-Running BRT

Source: KOA and ICF International, 2014.

Bus Stops

Metro Rapid bus stops that currently serve the 794 and 734 lines on the northern part of the alignment along Truman Street and San Fernando Road would be upgraded and have design enhancements that would be Americans with Disabilities Act (ADA) compliant, including compliance with the dimensions and requirements pertaining to Bus Boarding and Alighting Areas, Bus Shelters, and Bus Stops as described in sections 8.10.2, 8.10.3, and 8.10.4 of the 2010 ADA Standards. These stops would also serve the redirected Metro Rapid Line 761X:

1. Sylmar/San Fernando Metrolink Station;
2. Hubbard Station;
3. Maclay Station;
4. Paxton Station; and
5. Van Nuys/San Fernando Station.

At the Sylmar/San Fernando Metrolink Station, an upgraded bus stop with canopies would be provided for both northbound and southbound bus service.

The bus stops at Hubbard Avenue and Maclay Avenue would require widening of the sidewalks to 10 feet to accommodate the bus stop canopies. Due to the narrow sidewalk width, the southbound bus stop at Hubbard Avenue would be shifted south of Meyer Street. This would provide space for station amenities at this bus stop location. This bus stop relocation would require coordination with and approval by the City of San Fernando. Any bus stop relocations within the City of Los Angeles would have to be coordinated with, and approved by the City of Los Angeles.

Along the Van Nuys Boulevard segment, bus stop platforms would be constructed in the median. Proposed new median bus stops would include the following (from north to south):

1. Laurel Canyon Station
2. Arleta Station
3. Woodman Station
4. Plummer Station
5. Nordhoff Station
6. Roscoe/Chase Station
7. Blythe Station
8. Van Nuys Metrolink Station
9. Sherman Way Station
10. Vanowen Station
11. Victory Station
12. Van Nuys Metro Orange Line Station

All curbside bus stops that serve local buses such as the Metro Local Line 233 along Van Nuys Boulevard north of the Metro Orange Line would remain in their current location.

The proposed stations would be consistent with Metro's Systemwide Station Design Criteria. The median BRT bus stops that would be used by Metro Rapid Line 761X would have split platforms serving the two directions of travel, and typically would be located on the far side of signalized intersections. The median BRT bus stop platforms would be 6 to 8 inches high, 8 to 12 feet wide, and approximately 190 to 330 feet long. The bus stops on Van Nuys Boulevard near the Metro Orange Line and at Victory Boulevard would have entrances at each end as they are located on short blocks with traffic signals at each end. Off-board fare collection and TAP card validators would be provided at all station platforms. In addition, Metro is moving to a fare gate system and such a system may be

integrated into station design. Bicycle parking and bike lockers would also be provided at or near Metro stations, as required by Metro's Design Criteria. In addition, a painted steel guardrail would be placed along the non-loading side of the BRT platform, to prevent patrons from crossing. A barrier that would be the length of the alignment could be installed to prevent illegal pedestrian crossings, and fencing for pedestrian channelization could also be installed under this alternative. Figure 2-7 illustrates a typical station with a canopy that would be constructed for this BRT alternative.

Figure 2-7: BRT Alternatives – Alternative 2: Median-Running BRT (Typical Median-Running BRT Station)

Source: Metro, John Kaliski Architects, 2015.

Operations

Metro Rapid Line 761X would operate with 6-minute peak and 12-minute off-peak headways. Metro Local Line 233 would operate with 8-minute peak and 16-minute off peak headways.

Based on Metro's *Operations Plan for the East San Fernando Valley Transit Corridor Project*, the Median-Running BRT Alternative is anticipated to result in speed improvements of 18 percent for peak hours and 15 percent for off-peak hours.

Vehicles

Articulated 60-foot buses, similar to those under the Curb-Running BRT Alternative would be operated, as shown in Figure 2-5. Each bus would have the capacity to serve up to 75 passengers (57 seats x 1.30 passenger loading standard). Buses would be equipped with transit signal priority equipment, similar to existing Metro Rapid buses, to continue to allow for improved operations and on-time performance.

Vehicles would have doors only on the right side of the bus for passengers to board and alight.

Supporting Facilities

It is anticipated that the Metro Division 15 MSF, located in Sun Valley, would accommodate the 10 additional buses needed for this alternative, which is fewer vehicles than the TSM Alternative because it would operate in dedicated bus lanes and, therefore, would have faster run-times. No major modifications would be required to the existing facility to accommodate the additional buses.

Parking Loss and Lane Loss

All curbside parking would be prohibited along the entire extent of Van Nuys Boulevard from the Van Nuys Metro Orange Line Station to San Fernando Road.

Travel lanes on Van Nuys Boulevard would be provided as follows:

- North of Parthenia Street: two lanes would be maintained in each direction;
- Between Parthenia Street and Roscoe Boulevard: the number of travel lanes would be reduced from three lanes to two lanes in each direction;
- Between Roscoe Boulevard and Valerio Street: two lanes would be maintained each way throughout the day; and
- Between the Van Nuys Metro Orange Line Station and Valerio Street: Travel lanes would be reduced from three lanes to two lanes in each direction.

Although two lanes would be provided the length of Van Nuys Boulevard in each direction, the flow in the curbside lane of traffic would be impeded whenever a right-turning vehicle yields to crossing pedestrians or a local bus is stopped at a bus stop. Similarly, the flow of traffic would also be impeded at intersections along San Fernando Road, which is the only segment where left-turns are allowed, without a left-turn lane.

Turning Restrictions

Left turns from Van Nuys Boulevard onto cross streets would be maintained at most of the currently signalized intersections, and prohibited at all unsignalized intersections. The dual left-turn lanes on northbound and southbound Van Nuys Boulevard at Sherman Way and at Roscoe Boulevard would be reduced to single left-turn lanes.

Several left-turns in the Van Nuys Civic Center, between Calvert and Hartland Streets, would be prohibited to accommodate median bus stop platforms. Because of the distance between signalized intersections, there would not be enough space for left-turn lanes. For similar reasons, the signalized left turn into the Panorama Plaza retail property on the east side of Van Nuys Boulevard, between Roscoe Boulevard and Chase Street, would be prohibited.

Unless otherwise prohibited, U-turns would be allowed from signalized left-turn lanes on Van Nuys Boulevard. Access to and from minor side streets and private driveways would rely on these U-turn opportunities.

All movements across the median guideway would be prohibited. This includes left turns from Van Nuys Boulevard at unsignalized intersections and private driveways, as well as left turns and through traffic from the side streets or from private driveways. Motorists who desire to make a left turn into an unsignalized cross-street or driveway would need to find a signalized left turn from which to make a U-turn or turn right off of Van Nuys Boulevard and seek a route that would enable them to reach a signalized cross street.

The following intersections would have left-turn prohibitions:

- Van Nuys Boulevard & El Dorado Avenue
- Van Nuys Boulevard & Tamarack Avenue
- Van Nuys Boulevard & Cayuga Avenue
- Van Nuys Boulevard & Oneida Avenue
- Van Nuys Boulevard & Omelveny Avenue
- Van Nuys Boulevard & Amboy Avenue
- Van Nuys Boulevard & Rincon Avenue
- Van Nuys Boulevard & Remick Avenue
- Van Nuys Boulevard & Vena Avenue
- Van Nuys Boulevard & Lev Avenue
- Van Nuys Boulevard & Canterbury Avenue
- Van Nuys Boulevard & Vesper Avenue
- Van Nuys Boulevard & Novice Street
- Van Nuys Boulevard & Gledhill Street
- Van Nuys Boulevard & Vincennes Street
- Van Nuys Boulevard & Osborne Street
- Van Nuys Boulevard between Chase Street & Roscoe Boulevard
- Van Nuys Boulevard & Lorne Street
- Van Nuys Boulevard & Michaels Street
- Van Nuys Boulevard & Keswick Street (northbound)
- Van Nuys Boulevard & Covello Street
- Van Nuys Boulevard & Wyandotte Street
- Van Nuys Boulevard & Gault Street
- Van Nuys Boulevard & Hart Street
- Van Nuys Boulevard & Archwood Street
- Van Nuys Boulevard & Gilmore Street (northbound)
- Van Nuys Boulevard & Friar Street (southbound)
- Van Nuys Boulevard & Delano Street (northbound)
- Van Nuys Boulevard & Calvert Street
- Van Nuys Boulevard & Bessemer Street

Bicycle Facilities

On Van Nuys Boulevard between the Van Nuys Metro Orange Line Station and San Fernando Road, the curbside lanes typically would be 11 feet wide. Thus, motorists in the curbside lane would need to shift to the left to pass a bicyclist. The existing bike lanes extending north on Van Nuys Boulevard approximately two miles from Parthenia Street to Beachy Avenue would be removed and would not be replaced under this alternative. However, bicycle parking would be provided at or near Metro stations, as required by Metro's Design Criteria.

Accessibility

Pedestrian Access

All existing signal-controlled crosswalks would be maintained. However, all other pedestrian crossings on Van Nuys Boulevard at unsignalized intersections would be prohibited.

Bus patrons would be restrained between curbside local bus stops and median BRT bus stops by railings on the backside of median bus stop platforms.

From Sherman Way northward, the public right-of-way width of Van Nuys Boulevard is 100 feet. To accommodate two bus lanes and a left-turn lane or bus stop in the median of Van Nuys Boulevard, the sidewalk widths would be narrowed to 10 feet. This is required due to street widening that would occur in some locations. At locations where the sidewalk would be narrowed, the power poles would need to be relocated. In most cases, to satisfy drainage requirements, the entire width of the sidewalk would be reconstructed. At some locations where the sidewalk width is currently less than 10 feet, there would be no sidewalk narrowing. At a curbside bus stop, sidewalks currently less than 10 feet wide would be widened to 10 feet.

Access to Businesses and Residents

Only right turns into and out of unsignalized cross streets and driveways would be allowed. Left turns into and out of cross streets and driveways would be prohibited.

2.2.4 Rail Alternatives

2.2.4.1 Alternative 3: Low-Floor LRT/Tram

The Low-Floor LRT/Tram Alternative would operate along a 9.2-mile route from the Sylmar/San Fernando Metrolink Station to the north, to the Van Nuys Metro Orange Line Station to the south. The Low-Floor LRT/Tram Alternative would operate in a median dedicated guideway for approximately 6.7 miles along Van Nuys Boulevard between San Fernando Road and the Van Nuys Metro Orange Line Station. The Low-Floor LRT/Tram Alternative would operate in mixed-flow traffic lanes on San Fernando Road between the intersection of San Fernando Road/Van Nuys Boulevard and just north of Wolfskill Street. Between Wolfskill Street and the Sylmar/San Fernando Metrolink Station, the Low-Floor LRT/Tram would operate in a median dedicated guideway. The Low-Floor LRT/Tram would serve the cities of San Fernando and Los Angeles, including the communities of Pacoima, Arleta, Panorama City, and Van Nuys, with 28 stations. The route of the Low-Floor LRT/Tram Alternative is illustrated in Figure 2-8.

The Low-Floor LRT/Tram Alternative would operate using low-floor articulated vehicles that would be electrically powered by overhead wires. This alternative would include supporting facilities, such as traction power substations (TPSS) and an MSF.

Because the Low-Floor LRT/Tram Alternative would fulfill the current functions of the existing Metro Rapid Line 761 and Metro Local Line 233, these bus routes would be modified to maintain service only to areas outside of the project corridor. Thus, Metro Rapid Line 761 (referred to as 761S with reduced service) would operate only between the Metro Orange Line and Westwood, and Metro Local Line 233 (referred to as 233S with reduced service) would operate only between San Fernando Road and Glenoaks Boulevard, although it is most likely that this area would continue to be served by a

Figure 2-8: Rail Alternatives – Alternative 3: Low-Floor LRT/Tram

Source: KOA and ICF International, 2014.

neighboring bus line or that the 233S route would be modified, because it is not typical for a Metro bus line to serve such a limited geographic area. Metro Operations would make such modifications based on observation of the line's performance and feedback from the communities it serves. It should be noted that in December 2014, Metro Rapid Line 761 was re-routed and replaced with Metro Rapid Line 744, which travels from Van Nuys Boulevard to Ventura Boulevard, and then to Reseda Boulevard, while a new Metro Rapid Line 788 travels from Van Nuys Boulevard through the Sepulveda Pass to Westwood and provides peak period freeway express service.

Vehicles

Low-Floor LRT/Tram vehicles may be similar to the small articulated rail vehicles currently used in Portland, Oregon, or may resemble the multi-unit low-floor light rail vehicles that are also used in Portland, as well as San Diego and many other US cities. For the purposes of this study, it is assumed the Low-Floor LRT/Tram trains would consist of two cars that would be connected to form a 180-foot-long train. Although Low-Floor LRT/Tram vehicles could operate at speeds of up to 60 miles per hour (mph) in a dedicated guideway, along Van Nuys Boulevard, they would not exceed the posted adjacent roadway speed limit, which is typically 35 mph. Low-Floor LRT/Tram vehicles would carry over 150 seated passengers and approximately 265 total passengers, including standing passengers (depends on which type of Low-Floor LRT/Tram vehicle is selected). The Low-Floor LRT/Tram would have doors on both sides of each vehicle, allowing for passenger boarding and alighting at center platform as well as side platform stations. The Low-Floor LRT/Tram vehicles would be configured with a driver's cab at either end, allowing them to run in either direction without the need to turn around at the termini. Figure 2-9 presents examples of different types of Low-Floor LRT/Tram vehicles that could be used with this alternative.

Alignment

The Low-Floor LRT/Tram Alternative would operate along the following route:

- From the Sylmar/San Fernando Metrolink Station, the Low-Floor LRT/Tram would operate within a median dedicated guideway on San Fernando Road;
- At Wolfskill Street, the Low-Floor LRT/Tram would operate within mixed-flow travel lanes on San Fernando Road to Van Nuys Boulevard;
- At Van Nuys Boulevard, the Low-Floor LRT/Tram would turn southwest and travel south within the median of Van Nuys Boulevard in a new dedicated guideway; and
- The Low-Floor LRT/Tram would continue to operate in the median along Van Nuys Boulevard until reaching its terminus at the Van Nuys Metro Orange Line Station.

Figure 2-9: Examples of Low-Floor LRT/Tram Vehicle Types

Portland Streetcar Tram Vehicle in Operation

Siemens S70 Low-Floor LRT Vehicle Operation on Portland's MAX System

San Diego Trolley Siemens S70 Low-Floor LRT Vehicle

Source: Wikipedia and sdmts.com, 2015.

Stations

The following stations are proposed with the Low-Floor LRT/Tram Alternative:

1. Sylmar/San Fernando Metrolink Station
2. Hubbard Station
3. Maclay Station
4. Paxton Station
5. Van Nuys/San Fernando Station
6. Telfair Station
7. Haddon Station
8. Laurel Canyon Station
9. Arleta Station
10. Beachy Station
11. Woodman Station
12. Plummer Station
13. Tupper Station
14. Nordhoff Station
15. Parthenia North Station
16. Parthenia South Station
17. Chase Station
18. Roscoe Station
19. Blythe Station
20. Van Nuys Metrolink Station
21. Valerio Station
22. Sherman Way Station
23. Hart/Vose Station
24. Vanowen Station
25. Kittridge Station
26. Victory Station
27. Erwin/Sylvan Station
28. Van Nuys Metro Orange Line Station

The Low-Floor LRT/Tram stations would be ADA compliant, including compliance with the requirements pertaining to rail platforms, rail station signs, public address systems, clocks, escalators, and track crossings as described in sections 8.10.5, 8.10.6, 8.10.7, 8.10.8, 8.10.9, and 8.10.10 of the 2010 ADA Standards. The proposed Low-Floor LRT/Tram stations would be consistent with Metro's Rail Design Criteria, including directive and standard drawings. Metro's criteria apply to all station types (i.e., at-grade, subway, etc.). The typical Low-Floor LRT/Tram station platform would be 8 feet wide for a side platform station to 16 feet wide for a center platform station, 180 feet long, and rise from the street and sidewalk level via ADA compliant accessible ramps to a 14-inch height. Access to the Low-Floor LRT/Tram station platforms would be from crosswalks. Canopies at the Low-Floor LRT/Tram stations would be approximately 13 feet high and would incorporate Low-Floor LRT/Tram station stop lighting to enhance safety. Low-Floor LRT/Tram station platforms may include one or two entryways; for stations with only one public access point, an emergency exit and stair would provide an exit. Low-Floor LRT/Tram stations would provide bench seating and contain ticket vending machines, video message signs, route maps, and stand-alone validators, as well as include the name and location of the Low-Floor LRT/Tram station. In addition, Metro is moving to a fare gate system and such a system may be integrated into station design. Figure 2-10 illustrates a typical station with a canopy that would be constructed under the Low-Floor LRT/Tram Alternative.

Figure 2-10: Rail Alternatives – Alternative 3: Low-Floor LRT/Tram (Typical Low-Floor LRT/Tram Station)

Source: Metro, John Kaliski Architects, 2015.

Supporting Facilities

The Low-Floor LRT/Tram Alternative would require a number of additional elements to support vehicle operations, including an Overhead Contact System (OCS), TPSSs, signaling, and an MSF.

Maintenance and Storage Facility

The new Low-Floor LRT/Tram MSF would accommodate both operational and administrative functions. The MSF would accommodate all levels of vehicle service and maintenance (i.e., progressive maintenance, scheduled maintenance, unscheduled repairs, warrantee service, and limited heavy maintenance) in addition to storage space for vehicles. The number of Low-Floor LRT/Tram vehicles that would be needed under this alternative would likely be small in comparison to the existing Metro LRT system. The typical Low-Floor LRT/Tram MSF would provide: interior and exterior vehicle cleaning, sanding, and inspection areas; maintenance and repair shops; storage yards for vehicles; and storage areas for materials, tools, and spare vehicle parts. The storage yard would be the point of origin and termination for daily service. Figure 2-11 is a photograph of a typical MSF facility.

The MSF would serve as the "home base" for the operators. Space would be provided for staff offices, dispatcher workstations, employee break rooms and/or lunchrooms, operator areas with lockers, showers and restrooms, and employee and visitor parking.

The MSF would include collision/body repair areas, paint booths, and wheel truing (the profiling of wheels to ensure the proper wheel to rail interface) machines. The MSF would also include maintenance-of-way, signals and communications, and traction power functions that would be housed in a separate and smaller building.

The MSF site would accommodate the maximum number of Low-Floor LRT/Tram vehicles required for service and also allow for future expansion of transit service and vehicle maintenance and storage. The MSF site would be approximately 25 to 30 acres.

The MSF would be located at or near one of the following intersections, in industrial areas, and shown in Figure 2-12:

- MSF Option A – Van Nuys Boulevard/Metro Orange Line;
- MSF Option B – Van Nuys Boulevard/Keswick Street; and
- MSF Option C – Van Nuys Boulevard/Arminta Street.

Several parcels occupying 25 to 30 acres would need to be acquired to accommodate the MSF.

It is possible that minor bodywork and collision repairs, such as the replacement of body panels and touch-up of painted surfaces, could be contracted or sent to another heavy maintenance facility, such as the Metro Blue Line facility in Long Beach. Similarly, it is possible that wheel truing could be contracted or sent to another heavy maintenance facility.

Figure 2-11: Typical MSF Facility for Tram/LRT

Source: Metro, 2015.

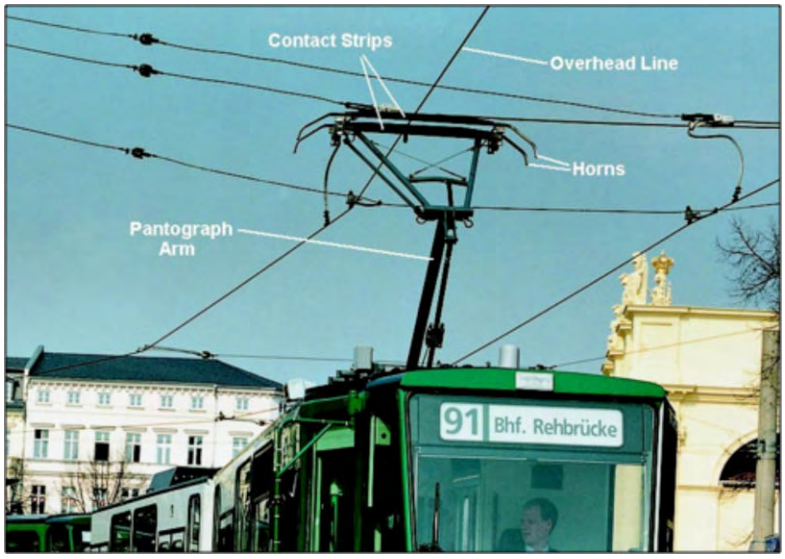
Figure 2-12: Locations of Potential MSF Sites along Alignment

Source: KOA, 2014.

Overhead Contact System

An OCS is a network of overhead wires that distributes electricity to tram and light rail vehicles (see Figure 2-13). An OCS would include steel poles along the length of the right-of-way to support an electrical power line that would be suspended above the LRT or tram tracks. A telescoping pantograph or "arm" on the roof of Low-Floor LRT/Tram vehicles would slide along the underside of the contact wire and deliver electric power to the vehicles. The OCS poles would be approximately 30 feet tall and typically located every 90 to 170 feet between two Low-Floor LRT/Tram tracks. Where the available public right-of-way width is extremely limited, the OCS poles would be placed on the sidewalk. This would be required in a few locations within the communities of Van Nuys, Panorama City, and Arleta. At such locations, curb side bus stops serving local bus lines would be relocated so as to avoid having obstructions within the bus stop area.

Figure 2-13: Typical OCS for Tram/LRT



Source: Railway Technical Web Pages, 2014.

Traction Power Substations

TPSSs are electrical substations that would be typically placed every 1.0 to 1.5 miles. The Low-Floor LRT/Tram vehicles would be powered by approximately nine TPSS units, which would be spaced relatively evenly along the alignment to provide direct current to the Low-Floor LRT/Tram vehicles. TPSSs would be located at points along the alignment where maximum power draw is expected (such as at stations and on inclines). In the event that one TPSS needs to be taken off line, the Low-Floor LRT/Tram vehicles would continue to operate. Maintenance buildings would require a separate TPSS.

The size of each TPSS unit would be approximately 60 feet by 80 feet and about 12 to 14 feet high. The unit would require access to the local road network for equipment installation and maintenance. Power would be fed to the OCS through underground feeders in duct banks and up a pole to a connection with the contact wire.

The TPSS units may be located within the public right-of-way, in parking lots, or in acquired parcels. A representative TPSS is shown in Figure 2-14. For the purposes of analysis in this DEIS/DEIR, potential or typical TPSS locations were evaluated. However, other more suitable locations could be selected, if they become available and are comparable to the potential locations analyzed herein.

Figure 2-14: Typical TPSS for Tram/LRT

Source: Google, 2015.

Low-Floor LRT/Tram Signaling

The Low-Floor LRT/Trams would be controlled by the traffic signals that govern vehicular traffic on Van Nuys Boulevard. Every traffic signal on Van Nuys Boulevard would be modified to provide for Low-Floor LRT/Tram signals.

Signal operation would be similar to that used for median LRT operations throughout the Metro region (such as the Metro Blue Line segments along Washington Boulevard and Long Beach Boulevard, the Metro Gold Line along 1st Street and 3rd Street, the Exposition Line along Colorado Avenue, and the Crenshaw/LAX Line along Crenshaw Boulevard). The Low-Floor LRT/Tram would receive a green light only when conflicting traffic has a red light. Low-Floor LRT/Trams would be equipped with transit signal priority equipment to allow for improved operations and on-time performance.

Operations

The proposed Low-Floor LRT/Tram would operate with 4-minute peak and 8-minute off-peak headways. Metro Rapid Line 761S would operate with 6-minute peak and 12-minute off-peak headways, while Metro Local Line 233S would operate with 8-minute peak and 16-minute off peak headways.

Based on Metro's Operations Plan for the East San Fernando Valley Transit Corridor Project, the Low-Floor LRT/Tram Alternative would assume a similar travel speed as the Median-Running BRT Alternative, with speed improvements of 18 percent during peak hours/peak direction and 15 percent during off-peak hours.

Parking Loss and Lane Loss

Parking Loss

All curbside parking would be prohibited along the alignment on Van Nuys Boulevard and on San Fernando Road.

Lane Loss

Travel lanes would be provided as follows:

- From its northern junction with Truman Street, near Bleeker Street, to Wolfskill Street, the number of travel lanes on San Fernando Road would be reduced from two lanes to one lane in each direction.
- From Wolfskill Street to Van Nuys Boulevard, San Fernando Road would retain its existing two lanes in each direction, with the Low-Floor LRT/Tram sharing a lane with motor vehicles in each direction.
- The number of travel lanes on Van Nuys Boulevard would be reduced from three to two lanes in each direction on Van Nuys Boulevard between San Fernando Road and the Metro Orange Line, and wider curb lanes would be narrowed near intersections.

Turning Restrictions

Most of the left turns would be prohibited from San Fernando Road through the City of San Fernando where a median dedicated guideway for the Low-Floor LRT/Tram vehicle is proposed between the Sylmar/San Fernando Metrolink Station and Wolfskill Street. Furthermore, to maintain the pedestrian-oriented retail character of San Fernando Road between San Fernando Mission Boulevard and Chatsworth Drive, a possible option for operation in this location would redirect through traffic off San Fernando Road on the block between Maclay Avenue and Brand Boulevard by means of turn restrictions.

All existing turning movements would be maintained on San Fernando Road between Wolfskill Street and Van Nuys Boulevard, where the Low-Floor LRT/Tram would share travel lanes with motor vehicles.

Left turns from Van Nuys Boulevard onto cross streets would be maintained at most of the currently signalized intersections where the Low-Floor LRT/Tram would be running in the median. However, all vehicle movements across the median at currently unsignalized intersections would be prohibited. This would include left turns from Van Nuys Boulevard as well as left turns and through traffic from minor side streets and private driveways. Motorists who desire to make a left turn onto an unsignalized cross street or into a driveway would have to make a U-turn at a signalized left-turn location or choose a route that would allow them to use a signalized cross street.

The following intersections would have turning restrictions (left turns prohibited each way, unless otherwise noted):

- Hubbard Avenue & San Fernando Road
- Meyer Street & San Fernando Road
- Lazard Street & San Fernando Road
- Huntington Street & San Fernando Road
- Workman Street & San Fernando Road
- Kalisher Street & San Fernando Road
- San Fernando Mission Boulevard & San Fernando Road
- Maclay Avenue & San Fernando Road (left and through moves prohibited)
- Brand Boulevard & San Fernando Road (left turns prohibited northbound, right and through moves prohibited southbound)
- Kittridge Street & San Fernando Road
- Chatsworth Drive & San Fernando Road
- Van Nuys Boulevard & El Dorado Avenue (left turns prohibited northbound)
- Van Nuys Boulevard & Tamarack Avenue
- Van Nuys Boulevard & Cayuga Avenue
- Van Nuys Boulevard & Oneida Avenue
- Van Nuys Boulevard & Omelveny Avenue
- Van Nuys Boulevard & Amboy Avenue
- Van Nuys Boulevard & Rincon Avenue
- Van Nuys Boulevard & Remick Avenue
- Van Nuys Boulevard & Vena Avenue
- Van Nuys Boulevard & Lev Avenue
- Van Nuys Boulevard & Canterbury Avenue
- Van Nuys Boulevard & Vesper Avenue
- Van Nuys Boulevard & Novice Street
- Van Nuys Boulevard & Gledhill Street
- Van Nuys Boulevard & Vincennes Street
- Van Nuys Boulevard & Osborne Street
- Van Nuys Boulevard between Chase Street & Roscoe Boulevard
- Van Nuys Boulevard & Lorne Street
- Van Nuys Boulevard & Michaels Street
- Van Nuys Boulevard & Keswick Street (northbound)
- Van Nuys Boulevard & Covello Street
- Van Nuys Boulevard & Wyandotte Street
- Van Nuys Boulevard & Gault Street
- Van Nuys Boulevard & Hart Street
- Van Nuys Boulevard & Archwood Street
- Van Nuys Boulevard & Gilmore Street (northbound)
- Van Nuys Boulevard & Friar Street (southbound)
- Van Nuys Boulevard & Sylvan Street (northbound)
- Van Nuys Boulevard & Calvert Street
- Van Nuys Boulevard & Bessemer Street

New traffic signals would be constructed at the following locations:

- Meyer Street & San Fernando Road;
- Lazard Street & San Fernando Road;
- Huntington Street & San Fernando Road;
- Kalisher Street & San Fernando Road;
- Chatsworth Drive/Kittridge Street & San Fernando Road;
- Pinney Street and San Fernando Road;
- Van Nuys Boulevard & El Dorado Avenue; and
- Van Nuys Boulevard & Hart Street.

Bicycle Facilities

On Van Nuys Boulevard between San Fernando Road and the Metro Orange Line, the curbside lanes typically would be 11 feet wide. The existing bike lanes extending north on Van Nuys Boulevard approximately two miles from Parthenia Street to Beachy Avenue would be removed, but the existing Class I bike path adjacent to San Fernando Road would remain in place. In addition, bicycle parking would be provided at or near Metro stations, as required by Metro's Design Criteria.

Accessibility

Pedestrian Access

On the segment of San Fernando Road between Wolfskill Street and Van Nuys Boulevard where the Low-Floor LRT/Tram would operate in mixed-flow, pedestrians may continue to cross San Fernando Road at any location where crossings are currently allowed.

There would be a pedestrian bridge at the Sylmar/San Fernando Station from the LRT/Tram platform to the Metrolink platform.

On all other segments where the Low-Floor LRT/Tram operates in a semi-exclusive guideway, pedestrian crossings would be permitted only at signal-controlled intersections. Between the signalized intersections, a fence would be installed to prevent mid-block pedestrian crossings, as is the current practice of Metro on its median-running LRT lines. Pedestrians would be required to walk to a signalized location to cross San Fernando Road or Van Nuys Boulevard. Low-Floor LRT/Tram passengers would reach the median station platforms from crosswalks at signalized intersections.

Along Van Nuys Boulevard, where the existing sidewalks on each side of Van Nuys Boulevard are approximately 13 feet wide, sidewalks would be narrowed to 10 feet to accommodate the installation of the Low-Floor LRT/Tram guideway and a left-turn lane or Low-Floor LRT/Tram station in the median of Van Nuys Boulevard, while providing two travel lanes in each direction. No sidewalk would be narrowed to a width less than 10 feet. This sidewalk narrowing would occur from the Metro Orange Line to El Dorado Avenue in Pacoima, and would require the relocation of utility poles. In these areas, the entire sidewalk would be reconstructed to satisfy drainage requirements.

Access to Adjacent Businesses and Residences

Mixed-flow segments of the Low-Floor LRT/Tram alignment on San Fernando Road between Wolfskill Street and Van Nuys Boulevard would allow all currently permitted turns into and out of driveways that cross the medians. For all other segments, left turns into and out of driveways would be blocked by a median fence under the Low-Floor LRT/Tram Alternative. Only right turns into and out of unsignalized cross streets and driveways would be allowed.

Right-of-Way

Several parcels occupying a total of 25 to 30 acres would need to be acquired to accommodate the MSF site. Right-of-way would also be required to access the MSF site from the alignment. This would differ depending on the MSF site that is ultimately selected, as follows:

- For MSF Option A, right-of-way would be required for vehicles to travel between Van Nuys Boulevard and the MSF site, in an alignment between the Metro Orange Line and Bessemer Street.
- For MSF Option B, additional acquisitions would be needed on the west side of Van Nuys Boulevard from the Saticoy/Metrolink Station, so that the Low-Floor LRT/Tram vehicles could travel to the west of the Van Nuys Boulevard alignment, to the MSF site located within the industrial areas north of Keswick Street and just south of Raymer Street.
- For MSF Option C, additional acquisitions would be needed along Arminta Street west of the Van Nuys Boulevard alignment, so that the Low-Floor LRT/Tram vehicles could travel to the MSF site located within the industrial areas north of the Union Pacific Railroad and Metrolink tracks, and just south of Arminta Street.

In addition, parcel acquisitions would be required for the placement of TPSSs approximately 1.0 to 1.5 miles apart along the alignment.

2.2.4.2 Alternative 4: LRT

Similar to the Low-Floor LRT/Tram Alternative, the LRT vehicles under Alternative 4 would be powered by overhead electrical wires; however, it is relevant to note the onboard commuter load capacities for Alternatives 3 and 4. Low-floor and high-floor LRT vehicles have different load capacities, 100 versus 133, respectively. Using the San Diego Trolley low-floor vehicle as an example, their 90-foot low-floor vehicle has a commute/load capacity of 100 persons. Additionally, aisles are narrower and include step(s) to get to some/many seats. Additionally, seats above 'trucks' have less leg room. The low floor combined with the area dedicated to the trucks/wheels and the longer cab areas result in reduced capacity. For comparison, Metro's 90-foot high-floor model has a commute/load capacity of 133 passengers and is the vehicle type that would likely be used for Alternative 4 (shown in Figure 2-16).

Under this alternative, the LRT would travel along the Antelope Valley Metrolink railroad corridor from the Sylmar/San Fernando Metrolink Station south to Van Nuys Boulevard, then along Van Nuys Boulevard from San Fernando Road to the Van Nuys Metro Orange Line Station; a distance of approximately 9.2 miles. The route of the LRT Alternative is illustrated in Figure 2-15.

Figure 2-15: Rail Alternatives – Alternative 4: LRT

Source: ICF International, 2014.

Figure 2-16: Example of Metro LRT Vehicle

Source: Metro Transportation Library and Archives, 2015.

Vehicles

LRT vehicles would be similar to those currently used throughout the existing Metro LRT system, as shown in Figure 2-16. Metro's LRT System is designed to accommodate trains of up to three 90-foot rail cars, for a total train length of 270 feet. Although LRT vehicles can operate at speeds of up to 65 mph in an exclusive guideway, operating at-grade along Van Nuys Boulevard, they would not exceed the posted speed limit, which is typically 35 mph. The LRT Alternative assumes a maximum speed of 50 mph when traveling underground, but due to station spacing would travel at an average of 30 mph along the underground segment, as well as when traveling within the Metro rail right-of-way adjacent to San Fernando Road. LRT vehicles could carry approximately 230 seated passengers and more than 400 passengers when standing passengers on a three-car train are included. The LRT train sets would be configured with a driver's cab at either end, similar to other Metro light rail trains, allowing them to run in either direction without the need to turn around at the termini.

Alignment

On the surface-running segment, the LRT Alternative would operate at prevailing traffic speeds and would be controlled by standard traffic signals.

The LRT Alternative alignment would have two tracks and would be fully separated from automobile traffic, except at grade crossings. The LRT Alternative would operate along the following route:

- Along and just east of San Fernando Road, from the Sylmar/San Fernando Metrolink Station south to Van Nuys Boulevard, the alignment would be located within the existing Antelope Valley freight/commuter rail right-of-way but on separate dedicated tracks;
- From the intersection of San Fernando Road and Van Nuys Boulevard to the Metro Orange Line, the LRT Alternative would operate in a semi-exclusive right-of-way in what is currently the median of Van Nuys Boulevard; within this segment, the LRT would be underground beneath Van Nuys Boulevard from just north of Parthenia Street south to Hart Street.

Stations

Stations would be constructed at approximately 3/4-mile intervals along the entire route. There would be 14 stations, three of which would be underground. The three underground stations would be located near Sherman Way, the Van Nuys Metrolink Station, and Roscoe Boulevard. The following stations are proposed under the LRT Alternative:

1. Sylmar/San Fernando Metrolink Station
2. Maclay Station
3. Paxton Station
4. Van Nuys/San Fernando Station
5. Laurel Canyon Station
6. Arleta Station
7. Woodman Station
8. Nordhoff Station
9. Roscoe Station
10. Van Nuys Metrolink Station
11. Sherman Way Station
12. Vanowen Station
13. Victory Station
14. Van Nuys Metro Orange Line Station

All local curbside bus stops along Van Nuys Boulevard north of the Metro Orange Line would remain in their current location. Along San Fernando Road and Truman Street, the existing bus stops would also remain in their current locations.

The proposed stations would have designs consistent with existing Metro Rail Design Criteria, including directive and standard drawings. Stations, as shown in Figure 2-17 and would be ADA compliant including compliance with the requirements pertaining to rail platforms, rail station signs, public address systems, clocks, escalators, and track crossings as described in sections 8.10.5, 8.10.6, 8.10.7, 8.10.8, 8.10.9, and 8.10.10 of the 2010 ADA Standards. The proposed LRT stations would be consistent with Metro's Systemwide Station Design Criteria.

Common elements would include signage, maps, fixtures, furnishings, lighting, and communications equipment. All stations are proposed to have center or side platforms, allowing passengers to access trains traveling in either direction. Typically, at-grade station platforms would be 270 feet long (to accommodate three-car trains), 39 inches high (to allow level boarding and full accessibility, in compliance with the ADA), and 13.5 feet wide for side platforms to 16 feet wide for center platform stations. The three below-grade stations would be the same length and height but about 30 feet wide to accommodate stairs, escalators, and elevators. A typical below-grade station is shown in Figure 2-18.

Canopies at the LRT stations would be approximately 13 feet high and would incorporate station lighting to enhance safety. LRT station platforms may include one or two entry ways; for stations with only one public access point, an emergency exit and stair would provide an exit. LRT stations would include bench seating and contain ticket vending machines, video message signs, route maps, and fare gates, as well as the name and location of the LRT station.

Stations would also include bicycle parking and bike lockers at or near underground stations, as required by Metro's Design Criteria. In addition, signage and safety and security equipment, such as closed-circuit televisions, public announcement systems, passenger assistance telephones, and variable message signs (providing real-time information), would be part of the amenities.

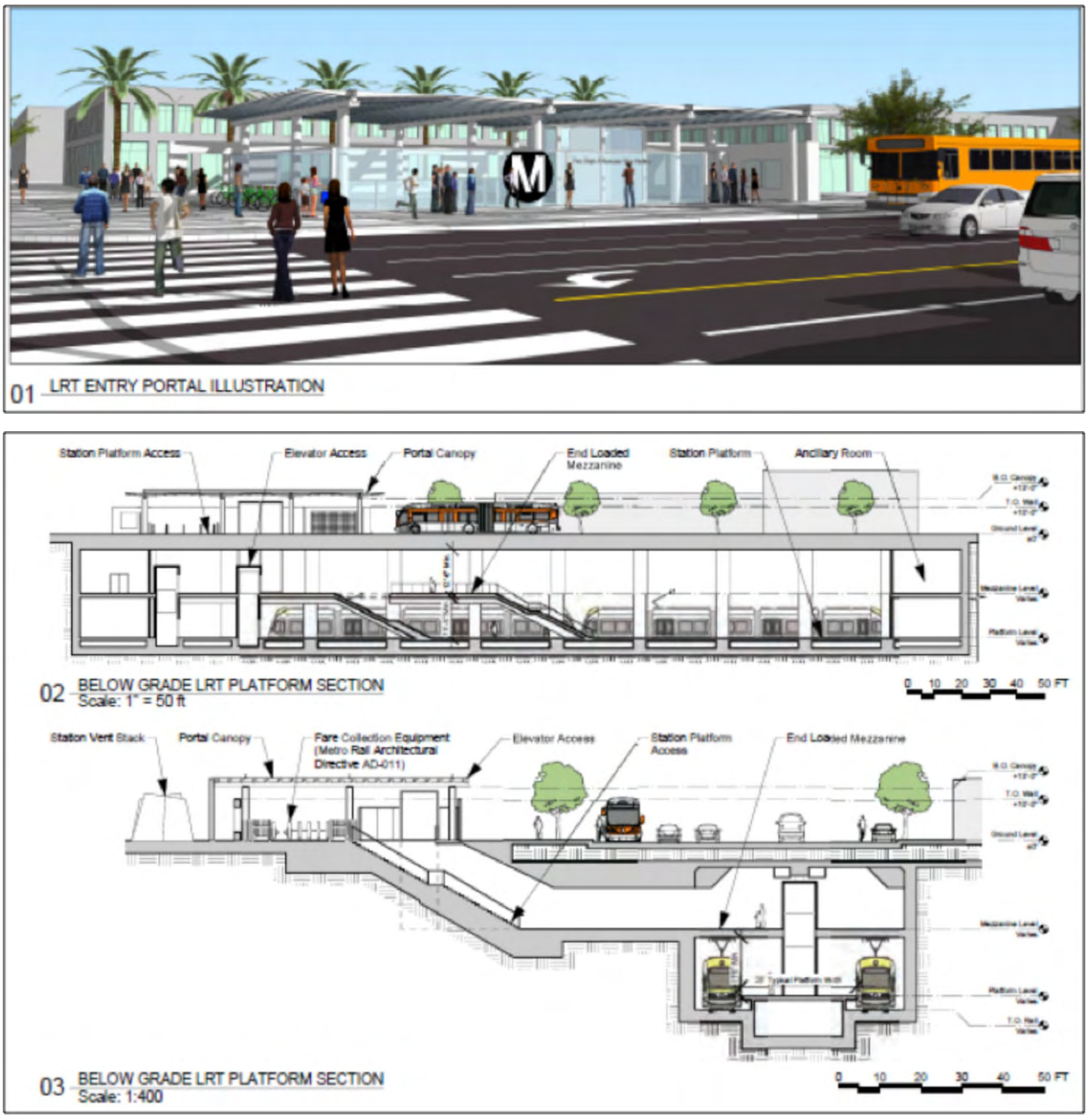
Entry to the three underground stations would be provided from an entry plaza and portal. The entry plaza would be approximately 150 feet long and 90 feet deep and contain centrally placed and approximately 100 feet long by 60 feet wide entry structures rising to a height of approximately 15 feet. Each plaza would also contain landscape planting, and bicycle racks and/or storage. The entry portals would be covered with canopies, and the entry areas would contain ticket vending machines, video message signs, and route maps. The entry portals would provide access to stairs, escalators, and elevators leading to an underground LRT station mezzanine level, which, in turn, would be connected via additional stairs, escalators, and elevators to the underground LRT station platforms that would be 28 feet wide.

Engineering drawings illustrating typical cross sections for the underground guideway and guideway portals are shown as Figure 2-19.

Figure 2-17: Rail Alternatives – Alternative 4: LRT (Typical At-Grade LRT Station)

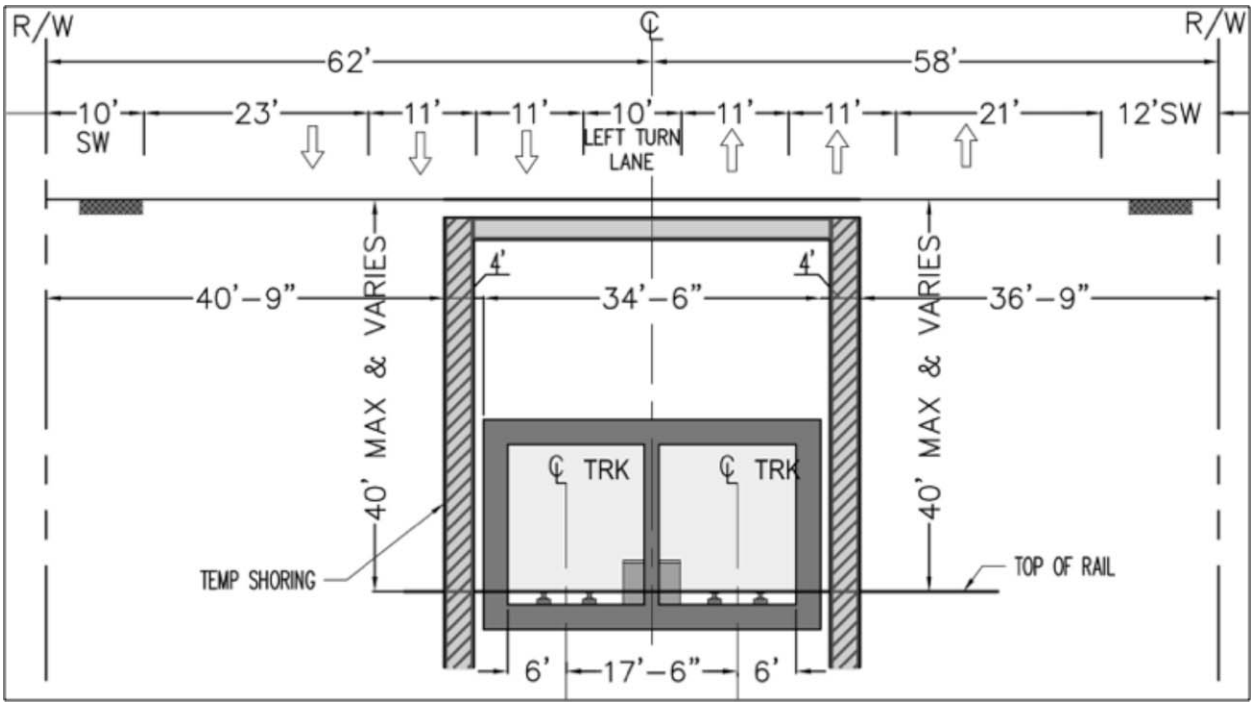
Source: Metro, John Kaliski Architects, 2015.

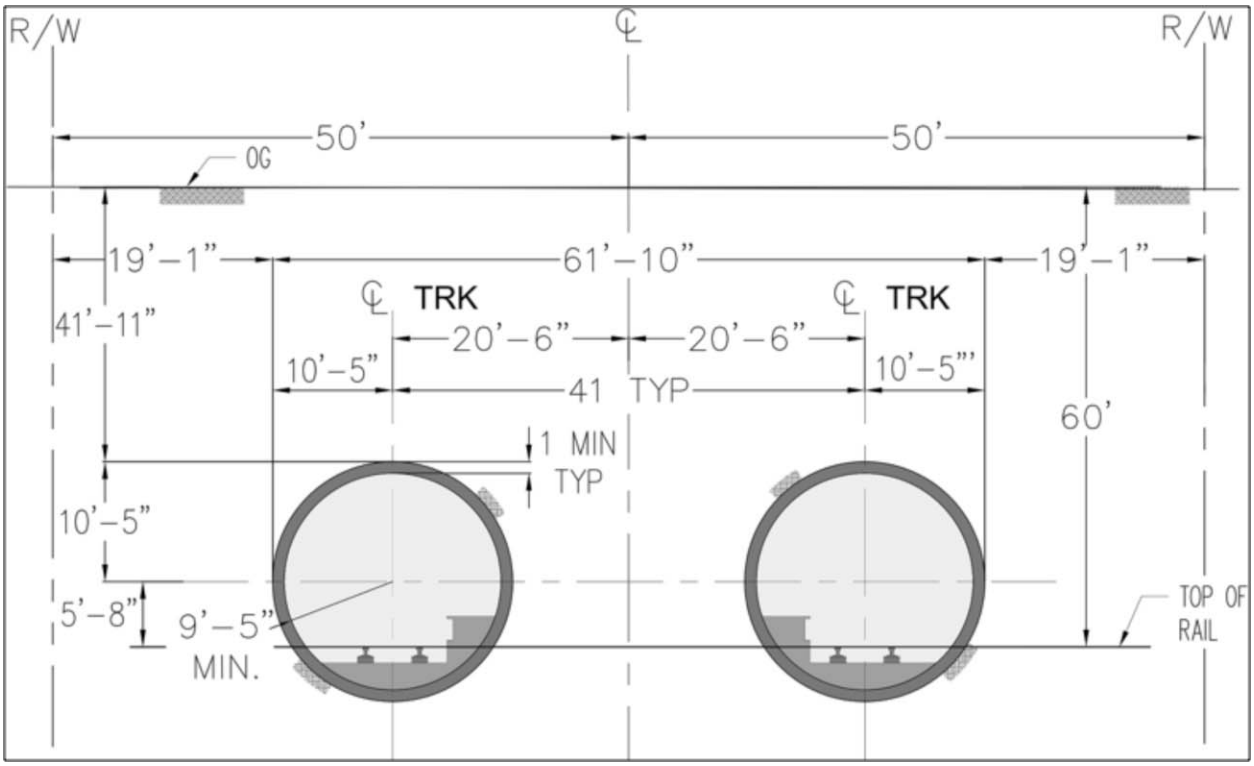
Figure 2-18: Rail Alternatives – Alternative 4: LRT (Typical Below-Grade LRT Station)



Source: Metro, John Kaliski Architects, 2014.

Figure 2-19: Rail Alternatives – Alternative 4: LRT (Examples of Typical Cross Sections for Underground Guideway and Portal)





Source: KOA, 2015.

Maintenance and Storage Facility

Similar to the Low-Floor/LRT Alternative, this Alternative would include construction of a new MSF, which would provide secure storage of the LRT vehicles when they are not in operation as well as regular light maintenance to keep them clean and in good operating condition. Figure 2-11 is a photograph of a typical MSF facility.

The MSF would be located at or near the following intersections, in industrial areas, and shown in Figure 2-12:

- MSF Option A – Van Nuys Boulevard/Metro Orange Line;
- MSF Option B – Van Nuys Boulevard/Keswick Street; and
- MSF Option C – Van Nuys Boulevard/Arminta Street.

The MSF would consist of an enclosed building and a yard where routine inspections, maintenance work, and light repairs would be performed. The facility would have sufficient storage capacity as well as paved maintenance aisles, a pit track, overhead crane, paved truck access, staff offices, parts storage areas, and a machine shop. An employee parking area may also be provided. The MSF site would be approximately 25 to 30 acres in size. Train Operators and transportation staff would be based out of MSF facilities.

Supporting Facilities

The LRT Alternative would require a number of additional elements to support vehicle operations, including an OCS, TPSS, communications and signaling buildings, and an MSF.

The LRT would travel along the median for most of the route, with a subway of approximately 2.5 miles in length between Vanowen Street and Nordhoff Street.

Per Fire Life Safety Criteria, ventilation shafts and emergency fire exits would be installed along the tunnel portion of the alignment. These would be located at the underground stations and surrounding properties or sidewalks.

Overhead Contact System

Similar to the Low-Floor LRT/Tram Alternative, an OCS would be required for this alternative (see Figure 2-13). The function of the OCS would be similar to that described for the Low-Floor LRT/Tram Alternative.

Traction Power Substations

Similar to the Low-Floor LRT/Tram Alternative, the TPSS units would be spaced approximately 1 mile apart along Van Nuys Boulevard. Up to seven TPSS locations are proposed for the LRT Alternative, generally in station areas, acquired land, and in parking lots.

A representative TPSS is shown in Figure 2-14.

Communications and Signaling Buildings

Communications and signaling buildings that would contain train control and communications equipment would be located at each station. These facilities would be constructed as enclosures underneath the station platforms.

Operations

The proposed LRT would operate with 6-minute peak and 12-minute off-peak headways. Metro Rapid Line 761S would operate with 6-minute peak and 12-minute off-peak headways, while Metro Local Line 233 would operate with 8-minute peak and 16-minute off peak headways.

Parking Loss and Lane Loss

Parking Loss

All curbside parking would be prohibited along the surface-running segments of the LRT Alternative on Van Nuys Boulevard. On-street parking would be maintained on segments where the LRT Alternative would be underground (between Vose Street and Parthenia Street) as well as where the LRT Alternative route would be located within the Metro-owned railroad right-of-way parallel to San Fernando Road and Truman Street.

Lane Loss

Travel lanes would be provided as follows:

The number of travel lanes on Van Nuys Boulevard would be reduced from three to two lanes in each direction for the segment between the Metro Orange Line and Vose Street.

- Between Vose Street and Parthenia Street, the LRT Alternative would be located underground, and no major changes in the surface roadway would be necessary.
- North of Parthenia Street, two travel lanes in each direction on Van Nuys Boulevard would be maintained, but wider curb lanes would be narrowed near intersections.
- The LRT Alternative would depart the median-running portion of the alignment on Van Nuys Boulevard at El Dorado Avenue, two blocks south of the Metrolink and Union Pacific Railroad grade crossing. Beyond that point, Van Nuys Boulevard would have two travel lanes in each direction and room for right-turn lanes at intersections. Just north of El Dorado Avenue would be the Pacoima LRT station.

The LRT alignment would be constructed within the Metro right-of-way, adjacent to San Fernando Road. The existing single Metrolink track would need to be shifted easterly, while leaving room for a proposed second Metrolink track. The recently constructed bike path along the north side of San Fernando Road would be maintained. The current lane configuration on Van Nuys Boulevard leading to and from the railroad grade crossing would remain.

Turning Restrictions

Left turns from Van Nuys Boulevard onto cross streets would be maintained at most of the currently signalized intersections where the LRT would be running in the median. However, all vehicle movements across the median at currently unsignalized intersections would be prohibited. This would include left turns from Van Nuys Boulevard as well as left turns and through traffic from un-signalized side streets and private driveways. Motorists who desire to make a left turn onto an unsignalized cross street or into a driveway would have to make a U-turn at a signalized left-turn location or choose a route that would allow them to use a signalized cross street.

The following intersections would have turning restrictions (left turns prohibited each way, unless otherwise noted):

- Van Nuys Boulevard & El Dorado Avenue (left turns prohibited northbound)
- Van Nuys Boulevard & Tamarack Avenue
- Van Nuys Boulevard & Telfair Avenue
- Van Nuys Boulevard & Cayuga Avenue
- Van Nuys Boulevard & Kewen Avenue
- Van Nuys Boulevard & Oneida Avenue
- Van Nuys Boulevard & Haddon Avenue
- Van Nuys Boulevard & Omelveny Avenue
- Van Nuys Boulevard & Amboy Avenue
- Van Nuys Boulevard & Rincon Avenue
- Van Nuys Boulevard & Laurel Canyon Boulevard (left turns prohibited southbound)
- Van Nuys Boulevard & Remick Avenue
- Van Nuys Boulevard & Vena Avenue
- Van Nuys Boulevard & Bartee Avenue
- Van Nuys Boulevard & Lev Avenue
- Van Nuys Boulevard & Arleta Avenue (left turns prohibited northbound)
- Van Nuys Boulevard & Beachy Avenue
- Van Nuys Boulevard & Canterbury Avenue
- Van Nuys Boulevard & Woodman Avenue (left turns prohibited southbound)
- Van Nuys Boulevard & Vesper Avenue
- Van Nuys Boulevard & Novice Street
- Van Nuys Boulevard & Gledhill Street
- Van Nuys Boulevard & Vincennes Street
- Van Nuys Boulevard & Tupper Street
- Van Nuys Boulevard & Nordhoff Street (left turns prohibited southbound)
- Van Nuys Boulevard & Osborne Street
- Van Nuys Boulevard & Rayen Street
- Van Nuys Boulevard between Chase Street & Roscoe Boulevard
- Van Nuys Boulevard & Lorne Street
- Van Nuys Boulevard & Michaels Street
- Van Nuys Boulevard & Keswick Street (left turns prohibited northbound)
- Van Nuys Boulevard & Covello Street
- Van Nuys Boulevard & Wyandotte Street
- Van Nuys Boulevard & Gault Street
- Van Nuys Boulevard & Hart Street
- Van Nuys Boulevard & Hartland Street
- Van Nuys Boulevard & Archwood Street
- Van Nuys Boulevard & Gilmore Street
- Van Nuys Boulevard & Friar Street
- Van Nuys Boulevard & Erwin Street (left turns prohibited southbound)
- Van Nuys Boulevard & Delano Street
- Van Nuys Boulevard & Calvert Street
- Van Nuys Boulevard & Bessemer Street

New traffic signals would be constructed at the following locations:

- Pinney Street & San Fernando Road; and
- Van Nuys Boulevard & El Dorado Avenue.

Bicycle Facilities

Bicycle parking would be provided at or near Metro stations, as required by Metro's Design Criteria. On Van Nuys Boulevard, between the Metro Orange Line and San Fernando Road, the curbside lanes typically would be 11 feet wide. The existing bike lanes extending north on Van Nuys Boulevard approximately two miles from Parthenia Street to Beachy Avenue would be removed, but bike lanes would be provided along the segment where the LRT is underground, from Hart Street north to Parthenia Street.

The City of Los Angeles recently constructed a bicycle path within Metro's railroad right-of-way parallel to San Fernando Road. This existing Class I bike path adjacent to San Fernando Road would remain in place. The right-of-way is sufficiently wide enough to allow the bicycle path to remain alongside a pair of LRT tracks and relocated tracks for Metrolink and Union Pacific trains. At the point where the LRT Alternative crosses the bicycle path, near the intersection of Pinney Street and San Fernando Road, a signalized grade crossing would be provided. It should be noted that the bike path would be shifted from the east side of the railroad alignment to the west side of the tracks through the City of San Fernando to reduce the number of bike-rail crossings, reduce the amount of right-of-way acquisitions, and provide a better alignment of the railroad and LRT tracks, since there is limited right-of-way for rail to the west of the existing tracks, but more right-of-way available east of the existing tracks, and would avoid having trains and the bike lane cross each other at Wolfskill Street.

Accessibility

Pedestrian Access

All current crosswalks at signal-controlled intersections would be maintained. Between the signalized intersections, a fence would be installed to prevent mid-block pedestrian crossings, as is Metro's current practice on its median-running LRT lines. Pedestrians would be required to walk to a signalized location to cross Van Nuys Boulevard. LRT passengers would reach the median station platforms from crosswalks at signalized intersections.

There would be a pedestrian bridge at the Sylmar/San Fernando Metrolink Station from the LRT platform to the parking lot.

In the Van Nuys Civic Center, where the existing sidewalks on each side of Van Nuys Boulevard are approximately 13 feet wide, sidewalks would be narrowed to 10 feet to accommodate the installation of two LRT tracks and a left-turn lane or LRT station in the median of Van Nuys Boulevard while providing two travel lanes in each direction. This sidewalk narrowing would occur from the Metro Orange Line to the planned subway portal north of Hartland Street. No sidewalk would be narrowed to a width less than 10 feet. At the locations where the sidewalks would be narrowed, utility poles would need to be relocated. In these areas, the entire sidewalk would be reconstructed to satisfy drainage requirements.

A similar narrowing of the sidewalks would occur along Van Nuys Boulevard north of the subway portal near Rayen Street in Panorama City where the LRT vehicles would resume a surface alignment in the roadway median and proceed to El Dorado Avenue in Pacoima.

Access to Adjacent Businesses and Residences

All current vehicle turns into and out of driveways that currently cross the median as left turns would be blocked by a median fence under the LRT Alternative. Only right turns into and out of cross streets and driveways would be allowed.

Right-of-Way

Several parcels occupying a total of 25 to 30 acres would need to be acquired to accommodate the MSF site. Right-of-way is also required to access the MSF site from the alignment. This would differ depending on the MSF site that is ultimately selected, as follows:

- MSF Option A: right-of-way would be required for vehicles to travel between Van Nuys Boulevard and the MSF site, in an alignment between the Metro Orange Line and Bessemer Street.
- MSF Option B: the tunnel would include a turnoff south of the underground Van Nuys Metrolink Station, and would form a U-Trench just west of Van Nuys Boulevard, where the LRT vehicles would travel to the MSF site located within the industrial areas just south of the Raymer Street.
- MSF Option C: the tunnel would include a turnoff north of the underground Van Nuys Metrolink Station, where a tunnel leading west to the MSF site would travel eventually into a U-Trench, between Cabrito Road and Arminta Street.

In addition, parcel acquisitions would be required for the placement of TPSS units approximately 1.0 to 1.5 miles apart along the alignment. Underground easements would also be required where the tunnel portion of the alignment travels beneath private property rather than directly underneath the Van Nuys Boulevard right-of-way.

Metro is the owner and operator of a 100-foot-wide railroad right-of-way through Pacoima, San Fernando, and Sylmar that currently has a single track down the center of the corridor, with some sidings. The track serves Metrolink commuter rail service and the Union Pacific Railroad. Within the Pacoima community of the City of Los Angeles, the 100-foot width could accommodate two LRT tracks, two commuter and freight rail tracks, and the new bike path. To provide sufficient room for the LRT tracks, the existing single rail track would be removed from the center of the corridor and replaced with double tracks along the corridor's eastern edge to serve commuter and freight rail operations. The right-of-way could accommodate a center platform LRT station near Paxton Street.

The available right-of-way within the City of San Fernando is relatively narrow. From Wolfskill Street to a point approximately 1,000 feet north of Maclay Avenue, the right-of-way widths generally range from 60 feet to 80 feet. At the Pacoima Wash, north of SR-118, a pair of new bridges would be needed, one for the LRT tracks, and the other for the commuter/freight rail tracks. These bridges would lie alongside the existing San Fernando Road Bridge and the newly constructed bike path bridge.

Gated LRT Grade Crossings

For the portion of the LRT alignment within the Metro-owned railroad right-of-way, the grade crossings at Paxton Street, Wolfskill Street, Brand Boulevard, Maclay Avenue, and Hubbard Avenue would be controlled by traditional railroad crossing gates. The current single-track crossings would become four-track crossings, contingent on approval by the Public Utilities Commission.

There is also the possibility of including pedestrian gates for at-grade street crossings, in addition to the traditional railroad crossing gates that exist at Paxton Street, Wolfskill Street, Brand Boulevard, Maclay Avenue, and Hubbard Avenue.

2.2.5 Operations Summary

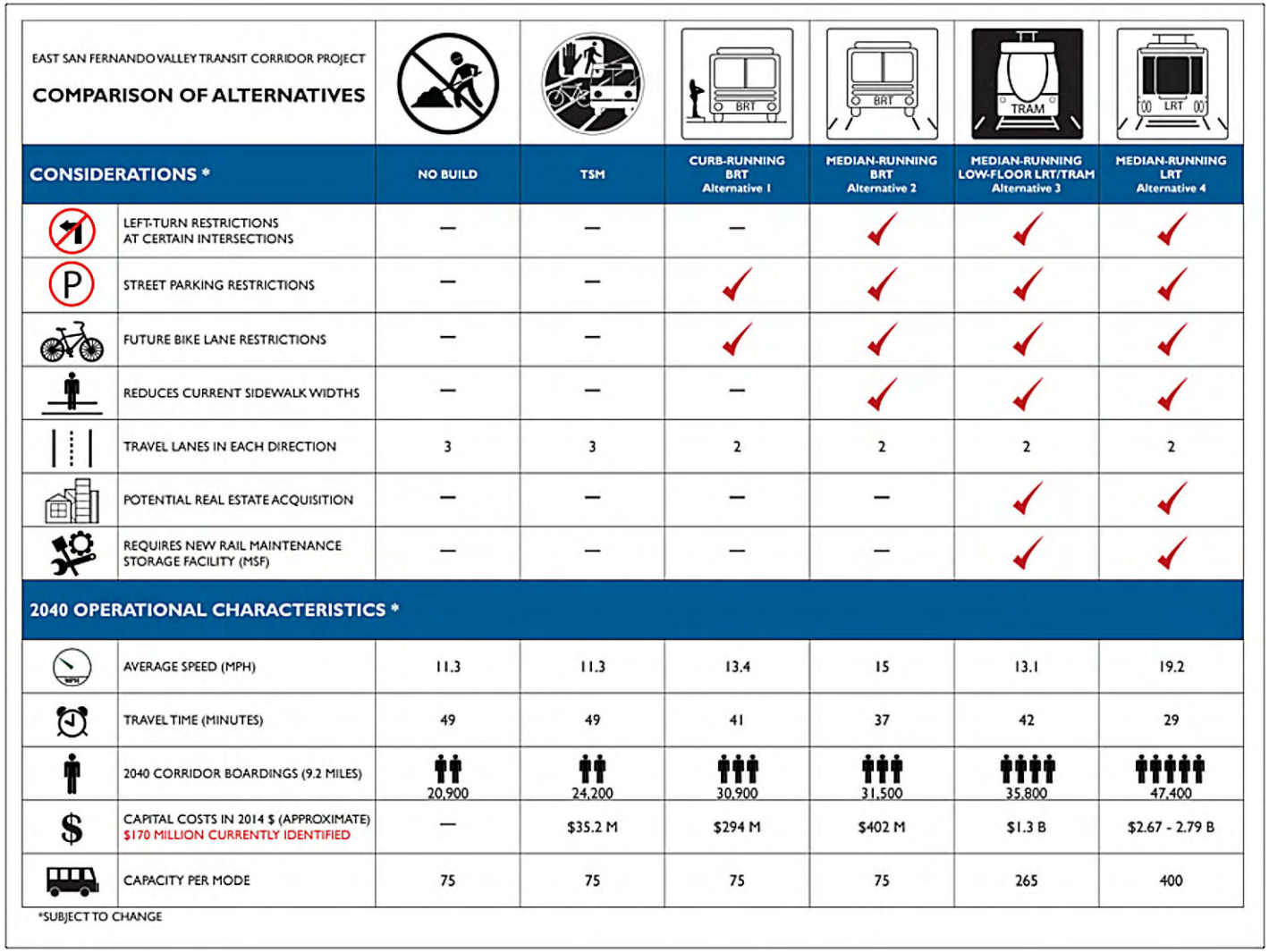
It is assumed that the TSM, BRT, Low-Floor LRT/Tram, and LRT alternatives could operate 24 hours a day 7 days a week. However, Alternative 1, the Curb-Running BRT Alternative would operate in dedicated curb lanes only from the morning and extending throughout the day and early evening but would not operate in a dedicated lane during the overnight hours. Metro Rapid Line 761 currently operates fewer hours during the evening and late-night timeframe, from 10 p.m. to 4 a.m., whereas Metro Rapid Line 761 under the No-Build Alternative (in 2040) would provide operations during expanded hours, including the time period from 12 a.m. to 4 a.m.

Headways generally are shortest during peak hours and longer during off-peak hours. The forecasted headways for each alternative are shown in Table 2-1. Figure 2-20 illustrates some of the main differences between the alternatives.

Table 2-1: Alternatives Comparison: Bus and Rail Headways during Peak and Off-Peak Hours

ALTERNATIVE	HEADWAY (Minutes)			
	Metro Local Line 233 (peak/off-peak hours)	Metro Rapid Line 761 (peak/off-peak hours)	Low-Floor LRT/Tram (peak/off-peak hours)	LRT (peak/off-peak hours)
No-Build	12/20	10/17.5	n/a	n/a
TSM	8/16	8/16	n/a	n/a
BRT- Alternative 1: Curb-Running BRT	8/16	6/12	n/a	n/a
BRT Alt.-Alternative 2: Median-Running BRT	8/16	6/12	n/a	n/a
Rail Alt. – Alternative 3: Low-Floor LRT/Tram	8/16	6/12	4/8	n/a
Rail Alt. – Alternative 4: LRT	8/16	6/12	n/a	6/12
Source: STV 2014.				

Figure 2-20: Comparison of Alternatives



EAST SAN FERNANDO VALLEY TRANSIT CORRIDOR PROJECT

COMPARISON OF ALTERNATIVES

CONSIDERATIONS *	NO BUILD	TSM	CURB-RUNNING BRT Alternative 1	MEDIAN-RUNNING BRT Alternative 2	MEDIAN-RUNNING LOW-FLOOR LRT/TRAM Alternative 3	MEDIAN-RUNNING LRT Alternative 4
LEFT-TURN RESTRICTIONS AT CERTAIN INTERSECTIONS	—	—	—	✓	✓	✓
STREET PARKING RESTRICTIONS	—	—	✓	✓	✓	✓
FUTURE BIKE LANE RESTRICTIONS	—	—	✓	✓	✓	✓
REDUCES CURRENT SIDEWALK WIDTHS	—	—	—	✓	✓	✓
TRAVEL LANES IN EACH DIRECTION	3	3	2	2	2	2
POTENTIAL REAL ESTATE ACQUISITION	—	—	—	—	✓	✓
REQUIRES NEW RAIL MAINTENANCE STORAGE FACILITY (MSF)	—	—	—	—	✓	✓
2040 OPERATIONAL CHARACTERISTICS *						
AVERAGE SPEED (MPH)	11.3	11.3	13.4	15	13.1	19.2
TRAVEL TIME (MINUTES)	49	49	41	37	42	29
2040 CORRIDOR BOARDINGS (9.2 MILES)	20,900	24,200	30,900	31,500	35,800	47,400
CAPITAL COSTS IN 2014 $ (APPROXIMATE) $170 MILLION CURRENTLY IDENTIFIED	—	$35.2 M	$294 M	$402 M	$1.3 B	$2.67 - 2.79 B
CAPACITY PER MODE	75	75	75	75	265	400

*SUBJECT TO CHANGE

Source: KOA, 2015.

2.3 Alternatives Considered and Eliminated from Further Review

The following alternative alignments were considered but eliminated from further review in this Draft DEIS/DEIR:

- Sepulveda Boulevard – Other than the southern segment, this alignment failed to link with many primary destination points, would realize fewer boardings than an alignment primarily on Van Nuys Boulevard and was opposed by the community in the northern section of the alignment.
- I-210 Freeway Terminus Point – An alignment to this location failed to link with local/regional bus or rail service and lacked the ridership potential when compared with an alignment terminating at the Sylmar/San Fernando Metrolink Station. The Metrolink Station provides regional and local linkages, a park-and-ride, bus layover facilities, and garnered greater community support.
- Van Nuys Boulevard between the Metro Orange Line and Ventura Boulevard – Since the alignment of the future Sepulveda Pass transit project has not yet been determined, nor where such a transit line would connect to existing transit lines in the San Fernando Valley, it was decided that this transit corridor should not preclude the location of the connection. Therefore, the southern terminus for this corridor was modified to be at an existing transit line.

2.4 Construction Activities

Section 4.18 of this DEIS/DEIR includes a detailed discussion of potential construction impacts, by alternative. The following text in this section is intended to provide a general description and understanding of the types of activities that would be required to construct the build alternatives.

Generally, the two BRT alternatives would require less construction than the two proposed rail alternatives. Construction of the build alternatives would utilize conventional construction techniques and equipment commonly used in the Southern California region. This could include the following:

- Pavement removal;
- Utility relocation;
- Excavation;
- Construction of at-grade trackwork and train signaling;
- Stations, including station platforms;
- Tunnels (Alternative 4);
- Construction of pedestrian access ways;
- Installation of specialty system work, such as overhead contact electrification systems and communications and signaling systems;
- Construction of TPSS facilities;
- Reconstruction of sidewalks, paving, and striping; and
- Subgrade preparation and placement of rail ballast.

All work would conform to industry specifications and standards. The construction equipment could include the following:

- Pile-driving and trenching equipment;
- Tunnel boring machines;
- Bulldozers;
- Rollers;
- Cranes;
- Concrete trucks;
- Pumping equipment;
- Flatbed trucks;
- Support vehicles, including employees' personal transportation, fuel delivery trucks, mechanics' trucks, and utility trucks used by supervisors and inspectors;
- Dump trucks; and
- Rail-mounted equipment.

Temporary traffic detours and truck routes would be required during construction. A Construction Management Plan would be implemented throughout the entire construction period to reduce potential impacts.

Construction is anticipated to last 18 to 60 months, depending on the alternative. The actual duration for construction activities would depend on final designs, the contractors' means and methods, project funding, restrictions on working hours, and other similar variables. Project construction activities would typically take place between the hours of 7 a.m. and 9 p.m. within the City of Los Angeles, in accordance with Los Angeles Municipal Code Section 41.40(a) and 7 a.m. and 6 p.m. within the City of San Fernando, in accordance with San Fernando City Code Section 34-28(10). However, Metro may seek a variance from these Municipal Code Sections, to construct particular portions of the alignment outside of these hours. Construction would begin after funding for the project is secured.

The required construction easements (i.e., the areas needed temporarily during construction in addition to the actual project footprint) would vary along the alignment, depending on the type of construction and the adjacent land use. Lane and/or road closures would be scheduled to minimize disruptions, and a Traffic Management Plan would be approved, in coordination with both the Cities of Los Angeles and San Fernando, prior to construction.

The laydown and storage areas for construction equipment and materials would be established in the vicinity of the project within the right-of-way, parking lots, vacant land, or on the parcels that would be acquired for the proposed MSF site. During construction, the contractor would determine staging locations. Construction staging areas are locations needed for:

- Equipment storage
- Construction materials delivery and storage
- Equipment assembly
- Materials production
- Dewatering activities

- Access roads
- Construction worker parking
- Temporary trailer offices
- Demolition staging
- Removal of excavated materials
- Other related activities during the construction period

Construction staging areas are temporary, and would be located within the street right-of-way and in off-street locations. Temporary street closures would be needed to accommodate construction staging. Detours and closures would be coordinated with LADOT and the City of San Fernando. In some instances, land acquired for permanent project facilities, such as station entrances, would be suitable for construction staging. In other locations, temporary construction easements may be needed to allow construction equipment to use private property during construction. Further detail on acquisitions needed for construction staging areas is provided in Section 4.2, Real Estate, and Acquisitions.

The analysis in this document assumes that, unless otherwise stated, the project would be designed, constructed, and operated in accordance with all applicable laws, regulations, ordinances, and formally adopted City of Los Angeles, City of San Fernando, and Metro standards (e.g., Los Angeles Municipal Code and Metro's Green Construction Policy). Construction and demolition activities would comply with applicable regulations, and the disposal and/or recycling of materials would be performed in accordance with standard construction practices and Metro's GEN-51: Construction and Demolition Debris Recycling and Reuse Policy. Further detail describing the potential construction methods, techniques, and equipment is included in Section 4.19, Construction Impacts, of this Draft EIS/EIR.

2.5 Anticipated Permits and Approvals

Certification of the EIR and approval of the project by Metro, as well as approval of the EIS by the Federal Transit Administration, would be required prior to construction and implementation. This DEIS/DEIR is a project EIR, as defined by Section 15161 of the California Environmental Quality Act (CEQA) Guidelines and, as such, serves as an informational document for the general public and the project's decision-makers. Metro, as the CEQA lead agency, has the responsibility for preparing and distributing the DEIS/DEIR, pursuant to State CEQA Guidelines Section 21067. Metro will prepare a Final EIS/EIR that incorporates the DEIS/DEIR and any required revisions to the DEIS/DEIR, DEIS/DEIR comments, a list of commenters, and responses to the comments. The Metro Board will consider the Final EIR together with any comments received during the public review process. The Metro Board then would decide whether to certify the Final EIR and approve the project.

This DEIS/DEIR would be used in connection with all other permits and approvals necessary for construction and operation of the project. It would be used by the City of Los Angeles, Los Angeles Department of Building and Safety, Los Angeles Bureau of Street Lighting, California Public Utilities Commission (CPUC), City of San Fernando, South Coast Air Quality Management District, and other responsible public agencies that must approve activities undertaken with respect to the project.

Implementation of the project would require discretionary actions and permits from the following agencies:

Table 2-2: Anticipated Permits and Approvals

Agency	Permit/Approval Required	Phase Anticipated
Federal Transit Administration	Approval of EIS as lead agency under NEPA	End of Environmental Phase
Los Angeles County Metropolitan Transportation Authority (Metro) Board of Directors	Certification of the EIR, adoption of Findings and Statement of Overriding Considerations, adoption of the Mitigation Monitoring and Reporting Program	End of Environmental Phase
Los Angeles Department of Transportation	Approval of traffic signal/transit priority system improvements and street restriping plans; recommendation for approval by the City Council	End of Environmental Phase
Los Angeles Fire Department	Approval of project plans for fire life safety design requirements	Final Design Plans Phase
City of San Fernando	Discretionary actions and permits would be required	Environmental Phase through Construction
Cal/OSHA	Classification by Cal/OSHA under the Title 8 Tunnel Safety Orders for construction of underground guideways and stations	Final Design Plans and Construction Phases
Metrolink	Approval for track relocations	Final Design Plans and Construction Phases
Union Pacific Railroad	Approval for track relocations	Final Design Plans and Construction Phases
U.S. Army Corps of Engineers	Permits or approval for potential encroachments on the Pacoima Wash and Los Angeles River	Final Design Plans and Construction Phases
California Department of Transportation (Caltrans)	Permits or approvals for encroachment on the I-5 and SR-118 freeway ramps	Final Design Plans and Construction Phases
California Public Utilities Commission	Approval for grade crossings	Final Design Plans and Construction Phases
Los Angeles Regional Water Quality Control Board	Stormwater Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) General Permit	Pre-Construction and Construction Phases

2.6 Approach to Cumulative Impacts Analysis

CEQA requires an environmental impact report to evaluate a project's contribution to cumulative impacts. Cumulative impacts are the project's impacts combined with the impacts of the related past, present, and reasonably foreseeable future projects. Cumulative impacts discussions for each environmental topic area are provided in this document. As stated in CEQA, Title 14, Section 21083 (b)(2), a project may have a significant effect on the environment if the "possible effects of a project are individually limited but 'cumulatively considerable.' As used in this paragraph, 'cumulatively considerable' means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects." State CEQA Guidelines Section 15130(b) states that the discussion of cumulative impacts can be either "a list of past, present, and probably future projects" or a "summary of projections contained in an adopted local, regional, or statewide plan, or related planning document that describes or evaluates conditions contributing to the cumulative effect." The cumulative impact analysis in this DEIS/DEIR uses both the summary of projections approach and related projects list, depending on the impact area. The appropriate adopted planning document is the SCAG 2012–2035 RTP/SCS. However, SCAG is currently updating the RTP/SCS to reflect the years 2016-2040. The 2016–2040 timeframe for projections is more appropriate than the 2012–2035 timeframe because it more closely resembles the estimated operational date for this project. Therefore, for purposes of this DEIS/DEIR, the modeling and calculations for cumulative impacts used throughout the analyses reflect a 2040 horizon year.

For the purposes of this analysis, the general study area used for the determination of cumulative impacts includes parts of the City of San Fernando and the communities of Mission Hills, Pacoima, Arleta, Panorama City, and Van Nuys. The general study area boundaries include the Santa Monica Mountains (just north of Foothill Boulevard) to the North, Polk Street and Sepulveda Boulevard to the West, just south of Ventura Boulevard on the South, and Fulton Avenue and Branford Street to the East. These boundaries encompass all past, present, and reasonably foreseeable projects (with impacts related to the proposed project) near the proposed project and alignment. Related projects located within the general study area are listed in Table 2-3 and depicted in Figure 2-21. If the study area for a particular resource area differs from the general study area, that study area is identified in the relevant section below.

Detailed descriptions of the affected environment/existing conditions for each of the resource areas (visual and aesthetics; air quality; cultural resources; ecology and biology; etc.) can be found in the individual technical studies prepared for each resource area. An overview of the affected environment within the study defined above is provided below.

The study area is located in the San Fernando Valley area of Los Angeles. The San Fernando Valley is a flat area consisting of approximately 260 square miles, and is bounded by the Santa Susana Mountains to the northwest, the Simi Hills to the west, the Santa Monica Mountains and Chalk Hills to the south, the Verdugo Mountains to the east, and the San Gabriel Mountains to the northeast. The San Fernando Valley is an urbanized area that includes a variety of land uses, including residential, commercial, institutional, and light industrial development. The project corridor is approximately 9.2 miles in length, and runs nearly the entire north/south length of the valley floor.

Table 2-3: Cumulative Projects

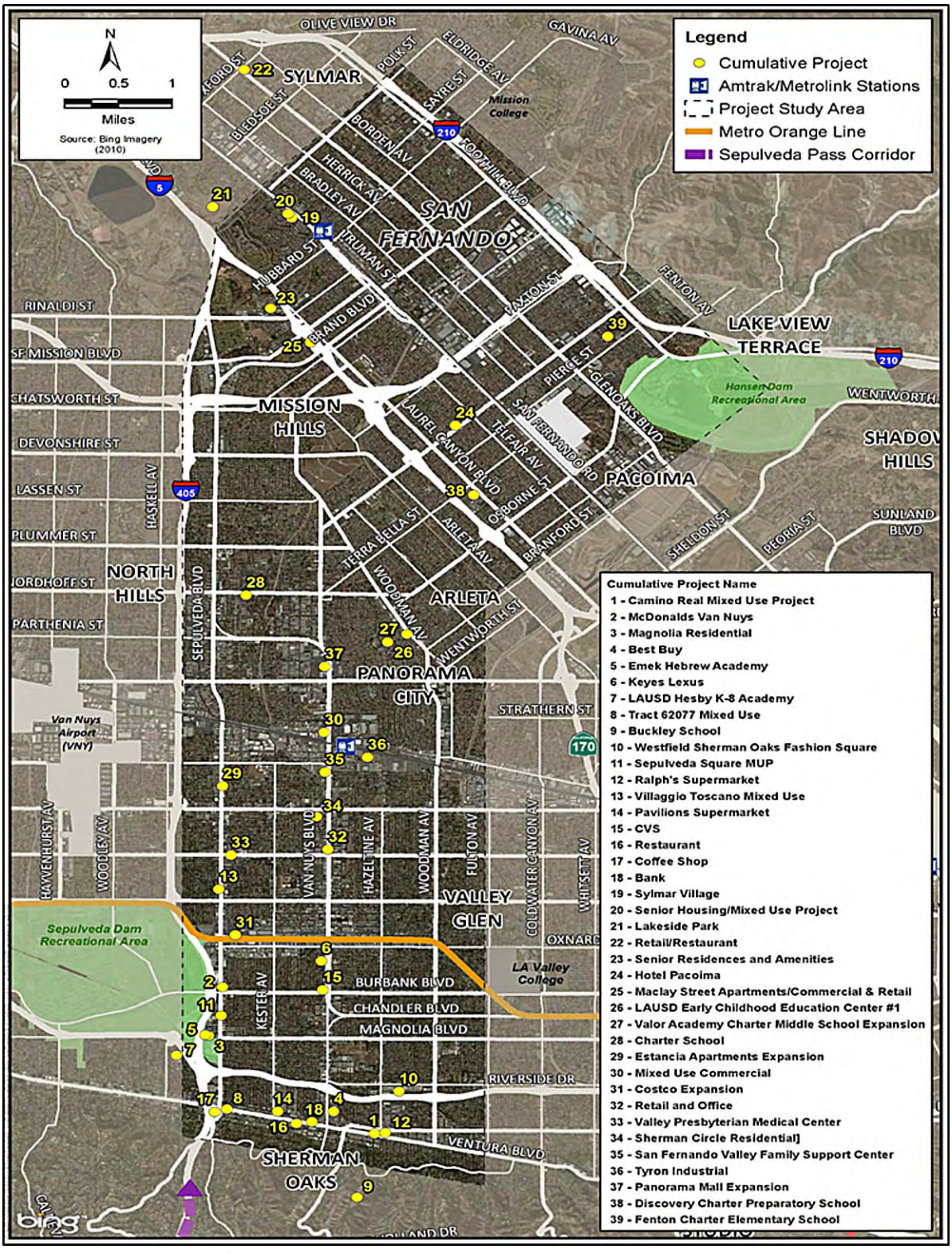
Map Reference No.	Status	Project Title	Project Description/Scope	Project Location
1	Completed	Camino Real Mixed Use Project	Demolition of 7,000 sf of commercial uses. Proposed condominium and retail uses.	14121 Ventura Blvd.
2	Pre-construction	McDonalds Van Nuys	2,437 sf fast food with drive thru	5628 Sepulveda Blvd.
3	Completed	Magnolia Residential	Proposed 98 apartments	15357 Magnolia Blvd
4	Completed	Best Buy	60,000 sf electronics store	4500 Van Nuys Blvd
5	Completed	Emek Hebrew Academy	225 student enrollment increase	15365 Magnolia Blvd
6	Completed	Keyes Lexus	Proposed car dealership	5855 Van Nuys Blvd
7	Completed	LAUSD Hesby K-8 Academy	528 K-8 students in academy school to replace old school site	15530 Hesby St
8	Completed	Tract 62077 Mixed Use	52 condominiums plus 7,460 sf specialty retail	15222 Ventura Blvd
9	Completed.	Buckley School	Addition to existing school	3900 Stansbury Avenue
10	Under Construction	Westfield Sherman Oaks Fashion Square	Expansion of existing shopping center	14006 Riverside Dr
11	Pre-construction	Sepulveda Square MUP	97 condo units/34,775 sf retail	5700 N Sepulveda Blvd
12	Constructed	Ralphs Supermarket	Supermarket	14049 Ventura Blvd
13	Pre-construction	Villaggio Toscano Mixed Use	500 apartment units	4805 N Sepulveda Blvd
14	Constructed	Pavilions Supermarket	Supermarket	14845 Ventura Blvd
15	Constructed	CVS	12,830 sf pharmacy with drive-thru	5601 Van Nuys Blvd
16	Constructed.	Restaurant	restaurant	14708 Ventura Blvd
17	Pre-construction	Coffee shop	Coffee shop	15315 Dickens St.
18	Pre-construction	Bank	7,000 sf bank to replace 7,000 sf office	14601 Ventura Blvd
19	Pre-construction	Sylmar Village	246 condo units, 9,000 sf retail,9,000 office building	12385 San Fernando Rd
20	Pre-construction	Senior housing/mixed use project	150 senior housing units, 25,000 sf medical office	12415 San Fernando Rd

Map Reference No.	Status	Project Title	Project Description/Scope	Project Location
21	Pre-construction	Lakeside Park	Development of a 36-acre park with five baseball fields and four full-size soccer fields, a skate plaza, office space, and parking lots.	15300 W Lakeside St
22	Pre-construction	Retail/Restaurant	7,486 sf retail/restaurant	13530 Glenoaks Blvd
23	Pre-construction	Senior Residences and amenities	1,250 units of senior residences and amenities	11570 N Indian Hills
24	Pre-construction	Hotel Pacoima	44-room hotel development	13535 Van Nuys Blvd
25	Completed	Maclay Street Apartments/Commercial & Retail	141 units and 10,115 sf commercial space	13260 W Maclay St
26	Completed	LAUSD Early Childhood Education Center #1	175 seats for pre-K to 2nd grade	8605 Colbath Ave
27	Completed	Valor Academy Charter Middle School Expansion	Charter middle school expansion	8755 Woodman Ave
28	Pre-construction	15136 Nordhoff Street Charter School	Charter school	15136 Nordhoff St
29	Completed	Estancia Apartments Expansion	77 additional apartments	6640 N Sepulveda Blvd
30	Pre-Construction	Mixed Use Commercial & Fire Station	Fire Station and Office/Retail Commercial Space	14450 Arminta St
31	Pre-Construction	Costco Expansion	13,221 sf addition	6100 N Sepulveda Blvd
32	Completed	Retail and Office	100 apartments, 13,000 sf, retail	6828 Van Nuys Blvd
33	Completed	Valley Presbyterian Medical Center	79,127 sf office building	15225 Vanowen St
34	Under Construction	Sherman Circle Residential	355-unit apartment building	14500 W Sherman Circle
35	Under Construction	San Fernando Valley Family Support Center	Relocation of County Services building	7515 Van Nuys Blvd
36	Pre-construction	Tyrone Industrial	283,920 sf light industrial uses	7600 Tyrone Ave
37	Pre-Construction	Panorama Mall Expansion	Expansion of existing mall	8401 Van Nuys Blvd
38	Pre construction	Discovery Charter Preparatory School	Proposed 400-student private high school	9989 Laurel Canyon Blvd
39	Completed	Fenton Charter Elem School	Relocation and expansion of existing school	11351 Dronfield Ave

Map Reference No.	Status	Project Title	Project Description/Scope	Project Location
40	Preliminary Planning	Sepulveda Pass Transit Corridor Project	Implementation of a transit project in the Sepulveda Pass area, connecting the San Fernando Valley and the Westside regions of Los Angeles	Sepulveda Pass area, but exact alignment still undefined
41	Preliminary Planning	Pacoima Wash Greenway Project	Development of greenway along the Pacoima Wash area, connecting with San Fernando Road Metrolink Bike Path	

Source: KOA and ICF International, 2015.

Figure 2-21: Cumulative Projects



Source: ICF International, 2015.