Canoga Transportation Corridor

Final Comparative Evaluation of Alternatives Report

Los Angeles County Metropolitan Transportation Authority
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Los Angeles, CA 90012

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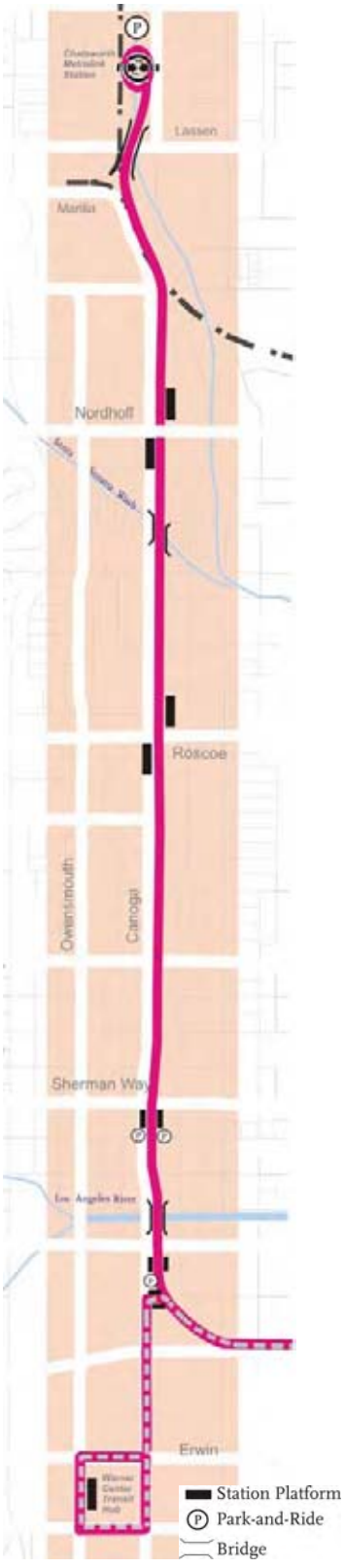
EXECUTIVE SUMMARY



Introduction

The Canoga Transportation Corridor Study was initiated in May 2007 to identify how to build upon the success of the Metro Orange Line (MOL) with a north-south connection from the western end of the busway at the Canoga Station to the Chatsworth Metrolink Station four miles to the north. Initially, eight alternatives along three different corridors were considered. The MOL extension alternatives included on-street, mixed-flow operations and dedicated bus lanes on Topanga Canyon Boulevard, De Soto Avenue and Canoga Avenue. Public scoping meetings were held in July 2007 at which input on project alternatives was solicited. A Screening Report was completed in September 2007 which narrowed the range of alternatives for study in the Draft Environmental Impact Report (DEIR) to two build alternatives, a No Project and a Transportation Systems Management (TSM) Alternative.

The DEIR was publicly circulated between March 3 and April 16, 2008. Public input was received from many individuals and 10 public agencies. The letters from the public generally focused on which alternative or northern option was the author's preferred alternative. The largest number of comments related to the desire for sound walls along residential portions of the corridor and concerns about noise and/or fumes. Most of the public input was supportive of a transportation improvement in the Canoga Corridor, including the landscape and pedestrian/bikeway improvements. Only a few persons were opposed to the project, including a few businesses that might be impacted by it.

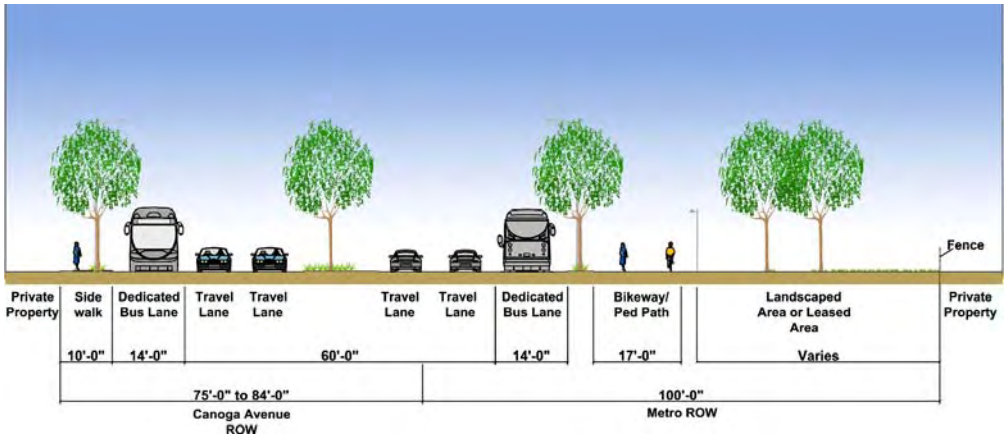
This Comparative Evaluation of Alternatives Report is intended to assist the Los Angeles County Metropolitan Transportation Authority (Metro) Board in selecting a Locally Preferred Alternative (LPA) for the Canoga Transportation Corridor based on the environmental analysis and other evaluation criteria.

Alternatives Evaluated

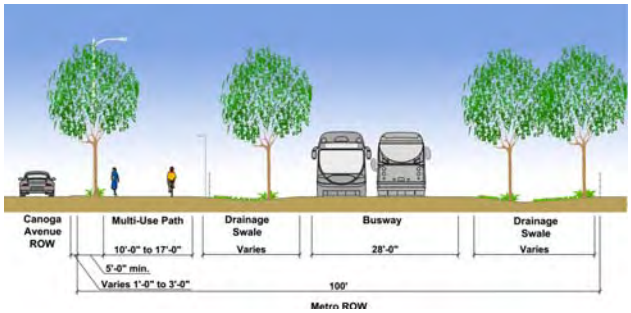
Three Project Alternatives were evaluated in addition to the 2030 No Project condition:

- **Transportation Systems Management Alternative** – addition of local bus service on Canoga Avenue and headway improvements to several existing Metro bus routes

- **On-Street Dedicated Bus Lanes Alternative** – widening of Canoga Avenue into the Metro-owned parallel former railroad right of way to provide dedicated bus-only lanes along the curbs and bicycle/pedestrian paths on the adjacent Metro right of way. The typical cross section for this alternative is illustrated below.



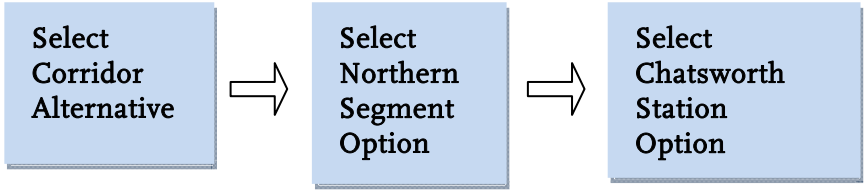
- **Busway Alternative** – extension of the MOL along the Metro-owned right of way with parallel bicycle/pedestrian paths similar to the existing MOL from North Hollywood to Canoga Station. The typical cross section for this alternative is illustrated below.



Locally Preferred Alternative

A corridor alternative (base LPA) is selected first. The northern segment options (how that corridor alternative will be connected to Lassen Street) are discussed and evaluated following the selection of the base LPA. Finally, the Chatsworth Station option that works best with the northern segment option is determined. This three step process is illustrated below.

A Three-Step LPA Selection Process



The Canoga Busway Alternative is the recommended LPA. It meets more of the goals and objectives (see table below) established for this corridor than the other alternatives. The Busway received strong public support, significantly more than any other alternative. It is less costly and more cost-effective than the On-Street Dedicated Bus Lanes Alternative. It provides aesthetic and landscape improvements along the corridor and provides the high-quality premium rapid bus service that has been successful on the MOL.

It also provides more safety (incident prevention) and certainty in terms of bus speeds and travel times into the future since buses are in a dedicated facility separate from autos.

Project Alternatives Comparison				
Goal/Objective	No Project	TSM	On-Street Dedicated Bus Lanes	Busway
Regional Connectivity				✓
North-South Mobility				✓
Land Use & Development				✓
Community Input				✓
Environmental Impacts	✓	✓		
Community Impacts	✓	✓		
Cost-Effectiveness				✓
Total				✓

✓ Alternative which best meets projects goals and objectives
Source: Iteris, 2008

The capital costs for the TSM Alternative include only the costs of additional buses, whereas the capital costs for the build alternatives includes the infrastructure and vehicle costs. The capital costs for the base (Option 1) alternatives are:

TSM Alternative: $12.6 million (2007 dollars)

On-Street Dedicated Lanes Alternative: $207.7 million (2007 dollars)

Busway Alternative: $157.3 million (2007 dollars)

The On-Street Dedicated Lanes Alternative is more costly than the busway because Canoga Avenue would have to be widened and re-built as part of that alternative, in addition to the costs of the parallel bike and pedestrian pathways and landscaping, whereas the Busway leaves Canoga Avenue largely as is and most of the capital cost is spent within the Metro right-of-way.

The annualized capital and operating costs for the alternatives are described below in 2007 dollars. The TSM Alternative is lower in cost, but also results in less annual hours of travel time savings for riders.

Cost-Effectiveness Calculation: Incremental Value Over No Project			
Alternative	**Annualized Capital Costs (2007 $)**	**Annual O&M Cost (millions 2007 $)**	**Annual Hours Saved (millions)**
TSM	$1.59	$15.33	0.08
On-Street Dedicated Bus Lanes Alternative	$56.43	$23.05	0.98
Busway	$33.42	$22.04	0.99

Source: Iteris, 2008

The Federal Transit Administration utilizes a factor called the cost-effectiveness index to compare transit projects around the country. The index is a measure of the cost to obtain an hour of travel time savings. The table below shows that the Busway Alternative is the most cost-effective alternative because it costs less than the On-Street Dedicated Lanes Alternative, while achieving slightly higher travel time savings and while it may be more expensive than the TSM Alternative, it results in much greater travel time savings.

Cost-Effectiveness Index Calculation (Lower is Better)		
Build Alternative	**Annualized Cost Per Hour Saved**	
	Over No Project	**Over TSM**
TSM	$ 211	-
On-Street Dedicated Bus Lanes	$ 81	-$130
Busway	$ 56	-$155

Source: Iteris, 2008

As seen on the table above, the Busway Alternative would be the most cost-effective alternative.

Stations on the Busway Alternative will be located at the following locations:

- Canoga Park-and-Ride Station (additional platforms added to the existing stations
- Sherman Way Park-and-Ride Station (includes parking)
- Roscoe Station
- Nordhoff Station
- Chatsworth Metrolink Park-and-Ride Station (additional platforms added, location depends upon which Northern Terminus Option is selected)

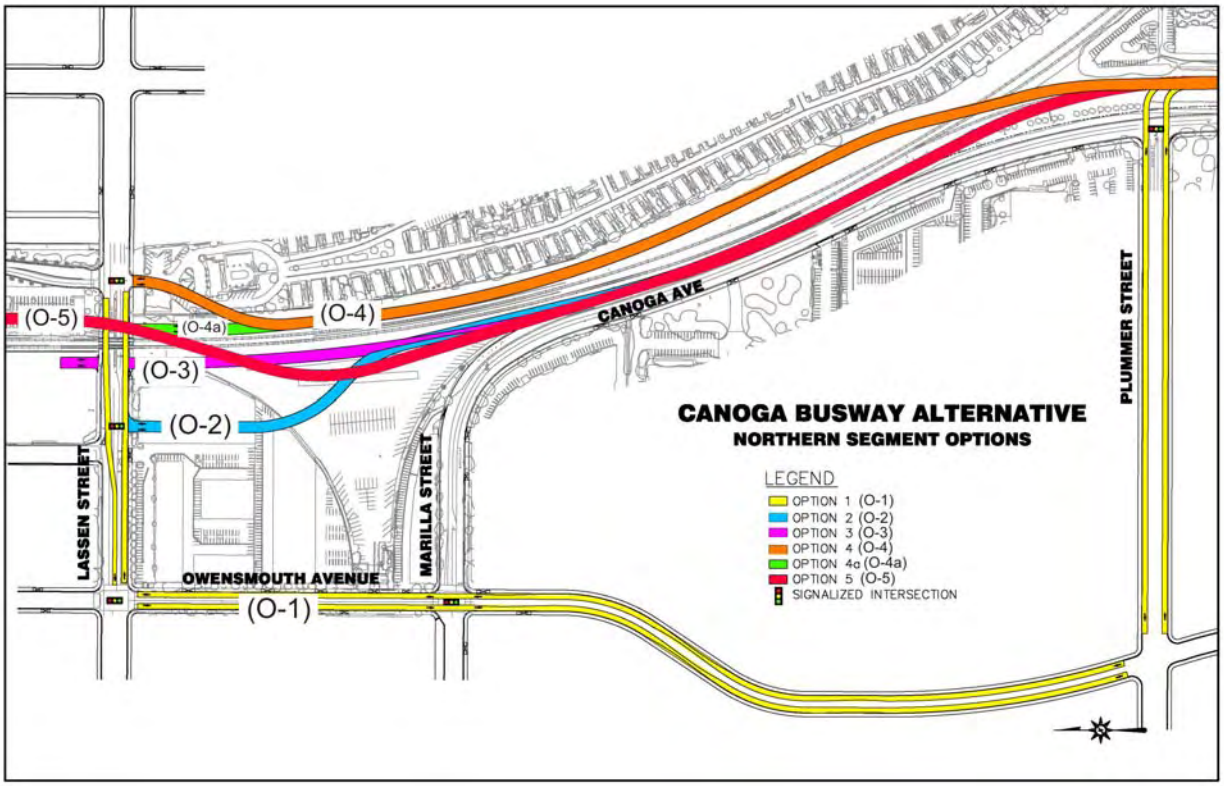
Northern Terminus Option 5 – Grade Separation into Chatsworth Metrolink Station is recommended as the LPA.

Five northern segment options were considered. These options are illustrated below.

Option 1 Busway Ends At Plummer - This has lowest capital cost, but would also be the least safe and have the lowest bus operating speed, thus lengthening travel times and reducing the quality of MOL service. This option is opposed by the Los Angeles Department of Transportation (LADOT), the Union Pacific Railroad Company (UP), the California Public Utilities Commission (PUC), and

Metrolink, due to safety concerns with buses crossing the railroad tracks at grade. Conversion to LRT under this option would be very costly due to property acquisitions.

Option 2 At-Grade "T" Intersection on Lassen Approx. 200 Ft West of Tracks – This option would have relatively low costs (even though it requires property acquisitions) and is also one of the least safe and slower options. Conversion to LRT under this option would be very costly due to property acquisitions.



Option 3 At-Grade Parallel Crossing of Lassen West of Tracks – this option is a faster and safer option compared to Options 1 and 2; however, it would require the station be on the west side of the railroad tracks (private property to be acquired) and this would make the rail-bus interface less convenient for travelers. Furthermore, having the station on the west side of the tracks would make LRT conversion more difficult in the future. This option would require a new signal on Lassen Street at the busway's crossing. This signal may require simultaneous railroad gate activation, causing additional traffic delays.

Option 4 Underpass of Tracks with Crossing of Lassen East of Tracks – These options are also faster and safer; however, they negatively impact the Sunburst Mobile Home Park, may be opposed by the UP railroad, and are difficult and costly to construct due to the undercrossing of the active rail tracks. Furthermore, this option would require a new signal on Lassen Street at the busway's crossing. This signal may require simultaneous railroad gate activation, causing additional traffic delays. This option would have lower LRT conversion costs, as the necessary ROW would have already been secured.

Option 5 Elevated/Underground Grade Separation of Railroad Tracks and Lassen Street – this option would be the safest way to access the Metrolink station. Furthermore, no private property would have to be acquired for this option. However, the overpass version of this option could be opposed by some due to visual concerns. The underpass version would cost significantly more than the other options. The overpass version would not cost more than Options 4 and 3.

As stated above, Option 5 is recommended as the LPA.

Chatsworth Station

Given that Option 5 is the preferred northern segment option, **Chatsworth Station Option D is the LPA.**

The total cost of the LPA, with the Busway, northern segment Option 5 (overcrossing) and Chatsworth Station Option D, is $191 million in 2007 dollars.

Other Considerations

- An optional station at Parthenia was included in the DEIR. It is recommended that it not be included in the LPA because it would result in one-half mile station spacing, closer than desired on rapid bus service or BRT and would attract a small number of new riders (250 per day). It also increases the cost of the project by $4.6 million (2007 dollars).

- The potential on-street, mixed-flow extension of MOL service north of the Chatsworth Metrolink Station to the SR-118 freeway was evaluated. It is not recommended because of the difficulty of locating a park-and-ride lot at SR-118, limited ridership forecast on the extension, congestion on the routes to the SR-118 which would slow bus travel times, and significant community opposition.

1.0 INTRODUCTION

This report evaluates the alternatives presented in the Canoga Transportation Corridor Draft Environmental Impact Report (DEIR), released to the public on March 3, 2008. An EIR is an informational document, which informs public agency decision makers, and the public of the potentially significant environmental effect of a project, identifies possible ways to minimize the significant effects, and describes reasonable alternatives. The EIR does not, however, recommend an alternative.

1.1 PURPOSE OF THE LOCALLY PREFFERED ALTERNATIVE

The purpose of this report is to evaluate the adequacy of each alternative in terms of its ability to meet the project's goals and objectives, and to recommend a locally preferred alternative (LPA). Metro will consider the information in the DEIR, the recommended LPA in this report and the public's input, prior to the approval of the Project. Other agencies and several Departments of the City of Los Angeles will also be involved in reviewing and approving the Project.

1.2 BACKGROUND AND HISTORY

The San Fernando Valley North-South Transit Corridor Regionally Significant Transportation Investment Study (RSTIS), completed in April, 2003 evaluated transit enhancements on five major corridors extending from Vineland Avenue in the East Valley to Topanga Canyon Boulevard in the West Valley. The RSTIS, which was approved by the Metro Board in May, 2003, recommended transit improvements on five north-south corridors, including the Canoga Transportation Corridor. Subsequently, Metro completed the Canoga Transportation Corridor Alternatives Screening Report (Screening Report), focusing only on alternatives in the Canoga Corridor which could serve to implement the remaining RSTIS recommendations for improved north-south transit improvements in the western San Fernando Valley. The Los Angeles Department of Transportation (LADOT) is currently studying transit improvements on the other four corridors recommended by the RSTIS. The Screening Report, which was the first step in this environmental clearance process, was submitted to the Metro Board as an information item in September 2007. The report narrowed the alternatives for further consideration from ten to four. The four alternatives include the No Build and Transportation Systems Management (TSM) Alternatives and two Build Alternatives which were then included in the DEIR. **Figure 1** illustrates the two build alternatives presented in the EIR.

Figure 1 Canoga Transportation Corridor Alternatives

2.0 PROJECT GOALS AND OBJECTIVES

The goals and objectives for the project were developed from the transportation and land use goals and objectives of the participating government agencies and are consistent with the other transit improvements currently planned for Los Angeles County. **Table 1** lists the goals and objectives for the Canoga Transportation Corridor.

Table 1 Goals and Objectives

Goal	Objective
1. Enhance regional transit connections to/from the western San Fernando Valley	a. Connect with other regional transportation facilities, including the MOL, Ventura Metro Rapid Bus and Metrolink b. Capitalize on the success of the MOL by providing an operational and physical interface with a north-south transit service c. Complete a "Transit Loop" in the San Fernando Valley, comprising Metrolink and the MOL, and covering both east-west and north-south corridors d. Provide an alternative to the congested San Diego (I-405), Golden State (I-5), Ronald Reagan (SR-118) and Hollywood (SR- 170-US-101) freeways e. Promote intra-modal and inter-modal integration and connectivity to improve system-wide transportation efficiency f. Relieve congestion through the Cahuenga (U.S. 101) and Sepulveda (I-405), and Santa Susana (SR-118) passes by providing connections to the Los Angeles Basin through the Metro Red Line and to the Wilshire Metro Rapid Bus.
2. Improve north-south mobility in the western San Fernando Valley.	a. Connect important activity centers, including educational, medical, cultural, commercial and business b. Enhance transit accessibility to residential land uses c. Support sustainable transportation development by increasing transit ridership d. Provide efficient, convenient and affordable transit alternatives to both choice riders and riders without easy access to other modes of transportation e. Minimize north-south travel times f. Provide enhanced bi-directional north-south transit service g. Provide opportunities to intercept traffic passing through the Valley h. Provide park-and-ride lots at transit stops where compatible with surrounding land uses i. Relieve congestion on North-South arterials
3. Support land use and development goals	a. Provide high-capacity transit linkages between major activity centers b. Support the objectives/strategies of SCAG's Compass Growth Vision for focusing growth in existing and emerging centers and along major transportation corridors c. Achieve City of Los Angeles General Plan Framework Plan goals for increased transit use and concentration of growth in designated Targeted Growth Areas d. Coordinate with City of Los Angeles' Transportation Element policies for Transit Priority Arterial Streets e. Enhance joint development opportunities f. Support and be compatible with the goals of the Los Angeles River Revitalization Master Plan for ensuring safe access to and compatibility between the river and other activity centers g. Support the objective of the Warner Center Specific Plan to coordinate future land use development in Warner Center with the public transit and transportation system

Table 1 Goals and Objectives	
Goal	**Objective**
	h. Support the Canoga Park- Winnetka – Woodland Hills – West Hills Community Plan policies for the development of a public transit system that improves mobility with convenient alternatives to automobile travel and the provision of safe, attractive and clearly identifiable transit stops with user friendly design amenities i. Support the Chatsworth-Porter Ranch Community Plan policy for the increase in bus routes and bus frequency as the potential ridership increases in the Community with population growth
4. Maximize community input, i.e., define the project in a manner that it is responsive to community and policy makers	a. Provide opportunities for community input to the planning and environmental review process b. Seek new ways to share information and incorporate community views into planning (i.e. ensure a collaborative and interactive participation process) c. Provide alternative and multi-lingual methods for community input, including in-person, telephone, and web-based opportunities for information and feedback
5. Provide a transportation project that is compatible with and enhances the physical environment wherever possible	a. Identify cost-effective improvements that minimize adverse effects on the environment b. Avoid impacts on parklands c. Minimize noise impacts d. Minimize impacts on cultural resources e. Minimize air pollution f. Reduce conflicts with trucks, autos and pedestrians to ensure safety g. Incorporate streetscape improvements in the transit improvements h. Incorporate improvements at transit stops that enhances the physical environment for waiting passengers i. Incorporate improvements that enhance bicycle and pedestrian accessibility to transit stops j. Incorporate improvements along the transit corridor that provide enhanced bicycle and pedestrian mobility to the surrounding neighborhoods k. Provide connections to planned landscaping and trail improvements along the Los Angeles River
6. Provide a transportation improvement project that minimizes impacts on the community	a. Minimize business and residential dislocations, community disruption, and property damage b. Avoid creating physical barriers, destroying neighborhood cohesiveness, or in other ways lessening the quality of the human environment c. Minimize traffic and parking impacts d. Minimize impacts during construction
7. Provide a transportation project that is cost-effective and within the ability of Metro to fund, including capital and operating costs	a. Identify cost-saving measures to reduce project costs b. Leverage existing transportation resources and explore new innovative financing opportunities c. Prioritize alternatives eligible for State Traffic Congestion Relief Program funding earmarked for the San Fernando Valley d. Maximize the benefits associated with the use of existing public rights-of-way. e. Ensure fiscal consistency with the Metro Long Range Transportation Plan f. Ensure integration with Metro Local services g. Identify, if appropriate, a phased implementation plan for alternatives to be implemented as funds are identified

3.0 ALTERNATIVES CONSIDERED

3.1 PRELIMINARY SCREENING RESULTS

As discussed above, the Screening Report was the first step in the environmental clearance process, and was submitted to the Metro Board as an information item in September 2007. The Screening Report considered eight build alternatives along three different corridors to extend the MOL, a TSM and a No Build Alternative. The MOL extension alternatives included on-street, mixed-flow operations and dedicated bus lanes on Topanga Canyon Boulevard, De Soto Avenue and Canoga Avenue. The extension of the MOL Busway through Metro's right-of-way (ROW) was also considered. The MOL extension alternatives were screened to two: Canoga On-Street Dedicated Bus Lanes Alternative and Canoga Busway Alternative. The alternatives operating on the other two corridors were screened out because of their potential traffic impacts, community opposition and lower ridership potential. The two selected build alternatives, a No Project Alternative and the TSM Alternative, were then included in the EIR. The MOL extension build alternatives included in the Screening Report are illustrated in **Figure 2**.

SR-118 Option

For each of the build alternatives, the Screening Report included the assessment of a potential on-street, mixed-flow connection to a park-and-ride lot at SR-118. This connection would allow automobile commuters coming from both directions on SR-118 to park close to the freeway off-ramp and connect via transit with destinations in the entire San Fernando Valley and beyond. Three options for extensions of bus service north from the Chatsworth Metrolink Station were examined: (1) via Topanga Canyon Boulevard to a potential park-and-ride lot in the vicinity of the SR-118 Topanga Canyon Boulevard ramps; (2) via De Soto Avenue to a potential park-and-ride lot in the vicinity of the SR-118 De Soto Avenue ramps; or (3) via De Soto Avenue, Rinaldi Street and Porter Ranch Road to an existing park-and-ride lot south of SR-118 along Porter Ranch Road.

The feasibility of this extension was limited primarily by the availability of suitable sites for a park-and-ride lot in the vicinity of the freeway ramps (Topanga Canyon Boulevard or De Soto Avenue) and/or the feasibility of having buses access the existing park-and-ride lot at Porter Ranch Road. In the case of Topanga Canyon Boulevard, no suitable sites were available for the development of a park-and-ride lot and the area is zoned for park land. As for the existing Porter Ranch Road park-and-ride lot, even though the lot has capacity to accommodate new riders, it would take buses up to 8-10 minutes to travel the 3.2-mile stretch from the Chatsworth Metrolink Station, given the levels of congestion on De Soto Avenue, and this would have negative cost and operational implications that would make the extension infeasible. Furthermore, 60-foot buses would have difficulty turning around at the park-and-ride facility.

Finally, one potentially suitable site was identified at the northern terminus of De Soto Avenue near SR-118. However, this option was not carried forward as part of the project description for two reasons: 1) during the two public scoping sessions held for the project, significant public opposition to running frequent Metro Liner buses on De Soto Avenue was expressed and; 2) the travel demand at the potential SR-118 station was forecasted to be only approximately 30 peak-period and 250 daily transit trips. The cost of extending MOL service north to SR-118 with three minute headways would not be justified to capture 30 additional peak-period riders.

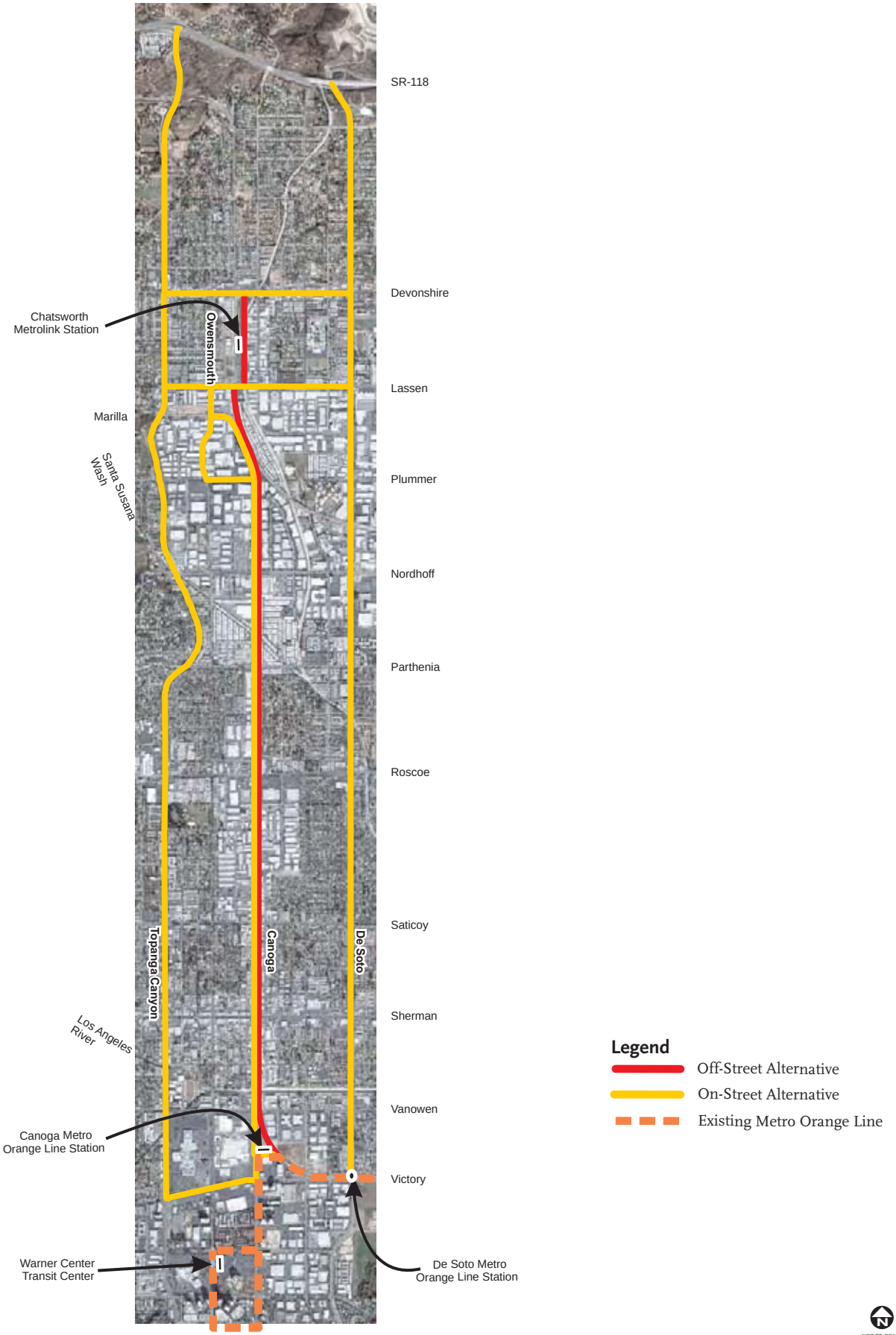


Figure 2
Initial MOL Extension Alteranatives

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If the level of service was less than the three minute headways proposed for the rest of the MOL, the level of ridership would likely decrease, making this extension of service not cost-effective. It is therefore not recommended that the extension to SR-118 be included as part of the LPA.

3.2 BRIEF DESCRIPTION OF ALTERNATIVES IN DEIR

No Project

The No Project Alternative reflects the condition anticipated for the year 2030, based on SCAG's growth forecast, if no major transit improvement investments are made in the western SFV. This scenario would mean that the Metro-owned ROW or Canoga Avenue would not be used for a transit project. This alternative is used as a baseline for comparison to the TSM, On-Street Dedicated Bus Lanes, and Busway Alternatives.

TSM

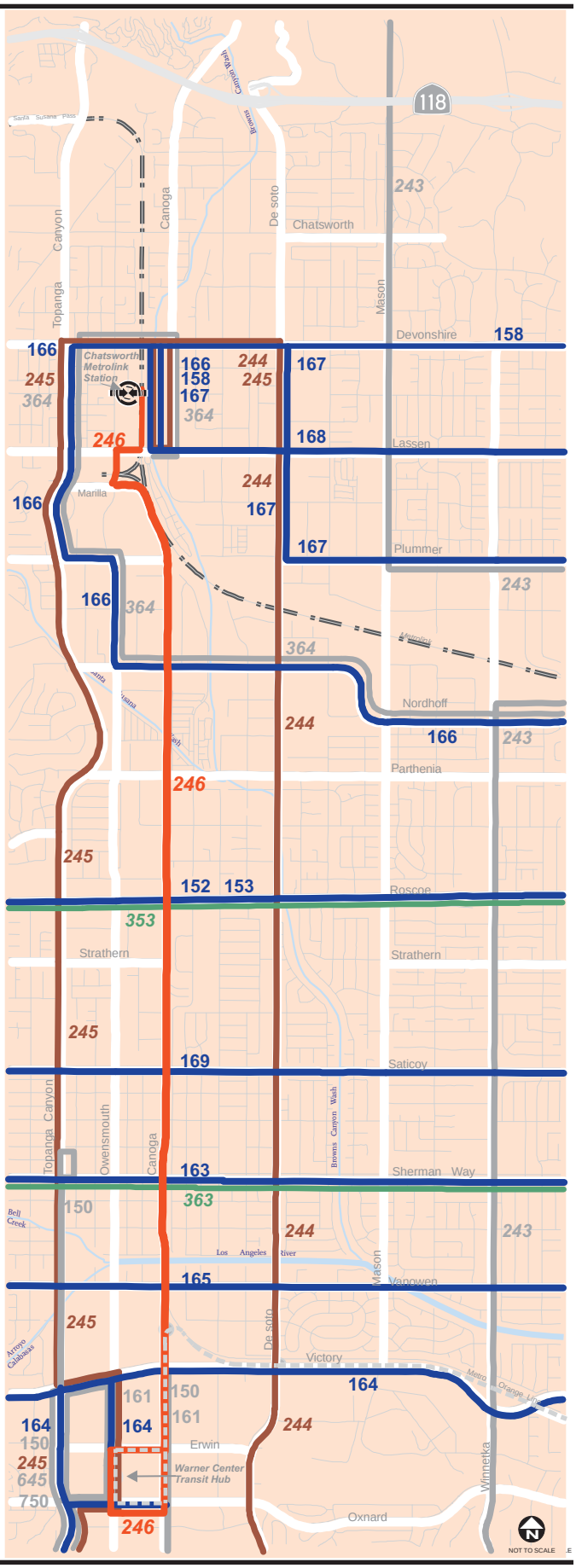
A Transportation Systems Management (TSM) Alternative is designed to identify low-cost, easily implementable improvements as an alternative to the construction of more-expensive alternatives. The TSM Alternative entails frequency improvements on existing Metro transit routes as well as providing a new local transit line for Canoga Avenue, though not including any transit priority measures (signal priority or dedicated lanes) for this corridor.

The implementation of the TSM Alternative would allow for a reduction in headways in comparison to the No Project Alternative. The TSM Alternative improvements would be applied for the full length of each route. If all suggested improvements were made, estimated increased fleet requirements would be up to 23 vehicles (excluding spares). These improvements would need to be prioritized and could be included with any selected alternative.

The TSM Alternative also includes the addition of a new Metro Local route along Canoga Avenue. The new local route (246) would extend from the Warner Center Transit Hub to the Chatsworth Metrolink Station, utilizing Owensmouth Street, Oxnard Street, Erwin Street, Canoga Avenue, Marilla Street, Owensmouth Street, and Lassen Street. The TSM Alternative's new local service on Canoga Avenue would include a terminal at Warner Center, a stop at the existing Canoga MOL station and stops on Canoga Avenue at Sherman Way, Saticoy, Roscoe Boulevard, Parthenia, Nordhoff, Plummer, and Lassen Streets in line with closer stop spacing provided by local service. The TSM Alternative is illustrated in **Figure 3**.

On-Street Dedicated Bus Only Lanes & Northern Options

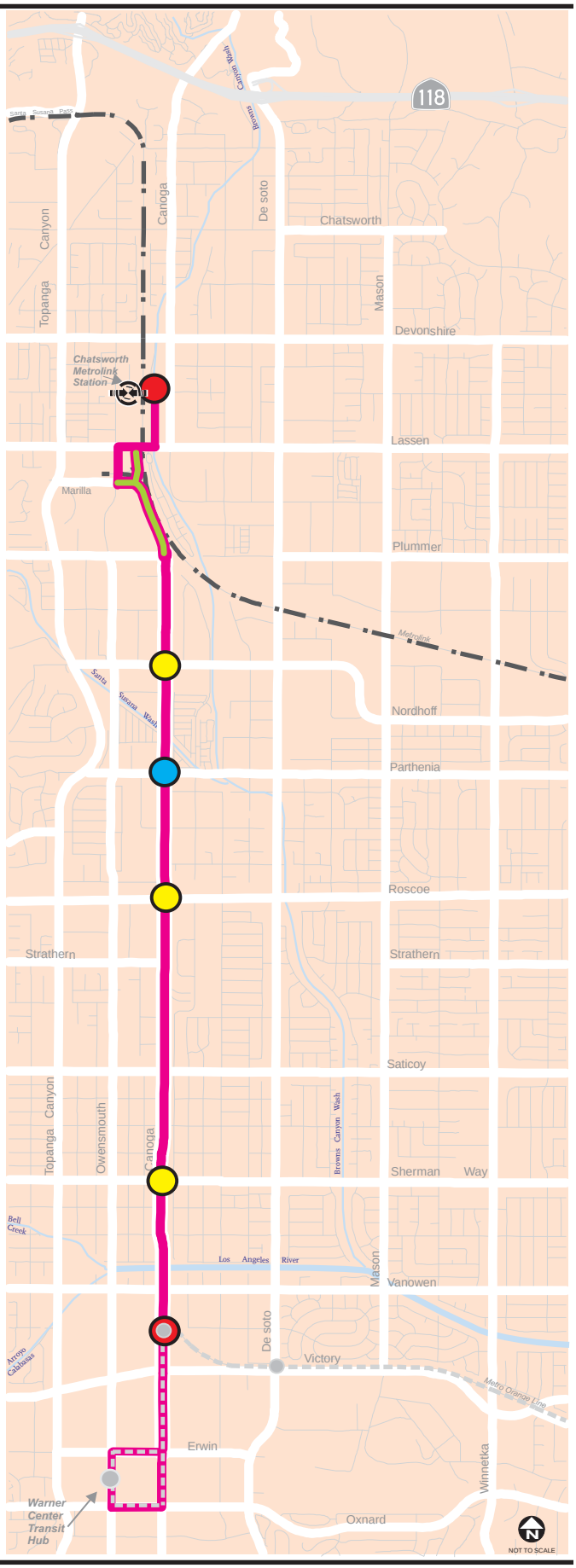
This alternative would operate similar to a Metro Rapid service, but with dedicated lanes. A southbound Bus-Only Lane along Canoga Avenue provided by prohibiting on-street parking; a northbound Bus-Only Lane would be provided by widening the street into the Metro-owned ROW that parallels Canoga Avenue. At intersections with east-west cross streets, Canoga Avenue will be further widened into the Metro ROW to provide right-turn-only lanes on Canoga Avenue, which would allow right-turning vehicles to merge across the bus-only lanes so that through buses are not blocked by right-turning vehicles at the intersections. The dedicated lanes would be paved in concrete at the stations and extend approximately 150 ft. north and south of the stations in each direction. On Canoga Avenue, north of the Canoga MOL Station, a landscaped median island would be provided as part of this alternative. This landscape median would not extend north of Plummer Street, where the roadway narrows to one lane in each direction. **Figure 4** illustrates the alignment of the On-Street Dedicated Bus Lanes Alternative.



Legend

- New Local Route 246 (Warner Center - Chatsworth Transportation Center)
- East/West Local Service
- North/South Local Service
- Limited Stop Service
- Metrolink & Metrolink Stations
- Existing Stations (Metro Orange Line)

Source: TMD



Legend

- Main Route
- Metrolink Chatsworth Station Access Options
- Metrolink & Metrolink Stations
- Proposed Stations
- Optional Station
- Reconfigured Station
- Existing Stations (Metro Orange Line)

Source: ITERIS

Figure 4
On-Street Dedicated Bus Lanes Alternatives

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The Canoga On-Street Dedicated Bus Lane Alternative would be a "modified" version of the MOL concept of a "multi-modal transportation facility within a greenway." Canoga Avenue would be widened between Vanowen and Nordhoff Streets to create dedicated lanes for the BRT adjacent to the curbs. Along Canoga Avenue, the Metro ROW varies from 40 ft to 275 ft with a typical width of 100 ft. The 100 ft ROW and larger ROW sections provide opportunities for landscaping, a bikeway/pedestrian path and the dedicated lanes.

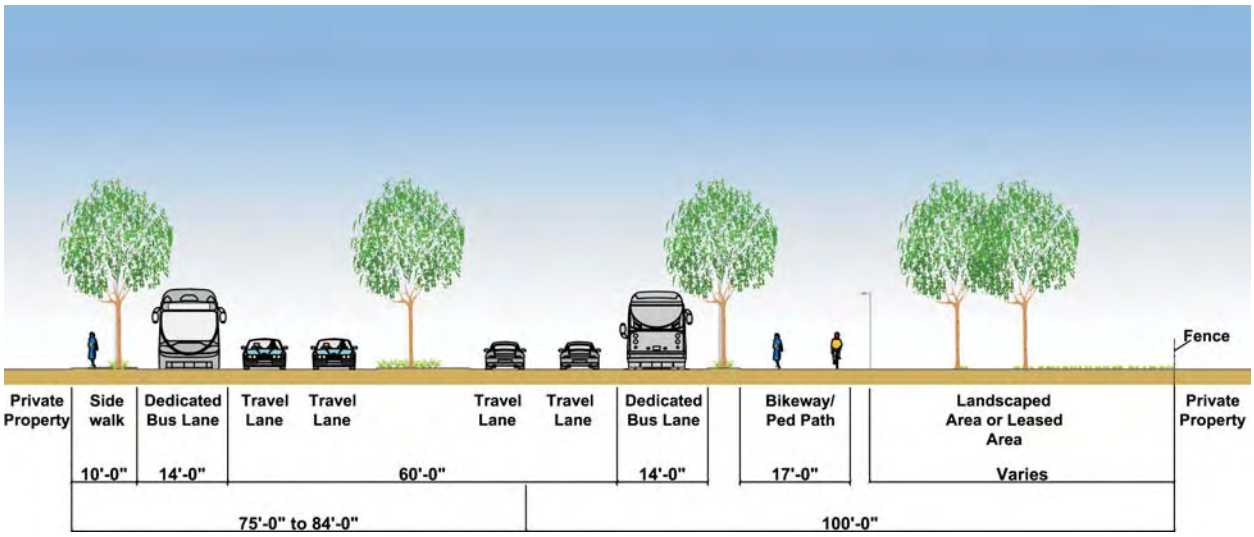
The 40-foot portion is at the north end of the corridor along the railroad tracks. The Canoga On-Street Dedicated Bus Lanes Alternative will utilize City of Los Angeles ROW in addition to the Metro ROW in this area. The 65-foot portion, a short segment directly north of Sherman Way, is directly behind a recently built strip shopping center with parking facing Canoga Avenue. The Canoga On-Street Dedicated Bus Lanes Alternative would displace this shopping center to accommodate the median, dedicated bus lanes, station platforms, and the bikeway/pedestrian path. The property would have to be purchased and the building torn down. This alternative also requires the termination of the Canoga Self-Storage lease between Saticoy Avenue and Roscoe Boulevard. Other Metro leases adjacent to Canoga Avenue would not be renewed. The 275 ft portion of the Metro ROW, located south of Sherman Way and north of Vanowen Street provides the opportunity for the typical sections of the Canoga On-street Dedicated Bus Lanes Alternative. The additional ROW width also provides opportunities for landscaping, the potential preservation of some existing Metro leases, and the integration of the project with the Los Angeles River. At the northern end of the route, between Marilla Street and Lassen Avenue, this alternative may include dedicated bus lanes in an exclusive ROW. The ROW north of Marilla Street is only partially owned by Metro; therefore, some private property would have to be purchased. **Figure 5** illustrates typical cross-sections for the On-Street Dedicated Bus Lanes Alternative.

Where feasible, a Class I bikeway and parallel pedestrian path would run from the Canoga MOL Station to the Chatsworth Metrolink Station and would occupy 10-17 ft of the ROW. Where ROW allows, the facility would include a 12-foot bikeway and adjacent 5-foot pedestrian pathway. Where less than 17 feet is available (at the stations, and parallel to the railroad tracks), a 10-foot multi-use path is provided and will be shared by bicycles and pedestrians. Buses would be the only vehicles allowed within the dedicated lanes, except at intersections and driveways, where vehicles would be able to cross the dedicated lanes in order to turn right. Left turn pockets into driveways are not anticipated. Furthermore, a right-turn pocket would be provided at the approaches to all intersections along Canoga Avenue where the dedicated lanes are implemented, allowing buses to cross the intersections unimpeded by right-turning vehicles. Signage would be posted listing restrictions on autos, trucks, motorcycles, bicycles and pedestrians within the dedicated lanes.

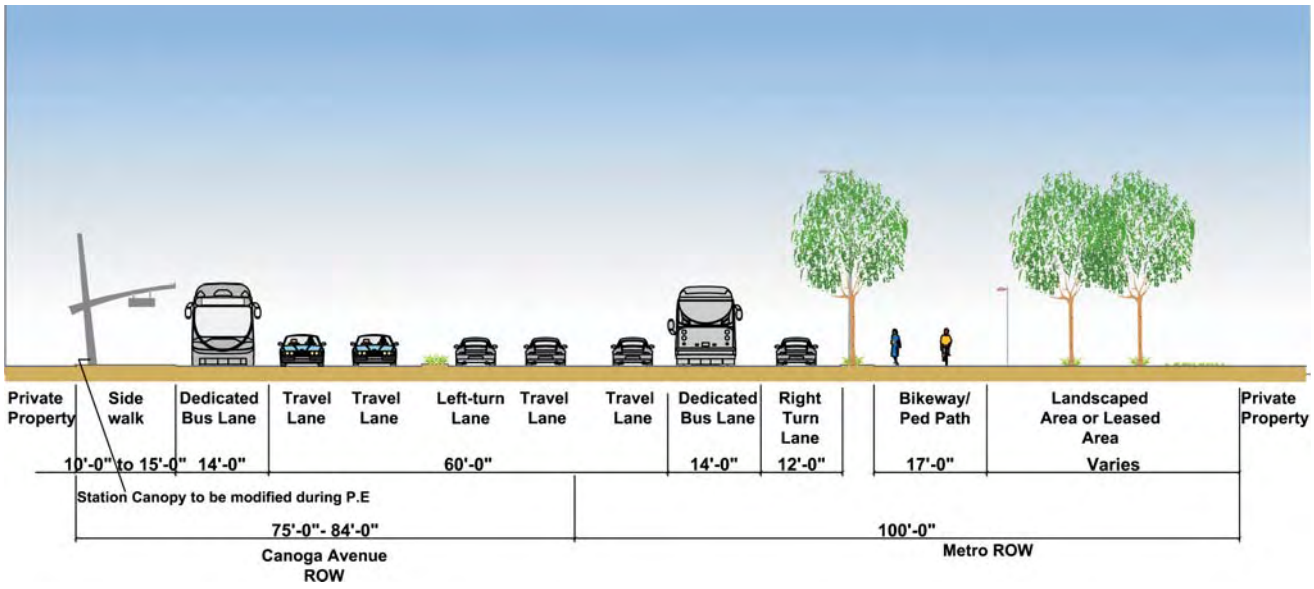
North of Plummer Street, the Canoga Avenue ROW is limited and the Amtrak/Metrolink/UP tracks are still in operation. Canoga Avenue narrows from two lanes in each direction to one lane in each direction. Several sub-options are under consideration for this area and will be described below.

Three options are considered for the final northern segment to connect to the Chatsworth Metrolink Station. Landscaping would be provided along each side of the busway and the multi-use path for all the options. All options are illustrated in **Figure 6**.

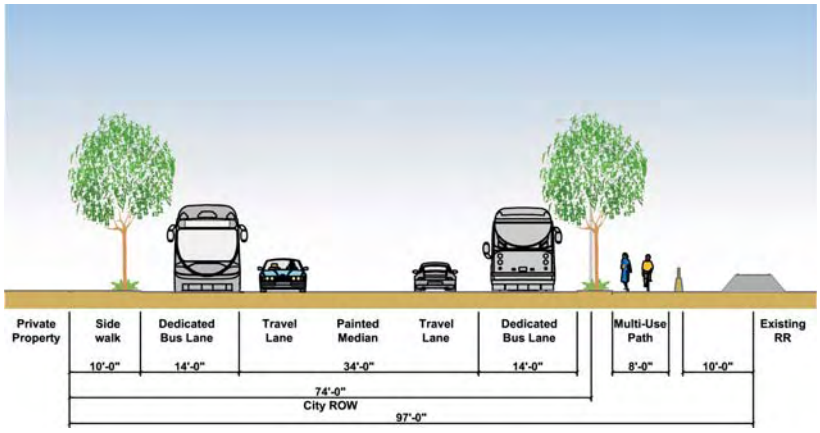
Option 1 Dedicated Bus Lanes end at Marilla Street - The dedicated lanes would end at Marilla Street and buses would use Marilla Street, Owensmouth Avenue, Lassen Street and Old Depot Plaza Road. With this option, the intersection of Lassen Street and Old Depot Plaza Road would be signalized. The multi-use path for this option would either terminate at Plummer Street or continue up the railroad ROW to Lassen Street.



from Vanowen Street to Nordhoff Street



from Vanowen Street to Nordhoff Street with northbound right-turn lane



from Nordhoff Street to Marilla Street

Source: GRUENASSOCIATES

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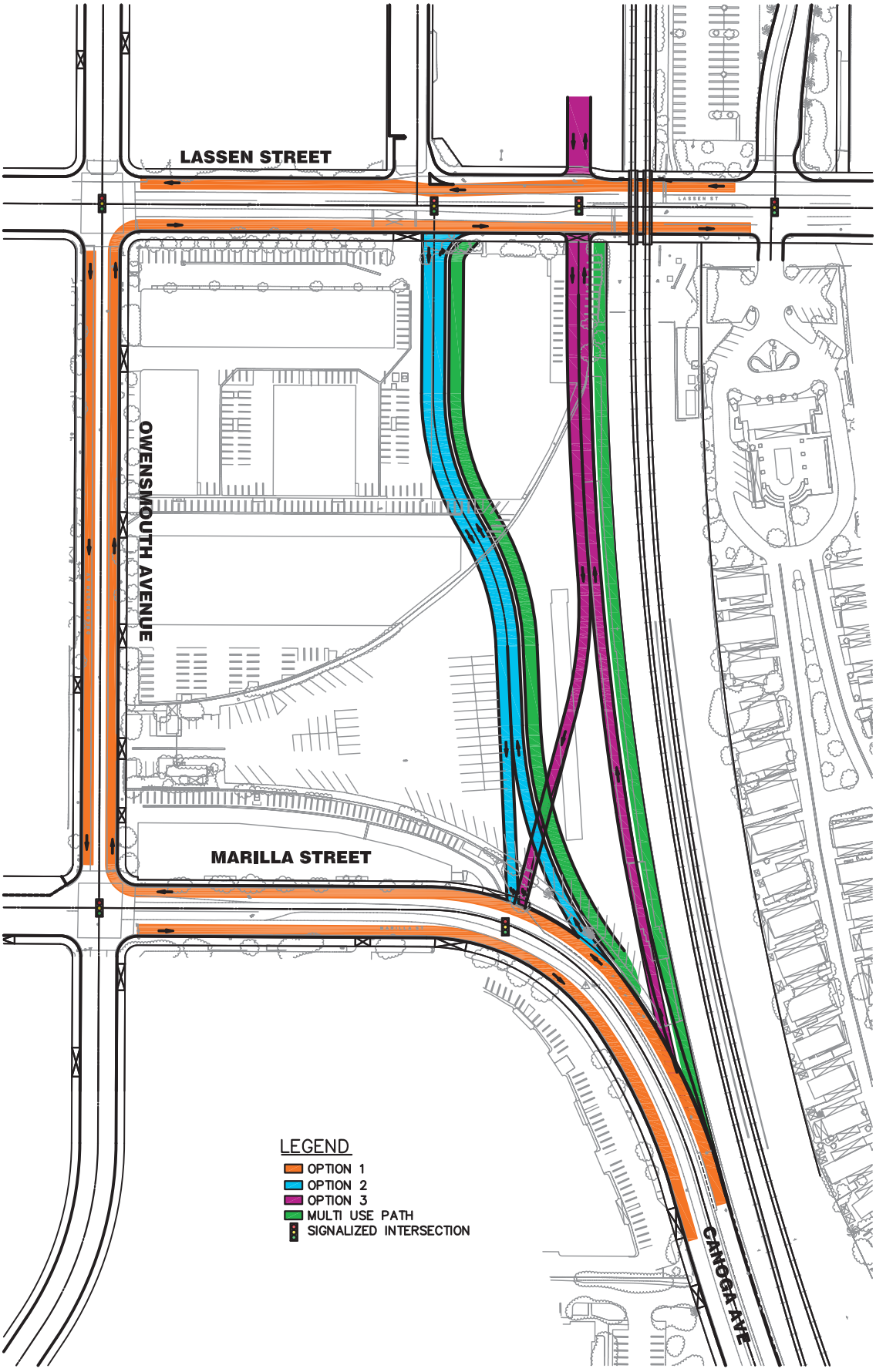

Figure 6
On-Street Dedicated Bus Lanes - Northern Segment Option

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Option 2 At-Grade "T" Intersection on Lassen Street Approx. 200 ft. West of Tracks - The dedicated lanes would continue north of Marilla Street through two parcels (one is Metro-owned and the other one is privately-owned) to connect to Lassen Street at a new signalized intersection approximately 200 ft west of the tracks; the buses would then turn right onto Lassen Street, cross the tracks, and left onto Old Depot Plaza Road (Lassen Street at Old Depot Plaza Road will be signalized). The multi-use path for this option would terminate at Lassen Street.

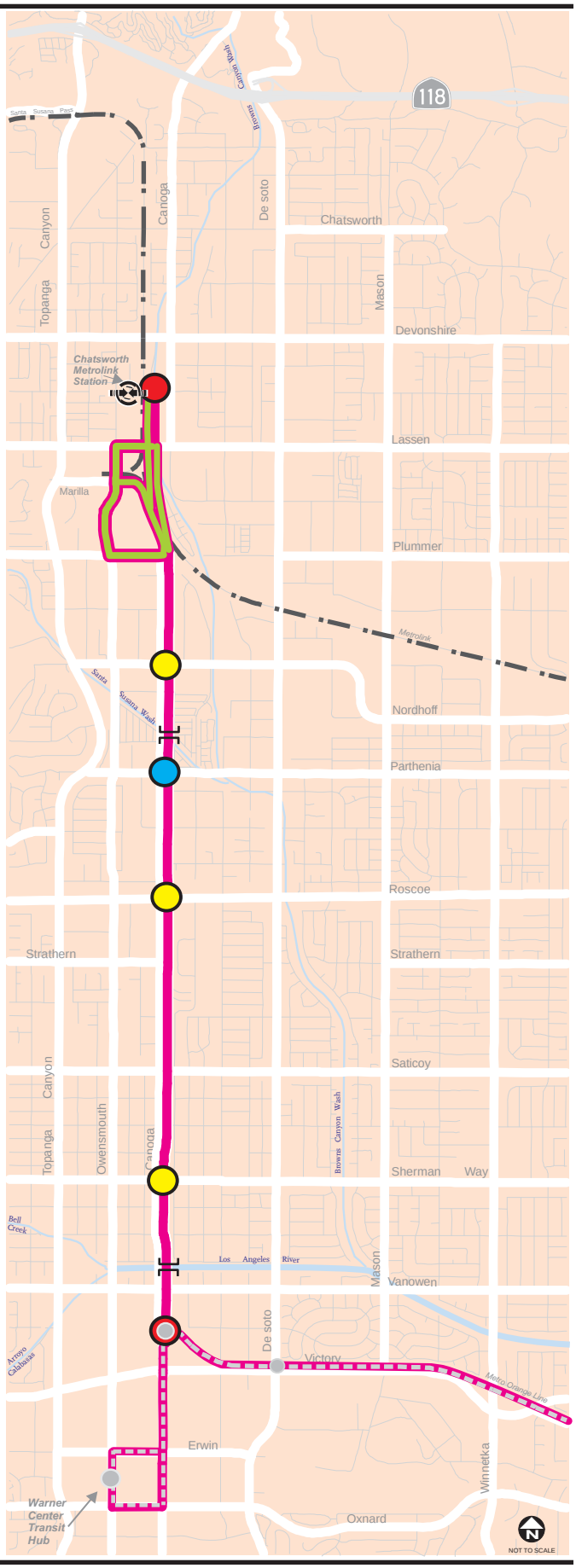
Option 3 At-Grade Parallel Crossing of Lassen West of Tracks - The dedicated lanes would continue north of Marilla Street through two parcels (one is Metro-owned and the other one is privately-owned) and then cross Lassen Street at a new signalized intersection to access a new terminus bus station located on the west side of the train tracks, on a property that is currently privately-owned. A grade-separated pedestrian access to the new bus station from the parking lot would be provided. The multi-use path for this option would terminate at Lassen Street.

Busway Alternative & Northern Options

The Canoga Busway Alternative consists of a fixed busway extending BRT service north from the existing MOL Canoga Station along the Metro-owned railroad ROW paralleling Canoga Avenue, to the Chatsworth Metrolink Station. Some of the options for the northern portion of the alignment could potentially require some ROW purchases. **Figure 7** illustrates the alignment of the Busway Alternative.

Along most of the alignment, the ROW would provide adequate room for landscaping and space for a bikeway/pedestrian path adjacent to the busway. Along Canoga Avenue, the Metro ROW varies from 40 ft to 275 ft with a typical width of 100 ft. The 100 ft ROW and larger ROW sections provide opportunities for landscaping, bikeway/pedestrian paths and the busway. The 40-ft portion is adjacent to the railroad tracks at the north end of the corridor. In this segment, the busway and multi-use path will be between the tracks and a narrowed Canoga Avenue, with room for only minimal landscaping. The 65-ft portion, a short segment directly north of Sherman Way, is directly behind a recently built strip shopping center with parking facing Canoga Avenue. The busway and a multi-use path would be located behind the shopping center, but the narrow 65 ft ROW in this segment reduces the potential for landscaping and a bio-swale (swaled drainage course with gently sloped sides and filled with vegetation and compost). The 275-ft portion of the Metro ROW, located south of Sherman Way and north of Vanowen Street provides the opportunity for the typical sections for the Canoga Busway Alternative. The additional ROW width (approximately 175 ft) also provides the opportunity for additional landscaping, the potential preservation of existing long-term leases, and the integration of the project with the Los Angeles River Revitalization Master Plan. The ROW narrows significantly north of Plummer Street, adjacent to the Metrolink tracks. At this point, Canoga Avenue would be 32 ft wide. Due to the curving nature of the railroad tracks and Canoga Avenue (moving away from each other), the narrow segment is limited in length and the roadway (Canoga Avenue) will widen back to 62 ft as quickly as possible. Several options are considered for the northern segment to connect to the Chatsworth Metrolink Station and they are discussed in detail below. **Figure 8** illustrates typical cross-sections for the Busway Alternative.

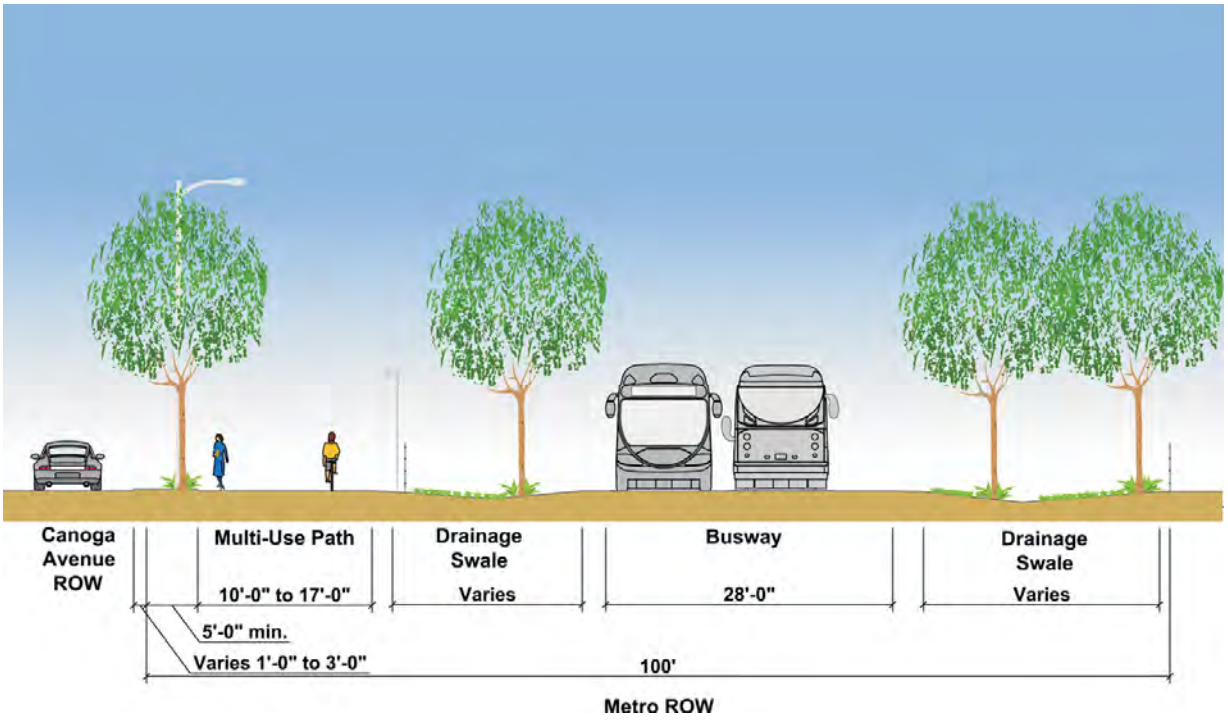
Where feasible, a Class I bikeway and pedestrian path would run from the Canoga MOL Station to the Chatsworth Metrolink Station and would occupy 10-17 ft of the ROW. Where ROW allows, the facility would include a 12-foot bikeway and adjacent 5-foot pedestrian pathway. Where less than 17 feet is available (at the stations, parallel to the railroad tracks, and just north of Sherman Way), a 10-foot multi-use path is provided and will be shared by bicycles and pedestrians.



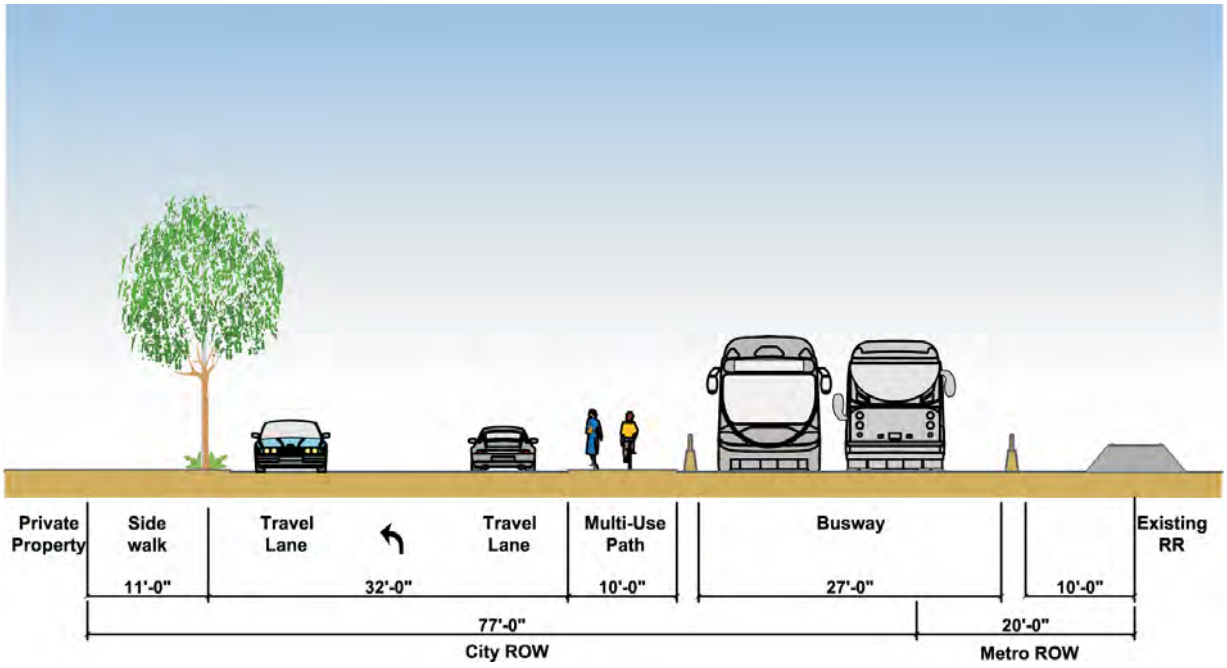
Legend

- Main Route
- Metrolink Chatsworth Station Access Options
- Metrolink & Metrolink Stations
- Proposed Stations
- Optional Station
- Reconfigured Station
- Existing Stations (Metro Orange Line)
- New Bridge

Source: ITERIS



100 ft. ROW Between Stations



Parallel to Metrolink Tracks

Source: GRUENASSOCIATES

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Buses and Metro-authorized vehicles would be the only vehicles allowed within the busway. Signage would be posted listing restrictions on autos, trucks, motorcycles, bicycles and pedestrian within the busway lanes. Metro-authorized emergency vehicles would only use the busway when responding to emergencies within or immediately adjacent to the ROW.

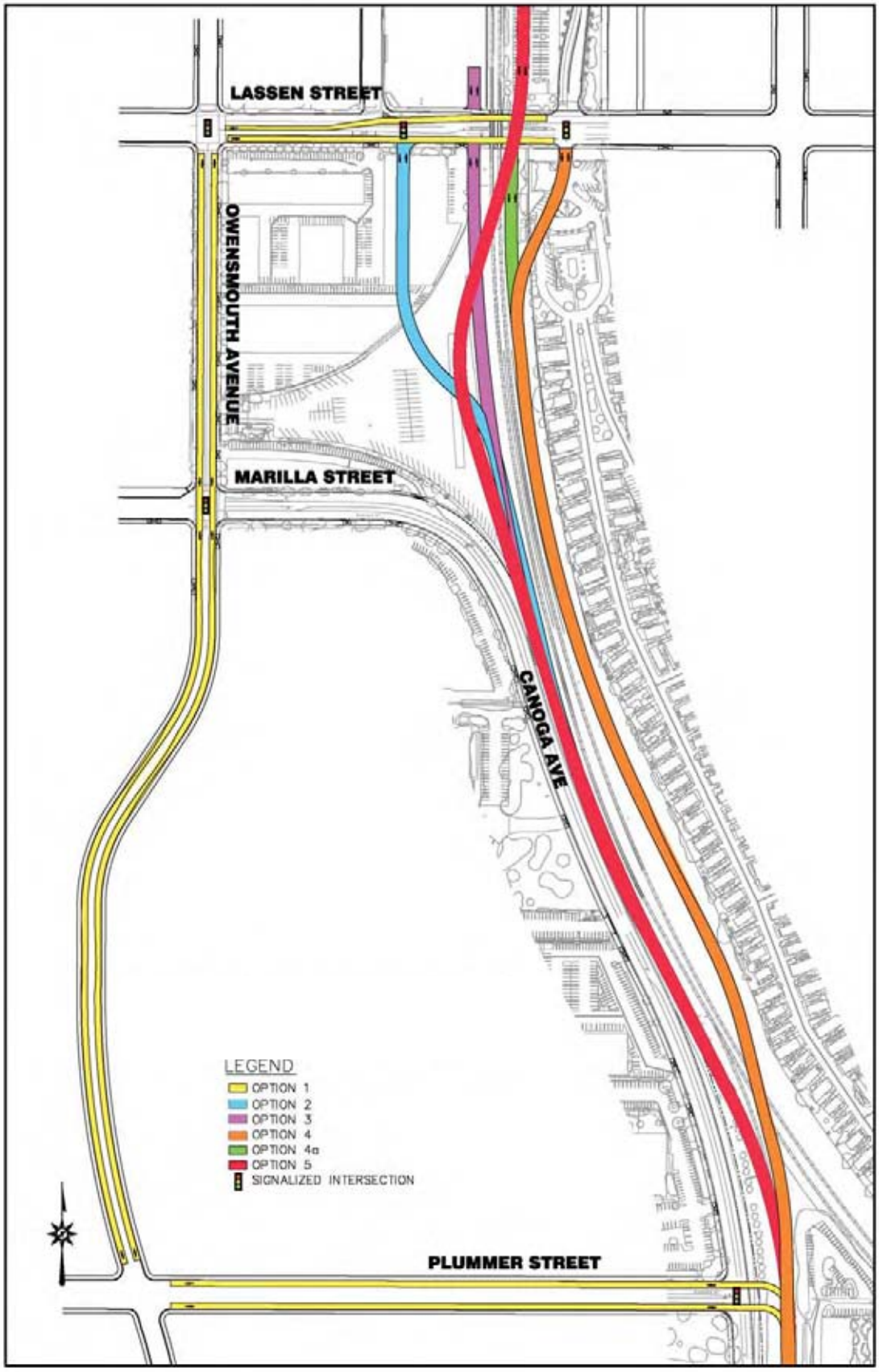
As illustrated in **Figure 9**, several options are considered for the northern segment to connect to the Chatsworth Metrolink Station. Landscaping would be provided along each side of the busway and the multi-use path for all the options.

Option 1 Busway Ends At Plummer – Buses would exit the Busway at Plummer Street and travel on Plummer Street, Owensmouth Avenue, Lassen Street and Old Depot Plaza Road. With this option, the intersection of Canoga Avenue and Plummer Street and the intersection of Lassen Street and Old Depot Plaza Road will be signalized. The multi-use path for this option would terminate at Plummer Street.

Option 2 At-Grade "T" Intersection on Lassen Approx. 200 Ft West of Tracks – The busway and possibly the multi-use path would extend north to Lassen Street on the west side of the railroad tracks, intersecting Lassen Street at a new signalized intersection approximately 200 ft west of the tracks. Buses would travel in mixed flow on Lassen Street and cross the tracks to reach the Chatsworth Metrolink Station. This alternative requires property acquisition south of Lassen Street; it also requires converting the southbound approach of a private roadway intersecting Lassen Street west of the tracks into a right-turn only. An optional plan could be required where only northbound buses and the multi-use path would travel on the busway all the way north to Lassen Street. This would occur if the two-way busway and multi-use path could not be accommodated in the narrow ROW area adjacent to the Metrolink tracks. Southbound buses would return via Lassen Street, Owensmouth Avenue, and Plummer Street, re-entering the busway at a new signalized intersection at the intersection of Canoga Avenue and Plummer Street.

Option 3 At-Grade Parallel Crossing of Lassen West of Tracks - The busway and the multi-use path would extend north to Lassen Street directly to the west of the railroad tracks and cross Lassen Street at a signalized intersection to access the Busway terminus station on the west side of the tracks. A pedestrian grade-separation to cross the tracks would be provided. Sidewalks along the north side of Lassen Street would be widened between the railroad tracks and Old Depot Plaza Road to provide a connection of the multi-use path to the station. This option requires property acquisition or reconfiguration of one property south of Lassen Street, directly west of the railroad tracks, as well as several lots north of Lassen Street for the terminus station. An optional plan could be required where only northbound buses and the multi-use path would travel on the busway all the way north to Lassen Street. This would occur if the two-way busway could not be provided in the narrow ROW area adjacent to the Metrolink tracks. Southbound buses would return via Lassen Street, Owensmouth Avenue, and Plummer Street, re-entering the busway at a new signalized intersection at the intersection of Canoga Avenue and Plummer Street.

Option 4 Underpass of Tracks with Crossing of Lassen East of Tracks - The busway would pass under the railroad tracks in a grade separation and cross Lassen Street at-grade. Two potential intersections of the busway on Lassen Street are being considered in this EIR. One would be located at the existing Old Depot Plaza Road intersection on Lassen Street. This would require purchase of part of the mobile home park's property, south of Lassen Street, and reconfiguration of the parking and access road to the mobile home park. The second option would include an intersection adjacent to the east side of the railroad tracks, with buses crossing Lassen Street parallel to the tracks at a signalized intersection into a redesigned Chatsworth Metrolink Station.



Source: DMJM HARRIS

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Figure 9
Busway - Northern Segment Options

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The multi-use path would remain at-grade adjacent to the west side of the tracks and end at Lassen Street.

Option 5 Elevated/Underground Grade Separation of Railroad Tracks and Lassen Street - The busway extends along the west side of the railroad tracks and is either elevated over or depressed under the railroad tracks and Lassen Street on a grade separation, then descending or ascending into the parking lot of the Chatsworth Metrolink Station. The multi-use path would remain at-grade adjacent to the west side of the grade-separated busway and end at Lassen Street.

Bus Rapid Transit (BRT) signals and vehicle signals will be placed at each crossing to control the bus, vehicle, pedestrian, and bicycle traffic at the crossing, the same way they are currently being operated along the MOL. Typically, the BRT crossings will be multi-phased (BRT phase and multiple vehicle phases to control turns across the busway).

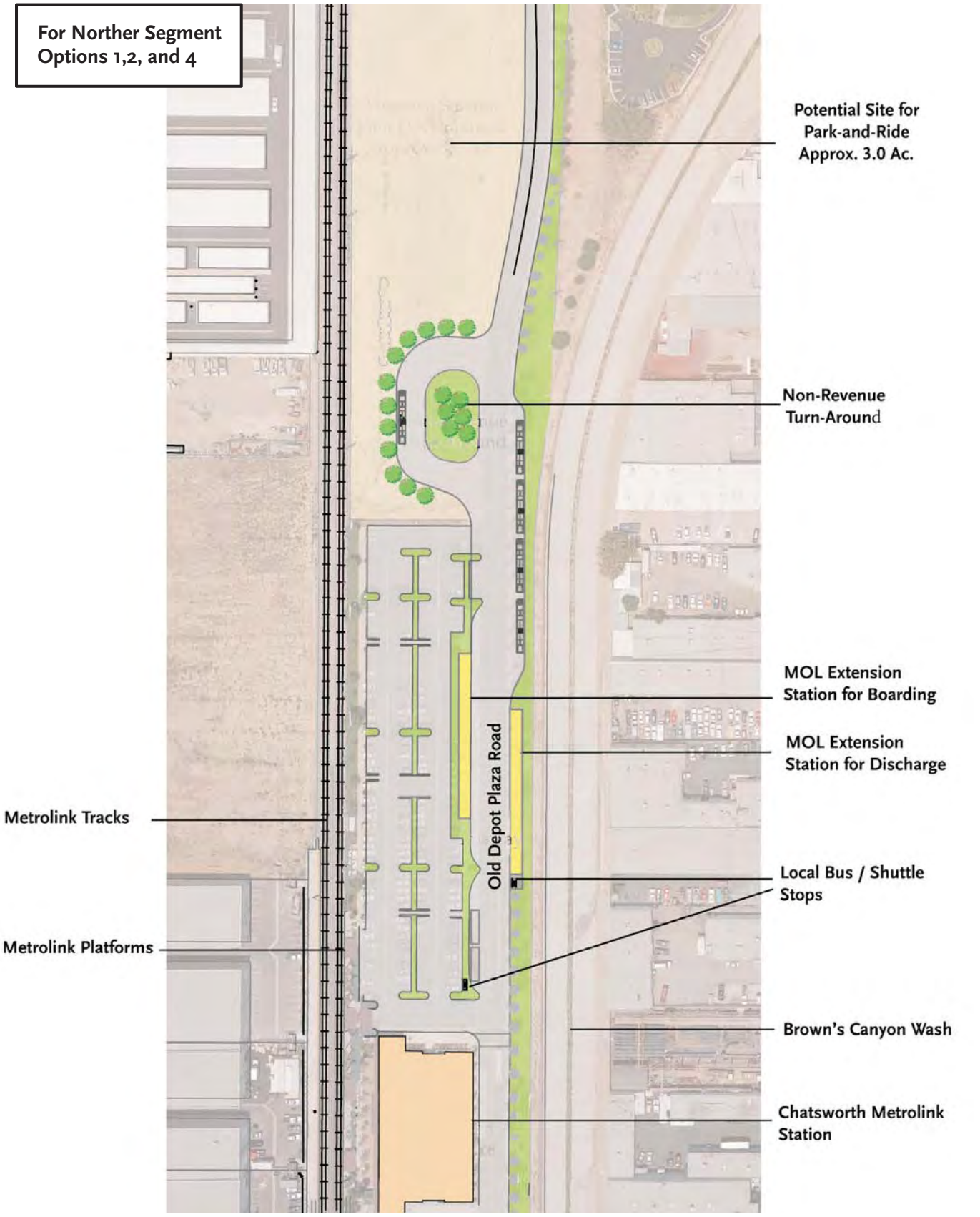
Chatsworth Metrolink Station Options

The Chatsworth Metrolink station would be the northern terminus of the corridor. There are two tracks and two platforms at the station. For 28 out of the 30 current trains per day, patrons board/alight via the eastern platform. For two trains per day, they cross the tracks via an at-grade pedestrian crossing to reach the western platform. This pattern is expected to continue with the MOL extension. Several options are under consideration.

Option A Non-Revenue Turn-Around - Buses would unload and pick up passengers at new canopies and platforms adjacent to the Old Depot Plaza Road near the rail station north of the current local bus stops. A non-revenue turn-around would be provided in the vacant area near Devonshire Street. Additional landscaped park-and-ride spaces would be provided in the vacant area near Devonshire Street. This option is illustrated in **Figure 10** and could be combined with all northern segment options terminating at-grade, on the east side of the tracks (On-Street Dedicated Bus Lanes Options 1 and 2 and Busway Options 1, 2, 2a, 4, and 4a).

Option B Turn-Around south of Metrolink Station Platforms - Similar to the North Hollywood terminus station of the MOL, a bus turn-around with layover bus spaces, and a combined boarding and pick – up platform would be provided. The turn-around would be located south of the Chatsworth Metrolink Station and would displace some existing parking. Parking displaced as well as additional parking would be provided in the vacant area north of the Chatsworth Metrolink Station (see **Figure 14**). This option is illustrated in **Figure 11** and could be combined with all northern segment options terminating at-grade, on the east side of the tracks (On-Street Dedicated Bus Lanes Options 1 and 2 and Busway Options 1, 2, 2a, 4, and 4a).

Option C Turn-Around on Vacant Lot West of Tracks - A bus turn-around and layover spaces on vacant land west of the railroad tracks with a grade-separated pedestrian crossing of the tracks and tree-lined pedestrian linkages. This option requires purchase of the existing vacant private property. This option is illustrated in **Figure 12** and could be combined with all northern segment options terminating on the west side of the tracks (On-Street Dedicated Bus Lanes and Busway Options 3 and 3a). *Option D Elevated or Below-Grade Separation* - This option is illustrated in **Figure 13** and would be combined with the Grade Separation of Railroad Tracks and Lassen Street option for the northern segment (Busway Option 5).



Source: GRUENASSOCIATES

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Figure 10
Chatsworth Station Option A

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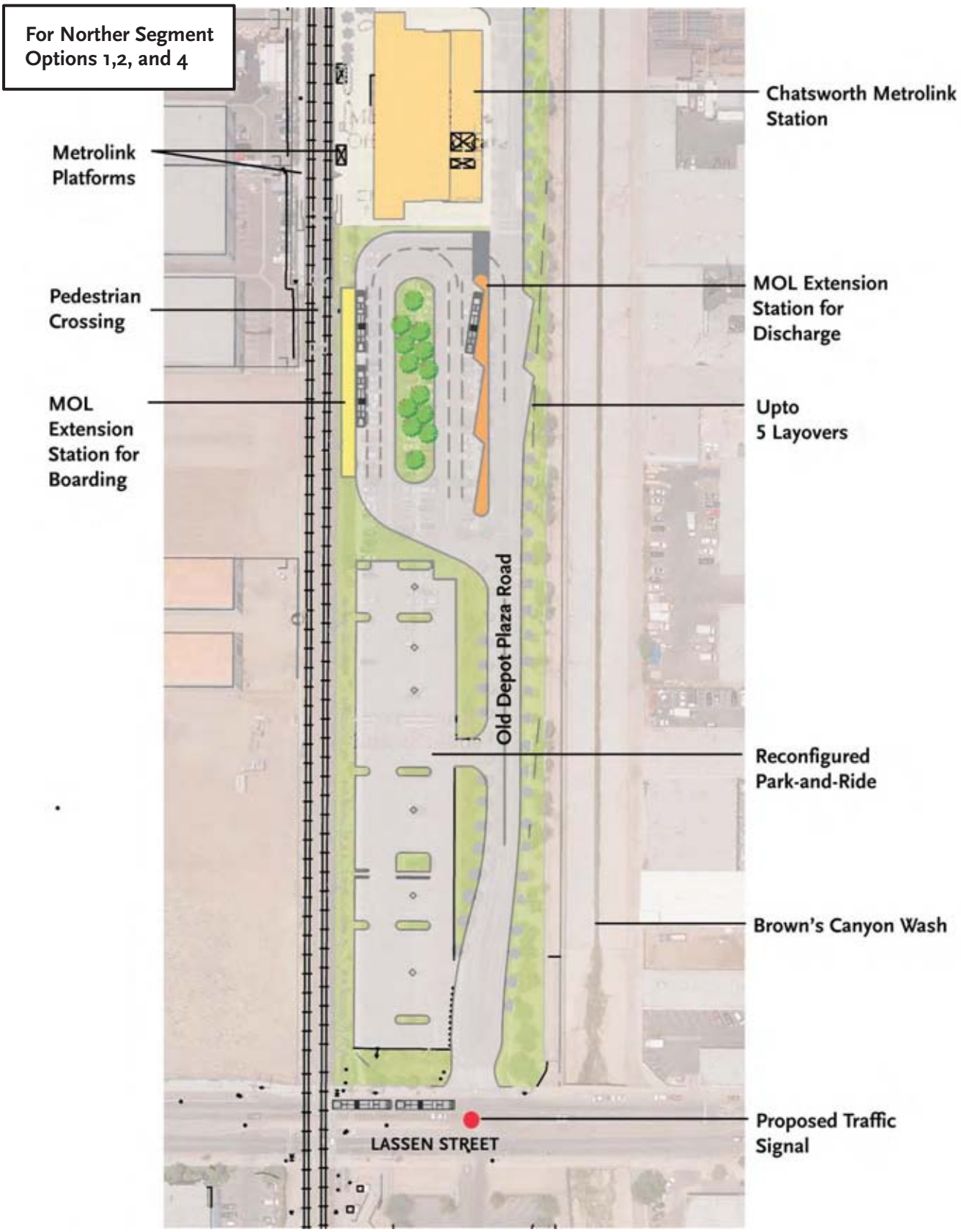

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Figure 11
Chatsworth Station Option B

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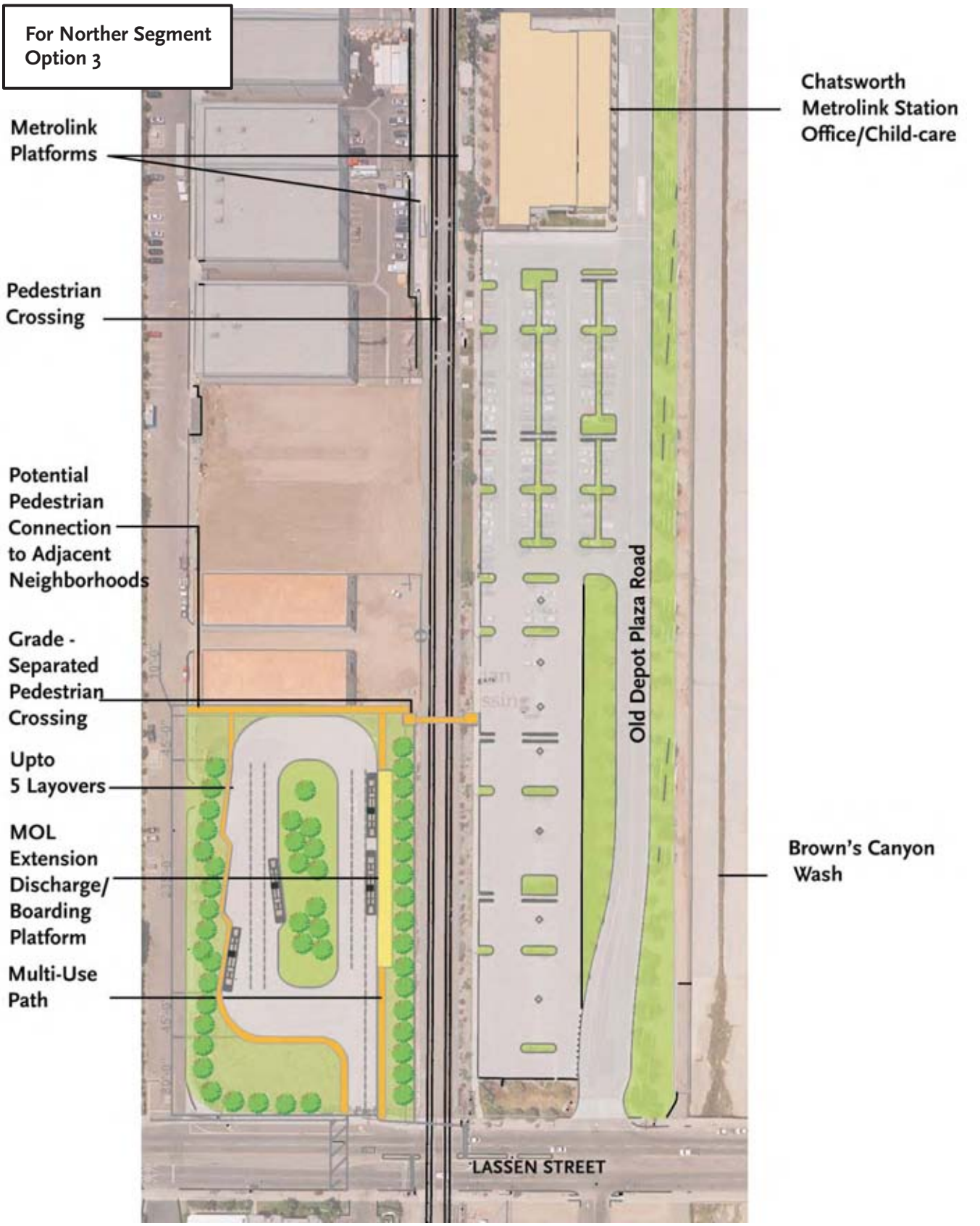

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Figure 12
Chatsworth Station Option C

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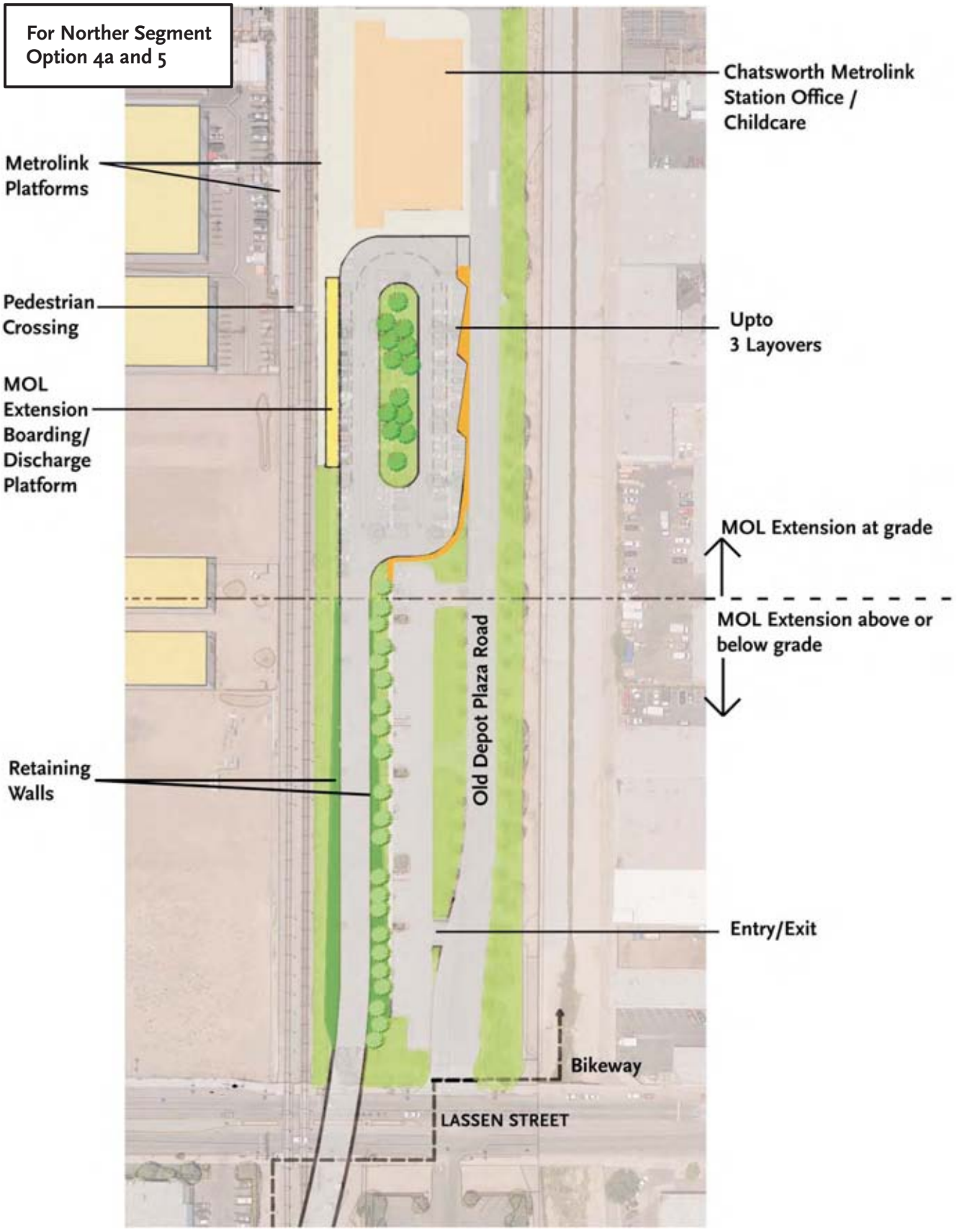

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Figure 13
Chatsworth Station Option D

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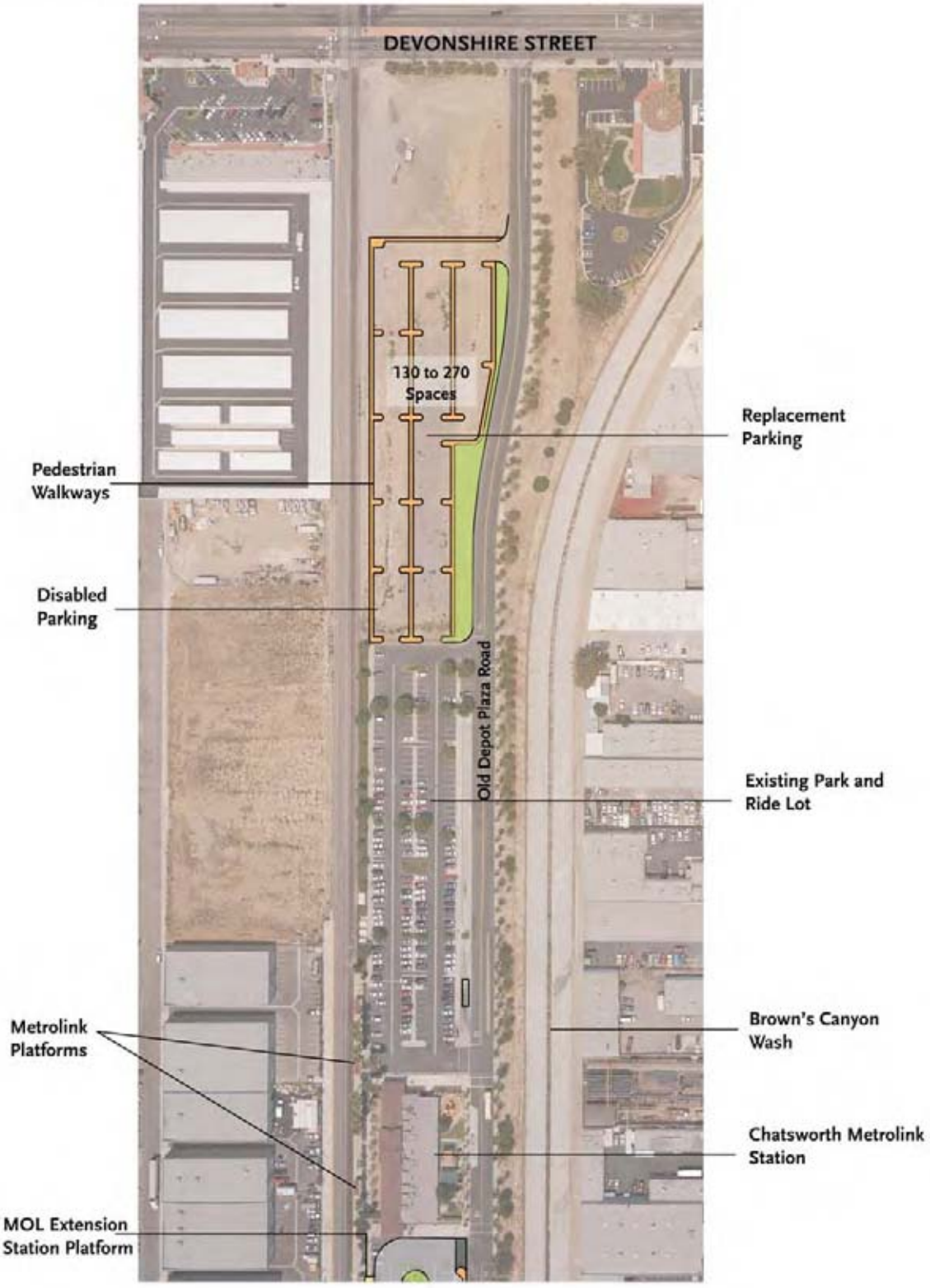
REPLACEMENT PARKING FOR OPTION B AND D NORTH OF CHATSWORTH METROLINK STATION



Source: GRUENASSOCIATES

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Figure 14
Replacement Parking at Chatsworth Metrolink Station

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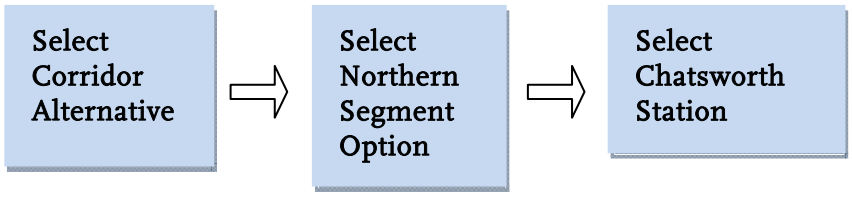
Option D Elevated or Below-Grade Separation – This option is illustrated in **Figure 13** and would be combined with the Grade Separation of Railroad Tracks and Lassen Street option for the northern segment (Busway Option 5. Parking displaced as well as additional parking would be provided in the vacant area north of the Chatsworth Metrolink Station (see **Figure 14**).

4.0 COMPARISON OF ALTERNATIVES

This section presents the evaluation of the project alternatives based on their consistency with the project's goals and objectives presented in **Table 1**. As described in the previous section, there are several different options for each of the build alternatives to access the Chatsworth Metrolink Station. A corridor alternative (base LPA) is selected first. The northern segment options (how that corridor alternative will be connected to Lassen Street) are discussed and evaluated following the selection of the base LPA. Finally, the Chatsworth Station option that works best with the northern segment option is determined. This three step process is illustrated below.

A Three-Step LPA Selection Process



4.1 GOAL 1: REGIONAL CONNECTIVITY

Regional Transportation Facilities

All of the build alternatives would have a connection to the Chatsworth Metrolink Station, allowing transfers to and from the Metrolink commuter rail system and AMTRAK service at the station. Similarly, all build alternatives provide a connection to Warner Center and the North Hollywood Metro Red Line Station, another two major transit hubs. All build alternatives, therefore, provide the same amount of regional connectivity; however, the ease and convenience of the connections vary among them. The TSM Alternative would provide the least direct connection because passengers wanting to continue to North Hollywood would need to transfer at the Canoga MOL Station. The On-Street Dedicated Bus Lanes Alternative would provide a more direct connection, however the Busway Alternative, given its faster travel time (see below), would provide the fastest, most direct connection.

Operational Interface with the Metro Orange Line

All build alternatives would provide an operational interface with the MOL. The most efficient interface would be provided by the Busway Alternative, as this alternative would allow direct trips between Chatsworth and North Hollywood. The On-Street Dedicated Bus Lanes Alternative would provide direct trips also; however, the extra time it would take the buses to access the Canoga MOL Station from Canoga Avenue would add to the overall travel time. The TSM Alternative would offer the least efficient interface with the MOL. Southbound buses would stop at the intersection of Canoga Avenue and the existing MOL busway terminus; passengers wanting to transfer to the MOL would have to cross Canoga Avenue to reach the Canoga Station.

Complete San Fernando Valley "Transit Loop"

The northern extension of the MOL would complete a "transit loop" in the San Fernando Valley, comprising Metrolink and the MOL, and covering both east-west and north-south corridors. All build alternatives would complete this loop.

Provide a Transit Alternative to the Congested Freeways

The San Diego (I-405), Golden State (I-5), Ronald Reagan (SR-118) and Ventura/Hollywood (SR- 170-US-101) freeways experience high levels of congestion during the morning and evening peak hours. A northern extension of the MOL would provide people living in the northwest San Fernando Valley with a transit alternative to these congested freeways. All build alternatives would provide this freeway alternative. Nevertheless, the build alternatives would provide a more attractive and convenient one. A more attractive alternative would, in turn, result in a higher share of current auto commuters choosing to take transit. As discussed in the DEIR, the Busway Alternative would provide the greatest reduction in vehicle miles traveled (VMT) in the San Fernando Valley (0.14%). The Busway Alternative would therefore provide the greatest congestion relief.

Intra-modal and Inter-modal Integration and Connectivity

Integration and connectivity improves system-wide transportation efficiency. All build alternatives would improve inter-modal integration and connectivity, as they would all connect to Metrolink, AMTRAK, Metro Rail and Metro Rapid systems. Furthermore, both build alternatives would provide intra-modal integration with the existing MOL.

Connections to the Los Angeles Basin

All build alternatives would relieve congestion through the Cahuenga (U.S. 101), Sepulveda (I-405), and Santa Susana (SR-118) Passes by providing connections to the Metro Red Line and to the Wilshire Metro Rapid Bus via transfers to the Metro Rapid Bus on Van Nuys Boulevard. As described above, the convenience of those connections varies among the alternatives. The fastest, most convenient connection would be provided by the Busway Alternative.

- *The Busway Alternative would provide the highest level of regional connectivity* -

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4.2 GOAL 2: NORTH-SOUTH MOBILITY IMPROVEMENT

All build alternatives improve north-south mobility in the corridor. The level of improvement can be evaluated based on the travel time, ridership, and level of accessibility of each alternative.

Minimize North-South Travel Times

Travel time on the Busway Alternative would be, on average, one mile per hour faster than on the dedicated lanes (20 vs. 21 mph). The difference in average speed between the two build alternatives is driven by the difference in free-flow speed, number of signals each alternative would have to cross, and the level of transit priority that each alternative will receive. This difference in average speed is the result of a faster free-flow speed on the Busway itself, one less signal to cross and less average signal delay. **Figure 15** illustrates the difference in speeds between the On-Street Dedicated Bus

Lanes and the Busway Alternatives. The solid line represents the speed profile of a bus that would obtain bus signal priority at every intersection. The average speed is lower for buses operating on the dedicated lanes because they would have to cross one extra signal. The average speed for buses on the Busway is likely to remain the same over time. The average speed for buses running on the dedicated bus lanes may decline as congestion worsens on Canoga Avenue and there is more interference between automobile traffic merging across the bus lanes for turns at intersections or into/out of driveways.

The TSM Alternative's local Route 246 would also run north-south on Canoga Avenue, but without the advantage of a dedicated facility or signal priority. The average speed for a local bus traveling in the mixed-flow lanes on Canoga Avenue would be 15-18 mph.

Transit Alternatives - Ridership

Ridership is the number people forecast to use the project alternative as estimated with Metro's transportation demand forecasting model. Transit ridership is affected by both internal (e.g. pricing, service quality and quantity) and external (e.g. area's employment and population) factors. Since all project alternatives would operate in the same area, internal factors would determine the differences in ridership between alternatives. For both build alternatives, service quantity (headways) would be equal; therefore, service quality (speed) would be the differentiator. Ridership has been estimated for all project alternatives based on forecast year 2030. The projected ridership for each alternative is shown in **Table 2**.

The "boardings" column represents the number of passengers expected to use the system by boarding at a fixed guideway station; that is, board and alight at stations constructed as part of either of the two project alternatives. The "new transit riders" column is the appropriate measure for determining the number of additional riders, since this measure deals with linked (end-to-end) trips. New transit riders are reported for each alternative as increments over the No Project and TSM Alternatives.

The results demonstrate that the difference in transit ridership between the Canoga Busway Alternative and the Canoga On-Street Dedicated Lanes Alternative is relatively small. The lower ridership of the Canoga On-Street Dedicated Lanes Alternative is related to the slightly slower average speed.

Connect Important Activity Centers

All build alternatives would connect important activity centers, including educational, medical, cultural, commercial and business. The only distinction that can be made between these alternatives is the speed at which this connection may be provided. As discussed above, the Busway Alternative would provide the fastest travel time.

Figure 15 Speed Profile Comparison

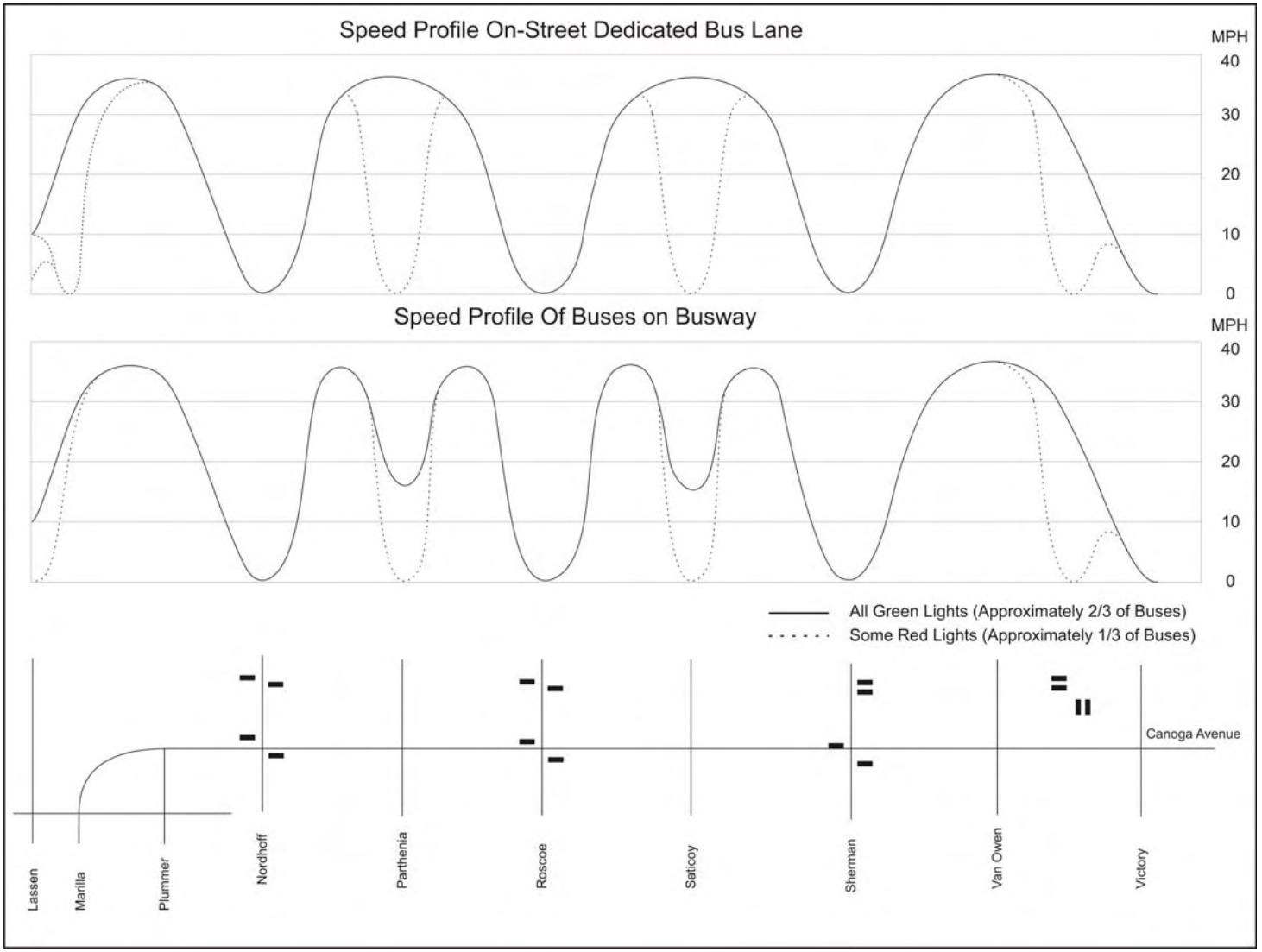

Table 2 2030 Ridership Estimates			
Station	**Daily Transit Boardings for the MOL (fixed guideway stations only)**	**New Daily Transit Trips**	
		Compared to No Project Alternative	**Compared to TSM Alternative**
Alternative 2. TSM			
Metro Orange Line	**31,321**	**1,245**	-
Alternative 3. Canoga On-Street Dedicated Bus Lanes Alternative			
Sherman Way	2,378		
Roscoe	2,883		
Nordhoff	595		
Chatsworth	2,129		
Canoga Extension Total	7,985		
Metro Orange Line	**45,371**	**8,943**	**7,698**
Alternative 4. Busway			
Sherman Way	2,407		
Roscoe	2,933		
Nordhoff	613		
Chatsworth	2,247		
Canoga Extension Total	8,200		
Metro Orange Line	**45,537**	**9,023**	**7,778**

Source: Iteris, 2007

Transit Accessibility to Residential Land Uses

Enhancing transit accessibility for people means bringing transit closer to residential areas. The northern extension of the MOL would bring transit closer to several residential neighborhoods in the western San Fernando Valley, including neighborhoods in Chatsworth and Canoga Park. All build alternatives would achieve this objective. The only distinction that can be made between these alternatives is the level of accessibility each provides. The build alternatives would provide four new MOL stations. The TSM Alternative's local route 246 would provide close stop spacing, with a total of eight new stops.

Sustainable Transportation Development

The northern extension of the MOL would support sustainable transportation development by increasing transit ridership. All build alternatives would increase transit ridership; however, as discussed above, the Busway Alternative would provide the highest increase in transit ridership and therefore, the most support for sustainable transportation development.

Enhanced Bi-directional North-South Transit Service

All build alternatives provide enhanced bi-directional north-south transit service along Canoga Avenue. However, the fastest, most convenient service would be provided by the Busway Alternative.

Provide opportunities to intercept traffic passing through the Valley

Traffic passing through the San Fernando Valley consists of persons traveling longer distances, such as commuters from Ventura County to Downtown Los Angeles. These drivers would not be likely to change their mode of travel to shift to a local bus on Canoga Avenue, the TSM Alternative. They might be attracted to Metro Rapid Bus service that would transport them between a park-and-ride lot in Chatsworth to connect to the Metro Red Line in North Hollywood, however. The Busway and On-Street Dedicated Lanes Alternatives therefore have more likelihood of intercepting some through traffic and shifting those trips to transit.

Park-and-Ride Lots

The provision of park-and-ride lots at transit stops enhances the ridership potential of a route. A new park-and-ride facility would be provided at Sherman Way for both build alternatives. This facility would also replace some of the existing parking spaces at the Canoga Station that would be lost as a result of the re-configuration. The TSM Alternative does not provide any new park-and-ride facilities.

Congestion Relief on North-South Arterials

The northern extension of the MOL would generally relieve congestion on north-south arterials in the western San Fernando Valley, as people who would normally use these arterials would instead use the MOL. As described in the DEIR, all of the build alternatives would reduce vehicle miles of travel (VMT) in the study area. The Busway and On-Street Dedicated Bus Lanes Alternatives would decrease VMT by a comparable percentage (around 0.3%). The TSM Alternative would decrease VMT by only 0.05%.

At Canoga Avenue intersections specifically, the implementation of the build alternatives would worsen the overall intersection level of service because of the changes in signal phasing and timing needed to accommodate the BRT. Specific mitigation measures were identified in the DEIR to mitigate the intersection level of service impacts caused by the implementation of the project.

- *The Busway Alternative would provide the best north-south mobility improvement* -

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4.3 GOAL 3: SUPPORT LAND USE AND DEVELOPMENT GOALS

High-Capacity Transit Linkages

The TSM Alternative would provide local bus service, not high-capacity transit linkages. The Canoga On-Street Dedicated Bus Lanes and the Canoga Busway Alternatives would provide high-capacity transit connections between Warner Center and the Chatsworth Metrolink Station and linkages along the MOL to Pierce College, Van Nuys Government Center, Valley College, North Hollywood and downtown Los Angeles via a transfer to the Metro Red Line.

Support SCAG's Compass Growth Vision

The Canoga Transportation Corridor ROW has been identified by SCAG as part of the 2% strategy opportunity area, an area on which modest changes to land use and transportation is recommended. All build alternatives, TSM, Canoga On-Street Dedicated Bus Lanes and Canoga Busway support SCAG's vision.

General Plan Framework Plan - growth concentration in designated Targeted Growth Areas

The General Plan framework identifies and provides incentives for growth in commercial and mixed-use centers, along boulevards, and in proximity to transportation corridors. The Canoga On-Street Dedicated Bus Lanes and Canoga Busway Alternatives would support the Los Angeles General Plan Framework goal of increased transit use by locating high-capacity transit connecting Warner Center, a designated "Regional Center", downtown Canoga Park, a "Community Center" and Devonshire Street near the Chatsworth Metrolink Station, designated as a "Community Center" and "Mixed-Use Boulevard". The TSM Alternative would also connect these centers, however transit usage would be less, due to the slower local bus service and the need for transfers between local and MOL buses.

City of Los Angeles' Transportation Element Policies for Transit Priority Arterial Streets

Canoga Avenue is not a Transit Priority Arterial, although the Community Plans does recognize the corridor as a transportation facility. Canoga Avenue parallels the Metro ROW, is designated as a Secondary Highway, and has not been constructed to full Secondary Highway standards. The northern portion of the Metro ROW parallels the UP ROW which has active trains. Due to unique conditions of these parallel ROWs, Metro has been coordinating with LADOT regarding modifications of the Secondary Highway standard for Canoga Avenue to accommodate exclusive bus lanes, a bikeway/pedestrian path for either the Canoga On-Street Dedicated Bus Lanes or Canoga Busway Alternative. For the On-Street Dedicated Bus Lanes Alternative, Canoga Avenue would be widened into the Metro ROW to accommodate the exclusive lanes with the bikeway/pedestrian path on the Metro ROW. Neither on-street parking nor a standard sidewalk would not be provided as required in the Secondary Highway standards. For the Canoga Busway Alternative, Canoga Avenue would generally remain as it exists today with the bikeway/pedestrian paths and busway on the Metro ROW except near the UP tracks where a portion of the Canoga Avenue ROW would be required for the busway and multi-use path. Both alternatives would not allow Canoga Avenue to be built out to current City of Los Angeles Secondary Highway standards.

Joint Development Opportunities

The TSM and No Build Alternatives would not enhance joint development opportunities. Both build alternatives would include surface park-and-ride lots in the Metro ROW at the Sherman Way station and at the Chatsworth Metrolink Station. The land within the Metro ROW is currently designated in Community Plans and zoned as Public Facilities and would require a Community Plan amendment for uses typically found in joint development projects such as retail, offices, and residential. Both build alternatives could enhance joint development opportunities in the future with modifications to Community Plans and zoning changes, and additional environmental analysis.

Los Angeles River Revitalization Master Plan

All build alternatives are compatible with the Los Angeles River Revitalization Master Plan. The Canoga On-Street Dedicated Bus Lanes and the Canoga Busway Alternatives include a proposed bikeway/pedestrian path on the Metro ROW as shown on the Los Angeles River Revitalization

Master Plan. Both build alternatives would not preclude future connections of this proposed north-south bikeway/pedestrian path to the proposed master plan bikeways and pedestrian promenades paralleling the river. The Canoga Busway Alternative may require a signalized crossing of the busway to make the connection, while a signalized crossing of the busway may not be required for the Canoga On-Street Alternative. In the future, portions of the Metro ROW near the Los Angeles River could be used for open space for recreation and water recharge as discussed in the Master Plan. However, in both alternatives, non-renewal or renegotiation of current leases on Metro property along the Los Angeles River would be needed to achieve this.

Warner Center Specific Plan

The TSM Alternative would provide local bus service from the Chatsworth Metrolink Station to Warner Center. The Canoga On-Street Dedicated Bus Lanes and Canoga Busway Alternatives would provide MOL quality service from the Chatsworth Metrolink station to the Warner Center Transit Hub supporting mobility in the area and future land use developments.

Canoga Park-Winnetka – Woodland Hills – West Hills Community Plan Policies

The TSM Alternative would improve local bus service in the Community Plan area with standard bus stops including a bus stop sign, and benches/shelters if provided by advertising vendors. The Canoga On-Street Dedicated Bus Lane and Canoga Busway Alternatives would include safe, attractive high-capacity bus rapid transit services. Bus stations along the Canoga On-Street Dedicated Bus Lanes Alternative would be on-street. Full amenities similar to the MOL may not be achievable at all stations on the west side of Canoga Avenue due to sidewalk constraints. The Canoga Busway Alternative would provide user-friendly design amenities and have clearly identifiable stations similar to the MOL.

Chatsworth-Porter Ranch Community Plan Policies

The TSM, Canoga On-Street Dedicated Bus Lanes and the Canoga Busway Alternatives would increase bus routes and bus frequency within the Community Plan Area. However, the Canoga On-Street Dedicated Bus Lanes and the Canoga Busway Alternatives would increase bus frequency more than the TSM alternative.

- *The Busway Alternative better supports land use and development goals* -

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4.4 GOAL 4: MAXIMIZE COMMUNITY INPUT

Opportunities for community input have been provided throughout the environmental review process in the form of scoping meetings, public hearings, neighborhood council meetings, community organization meetings, in-person meetings, elected officials briefings, and through Metro's website. Two public hearings were held for the DEIR: one on March 19, 2008 at the Canoga Park's New Academy and another on March 26, 2008 at Chatsworth High School. The presentations at both hearings were provided simultaneously in Spanish. The project's outreach team also attended neighborhood council meetings along the corridor to obtain community input. Additionally, Metro coordinated in-person meetings with selected leaseholders and mobile home park homeowners along the ROW that could potentially be affected by the project to directly address their

concerns. Community input was also gathered on-line through Metro's website and the project's Hotline.

At both public hearings there was strong public support for the Busway Alternative. There was also limited opposition to the On-Street Dedicated Bus Lanes Alternative, mainly concerning the potential loss of on-street parking along the west side of Canoga Avenue.

Public input was received from many individuals and 12 public agencies, including six departments of the State of California, the Southern California Association of Governments, SCRRA, LADOT, LAUSD and CRA/LA. Most of the public agency letters addressed issues related to the particular agency's area of technical responsibility without expressing an opinion on a preferred alternative, although LADOT expressed opposition to alternatives that would result in buses crossing the Metrolink/AMTRAK/UP tracks at-grade. The letters from the public generally focused on which alternative or northern option was the author's preferred alternative. **Table 3** summarizes the sources of public comments.

Table 3 Source of Public Comments

Source	Number
Agency Letters	11
Public Letters/Emails	65
Elected Official Letters	1
Public Hearing Testimony	31
Public Hearing Comment Card	42
Total	**150**

Source: Consensus Planning Group, 2008

The largest number of comments related to the desire for sound walls or security fences along residential portions of the corridor and concerns about noise and/or fumes. Most of the public input was supportive of a transportation improvement in the Canoga Corridor, including the landscape and pedestrian/bikeway improvements. Only a few persons were opposed to the project, including a few businesses that might be impacted by it. There was more support expressed for the Busway Alternative than for the On-Street Dedicated Bus Lanes Alternative and there was opposition expressed to the extension to SR-118.

Several people supported the potential to convert the project to a light rail transit project.

Metro has also kept elected officials apprised of the project from its inception, through meetings with their staff. Throughout the process, all elected officials have expressed strong support for the Busway Alternative.

- *The Busway Alternative was favored by the community at large* -

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4.5 GOAL 5: MINIMIZE ENVIRONMENTAL IMPACTS

Land Acquisition, Relocation, & Displacement

Metro acquired the ROW from the Southern Pacific Transportation Company in 1991. As part of this process, Metro inherited lease agreements entered into by the railroad. Since acquiring the ROW, Metro has entered into additional land leases and has granted additional temporary easements. A number of commercial and industrial businesses along the Metro ROW entered into lease agreements to expand their sites for parking, storage, and/or building improvements. The property leases that were entered into by Metro since acquiring the ROW have generally been short-term (i.e., month-to-month). There are a total of 93 leases within the Metro ROW. All of the 41 lease agreements Metro inherited from the Southern Pacific Transportation Company are month-to-month except for one, and all but two of the 52 lease agreements Metro has entered into since acquiring the ROW are month-to-month. Therefore, approximately 97 percent of the leases within the Metro ROW are on a month-to-month basis, while only three percent are annual or longer-term leases. Generally, the ground leases are of industrial and commercial nature or they are used for vehicle or industrial storage.

The Canoga Busway Alternative would require fewer private property acquisitions and non-renewal of lease agreements than the Canoga On-Street Dedicated Bus Lanes Alternative. The Canoga On-Street Dedicated Bus Lanes Alternative would result in the non-renewal of 57 ground leases and 26 sign lease agreements, while the Canoga Busway Alternative would result in the non-renewal of 56 ground leases and 25 sign lease agreements.

Implementation of the On-Street Dedicated Bus Lanes Alternative would require the acquisition of the property located on 7204-7258 Canoga Avenue/21355 Sherman Way. This property is improved with a 15,540-square-foot retail commercial center that contains 14 individual commercial spaces and a freestanding commercial building.

The northern segment of each alternative could require more property acquisitions. The evaluation of the northern segment options will follow the evaluation of corridor alternatives.

Land Use and Development

No land use impact would occur under the No Build and TSM Alternatives. The On-Street Dedicated Bus Lanes and Busway Alternatives would include walls, fences, and landscaping to buffer sensitive land uses. These alternatives would not substantially alter the character of the surrounding area, however they would change the character of the ROW located south of Roscoe Boulevard from an industrial area of building materials and automobiles, to a landscaped multi-modal transportation facility, similar to the MOL.

The alternatives generally would be consistent with relevant regional and local plans and policies. The TSM Alternative would be inconsistent with the relevant Community Plans as these include development of the ROW for public transportation improvements and recreational uses. For both build alternatives, the General Plan Transportation Element Secondary Highway standard would require an exception to address unique conditions along Canoga Avenue.

The build alternatives could increase the likelihood of development on adjacent land consistent with surrounding land uses and local plans and zoning. It would be speculative and not reasonably

foreseeable to identity any change in land use or intensity beyond current plans at this time and is outside the scope of this project. **Figure 16** illustrates existing land uses along the corridor. **Figure 17** illustrates the City of Los Angeles General Plan Land Use designations along the corridor.

Population, Housing, & Environmental Justice

The two alternatives would not displace or introduce any housing units. However, the Canoga On-Street Dedicated Bus Lanes Alternative would result in the loss of approximately 234 jobs (143 due to the non-renewal of leases and 91 due to land acquisitions)[1]; it would also require the acquisition of six properties and the non-renewal of 57 leases. The Canoga Busway Alternative would result in the loss of approximately 219 jobs (143 due to the non-renewal of leases and 76 due to land acquisitions)[1]; it would require acquisition of a maximum of five properties, and the non-renewal of 56 leases. The Canoga Busway Alternative would displace fewer jobs and would terminate fewer leases.

Parklands & Other Community Facilities

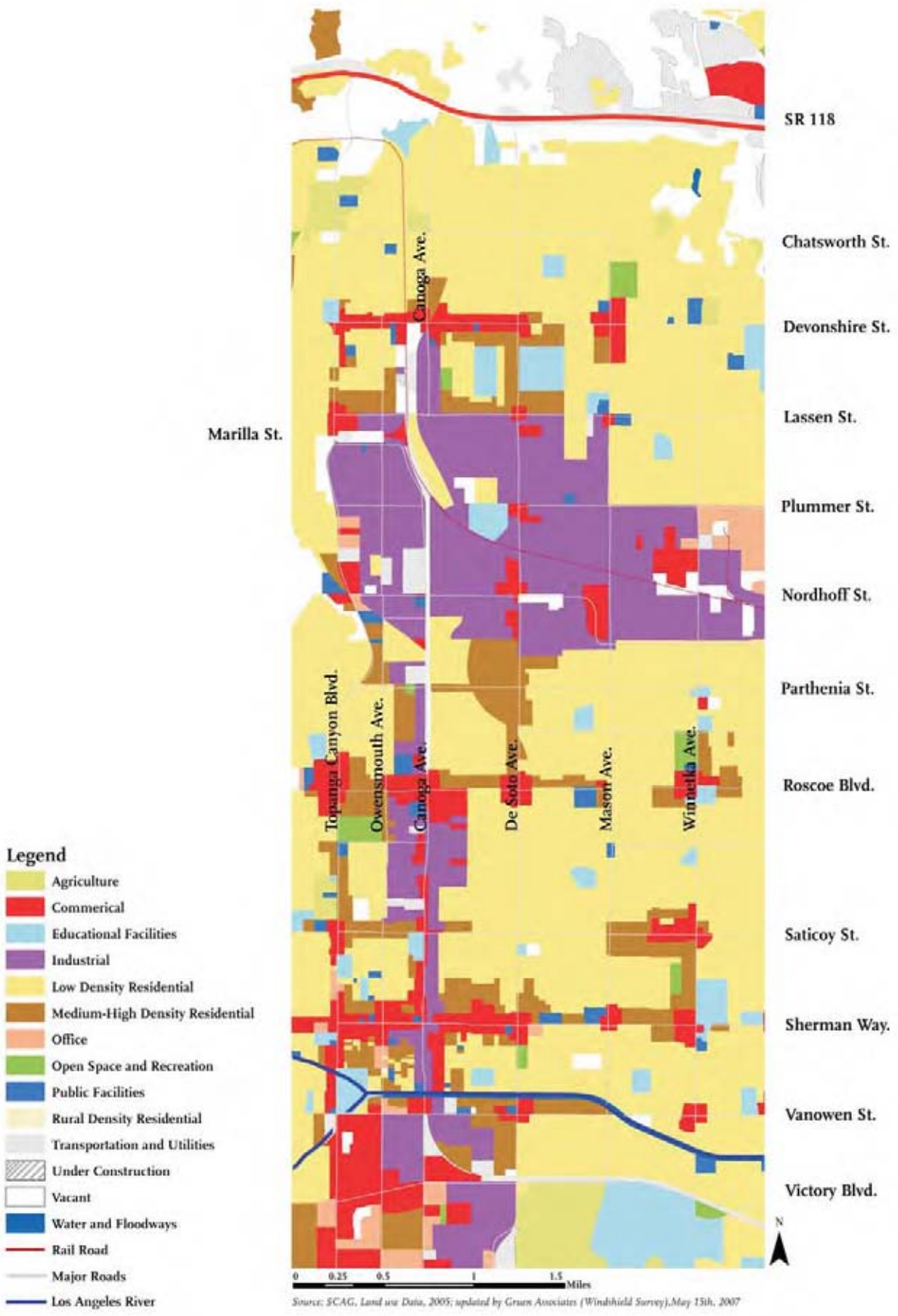
The two alternatives would have a beneficial impact on parks and recreation since it would improve transit accessibility to parks and recreational facilities. No parks, recreational facilities, schools, libraries, or other community facilities would be displaced or disrupted.

Historic, Archaeological, & Paleontological Resources

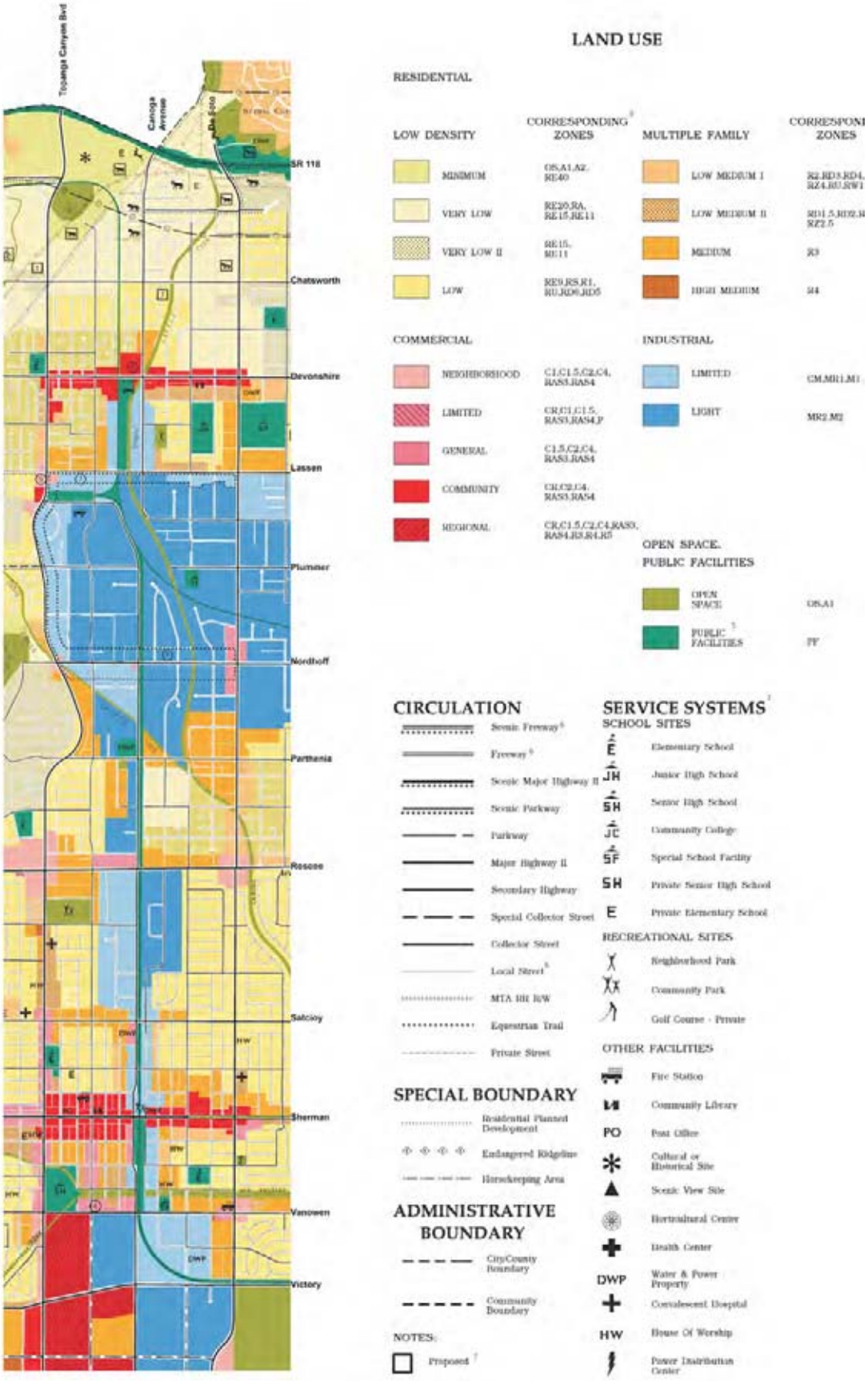
The On-Street Dedicated Bus Lanes Alternative would widen the street into the Metro ROW, while the Busway Alternative would utilize the ROW to extend the existing MOL Busway. Both of these alternatives would require the demolition of two buildings that were found to be 50 years of age or older. These structures were evaluated for potential eligibility under the California Register of Historical Recourses (CRHR) *Criteria for Evaluation* and were found to be ineligible for consideration as historically significant resources. The Busway Alternative would also require the demolition of a Los Angeles River railroad bridge over 50 years of age (U.S. Eng. No. 449.69). The bridge was found to be ineligible for listing in the CRHR criteria for evaluation. Based on the number of demolitions of structures which are over 50 years of age, the On-Street Dedicated Bus Lanes Alternative would have fewer impacts. However, none of the properties identified within the project area rise to the level of historical significance and no properties are eligible for the CRHR. As such, the build alternatives would result in no unavoidable significant adverse impacts to historic resources.

Both build alternatives would require minor grading and excavation in the southern portion of the alignment along Canoga Avenue and the Metro ROW. No prehistoric cultural resources are recorded within the project area, and none were found during the pedestrian survey. As such, Canoga Avenue and the ROW have a low potential to contain intact or buried archaeological or paleontological resources; it is unlikely that the build alternatives would adversely affect known archaeological or paleontological resources in the southern portion of the alignments. However, the Busway Alternative would require a greater amount of excavation and site disturbances in the northern portion of the alignment due to the options proposed for crossing the train tracks, which include an underpass. Excavations of 5 feet or more into Quaternary deposits may expose significant archaeological and paleontological resources. Therefore, the Busway Alternative has a greater potential than the On-Street Dedicated Bus Lanes Alternative to inadvertently affect archaeological and paleontological resources.

[1] Employment estimates based on the SCAG Employment Density Study (2001).



Source: **GRUEN**ASSOCIATES - *SCAG, Land Use Data, 2005; updated by Gruen Associates (Windshield Survey),May 15th, 2007*



Source: **Chatsworth-Porter Ranch Community Plan and Canoga Park - Winnetka Woodland Hills Community Plan**

Figure 17
City of L.A. General Plan Land Use Designations

G:\USERS\2007\07-1643 Northern Canoga Extension - Orangeline\gra\CEAR

Visual & Aesthetic Impacts

The No Build and TSM Alternatives would have no effect on visual and aesthetic conditions. For the build alternatives, most elements between the Canoga MOL Station and Plummer Street would be at-grade and would not adversely affect a scenic vista or degrade the existing visual quality of the area. The stations would be in-scale with the surrounding land uses. However, the construction of the project would result in additional lighting at station areas and along the bikeway for the build alternatives. The impacts of bus headlights on residents along the corridor would be minimal due to planned landscape improvements, fences, walls, and other measures and because the buses will be traveling parallel to the homes. For the Busway Alternative, northern end Options 4 and 4a, soundwalls located close to existing mobile homes would reduce access to sunlight and air quality and impacts would be significant without mitigation. For the Busway Alternative, Option 5 in an elevated profile would result in a potentially significant impact at Lassen Street without mitigation. With mitigation, Busway Alternative Options 4, 4a, and 5 impacts would be less than significant.

Existing trees on the Metro ROW and Canoga Avenue would be affected by the construction of the build alternatives; however the conceptual plans include planting of a considerably higher number of trees than would be removed. Therefore, impacts would not be significant with mitigation.

Construction of the build alternatives could result in temporary disruptions to the visual character of the area including visual intrusions, shade and shadow, increase in ambient light levels and glare during the short period of construction. Lighting shall be hooded and shielded to minimize spillover effects and glare. Alternatively, screening and construction fencing would reduce the impacts to less than significant.

Traffic, Circulation, & Parking

All build alternatives would have a beneficial impact on Valley-wide and study area mobility indicators, such as vehicle miles of travel (VMT) and vehicle hours of travel (VHT), and also on transit performance indicators such as daily transit boardings, new transit riders, daily bus boardings, etc. Of the three build alternatives, the Busway would have the most significant mobility benefits, followed by the On-Street Dedicated Bus Lanes and finally the TSM Alternative.

The implementation of either build alternative would significantly increase delay on five to nine study intersections. The Busway Alternative would impact four more intersections than the On-Street Dedicated Bus Lanes Alternative. All of these impacts would be considered less than significant after mitigation. Mitigation measures include both physical and operational improvements to the intersections.

From a traffic safety standpoint, the On-Street Dedicated Bus Lanes Alternative would be less safe because it would require vehicles to enter the dedicated bus lanes in order to turn right at intersections. Safety implication related to the northern segment options are discussed later in the chapter of the report.

The implementation of either build alternative would also significantly impact existing park-and-ride lots. The loss of existing spaces would be the result of the reconfiguration of the Canoga MOL Station and the Chatsworth Metrolink Station. Parking at the Canoga MOL Station is currently under-utilized. This impact would be considered less than significant after mitigation. The mitigation includes provision of off-street parking adjacent to the Sherman Way Station to accommodate future park-and-ride demand, including extra demand due to the loss of any existing

spaces at the re-configured MOL Canoga Station, and expansion of the northern parking lot at the Chatsworth Metrolink Station either vertically or horizontally to replace, at a minimum on a one-for-one basis, the spaces displaced by the potential bus turn-around on the south parking lot.

The Canoga On-Street Dedicated Lanes Alternative could have a significant impact before mitigation on the supply of on-street parking along Canoga Avenue, as the existing southbound parking lane would be eliminated. Additional off-street parking spaces are provided as mitigation. At the Sherman Way station, a parking lot(s) is proposed on the Metro ROW that would contain at least 50 parking spaces beyond the anticipated park-and-ride demand for the station that shall be designated as public parking. At the Roscoe Boulevard station, a parking lot is proposed on the Metro ROW that would contain at least 75 parking spaces beyond the anticipated park-and-ride demand for the station that shall be designated as public parking.

The implementation of either build alternative has the potential to result in significant construction impacts on traffic circulation. Because the BRT would be routed through urban areas, motorists and pedestrians will at times be delayed and inconvenienced during the construction period. With the On-Street Dedicated Lanes Alternative, these impacts will be felt along the entire length of Canoga Avenue from the existing Canoga MOL Station to Lassen Avenue since the entire street will be reconstructed and widened into the Metro ROW, necessitating much detouring of existing traffic. The Busway Alternative would have significantly less impact on existing traffic, primarily at the east-west cross streets. Several mitigation measures have been identified that would bring construction impacts to a level less than significant. The most important construction mitigation measure is the development of Worksite Traffic Control Plans.

Air Quality

Daily construction emissions associated with the two build alternatives would be similar. Both alternatives would exceed the South Coast Air Quality Management District (SCAQMD) localized significance thresholds for $PM_{2.5}$ and PM_{10} during construction. Nearby sensitive receptors would be exposed to construction emissions for a shorter time period under the Canoga Busway Alternative since construction would last for approximately 20 to 24 months under the Canoga Busway Alternative and for approximately 24 to 36 months under the Canoga Dedicated Bus Lanes Alternative.

The Canoga Busway Alternative would result in less operational emissions than the Canoga Dedicated Bus Lanes Alternative. When compared to the No Project Alternative, the Canoga Dedicated Bus Lanes Alternative would increase VOC and NO_X emissions by 1 and 21 pounds per day (ppd), respectively. This alternative would decrease emissions when compared to the No Project Alternative by 92 ppd for CO, 1 ppd for SO_X, 3 ppd for $PM_{2.5}$, and 3 ppd for PM_{10}. When compared to the No Project Alternative, the Canoga Busway Alternative would increase NO_X emissions by 17 ppd. This alternative would decrease emissions when compared to the No Project Alternative by 1 ppd for VOC, 115 ppd for CO, 1 ppd for SO_X, 4 ppd for $PM_{2.5}$, and 4 ppd for PM_{10}.

The two alternatives would generate similar amounts of CO concentrations at the affected roadway intersections. CO concentrations for the two alternatives would range from 4.1 to 4.3 parts per million (ppm) for the one-hour period and from 1.5 to 1.6 ppm for the eight-hour period.

The Canoga Busway Alternative would result in less greenhouse gas emissions (GHG) than the Canoga On-Street Dedicated Bus Lanes Alternative. When compared to the No Project Alternative,

the Canoga On-Street Dedicated Bus Lanes Alternative would result in a reduction of approximately 8,332 tons per year (tpy) of GHG emissions and the Canoga Busway Alternative would result in a reduction of approximately 13,634 tpy of GHG emissions.

Noise and Vibration

Prior to implementation of mitigation measures, fewer sensitive receptors would be exposed to severe noise impacts under the Canoga On-Street Dedicated Bus Lanes Alternative than under the Canoga Busway Alternative. Options 1 and 3 of the Canoga On-Street Dedicated Bus Lanes Alternative would not expose sensitive receptors to severe noises impacts, and Option 2 would expose three multi-family residential buildings to severe noise impacts. Options 1 and 5 of the Canoga Busway Alternative would not expose sensitive receptors to severe noise impacts. Options 2 through 3a would expose three multi-family residential buildings to severe noise impacts, and Option 4 and 4a would expose three mobile homes to severe impacts. With implementation of mitigation measures, the Canoga On-Street Dedicated Bus Lanes Alternative and the Canoga Busway Alternative would not expose sensitive receptors to severe noise impacts.

The two alternatives would result in similar operational noise impacts associated with park-and-ride facilities, passenger information systems at proposed transit stations, and vibration.

The two alternatives would expose sensitive receptors to significant noise impacts during construction even with implementation of mitigation measures.

Geology, Soils and Seismicity / Hazardous Materials

The No Project and TSM Alternatives would not require construction and present no geological or seismic impacts. The Busway Alternative has more structures planned than the On-Street Dedicated Bus Lanes Alternative. A potential grade separation structure is also planned near Lassen Street for the Busway Alternative. This grade separation structure is located near a fault study area.

Water Resources

The No Build and TSM Alternatives would not have an effect on water resources as they do not change current drainage conditions along the corridor. The Canoga On-Street Dedicated Lanes Alternative would widen Canoga Avenue to accommodate the bus lanes. This would result in a larger surface area of impermeable pavement that would result in rain water draining into storm drains along the sides of Canoga Avenue. Areas of landscaping along the parallel bicycle/pedestrian pathway would potentially be able to drain into landscaped swales to allow water to percolate into the ground. The Busway Alternative would not change the drainage patterns on the existing Canoga Avenue and would provide opportunities for the paved Busway and its parallel landscaped areas to drain into swales. This would reduce the comparative level of storm water run-off and reduce the impact of the Busway on water resources in comparison to the On-Street Dedicated Lanes Alternative.

Biological Resources & Ecosystems

The build alternatives would be constructed within a developed, urban area with no reasonable potential for wetlands, special-status plant or animal species or their occupied habitat. The area also provides no opportunity for accessible movement between two or more existing open spaces. Thus, the build alternatives would not adversely affect wetlands, special-status species, or wildlife corridors.

However, the build alternatives would require the removal of a small number of planted trees. Although the trees do not have special regulatory status as rare or sensitive, the removal of trees or other construction activities could affect native birds and their nests and conflict with the Migratory Bird Treaty Act and similar laws in the California Fish and Game Code protecting native bird species. The implementation of mitigation measures should include avoiding the core nesting season for native birds and a pre-construction survey of nesting birds.

Energy

Energy consumption for the Canoga Busway Alternative would be less than the Canoga On-Street Dedicated Bus Lanes Alternative. When compared to the No Project Alternative, the Canoga On-Street Dedicated Bus Lanes Alternative would result in a reduction of approximately 142,499,666,060 British Thermal Units (BTU) per year, and the Canoga Busway Alternative would result in a reduction of approximately 222,580,964,995 BTU per year.

Safety & Security

None of the project alternatives would have a significant impact on public safety, crime prevention or emergency response. Both build alternatives do have the same potential to have significant construction impacts on safety and security. Student safety during the construction period could be a concern at schools located adjacent to construction sites, if not mitigated. Furthermore, emergency response during construction could be compromised due to detours and street closures. Mitigation measures have been identified to reduce these impacts to less than significant levels.

- *The No Project and TSM Alternatives have the least amount of environmental impacts* -

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4.6 GOAL 6: MINIMIZE COMMUNITY IMPACTS

Although the project would primarily be located within the Metro-owned ROW, the implementation of either build alternative could impact persons or businesses with leases of Metro-owned property and to privately-owned properties outside the Metro ROW. The TSM Alternative does not require the acquisition of private properties or the relocation of businesses.

Business Relocations

Both build alternatives would primarily be located within Metro-owned ROW, currently leased to a number of commercial and industrial businesses. There are a total of 93 existing leases along the ROW, 60 of which are ground leases to businesses; the rest are sign and billboard leases or licenses and easements.

The implementation of the Busway Alternative would result in the non-renewal of 56 of the 60 ground leases. Four existing leases may be renewed: National Ready Mixed Services Company, California Portland Cement Company, Jacobi Building Materials, and Canoga Self Storage. These leases would be reconfigured, if possible.

The implementation of the On-Street Dedicated Bus Lanes Alternative would result in the non-renewal of 57 of the 60 ground leases. Three existing leases may be renewed: National Ready Mixed Services Company, California Portland Cement Company, and Jacobi Building Materials. These leases would be reconfigured, if possible.

Property Acquisitions

No private property would need to be acquired for the implementation of the TSM or Busway Alternatives (northern segment options are discussed below). Implementation of the On-Street Dedicated Bus Lanes Alternative would require the acquisition of the property located on 7204-7258 Canoga Avenue/21355 Sherman Way. This property is improved with a 15,540-square-foot retail commercial center that contains 14 individual commercial spaces and a freestanding commercial building. The northern segment of each alternative would require more property acquisitions. The evaluation of the northern segment options will follow the evaluation of corridor alternatives.

- *The No Project and TSM Alternatives have least amount of community impacts* -

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4.7 GOAL 7: COST-EFFECTIVENESS

Transportation investments have two types of costs: capital costs and operating and maintenance (O&M) costs. Capital costs are the construction and start-up costs, such as the guideway, vehicles, and any system facilities. O&M costs are the costs associated with the running of the transportation facility, such as labor, vehicle maintenance, and overall facility maintenance. This section describes both capital and O&M costs in relation to the cost-effectiveness of each alternative.

Cost-effectiveness is a measure used to evaluate how the costs of a transit project (for both construction and operation) compare to the expected benefits (travel time savings). The Federal Transit Administration's (FTA) cost-effectiveness criterion is measured by the incremental cost per incremental passenger in the forecasted year (2030). This measure is based on the annualized total capital investment and annual operating cost, divided by the change in annual hours saved, expressed in the equation:

$$\text{Cost Effectiveness Index} = \frac{\text{change in annualized capital costs + change o \& m annual costs}}{\text{Change in annual hours saved}}$$

The smaller the index, the more cost-effective the project alternative. Consistent with FTA requirements, cost-effectiveness for each alternative is measured against the No Project and TSM Alternatives.

4.8 CAPITAL COST COMPARISON

As described above, capital costs are the expenses related with to physical construction and design of a transportation facility or system, including ROW, guideway and station construction, environmental mitigation, urban design, station area parking lots, vehicle purchases, system-wide equipment and maintenance facilities as needed. The construction costs of the TSM and the two build alternatives were developed based on consultant knowledge of industry costs and on units costs derived from construction of other Metro transit projects.

Methodology

The TSM Alternative would require only the purchase of new buses. The costs of the build alternatives and their variations were calculated using values from both Metro and consultants. Each total cost is based on unit costs for individual line items required to build and operate the BRT. Both Metro and the consultant provided prices for items such as guideways, stations, vehicles, landscaping, maintenance yards, parking spaces, ROW, and other components of the project.

Capital Cost Comparison

The TSM Alternative was estimated at $12.6 million in 2007 dollars and it includes 28 buses. It was assumed that no new maintenance facility will be needed for the TSM Alternative.

Because different northern segment options are also being examined for each of the build alternatives, the capital cost of the two build alternatives was estimated for the construction of the lowest cost option for each alternative (Option 1). This allows for a fair comparison of the cost in terms of cost-effectiveness. The cost of the On-Street Dedicated Bus Lanes Alternative was calculated at $207.700 million; and the cost for the Busway Alternative was calculated at $157.300 million. **Table 4** below summarizes the cost estimates for each of the build alternatives.

Table 4 Capital Cost Comparison of Alternatives – Cost Estimate ($,1,000s 2007)

Cost Component	TSM	On-Street Alternative (Option 1)	Busway Alternative (Option 1)
Facilities; including Design, Construction, Systems, Environmental, Landscaping, Master Cooperative Agreements, and Professional Services		$156,900	$127,100
Real Estate		$21,900	$6,300
Vehicles	$12,600[1]	$8,100[2]	$8,100[2]
Project Contingency	-	$20,800	$15,800
Total Project Cost	$12,600	$207,700	$157,300
Notes: 1. Vehicle cost for opening day – 28 40' buses. 2. Vehicle cost for opening day – nine 60' buses. 3. Lowest price option used for comparison			

Source: Lennax, Metro, 2008

The On-Street Dedicated Bus Lanes Alternative has the highest capital costs mainly because it involves the re-construction of Canoga Avenue. The TSM Alternative would have the lowest capital costs, as no significant construction costs would need to be incurred.

Operating Cost Estimates

Annual operating and maintenance costs were calculated based on each of the alternatives' operation plan and Metro's assumptions regarding staffing requirements, labor costs, and other non-labor expenses, expressed in the cost per revenue mile.

Operation Plan

The operating plan for both the On-Street Dedicated Bus Lanes and Busway Alternatives focuses on an integrated operation with the existing MOL. This recognizes the regional travel role for this key transit investment for the San Fernando Valley.

The following service operating pattern is proposed for the two alternatives.

- Existing MOL service Warner Center (WC)– North Hollywood (NH)
- New MOL service Chatsworth (CH) – North Hollywood
- New MOL service Chatsworth – Warner Center

This plan provides one-seat rides (no transfers) between each MOL station.

The proposed service frequencies for these three routes in 2030 are shown in **Table 5.**

Table 5 Service Frequencies

Service	Peak	Midday	Evening	Weekend Day
MOL WC – NH	6 min.	12 min.	20 min.	12 min.
MOL CH-NH	6 min.	12 min.	20 min.	12 min.
MOL CH – WC	6 min.	12 min.	20 min.	12 min.
MOL Combined	3 min.	3 min.	10 min.	3 min.

Source: TMD, 2007

The combined operation would apply regardless of the "build" alternative selected. Both are assumed to have comparable travel times. The on-street lanes may enjoy a slight speed benefit from better integration of signal priority with the existing traffic signals. The Busway may enjoy more direct access from Canoga Avenue into the Chatsworth Transportation Center compared with the on-street lanes, which will not have a dedicated bridge or flyover access to Chatsworth Transportation Center. As noted earlier, the Busway is assumed to operate at an average end-to-end speed of 21 MPH and the On-Street Dedicated Lanes Alternative is assumed to operate at 20 MPH due the additional traffic signal(s) it traverses.

Fleet Requirements

Based on the operating plans above, the resources required for the build alternatives are therefore assumed to be the same and are summarized in **Table 6.**

Table 6 2030 Fleet Requirements by Day of Week

Extra 2030 Resources	Per Weekday	Per Weekend Day
Added Revenue Miles	4,467	4,034
Added Revenue Hours	319	219
Extra Fleet	**22**	N/A

Operating costs are directly related to the number of buses (resources) required to service the forecast travel demand. In reviewing the performance of the various Canoga MOL alternatives in modeling for 2030, it is prudent to review the ridership growth in comparison to extra resources required. It should be noted that although 22 new buses will be required to provide the level of service reflected in **Table 6** above, on opening day of the Canoga extension, only 9 new buses will be required if current headways are maintained. **Table 7** below summarizes the various ratios (and resource units). These reflect estimated total MOL ridership per revenue mile, revenue hour or peak bus allocated to the MOL under each scenario.

Given the above data, at first glance, the strongest performing service is the MOL under No Project conditions; that is, current headways. Maintaining current headways with the forecast demand in 2030 could result in severe overcrowding given that MOL buses are already experiencing capacity problems in the peak hour with daily ridership just under 26,000.

A second figure is included with existing MOL capacity and resource units increased 33% (3.5 min. instead of 4 min. peak, 7.5 instead of 10 min. off peak on existing MOL) to carry the added ridership (over 12,000 more daily riders compared with today). With this adjustment, performance of the proposed Canoga extension (either Busway or On-Street Dedicated Lanes Alternative) is very comparable to that of the existing MOL in 2030.

The data overall suggests the Canoga extension for the MOL should be as effective as the existing MOL.

Table 7 Ridership/Resource Investment – MOL Canoga Extension 2030

Scenario	Ridership	Est. Rides/ Revenue Mile (Revenue Miles)	Est. Rides/ Revenue Hour (Revenue Miles)	Est. Rides/ Peak Bus (Revenue Miles)
No Project – existing service levels	31,295	6.34 (4,934)	100.95 (310)	1159.07 (27)
No Project MOL with extra capacity (3.5 min. peak, 7.5 min. off peak)	31,295	5.51 (5,683)	79.83 (392)	948.3 (33)
TSM	31,321	1.36 (23,094)	20.13 (1,556)	1,118 (28)
On-Street Alternative	45,371	4.83 (9,402)	72.13 (629)	925.94 (49)
Busway Alternative	45,537	4.84 (9,402)	72.40 (629)	929.33 (49)
New Orange Line Busway omitting CH-WC pattern	44,116	5.6 (7,883)	109.47 (403)	1050.38 (42)

Source: TMD, 2008

Warner Center – Chatsworth Direct

Within the "build" alternatives operating plans is the assumption that a direct north-south Warner Center-Chatsworth route will be operated. This route alone generates around 2,800 rides. It may be reasonable to assume that at least 50 percent of this ridership is retained if the service is dropped and riders must transfer between the other two lines at the Canoga station. With the costs of this service removed, and half the ridership retained, a significant improvement is made in ridership per resource unit.

Annual Operating Costs

Table 8 presents the total and incremental annual operating costs of the alternatives based on current Metro costs per revenue mile. These costs include the cost of the two new lines added to the current MOL, plus the cost of improving service on the existing MOL to meet forecast travel demand. A cost savings of $7.411 million would be achieved by eliminating the Chatsworth-Warner Center route and requiring a transfer at the MOL Canoga Station to make this north-south trip.

Table 8 Annual Operating Costs: Incremental Value Over Existing

Alternative	Total Annual Operating Cost ($1,000- 2008)	Incremental Annual Operating Cost ($1,000-2008) – over existing MOL
TSM Alternative	$15,327	$15,327
On-Street Dedicated Lanes Alternative	$45,029	$23,051
Busway Alternative	$44,013	$22,035
Busway Alternative w/out CH-WC route	$36,602	$14,624
On-Street Dedicated Lanes Alternative w/out CH-WC route	$37,617	$15,639

Source: TMD, 2008

Travel Time Savings (User Benefits)

This measure is defined as the total travel time savings that are expected to result from the build alternative in the forecast year (2030), compared to both the No Project and TSM Alternatives. This aggregate value includes travel time savings for users of all transportation modes. The travel time savings were calculated using FTA's summit program and Metro's travel demand forecasting model. **Table 9** below summarizes the travel time savings for each of the build alternatives.

Table 9 Value of Travel Time Savings

Build Alternative	Total Annual Change (Hours)	
	Annual Savings to No Project	Annual Savings to TSM
TSM	84,582	-
On-Street Dedicated Bus Lanes	976,584	892,002
Busway	991,004	906,422

Source: Iteris, 2007

Alternatives Cost Effectiveness

As described above, cost-effectiveness is a measure used to evaluate how the costs of a transit project compare to the expected benefits The FTA's cost-effectiveness criterion is measured by the incremental cost per hour of travel time saved in the forecasted year (2030). This measure is based on the annualized total capital investment and annual operating cost, divided by the change in annual hours saved; the smaller the index, the more cost-effective the project alternative. Consistent

with FTA requirements, cost-effectiveness for each alternative is measured against the No Project and TSM alternatives. To calculate the change in capital cost, project costs were annualized according to their assumed useful life, using FTA annualization factors shown in **Table 10**.

Table 10 Life Cycle Assumptions

Project Element	Useful Life	Annualization Factor
ROW	100 years	0.07
Structures, trackwork, signals, electrification	30 years	0.081
Buses	12 years	0.126

Source: Technical Guidance on Section 5309 New Starts Criteria, FTA, 2007

Annual O&M costs were summarized in **Table 8** and travel time savings in **Table 9. Table 11** summarizes the data used in the cost-effectiveness index calculation and **Table 12** summarizes the calculated cost-effectiveness index for each alternative.

Table 11 Cost-Effectiveness Calculation: Incremental Value Over No Project

Alternative	Annualized Capital Costs (2007 $)	Annual O&M Cost (millions 2007 $)	Annual Hours Saved (millions)
TSM	$1.59	$15.33	0.08
On-Street Dedicated Bus Lanes Alternative	$56.43	$23.05	0.98
Busway	$33.42	$22.04	0.99

Source: Iteris, 2008

As seen on **Table 12** below, the Busway Alternative would be the most cost-effective alternative because it costs less than the On-Street Dedicated Lanes Alternative, while achieving slightly higher travel time savings and while it may be more expensive than the TSM Alternative, it results in much greater travel time savings.

Table 12 Cost-Effectiveness Index Calculation (Lower is Better)

Build Alternative	Annualized Cost Per Hour Saved	
	Over No Project	Over TSM
TSM	$ 211	-
On-Street Dedicated Bus Lanes	$ 81	-$130
Busway	$ 56	-$155

Source: Iteris, 2008

- *The Busway Alternative is the most cost-effective alternative* -

5.0 LOCALLY PREFERRED ALTERNATIVE

5.1 PREFERRED ALTERNATIVE

Based on the evaluation presented in Section 4.0, the Busway Alternative better meets the project's goals and objectives. The busway would cost less to build (compared to building dedicated lanes on Canoga Avenue) and would provide the faster, more reliable north/south connection, resulting in higher ridership levels than other alternatives considered. Significant environmental impacts are completely mitigated (except during construction) and mobility benefits are higher than for all other alternatives. Furthermore, the majority of public comments received in the environmental process favored the Busway Alternative. **Table 13** provides a summary evaluation of the alternatives with a point system (4 indicates the highest ranked alternative, 1 indicates lowest ranked alternative). The Busway Alternative scores the highest with 23 points compared to the TSM and On-Street Dedicated Lanes Alternative with 16 points.

Table 13 Project Alternatives Comparison

Goal/Objective	No Project	TSM	On-Street Dedicated Bus Lanes	Busway
Regional Connectivity	1	2	3	4
North-South Mobility	1	2	3	4
Land Use & Development	1	2	3	4
Community Input	1	1	2	4
Environmental Impacts	4	4	1	1
Community Impacts	4	4	1	2
Cost-Effectiveness	1	1	3	4
Total	13	16	16	23

The Busway Alternative is recommended as the Locally Preferred Alternative for the Canoga Transportation Corridor.

5.2 COMPARISON OF OPTIONS ASSOCIATED WITH LPA

Several different configuration and routing options were contemplated in the DEIR for each alternative. With the selection of the Busway Alternative as the LPA, only the options associated with that alternative are further discussed in this report. The options are evaluated based on the following criteria: Cost, Bus Operations Issues, Safety, Environmental Impacts, Real Estate Issues, Railroad Operation Issues, Long-term Implications, Permitting Issues, Bicycle/Pedestrian Path treatment, and public input.

Northern Options

As described in Section 3.0, there are five options for extending the busway to the Chatsworth Metrolink Station.

Cost

The cost for each of the options is presented in **Table 14**. Option 1 would cost the least because there is no need to buy private properties. Option 2 would cost more because of the need to purchase one private property on the north side of Marilla Street. Option 3 would cost more than Option 2 because a private property would have to be purchased to construct a station on the west side of the tracks and the station is more expensive because of the cost to provide a pedestrian grade-separation of the tracks for pedestrians to reach the Metrolink Station platforms and its parking. Option 4's cost is higher, even though only a partial private property acquisition would be required, because an underground crossing of the tracks would have to be constructed. Constructing an underpass below active rail lines at an angle (not directly perpendicular to the tracks) is a very complicated and expensive construction job. Option 5 would cost the most if a grade-separated connection under the railroad tracks and Lassen Street to the Chatsworth Metrolink Station was constructed. With the elevated grade separation, which is significantly less expensive than the underpass, Option 5 would cost less than Options 3 and 4.

Table 14 Northern Option Cost Comparison

Cost Component	Option 1	Option 2	Option 3	Option 4	Option 5* Overpass
Facilities Cost; includes design, systems, environmental, landscaping, master cooperative agreements and professional services	$127,100	$129,300	$133,900	$145,600	$145,900
Real Estate Costs	$6,300	$12,600	$19,200	$8,700	$7,100
Vehicle Costs	$ 8,100	$8,100	$8,100	$8,100	$8,100
Project Contingency	$15,800	$16,700	$18,000	$18,100	$18,000
Total:	**$ 157,300**	**$166,700**	**$179,200**	**$180,500**	**$ 179,100**

Notes:

1. Costs are in $1,000 2007
2. Option 5 underpass estimated at $198 million.
3. The cost estimate for this comparison is based on Conceptual Engineering Design.

Source: Lennax, Metro, 2008

Alternative 5 has a large structure over the active rail line and Lassen Blvd. Construction near and around active rail lines increases costs and construction durations. The project cost estimate does include additional costs for this but the costs are somewhat outside the control of Metro thus this creates some added risks. This risk can be mitigated by close coordination with the railroads and by appropriate terms in the construction documents to address the construction constraints.

Bus Operational Issues

The amount of time each option adds to the overall travel time of the MOL is a very important factor in the selection of a northern segment option. Travel time is often the key determinant in commuter mode choice. Under Option 1, buses could take up to 3 minutes to reach the Chatsworth Metrolink Station from Plummer Street, because they would have to travel on regular mixed-flow lanes. This

travel time differential would also likely increase over time as congestion on Owensmouth and Lassen increase.

Design speeds and operating speeds are limited by the horizontal and vertical geometric constraints of the rail and roadway clearances and available ROW. BRT and future LRT operating speeds would be limited to about 35 mph (vs. 55 mph) in the segment north of Plummer. This would have a small negative impact on the overall travel time.

Option 5, with a fully grade-separated bridge or tunnel over or under the railroad tracks and Lassen Street allows service to maintain an operating speed of around 21 miles per hour consistent with the remainder of the MOL. In contrast to this, access via the on-street Option 1 represents an addition of 0.42 miles distance, but more concerning is its likely lowering of average operating speed to around 10 miles per hour (peak) and 15 miles per hour off peak adding an extra 5 and 3 minutes travel time per direction, respectively, for this segment.

The implications of this difference in travel time between Option 1 and Option 5 is around an additional 2% in revenue miles, 5% in revenue hours and two to four additional peak buses required. These are illustrated in **Table 15**. Options 2, 3 and 4 would fall between these two extremes in terms of fleet requirements.

Table 15 Difference in Fleet Requirements for Option 1 Compared to Option 5

Chatsworth On-Street Access	Extra Revenue Miles	Extra Revenue Hours	Extra Peak Buses
Weekdays	+224 (+2%)	+34 (+5%)	+4
Weekends	+144 (+2%)	+22 (+5%)	+2

Source: TMD, 2008

Safety Issues

Safety is a primordial factor in selecting a preferred option. An assessment of each of the option's safeness, relative to the others was prepared, based on discussions held with Union Pacific Railroad Company (UP) and the Southern California Regional Rail Authority (Metrolink), two of the railroad operators utilizing the tracks, and staff of the State of California Public Utilities Commission who have jurisdiction over approval of rail crossings.

Northern Segment Options 1 and 2 – These two options are considered the least safe, relative to the others, because they would be adding buses to the existing at-grade railroad crossing. Buses would stop before crossing the railroad tracks, but having buses cross the railroad tracks potentially as often as every 1 ½ minutes would increase the chances for a bus-rail accident. Option 1, with buses traveling in mixed-flow on Plummer, Owensmouth and Lassen Streets also increases the opportunity for bus-auto accidents.

Northern Segment Options 3 and 4 – These options are considered safer than the at-grade crossing options (1 and 2) because the buses would not have to cross the railroad tracks at-grade, but they would cross Lassen Street at-grade in new signalized intersections. Buses would cross Lassen Street parallel to the tracks on either side (west in option 3 and east in option 4). Crossing adjacent to the tracks may require simultaneous railroad gate activation to enhance the safety of these options which would cause additional traffic delays on Lassen Street.

Northern Segment Option 5 – This option is considered the safest relative to the others because there

would be no at-grade crossing of either the railroad tracks or Lassen Street. The buses would reach the Chatsworth Metrolink station via an underground tunnel or an elevated structure grade separating buses from both the tracks and the street.

Environmental Impacts

The environmental impacts of each option were assessed in the DEIR. The most salient environmental issues related to the northern segment options are safety, land acquisitions, noise, and visual. Safety and land acquisitions are discussed separately. Visual is discussed below.

Regarding the Busway Option 5, the DEIR states:

"The elevated viaduct would be a new visual element in this area. Bus riders would have access to views into the mobile homes located east of the railroad tracks. This would reduce privacy for these residences unless a barrier to screen views on the viaduct would be provided. The overhead viaduct could block views of mountains and shade mobile homes. Therefore, a significant visual impact is anticipated for Option 5 in an elevated profile. A below-grade separation of the railroad tracks and Lassen Street would have no significant effects on the visual environment." Technically, a significant visual impact only occurs when views from public rights-of-way are obstructed. Blocking a view from a private property is not considered a significant impact per CEQA.

Mitigation measures specified in the DEIR for Option 5 include:

> **MM 4.6-4:** To reduce visual impacts for the Canoga Busway Alternative Option 5, provide landscaping adjacent to the mobile homes, and also visual barriers on the elevated viaduct or other measures that would reduce direct views from the elevated Busway onto adjacent mobile homes.
>
> **MM 4.6-5:** Design guidelines for the elevated bridge structure for the Canoga Busway Alternative - Option 5 shall consider community input before the construction phase of the project. Design guidelines shall include techniques to reduce the massing and profile of the elevated structure, and to maintain views, where possible of the Simi Hills.

Visual Analysis of Option 5

With mitigation measures, visual and aesthetics impacts for the Busway Alternative would be less than significant per the DEIR.

Using conceptual engineering Plan and Profile drawings of the Option 5 bridge and viaduct, an analysis of the visual environment and potential mitigation measures to reduce the massing of this bridge and viaduct was prepared. **Figure 18a, b and c** illustrate the Option 5 bridge over Lassen Street and images with and without the viaduct looking northwest from two mobile homes adjacent to the UP ROW.

- **Figure 18a-1** – Lassen Street is a public ROW and currently there are views of the Simi Hills to the west as shown in the existing condition photos taken from the entrance to the mobile home park, south of Lassen Street.

- **Figure 18a-2** – is a view standing on the sidewalk at the mobile home park entrance; Simi Hills are visible under the bridge. Further away from the bridge to the east on Lassen Street, the bridge would temporary block views of the mountains. Overhead utility poles/lines will be undergrounded as part of this project, some billboards removed, and railroad gates and lights relocated improving the overall visual environment.

- **Figure 18b-1** is the existing condition looking northwest towards mountains from the northern-most mobile home adjacent to the Metro ROW closest to the clubhouse. The existing industrial building south of Lassen Street and west of the railroad tracks blocks much of the view of the mountains. Any new industrial building west of the railroad tracks will further block views of the mountains.

- **Figure 18b-2** shows an 8 ft privacy wall which would block the view of the mountains from the backyard of the mobile homes. This privacy wall was requested by some mobile home owners.

- **Figure 18b-3** shows the elevated busway on a retaining wall and embankment which would entirely block views of the mountains.

- **Figure 18b-4** shows the elevated busway on a retaining wall and embankment but with landscaping enhancements.

- **Figure 18c-1** illustrates existing views from the 18th mobile home south of the clubhouse, looking towards Lassen Street.

- **Figure 18c-2**- shows an 8 ft privacy wall which would block the view of the mountains from the backyard of the mobile homes. This privacy wall was requested by some mobile home owners.

- **Figure 18c-3**- illustrates the view from the mobile home looking towards the bridge with an embankment.

Potential mitigation for the massing of the bridge structure would be to provide variations in the shape of the bridge and railings to create shadow lines and openings. This will be explored in more detail during PE and by the design/build contractor.

Noise impacts were identified for the aforementioned mobile home park under Options 4 and 4a, as the busway would be constructed in close proximity to the homes. As mitigation, the DEIR identified the construction of a soundwall. This soundwall would also help eliminate some of the existing train noise.

Lassen Street View at Mobile Home Park Entrance Looking West

18a-1 Existing View on Lassen at Impact Location

18a-2 With Bridge Over Lassen Street

Source: **GRUEN**ASSOCIATES

Option 5 from Mobile Home # 1

18b-1 Existing North-West View from Mobile Home 1

18b-2 With an 8 ft Wall Requested by Mobile Home Residents

18b-3 With Retaining Wall and Embankment

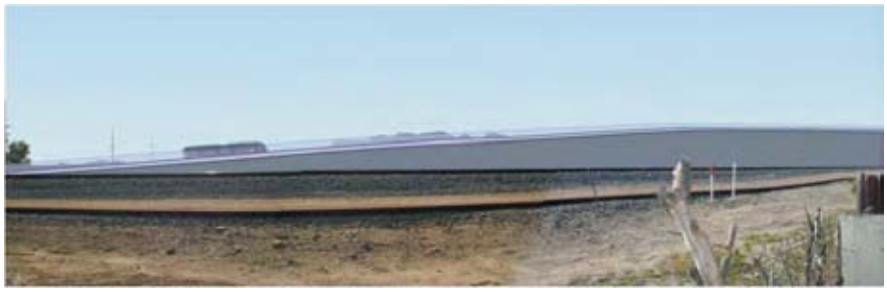
18b-4 With Retaining Wall, Embankment, and Landscaping Enhancement

Source: **GRUEN**ASSOCIATES

Option 5 from Mobile Home # 18

18c-1 Existing North-West View from Mobile Home 18

18c-2 With an 8 ft Wall Requested by Mobile Home Residents



18c-3 With Retaining Wall

Source: **GRUEN**ASSOCIATES

Real Estate Issues

The acquisition of private property has the potential of increasing project costs significantly and displaces some existing businesses. Only Options 1 and 5 would not require property acquisitions or modifications to existing private property other than placement of a bridge support column in the UP ROW. Option 2 would require the acquisition of two private properties: 9810-9860 Owensmouth Avenue and 21610-21638 Lassen Street. Option 3 would also require the acquisition of two private properties: 21600 Lassen Street and a vacant property at the northeast corner of Lassen Street & Remmet Avenue. The property at 21600 Lassen could potentially be reconfigured since the building on-site would not stand in the way of the Busway alignment and Metro owns the parcel to the south of it which could be used for access and parking.

The properties that would need to be acquired for both Options 2 and 3 either currently house industrial uses or, are zoned for industrial use. This represents a potential impact on industrial jobs in the area. Option 4 would require purchase of property from the Sunburst Mobile Home Park.

Railroad Operation Issues

The operations of Union Pacific freight trains and Metrolink commuter and AMTRACK trains would be affected differently by each of the options. The options which include at-grade crossings of the railroad tracks (options 1 and 2) would not directly impact railroad operations, necessarily, but could result in the decision to slow trains at this crossing, which would negatively impact their travel time. The options that cross Lassen Street parallel to the tracks (options 3 and 4a) could result in a decision to lower the railroad crossing gates as the buses cross Lassen, for safety reasons, which would increase wear and tear on the crossing warning devises and shorten their usable life. Options 4 and 4a, which place the Busway on the east side of the tracks on UP property, would preclude the possibility of ever providing a third track in this portion of the ROW, an option that UP does not want to preclude. Option 5, if elevated, would require construction of a bridge column in the Union Pacific ROW just south of Lassen Street. Location of a column within part of the UP ROW would not be problematic because the UP ROW narrows at Lassen Street so that a third track could not extend north of Lassen Street; any such third track would have to rejoin the existing tracks south of the column location.

Long-Term Implications

The choice of a northern segment option has long-term implications because of the capital costs involved with any change in the busway's configuration. The primary long-term implication is the physical feasibility of converting the busway into a fixed-guideway light rail transit (LRT) system in the future. Other long-term implications include the ease of extending the MOL further north through Old Deport Plaza Road and any impediments to future grade separations created by the project.

<u>Options 1 and 2</u>

Conversion to LRT would be very costly under these options as private property acquisitions would be required. Extending the MOL further north through Old Depot Plaza Road would be relatively easy under these options and no grade separation would be precluded.

<u>Option 3</u>

This option would likely have lower LRT conversion costs compared to options 1 and 2, as the necessary ROW would have already been secured. However, Chatsworth Station Re-configuration Option C would not accommodate an LRT terminus as easily as the other terminus options. Extending the MOL further north through Old Depot Plaza Road would be very costly and more

difficult under this option because the station would be on the west side of the railroad tracks. Further grade separations would not be precluded under this option.

Option 4

This option would have lower LRT conversion costs, as the necessary ROW would have already been secured. Extending the MOL further north through Old Depot Plaza Road would be relatively easy under these options and no grade separation would be precluded.

Option 5

This would be the easiest and least expensive option in terms of LRT conversion because no properties would need to be acquired and no further grade separation would be needed. However, a design standard exception may be needed for horizontal curves. Option 5 (above grade alternative), would have a negative long-term implication for the existing railroad operators, as grade separating the Busway above the tracks would preclude the potential for a grade separation of the railroad and Lassen Street. No such grade separation is currently under consideration, however. Extending the MOL further north through Old Depot Plaza Road would be relatively easy under this option.

Permitting Issues

The California Public Utilities Commission (CPUC) is the permitting agency for railroad crossings. The permitting process can vary in duration depending on the complexity of the crossing. A General Order 88B permit for the Lassen Street rail crossing would be required for all northern segment options, except Option 5. Option 5 would not necessitate this approval, as it is a grade-separation. Option 5 would therefore be the best option in terms of permitting time.

Options 3 and 4a create an atypical intersection at Lassen and the BRT alignment immediately adjacent to an active passenger and freight railroad. Vehicular traffic approaching this intersection will be confronted with both rail and BRT signals in close proximity creating confusion as to the proper action by the vehicle. The BRT and rail crossing signals must be interconnected to provide time for clearance of the tracks when the train approaches. Traffic on Lassen will be stopped by the BRT signal. The stop bar alone will not prevent vehicles from stopping on the tracks and this will create a potential hazard. To prevent this, the rail crossing gates would have to be activated by the BRT approaching. Crossing gates have not been used on any intersection on the existing BRT so the use here would be inconsistent with current practice and could potentially create liability and risk management issues relative to the current system. The California Public Utilities Commission (CPUC) approves modifications to all rail crossings and may not approve modifications to the existing crossing to construct the BRT immediately adjacent to the rail. There is a risk that this design will not be approved by CPUC. Future conversion to LRT would require a fully gated crossing similar to some areas of the Long Beach Blue Line where the LRT is adjacent to freight rail.

Bicycle/Pedestrian Path

The treatment of the bicycle/pedestrian path varies among the options (see Section 3.0 for details). Under all options, except Option 1, the bicycle/pedestrian path could be carried along with the Busway up to Lassen Street and into the Chatsworth Metrolink Station, assuming that the absolute minimum clearance between busway and the tracks would be used. Under Option 1, the bicycle/pedestrian path would terminate at Plummer Street.

Terminus

The final reconfiguration of the Chatsworth Metrolink Station depends upon the selection of a northern segment option (see Section 3.0 for a description of the Chatsworth Station re-configuration options).

Options 1, 2, and 4a

These options would be compatible with re-configuration Options A or B. Option A would have minimal parking impacts on the existing station. The interface with Metrolink trains and local buses would be very efficient because train and bus platforms would be in close proximity. Option B would also provide a very good bus-rail interface because the platforms would be adjacent to each other; however, this option would require the replacement of existing parking spaces displaced from the southern portion of the station. The new spaces would be located on the northern portion of the station, where the property is currently vacant. As a result, Metrolink patrons would have to walk slightly further to reach their platform.

Option 3

This option would only work with Chatsworth Station re-configuration Option C, which would place the bus platforms on the west side of the railroad tracks, opposite the existing train platforms. Under this option, the bus and rail platforms would be a distance from each other and MOL passengers would be required to access their platform via a pedestrian underpass or overpass. Therefore, the interface with Metrolink and local buses would not be accommodated as well. This option would preserve existing parking spaces at the station.

Options 4a and 5

These options would work with Chatsworth Station re-configuration Option D, which would eliminate most or all of the existing southern parking lot. As a result, Metrolink patrons would have to walk further (from an average of 400 feet to an average of 800 feet) to reach their platform. Under this option, however, the Metrolink-MOL interface (transfers) would be very efficient because the bus and rail platforms would be adjacent to each other. The local bus-MOL interface could be accommodated as well and potentially improved if the local bus stop is relocated to the south of the existing station building. An elevated grade-separation provides the opportunity to retain excavated material within project limits, as it would be used for the bridge's embankments.

Public Input

The option that received the most opposition comments was Option 4, with the comments opposing the Busway on the east side of the railroad tracks coming primarily from residents of the adjacent mobile home park. The public comments were relatively evenly split in support for Options 3 and 5, although it appears that some misinterpreted Option 3 as including an underpass under Lassen Avenue and this may have lead to their statements of support.

Preferred Northern Segment Option

The positive and negative attributes of each of the northern segment options were discussed above. In general terms, most of the options have strong positive and negative attributes. Careful consideration to details is necessary in assessing their relative ranking.

In general terms:

Option 1 Busway Ends At Plummer - This has lowest capital cost, but would also be the least safe and have the lowest bus operating speed, thus lengthening travel times and reducing the quality of

MOL service. This option is opposed by the Los Angeles Department of Transportation (LADOT), the Union Pacific Railroad Company (UP), the California Public Utilities Commission (PUC), and Metrolink, due to safety concerns with buses crossing the railroad tracks at grade. Conversion to LRT under this option would be very costly due to property acquisitions.

Option 2 At-Grade "T" Intersection on Lassen Approx. 200 Ft West of Tracks – This option would have relatively low costs (even though it requires property acquisitions) and is also one of the least safe and slower options. Conversion to LRT under this option would be very costly due to property acquisitions.

Option 3 At-Grade Parallel Crossing of Lassen West of Tracks – this option is a faster and safer option compared to Options 1 and 2; however, it would require the station be on the west side of the railroad tracks (private property to be acquired) and this would make the rail-bus interface less convenient for travelers. Furthermore, having the station on the west side of the tracks would make LRT conversion more difficult in the future. This option would require a new signal on Lassen Street at the busway's crossing. This signal may require simultaneous railroad gate activation, causing additional traffic delays.

Option 4 Underpass of Tracks with Crossing of Lassen East of Tracks – These options are also faster and safer; however, they negatively impact the Sunburst Mobile Home Park, may be opposed by the UP railroad, and are difficult and costly to construct due to the undercrossing of the active rail tracks. Furthermore, this option would require a new signal on Lassen Street at the busway's crossing. This signal may require simultaneous railroad gate activation, causing additional traffic delays. This option would have lower LRT conversion costs, as the necessary ROW would have already been secured.

Option 5 Elevated/Underground Grade Separation of Railroad Tracks and Lassen Street – this option would be the safest way to access the Metrolink station. Furthermore, no private property would have to be acquired for this option. However, the overpass version of this option could be opposed by some due to visual concerns. The underpass version would cost significantly more than the other options. The overpass version would not cost more than Options 4 and 3.

In general terms, Options 3 and 5 with the overpass have the strongest positive attributes, albeit each with some drawbacks. Options 2 and 4 have significant issues that would not warrant them to be considered further for inclusion in the LPA. Option 1 and 2 are opposed by LADOT, UP, PUC, and Metrolink, due to safety concerns with buses crossing the railroad tracks at grade, but Option 1 could serve as an interim project option if funding constraints preclude the higher-cost options 3 or 5. A detailed examination of the positive and negative attributes of Options 3 and 5 is presented in **Table 16** below.

As summarized in **Table 16**, Option 5 with the overpass would be the overall better option. Option 5 with the overpass provides a faster and safer connection to the Chatsworth Metrolink Station, at slightly lower cost than Option 3. The overhead viaduct associated with Option 5 could momentarily block views of mountains from Lassen Street; however, this is not considered as critical as the safety and traffic congestion implications of an at-grade crossing (Option 3). The congestion and safety implications of Option 3 are significant enough to eliminate this option from further consideration.

Option 5 with a grade separation over the railroad tracks and Lassen Street is recommended as the LPA.

Table 16 Northern Segment Options – Positive and Negative Attributes		
Option	**Option 3**	**Option 5 - Overpass**
Cost	Slightly costlier	**Best** – less cost
Bus Ops.	New signal on Lassen could cause traffic delays	**Best** – faster in reaching station
Safety	Does not cross railroad tracks; however, the option crosses Lassen Street at-grade and it would need to be interconnected with rail crossing arms.	**Best** – safest, completely grade-separated option.
Environmental Impacts	**Best** – no major environmental impacts	Visual impacts along Lassen Street
Real Estate Issues	Two private properties to be acquired	**Best** – no private property acquisitions
Railroad Issues	**Best –** no major issues anticipated	Installation of column on UP property
Long Term	Limited LRT convertibility due to the station re-configuration	**Best** – easy LRT convertibility (design standard exception may be required) and extension to the north through Old Depot Plaza Road.
Permitting	Order 88b Required	**Best**
Bicycle/Ped Path	same	same
Terminus	Minimal loss of existing parking; Difficult bus-rail interface	**Best** – good bus-rail interface. Loss of most of the existing parking can be replaced. Excavated material retention possible.
Public Input	Evenly split support.	Evenly split support. Opposed by Mobile Home Park owners
Result	Not the best	**Best**

Chatsworth Station

Given that Option 5 is the preferred northern segment option, Chatsworth Station Option D is the LPA.

Parthenia Optional Station

A station at Parthenia Street was evaluated in the DEIR as an optional element of the Busway Alternative. This section of the Evaluation Report discusses the pros and cons of including the Parthenia Station in the LPA.

BRT Design Criteria

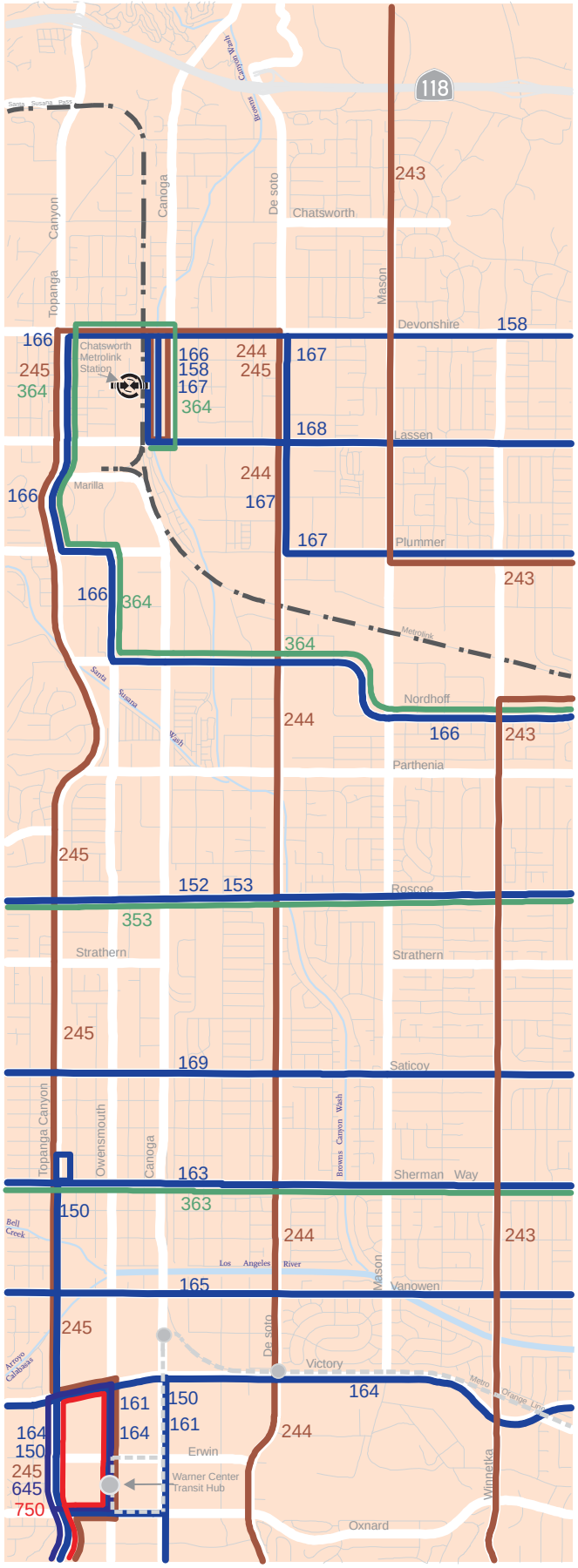
Metro's design criteria for the on-street Metro Rapid service and bus rapid transit service such as the MOL call for stations to be spaced approximately one-mile apart. These criteria are intended to result in premium (faster) regional rapid mass transit service for longer-distance trips with fewer stops, compared to local bus service which may have a stop on every corner. The stations on the existing MOL are spaced approximately one-mile apart (1.1 mile average spacing). The five proposed stations on the four-mile Chatsworth MOL Extension at the existing Canoga MOL Station, Sherman Way, Roscoe Boulevard, Nordhoff Street and the Chatsworth Metrolink Station would also be approximately one-mile apart. Adding a station at Parthenia Street would reduce the station spacing between Roscoe and Parthenia and between Parthenia and Nordhoff to one-half mile. The reduction in station spacing would have impacts on bus operations and overall travel time – making the service less attractive to some transit riders, but could also increase ridership by the added convenience to others transit riders in the vicinity of Parthenia. It would also impact construction and operating costs, as discussed below. It should also be noted that the MOL is intended to be designed to be convertible to light rail service in the future. Metro light rail stations are also typically one mile apart, other than in very dense areas such as Downtown Los Angeles.

Station Accessibility

A station at Parthenia would not include a park-and-ride lot, so access would be provided primarily by walk or bicycle modes. Some kiss-and-ride (drop off/pick up) activity could occur at Parthenia, but it could just as easily occur at Nordhoff or Roscoe. There is currently no local or limited bus service on Parthenia Street. As illustrated in **Figure 19**, there are local buses on both Nordhoff and Roscoe, so transfers from local buses to the MOL would be possible at those two stations. Ridership patterns on the existing MOL indicate that transfers from local buses and walk-ins are the predominant mode of access to the MOL. The lack of even a local bus on Parthenia is somewhat indicative of the demand for transit ridership along the Parthenia corridor. If there had been a lot of public requests for local service on Parthenia, there would likely be some service on Parthenia.

Public Input

Some comments were received at the public scoping meetings or public hearings and in written comments submitted on the Draft EIR that favored a Parthenia station. They were relatively few in number. Some opposition to the Parthenia station was also expressed by nearby residents, some of whom thought the station might include a park-and-ride lot. The optional station did not generate a lot of public attention. Some of those who supported the Parthenia station live in the adjacent Riviera Mobile Estates mobile home park. Residents of the Eton Mobile Home Park just to the north would have easier access to the Nordhoff station because their park is accessed from Nordhoff and walking south to Parthenia is blocked by the Santa Susana Wash which runs between the two mobile home parks. **Figure 20** includes an aerial view of the land uses around each station site and some of the barriers to accessibility to the station sites. For residents of the neighborhood south of Parthenia, east of the busway alignment, access to the Roscoe station will require some out-of-the-way walking to reach the station, compared to a more straight access route via streets to Parthenia. This is because the north-south streets closest to the alignment do not connect to Roscoe Boulevard. These residents would have to walk east to Variel Street to reach Roscoe and then walk west to the station. During the PE phase of the project, it will be further investigated to determine if a more direct pedestrian path can be provided to the Roscoe Station within the Metro ROW.



Source: Metro

Figure 19
West Valley Bus Routes

G:\USERS\2007\107-1643 Northern Canoga Extension - Orangeline\gra\CEAR

Source: ITERIS

NOT TO SCALE

Figure 20
Land Uses Around Parthenia Station

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Ridership

The ridership shed around a station is approximately one-half mile. This varies from location to location based on factors such as topography, physical barriers (e.g., rivers, freeways, etc.), climate, and urban design considerations (e.g., sidewalk amenities, street trees). The half-mile circles around the Roscoe and Nordhoff stations are illustrated in **Figure 21**. They come close to touching one another. The amount of population and employment projected within each of these circles is illustrated in the table below.

The additional population and employment that could be directly served by a Parthenia station that would not have been previously within one-half mile of either the Roscoe or Nordhoff Stations is illustrated in the shaded are on **Figure 21** and summarized in **Table 17** below.

Table 17 Additional Population and Employment Within One-Half Mile of Parthenia Station

Socioeconomic Data 2030	Nordhoff	Roscoe	Total	Additional Population and Employment Served by Parthenia Station
Population	5,676	10,354	16,030	2,668
Employment	2,967	3,464	6,431	965

Source: GRUEN Associates based on SCAG data

The additional ridership on the MOL would be a percentage of these new residents or employees. The additional Parthenia station was coded into Metro's travel demand forecasting model and the ridership as a result of this additional station was forecast to be 540 daily trips as shown in **Table 18** below.

Table 18 Daily Metro Orange Line Ridership in 2030

Scenario	Daily Ridership
Busway Extension to Chatsworth	45,540
Busway to Chatsworth with Parthenia Station	46,080
Additional Ridership	540

Source: Iteris based on Metro model

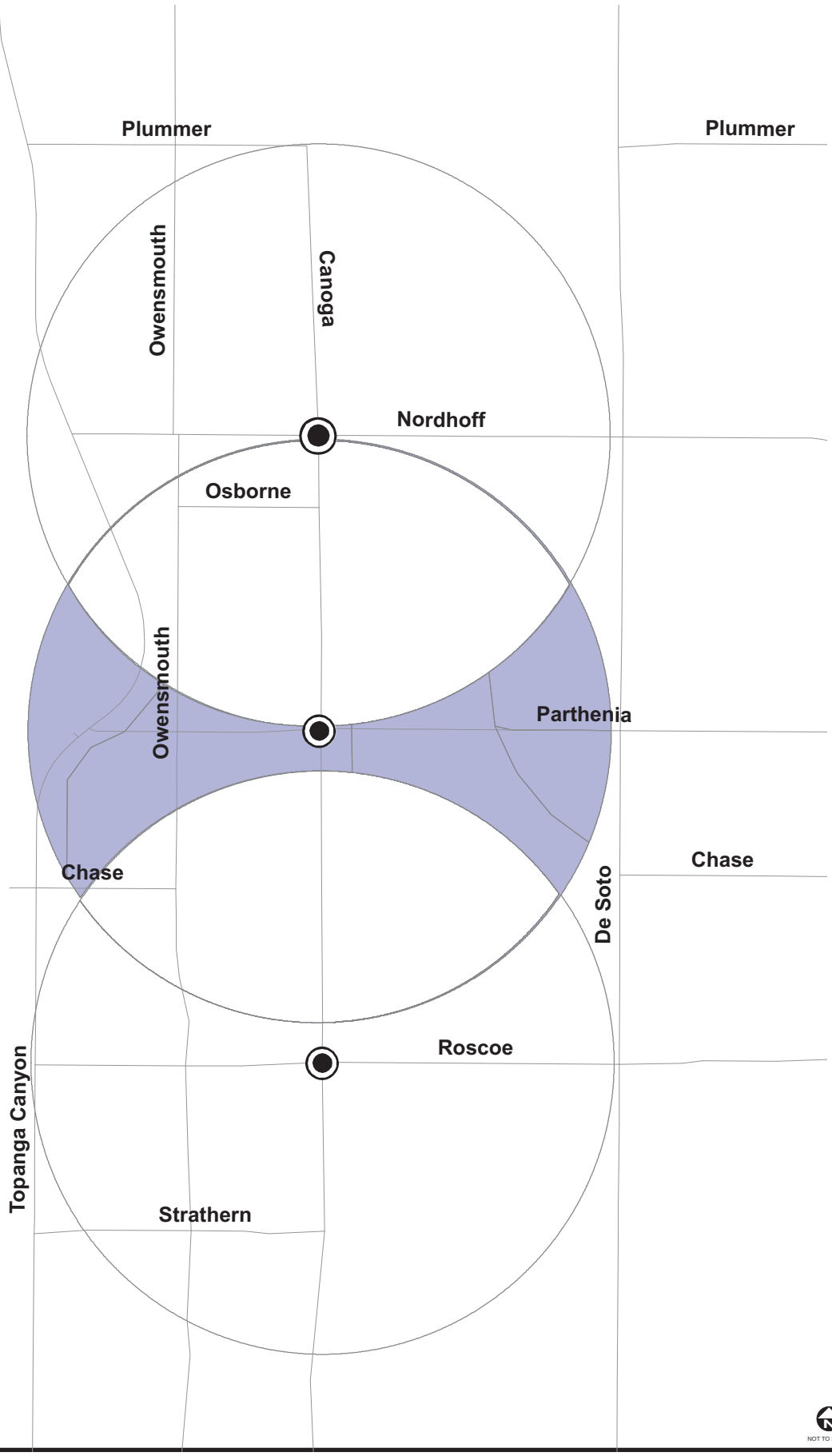
The actual ridership at the Parthenia station would be more than 540 riders, but some of them would be people who would otherwise have walked, biked or been driven to the Roscoe and/or Nordhoff stations. The net increase in daily riders would be 540 trips in 2030.

Cost

The cost of an additional station at Parthenia would be approximately $4,600,000 in 2007 dollars.

Travel Time

The addition of another stop on the Canoga extension of the MOL would increase the overall travel time on the route by approximately one-half minute. This would increase the travel time for a trip from Chatsworth to North Hollywood from about 60-67 minutes to 60.5-67.5 minutes, a one percent increase, which would not be significant and is within the variation of individual bus trips. For shorter trips, for example from Chatsworth to Warner Center, this additional stop would increase the travel time by closer to five percent.



Source: GRUENASSOCIATES

NOT TO SCALE

Figure 21
Half Mile Radius Around Parthenia Station

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Skip-Stop Confusion

It has been suggested that not every bus should have to service the Parthenia Station, that there could be skip-stop operations, with only certain buses stopping at Parthenia. While this would be feasible, it could be confusing to the public. The operations plan for the MOL with the Canoga extension includes multiple routes. There will be three routes operating: (1) North Hollywood-Warner Center, (2) North Hollywood – Chatsworth, and (3) Chatsworth – Warner Center. MOL riders will in the future have to make sure that they board the proper bus on the route that goes to their destination, similar to boarding the Metro Red and Purple Lines downtown. Adding the further uncertainty as to whether or not a particular bus stops at Parthenia would be confusing.

Recommendation

Given the relatively small increment in ridership generated by a Parthenia station, the $4.6 Million cost and small delays to other riders due to the additional stop, it does not seem appropriate to deviate from the BRT Design Standards by placing a Parthenia station within one-half mile of the Roscoe and Nordhoff stations. This could set a precedent for other low-ridership stations in low-density areas on existing or future Metro Rapid/BRT Lines. It is recommended that the Parthenia station not be included in the Locally Preferred Alternative. However, it is recommended that the project design not preclude the addition of a Parthenia station in the future.

Operations Plan

The operating plan for both the LPA focuses on an integrated operation with the existing MOL. This recognizes the regional travel role for this key transit investment for the San Fernando Valley.

The following service operating pattern is proposed for the two alternatives.

- Existing MOL service Warner Center (WC)– North Hollywood (NH)
- New MOL service Chatsworth (CH) – North Hollywood
- New MOL service Chatsworth – Warner Center

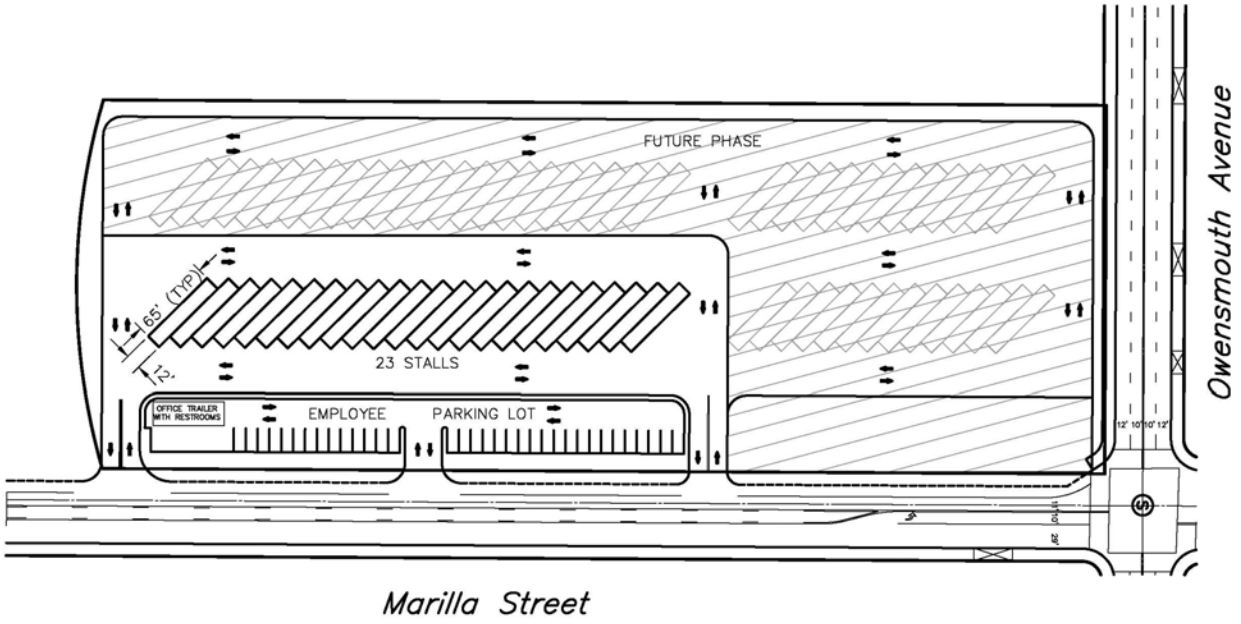
This plan provides one-seat rides (no transfers) between each MOL station.

Maintenance /Bus Parking

The Division 8 facility currently operates at almost full capacity. The Division's capacity is 229 buses and it is currently assigned 223 buses. In order to accommodate the added buses, Metro would have to provide an off-site overnight bus parking facility, and perform the maintenance work at Division 8. The Metro-owned vacant lot at the northwest corner of Owensmouth Avenue and Marilla Street would be paved for bus parking.

The Marilla parking lot could accommodate many more buses than just those required for the Canoga extension. It may be implemented in two phases with the initial phase designed to accommodate parking for the buses required for the extension and a second phase for additional bus parking when needed. **Figure 22** illustrates Phase 1 of the proposed Marilla Parking lot.

Figure 22 Division 8 Marilla Parking Lot Phase 1



Source: Iteris, 2008

6.0 TOTAL LPA PROJECT COST ESTIMATE

The cost estimate for the Locally Preferred Alternative is illustrated in **Table 19**.

Table 19 Total LPA Project Cost

Cost Component	Cost Estimate ($1,000s 2007)
Facilities Cost; includes design, systems, environmental, landscaping, master cooperative agreements and professional services	$145,900
Real Estate Costs	$7,100
Vehicle Costs	$8,100
Project Contingency	$18,000
Costs Committed to Date	$11,900
Total:	**$191,000**

Notes:

1. Costs are in $1,000 2007
2. The cost estimate for this comparison is based on Conceptual Engineering Design.
3. Costs committed to date for planning & engineering and related services.

Source: Lennax, Metro, 2008