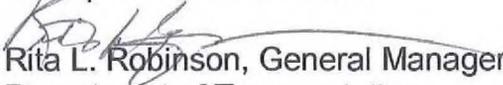


CITY OF LOS ANGELES
INTERDEPARTMENTAL CORRESPONDENCE

Date: March 15, 2010

To: The Honorable City Council
c/o City Clerk, Room 395, City Hall
Attention: Honorable Bill Rosendahl, Chair
Transportation Committee

From: 
Rita L. Robinson, General Manager
Department of Transportation

Subject: **EAST SAN FERNANDO VALLEY NORTH/SOUTH TRANSIT CORRIDORS BUS
SPEED IMPROVEMENT PROJECT**

The Department of Transportation (LADOT) has completed a bus speed improvement study for the East San Fernando Valley North/South Transit Corridors - Reseda, Sepulveda, Van Nuys and Lankershim/San Fernando (map attached.) The study was prepared in accordance with a funding agreement between LADOT and the Los Angeles County Metropolitan Transportation Authority (Metro) for the "San Fernando Valley North/South Bus Speed Improvements Study," funded by the state Traffic Congestion Relief Program (TCRP).

After detailed analyses and extensive consultation with elected officials and Metro, LADOT has identified a range of bus speed and service improvements for the four north/south corridors. These improvements include a new interlined bus service for Van Nuys, signal timing adjustments, traffic striping improvements, street widenings, concrete bus pads, bridge widening, bus stop relocations, transit station enhancements, and a median busway on Van Nuys Boulevard. We are also recommending further study of north/south passenger rail service improvements in the Valley, beginning with the Lankershim/San Fernando Corridor between the North Hollywood Metro Red Line Station and the Sylmar Metrolink Station.

LADOT has developed a three-phase plan to design, environmentally clear and construct near-term (Phase I) and mid-term (Phase II) improvements and plan, design and environmentally clear long-term (Phase III) improvements. The three phases are projected to cost a total of \$63.9 million. Phase I improvements include engineering measures such as signal re-timing, lane re-striping and bus stop relocations. As part of these Phase I improvements, Metro has already implemented a new interlined bus service (Line 902) from the Metro Red Line North Hollywood Station to Pacoima via Van Nuys Boulevard and Burbank Boulevard, which started operation on December 12, 2009. Phase II improvements entail capital improvements such as roadway widening and transit enhancements at bus stops. In Phase III, a 5-mile dedicated, median busway with a direct connection to the Metro Orange Line along Van Nuys Boulevard is recommended for further analysis. While Metro's *2009 Long Range Transportation Plan* allocates \$170 million for the San Fernando Valley East North/South Transit Corridor, additional funding may be needed to construct this median busway on Van Nuys Boulevard.

In addition to these bus speed improvements, staff recommends preparation of an Alternatives Analysis for expanded north/south passenger rail service in the Valley.

RECOMMENDATIONS

That the City Council, subject to the approval of the Mayor:

1. DIRECT LADOT to work with Metro on a scope, schedule and budget for federal/state environmental clearance and public outreach for all three phases of the East San Fernando Valley North/South Transit Corridors Bus Speed Improvement Project.
2. DIRECT LADOT to include in the environmental clearance three busway alternatives for the Van Nuys Corridor between Burbank Boulevard and Plummer Street: 1) median busway; 2) median busway with grade separations at major cross streets; 3) median busway with grade separations at major cross streets and a tunnel segment between the Metro Orange Line and Vanowen Street.
3. DIRECT LADOT to work with Metro to develop a scope, schedule and budget for an Alternatives Analysis of expanded north-south passenger rail in the San Fernando Valley, including a potential rail connection between the Metro Red Line North Hollywood Station and the Sylmar Metrolink Station.
4. DIRECT LADOT to report back on the project status every 12 months.

BACKGROUND

According to 2008 Metro data, Van Nuys Boulevard is one of the top ten transit corridors in the County, with average daily bus boardings of 31,800. Sepulveda Boulevard has 11,400 daily boardings, followed by Lankershim Boulevard with 10,700 daily boardings and Reseda Boulevard with 9,800 daily boardings.

In 2000, the state legislature allocated \$100 million in TCRP funds to Metro for development and construction of a "North-South corridor bus transit project that interfaces with the... East-West Burbank-Chandler corridor project [i.e., Metro Orange Line] and with the Ventura Boulevard Rapid Bus project" (AB 2928.) In 2001, LADOT began working with Metro on a Major Investment Study of north/south transit corridors in the San Fernando Valley, funded by \$2 million from the TCRP. The result was the *San Fernando Valley North-South Transit Corridor Regionally Significant Transportation Investment Study* (RSTIS), published in 2003. The RSTIS identified five major north/south transit corridors in the San Fernando Valley (Canoga, Reseda, Sepulveda, Van Nuys and San Fernando/Lankershim) and recommended specific improvements in those corridors.

In May 2003, the Metro Board received and filed the RSTIS report and directed their CEO to proceed with a phased implementation plan, which included preparation of an EIR for the Canoga Extension of the Metro Orange Line; capital and operational improvements in the other four corridors (Reseda, Sepulveda, Van Nuys and Lankershim/San Fernando); and expansion of Metro Rapid bus service. Subsequently, the expansion of Metro Rapid bus service was completed using a separate funding source. The EIR for Canoga Extension was prepared using a portion of the \$100 million TCRP funds.

In July 2007, LADOT and Metro entered into a \$900,000 Funding Agreement for the "San Fernando Valley North/South Bus Speed Improvements" study, pursuant to the Metro Board's request. LADOT immediately began work on the project, which is the subject of this Council report. In November 2008, County voters approved Measure R, a one-half cent County sales tax for transportation projects which provides \$68.5 million for the "San Fernando Valley East North-South Rapidways" (Reseda, Sepulveda, Van Nuys and Lankershim/San Fernando), with a projected opening date of 2018.

LADOT has completed Phase I of the San Fernando Valley North/South Bus Speed Improvements project with an extensive analysis of bus speed problems in the four north/south corridors and an array of recommended improvements that would result in improved bus speeds and reduced bus travel times in the corridors. Each corridor was analyzed on a segment-by-segment basis.

Many of the improvements originally identified in the 2003 RSTIS have been included in the project. In addition to improvements geared toward improving bus speeds, the RSTIS recommended station design standards consistent with those for Metro Rapid bus stops and on-street station area enhancements such as landscaping and street furniture. Since these types of transit and pedestrian enhancements improve the experience of transit riders and create more attractive transit corridors, they have been included in the list of potential improvements for each corridor.

DISCUSSION

Funding

The state's TCRP legislation (AB 2928) programmed \$100 million for a "North-South corridor bus transit project" in the San Fernando Valley. Of this, \$89 million is still programmed but not currently available. To date, \$11 million in TCRP funds has been allocated for the project; approximately \$10.5 million has been expended for Project Approval/Environmental Document (PA&ED) work on the Metro Orange Line Canoga Extension, the 2003 *Regionally Significant Transportation Investment Study*, and this study. Currently approximately \$450,000 in TCRP funds is still available to the City for PA&ED work. These funds will expire by June 2011 and must be spent before that time. Beyond that, Caltrans does not expect TCRP funds to be available for allocation until the state budget situation improves.

Measure R provides an additional \$68.5 million for the "San Fernando Valley East North-South Rapidways" (Reseda, Sepulveda, Van Nuys and Lankershim/San Fernando), which is projected to be spent by 2018. Metro's Financial Forecasting Model shows that \$800,000 in Regional Prop C 25% funds should be available for the project in FY 2011/12 and projects \$800,000 in Measure R funds for the project in FY 2012/13.

Metro's 2009 Long Range Transportation Plan (LRTP) includes \$170 million for the "San Fernando Valley East North/South Transit Corridor" coming from the state TCRP, Measure R and other local sources. Congressional Representatives Brad Sherman (District 27) and Howard Berman (District 28) wrote to Metro in March 2009 urging prioritization of the East San Fernando Valley North/South Transit Corridors Project in the LRTP and federal transportation reauthorization bill. They also encouraged Metro to apply for federal Small Starts funding for the project.

In order to advance the project while awaiting release of state TCRP funds and position it to compete successfully for federal Small Starts funding, LADOT recommends preparing an EIR/EIS and conducting public outreach over the next three years using the \$450,000 in unexpended budget from this study (in FY 2010/11), \$1,000,000 in Regional Prop C 25% funds (in FY 2011/12), and \$1,000,000 in Measure R funds (in FY 2012/13.) This \$2,450,000 will provide a solid financial base for the work and is consistent with environmental clearance/public outreach budgets for other major transit projects.

Bus Lane & Busway Issues

LADOT examined the feasibility of creating new bus lanes in corridor segments where bus speeds are poor and would benefit significantly from bus lanes. Implementation options included converting mixed flow lanes to bus lanes, removing peak period on-street parking, and widening the street to create new bus lanes. Both full-time median bus lanes (i.e., busway) and peak period curbside bus lanes were considered.

Converting traffic lanes for bus lanes or a busways would impact traffic flow and parking. For example, bus lanes or a busway on Van Nuys Boulevard between the Metro Orange Line and the Panorama Mall are projected to increase traffic delay by 23% at Victory Boulevard, by 100% at Vanowen Street, and by 65% at Roscoe Boulevard. Approximately 900 on-street parking spaces would also have to be restricted during peak periods or removed completely.

Metro has expressed strong reservations about the implementation of curbside bus lanes along the north/south corridors in the San Fernando Valley because they present operational problems for buses that would impact performance gains. Buses in curbside bus lanes would have to stop or slow down for right-turning vehicles, pedestrians, and vehicles attempting to merge into mixed flow traffic. These interactions could negate the bus lane's time-saving benefits and present safety hazards as vehicles and pedestrians maneuver around buses to access driveways, alleys and side streets.

Instead, Metro supports development of full-time bus lanes in dedicated median busways. LADOT's research, however, indicates that full-time exclusive median bus lanes create policy trade-offs due to narrow roadway widths in most of the corridor segments where bus lanes are most needed to improve bus speeds. Median bus lanes work well along wide boulevards, but when inserted into narrower street segments, they create circulation and access problems for vehicles and buses. Median bus lanes also require stations and passenger loading in the middle of the street, similar to operations of the existing Metro Blue Line and Metro Gold Line. Exclusive median bus lanes would result in bus bunching at stations unless additional exclusive bus passing lanes are provided, requiring more street capacity and right-of-way acquisition.

Further information on bus lane criteria, impacts and implementation issues can be found in the attached Technical Appendix.

In general, policy makers need to consider that the public right-of-way is limited in capacity and must be allocated between competing uses - cars, trucks, buses, bicycles, pedestrians and parking. Improving bus speeds with bus lanes comes at a cost to other modes of transportation. Since bus lanes impact traffic flows, traffic circulation and parking for businesses and residences, those impacts should be weighed against the benefits of improved bus speeds and travel times. These issues can be more fully analyzed in the EIR/EIS.

Implementation Plan

LADOT has evaluated the benefits and costs of implementing improvements for the four corridors in three phases - near-term, mid-term and long-term. The cost of these improvements is estimated to be \$59,982,000, not including environmental clearance, staffing, and construction of major long term improvements.

LADOT recommends environmentally clearing all proposed improvements through an EIR/EIS, which would provide CEQA and NEPA clearances and position the project to compete for federal funding. The EIR/EIS and related public outreach are estimated to cost \$2,450,000 and would take approximately 3 years to complete. Metro has indicated a willingness to act as the lead agency for the environmental clearance and public outreach provided that the City dedicates staff to work on the project. Metro and City staffing (including salaries and overhead) are eligible expenses for project funding and are estimated to cost \$1,500,000 for the first three years. This would pay for one full-time equivalent position at Metro and one full-time equivalent position at the City in FY 2010/11, FY 2011/12 and FY 2012/13.

With all components accounted for, the total project cost is **\$63,932,000**.

Note: All schedule estimates assume full availability of City staff at LADOT, Bureau of Engineering and related agencies to support project development and implementation.

Near Term Improvements (Phase I)

- Van Nuys Boulevard:
 - New interlined bus service (Line 902) connecting Van Nuys Corridor with Metro Red Line North Hollywood Station
 - Transit station enhancements and concrete bus pads for Line 902
 - Signal priority and signal timing changes
 - Bus stop relocation
 - Traffic lane/turn pocket additions by re-striping
- Reseda Boulevard:
 - Signal timing changes
 - Bus stop relocations
 - Traffic lane/turn pocket additions by re-striping
- Sepulveda Boulevard:
 - Signal timing changes
 - Bus stop relocation
 - Traffic lane/turn pocket additions by re-striping
- Lankershim Boulevard/San Fernando Road:
 - Signal timing changes
 - Traffic lane/turn pocket addition by re-striping

It will take 1-2 years after completion of the environmental clearance for design, construction and implementation of Phase I engineering and operational improvements. The total cost is **\$1,482,000**, which will require approvals from Metro and California Transportation Commission for funding allocation.

Mid Term Improvements(Phase II)

- Van Nuys Boulevard:
 - Add a northbound lane between Huston Street and Chandler Boulevard (0.5 miles) through on-street parking restriction
 - Add a southbound lane between Arminta Street and Parthenia Street (0.9 miles) through lane re-striping.
 - Widen the bridge over a flood control channel on Van Nuys Boulevard at Arleta Avenue to increase average bus speeds and improve operational safety.
- Reseda Boulevard:
 - Widen Reseda Boulevard at Roscoe Boulevard to create a southbound right-turn lane and an additional northbound left turn lane to reduce bus delay at this intersection.

- Install transit station enhancements, including decorative stamped-asphalt crosswalks, security lighting, pedestrian amenities and
- Install landscaped median islands, at selected locations along Reseda Boulevard.

- Sepulveda Boulevard:
 - Widen Sepulveda Boulevard at Burbank Boulevard and Sherman Way to create new northbound right-turn lanes to reduce bus delay at these intersections.
 - Install transit station enhancements, including decorative stamped-asphalt crosswalks, security lighting, pedestrian amenities and landscaped median islands, at selected locations along Sepulveda Boulevard.

- Lankershim Boulevard/San Fernando Road:
 - Install concrete bus pads at bus stops.
 - Install transit station enhancements, including decorative stamped-asphalt crosswalks, security lighting, pedestrian amenities and landscaped median islands, at selected locations along Lankershim Boulevard and San Fernando Road.

It will take approximately 3-5 years after completion of the EIR/EIS for design, construction and implementation of Phase II capital improvements. Preliminary and final engineering will be performed. The total cost is estimated to be **\$47,500,000**, which will require approvals from Metro and California Transportation Commission for funding allocation.

Long Term improvements (Phase III)

A 5-mile, limited-stop median busway on Van Nuys Boulevard between Burbank Boulevard and Plummer Street is recommended for further analysis to provide a full-time, exclusive facility for Metro Rapid buses through this heavily-traveled segment. A median busway is expected to improve bus speeds by approximately 15%. The busway could include underground grade separations at major cross streets (e.g., Victory Boulevard, Sherman Way, Roscoe Boulevard and Nordhoff Street) to avoid significant traffic impacts. It could also include a tunnel segment of approximately 1-mile under the Van Nuys Civic Center between the Metro Orange Line and Vanowen Street.

It will take approximately 2 years after completion of the EIR/EIS for planning and design of the median busway on Van Nuys Boulevard. The cost for this work is estimated to be **\$9,000,000**. Additional funding, possibly through the federal Small Starts program, may be needed for construction. Budget is available for the planning and design work, subject to approvals from Metro and California Transportation Commission for funding allocation.

Rail Service Alternatives Analysis for Northeast Valley (San Fernando/Lankershim Corridor)

The northeast San Fernando Valley has a large transit-dependent population that must access

jobs, schools, goods and services in other parts of the region by bus. There is commuter rail but no mass transit rail service in this area, although there is an opportunity to create a north/south rail connection between existing passenger rail hubs that would provide such a service. The Metro Red Line now terminates at the North Hollywood Station, while further north is the Sylmar Metrolink Station, which may be designated a California High Speed Rail station. An Alternatives Analysis should be conducted to connect these two rail transit hubs via heavy rail subway, light rail transit or other rail along the San Fernando/Lankershim Corridor or a parallel north/south alignment.

The cost for such a Rail Service Alternatives Analysis for the northeast San Fernando Valley is estimated to be **\$2 million** and may be eligible for TCRP or Measure R funding. The Analysis could be completed within one year.

A chart of all recommended improvements showing phasing and costs is provided in Attachment 2.

Public Outreach

LADOT has conducted numerous project briefings for elected officials and VICA's Transportation Committee. Attendees have included staff from Congressional District 27 (Sherman), state Senate District 20 (Padilla), Assembly Districts 39 (Fuentes) and 40 (Levine), County Supervisory District 3 (Yaroslavsky), the Mayor's Office, and Council Districts 2, 6 and 7.

More extensive public outreach would be conducted in conjunction with preparation of the EIR/EIS.

COORDINATION WITH OTHER AGENCIES

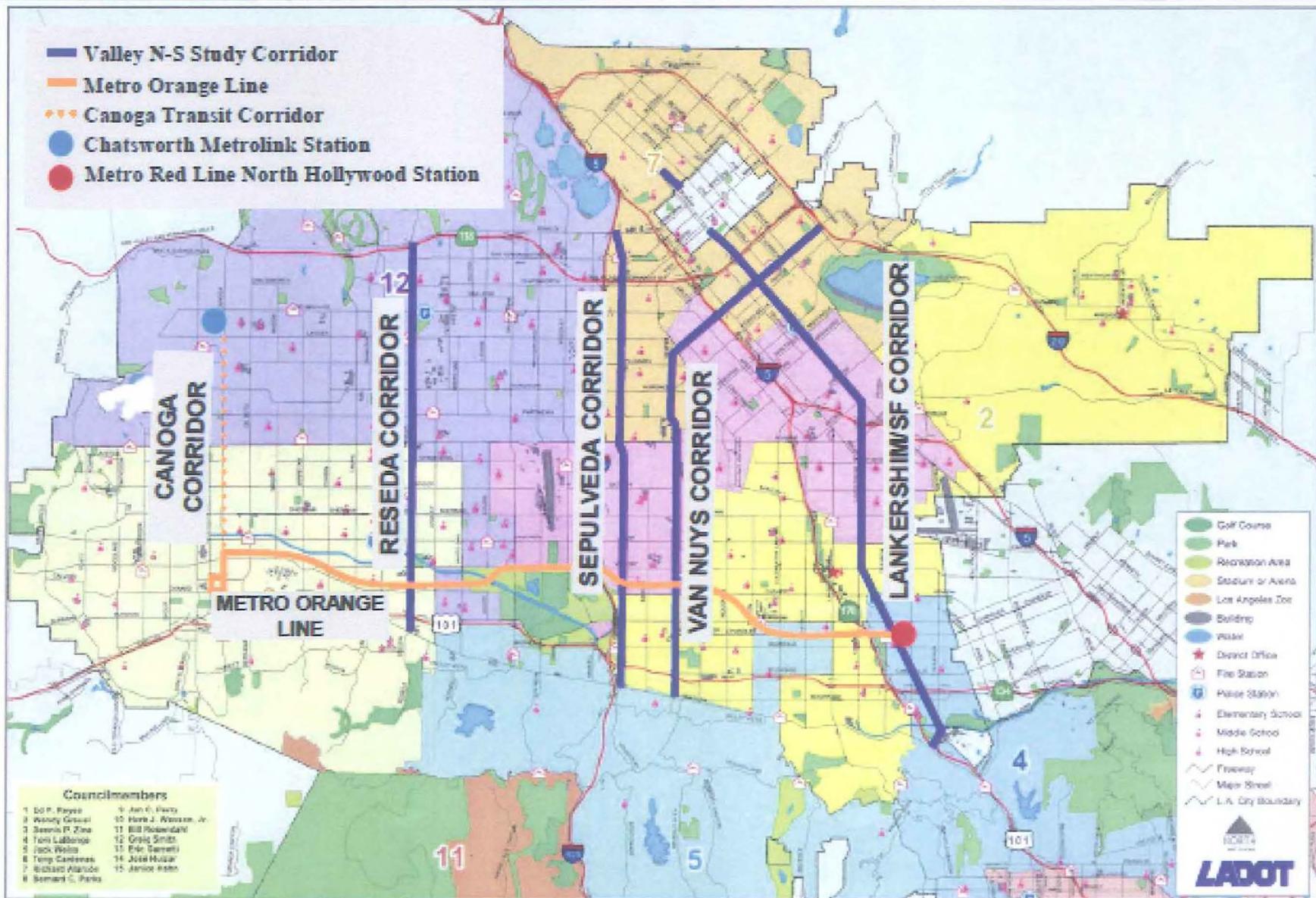
LADOT has coordinated closely with Metro Planning and Bus Operations staff on this project. Staff has also provided technical assistance to the CRA/LA's Pacoima Transportation Study, which focuses on improving mobility and quality of life along a 1.8-mile stretch of Van Nuys Boulevard between the I-5 Freeway and Glenoaks Boulevard.

FISCAL IMPACT

Development and implementation of recommended improvements would be funded by the TCRP, Measure R, and other outside sources, so there would be no impact on the City's General Fund.

Attachments:

1. Transit Corridors Map
2. Phasing, Schedule & Cost of Improvements
3. Technical Appendix



San Fernando Valley North-South Transit Corridors

**EAST SAN FERNANDO VALLEY NORTH-SOUTH TRANSIT CORRIDORS BUS SPEED IMPROVEMENT PROJECT
PHASING, SCHEDULE AND COST OF IMPROVEMENTS**

CORRIDOR	NEAR TERM (PHASE I)	COST (\$000)	MID TERM (PHASE II)	COST (\$000)	LONG TERM (PHASE III)	COST (\$000)	TOTAL COST (\$000)
RESEDA	Signal timing changes @ various intersections	\$10	Transit Enhancements & Landscaped Median Islands	\$9,500			
	Striping changes to add RT or LT pockets	\$80	S/B roadway widening at Roscoe for new R/T lane	\$1,000			
	Bus stop relocations (2)	\$10	↳ R.O.W. Acquisition	\$5,000			\$15,600
SEPULVEDA	Signal timing changes @ various intersections	\$10	Transit Enhancements & Landscaped Median Islands	\$9,000			
	Striping changes to add RT or LT pockets	\$120	N/B roadway widening @ Burbank for new R/T lane	\$1,000			
	Bus stop relocation (1)	\$5	↳ R.O.W. Acquisition	\$5,000			
			N/B roadway widening @ Sherman Way for new R/T lane	\$1,000			
			↳ R.O.W. Acquisition	\$5,000			\$21,135
VAN NUYS	Bus stop relocation (1)	\$5	Lane addition NB (Huston to Chandler)	\$400	Median Busway (Oxnard St. - Nordhoff St.)		
	Signal timing adjustments south of Burbank Bl.	\$10	Lane addition NB & SB (Armita to Parthenia)	\$600	↳ Preliminary Engineering	\$9,000	
	Improvements for Interlined Bus Service (Line 902)	\$1,182	Bridge widening @ Beach and Arleta	\$4,000			
	Striping changes to add RT & LT pockets						
	Signal priority & signal timing adjustments						
	Bus stop improvements						
	Concrete bus pads						\$15,197
LANKERSHIM/ SAN FERNANDO	Signal timing changes @ various intersections	\$10	Transit Enhancements & Landscaped Median Islands	\$5,000	Rail Service Alternatives Analysis	\$2,000	
	Striping changes to add NB through lane (Magnolia to Chandler)	\$40	Concrete bus pads at Metro Rapid stops	\$1,000			\$8,050
DESIGN & CONSTRUCTION ESTIMATE		\$1,482		\$47,500		\$11,000	\$59,982

	FISCAL YEAR - PHASE I	COST (\$000)	FISCAL YEAR - PHASE II	COST (\$000)	FISCAL YEAR - PHASE III	COST (\$000)	FISCAL YEAR - TOTAL	
TIMEFRAME	FY 2011 - EIR & Public Outreach	See Total	FY 2011 - EIR & Public Outreach	See Total	FY 2011 - EIR & Public Outreach	See Total	\$450	
	FY 2012 - EIR & Public Outreach	See Total	FY 2012 - EIR & Public Outreach	See Total	FY 2012 - EIR & Public Outreach	See Total	\$1,000	
	FY 2013 - EIR & Public Outreach	See Total	FY 2013 - EIR & Public Outreach	See Total	FY 2013 - EIR & Public Outreach	See Total	\$1,000	
	EIR & Public Outreach (for all 3 Phases)							\$2,450
	FY 2014 - Engineering	\$300	FY 2014 - Engineering	\$500	FY 2014 - Engineering & Rail Analysis	\$5,000	\$5,800	
	FY 2015 - Engineering & Construction	\$1,182	FY 2015 - Engineering & ROW	\$2,000	FY 2015 - Engineering	\$4,000	\$7,182	
			FY 2016 - ROW	\$7,000	FY 2016 - Engineering	\$2,000	\$9,000	
			FY 2017 - ROW & Construction	\$18,000			\$18,000	
			FY 2018 - Construction	\$20,000			\$20,000	
							\$0	
	Design & Construction	\$1,482		\$47,500		\$11,000	\$59,982	
	Staffing (Metro and City of Los Angeles)						\$1,500	
TOTAL PROJECT COST ESTIMATE							\$63,932	

TECHNICAL APPENDICES

- APPENDIX A EXISTING CORRIDOR CONDITIONS
- APPENDIX B BUS SPEED ANALYSIS METHODOLOGY
- APPENDIX C INTER-LINED BUS SERVICE BETWEEN METRO RED LINE
NORTH HOLLYWOOD STATION AND PACOIMA (LINE 902)
- APPENDIX D. BUS LANE CRITERIA AND IMPACTS
- APPENDIX E. ISSUES WITH MEDIAN BUSWAY ON VAN NUYS BOULEVARD
- APPENDIX F. VAN NUYS BOULEVARD BUS TUNNEL

APPENDIX A. EXISTING CORRIDOR CONDITIONS

Reseda Corridor

- 10-12 Metro buses per hour serve the corridor in each direction during peak periods. Northbound bus speeds range between 14.0-17.4 mph, depending on time of day. Southbound bus speeds range between 14.8-15.3 mph. These bus speeds are rated LOS C (Good) to LOS B (Very Good) per FTA's bus speed level of service criteria. Northbound bus travel times range between 20.5 and 25.5 minutes, depending on time of day. Southbound bus travel times range between 19. and 20.9 minutes.
- Bus speed delays occur primarily between Erwin St. and Ventura Blvd. (southbound) and at the Metro Orange Line Busway, Sherman Way and Roscoe Blvd. (northbound and southbound.)

Van Nuys Corridor

- 12-15 Metro buses per hour serve the corridor in each direction during peak periods. Northbound bus speeds range between 11.7-15.4 mph, depending on time of day. Southbound bus speeds range between 13.0-13.5 mph. These bus speeds are rated LOS C (Good) per FTA's bus speed level of service criteria. Northbound bus travel times range between 35.3 and 46.7 minutes, depending on time of day. Southbound bus travel times range between 41.9 and 43.4 minutes.
- Bus speed delays occur primarily at Ventura Blvd., the US 101 Freeway ramps, the Metro Orange Line Busway, Sherman Way, and in the Civic Center and Panorama City Mall areas.

Sepulveda Corridor

- 12-15 Metro buses per hour serve the corridor in each direction during peak periods. Northbound bus speeds range between 13.0-17.5 mph, depending on time of day. Southbound bus speeds range between 14.4-16.7 mph. These bus speeds are rated LOS C (Good) to LOS B (Very Good), per FTA's bus speed level of service criteria. Northbound bus travel times range between 25.7-34.7 minutes, depending on time of day. Southbound bus travel times range between 24.9-28.9 minutes.
- Bus speed delays occur primarily between Burbank Blvd. and the Metro Orange Busway and at Victory Blvd., Sherman Way, Roscoe Blvd. and the SR-118 Freeway ramps.

Lankershim/San Fernando Corridor

- 10-12 Metro buses per hour serve the corridor in each direction during peak periods. Northbound bus speeds range between 17.7-22.2 mph, depending on time of day. Southbound bus speeds range between 19.3-19.7 mph. These bus speeds are rated LOS B (Very Good) to LOS A (Excellent) per FTA's bus speed level of service

criteria. Northbound bus travel times range between 29.9 and 37.4 minutes. Southbound bus travel times range between 33.6 and 34.3 minutes.

- While overall bus speeds are very good to excellent throughout this corridor, northbound and southbound delays do occur along Lankershim Blvd. between Chandler Blvd. and Ventura Blvd.

APPENDIX B. BUS SPEED ANALYSIS METHODOLOGY

Methodology

Bus speeds and travel time savings estimates for potential improvements were calculated based on findings from the Wilshire Bus Rapid Transit studies conducted by LADOT and LACMTA, including the 2004-2007 bus lane demonstration project in West LA. A factor of 15% improvement in bus travel time was used for bus lanes.

LADOT examined the feasibility of creating new bus lanes in segments where bus speeds are poor and would benefit significantly from bus lanes OR where bus lanes would have minimal impacts on traffic and residential on-street parking. Where bus lanes would significantly improve poor bus speeds, LADOT analyzed the feasibility of converting mixed flow lanes to bus lanes, removing peak period on-street parking, and/or widening the street to create new bus lanes. In some cases, a combination of these measures was necessary.

LADOT modeled Highway Capacity Manual (HCM) level of service (LOS) and delay impacts for mixed flow traffic at major intersections in corridor segments where bus lanes are proposed. Existing conditions were simulated based on existing intersection geometry, signal timing and traffic demand. Future simulations for these intersections were performed with either the addition of a new bus and right-turn only lane or conversion of a mixed flow lane into a bus and right-turn only lane.

Using the HCM LOS and delay simulations, order-of-magnitude air emissions from changes in traffic delay were also estimated.

Bus Speed Level of Service

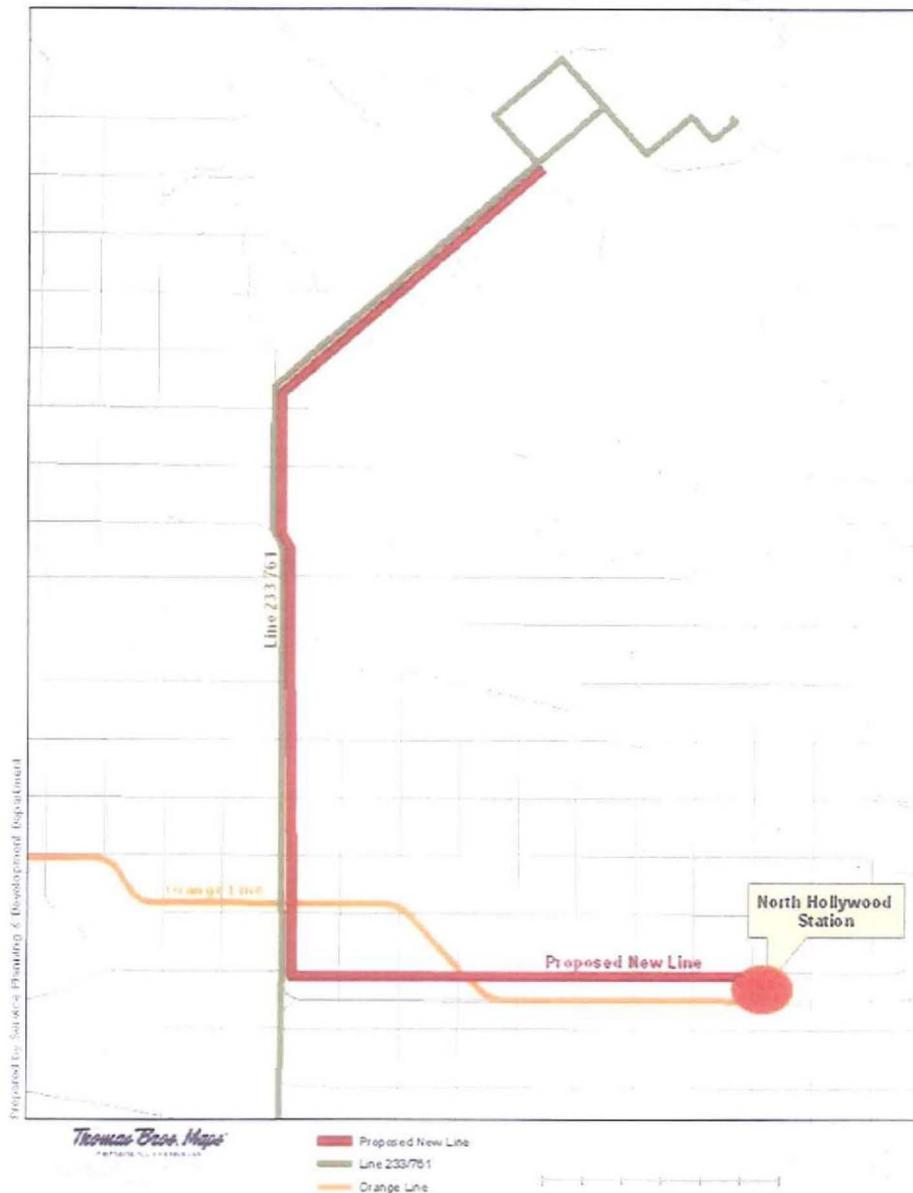
The FTA's suggested LOS criteria for bus speeds on arterials with 1-3 bus stops per mile, similar to Metro Rapid Service:

LOS A	21.2 < mph	< 2.8min/mile	Excellent – Free Flow
LOS B	16.2 – 21.1 mph	2.8 – 3.7 min/mile	Very Good
LOS C	11.0 – 16.1 mph	3.8 – 5.5 min/mile	Good
LOS D	7.9 – 10.9 mph	5.6 – 7.6 min/mile	Fair- Some Delay
LOS E	6.0 – 7.8 mph	7.7 – 10.0 min/mile	Poor - Delay Worsens
LOS F	< 6.0 mph	> 10 min/mile	Very Poor – Stop and Go

APPENDIX C. INTER-LINED BUS SERVICE BETWEEN METRO RED LINE NORTH HOLLYWOOD STATION AND PACOIMA (LINE 902)



Proposed New Line. Line 233/761 and Orange Line



NoHo Red Line – Van Nuys Connector

Proposal:

- New route between NoHo Red Line Station and Van Nuys/Glen Oaks via Burbank Bl. and Van Nuys Bl.
- Close door operation along Burbank Bl.
- Serve all stops along Van Nuys Bl.

Benefits:

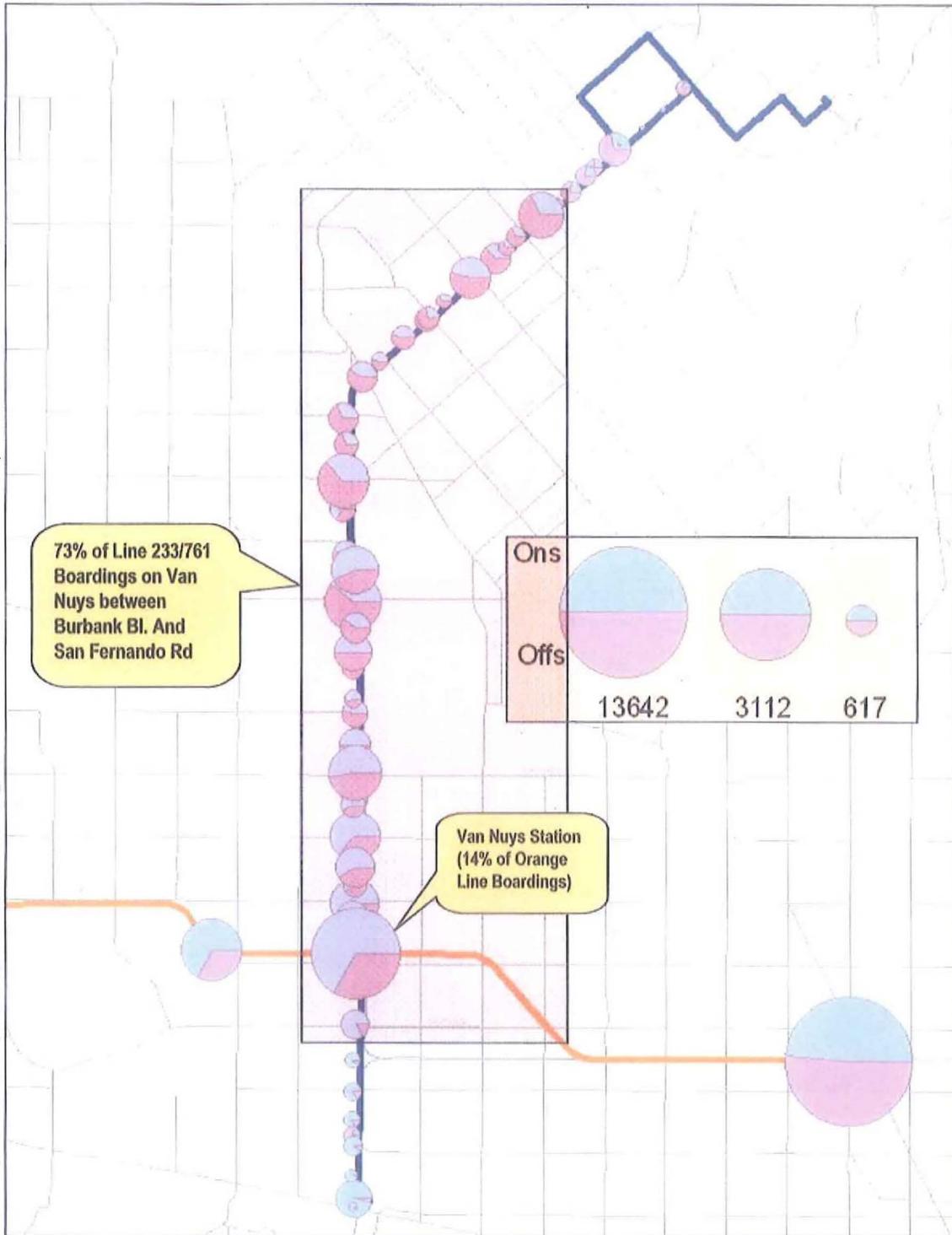
- Direct and faster connection from NoHo Station to destinations along Van Nuys Bl.
- Red Line to bus transfer at Red Line bus terminal (not Orange Line station).
- Maintains appropriate service levels on Van Nuys Bl.
- Does not interfere with Orange Line operations and traffic signal synch.

Implementation:

- Dec 2009 – Peak hour service at 12-15 min frequencies.
- June 2010 – Base day/weekend service.



Line 233/761 and Orange Line (Sepulveda, Van Nuys, and N. Hollywood Stations)



Prepared by Service Planning & Development Department (P105_02)

Thomas Bros. Maps
CREATING YOUR WORLD

— Line 233/761
— Orange Line

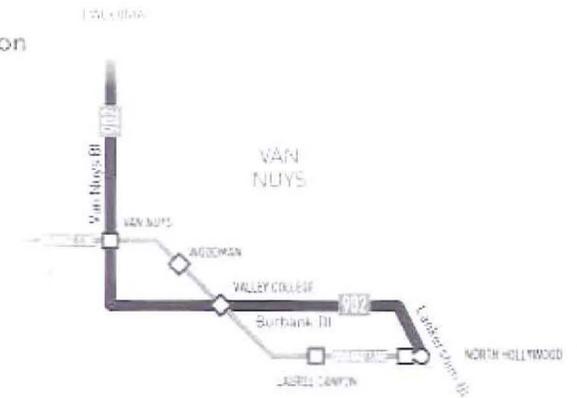




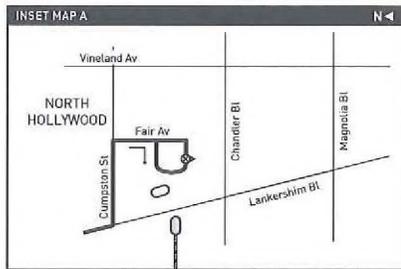
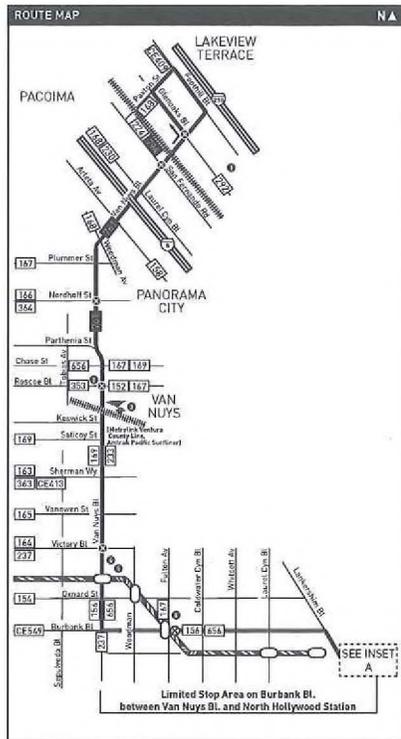
Orange Line Riders: Save Time with Line 902

Metro's new Line 902 saves time during your rush hour commute with direct service between Van Nuys Boulevard, LA Valley College and Metro Rail's North Hollywood Station. Line 902 also provides local service along Van Nuys Boulevard, giving you easy connections to:

- > Van Nuys Civic Center
- > Van Nuys Boulevard Shopping
- > Van Nuys Amtrak/Metrolink Station
- > And more!



Plan your trip at metro.net.



- MAP NOTES**
- 1 Hansen Dam Recreation Area
 - 2 Panorama Mall
 - 3 Van Nuys Metrolink Station
Metro Bus Lines 169, 233, 761, 902; Ventura County Line; Amtrak
 - 4 Van Nuys Civic Center
 - 5 Van Nuys Orange Line Station
Metro Bus Lines 154, 156, 233, 237, 761, 902; LDVAN
 - 6 Valley College Orange Line Station
Metro Bus Lines 156, 167, 902; CE549; LDVAN

- LEGEND**
- Route of Line 902
 - Route of Orange Line
 - Timepoint
 - Limited Stop & Timepoint
 - Metrolink Station
 - Amtrak Station
 - Metro Orange Line Station
 - CE LADOT Commuter Express
 - LD LADOT DASH
 - SC Santa Clarita Transit

- INSET MAP A**
- North Hollywood Red Line Station
Metro Bus Lines 152, 154, 156, 183, 224, 353, 363, 656 Owl, 902, Orange Line; BB Media District, Airport/Empire; CE549; SC757
 - Metro Orange Line
 - Metro Orange Line Station
 - Stop & Timepoint

Art's a trip.

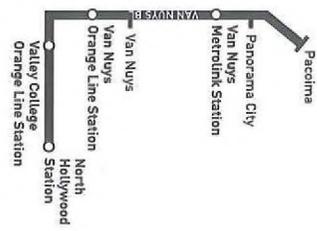
Free Metro Rail Art Tours are offered the first Saturday and Sunday of each month. Call 213.922.2738 for information.

Better safe than sorry.

Report all suspicious activity or unattended packages to Metro or Sheriff's personnel immediately. SHERIFF'S HOTLINE: 1.888.950.SAFE(7233)

M Metro

English / Español
 Subject to change without notice 1.800.COMMUTE
 For information please call metro.net
 All times are subject to change
 TTY 1.800.950.9040



Timetable Effective Dec 13, 2009

Metro Local and Limited

902

Pacoima - North Hollywood Station via Van Nuys Bl, Burbank Bl

Monday through Friday

Effective Dec 13 2009

902

Northbound (Approximate Times)

NORTH HOLLYWOOD	VALLEY GLEN	VAN NUYS	PANORAMA CITY	PACOMA		
North Hollywood Station	Valley College Station	Van Nuys & Victory	Van Nuys & Roscoe	Van Nuys & Nordhoff	Van Nuys & San Fernando	Van Nuys & Glenoaks
6:07A	6:16A	6:26A	6:36A	6:39A	6:50A	7:03A
6:19	6:28	6:36	6:47	6:51	7:02	7:15
6:31	6:40	6:48	6:59	7:04	7:16	7:29
6:43	6:52	7:00	7:12	7:17	7:29	7:42
6:55	7:04	7:12	7:24	7:29	7:41	7:54
7:07	7:16	7:24	7:36	7:41	7:53	8:06
7:19	7:28	7:36	7:48	7:53	8:05	8:18
7:31	7:40	7:48	8:00	8:05	8:16	8:29
7:43	7:52	8:00	8:13	8:18	8:29	8:42
7:55	8:04	8:12	8:25	8:30	8:41	8:54
8:07	8:16	8:24	8:37	8:42	8:53	9:06
8:19	8:28	8:36	8:49	8:54	9:05	9:18
8:31	8:40	8:48	9:01	9:06	9:17	9:30
8:43	8:52	9:00	9:13	9:18	9:29	9:42
THEN SERVICE RESUME						
2:51P	3:00P	3:08P	3:24P	3:30P	3:44P	3:57P
3:03	3:12	3:20	3:36	3:42	3:54	4:09
3:15	3:24	3:32	3:48	3:54	4:08	4:21
3:27	3:36	3:44	4:00	4:06	4:20	4:33
3:38	3:47	3:55	4:12	4:18	4:32	4:45
3:50	3:59	4:07	4:25	4:31	4:45	4:58
4:02	4:11	4:19	4:37	4:43	4:57	5:10
4:14	4:23	4:31	4:49	4:55	5:08	5:21
4:26	4:35	4:43	5:01	5:07	5:20	5:33
4:38	4:47	4:55	5:15	5:21	5:34	5:47
4:50	4:59	5:07	5:27	5:33	5:46	5:59
5:02	5:11	5:19	5:39	5:45	5:58	6:11
5:14	5:23	5:31	5:51	5:57	6:09	6:22
5:26	5:35	5:43	6:02	6:08	6:20	6:33
5:39	5:48	5:56	6:13	6:19	6:31	6:44
5:51	6:00	6:08	6:24	6:30	6:42	6:55
6:04	6:13	6:21	6:37	6:43	6:55	7:08

Monday through Friday

902

Southbound (Approximate Times)

PACOMA		PANORAMA CITY		VAN NUYS	VALLEY GLEN	NORTH HOLLYWOOD
Van Nuys & Glenoaks	Van Nuys & San Fernando	Van Nuys & Nordhoff	Van Nuys & Roscoe	Van Nuys & Victory	Valley College Station	North Hollywood Station
6:57A	6:01A	6:13A	6:18A	6:28A	6:36A	6:45A
6:09	6:13	6:25	6:30	6:40	6:48	6:57
6:21	6:25	6:37	6:42	6:52	7:00	7:09
6:32	6:36	6:48	6:53	7:05	7:13	7:22
6:44	6:44	6:56	7:01	7:16	7:24	7:33
6:56	6:54	7:07	7:13	7:28	7:36	7:45
7:07	7:06	7:19	7:25	7:40	7:48	7:57
7:14	7:18	7:31	7:37	7:52	8:00	8:09
7:26	7:30	7:43	7:49	8:04	8:12	8:21
7:39	7:43	7:56	8:02	8:16	8:24	8:33
7:51	7:55	8:08	8:14	8:28	8:36	8:45
8:04	8:08	8:21	8:27	8:41	8:49	8:58
8:15	8:19	8:32	8:38	8:52	9:00	9:09
8:28	8:32	8:45	8:51	9:05	9:13	9:22
8:38	8:42	8:55	9:01	9:15	9:23	9:32
THEN SERVICE RESUME						
3:12P	3:16P	3:29P	3:36P	3:51P	3:59P	4:08P
3:24	3:28	3:41	3:47	4:03	4:11	4:20
3:36	3:40	3:53	3:59	4:15	4:23	4:32
3:48	3:52	4:05	4:11	4:27	4:35	4:44
4:00	4:04	4:17	4:23	4:39	4:47	4:56
4:12	4:16	4:29	4:35	4:51	4:59	5:08
4:24	4:28	4:41	4:47	5:03	5:11	5:20
4:36	4:40	4:53	4:59	5:15	5:23	5:32
4:48	4:52	5:05	5:11	5:27	5:35	5:44
5:00	5:04	5:17	5:23	5:39	5:47	5:56
5:12	5:16	5:29	5:35	5:51	5:59	6:08
5:24	5:28	5:41	5:47	6:03	6:11	6:20

Saturday, Sunday and Holiday Schedule

Horarios en los días feriados

No service operated on Saturday, Sunday and holidays.

No hay servicio los sábados, domingos y feriados.

Boarding Restrictions

Local Stop Area: Along Van Nuys Blvd. between Glenoaks and Burbank Blvds, passengers will be permitted to board and alight at all local bus stops.

Limited Stop Area: Along Burbank Blvd., passengers will be permitted to board and alight only at Fulton Ave. and North Hollywood Station..

Restricciones para Abordar

Area local de paradas: A lo largo de Van Nuys Blvd., entre Glenoaks y Burbank Blvds., pasajeros seran permitidos abordar y desbordar en todas las paradas locales.

Area de paradas limitadas: A lo largo de Brubank Blvd., pasajeros seran permitidos abordar y desbordar solamente en Fulton Ave. y North Hollywood Station.



Keep your bike safe.

Use a Metro Bike Locker to store your bike. For locker rentals, call 213.922.2660 or visit metro.net/bikes.

APPENDIX D. BUS LANE CRITERIA AND IMPACTS

Bus Lane Criteria

The following bus lane criteria were used by LADOT in its analysis of the Wilshire Bus Lanes Project. They are derived from the USDOT's "Operational Design Guidelines for High Occupancy Vehicle Lanes on Arterial Roadways" (1994), the Journal of Public Transportation Vol. 5, No. 2 (2002), and SCAG's warrant criteria for arterial bus lanes (1991):

- Bus lanes at least 10 km (6.2 miles) in length
- Serving many communities and business centers
- Travel time savings of at least 8-10 minutes
- Heavy bus corridor with at least 30-40 buses in the peak hour and 300 buses per day

These criteria have not yet been applied to the potential bus lanes described in this study but may be considered in further evaluation, especially for bus lanes that are not expected to provide bus speed improvements.

Bus Lane Impacts

While bus lanes are relatively easy to install and can significantly improve bus speed and travel time on congested roadways, they are not always necessary or appropriate, particularly when buses are already operating at satisfactory levels of service in normal traffic conditions. In fact, bus lanes present their own set of problems with respect to traffic operations, enforcement and community impacts. The following bus lane issues have been documented in international case studies and/or been observed directly by LADOT:

- Impacts on Traffic and Air Emissions – When bus lanes are created by converting mixed flow lanes to bus lanes, there may be impacts on mixed flow traffic and related air emissions. Loss of one lane of mixed flow traffic can have a disproportionate impact on remaining mixed flow capacity. This results in increased congestion and traffic diversion.
- Impacts on Parking and Pedestrians – When bus lanes are created by removing on-street parking, the loss of parking impacts dense residential areas and commercial areas with limited off-street parking. Removal of on-street parking also eliminates any visual or psychological buffer between moving traffic and pedestrians. If buses are moving speedily along a bus lane, as intended, the unintended result may be an unfriendly pedestrian environment.

- Enforcement Problems – Bus lane violations by motorists are common, especially in heavy traffic congestion. Use of police officers to enforce bus lane exclusivity is costly and cannot provide the consistent enforcement needed to modify motorists' behavior. To remedy this, the City of London is successfully utilizing bus-mounted cameras to photograph the license plates of bus lane violators (similar to red light photo enforcement programs.) If Los Angeles continues to install bus lanes, it may be advisable to pursue these types of alternative enforcement measure.
- Circulation and Access Problems – Curbside bus lanes must accommodate not only buses but also vehicles turning in and out of side streets, alleys and driveways. In heavy congestion, these vehicles can end up blocking the bus lane while attempting to enter mixed flow traffic lanes. This can create a traffic safety hazard for motorists and impede bus movement in the bus lane. Vehicles may also have difficulty crossing bus lanes to enter driveways. Curbside bus lanes must also accommodate right-turning vehicles. This can create merging problems as right-turners into the bus lane try to enter mixed flow lanes. Right-turners out of the bus lane may block bus movement while waiting for pedestrians or cross-street traffic at intersections. There can also be enforcement confusion in short blocks where right-turning vehicles are entering and exiting the bus lanes over short distances.
- Mixed Results From Demonstration Project – Los Angeles removed a one-mile stretch of bus lanes on Wilshire Blvd. in West Los Angeles in 2007 after a three-year test period. Although the bus lanes benefited bus speeds, they impacted traffic congestion, parking and circulation and access and were not well-received by the community.

Given these issues, bus lanes should not be regarded as a Bus Rapid Transit easy fix. They should be utilized only where they are truly needed to alleviate bus speed delay.

APPENDIX E. ISSUES WITH MEDIAN BUSWAY ON VAN NUYS BOULEVARD

In 2001 and 2002, fully-dedicated median-running bus lanes along Wilshire Boulevard were analyzed for Metro's Wilshire Bus Rapid Transit (BRT) Project FEIR. Due to significant traffic safety and operational concerns with median-running bus lanes, it was determined that curbside bus lanes were a better option for Wilshire Blvd. Curbside bus lanes were subsequently adopted by the Metro Board as the Locally Preferred Alternative for the Wilshire BRT Project. LADOT's specific concerns about median-running bus lanes on Van Nuys Blvd., many of which were identified for the Wilshire BRT Project, are as follows:

- Lane Offsets – The installation of median-running bus lanes along Van Nuys Blvd. within narrower segments of the existing street would cause lane offsets in excess of 10 feet at a number of major intersections. These lane offsets would result in cars, trucks and buses meandering through the intersection, creating traffic safety problems. In order to eliminate lane offsets in narrow segments, either widening and right-of-way acquisition would be necessary, or mixed flow through movements would have to be reduced to a single lane.
- Parking Loss – Without widening of Van Nuys Blvd. in the Civic Center, median-running bus lanes would require the elimination of a significant number of parking spaces throughout the day. Unlike curbside bus lanes, parking cannot be restored in off-peak periods.
- Bus Lane Buffer – To reduce bus lane violations by motorists and to increase traffic safety, buffers of 2-3 feet may be required between the bus lanes and mixed flow lanes. Plastic bollards could be placed within these buffers. The buffers would further reduce the amount of available street width.
- Right Turn Blockage – Along Van Nuys Blvd.'s narrower street width segments, right turn pockets would be precluded, forcing one of the through lanes to be a through/right shared lane. In pedestrian-heavy areas such as the Van Nuys Civic Center, cars in the through/right shared lane may have to wait an entire green cycle before pedestrians clear on cross streets.
- Left Turn Interlocking – Left turn movements may have an interlocking problem, where left turn movement paths overlap. Interlocking left turns require a lead-lag left turn signal operation, reducing either the window for the median-running bus to traverse the intersection, or reducing the available green time for mixed flow traffic. It should also be noted that shared through/left turn lanes would not be feasible for a median-running bus lane intersection.
- Double Left Turn – Without widening, there is insufficient existing street width to provide a double left turn movement with median-running bus lanes. Cross streets such as Sherman Way and Roscoe Blvd. rely on double left turn movements, and a number of other major intersections may require double left turn pockets in the future.

- Reduced Driveway Access – Because mid-block left turns are precluded with median-running bus lanes, driveways could only be entered through right turns. This would mean that a vehicle approaching a driveway from the opposite side of the street would have to make a series of turns, including a U-turn, in order to access the driveway.
- Street Widening Needed – In order to provide adequate space for two through lanes, left and right turn pockets, bus station and median-running bus lanes, Van Nuys Blvd. would need to be widened approximately 22' at intersections such as Victory Blvd. Sidewalks could be shaved mid-block; however, right-of-way acquisition would be necessary at intersections.
- No passing lane for buses at stations – Roadway width at major intersections where stations will be located does not allow for an additional passing lane for Express and Rapid buses. Without a passing lane, buses would bunch up at stations, preventing them from maintaining consistent headways.
- Separate bus stops for Local and Metro Rapid service – Bus riders will often choose to take whichever bus service arrives first, Metro Local or Rapid. The separation of Rapid and Local service would introduce a safety hazard, with pedestrians potentially jumping across lanes to catch a Metro Rapid bus while waiting at a Local stop, and vice versa.



Median Busway in Taipei, Taiwan

APPENDIX F. VAN NUYS BOULEVARD BUS TUNNEL

Because of the significant impacts on traffic delay, air emissions and on-street parking created by bus lanes through the Van Nuys Civic Center, and to alleviate persistent bus speed delay in that segment, LADOT has looked at the benefits of a busway tunnel under Van Nuys Blvd. between the Metro Orange Line Busway and Sherman Way, a distance of 1.5 miles. A busway tunnel could start south of the Metro Orange Line Busway and daylight north of Vanowen St., where Van Nuys Blvd. widens again.

A busway tunnel between the Metro Orange Line and Sherman Way would leave mixed flow traffic capacity and on-street parking through the Civic Center intact. It would create an exclusive Bus Rapid Transit facility for the Van Nuys Corridor where it is needed most and would result in optimal bus speed and travel time through the segment. With two stops at Victory Blvd. and Vanowen St. (underground stations), a busway tunnel would result in an average bus speed of 25.3 mph and a bus travel time of 3.6 minutes in the segment, regardless of the time of day or direction of travel. This would more than double existing bus speeds and reduce travel times by more than half through the Civic Center:

Busway Tunnel (Metro Orange Line to Sherman Way) Benefits

Direction & Time of Day	Existing Bus Speed (mph)	Tunnel Bus Speed (mph)	% Change	Existing Travel Time (min.)	Tunnel Travel Time (min.)	% Change
Northbound						
AM Peak	12.7	25.3	99%	7.2	3.6	(50%)
PM Peak	8.1	25.3	212%	11.2	3.6	(68%)
Southbound						
AM Peak	10.3	25.3	146%	9.0	3.6	(60%)
PM Peak	9.6	25.3	164%	9.7	3.6	(63%)

Busway tunnels have been utilized successfully in other major cities, such as Seattle. Further study and engineering analysis is necessary before the feasibility of a bus tunnel under Van Nuys Blvd. can be fully determined.

Van Nuys Bus Tunnel Concept

- ★ Tunnel Portal
- Tunnel Bus Stop

