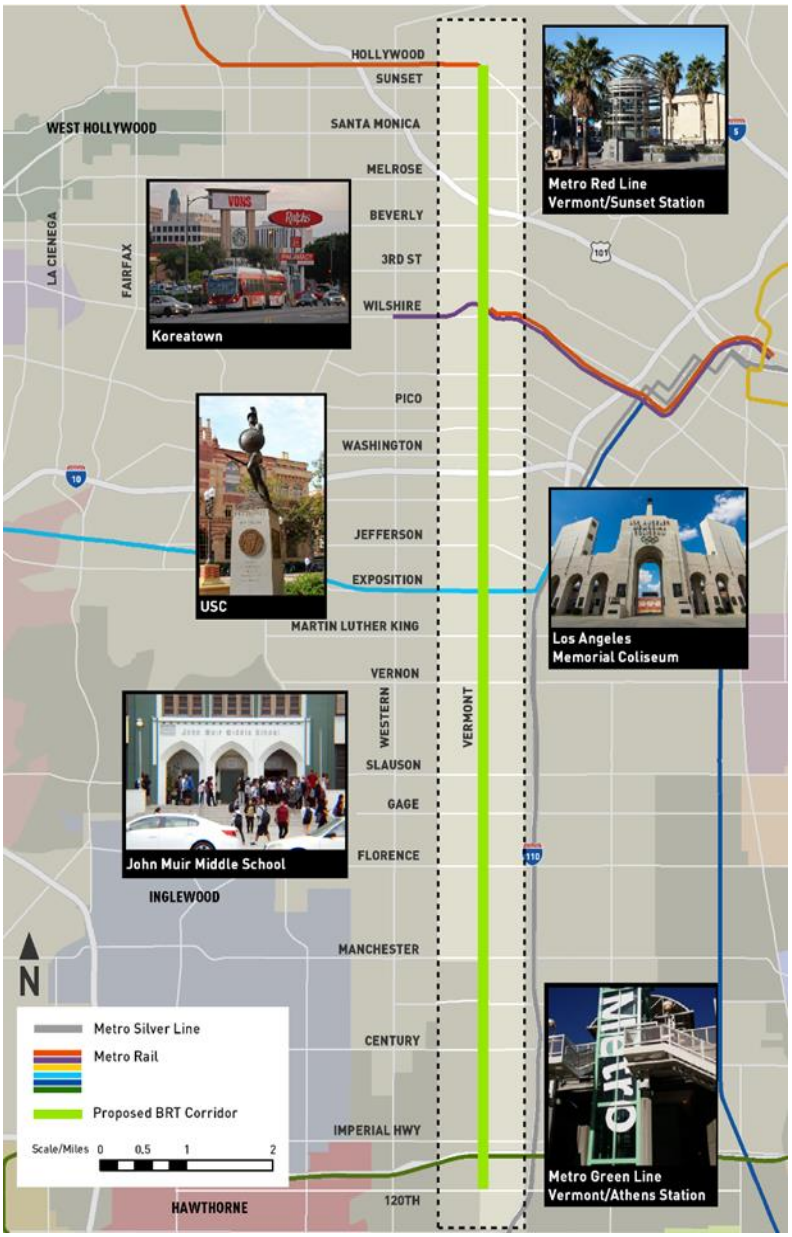
Executive Summary

The Vermont Avenue Corridor, which extends approximately 12.4 miles from Hollywood Boulevard south to 120th Street, is the second busiest bus corridor in Los Angeles County with over 45,000 daily boardings. The corridor was identified in the Los Angeles County Metropolitan Transportation Authority's (Metro) 2013 Countywide Bus Rapid Transit (CBRT) and Street Design Improvement Study) as a promising corridor for implementation of Bus Rapid Transit (BRT). Of the nine corridors identified in the CBRT study, the Vermont Corridor was identified as the best, demonstrating the highest net 20-year benefits.

Vermont Avenue is currently served by Metro Rapid Line 754 and Metro Local Line 204, providing important connections to numerous other transit services including the Metro Red, Purple, Exposition, and Green Lines. The corridor also serves numerous important key activity centers including Koreatown, Kaiser Permanent Los Angeles Medical Center, University of Southern California, California Science Center, and the Natural History Museum.



Vermont BRT Corridor and Study Area

Study Purpose and Goals

The purpose of the Vermont BRT Corridor Technical Study is to identify strategies for improving bus service along Vermont Avenue. To this end, there are five key study objectives:

1. Characterize existing conditions affecting bus transit performance and establish the case for bus service improvement strategies;

2. Describe conditions and constraints, both physical and operational, affecting BRT planning and design;

3. Evaluate the feasibility and challenges associated with potential BRT concepts;

4. Estimate project benefits, non-transit impacts, and key tradeoffs associated with potential BRT options; and

5. Identify promising BRT concepts to carry forward into environmental study and more detailed design.

Several project goals were identified in coordination with a special Technical Advisory Committee (TAC) consisting of representatives of the City of Los Angeles, Los Angeles county Department of Public Works, and several Metro departments. The goals are:

- Enhance the customer experience
  - Reduce passenger travel times
  - Improve service reliability
- Improve service performance
  - Create a cost-effective, long-term transit solution
  - Faster average bus speeds
  - Increased ridership
- Increase person throughput for the corridor

Existing Bus Service

The Vermont Corridor is served by Metro Rapid Line 754 and Metro Local Line 204 as well as several LADOT DASH lines and a short segment of GTrans Line 2. Existing Metro service operates a combined frequency of every 3 to 6 minutes in the peak periods, 7.5 minutes during the midday, 10 to 20 minutes in the evening, and 30 minutes in the night. Bus stop waiting areas are generally sparse along the corridor and pedestrian connections for transfers to other transit services can be inconvenient.

Metro Rapid Line 754 and Metro Local Line 204 experience performance issues related to slow bus speeds caused by traffic, intersection delays and service reliability concerns due to congestion, excessive dwell times at busy bus stops, absence of customer-friendly amenities at stop locations, and poor pedestrian access between bus stops and Metro Rail stations. On Metro Rapid Line 754, average actual end-to-end run times range from 53 minutes to 1 hour and 10 minutes. On Metro Local Line 204, actual travel times range from 1 hour and 12 minutes to 1 hour and 24 minutes. On a typical weekday, buses arrive as scheduled approximately two-thirds of the time and are either late or early the remaining one-third of the time. Customer satisfaction surveys indicate that more than 10% of passengers on Metro Rapid Line 754 and Metro Local Line 204 are not satisfied with Metro bus service.

Bus Improvement Concepts

Four preliminary BRT concepts were identified in this technical study and are described as follows:

Concept 1: End-to-End Side-Running BRT

- Creates 12.4 miles of side-running BRT by converting traffic lanes next to parking to dedicated bus lanes
- Results in loss of 446 all-day parking spaces

Concept 1: End-to-End Side-Running BRT

Concept 2: Combination Side and Center-Running BRT

- Creates 8.2 miles of side-running dedicated bus lanes by converting traffic lanes next to parking (north of Gage Avenue)
- Creates 4.2 miles of center-running dedicated bus lanes by converting the center traffic lanes (south of Gage Avenue)
- Results in loss of 464 all-day parking spaces

Concept 2: Center-Running BRT South of Gage Ave.

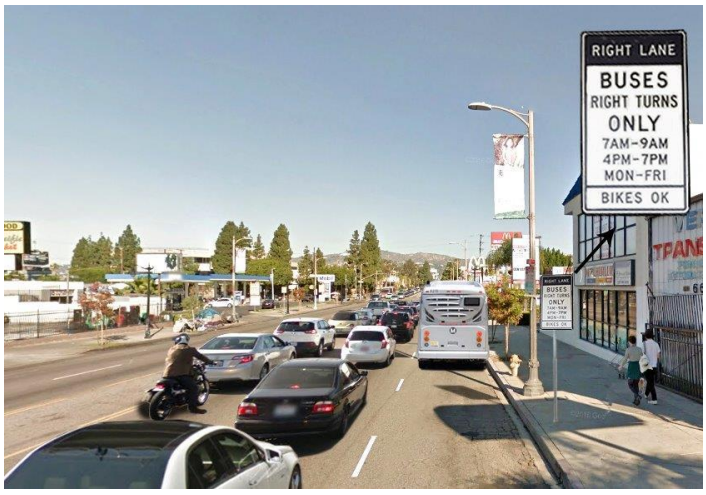
Concept 3: Curbside-Running BRT

- Creates 7.3 miles of curbside dedicated bus lanes by converting on-street parking, where wide enough to bus lanes
- BRT would operate in mixed flow for 5.1 miles due to right-of-way (ROW) constraints
- Results in loss of 1,100 all-day parking spaces

Concept 3: Curbside-Running BRT

Concept 4: Peak Period Curbside-Running BRT

- Bus lanes would exist during peak hours only (7:00 AM - 9:00 AM and 4:00 PM - 7:00 PM). BRT would operate in mixed-flow all other times
- Creates 2.7 miles of curbside peak hour dedicated bus lanes by converting restricted peak period parking
- BRT would operate in mixed flow for 9.7 miles due to a lack of restricted peak period parking and ROW constraints
- Results in loss of 83 all-day parking spaces



Concept 4: Peak Period Curbside-Running BRT

Each of these concepts were developed using the following assumptions:

- All BRT concepts would include additional BRT attributes such as optional all-door boarding, enhanced traffic signal priority, enhanced BRT stations, and optimized operating plans.
- The converting of general purpose lanes to bus lanes is consistent with the City of Los Angeles Mobility Element 2035 adopted in January 2016 for the Vermont Corridor.
- No additional ROW would be acquired to accommodate the physical requirements associated with BRT implementation.
- The BRT would operate from 5:00 AM to 10:00 PM weekdays with headways of every 5 minutes during peaks and every 10 minutes mid-day.
- Saturday service would operate from approximately 6:00 AM to 10:00 PM and from 6:00 AM to 8:00 PM on Sundays. Proposed headways on weekends are every 15 minutes.
- BRT lane widths vary from 12 to 14 feet. Twelve-foot lanes would be used under constrained conditions only.
- Existing streetscape, sidewalk widths, and landscaped medians to be maintained as much as possible throughout the corridor.
- All BRT concepts would have the same stop locations. 17 proposed stations, spaced approximately 0.7 miles apart, were identified.

Assessment of Preliminary Concepts

The preliminary concepts were assessed according to passenger travel time savings, average bus speeds, ridership, estimated project costs, person throughput, and impacts to existing facilities. The following tables highlight the results of this preliminary assessment.

Concepts	*Average Travel Time (PM Peak, SB, in Minutes)*			*Average Speed (mph)*			*Total Corridor Ridership (weekday)*			*Capital Cost (in Millions)*	*Increase in Annual O&M Cost (in Millions)*
	Current Metro Rapid Line 754	Post Project	% Change	Current Metro Rapid Line 754	Post Project	% Change	No Build (2035)	Build (2035)	% Change	Post Project (2016$)	Post Project (2016$)
Concept 1	70	51	**27%**	11	15.1	**37%**	54,600	74,050	**36%**	322	**3.4**
Concept 2		50	**28%**		15.3	**39%**		74,380	**36%**	332	**3.4**
Concept 3		62	**12%**		12.4	**13%**		66,480	**22%**	235	**3.8**
Concept 4		64	**9%**		12	**9%**		63,850	**17%**	145	**4.1**

Concepts	Travel Lane Impacts (by direction)		Person Throughput (per lane)			Parking Impacts (reduction)		
	Current	Post Project	Current	Post Project	% Change	Current	Post Project	% Change
Concept 1	2-3	**1-2**	900	1,400-1,600	**56% - 78%**	2,005	-446	**-22%**
Concept 2		**1-2**					-464	**-23%**
Concept 3		**2-3**					-1,100	**-55%**
Concept 4		**2-3**					-83	**-4%**

Findings and Recommendations

The study explored the feasibility of implementing BRT, including bus lanes and other BRT features, within the existing ROW of a heavily congested and constrained corridor. Of the four initial BRT concepts, Concept 1 and Concept 2, with end-to-end dedicated bus lanes, were determined to be the most promising options for improving bus service on the Vermont Corridor primarily because they yield the largest improvement in operational performance, result in the highest increase in ridership, best improve the customer experience and minimize the impact on on-street parking.

It is recommended that both Concept 1 and Concept 2 be advanced to the next level of analysis. Implementing either concept within existing physical constraints of available ROW in the corridor will reduce vehicular travel lanes and some on-street parking capacity. These impacts should be further explored during the environmental review process.

Vermont BRT Corridor Technical Study – Phase II

Measure M, a half-cent sales tax measure passed by Los Angeles County voters in November 2016, identifies a potential rail conversion on the Vermont Corridor after FY 2067 based on ridership demand. Phase II of the technical study will focus on considerations that should be included in the final design of any BRT concept to ensure that its implementation does not preclude any potential conversion to rail in the future. Phase II will also identify feasible rail modes and ridership thresholds that inform the conversion of BRT to rail. Upon completion of Phase II, the intent is to proceed into environmental review.