WESTSIDE SUBWAY EXTENSION PROJECT

Wilshire/La Cienega Terminus (Phase 1) Traffic Impact Analysis Report

Metro

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1.0 INTRODUCTION

This report provides updates from what was presented in the Draft EIS/EIR for Alternative 2 (Westwood/VA Hospital Extension), which was selected as the Locally Preferred Alternative (LPA) by the Metro Board in October 2010. The focus of this report is on the identification and analysis of potential effects of a Wilshire/La Cienega Station terminus (Phase 1) if the LPA is implemented in three sequential phases rather than as a single phase. The analysis results indicate that no locations in the initial phase of the LPA to the Wilshire/La Cienega Station will be adversely affected in terms of the identified traffic impact criteria.

2.0 YEAR 2035 NO BUILD CONDITIONS

This section describes the methodology used to forecast future Year 2035 No Build traffic volumes and details expected intersection level of service under Year 2035 No Build conditions. During the Draft EIS/EIR phase of the project, a total of 192 intersections were identified for analysis within the study area. The 192 intersections were relevant to Alternative 5, which included the West Hollywood and Santa Monica extensions as part of the alignment. In this report, level of service (LOS) analysis is conducted only for the 53 intersections included in the modified Wilshire/La Cienega terminus (Phase 1) study area (intersections within one mile of potential station locations), between the existing Wilshire/Western Station and the proposed Wilshire/La Cienega Station.

2.1 Methodology

2.1.1 Travel Demand Forecast Data

For the Draft EIS/EIR, a travel demand model for the Westside Subway Extension was developed using a combination of the updated Metro Regional Travel Demand Model and the VISUM modeling software. The Metro Regional Travel Demand Model was used to forecast regional travel patterns and the VISUM modeling software was used to refine regional travel patterns to match observed traffic counts.

The Metro Regional Travel Demand Model receives its demographic inputs from the SCAG Regional Travel Demand Model and produces regional travel flows based on a four-step process. To improve on the level of detail in the forecasting process, the VISUM modeling software was used to extract a sub-area of the regional model and enhance its level of detail. VISUM has the same standard features as traditional travel demand models, as well as other features that allow the model to capture the local-scale distributional effects of roadway improvements and land use changes more accurately. VISUM is capable of refining regional travel patterns to match observed traffic volumes through a matrix estimation process, and utilizes an assignment algorithm that assigns vehicle trips to the roadway network based on roadway link and turning movement capacities. Thus, the regional model was used as a macro-level planning tool for trip generation, trip distribution, and mode split, while the VISUM model was used for travel pattern refinement and detailed trip assignment in the study area.

Subsequent to the preparation of the Draft EIS/EIR, the Metro Regional Travel Demand Model was refined to provide updated ridership forecasts included in the Final EIS/EIR. New Future No Build and Future with Project model runs were conducted, to provide updated inputs into the VISUM model.

A sub-area validation was performed on the base year VISUM model updated to reflect the refined Metro Travel Demand Model runs, to ensure the model produced traffic forecasts that reasonably resembled observed traffic counts obtained in the project study area. The model was calibrated by adjusting parameters such as roadway speeds and capacities until the model was validated by applying a set of criteria that compare model volumes to actual counts. The base year VISUM model was then considered to be valid to existing traffic counts.

To develop future no project volumes, the differential between the base and future model runs were applied to the calibrated base year model.

2.1.2 Level of Service Analysis Tool

The SYNCHRO 6.0 software suite was used to develop study area roadway and intersection network for this traffic analysis. The Synchro model was constructed by drawing the roadway network using aerial photography as a background. The number of lanes and the location of lane additions and drops were confirmed by field observations. Additional detail was incorporated into the SYNCHRO network (posted speed limits, grades, etc.) to better reflect observed field conditions. Traffic signal-related information such as phasing and initial timings (minimum green, maximum green, distance or "gap" between vehicles, etc.) for the signalized intersections was obtained from the affected agencies or during field visits to the site. Additional detail such as turn pocket lengths, saturation flow and intersection spacing was coded based on field measurements. Once the model was developed, a.m. and p.m. peak hour intersection turning movement counts and pedestrian volumes were added to the 53 study locations representing the Wilshire/La Cienega terminus (Phase 1) study area.

2.1.3 Incorporation of Pedestrian Volumes

The Wilshire/La Cienega terminus (Phase 1) would result in additional pedestrian activity at intersections immediately adjacent to and within walking distance (typically one-quarter mile) of proposed station locations. Mode of access data from the Metro Regional Travel Demand Model along with future station site plans were used to determine the increase in pedestrians expected at each leg of an intersection adjacent to a proposed station location. The pedestrian volumes were added to the Synchro network to account for additional vehicle delay at unprotected left and right turns as a result of increased pedestrian activity. Vehicle delay would also be affected by an increased number of pedestrian calls, which would increase time allotted to walk phases and associated green phases.

2.2 Traffic Forecasts

Using the inputs described previously, the weekday peak hour (a.m. and p.m.) Future Year 2035 No Build forecasts were developed at the 53 study intersections. Study intersection turning movement volumes are contained in Appendix A.

2.3 Level of Service Methodology

The commonly accepted operational analysis methodology from *2000 Highway Capacity Manual* (HCM) (Transportation Research Board, 2000) was used to estimate delay and corresponding LOS at each study intersection. The operations analysis methodology rates intersection conditions based on the average delay, measured in seconds, experienced by drivers.

LOS is a qualitative measure used to describe the condition of traffic flow, ranging from LOS A (free flow conditions) to LOS F (congested conditions), with LOS E representing the theoretical maximum capacity of a link or intersection before gridlock occurs. Table 1 provides LOS definitions for signalized intersections using the HCM methodology. Weekday a.m. and p.m. peak hours were selected for analysis because they represent the most critical periods of traffic congestion in the study area, compared to other time periods such as weekday or weekend midday. The LOS definitions and ranges of delay shown in the following table represent average conditions for all vehicles at an intersection across an entire hour. Delays longer than the average condition are experienced by motorists on certain movements and/or during peak times within the peak hour.

Table 1: Level of Service Definitions for Signalized Intersections

Level of Service	Control Delay (seconds/vehicle)	Interpretation*
A	$\leq$10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low density.
B	>10.0 and $\leq$20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	>20.0 and $\leq$35.0	These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	>35.0 and $\leq$55.0	At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	>55.0 and $\leq$80.0	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	>80.0	This level, considered unacceptable by most drivers, often occurs with oversaturation; that is, when arrivals flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

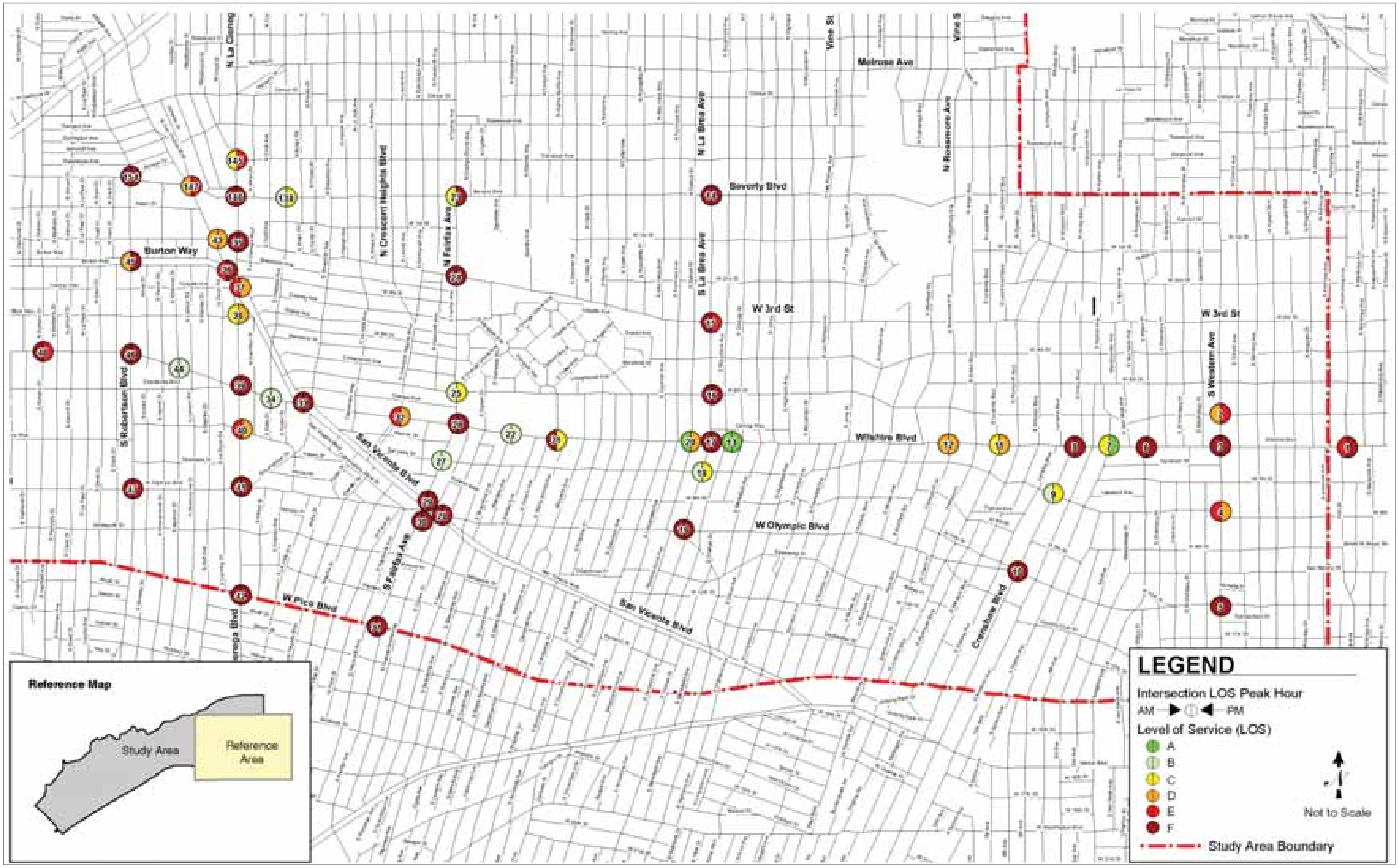
Source: Highway Capacity Manual, Transportation Research Board, 2000.
* Level of service interpretation was derived from *Highway Capacity Manual 1994*, Transportation Research Board, 1994.

Generally, the minimum acceptable LOS for any intersection in an urbanized area is LOS D. The affected jurisdictions for the Westside Subway Extension study area all consider LOS D the minimum acceptable LOS. Therefore, LOS D will serve as the minimum acceptable standard for the Westside Subway Extension project.

2.4 Level of Service Analysis

Future Year 2035 projected morning and afternoon peak period delay and corresponding LOS are contained in Appendix B. Detailed LOS calculations per intersection by scenario are provided in Appendix C. The LOS results by peak hour are illustrated graphically in Figure 1.

Figure 1: Future Year 2035 No Build Level of Service



3.0 FUTURE YEAR 2035 PLUS PROJECT (PHASE 1) CONDITIONS

This section describes the methodology used to forecast Future Year 2035 plus Project traffic volumes and details expected intersection level of service resulting from the addition of the Wilshire/La Cienega terminus (Phase 1) to the existing street system.

3.1 Methodology

Future plus Project traffic volume forecasts were developed with the use of the Future Baseline Year (2035) Metro Regional Travel Demand Model. The Travel Model was run without (No Build) and with (plus Project) the Wilshire/La Cienega terminus (Phase 1) to produce two sets of origin-destination trip tables. The difference between the two origin-destination trip tables (plus Project minus No Build) was then added to the validated base year trip table and assigned to the VISUM roadway network. The resulting outputs were Future plus Project turning movement forecasts.

3.2 Traffic Forecasts

Using the inputs described previously, the weekday peak hour (a.m. and p.m.) Future Year 2035 plus Project forecasts for the Wilshire/La Cienega terminus (Phase 1) were developed at the 53 study intersections. Study intersection turning movement volumes are contained in Appendix A. Intersections outside the modified Wilshire/La Cienega Terminus (Phase 1) study area show "NA" (not applicable) in place of turning movement volumes.

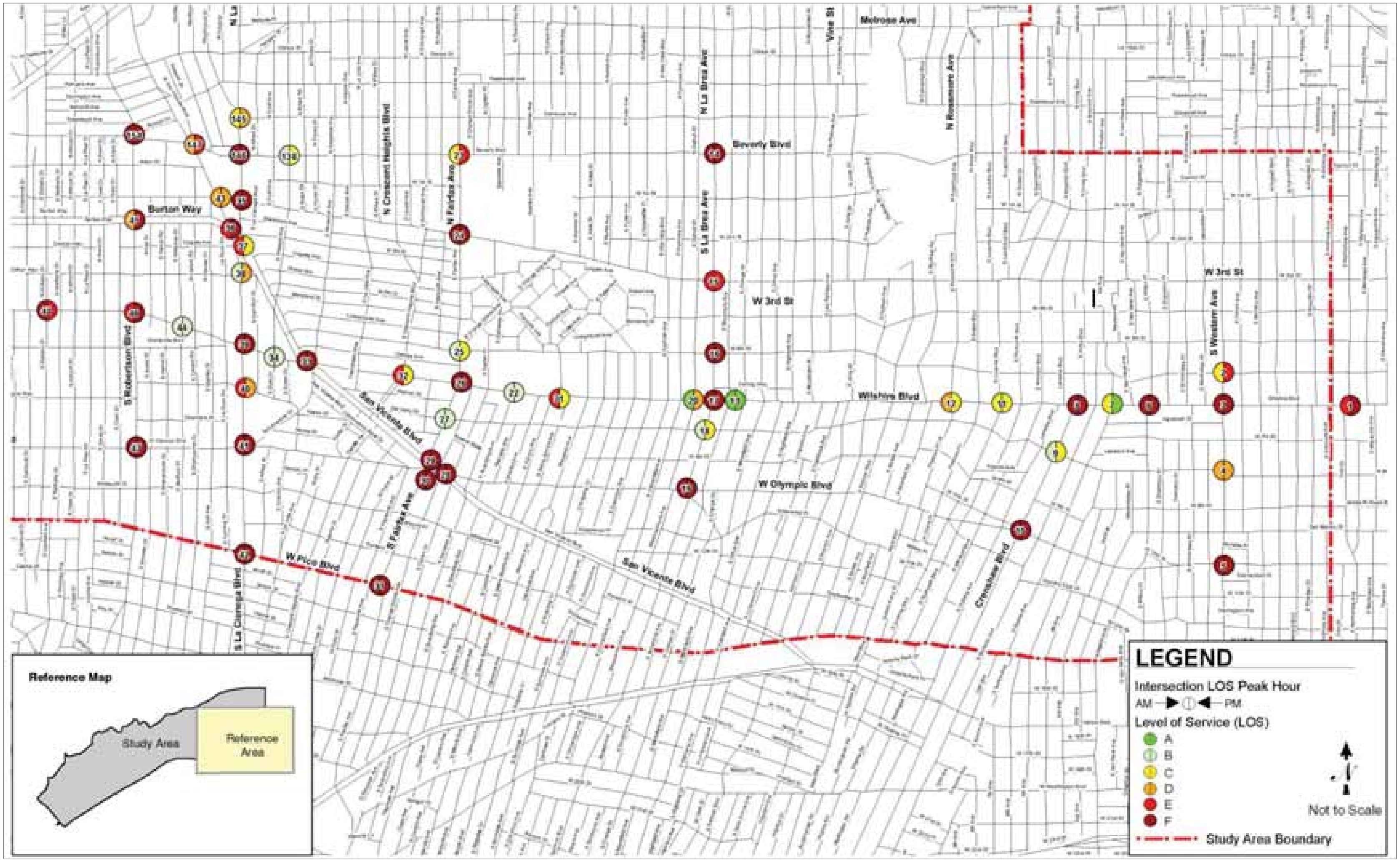
3.3 Level of Service Analysis

Projected morning and afternoon peak period delay and corresponding LOS for the selected 53 study intersections are contained in Appendix B. Detailed LOS calculations per intersection by scenario are provided in Appendix C. Under Future Year 2035 plus Project scenario, 17 of the 53 study locations are projected to operate at LOS D or better during both peak hours. The remaining 36 intersections are projected to operate at LOS E or F during one or both AM and PM peak hours. The LOS results by peak hour are illustrated graphically in Figure 2. The Wilshire/La Cienega terminus (Phase 1) would result in a modest, but measurable improvement in traffic operating conditions in compared to Future Year 2035 No Build conditions. In the a.m. peak hour, six of the 53 intersections will improve by one level of service and in the p.m. peak hour six intersections will improve by one level of service. Table 2 summarizes the improvement in level of service generated by the Wilshire/La Cienega terminus (Phase 1) for each peak hour

Table 2: Wilshire/La Cienega Terminus (Phase 1) Level of Service Improvement Compared to Future Year 2035 No Project Conditions

Level of Service Improvement	No Build to Project	
	AM Peak Hour	PM Peak Hour
F to E or better	3	1
E to D or better	1	1
D to C or better	1	4
C to B or better	1	0
B to A or better	0	0
No change in LOS	47	47
Total	53	53

Figure 2: Future Year 2035 plus Project (Phase 1) Level of Service



4.0 IMPACT ANALYSIS

The projected Future Year plus Project levels of service were analyzed to determine the operating conditions of the 53 study intersections with the Wilshire/La Cienega terminus (Phase 1) in place. These levels of service were compared to the Future Year 2035 No Build intersection levels of service to identify the potential impacts of the Wilshire/La Cienega terminus (Phase 1) on the surrounding street system. This section provides a discussion of the impact criteria used to assess the potential for significant/adverse impacts, provides an impact analysis, and summarizes the results.

4.1 Methodology and Impact Criteria

For this traffic impact analysis, the evaluation of significance under the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) has been conducted by comparing the Future plus Project scenario to the Future No Build scenario. The net change in delay at study intersections is compared to thresholds of significance for determination of impacts. The criteria used to measure a significant impact are defined in Table 3.

4.2 Impact Determination

Using the impact criteria shown in Table 3, the traffic impact analysis found that with the Wilshire/La Cienega terminus (Phase 1) no study intersection exceeded the threshold for a significant/adverse traffic impact as compared to the Future Year 2035 No Build scenario. Therefore, the Wilshire/La Cienega terminus (Phase 1) would not result in significant/adverse traffic impacts.

Projected morning and afternoon peak period delay, corresponding LOS and impact determination for the Wilshire/La Cienega terminus (Phase 1) at the 53 study intersections are contained in Appendix B.

Table 3: Westside Subway Extension Traffic Impact Criteria

Definition	Criteria
The intersection LOS analysis assumes that an intersection would be significantly impacted (CEQA)/adversely affected (NEPA) by traffic volume changes if a project alternative causes an increase in average vehicle delay according to the following thresholds:	Final LOS C – a significant/adverse impact has occurred if the delay is increased by 10 or more seconds
	Final LOS D - a significant/adverse impact has occurred if the delay is increased by 7.5 or more seconds
	Final LOS E/F - a significant/adverse impact has occurred if the delay is increased by 5 or more seconds