5.0 FINANCIAL ANALYSIS AND COMPARISON OF ALTERNATIVES

5.1 FINANCIAL ANALYSIS

The cost of a transportation investment falls into two categories: capital costs, and operating and maintenance (O&M) costs. Capital costs are the start-up costs for the project, including the costs of guideway construction, vehicles, and any system facilities necessary before the project can begin operation. Operating and maintenance costs are the costs associated with the regular running of a new transportation facility. Costs such as labor, vehicle maintenance, and overall facility maintenance all fall into this category.

This section discusses both types of costs, and then analyzes the Metropolitan Transportation Authority (MTA's) ability to afford the alternatives.

5.1.1 Capital Costs

Capital costs are the expenses associated with design and construction and include acquisition of right-of-way, guideway and station construction, environmental mitigation and urban design, park and ride lots, vehicles, and system equipment and maintenance facilities. Capital cost estimates for the TSM and the four Exposition LRT alternatives were based on MTA historical costs with some input from actual costs of other transit projects throughout the country. Costs for the Wilshire BRT and the four Exposition BRT Alternatives were developed from historical MTA costs, where applicable, from existing projects nationwide, and from in-house engineering judgement.

A key factor in this cost estimation process has been to compare historic MTA costs to costs based on the national and local experiences of the consultant groups involved in the MIS / EIS process for the Eastside, San Fernando Valley, and Mid-City/Westside Transit Corridor Studies. Unit costs form the combined experiences of Parsons Transportation Group, Parsons Brinkerhoff Quade and Douglas, Korve Engineering, and Gruen Associates were evaluated. While in some cases these values varied slightly from those of the MTA, they did serve to verify and validate the overall cost approach used by the MTA.

The costs developed herein for each alternative were calculated using the MTA values. While these values were in some cases higher than those experienced by other consulting groups for other similar projects nationwide, they were universally applied in this report to provide continuity to previous MTA estimates.

For each of the Alternative Segments shown in Table 5-1A, the total construction cost is based on unit costs for individual line items such as Guideways, Stations, Systems, Parking Spaces, Urban Design, Maintenance Facilities, and other components of a project. Certain percentages, commonly called "soft costs" were applied to the unit costs to develop the final, total cost for an alternative. These percentages provide a way to account for costs such as Design Services, Insurance, Artwork, and Contingencies.

Table 5-1B provides the composite capital cost packaged into the project alternatives. The composite cost adds vehicles (bus and light rail) as appropriate. The amount of bus vehicles are determined by analyzing fleet size as generated by the MTA's transportation simulation model. Peak hour loads are also examined to determine the size of bus (standard, single-articulated or double-articulated) needed.

Resulting fleet sizes are compared to No Build, and unit costs (including soft costs) for standard, single-articulated or double-articulated buses are applied. Light rail vehicles for Alternatives 3 and 3A are determined by the proposed service plan and expected peak loads; once again, light rail vehicle costs include associated soft costs.

TABLE 5-1A
CONSTRUCTION COST SUMMARY (WITHOUT VEHICLES)

Alternative Segments		Description	Total Construction Cost (in 1999 Millions of Dollars)
	TSM	Wilshire/Oxford to Santa Monica	46.5
A	Wilshire BRT *(Median - running or median adjacent)*	Wilshire/Oxford to Ocean/Broadway	304.6
B	Wilshire BRT *(Curb adjacent)*	Wilshire/Oxford to Ocean/Broadway	313.7
C	Exposition BRT (FULL LENGTH)	7th/Flower to Ocean/Colorado	290.9
D	Exposition BRT (FULL LENGTH) *(Subway design option)*	7th/Flower to Ocean/Colorado (¾ Mile Tunnel at USC)	439.2
E	Exposition BRT (MOS)	7th/Flower to Venice/Robertson	128.9
F	Exposition BRT (MOS) *(Subway design option)*	7th/Flower to Venice/Robertson (¾ Mile Tunnel at USC)	277.2
G	Exposition LRT (FULL LENGTH)	7th/Flower to Ocean/Broadway	554.9
H	Exposition LRT (FULL LENGTH) *(Subway design option)*	7th/Flower to Ocean/Broadway (¾ Mile Tunnel at USC)	674.4
I	Exposition LRT (MOS)	7th/Flower to Venice/Robertson	252.8
J	Exposition LRT (MOS) *(Subway design option)*	7th/Flower to Venice/Robertson (¾ Mile Tunnel at USC)	372.3

TABLE 5-1B
CAPITAL COST COMPOSITE FOR PROJECT ALTERNATIVES

Alternative		Total Capital Cost*	Bus Vehicle Cost**	LRT Vehicle Cost	Total Project Cost (in 1999 Millions of Dollars)
	TSM	46.5	52.3	-	98.8
1	Wilshire BRT *(Baseline median - running)*	304.6	49.4	-	354.0
1a	Wilshire BRT *(Median adjacent)*	304.6	49.4	-	354.0
1b	Wilshire BRT *(Curb adjacent)*	313.7	49.4	-	363.1
2	Wilshire BRT and Exposition BRT (FULLLENGTH)	304.6 290.9	58.4	-	653.9
2	Wilshire BRT and Exposition BRT *Subway design option at USC/ Exposition Park (For Alternatives 2 , 2A, 3, and 3A)*	304.6 439.2	58.4	-	802.2
2a	Wilshire BRT and Exposition BRT (MOS)	304.6 128.9	47.4	-	480.9
2a	Wilshire BRT and Exposition BRT (MOS) *Subway design option at USC/ Exposition Park (For Alternatives 2, 2A, 3, and 3A)*	304.6 277.2	47.4	-	629.2
3	Wilshire BRT and Exposition LRT	304.6 554.9	26.6	117.8	1,003.9

TABLE 5-1B CAPITAL COST COMPOSITE FOR PROJECT ALTERNATIVES					
	Alternative	**Total Capital Cost***	**Bus Vehicle Cost****	**LRT Vehicle Cost**	**Total Project Cost (in 1999 Millions of Dollars)**
3	Wilshire BRT and Exposition LRT *Subway design option at USC/ Exposition Park* *(For Alternatives 2, 2A, 3, and 3A)*	304.6 674.4	26.6	117.8	1,123.4
3a	Wilshire BRT and Exposition LRT (MOS)	304.6 252.8	35.6	55.8	648.8
3a	Wilshire BRT and Exposition LRT (MOS) *Subway design option at USC/ Exposition Park* *(For Alternatives 2, 2A, 3, and 3A)*	304.6 372.3	35.6	55.8	768.3

* Alternatives 2, 2A, 3 and 3A use Baseline (median reconstruction) configuration for Wilshire BRT.
** Bus vehicle costs represent net change in bus fleet per transportation model runs.

Tables 5-1C, 5-1D, 5-1E and 5-1F provide a further breakdown of capital cost elements into the categories of street reconstruction/guideways and structures, stations, replacement parking, park and ride, vehicles, and storage/maintenance facilities.

TABLE 5-1C
TSM ALTERNATIVE SUMMARY OF COSTS
(COSTS IN MILLIONS – 1999 DOLLARS)

Cost Category	Cost
Street Reconstruction (N/A)	0.00
Stations + Systemwide Equipment (N/A)	0.00
Vehicles (70 double-articulated buses offset by a reduction of 85 standard buses)	52.30
Storage/Maintenance Facility	27.50
Sub-Total	**79.80**
Replacement Parking (N/A)	0.00
Park and Ride (N/A)	0.00
Sub-Total	**0.00**
Soft Costs – Professional Services	13.34
Soft Costs – Pre-Revenue Operations/Insurance	2.89
Soft Costs – Contingency	2.75
Sub-Total	**18.98**
Total	**98.78**

TABLE 5-1D
WILSHIRE BRT SUMMARY OF COSTS
(COSTS IN MILLIONS – 1999 DOLLARS)

Cost Category	Median	Median Adjacent	Curb Adjacent
Street Reconstruction	44.79	44.79	50.18
Stations (14) + Systemwide Equipment	33.59	33.59	33.59
Vehicles (70 double-articulated buses offset by a reduction of 71 standard buses)	49.40	49.40	49.40
Storage/Maintenance Facility	55.00	55.00	55.00
Sub-Total	**182.78**	**182.78**	**188.17**
Replacement Parking (1263 Stalls, Incl. ROW)	62.25	62.25	62.25
Park and Ride (None Required)	0.00	0.00	0.00
Sub-Total	**62.25**	**62.25**	**62.25**
Soft Costs – Professional Services	66.22	66.22	68.84
Soft Costs – Pre-Revenue Operations/Insurance	14.34	14.34	14.90
Soft Costs – Contingency	28.43	28.43	28.97
Sub-Total	**108.98**	**108.98**	**112.70**
Total	**354.02**	**354.02**	**363.13**

TABLE 5-1E
WILSHIRE BRT PLUS EXPOSITION BRT SUMMARY OF COSTS
(COST IN MILLIONS – 1999 DOLLARS)*

Cost Category	Costs
Wilshire BRT Capital Costs*	
Street Reconstruction	44.79
Stations (14)+ Systemwide Equipment	33.59
Replacement Parking (1263 Stalls, Incl. ROW)	62.25
Park and Ride	-
Sub-Total	**140.63**
Exposition BRT Capital Costs	
Guideways and Structures	103.53
Stations (20)+ Systemwide Equipment	57.57
Park and Ride (2881 Stalls, Incl. ROW)	12.40
Sub-Total	**173.50**
Operational Capital Costs (Combined Projects)	
Vehicles (70 double-articulated buses and 49 single-articulated buses offset by a reduction of 144 standard buses)	58.40
Storage/Maintenance Facility	55.00
Sub-Total	**113.40**
Soft Costs (Combined Projects)	
Professional Services	147.84
Pre-Revenue Operations/Insurance	32.01
Contingency	46.56
Sub-Total	**226.41**
Total	**653.94**

* Costs for Median Option or Median-Adjacent Option

TABLE 5-1F WILSHIRE BRT PLUS EXPOSITION LRT SUMMARY OF COSTS (COST IN MILLIONS – 1999 DOLLARS)*	
Cost Category	**Costs**
Wilshire BRT Capital Costs*	
Street Reconstruction	44.79
Stations (14)+ Systemwide Equipment	33.59
Replacement Parking (1263 Stalls, Incl. ROW)	62.25
Park and Ride	-
Sub-Total	**140.63**
Exposition LRT Capital Costs	
Guideways and Structures	124.06
Stations (14)+ Systemwide Equipment	181.96
Park and Ride (3493 Stalls, Incl. ROW)	16.93
Sub-Total	**322.95**
Operational Capital Costs (Combined Projects)	
Vehicles (70 double-articulated buses offset by a reduction of 119 standard buses plus 38 light rail vehicles)	144.40
Storage/Maintenance Facilities	62.50
Sub-Total	**206.90**
Soft Costs (Combined Projects)	
Professional Services	222.52
Pre-Revenue Operations/Insurance	48.18
Contingency	62.71
Sub-Total	**333.41**
Total	**1,003.89**
* Costs for Median Option or Median-Adjacent Option	

5.1.2 Operating and Maintenance Costs

Operating and Maintenance (O&M) costs were determined using the MTA's O&M cost model. This cost model was developed to estimate O&M costs for MTA's bus, Blue Line, Green Line, and Red Line operating modes, as well as support department costs related to operations. Even though MTA operating costs have been used for purposes of analysis in this section, no determination has been made about who would operate any such new service. Either MTA or other municipal operators could provide all or parts of this new service.

The MTA O&M cost model estimates staffing requirements, labor costs, and non-labor expenses by transit mode (i.e., Motor Bus, Blue Line, Green Line, Red Line) and department within each mode. The model is calibrated to MTA's fiscal year (FY) 1998-99 Adopted Budget[1]. Overhead costs are allocated to the transit modes based on the allocations made for MTA's Adopted Budget. The model uses operating characteristics (e.g., peak vehicles, number of stations, passengers) to determine future costs. As future operating plans change (e.g., new rail lines are constructed), costs change accordingly.

1 Los Angeles County Metropolitan Transportation Authority. Fiscal 1998-1999 Adopted Budget. June 1998.

The model meets Federal Transit Administration (FTA) guidelines[2] for estimating operating costs. These guidelines specify that:

- Costs are computed by estimating labor and materials needed to provide a given level of service, and then unit costs are applied to the estimated future labor and material cost items;
- Costs are calculated based on operating characteristics for each mode (e.g., Red Line train hours), rather than for all modes combined (e.g., systemwide passengers);
- Each reported labor and non-labor expense is calculated separately, which ensures that equations are mutually exclusive and cover all operating costs; and
- Most cost items are variable, meaning that cost estimates will change with projected changes in service.

The model calculates costs separately for each labor and non-labor item in MTA's FY 1999 budget. The driving variables used in the O&M cost model are presented in Table 5-2 below.

TABLE 5-2
O&M COST MODEL VARIABLES

Input Statistic	MTA Bus	Rail Modes
Annual Boardings (Unlinked Passengers)	X	X
Peak Vehicles	X	X
Active Fleet Vehicles	X	X
Operating Divisions	X	X
Annual Revenue Bus/Car Miles	X	X
Annual Revenue Bus/Train Hours	X	X
Contract/BDOF Service Hours	X	
Route Miles		X
Elevated Stations	X	X
At-Grade Stations	X	X
Subway Stations	X	X
Total Stations		X
Automated Operation (Green Line)		X

For each alternative, O&M costs were calculated for the entire MTA system of bus, Red Line, Green Line and Blue Line service.

If service provided by another municipal operator is affected, incremental service statistics such as annual revenue vehicle miles, annual revenue vehicle hours, and fleet size are reported based on output from the MTA transportation simulation model. Three other operators besides MTA are affected by proposed modifications to transit service for this study corridor: Los Angeles Department of Transportation (LADOT), Santa Monica Municipal Bus Lines, and Culver City Municipal Bus Lines. Service statistics for these operators are provided in Technical Report, Volume 1. For purposes of accounting for these changes in the overall O&M cost, incremental annual revenue vehicle hours are multiplied by the municipal operator's operating expense per revenue vehicle hour as reported in the 1998 National Transit Database. To adjust these hourly costs to 1999 dollars, a 3 percent inflation factor is used.

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2 Federal Transit Administration. Procedures and Technical Methods for Transit Project Planning (Supplement). U.S. Department of Transportation, February 1993.

The total annual O&M cost for MTA service is $842 million for the 2020 No Build[3] condition. Table 5-3 reports incremental costs over No Build, as well as incremental costs over Transportation System Management (TSM), for MTA and other municipal operator services.

The incremental operating cost of about $5 million is needed to establish the improved service defined in the TSM Alternative. Another $2 million or so is needed for services directly related to the Wilshire BRT (Alternatives 1, 1A or 1B). Adding the Exposition BRT leads to another $11 million in annual operating costs. The highest incremental operating costs occur if Exposition LRT is added, leading to about $20 million in additional annual operating costs over Wilshire BRT.

For the other municipal operators, the assumed service plans at most add under $2 million in annual operating costs for LADOT or Culver City. Santa Monica Municipal Bus Lines potentially can enjoy operating savings especially when full Exposition routes are introduced, since it allows the opportunity to cut back or eliminate its express service to downtown Los Angeles. Details of assumed route modifications and service levels are provided in Technical Report, Volume 1. Of course, the actual implementation of these assumed route modifications is at the discretion of each individual operator.

TABLE 5-3
INCREMENTAL ANNUAL OPERATING AND MAINTENANCE COSTS OF PRELIMINARY ALTERNATIVES (IN 1999 $ MILLIONS)

Alternative	Cost over No Build	Cost over TSM
Transportation System Management (TSM)	**$4.9**	**N/A**
MTA	$6.8	
LADOT	$0.8	
Santa Monica Municipal Bus Lines	-$3.7	
Culver City Municipal Bus Lines	$1.0	
1, 1a, 1b. Wilshire BRT	**$6.9**	**$2.0**
MTA	$8.8	$2.0
LADOT	$0.8	$0.0
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	1.0	$0.0
2. Wilshire BRT + Exposition BRT	**$17.4**	**$12.5**
MTA	$21.5	$14.7
LADOT	$0.7	-$0.1
Santa Monica Municipal Bus Lines	-$6.6	-$2.8
Culver City Municipal Bus Lines	$1.8	$0.8
2a. Wilshire BRT + Exposition BRT Minimum Operating Segment (MOS)	**$14.7**	**$9.8**
MTA	$15.9	$9.1
LADOT	$0.7	-$0.1
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	$1.8	$0.8
3. Wilshire BRT + Exposition LRT	**$27.5**	**$22.6**
MTA	$31.1	$24.2
LADOT	$1.2	$0.4
Santa Monica Municipal Bus Lines	-$6.6	-$2.8

[3] Mid-City/Westside Transit Draft and EIS/EIR refers to "No Build" as the No Action Alternative. For the purposes of this section No Build and No Action Alternative will be used interchangeably.

TABLE 5-3 INCREMENTAL ANNUAL OPERATING AND MAINTENANCE COSTS OF PRELIMINARY ALTERNATIVES (IN 1999 $ MILLIONS)		
Alternative	**Cost over No Build**	**Cost over TSM**
Culver City Municipal Bus Lines	$1.8	$0.8
3a. Wilshire BRT + Exposition LRT Minimum Operating Segment (MOS)	**$24.0**	**$19.0**
MTA	$24.7	$17.9
LADOT	$1.2	$0.4
Santa Monica Municipal Bus Lines	-$3.7	$0.0
Culver City Municipal Bus Lines	$1.8	$0.8

5.1.3 Financial Capability to Build and Operate

MTA has used its financial forecasting model for Los Angeles County to assess the financial feasibility of the Mid-City/Westside corridor alternatives. This financial model is the tool used to project all capital and operating costs and revenues for all transportation modes in Los Angeles County from FY 2000 through FY 2025.

In a document submitted to the FTA (Section 5309 submittal, July 2000), the MTA provided detailed analysis from the financial forecasting model to establish the ability to fund projects in the Mid-City/Westside, San Fernando Valley, and Eastside corridors of Los Angeles County. The No Build scenario was modeled to provide a baseline for the build alternatives. Initial No Build scenario financial results indicated significant but manageable operating shortfalls could occur in FY 06 through FY 09 if no further actions are taken by the MTA. A $438 million operating deficit, or 3.3% of the total MTA operating budget of $13.2 billion, was projected for the period FY 2000-2010. This deficit is expected to be largely addressed through a number of cost reduction strategies, which is projected to essentially balance the No Build scenario to within 0.5% of the overall operating budget. This balanced plan provides a basis for analyzing the financial impacts of introducing the three corridor projects.

The model includes revenues from the State Traffic Congestion Relief Plan (AB 2928) and FTA 5309 New Starts funds, which are expected to provide 80% of the capital funding, needed for the capital costs of the corridors. The balance of the capital funding plan for these projects will come from committed flexible federal funds (CMAQ and RSTP) and local half-cent sales tax funds. The funding plan for the projects is stable and reliable given the commitments of funding recently realized. The financial analysis indicates that funding is available to complete the Wilshire BRT alternative for the Mid-City/Westside so that operations can begin as soon as FY 2005.

The combined impacts of the San Fernando Valley, Mid-City/Westside and Eastside projects lead to a projected operating deficit of $151.2 million for the FY 2004-FY 2010 period, if no further actions are taken to balance the operating plan. The most challenging shortfalls are projected to occur in FY 2007, FY 2008, and FY 2009.

MTA has established a Cost Reduction Team whose goal is to reduce bus and rail hourly operating costs. The strategies developed by the team will be phased-in beginning in FY 2005 to reduce hourly operating costs by one dollar per year for six years, for a total of six dollars per hour in 2010. This cost reduction plan will achieve the $151.2 million system wide savings needed to ensure a balanced operating plan with the three corridor projects.

The twenty-year cash flows indicate that MTA has the financial capacity to build and operate the Wilshire BRT project while continuing the operation and maintenance of the entire regional transit system. Table 5-3A lists the anticipated source of capital funds and the expected amount for the Mid-City/Westside project as adopted by the MTA. Under this plan, the majority of funds (76%) come from State sources, with 23% expected from FTA Section 5309 New Starts funding. The remainder is provided by local funding (1%).

TABLE 5-3A
PROPOSED FUNDING PLAN FOR MID-CITY/WESTSIDE TRANSIT PROJECT

Funding Source	Amount (millions)	Total (millions)
FTA Section 5309 New Starts	$78.6	
Subtotal Federal Sources		$78.6 (23%)
Traffic Congestion Relief Program	$256.0	
State Regional Improvement Funds (AB 1012)	$2.5	
Subtotal State Sources		$258.5 (76%)
Proposition C 40%	$3.2	
Subtotal Local Sources		$3.2 (1%)
TOTAL (ALL FUNDING SOURCES)	**$340.3**	**$340.3 (100%)**

Note: Project costs as submitted in Section 5309 report; represented Westside project is Wilshire BRT Alternative 1/1a.

Since the submittal of the Section 5309 report, refinements have been made to the capital cost of the baseline Wilshire BRT alternative. In addition, other variations to the baseline Wilshire BRT alternative potentially increase the project costs reflected in the Section 5309 submittal (e.g., a curbside BRT lane rather than a median BRT lane). These modifications would affect the Section 5309 analysis by up to $23 million. The MTA anticipates an annual allocation ranging between $60-$75 million for the Section 5309 New Starts Program. A bridge loan or other financial instrument may become necessary in the event that the annual appropriations fall short of expected expenditures. Within the preliminary 5309 report submitted in July 2000, such financial adjustments were discussed and shown, including preliminary construction cash flows for the three corridors, and specifically the Wilshire BRT project. Such proposals would certainly be considered affordable well within the year 2020 planning horizon and funding capacities.

Beyond the Wilshire BRT project in the Mid-City/Westside Corridor, further financial capacity exists to fund another project such as one of the Exposition alternatives. Such a project is anticipated to be partially funded with federal New Starts funds. The MTA's Section 5309 submittal establishes that an Exposition BRT or LRT project with a capital cost of $300 million can be built from FY 2009 through FY 2013, and an additional operating cost of nearly $18 million annually can be supported. These incremental capital and operating costs are adequate for the Exposition BRT (full length or MOS) alternative, and the Exposition LRT MOS alternative.

The MTA has estimated that over $12 billion in unallocated funding is available over the life of its Long Range Financial Plan between the years 2010 and 2025. This amount is certainly adequate to fund any of the alternatives examined in this document. Selection of any alternative, which requires funding beyond the financial analysis outlined in the Section 5309 submittal, would need to be integrated into the MTA's Long Range Plan, since it would commit funds that could otherwise be considered for other projects.

5.2 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section provides a variety of measures to evaluate and compare the alternatives under study. These measures are consistent with the FTA guidelines for assessing major investments.[4] Enactment of the Transportation Equity Act for the 21st Century (TEA-21) in 1998 requires that FTA evaluate and rate candidate New Starts projects as the basis for approving projects for federal funding. Table 5-4 summarizes the indices included in this section.

TABLE 5-4
COMPARATIVE ANALYSIS OF ALTERNATIVES

Analysis Category	Measures
Effectiveness in Improving Mobility	Ridership
	Travel Time Comparison
	Travel Time Savings
Cost-Effectiveness	Annualized Cost per New Daily Transit Trip
Operating Efficiencies	Operating Cost per Passenger Mile
Equity	Discussion of Demographic Factors

Other analysis for FTA measures related to air quality and transit supportive land use can be found in Section 3.8 (Air Quality) and Section 3.4 (Land Use/Neighborhoods and Communities). This chapter ends with a synthesis of trade-offs between the alternatives.

5.2.1 Effectiveness in Improving Mobility

Various elements serve as indicators of improved mobility. Ridership describes the amount of people using the project alternative, as estimated through a transportation demand model. A travel time comparison of average speeds and overall travel times provide an understanding of how the transit alternatives perform during an average trip between two points. Travel time-savings assesses the annual hours of time saved from both transit and automobile users as a result of the project.

Ridership

For all project alternatives, ridership is a function of travel time and cost. All else being equal, the faster technologies attract more riders. Longer segments have higher ridership because they serve a larger area, incorporate more stations, and potentially reduce transfers. Alignment choice also affects ridership, as does the amount of delay at intersections, which is affected by the amount of signal priority that can be assumed for an alternative.

Ridership has been estimated for each alternative through the MTA's travel simulation model, based on the forecast year 2020. Individual model runs were performed for the following scenarios:

- No Action (Baseline)
- TSM
- Wilshire Bus Rapid Transit (Baseline Medium-Running)

[4] *Technical Guidance on Section 5309 New Criteria*, Federal Transit Administration Office of Planning, July 1999.

- Wilshire BRT + Exposition Bus Rapid Transit (Full Length)
- Wilshire BRT + Exposition BRT (MOS)
- Wilshire BRT + Exposition Light Rail Transit (Full Length)
- Wilshire BRT + Exposition LRT (MOS)
- Exposition BRT
- Exposition LRT

The final two ridership runs for Exposition BRT and Exposition LRT independently (without Wilshire BRT) do not correspond with alternatives provided in this document since all alternatives being studied include the Wilshire BRT. However, these model runs were performed to provide a worst-case condition for evaluating environmental impacts along the Exposition route.

The projected ridership for each alternative is shown on Table 5-5 below. The "boardings" column represents the number of passengers expected to use the system *within* the study area, that is, board and disembark at stations constructed as part of the Mid City- Westside Transit Corridor Project. While boardings give an indication of transit activity, these numbers should not be used in trying to assess how many more riders are attracted to transit since a single rider may need to transfer one or more times, accounting for more than one boarding to complete a single trip. 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 Action and TSM alternatives, per FTA guidelines.

TABLE 5-5
RIDERSHIP IN FORECAST YEAR 2020

Alternative	Daily Fixed Guideway Boardings*	Incremental Linked Trips (Daily)	
		To No Action	To TSM
TSM	N/A	1,100	N/A
1, 1a, 1b. Wilshire BRT	39,600	12,200	11,100
2. Wilshire BRT and Exposition BRT	36,300 Wilshire BRT 29,000 Exposition BRT	19,500	18,400
2a. Wilshire BRT and Exposition BRT (MOS)	36,400 Wilshire BRT 20,500 Exposition BRT	18,500	17,400
3. Wilshire BRT and Exposition LRT	32,500 Wilshire BRT 51,400 Exposition LRT	27,200	26,100
3a. Wilshire BRT and Exposition LRT (MOS)	38,300 Wilshire BRT 27,200 Exposition LRT	15,600	14,500

*BRT boardings on BRT facility only (does not include "tails" of feeder routes).
Note: A peak-hour only BRT, discussed as a mitigation of impacts associated with replacement parking (see Section 3.2), would capture roughly 50% of the estimated new transit riders of an all-day service BRT.

There is a very modest increase in ridership for the TSM alternative. The TSM alternative contained some assumptions to improve efficiency in the Westside by cutting back less productive routes and supplementing more productive routes. Only a modest amount of service was added on the Wilshire rapid bus; its frequency of service was limited by the time spacing needed to retain the ability to grant transit priority at intersections.

This frequency of service is maintained for the Wilshire BRT model run (representing Alternatives 1, 1a and 1b), so the increase in ridership over TSM is due to the improved transit facility and travel time.

While the differences in configuration for the Wilshire BRT lane may lead to variations in travel time (and therefore ridership) between Alternatives 1, 1A, and 1B, for purposes of this study a single model run was performed to represent any version of the Wilshire BRT.

Since the Wilshire BRT is incorporated in all build alternatives, any alternative which adds service on the Exposition route will lead to higher ridership than Wilshire BRT alone. Therefore, Alternatives 2, 2A, 3 and 3A all lead to more incremental linked trips than the Wilshire BRT alone. Alternative 3 (Wilshire BRT and Exposition LRT) has the greatest potential to attract new riders, with 27,200 daily added trips. This is substantially higher than the Wilshire BRT alternative alone or with the Exposition BRT alternatives.

In comparing Exposition MOS alternatives, the BRT MOS provides greater new ridership than the LRT MOS. This is because the service plan on the Exposition BRT MOS is largely intact, since many of the routes feeding the Exposition BRT are unaffected by the segmentation. In contrast, the Exposition LRT MOS by definition must terminate its rail service at Venice Boulevard/Washington Boulevard and depend on transit transfers (or drive access) for the remaining portion of the route.

It should be noted that the ridership figures for alternatives with a project on the Exposition route (i.e., Alternatives 2, 2A, 3 and 3A) incorporate the benefits of Wilshire BRT plus the Exposition alternative. Ridership for an Exposition alternative alone cannot be derived by merely subtracting out Wilshire BRT ridership as reported under Alternative 1. To understand the independent impacts of an Exposition project without Wilshire BRT, separate model runs were performed for the full Exposition BRT and full Exposition LRT. These showed 11,600 and 17,200 incremental daily linked trips respectively.

Travel Time Comparison

Table 5-6 compares the runtimes, average speed, and headways for the project build alternatives. This table provides a direct comparison of these selected service characteristics as described in Chapter 2.

TABLE 5-6
COMPARISON OF TRAVEL TIME CHARACTERISTICS

Alternative	Total Runtime Downtown SM-LA	Average Speed	Peak period, Base Headways (minutes)
1, 1a, 1b. Wilshire BRT (downtown Santa Monica to 5th/Grand)	58-60 minutes	20-23 mph on busway segment	3, 6.6
2. Wilshire BRT and Exposition BRT (downtown Santa Monica to 7th/Flower)	47 minutes (all-stop) 39 minutes (skip-stop)	21 mph (all-stop) 26 mph (skip-stop)	5, 10 (all-stop) 10, 0 (skip-stop)
3. Wilshire BRT and Exposition LRT (downtown Santa Monica to 7th/Flower)	42 minutes	24 mph	5, 12

Alternatives 2 and 3 list service characteristics for Exposition alternatives only; Wilshire BRT service characteristics in these alternatives are identical to the description for Alternative 1: Wilshire BRT. Alternative 2 describes characteristics of end-to-end routes; the service plan also involves rerouting portions of other MTA and LADOT routes onto the busway.

The quickest end-to-end trips between Santa Monica and downtown Los Angeles are provided by the Exposition LRT service and the Exposition BRT "skip-stop" route which serves selected stations only. The Wilshire BRT alternatives' travel times are hampered east of Western Avenue, since there is no exclusive bus lane and buses proceed similarly to how rapid buses currently travel on mixed-flow lanes. (The Wilshire BRT alternatives also have a different endpoint in downtown Los Angeles than the Exposition routes.) The ranges expressed for Alternatives 1, 1A and 1B reflect potential travel time variations since Alternatives 1A and 1B may be slower due to potential conflicts with left-turning and right-turning vehicles, respectively.

Travel Time Savings

This measure is defined as the total travel time savings that are expected to result from the Build Alternative in the forecast year (2020), compared to both the No Action and TSM alternatives. This aggregate value includes travel time savings for people making trips on transit (both new and existing transit riders) as well as savings that accrue to people using competitive modes (automobile users). This measure is calculated using reported values from the MTA's transportation simulation model, summarized in Table 5-7.

TABLE 5-7
VALUE OF TRAVEL TIME SAVINGS

Build Alternative	Total Annual Change (Millions of Hours)	
	Annual Savings to No Build	Annual Savings to TSM
1, 1A, 1B: Wilshire BRT (All 3 Alternatives)	1.2	0.9
2: Wilshire BRT and Exposition BRT (Full Length)	1.8	1.5
2A: Wilshire BRT and Exposition BRT (MOS)	1.8	1.5
3: Wilshire BRT and Exposition LRT (Full Length)	2.2	2.0
3A: Wilshire BRT and Exposition LRT (MOS)	1.5	1.2

Once again, since Alternatives 2 and 3 incorporate the Wilshire BRT project, travel time savings are greater than what is achieved by the Wilshire BRT project alone. Alternative 3, Wilshire BRT and Exposition LRT, provides the greatest potential for travel time savings.

5.2.2 Cost-Effectiveness

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 (increased transit ridership).

The FTA's cost effectiveness criterion is measured by the incremental cost per incremental passenger in the forecast year. This measure is based on the annualized total capital investment and annual operating costs, divided by the change in annual transit system ridership, expressed as the following equation:

$$\text{Cost Effectiveness Index} = \frac{\Delta\text{Capital Cost} + \Delta\text{O\&M Cost}}{\Delta\text{Linked Transit Trips}}$$

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 Action and TSM alternatives.

To calculate the change in capital cost, project costs discussed in Section 5-1.1 were aggregated according to their assumed useful life and annualized accordingly, using FTA annualization factors shown in Table 5-8:

TABLE 5-8 LIFE CYCLE ASSUMPTIONS		
Project Element	**Useful Life**	**Annualization Factor**
Right-of-way	100 years	0.070
Structures, trackwork, signals, electrification	30 years	0.081
Rail vehicles	25 years	0.086
Buses	12 years	0.126
Source: Technical Guidance on Section 5309 New Starts Criteria, FTA, July 1999.		

Annual operating and maintenance costs were calculated using the approach described in Section 5-1.2. The change in linked transit trips for the forecast year 2020 was determined using the MTA travel forecasting model.

Table 5-9 and Table 5-10 summarize the data used in the calculation of the cost-effectiveness index, and the resulting incremental cost per incremental passenger is shown in Table 5-11.

TABLE 5-9
COST-EFFECTIVENESS CALCULATION: INCREMENTAL VALUES OVER NO BUILD

Alternative	Annualized Capital Cost (millions)	Annual O&M Cost (millions)	Annual Linked Trips (millions)
Transportation System Management (TSM)	$10.35	$4.89	0.35
1. Wilshire BRT (Baseline Median-Running)	$31.14	$6.89	3.85
1A. Wilshire BRT (Median-Adjacent)	$31.14	$6.89	3.85
1B. Wilshire BRT (Curb Adjacent)	$31.92	$6.89	3.85
2. Wilshire BRT and Exposition BRT(Full Length)	$56.99	$19.42	6.16
2A. Wilshire BRT and Exposition BRT (MOS)	$41.60	$14.67	5.24
3. Wilshire BRT and Exposition LRT(Full Length)	$84.04	$29.50	8.58
3A. Wilshire BRT and Exposition LRT (MOS)	$54.76	$23.99	4.92

TABLE 5-10
COST-EFFECTIVENESS CALCULATION: INCREMENTAL VALUES OVER TSM

Alternative	Annualized Capital Cost (millions)	Annual O&M Cost (millions)	Annual Linked Trips (millions)
1. Wilshire BRT (Baseline Median-Running)	$20.79	$2.00	3.51
1A. Wilshire BRT (Median-Adjacent)	$20.79	$2.00	3.51
1B. Wilshire BRT (Curb Adjacent)	$21.57	$2.00	3.51
2. Wilshire BRT and Exposition BRT (Full Length)	$46.64	$14.53	5.81
2A. Wilshire BRT and Exposition BRT (MOS)	$31.25	$9.78	5.48
3. Wilshire BRT and Exposition LRT (Full Length)	$73.69	$24.61	8.23
3A. Wilshire BRT and Exposition (LRT MOS)	$44.41	$19.10	4.57

TABLE 5-11 COST-EFFECTIVENESS OF BASELINE ALTERNATIVES: ANNUALIZED COST PER NEW DAILY TRANSIT TRIP		
Alternative	**Over No Build**	**Over TSM**
Transportation System Management (TSM) Alternative	$43.80	N/A
1. Wilshire BRT (Baseline Median-Running)	$9.90	$6.50
1A. Wilshire BRT (Median-Adjacent)	$9.90	$6.50
1B. Wilshire BRT (Curb Adjacent)	$10.10	$6.70
2. Wilshire BRT and Exposition BRT	$12.40	$10.50
2A. Wilshire BRT and Exposition BRT MOS	$9.70	$7.50
3. Wilshire BRT and Exposition LRT	$13.20	$11.90
3A. Wilshire BRT and Exposition LRT MOS	$16.00	$13.90

The most cost-effective alternatives are those which yield a high number of new riders at a low incremental cost. Compared to No Action, the Wilshire BRT alternatives (1, 1A and 1B) and Alternative 2A (Wilshire BRT and Exposition BRT MOS) all have very efficient cost-effectiveness measures at under or around $10 per added rider. Alternative 2 (Wilshire BRT and Exposition BRT) and Alternative 3 (Wilshire BRT and Exposition LRT) also have well-performing cost-effectiveness measures at about $12 and $13 per added new rider, respectively. Finally, Alternative 3A (Wilshire BRT and Exposition LRT MOS) follows closely behind at $16 per added rider.

The TSM Alternative shows a very high cost per added rider over No Action, because capital cost improvements under this alternative (converting the Wilshire rapid bus fleet to double-articulated vehicles and providing corresponding room in a maintenance facility) do not increase ridership as much as give more riders a seat. (Under No Action, there are unacceptable passenger loads for Wilshire rapid bus service.) While this is a significant improvement in the quality of transit service, it does not get reflected in this measure.

The cost-effectiveness of alternatives compared to TSM generally follow the same relationship as No Action, with lower costs per added rider by $2 to $3.50. The Wilshire BRT alternatives (1, 1A and 1B) remain the most effective at under $7 per added rider, followed by Alternative 2A (Wilshire BRT and Exposition BRT MOS) at $7.50 per added rider.

Cost-effectiveness calculations were also completed for the subway design options for the alternatives involving the Exposition right-of-way. The subway sections for the Exposition BRT and LRT options tend to add about $2.00 to the cost per added rider. Results are summarized in Table 5-12 below:

TABLE 5-12 COST-EFFECTIVENESS OF ALTERNATIVES WITH SUBWAY DESIGN OPTIONS: ANNUALIZED COST PER NEW DAILY TRANSIT TRIP		
Alternative	**Over No Build**	**Over TSM**
2. Wilshire BRT and Exposition BRT with subway section	$14.40	$12.60
2A. Wilshire BRT and Exposition BRT MOS with subway section	$11.70	$9.70
3. Wilshire BRT and Exposition LRT with subway section	$14.40	$13.10
3A. Wilshire BRT and Exposition LRT MOS with subway section	$18.00	$16.00
Note: Wilshire BRT uses Alternative 1 (baseline) definition.		

5.2.3 Operating Efficiency

The FTA uses a single measure for the Operating Efficiencies criterion, which is change in operating cost per passenger mile for the entire regional transit system. The basic calculation involves dividing the system annual operating cost for transit service by the system annual passenger-miles projected for the year 2020. Calculation of the total transit operating costs is discussed under Section 5-1.2, (Operations and Maintenance Costs). System annual passenger-miles are produced from the MTA transportation model.

It should be noted that operating costs were based on adjusting model output statistics so that modeled statistics for 1998 are similar to existing MTA operations in 1998. Passenger-miles (which are not needed for the O&M model) remain unadjusted so it is likely that the cost per passenger-mile should be higher for all alternatives. Regardless, the relative standing of all alternatives should be the same. Table 5-13 presents the operating cost per passenger mile.

TABLE 5-13
OPERATING COST PER PASSENGER MILE

Alternative	Operating Cost per Passenger Mile
No Action	$0.31
TSM	$0.32
1, 1A, 1B. Wilshire BRT	$0.31
2. Wilshire BRT and Exposition BRT(Full Length)	$0.32
2A. Wilshire BRT and Exposition BRT(MOS)	$0.32
3. Wilshire BRT and Exposition LRT (Full length)	$0.32
3A. Wilshire BRT and Exposition LRT(MOS)	$0.32

This measure leads to small distinctions between alternatives, since operations associated with these projects are dwarfed when incorporated in operations of the countywide transit system.

5.2.4 Equity

For purposes of this analysis, and consistent with the Reference Manual, National Transit Institute Training Program for Major Investment Studies (National Training Institute and Parsons Brinckerhoff Quade & Douglas, 1995), equity refers to the relative relationship of costs and benefits for a project alternative. Equity considerations generally fall into three interrelated classes: (1) the extent to which the transportation investments improve transportation service to various population segments (i.e., the extent to which transit improvements benefit the transit dependent); (2) the distribution of project costs across the population through the funding mechanisms used for the local contribution for construction and operation; and (3) the incidence of significant environmental impacts.

All of the analysis conducted for the Mid-City/Westside Transit Corridor Project, including the Re-Evaluation/Major Investment Study Report (MTA, 2000), as well as the Purpose and Need, Environmental Justice, and Socioeconomics section of this document, indicate that the study area warrants a significant investment for transit investments, as supported by the following facts:

- **The Need for Transit Improvements has been Established in Previous Studies.** Providing high-capacity transit service improvement has been long recognized in the Mid-City/Westside Area. Since the 1970's, the LACMTA and its predecessors (SCRTD, LACTC) have conducted numerous transportation planning and environmental impact studies that established the need and feasible locations for either bus, light rail and/or heavy rail east-west service in various parts of the study area.

- **Study Area Contains A Major Concentration of Activity Centers and Destinations.** The area contains the largest concentration of major activity centers and destinations within the Los Angeles metropolitan region. Many of these centers are located within the most congested portion of the study area north of the Santa Monica Freeway (I-10) and east of the San Diego Freeway (I-405).
- **The "Centers Concept" Land Use Policy is Transit Based.** Land use policies in the Los Angeles metropolitan region have traditionally been founded upon the framework that access to major activity centers would be facilitated through a network of transit connections. The recently completed Los Angeles General Plan Framework reinforced this concept as a continuing policy framework for the City of Los Angeles. New growth is planned and encouraged to occur only in areas that are served by transit.
- **There is an Existing Concentration of Transit Supporting Land Uses.** The existing activity centers in the study area are a central part of a large concentration of land uses that are considered to be transit supporting (high-density housing, commercial and retail). In fact, roughly 30 percent of the land area within the study area falls into this category. Patterns of transit supporting land uses are concentrated along the Santa Monica Boulevard/Wilshire Boulevard corridors. A lesser concentration is evident along a southern oriented Venice Boulevard corridor.
- **High Study Area Population and Employment Densities Support Transit.** Population and employment densities in the study area are the highest within the metropolitan region, averaging approximately 13,883 persons per square mile and 9,167 employees per square mile.
- **There is a History of Transit Usage in the Study Area.** Existing transit usage within the study area is proportionally higher than any other area in Los Angeles County (13.64 percent for the study area versus 6.8 percent for the County). Because there is a large base of existing transit service and transit patrons, increasing the transit mode share through increased service would represent a natural extension of existing patterns and trends.
- **There is a Significant Transit Dependent Population in the Study Area.** Part of the underlying reason for high transit usage in the study area is that a significant number of households do not own an automobile and have low incomes. According to the 1990 Census, approximately 18.33 percent of households did not have a vehicle compared to 10.90 percent for the County. The majority of these households are concentrated in the eastern and northeastern portion of the study area. In addition, in 1990, 20.91 percent of the population of the study area was below poverty status compared to 14.76 percent in the County.
- **The Study Area Is Expected to Continue to Capture a Large Share of Regional Population and Employment Growth.** Population and employment forecasts to the year 2020 adopted by the Southern California Association of Governments clearly suggest that the study area will capture a large share of growth over the next 20 years. This growth will place further demands on transit service and well as result in increasing congestion on local roadways and regional highways serving the study area.
- **Continued Growth in the Business Services Sector (Entertainment and Media Related) Underlies the Future Development Potential in the Study Area.** Growth in the study area will continue to be fueled by the fact that entertainment and media-related businesses are concentrating in the western part of the corridor. Currently, the study area is the center of approximately 1/3 of

all new office construction underway in LA County, which makes it the largest office market in Los Angeles. Real estate analysts expect that the demand for production and creative spaces will continue to be robust. The industries and businesses that are attracted to the study area are those that are expected to be the foundation of the local and regional economy for many years into the future.

- **There are Substantial East-West Travel Patterns that are Not Currently Served by a High Capacity Transit System.** Travel patterns currently indicate that the study area is a primary attraction for work trips with origins in the West and East San Fernando Valleys. A simplified "spider network" of travel patterns derived from origin-destination data in the LACMTA Travel Model suggests north-south travel patterns from the San Fernando Valley convert to east-west demand within the study area. The spider network for 1997 and 2020 conditions both indicate there is strong east-west travel demand along major east-west corridors: Santa Monica Boulevard, Wilshire Boulevard, Santa Monica Freeway and Exposition/Venice Boulevards. None of these corridors are currently served by a high capacity transit system.
- **Peak Hour Congestion on Study Area Roadways Underlies Need for Transit Improvements.** There is substantial peak hour congestion in the northern portion of the study area. Vehicular travel to the East and West San Fernando Valleys must ultimately pass through the Sepulveda or Cahuenga passes. Access patterns to these routes are congested during the peak travel hours as motorists attempt to pass northward at either the western or eastern ends of the study area.
- **Local Policies are Oriented Toward Demand Management and Transit Solutions rather than on Physical Roadway Improvements.** Because of the level of buildout and density within the study area, local jurisdictions have generally determined through their local policies that congestion relief improvements should focus on travel demand management rather than on physical improvements such as widening and new roadways. In a number of cases, local communities desire to eliminate cut through and neighborhood traffic or to support more livable downtown or commercial areas, are supporting initiatives to limit roadway capacity or further slow traffic flow; thus leaving transit improvements as one of the only viable remaining alternatives to reduce traffic volumes and congestion-related delays.

With respect to cost-effectiveness, which is a measure used to evaluate how the costs of a transit project (for both construction and operation) compare to the expected benefits (increased transit ridership), the financial analysis indicates that the Wilshire BRT and Wilshire BRT and Exposition BRT MOS have a very efficient cost-effectiveness measure of approximately $9 per added rider (as compared to the No Action Alternative). Wilshire BRT and Exposition BRT and Wilshire BRT and Exposition LRT also have a well-performing cost-effectiveness measure of about $12, and $13 per added new rider, respectively. Finally, Wilshire BRT and Exposition LRT MOS follows closely behind at a little over $15 per added rider. Only the TSM Alternative shows a very high cost per added rider over the No Build Alternative, primarily due to the capital costs (converting the Wilshire Rapid Bus fleet to double-articulated vehicles and providing corresponding room in a maintenance facility) do not increase ridership as much as give more riders a seat. While this is a significant improvement in the quality of transit service, it does not reflect well in the cost-effectiveness measure. In summary, all of the alternatives that were evaluated in either the EIS/EIR or as part of the transportation modeling and financial analysis perform well with respect to cost-effectiveness. With respect to environmental impacts, particularly as they could disproportionately affect high minority and low income populations, the Wilshire route has several station locations that contain high concentrations of minority and low-income populations; however, the Corridor as a whole contains less than 33% minority and low-income households. Because the percentage of minority and low-income populations is below 33% (with a minority population of 30% and a low-income population of 25%), infrastructure and environmental impacts associated from the proposed Wilshire BRT Alternative is not anticipated to disproportionately affect low-income or minority populations in close proximity to the project area. Therefore, the impacts are not considered significant to low-income and minority households.

The majority of the Census Block Groups identified as high minority and low income overlap within the Exposition route, indicating distinct patterns of correlation and possible disproportionality with regard to minority populations and low-income populations and their socioeconomic conditions. As a whole, the Exposition Corridor contains a large low-income and minority population, specifically concentrated near the stations located between 7th/Flower Street and La Cienega Boulevard.

Because the Exposition Corridor contains a disproportionately high concentration of both low-income and minority households, the physical and environmental impacts associated with the proposed alternatives using the Exposition Corridor would disproportionately effect those households. Evaluation of the possible MTA transit routes was based largely on lands owned by the MTA. The right-of-way (ROW) proposed for use with the Exposition alternatives is currently owned and operated by the MTA and allows the alternatives to be fiscally feasible. Public transportation projects are beneficial to low-income households because of the reliance those individuals have on public transit for mobility. While the environmental impacts associated with this alternative would be disproportionately distributed to both low-income and minority households, the result of an improved transit system for those individuals is considered beneficial. The environmental consequences of the proposed project primarily consist of an increase to the air quality, noise, and traffic levels currently existing in the area. These impacts do not outway the benefits of installing an improved public transportation system to an area of target users. Therefore, the impacts are not considered significant to either low-income or minority households.

In summary, there is equity among the extent to which transportation investments benefit the transit dependent, the cost-effectiveness of the alternatives, and the incidence of significant environmental impacts.

5.2.5 Tradeoffs Among Alternatives

The Wilshire BRT Alternative offers substantial and cost-efficient benefits to existing and future transit patrons, as well as substantially enhancing the "people-carrying" capacity of Wilshire Boulevard. As demonstrated previously in the Chapter, there is more than sufficient financial capability to implement the Wilshire BRT Alternative.

An outstanding issue for the Wilshire BRT pertains to achieving a workable consensus to move forward with this alternative. Implementing a "peak-hour" only option as a mitigation measure for parking impacts may enhance the feasibility of this alternative and would remove the need for replacement parking along with a cost reduction of more than $60 million. It should be noted that this option would capture one-half of the new transit riders, compared to the baseline alternative; thus, cost per new rider would increase substantially.

In the near-term, the Wilshire BRT plus Exposition BRT MOS provides the most cost-effective approach. However, in the longer-term (2025), the Wilshire BRT plus Exposition LRT Alternative offers some advantages over a similar, full-length Exposition BRT alternative as there is potential connectivity with the Pasadena and Eastside LRT.