8-6 PURPOSE AND NEED AND FINANCIAL COMPARISON OF ALTERNATIVES

This chapter compares the various alternatives under consideration in terms of the following:

- Capital Cost Estimates
- Operating Cost Estimates
- Financial Capability to Build and Operate
- Effectiveness in Improving Mobility
- Cost-Effectiveness
- Operating Efficiencies
- Environmental Benefits
- Equity
- Community Involvement Response
- Purpose and Need
- Significant Trade-Offs

8-6.1 PURPOSE AND NEED COMPARISON OF ALTERNATIVES

As described in Chapter 1 of the FEIR, the MTA and other government agencies have set several goals and objectives for a project in the San Fernando Valley East-West Transit Corridor. This section compares how well each of the Rapid Bus alternatives considered meets those goals (see Table 1-5 of the FEIR). The specific goals of a transportation project in the corridor are to:

- Improve mobility in the San Fernando Valley,
- Support land use and development goals,
- Maximize community input into the project development process,
- Be compatible with and enhance the physical environment,
- Minimize impacts on the community, and
- Provide a cost-effective project within the ability of MTA to fund, including capital and operating costs.

This section summarizes information provided in other parts of the environmental document in the context of these goals.

8-6.1.1 Mobility in the San Fernando Valley

Several of the project objectives fall under the general goal of improving mobility in the Valley. A project in the East-West Transit Corridor should provide an alternative to the congested Ventura Freeway (US 101 / SR 134) and relieve congestion through the Cahuenga and Sepulveda passes (by providing Valley stations that are connected to the Metro Red Line). In addition, a project should minimize total travel time for patrons, provide enhanced bi-directional

transit service, and provide opportunity to intercept traffic passing through the Valley; in other words, provide transportation alternatives to auto traffic passing through the Valley.

In general, all of the Rapid Bus alternatives would improve mobility with improved transit service. The alternatives, particularly the RB-Network alternative, would provide improved travel speeds in areas north of the MTA ROW. The RB-Network alternative would also provide improved travel speeds along north-south corridors in the Valley. All of the Rapid Bus alternatives connect in some way to the Metro Red Line. However, the Rapid Bus alternatives, particularly the RB-5 alternative, would attract marginally few riders over the TSM alternative compared to the Locally Preferred Alternative, limiting the extent of mobility benefits. In addition, as congestion increases on urban arterial streets, the benefits of Rapid Bus will diminish and become less of an alternative to auto use in the Valley.

8-6.1.2 Support Land Use and Development Goals

Several project objectives fall under the general goal of encouraging transit-supportive land use and development goals. A project should provide Transit Oriented Development (TOD) linkages between activity centers, achieve City of Los Angeles *General Plan Framework* and *Transportation Element* goals for increased transit mode split and concentration of growth in targeted growth areas and in transit-oriented districts as designated by the Community Plans, provide transit enhancements as described in the *Warner Center Specific Plan* and facilitate implementation of the 2001 SCAG RTP Baseline 2025 busway project in the corridor.

All of the three Rapid Bus alternatives would provide increased transit linkages between existing activity centers in the Valley. However, by precluding the construction of high-capacity mass transit service on a corridor serving high activity centers which are suitable for future transit oriented developments, the three Rapid Bus alternatives would not support the City's "focused growth" policies and goals which would accommodate the City's growing housing needs without the need to accommodate these needs across larger areas. The failure to achieve the City's focused growth policies could result in pressure to accommodate the housing needs of the City's growing population across all areas, resulting in adverse impacts in low-density residential neighborhoods. Also, the three Rapid Bus alternatives would not support specific goals in the 2001 SCAG RTP, the Transportation Element, and other City plans for a busway and/or other high-capacity transit improvements in the MTA ROW.

8-6.1.3 Community Input

The goal of maximizing community input should be met with objectives including:

- Incorporation of citizen and policymaker input from previous studies in the corridor,
- Provision of opportunities for community input to the MIS/EIS/EIR process, and
- Incorporation of community views in the process.

Prior community involvement is discussed in Section 6-3.6 of the Final EIR. The Rapid Bus alternatives being considered in this Section were developed directly as the result of community

input on the Full BRT Alternative, and these alternatives further the incorporation of community views into the environmental process. However, it should be noted that the three Rapid Bus alternatives, like the Full BRT Alternative, are not universally supported by the community. Support for the Full BRT Alternative by other agencies, business groups, schools, community groups, and individuals would be disregarded if the Rapid Bus alternatives were selected over the Full BRT Alternative.

8-6.1.4 Compatibility with the Physical Environment

The project should be compatible with the physical environment, and should therefore minimize impacts on parklands and cultural resources, as well as minimize noise and air pollution impacts. In addition, the project should enhance the physical environment where possible.

The Rapid Bus alternatives are generally compatible with the physical environment. The alternatives' enhancement of the physical environment is minimal, limited to the installation of Rapid Bus shelters at stops where they can be accommodated within the sidewalk right of way.

8-6.1.5 Impacts on the Community

In order to minimize impacts on the community, a project should:

- Minimize business and residential dislocations, community disruption, and property damage,
- Avoid creating physical barriers, destroying neighborhood cohesiveness, or in other ways lessen the quality of the human environment,
- Minimize traffic and parking impacts, and
- Minimize impacts during construction.

The Rapid Bus alternatives would eliminate a number of on-street parking spaces. Due to the lack of park-and-ride lots, the loss of the on-street parking spaces would potentially create parking impacts that would require mitigation. The Rapid Bus alternatives would not result in barriers affecting neighborhoods or cohesiveness. Because construction would be limited to bus stops and installation of signal priority technology in the street, traffic disruption would be minimal and business and residential dislocations would not occur. However, the failure to achieve the City's focused growth policies could result in pressure to accommodate the housing needs of the City's growing population across all areas, resulting in adverse impacts in low-density residential neighborhoods.

8-6.1.6 Cost Effectiveness and Fiscal Capacity to Operate

In order to ensure that a transportation project is cost effective and that MTA has the fiscal capacity to operate it, the project should:

- Identify cost-saving measures to reduce project costs,

- Maximize the benefits associated with the use of right-of-way already purchased by the MTA, and
- Ensure fiscal consistency with the MTA Long Range Plan.

The Rapid Bus alternatives would reduce project capital costs because of their minimal construction requirements. However, the relatively high operating costs of operating a Rapid Bus system compared with the low number of new riders over the TSM Alternative results in poor cost-effectiveness ratings for the Rapid Bus alternatives, particularly the RB-5 Alternative. The Rapid Bus alternatives would also not make use of the MTA ROW, already purchased by MTA for transit use in the corridor. While not approved as a part of the LRTP, the capital costs of the Rapid Bus alternatives could be supported by the capital costs approved for the Full BRT Alternative. However, the operating deficits created by the Rapid Bus alternatives would be beyond those stated in the LRTP, with the operating deficit for the RB Network projected to approach that of the remainder of the MTA's entire system.

8-6.2 FINANCIAL ANALYSIS

This section discusses capital costs, as well as operating and maintenance (O&M) costs for the Rapid Bus alternatives, and then analyzes the MTA's financial capability to build and operate them.

8-6.2.1 Capital Cost Estimates

For the Rapid Bus alternatives, capital costs are comprised of the following elements:

- Bus stops
- Signal priority
- Maintenance facility upgrades
- Vehicles

Bus stops and signal priority costs are based on unit costs for the Metro Rapid program. Cost per bus stop is $40,000 in 2004 dollars, de-escalated 3% annually to 2001 dollars. Signal priority costs are estimated based on a per-mile cost of $100,000 in 2004 dollars, de-escalated 3% annually to 2001 dollars.

The cost of vehicles is provided as a range, corresponding with the range of vehicles calculated for each of the three Rapid Bus alternatives. The lower end of the range assumes Rapid Bus routes have minimal turnaround and no barriers to operating at a speed reflective of transit priority. The upper end of the range allows for bus turnaround routings that are typical for this area, and the potential for somewhat slower operating speeds since there cannot be widespread transit priority on east-west arterials across the San Fernando Valley.

Maintenance facility upgrades provide a budget for accommodating additional buses in existing divisions. The budget for each Rapid Bus alternative is based on prorating the maintenance facility budget for the BRT Alternative according to the number of buses associated with each

alternative. The maintenance facility budget is expressed as a range, corresponding to the range in vehicle estimates.

Table 8-6.1 (Summary of Capital Costs (2001 Dollars, in millions) provides the summary of capital costs in 2001 dollars for the Rapid Bus alternatives. The RB-Network ranges from $72.5 to $92.9 million; RB-5 ranges from $45.7 to $60.7 million; and RB-3 ranges from $42.6 to $56.4 million.

Table 8-6.1: Summary of Capital Costs (2001 Dollars, in millions)

	RB-3 Alternative	RB-5 Alternative	RB-Network Alternative
Construction (station stops, signal priority, maintenance yard upgrades)	$7.4	$7.8 - $7.9	$14.2 - $14.3
Vehicles	$35.2 - $49.0 *(64 to 89 buses)*	$38.0 - $52.8 *(69 to 96 buses)*	$58.3 - $78.7 *(106 to 143 buses)*
TOTAL	$42.6 - $56.4	$45.7 - $60.7	$72.5 - $92.9

Notes:
1. Line items include associated professional services and project contingency.
2. Ranges based on potential variances in operating environment, which affect fleet size.

Source: TMD, Gruen Associates, STV/URS, Manuel Padron & Associates, 2004.

Table 8-6.2 (Capital Cost Comparison (2001 Dollars, in millions)) presents the costs of the Rapid Bus alternatives alongside the TSM and BRT alternatives in 2001 dollars. While the Rapid Bus alternatives cost from $21.1 to $71.5 million more than the TSM Alternative in 2001 dollars, they are still substantially less than the $300.5 million capital cost of the Full BRT Alternative (lower-bound estimate), which is $279.0 million more than the TSM Alternative.

Table 8-6.2: Capital Cost Comparison (2001 Dollars, in millions)

Alternative	Total Capital Cost (2001 $)	Incremental Capital Cost to TSM (2001 $)
TSM	$21.5	NA
RB-3	$42.6 - $56.4	$21.1 - $35.0
RB-5	$45.7 - $60.7	$24.3 - $39.2
RB-Network	$72.5 - $92.9	$51.0 - $71.5
Full BRT (Lower-Bound Estimate)	$300.5	$279.0
Full BRT (Upper-Bound Estimate)	$289.2	$267.7

Source: Manuel Padron & Associates, 2001, 2004.

8-6.2.2 Operating Cost Estimates

Operating and Maintenance (O&M) costs in 2001 dollars were determined for the Rapid Bus alternatives using the methodology described in Section 6-2.2 of the FEIR. O&M costs are summarized in **Table 8-6.3** (Incremental Annual Operating and Maintenance Costs (2001 dollars, in millions)). O&M costs for TSM and BRT alternatives as discussed in Section 6-2.2 of the FEIR are included in this table for ease of comparison.

Table 8-6.3: Incremental Annual Operating and Maintenance Costs (2001 dollars, in millions)

	Cost Over No Build	Cost Over TSM
TSM		
MTA	$11.2	NA
LADOT	$0.4	NA
TOTAL	$11.6	NA
RB-3		
MTA	$20.8 - $22.6	$9.6 - $11.4
LADOT	$0.4	$0.0
TOTAL	$21.2 - $23.1	$9.6 - $11.4
RB-5		
MTA	$21.8 - $23.8	$10.6 - $12.6
LADOT	$0.4	$0.0
TOTAL	$22.2 - $24.2	$10.6 - $12.6
RB-Network		
MTA	$30.2 - $34.0	$19.0 - $22.8
LADOT	$0.4	$0.0
TOTAL	$30.6 - $34.4	$19.0 - $22.8
BRT Lower Bound Estimate		
MTA	$18.5	$7.3
LADOT	$4.0	$3.6
TOTAL	$22.5	$10.9
BRT Upper Bound Estimate		
MTA	$18.3	$7.1
LADOT	$4.2	$3.8
TOTAL	$22.5	$10.9

Note: Ranges based on potential variances in operating environment, which affects operating statistics and costs.

Source: Manuel Padron & Associates, 2001, 2004.

As in the development of capital costs, the O&M costs for the Rapid Bus alternatives are expressed as a range. The lower end of the range assumes Rapid Bus routes have minimal turnaround and no barriers to operating at a speed reflective of transit priority. The upper end of the range allows for bus turnaround routings that are typical for this area, and the potential for somewhat slower operating speeds since there cannot be widespread transit priority on east-west arterials across the San Fernando Valley. These potential variations lead to differences in estimated operating statistics (such as vehicle miles, vehicle hours, and fleet size) that are relevant in estimating O&M costs.

For MTA, operation of the Rapid Bus alternatives require an incremental operating cost over the TSM Alternative of anywhere from $9.5 million (for the lower bound RB-3 Alternative) to $22.8 million (for the upper bound RB-Network Alternative)

For LADOT, operating costs for the Rapid Bus alternatives are identical to those of the TSM Alternative, since no LADOT services were modified for the Rapid Bus alternatives.

8-6.2.3 Financial Capability to Build and Operate

The financial capability to build and operate the Rapid Bus alternatives are based on the capital and operating costs summarized in **Table 8-6.4** (Summary of Capital and Operating Costs for

Financial Capacity Analysis (2001 dollars, in millions). In making the financial analysis herein, it is assumed that the proposed operating funds for the Project can be transferred to operate the RB Alternatives. However, because of legal limitations imposed upon the use of capital funds that have been identified for the construction of the Project, these Project construction funds cannot be used to pay for the expense of operations.

Table 8-6.4: Summary of Capital and Operating Costs for Financial Capacity Analysis (2001 dollars, in millions)

	Total Capital Costs	Annual Operating Costs
RB-3		
Lower range (64 buses)	$42.6	$21.2
Upper range (89 buses)	$56.4	$23.1
RB-5		
Lower range (69 buses)	$45.7	$22.2
Upper range (96 buses)	$60.7	$24.2
RB-Network		
Lower range (106 buses)	$72.5	$30.6
Upper Range (143 buses)	$92.9	$34.4

Source: TMD, Gruen Associates, Manuel Padron & Associates, 2004.

The operating costs for the Project have been included through the LRTP process. The operating costs for RB-3 and RB-5 are similar to those of BRT. However, the annual operating costs for the RB Network are $8.1 to $11.9 million higher than the Project. If implemented, the RB Network would add substantially to the projected operating deficit previously identified in the Final EIR. This deficit is $151.2 million through FY 2010. The operation of the RB Network would add an additional amount ranging between $40.5 million to $59.5 million for the five-year time period. This would result in an overall combined deficit ranging from $191.7 to $210.7 million when adjusted for transferring the proposed operating funds of the Project to operate the RB Network. This would increase the currently planned and approved deficit by about one-third. In order to fund a deficit of this magnitude, services and programs in the Valley and/or elsewhere may have to be cut or reduced. Further deficits are unlikely given fiscal constraints confronting the MTA.

The capital costs and bus purchases associated with the RB alternatives range from $42.6 million to $92.9 million. These costs are substantially less than the capital costs of $289.2 million to $300.9 million estimated for the Project. However, because of legal limitations on the use of capital funds previously identified for construction of the Project, they may not be transferred for use to assist in funding the operating deficit of the RB Alternatives.

8-6.3 COMPARATIVE ANALYSIS OF ALTERNATIVES

This section analyzes the new Rapid Bus alternatives according to the measures identified in Section 6-3 of the Final EIR.

8-6.3.1 Effectiveness in Improving Mobility

Three measures that serve as indicators of improved mobility are: ridership, travel time comparison, and travel time savings. These measures are described in Section 6-3.1 of the Final EIR.

a. Ridership

Ridership model runs were completed for each of the three Rapid Bus alternatives, using the MTA's travel simulation model. **Table 8-6.5** (Ridership) reports new daily transit trips (representing new transit riders) as increments over the No Build and TSM alternatives. The numbers in this table are different from the "Daily Transit Trip" numbers shown in **Table 8-3-3** because these numbers reflect mobility statistics for the Valley only, and **Table 8-3-3** are Countywide.

For the "daily transit boardings" column, boardings are shown for individual Rapid Bus routes as they operate from end-to-end. Therefore, these boardings cannot be directly compared to the BRT alternatives boardings as reported in Section 6-3.1 of the Final EIR, which only report those boardings occurring in the fixed guideway portions of the route (that is, board and disembark at stations constructed as part of the San Fernando Valley East-West Transit Corridor project). Total boardings for an alternative are not necessarily reflective of an alternative's effectiveness: an alternative with more Rapid Bus routes would likely have greater total boardings than an alternative with fewer Rapid Bus routes, but the average boardings per route may be less efficient. For example, the average boardings for the RB-Network Alternative is about 6,300 per route, whereas the average boardings for the RB-3 Alternative is 9,800 per route.

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. Additionally, riders may merely be shifting off other bus routes.

To understand how many additional riders are attracted to transit, the appropriate measure to compare is "new daily transit trips," since this measure deals with "linked" (end-to-end) trips. **Table 8-6.5** reports these new daily transit trips (representing new transit riders) for each alternative as increments over the No Build and TSM alternatives. The new transit trips for the TSM and BRT alternatives as reported in Section 6-3.1 of the Final EIR are included in this table for ease of comparison. The boardings and new daily transit trips reported for all of the three RB alternatives and both of the BRT alternatives also assume that each alternative is integrated with the TSM enhancements. The biggest increase in transit ridership (13,000 to 15,300 daily new transit trips) results from implementing the Full BRT Alternative, which integrates service improvements assumed in the TSM Alternative. RB-Network and RB-3 alternatives follow, adding 10,100 to 10,300 daily new transit trips, respectively. The RB-5 Alternative adds 9,200 daily new transit trips, a modest increase over the TSM Alternative's estimated 9,000 daily new transit trips over the No Build Alternative.

Table 8-6.5: Ridership

Alternative	Daily Transit Boardings[1]	New Daily Transit Trips	
		Over No Build	Over TSM
TSM	N/A	**9,000**	**N/A**
RB-3			
RB-Sherman Way	10,900		
RB-Vanowen	5,200		
RB-Victory	13,300		
	29,400	**10,100**	**1,100**
RB-5			
RB-Sherman Way	6,800		
RB-Victory	16,100		
RB-Oxnard	1,300		
RB-Burbank	3,800		
RB-Chandler	1,300		
	29,300	**9,200**	**200**
RB-Network			
RB-Devonshire	3,300		
RB-Roscoe	7,900		
RB-Victory	18,700		
RB-Laurel Cyn	6,400		
RB-San Fernando	2,900		
RB-Van Nuys	6,000		
RB-Sepulveda	6,400		
RB-Reseda	1,000		
RB-Topanga Cyn	4,300		
	56,900	**10,300**	**1,300**
Full BRT			
Lower-Bound Estimate	24,700	**15,300**	**6,300**
Upper-Bound Estimate	18,700`	**13,000**	**4,000**

Notes:

1. Boardings for Rapid Bus routes included in entirety. Boardings for BRT based on fixed guideway stations only. These boardings cannot be directly compared to boardings as reported for the BRT alternatives, which only report those boardings occurring in the fixed guideway portions of the route (that is, board and disembark at stations constructed as part of the San Fernando Valley East-West Transit Corridor project). Also, boardings do not distinguish between whether transit riders are merely shifting off other bus routes, or whether new riders are attracted to transit.

Source: Manuel Padron & Associates, 2001, 2004.

b. Travel Time Comparison

Based on public comment, travel time is expressed by comparing cross-valley travel on a number of key arterials. **Table 8-6.6** (Year 2020 Transit Travel Times on Valley Arterials (in minutes) summarizes travel times for three east-west routes (Victory Boulevard/BRT right-of-way, Sherman Way, and Roscoe) and two north-south routes (Reseda and Topanga Canyon). The table provides total travel time, average speed, and percent improvement over the TSM Alternative travel times under each of the Rapid Bus alternatives, as well as the BRT and TSM alternatives.

Victory Boulevard is reported with two different project limits: Victory Boulevard/Lankershim provides a travel time from Warner Center to the North Hollywood station to be comparable with corresponding travel time information for the LPA; and Victory Boulevard from De Soto to Laurel Canyon is provided to match the limits of the other east-west corridors (Sherman Way and Roscoe).

Table 8-6.6: Year 2020 Transit Travel Times on Valley Arterials (in minutes)

Corridor	Limits	TSM	BRT	RB-Network	RB-5	RB-3
Travel Time (in minutes)[1]						
BRT Right-of-Way	Warner Center – North Hollywood	--	28.8 - 40.0	--	--	--
Victory Blvd/Lankershim Blvd	Warner Center – North Hollywood	47.1	--	41.7 - 45.6	41.7 - 45.6	41.7 - 45.6
BRT Right-of-Way	De Soto-Laurel Cyn	--	23.9 - 33.6	--	--	--
Victory Blvd	De Soto-Laurel Cyn	37.6	--	31.7 - 34.4	31.7 - 34.4	31.7 - 34.4
Sherman Way	De Soto-Laurel Cyn	35.9	--	--	32.5 - 35.8	32.5 - 35.8
Roscoe	De Soto-Laurel Cyn	38.9	--	33.0 - 36.7	--	--
Reseda	Devonshire-Ventura Blvd	23.5	--	18.7 - 20.9	--	--
Topanga Cyn	Devonshire-Ventura Blvd	22.9	--	21.4 - 22.9	--	--
Average Speed (in miles per hour)						
BRT Right-of-Way	Warner Center – North Hollywood	--	19.6 - 27.2	--	--	--
Victory Blvd/Lankershim Blvd	Warner Center – North Hollywood	15.8	--	16.3 - 17.8	16.3 - 17.8	16.3 - 17.8
BRT Right-of-Way	De Soto-Laurel Cyn	--	21.0 - 29.6	--	--	--
Victory Blvd	De Soto-Laurel Cyn	17.6	--	19.2 - 20.9	19.2 - 20.9	19.2 - 20.9
Sherman Way	De Soto-Laurel Cyn	18.3	--	--	18.6 - 20.3	18.6 - 20.3
Roscoe	De Soto-Laurel Cyn	17.0	--	18.3 - 20.0	--	--
Reseda	Devonshire-Ventura Blvd	15.4	--	17.8 - 19.4	--	--
Topanga Cyn	Devonshire-Ventura Blvd	18.9	--	18.9 - 20.2	--	--
Percent Improvement over TSM Travel Times						
BRT Right-of-Way	Warner Center – North Hollywood	NA	15 – 39%[2]	--	--	--
Victory Blvd/Lankershim Blvd	Warner Center – North Hollywood	NA	--	3 - 11%	3 - 11%	3 - 11%
BRT Right-of-Way	De Soto-Laurel Cyn	NA	11 – 36%[2]	--	--	--
Victory Blvd	De Soto-Laurel Cyn	NA	--	9 - 16%	9 - 16%	9 - 16%
Sherman Way	De Soto-Laurel Cyn	NA	--	--	0 - 10%	0 - 10%
Roscoe	De Soto-Laurel Cyn	NA	--	6 - 15%	--	--
Reseda	Devonshire-Ventura Blvd	NA	--	11 - 20%	--	--
Topanga Cyn	Devonshire-Ventura Blvd	NA	--	0 - 7%	--	--

[1]Arterial travel times based on range in transit signal priority from 10% improvement over standard bus speeds to 20% improvement.
[2]Percent improvement over TSM on Victory Boulevard.

Source: MTA transportation model, Manuel Padron & Associates, 2001, 2004.

BRT travel times are expressed as a range, based on the potential differences in operations as defined by the lower bound and upper bound analysis. Rapid bus travel times are also expressed as a range, based on transit priority generally allowing a 10 to 20 percent improvement over standard bus speeds though in some cases, very little improvement over TSM bus speeds is anticipated.

It should be noted that Rapid Bus travel times are automatically determined through the transportation model, as a function of traffic speed. In actual implementation, Rapid Bus travel times are affected by the amount of transit priority allowed at traffic signals. Because transit priority can be granted on very few east-west arterials (because of the need to preserve north-south traffic flows), the Rapid Bus travel times as represented in the transportation model are likely to be somewhat faster than what can realistically be achieved.

For Victory Boulevard/Lankershim Boulevard, the Rapid Bus alternatives are modeled as an 11 percent speed improvement over the TSM Alternative, compared to the potential speed improvement of 15 to 39 percent for travel times on the BRT Alternative. Travel times on Sherman Way are improved by 10 percent for the RB-5 and RB-3 alternatives. Travel times on Roscoe, Reseda and Topanga Canyon are only improved under the RB-Network Alternative.

c. 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 Build 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. **Table 8-6.7** (Value of Travel Time Savings) provides travel time savings for the Rapid Bus alternatives, along with the BRT Alternative (as presented in Section 6-3.1.3 of the Final EIR) to facilitate comparison.

Table 8-6.7: Value of Travel Time Savings

Alternative	Total Annual Change (Hours)	
	Annual Savings to No Build	Annual Savings to TSM
RB-3	359,000	76,000
RB-5	285,000	5,000
RB-Network	312,000	30,000
Full BRT (Lower-Bound Estimate)	439,000	154,000

Source: MTA Transportation Demand Model, 2001, 2004.

The BRT Alternative continues to have the greatest estimated annual savings. Of the three Rapid Bus alternatives, the RB-3 Alternative is estimated to have the greatest annual savings.

8-6.3.2 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). 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 cost effectiveness index was calculated for the Rapid Bus alternatives. **Table 8-6.8** (Cost-Effectiveness Calculation: Incremental Values over No Build) and **Table 8-6.9** (Cost-Effectiveness Calculation: Incremental Values over TSM) summarize the annualized capital costs in 2001 dollars (using the process described in Section 6-3.2), annual O&M cost in 2001 dollars, and annual linked trips used in calculating the cost-effectiveness index as compared to the No Build Alternative, and as compared to the TSM Alternative. **Table 8-6.10** (Cost-Effectiveness of Alternatives – Annualized Cost per New Daily Transit Trip (in 2001 Dollars)) provides the resulting incremental cost per incremental passenger compared to both the No Build and TSM alternatives, respectively. The cost-effectiveness calculations and indices for the TSM and Full BRT alternatives (as presented in Section 6-3.2 of the Final EIR) are also included for ease of comparison.

Table 8-6.8: Cost-Effectiveness Calculation: Incremental Values over No Build

Alternative	Annualized Capital Cost (millions, 2001 $)	Annual O&M Cost (millions, 2001 $)	Annual Linked Trips (millions)
TSM	$2.70	$11.62	2.84
RB-3	$5.0 - $6.8	$21.2 - $23.1	3.19
RB-5	$5.4 - $7.3	$22.2 - $24.2	2.89
RB-Network	$8.5 - $11.1	$30.6 - $34.4	3.26
Full BRT	$25.58 - $27.01	$22.49 - $22.50	4.11 - 4.83

Source: Manuel Padron & Associates, 2001, 2004.

Table 8-6.9: Cost-Effectiveness Calculation: Incremental Values over TSM

Alternative	Annualized Capital Cost (millions, 2001 $)	Annual O&M Cost (millions, 2001 $)	Annual Linked Trips (millions)
RB-3	$2.33 - $4.07	$9.62 - $11.44	0.36
RB-5	$2.71 - $4.59	$10.57 - $12.58	0.06
RB-Network	$5.79 - $8.36	$19.01 - $22.81	0.42
Full BRT	$22.87 - $24.30	$10.87 - $10.88	1.27 - 1.99

Source: Manuel Padron & Associates, 2001, 2004.

Table 8-6.10: Cost-Effectiveness of Alternatives – Annualized Cost per New Daily Transit Trip (in 2001 Dollars)		
Alternative	**Over No Build**	**Over TSM**
TSM	$5	N/A
RB-3	$8 - $9	$34 - $44
RB-5	$10 - $11	$228 - $294
RB-Network	$12 - $14	$59 - $74
Full BRT	$10 - $12	$18 - $27

Source: Manuel Padron & Associates, 2001, 2004.

When compared to the No Build Alternative, the TSM Alternative is extremely cost-effective at about $5 per added rider. For the remaining alternatives, RB-3 has somewhat lower costs per rider than RB-5, BRT, and the RB-Network.

However, when compared to TSM, the alternatives show far greater distinctions. The large variance in measures is due to the equation's sensitivity to the additional linked trips compared to TSM. For example, because the RB-5 Alternative generates only a very few additional new riders over TSM, the annualized cost of the RB-5 Alternative per new rider added over TSM is very high. Because the Rapid Bus alternatives produce only a few new riders over TSM, the Full BRT Alternative is substantially more cost-effective than any of the Rapid Bus alternatives.

8-6.3.3 Operating Efficiencies

The Operating Efficiencies criterion is measured by the 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. This measure was estimated using the same methodology discussed in Section 6-3.3 of the Final EIR. **Table 8-6.11** (Operating Efficiency of Alternatives (in 2001 Dollars)) presents the operating cost per passenger mile for the new Rapid Bus alternatives; the corresponding estimates for the No Build, TSM and Full BRT alternatives, as presented in Section 6-3.3 of the Final, are also provided for ease of comparison.

Table 8-6.11: Operating Efficiency of Alternatives (in 2001 Dollars)	
Alternative	**Operating Cost per Passenger Mile**
No Build	$0.345
TSM	$0.347
RB-3	$0.350 - $0.351
RB-5	$0.351 - $0.352
RB-Network	$0.354 - $0.355
Full BRT	$0.347 - $0.350

Source: Manuel Padron & Associates, 2001, 2004.

Because the measure involves averaging the cost per passenger mile for the entire regional system, differences between alternatives tend to be barely discernible. Cost per passenger mile is

lowest for the TSM and Full BRT lower-bound Alternatives; similar for the Full BRT upper-bound Alternative, RB-3 Alternative, and RB-5 Alternative; and slightly higher for the RB-Network Alternative.

8-6.3.4 Environmental Benefits

The Rapid Bus alternatives have been compared across a range of environmental factors. The results of these comparisons can be found in tabular form in the Revised Executive Summary and in detail in Sections 8-3, 8-4, and 8-5. The following is a brief overview of these comparisons.

Transportation and Parking: Compared to the No Build Alternative, the Rapid Bus alternatives would result in increased transit mode share, increased transit ridership, and decreased daily vehicle trips. On the other hand, the Rapid Bus alternatives would add Rapid Buses to existing streets, which would cause one or more intersections to operate at LOS E. Furthermore, establishment of the Rapid Bus stops would remove between 65 and 150 on-street parking spaces, depending on the Rapid Bus alternative, and the loss of these spaces would constitute a potentially significant impact to parking. Potential impacts to parking would be reduced to a less-than-significant level with the incorporation of the proposed mitigation measures.

Land Use and Development: The Rapid Bus alternatives would be inconsistent with a number of regional and local land use plans in that the Rapid Bus alternatives would preclude the construction of a high-capacity transit system in the Valley and/or a transit system/stations in the MTA ROW. Amending these numerous plans would severely alter their objectives without any substitute objective that will curtail widespread growth. Accordingly, there are no feasible mitigation measures to eliminate, or substantially reduce, the significant land use impact, and an unavoidable residual impact would occur.

Acquisitions and Displacements: The Rapid Bus alternatives would not require any full or partial acquisition of property or affect any lease agreements. The Rapid Bus alternatives also would not displace residences or businesses.

Demographics and Neighborhoods: No significant impacts on demographics or neighborhoods would occur under the Rapid Bus alternatives. The Rapid Bus alternatives would be consistent with previous transportation uses and neighborhood character, and would not generate a significant shift or gain/loss in population. The Rapid Bus alternatives would not eliminate legal crossings, and Rapid Bus stop locations would not have a significant impact on neighborhood security or views into adjoining neighborhoods. Compared to the No Build Alternative, the Rapid Bus alternatives would improve transit services for low- to moderate-income populations.

Community Facilities and Services: The Rapid Bus alternatives would not substantially increase demand for police and fire services or increase emergency response times. Access to schools, libraries, some religious institutions, health care facilities, and parks and recreational facilities would all be improved under the Rapid Bus alternatives relative to the No Build Alternative.

Fiscal and Economic Conditions: None of the three Rapid Bus alternatives would result in the loss of jobs or tax revenue. Conversely, the RB-3, RB-5, and RB-Network alternatives would generate an estimated 1,207, 1,269, and, 1,745 jobs, respectively.

Visual and Aesthetic Conditions: The Rapid Bus alternatives would have minimal visual impacts because they would utilize existing streets and construct visually and aesthetically unobtrusive Rapid Bus stops. Some street trees would be removed but replaced elsewhere along street.

Air Quality: None of the three Rapid Bus alternatives would exceed the State one- or eight-hour CO standards. The RB-3 Alternative would result in a decrease in CO, NO_X, and ROG and a negligible change in PM_{10} emissions. The RB-5 Alternative would result in a decrease in CO and ROG and negligible change in NO_X and PM_{10} emissions. The RB-Network would result in a decrease in CO and negligible change in NO_X, ROG, and PM_{10} emissions.

Energy: The RB-3 Alternative would decrease energy consumption compared to No Build by 72 billion BTUs and compared to TSM by 12 billion BTUs. The RB-5 Alternative would decrease energy consumption compared to No Build by 63 billion BTUs and compared to TSM by 3 billion BTUs. The RB-Network Alternative would decrease energy consumption compared to No Build by 69 billion BTUs and compared to TSM by 9 billion BTUs.

Noise and Vibration: The RB-3 and RB-Network alternatives would not result in significant noise impacts. The RB-5 Alternative would result in severe noise impacts for 18 single-family residences and 12 multifamily residences. With the incorporation of the proposed mitigation measures, impacts would be reduced to a less-than-significant level. None of the Rapid Bus alternatives would have significant vibration impacts.

Geotechnical Considerations: The three Rapid Bus alternatives would require minor construction to establish new Rapid Bus stops and transit priority, and would not construct structures designed for human occupancy. Thus, although the Rapid Bus alternatives would be located in a seismically active region, the Rapid Bus alternatives would not present a significant level of risk under CEQA related to geotechnical hazards.

Biological Resources: Each of the Rapid Bus alternatives would remove a number of ornamental street trees. However, the tree removal would be coordinated with bird nesting time frames and would not remove active bird nests. In addition, removed trees would be replaced, as necessary. Thus, the removal of a number of ornamental street trees would not constitute a significant impact on biological resources. The Rapid Bus alternatives would have no other effects on biological resources.

Water Resources: The Rapid Bus alternatives would not increase impervious surfaces and or otherwise not affect groundwater resources. Although the Rapid Bus alternatives would cross a number of unchannelized flood hazard zones, the Rapid Bus alternatives would use existing roads and bridges and would present the same impacts related to flood hazards as do existing land uses.

Safety and Security: The Rapid Bus alternatives would present a potential for marginal increase in accidents; however any increase would be offset as the number of automobiles on the road decreases with increasing public transit ridership. Because the Rapid Bus alternatives would only marginally affect traffic conditions, the Rapid Bus alternatives would not negatively affect emergency access or evacuation routes. Furthermore, the Rapid Bus alternatives would not result in significantly increased crime rates.

Cultural Resources: The Rapid Bus alternatives would require only minor construction and would not result in any significant direct or indirect effects to cultural resources.

Section 4(f) Evaluation: This Revised FEIR is strictly a CEQA document, and a Section 4(f) Evaluation is not required and was not conducted.

Construction Impacts: The Rapid Bus alternatives would require only minor construction necessary to establish a number of new Rapid Bus stops and to install loop detectors for signal priority. Therefore, the Rapid Bus alternatives would not result in significant construction impacts.

8-6.3.5 Equity

The equity analysis of the alternatives is unchanged and is presented in Section 6-3.5 of the Final EIR.

8-6.3.6 Community Involvement Response

The extensive outreach process for the San Fernando East-West Transit Corridor Study is documented in detail in Section 6-3.6 of the Final EIR. The Rapid Bus alternatives being considered in this Section are to comply with Court of Appeal's decision in *Citizen's Organization for Smart Transit v. Los Angeles County Metropolitan Transportation Authority*, which directed Metro to evaluate a Rapid Bus Alternative(s) in addition to alternatives presented to the Metro Board previously. The planning documents referenced in Section 8-4.1 are available for review at:

Dorothy Peyton Gray Transportation Library
Metropolitan Transportation Authority
One Gateway Plaza, 15th Floor
Los Angeles, CA 90012-2952
Phone: 213-922-4859
Fax: 213-922-7955
Email: library@metro.net

Hours of operation: Monday – Friday, 7:30 am – 4:30 pm
Public hours: Monday and Thursday, 8:00 am – 4:00 pm

8-6.3.7 Significant Trade-Offs

The following analysis of significant trade-offs provides the distinguishing characteristics for each alternative, incorporating analyses throughout this document related to capital cost comparisons, travel speeds, community concerns, and environmental impacts as well as the cost effectiveness and efficiency measures.

The Rapid Bus alternatives do not provide the same degree of mobility and transit-supportive benefits when compared to the BRT Alternative (the Locally Preferred Alternative). This is demonstrated by lower levels of new transit riders for all of the Rapid Bus alternatives when compared to the BRT Alternative (lower and upper bound). System-wide travel time saving for all of the Rapid Bus alternatives are also lower than the travel time savings of the BRT Alternative (lower and upper bound). In addition, while the Rapid Bus alternatives, particularly the RB-Network alternative, do provide similar or improved travel times on some corridors north of the MTA ROW, these transit model-derived travel times do not fully account for the increasing traffic congestion, which will diminish the predicted speed of Rapid Bus service in the coming years. The BRT Alternative would provide a consistent travel time and speed even as congestion increases on surrounding streets. Moreover, the BRT Alternative creates a dedicated ROW with fewer intersection conflicts as well as park-and-ride lots serving a list of activity centers.

The Rapid Bus alternatives all have lower capital costs than the BRT Alternative (upper and lower bound), with the RB-3 Alternative (lower range) having the lowest capital cost. However, because the additional new riders these alternatives generate over the TSM Alternative are lower than the new riders generated by the BRT Alternative, the cost-effectiveness of the alternatives over TSM is worse than that of the BRT Alternative (upper and lower bound). Of the Rapid Bus alternatives, the RB-3 Alternative has the best-cost effectiveness and the RB-5 Alternative has the worst.

The three Rapid Bus alternatives and the BRT Alternative would each result in one significant environmental impact that cannot be mitigated. The three Rapid Bus alternatives would have an unmitigated significant land use impact because they are not consistent with certain land use goals and policies (see Section 8-4.1 of this document) while the BRT Alternative would have a temporary significant construction noise impact (see Section 5-9 of the Final EIR). Thus, although both the BRT Alternative and the three Rapid Bus alternatives are relatively similar in that they result in only one unmitigated significant impact; the construction significant noise impact associated with the BRT Alternative would end at construction completion while the significant land use impact associated with the three Rapid Bus alternatives would be ongoing through the life of the land use plans.

In some communities, particularly those directly along the MTA ROW, support for one or all of the three Rapid Bus alternatives may be greater than for the BRT Alternative. However, overall support for the BRT Alternative from the community at large (from other agencies, business organizations, schools, and groups supporting major transit investment in the region, for example) would not be satisfied by the Rapid Bus alternatives.