

Chapter 6 COST AND PERFORMANCE CONSIDERATIONS AND SUMMARY COMPARISON OF ALTERNATIVES

6.1 Introduction

This chapter summarizes the capital and operating and maintenance (O&M) costs and planned sources of funding for the Regional Connector's Locally Preferred Alternative (LPA). This chapter also includes a comparison of the alternatives analyzed in the Draft EIS/EIR including the Fully Underground Alternative that has been designated the LPA.

This chapter has been updated since publication of the Draft EIS/EIR based on refinements to the LPA. The costs and revenues presented in this chapter reflect an update to the costs and revenues presented in the Draft EIS/EIR. As such, costs and revenues reflect the detailed financial plan that was developed in conjunction with Metro's request to the Federal Transit Administration (FTA) for consideration in the fiscal year (FY) 2013 Annual Report on Funding Recommendations to construct and operate the LPA within FTA requirements for grants awarded under the Section 5309 New Starts Program. Specifically, Metro is requesting the Regional Connector be listed as a project recommended by the FTA for a Full Funding Grant Agreement in FY 2013. This analysis and the more detailed financial document will assist FTA, Metro, City officials, and the general public in understanding and evaluating Metro's financial capacity to construct the Regional Connector and to operate and maintain the existing transit system in a state of good repair.

Costs and revenues presented in this chapter are in 2011 base year dollars and in Year of Expenditure (YOE) dollars. YOE dollars reflect the financial impact of funds that would need to be expended in the actual year of expenditure and the relative effects of inflation on costs and revenues. Annual and compounded inflation rates and the project implementation schedule are used to project from base year dollars to YOE dollars. For example, in YOE dollars, \$1.00 in 2011 is equivalent to \$1.03 in 2012, using an inflation rate of 3.0 percent. Additionally, costs and revenues are presented consistent with Metro's fiscal year, beginning July 1 and running through June 30.

Minor changes have also been made to this chapter in order to maintain consistency with other Metro projects. Average weekday values were calculated in the Draft EIS/EIR for vehicle miles traveled (VMT) and other measures based on VMT. In order to report annual values for VMT in the Draft EIS/EIR, a multiplier (annualization factor) was used to convert the daily values. The annualization factor has been updated for this Final EIS/EIR to maintain consistency with other Metro projects, and this has caused annual VMT and other annualized measures based on VMT to change slightly. A vertical line in the margin is used to show where revisions have occurred to this chapter since publication of the Draft EIS/EIR, excluding minor edits for consistency and correction of formatting and minor typographical errors.

The other chapters of this EIS/EIR present an analysis of the build alternatives that emerged from the Alternatives Analysis (AA) process: the At-Grade Emphasis LRT and Underground

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Emphasis LRT Alternatives. After project scoping, considerable community involvement, and input received during the Draft EIS/EIR public review period, the Fully Underground LRT Alternative was developed and refined to address the concerns of the public, public agencies, and the Little Tokyo community. The Metro Board of Directors voted on October 28, 2010 to designate the Fully Underground LRT Alternative as the LPA. Further refinements to the LPA have since been made, and are reflected in this Final EIS/EIR.

6.2 Capital Costs and Revenues

This section presents the capital cost of the LPA and the federal, state, and local revenue sources proposed for funding.

6.2.1 Capital Costs

In 2011 base year dollars, the LPA is projected to cost \$1.16 billion (\$1.34 billion in YOE dollars), excluding \$23.6 million in planning and environmental costs. The capital cost estimate is based on work completed to date as part of the PE phase of project development and includes over 30.0 percent in contingencies, which is consistent with FTA’s guidance for a project at this stage in the planning process.

Table 6-1 presents the LPA’s capital cost using the FTA’s Standard Cost Categories (SCC) in 2011 base year dollars and YOE dollars. FTA requires submission of capital costs in the SCC format at key milestones in the major capital project development process, including the application to enter PE and the application to enter final design. The application to enter PE was submitted in fall 2010 and approved in January 2011. The project expects to enter final design by spring 2012 after the Record of Decision (ROD), which is expected by winter 2012.

For the YOE cost analysis, capital costs were escalated from 2011 dollars using annual growth rates and the planned implementation schedule for the project. The annual and compound growth rates used to escalate costs are shown in Table 6-2, and reflect the growth rate assumptions included in Metro’s Long Range Transportation Plan (LRTP). In addition to these escalation rates, the percent of project completion by year (cost curve) shown in Table 6-3 was used to estimate the annual cost estimates for the LPA.

Figure 6-1 summarizes annual costs in YOE dollars. As shown in Table 6-3 and Figure 6-1, the major expenditures for the LPA (approximately 69 percent) are projected to occur between FY 2015 and FY 2018. Costs in these years reflect construction of the major components of the LPA, as well as the acquisition of rail vehicles.

Table 6-1. Locally Preferred Alternative Capital Cost Estimates, by FTA Standard Cost Category (in Millions)

FTA Standard Cost Categories	2011 \$	YOE \$
10 Guideway and Track Elements	\$233.0	\$269.1
20 Stations, Stops, Terminals, Intermodal	\$271.3	\$319.2

Table 6-1. Locally Preferred Alternative Capital Cost Estimates, by FTA Standard Cost Category (in Millions) (continued)

FTA Standard Cost Categories	2011 \$	YOE \$
30 Support Facilities: Yards, Shops, Admin. Buildings	\$2.1	\$2.6
40 Site Work and Special Conditions	\$138.0	\$157.6
50 Systems	\$44.4	\$54.7
60 ROW, Land, Existing Improvements	\$127.2	\$136.0
70 Vehicles	\$17.6	\$20.0
80 Professional Services	\$228.0	\$260.5
90 Unallocated Contingency	\$106.2	\$122.8
100 Finance Charges	\$0.0	\$0.0
Total	\$1,167.8	\$1,342.5

Table 6-2. Year of Expenditure Escalation Rates¹

Fiscal Year	Growth Rate	Compound Annual Growth Rate
2011	1.00	1.00
2012	1.03	1.03
2013	1.03	1.06
2014	1.03	1.09
2015	1.03	1.13
2016	1.03	1.16
2017	1.03	1.19
2018	1.03	1.23
2019	1.03	1.27
2020	1.03	1.30

Note:

¹ It should be noted that a three percent escalation rate for the next 10 years does not reflect the previous 10 year period, and some fluctuation may occur.

Table 6-3. Cost Curve Assumptions by FTA Standard Cost Category (SCC)

FTA SCC Category	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20	Total
10 Guideway and Track Elements				5.7%	37.0%	32.1%	12.4%	12.8%			100.0%
20 Stations, Stops, Terminals, Intermodal				5.6%	19.1%	24.6%	21.3%	27.2%	2.2%		100.0%
30 Support Facilities: Yards, Shops, Admin. Buildings							13.6%	86.4%			100.0%
40 Site Work and Special Conditions			4.7%	22.6%	21.8%	27.5%	15.8%	5.4%	2.2%		100.0%
50 Systems						4.7%	11.6%	56.9%	26.7%		100.0%
60 ROW, Land, Existing Improvements	0.1%	11.7%	49.6%	38.6%							100.0%
70 Vehicles			4.3%	20.7%	24.7%	20.9%	29.4%				100.0%
80 Professional Services	3.5%	7.3%	14.9%	14.1%	9.9%	15.2%	13.6%	9.7%	8.9%	2.9%	100.0%
90 Unallocated Contingency		1.0%	8.3%	15.1%	18.5%	21.1%	15.5%	16.0%	3.3%	1.4%	100.0%
Total	0.7%	2.7%	9.3%	13.4%	18.5%	20.9%	14.4%	15.5%	3.9%	0.7%	100.0%

Note:
Addition of columns may not match total due to rounding.

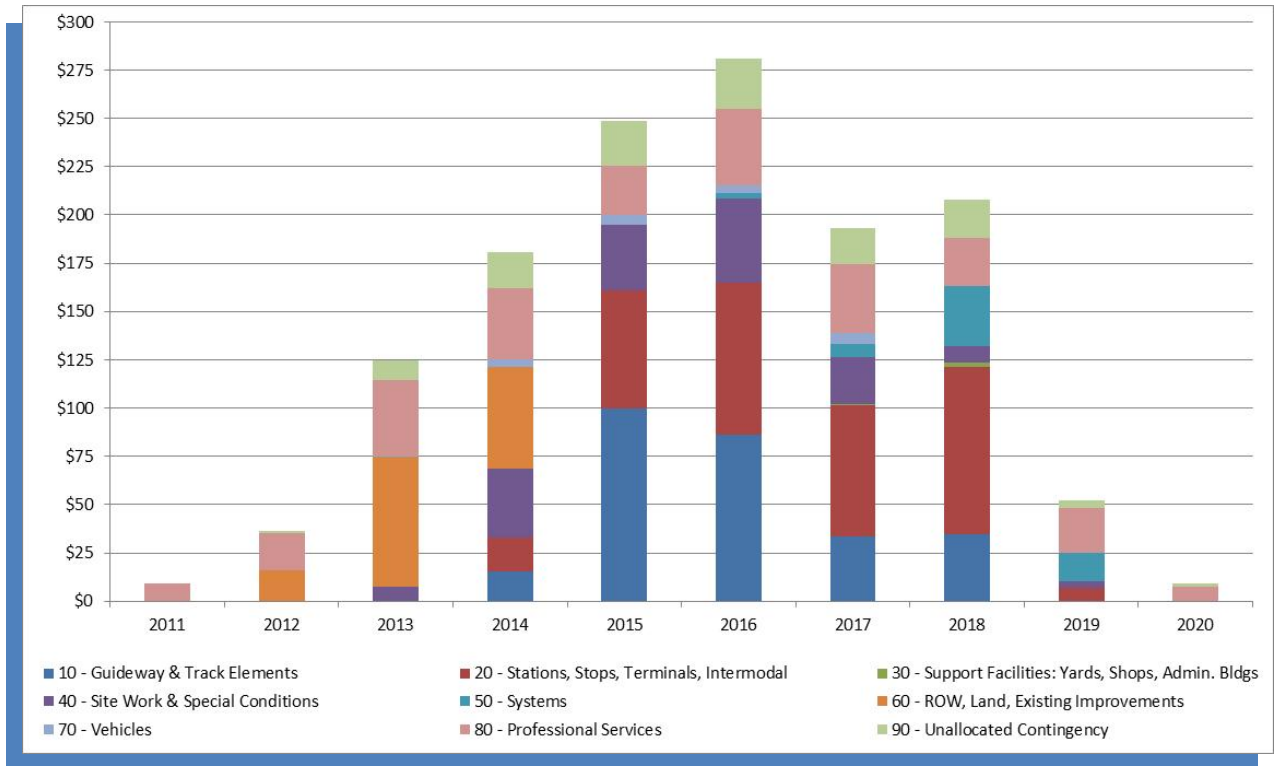


Figure 6-1. Annual Capital Costs by FTA Standard Cost Category (YOE \$ in Millions)

6.2.2 Capital Revenue Sources

The proposed sources of capital funds for the LPA are summarized in Table 6-4 and Figure 6-2. As shown in the table and figure, the planned funding to implement the project reflects a combination of local, state, and federal sources. FTA Section 5309 New Starts funding is the largest source and is assumed to provide 50 percent of total funding. Proposition 1B funds are the second largest source, followed by Measure R Sales Tax-backed Qualified Transit Improvement Bonds (QTIBs), High-Speed Rail Bond proceeds, Lease Revenues, Repayment from State of Capital Project Loans, and Local Agency Funds, with minor contributions from State Regional Improvement Program funds. Each source is described in more detail following the table and figure.

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Table 6-4. Proposed Sources of Capital Funding (YOE \$ in Millions)

Capital Cost Revenues	YOE \$
Federal	
Section 5309 - New Starts (50% of Costs)	\$671.3
State	
High-Speed Rail Bonds	\$114.9
Proposition 1B	\$175.5
Regional Improvements Program Funds	\$16.1
Local	
Measure R Sales Tax-backed QTIBs	\$160.0
Lease Revenue	\$89.8
Repayment from State of Capital Project Loans	\$73.9
Local Agency Funds (3% of Costs)	\$41.0
Total Revenues	\$1,342.5

6.2.2.1 Federal Sources

FTA Section 5309 New Starts Program

The major funding source for the Regional Connector is the FTA New Starts Program. The New Starts Program is the federal government’s primary financial resource for supporting locally-planned, implemented, and operated transit fixed guideway capital investments, such as the LPA.

Projects applying for New Starts funding are required by law to undergo evaluation by the FTA throughout the entire project development process. Projects are evaluated according to a variety of criteria such as mobility improvements, environmental benefits, cost-effectiveness, operating efficiencies, transit supportive land use, and local financial capacity.

Funding decisions are made after projects complete the NEPA process, are evaluated and rated, and it has been determined that they meet all of the requirements of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 5309. These steps must be completed before a project can receive New Starts funding.

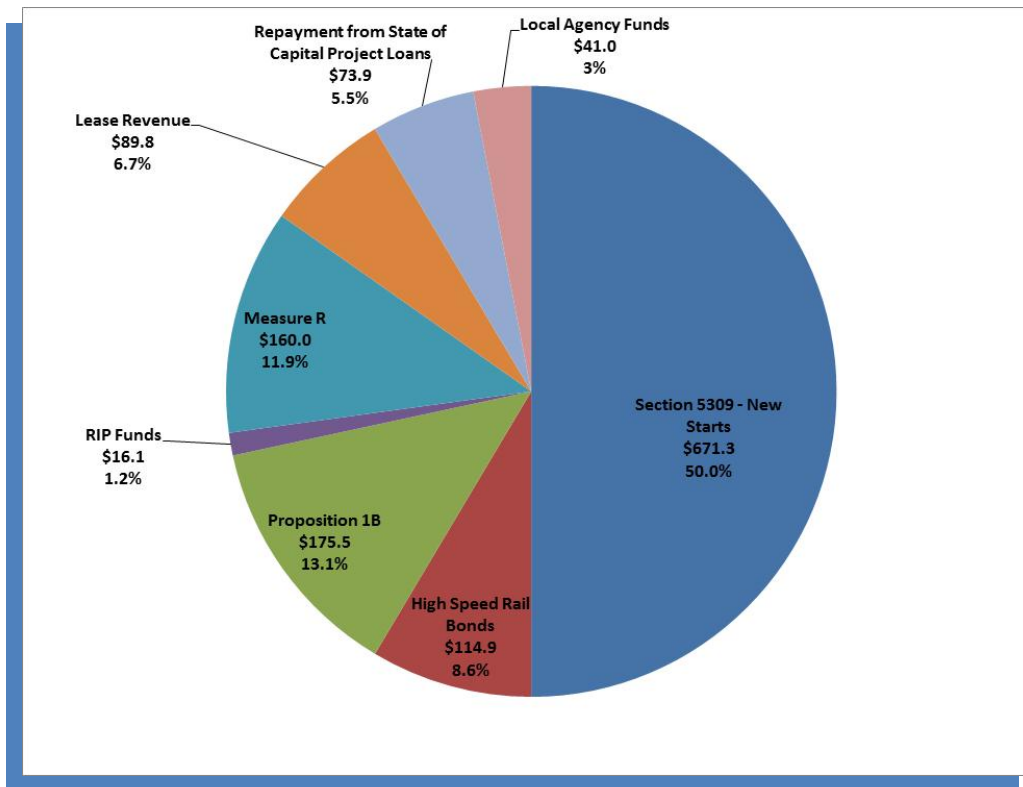


Figure 6-2. Proposed Sources of Capital Funding (YOE \$ in Millions)

Federal Section 5309 New Starts funds requested for the Regional Connector project total \$671.3 million, an amount equal to 50 percent of the total capital cost. Proposed annual New Starts funding levels for the Regional Connector are shown in Table 6-5. These annual funding levels will be refined and agreed upon between FTA and Metro during PE and prior to entry into final design. As noted in FTA's Preliminary Engineering Approval for the Regional Connector Transit Corridor Project letter dated January 4, 2011, FTA's approval to initiate PE is not a commitment to approve or fund any final design or construction activities. Such a decision must await the outcome of the analyses to be performed during PE, including completion of the environmental review process.

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Table 6-5. Projected Annual New Starts Funding for the Locally Preferred Alternative: FY 2012 to FY 2020 (YOE \$ in Millions)

Fiscal Year	Annual New Starts Levels
2012	\$0.0
2013	\$100.0
2014	\$100.0
2015	\$100.0
2016	\$100.0
2017	\$100.0
2018	\$100.0
2019	\$62.0
2020	\$9.3
Total	\$671.3

6.2.2.2 State Funding Sources

Proposition 1B PTMISEA: The Public Transportation Modernization, Improvement, and Service Enhancement Account (PTMISEA)

Approved by California voters statewide in 2007, Proposition 1B PTMISEA funds are distributed by formula to transit operators and regional agencies for use in rehabilitation, safety or modernization improvements, capital service enhancements or expansions, new capital projects, bus rapid transit improvements, or for rolling stock procurement, rehabilitation or replacement. As shown in Table 6-6, Metro is projecting that it will receive a total of \$735.4 million in PTMISEA funding over the FY 2013 to FY 2018 period, of which \$175.5 million has been designated for use to support implementation of the LPA.

**Table 6-6. Projected Annual Proposition 1B
PTMISEA Funds (YOE \$ in millions)**

Fiscal Year	PTMISEA Funds
2012	\$0.0
2013	\$19.7
2014	\$2.6
2015	\$18.8
2016	\$31.1
2017	\$50.8
2018	\$52.5
2019	\$0.0
2020	\$0.0
Total	\$175.5

Safe, Reliable High-Speed Rail Passenger Train Bond for the 21st Century (AB 3034)

As approved by California voters in November 2008, the High-Speed Rail Bond allows for \$9.95 billion of general obligation bonds to be issued for the California high-speed rail project. Of the \$9.95 billion, \$9.0 billion is designated to provide a portion of the local share of funding for the first segment of the high-speed rail network which would extend from Los Angeles Union Station to San Francisco’s Transbay Terminal. The remaining \$950.0 million has been designated for capital projects to connect existing passenger rail lines to the high-speed rail system as well as to enhance capacity and improve safety. The \$950.0 million is proposed to be allocated to the following programs:

1. Twenty percent (\$190.0 million) will be allocated to the Department of Transportation for state supported intercity rail lines that provide regular service and operate and maintain their rail facilities, right-of-way and equipment with public funds. A minimum of 25 percent of the \$190.0 million, approximately \$47.5 million, will be allocated to California’s three intercity rail corridors.
2. Eighty percent (\$760.0 million) will be allocated upon appropriation to eligible recipients according to the percent amount calculated of the following provisions:

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- One third of the eligible recipient's share of statewide track miles;
- One third of the eligible recipient's percentage share of statewide annual vehicle miles; and
- One-third of the eligible recipient's percentage share of statewide annual passenger trips.

Based on the allocation of these funds to eligible agencies approved by the California Transportation Commission (CTC), of the \$950.0 million, Metro will receive \$240.9 million in state High-Speed Rail Bond proceeds. Of this total, \$114.9 million is proposed to be available for the Regional Connector. The remaining \$126.0 million is proposed for improvements to the Metrolink commuter rail system.

Table 6-7 summarizes the proposed annual level of High-Speed Rail Bond funds for the LPA.

Table 6-7. Projected Annual High-Speed Rail Bond Funds (YOE \$ in millions)

Fiscal Year	High-Speed Rail Funds
2012	\$0.0
2013	\$0.0
2014	\$10.5
2015	\$34.4
2016	\$70.0
2017	\$0.0
2018	\$0.0
2019	\$0.0
2020	\$0.0
Total	\$114.9

Regional Improvement Program (RIP)

RIP funding is derived from the State Highway Account and programmed in the State Transportation Improvement Program (STIP). Funds in the State Highway Account are comprised of state fuel excise taxes, truck weight fees and other state transportation revenues as well as from California's allocation of federal highway trust funds. Metro proposes to use only non-federal funds from the State Highway account for the LPA. Within the STIP, 75 percent of the funding is allocated and programmed by the regional transportation planning agencies such as Metro under the RIP. The remaining 25 percent is programmed by the state under the Interregional Improvement Program.

Based on a fund estimate prepared by Caltrans, the California Transportation Commission develops the annual RIP programming targets for each agency. Metro selects and programs the projects to be funded through its Call for Projects process and the Metro Long and Short Range Transportation Plans. Metro has programmed and re-programmed its STIP projects to conform to the targets, which have been subject to change based on the level of funds available and the extent of borrowing of transit revenues by the state for use in balancing the state budget.

RIP funding in the amount of \$16.1 million is projected for the LPA in FY 2018.

6.2.2.3 Local Sources

Measure R Sales Tax

Measure R is a half-cent transportation sales tax approved in November 2008 by Los Angeles County voters to meet the transportation needs of Los Angeles County. This is the third half-cent transportation sales tax within Los Angeles County with the others being Proposition A and Proposition C. Collection of the tax began on July 1, 2009 for public transit purposes (rail expansion, local street improvements, traffic reduction, better public transportation, and quality of life) for a period of 30 years.

Metro is responsible for administering Measure R revenues. Measure R revenues flow to Metro which then allocates the revenues in accordance with legally binding allocation rules delineated by Los Angeles County Ordinance #08-01, the Metro Formula Allocation Procedure, and Metro Board of Directors actions. Ordinance #08-01 mandates that 65 percent of Measure R revenues are to be allocated to rail or bus transit. Further, Ordinance #08-01 specifies that 35 percent of Measure R revenues must be allocated to the 12 capital expansion projects included in the Long-Range Capital Plan that it delineates.

Overall, Measure R is expected to generate nearly \$36 billion in revenues from FY 2010 to FY 2040. Of that \$36 billion, approximately \$12.2 billion (or approximately 35 percent of total revenues) is mandated to be allocated to the 12 capital expansion projects included in the Long-Range Capital Plan by Ordinance #08-01. As outlined in the Measure R expenditure plan, which is included in Ordinance #08-01, the Regional Connector project is legislated to receive a minimum of \$160.0 million in Measure R funding. Table 6-8 summarizes the annual level of Measure R funding for the LPA.

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Table 6-8. Measure R Proceeds - Regional Connector

Fiscal Year	Measure R Funds - Cash
2011	
2012	
2013	
2014	\$1.2
2015	\$48.0
2016	\$38.7
2017	\$42.6
2018	\$39.3
2019 ¹	\$(9.8)
Total	\$160.0

Note:

¹ It is assumed that Measure R will advance \$9.8 M in FY 2018 and be reimbursed in FY 2019 from Section 5309 New Starts. Measure R funding will total \$169.8 M by FY 2018 and will total \$160 M after the reimbursement.

Lease Revenue

Lease revenues are assumed to be available to fund administration, rail and bus capital projects, and bus operations. Metro is projected to annually receive between \$10.5 million and \$20.1 million in revenue from leases of property and assets. Additionally, in FY 2011, Metro had a beginning balance of \$124.5 million for lease revenues. The Regional Connector financial plan includes lease revenue in FY 2014 (\$42.6 million) and FY 2015 (\$47.2 million). As shown in Table 6-9, based on Metro's adopted FY 2011 budget, the lease revenue account had a beginning cash balance of \$124.5 million. Annual revenues for the next five years are projected to be between \$16.2 million and \$17.4 million. Over the FY 2011 to FY 2015 period, the combination of annual revenue projections and the FY 2011 beginning balance are projected to cover annual expenditures including the Regional Connector's costs in FY 2014 and FY 2015.

Table 6-9. Annual Allocation of Lease Revenue Funds (YOE \$ in millions)

	2011	2012	2013	2014	2015
Revenue					
Beginning Balance	\$124.5	\$99.0	\$84.0	\$95.4	\$64.6
Annual Revenue	\$16.2	\$16.2	\$16.6	\$17.0	\$17.4
Total Revenue	\$140.7	\$115.2	\$100.6	\$112.4	\$82.0
Costs					
Regional Administration	\$14.6	\$17.7	\$5.2	\$5.2	\$5.1
Bus Capital	\$27.1	\$13.5			
Regional Connector				\$42.6	\$47.2
Total Costs	\$41.7	\$31.2	\$5.2	\$47.8	\$52.3
Total Surplus / (Shortfall)	\$99.0	\$84.0	\$95.4	\$64.6	\$29.7

Fund 3562, Repayment from State of Capital Project Loans

The FY 2010 Metro budget included a “Special Revenue Other” fund balance of \$297.0 million in AB 3090 and Traffic Congestion Relief Program (TCRP) which reflects repayment from the State of California of previous capital project loans. These capital reimbursements (Fund 3562, Repayment from State of Capital Project Loans) are for advances made by Metro to the state in lieu of capital project funding that could not be provided by the state on the originally programmed schedule. Metro assumes that these funds must be used for capital purposes only. As they are reimbursements for prior capital expenses, the funds are flexible for many transportation capital purposes, including subway uses now prohibited by Proposition A and Proposition C. These funds are already in Metro’s accounts and available for use.

Table 6-10 is Metro’s June 30, 2011 Trial Balance for this source. The table reflects the following:

- July 1, 2010 beginning balance was \$307.5 million;
- Net investment earnings were \$6.5 million;
- Expenditures between July 1, 2010 and June 30, 2011 were \$60.9 million; and
- June 30, 2011 ending balance was \$253.2 million.

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Table 6-10. Metro June 30, 2011 Trial Balance: Fund 3562 - Repayment from State of Capital Project Loans (in Millions)

Fund 3562 Trial Balance	
Fund 3562 Fund Balance (July 1, 2010)	\$308
Plus: Net Investment Earnings	\$6
Minus: Expenditures Between July 1, 2010 and June 30, 2011	\$(61)
Fund 3562 Fund Balance (June 30, 2011)	\$253
Fund 3562 Asset Breakdown	
Cash and Cash Equivalents	\$78
Investments	\$133
Interest Receivable	\$2
Leases and Other	\$40
Notes Receivable	\$0
Fund 3562 Fund Balance (July 1, 2010)	\$253

Metro is taking advantage of the flexibility of this source by assuming the use of the funds, in part, for leveraging federal New Starts funds for planned subway construction projects, including the Regional Connector.

Metro has programmed \$73.9 million in Reimbursement Fund revenue for the Regional Connector. As shown in Table 6-11, these funds are programmed for use over FY 2011 to FY 2014.

**Table 6-11. Projected Repayment for State Capital Project
Loans Funding Levels (YOE \$ in Millions)**

Fiscal Year	Funds
2011	\$9.3
2012	\$36.2
2013	\$4.8
2014	\$23.6
2015	
2016	
2017	
2018	
Total	\$73.9

Local Agency Funds

The Measure R Expenditure Plan calls for local jurisdictions to provide three percent of total project costs for Measure R transit projects. On April 28, 2010, the City of Los Angeles adopted the Measure R Local Return Funds Guidelines Ordinance and Expenditure Plan in Measure R Ordinance. A component of the approved guidelines was a plan for the expenditure of the City's Measure R local return funds that accelerated the three percent local match for the Measure R projects in the City of Los Angeles and proposed schedule of funding requirements across multiple years. The LPA's financial plan assumes \$41.0 million in local agency funding.

6.2.2.4 Potential America Fast Forward (Formerly 30/10 Initiative) Capital Financing Strategy

As originally planned, Measure R was expected to generate a portion of the revenues necessary to fund the non-federal contribution for the Regional Connector on a pay-as-you-go basis. However, the Metro Board of Directors has placed a high priority on completion of the Regional Connector and 11 other projects as an objective of America Fast Forward. Formerly referred to as the 30/10 Initiative, America Fast Forward proposes federal legislation to establish QTIBs and enhanced Transportation Infrastructure Finance and Innovation Act (TIFIA) provisions to accelerate and complete 30 years of transit projects in 10 years. On April 23, 2010, Metro Board of Directors approved a resolution to support the acceleration of construction of 12 high-priority transit capital projects, including the Regional Connector.

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QTIBs represent a new category of direct subsidy tax-preferred bonds for transit initiatives of national significance, and are pending legislative approval as part of pending or future tax legislation. It is proposed that the federal interest subsidy would be set at 100 percent of the interest rate on the bonds and the bond principal repayment must be backed by non-federal revenue sources, such as Measure R. QTIBs are proposed to be enacted as part of a pilot program, through which the Secretary of Transportation would select nationally significant projects or programs of projects, such as America Fast Forward, that significantly reduce greenhouse gases or emissions, have an estimated capital cost in excess of \$1 billion, and derive not more than 30 percent of their capital cost funding from federal New Starts funds.

It is important to note that while implementation of America Fast Forward would accelerate implementation of the 12 high-priority transit corridor projects, it would not impact the implementation schedule for the Regional Connector.

The federal legislation required for America Fast Forward is still pending. Due to this uncertainty, the financial plan described previously does not rely on the proposed America Fast Forward legislation. The financial plan reflects Metro's 2009 LRTP Financial Update and is an alternate strategy if the federal legislation required to accelerate the 12 projects is not enacted as currently envisioned. Although this financial plan does not rely on the proposed America Fast Forward legislation, Metro intends to continue to seek support for this national legislation from the Congress and the Administration in order to advance all 12 high-priority transit projects on an accelerated schedule.

6.2.2.5 Commitment of Capital Funds

Table 6-12 summarizes the funding sources proposed for the LPA, the associated percent shares of state and local funds, and their respective commitment status. As shown in the table, state and local sources comprise 50.0 percent (\$671.3 million) of the total funding, of which 91.5 percent (\$614.2 million) is either budgeted or committed to support implementation of the LPA. A brief explanation is provided for each of the state and local sources to indicate their commitment.

- Proposition 1A High-Speed Rail Bonds: All voter and legislative approvals and local and state programming actions have been completed for construction phase funding. Until Metro is ready to advertise the Regional Connector project for construction, there are no further approvals required or possible. It is assumed that legislative appropriation, the actual bond sale, and the CTC's allocation vote will all be in place before Metro goes to construction.
- Proposition 1B PTMISEA: All voter, legislative, and programming approvals have been finalized and no further action is required except sale of the bonds by the Treasurer of the State of California and release of the funds by Caltrans. Funds now expended by Metro are reimbursable by Caltrans as soon as the bonds are sold by the Treasurer of the State of California.

- Measure R: All voter and legislative approvals have been finalized and no further action is required. Funds are available to Metro and have been programmed for the Regional Connector project. If the proposed QTIB financing approach is unavailable, the \$160.8 million will not be deferred by Metro as the funds are already available from the proceeds of a previous bond sale that did not utilize federal payment of bond interest as do QTIBs.
- State Repayment of Capital Project Loans: These funds are in Metro's accounts, either as cash or as a pledge by the state to repay private placement bonds. The funds have been programmed for the Regional Connector project.
- Regional Improvement Program Funds: The financial plan reflects planned amounts included in Metro's Countywide Financial Forecast Model FY 2010 to 2040.
- Lease Revenues: In FY 2011 Metro has projected ending balance of \$99.0 million combined with the planned allocation of revenue, including use on the LPA, reflected in Metro's Countywide Financial Forecasting Model FY 2010 to FY 2040.

Table 6-12. Locally Preferred Alternative Commitment of Capital Funds (YOE \$ in Millions)

	YOE \$	Share of Non-New Starts Share	Status of Funds
Capital Cost			
LPA	\$1,342.5		
Revenues			
FTA Section 5309 New Starts Share	\$671.3		
Non-New Starts Share	\$671.3		
Regional Improvement Program Funds	\$16.1	2.40%	Planned
Proposition 1A High-Speed Rail Bonds	\$114.9	17.11%	Budgeted
Proposition 1B PTMISEA	\$175.5	26.15%	Budgeted
Measure R	\$160.0	23.83%	Budgeted
State Repayment of Capital Project Loans	\$73.9	11.02%	Committed
Local Agency Funds	\$41.0	6.11%	Planned
Lease Revenues	\$89.8	13.38%	Committed

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6.3 Operating and Maintenance Costs and Revenues

This section describes the O&M costs for the LPA and the revenue sources proposed to fund them.

6.3.1 O&M Costs

System-wide O&M cost estimates were developed for the heavy rail, light rail, and bus components of the alternatives. O&M costs reflect the FY 2035 operating plans of Metro and other transit agencies within the project area. The resource build-up methodology for estimating O&M costs was designed to meet FTA guidance. Detailed information regarding O&M costs is provided in the *Regional Connector Transit Corridor: Operating and Maintenance Cost Estimate Report* dated January 26, 2010. For this report, O&M costs from the *Regional Connector Transit Corridor: Operating and Maintenance Cost Estimate Report* are escalated to 2011 dollars.

Table 6-13 summarizes Metro’s FY 2035 heavy rail, light rail, and bus O&M costs by mode for the LPA and the No Build Alternative. As shown in the table, total FY 2035 O&M cost for the LPA is projected to be \$1,784.8 million and \$1,790.7 million for the No Build Alternative. Table 6-14 compares the change in annual O&M costs for the LPA relative to the No Build Alternative. As shown in the Table 6-14, system-wide O&M costs for the LPA are projected to be \$5.9 million higher than the No Build Alternative. This reflects a \$6.9 million increase in annual LRT operating costs and a \$1.0 million savings in annual heavy rail operating costs. The heavy rail O&M cost savings is due to the casualty and liability cost component of the O&M cost model which varies with changes in boardings. Heavy rail boardings vary among the alternatives and as a result, the casualty and liability cost component is different between the No Build Alternative and the LPA.

Table 6-13. FY 2035 System-wide Heavy Rail, Light Rail, and Bus O&M Costs for the Locally Preferred Alternative and No Build Alternative (2011 \$ in Millions)

Mode	No Build Alternative	Locally Preferred Alternative
Heavy Rail	\$199.6	\$198.6
Light Rail	\$509.9	\$516.8
Bus	\$1,037.5	\$1,037.5
Contracted Bus	\$37.8	\$37.8
System-wide Total	\$1,784.8	\$1,790.7

Table 6-14. Comparison of FY 2035 System-wide O&M Costs for the Locally Preferred Alternative to the No Build Alternative (2011 \$ in Millions)

Mode	No Build Alternative	Locally Preferred Alternative
Heavy Rail	-	-\$1.0
Light Rail	-	\$6.9
Bus	-	\$0.0
Contracted Bus	-	\$0.0
System-wide Total	-	\$5.9

6.3.2 O&M Revenue Sources

The sections below describe the estimated fare revenue, farebox recovery rates, and levels of annual system-wide operating support associated with the LPA compared to the No Build Alternative.

6.3.2.1 Farebox Revenues and Farebox Recovery

Table 6-15 summarizes the annual system-wide farebox revenues and farebox recovery rates for the heavy rail, light rail, and bus components of the No Build Alternative and LPA for the FY 2035 horizon year. Farebox recovery reflects the share of operating costs paid through fare revenues.

To compare the differences among alternatives, annual estimates of FY 2035 farebox revenues were developed based on the travel forecasting model projections of 2035 total daily boardings and linked trips by alternative and an average fare revenue per linked trip calculation discussed in detail in the Financial Analysis Report (Appendix HH). Total daily linked trips were annualized using an annualization factor of 317.80, consistent with the factor used in the calculation of user benefits.

As shown in Table 6-15, annual system-wide farebox revenues for the 2035 horizon year for the No Build Alternative is estimated to be \$620.3 million and \$626.8 million for the LPA, or approximately \$6.5 million more than the No Build Alternative. With the additional \$6.5 million in annual fare revenues offsetting the higher system-wide O&M costs shown previously in Table 6-13, farebox recovery for the LPA (35.0 percent) is slightly higher than the No Build Alternative (34.8 percent).

6.3.2.2 Level of Operating Support from Metro

As shown in Table 6-16, in comparison to the No Build Alternative, implementation of the LPA would have a relatively small impact on the level of operation support required from Metro. The combined effect of the LPA is estimated to have slightly higher annual system-wide O&M costs

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(\$5.9 million) but also projected to achieve a slightly higher level of farebox revenues (\$6.5 million) resulting in a \$0.6 million reduction in operating support from Metro.

Table 6-15. FY 2035 System-wide Annual Fare Revenues and Farebox Recovery for the Locally Preferred Alternative and No Build Alternative (2011 \$ in Millions)

Alternative	No Build Alternative	Locally Preferred Alternative
Annual Boardings (millions)	694.0	693.0
Annual Linked Trips (millions)	364.9	370.8
Fare Revenue	\$620.3	\$626.8
Farebox Recovery	34.8%	35.0%

Table 6-16. Locally Preferred Alternative FY 2035 System-wide Impact in Annual Operating Support Relative to the No Build Alternative (2011 \$ in Millions)

	No Build Alternative	Locally Preferred Alternative
Increase in Operating Costs	-	\$5.9
Increase in Farebox Revenues	-	\$6.5
Impact on Operating Support	-	-\$0.6

6.3.2.3 Sources of O&M Funding Support

The LPA would be funded as an incremental component of Metro's existing and planned rail program. In addition to fare revenue, Table 6-17 summarizes the local, state, and federal revenue sources that are projected to provide approximately \$8.8 billion in operating support for the Metro rail system based on the LRTP Financial Plan. For each source, the projected level of funding is provided for Metro rail operations over the FY 2020 to FY 2035 period, during which period the LPA would be in operation.

**Table 6-17. Funding Support for Metro’s Rail Operations,
by Source FY 2020 – FY 2035 (YOE \$ in Millions)**

Source	Total, FY 2020-2035
Local Funds	
Proposition A Rail Development Program	\$2,033.7
Proposition C Security Program	\$245.7
Proposition C Discretionary Program	\$3,055.4
Measure R Rail Operations Program	\$1,055.1
Other Metro Funds	\$476.6
State Funds	
State Transportation Assistance	\$815.2
Federal Funds	
Section 5309 Fixed Guideway Modernization Program	\$704.4
Section 5307 Urbanized Area Formula Funds	\$102.0
Section 5340 Growing States and High Density Program	\$131.8
Congestion Mitigation and Air Quality Program	\$198.00
TOTAL	\$8,817.9

6.4 Cost Risks and Uncertainties

As with any large infrastructure project in its planning stages, the LPA includes several sources of risks and uncertainties that could potentially affect the capital and operating cost and revenue assumptions.

From a capital cost perspective, they include inflationary risks, the construction schedule, scope, and the cost and schedule of the other America Fast Forward projects. On the revenue side, major risks include Measure R revenue shortfalls, the inability to obtain necessary financing, and the availability and timing of FTA New Starts funds.

Key areas of risk from an O&M cost perspective are related to cost escalation for labor or fuel and real increases in unit O&M costs for the project or system upon completion. From a revenue perspective, areas of uncertainty include ridership and fare revenue forecasts and sales tax revenues.

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6.4.1 Capital Risks

6.4.1.1 Capital Cost Risks

Inflation

Inflation is a key risk for large capital improvement projects, as it typically represents a large share of the capital cost when project development is stretched over several years. A large part of cost inflation is driven by demand and supply at global and regional levels, factors that are beyond the control of project sponsors.

As described previously, the capital cost estimate assumes a rate of inflation growth increase of three percent from FY 2011 to FY 2020. This assumes a gradual increase in economic growth in the Los Angeles region. During PE, the risk assessment will evaluate the forecasted cost escalation rates in more detail and evaluate different escalation rates for different commodity types.

In general, commodity prices tend to be particularly sensitive to global economic pressures. A notable example is steel, the price of which peaked in the third quarter of 2008 (after a steep run up), significantly dropped for three straight quarters, and then increased 5.7 percent between the second and third quarters of 2009. Since steel is an easily transportable, high-value commodity that is essential for a wide range of manufacturing and construction uses, its price is influenced by changes in production as well as speculation of future economic demand. Crude oil, which after processing is used in one form or another for many elements of a construction project, is similar. Other commodities (e.g., concrete) are less transportable so they tend to be influenced more by regional economic factors; however, they also represent a notable share of rail transit construction costs and their price variations will impact the project costs.

Right-of-way costs are highly correlated with property values, which have recently declined after many years of growth at rates that were higher than historical averages. It is currently unknown when the real estate market will fully recover. This, along with site-specific factors that can influence the cost of acquisitions, creates a considerable amount of uncertainty regarding right-of-way costs.

With the accelerated implementation of the 12 transit corridor projects in America Fast Forward, the availability of qualified labor is another potential source of capital cost inflation. If there is insufficient qualified labor, capital cost escalation can occur through unit cost increases (due to insufficient competition or the need to bring additional qualified labor into the region) and/or schedule delays. To mitigate this risk, Metro currently anticipates performing a more detailed study of market conditions and the availability of qualified labor in the PE phase of the project.

Project Schedule

Schedule delays can lead to cost increases that may impact the financial plan for a project, both in additional cost escalation and increased professional services costs. Schedule changes might result from scope changes, local permitting and approval processes, agreement negotiations, right-of-way acquisition, the availability of qualified labor, procurement delays, vehicle manufacturing delays, and construction delays. As a project becomes more complex, tasks become larger and they often have more dependencies. Task durations can be dependent on many factors, some of which are beyond a project manager's control.

Project Scope

As the project progresses through PE and design, the cost estimate will become more precise as the project is refined. Cost increases could occur as a result of unexpected soil conditions and geotechnical issues, the need for unexpected utility relocations, or the presence of tar sands, unanticipated groundwater, and other environmental impacts and mitigation measures, particularly associated with the underground alignment. Issues relating to tunneling technologies, for example, can change the estimated costs. The current cost estimate includes contingencies to cover these and other potential changes.

Cost and Schedule of Other America Fast Forward Projects

Both the capital costs and schedules of the other America Fast Forward projects are subject to the same uncertainties outlined above for the LPA. As all projects are expected to be constructed around the same time period, cost increases or schedule modifications for any project could impact the availability of capital funds for the LPA. With an increase in capital costs for one, some, or all of America Fast Forward projects, the total funds required for the twelve America Fast Forward projects may exceed the anticipated revenues that are programmed to construct the projects.

6.4.1.2 Capital Revenue Risks

Measure R Revenue

Measure R revenues are generated from a sales tax. Sales taxes tend to move in tandem with the overall economy. As such, Measure R revenues are solely dependent on the ebbs and flows of the Los Angeles County economy. This could potentially lead to future Measure R shortfalls during times of economic recession or depression. Any reduction in Measure R funding could impact Metro's ability to complete the LPA or could impact the delivery of other capital projects. However, the reverse is also true, as Measure R revenues will potentially exceed projections in times of robust economic activity. In light of the comparatively small share of capital revenue coming from Measure R, this is less likely to be a major risk for the LPA.

Inability to Obtain Necessary Financing

The accelerated America Fast Forward project schedules require Metro to leverage anticipated Measure R revenues using innovative financing tools. In some cases, these tools, including QTIBs and programmatic TIFIA loans, are subject to legislative action. Should QTIB and programmatic TIFIA loan legislation fail to come to fruition, Metro will need to consider other means of raising the financing necessary to complete the 12 America Fast Forward projects, including use of conventional forms of debt financing for which Metro would be required to pay higher rates of interest than for QTIB or TIFIA. With respect to the LPA, either Measure R cash or conventional forms of Measure R-backed debt could be used in place of innovative financing instruments to provide the \$160 million in proceeds proposed from Measure R-backed financing.

FTA Funds

The financial plan assumes \$671.3 million of federal funds through the Section 5309 New Starts Program. Federal legislation that authorizes and extends this and other federal funding programs (SAFETEA-LU) expired December 31, 2010 but has been extended through a series of

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continuing resolutions. While all federal funding programs have been in place for many years, through authorization and/or appropriations bills there is a possibility that Congress could increase or decrease the amount of funds available, impose new rules on project eligibility, or revise the criteria that FTA is directed to use for evaluating potential projects. The timing of new authorization legislation is also uncertain, as it depends on congressional action and presidential approval.

Specifically related to the proposed FTA Section 5309 funding, the identified level of New Starts funds would be identified in a Full Funding Grant Agreement (FFGA) between FTA and Metro. The FFGA would also identify the amount to be made available each year, subject to annual appropriations legislation. Any delay could necessitate additional borrowing or schedule delays, potentially increasing the project's capital cost.

6.4.2 Operating and Maintenance Risks

6.4.2.1 Operating and Maintenance Cost Risks

O&M Cost Increase

In general O&M unit costs are subject to many macroeconomic factors, including fuel prices, commodity prices, labor contracts, and security costs. These factors are all subject to the macroeconomic environment and are largely out of the hands of Metro and thus are all potential risks that may have impacts on operating costs, either negative or positive. Metro has estimated O&M costs as a function of vehicle-revenue hours, and any increase in unit costs could lead to an increase in overall O&M costs.

6.4.2.2 Operating and Maintenance Revenue Risks

O&M Revenue Shortfall

Fare revenues make up a notable share of the LPA's corridor revenue. Ridership and a continuation of current fare levels in real terms could change due to economic conditions, the local job market, population growth, or levels of traffic congestion on roads and major highways.

6.5 FTA New Starts Evaluation – Performance Considerations

6.5.1 Introduction

This section summarizes and compares the key FTA New Starts project performance measures for each build alternative to the No Build and TSM Alternatives. This evaluation and comparison supports the LPA as being the highest performing of the build alternatives being considered. Table 6-18 summarizes the categories and measures included in this section.

6.5.2 Effectiveness in Improving Mobility

Various elements serve as indicators of improved mobility including responsiveness to goals and objectives and the transportation problems and deficiencies identified in Chapter 1, Purpose and Need. Ridership describes the number of people using the proposed transit alternatives (including the LPA) in 2035, as estimated through the Metro travel forecasting model. Travel time savings assess the daily and annual value of time saved for transit users as a result of the proposed transit alternatives, including the LPA. Tables 6-19 and 6-20 summarize the key mobility measures.

After the Draft EIS/EIR was published, adjustments to the ridership modeling baseline data were made in response to input received from FTA. Since the Metro Board of Directors had already designated the Fully Underground LRT Alternative as the LPA by the time FTA's comments were received, only the ridership modeling data for the No Build Alternative and the LPA were updated. The ridership modeling data for the other alternatives were not updated. As such, only the original Draft EIS/EIR ridership modeling data for the Fully Underground LRT Alternative is valid for the purposes of comparison with the TSM Alternative and the other build alternatives. Updated modeling data for the LPA in response to FTA's comments is shown in Table 6-20.

Table 6-18. Evaluation Categories and Measures

Comparative Analysis of Alternatives	
Effectiveness in Improving Mobility	Study Goals and Objectives
	Ridership – New Daily Transit Trips
	Ridership – Daily Project Trips
	Travel Time Savings
	Daily Project Passenger Miles
Cost - Effectiveness	Incremental Cost per Hour of Transit System User Benefits
Operating Efficiencies	Operating Cost per Passenger Mile

Table 6-19. Mobility Effectiveness Measures from the Draft EIS/EIR

Measure	No Build Alternative	TSM Alternative	At-Grade Emphasis LRT Alternative	Underground Emphasis LRT Alternative	Fully Underground LRT Alternative from the Draft EIS/EIR
Daily New Transit Trips compared to No Build	N/A	5,300	12,300	14,900	17,300
Daily New Transit Trips compared to TSM	N/A	N/A	7,000	9,600	12,000
Daily Project Transit Trips	N/A	N/A	67,400	70,700	89,900
Daily Hours of Transit Users Time Saved compared to No Build	N/A	6,400	15,200	18,300	20,400

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Table 6-19. Mobility Effectiveness Measures from the Draft EIS/EIR (continued)

Measure	No Build Alternative	TSM Alternative	At-Grade Emphasis LRT Alternative	Underground Emphasis LRT Alternative	Fully Underground LRT Alternative from the Draft EIS/EIR
Annual Hours of Transit Users Time Saved compared to No Build	N/A	2,023,000	4,836,000	5,826,000	6,477,000
Daily Hours of Transit Users Time Saved compared to TSM	N/A	N/A	8,800	11,900	13,900
Annual Hours of Transit Users Time Saved compared to TSM	N/A	N/A	2,792,000	3,781,000	4,432,000
Daily Project Passenger Miles	N/A	N/A	80,300	108,200	113,900

Table 6-20. Mobility Effectiveness Measures for the Locally Preferred Alternative

Measure	Locally Preferred Alternative
Daily New Transit Trips compared to No Build	17,700
Daily Project Transit Trips	88,200
Daily Hours of Transit Users Time Saved compared to No Build	20,800
Annual Hours of Transit Users Time Saved compared to No Build	6,610,000
Daily Project Passenger Miles	118,100

6.5.2.1 Ridership

For all proposed alternatives, including the LPA, transit ridership is a function of travel time and cost. All else being equal, the faster travel times attract more riders. Speed is usually a function of both the technology (bus, LRT, etc.) and the physical conditions in which the vehicles operate.

The major measures of effectiveness of transit ridership for comparison between alternatives is the number of new “transit” trips compared to the No Build and TSM Alternatives and the “project” transit trips (actual transit trips using the Regional Connector segment). As shown in Table 6-19 and Table 6-20, the LPA performs the best compared to the No Build, TSM, and other build alternatives for both new transit trips and project transit trips.

6.5.2.2 Travel Time Savings

Travel time savings is defined as the total travel time savings for “transit” riders that would be expected to result from the build alternatives and the TSM Alternative in the forecast year (2035) compared to the No Build Alternative. Savings are represented as both daily and annual hours of travel time saved for transit users. As shown in Tables 6-19 and 6-20, compared to the No Build Alternative, the TSM Alternative would save transit riders over two million hours per year; the At-Grade Emphasis LRT Alternative would save 4.8 million hours per year; the Underground Emphasis LRT Alternative would save 5.8 million hours per year; and the LPA would save 6.6 million hours per year. Compared to the TSM Alternative, the LPA would save transit riders over 4.6 million hours per year.

6.5.2.3 Daily Project Passenger Miles

Project passenger miles is a measure that shows usage on the project segment in terms of the number of transit users and the length of the project as defined by the alternative. It is related to the project transit trips and shows that the LPA performs 47 percent and nine percent better, respectively, than the At-Grade Emphasis LRT Alternative and the Underground Emphasis LRT Alternative (Tables 6-19 and 6-20).

6.5.3 Cost-Effectiveness (Efficiency)

Cost-effectiveness is a measure used to evaluate how the costs of a transit project alternative (for both construction and operation) compare to expected benefits. Over the years, FTA has revised the cost-effectiveness measure and changed the measure of benefits from “new transit trips” to “transit system user benefits or transit travel time benefits in annual hours.” Cost-effectiveness for the proposed alternatives (including the LPA) is shown in Tables 6-21 and 6-22.

FTA’s cost-effectiveness criterion is measured by the incremental cost per hour of transit system user benefits in the forecast year for the alternatives compared to the No Build and TSM Alternatives. To calculate the change in project capital costs discussed in Section 6.2.1, capital costs were aggregated according to their assumed useful life and annualized accordingly (using a seven percent discount factor mandated by FTA), and using standard FTA annualization factors. Annual operating and maintenance costs were calculated using the approach described and reported in Section 6.3.1.

Table 6-21 presents the 2035 annualized cost and benefit values and the resulting cost-effectiveness for the build alternatives from the Draft EIS/EIR compared to the No Build and TSM Alternatives. As noted above, after the Draft EIS/EIR was published, the ridership modeling data was revised in response to comments received from FTA. The revised ridership modeling data for the LPA and No Build Alternative affected the cost-effectiveness calculations. The annualized cost and benefit values for the LPA compared to the No Build Alternative are included in Table 6-22. Of the build alternatives, the LPA is the most cost-effective and would receive a Medium-High Cost-Effectiveness Rating.

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Table 6-21. Cost-Effectiveness - Incremental Cost per Hour of Transit System User Benefits from the Draft EIS/EIR

Measure	No Build Alternative	TSM Alternative	At-Grade Emphasis LRT Alternative	Underground Emphasis LRT Alternative	Fully Underground LRT Alternative from the Draft EIS/EIR
Total System-wide Annual O&M Cost (million \$)	\$1,690.871	\$1,705.162	\$1,702.747	\$1,696.008	\$1,696.948
Total Annualized Cost in Forecast Year (2035) (million \$)	\$1,690.87	\$1,711.85	\$1,768.91	\$1,776.60	\$1,786.17
Incremental Annualized "Cost" compared to No Build (million \$)	N/A	\$20.98	\$78.04	\$85.73	\$95.30
Incremental Annualized "Cost" compared to TSM (million \$)	N/A	N/A	\$57.06	\$64.75	\$74.32
Annual Hours of Transit Users Time Saved compared to No Build (million)	N/A	2.023	4.836	5.826	6.477
Annual Hours of Transit Users Time Saved compared to TSM (million)	N/A	N/A	2.792	3.781	4.432
Cost-Effectiveness to No Build (\$)	N/A	\$10.37	\$16.14	\$14.71	\$14.71
Cost-Effectiveness to TSM (\$)	N/A	N/A	\$20.44	\$17.12	\$16.77

Table 6-22. Cost-Effectiveness - Incremental Cost per Hour of Transit System User Benefits for the Locally Preferred Alternative

Measure	No Build Alternative	Locally Preferred Alternative
Total System-wide Annual O&M Cost (million \$)	\$1,851.749	\$1,857.712
Total Annualized Cost in Forecast Year (2035) (million \$)	\$1,852	\$1,935
Incremental Annualized "Cost" compared to No Build (million \$)	N/A	\$91

Table 6-22. Cost-Effectiveness - Incremental Cost per Hour of Transit System User Benefits for the Locally Preferred Alternative (continued)

Measure	No Build Alternative	Locally Preferred Alternative
Annual Hours of Transit Users Time Saved compared to No Build (million)	N/A	6.610
Cost-Effectiveness to No Build (\$)	N/A	\$12.65

6.5.4 Operating Efficiency

The FTA uses a single measure of the operating efficiencies criterion, which is the change in operating cost per passenger mile for the entire transit system. The basic calculation involves dividing the system annual operating and maintenance cost for transit services by the system annual passenger miles projected for the year 2035. Calculation of O&M costs is discussed in Section 6.3.1. System annual passenger miles are produced by the Metro travel forecasting model for each alternative for the forecast year of 2035. The No Build Alternative has an operating cost per passenger mile of approximately \$0.29. All of the alternatives have approximately the same operating cost per passenger mile with the LPA being slightly lower at \$0.28.

6.6 Comparison of Alternatives

This chapter summarizes the information from the other chapters of this EIS/EIR and highlights important trade-offs between the proposed alternatives. As stated in Chapter 2, Alternatives Considered, Metro has designated the Fully Underground LRT Alternative as the LPA. Section 6.6.1 contains a summary of the evaluation methodology used to reach this LPA designation. Further information on the cost and ridership estimates used in this analysis is provided in previous sections of this chapter. Detailed discussions of environmental considerations are provided in Chapter 4, Environmental Analysis, Consequences, and Mitigation.

6.6.1 Evaluation Methodology

Metro applied the following goals and objectives for evaluating potential alternatives (including the LPA) to the Regional Connector Transit Corridor project. These goals and objectives reflect Metro's mission to meet public transportation and mobility needs for transit infrastructure while also being a responsible steward of the environment and being considerate of affected agencies and community members when planning a fiscally sound project.

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Transportation goals:

- Improve regional system functionality by maximizing ridership and increasing transit accessibility and connectivity
- Reduce the number of transfers occurring system-wide, particularly at 7th Street/Metro Center Station and Union Station
- Minimize the trip time between the Metro Gold, Blue and future Expo Lines between 7th Street/Metro Center Station and Union Station
- Expand transit coverage of downtown Los Angeles with new high capacity stations
- Improve mobility and accessibility both locally and regionally – Develop an efficient and sustainable level of mobility within Los Angeles County to accommodate planned growth and a livable environment
- Leverage investments previously made in the regional rail system to improve system reliability

Environmental goal:

- Support efforts to improve environmental quality – Develop a project that minimizes adverse environmental impacts while providing environmental benefits, including providing air quality benefits and help the region meet greenhouse gas reduction goals

Land use goals:

- Support community planning efforts – Support the progression of the downtown Los Angeles area as an integrated destination and a dynamic livable area accommodating projected growth in a sustainable manner
- Support adopted land use and transportation plans
- Increase livability through the integration of transit into communities

Implementation goals:

- Provide a safe and secure alternative transportation system – Develop a project that is safe for riders, pedestrians, and drivers while meeting the region's need for security
- Support public involvement and community preservation – Incorporate the public in the planning process and balance the benefits and impacts while preserving communities in the area, such as Little Tokyo, the Arts District, Bunker Hill, Civic Center, and the Historic Core
- Recognize and value the unique and diverse communities in the project area

Financial goals:

- Create jobs and support a sustainable economy
- Provide a cost-effective transportation system – Develop a project that provides sufficient regional benefits to justify the investment
- Achieve a financially feasible project – Develop a project that maximizes opportunity for funding and financing that is financially sustainable

These goals draw upon the ones presented in the AA study completed in 2009. For the purposes of this EIS/EIR, they have been updated and refined based on public involvement and further analysis of the proposed alternatives (including the LPA), the project area, and the background transportation system. These goals capture, to a degree, the FTA's criteria used to rate projects under consideration for the discretionary Section 5309 New Starts Program.

FTA's current rating system considers projects from two perspectives: project justification and local financial commitment. Projects must receive at least a "medium" rating in both categories to be recommended for funding. It should be noted that FTA has recently commenced a rulemaking process which may significantly change the measures used to make New Starts funding recommendations, and FTA has directed that consideration be given to economic and job benefits, environmental sustainability, and livable communities in weighing alternatives for transit projects.

6.6.2 Evaluation Results

This section examines the proposed TSM Alternative with the three build alternatives (At-Grade Emphasis LRT Alternative, Underground Emphasis LRT Alternative, and the LPA (formerly called the Fully Underground LRT Alternative)) based on the criteria discussed in Section 6.6.1. These criteria are used to compare the alternatives to each other, and to the No Build Alternative, which represents year 2035 conditions without the proposed Regional Connector project. Detailed descriptions of the potential alternatives are provided in Chapter 2, Alternatives Considered. Further discussion of the evaluation results is provided in the following sections.

A summary comparison of alternatives is shown in Table 6-23. After the Draft EIS/EIR was published, adjustments to the ridership modeling baseline data were made in response to comments received from FTA. Since the Metro Board of Directors had already designated the Fully Underground LRT Alternative as the LPA by the time FTA's comments were received, only the ridership modeling data for the No Build Alternative and the LPA were updated. The ridership modeling data for the other alternatives were not updated. As such, only the LPA modeling data is valid for the purposes of comparison with the No Build Alternative. The TSM Alternative and other build alternatives from the Draft EIS/EIR are shown for reference only.

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Table 6-23. Summary Comparison of Alternatives

Criteria	No Build ¹	TSM	At-Grade Emphasis	Underground Emphasis	Locally Preferred Alternative ¹
Transportation Goal					
New Daily System-wide Linked Trips in 2035	N/A	5,300	12,300	14,900	17,700
<u>Number of Transfers Needed to Reach:</u>					
Long Beach from Pasadena	2	2	0	0	0
East Los Angeles from Culver City	2	2	0	0	0
East Los Angeles from Long Beach	2	2	1	1	1
Culver City from Pasadena	2	2	1	1	1
Little Tokyo/Arts District from Long Beach	2	1 ²	1	0	0
Little Tokyo/Arts District from Culver City	2	1 ²	0	1	0
Little Tokyo/Arts District from Pasadena	0	0	1	0	0
Little Tokyo/Arts District from East Los Angeles	0	0	0	1	0
<u>Travel Times in Minutes from:³</u>					
Chinatown Station to Pico Station	20	25 ²	17	15	13
Pico/Aliso Station to Pico Station	23	30 ²	15	10	11
New Rail Stations	0	0	3	3	3
Improve Local and Regional Access/Mobility?	No	No	Yes	Yes	Yes
Leverage Prior Rail System Investments to Improve Reliability?	Low	Low	Med	High	High
Environmental Goal⁴					
Annual Greenhouse Gas Reduction (metric tons CO ₂ e)	Base	51,400	56,900	58,200-58,300	59,500-59,600
Annual Regional Vehicle Miles Traveled Reduction (millions)	Base	87M	96M	99M	102M
Land Use Goal					
Support Community Planning Efforts, Dynamic/Sustainable?	No	No	Yes	Yes	Yes
Support Adopted Land Use and Transportation Plans?	No	No	Yes	Yes	Yes
Increase Livability by Integrating Transit into Communities?	No	No	Yes	Yes	Yes

Table 6-23. Summary Comparison of Alternatives (continued)

Criteria	No Build ¹	TSM	At-Grade Emphasis	Underground Emphasis	Locally Preferred Alternative ¹
Implementation Goal					
Safe and Secure for Riders, Pedestrians, and Drivers?	Yes	Yes	Yes	Yes	Yes
Incorporate Public Involvement, Preserve Communities?	Low	Low	Low	Low	High
Recognize and Value Diverse Project Area Communities?	Med	Med	Low	Low	High
Financial Goal					
Number of New Jobs Created by Project	N/A	N/A	13,800	20,700	16,500
FTA New Starts Cost-Effectiveness Index (CEI) versus TSM	N/A	Base	\$20.44	\$17.12	\$12.65
Capital Costs (millions, 2009\$)	None	\$67.3	\$899.2	\$1,120.1	\$1,167.8 ⁵
Year 2035 Operating and Maintenance Costs (millions, 2009\$)	Base	\$14.3	\$11.9	\$5.1	\$6.0 ⁵
Financially Feasible Project?	N/A	Yes	Yes	Yes	Yes

Notes:

¹ No Build and LPA reflect adjustments to ridership modeling baseline since publication of the Draft EIS/EIR.

² Assumes use of TSM shuttles instead of Metro Red/Purple Lines.

³ Assumes five minutes for each transfer. Actual transfer times vary.

⁴ Refer to Executive Summary Table ES-1 for additional environmental impacts comparison.

⁵ 2011 Dollars

6.6.2.1 Transportation

To assess how well each alternative would improve the transportation goals outlined in Section 6.6.1, the following metrics were used to measure regional system functionality, reduction of transfers, minimization of trip time, and expansion of rail coverage of the downtown area:

- New system-wide linked trips in year 2035
- Number of transfers required to reach selected origin-destination pairs on the rail system
- Travel time improvement between stations that would be linked by the Regional Connector
- Number of new rail stations in downtown Los Angeles

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- Qualitative assessment of whether each alternative would improve local and regional mobility (Yes/No)
- Qualitative assessment of how effectively each alternative would leverage prior rail system investments to improve reliability (Low/Medium/High)

All of the build alternatives would improve local and regional access and mobility, but the LPA outperformed the other alternatives in the majority of the comparisons. It would attract 17,700 new linked trips to the transit system. The LPA would also eliminate the most transfers from the light rail network, and add the most new stations to the downtown area. In doing so, it would shave approximately seven minutes off of north-south cross-county trips, and approximately 12 minutes off of east-west trips. It should be noted that a conservative assumption of five minutes was used for each transfer, but transfers may take much longer during off-peak hours.

The No Build and TSM Alternatives would not improve the operation of the rail system. As such, they would not effectively enhance Los Angeles County's prior investments in rail transit to improve system reliability and have been assigned ratings of "low" for this criterion. The build alternatives (including the LPA) would all achieve this goal, but public concerns have been raised about the reliability of the At-Grade Emphasis LRT Alternative as it would operate in a mixed traffic street environment. Approximately half of the alternative's alignment would be street-running, and many stakeholders have expressed concern that a single traffic accident near the light rail alignment could halt service on the entire light rail network. The Underground Emphasis LRT Alternative and LPA would have little to no street running track and would not encounter these potential reliability issues. The At-Grade Emphasis LRT Alternative has accordingly been rated "medium," and the other two build alternatives have been given ratings of "high".

6.6.2.2 Environmental

A primary environmental goal of the project is to reduce traffic congestion and associated greenhouse gas emissions. The LPA would reduce annual VMT by 102 million miles and reduce greenhouse gas emissions by about 59,600 metric tons of CO₂e each year compared to No Build Alternative conditions. The other build alternatives would reduce VMT by 96 million to 99 million miles and reduce CO₂e by 56,900 to 58,300 metric tons.

Metro intends to minimize all environmental impacts associated with the project, and a comparison of each alternative's environmental impacts is provided in the Executive Summary, Table ES-1. More detail on each impact is provided in Chapter 4, Environmental Analysis, Consequences, and Mitigation. In addition to providing the greatest environmental benefits in terms of VMT and greenhouse gas reductions, the LPA would also result in the fewest adverse environmental impacts after mitigation measures shown in Chapter 8, Mitigation Monitoring and Reporting Program for the LPA, have been applied.

6.6.2.3 Land Use

Qualitative analysis of each alternative and relevant community feedback was applied to gauge compatibility of the alternatives with community planning efforts, adopted land use and transportation plans, and integration of transit into communities. All of the build alternatives, including the LPA, for this less-than two mile link in the rail system are located in the same

downtown vicinity. Therefore the build alternatives, including the LPA, would all be equally responsive to the growth of the downtown area as a livable and sustainable area by improving the quality and comprehensiveness of non-automobile transportation options. The No Build and TSM Alternatives would do little to enhance the existing transportation network. Several land use plans, including the City of Los Angeles General Plan's Transportation Element and Central City Community Plan, call for a light rail connector from 7th Street/Metro Center Station to Union Station, emphasizing that local planning for the downtown area is being performed with the Regional Connector in mind. As such, the No Build and TSM Alternatives would be directly incompatible with these plans.

6.6.2.4 Implementation

All of the build alternatives (including the LPA) and the TSM Alternative follow roughly similar alignments, and would affect the same communities. To measure how effectively and equitably each alternative can be woven into the project area with maximum community compatibility, the following qualitative measures were used:

- Safety and security
- Incorporation of public involvement and community preservation efforts
- Recognition of the unique and diverse communities in the area

All of the alternatives, including the LPA, would include design measures to ensure the safety and security of riders, pedestrians, and drivers. As such, they would all equally meet the safety and security goal.

The public involvement process and the Draft EIS/EIR public review period have revealed overwhelming community support for the LPA and this is the only alternative that can be implemented without causing inconsistencies with community input regarding impacts on the Little Tokyo community and its unique culture and history. The Little Tokyo community has indicated that features of the other two build alternatives, such as the proposed Alameda Street underpass, the potential Alameda Street pedestrian bridge, and permanent conversion of the commercial block southwest of 1st and Alameda Streets to transit use, would disrupt community cohesion and identity. Many Little Tokyo stakeholders have accordingly identified the LPA, which omits these features, as the only alternative that would preserve their community while still providing the Regional Connector project's desired mobility benefits. The No Build and TSM Alternatives would avoid the unwanted features of the At-Grade Emphasis LRT and Underground Emphasis LRT Alternatives, but they would not meaningfully enhance the transportation network serving the community.

6.6.2.5 Financial

The financial goals of the Regional Connector project include job creation, economic sustainability, transportation system cost-effectiveness, and project financial feasibility. The following quantitative metrics were developed to measure these factors (as shown in Table 6-17):

Chapter 6 Cost and Performance Considerations & Summary Comparison of Alternatives

- Number of new jobs created by each alternative
- FTA New Starts Cost-Effectiveness Index (CEI) compared to the TSM Alternative
- Capital costs
- Year 2035 operating and maintenance costs

The LPA would be the most expensive to construct (\$1,167.8 million in 2011 dollars), but it would create the most new jobs and attract the most riders, thus making it the most cost-effective build alternative per FTA's New Starts CEI. It would also be the second least expensive project alternative to operate, after the Underground Emphasis LRT Alternative.

A qualitative metric of financial feasibility was also used to compare the proposed alternatives. Per Metro's current financial outlook, additional revenues will need to be identified to fully fund the capital costs of the build alternatives. The Metro Board of Directors voted on October 28, 2010 to remove the Flower/5th/4th Street station from the LPA as a way to reduce capital costs. Despite the need for additional revenues, none of the alternatives would present a great enough revenue gap to render themselves financially infeasible.