

## CHAPTER 6—COST AND FINANCIAL ANALYSIS

This chapter presents the capital and operating cost estimates and the financial analysis for the alternatives presented in Chapter 2 of this Draft EIS/EIR. The information presented is summarized from the *Westside Subway Extension Cost and Financial Analysis Technical Report* (Metro 2010v).

Metro operates on a fiscal year (FY) beginning July 1 and ending June 30. For example, FY 2011 refers to the period July 1, 2010, through June 30, 2011. All year references in this chapter are to Metro's fiscal year. Throughout this chapter, costs and revenues are presented in 2009 dollars or year of expenditure (YOE) dollars where specified.

### 6.1 Cost Estimate Methodology

#### 6.1.1 Capital Cost Methodology

The methodology used for generating capital cost estimates is consistent with FTA guidelines. FTA requires project sponsors to use standardized cost categories (SCC), which summarize budget baselines in a consistent framework.

Estimates that support the Draft EIS/EIR are based on concept drawings that are developed to an approximate 10-percent level of engineering completion. Where the level of design does not support quantity measurements, parametric estimating techniques were utilized. Costs were estimated in Year 2009 dollars. The *Draft Capital Cost Estimate Report*, dated May 10, 2010, provides additional detail on the cost estimating methodology and the cost elements included in the SCC categories.

#### 6.1.2 Operating and Maintenance Costs Methodology

The methodology for estimating operating and maintenance (O&M) costs was designed to satisfy FTA guidance on cost modeling, which calls for O&M costs to be estimated using a resource build-up approach. In addition to Metro, transit agencies within the study area of the Westside Extension Transit Corridor Study include Los Angeles Department of Transportation (LADOT), Santa Monica Big Blue Bus (BBB), Culver City Bus Line, Antelope Valley, Santa Clarita, and West Hollywood. Additional information about the methodology used to forecast O&M costs is provided in the *Operating and Maintenance Cost Methodology and Model* report dated April 2010.

### 6.2 Capital Plan

The capital plan presents and compares the capital costs associated with each of the alternatives, presents the proposed capital financing plan, and then analyzes Metro's ability to fund the Build Alternatives.

#### 6.2.1 Capital Costs

Table 6-1 presents the capital costs for the TSM and Build Alternatives by SCC code in 2009 dollars. The No Build Alternative does not have any associated capital costs for comparative purposes, as it is considered to be the base case for evaluating the other alternatives.

**Table 6-1. Capital Cost Estimates for TSM and Build Alternatives by Standardized Cost Category in 2009 Dollars (Millions)**

Cost Categories	TSM	Alternative 1— Westwood/ UCLA	Alternative 2— Westwood/VA Hospital	Alternative 3—Santa Monica Extension	Alternative 4— Westwood/VA Hospital plus West Hollywood	Alternative 5—Santa Monica Extension plus West Hollywood
Guideway and track elements	—	809,966	831,688	1,124,337	1,280,581	1,590,122
Stations, stops, terminals, intermodal	—	910,882	1,009,757	1,518,657	1,723,220	2,232,120
Support facilities—yards, shops, administration buildings	13,000	136,431	136,431	226,392	226,392	226,392
Sitework and special conditions	—	293,952	317,178	456,417	506,857	638,476
Systems	1,920	156,520	166,510	230,871	255,279	321,407
Right-of-way, land, existing improvements	—	101,639	159,400	209,954	216,982	325,295
Vehicles	18,018	498,036	528,528	620,004	823,284	965,580
Professional services	4,924	761,560	812,315	1,173,702	1,317,468	1,652,811
Unallocated contingency	3,786	366,899	396,181	556,033	635,006	795,220
Finance charges	—	—	—	—	—	—
<b>Total cost (2009 dollars)</b>	<b>41,648</b>	<b>4,035,885</b>	<b>4,357,988</b>	<b>6,116,367</b>	<b>6,985,069</b>	<b>8,747,423</b>

The capital cost estimates include cost contingency to cover unexpected cost increases, which is consistent with FTA recommendations for transit projects at the 10 percent level of engineering completion. Contingency consists of amounts allocated in varying amounts to each cost category based on “known unknowns”. In addition, an additional amount of unallocated contingency has been added to address “unknown unknowns,” or to simply reflect a prudent amount to cover unanticipated events. Together, allocated and unallocated amounts make up the total contingency. Table 6-2 shows the total amount of contingency that is included in the cost estimate for each alternative.

The capital cost estimates for the alternatives include certain capital projects that benefit the system as a whole, and that are necessary precursors to a Westside Subway Extension. These costs include:

- A turnback facility in the existing Division 20 (Purple/Red Line) Maintenance Facility to accommodate 2.5-minute headways in the main subway trunk;
- Improvements to the existing shop and inspection facilities at the Division 20 yard that are required for both the No Build and Build Alternatives; and
- An expansion of the existing Rail Operations Center located at Imperial and Willowbrook Avenue along the Metro Blue Line. Costs for expansion to this Central Control building that are attributed to other Measure R projects are not included, as it is assumed that they are funded by Measure R in the No-Build scenario.

**Table 6-2. Total Allocated and Unallocated Contingency for TSM and Build Alternatives in 2009 Dollars (Millions)**

Cost Categories (\$2009 Dollars)	TSM	Alternative 1—Westwood/ UCLA	Alternative 2—Westwood/VA Hospital	Alternative 3—Santa Monica Extension	Alternative 4—Westwood/VA Hospital plus West Hollywood	Alternative 5—Santa Monica Extension plus West Hollywood
Allocated Contingency	62,900	463,578	515,654	720,033	809,990	1,025,187
Unallocated Contingency	20,000	366,899	396,181	556,033	635,006	795,220
Total Contingency	82,900	830,477	911,835	1,276,066	1,444,996	1,820,407
Contingency as Percent of Capital Cost	27.81%	25.91%	26.46%	26.36%	26.08%	26.28%

Other cost elements that have been identified as potential cost risks, which would also require funding from the LRTP, are discussed in Section 6.5.1.

### 6.2.2 Proposed Capital Funding Sources

Metro proposes to use a mix of Federal and local funding to fund the Westside Subway Extension. The basis of this analysis is Metro’s adopted LRTP dated October 2009. In the LRTP, funding for the Project has been divided into three segments. Segment 1 is based on a planning estimate for Wilshire/Western to Wilshire/Fairfax (MOS 1) and is expected to be completed by 2019; Segment 2 (MOS 2) would extend from Wilshire/Fairfax to Century City and be completed in 2026; and Segment 3, from Century City to Westwood and based on a cost similar to Alternatives 1 or 2, would be completed in 2036. No funding has been included for Alternatives 3, 4, or 5.

As described above, Metro is trying to accelerate its capital program with the 30/10 Initiative. The concept of the 30/10 Initiative is to use the long-term revenue from the Measure R sales tax as collateral for long-term bonds and a federal loan which will allow Metro to build 12 key mass transit projects, including the Westside project, in 10 years rather than 30. Metro has estimated that accelerating the construction of these 12 key Metro projects will result in cost savings and create economic benefits. The Metro board adopted a position of support for the 30/10 concept on April 15, 2010, and also confirmed that future board action would be required to approve an accelerated project delivery schedule.

While these plans are preliminary, such a development would impact the project completion schedule and cost. If such plans materialize, the impact on the total project cost in YOE dollars will be examined further.

The funding sources that have been identified in the adopted LRTP (October 2009) include the following.



### **Federal**

Section 5309 New Starts Funds—These Federal funds are awarded by FTA on a discretionary basis to new fixed guideway projects. As stated in its LRTP, Metro currently intends to request \$1.7 billion in FTA Section 5309 New Starts funds (in year of expenditure dollars) for the Westside Subway Extension. For the purpose of this analysis, the total amount of New Starts funding available is assumed to be fixed at the amount assumed in the LRTP.

### **Local**

The Measure R sales tax was approved by the voters in November 2008 and took effect in July 2009. Measure R will provide the majority of non-Federal funding. This analysis assumes that Measure R funds would be used to fund project costs not covered by FTA New Starts or local agency funds, up to the amount included in the LRTP for the Westside Subway Extension.

### **Letters of No Prejudice Reimbursement Fund**

Metro intends to use approximately \$56.4 million (in year of expenditure dollars) in funds derived from reimbursements to Metro from the State for Letters of No Prejudice (LONP) agreements on various capital projects, which Metro is free to use on other capital projects. In addition, Metro has expended approximately \$9.2 million in Regional Improvement Funds, Local Transportation Fund (LTF) General Revenues, and Transportation Development Act (TDA) Article 4 funds from 2006–2010. These funds are not included in the analysis of future funding requirements but are described below because they are shown in the LRTP as sources of funds for the Project.

### **6.2.3 Evaluation of Financial Capacity**

Table 6-3 summarizes the capital costs and revenues for the alternatives under consideration. For the purpose of comparison, the revenues have been converted to 2009 dollars so they can be compared to the costs, which are also in 2009 dollars. Therefore, any potential revenue gap is also shown in 2009 dollars. The total amount of funds from all sources, as programmed in the LRTP, is \$4.283 billion when converted to 2009 dollars.

As illustrated in Table 6-3, the estimated capital costs of the following alternatives fall within the amount of funds identified in the LRTP:

- TSM Alternative
- Alternative 1, including its station and alignment options

Alternative 2 exceeds the amount of funding in the LRTP by \$83 million in 2009 dollars, which is less than two percent of the total cost. Because this is relatively close to the amount of funding that is currently programmed, it is assumed that Metro can program additional Measure R funding to help cover this shortfall in future updates of the LRTP without significantly impacting the agency’s ability to complete other Measure R projects. Some of the station and alignment options presented in Chapter 2 would decrease or eliminate this funding gap, while others would increase the gap and require Metro to reprogram additional Measure R funding in future updates of the LRTP. Chapter 7 provides additional detail on the differences in capital costs for these options.

Alternatives 3, 4, and 5 are not considered to be financially feasible because their capital costs significantly exceed the amount of funding available in the LRTP. As shown in Table 6-3, the funding gap is between \$1,842 million and \$4,472 million in 2009 dollars for these alternatives. Metro would be unable to fund this gap through Measure R revenues without impacting its ability to fund other capital projects unless the agency identified a new source of funds.

Table 6-3 shows the assumed amount of Federal funds as a percentage of the total project cost in 2009 dollars.

**Table 6-3. Capital Funding Requirements for Transportation System Management and Build Alternatives in 2009 Dollars (Millions)**

Cost and Revenue	Westside Subway Funds—LRTP	TSM	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Total capital cost	4,283.4	41.6	4,035.9	4,358.0	6,116.4	6,985.1	8,747.4
FTA New Starts funds	1,371.7	—	1,371.7	1,371.7	1,371.7	1,371.7	1,371.7
Measure R	2,727.9	41.6	2,489.5	2,727.9	2,727.9	2,727.9	2,727.9
Local transit funds	118.7	—	118.7	118.7	118.7	118.7	118.7
LONP reimbursement	55.9	—	55.9	55.9	55.9	55.9	55.9
Other sources needed for shortfall	—	—	-	83.7	1,842.1	2,710.8	4,473.2
<b>Total revenues needed</b>	<b>4,283.4</b>	<b>41.6</b>	4,035.9	4,358.0	6,116.4	6,985.1	8,747.4
FTA funds as percent of total project cost	32%	0%	34%	31%	22%	20%	16%

Metro may elect to request additional Federal funding for the Westside Subway Extension. Metro will coordinate further with FTA on the amount of Federal funds as the financial plan for the selected alternative is finalized.

Also of interest is Metro's ability to fund its other capital needs even as it implements the Westside Subway Extension Project. These needs include not only other major capital projects but also routine replacement of existing assets as they reach the end of their useful lives.

Metro's ongoing capital needs are funded through a number of local, state, and Federal funds. The funds programmed for the Metro Rail capital needs from 2010 to 2040, as shown in the LRTP, are provided in the *Westside Subway Extension Cost and Financial Analysis Technical Report* (Metro 2010v). Measure R will finance new transportation projects and programs and accelerate many projects already in the project development pipeline, including new rail and bus rapid transit projects, commuter rail improvements, Metro Rail systems improvements, highway projects, improved countywide and local bus operations, and local city-sponsored transportation improvements.

In March 2010, in response to changing economic conditions, reduced state transportation funding, and the availability of new federal stimulus funds, the Metro Board of Directors approved a revised LRTP expenditure plan for projects over \$7 million occurring between FY 2011 and 2019. Additional details on the prioritized investment plan for 2011 to 2019 are included in the *Cost and Financial Analysis Technical Report*.

As described above Metro will continue to reevaluate and revise its financial plan based on the 30/10 Initiative.

### 6.3 Operating and Maintenance Plan

This section addresses the O&M cost estimates for each alternative, the revenues available to fund the increased O&M costs for the Westside Subway Extension, and Metro’s ability to fund the incremental O&M costs.

#### 6.3.1 Operating and Maintenance Costs

Table 6-4 shows the annual costs to operate and maintain each alternative the rest of Metro’s planned transit system for the project horizon year (2035) along with the difference between each project alternative and the No Build Alternative. The O&M costs include incremental costs for the various Metro modes, as well as the incremental O&M costs for the municipal transit systems. Additional details on the O&M costs are provided in the *Draft Operating and Maintenance Cost Methodology Report* (Metro 2010x).

The LRTP includes O&M funding of \$48 million for the Westside Subway Extension in 2035. The O&M costs for the TSM Alternative, Alternative 1, and Alternative 2 can be accommodated within this amount. Alternatives 3, 4 and 5 would require additional operating revenues of \$61 to \$118 million in 2035.

**Table 6-4. Annual Operating and Maintenance Costs for Year 2035 for Transportation Systems Management and Build Alternatives in Year-of-Expenditure Dollars (Millions)**

Annual Amounts	No-Build	TSM	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Metro heavy rail	127.31	127.33	193.76	198.13	220.48	246.93	277.55
Metro light rail	490.95	490.95	490.70	490.64	490.21	490.54	490.10
Metro directly-operated bus	921.92	925.57	891.22	891.22	891.22	891.22	891.22
Metro purchased transp. bus	35.11	35.11	35.11	35.11	35.11	35.11	35.11
<i>Subtotal—Metro Total System</i>	<i>1,575.29</i>	<i>1,578.95</i>	<i>1,610.79</i>	<i>1,615.10</i>	<i>1,637.03</i>	<i>1,663.80</i>	<i>1,693.97</i>
Municipal Systems Total Cost	167.02	167.00	166.93	166.94	166.96	166.96	166.99
Total Metropolitan Area Cost	1,742.31	1,745.95	1,777.72	1,782.04	1,803.98	1,830.76	1,860.97
Difference from No Build—Metro Only		3.66	35.50	39.82	61.74	88.51	118.69
Difference from No Build		3.64	35.41	39.73	61.67	88.45	118.66

Given the number of cost and service variables that could change in the next 25 years, it is possible that Metro will be able to absorb a greater incremental increase in O&M costs by 2035, which may make one of the alternatives above more affordable.

#### 6.3.2 Operating and Maintenance Funding Sources

Metro uses a combination of local, state, and Federal funding sources to operate and maintain the Metro Rail system. These funding sources are as follows.

### Local/State

- Los Angeles County Proposition A and Proposition C Countywide Sales Tax
- TDA Article 4 statewide  $\frac{1}{4}$  one-quarter-cent sales tax
- Other (includes miscellaneous revenues, such as advertising)
- Los Angeles County Transportation Sales Tax, Measure R
- State Transit Assistance—Population Share (Metro anticipates receiving these funds for O&M after 2013)

### Federal

- Section 5309 Fixed Guideway Modernization
- Section 5340 Growing States and High Density
- Homeland Security Grants
- Congestion Management and Air Quality (CMAQ) Funds (for initial 3 years of operations on the Gold Line, Expo Line, Crenshaw, and other new lines)

In addition to these funding sources, Metro relies on fare revenues to fund about one third of its operating costs.

The *Cost and Financial Analysis Technical Report* presents the operating and maintenance cash flow for the entire Metro rail and bus system, including the Westside Subway Extension.

## 6.4 Construction Phasing

In addition to the alternatives described above, Metro is evaluating two minimum operating segments (MOS). These are described more in Chapter 2 of this DEIS. The capital costs of these two segments are shown in Table 6-5.

The capital and operating costs for MOS 1 and MOS 2 both fall within the amount of funding identified in Metro's approved LRTP. The decision to use construction phases may be affected by the 30/10 plan if Metro chooses to accelerate project delivery for the Westside Subway Extension.

**Table 6-5. Capital Cost Estimates for Minimum Operating Segments by Standardized Cost Category in 2009 Dollars (Millions)**

Cost Categories	MOS 1— Fairfax West Terminus	MOS 2 — Century City—Santa Monica Boulevard Terminus
Guideway and track elements	306,801	607,314
Stations, stops, terminals, intermodal	374,769	817,988
Support facilities—yards, shops, administration buildings	136,431	136,431
Sitework and special conditions	136,186	249,883
Systems	66,577	126,463
Right-of-way, land, existing improvements	72,040	83,361
Vehicles	254,100	304,920
Professional services	336,851	639,567
Unallocated contingency	168,376	296,593
Finance charges	0	—
<b>Total cost (2009 dollars)</b>	<b>1,852,131</b>	<b>3,262,520</b>

## 6.5 Risks and Uncertainties

### 6.5.1 Project Cost Uncertainties

As with any project in the planning stage, there is a degree of cost risk associated with each of the alternatives under. This cost risk is primarily associated with the definition of the project scope, project schedule, and project funding.

#### Changes in Project Scope and Conditions

Current cost estimates are based on an approximate 10-percent level of engineering completion. As the project progresses into preliminary engineering and design, the 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.

Metro has also identified several scope elements that will be studied further during the preliminary engineering phase, including a track connection structure that preserves a future expansion of the Westside Subway Extension to West Hollywood; an allowance for the future expansion of the Westwood/VA Hospital station with two platforms; replacement parking at the VA Hospital station; and additional environmental mitigation costs to identify fossil remains in the project area.

If added to the scope of the project, these improvements would require of \$141 million to \$267 million of additional funding, in 2009 dollars.

### **Changes in Project Schedule**

Schedule delays could be related to unforeseen construction challenges, local decision-making processes, equipment malfunctions, or general construction delays. Uncertainty still exists in the precise timing of the construction phases, which may be impacted by the 30/10 plan, the availability of local funding, and the timing of Federal funding approvals. However, both of Metro's prior Federal rail projects, including the Eastside Gold Line and the Red Line MOS-3, were delivered on their Full Funding Grant Agreement schedules and budgets.

### **6.5.2 Funding Uncertainties**

#### **FTA New Starts Funding**

The project funding plan assumes \$1.7 billion in Federal New Starts funds (in year of expenditure dollars), which represents approximately 28 percent of the total funding for the Project programmed in the long range plan. The terms of this funding will be negotiated and described in the Full Funding Grant Agreement between the Metro and the FTA, which is expected to occur during the final design stage of the project planning process.

The current Federal legislation that authorizes the New Starts program has been extended until December 31, 2010. There is still considerable uncertainty about when Congress will reauthorize the surface transportation program and the amount of funding that will be provided for New Starts projects. This could affect the total amount of funding available for New Starts projects around the country.

#### **Local Funding Risks**

The primary source of non-Federal funding is the Measure R half-cent sales tax. Sales tax collections are sensitive to economic conditions and overall rates of consumption. Any reduction in Measure R funding could impact Metro's ability to complete the entire Westside Subway Extension or could impact the delivery of other capital projects.

Metro has developed an expenditure plan for 2011 to 2019 that prioritizes its major investments based on a number of criteria. Projects that are currently under construction and have existing funding commitments are the highest priority. The next highest priority includes projects that have begun purchasing right of way and projects that require funding to continue project development.

The next tier of priorities relates to capital projects that are seeking approval to begin construction. For those projects, Metro has assigned the highest priority to safety improvements and New Starts projects. An initial phase of the Westside Subway Extension falls into this category, demonstrating the high priority that Metro places on undertaking this project in the 2011 to 2019 timeframe.

The 30/10 plan could also affect the timing and availability of local funding, which would be provided through debt that would be repaid by Measure R revenues. Some of these debt instruments could require legislative action by Congress. However, since Metro has identified the Westside project as a high priority that will be implemented in the next decade, Metro may reduce this risk by using existing debt instruments to start construction on this project in the near term.