

8.0 Executive Summary

Introduction

This Milestone Report for the Financial Plan is the eighth in a series of eleven. The financial analysis prepared by AECOM Consulting Transportation Group (ACTG) for the Southern California Association of Governments (SCAG) provides cost and revenue estimates for the proposed LAX-Palmdale Maglev stand-alone operating scenarios. The total project costs include capital and operating costs, and project implementation allowances. The revenues include fare revenue; freight revenue, concessions and advertising revenues and parking revenue estimated for a stand-alone system. Funding for the construction of the project is anticipated to come from project generated revenues. The intent is limit public financial support for the implementation and operation of the LAX- Palmdale Corridor project. Several financing mechanisms, including short-term debt, the Federal Transportation Infrastructure Finance & Innovation Act (TIFIA) program, and tax-exempt financing were factored into the analysis as uncommitted new funding to Southern California. Other funding, which is not reflected in these analyses may be derived from innovative financing opportunities and Federal funding programs.

ACTG developed a financial analysis model that projected the funding and operating requirements for the three LAX-Palmdale standalone alignments known as the Airport Connector, Maximum Coverage and Transit Hubs scenarios. Scenarios differ with respect to capital and operating and maintenance costs and project revenues. All scenarios include three uncommitted capital sources and four projected operating sources. The capital funding analysis assumed a borrowing program that included TIFIA loan participation. TIFIA acts to leverage downstream revenues through a delayed payment arrangement. The analyses assume that the remaining capital requirements are met through tax-exempt financing, which presumably is placed by a public entity. Since, the project is viewed as a self-sufficient enterprise, no subsidy funds are assumed for meeting capital or operating costs.

Milestone 8 consists of nine components:

- 8.1 Financial Plan Introduction
- 8.2 Funding Requirements
- 8.3 Capital Financing Instruments
- 8.4 Sources of Revenue
- 8.5 Debt Repayment
- 8.6 Funding and Financing Results
- 8.7 Implications for Project Implementation
- 8.8 Innovative Financial Alternatives
- Appendix: Summary Tables of Annual Borrowing Levels

The results of each are described in subsequent sections of the Milestone 8 report. This executive summary provides an overview of the results of the financial plan analysis. The Appendix contains a set of tables identifying the potential annual borrowing levels for the LAX-PMD system.

Sources and Uses of Funds Analysis

The three alternative alignments utilize the same construction scenario: with construction ending in FY2008, and contain different capital funding requirements. Additionally, the scenarios share the same financing assumptions, which include TIFIA loans and some form of tax-exempt borrowing. The differences arise in the total cost assumptions, ridership levels, and annual revenue forecasts.

ACTG developed a multi-year cash flow model, where the three alignments utilized short-term borrowing to fund planning and engineering costs, allocated TIFIA funds and tax-exempt financing to fund the construction, vehicle purchase and other capital-related costs. The analysis did not incorporate Federal Transit Administration (FTA) New Starts funding, or any State and Local contributions. In order to assess the magnitude of the borrowing requirements, the analysis considered the length of time required to pay down the capitalized interest and principal requirements. This is the major feature of the project, and makes it difficult to finance. Specifically, revenue operations do not start until 2009, and the project builds on borrowing requirements through substantial capitalized interest accruals. All funds, except for base year valuations, are shown in escalated year-of-expenditure dollars.

Several assumptions were made in the financial analysis. First, ACTG used short-term borrowings to fund planning and engineering costs in FY2002 and FY2003. Second, ACTG assumed the Federal Government would provide a TIFIA loan to fund one-third of the capital costs. TIFIA loans allow up to 10-years of delayed payments from the date that construction is completed. The loan must be paid off 35 years from the date that construction is completed, and TIFIA loans do not require level debt repayment schedules. Interest costs correspond to 30-year Treasury bonds, which currently yield approximately 6.0%. TIFIA funds typically are allocated when available grant funds for construction are depleted, and in years that debt repayment is delayed the accumulated balances accrue interest costs at 6.0%. In this analysis TIFIA funds are required at the outset of project implementation, because the analysis assumed that no grant funds are available. Third, the use of tax-exempt financing is assumed to fund the remaining capital costs. The large capital requirements mitigate against any form of private financing. This would increase interest costs, and further impact the financial strength of the project. While tax-exempt financing implicitly assumes that a public entity places the debt; analysis does not include public subsidy as a funding source.

The TIFIA program's repayment terms are regarded as flexible with regard to repayment terms; the analysis assumes a 6.0 percent interest rate for both the TIFIA loan and the tax-exempt financing. For this project, it was assumed that the tax-exempt financing would generate up to two-thirds of the required long-term capital funding. The model projected that both TIFIA and tax-exempt debt repayments begin in FY2009. In addition to the debt incurred for construction, capitalized interest also had to be borrowed; and this caused a substantial increase in debt and ultimately caused the repayment to extend beyond 2045 for two of the three stand-alone scenarios.

The project's capital funds accrued principal and interest expenses annually during the seven-year planning and construction period. ACTG structured the model so that current year borrowings included accrued principal and net interest expense from prior year borrowings. Total capital borrowings (from FY2002 – FY2008), including net interest expense in billions of year-of-expenditure dollars, are shown in the tabled data for the three alternatives in Table 8.0-1.

**Table 8.0-1
Total Capital Borrowings with Interest Expense**

	Airport Connector	Maximum Coverage	Transit Hubs
	Short-term Borrowings		
Principal	\$0.09	\$0.13	\$0.12
Interest	\$0.01	\$0.01	\$0.01
Total Borrowing	\$0.10	\$0.14	\$0.13
	TIFIA Loan (1/3 of Total)		
Principal	\$3.24	\$4.68	\$4.21
Interest	\$0.55	\$0.80	\$0.72
Total Borrowing	\$3.79	\$5.48	\$4.93
	Vendor Financing (2/3 of Total)		
Principal	\$6.48	\$9.37	\$8.43
Interest	\$1.10	\$1.59	\$1.43
Total Borrowing	\$7.58	\$10.96	\$9.86
	TOTAL BORROWING PROGRAM		
Total Short-term	\$0.10	\$0.14	\$0.13
Total Long-term	\$11.37	\$16.44	\$14.79
Total Borrowing	\$11.47	\$16.58	\$14.92

Escalation factors of 3.0% per annum are used in the financial analysis to state sources and uses of funds in current dollars. Total construction costs vary among the three scenarios based on inputs provided by IBI and Parsons Transportation Group. The current construction schedule begins in mid-year 2002 and concludes in FY2008. Annual revenue forecasts for 2025 were used as the starting point for 2009 revenue using a factor of 75% for 2009 to indicate that the system builds ridership to the 2025 horizon year. Revenues are increased at 3.0% per year for inflation and 1.4% per year representing real growth in the Los Angeles basin. All operating and maintenance costs were escalated by 3.0% per year.

Funding & Financing Results

The Maglev alternatives utilized similar forms of borrowing to fund a seven-year planning and construction period ending in FY2008. An overriding concern that affected the analysis and shaped the results was the accrual of principal and interest expenses throughout the construction period. What is more, due to the significant borrowings required to build the Maglev system to begin service in FY2009, the project sponsors will have to borrow additional funds to maintain a debt repayment program. (Essentially, the project sponsors will need to borrow funds to pay interest, since revenue is not available until 2009, which compounds the capital investment situation.)

Operating revenue estimates differed among the alternatives based on the alignments' ridership estimates; which provide the basis for the revenue projections to determine debt repayment capacity. ACTG initially structured the financial model to repay all outstanding debt within a 36-year operating horizon; but given the revenue estimates, the two of the three alignments did not fully repay the debt by FY2045. Accordingly, the analysis was extended to project new repayment periods. Table 8.0-2 summarizes the results. The following table reflects the outstanding debt levels at the start of service and at the end of the projected repayment year (2045); the analysis was then extended to determine the date that debt was fully paid for each alignment. The entry, Cash Available for Interest Payments, represents the alignments' net earnings before debt service (total revenue less total operating and maintenance expenses) for the fiscal year.

TABLE 8.0-2
AMORTIZATION OF LOAN PROGRAM SUMMARY

Airport Connector	Start of Service	Initial Projected Payoff	Actual Payoff Period
	FY09	FY45	FY50
Beginning Debt Balance	\$ 11,471,991,821	\$ 10,440,613,355	\$ 386,726,751
Accrued Interest	\$ 688,319,509	\$ 626,436,801	\$ 23,203,605
Cash Available for Interest Payments	\$ 244,769,429	\$ 2,203,253,143	\$ 2,778,671,297
Ending Debt Balance	\$ 11,915,541,901	\$ 8,863,797,013	\$ (2,368,740,942)

Maximum Coverage	Start of Service	Initial Projected Payoff	Actual Payoff Period
	FY09	FY45	FY47
Beginning Debt Balance	\$ 16,580,629,618	\$ 7,456,236,266	\$ 1,286,205,156
Accrued Interest	\$ 994,837,777	\$ 447,374,176	\$ 77,172,309
Cash Available for Interest Payments	\$ 382,355,083	\$ 3,365,056,877	\$ 3,691,635,246
Ending Debt Balance	\$ 17,193,112,313	\$ 4,538,553,565	\$ (2,328,257,780)

Transit Hubs	Start of Service	Initial Projected Payoff	Actual Payoff Period
	FY09	FY45	FY45
Beginning Debt Balance	\$ 14,925,027,831	\$ 2,366,383,400	\$ 2,366,383,400
Accrued Interest	\$ 895,501,670	\$ 141,983,004	\$ 141,983,004
Cash Available for Interest Payments	\$ 361,900,742	\$ 3,126,656,614	\$ 3,126,656,614
Ending Debt Balance	\$ 15,458,628,759	\$ (618,290,210)	\$ (618,290,210)

As the table indicates, the Transit Hubs alignment produced the shortest payoff period and retired all outstanding debt in FY2045; the Airport Connector had the longest payoff period and retired its debt in FY2050. ACTG assumed that all available earnings were used to pay the accrued interest, and any remaining cash was then applied to principal. The (negative) balances shown for ending debt balance indicate the amount of cumulative cash available in the year that all debt is repaid. Once a positive cash balance is achieved it will grow by over \$3 billion per year.

Key financial results are provided in the following table in year 2000 dollars.

Table 8.0-3
Key Financial Results

	Alignment Alternatives		
	Airport Connector	Transit Hubs	Maximum Coverage
Capital Cost	\$8.2 Billion	\$10.7 Billion	\$11.9 Billion
O&M Cost	\$145 Million/Year	\$188 Million/Year	\$212 Million/Year
Revenue	\$416/Million/Year	\$581 Million/Year	\$635 Million/Year
Payoff Year	2050	2045	2047

Implications For Project Implementation

The results of the LAX-Palmdale Maglev financial plan yield several observations that question the proposed timing for implementation, and the scope of the project. The analysis, as structured, shows that LAX-Palmdale requires significant borrowing levels from uncommitted capital sources, namely the TIFIA program and some form of tax-exempt financing. Moreover, for the Airport Connector and Maximum Coverage alternatives the revenue projections are insufficient to retire outstanding debt levels within the initial 36-year analysis period. The Transit Hubs alternative requires the entire 36-year analysis period for retiring outstanding debt. Assuming some sort of private financing, e.g., corporate bonds would greatly increase interest expense extending the payoff period further into the future.

These are very large capital projects to be 100 percent leveraged through debt. The effect of large up-front capital requirements and a long implementation period with delayed project revenue generation add substantial costs through escalation and capitalized interest. For example, the Airport Connector has an engineered capital cost of \$8.2 billion in year 2000 dollars. Escalation at 3 percent per year adds \$1.6 billion in year-of-expenditure dollars since the project takes seven years to construct. Without revenue generation, interest expense becomes an item that must be capitalized, adding another \$1.7 billion. This produces a balance in outstanding debt of \$11.5 billion by 2009, when revenue is finally realized. Moreover, things don't immediately improve with revenue operations. In 2009 accrued interest is about \$700 million, met with net operating revenue of only \$200 million, which results in the need to increase borrowing. Similar results obtain for the Transit Hubs and Maximum Coverage alternatives.

Viewed as a pure equity play by a private entity shows internal rates of return of approximately 6.0 percent, 5.4 percent, and 5.6 percent for the Transit Hubs, Airport Connector, and Maximum Coverage alternatives, respectively. Viewed in the context of cost risk, completion risk, revenue risk, operating risk, etc. these rates of return are

probably not acceptable, especially since the returns are largely produced by revenue generated in the out-years, especially from 2035 to 2045. The private sector not only looks at rate-of-return, an equally important factor is pay-back period, (the time required to recoup investment). With pay-back periods extending to 2045 and beyond, this would be viewed negatively through corporate finance criteria for investment.

While in the current specification of alternatives, the project would be extremely difficult to finance; any of the alignment alternatives produces solidly contrasting financial results when compared to typical transit (or commuter rail) projects.

- Unlike a typical transit project, revenues far exceed operations & maintenance expenses by a ratio of about 3 to 1
- Payoff year occurs when all debt is retired, implying capital investment is not a sunk cost for the Maglev project
- Unlike a typical transit project all capital costs including escalation and financing costs are returned from project revenues.

Project staging should be considered by first constructing a segment of the full build-out Maglev alignment. Project staging should improve results through the following

- Lower capital costs, this lessens the large front-end costs
- Faster project implementation, this lessens costs and accelerates revenues
- Lower escalation and financing costs from a smaller project that is implemented quicker
- Earlier revenue generation to pay-down any accumulated debt and/or provide faster returns to investors
- Improved revenue to cost ratios by implementing the segment(s) that show the best ridership in terms of passenger volumes and market acceptance on a fares per mile basis

The project could then be re-visited from the perspective of some type of private sector involvement.