SR-710 Tunnel Financial Feasibility Assessment

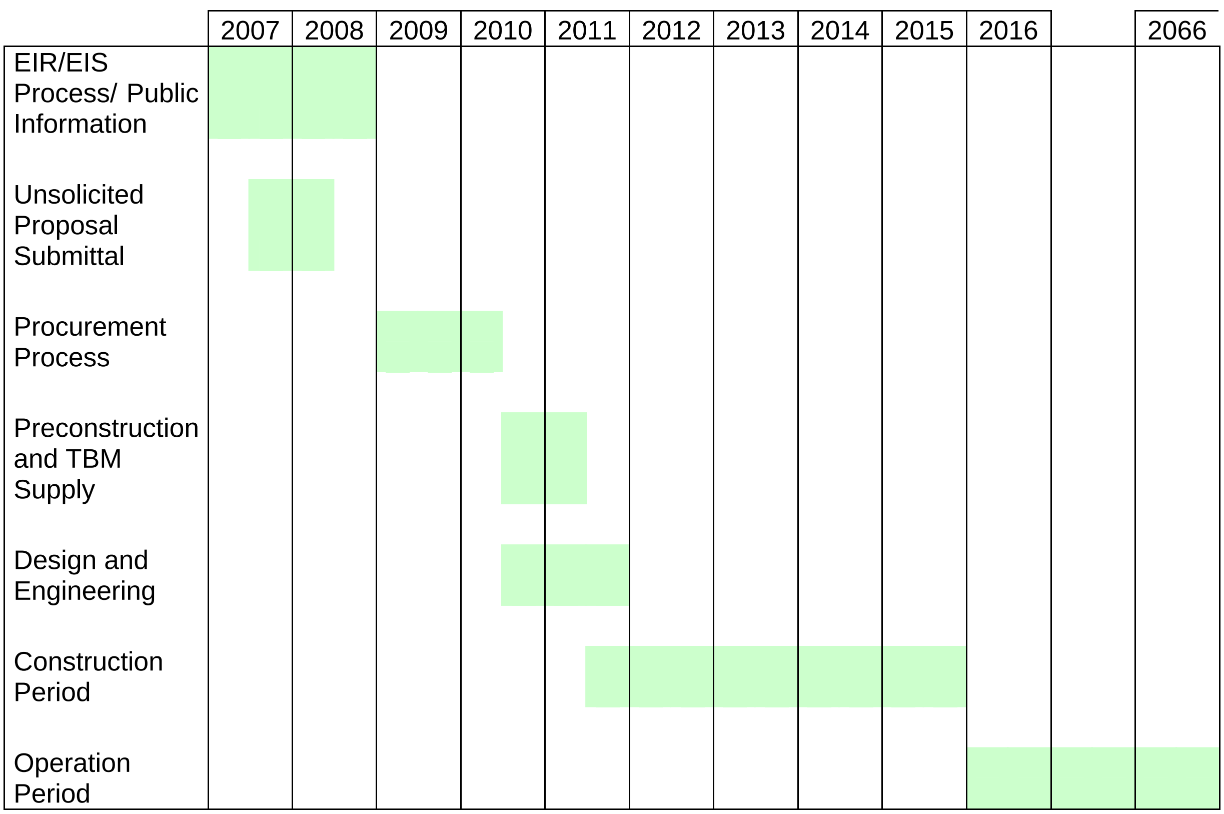
1. BACKGROUND

Alternative concepts have been proposed and evaluated to complete the SR-710 freeway and close the 4.5 mile gap in the corridor. Alternatives evaluated include traditional “surface” freeway alternatives through the communities of Los Angeles, South Pasadena and Pasadena. None of these previously proposed and evaluated alternatives have been successful in satisfying the regional mobility needs and community/ environmental concerns. In response to community/environmental concerns and to lessen the potential impact of completing the Route 710 freeway, a tunnel concept was proposed for assessment as a potential option to the surface alternatives.

The Los Angeles County Metropolitan Transportation Authority (LACMTA-Metro) in conjunction with CALTRANS issued on June 7th, 2006 the *Route 710 Tunnel Technical Feasibility Assessment Report* conducted by Parsons Brinckerhoff. This technical report concluded that the tunnel concept to complete the Route 710 freeway was feasible both from an engineering and environmental standpoint. Preliminary findings also indicated that determination of financial feasibility would depend on a number of external factors requiring further evaluation. The following analysis provides some additional preliminary financial considerations for the Route 710 Tunnel.

2. GENERAL ASSUMPTIONS

2.1 Schedule



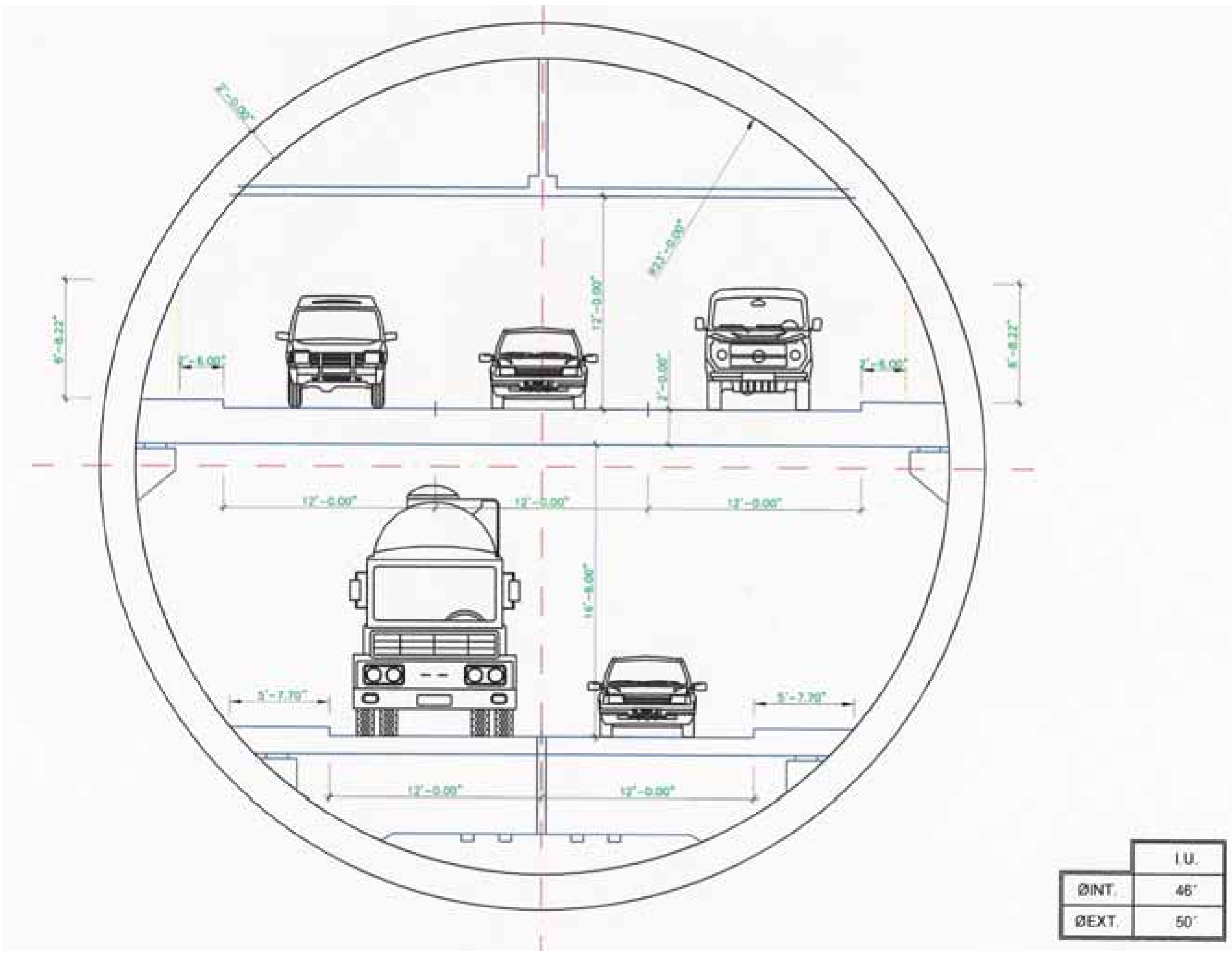
2.2 Concession Term & Commencement of Service

A 50-year concession term has been assumed for the analysis. Service could commence as early as January 2016.

2.3 Construction Assumptions, Considerations and Estimate

Two 46-foot inner diameter (50-foot outer) tunnels would be constructed using two tunnel boring machines (“TBM”). The construction per the schedule above would last 4.5 years, from mid-2011 to end of 2016. This section is similar to the one constructed for the M-30 tunnel in Madrid completed at the end of 2006.

This section provides for two levels of lanes. The first level allows for three 12-foot lanes for passenger vehicles. The second level, which carries two 12-foot lanes, could be used for trucks and/or High Occupancy Vehicles.



Estimated capital expenditures for the two 46-foot diameter tunnels are as follows:

Tunnels (civil works)…………………………………………………..	$2,246 M
Portals and external connections (no fly-over connectors)…………	$225 M
E & M……………………………………………………………...……	$475 M
Flyovers North & South………………………………………..……	$151 M
TOTAL……………………………………………………………………	$3,197 M

(All figures above are in 2007 dollars)

A second construction option, using only one TBM (to defer a large initial investment), is to construct one 46-foot diameter tunnel (during the first five years 2011-2016) followed by second one from 2016 to 2020. In those four years, operations would be very complex. It would entail closing the tunnel during off-peak hours in order to facilitate construction in the northbound direction for the AM peak and in the southbound direction during PM peak. Only peak periods would be open to traffic. Trucks would be precluded from using the tunnel during this period. This option is also considered from a financial standpoint (See Case 5 Section 3.9.4).

A third construction option could be the construction of two 30-foot diameter tunnels in the year 2016 (same construction period mid-2011 to end of 2016). These tunnels could accommodate the 3+3 lanes—needed at the beginning of the term. In 2030 another 30-foot diameter tunnel would be necessary. The construction of a third tunnel in 2030, however, may negatively impact operations. The cost and complexity of connecting the structures under such a scenario would need to be considered.

2.4 Traffic Forecast

Traffic analysis data was generated from SCAG's travel demand model. Traffic volumes were calculated applying different toll scenarios (flat and variable rates). Traffic and revenue forecasts were determined based on model output (through 2030). Forecasts beyond 2030 to 2050 were extrapolated with the following growth rates:

PERIOD	SCAG Model	TUNNEL
2016-2020	0.9	1.7/1.8
2020-2030	0.8	3.9/4.1
2030-2040	Not available	2.0/2.1
2040-2050	Not available	1.0/1.0

Analysis indicates that 3+3 lanes are needed by start of service. By 2030, demand increases such that 4+4 lanes would be necessary to accommodate traffic in the tunnel.

2.5 Tolling Structure

Two tolling structures have been considered at this point: flat rate toll and a variable toll (depending on the time of day).

The flat rate is assumed to be $7.00. See tables 1, 2, and 3 of Exhibit 1 Traffic & Revenue.

A second scenario with a variable toll structure adjusts toll pricing depending on the time of the day. The traffic analysis divided the 24-hour period into four time periods. The assumed toll rates are as follows:

PERIOD	TIME RANGE	TOLL (2006 $)
AM Peak	6 AM to 9 AM	7.00
Midday	9 AM to 3 PM	4.00
PM Peak	3 PM to 7 PM	8.00
Night	7 PM to 6 AM	3.00
24-hour day	24-hour	7.00 (Flat rate)

These rates have been used for the entire term although it is very likely that further adjustments could be made over the years allowing for more revenue than analyzed under current scenarios.

In the opening year, the "average" user would pay $5.64 to use the tunnel. Trucks would pay an average of $15.23.

The revenues utilized in the financial model correspond to the variable toll structure which yields a stronger revenue stream.

2.6 Traffic Volumes & Revenues

The following are two tables that show the traffic volumes in the tunnel and the revenue stream generated for the two tolling structures considered above. The first one represents the vehicles per day in the tunnel and the revenues per day generated using a flat rate of $7.00. The second table represents the daily traffic in the tunnel and the revenue generated when the variable tolling structure is applied. The latter yields better results in terms of revenues.

TRAFFIC VOLUMES & REVENUE FOR FLAT TOLLING STRUCTURE

YEAR	VEHICLES PER DAY	REVENUE (2006 $, in Millions)
2016	20,490	67.439
2020	43,037	120.527
2030	63,139	173.733
2040	76,657	209.130
2050	84,517	229.599

See table 4 in Exhibit 1Traffic for further detail

TRAFFIC VOLUMES & REVENUE FOR VARIABLE TOLLING STRUCTURE

YEAR	VEHICLES PER DAY	REVENUE (2006 $, in Millions)
2016	31,237	71.753
2020	55,607	128.018
2030	83,488	185.691
2040	102,577	226.283
2050	113,778	249.985

See table 5 in Exhibit 1Traffic for further detail on traffic volumes and revenues.

In comparing both tables, it is clear that the variable tolling structure is a more preferable option:

1) Uses the latest technology and advanced pricing techniques.
2) Optimizes mobility by balancing peak and off-peak traffic.
3) Maximizes revenue.

2.7 Passenger and Commercial Tolling

It has been assumed that all vehicles, both passenger and commercial, will be tolled without restrictions. Trucks would be permitted to use the tunnel, except for those carrying hazardous materials, at all times. A correction factor for vehicles carrying hazardous materials has been taken into consideration in this report.

Due to the importance of truck traffic on the SR-710 and to provide another east-bound connection for freight, it is critical to allow truck traffic in the tunnel.

2.8 Exempt Vehicles

No exempt vehicles have been considered in this study.

2.9 Interchange at Huntington Drive

This report does not include an analysis of an interchange at Huntington Drive. The reasons for this are: the additional cost of construction and road improvements, community disruption, and additional Right-of-Way needs.

2.10 Operation and Maintenance

This report relies upon recent experience in the Operation and Maintenance ("O&M") of tunnels and highways around the world. It also considers the specific characteristics of the SR-710 tunnel and the area that it serves.

Principal elements taken into consideration to design and to assess tunnel operations are as follows:

a) Tunnel and Roadway Systems Operations. In this section the following electrical and electro-mechanic systems have been evaluated: energy distribution, energy emergency distribution, ventilation, water pump systems, lighting, fire suppression and detection, communications, CO monitoring.

b) ITS: Intelligent traffic systems.

c) Incident Response.

d) Public Relations.

Preventative maintenance is critical to addressing safety concerns associated with tunnel operations. Therefore, all the different tunnel systems must always be functional in order to guarantee safety for tunnel users.

Current estimates to safely and reliably operate and maintain ("OPEX") the tunnel are shown in the following table.

Expenditure Categories	Est. Annual Expenditures (Period 2016-2066)
Overheads	$2,412,475
Operations (excluded ORT)	$2,325,565
ORT	$8,756,406
Maintenance (Routine)	$6,675,417
Insurance	$4,000,000
TOTAL OPEX (excl. major maintenance)	$24,209,863
Renewals/Major maintenance reserve	$6,339,186

In summary, the annual cost to operate and maintain the SR-710 Tunnel is approximately $24.2 million ($2007) and another $6.4 million per year must be reserved for major replacement and rehabilitation needs.

See Exhibit 2 O&M for additional details.

2.11 ITS & ORT

Toll design considerations were included in the preliminary assessment of the SR-710 Tunnel Project. A core assumption is that an Open Road Tolling ("ORT") technology would be utilized. In the ORT model, toll plazas are replaced by gantries with no barriers. These gantries contain all the necessary equipment to electronically read tags placed on the vehicles.

Such a system allows vehicles to be tolled without stopping or having to reduce their running speed. In order to collect the fares, each transponder would be associated with an account. Those vehicles which do not carry an electronic tag are billed through Video Tolling. Photos of passing car plates are taken. Bills are later sent to drivers from the data provided by the Department of Motor Vehicles.

The advantages provided by an ORT configuration include the elimination of a toll plaza and the consequent reduction in the need for additional Right-of-Way acquisition, air quality improvements, reduction of fuel consumption and increases in customer convenience and satisfaction.

The following specific assumptions have been made for the tunnel ORT system:

a) Two toll gantries with no other means of payment.

b) Video tolling (for non-tag costumers).

c) High number of commuting customers (high ratio between transaction customers and accounts).

2.12 Risk Matrix

RISK DESCRIPTION		Private Entities	CALTRANS	MITIGATION	COMMENTS
Environmental	Environmental Clearance		X		Environmental clearance is assumed to be obtained by CALTRANS.
	Discovery of hazardous materials or archeological, paleontological or cultural resources	X	X	Preliminary studies	Further studies must be carried out. EIS will undertake part/all of the necessary studies.
Policy/Political	Uncertainties regarding public policy		X	Work to establish adequate legislative	Public agency stakeholders.

RISK DESCRIPTION		Private Entities	CALTRANS	MITIGATION	COMMENTS
				framework.	
	ROW parcels SALE		X	Specific authorization needed	
Construction / Design	Geotechnical	X	X	Additional preliminary studies needed	Much further details are needed to design the tunnel. EIS will provide further geotechnical investigations. CALTRANS would cover major contingencies.
	Utilities	X	X	Preliminary Studies, Utility Management Plan.	
	Cost and schedule overruns	X		Experienced designers, specialist and contractors	Well defined project. Selection of best engineering company and tunnel specialist to execute project.
SEISMIC	Interruption of operations due to seismic damages.	X	X	Contract best engineering and geotechnical firms. Conduct detail studies and insert seismic consideration in tunnel structural design from beginning of project.	It is fair to share the risk of force majeure events beyond insurable limits. Tunnels provide safer behavior during earthquakes than ordinary structures. All previous seismic tunnel experience in California should be gathered to substantiate this argument.
O&M	Excessive O&M costs	X		Select to work with private entities with experience in O&M of these types of facilities.	
	Excessive capital maintenance costs	X		Select to work with private entities with experience in O&M of these types of facilities.	
Revenues	Traffic below projections	X		Select to work with consultants with experience in traffic and revenue projections.	Further traffic and revenue studies shall be conducted.
	Toll collection	X		Select to work with private entities with experience in toll collection operations.	Experience to date in the SCAG region includes OCTA with the 91 Express Lanes (1 Million tags issued as of March 2007).
	Competing /alternative projects	X	X	Not applicable.	
	Customer willingness to use the toll Facility	X		High-quality service. Public Relations. Safety. O&M Plan. Incident Response	This will require a thorough investigation and study of traffic conditions and behavior in an area not used to have tolled infrastructures.
	Collection Enforcement	X	X	Work with private entities and enforcement agencies to develop an enforcement plan.	

RISK DESCRIPTION		Private Entities	CALTRANS	MITIGATION	COMMENTS
Financial	Interest rates change prior to financial close		X	Achieve financial closing immediately after Award	A mechanism for risk sharing should be defined.
	Inflation risk	X		Tolls will be increased according to inflation	
	Project finance	X		Work with private entities with extensive experience in project finance.	

3. FINANCIAL ANALYSIS

3.1 General Assumptions

The financial analysis focuses on one base case (Case 1) and four alternative scenarios (Case 2 through 5). A public funding contribution of $1.0 billion is considered in all five cases. This public subsidy is assumed to be received in progress payments linked to the achievement of construction milestones. The base case construction cost is $3.2 Billion (See 3.2). OPEX, ITS and ORT base case costs are also contained in 3.2.

CASE 1	Base Case
CASE 2	PAB (Private Activity Bond) Financing
CASE 3	Construction Cost Reduction
CASE 4	Combined Scenario
CASE 5	Deferred Scenario

3.1.1 Term of the concession

5 years of construction and 50 years of operations.

3.1.2. Equity / Debt Ratio

According to market practice, the assumed equity to debt ratio is 25 / 75.

3.1.3. Inflation

Flat inflation of 2.5% has been considered for the whole period.

3.1.4. Debt Cost

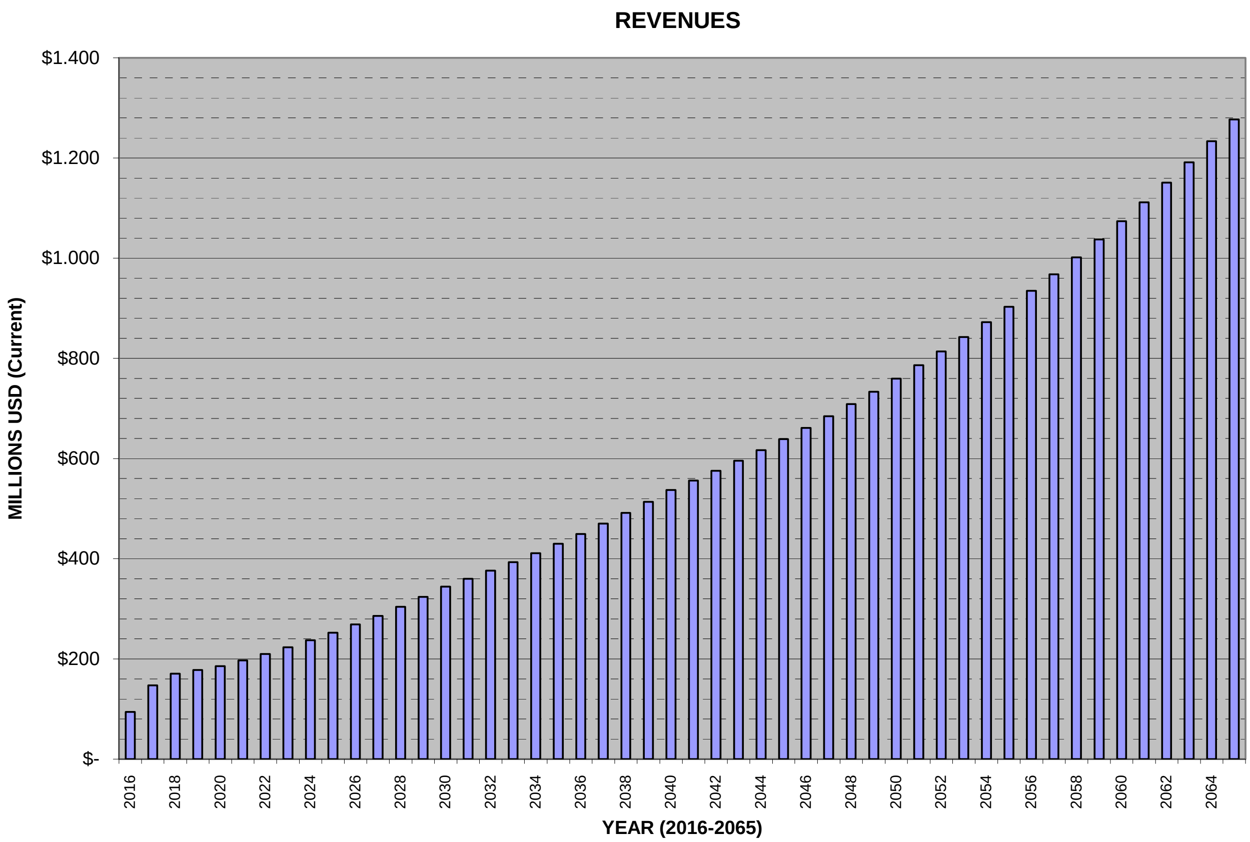
LIBOR	5.31%
Margin all in	1.50%
Total	**6.81%**
Debt Issuance Cost	2.00%

3.2. Construction Cost

Total Construction Cost	**3,200,000,000**
Total ORT (2006 prices)	**16,673,126**
Total ITS (2006 prices)	**38,484,217**
Public subsidy	**1,000,000,000**

3.3. Revenues

The bar chart below depicts the ramp up of revenues during the early stages of the project.



3.4. OPEX

Operational expenditures are estimated as follows (in $2007).

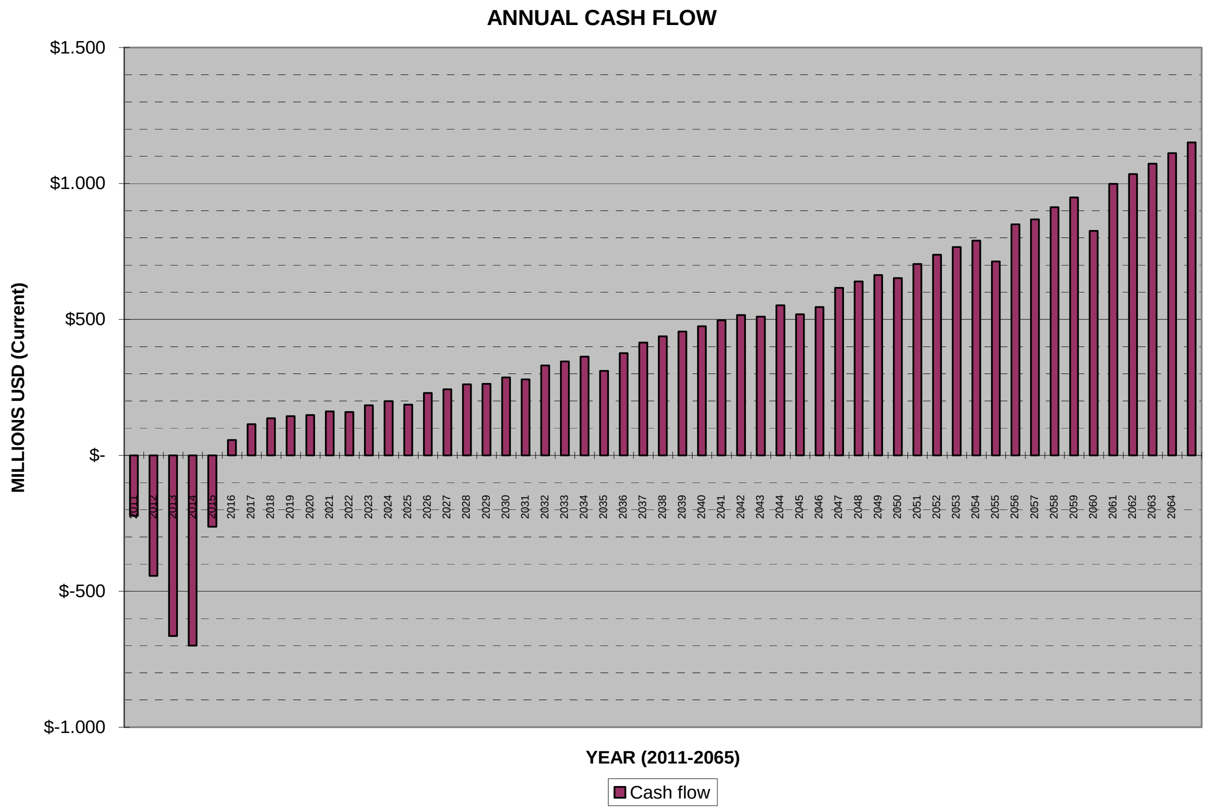
Overheads	2,796,105	11.21%
Operations	11,074,739	44.42%
Maintenance	7,061,265	28.32%
Insurance	4,000,000	16.04%
Total	**24,932,109**	**100.00%**

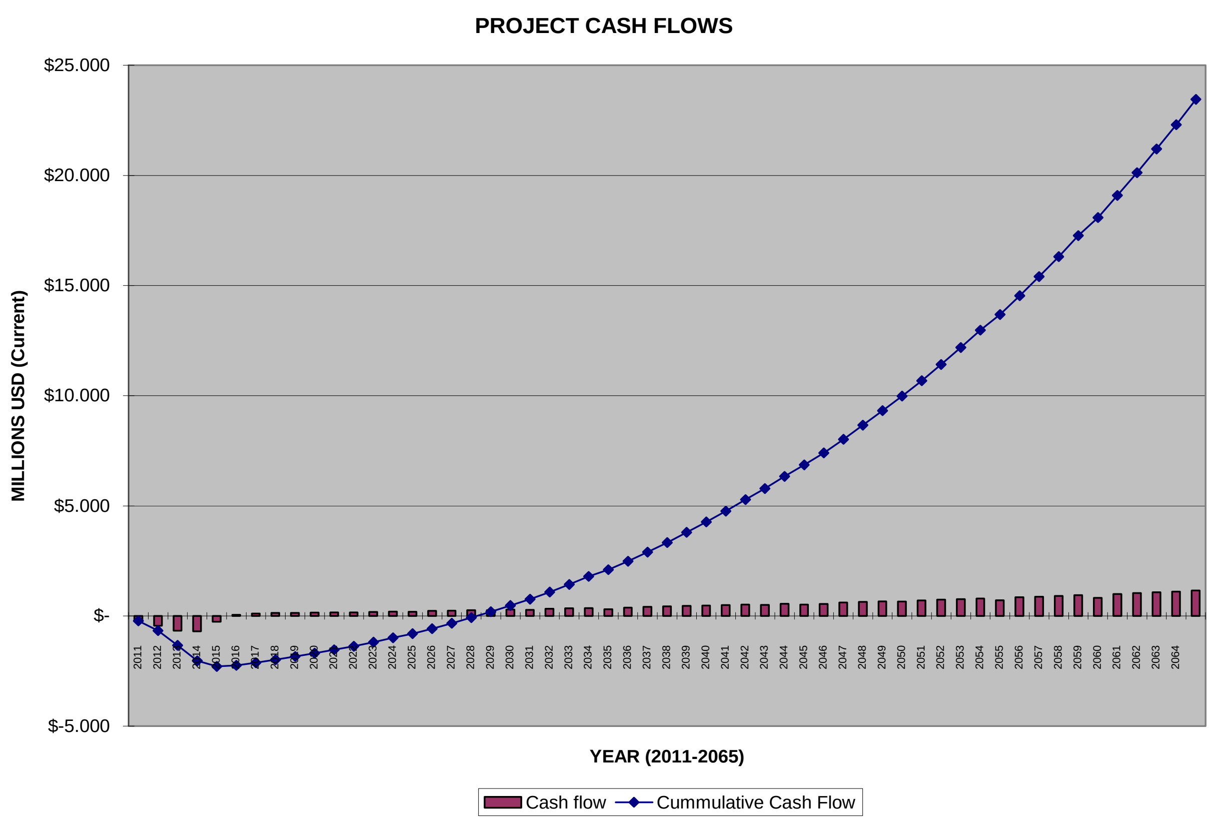
Major maintenance cost has been included as provided in the O&M Exhibit.

3.5. Uses and Sources of Funds during Construction

Total ITS	**48,662,282**
Total ORT	**21,082,731**
Construction	**3,200,000,000**
Total Investment	
Public subsidy	(1,000,000,000)
Total Construction Cost	**2,269,745,013**
Construction OPEX	**24,245,013**
Debt Issuance Cost	39,070,920
Interest Expenses	271,667,064
Financial Expenses	**310,737,984**
Total Investment	**2,604,728,009**
Equity Contribution	651,182,002
Debt	1,953,546,007

3.6. Cash Flow Profiles

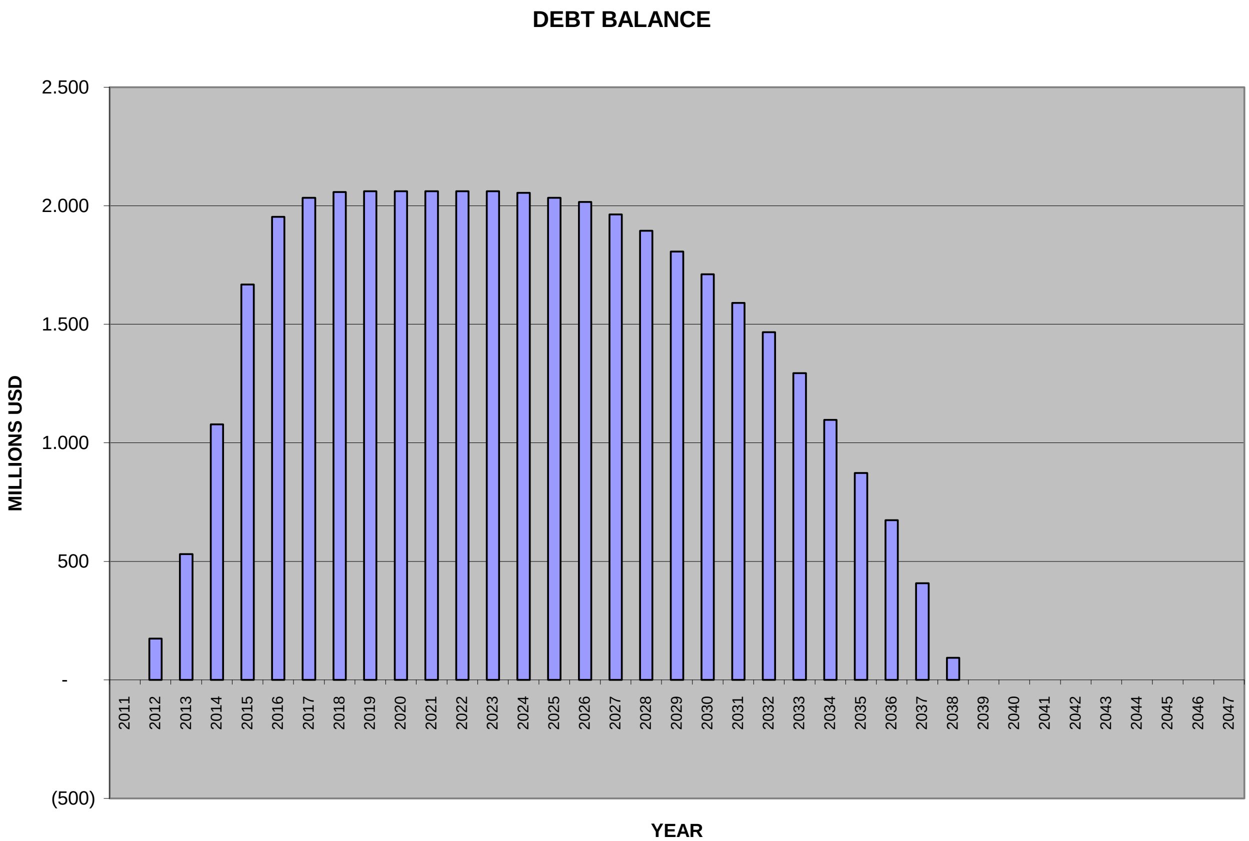




The cash flow profile indicates that the project will need strong financial support during the initial years; analysis also assumes capitalization of interest.

3.7. Debt structure

The debt structure would be complex due to the cash flow profile during the early years of the project. Initial analysis assumes debt to be structured over 28 years.



3.8. CASE 1: Base Case Results

Input data: Construction cost

Project IRR: 9.0%
Shareholders IRR (pre tax): 10.5%

Shareholders' IRR can be improved through debt structuring.

3.9. Sensitivities

3.9.1. CASE 2: PAB Financing

This is case is similar to Case 1 except that the financing is acquired by Private Activity Bonds (tax-exempt bonds) instead of senior bank debt. IRR improves 1.6% from Case 1.

Project IRR: 9.0%
Shareholders' IRR (pre tax): 12.11%

Shareholders' IRR can be improved through debt structuring.

3.9.2. CASE 3: Construction Cost Reduction

This case is similar to Case 1 except that the construction cost is reduced to $3 billion. IRR improves 0.87% from Case 1.

Construction Cost: $3 billion
Bank financing

Project IRR: 9.5%
Shareholders' IRR (pre tax): 11.37%

Shareholders' IRR can be improved through debt structuring.

3.9.3. CASE 4: Combined Scenario

The following adjustment was made:
OPEX: 10% reduction
Traffic: 5% increase
Bank Financing

Project IRR: 9.4%
Shareholders' IRR (pre tax): 11.26%

Shareholders' IRR can be improved through debt structuring.

3.9.4. CASE 5: Deferred Scenario

Construction Cost: The first tunnel with a 5-year construction period is estimated to cost $1.6 billion. A second tunnel with a 4-year construction period is estimated to cost $1.6 billion. Revenues are less during the initial period. See Section 2.3 for further details.

Project IRR: 9.3%
Shareholders IRR (pre tax): 11.07%

The debt profile during the early years is improved. IRR improves 0.57%
Shareholders' IRR can be improved through debt structuring.

3.10. Financial Conclusions

- The ramp up period may be problematic; public subsidies during the early years of project development would improve the financial profile.

- Structuring financing alternatives (including PABs, 30 to 50-year term bonds) could help improve the Shareholders' IRR.