

**1. Project Description**

## Project description for the purposes of the PPP analysis

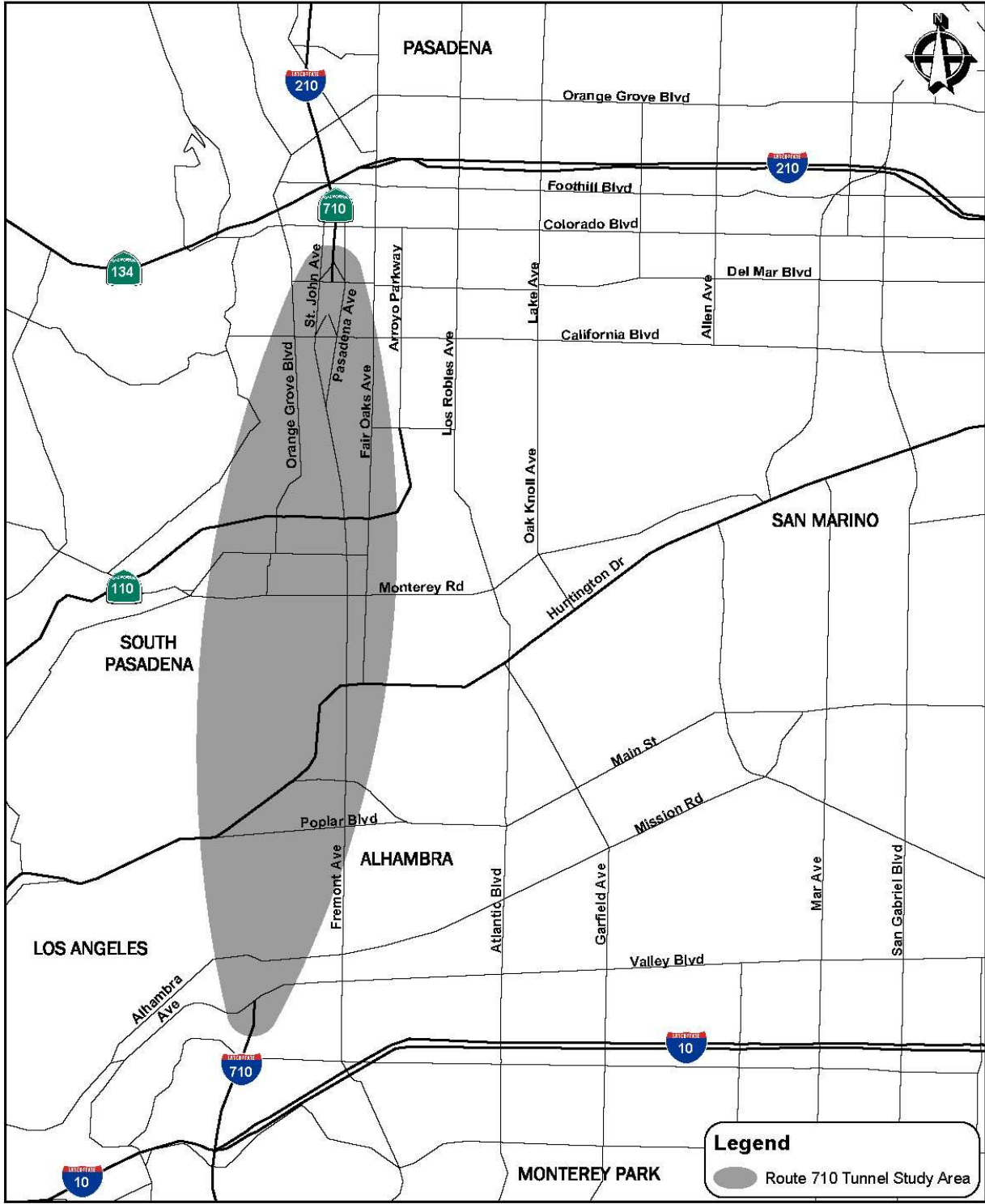
The foundation for this project assessment is a feasibility study conducted for Metro by Parsons Brinckerhoff, entitled: "Route 710 Tunnel Technical Feasibility Assessment Report, Task Order PS-4310-1268-05-01-2".

Description of project: The following is an excerpt from the 2006 Feasibility Report. *"The Interstate 710 (I-710) "Long Beach" freeway serves as a major north-south link in the Los Angeles County transportation network. The freeway is an extensively traveled facility and its level of service has deteriorated as congestion and demand grow within the corridor. This facility currently extends from its southern terminus in the City of Long Beach to Valley Boulevard, just north of the Interstate 10 (I-10) "San Bernardino" freeway near the boundary between Cities of Los Angeles and Alhambra. Beyond this northern terminus is a 4.5 mile gap in the Route 710 until the freeway resumes at Del Mar Boulevard, in the City of Pasadena, where it extends 0.6 miles to the north --- to its junction with the Interstate 210 (I-210) "Foothill" freeway.*

*The California Department of Transportation (Caltrans), Federal Highway Administration (FHWA), the Southern California Association of Governments (SCAG) and the Los Angeles County Metropolitan Transportation Authority (MTA) support the completion of Route 710 to relieve regional and local traffic congestion and to enhance regional air quality. Consequently, SCAG has included this project in its Regional Transportation Plan (RTP) since 1989 and in its Regional Transportation Improvement Plan (RTIP) since 1991.*

*Over the past forty years, alternative concepts have been proposed and evaluated to complete the I-710 freeway and close the 4.5 mile gap in the corridor. To date, none of the previously proposed and evaluated alternatives has been successful in satisfying the regional mobility needs and community/ environmental concerns. These alternatives were traditional "surface" freeway alternatives through the communities of Los Angeles, South Pasadena and Pasadena. All alternatives considered traversed through highly developed urbanized neighborhoods and required a substantial volume of right-of-way along the alignments. Many members of the community were concerned with the impact of these "right-of-way" intensive "surface" alternatives and consequently, opposed to the extension of the Route 710 freeway. In response to this reaction 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 alternative".* Figure 1 is a study area map. Note that the alternative studied by Parsons Brinckerhoff focused on a single alignment that stretched the shortest distance between the 210 and the 710.

The specific alignment selected for this assessment is detailed in the table below. It is important to note that this PPP analysis will focus on a single alignment described herein. The identification of the project for the purposes of this PPP study is in no way intended to circumvent the environmental process nor is it intended to indicate that this project will be selected as the locally preferred alternative. Rather, the SR 710 project studied herein is representative of the type of project which may be ultimately selected by the Metro Board and Caltrans as the Locally Preferred Alternative (LPA) and which then may be designed and constructed. After the environmental process has progressed to the point where Metro /Caltrans selects a LPA, it will be necessary to take another look at the project assumptions made for the express purposes of this study, and make the appropriate adjustments to bring this PPP study into line with the LPA.



**Route 710 Tunnel Feasibility  
Technical Assessment  
STUDY AREA**

Alignment	“Straightened” Alternative A in the PB study through the gap, Valley Blvd to Del Mar. PB’s alignment approximated the previously proposed Meridian at-grade alignment. This alignment had a curvilinear nature which is of questionable justification as a deep bore tunnel and we will assess the cost savings of a straight line alignment. Tunnel length is approximately 21,000’ (PB Alt A was 21,163’).
Cross-Section	Two 57’ Bores, drilled sequentially (PB Option A1). Alternate: Two 48’ Bores (PB Option C1). Include suboption of a single bore option (i.e. indefinite delay after opening first bore to 2 lanes each direction).
Profile	Per PB Study
Huntington	No interchange
Trucks	Permitted. Alternate: No trucks (per Failing)
Technology	TBM
<b>Description of alternatives under consideration</b>	
The current study area for the tunneling alignments consists of a wide swath of possible alignments as defined in the recently completed tunnel technical study completed for Caltrans by CH2M-Hill (CH). The project area was defined as between I-10 to the south, I-5 to the west, I-210 to the north, and I-605 to the east. Currently evaluations such as the geotechnical feasibility study are to be guided by “route-neutral” principles for the extension of SR710. Route-neutral means that currently no alignment for the tunnel is favored over another. It also requires that all practical routes for extending SR 710 be considered.	
<b>Project status</b>	
Three preliminary studies have now been completed: the 2006 MTA/PB Feasibility Assessment, the 2009 Caltrans/CH geotechnical study, and a traffic modeling study for SCAG by Iteris entitled “I-710 Missing Link Truck Study”. The next step in project development other than this PPP feasibility analysis would be to embark upon the environmental analysis, should the MTA Board decide to pursue.	
<b>Discussion / Notes</b>	
While there remains a wide range of alternatives still in play, the alternative selected for this assessment was done purely from a PPP perspective and done so solely to provide the best chance of success as a PPP. This approach will result in an analysis which can then serve as a baseline for assessment of the PPP feasibility of other alignments.	
<b>2. Ridership / traffic numbers</b>	
Traffic numbers from both the PB study and the SCAG (Iteris) study will be assessed for their suitability for PPP analysis. Toll sensitivity and diversion estimation in the PB study will be reviewed and refined with the most recent and pertinent information available today including an assessment of travel time differentials and alternative routes. PB estimated the 2030 average weekday traffic at 169,581 vehicles per day.	
<b>3. Capital, operating, and maintenance costs</b>	
PB Estimate of Capital cost: \$2,875 billion (2006 dollars) for Alignment A, 57’ bore; \$2,377 billion (2006 dollars) for Alignment A, 48’ bore.	

PB Estimate of Operating & Maintenance costs: \$33.6 million/year (2006 dollars)

These costs will undergo a critical review and potential re-estimation as part of this effort.

**4. Renewal and replacement schedules**

Not yet evaluated

**5. Life cycle cost calculations**

Not yet evaluated

**6. Projected schedule**

Estimated Schedule from the 2006 PB Feasibility Study is shown below. This schedule will be scrutinized and perhaps adjusted as part of this study.

	TASK NAME	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9
1	Project Mobilization	■								
2	Portal Excavations	■	■							
3	TBM Installation at North and South Portals		■							
4	TBM Mining from North and South Portals			■	■	■	■			
5	North and South Tunnel Fault Zone Reconstruction						■			
6	Cross Passage Construction			■	■	■				
7	Tunnel Lining and Road Deck						■	■	■	
8	Build Out Portal & Approaches							■	■	■
9	Tunnel Vent Structures				■	■	■	■	■	■
10	Tunnel Finishes							■	■	■
11	Optional Tunnel Interchange			■	■	■	■			
	Project Demobilization - Heavy Civil Works									■

**7. Project revenue estimates (Millions YOE Dollars)**

The PB Study estimated annual revenue generation of between \$133.7M and \$213.4M depending on the toll schedule. This estimate will be re-evaluated as part of this study. The PB Study projected capital funding from net bond proceeds based on this revenue of \$900M to \$1.5B, this too to be re-evaluated as part of this study.

<b>8. Identification of existing anticipated funding sources (Millions YOE Dollars)</b>						
(\$ in millions)	Plan Total	%	Years 05-'09	Years 10-'19	Years 20-'29	Years 30-'40
<b>TOTAL PROJECT COSTS</b>	<b>5,636.4</b>					
Not yet programmed	1,049.4			173.9	82.9	783.9
Baseline programmed	27.1		27.1			
<b>Subtotal Costs</b>	<b>1,076.5</b>	<b>19.1%</b>				
<b>PROJECT REVENUES (FUNDED)</b>						
<b>Local</b>						
Measure R Sales Tax (FIS 460315)	1,049.4	97.5%	-	173.9	82.9	783.9
<b>Subtotal Local</b>	<b>1,049.4</b>	<b>97.5%</b>				
<b>Federal (programming basis)</b>						
Other Federal Funds	2.4	0.2%	2.4	-	-	-
<b>Subtotal Federal</b>	<b>2.4</b>	<b>0.2%</b>	<b>2.4</b>			<b>-</b>
<b>Mixed (programming basis)</b>						
Regional Improvement Prog Funds (RIP)	8.8	0.8%	8.8			-
Interregional Improvement Prog Funds (IIP)	15.9	1.5%	15.9			-
<b>Subtotal Mixed</b>	<b>24.7</b>	<b>2.3%</b>	<b>24.7</b>			
<b>Total Project Revenues</b>	<b>1,076.5</b>		<b>27.1</b>	<b>173.9</b>	<b>82.9</b>	<b>792.6</b>
<b>BALANCE: HIGHWAY STRATEGY COSTS</b>	<b>4,559.9</b>	<b>80.9%</b>		<b>76.0</b>	<b>4,483.9</b>	<b>-</b>
<b>HIGHWAY STRATEGY REVENUE (CONCEPTUAL)</b>						
<b>Local</b>						
Tolls/PPP	2,818.0	61.8%		-	2,818.0	-
<b>Subtotal Local Revenues</b>	<b>2,818.0</b>	<b>61.8%</b>		<b>-</b>	<b>-</b>	<b>-</b>
<b>State</b>						
State Programs	180.0	3.9%		-	180.0	-
<b>Subtotal State Revenues</b>				<b>-</b>	<b>-</b>	<b>-</b>
<b>Federal</b>						
Federal Formula Funds (Additional)	1,301.9	28.6%		-	1,301.9	-
Federal HPP/PNS Earmarks	186.0	4.1%		2.0	184.0	-
Metropolitan Mobility and Access	74.0	1.6%		74.0	-	-
<b>Subtotal Federal Revenues</b>	<b>1,561.9</b>	<b>34.3%</b>		<b>76.0</b>	<b>1,485.9</b>	<b>-</b>
<b>Total Highway Strategy Revenues</b>	<b>4,559.9</b>		<b>27.1</b>	<b>76.0</b>	<b>4,483.9</b>	<b>-</b>
<b>GRAND TOTAL</b>	<b>5,636.4</b>		<b>27.1</b>	<b>249.8</b>	<b>4,566.8</b>	<b>792.6</b>

**SR 710 North Extension (tunnel) - Key Funding Issues**

- Capital cost of proposed project is \$5,636.0 million in YOE \$ in the LRTP. It is not clear what the constant dollar amount is for comparison to the 2006 PB Feasibility Study cost estimate of \$2,875.0 million (2006 \$) for Alignment A.
- The Metro LRTP reflects two categories of funding: 1) Project Revenue, or revenues projected from existing sources; and 2) Highway Strategic Revenues, or revenues beyond those projected to be available.
- Project Revenues constitute 19.1 % (\$1,076.1 million) of the revenues required based on the LRTP capital cost estimate. Almost all of these revenues are from Measure R (97.5%), which are the last dollars to be expended for the project. The remainder comes from mixed Federal/Regional and Interregional Improvement Funds (2.5%).
  - Of the \$1,049.4 million in Measure R funds, 16.6% (\$173.9 million) are proposed over FY 2010 – FY 2019, 7.9% (\$82.9 million) over the FY 2020 – 2029 period, and 74.7% (\$783.9 million) over the FY 2030 – 2039 period.
  - Of the \$0.271 million in Federal/mixed Regional and Interregional Improvement Funds, 100.0% have already been expended in the early FY 2005 -2009 period.
- Highway Strategic Revenues constitute 80.9% (\$4,559.9.0 million) of the revenues required. Of these, 61.8% are from financing proceeds (defined as tolls/PPPs), 3.9% from State programs, and 34.3% from various Federal sources.
  - Of the \$2,818.0 million in financing proceeds, 100.0% are proposed over the FY 2020 – 2029 period.
  - Of the \$180.0 million in State programs, 100.0% are proposed over the FY 2020 – 2029 period.
  - Of the \$1,561.9.0 million in various Federal funds, 1.7% are proposed over FY 2010 – FY 2019 and 98.3% over the FY 2020 – 2029 period.
- LA Metro has submitted a reauthorization earmark request of \$60.0 million for environmental and design work.

**9. Issues & opportunities**

**Constructability**

Tunnel Boring Machine (TBM) technology has advanced substantially in the four years since the PB feasibility study was completed. The study will endeavor to evaluate these advances which will serve to mitigate any constructability issues and reduce schedule and costs of TBM construction.

**Existing risk analyses**

None known to date. This study will include a risk matrix assessment.

**10. Assessment of public opinion and approval levels**

SR 710 North Tunnel has tapped into a substantial, although vocal minority, opposition to freeway construction in the communities to the north of the closure. Other than rote opposition to freeway construction, the primary fear appears to be of increased traffic levels on the roadways to the north. The positive environmental impacts, including noise, traffic reduction and air quality improvements which

would presumably result from “burying” over a hundred thousand vehicles a day and removing them from the streets of Pasadena has the potential for “trumping” the concerns of the communities to the south and thus restoring political feasibility to the gap closure.

#### **11. Sources**

1. Route 710 Tunnel Technical Feasibility Assessment Report, Task Order PS-4310-1268-05-01-2 for LA MTA by Parsons Brinckerhoff, 2006.
2. SR-710 Tunnel Draft Geotech Report for Caltrans by CH2M-Hill, 2009
3. I-710 Missing Link Truck Study: Traffic Analysis for the Arroyo Verdugo Subregion - With and Without the I-710 Gap Closure, for Southern California Association of Governments by Iteris, 2010
4. LACMTA Countywide Financial Forecasting Model FY 2005 – FY 2040