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San Diego Association of
Governments
California Department of
Transportation, District 11

**State Route 11 Toll Road and
East Otay Mesa Port of Entry**

Financial Feasibility Study

Final Report

December 21, 2006



Risk Analysis • Investment and Finance
Economics and Policy

San Diego Association of Governments
California Department of Transportation, District 11

**State Route 11 Toll Road and
East Otay Mesa Port of Entry**

Financial Feasibility Study

Final Report

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EXECUTIVE SUMMARY

Background

Trade between the U.S. and Mexico fuels economic growth on regional and national levels. Investments in border infrastructure attempt to keep pace with U.S. import demand but with partial success. New demands for improved security extend average processing times and exacerbate waiting times at the port of entries. Problems are particularly acute in the San Diego-Tijuana region, since San Ysidro is the busiest land crossing in the world in terms of numbers of people processed. Waiting times at existing facilities routinely can last over an hour for passenger vehicles, and truck drivers have logged four hours in line.

Budget constraints at the federal level have limited its ability to contribute to border infrastructure needs. Where funds are available, long lead times are required between project design and allocation. In this context, innovative financing mechanisms such as public-private partnerships can play an important role. Infrastructure investments that can generate revenue - and even an attractive return on investment - become potential examples of win-win solutions.

While local resources are also constrained, the demand for generating public benefits from investments can sometimes drive action to unlock funds. In this regard, it can become very important to understand the implications of investment levels on the size and distribution of public benefits.

Project Summary

The San Diego Association of Governments (SANDAG) has retained HDR|HLB Decision Economics Inc. (HDR|HLB) to assess whether the proposed State Route (S.R.) 11 and East Otay Mesa (EOM) Port of Entry (POE) could be financed as toll facilities. In this effort, HDR|HLB has developed traffic, revenue, cost and financial risk models--approaches that have been extensively used in other toll road feasibility analysis for capital markets (rating agencies, bond insurers, etc).

Development of S.R. 11 and the EOM POE would help reduce long wait times at nearby POEs. These facilities have limited options for expanding capacity to meet current demand. As population and economic development drive future demand, wait times would increase accordingly. A new POE in the San Diego-Tijuana region will relieve this pressure and can achieve reductions in wait times for all persons crossing the border.

Study Approach

The primary focus of this study is whether the S.R. 11 and EOM POE project is a good candidate to attract private investment. To answer this question, HDR|HLB investigated whether the necessary conditions for a “successful” toll facility are met; evaluated the facility in light of standard credit rating criteria for toll facilities; analyzed the impact of potential revenue and cost scenarios; and assessed the investor market.

The traffic and revenue forecast analysis is built around transparency. An expert panel, convened by HDR|HLB, SANDAG, and the California Department of Transportation (Caltrans) thoroughly reviewed the models, verified data accuracy, assessed reasonability of assumptions and suggested revisions, as necessary. In all cases, key assumptions on the drivers of traffic and revenue are characterized with a risk

profile and uncertainty. Analytical models incorporate these uncertainties to ultimately provide a probability of achieving the necessary debt service coverage levels over time.

Findings

Principal financial findings are contained in Table ES-1. This table summarizes debt service coverage ratios (DSCR) for a series of cost scenarios with baseline revenues. The baseline cost scenario includes only capital and operation and maintenance (O&M) costs for S.R. 11. Additional cost scenarios assess the grant level requirements necessary to achieve a solid financial rating while including the cost of additional project elements.

Regarding baseline costs, passenger vehicles and trucks transaction growth and a high demand for the lower waiting times at the EOM POE appear to produce the revenues that are necessary to limit debt service coverage risk to only a few years. With a \$50 million grant (17% of the total capital cost), the revenues achieve a high likelihood of success and reasonably likelihood of an investment grade rating. To achieve the same investment grade rating, the capital grant requirement rises substantially to \$400 million if project revenues are intended to cover S.R. 11 capital and O&M costs and also the EOM POE capital cost (Scenario C-1). The grant amount is over 60% of the total capital cost. If the EOM POE O&M costs (including personnel) are added to the project budget, the debt service coverage simply cannot be met. Only if O&M costs for the first thirty years are covered by an external source and with the same \$400 million capital grant can the project achieve a reasonable credit rating Scenario C-3. The cumulative shortfall in O&M costs over this period is approximately \$1 billion in current year dollars.

Table ES-1: Expected S.R. 11 and EOM POE Credit Ratings and Needs for Public Co-Investments (In Millions of 2012 Dollars)

Scenario	Total Capital Costs	Annual O&M Costs	Capital Grant	Likelihood of "Success" ¹	Likelihood of Investment Grade Rating ²
Cost Scenarios					
Baseline Scenario S.R.-11 Capital and O&M Costs	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%
			\$50 17%	>95%	80% - 85%
Scenario C-1 S.R.-11 Capital and O&M Costs, plus POE Capital Costs	\$660.4	\$0.42	\$300 45%	>80%	65% - 70%
			\$400 61%	>95%	80% - 85%
Scenario C-2 S.R.-11 Capital and O&M Costs, plus POE Capital and O&M Costs	\$660.4	\$37.02	\$400 61%	<5%	<5%
Scenario C-3 S.R.-11 Capital and O&M Costs, plus POE Capital and O&M Costs after 30 years	\$660.4	\$37.02	\$400 61%	>90%	75% - 80%

Note: (1) Major bond insurers (with AAA ratings) would prefer to insure projects with a 99 percent probability that the DSCR (the first percentile) is 1.0 or higher. This level of analysis is limited to an upper probability bound of 95%. Exact determination at the 99% level may be required by the major bond insurers.

(2) Major bond insurers (with AAA ratings) consider a DSCR of 1.25 to be the minimum level for an investment grade rating of BBB.

Strengths, weaknesses, and an assessment of the investor market can be summarized as follows:

Strengths

- EOM and S.R. 11 would be an alternative border crossing to increasingly congested Otay Mesa (OM) and San Ysidro (SY) facilities.
- New facilities would offer dramatic travel time savings for users.
- Travelers continuing to use the free POEs would experience small reductions in wait times, but if aggregated would amount to a sizable public benefit.
- Over the next several decades, population growth in the region – especially in Mexico, would lead to success of the toll facilities.

Weaknesses

- Estimated construction and operational costs for S.R. 11 and EOM are quite expensive.
- As with most toll road start-ups, a financing plan with relatively low obligations in early years of operations (e.g., principal repayments starting a few years after opening) would be needed to be viable.

Investor Market assessment

- The analysis reveals that S.R. 11 and EOM POE would require at least \$400 million in external funds to pay for all construction costs. This level of funding is however insufficient to cover the EOM POE O&M costs until the facility has been operating for 30 years.
- Integration with the Mexican toll road would lower the total cost burden somewhat, but not enough to pay for the annual O&M shortfall at the EOM POE.

Next Steps

Given the need for public participation, some additional analyses may be needed. These include an assessment of economic benefits and distributional welfare effects on the region (i.e. an assessment of whether the rate of return from the social perspective warrants the local public investments in the project). In addition, conducting a due diligence and risk-based assessment of estimated construction and O&M costs of S.R. 11 and the EOM POE may identify mitigation strategies for reducing risks. Also, a more complete financial analysis could broaden the scope of study to explore the potential of non-toll revenues (e.g. development fees) to reduce grant needs and to explore mechanisms for alleviating shortfalls in O&M costs.

CHAPTER 1: INTRODUCTION

State Route (S.R.) 11 is a proposed road connecting S.R. 905 and S.R. 125 to the San Diego and Tijuana international border. S.R. 11 would terminate at the proposed East Otay Mesa (EOM) port of entry (POE). The San Diego Association of Governments (SANDAG) has contracted HDR|HLB Decision Economics Inc. (HDR|HLB) to prepare a financial feasibility study of developing S.R. 11 and the POE as tolled facilities.

The EOM POE would be located approximately two miles east of the Otay Mesa (OM) POE and eight miles east of the San Ysidro (SY) POE, two local existing POEs. This road and new POE would further the increasing interconnections between the rapidly growing populations and economic centers on both sides of the border.

Development of S.R. 11 and the EOM POE would reduce long wait times currently observed at the OM and SY border crossings. These facilities have limited options for expanding capacity to meet current demand. As population and economic development drive future demand, wait times are expected to increase accordingly. A new POE in the San Diego-Tijuana region will relieve this pressure, and depending on the how its toll system is operated, can achieve reductions in wait times for all persons.

S.R. 11 and the EOM POE would be developed as integrated facilities. Passenger vehicles and trucks crossing the border at EOM would pay a toll before joining S.R. 11. S.R. 11 would begin just after exiting the POE and provide interchanges for local border traffic and others traveling further north. Traffic using S.R. 11 without crossing the border would be assumed to pay a different toll amount that is proportional to its service.¹

Note that S.R. 11 and the EOM POE are necessarily coupled project components. Neither facility is reasonably attractive without the other. Complicating this relationship is that these facilities are typically owned, operated and funded by separate institutions, local and state government (or private) and federal government. While this relationship may imply complexities for financial feasibility, this study does not delve into this matter but focuses only on levels of revenue and costs.

This report discusses the process and assumptions in forecasting cross border traffic and revenue from these proposed facilities. The financial feasibility of the several revenue and cost scenarios is evaluated to determine the conditions which lead to acceptable risks as perceived by the financial community.

The baseline scenario is designed for the toll revenue to be applied to the total capital and operation and maintenance (O&M) costs of S.R. 11 only. The additional scenarios are defined as:

- Alternative 1:
 - *Toll revenue applied to baseline plus POE capital cost*
- Alternative 2:
 - *Toll revenue applied to baseline plus POE capital and O&M costs*

¹ Traffic and revenues for local S.R. 11 road use were not examined in this analysis. These revenues are likely to be small and, according to a previous study, only marginally able to generate revenues sufficient to cover costs.

- Alternative 3:
 - *Demand for EOM POE increases with Tijuana-Tecate toll road integration*
- Alternative 4:
 - *EOM POE offers bus rapid transit service for pedestrians*
- Alternative 5:
 - *EOM POE is designed for trucks only*

Other alternatives are examined based on other risk factors of the project.

Overall, the study addresses several components including an:

- Investigation of whether the necessary conditions for a “successful” toll facility are met (sufficient traffic/toll revenues and adequate capital at a reasonable cost);
- Evaluation of the facility in light of standard credit rating criteria for toll facilities (i.e. evaluate potential risk and the likelihood of an “investment-grade” rating);
- Evaluation of how alterations in the operation configurations might impact its “performance”;
- Assessment of the investor market; and
- Technical and managerial recommendations.

Six major steps are involved in completing this analysis. These steps include:

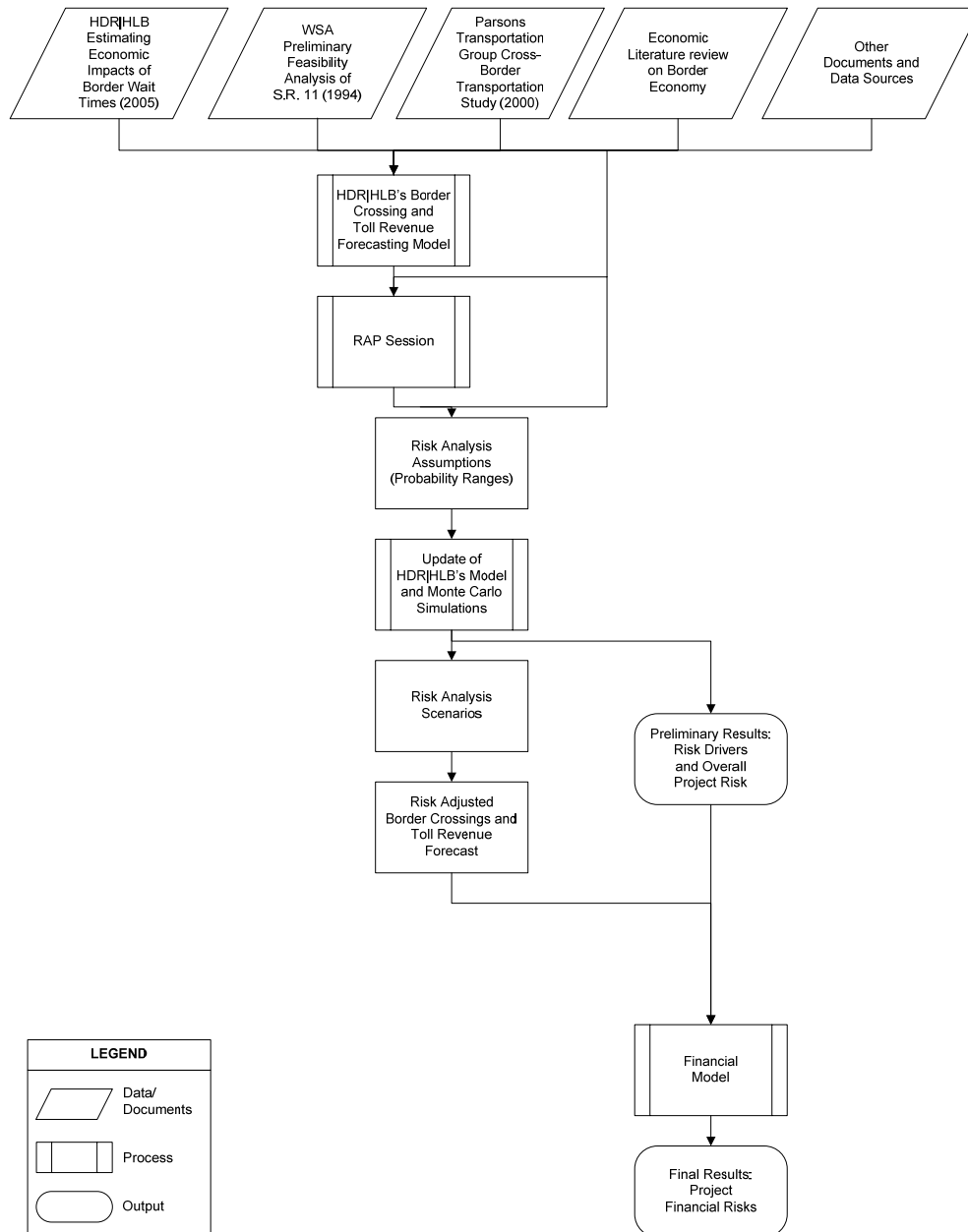
1. Research and analyze regional socio-economic projections;
2. Review data from SANDAG including previous relevant reports;
3. Develop a simplified risk analysis travel demand and toll revenue forecasting model;
4. Conduct a Risk Analysis Process (RAP) session;
5. Update risk analysis assumptions and run Monte Carlo simulations to generate initial traffic, revenue, and debt service coverage ratio (DSCR) projections;
6. Report and document simulation results.

Figure 1 illustrates how these steps are linked in a structure and logic diagram.

The organization of the report begins with a description of the border area, the historical border crossings, and a description of S.R. 11 and the EOM POE. The next section discusses the methodological framework for the models used in this analysis: the border crossing forecast model, the POE and toll road diversion model, toll revenue model, and the financial model. The forecasting assumptions of the risk analysis variables used in these models are presented in the fourth section. The results of these models are described in the fifth section and the conclusions and recommendations are discussed in the sixth section.

A number of Appendices provide supplemental project and analytical information. For example, additional data and analysis are contained in Appendix 1. Appendix 2 provides background information on the RAP session, the HDR|HLB vehicle for gathering and incorporating expert opinion. Appendix 3 summarizes actual results and responses from RAP panelists. Appendix 4 discusses the risks in the project with respect to standard credit rating criteria. Additional background information for understanding debt service coverage results is contained in Appendix 5. In Appendix 6, market survey results are presented on existing tolled bridges connecting border crossings. Finally, Appendix 7 reports on a discussion of the model and approach with a member of the financial community.

Figure 1: Risk Analysis Process Overview



CHAPTER 2: PROJECT DESCRIPTION AND STUDY AREA

The study area for the scope of this financial feasibility report includes the San Diego-Tijuana border area, the existing POEs of OM and SY, and the proposed EOM facility.

2.1 Description of Border Area

The California Department of Transportation (Caltrans) 2001 application for a new port of entry provides background for the project area (Figure 2). Directly north of the future EOM POE in San Diego County, the land consists of about 1,350 hectares of generally undeveloped, vacant land that is bounded on the west by the City of San Diego and is circumscribed on the north and east by the Otay River Valley and the San Ysidro Mountains. Much of this land has been allocated for industrial use with low-density residential use planned for much of the remainder of the area.

On the Mexican side, the EOM-Otay II POE would connect to the Tijuana-Rosarito corridor that includes direct links to the Tijuana-Tecate toll and free roads as well as the Tijuana-Ensenada toll and free roads. Eastward urban growth of Tijuana will be also connected to San Diego County at EOM. According to the Study of Integration for the Otay II POE, (Secretary of Social Development of Mexico), faster population growth is expected in eastern Tijuana than in the already developed western areas of the city. The Caltrans 2000 Project Study Report further describes that the “areas of northeastern Tijuana near the future EOM POE have experienced significant rates of growth of low income, high density, unregulated residential settlements, as well as industrial development.”

The alternate POEs in the San Diego- Tijuana border area are shown in Figure 2. These two existing POEs are to the west of the proposed EOM site, SY and OM. OM is approximately two miles west of the proposed EOM site; SY is approximately eight miles west of the proposed EOM site. Further details and assumptions for modeling purposes of the infrastructure at these alternate POEs can be found in Appendix 1-B.

Figure 2: Map of S.R. 11



Source: SANDAG S.R.11 Fact Sheet, http://www.sandag.cog.ca.us/uploads/publicationid/publicationid_7_1094.pdf

Another POE, Tecate, is located approximately 25 miles further east of the proposed EOM site. This POE is much smaller and less frequently used. Because total border crossings at Tecate are relatively low, insignificant levels of revenue could be generated from crossings diverted to the EOM POE. Tecate is not modeled as an alternative POE but instead is assessed in one of the revenue scenarios.

2.2 Border Crossings

This section presents data on border crossings by passenger vehicles at the SY and OM POEs and trucks at OM. Trucks were permitted to cross at SY until 1992.

2.2.1 Passenger Vehicle Crossings

Annual northbound passenger vehicle crossings at SY and OM are shown in Table 1. The annual change in crossings varies from year to year. SY processes more passenger vehicles than OM every year. However, recently, crossings at OM have been increasing at a faster rate.

Table 1: Annual Passenger Vehicle Crossings

Year	OM Crossings		SY Crossings	
	Count	Change	Count	Change
1985	1,538,540	NA	9,678,077	NA
1986	2,085,585	35.6%	9,712,320	0.4%
1987	2,141,586	2.7%	10,296,336	6.0%
1988	2,416,171	12.8%	12,143,249	17.9%
1989	3,313,379	37.1%	12,919,019	6.4%
1990	3,411,665	3.0%	13,510,854	4.6%
1991	3,654,273	7.1%	14,045,810	4.0%
1992	4,132,417	13.1%	13,540,135	-3.6%
1993	3,711,402	-10.2%	14,667,073	8.3%
1994	3,745,144	0.9%	15,933,956	8.6%
1995	3,549,378	-5.2%	13,833,715	-13.2%
1996	3,377,407	-4.8%	13,782,593	-0.4%
1997	3,800,936	12.5%	13,213,420	-4.1%
1998	4,326,786	13.8%	14,474,686	9.5%
1999	4,480,026	3.5%	15,269,561	5.5%
2000	4,845,348	8.2%	15,237,428	-0.2%
2001	3,956,842	-18.3%	15,001,616	-1.5%
2002	4,140,610	4.6%	16,441,766	9.6%
2003	4,912,899	18.7%	17,408,481	5.9%
2004	6,193,568	26.1%	17,621,030	1.2%
2005	6,672,994	7.7%	17,208,106	-2.3%

Source: Bureau of Transportation Statistics; U.S. Department of Transportation

2.2.2 Truck Crossings

Total annual northbound truck crossings and the annual percentage change at the OM POE are shown in Table 2. Truck crossings at OM have grown almost every year since it opened in 1985. The growth rate appears to have declined for a few years after 2001.

Table 2: Annual Truck Crossings (OM)

Year	Count	Change	Year	Count	Change
1985	88,426	NA	1996	530,704	19.1%
1986	145,039	64.0%	1997	567,715	7.0%
1987	207,405	43.0%	1998	606,384	6.8%
1988	235,545	13.6%	1999	646,587	6.6%
1989	275,057	16.8%	2000	688,340	6.5%
1990	216,185	-21.4%	2001	708,446	2.9%
1991	315,650	46.0%	2002	731,291	3.2%
1992	374,141	18.5%	2003	697,152	-4.7%
1993	384,615	2.8%	2004	726,164	4.2%
1994	439,654	14.3%	2005	730,253	0.6%
1995	445,770	1.4%			

Source: Bureau of Transportation Statistics; U.S. Department of Transportation

2.3 Description of S.R. 11 and the EOM POE

Northbound passenger vehicles and trucks would follow similar inspection procedures at the EOM POE as they would at SY or OM. EOM would perform primary inspections through U.S. Customs and U.S. Secondary Inspections. Trucks would first stop at the U.S. Commercial Import Station. From there, required trucks would be routed on a commercial vehicle bypass road to the Otay Mesa POE Commercial Vehicle Enforcement Facility (CVEF) or to a new facility located at the EOM POE. The northbound travelers crossing the border at EOM will continue on S.R. 11 towards its junction with S.R. 125 and S.R. 905. There are also two local interchanges described in the Caltrans September 2000 Project Study Report at Enrico Fermi Road and the future extension of local roads.

Two alignments are currently being considered for S.R. 11. The Caltrans 2000 Project Study Report describes the central alignment requiring 70 hectares of right of way and impacting 14 parcels for S.R. 11. The central alignment would include a 4.7 km section of four-lane freeway with two local interchanges and a two-lane truck bypass road between EOM and the OM CVEF.

The western alignment requires approximately 60 hectares of right of way and will impact 13 parcels. The western alignment would include a 4.1 km section of four-lane freeway with two local interchanges and an over crossing and a two-lane truck bypass road to the OM CVEF.

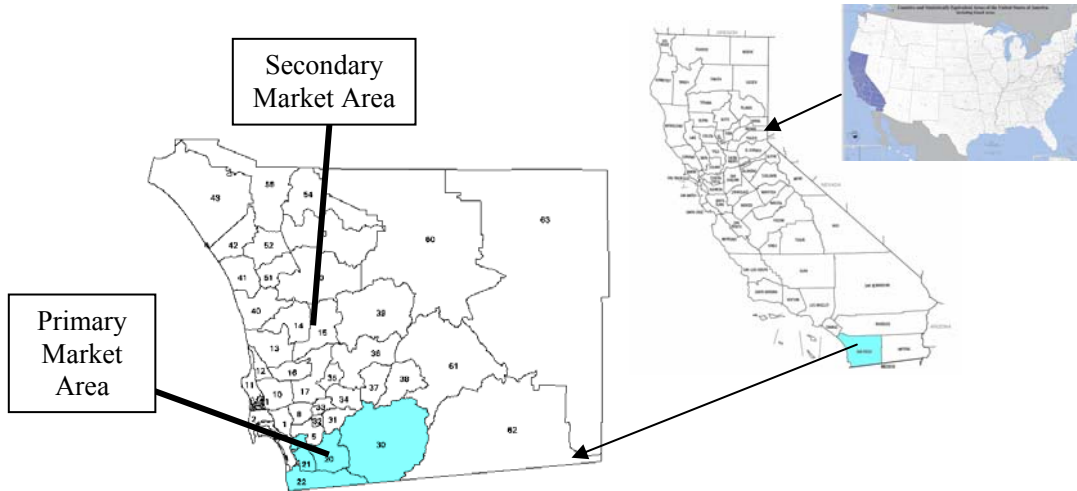
2.4 Market Areas

This analysis has incorporated influences on crossings at the existing POEs from the U.S. and Mexico at several regional levels. On the U.S. side, four market areas are considered (shown in Figure 3). The two focal areas are located within San Diego County and consist of:

- U.S. primary market area (PMA), comprising the sub-regional areas of South Bay, Sweetwater, Jamul, Chula Vista, and National City; and
- U.S. Secondary Market Area consists of San Diego County excluding the PMA.

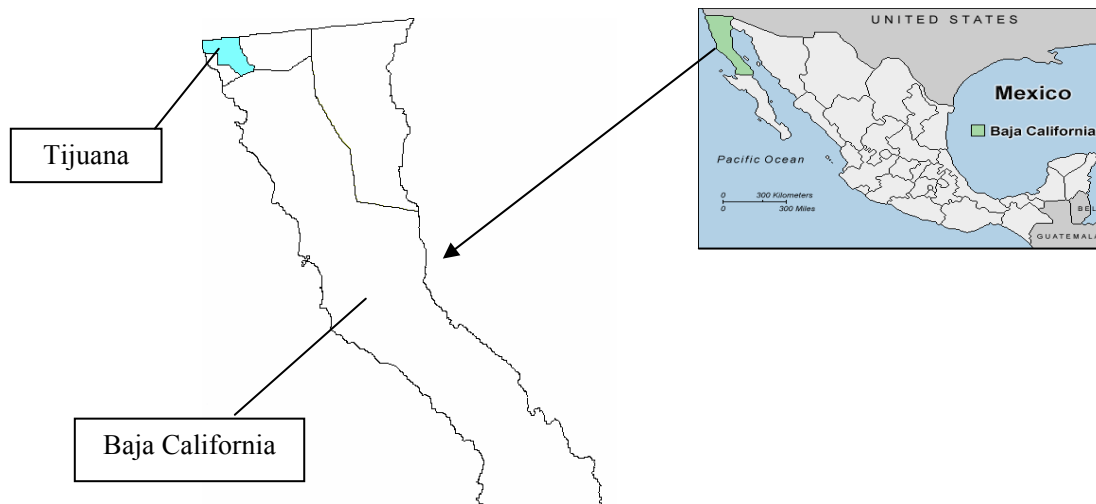
Two other areas include California (excluding San Diego County) and the U.S. (excluding California).

Figure 3: U.S. Market Areas



On the Mexican side, three market areas are considered (shown in Figure 4). The Municipality of Tijuana comprises the Mexican PMA. A secondary market area consists of the State of Baja California (excluding Tijuana). The third market area in Mexico consists of the entire country, excluding Baja California.

Figure 4: Mexican Market Areas



CHAPTER 3: ANALYTICAL MODELS

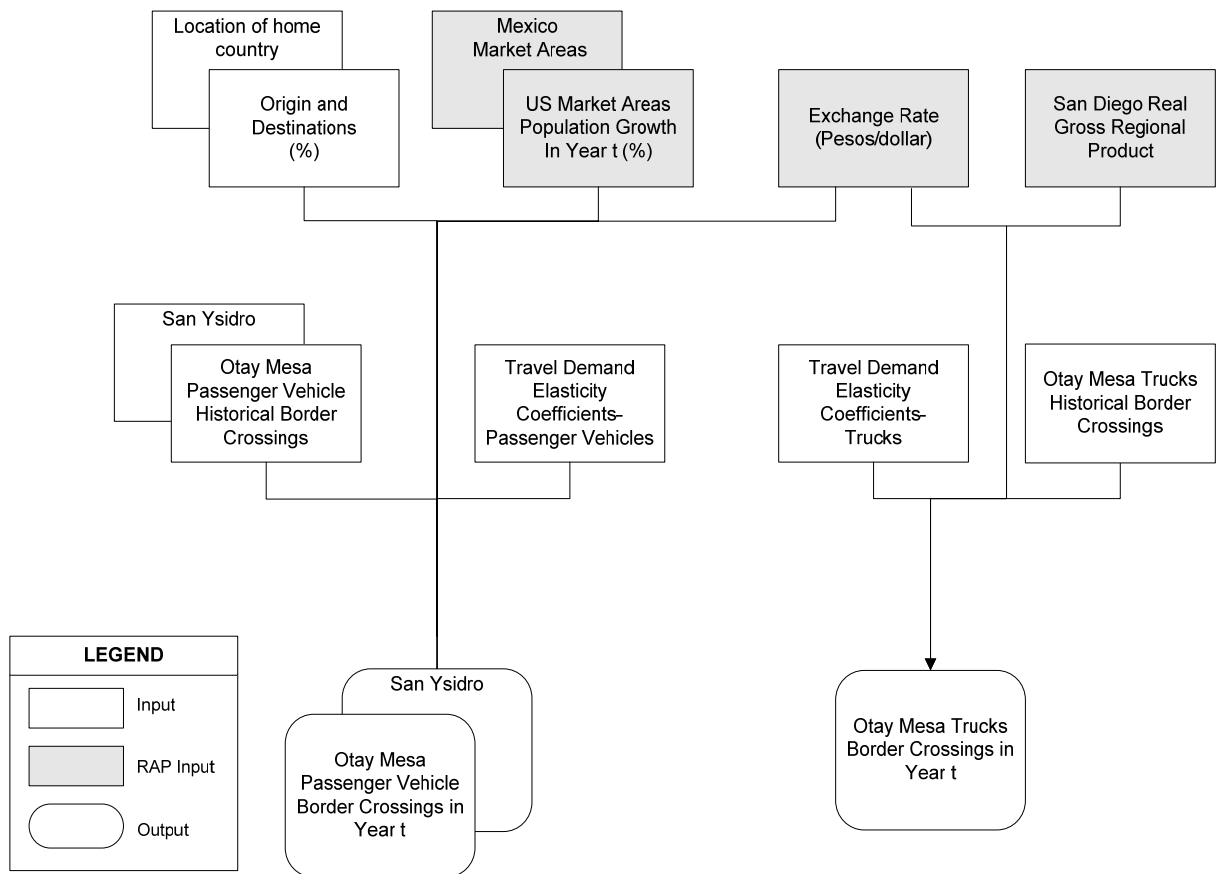
HDR|HLB developed four integrated models for analyzing the financial feasibility with risk. These models include: a border crossing model, a toll share model, a toll revenue model, and a financial model. In this chapter, each of these models is described using structure and logic diagrams.

3.1 Border Crossing Model

The border crossing model was developed through statistical analyses of historical passenger vehicle and truck crossings at the SY and OM POEs, respectively. A wide range of variables was examined to determine a model that was theoretically sound and provided a good fit of the data. Crossing forecasts for each vehicle type utilized the estimated coefficients and forecasted values for the independent variables.

The structure and logic diagram (Figure 5) illustrates the major elements of the three base crossing models: two passenger vehicles models for OM and SY, and one for trucks at OM. Shaded boxes indicate variables discussed in the RAP session.

Figure 5: Structure and Logic Diagram for Border Crossing Demand Forecast



3.2 Port of Entry Diversion and Toll Share Model

HDR|HLB's model for estimating traffic diversion from existing POEs to the EOM POE was developed specially for this project. Conventional toll diversion models were not applied in this project because the task involved disentangling the interrelationships between toll rates, maximum waiting times at the EOM POE and traffic diversion to the EOM POE. The final model builds on a theory of convergence of travel time options for different border crossing locations. For example, at a given toll rate, travelers are assumed to be indifferent between waiting at an existing facility or paying the toll, driving the extra distance and incurring a shorter wait time at EOM. With some proportion of travelers choosing EOM, waiting times at the existing facilities are reduced proportional to the number of lanes at the new facility.

Figure 6 illustrates the major elements of the model. The model accounts for additional costs of the toll, and driving distance to the new POE. Value of time, weighted by location of home country and purpose of trip, contribute to the likelihood of going to the new POE. RAP variables are shown in shaded cells. Baseline waiting times are derived from RAP panelists and U.S. Customs and Border Protection (CBP) data. Annual increases in baseline waiting times are computed from increases in total crossing volumes. Because it is expected that CBP will undertake infrastructural and operational steps to reduce waiting times, waiting times grow at a smaller rate than that of crossings.

Induced demand represents additional border crossings that are created due to the reduction in waiting times at existing facilities, after traffic is diverted to the EOM POE. The model incorporates induced demand by assuming that reduction in waiting times at existing facility is partially returned to original levels, at a rate determined by an elasticity of induced demand. The model also assumes that some of the new travelers will be diverted to the new POE at the same diversion rate as current users. The resulting induced demand diversion to EOM is a relatively minor level of volume. This volume however represents upward pressure on the toll rate. The final toll rate for all vehicles incorporates original and induced demand for the lower waiting times at EOM.

Several key equations are involved in solving the toll diversion model. Figure 7 lists a set of equations for solving truck and passenger vehicle diversion from OM. The model for passenger vehicles is more complex because vehicles are diverted from two facilities, each of which has its own distance to the EOM POE and weighted value of time (as determined by a person's purpose of trip and location of home, respectively). Separate models of toll diversion are developed for individual cases including: Passenger Vehicles: Normal and SENTRI lanes; Trucks: Normal and FAST; peak and off-peak periods; and, weekend and weekday periods.² Toll rates and diversion levels are principal outputs of the models.

² SENTRI (Secure Electronic Network for Travelers Rapid Inspection) and FAST (Free and Secure Trade) are programs offered to pre-approved passengers, importers, carriers, and registered drivers that result in quicker clearance across the border.

Figure 6: Structure and Logic Diagram for Toll Share Estimation

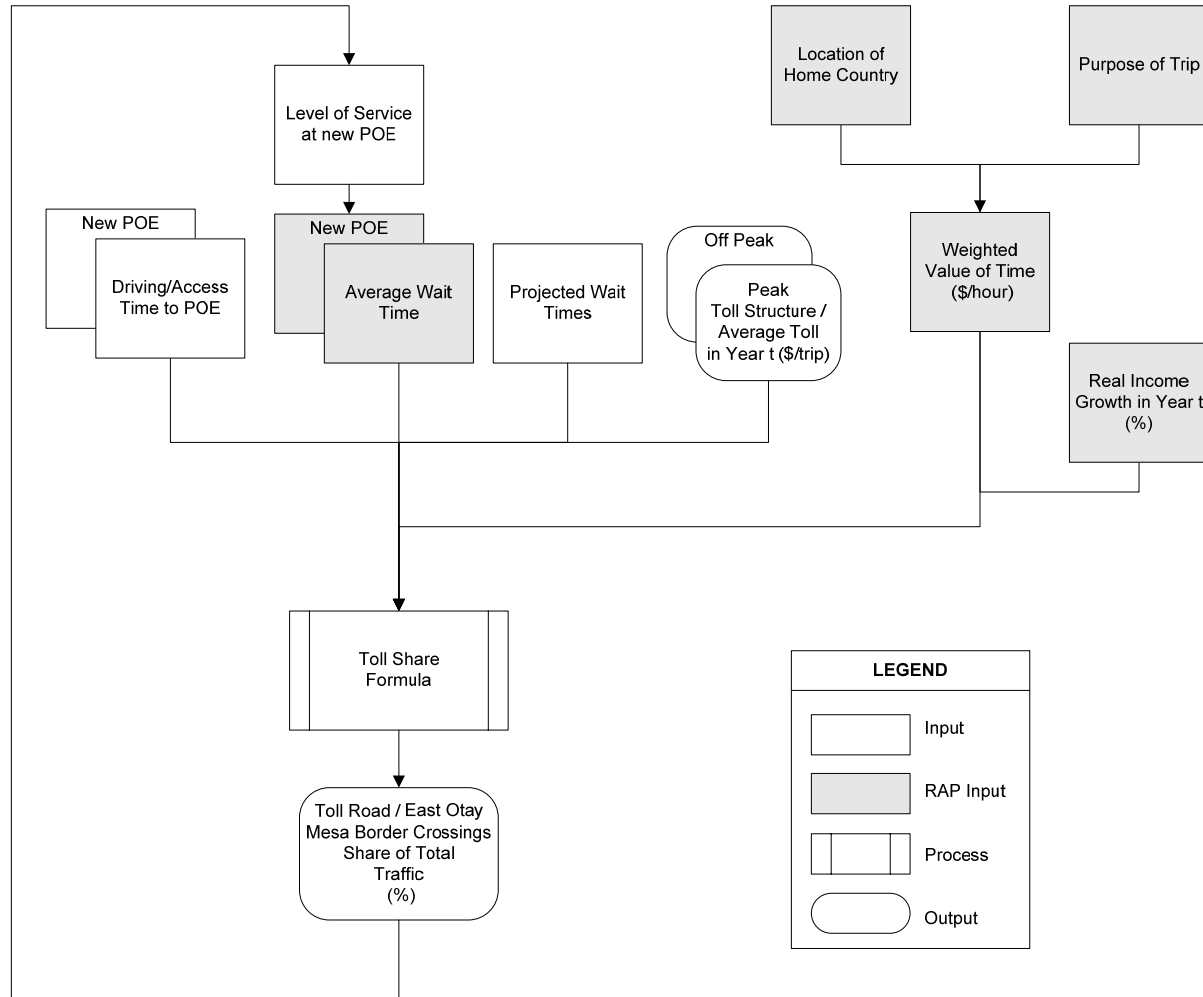


Figure 7: Diversion Model Equations

Truck Model Equations to Solve for Toll Rate and Diversion

1. $W_E = L_O/L_E (\hat{W}_O - W_O)$

2. $W_O = W_E + D_O + T/V$

3. $T = V (W_O - W_E - D_O)$

4. $DV_E = W_E L_E / \hat{W}_O L_O$

Passenger Vehicle Model Equations to Solve for Toll Rate and Diversion

5. $W_E = L_O/L_E (\hat{W}_O - W_O) + L_S/L_E (\hat{W}_S - W_S)$

6. $W_O = W_E + D_O + T/V_O$

7. $W_S = W_E + D_S + T/V_S$

8. $T = V_S (W_S - W_E - D_S) = V_O (W_O - W_E - D_O)$

9. $DV_E = W_E L_E / [\hat{W}_O L_O + \hat{W}_S L_S]$

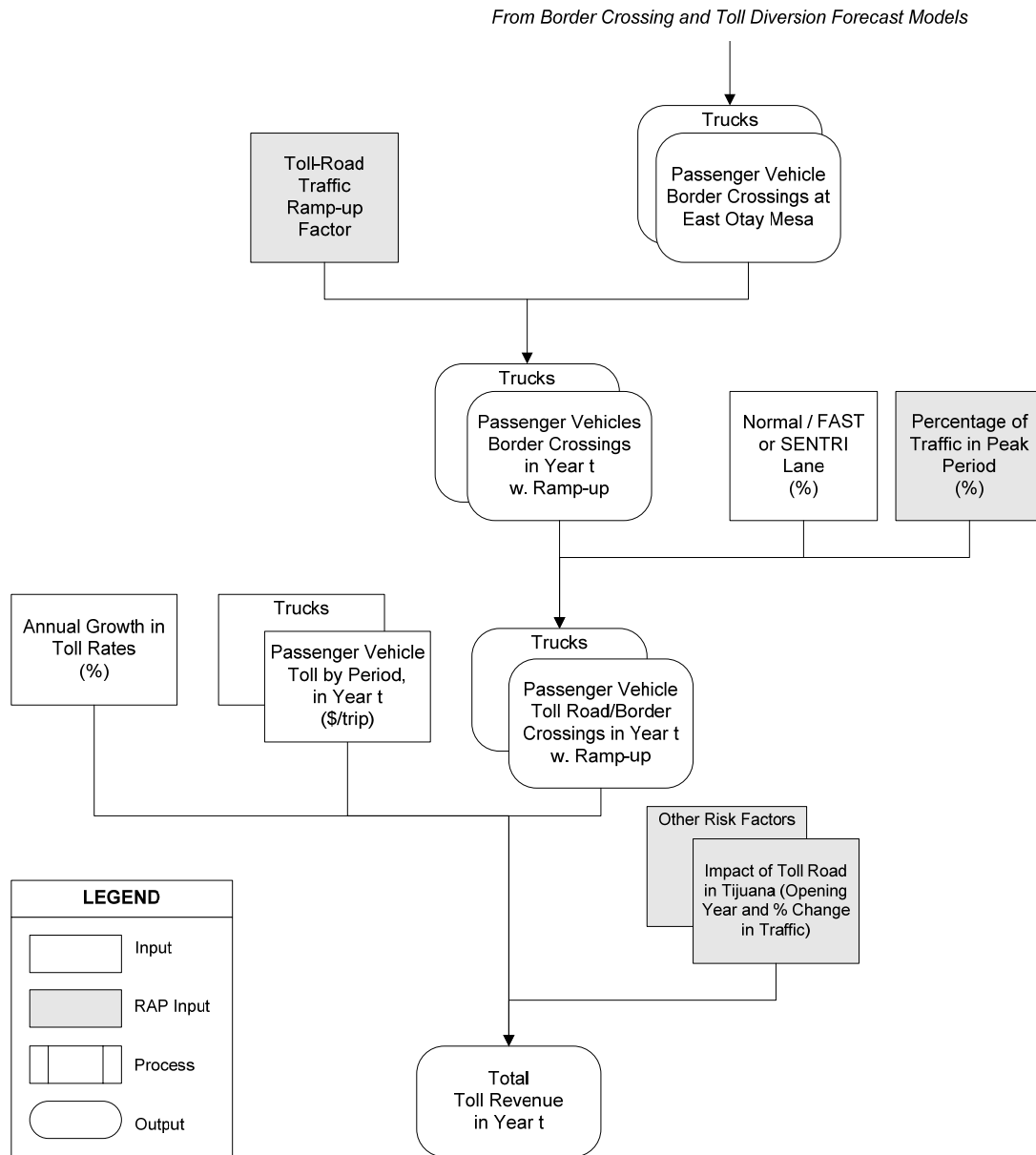
Where:

- Subscripts: O = Otay Mesa, E = proposed East Otay Mesa, S = San Ysidro
- W = Waiting Times; \hat{W} = Existing Waiting Time
- L = Number of operating lanes
- T = Toll rate
- D = Driving time difference between existing and new POE
- V = Value of time (weighted by purpose of trip, location (country) of home)
- DV = Toll Diversion rate

3.3 Toll Revenue Model

The toll revenue model developed by HDR|HLB is relatively straightforward. Figure 8 illustrates the major elements including the analytical dimensions (weekend/weekday period, type of lane, peak/off-peak period); RAP variables (shaded boxes); and additional model features such as ramp-up, risk factors, and revenue scenarios.

Figure 8: Structure and Logic Diagram for Toll Revenue Forecasting



3.4 Financial Model

HDR|HLB's financial model incorporates several features that facilitate an evaluation of funding mechanisms for alternative cost and revenue scenarios. These features include:

- “Cash trap” account³
- Debt service reserve account (initial funding = two years of debt service, principal and interest)

Financial assumptions include:

- 100% debt financed (baseline)
- 5.0% interest
- 60-year maturity
- 5-year grace period (zero debt service) from 2012 - 2017
- Capitalized interests during grace period
- 1.00% real return on reserve funds
- Bond closing expenses: 1.00% of Par Amount
- Monoline insurance policy (0.25% insurance premium paid annually)
- Other miscellaneous expenses

³ A Cash Trap account holds surplus revenue that would be applied to debt service or other needs.

CHAPTER 4: RISK ANALYSIS VARIABLES

This chapter presents assumptions on all of the variables used in each model. Each variable is defined for a range of potential values and a particular probability distribution.⁴ Parameter values (defining the median and range of reasonable values) have been initially developed by HDR|HLB research. In some cases, parameter values were refined during a risk analysis workshop conducted on November 2, 2006 in San Diego (see Appendix 3).

4.1 Population

Population markets are divided into four U.S. segments and three Mexican segments. The smaller two segments in each country were subject to the RAP panel discussion to determine forecast values. These include five sub-regional areas (SRAs) in San Diego County (South Bay, Sweetwater, Jamul, Chula Vista, and National City), San Diego County (excluding the five SRAs), the Municipality of Tijuana, and the State of Baja California (excluding Tijuana). The historical data and projections for all of the population segments are shown in Tables 5-15.

A composite population variable is computed as a weighted sum of populations in each region according to the origin-destination patterns at each existing POE. This variable is applied in passenger vehicle models as a predictor of border crossings at existing facilities.

The origin-destination patterns are assembled from northbound border crossing surveys. The HDR|HLB (2005) and Parsons (2000) surveys of cross-border travelers have been combined to determine origin and destinations of travelers at OM and SY. Tables 3 and 4 summarize OM and SY origin and destinations.

Table 3: Origin-Destinations of travelers at OM

Origins	Destinations				Total
	US PMA	San Diego	CA	US	
Tijuana	41.3%	53.6%	3.7%	0.3%	98.9%
Baja California	0.4%	0.2%	0.4%	0.0%	1.0%
Mexico	0.0%	0.0%	0.1%	0.0%	0.1%
Total	41.7%	53.8%	4.2%	0.3%	100.0%

⁴ Most variables are defined with the Pert distribution, a flexible functional form that incorporates three parameters: a median, 10% lower value and 90% upper value. This flexibility enables right or left skews in the distribution to be easily defined. In addition, the Pert distribution is bounded, unlike the Normal distribution which is unbounded for positive and negative values.

Table 4: Origin-Destinations of travelers at SY

Origins	Destinations				
	US PMA	San Diego	CA	US	Total
Tijuana	44.2%	47.6%	4.5%	0.2%	96.4%
Baja California	1.7%	0.8%	0.8%	0.0%	3.4%
Mexico	0.0%	0.2%	0.0%	0.0%	0.2%
Total	45.9%	48.6%	5.3%	0.2%	100.0%

Table 5: Primary Market Area Population Historical Data

Year	Count	Change	Year	Count	Change
1985	277,909	NA	1996	348,244	1.1%
1986	286,850	3.2%	1997	355,773	2.2%
1987	296,919	3.5%	1998	362,281	1.8%
1988	306,155	3.1%	1999	370,511	2.3%
1989	314,115	2.6%	2000	379,000	2.3%
1990	325,170	3.5%	2001	385,993	1.8%
1991	330,973	1.8%	2002	399,152	3.4%
1992	337,483	2.0%	2003	412,220	3.3%
1993	340,190	0.8%	2004	423,483	2.7%
1994	341,596	0.4%	2005	439,091	3.7%
1995	344,288	0.8%			

Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	3.0%	1.8%	3.7%	2.5%	3.5%
Last 10 Years	2.5%	0.8%	3.7%	2.1%	2.9%
Full Period	2.3%	0.4%	3.7%	2.0%	2.6%

Source: SANDAG Data Warehouse; U.S. Census Bureau

Table 6: Primary Market Area Population Projections

Year	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	1.95%	1.90%	2.00%	1.95%	1.95%	2.05%
2011-2020	1.35%	1.30%	1.40%	1.50%	1.40%	1.60%
2021-2030	0.55%	0.50%	0.60%	1.00%	0.90%	1.10%
After 2030	0.55%	0.50%	0.60%	1.00%	0.90%	1.10%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
 (b) Upper limit of an 80% confidence interval

Table 7: San Diego County Population Historical Data

Year	Count	Change	Year	Count	Change
1985	2,102,486	NA	1996	2,682,093	0.9%
1986	2,169,957	3.2%	1997	2,729,054	1.8%
1987	2,248,471	3.6%	1998	2,794,785	2.4%
1988	2,328,331	3.6%	1999	2,853,258	2.1%
1989	2,417,639	3.8%	2000	2,858,000	0.2%
1990	2,498,016	3.3%	2001	2,863,657	0.2%
1991	2,539,583	1.7%	2002	2,920,010	2.0%
1992	2,583,470	1.7%	2003	2,971,805	1.8%
1993	2,614,222	1.2%	2004	3,013,014	1.4%
1994	2,638,511	0.9%	2005	3,039,277	0.9%
1995	2,658,584	0.8%			

Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	1.3%	0.1%	2.0%	0.7%	1.8%
Last 10 Years	1.4%	0.1%	2.4%	1.0%	1.7%
Full Period	1.9%	0.1%	3.8%	1.5%	2.2%

Source: SANDAG Data Warehouse; U.S. Census Bureau

Table 8: San Diego County Population Projections

Year	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	1.15%	1.03%	1.15%	1.15%	1.03%	1.15%
2011-2020	0.95%	0.90%	1.05%	0.95%	0.85%	1.15%
2021-2030	0.95%	0.85%	1.10%	0.95%	0.75%	1.25%
After 2030	0.95%	0.85%	1.10%	0.95%	0.75%	1.25%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
 (b) Upper limit of an 80% confidence interval

Table 9: Municipality of Tijuana Population Historical Data

Year	Count		Average Annual Growth Rate (%)		
1970	341,000		NA		
1980	462,000		3.1%		
1990	747,381		4.9%		
1995	991,592		5.8%		
2000	1,210,820		4.1%		
2005	1,410,700		3.1%		
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	3.10%	2.92%	3.76%	2.90%	3.31%
Last 10 Years	3.59%	2.92%	5.18%	3.28%	3.90%
Full Period	4.33%	2.92%	6.54%	4.03%	4.63%

Sources: Institute for Regional Studies of the Californias (1970 and 1980 estimates); Instituto Nacional de Estadística, Geografía e Informática (1990, 1995, 2000, and 2005 estimates)

Table 10: Municipality of Tijuana Population Projections

	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	2.70%	2.30%	4.10%	3.50%	2.63%	4.38%
2011-2020	2.20%	2.10%	2.30%	1.84%	1.38%	2.30%
2021-2030	1.65%	1.50%	1.80%	1.41%	1.06%	1.76%
After 2030	1.65%	1.50%	1.80%	1.52%	1.14%	1.90%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 11: Baja California Population Historical Data

Year	Count	Change	Year	Count	Change
1985	1,462,567	NA	1996	2,212,368	3.8%
1986	1,518,315	3.8%	1997	2,293,275	3.7%
1987	1,574,063	3.7%	1998	2,374,808	3.6%
1988	1,629,811	3.5%	1999	2,457,288	3.5%
1989	1,685,559	3.4%	2000	2,540,519	3.4%
1990	1,741,307	3.3%	2001	2,623,527	3.3%
1991	1,816,965	4.3%	2002	2,705,614	3.1%
1992	1,893,646	4.2%	2003	2,786,944	3.0%
1993	1,971,875	4.1%	2004	2,867,630	2.9%
1994	2,051,397	4.0%	2005	2,947,836	2.8%
1995	2,131,694	3.9%			
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	3.32%	1.78%	4.67%	2.29%	4.23%
Last 10 Years	1.59%	-2.65%	4.67%	-0.50%	3.68%
Full Period	3.17%	-2.65%	6.93%	-0.19%	6.47%

Source: Consejo Estatal de Población de Baja California, Secretaría de Gobernación de México

Table 12: Baja California Population Projections

	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	2.55%	2.50%	2.60%	2.55%	2.45%	2.65%
2011-2020	2.10%	2.00%	2.20%	2.10%	1.90%	2.30%
2021-2030	1.60%	1.50%	1.70%	1.60%	1.40%	1.80%
After 2030	1.60%	1.50%	1.70%	1.60%	1.40%	1.80%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 13: California Population Historical Data

Year	Count	Change	Year	Count	Change
1985	26,441,109	NA	1996	31,780,829	0.9%
1986	27,102,237	2.5%	1997	32,217,708	1.4%
1987	27,777,158	2.5%	1998	32,682,794	1.4%
1988	28,464,249	2.5%	1999	33,145,121	1.4%
1989	29,218,164	2.6%	2000	33,871,648	2.2%
1990	29,950,111	2.5%	2001	34,526,660	1.9%
1991	30,414,114	1.5%	2002	34,988,088	1.3%
1992	30,875,920	1.5%	2003	35,456,602	1.3%
1993	31,147,208	0.9%	2004	35,842,038	1.1%
1994	31,317,179	0.5%	2005	36,132,147	0.8%
1995	31,493,525	0.6%			
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	1.3%	0.8%	2.1%	1.0%	1.7%
Last 10 Years	1.4%	0.6%	2.1%	1.2%	1.6%
Full Period	1.6%	0.5%	2.6%	1.4%	1.8%

Source: U.S. Census Bureau, mid year estimates

Projections

California population is projected to grow at an annual rate of 1%.

Table 14: U.S. Population Historical Data

Year	Count	Change	Year	Count	Change
1985	237,923,795	NA	1996	268,582,017	1.2%
1986	240,132,887	0.9%	1997	271,818,977	1.2%
1987	242,288,918	0.9%	1998	275,040,082	1.2%
1988	244,498,982	0.9%	1999	278,195,745	1.1%
1989	246,819,230	0.9%	2000	281,421,906	1.2%
1990	248,709,873	0.8%	2001	285,107,923	1.3%
1991	251,955,245	1.3%	2002	287,984,799	1.0%
1992	255,585,733	1.4%	2003	290,850,005	1.0%
1993	259,068,338	1.4%	2004	293,656,842	1.0%
1994	262,318,037	1.3%	2005	296,410,404	0.9%
1995	265,471,847	1.2%			
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	1.0%	0.9%	1.3%	0.9%	1.1%
Last 10 Years	1.1%	0.9%	1.3%	1.1%	1.2%
Full Period	1.1%	0.8%	1.4%	1.1%	1.2%

Source: U.S. Census Bureau, mid year estimates

Projections

The U.S. population is projected to grow at approximately 0.8% annually.

Table 15: Mexican Population Historical Data

Year	Count	Change	Year	Count	Change
1985	76,767,225	NA	1996	94,398,579	1.6%
1986	78,442,430	2.2%	1997	95,895,146	1.6%
1987	80,122,492	2.1%	1998	97,325,063	1.5%
1988	81,781,816	2.1%	1999	98,616,905	1.3%
1989	83,366,836	1.9%	2000	99,926,620	1.3%
1990	84,913,652	1.9%	2001	101,246,961	1.3%
1991	86,488,032	1.9%	2002	102,479,927	1.2%
1992	88,111,030	1.9%	2003	103,718,062	1.2%
1993	89,749,141	1.9%	2004	104,959,594	1.2%
1994	91,337,896	1.8%	2005	105,909,000	0.9%
1995	92,880,353	1.7%			
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	1.2%	0.9%	1.3%	1.1%	1.3%
Last 10 Years	1.3%	0.9%	1.7%	1.2%	1.4%
Full Period	1.6%	0.9%	2.2%	1.5%	1.7%

Source: U.S. Census Bureau, International Database

Projections

The population of Mexico is projected to grow at approximately 1.2% annually in the near future, until 2020. After 2020, the growth rate is projected to be 0.8% annually.

4.2 Additional Variables for Forecasting Border Crossings

Two additional variables are used to estimate border crossings. Nominal exchange rates are included in the passenger vehicle models along with population. The truck forecast model includes the same nominal exchange rate series and real San Diego Gross Regional Product (GRP). Nominal exchange rate is the annual percentage change in the nominal exchange rate, measured in Mexican pesos per U.S. dollars. San Diego real GRP is computed as a percent of the California Real Gross State Product where the percent equals the ratio of personal income in San Diego to total personal income of California. Forecasts for GRP are developed from the U.S. Gross Domestic Product projections (see Appendix 1-A.) The historical data and projections for these two variables are shown in Tables 16-19.

Table 16: Nominal Exchange Rate Historical Data

Year	Count	Change	Year	Count	Change
1985	0.327	NA	1996	7.603	18.0%
1986	0.639	95.5%	1997	7.921	4.2%
1987	1.418	121.8%	1998	9.152	15.5%
1988	2.281	60.9%	1999	9.561	4.5%
1989	2.495	9.4%	2000	9.459	-1.1%
1990	2.841	13.9%	2001	9.341	-1.2%
1991	3.022	6.4%	2002	9.665	3.5%
1992	3.095	2.4%	2003	10.797	11.7%
1993	3.115	0.7%	2004	11.290	4.6%
1994	3.383	8.6%	2005	10.895	-3.5%
1995	6.442	90.4%			
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	3.0%	-3.5%	11.7%	-0.8%	6.8%
Last 10 Years	5.6%	-3.5%	90.4%	-6.0%	17.2%
Full Period	23.3%	-3.5%	121.8%	12.6%	34.0%

Source: Organization for Economic Cooperation and Development (OECD) Statistic Database

Table 17: Nominal Exchange Rate Projections

Year	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	2.0%	0.0%	4.0%	1.50%	-3.00%	3.00%
2011-2020	0%	-3.0%	3.0%	1.00%	-3.00%	3.00%
2021-2030	0%	-3.0%	3.0%	1.00%	-3.00%	3.00%
After 2030	0%	-3.0%	3.0%	0.50%	-3.00%	3.00%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 18: San Diego GRP Historical Data

Year	Count	Change	Year	Count	Change
1990	77,246	NA	1998	92,355	8.0%
1991	76,447	-1.0%	1999	101,011	9.4%
1992	76,081	-0.5%	2000	108,040	7.0%
1993	75,442	-0.8%	2001	109,522	1.4%
1994	76,158	0.9%	2002	113,902	4.0%
1995	78,314	2.8%	2003	117,747	3.4%
1996	81,887	4.6%	2004	124,405	5.7%
1997	85,529	4.4%	2005	130,293	4.7%
Period	Mean	Minimum	Maximum	80% Range	
				Lower	Upper
Last 5 Years	3.8%	1.4%	7.0%	2.5%	5.1%
Last 10 Years	5.2%	1.4%	9.4%	4.2%	6.3%
Full Period	3.6%	-1.0%	9.4%	2.5%	4.7%

Sources: San Diego Chamber of Commerce; Bureau of Economic Analysis, U.S. Department of Commerce

Table 19: San Diego GRP Projections

Year	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Mean	Lower 10% ^(a)	Upper 10% ^(b)	Mean	Lower 10% ^(a)	Upper 10% ^(b)
2006-2010	4.5%	4.4%	4.6%	3.80%	3.70%	3.90%
2011-2020	4.1%	4.0%	4.2%	3.30%	3.10%	3.50%
2021-2030	4.1%	3.9%	4.3%	3.30%	3.10%	3.50%
After 2030	4.1%	3.9%	4.3%	3.30%	3.10%	3.50%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

4.3 Border Crossing Market Segments

In developing toll revenue projections, the total border crossings at OM and SY are divided into the segments of time and the type of lane. For example, assumptions are made on the percent of travelers crossing during weekday and weekend days (Tables 20-21) and peak and off-peak periods (Tables 22-23). A third market segmentation involves delineating the percentage of passenger vehicles and trucks using normal or SENTRI/FAST lanes (Table 24). A characterization of peak times based on an analysis of wait times and number of lanes open is provided in Appendix 1-C.

Table 20: Percentage of Traffic in Weekday at OM

% Traffic in Weekday at OM	Probability Ranges		
	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	75%	72%	77%
Trucks	75%	70%	80%

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 21: Percentage of Traffic in Weekday at SY

% Traffic in Weekday at SY	Probability Ranges		
	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	75%	72%	77%

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 22: Percentage of Traffic in Peak Period at OM

% Traffic in Peak Period at OM	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	60%	45%	75%	60%	55%	70%
Trucks	60%	45%	75%	60%	55%	70%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 23: Percentage of Traffic in Peak Period at SY

% Traffic in Peak Period at SY	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	60%	45%	75%	75%	72%	77%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 24: Percentage of Traffic by Type of Lane

% Traffic in Type of Lane		OM			SY		
		Median	Lower 10%	Upper 10%	Median	Lower 10%	Upper 10%
Passenger Vehicles	Normal	85%	83%	87%	85%	83%	87%
	SENTRI	15%	17%	13%	15%	17%	13%
Trucks	Normal	90%	88%	95%	NA		
	FAST	10%	12%	5%			

4.4 Value of Time

Value of time is a key determinant of the toll diversion model. The model utilizes weighted values of time based on data on travelers' purpose of trip and location of their home country. The value of time as perceived by persons with home in the U.S. is expressed in 2004 dollars per hour. The average wage in San Diego County for all occupations is \$20/hour. Values of time for commuting, non-work, and airport traffic are assumed to be 60%, 30%, and 100% of this wage, respectively. The assumptions for the value of time for persons with home in the U.S. are shown in Table 25.

The value of time as perceived by persons with a home in Mexico is expressed in 2004 dollars per hour. The average manufacturing wage in Mexico is U.S. \$2.50/hr. It is assumed that 50% of persons crossing the border with a home in Mexico earn the San Diego average wage and 50% earn the average Mexican manufacturing wage. The weighted average is \$11.25/hr. Values of time for commuting, non-work, and airport traffic are assumed to be 60%, 30% and 100% of this wage, respectively. The assumptions for the value of time for persons with home in Mexico are shown in Table 26.

The full value of time for trucks includes both the wage of the driver and estimated cargo cost. The value of time of a truck driver can range from \$18 - \$25 in 2000 dollars. Several independent studies have estimated cargo costs to be between \$2 and \$45/hr. Other studies have found freight costs to exceed hundreds of dollars per hour. The variable is expressed in 2004 dollars per hour. The assumptions for the value of time trucks are shown in Table 27.

Several adjustments to the weighted value of time are incorporated in the model. For example, the value is assumed to grow annually for passenger vehicles and trucks in real terms. The assumptions for the real annual growth of the value of time are shown in Table 28.

The value of time is also adjusted by assumptions of vehicle occupancy to reflect the full value of all passengers in the vehicle. This adjustment is made for each purpose of trip and type of vehicle. The assumptions about vehicle occupancy are shown in Table 29.

Finally, an additional premium on the value of time is applied to reflect the value of improved reliability of travel time from using the EOM POE and S.R. 11. The assumptions about the value of improved reliability are shown in Table 30.

The value of time is weighted by the home country of travelers in each type of lane during the weekday or weekend at OM and SY for passenger vehicles and trucks at OM, shown in Table 31.

Table 25: Passenger Vehicles with home in the U.S., in Base Year

Purpose of Trip	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)
Commuting	12.0	8.0	16.0	12.0	8.0	16.0
Non Work	6.0	4.0	8.0	6.0	4.0	8.0
Airport	20.0	12.0	28.0	20.0	12.0	28.0

*No adjustment was made following the November 2, 2006 risk workshop

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 26: Passenger Vehicles with home in the Mexico, in Base Year

Purpose of Trip	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)
Commuting	6.7	4.4	8.9	6.73	4.48	8.97
Non Work	3.4	2.2	4.5	3.36	2.24	4.48
Airport	11.25	6.7	15.7	11.21	6.73	15.69

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 27: Value of time for Trucks, in Base Year

Country of Origin	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)	Median (\$/hr)	Lower 10% ^(a) (\$/hr)	Upper 10% ^(b) (\$/hr)
US	45.0	30.0	60.0	45.0	30.0	60.0
Mexico	45.0	30.0	60.0	22.5	15.0	30.0

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 28: Real Annual Growth of the Value of Time

	Variable	Preliminary Probability Ranges			Adjusted Probability Ranges*		
		Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	US	1.0%	0.5%	1.25%	1.0%	0.75%	1.25%
	Mexico	1.0%	0.5%	1.25%	1.0%	0.75%	1.25%
Trucks	US	1.0%	0.5%	1.25%	0.50%	0.38%	0.63%
	Mexico	1.0%	0.5%	1.25%	0.50%	0.38%	0.63%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 29: Vehicle Occupancy

		Median
Passenger Vehicles	Airport	1.67
	Commuting	1.35
	Non Work	1.67
Trucks		1.12

Table 30: Value of Time Premium due to improved reliability

	Median	Lower 10% ^(a)	Upper 10% ^(b)
Additional Premium on Value of Time – Passenger Vehicles and Trucks	.20	.10	.30

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 31: Value of Time Weighting Assumptions

	Passenger Vehicles						Trucks		
	OM			SY			OM		
	Median	Low	Median	Low	High	High	Median	Low	High
Common Assumptions									
% US (Home Country) to Airport	0.5%	0.4%	0.0%	0.0%	0.0%	1.0%	2.7%	2.4%	3.0%
% MX (Home Country) to Airport	0.3%	0.1%	0.0%	0.0%	0.0%	1.0%	1.0%	0.9%	1.3%
Weekday / Normal Lane									
% MX (Home Country)	85.0%	81.0%	85.0%	76.5%	93.5%	89.0%	85.0%	81.0%	89.0%
% Work	37.5%	33.8%	95.0%	90.0%	99.0%	41.3%	37.5%	33.8%	41.3%
Weekday / SENTRI/FAST Lane									
% MX (Home Country)	20.0%	18.0%	35.0%	33.0%	37.0%	22.0%	20.0%	18.0%	22.0%
% Work	98.0%	95.0%	95.0%	94.0%	98.0%	99.0%	96.0%	94.0%	97.0%
Weekend / Normal Lane									
% MX (Home Country)	40.0%	36.0%	40.0%	38.0%	42.0%	44.0%	40.0%	36.0%	44.0%
% Work	20.0%	18.0%	95.0%	90.0%	99.0%	22.0%	20.0%	18.0%	22.0%
Weekend / SENTRI/FAST Lane									
% MX (Home Country)	20.0%	18.0%	35.0%	33.0%	37.0%	22.0%	20.0%	18.0%	22.0%
% Work	98.0%	95.0%	95.0%	90.0%	98.0%	99.0%	96.0%	94.0%	97.0%

4.5 Waiting Times

The waiting times indicate the amount of time spent waiting before entering the POE for processing. The waiting times at the existing POEs are important factors in the toll diversion model. The data for waiting times is based on the reported waiting times by the U.S. Customs and Border Protection (U.S. CBP) and the results of the HDR|HLB 2005 survey of cross-border travelers at the SY and OM POEs. The CBP data on waiting times is presented in the Appendix 1-E and 1-F; these data are likely to be lower boundaries for actual waiting times, especially for peak periods because 60 minutes is a maximum waiting time for many data entries. Appendix 1-G includes data on expected waiting times (based on the HDR|HLB survey) which indicated some significantly longer waiting times. The assumptions on waiting times for passenger vehicles and trucks were subject to the RAP panel discussion; these assumptions are shown in Tables 33-35. Also, the waiting times are assumed to increase over time with the growth in crossings at all POEs.

Once inside the POE, the passenger vehicles and trucks undergo inspections of the persons and goods traveling into the U.S. This processing time is a component for the total time savings of the traffic diversion to EOM. The assumptions made on the processing time at the EOM POE are shown in Table 32.

As discussed previously in Section 3.2, another component of waiting times is induced demand. In particular, new cross-border trips induced by lower waiting times increase the pressure on waiting times at both existing facilities and the new EOM POE. Induced demand is incorporated in the model as an elasticity factor which, when multiplied with the baseline level of diversion to EOM, computes a total potential increase in new cross-border trips, the new travelers who make up some of the diversion to EOM. The assumptions made on induced demand are shown in Table 36.

Increases in waiting times at the SY and OM POEs are expected because of growth in projected crossings. Countering these increases include a number of adjustments including: capacity expansion

of existing facilities (such as additional lane-hours or lane configurations) and passenger vehicles shifting from peak to off-peak or from normal to SENTRI lanes. These adjustments constrain the potential increase in waiting times at existing facilities. The model accounts for these adjustments in two steps. First, the annual rate of growth in crossings at the SY and OM POEs is computed. Then, a percentage impact of crossing growth on waiting time is applied to account for these adjustments. The adjustment factor is applied to each crossing growth rates for each vehicle and POEs. A single adjustment value of 10% is used in all cases.

Table 32: Processing Times

Type of Vehicle and Lane		Weighted average of Processing Times (hours)		
		Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	Normal	0.03	0.01	0.4
	SENTRI	0.03	0.02	0.1
Trucks	Normal	0.22	0.03	1.0
	FAST	0.16	0.03	1.0

Source: CBP

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 33: Waiting Times for Passenger Vehicles at the OM POE

Weekday Waiting Times at OM (hours)		Preliminary Probability Ranges			Adjusted Probability Ranges*		
		Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Normal Lanes	Peak	0.75	0.41	1.00	0.75	0.35	1.00
	Off Peak	0.50	0.16	0.92	0.50	0.15	0.95
SENTRI Lanes	Peak	0.08	0.01	0.16	0.25	0.10	0.75
	Off Peak	0.03	0.01	0.16	0.15	0.10	0.50

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 34: Waiting Times for Passenger Vehicles at the SY POE

Weekday Waiting Times at SY (hours)		Preliminary Probability Ranges			Adjusted Probability Ranges*		
		Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Normal Lanes	Peak	0.83	0.50	1.00	1.25	0.75	2.00
	Off Peak	0.66	0.16	1.00	0.75	0.15	1.00
SENTRI Lanes	Peak	0.16	0.01	0.33	0.33	0.15	0.75
	Off Peak	0.08	0.01	0.33	0.15	0.10	0.5

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 35: Waiting Times for Trucks

Weekday Waiting Times (hours)		Preliminary Probability Ranges			Adjusted Probability Ranges*		
		Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Normal Lanes	Peak	0.75	0.16	1.00	1.50	1.00	4.00
	Off Peak	0.50	0.08	0.91	1.00	0.90	2.00
FAST Lanes	Peak	0.25	0.08	0.91	0.75	0.50	2.00
	Off Peak	0.16	0.01	0.58	0.75	0.50	1.50

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

Table 36: Induced Demand

	Median	Lower 10% ^(a)	Upper 10% ^(b)
Induced Demand Elasticity	50%	40%	60%

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

4.6 Driving Times to the EOM POE

Additional driving times to the EOM POE from existing POEs also influence demand for the new EOM border crossing. Table 37 provides parameters for the additional drive time assumptions during peak and off-peak periods. Additional driving times are computed between reference locations in Tijuana and San Diego. Each existing POE has a reference location that incorporates origin-destination patterns of travelers as obtained from cross-border surveys (Parsons, 2000 and HDR|HLB, 2005). Driving times are initially computed for off-peak periods. Peak period times are assumed to be a larger multiple of off-peak times and are represented as a range of values.

Table 37: Driving Times

Additional Driving Times to EOM				
POE Pairs	Off Peak (baseline hours)	Peak driving time factors (multiplies with off-peak times)		
		Median	Low	High
OM-EOM	0.08	3	2	5
SY-EOM	0.15	3	2	5

Driving time estimates based on reference locations provides a means of modeling a potential larger growth rate in demand for the EOM POE as population centers grow near this future POE. This modeling feature is achieved by assuming that the additional driving time can become smaller over time. The rationale is that a smaller travel time implies a reference location that is closer to the new EOM POE. Since reference locations represent the relative center of a wide range of actual departure points, this model feature is intuitive. Downward adjustments to driving times are developed for SY-EOM and OM-EOM separately. In each case, a maximum percent reduction and a rate of change are defined. Data is provided in Table 38.

Table 38: Adjustments to Driving Times

Adjustments to Driving Times to Account for Population Growth in East and Northeast Tijuana				
POE Pairs	Annual rate of change in driving time			Maximum % reduction in driving time
	Median	Low	High	
OM-EOM	2.0%	0.0%	5.0%	40%
SY-EOM	1.0%	0.0%	5.0%	30%

4.7 Infrastructure Assumptions

Another variable in the POE diversion and toll share model is the number of lanes open at the existing POEs and at EOM. The number lanes open for each type of lane currently varies at the existing POEs by weekday and weekend and time of day. Information on this variation was obtained from a SANDAG dataset that was originally produced by CBP. Further details about the infrastructure at the existing POEs and at EOM can be found in Appendix 1-G. The assumptions made on the number lanes open at the existing POEs and at EOM are shown in Table 39.

Table 39: Infrastructure Assumptions

	OM			SY			EOM		
	Median	Low	High	Median	Low	High	Median	Low	High
Passenger Vehicles									
Weekday Normal Lanes									
Peak	8	6	9	19	16	22	8	6	9
Off Peak	6	2	8	16	4	19	6	2	8
Weekday SENTRI Lanes									
Peak	1	1	1	3	0	4	1	1	1
Off Peak	1	1	1	2	0	3	1	1	1
Weekend Normal Lanes									
Peak	9	6	9	20	16	22	9	6	9
Off Peak	6	4	8	14	4	19	6	4	8
Weekend SENTRI Lanes									
Peak	1	1	1	3	0	4	1	1	1
Off Peak	1	1	1	2	0	3	1	1	1
Trucks									
Weekday Normal Lanes									
Peak	7	5	9				7	5	9
Off Peak	6	5	8				6	5	8
Weekday FAST Lanes									
Peak	1	1	1				1	1	1
Off Peak	1	1	1				1	1	1
Weekend Normal Lanes									
Peak	6	6	9				6	6	9
Off Peak	5	1	6				5	1	6
Weekend FAST Lanes									
Peak	1	1	1				1	1	1
Off Peak	1	1	1				1	1	1

4.8 S.R. 11 and EOM POE Traffic Ramp-Up

These variables, shown in Table 40, describe the changes on S.R. 11 and border crossing traffic at EOM in the opening year and immediately thereafter. It shows how fast the maximum potential use of the facility (for a given set of socioeconomic conditions) would be reached, and represents the time needed for the community to become aware of the toll road and its potential benefits (in terms of time savings, access, safety, etc).

Table 40: Ramp-up

	Variable	Preliminary Probability Ranges			Adjusted Probability Ranges*		
		Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Passenger Vehicles	% of Projected Total at Opening	50%	40%	60%	60%	50%	70%
	Ramp-up Period (years to steady state)	36	24	48	2.00	1.00	4.50
Trucks	% of Projected Total at Opening	50%	40%	60%	60%	50%	70%
	Ramp-up Period (years to steady state)	36	24	48	2.00	0.50	2.50

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval
(b) Upper limit of an 80% confidence interval

4.9 Data for Scenario Analysis

4.9.1 Summary of Baseline Assumptions for Revenue Scenarios

The following list briefly reviews the major assumptions in the baseline analysis. Some of these assumptions will be modified in the revenue and cost scenarios.

- Alternative POEs: OM and SY
- Capacity (numbers / types of lanes):
 - Current capacity at existing POEs⁵
 - New POE is assumed to have nine passenger vehicle lanes (including one SENTRI), and nine truck lanes (including one FAST)
- Origin-Destinations of persons crossing border
 - Apply results from border crossing surveys in 2000 and 2005
- Process
 - POE to process passenger vehicles and trucks (no pedestrian)
 - Estimates of processing times were made available by U.S. Customs and Border Protection
- Facility
 - S.R. 11 Capital and O&M costs only
 - No toll facility on the Mexican side
- Wait Time
 - EOM provides a twenty minute wait time for normal lanes (truck and passenger vehicles) and FAST lanes
 - SENTRI provides a six minute wait time

⁵ See Appendix 1-B for details of capacity at existing POEs.

4.9.2 Revenue Scenarios

Several alternate revenue scenarios have been modeled for this project. Two scenarios include variables that were discussed by RAP panelists. One of these scenarios assesses the seamless interconnection of S.R. 11 with the Tijuana-Tecate toll road in Mexico. The Tijuana-Tecate Toll Road currently ends approximately two miles south of the possible site of the EOM-Otay II POE. A direct connection from this toll road is in planning stages. The assumptions on the impact of the integration of the Tijuana-Tecate toll road to EOM are shown in Table 41.

The second revenue scenario considers the potential shift of people from passenger vehicles to crossing the border as pedestrians and then utilizing a potential bus rapid transit at the EOM POE. For these scenarios, additional variables have been defined including the opening year and total impact on revenue. The assumptions on the impact of the pedestrian crossing at EOM are shown in Table 42.

A third scenario would assess revenue impacts if EOM were designed only for trucks. Such a facility would provide service for 16 normal and two FAST lanes. No passenger vehicles would be permitted. This scenario is modeled the same as the baseline revenue but with the new numbers of lanes. Assumptions on waiting times at existing facilities and level of service at new facility are unchanged.

Table 41: Impact of Integration of Tijuana-Tecate Toll Road to EOM

Variable	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Opening Year	2020	2015	2025	2015	2015	2015
Impact on Passenger Vehicle Diversion	10%	5%	15%	7%	5%	10%
Impact on Truck Diversion	10%	5%	15%	10%	5%	15%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval

(b) Upper limit of an 80% confidence interval

Additional assumptions for modeling this scenario include:

- Integration of roads generates additional diversion from the Tecate POE
- Growth at the Tecate POE is similar to that at the OM and SY POEs
- Toll rates are assumed to be unchanged because increased volumes are relatively low

Table 42: Potential of Pedestrian Crossing at EOM

Variable	Preliminary Probability Ranges			Adjusted Probability Ranges*		
	Median	Lower 10% ^(a)	Upper 10% ^(b)	Median	Lower 10% ^(a)	Upper 10% ^(b)
Opening Year	2020	2015	2025	2015	2015	2015
Impact on S.R. 11/ EOM Vehicle Use	-4%	-1%	-6%			
Diversion to pedestrian modes				20%	10%	30%

*Adjusted after the November 2, 2006 risk workshop (the adjusted ranges were used in the analysis)

Notes: (a) Lower limit of an 80% confidence interval

(b) Upper limit of an 80% confidence interval

Additional assumptions for modeling this scenario include:

- Ratio of pedestrians to vehicles is similar to the existing OM POE (25%)
- Level of service at the EOM POE would entail a reduction in waiting times comparable to passenger vehicles
- Pedestrians pay a toll of \$1 at the EOM POE

4.9.3 Revenue Risk Factors

As part of due diligence, several risk factors were evaluated with RAP panelists. These factors pose potential risks to the future growth of border crossings at EOM.

1. Opening of a port in Punta Colonet: This proposal for a multibillion dollar container port in Punta Colonet, Baja California, includes plans to build a direct railway to Yuma, AZ or other locations east of the San Diego region. This could potentially divert trade and truck traffic around the San Diego-Tijuana region.
2. Expanded Mass Transit at SY and/or OM: Expanded public transportation options at existing ports of entry could potentially encourage more pedestrians to cross at SY and/or OM and decrease crossings at the EOM POE.
3. Increased border security and/or visa limitations: This could potentially create longer waiting times at the ports of entry and therefore increase the demand for a guaranteed lower waiting time by paying the toll at the EOM POE.
4. Compliance with NAFTA rules of Mexico-domiciled trucks: This could potentially increase truck traffic because increased competition from Mexican-based trucks could lower shipping prices and increase shipments. It may also induce decreases of the number of warehouses in the Otay Mesa area.

The assumptions of these potential risks occurring and their impact are shown in Table 43.

Table 43: Risk Factors

Potential Risks	Probability of Occurring in 2020	% Impact on EOM Border Crossings		
		Median	Lower 10% ^(a)	Upper 10% ^(b)
Opening of Punta Colonet	25%	10%	5%	20%
Expanded Mass Transit at SY and/or OM	65%	3%	2%	5%
Increased Border Security and/or Visa Limits	75%	5%	2%	7%
Compliance with NAFTA Rules of Mexican Based Trucks	60%	5%	2%	7%

Notes: (a) Lower limit of an 80% confidence interval
 (b) Upper limit of an 80% confidence interval

Additional assumptions for modeling these scenarios include:

- The impact continues beyond 2020.
- Total impact of these risks may be anticipated on annual crossings.
- The impact incorporates both the probability of occurring and the range of percent impacts on EOM crossings.
- Diversion and toll rates are assumed to be the same since the expected impact from any of these risks is less than 4%.

4.9.4 Project Cost Scenarios

Recent S.R. 11 construction and operation/maintenance (O&M) cost estimates were obtained from Caltrans. Construction cost estimates in 2006 dollars have been escalated to 2012 dollars (the year when construction is expected to start), compounded at three percent per year. The range of estimates is based on the western and central alignments of S.R. 11. The low scenario is based on the western alignment. The median cost is the central alignment with 150% of the right of way costs. The high cost scenario is also the central alignment but with a doubling of the right of way costs.

Estimated construction costs for the EOM POE were provided by the CBP based on EOM design assumptions.⁶ POE O&M costs, assuming three shifts per lane plus additional supervisors and management, are estimated to be approximately 10% of capital costs. Table 44 summarizes these costs.

Table 44: Project Costs

In 2006 Dollars	Median	Low	High
S.R. 11 Capital Costs	\$ 246,600,000	\$ 208,600,000	\$ 264,400,000
S.R. 11 Annual O&M Expenses	\$ 350,000	\$ 300,000	\$ 400,000
POE Capital Costs	\$ 272,500,000	\$ 245,000,000	\$ 300,000,000
POE Annual O&M Expenses	\$ 27,200,000	\$ 13,700,000	\$ 40,900,000
Total Capital Expenses	\$ 519,100,000	\$ 453,600,000	\$ 564,400,000
Total Annual O&M Expenses	\$ 27,550,000	\$ 14,000,000	\$ 41,300,000

Additional assumptions in developing these values and estimated costs in 2012 include:

- POE O&M are 10%, 5% and 15% of the median POE capital cost
- Additional factors in adjusting from 2006:
 - S.R 11 construction cost escalation rate at 3% per year
 - POE construction cost escalation rates are 3%, 4% and 5% for low, median and high costs (due to a less certain nature of these costs)
 - Proportion of S.R 11 construction costs based on year of expenditure are 25%, 50% and 25% for construction years 1, 2 and 3, respectively.
 - S.R 11 O&M escalation rates are 2%, 3%, and 4% for low, median and high costs

Several cost scenarios are examined in this study with respect to baseline revenue. The baseline cost scenario includes S.R. 11 capital and O&M costs only. One alternative cost scenario adds POE capital costs to the baseline costs. The second cost scenario includes POE O&M costs as well.

CHAPTER 5: SUMMARY OF FINDINGS

5.1 Border Crossing Forecasts

Border crossing projections through 2065 for passenger vehicles and trucks at SY and OM, respectively, are shown in Figures 9, 10 and 11. Values are reported for the median, lower and upper boundaries with boundaries of the 70% confidence interval.

Figure 9: Border Crossing Forecast of Passenger Vehicles at OM

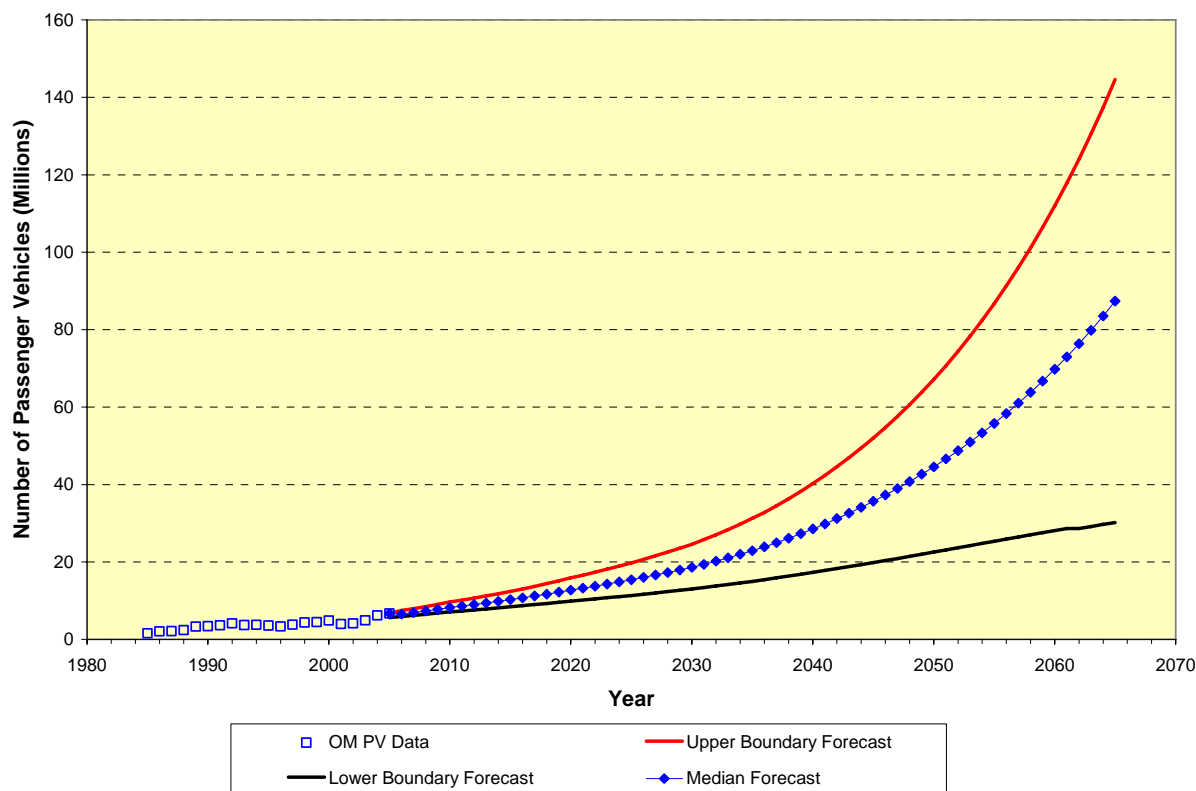


Table 45: OM Passenger Vehicle Crossing Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	10.3	8.1	12.4	
2020	12.7	9.6	15.9	3.69%
2030	18.6	12.6	24.6	3.50%
2040	28.5	16.8	40.2	3.96%
2050	44.6	22.0	67.2	4.14%
2060	69.8	27.6	112.0	4.16%

AACG = Average Annual Compound Growth

⁶ CBP has not agreed to a concept, size, scope or timeline for EOM and these estimates are for purposes of this study only.

Figure 10: Border Crossing Forecast of Passenger Vehicles at SY

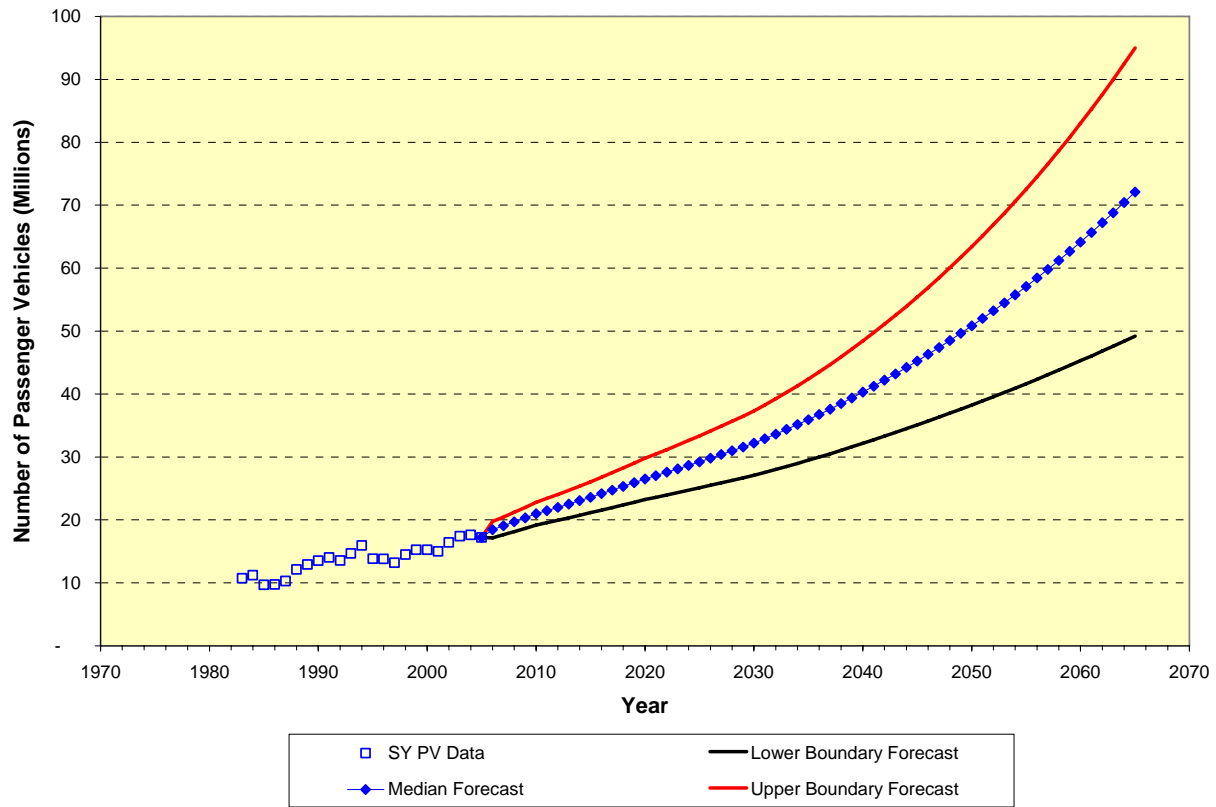


Table 46: SY Passenger Vehicle Crossing Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	23.6	21.1	26.1	
2020	26.5	23.2	29.8	1.96%
2030	32.2	27.1	37.3	1.78%
2040	40.3	32.2	48.4	2.06%
2050	50.8	38.2	63.4	2.13%
2060	64.2	45.3	83.0	2.14%

AACG = Average Annual Compound Growth

Figure 11: Border Crossing Forecast of Trucks at OM

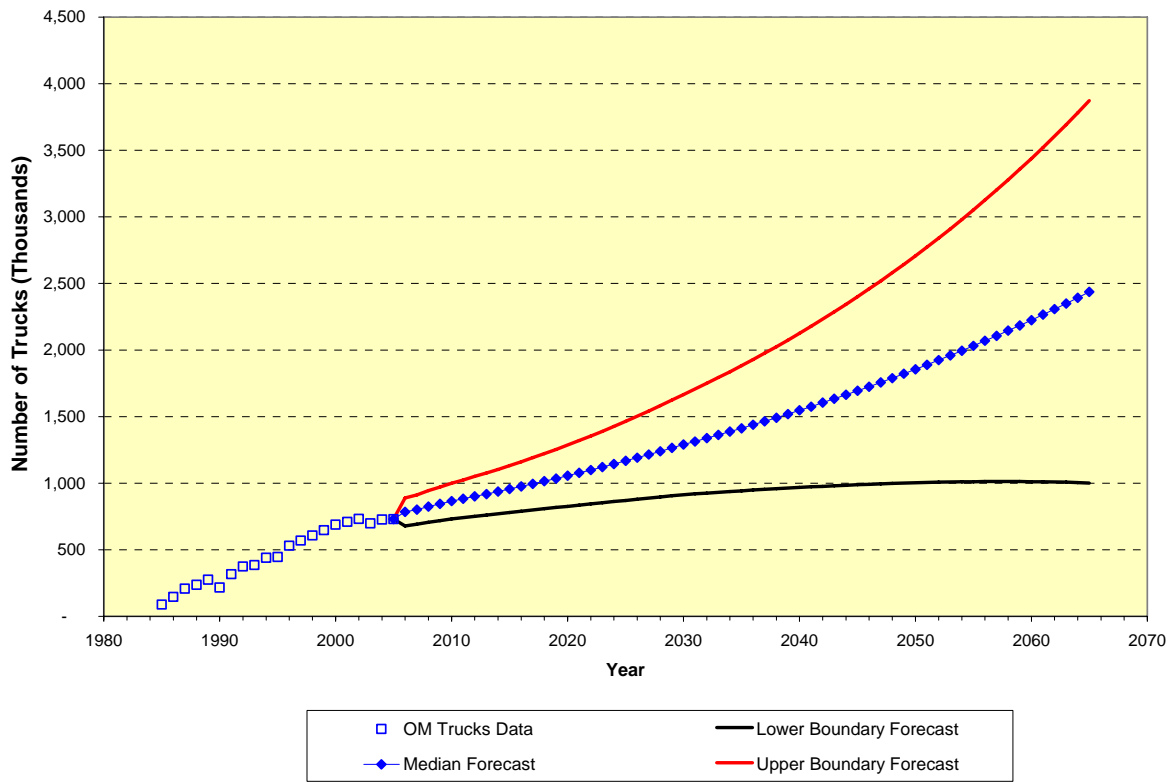


Table 47: OM Truck Crossing Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	1.0	0.8	1.1	
2020	1.1	0.8	1.3	1.68%
2030	1.3	0.9	1.7	1.83%
2040	1.5	1.0	2.1	1.67%
2050	1.9	1.0	2.7	1.67%
2060	2.2	1.0	3.4	1.67%

AACG = Average Annual Compound Growth

5.2 EOM POE Transaction Forecasts

Forecasts of annual passenger vehicles and trucks transactions at the EOM POE are shown in Figures 12 and 13. The projections of crossings begin in the year 2015, the anticipated opening year. The graphs are summarized in accompanying charts. After ramp-up is complete, passenger vehicle and truck transactions grow approximately 2% and 1.3% per year, respectively. This rate is fairly conservative given population growth and the high level of current congestion, and the limited options for expansion at existing facilities.

Figure 12: Border Crossing Forecast of Passenger Vehicles at EOM

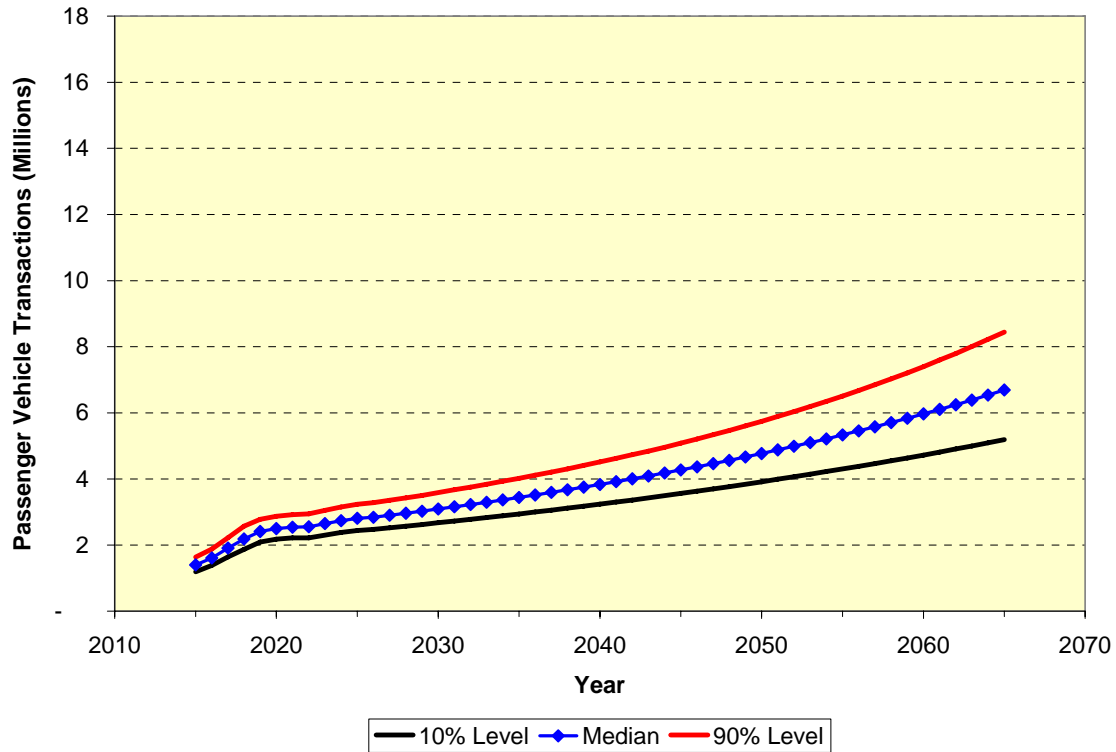


Table 48: EOM POE Passenger Vehicle Crossing Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	1.4	1.2	1.6	
2020	2.5	2.2	2.9	10.1%
2030	3.1	2.7	3.6	1.9%
2040	3.8	3.2	4.5	2.0%
2050	4.8	3.9	5.7	2.0%
2060	6.0	4.7	7.4	2.1%

AACG = Average Annual Compound Growth

Figure 13: Border Crossing Forecast of Trucks at EOM

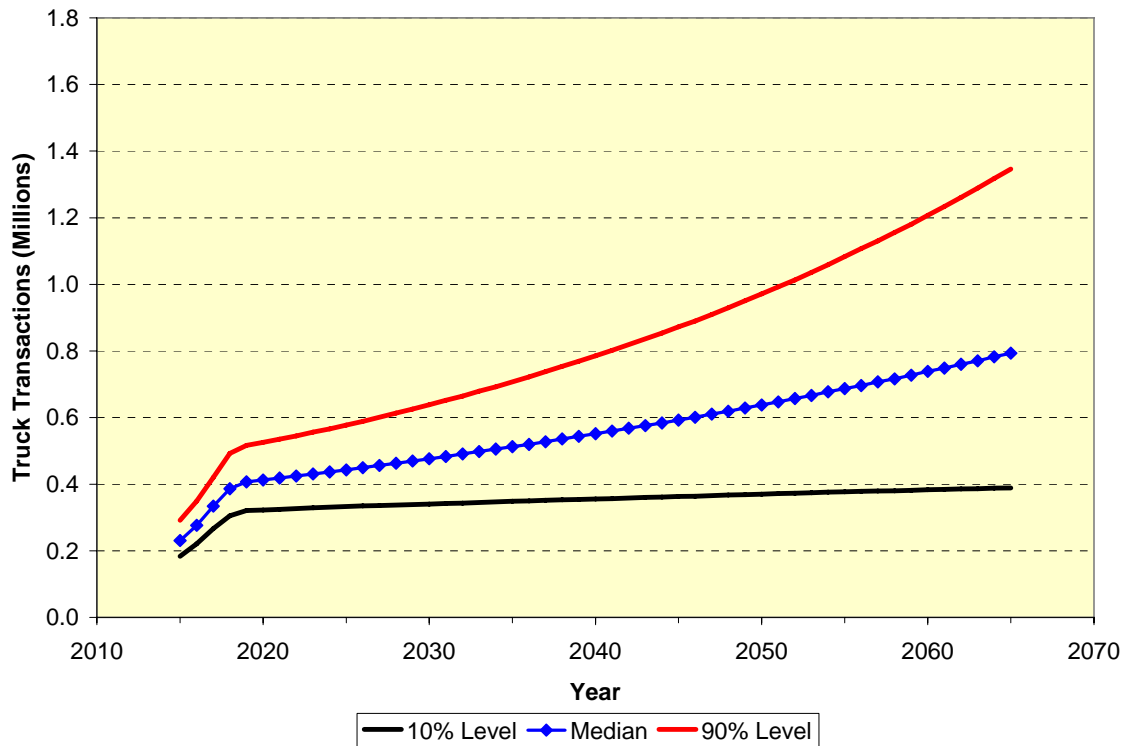


Table 49: EOM POE Truck Transaction Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	0.2	0.2	0.3	
2020	0.4	0.3	0.5	10.2%
2030	0.5	0.3	0.6	1.3%
2040	0.6	0.4	0.8	1.3%
2050	0.6	0.4	1.0	1.3%
2060	0.7	0.4	1.2	1.3%

AACG = Average Annual Compound Growth

5.3 Toll Revenue Forecast

Toll revenue forecasts (in 2006 dollars) for passenger vehicles, trucks separately and combined are shown in Figures 14-16 and accompanying Tables 50-52. Total annual revenue is shown in Table 53. Truck and passenger vehicle revenue grows more rapidly than transactions, representing the relatively faster increase in toll rates. Toll rates are driven by the increasing demand for using the EOM POE especially as waiting times grow at existing facilities. In early years, total revenue is split almost evenly between passenger vehicles and trucks but by 2040 passenger vehicles revenue provides over 60% of the revenue. Charts show the range of revenues for all years in 2006 dollars.

Total revenue is also computed for each type of lane. Low revenue levels for SENTRI and FAST lanes are manifestations of the marginal time savings in using EOM because waiting times at OM and SY are already relatively low in these expedited lanes.

Figure 14: Annual Passenger Vehicle Revenue

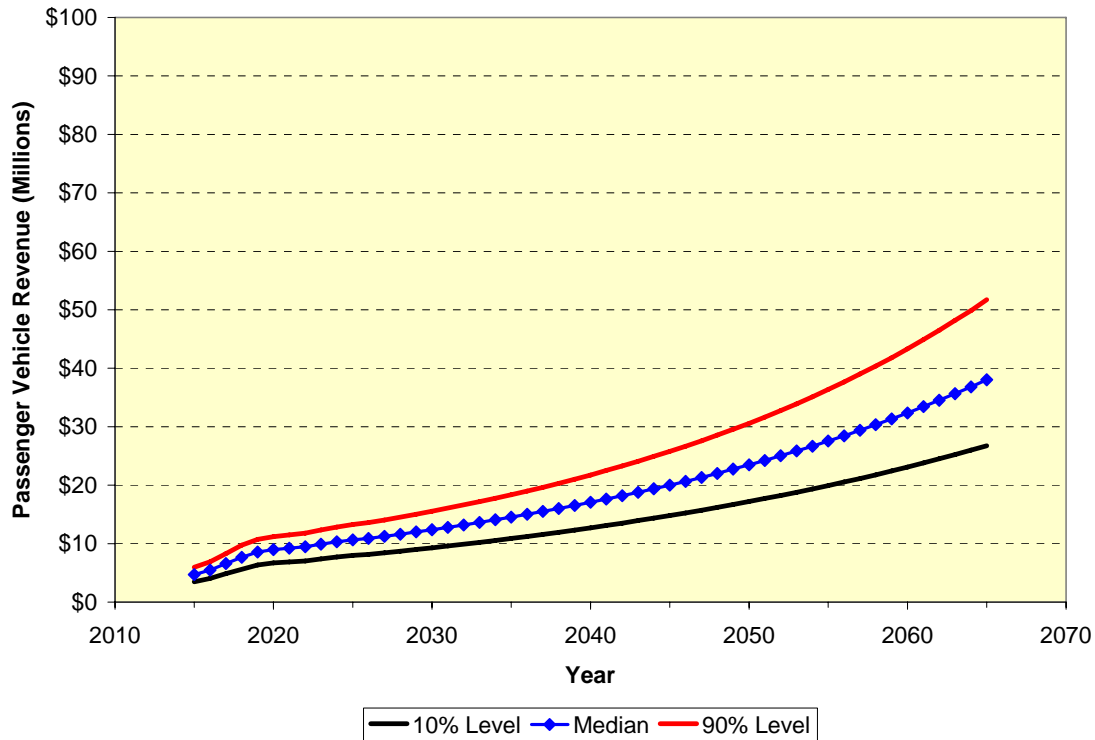


Table 50: Passenger Vehicle Revenue Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	\$4.7	\$3.5	\$5.9	
2020	\$9.0	\$6.7	\$11.2	11.4%
2030	\$12.4	\$9.3	\$15.5	3.0%
2040	\$17.1	\$12.7	\$21.8	3.0%
2050	\$23.5	\$17.2	\$30.6	2.9%
2060	\$32.4	\$23.1	\$43.3	3.0%

AACG = Average Annual Compound Growth

Figure 15: Annual Truck Revenue

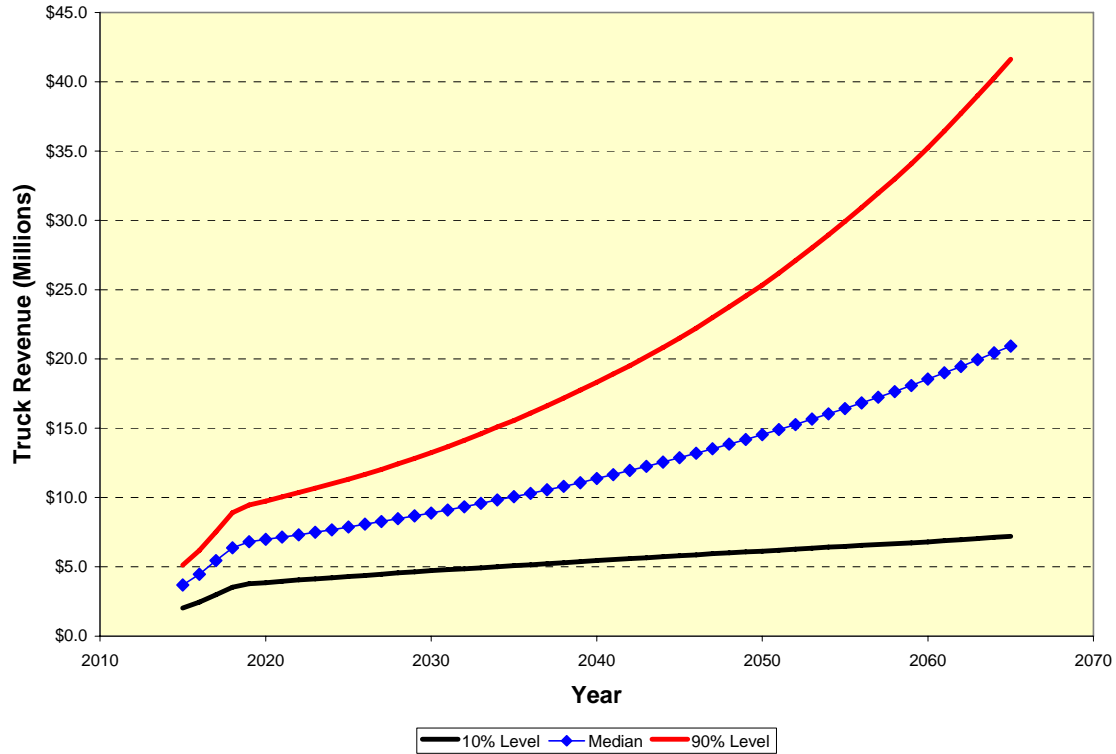


Table 51: Truck Revenue Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	\$3.7	\$2.0	\$5.1	
2020	\$7.0	\$3.9	\$9.7	11.2%
2030	\$8.9	\$4.7	\$13.2	2.2%
2040	\$11.4	\$5.5	\$18.3	2.3%
2050	\$14.5	\$6.1	\$25.3	2.3%
2060	\$18.5	\$6.8	\$35.2	2.2%

AACG = Average Annual Compound Growth

Figure 16: Total Annual Revenue at EOM

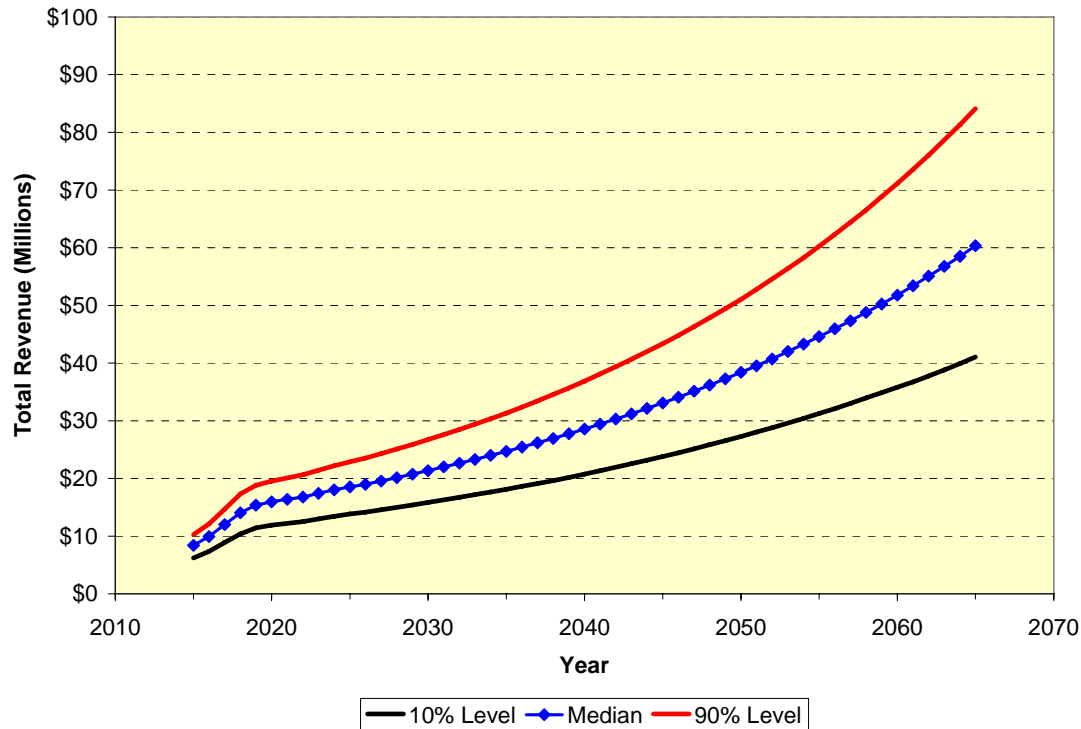


Table 52: EOM Total Revenue Projections (millions)

Year	50% Probability of Exceeding	Lower	Upper	AACG
2015	\$8.4	\$6.2	\$10.3	
2020	\$16.0	\$11.9	\$19.5	11.3%
2030	\$21.4	\$15.9	\$26.7	2.7%
2040	\$28.6	\$20.7	\$36.9	2.7%
2050	\$38.4	\$27.3	\$51.1	2.7%
2060	\$51.8	\$35.8	\$71.2	2.7%

AACG = Average Annual Compound Growth

Table 53: Total Annual Revenue (millions) – by vehicle type and lane type

Year	Passenger Vehicles - Normal	Passenger Vehicles - SENTRI	Truck - Normal	Truck - FAST
2015	\$4.6	\$0.1	\$3.5	\$0.2
2020	\$8.8	\$0.2	\$6.6	\$0.4
2030	\$12.1	\$0.3	\$8.4	\$0.5
2040	\$16.5	\$0.5	\$10.7	\$0.7
2050	\$22.6	\$0.9	\$13.6	\$0.9
2060	\$31.0	\$1.4	\$17.4	\$1.2

5.4 Toll Rates

Congestion-priced toll rates (in 2006 dollars) are computed for passenger vehicles and trucks for peak and off peak periods for each type of lane, shown in Tables 54-55. Note that the SENTRI and FAST lanes have lower toll rates because the time savings of crossing at the EOM POE is less for these travelers compared to the SENTRI and FAST counterparts at OM and SY.

Table 54: Average Toll Rate – Passenger Vehicles

Year	Normal / Peak	Normal / Off Peak	SENTRI / Peak	SENTRI / Off Peak
2015	\$7.0	\$1.6	\$2.5	\$0.8
2020	\$7.4	\$1.8	\$2.8	\$0.9
2030	\$8.2	\$2.1	\$3.2	\$1.2
2040	\$9.0	\$2.5	\$3.7	\$1.5
2050	\$9.8	\$2.9	\$4.1	\$1.9
2060	\$10.8	\$3.3	\$4.7	\$2.2

Table 55: Average Toll Rate – Trucks

Year	Normal / Peak	Normal / Off Peak	FAST / Peak	FAST / Off Peak
2015	\$47.3	\$32.0	\$25.8	\$22.9
2020	\$49.3	\$33.3	\$27.2	\$23.9
2030	\$53.5	\$36.1	\$30.1	\$26.1
2040	\$57.9	\$39.1	\$33.1	\$28.4
2050	\$62.6	\$42.3	\$36.2	\$30.1
2060	\$67.5	\$45.6	\$39.5	\$33.3

5.5 Results for Revenue Scenarios

Results from the analysis of alternate revenue scenarios perform as expected. Integrating Mexican toll roads with S.R. 11 would generate about 5% more revenue for the project annually. On the other hand, facilitating crossings for pedestrians would ultimately reduce net revenues as more passenger vehicles are diverted to pedestrian modes. Finally, if EOM were designed as a truck facility, total revenues would be dramatically reduced. Even though truck transactions and revenue would increase, it is not enough to make up for the loss in passenger vehicle revenue.

Table 56: Summary of Revenue Results for Revenue Scenarios

Scenario	Discussion of Impacts on Revenue
Connection of S.R. 11 and Tijuana-Tecate Toll Road	<ul style="list-style-type: none"> Total revenue is increased by an additional 5% (~\$1M by 2027) Annual growth in revenue is over 2%
Pedestrian Facility / Bus Transit at EOM	<ul style="list-style-type: none"> During first few years, achieves a net increase in revenue of around \$150,000 per year Net revenue declines each year until it becomes negative due principally to faster growth in toll rates for passenger vehicles Overall, a pedestrian / bus rapid transit would yield a marginal impact on total revenue and financial feasibility
Truck Only Facility	<ul style="list-style-type: none"> Truck transactions double Annual truck revenue increases by 35% Toll rates reduce by 22% @ peak and 65% @ off-peak Total revenue is 35% less in 2015 and rises to 50% less by 2065

5.6 Risk Analysis of Debt Service Coverage

Debt service coverage (DSC) is usually expressed as a ratio of cash flow available to meet annual interest and principal payments on debt, including sinking funds payments. The formula is:

$$\text{DSCR} = \frac{\text{Cash Flow Available for Debt Service}}{\text{Debt Requirements (Principal and Interest Payments of Outstanding Debt)}}$$

DSCR results are shown in tables that represent DSCR values along a probability distribution ranging from 5% to 95% for a number of years. The individual DSCR cells in the table are color-coded for DSCR values below 1.0, and between 1.0 and 1.1. Any DSCR value falling below 1.0 represents insufficient cash flow to service outstanding debt obligations. The credit rating agency Fitch, for example, looks for a minimum DSCR of 1.25 for it to bestow an investment grade bond rating. Appendix 5 provides additional guidelines to help read the DSCR probability tables.

HDR|HLB's risk analysis of the debt service coverage ratio for the baseline cost and revenue scenario is provided in Table 57. The baseline cost estimation of the project presents some down-side risks in the early years, with a likelihood of default (debt payment obligations exceeding revenue available for debt service, or debt service coverage ratio less than 1.0) of about 95 percent. Baseline results can be compared against cost scenarios (including various levels of external financial support) in Tables 58-61. DSCR results for alternate revenue scenarios and risk factors are shown in Tables 62-64 and Tables 65-68, respectively. These results are summarized and discussed in the next section. Note that the tables begin in year 2017 on the basis of the assumption that there is a five-year grace period following the start of construction in year 2012. In all cases, it is assumed that revenue increases with inflation at 3% annually.

Table 57: Debt Service Coverage Estimation of Baseline Cost Estimation

	Probability of Exceeding																			
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.07	1.12	1.19
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.11	1.15	1.19	1.24	1.32	
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.06	1.08	1.12	1.15	1.18	1.23	1.27	1.33	1.41	
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.12	1.15	1.19	1.22	1.26	1.31	1.36	1.42	1.52	
2022	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.08	1.12	1.15	1.18	1.22	1.26	1.30	1.34	1.40	1.45	1.52	1.63	
2023	1.00	1.00	1.00	1.00	1.04	1.08	1.11	1.15	1.20	1.23	1.26	1.31	1.35	1.39	1.44	1.50	1.56	1.64	1.77	
2024	1.00	1.00	1.00	1.04	1.10	1.15	1.19	1.23	1.28	1.31	1.35	1.40	1.45	1.49	1.54	1.61	1.67	1.76	1.91	
2025	1.00	1.00	1.04	1.11	1.17	1.22	1.26	1.32	1.36	1.40	1.45	1.50	1.55	1.60	1.66	1.73	1.81	1.90	2.05	
2026	0.92	1.00	1.11	1.17	1.25	1.29	1.34	1.40	1.44	1.49	1.54	1.61	1.66	1.71	1.77	1.85	1.93	2.04	2.21	
2027	0.93	1.07	1.17	1.24	1.32	1.38	1.43	1.49	1.54	1.60	1.65	1.72	1.77	1.84	1.90	2.00	2.08	2.20	2.39	
2028	0.99	1.13	1.25	1.32	1.40	1.47	1.52	1.59	1.64	1.71	1.76	1.83	1.90	1.97	2.05	2.14	2.24	2.37	2.57	
2029	1.03	1.21	1.33	1.43	1.50	1.57	1.63	1.71	1.76	1.83	1.90	1.97	2.05	2.13	2.21	2.31	2.40	2.57	2.78	
2030	1.09	1.28	1.43	1.52	1.60	1.69	1.75	1.82	1.89	1.97	2.03	2.12	2.22	2.29	2.38	2.49	2.60	2.78	3.04	
2031	1.16	1.37	1.52	1.62	1.71	1.81	1.87	1.96	2.03	2.11	2.19	2.27	2.39	2.46	2.56	2.68	2.80	3.01	3.29	
2032	1.24	1.47	1.62	1.73	1.83	1.94	2.01	2.10	2.17	2.25	2.35	2.44	2.56	2.65	2.75	2.88	3.02	3.25	3.55	
2033	1.33	1.57	1.74	1.86	1.97	2.08	2.17	2.25	2.35	2.43	2.53	2.64	2.76	2.87	2.98	3.11	3.27	3.53	3.85	
2034	1.42	1.68	1.86	2.00	2.13	2.23	2.34	2.42	2.53	2.61	2.73	2.85	2.98	3.10	3.22	3.35	3.54	3.83	4.18	
2035	1.52	1.79	1.99	2.14	2.28	2.40	2.51	2.60	2.72	2.81	2.93	3.07	3.21	3.36	3.47	3.63	3.83	4.14	4.52	
2036	1.63	1.91	2.12	2.29	2.45	2.58	2.69	2.80	2.92	3.02	3.14	3.30	3.45	3.61	3.74	3.92	4.14	4.47	4.89	
2037	1.76	2.05	2.27	2.48	2.63	2.78	2.90	3.02	3.15	3.26	3.40	3.57	3.73	3.91	4.05	4.25	4.47	4.85	5.30	
2038	1.90	2.19	2.44	2.66	2.83	2.99	3.12	3.26	3.39	3.53	3.66	3.84	4.04	4.23	4.37	4.59	4.81	5.25	5.77	
2039	2.03	2.36	2.60	2.86	3.06	3.23	3.37	3.51	3.66	3.79	3.95	4.15	4.36	4.56	4.72	4.96	5.20	5.69	6.26	
2040	2.15	2.51	2.78	3.06	3.27	3.48	3.63	3.76	3.94	4.08	4.25	4.47	4.70	4.91	5.07	5.35	5.62	6.13	6.77	
2041	2.32	2.70	2.99	3.30	3.52	3.76	3.91	4.06	4.24	4.41	4.60	4.83	5.08	5.31	5.49	5.79	6.09	6.68	7.38	
2042	2.49	2.90	3.21	3.52	3.78	4.03	4.21	4.38	4.57	4.76	4.96	5.20	5.47	5.74	5.94	6.26	6.59	7.23	7.97	
2043	2.66	3.13	3.44	3.77	4.06	4.34	4.53	4.73	4.92	5.14	5.35	5.63	5.92	6.20	6.42	6.76	7.15	7.81	8.61	
2044	2.86	3.37	3.72	4.04	4.35	4.67	4.87	5.09	5.27	5.54	5.76	6.05	6.36	6.69	6.91	7.29	7.71	8.41	9.30	
2045	3.09	3.63	4.01	4.34	4.67	5.04	5.26	5.52	5.68	5.98	6.22	6.55	6.86	7.24	7.48	7.91	8.35	9.12	10.08	
2046	3.31	3.89	4.32	4.67	5.03	5.44	5.66	5.93	6.12	6.46	6.72	7.07	7.41	7.82	8.10	8.55	9.06	9.89	10.91	
2047	3.55	4.19	4.65	5.03	5.42	5.85	6.09	6.38	6.61	7.00	7.25	7.61	7.99	8.45	8.74	9.22	9.78	10.70	11.80	
2048	3.80	4.50	4.98	5.41	5.82	6.30	6.53	6.86	7.10	7.53	7.81	8.18	8.59	9.09	9.43	9.94	10.56	11.56	12.73	
2049	4.09	4.86	5.36	5.83	6.28	6.78	7.04	7.38	7.66	8.13	8.44	8.82	9.27	9.84	10.23	10.74	11.48	12.51	13.84	
2050	4.39	5.20	5.78	6.27	6.76	7.29	7.60	7.94	8.24	8.75	9.12	9.52	10.02	10.61	11.03	11.57	12.44	13.55	14.99	
2051	4.74	5.59	6.22	6.73	7.27	7.82	8.19	8.55	8.88	9.42	9.85	10.28	10.79	11.47	11.93	12.47	13.46	14.68	16.23	
2052	5.13	5.97	6.69	7.23	7.80	8.36	8.78	9.17	9.56	10.12	10.59	11.10	11.58	12.37	12.84	13.45	14.51	15.81	17.54	
2053	5.50	6.41	7.20	7.82	8.40	8.99	9.47	9.88	10.34	10.91	11.43	11.98	12.50	13.35	13.89	14.58	15.72	17.16	19.01	
2054	5.87	6.85	7.70	8.37	9.06	9.65	10.20	10.59	11.13	11.73	12.34	12.88	13.48	14.38	14.96	15.75	16.97	18.50	20.56	
2055	6.31	7.36	8.26	9.02	9.77	10.33	10.95	11.38	12.01	12.67	13.28	13.87	14.52	15.48	16.14	16.95	18.36	19.97	22.24	
2056	6.76	7.91	8.85	9.66	10.46	11.08	11.74	12.21	12.91	13.58	14.43	14.91	15.61	16.63	17.33	18.28	19.74	21.57	24.04	
2057	7.23	8.49	9.48	10.36	11.28	11.91	12.65	13.13	13.95	14.61	15.60	16.07	16.80	17.93	18.70	19.76	21.31	23.39	26.09	
2058	7.68	9.10	10.15	11.16	12.11	12.80	13.54	14.09	15.01	15.75	16.70	17.34	18.13	19.29	20.13	21.30	23.01	25.27	28.27	
2059	8.22	9.76	10.87	12.03	13.00	13.72	14.51	15.14	16.12	16.88	17.91	18.65	19.52	20.74	21.63	22.95	24.85	27.26	30.69	
2060	8.81	10.45	11.63	12.85	13.94	14.70	15.57	16.27	17.32	18.18	19.23	20.07	21.03	22.31	23.30	24.67	26.76	29.37	33.23	
2061	9.64	11.24	12.61	13.85	14.95	15.75	16.63	17.62	18.51	19.66	20.65	21.56	22.69	24.00	25.18	26.86	28.71	31.62	35.96	

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 58: Debt Service Coverage Estimation (S.R. 11 Capital and O&M Costs, with \$50M Grant)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.05	1.09	1.14
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.05	1.08	1.11	1.14	1.17	1.20	1.25	1.31	1.38
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.11	1.14	1.17	1.21	1.24	1.28	1.31	1.35	1.41	1.56
2020	1.00	1.00	1.00	1.00	1.04	1.08	1.11	1.15	1.19	1.22	1.26	1.29	1.33	1.37	1.40	1.45	1.51	1.58	1.68
2021	1.00	1.00	1.00	1.05	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.37	1.42	1.46	1.50	1.55	1.62	1.71	1.80
2022	1.00	1.00	1.05	1.11	1.16	1.21	1.25	1.29	1.34	1.38	1.42	1.46	1.51	1.55	1.59	1.66	1.73	1.83	1.94
2023	1.00	1.01	1.12	1.18	1.24	1.29	1.34	1.38	1.43	1.49	1.53	1.57	1.62	1.67	1.72	1.79	1.87	1.98	2.11
2024	1.00	1.07	1.19	1.26	1.31	1.38	1.43	1.48	1.54	1.60	1.64	1.69	1.74	1.79	1.85	1.93	2.01	2.14	2.28
2025	1.00	1.14	1.26	1.35	1.40	1.47	1.53	1.58	1.65	1.71	1.75	1.81	1.88	1.93	2.00	2.08	2.17	2.30	2.47
2026	1.00	1.20	1.33	1.43	1.49	1.56	1.62	1.68	1.76	1.83	1.88	1.93	2.01	2.07	2.15	2.23	2.33	2.47	2.66
2027	1.00	1.28	1.42	1.52	1.59	1.67	1.74	1.81	1.88	1.97	2.01	2.08	2.16	2.22	2.31	2.41	2.51	2.67	2.88
2028	1.05	1.36	1.52	1.62	1.70	1.78	1.86	1.93	2.02	2.11	2.16	2.22	2.32	2.39	2.48	2.59	2.70	2.88	3.10
2029	1.13	1.46	1.62	1.73	1.82	1.90	2.00	2.08	2.17	2.27	2.33	2.40	2.50	2.58	2.68	2.80	2.92	3.12	3.38
2030	1.21	1.55	1.74	1.84	1.95	2.04	2.14	2.22	2.33	2.44	2.51	2.58	2.69	2.77	2.90	3.02	3.14	3.37	3.67
2031	1.29	1.67	1.86	1.98	2.08	2.19	2.29	2.40	2.51	2.63	2.70	2.78	2.90	2.99	3.13	3.27	3.39	3.65	4.00
2032	1.36	1.78	1.98	2.11	2.23	2.35	2.46	2.58	2.70	2.82	2.90	3.00	3.12	3.21	3.36	3.53	3.66	3.95	4.32
2033	1.47	1.90	2.13	2.25	2.39	2.53	2.65	2.79	2.91	3.03	3.14	3.23	3.38	3.48	3.66	3.82	3.98	4.29	4.70
2034	1.57	2.04	2.28	2.42	2.57	2.71	2.84	3.00	3.14	3.26	3.38	3.49	3.64	3.75	3.96	4.11	4.32	4.63	5.09
2035	1.69	2.17	2.44	2.61	2.76	2.91	3.05	3.22	3.37	3.51	3.64	3.78	3.92	4.05	4.27	4.43	4.69	5.02	5.52
2036	1.82	2.32	2.61	2.79	2.95	3.13	3.29	3.47	3.62	3.78	3.92	4.07	4.22	4.37	4.59	4.77	5.06	5.44	5.97
2037	1.95	2.50	2.81	2.99	3.17	3.37	3.54	3.74	3.92	4.08	4.23	4.40	4.57	4.73	4.97	5.17	5.50	5.90	6.49
2038	2.10	2.70	3.01	3.21	3.40	3.62	3.81	4.03	4.20	4.39	4.58	4.73	4.92	5.10	5.35	5.60	5.98	6.38	7.06
2039	2.27	2.88	3.24	3.45	3.65	3.89	4.11	4.34	4.52	4.73	4.93	5.12	5.31	5.51	5.78	6.05	6.49	6.90	7.67
2040	2.44	3.13	3.47	3.70	3.92	4.17	4.42	4.65	4.86	5.09	5.30	5.53	5.71	5.92	6.22	6.55	7.00	7.43	8.30
2041	2.64	3.37	3.74	3.97	4.22	4.50	4.75	5.03	5.26	5.48	5.72	5.98	6.17	6.40	6.72	7.08	7.58	8.07	9.01
2042	2.84	3.60	4.01	4.26	4.54	4.84	5.12	5.41	5.67	5.92	6.19	6.44	6.67	6.91	7.27	7.65	8.19	8.72	9.76
2043	3.06	3.89	4.31	4.59	4.88	5.21	5.52	5.80	6.09	6.37	6.68	6.95	7.20	7.45	7.85	8.25	8.82	9.43	10.57
2044	3.30	4.14	4.62	4.93	5.23	5.58	5.93	6.22	6.55	6.85	7.20	7.46	7.74	8.05	8.46	8.90	9.52	10.21	11.42
2045	3.55	4.45	4.97	5.29	5.63	6.00	6.40	6.71	7.05	7.40	7.76	8.09	8.36	8.73	9.14	9.65	10.29	11.08	12.38
2046	3.84	4.79	5.34	5.69	6.06	6.45	6.88	7.24	7.60	7.98	8.38	8.73	9.03	9.43	9.84	10.41	11.13	12.00	13.39
2047	4.13	5.11	5.75	6.11	6.49	6.94	7.40	7.77	8.17	8.59	9.02	9.40	9.72	10.16	10.61	11.25	12.03	12.92	14.53
2048	4.42	5.43	6.16	6.55	6.96	7.42	7.91	8.35	8.78	9.23	9.73	10.07	10.46	10.91	11.44	12.12	13.01	13.92	15.70
2049	4.77	5.85	6.62	7.07	7.51	8.00	8.49	9.00	9.46	9.96	10.48	10.86	11.33	11.79	12.36	13.12	14.13	15.12	17.08
2050	5.11	6.29	7.11	7.56	8.09	8.58	9.13	9.67	10.18	10.72	11.28	11.71	12.22	12.71	13.32	14.20	15.20	16.33	18.45
2051	5.50	6.74	7.62	8.14	8.69	9.23	9.85	10.38	10.93	11.55	12.10	12.60	13.17	13.65	14.36	15.35	16.45	17.62	20.08
2052	5.87	7.19	8.12	8.70	9.29	9.91	10.56	11.18	11.72	12.42	13.00	13.54	14.18	14.69	15.47	16.55	17.77	18.99	21.80
2053	6.40	7.74	8.70	9.41	9.99	10.66	11.36	12.00	12.61	13.35	14.00	14.60	15.27	15.81	16.69	17.92	19.23	20.55	23.62
2054	6.85	8.27	9.31	10.07	10.73	11.44	12.23	12.87	13.57	14.38	15.06	15.73	16.46	17.07	17.97	19.34	20.74	22.19	25.54
2055	7.34	8.95	9.99	10.81	11.48	12.27	13.11	13.87	14.60	15.44	16.17	16.98	17.68	18.40	19.39	20.87	22.42	23.98	27.61
2056	7.92	9.59	10.73	11.55	12.32	13.14	14.04	14.92	15.71	16.54	17.34	18.26	19.02	19.81	20.85	22.45	24.13	25.92	29.79
2057	8.57	10.26	11.50	12.39	13.22	14.13	15.06	16.02	16.87	17.85	18.68	19.71	20.50	21.32	22.41	24.24	26.10	28.09	32.24
2058	9.25	10.98	12.27	13.32	14.18	15.13	16.13	17.20	18.14	19.16	20.04	21.23	22.10	22.94	24.16	26.10	28.30	30.36	34.82
2059	9.94	11.79	13.16	14.23	15.19	16.20	17.34	18.46	19.55	20.57	21.54	22.74	23.89	24.64	25.98	28.10	30.57	32.76	37.57
2060	10.67	12.64	14.14	15.22	16.26	17.34	18.52	19.77	20.97	22.11	23.05	24.39	25.62	26.47	27.97	30.24	32.93	35.23	40.39
2061	11.34	13.60	15.05	16.51	17.61	18.71	19.95	21.23	22.53	23.78	24.78	25.94	27.46	28.53	30.31	32.51	35.37	38.29	44.16

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 59: Alternate Cost Scenario (Total S.R. 11 Costs and POE Capital Costs, with \$300M Grant)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.08
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.08	1.15
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.05	1.10	1.15	1.23
2022	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.11	1.16	1.22	1.31
2023	0.56	0.89	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.10	1.14	1.19	1.25	1.32
2024	0.59	0.68	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.12	1.17	1.21	1.28	1.33	1.42	1.50
2025	0.64	0.72	0.91	1.00	1.00	1.00	1.00	1.02	1.06	1.09	1.13	1.17	1.20	1.25	1.30	1.36	1.43	1.52	1.63
2026	0.68	0.76	0.84	1.00	1.00	1.00	1.04	1.08	1.12	1.16	1.19	1.24	1.27	1.33	1.38	1.46	1.53	1.63	1.75
2027	0.72	0.81	0.88	1.00	1.00	1.05	1.11	1.15	1.19	1.24	1.28	1.32	1.36	1.42	1.48	1.56	1.64	1.75	1.88
2028	0.77	0.86	0.93	1.00	1.05	1.12	1.18	1.23	1.27	1.32	1.36	1.41	1.45	1.51	1.58	1.67	1.76	1.87	2.03
2029	0.81	0.91	0.99	1.06	1.12	1.19	1.26	1.31	1.36	1.41	1.46	1.51	1.56	1.62	1.70	1.79	1.90	2.01	2.21
2030	0.87	0.97	1.06	1.13	1.19	1.26	1.34	1.40	1.45	1.52	1.56	1.62	1.67	1.74	1.82	1.94	2.05	2.17	2.39
2031	0.93	1.04	1.12	1.20	1.27	1.35	1.43	1.50	1.55	1.63	1.68	1.73	1.79	1.87	1.96	2.08	2.20	2.35	2.58
2032	0.98	1.10	1.20	1.28	1.35	1.43	1.53	1.60	1.66	1.74	1.79	1.85	1.92	2.01	2.11	2.24	2.37	2.54	2.79
2033	1.05	1.17	1.28	1.37	1.45	1.54	1.64	1.72	1.78	1.87	1.94	2.00	2.07	2.17	2.27	2.42	2.58	2.76	3.04
2034	1.12	1.25	1.37	1.47	1.56	1.65	1.76	1.85	1.92	2.01	2.08	2.16	2.24	2.34	2.46	2.61	2.79	2.97	3.30
2035	1.18	1.34	1.47	1.57	1.68	1.77	1.89	1.98	2.06	2.16	2.24	2.32	2.41	2.53	2.67	2.82	3.01	3.22	3.56
2036	1.26	1.43	1.56	1.69	1.79	1.91	2.02	2.12	2.21	2.31	2.41	2.49	2.59	2.72	2.87	3.03	3.25	3.46	3.87
2037	1.34	1.52	1.68	1.82	1.94	2.05	2.18	2.29	2.38	2.49	2.59	2.69	2.80	2.95	3.12	3.27	3.53	3.75	4.20
2038	1.43	1.64	1.80	1.95	2.08	2.20	2.34	2.47	2.57	2.69	2.80	2.90	3.02	3.18	3.36	3.54	3.82	4.10	4.57
2039	1.53	1.75	1.93	2.09	2.23	2.37	2.51	2.66	2.77	2.90	3.02	3.13	3.28	3.44	3.63	3.83	4.15	4.45	4.96
2040	1.63	1.88	2.07	2.24	2.40	2.54	2.70	2.85	2.97	3.11	3.26	3.38	3.53	3.72	3.91	4.14	4.48	4.80	5.38
2041	1.76	2.02	2.24	2.43	2.60	2.74	2.90	3.08	3.20	3.36	3.53	3.65	3.82	4.02	4.23	4.50	4.86	5.20	5.83
2042	1.89	2.16	2.41	2.63	2.81	2.95	3.12	3.31	3.46	3.63	3.80	3.93	4.13	4.36	4.58	4.86	5.26	5.64	6.32
2043	2.03	2.32	2.59	2.82	3.02	3.19	3.36	3.57	3.73	3.90	4.09	4.24	4.45	4.69	4.93	5.26	5.70	6.09	6.86
2044	2.18	2.49	2.78	3.03	3.24	3.43	3.60	3.84	4.01	4.21	4.41	4.56	4.80	5.07	5.34	5.67	6.16	6.59	7.44
2045	2.33	2.68	3.00	3.27	3.49	3.71	3.89	4.16	4.32	4.55	4.76	4.93	5.20	5.49	5.76	6.15	6.66	7.16	8.09
2046	2.52	2.89	3.23	3.51	3.77	3.99	4.19	4.49	4.66	4.91	5.12	5.32	5.63	5.95	6.23	6.66	7.21	7.77	8.78
2047	2.73	3.11	3.47	3.77	4.05	4.30	4.54	4.82	5.03	5.29	5.52	5.74	6.11	6.42	6.72	7.19	7.80	8.43	9.53
2048	2.94	3.34	3.73	4.05	4.35	4.62	4.87	5.18	5.42	5.70	5.94	6.18	6.58	6.93	7.26	7.75	8.42	9.12	10.30
2049	3.17	3.60	4.01	4.36	4.70	4.99	5.26	5.60	5.85	6.16	6.41	6.69	7.11	7.50	7.86	8.41	9.14	9.89	11.18
2050	3.39	3.88	4.32	4.68	5.08	5.39	5.65	6.01	6.30	6.65	6.90	7.21	7.70	8.09	8.49	9.13	9.90	10.73	12.16
2051	3.65	4.20	4.66	5.02	5.47	5.82	6.09	6.48	6.80	7.17	7.45	7.77	8.32	8.72	9.19	9.88	10.72	11.66	13.20
2052	3.88	4.49	5.01	5.38	5.87	6.26	6.54	6.94	7.32	7.71	8.03	8.37	8.94	9.40	9.90	10.67	11.57	12.59	14.27
2053	4.19	4.83	5.39	5.79	6.30	6.76	7.07	7.48	7.92	8.31	8.68	9.05	9.67	10.16	10.70	11.54	12.52	13.64	15.48
2054	4.49	5.19	5.79	6.23	6.78	7.28	7.56	8.05	8.54	8.97	9.34	9.77	10.42	10.97	11.58	12.44	13.58	14.78	16.75
2055	4.81	5.61	6.25	6.72	7.28	7.83	8.15	8.66	9.20	9.65	10.08	10.55	11.22	11.84	12.52	13.51	14.64	15.98	18.12
2056	5.15	6.01	6.71	7.21	7.79	8.38	8.77	9.35	9.90	10.38	10.87	11.36	12.08	12.77	13.49	14.52	15.76	17.27	19.61
2057	5.51	6.48	7.21	7.74	8.38	9.00	9.46	10.07	10.66	11.19	11.69	12.29	13.03	13.80	14.65	15.67	17.06	18.72	21.26
2058	5.91	6.95	7.73	8.35	9.01	9.69	10.19	10.81	11.45	12.03	12.58	13.23	14.07	14.86	15.80	16.94	18.46	20.30	23.00
2059	6.36	7.47	8.29	8.95	9.67	10.42	10.96	11.61	12.32	12.96	13.55	14.22	15.17	16.02	17.09	18.30	19.90	22.04	24.88
2060	6.83	8.05	8.90	9.60	10.41	11.19	11.76	12.45	13.27	13.95	14.59	15.30	16.35	17.27	18.44	19.78	21.44	23.84	26.88
2061	7.29	8.78	9.54	10.38	11.32	12.05	12.68	13.48	14.30	15.07	15.83	16.47	17.53	18.71	19.89	21.26	22.80	25.29	28.91

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 60: Alternate Cost Scenario (Total S.R. 11 Costs and POE Capital Costs, with \$400M Grant)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.07	1.14
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.12	1.15	1.19	1.23	1.28	1.36
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.09	1.11	1.15	1.18	1.22	1.26	1.29	1.33	1.38	1.43	1.54
2020	1.00	1.00	1.00	1.00	1.00	1.05	1.08	1.12	1.16	1.19	1.23	1.26	1.30	1.35	1.38	1.42	1.48	1.54	1.66
2021	1.00	1.00	1.00	1.00	1.05	1.11	1.15	1.19	1.23	1.26	1.31	1.35	1.39	1.44	1.48	1.52	1.59	1.65	1.79
2022	1.00	1.00	1.00	1.05	1.11	1.17	1.21	1.26	1.30	1.34	1.39	1.43	1.47	1.52	1.57	1.62	1.69	1.77	1.92
2023	1.00	1.00	1.05	1.12	1.18	1.25	1.30	1.35	1.40	1.44	1.49	1.54	1.59	1.64	1.70	1.76	1.83	1.92	2.08
2024	1.00	1.02	1.11	1.20	1.26	1.34	1.39	1.44	1.49	1.54	1.60	1.65	1.71	1.77	1.83	1.89	1.97	2.07	2.25
2025	1.00	1.08	1.18	1.28	1.35	1.43	1.49	1.54	1.60	1.65	1.71	1.77	1.83	1.90	1.97	2.03	2.13	2.24	2.43
2026	1.00	1.14	1.25	1.35	1.43	1.51	1.59	1.64	1.71	1.76	1.83	1.89	1.96	2.03	2.11	2.18	2.28	2.41	2.62
2027	1.05	1.21	1.33	1.44	1.53	1.61	1.70	1.77	1.83	1.88	1.96	2.03	2.11	2.18	2.27	2.35	2.47	2.61	2.83
2028	1.11	1.30	1.41	1.53	1.63	1.72	1.81	1.89	1.96	2.02	2.10	2.17	2.26	2.35	2.44	2.53	2.66	2.81	3.06
2029	1.18	1.38	1.51	1.65	1.75	1.84	1.94	2.03	2.11	2.18	2.26	2.34	2.43	2.53	2.63	2.74	2.88	3.04	3.33
2030	1.25	1.48	1.61	1.75	1.87	1.98	2.09	2.18	2.26	2.34	2.42	2.53	2.61	2.72	2.84	2.95	3.12	3.29	3.60
2031	1.35	1.57	1.72	1.87	2.01	2.12	2.24	2.34	2.43	2.53	2.61	2.71	2.81	2.94	3.06	3.19	3.38	3.56	3.90
2032	1.43	1.67	1.84	2.00	2.15	2.28	2.40	2.50	2.61	2.71	2.80	2.91	3.02	3.16	3.30	3.44	3.65	3.86	4.23
2033	1.53	1.80	1.98	2.16	2.32	2.45	2.59	2.70	2.82	2.92	3.04	3.14	3.27	3.40	3.58	3.73	3.95	4.17	4.60
2034	1.63	1.91	2.13	2.32	2.49	2.64	2.78	2.90	3.04	3.14	3.26	3.38	3.53	3.68	3.86	4.03	4.28	4.52	4.99
2035	1.75	2.04	2.28	2.49	2.68	2.83	3.00	3.12	3.27	3.38	3.51	3.64	3.81	3.97	4.17	4.37	4.62	4.90	5.42
2036	1.87	2.17	2.44	2.67	2.87	3.04	3.21	3.35	3.52	3.64	3.77	3.92	4.09	4.28	4.50	4.71	4.99	5.31	5.87
2037	2.02	2.34	2.62	2.88	3.10	3.27	3.47	3.62	3.79	3.93	4.08	4.24	4.44	4.64	4.89	5.12	5.41	5.76	6.43
2038	2.17	2.49	2.82	3.11	3.32	3.51	3.74	3.89	4.08	4.23	4.38	4.56	4.79	5.01	5.28	5.53	5.85	6.24	6.92
2039	2.32	2.66	3.02	3.34	3.57	3.76	4.01	4.21	4.40	4.54	4.74	4.93	5.16	5.42	5.70	5.98	6.33	6.74	7.49
2040	2.50	2.84	3.22	3.57	3.82	4.06	4.31	4.52	4.72	4.88	5.10	5.31	5.56	5.84	6.14	6.45	6.84	7.27	8.15
2041	2.68	3.07	3.49	3.83	4.13	4.38	4.64	4.87	5.09	5.29	5.53	5.73	6.02	6.33	6.64	7.00	7.41	7.90	8.84
2042	2.86	3.30	3.74	4.09	4.45	4.72	4.98	5.25	5.48	5.69	5.96	6.18	6.49	6.83	7.17	7.56	8.02	8.56	9.59
2043	3.07	3.55	4.03	4.40	4.77	5.06	5.35	5.66	5.90	6.13	6.42	6.66	7.00	7.38	7.73	8.18	8.67	9.27	10.35
2044	3.28	3.80	4.31	4.71	5.12	5.45	5.73	6.09	6.33	6.61	6.89	7.16	7.53	7.93	8.38	8.84	9.35	10.03	11.21
2045	3.55	4.08	4.63	5.08	5.51	5.87	6.18	6.57	6.83	7.15	7.45	7.73	8.14	8.57	9.07	9.59	10.12	10.87	12.15
2046	3.83	4.37	4.98	5.44	5.91	6.31	6.65	7.05	7.35	7.70	8.03	8.35	8.76	9.24	9.79	10.33	10.93	11.76	13.14
2047	4.14	4.69	5.36	5.85	6.38	6.76	7.15	7.58	7.92	8.30	8.65	9.00	9.45	9.98	10.56	11.19	11.80	12.76	14.23
2048	4.42	5.03	5.78	6.26	6.83	7.25	7.67	8.11	8.50	8.90	9.30	9.66	10.19	10.77	11.39	12.07	12.71	13.77	15.44
2049	4.75	5.40	6.22	6.72	7.33	7.80	8.25	8.74	9.17	9.61	10.01	10.42	11.02	11.66	12.33	13.07	13.78	14.89	16.68
2050	5.11	5.79	6.67	7.20	7.89	8.38	8.85	9.37	9.88	10.34	10.79	11.26	11.88	12.58	13.29	14.13	14.86	16.11	17.99
2051	5.48	6.24	7.17	7.73	8.46	9.01	9.56	10.09	10.62	11.13	11.61	12.14	12.81	13.58	14.37	15.27	16.03	17.40	19.50
2052	5.84	6.71	7.68	8.28	9.05	9.68	10.23	10.86	11.43	12.02	12.50	13.07	13.81	14.61	15.50	16.47	17.25	18.79	21.09
2053	6.29	7.20	8.24	8.85	9.75	10.39	11.02	11.71	12.34	12.92	13.47	14.08	14.94	15.80	16.69	17.77	18.64	20.36	22.89
2054	6.70	7.71	8.87	9.65	10.47	11.17	11.79	12.60	13.27	13.88	14.49	15.19	16.11	17.02	18.00	19.18	20.11	21.95	24.79
2055	7.17	8.24	9.48	10.35	11.25	11.97	12.64	13.49	14.30	14.90	15.56	16.32	17.36	18.28	19.37	20.67	21.76	23.68	26.83
2056	7.67	8.82	10.15	11.04	12.01	12.82	13.57	14.45	15.36	15.94	16.76	17.54	18.64	19.68	20.86	22.21	23.51	25.59	28.91
2057	8.22	9.52	10.89	11.88	12.83	13.80	14.61	15.50	16.53	17.27	18.09	18.94	20.10	21.25	22.48	24.05	25.48	27.65	31.26
2058	8.82	10.16	11.70	12.75	13.74	14.82	15.78	16.63	17.79	18.54	19.49	20.36	21.64	22.94	24.24	25.93	27.53	29.79	33.74
2059	9.48	10.93	12.54	13.70	14.80	15.89	16.92	17.79	19.11	19.91	20.97	21.89	23.32	24.72	26.09	27.97	29.70	32.21	36.53
2060	10.20	11.83	13.42	14.66	15.87	17.02	18.09	19.11	20.48	21.46	22.55	23.53	25.02	26.56	28.09	30.10	32.01	34.81	39.53
2061	11.21	12.86	14.31	15.67	17.05	18.12	19.43	20.38	21.71	22.78	24.16	25.42	27.01	28.49	30.32	32.18	34.42	37.43	42.35

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 61: Alternate Cost Scenario (Total S.R. 11 Costs, POE Capital Costs, and O&M Costs after 2044, with \$400M Grant)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.06	1.14
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.05	1.08	1.11	1.14	1.18	1.22	1.27	1.36
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.05	1.08	1.11	1.14	1.17	1.21	1.24	1.28	1.32	1.37	1.42	1.53
2020	1.00	1.00	1.00	1.00	1.01	1.04	1.08	1.11	1.14	1.18	1.21	1.26	1.29	1.33	1.37	1.41	1.47	1.53	1.64
2021	1.00	1.00	1.00	1.02	1.07	1.10	1.14	1.18	1.21	1.25	1.29	1.34	1.38	1.42	1.46	1.51	1.57	1.64	1.77
2022	1.00	1.00	1.02	1.07	1.12	1.16	1.21	1.25	1.29	1.33	1.37	1.42	1.47	1.51	1.56	1.62	1.68	1.76	1.91
2023	1.00	1.00	1.08	1.14	1.20	1.24	1.30	1.34	1.39	1.42	1.47	1.53	1.58	1.63	1.69	1.75	1.81	1.91	2.07
2024	1.00	1.06	1.14	1.22	1.27	1.32	1.38	1.43	1.48	1.52	1.58	1.64	1.69	1.74	1.81	1.88	1.95	2.06	2.24
2025	1.00	1.12	1.22	1.30	1.35	1.41	1.48	1.53	1.59	1.64	1.70	1.76	1.83	1.88	1.95	2.03	2.11	2.23	2.41
2026	1.01	1.18	1.29	1.37	1.44	1.50	1.57	1.63	1.69	1.75	1.81	1.87	1.95	2.01	2.09	2.18	2.27	2.40	2.60
2027	1.07	1.25	1.37	1.46	1.53	1.60	1.68	1.74	1.81	1.87	1.94	2.01	2.08	2.16	2.25	2.34	2.44	2.59	2.81
2028	1.13	1.33	1.45	1.56	1.63	1.71	1.79	1.86	1.93	2.01	2.08	2.15	2.23	2.33	2.42	2.52	2.62	2.80	3.03
2029	1.20	1.41	1.56	1.67	1.75	1.84	1.92	2.00	2.08	2.16	2.23	2.32	2.40	2.51	2.62	2.73	2.84	3.04	3.29
2030	1.29	1.50	1.66	1.79	1.87	1.97	2.06	2.15	2.23	2.32	2.40	2.50	2.58	2.70	2.83	2.95	3.07	3.29	3.56
2031	1.37	1.60	1.77	1.91	2.01	2.12	2.21	2.31	2.40	2.51	2.58	2.69	2.78	2.91	3.05	3.19	3.33	3.56	3.85
2032	1.46	1.72	1.89	2.04	2.15	2.26	2.36	2.48	2.58	2.69	2.76	2.89	2.99	3.13	3.28	3.45	3.60	3.84	4.15
2033	1.56	1.84	2.03	2.19	2.31	2.43	2.55	2.67	2.78	2.90	2.98	3.12	3.23	3.40	3.55	3.73	3.90	4.16	4.50
2034	1.67	1.99	2.18	2.36	2.49	2.62	2.74	2.87	2.99	3.12	3.21	3.36	3.49	3.67	3.84	4.03	4.22	4.50	4.88
2035	1.79	2.13	2.33	2.51	2.68	2.81	2.94	3.08	3.23	3.36	3.48	3.61	3.77	3.96	4.15	4.36	4.58	4.88	5.28
2036	1.92	2.28	2.48	2.71	2.87	3.01	3.15	3.31	3.47	3.61	3.74	3.88	4.05	4.26	4.47	4.69	4.94	5.29	5.68
2037	2.04	2.45	2.68	2.91	3.09	3.25	3.40	3.57	3.74	3.89	4.05	4.20	4.38	4.61	4.84	5.07	5.36	5.75	6.20
2038	2.19	2.62	2.89	3.12	3.32	3.50	3.66	3.84	4.01	4.19	4.38	4.52	4.74	4.97	5.23	5.49	5.82	6.23	6.71
2039	2.34	2.82	3.11	3.37	3.56	3.77	3.93	4.12	4.32	4.51	4.71	4.89	5.12	5.37	5.67	5.95	6.31	6.72	7.29
2040	2.51	3.03	3.35	3.61	3.81	4.03	4.22	4.43	4.65	4.84	5.06	5.28	5.50	5.78	6.12	6.42	6.83	7.25	7.90
2041	2.70	3.27	3.60	3.88	4.09	4.35	4.57	4.81	5.01	5.21	5.47	5.71	5.94	6.26	6.64	6.96	7.40	7.87	8.61
2042	2.92	3.51	3.86	4.18	4.41	4.68	4.91	5.18	5.38	5.62	5.90	6.17	6.43	6.78	7.15	7.51	8.00	8.55	9.34
2043	3.14	3.77	4.13	4.50	4.74	5.04	5.29	5.55	5.79	6.06	6.37	6.64	6.95	7.32	7.72	8.14	8.66	9.25	10.13
2044	3.38	4.04	4.43	4.82	5.09	5.41	5.68	5.95	6.20	6.51	6.86	7.14	7.48	7.89	8.31	8.81	9.36	9.98	10.96
2045	1.00	1.00	1.00	1.00	1.00	1.33	1.62	1.89	2.15	2.45	2.75	3.08	3.51	3.85	4.29	4.71	5.25	5.87	7.31
2046	1.00	1.00	1.00	1.00	1.09	1.46	1.78	2.06	2.34	2.68	2.99	3.35	3.80	4.19	4.66	5.12	5.70	6.33	7.94
2047	1.00	1.00	1.00	1.00	1.20	1.59	1.96	2.25	2.54	2.91	3.24	3.65	4.15	4.57	5.07	5.56	6.18	6.88	8.62
2048	1.00	1.00	1.00	1.00	1.34	1.77	2.16	2.46	2.76	3.18	3.53	3.97	4.51	4.96	5.50	6.02	6.70	7.47	9.36
2049	1.00	1.00	1.00	1.11	1.52	1.96	2.38	2.71	3.04	3.50	3.88	4.33	4.90	5.39	6.00	6.53	7.29	8.13	10.21
2050	1.00	1.00	1.00	1.24	1.68	2.14	2.60	2.98	3.34	3.82	4.27	4.73	5.32	5.86	6.48	7.09	7.94	8.85	11.02
2051	1.00	1.00	1.00	1.39	1.87	2.38	2.89	3.27	3.66	4.16	4.67	5.15	5.84	6.39	7.02	7.70	8.63	9.64	11.98
2052	1.00	1.00	1.01	1.56	2.09	2.61	3.15	3.56	4.00	4.54	5.08	5.60	6.36	6.97	7.63	8.33	9.45	10.49	12.93
2053	1.00	1.00	1.17	1.76	2.34	2.93	3.48	3.95	4.38	4.98	5.58	6.14	6.94	7.60	8.29	9.13	10.29	11.49	13.99
2054	1.00	1.00	1.33	1.98	2.58	3.26	3.85	4.35	4.78	5.43	6.09	6.73	7.56	8.31	8.99	9.99	11.21	12.47	15.16
2055	1.00	1.00	1.54	2.24	2.86	3.63	4.24	4.77	5.18	5.94	6.66	7.32	8.21	9.03	9.79	10.85	12.16	13.55	16.43
2056	0.26	1.00	1.76	2.52	3.20	4.02	4.65	5.21	5.62	6.45	7.25	8.00	8.97	9.84	10.66	11.83	13.24	14.73	17.92
2057	0.22	1.12	2.02	2.83	3.56	4.44	5.12	5.73	6.21	7.05	7.94	8.77	9.79	10.68	11.61	12.94	14.37	16.04	19.43
2058	0.34	1.29	2.30	3.18	3.93	4.88	5.66	6.28	6.82	7.66	8.70	9.60	10.66	11.68	12.56	14.12	15.69	17.46	21.02
2059	0.45	1.49	2.65	3.57	4.37	5.37	6.20	6.86	7.49	8.39	9.50	10.50	11.61	12.74	13.70	15.40	17.14	19.00	22.74
2060	0.24	1.69	2.99	3.98	4.84	5.91	6.77	7.52	8.20	9.12	10.39	11.44	12.67	13.82	14.93	16.71	18.60	20.63	24.57
2061	0.43	2.05	3.42	4.44	5.34	6.49	7.43	8.24	9.05	10.04	11.30	12.46	13.76	14.83	16.39	18.10	20.00	22.45	26.83

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 62: Alternate Revenue Scenario (Total S.R. 11 Costs, Integration with Tijuana – Tecate Toll Road)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.07
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.11	1.16	1.21	1.29
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.06	1.08	1.11	1.14	1.17	1.20	1.24	1.29	1.36	1.43
2020	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.07	1.10	1.12	1.15	1.18	1.22	1.25	1.28	1.33	1.37	1.45	1.55
2021	1.00	1.00	1.00	1.00	1.02	1.06	1.09	1.13	1.16	1.19	1.22	1.26	1.30	1.33	1.37	1.42	1.47	1.56	1.66
2022	1.00	1.00	1.00	1.04	1.07	1.12	1.15	1.19	1.23	1.26	1.29	1.34	1.38	1.42	1.46	1.51	1.57	1.66	1.78
2023	1.00	1.00	1.05	1.11	1.14	1.19	1.23	1.28	1.31	1.35	1.38	1.43	1.48	1.52	1.57	1.63	1.69	1.79	1.93
2024	1.00	1.04	1.11	1.17	1.22	1.26	1.31	1.36	1.40	1.44	1.48	1.53	1.59	1.63	1.68	1.74	1.82	1.93	2.08
2025	1.00	1.11	1.18	1.24	1.30	1.35	1.39	1.45	1.50	1.53	1.58	1.64	1.71	1.75	1.81	1.88	1.95	2.08	2.25
2026	1.01	1.16	1.24	1.31	1.37	1.43	1.48	1.55	1.59	1.63	1.69	1.75	1.81	1.87	1.93	2.01	2.10	2.24	2.42
2027	1.07	1.23	1.33	1.39	1.46	1.53	1.58	1.65	1.70	1.75	1.81	1.88	1.94	2.01	2.07	2.16	2.26	2.42	2.61
2028	1.13	1.31	1.41	1.48	1.55	1.63	1.68	1.76	1.81	1.87	1.93	2.02	2.08	2.15	2.22	2.31	2.43	2.59	2.83
2029	1.20	1.40	1.50	1.58	1.66	1.75	1.81	1.88	1.95	2.01	2.08	2.17	2.25	2.32	2.40	2.50	2.63	2.81	3.07
2030	1.27	1.49	1.61	1.69	1.78	1.87	1.94	2.01	2.08	2.15	2.25	2.33	2.41	2.49	2.59	2.70	2.85	3.04	3.32
2031	1.36	1.58	1.72	1.80	1.90	1.99	2.07	2.15	2.23	2.31	2.41	2.51	2.59	2.68	2.79	2.92	3.08	3.28	3.59
2032	1.44	1.69	1.83	1.92	2.03	2.13	2.22	2.31	2.39	2.48	2.58	2.70	2.78	2.88	2.99	3.14	3.32	3.54	3.88
2033	1.54	1.80	1.95	2.06	2.18	2.29	2.39	2.49	2.57	2.67	2.78	2.91	3.00	3.11	3.23	3.40	3.61	3.84	4.21
2034	1.63	1.93	2.09	2.20	2.34	2.45	2.57	2.67	2.75	2.88	3.00	3.13	3.24	3.34	3.49	3.67	3.92	4.16	4.58
2035	1.74	2.05	2.24	2.37	2.51	2.63	2.75	2.87	2.96	3.10	3.23	3.37	3.49	3.61	3.76	3.97	4.22	4.49	4.97
2036	1.86	2.19	2.39	2.54	2.68	2.82	2.94	3.06	3.19	3.32	3.48	3.61	3.75	3.88	4.05	4.28	4.56	4.86	5.39
2037	2.00	2.34	2.56	2.72	2.88	3.03	3.17	3.30	3.44	3.58	3.75	3.89	4.06	4.19	4.38	4.64	4.95	5.26	5.85
2038	2.15	2.51	2.76	2.94	3.09	3.26	3.42	3.54	3.69	3.87	4.03	4.20	4.38	4.53	4.73	5.04	5.36	5.70	6.31
2039	2.30	2.69	2.96	3.16	3.32	3.50	3.67	3.81	3.97	4.17	4.34	4.53	4.72	4.89	5.10	5.44	5.78	6.18	6.83
2040	2.45	2.88	3.16	3.38	3.56	3.75	3.92	4.10	4.26	4.48	4.66	4.85	5.08	5.26	5.50	5.86	6.24	6.69	7.39
2041	2.64	3.09	3.39	3.64	3.83	4.04	4.21	4.42	4.59	4.84	5.03	5.24	5.47	5.68	5.96	6.35	6.77	7.28	8.06
2042	2.84	3.32	3.64	3.91	4.12	4.32	4.53	4.77	4.94	5.22	5.41	5.65	5.88	6.14	6.43	6.86	7.33	7.87	8.77
2043	3.04	3.54	3.89	4.19	4.42	4.64	4.87	5.14	5.32	5.62	5.81	6.08	6.32	6.63	6.95	7.41	7.92	8.49	9.54
2044	3.25	3.79	4.18	4.50	4.73	4.99	5.23	5.52	5.72	6.03	6.26	6.54	6.78	7.12	7.49	7.99	8.56	9.18	10.33
2045	3.50	4.07	4.48	4.84	5.08	5.38	5.63	5.95	6.17	6.51	6.75	7.07	7.33	7.71	8.07	8.64	9.29	9.95	11.18
2046	3.76	4.37	4.79	5.19	5.46	5.79	6.05	6.40	6.64	7.01	7.28	7.61	7.89	8.30	8.72	9.36	10.01	10.78	12.08
2047	4.03	4.68	5.16	5.57	5.86	6.20	6.51	6.88	7.17	7.54	7.81	8.19	8.51	8.93	9.39	10.12	10.85	11.64	13.07
2048	4.28	5.05	5.56	5.96	6.26	6.66	6.98	7.37	7.69	8.10	8.39	8.79	9.11	9.59	10.14	10.95	11.68	12.53	14.16
2049	4.60	5.40	5.96	6.41	6.72	7.17	7.52	7.93	8.30	8.69	9.06	9.49	9.82	10.34	11.00	11.84	12.63	13.50	15.41
2050	4.95	5.81	6.37	6.87	7.22	7.70	8.08	8.54	8.92	9.37	9.75	10.22	10.62	11.15	11.88	12.76	13.64	14.63	16.69
2051	5.33	6.25	6.81	7.37	7.73	8.28	8.69	9.17	9.60	10.10	10.49	10.97	11.41	12.01	12.80	13.74	14.69	15.85	18.14
2052	5.73	6.67	7.29	7.90	8.28	8.87	9.33	9.84	10.30	10.80	11.28	11.78	12.29	12.90	13.81	14.80	15.81	17.06	19.58
2053	6.18	7.14	7.84	8.48	8.89	9.52	10.07	10.59	11.10	11.64	12.15	12.67	13.23	13.91	14.93	15.97	17.11	18.49	21.24
2054	6.59	7.63	8.40	9.07	9.56	10.24	10.83	11.36	11.93	12.47	13.07	13.64	14.27	15.01	16.14	17.24	18.51	19.98	23.02
2055	7.08	8.15	9.00	9.73	10.26	10.99	11.67	12.18	12.81	13.37	14.04	14.65	15.36	16.18	17.41	18.60	19.95	21.56	24.88
2056	7.59	8.72	9.62	10.41	11.00	11.77	12.51	13.07	13.74	14.37	15.10	15.74	16.51	17.40	18.75	20.02	21.45	23.24	26.91
2057	8.09	9.42	10.32	11.17	11.82	12.65	13.44	14.03	14.78	15.48	16.28	16.96	17.81	18.74	20.27	21.62	23.16	25.23	29.18
2058	8.73	10.10	11.08	11.96	12.72	13.54	14.48	15.05	15.89	16.62	17.52	18.24	19.20	20.14	21.81	23.30	25.00	27.28	31.48
2059	9.32	10.83	11.88	12.78	13.68	14.49	15.59	16.15	17.08	17.86	18.87	19.65	20.62	21.65	23.50	25.12	26.99	29.49	33.91
2060	9.91	11.59	12.71	13.68	14.64	15.50	16.71	17.37	18.33	19.12	20.22	21.07	22.12	23.29	25.23	26.98	29.00	31.84	36.56
2061	10.61	12.45	13.67	14.68	15.73	16.78	17.89	18.80	19.81	20.58	21.58	22.64	23.77	25.17	26.99	29.05	31.32	34.29	39.69

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 63: Alternate Revenue Scenario (Total S.R. 11 Costs, Tolloed Pedestrian Crossing at EOM)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.07	1.11	1.16	1.22
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.12	1.16	1.21	1.25	1.30	1.38
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.07	1.10	1.13	1.16	1.20	1.24	1.29	1.34	1.39	1.48
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.13	1.16	1.20	1.23	1.28	1.32	1.38	1.43	1.49	1.59
2022	1.00	1.00	1.00	1.00	1.00	1.04	1.09	1.12	1.15	1.19	1.23	1.26	1.30	1.35	1.40	1.46	1.52	1.59	1.70
2023	1.00	1.00	1.00	1.02	1.06	1.11	1.16	1.19	1.23	1.27	1.31	1.35	1.40	1.45	1.51	1.58	1.64	1.72	1.84
2024	1.00	1.00	1.03	1.08	1.13	1.18	1.23	1.27	1.32	1.35	1.40	1.45	1.49	1.55	1.61	1.69	1.76	1.85	2.00
2025	1.00	1.02	1.09	1.15	1.20	1.25	1.31	1.35	1.40	1.45	1.50	1.55	1.60	1.66	1.73	1.81	1.90	2.00	2.15
2026	1.00	1.07	1.15	1.22	1.27	1.32	1.39	1.44	1.49	1.53	1.59	1.65	1.71	1.77	1.85	1.94	2.04	2.14	2.31
2027	1.00	1.13	1.22	1.29	1.35	1.41	1.48	1.53	1.59	1.64	1.70	1.77	1.82	1.90	1.99	2.08	2.19	2.30	2.50
2028	1.06	1.21	1.29	1.37	1.43	1.50	1.57	1.63	1.70	1.75	1.81	1.88	1.96	2.03	2.14	2.24	2.35	2.48	2.68
2029	1.13	1.28	1.38	1.47	1.53	1.61	1.68	1.75	1.82	1.88	1.94	2.02	2.10	2.18	2.29	2.42	2.54	2.68	2.91
2030	1.19	1.36	1.47	1.57	1.63	1.72	1.80	1.88	1.95	2.02	2.09	2.16	2.27	2.34	2.46	2.61	2.75	2.91	3.16
2031	1.27	1.45	1.57	1.67	1.75	1.85	1.93	2.01	2.09	2.17	2.24	2.32	2.43	2.53	2.65	2.81	2.96	3.15	3.43
2032	1.36	1.54	1.67	1.78	1.86	1.97	2.06	2.15	2.24	2.32	2.39	2.49	2.61	2.72	2.85	3.02	3.19	3.39	3.71
2033	1.47	1.64	1.79	1.91	2.00	2.12	2.21	2.31	2.41	2.50	2.57	2.68	2.80	2.94	3.09	3.27	3.44	3.67	4.01
2034	1.55	1.76	1.92	2.04	2.15	2.27	2.38	2.48	2.58	2.69	2.77	2.89	3.02	3.16	3.32	3.53	3.73	3.96	4.33
2035	1.66	1.89	2.06	2.19	2.30	2.44	2.54	2.66	2.77	2.88	2.99	3.10	3.24	3.42	3.58	3.82	4.02	4.29	4.71
2036	1.78	2.01	2.20	2.34	2.47	2.62	2.73	2.85	2.97	3.09	3.21	3.34	3.49	3.67	3.85	4.12	4.35	4.63	5.11
2037	1.91	2.17	2.35	2.51	2.66	2.81	2.94	3.07	3.20	3.33	3.47	3.61	3.77	3.96	4.17	4.46	4.72	5.01	5.54
2038	2.05	2.32	2.52	2.69	2.86	3.02	3.16	3.30	3.44	3.57	3.74	3.89	4.06	4.26	4.51	4.83	5.08	5.41	6.00
2039	2.20	2.49	2.69	2.88	3.07	3.24	3.38	3.54	3.70	3.84	4.02	4.19	4.38	4.61	4.88	5.21	5.49	5.87	6.49
2040	2.34	2.67	2.90	3.08	3.31	3.48	3.62	3.80	3.98	4.12	4.33	4.51	4.69	4.97	5.24	5.63	5.94	6.36	7.00
2041	2.50	2.85	3.12	3.32	3.55	3.75	3.91	4.10	4.28	4.44	4.65	4.86	5.07	5.38	5.70	6.08	6.45	6.87	7.60
2042	2.67	3.06	3.34	3.57	3.82	4.03	4.21	4.41	4.62	4.78	5.01	5.23	5.46	5.80	6.14	6.57	6.97	7.45	8.25
2043	2.86	3.30	3.57	3.84	4.10	4.34	4.52	4.74	4.95	5.16	5.39	5.65	5.90	6.26	6.62	7.08	7.53	8.06	8.95
2044	3.06	3.54	3.83	4.11	4.40	4.64	4.87	5.09	5.32	5.54	5.81	6.08	6.35	6.74	7.14	7.62	8.10	8.70	9.71
2045	3.28	3.82	4.13	4.42	4.74	4.99	5.26	5.49	5.70	5.99	6.26	6.57	6.87	7.31	7.73	8.23	8.77	9.45	10.53
2046	3.54	4.10	4.43	4.76	5.09	5.35	5.66	5.90	6.14	6.44	6.73	7.10	7.39	7.89	8.35	8.89	9.47	10.25	11.42
2047	3.81	4.39	4.75	5.12	5.47	5.75	6.07	6.33	6.58	6.92	7.25	7.64	7.99	8.50	8.99	9.57	10.24	11.09	12.38
2048	4.08	4.71	5.08	5.51	5.85	6.17	6.51	6.78	7.08	7.41	7.78	8.17	8.58	9.15	9.69	10.31	11.04	11.96	13.39
2049	4.37	5.08	5.50	5.95	6.29	6.62	7.04	7.29	7.64	7.96	8.37	8.81	9.28	9.88	10.48	11.16	11.93	12.98	14.52
2050	4.65	5.44	5.90	6.37	6.78	7.13	7.54	7.84	8.20	8.55	9.00	9.50	10.01	10.65	11.26	12.04	12.86	14.05	15.69
2051	4.97	5.83	6.32	6.81	7.30	7.67	8.11	8.43	8.83	9.20	9.69	10.24	10.75	11.49	12.14	12.98	13.87	15.18	16.98
2052	5.28	6.24	6.74	7.29	7.83	8.22	8.67	9.03	9.50	9.87	10.41	11.00	11.56	12.37	13.06	13.94	14.91	16.38	18.37
2053	5.63	6.69	7.22	7.83	8.41	8.84	9.35	9.71	10.21	10.61	11.21	11.85	12.48	13.33	14.09	15.04	16.13	17.73	19.88
2054	5.99	7.16	7.78	8.42	9.01	9.54	10.05	10.44	10.95	11.42	12.06	12.74	13.44	14.40	15.21	16.17	17.40	19.14	21.56
2055	6.42	7.67	8.36	9.06	9.70	10.27	10.74	11.22	11.77	12.28	12.97	13.68	14.46	15.48	16.39	17.42	18.78	20.69	23.34
2056	6.91	8.21	8.92	9.75	10.38	11.01	11.51	12.08	12.63	13.20	13.88	14.67	15.54	16.66	17.63	18.83	20.25	22.29	25.17
2057	7.43	8.81	9.56	10.47	11.17	11.82	12.35	13.00	13.61	14.21	14.98	15.81	16.80	17.93	19.11	20.34	21.88	24.13	27.24
2058	8.00	9.43	10.24	11.20	11.96	12.66	13.22	13.98	14.62	15.32	16.09	17.01	18.11	19.26	20.61	21.97	23.57	25.99	29.44
2059	8.62	10.10	10.96	11.99	12.81	13.65	14.15	15.03	15.69	16.46	17.28	18.29	19.43	20.69	22.19	23.70	25.44	28.04	31.71
2060	9.20	10.80	11.74	12.84	13.72	14.61	15.18	16.09	16.81	17.67	18.51	19.62	20.90	22.29	23.84	25.53	27.41	30.21	34.16
2061	9.76	11.48	12.59	13.69	14.78	15.56	16.48	17.18	18.06	18.93	19.85	21.25	22.46	24.01	25.72	27.27	29.56	32.44	36.87

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 64: Alternate Revenue Scenario (Total S.R. 11 Costs, EOM Designed for Trucks Only)

	Probability of Exceeding																		
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2022	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2023	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2024	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02
2025	0.87	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.09
2026	0.80	0.91	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.06	1.08	1.12	1.16
2027	0.83	0.87	0.94	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.05	1.07	1.09	1.12	1.15	1.18	1.23
2028	0.87	0.90	0.93	1.00	1.00	1.00	1.00	1.01	1.04	1.05	1.07	1.09	1.11	1.13	1.15	1.18	1.22	1.26	1.31
2029	0.92	0.95	0.98	1.00	1.01	1.03	1.05	1.07	1.10	1.11	1.13	1.15	1.18	1.20	1.23	1.26	1.30	1.34	1.40
2030	0.96	1.00	1.02	1.04	1.07	1.08	1.11	1.14	1.16	1.18	1.20	1.23	1.25	1.27	1.31	1.34	1.38	1.43	1.50
2031	1.02	1.05	1.07	1.10	1.13	1.15	1.17	1.20	1.23	1.25	1.28	1.30	1.33	1.36	1.39	1.43	1.48	1.53	1.60
2032	1.07	1.10	1.13	1.16	1.19	1.21	1.24	1.28	1.30	1.33	1.36	1.38	1.42	1.44	1.48	1.53	1.58	1.64	1.72
2033	1.12	1.16	1.20	1.23	1.26	1.29	1.32	1.36	1.39	1.42	1.45	1.48	1.51	1.54	1.59	1.64	1.69	1.76	1.85
2034	1.18	1.23	1.27	1.30	1.34	1.37	1.40	1.44	1.48	1.51	1.55	1.58	1.61	1.65	1.70	1.75	1.82	1.90	1.99
2035	1.25	1.30	1.35	1.38	1.42	1.46	1.49	1.54	1.57	1.61	1.65	1.68	1.72	1.77	1.82	1.88	1.95	2.04	2.14
2036	1.31	1.37	1.42	1.47	1.51	1.55	1.58	1.63	1.68	1.72	1.76	1.80	1.84	1.89	1.95	2.01	2.09	2.19	2.30
2037	1.39	1.46	1.52	1.56	1.61	1.65	1.69	1.75	1.79	1.84	1.89	1.93	1.98	2.03	2.09	2.17	2.25	2.36	2.49
2038	1.48	1.55	1.61	1.66	1.71	1.76	1.81	1.86	1.92	1.97	2.02	2.07	2.12	2.18	2.25	2.33	2.42	2.54	2.69
2039	1.57	1.64	1.71	1.76	1.82	1.88	1.93	1.99	2.05	2.11	2.16	2.21	2.28	2.34	2.41	2.51	2.61	2.74	2.90
2040	1.66	1.74	1.82	1.87	1.94	2.00	2.06	2.12	2.19	2.25	2.32	2.37	2.43	2.51	2.59	2.69	2.80	2.96	3.12
2041	1.76	1.86	1.94	2.00	2.07	2.14	2.20	2.28	2.35	2.42	2.49	2.55	2.62	2.70	2.78	2.90	3.02	3.19	3.38
2042	1.87	1.97	2.07	2.13	2.21	2.29	2.36	2.44	2.52	2.58	2.67	2.74	2.81	2.90	2.99	3.12	3.25	3.44	3.66
2043	1.98	2.10	2.21	2.27	2.36	2.45	2.52	2.60	2.70	2.77	2.87	2.94	3.02	3.12	3.22	3.37	3.51	3.70	3.94
2044	2.10	2.23	2.35	2.43	2.52	2.61	2.69	2.78	2.89	2.96	3.07	3.15	3.24	3.35	3.46	3.62	3.77	3.99	4.25
2045	2.24	2.38	2.51	2.60	2.70	2.80	2.89	2.99	3.10	3.19	3.29	3.39	3.49	3.62	3.73	3.91	4.07	4.30	4.60
2046	2.38	2.54	2.68	2.77	2.88	2.99	3.09	3.20	3.33	3.41	3.53	3.64	3.75	3.89	4.02	4.21	4.39	4.64	4.98
2047	2.53	2.71	2.86	2.96	3.08	3.20	3.31	3.43	3.56	3.66	3.79	3.91	4.03	4.18	4.33	4.53	4.73	5.01	5.37
2048	2.69	2.88	3.04	3.16	3.28	3.42	3.54	3.67	3.80	3.92	4.06	4.20	4.32	4.49	4.65	4.87	5.09	5.39	5.79
2049	2.87	3.08	3.25	3.38	3.52	3.66	3.80	3.94	4.08	4.22	4.37	4.52	4.65	4.84	5.02	5.25	5.50	5.82	6.28
2050	3.05	3.29	3.47	3.61	3.76	3.92	4.07	4.22	4.38	4.52	4.69	4.85	5.00	5.20	5.41	5.66	5.92	6.28	6.78
2051	3.24	3.50	3.70	3.86	4.02	4.19	4.36	4.52	4.69	4.85	5.04	5.21	5.37	5.59	5.83	6.10	6.38	6.78	7.32
2052	3.45	3.72	3.94	4.12	4.29	4.48	4.66	4.84	5.01	5.20	5.40	5.59	5.76	5.99	6.27	6.56	6.88	7.29	7.88
2053	3.68	3.98	4.22	4.41	4.60	4.80	4.99	5.19	5.38	5.58	5.82	6.01	6.20	6.45	6.77	7.07	7.40	7.88	8.53
2054	3.92	4.25	4.49	4.71	4.91	5.13	5.34	5.56	5.76	5.99	6.24	6.46	6.66	6.94	7.29	7.61	7.98	8.49	9.20
2055	4.17	4.54	4.80	5.03	5.25	5.49	5.72	5.96	6.17	6.43	6.69	6.94	7.15	7.44	7.84	8.18	8.60	9.15	9.93
2056	4.43	4.82	5.11	5.37	5.59	5.87	6.11	6.37	6.60	6.87	7.16	7.45	7.68	7.99	8.41	8.79	9.26	9.84	10.70
2057	4.73	5.14	5.46	5.73	5.98	6.29	6.55	6.83	7.08	7.37	7.69	8.01	8.26	8.60	9.07	9.49	10.00	10.62	11.55
2058	5.03	5.48	5.82	6.12	6.38	6.73	7.02	7.30	7.59	7.90	8.25	8.59	8.86	9.24	9.74	10.20	10.77	11.44	12.46
2059	5.34	5.84	6.21	6.53	6.81	7.20	7.51	7.83	8.12	8.48	8.84	9.23	9.51	9.93	10.46	10.97	11.60	12.32	13.43
2060	5.67	6.21	6.61	6.96	7.26	7.69	8.03	8.36	8.68	9.07	9.46	9.88	10.18	10.64	11.22	11.77	12.48	13.26	14.46
2061	6.09	6.65	7.09	7.48	7.79	8.21	8.56	8.92	9.32	9.76	10.15	10.60	11.01	11.45	12.07	12.62	13.34	14.20	15.60

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 65: Alternate Revenue Scenario (Total S.R. 11 Costs, Risk of Punta Colonet Opening in 2020)

	Probability of Exceeding																			
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.09	1.15
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.11	1.16	1.21	1.30	
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.06	1.09	1.12	1.15	1.19	1.24	1.30	1.39	
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.12	1.15	1.19	1.22	1.27	1.32	1.39	1.49	
2022	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.07	1.11	1.14	1.18	1.22	1.26	1.30	1.35	1.40	1.48	1.59	
2023	1.00	1.00	1.00	1.00	1.00	1.03	1.08	1.11	1.15	1.18	1.22	1.26	1.31	1.35	1.40	1.45	1.51	1.60	1.72	
2024	1.00	1.00	1.00	1.01	1.06	1.10	1.14	1.18	1.22	1.26	1.31	1.35	1.40	1.45	1.50	1.55	1.63	1.72	1.86	
2025	0.99	1.00	1.01	1.07	1.12	1.17	1.22	1.26	1.30	1.35	1.40	1.45	1.50	1.55	1.60	1.66	1.75	1.85	2.01	
2026	0.90	1.00	1.05	1.13	1.19	1.24	1.29	1.34	1.38	1.43	1.48	1.54	1.60	1.66	1.71	1.78	1.88	1.99	2.15	
2027	0.91	1.02	1.12	1.20	1.26	1.32	1.37	1.43	1.48	1.53	1.59	1.65	1.71	1.77	1.84	1.91	2.02	2.14	2.33	
2028	0.97	1.08	1.18	1.27	1.34	1.40	1.46	1.52	1.57	1.64	1.69	1.77	1.83	1.90	1.97	2.05	2.17	2.30	2.51	
2029	1.01	1.15	1.26	1.36	1.43	1.50	1.56	1.62	1.69	1.76	1.82	1.90	1.97	2.05	2.12	2.21	2.34	2.49	2.73	
2030	1.09	1.23	1.34	1.45	1.53	1.60	1.67	1.74	1.81	1.88	1.95	2.04	2.13	2.21	2.29	2.39	2.52	2.69	2.95	
2031	1.16	1.31	1.43	1.54	1.64	1.72	1.79	1.86	1.94	2.02	2.10	2.19	2.28	2.37	2.47	2.57	2.72	2.90	3.20	
2032	1.23	1.39	1.52	1.64	1.75	1.84	1.91	2.00	2.08	2.17	2.25	2.35	2.45	2.54	2.65	2.77	2.94	3.12	3.46	
2033	1.32	1.49	1.63	1.76	1.88	1.97	2.06	2.14	2.23	2.34	2.43	2.54	2.65	2.75	2.88	3.00	3.18	3.38	3.75	
2034	1.41	1.59	1.75	1.88	2.02	2.12	2.21	2.31	2.40	2.51	2.61	2.73	2.85	2.97	3.11	3.24	3.44	3.68	4.05	
2035	1.50	1.69	1.87	2.02	2.16	2.27	2.37	2.48	2.59	2.71	2.82	2.94	3.07	3.20	3.35	3.50	3.72	3.98	4.39	
2036	1.61	1.81	2.00	2.16	2.31	2.43	2.54	2.66	2.78	2.91	3.03	3.17	3.31	3.45	3.61	3.77	4.01	4.29	4.74	
2037	1.72	1.95	2.15	2.32	2.48	2.61	2.74	2.87	2.99	3.14	3.27	3.42	3.57	3.73	3.91	4.09	4.34	4.65	5.14	
2038	1.84	2.09	2.31	2.48	2.67	2.81	2.95	3.09	3.22	3.38	3.52	3.69	3.85	4.02	4.23	4.42	4.69	5.04	5.58	
2039	1.97	2.25	2.48	2.67	2.86	3.01	3.17	3.32	3.47	3.64	3.79	3.99	4.16	4.34	4.55	4.77	5.07	5.45	6.04	
2040	2.11	2.41	2.65	2.85	3.06	3.23	3.40	3.57	3.73	3.92	4.08	4.28	4.48	4.67	4.90	5.14	5.47	5.88	6.52	
2041	2.26	2.59	2.85	3.07	3.29	3.49	3.67	3.85	4.03	4.24	4.41	4.63	4.84	5.06	5.31	5.56	5.93	6.37	7.07	
2042	2.42	2.78	3.06	3.31	3.52	3.77	3.94	4.14	4.34	4.57	4.75	5.00	5.22	5.46	5.74	6.02	6.42	6.90	7.65	
2043	2.59	2.99	3.30	3.56	3.78	4.06	4.25	4.46	4.69	4.92	5.13	5.39	5.62	5.91	6.21	6.49	6.94	7.47	8.27	
2044	2.79	3.21	3.53	3.82	4.06	4.35	4.55	4.79	5.04	5.28	5.52	5.79	6.05	6.36	6.70	6.99	7.48	8.06	8.95	
2045	3.01	3.46	3.80	4.11	4.37	4.69	4.91	5.17	5.45	5.71	5.97	6.25	6.53	6.86	7.24	7.59	8.09	8.72	9.70	
2046	3.24	3.71	4.08	4.43	4.70	5.04	5.28	5.57	5.87	6.15	6.43	6.74	7.04	7.40	7.81	8.21	8.76	9.45	10.50	
2047	3.46	3.99	4.38	4.76	5.06	5.42	5.68	6.00	6.34	6.62	6.92	7.28	7.59	8.01	8.43	8.87	9.47	10.24	11.40	
2048	3.70	4.28	4.67	5.09	5.43	5.81	6.09	6.46	6.80	7.12	7.44	7.82	8.18	8.63	9.07	9.56	10.21	11.04	12.35	
2049	3.97	4.60	5.03	5.47	5.85	6.24	6.57	6.96	7.34	7.69	8.04	8.45	8.83	9.32	9.79	10.36	11.05	11.96	13.43	
2050	4.25	4.94	5.40	5.86	6.28	6.70	7.08	7.48	7.89	8.30	8.68	9.10	9.53	10.06	10.57	11.19	11.95	12.95	14.54	
2051	4.54	5.31	5.81	6.30	6.75	7.20	7.61	8.05	8.49	8.93	9.35	9.80	10.27	10.84	11.41	12.08	12.94	13.99	15.68	
2052	4.88	5.69	6.24	6.77	7.27	7.70	8.17	8.65	9.13	9.58	10.06	10.56	11.05	11.65	12.27	13.04	13.96	15.08	16.94	
2053	5.24	6.12	6.73	7.29	7.83	8.31	8.80	9.32	9.83	10.32	10.85	11.42	11.93	12.55	13.27	14.12	15.11	16.28	18.38	
2054	5.63	6.57	7.24	7.84	8.41	8.95	9.47	10.01	10.59	11.10	11.69	12.28	12.86	13.51	14.32	15.24	16.33	17.56	19.88	
2055	6.07	7.05	7.78	8.42	9.02	9.61	10.19	10.75	11.41	11.94	12.59	13.23	13.83	14.56	15.44	16.46	17.65	18.96	21.51	
2056	6.50	7.56	8.35	9.05	9.68	10.30	10.93	11.53	12.24	12.85	13.52	14.22	14.88	15.61	16.62	17.71	19.02	20.43	23.20	
2057	6.97	8.11	8.97	9.73	10.40	11.06	11.76	12.40	13.17	13.84	14.59	15.37	16.04	16.87	17.94	19.14	20.57	22.06	25.10	
2058	7.47	8.74	9.62	10.42	11.18	11.86	12.64	13.31	14.18	14.87	15.72	16.56	17.28	18.16	19.36	20.66	22.17	23.79	27.18	
2059	8.01	9.36	10.35	11.15	11.97	12.74	13.59	14.33	15.21	15.98	16.87	17.80	18.60	19.53	20.88	22.29	23.93	25.66	29.42	
2060	8.60	10.01	11.05	11.94	12.83	13.68	14.54	15.39	16.29	17.18	18.10	19.12	20.05	21.01	22.48	24.03	25.80	27.74	31.74	
2061	9.28	10.77	11.79	12.91	13.74	14.83	15.67	16.54	17.56	18.53	19.47	20.57	21.54	22.71	24.09	25.96	27.69	30.08	34.40	

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 66: Alternate Revenue Scenario (Total S.R. 11 Costs, Risk of Expanded Mass Transit at Existing Facilities)

	Probability of Exceeding																			
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.09	1.17
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.12	1.16	1.21	1.30	
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.10	1.13	1.17	1.20	1.24	1.30	1.40	
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.06	1.09	1.13	1.16	1.20	1.24	1.28	1.33	1.39	1.51	
2022	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.11	1.15	1.19	1.23	1.27	1.31	1.36	1.41	1.48	1.60	
2023	1.00	1.00	1.00	1.00	1.01	1.05	1.08	1.12	1.16	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.52	1.60	1.73	
2024	1.00	1.00	1.00	1.02	1.07	1.11	1.15	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.51	1.57	1.63	1.72	1.87	
2025	0.98	1.00	1.03	1.09	1.14	1.19	1.23	1.27	1.32	1.36	1.41	1.46	1.51	1.56	1.62	1.68	1.76	1.86	2.02	
2026	0.92	1.00	1.08	1.14	1.21	1.25	1.30	1.34	1.40	1.44	1.50	1.56	1.61	1.67	1.73	1.80	1.88	2.00	2.17	
2027	0.93	1.04	1.14	1.21	1.28	1.33	1.38	1.43	1.49	1.54	1.60	1.67	1.72	1.79	1.85	1.93	2.02	2.16	2.35	
2028	0.97	1.11	1.21	1.29	1.36	1.42	1.47	1.53	1.59	1.64	1.71	1.78	1.85	1.91	1.99	2.07	2.17	2.32	2.53	
2029	1.01	1.18	1.29	1.38	1.46	1.52	1.58	1.64	1.71	1.77	1.84	1.91	1.99	2.06	2.14	2.23	2.34	2.51	2.73	
2030	1.08	1.26	1.37	1.47	1.55	1.62	1.69	1.76	1.83	1.89	1.97	2.05	2.14	2.21	2.30	2.40	2.53	2.72	2.94	
2031	1.16	1.34	1.46	1.57	1.66	1.74	1.81	1.88	1.96	2.03	2.12	2.20	2.30	2.38	2.48	2.59	2.73	2.94	3.18	
2032	1.23	1.43	1.56	1.67	1.77	1.86	1.94	2.02	2.10	2.18	2.27	2.36	2.46	2.56	2.67	2.79	2.94	3.18	3.44	
2033	1.32	1.53	1.67	1.79	1.90	2.00	2.08	2.17	2.26	2.36	2.44	2.54	2.65	2.76	2.88	3.01	3.18	3.46	3.74	
2034	1.41	1.64	1.79	1.92	2.03	2.15	2.23	2.33	2.43	2.54	2.63	2.74	2.86	2.97	3.11	3.25	3.44	3.75	4.05	
2035	1.51	1.75	1.92	2.06	2.18	2.30	2.40	2.50	2.61	2.73	2.83	2.94	3.07	3.21	3.36	3.51	3.72	4.05	4.40	
2036	1.61	1.88	2.05	2.20	2.33	2.47	2.57	2.69	2.80	2.93	3.04	3.16	3.31	3.44	3.61	3.79	4.01	4.37	4.76	
2037	1.72	2.02	2.20	2.37	2.51	2.66	2.77	2.90	3.02	3.16	3.29	3.42	3.57	3.72	3.91	4.10	4.35	4.75	5.19	
2038	1.84	2.16	2.37	2.54	2.70	2.86	2.98	3.12	3.26	3.40	3.54	3.70	3.85	4.02	4.23	4.43	4.71	5.14	5.64	
2039	1.98	2.32	2.55	2.72	2.90	3.08	3.21	3.36	3.51	3.66	3.82	3.99	4.15	4.33	4.56	4.78	5.09	5.56	6.12	
2040	2.12	2.48	2.73	2.92	3.11	3.30	3.44	3.61	3.77	3.94	4.11	4.29	4.46	4.66	4.91	5.15	5.49	6.01	6.60	
2041	2.29	2.66	2.94	3.14	3.34	3.55	3.71	3.89	4.07	4.25	4.45	4.62	4.83	5.03	5.31	5.59	5.95	6.52	7.18	
2042	2.46	2.85	3.16	3.39	3.60	3.81	3.99	4.19	4.38	4.58	4.79	4.98	5.21	5.43	5.74	6.03	6.44	7.05	7.78	
2043	2.63	3.06	3.40	3.63	3.88	4.10	4.30	4.51	4.73	4.95	5.17	5.38	5.62	5.87	6.19	6.52	6.96	7.63	8.46	
2044	2.81	3.29	3.65	3.90	4.16	4.40	4.63	4.85	5.08	5.32	5.55	5.79	6.05	6.32	6.67	7.03	7.51	8.22	9.15	
2045	3.03	3.55	3.93	4.20	4.49	4.75	4.99	5.24	5.48	5.75	6.00	6.28	6.54	6.83	7.20	7.62	8.14	8.92	9.93	
2046	3.25	3.80	4.21	4.52	4.83	5.11	5.36	5.63	5.90	6.19	6.47	6.76	7.06	7.37	7.77	8.24	8.80	9.64	10.73	
2047	3.49	4.07	4.52	4.85	5.19	5.50	5.77	6.05	6.34	6.66	6.96	7.28	7.60	7.96	8.37	8.90	9.51	10.43	11.65	
2048	3.74	4.36	4.86	5.21	5.56	5.89	6.20	6.51	6.82	7.17	7.50	7.83	8.18	8.57	9.02	9.58	10.25	11.24	12.60	
2049	4.05	4.69	5.23	5.61	5.98	6.36	6.66	7.01	7.35	7.75	8.08	8.45	8.85	9.28	9.76	10.37	11.10	12.19	13.65	
2050	4.36	5.02	5.60	6.03	6.44	6.84	7.16	7.53	7.93	8.34	8.70	9.10	9.56	9.99	10.52	11.19	12.00	13.18	14.77	
2051	4.69	5.39	6.01	6.49	6.93	7.36	7.69	8.09	8.55	8.99	9.36	9.80	10.29	10.77	11.34	12.09	12.94	14.24	15.96	
2052	5.01	5.79	6.45	6.97	7.43	7.90	8.25	8.69	9.18	9.65	10.07	10.56	11.08	11.56	12.21	13.04	14.00	15.38	17.27	
2053	5.37	6.21	6.96	7.50	8.00	8.51	8.90	9.36	9.88	10.41	10.87	11.39	11.95	12.51	13.20	14.12	15.16	16.62	18.76	
2054	5.78	6.66	7.46	8.05	8.62	9.16	9.55	10.06	10.65	11.21	11.70	12.29	12.90	13.49	14.24	15.23	16.37	17.95	20.28	
2055	6.15	7.14	8.00	8.64	9.24	9.82	10.28	10.83	11.44	12.03	12.58	13.22	13.89	14.56	15.36	16.42	17.68	19.37	21.98	
2056	6.57	7.64	8.56	9.25	9.92	10.55	11.01	11.61	12.30	12.89	13.53	14.25	14.95	15.65	16.53	17.70	19.06	20.83	23.79	
2057	7.07	8.24	9.20	9.92	10.68	11.35	11.85	12.52	13.27	13.89	14.62	15.40	16.12	16.88	17.86	19.13	20.60	22.54	25.75	
2058	7.59	8.85	9.84	10.68	11.47	12.16	12.75	13.49	14.26	14.95	15.74	16.55	17.33	18.16	19.28	20.66	22.24	24.25	27.82	
2059	8.14	9.50	10.56	11.48	12.30	13.02	13.71	14.51	15.33	16.07	16.93	17.78	18.66	19.55	20.79	22.29	24.00	26.18	30.14	
2060	8.73	10.17	11.28	12.32	13.19	13.97	14.69	15.54	16.44	17.26	18.17	19.10	20.04	21.04	22.38	23.98	25.86	28.22	32.57	
2061	9.34	10.97	12.13	13.16	14.14	15.06	15.80	16.73	17.55	18.57	19.53	20.61	21.59	22.76	24.12	25.83	27.93	30.58	34.83	

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 67: Alternate Revenue Scenario (Total S.R. 11 Costs, Risk of Increased Border Security)

	Probability of Exceeding																			
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.06	1.14
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.06	1.09	1.14	1.19	1.27	1.27
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.07	1.10	1.13	1.17	1.21	1.27	1.37	1.37
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.07	1.10	1.14	1.17	1.20	1.25	1.29	1.36	1.47	1.47
2022	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.06	1.09	1.13	1.16	1.20	1.24	1.28	1.32	1.38	1.45	1.56	1.56
2023	1.00	1.00	1.00	1.00	1.00	1.02	1.06	1.09	1.13	1.17	1.21	1.25	1.29	1.33	1.37	1.42	1.48	1.56	1.69	1.69
2024	0.99	1.00	1.00	1.00	1.04	1.08	1.12	1.16	1.21	1.25	1.29	1.33	1.38	1.42	1.47	1.51	1.59	1.68	1.82	1.82
2025	0.96	1.00	1.00	1.05	1.10	1.15	1.19	1.24	1.29	1.34	1.38	1.43	1.48	1.53	1.58	1.63	1.71	1.80	1.96	1.96
2026	0.87	1.00	1.04	1.11	1.16	1.22	1.27	1.31	1.36	1.42	1.47	1.52	1.58	1.63	1.69	1.74	1.83	1.93	2.11	2.11
2027	0.89	1.01	1.11	1.18	1.24	1.29	1.35	1.40	1.46	1.52	1.57	1.62	1.69	1.74	1.81	1.87	1.96	2.08	2.27	2.27
2028	0.97	1.02	1.17	1.25	1.31	1.38	1.44	1.49	1.55	1.62	1.67	1.74	1.80	1.86	1.94	2.01	2.11	2.23	2.45	2.45
2029	0.99	1.04	1.25	1.33	1.40	1.48	1.54	1.60	1.66	1.73	1.80	1.87	1.94	2.01	2.09	2.17	2.29	2.42	2.66	2.66
2030	1.07	1.11	1.33	1.42	1.50	1.58	1.65	1.71	1.79	1.86	1.94	2.01	2.09	2.16	2.25	2.34	2.47	2.61	2.88	2.88
2031	1.10	1.29	1.42	1.51	1.60	1.69	1.76	1.84	1.92	1.99	2.08	2.16	2.25	2.33	2.42	2.52	2.66	2.83	3.12	3.12
2032	1.17	1.38	1.51	1.62	1.71	1.80	1.88	1.97	2.06	2.14	2.23	2.32	2.41	2.50	2.60	2.72	2.86	3.05	3.37	3.37
2033	1.30	1.48	1.62	1.73	1.83	1.94	2.02	2.11	2.22	2.30	2.41	2.49	2.60	2.70	2.81	2.94	3.09	3.31	3.66	3.66
2034	1.39	1.58	1.73	1.86	1.96	2.08	2.17	2.28	2.38	2.48	2.59	2.69	2.80	2.91	3.03	3.18	3.35	3.58	3.96	3.96
2035	1.48	1.69	1.86	1.99	2.11	2.23	2.33	2.45	2.56	2.67	2.78	2.90	3.02	3.14	3.27	3.44	3.62	3.87	4.29	4.29
2036	1.57	1.81	1.98	2.13	2.25	2.39	2.51	2.62	2.75	2.87	2.99	3.11	3.25	3.39	3.52	3.71	3.90	4.19	4.63	4.63
2037	1.69	1.94	2.13	2.28	2.43	2.57	2.71	2.84	2.96	3.10	3.23	3.37	3.51	3.66	3.82	4.01	4.23	4.54	5.03	5.03
2038	1.81	2.09	2.28	2.46	2.61	2.77	2.92	3.05	3.19	3.34	3.49	3.63	3.78	3.96	4.12	4.34	4.57	4.92	5.46	5.46
2039	1.93	2.24	2.45	2.63	2.81	2.98	3.14	3.29	3.43	3.59	3.76	3.92	4.07	4.27	4.46	4.69	4.95	5.32	5.90	5.90
2040	2.06	2.40	2.63	2.82	3.02	3.19	3.38	3.53	3.70	3.87	4.04	4.21	4.39	4.60	4.80	5.06	5.35	5.75	6.40	6.40
2041	2.22	2.58	2.83	3.04	3.25	3.43	3.65	3.82	3.99	4.18	4.37	4.56	4.76	4.98	5.21	5.47	5.82	6.23	6.95	6.95
2042	2.38	2.77	3.04	3.27	3.50	3.70	3.93	4.11	4.30	4.49	4.72	4.91	5.13	5.37	5.63	5.91	6.30	6.74	7.52	7.52
2043	2.56	2.96	3.26	3.51	3.75	3.98	4.25	4.42	4.63	4.84	5.09	5.29	5.54	5.81	6.08	6.39	6.82	7.30	8.15	8.15
2044	2.75	3.18	3.50	3.77	4.03	4.28	4.56	4.76	4.97	5.21	5.47	5.70	5.97	6.26	6.55	6.90	7.38	7.90	8.81	8.81
2045	2.97	3.43	3.77	4.05	4.33	4.62	4.92	5.14	5.39	5.62	5.91	6.17	6.46	6.79	7.10	7.48	7.99	8.56	9.57	9.57
2046	3.18	3.68	4.05	4.36	4.65	4.97	5.29	5.54	5.82	6.05	6.38	6.64	6.97	7.34	7.67	8.08	8.65	9.28	10.35	10.35
2047	3.42	3.96	4.35	4.68	5.01	5.35	5.69	5.98	6.27	6.54	6.87	7.15	7.51	7.91	8.29	8.73	9.35	10.02	11.21	11.21
2048	3.65	4.26	4.68	5.02	5.37	5.72	6.13	6.42	6.73	7.02	7.38	7.69	8.10	8.51	8.93	9.43	10.09	10.83	12.13	12.13
2049	3.93	4.58	5.03	5.41	5.79	6.17	6.61	6.94	7.27	7.59	7.97	8.29	8.75	9.20	9.65	10.22	10.95	11.73	13.13	13.13
2050	4.22	4.91	5.41	5.82	6.22	6.64	7.11	7.46	7.82	8.18	8.59	8.94	9.42	9.92	10.44	11.03	11.84	12.70	14.20	14.20
2051	4.53	5.29	5.83	6.27	6.70	7.15	7.65	8.04	8.42	8.82	9.23	9.62	10.16	10.69	11.28	11.92	12.79	13.76	15.35	15.35
2052	4.86	5.65	6.23	6.74	7.19	7.68	8.21	8.65	9.06	9.49	9.95	10.36	10.94	11.52	12.17	12.84	13.79	14.84	16.59	16.59
2053	5.21	6.10	6.71	7.25	7.73	8.27	8.83	9.34	9.79	10.23	10.72	11.19	11.81	12.43	13.15	13.90	14.88	16.06	17.95	17.95
2054	5.57	6.54	7.20	7.78	8.32	8.88	9.47	10.05	10.51	11.03	11.55	12.07	12.72	13.40	14.22	15.00	16.06	17.38	19.42	19.42
2055	5.96	7.01	7.73	8.36	8.94	9.55	10.19	10.79	11.31	11.84	12.43	13.00	13.71	14.46	15.35	16.19	17.33	18.81	21.02	21.02
2056	6.36	7.51	8.30	8.96	9.59	10.28	10.95	11.61	12.16	12.70	13.35	14.00	14.73	15.57	16.52	17.45	18.67	20.33	22.72	22.72
2057	6.84	8.10	8.93	9.62	10.33	11.06	11.79	12.52	13.07	13.70	14.46	15.11	15.88	16.80	17.82	18.90	20.17	22.04	24.62	24.62
2058	7.33	8.68	9.59	10.32	11.09	11.89	12.67	13.45	14.08	14.75	15.57	16.22	17.12	18.11	19.20	20.37	21.79	23.79	26.60	26.60
2059	7.86	9.29	10.30	11.07	11.93	12.76	13.62	14.44	15.17	15.85	16.73	17.47	18.48	19.53	20.70	21.95	23.53	25.67	28.74	28.74
2060	8.40	9.93	11.06	11.86	12.80	13.67	14.61	15.51	16.26	17.04	17.93	18.77	19.85	21.00	22.24	23.62	25.32	27.65	30.98	30.98
2061	8.94	10.65	11.81	12.80	13.76	14.75	15.75	16.54	17.50	18.36	19.34	20.27	21.35	22.60	23.98	25.49	27.44	29.89	33.59	33.59

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

Table 68: Alternate Revenue Scenario (Total S.R. 11 Costs, Risk of U.S. Compliance with NAFTA Truck Rules)

	Probability of Exceeding																			
	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%	
2017	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
2018	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.05	1.10	1.17
2019	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.04	1.08	1.12	1.17	1.23	1.31	
2020	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.12	1.16	1.20	1.26	1.32	1.41	
2021	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	1.05	1.08	1.12	1.15	1.19	1.23	1.28	1.34	1.41	1.51	
2022	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.04	1.08	1.11	1.14	1.17	1.21	1.26	1.30	1.36	1.43	1.50	1.62	
2023	1.00	1.00	1.00	1.00	1.00	1.03	1.07	1.11	1.15	1.19	1.22	1.25	1.30	1.35	1.40	1.46	1.54	1.62	1.75	
2024	1.00	1.00	1.00	1.00	1.05	1.10	1.14	1.18	1.23	1.27	1.31	1.34	1.39	1.44	1.50	1.57	1.65	1.74	1.88	
2025	0.99	1.00	1.00	1.06	1.11	1.17	1.22	1.26	1.31	1.35	1.40	1.44	1.50	1.54	1.61	1.69	1.78	1.88	2.04	
2026	0.91	1.00	1.04	1.11	1.18	1.23	1.29	1.33	1.38	1.43	1.48	1.53	1.60	1.65	1.71	1.81	1.91	2.02	2.19	
2027	0.95	1.02	1.10	1.18	1.25	1.31	1.37	1.42	1.48	1.53	1.59	1.64	1.71	1.77	1.84	1.95	2.06	2.18	2.36	
2028	0.98	1.08	1.17	1.26	1.33	1.40	1.46	1.51	1.58	1.63	1.70	1.76	1.83	1.90	1.97	2.09	2.21	2.34	2.55	
2029	1.02	1.15	1.25	1.34	1.42	1.50	1.56	1.63	1.70	1.75	1.83	1.90	1.97	2.05	2.13	2.26	2.38	2.53	2.76	
2030	1.08	1.23	1.33	1.43	1.52	1.60	1.67	1.74	1.81	1.88	1.96	2.04	2.12	2.19	2.29	2.43	2.57	2.74	2.99	
2031	1.15	1.31	1.42	1.53	1.62	1.72	1.79	1.86	1.94	2.01	2.10	2.20	2.27	2.36	2.47	2.63	2.78	2.97	3.23	
2032	1.22	1.39	1.51	1.63	1.73	1.84	1.92	1.99	2.08	2.16	2.26	2.37	2.44	2.53	2.66	2.84	2.99	3.21	3.50	
2033	1.31	1.48	1.61	1.74	1.86	1.97	2.06	2.14	2.24	2.33	2.43	2.55	2.63	2.74	2.89	3.07	3.23	3.46	3.81	
2034	1.40	1.59	1.74	1.87	2.00	2.12	2.20	2.30	2.41	2.50	2.62	2.75	2.84	2.96	3.12	3.31	3.49	3.73	4.13	
2035	1.50	1.70	1.86	2.00	2.15	2.27	2.37	2.48	2.59	2.69	2.82	2.96	3.06	3.19	3.37	3.58	3.78	4.03	4.47	
2036	1.60	1.82	1.99	2.15	2.31	2.43	2.54	2.66	2.77	2.89	3.03	3.19	3.29	3.43	3.63	3.86	4.07	4.34	4.81	
2037	1.72	1.95	2.15	2.31	2.49	2.61	2.75	2.88	2.98	3.12	3.28	3.44	3.55	3.71	3.93	4.17	4.42	4.71	5.27	
2038	1.84	2.10	2.30	2.48	2.67	2.81	2.95	3.10	3.21	3.36	3.54	3.71	3.84	4.01	4.25	4.51	4.78	5.11	5.74	
2039	1.96	2.25	2.46	2.66	2.87	3.02	3.17	3.34	3.45	3.63	3.81	4.00	4.15	4.33	4.58	4.87	5.18	5.53	6.23	
2040	2.10	2.41	2.63	2.86	3.07	3.23	3.41	3.59	3.72	3.90	4.11	4.30	4.47	4.67	4.93	5.26	5.60	5.96	6.75	
2041	2.25	2.59	2.84	3.08	3.31	3.48	3.66	3.86	4.01	4.21	4.44	4.64	4.84	5.06	5.32	5.70	6.06	6.49	7.27	
2042	2.42	2.80	3.06	3.33	3.54	3.75	3.95	4.16	4.32	4.53	4.78	5.01	5.25	5.48	5.74	6.16	6.56	7.06	7.81	
2043	2.60	3.01	3.27	3.60	3.80	4.04	4.27	4.47	4.65	4.90	5.17	5.41	5.69	5.91	6.21	6.65	7.08	7.66	8.43	
2044	2.77	3.24	3.49	3.86	4.08	4.34	4.59	4.81	5.00	5.26	5.56	5.81	6.12	6.37	6.69	7.17	7.64	8.27	9.11	
2045	2.99	3.48	3.76	4.15	4.40	4.67	4.95	5.17	5.40	5.69	6.01	6.27	6.62	6.90	7.26	7.78	8.27	8.97	9.92	
2046	3.23	3.75	4.04	4.46	4.73	5.04	5.33	5.58	5.82	6.12	6.46	6.77	7.17	7.46	7.87	8.41	8.96	9.71	10.73	
2047	3.47	4.01	4.35	4.81	5.09	5.41	5.73	6.01	6.28	6.59	6.96	7.29	7.72	8.05	8.48	9.11	9.72	10.47	11.67	
2048	3.71	4.31	4.68	5.16	5.48	5.80	6.16	6.46	6.76	7.08	7.49	7.88	8.32	8.67	9.13	9.79	10.46	11.30	12.65	
2049	3.98	4.64	5.04	5.56	5.89	6.24	6.64	6.97	7.29	7.62	8.08	8.51	9.00	9.37	9.89	10.59	11.34	12.24	13.73	
2050	4.25	4.99	5.43	5.94	6.36	6.71	7.14	7.47	7.86	8.21	8.73	9.17	9.70	10.14	10.67	11.43	12.24	13.23	14.80	
2051	4.58	5.38	5.85	6.37	6.84	7.21	7.67	8.04	8.45	8.85	9.42	9.89	10.47	10.98	11.51	12.33	13.23	14.31	15.95	
2052	4.90	5.76	6.31	6.83	7.36	7.76	8.27	8.63	9.08	9.52	10.12	10.64	11.27	11.79	12.39	13.25	14.26	15.44	17.23	
2053	5.29	6.21	6.82	7.38	7.90	8.36	8.90	9.35	9.77	10.27	10.91	11.53	12.18	12.78	13.44	14.32	15.47	16.70	18.70	
2054	5.67	6.65	7.34	7.91	8.47	8.97	9.54	10.04	10.54	11.05	11.71	12.43	13.13	13.79	14.52	15.45	16.76	18.06	20.13	
2055	6.12	7.13	7.89	8.46	9.10	9.66	10.24	10.79	11.33	11.88	12.62	13.39	14.14	14.89	15.67	16.69	18.15	19.51	21.80	
2056	6.57	7.60	8.45	9.08	9.78	10.38	11.00	11.61	12.17	12.77	13.60	14.42	15.22	16.02	16.80	17.93	19.60	21.03	23.60	
2057	7.03	8.15	9.06	9.79	10.51	11.21	11.87	12.53	13.10	13.75	14.63	15.55	16.41	17.33	18.15	19.40	21.19	22.72	25.61	
2058	7.50	8.73	9.74	10.56	11.30	12.02	12.77	13.46	14.08	14.75	15.77	16.76	17.67	18.69	19.61	20.93	22.84	24.55	27.65	
2059	8.00	9.36	10.46	11.35	12.13	12.93	13.73	14.46	15.11	15.86	17.01	18.01	19.00	20.12	21.11	22.58	24.62	26.53	29.92	
2060	8.60	10.07	11.20	12.16	12.99	13.83	14.75	15.52	16.26	17.04	18.33	19.36	20.48	21.60	22.71	24.38	26.51	28.67	32.33	
2061	9.28	10.77	12.01	13.07	13.91	14.84	15.89	16.65	17.41	18.38	19.55	20.83	21.99	23.30	24.87	26.19	28.50	30.80	35.24	

Legend: Less than 1.0 Between 1.0 and 1.1 Between 1.1 and 1.2

5.7 Assessment of the Investors Market

Assessing the investor market implies the need for information about the supply and cost of private equity and debt for toll road financing. The key driver of supply and cost of capital is credit rating. If the project fails to obtain an investment-grade rating, the large institutional investors (the pension funds, fireman's funds, etc.) are generally not permitted to participate (due to a high risk exposure). It is the institutional investors that hold at least two thirds of most traditionally financed toll roads. Thus, the absence of an investment grade rating might lock this project out of the market. However, if the road is rated investment-grade, the market for toll road revenue bond securities is mature and, while taken aback by recent problems of under-performance, still plentiful. Investment grade toll roads also attract private equity. Examples include Route 407 in Toronto, Canada, and S.R. 125 in California.

Furthermore, if the proposed toll road is in a jurisdiction with Public-Private Partnership enabling legislation, the public sector can, if it chooses, share in the investment cost (through tax-financed sources, such as general obligation bonds, self-help taxes, federal grants and TIFIA credit support). In so doing, the public sector can “elevate” a road with a marginal or even below investment grade rating to the investment grade level, thereby giving rise to a plentiful supply of efficiently priced private capital.

Potential for Public-Private Partnership

The appropriate means of approaching a combined public and private opportunity is through the vehicle known as Public-Private Partnering (PPP). To assess the specific form that such a partnership might take, the following questions need to be addressed:

- Is the prospective enterprise likely to generate significant private benefits?
- Does the required investment exhibit a high enough degree of financial risk to indicate that private capital alone would be insufficient to finance it?
- Would some degree of public involvement encourage private participation?

The public sector is expected to be a significant beneficiary, mainly because the toll road would benefit the region through:

- Improved traffic flows;
- Reduced highway congestion;
- Increased industrial productivity and competitiveness due to improved access;
- Improved transportation safety; and
- Improved air quality and reduced greenhouse gas emissions.

The public sector can encourage and facilitate the success of the private investment through measures such as:

- Ensuring that the zoning around the toll area attracts investment such as warehousing, assembly, and general manufacturing plants;

- Providing investors with tax measures that encourage them to locate in the area;
- Providing private investors with favorable leasing terms;
- Transportation network improvements to improve access to the toll road; and
- Other policy measures that encourage local investment.

One of the requirements for a successful public-private partnership is a balanced arrangement where all the parties involved benefit in proportion to their financial participation. Such arrangement must lead to a win-win outcome in order to have a sustainable and successful partnership.

Expected S.R. 11 and EOM POE Credit Rating

Based on the traffic, revenue, and financial assessments described in the previous section, HDR|HLB has estimated:

- The likelihood of an investment-grade bond rating;
- The likelihood of obtaining efficiently priced bond insurance; and
- The need and magnitude, if any, for agency co-investment (PPP) to enable private sector participation.

Table 69 provides indicative DSCR ranges used by rating agencies to determine credit ratings for toll road projects. Even though a number of restrictions apply, these ranges have been used as a first approximation in this analysis. A definition of minimum investment grade rating where the DSCR is at least 1.25 (Rating BBB) is applied to the results that follow.

Table 69: Indicative DSCR Ranges for Toll Road Securitization Transactions

Rating	DSCR
AAA	2.0x – plus
AA	1.75x to 3.0x
A	1.5x to 2.5x
BBB	1.25x to 2.0x
Non Investment-Grade	Below 1.25x

Source: Fitch, “Toll Road Securitizations: Wherein the Future Flows,” January 2004. Note that the DSCR ranges provided in the table are only indicative, and subject to changes.

An evaluation of this project using the standard rating criteria of Fitch and JP Morgan is located in Appendix 4.

Table 70: Expected S.R. 11 and EOM POE Credit Ratings and Needs for Public Co-Investments

(In Millions of 2012 Dollars)

Scenario	Total Capital Costs	Annual O&M Costs	Capital Grant	Likelihood of "Success" ¹	Likelihood of Investment Grade Rating ²
Cost Scenarios					
Baseline Scenario S.R.-11 Capital and O&M Costs	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%
			\$50 17%	>95%	80% - 85%
Scenario C-1 S.R.-11 Capital and O&M Costs, plus POE Capital Costs	\$660.4	\$0.42	\$300 45%	>80%	65% - 70%
			\$400 61%	>95%	80% - 85%
Scenario C-2 S.R.-11 Capital and O&M Costs, plus POE Capital and O&M Costs	\$660.4	\$37.02	\$400 61%	<5%	<5%
Scenario C-3 S.R.-11 Capital and O&M Costs, plus POE Capital and O&M Costs after 30 years	\$660.4	\$37.02	\$400 61%	>90%	75% - 80%
Revenue Scenarios (with Baseline Cost)					
Scenario R-1 Integration of Mexican Toll Road	\$294.5	\$0.42	\$0 0%	>95%	80% - 85%
Scenario R-2 Pedestrian crossing at EOM	\$294.5	\$0.42	\$0 0%	>95%	80% - 85%
Scenario R-3 Truck only service at EOM	\$294.5	\$0.42	\$0 0%	>80%	65% - 70%
Risk Factor Scenarios (with Baseline Cost)					
Scenario RF-1 Opening of Punta Colonet	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%
Scenario RF-2 Expanded Mass Transit at Existing Facilities	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%
Scenario RF-3 Increased Border Security	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%
Scenario RF-4 Truck Compliance with NAFTA	\$294.5	\$0.42	\$0 0%	>90%	75% - 80%

Note: (1) Major bond insurers (with AAA ratings) would prefer to insure projects with a 99% probability that the DSCR (the first percentile) is 1.0 or higher. This level of analysis is limited to an upper probability bound of 95%. Exact determination at the 99% level may be required by the major bond insurers.

(2) Major bond insurers (with AAA ratings) consider a DSCR of 1.25 to be the minimum level for an investment grade rating of BBB.

CHAPTER 6: CONCLUSIONS

The main conclusion of this analysis is that, given the existing level of uncertainty surrounding key assumptions, the S.R. 11 toll road is a potentially good investment provided that there are sufficient external resources to cover the capital and O&M costs of EOM. With traditional debt finance, minor default risks may occur in early years. Its potential would be enhanced by integration with Mexican toll roads, an outcome that most experts consider likely.

S.R. 11 however cannot be considered without EOM. Accordingly, as indicated in the core of the report, public participation would be necessary to attract sufficient private capital and finance construction and management of EOM. A grant or other financing mechanism with back-loaded debt service/repayments is needed (possibly low-interest loan from the Transportation Infrastructure Finance and Innovation Act or TIFIA).

Strengths, weaknesses, and an assessment of the investor market can be summarized as follows:

Strengths

- EOM and S.R. 11 would be an alternative border crossing to increasingly congested OM and SY facilities.
- New facilities would offer dramatic travel time savings for users.
- Travelers continuing to use the free POEs would experience small reductions in wait times, but if aggregated would amount to a sizable public benefit.
- Over the next several decades, population growth in the region – especially in Mexico, would lead to success of the toll facilities.

Weaknesses

- Estimated construction and operational costs for S.R. 11 and EOM are quite expensive.
- As with most toll road start-ups, a financing plan with relatively low obligations in early years of operations (e.g., principal repayments starting a few years after opening) would be needed to be viable.

Investor Market assessment

- The analysis reveals that S.R. 11 and EOM POE would require at least \$400 million in external funds to pay for all construction costs. This level of funding is however insufficient to cover the EOM POE O&M costs until the facility has been operating for 30 years.
- Integration with the Mexican toll road would lower the total cost burden somewhat, but not enough to pay for the annual O&M shortfall at the EOM POE.

Conclusions

- S.R. 11 and the EOM POE meet the criteria for a successful toll road project that are:⁷
 - a. The new EOM POE and toll road relieve congestion at the existing SY and OM POEs in an already developed border region;
 - b. It provides a quicker and more convenient connection between existing and planned pockets of residential and commercial development; and
 - c. The time savings from taking the toll road more than compensates the users for paying the toll.
- While S.R. 11 and EOM may generate substantial traffic and toll revenues, public contributions would be necessary to generate private investment interest.

Next Steps

Given the need for public participation, some additional analyses may be needed. These include an assessment of economic benefits and distributional welfare effects on the region (i.e. an assessment of whether the rate of return from the social perspective warrants the local public investments in the project). In addition, conducting a due diligence and risk-based assessment of estimated construction and O&M costs of S.R. 11 and the EOM POE may identify mitigation strategies for reducing risks. Also, a more complete financial analysis could broaden the scope of study to explore the potential of non-toll revenues (e.g. development fees) to reduce grant needs and to explore mechanisms for alleviating short falls in O&M costs.

⁷ Source: William Streeter and Katherine McManus, "Challenges of Start-Up Toll Roads," *Project Finance Special Report*, Fitch, June 9, 1999

APPENDIX 1: SUPPLEMENTARY DATA TABLES AND GRAPHS

A. U.S. Real GDP and San Diego Real GRP

Data Source: San Diego Chamber of Commerce; Bureau of Economic Analysis, U.S. Department of Commerce; Congressional Budget Office (CBO) Economic Projections for 2006 to 2016.

Historical Data

Year	Change in US GDP	Change in SD GRP	Difference (Change in SD GRP – Change in US GDP)
1990	1.9%	1.4%	-0.5%
1991	-0.2%	-0.5%	-0.3%
1992	3.3%	-1.1%	-4.4%
1993	2.7%	-0.8%	-3.5%
1994	4.0%	1.5%	-2.5%
1995	2.5%	2.6%	0.1%
1996	3.7%	4.1%	0.4%
1997	4.5%	6.5%	2.0%
1998	4.2%	8.0%	3.8%
1999	4.5%	9.4%	4.9%
2000	3.7%	7.0%	3.3%
2001	0.8%	1.4%	0.6%
2002	1.6%	4.0%	2.4%
2003	2.5%	3.4%	0.9%
2004	3.9%	5.7%	1.8%
2005	3.2%	4.7%	1.5%
Average difference 2001-2005			1.4%

CBO's Year By Year Projections for Fiscal Years 2006-2016		CBO Projections + 1.4%
Year	Projections	San Diego GRP Projections
2006	3.4%	4.8%
2007	3.2%	4.6%
2008	3.1%	4.5%
2009	3.1%	4.5%
2010	3.1%	4.5%
2011	2.8%	4.2%
2012	2.7%	4.1%
2013	2.7%	4.1%
2014	2.6%	4.0%
2015	2.6%	4.0%
2016	2.5%	3.9%

B. Assumptions about Existing POE Operations and Use

Data Source: U.S. Customs and Border Protection (CBP) and SANDAG.

This chart indicates the numbers of lanes and hours of operation for the existing and proposed point of entry at EOM.

Type of Lane	Existing POEs		New POE
	OM	SY	EOM
Total Autos	8	24	8
SENTRI able	1	4	1
Trucks	8	NA	8
FAST	1	NA	1
Hours of operation			
Autos	24 hours / 7 days	24 hours / 7 days	same as OM
SENTRI able	5:00 AM-8:00 PM / Weekdays	4:00 AM-12:00 AM / 7 days	
Trucks	6:00 AM-8:00 PM / Weekdays 9:00 AM-5:00 PM / Weekends		

C. Assumptions about Peak Periods

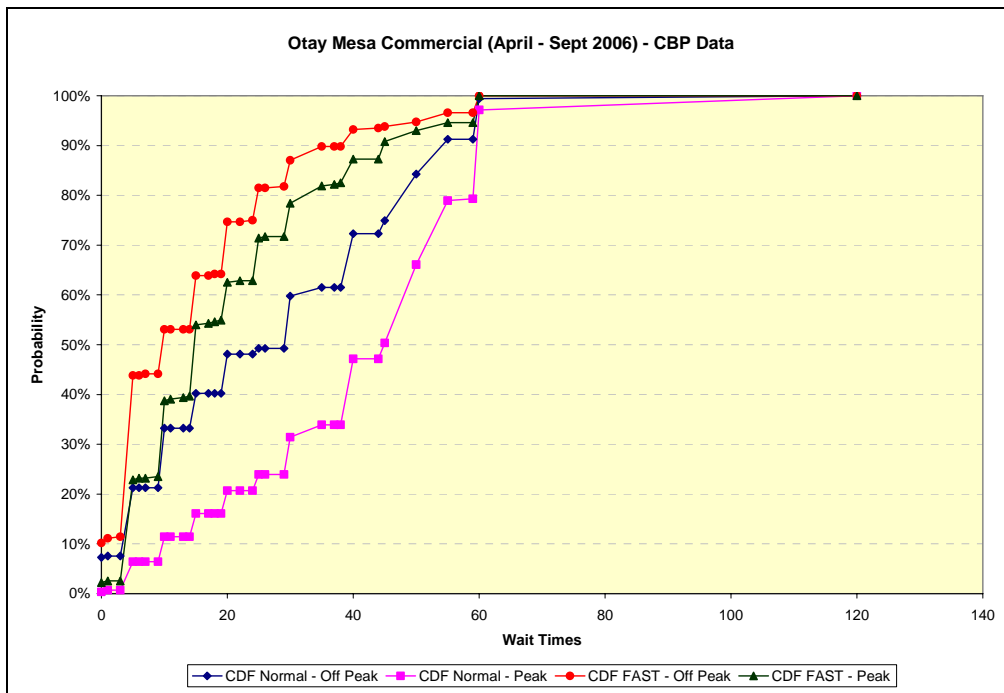
This chart provides results of an assessment of peak periods on weekdays and weekends for all existing POE based on the numbers of lanes open and the waiting time (WT). Hourly CBP data for 6 months (April – September, 2006) were used in determining peak periods.

	Conditions		Peak Times	Total Hours
	# of Lanes Open	WT		
OM - Commercial				
Weekday:	75% of time > 7 lanes open	> 25 minutes	9-11am; 2-5pm	7
Weekend:	50% of time > 5 lanes open	> 25 minutes	8-10am	3
OM - Passenger				
Weekday:	80% of time > 6 lanes open	>40 minutes	6-8am; 1-3pm	6
Weekend:	80% of time > 6 lanes open	>40 minutes	9-10am; 6-10pm	7
SY - Passenger				
Weekday:	80% of time >18 lanes open	> 40 minutes	5-7am; 12-4pm	8
Weekend:	80% of time >18 lanes open	> 40 minutes	8-11am; 6-9pm	4

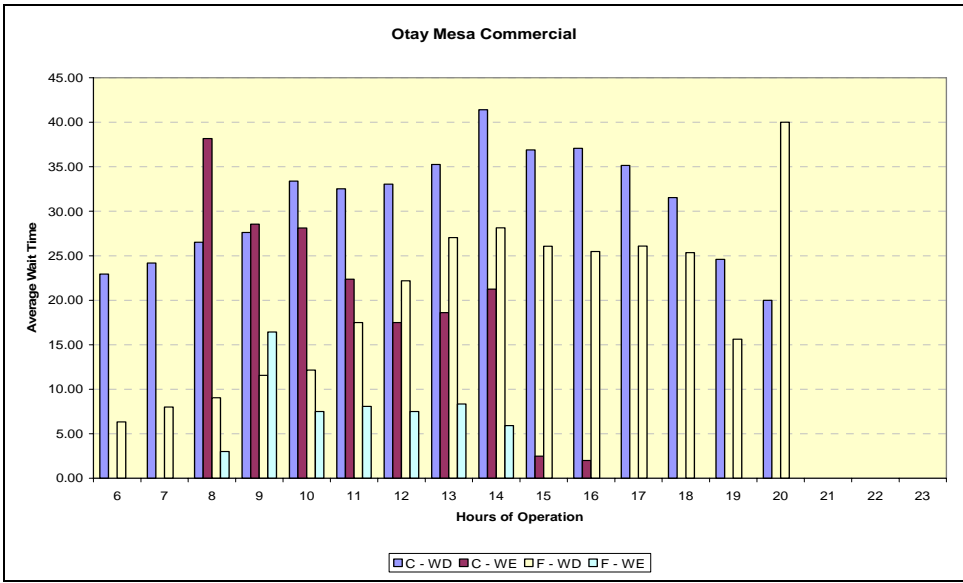
D. Waiting times at OM: Commercial Vehicles

Data Source: U.S. Customs and Border Protection; provided by SANDAG database.

This graph represents the probability of wait times for normal and FAST lanes of truck traffic for the past six months at OM.



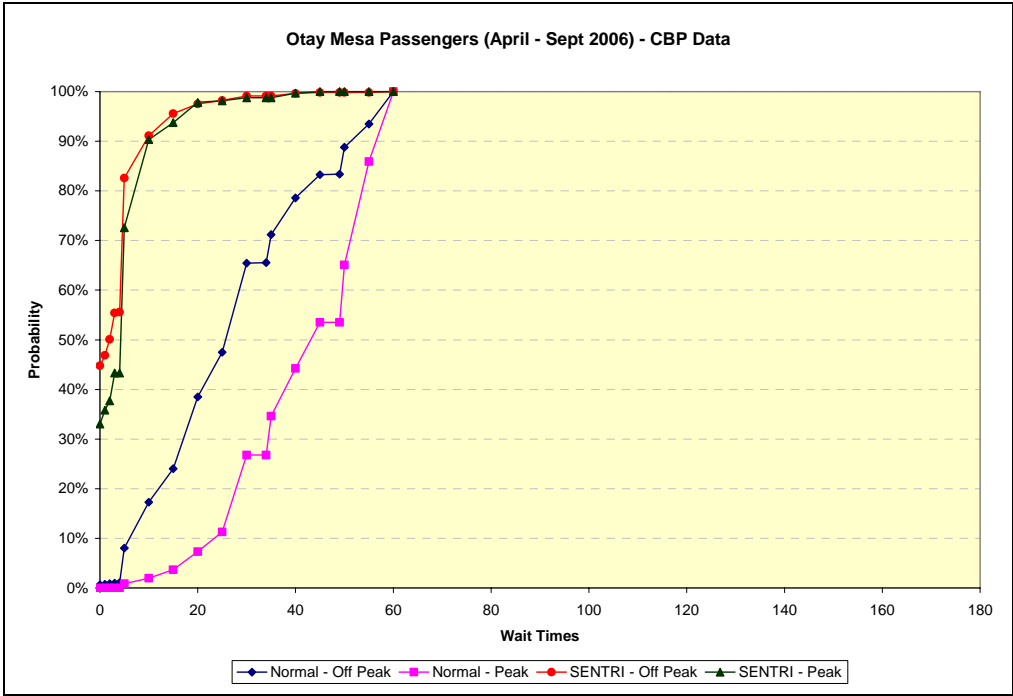
This graph represents the average waiting times by type of lane (C=Normal lane, F=FAST lane) and by weekday/weekend (WD=Weekday, WE=Weekend).



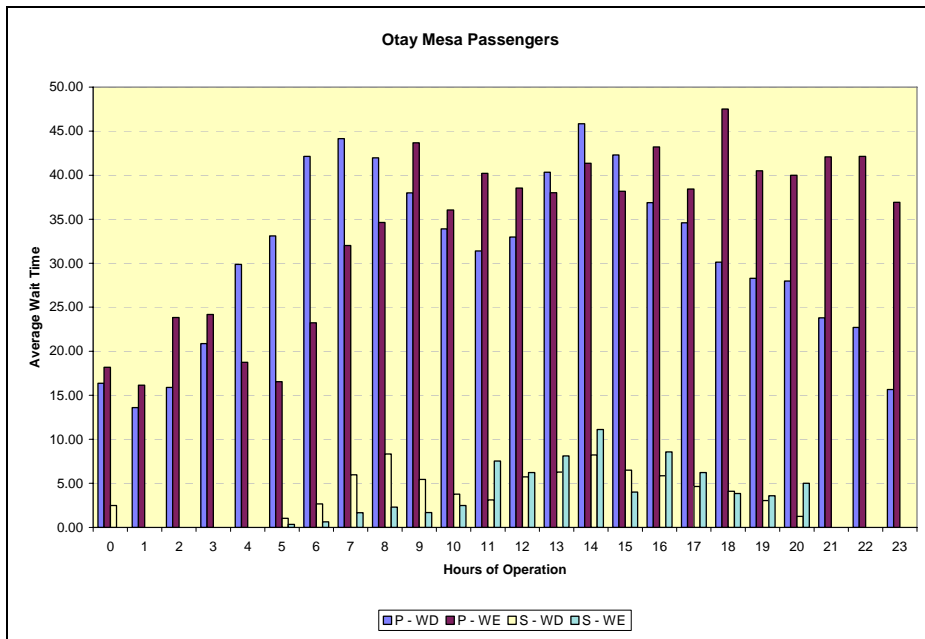
E. Waiting times at OM: Passenger Vehicles

Data Source: U.S. Customs and Border Protection; provided by SANDAG database.

This graph represents the probability of wait times for normal and SENTRI lanes of passenger vehicle traffic for the past six months at OM.



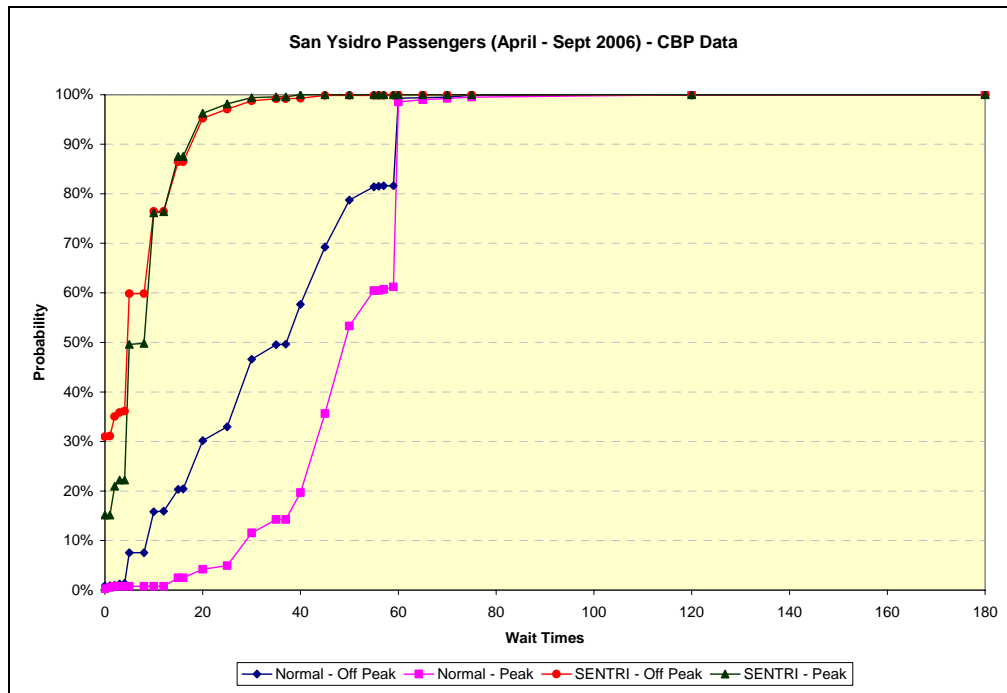
This graph represents the average waiting times by type of lane (P=Normal lane, S=SENTRI lane) and by weekday/weekend (WD=Weekday, WE=Weekend).



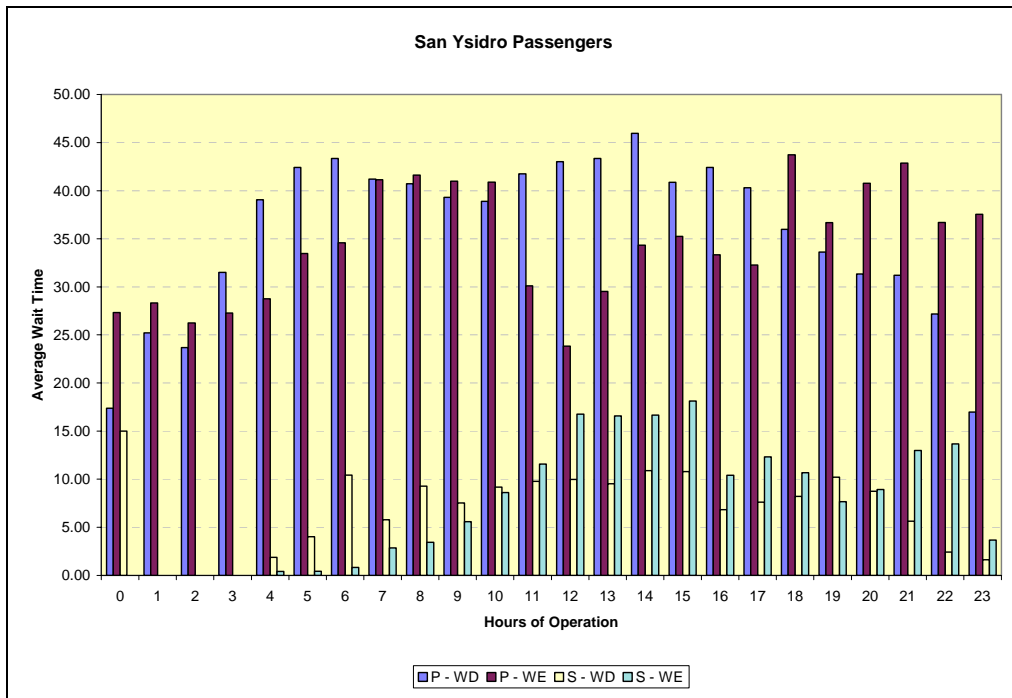
F. Waiting times at SY: Passenger Vehicles

Data Source: U.S. Customs and Border Protection; provided by SANDAG database.

This graph represents the probability of wait times for normal and SENTRI lanes of passenger vehicle traffic for the past six months at SY.



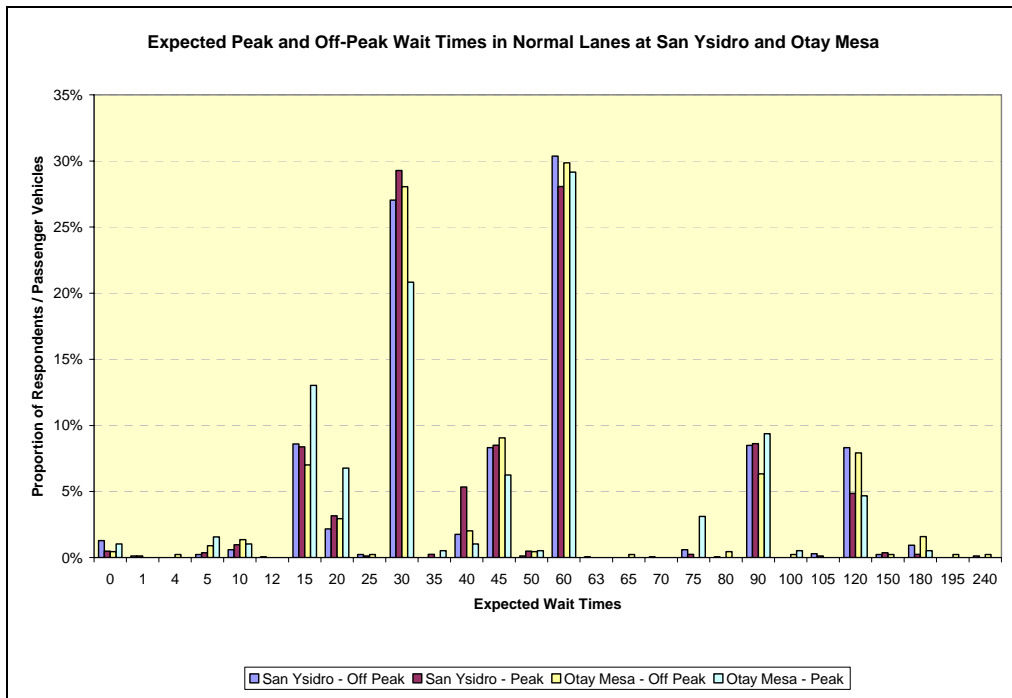
This graph represents the average waiting times by type of lane (P=Normal lane, S=SENTRI lane) and by weekday/weekend (WD=Weekday, WE=Weekend).



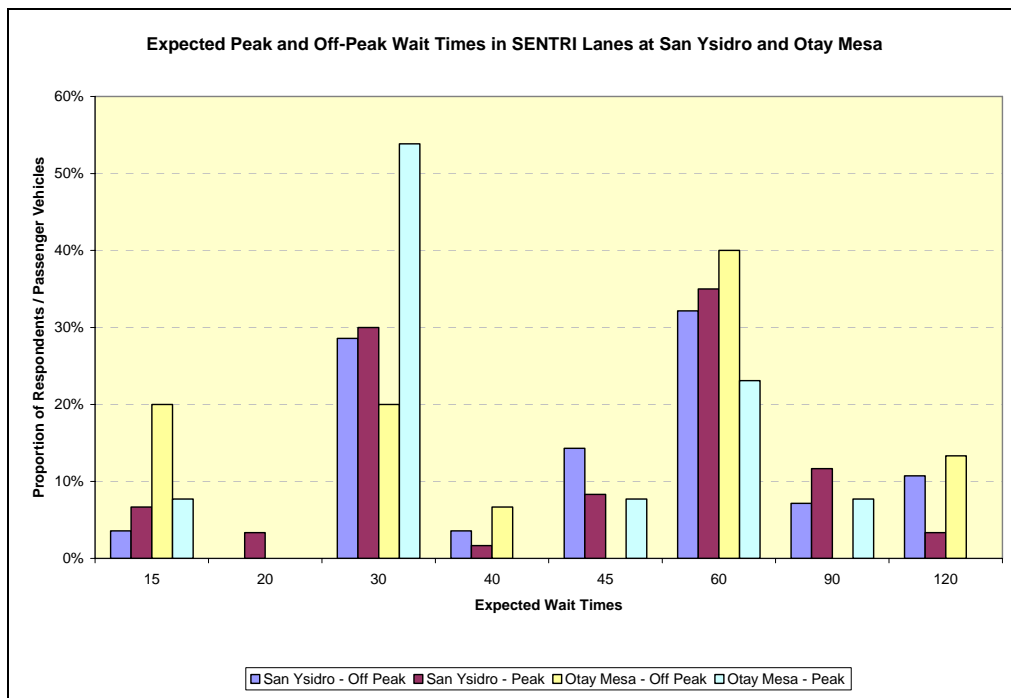
G. Expected Waiting times at SY and OM (Survey Data)

Data Source: HDR|HLB Decision Economics Inc. (2005). Surveys were conducted of random passenger vehicles waiting to cross the border. Their actual waiting time is unknown.

This graph represents expected waiting times for peak and off-peak periods in normal lanes.



This graph represents expected waiting times for peak and off-peak periods in SENTRI lanes.



H. Summary of Border Crossing Surveys

This table shows the percent of travelers originated from Tijuana colonias grouped by delegación. POE preference was estimated by proximity and ease of travel. Studies were conducted at different times and sampling structures. This may explain the difference in POE preference. For example, HDR|HLB found 10% of travelers living in delegaciones near to proposed EOM, but Parsons found none.

Likely POE Preference	Delegación	Percent of Survey Respondents by Source of Data		
		HDR HLB (2005)	Parsons (2000)	Combined
EOM	Centenario	5%	0%	3%
	Cerro Colorado	5%	0%	3%
EOM Total		10%	0%	7%
OM	La Presa	23%	20%	22%
	Mesa de Otay	16%	31%	21%
	Sanchez Taboada	2%	0%	1%
OM Total		40%	51%	44%
SY	Centro	17%	26%	20%
	La Mesa	16%	12%	15%
	Playas de Tijuana	5%	2%	4%
	San Antonio de los Buenos	11%	9%	11%
SY Total		50%	49%	50%
Grand Total		100%	100%	100%

APPENDIX 2: RAP PRIMER

Economic forecasts traditionally take the form of a single “expected outcome” supplemented with alternative scenarios. The limitation of a forecast with a single expected outcome is clear -- while it may provide the single best statistical estimate, it offers no information about the range of other possible outcomes and their associated probabilities. The problem becomes acute when uncertainty surrounding the forecast’s underlying assumptions is material.

A common approach is to create “high case” and “low case” scenarios to bracket the central estimate. This scenario approach can exacerbate the problem of dealing with risk because it gives no indication of likelihood associated with the alternative outcomes. The commonly reported “high case” may assume that most underlying assumptions deviate in the same direction from their expected value, and likewise for the “low case.” In reality, the likelihood that all underlying factors shift in the same direction simultaneously is just as remote as that of everything turning out as expected.

Another common approach to providing added perspective on reality is “sensitivity analysis.” Key forecast assumptions are varied one at a time in order to assess their relative impact on the expected outcome. A problem here is that the assumptions are often varied by arbitrary amounts. A more serious concern with this approach is that, in the real world, assumptions do not veer from actual outcomes one at a time. It is the impact of simultaneous differences between assumptions and actual outcomes that is needed to provide a realistic perspective on the riskiness of a forecast.

Risk Analysis provides a way around the problems outlined above. It helps avoid the lack of perspective in “high” and “low” cases by measuring the probability or “odds” that an outcome will actually materialize. This is accomplished by attaching ranges (probability distributions) to the forecasts of each input variable. The approach allows all inputs to be varied simultaneously within their distributions, thus avoiding the problems inherent in conventional sensitivity analysis. The approach also recognizes interrelationships between variables and their associated probability distributions.

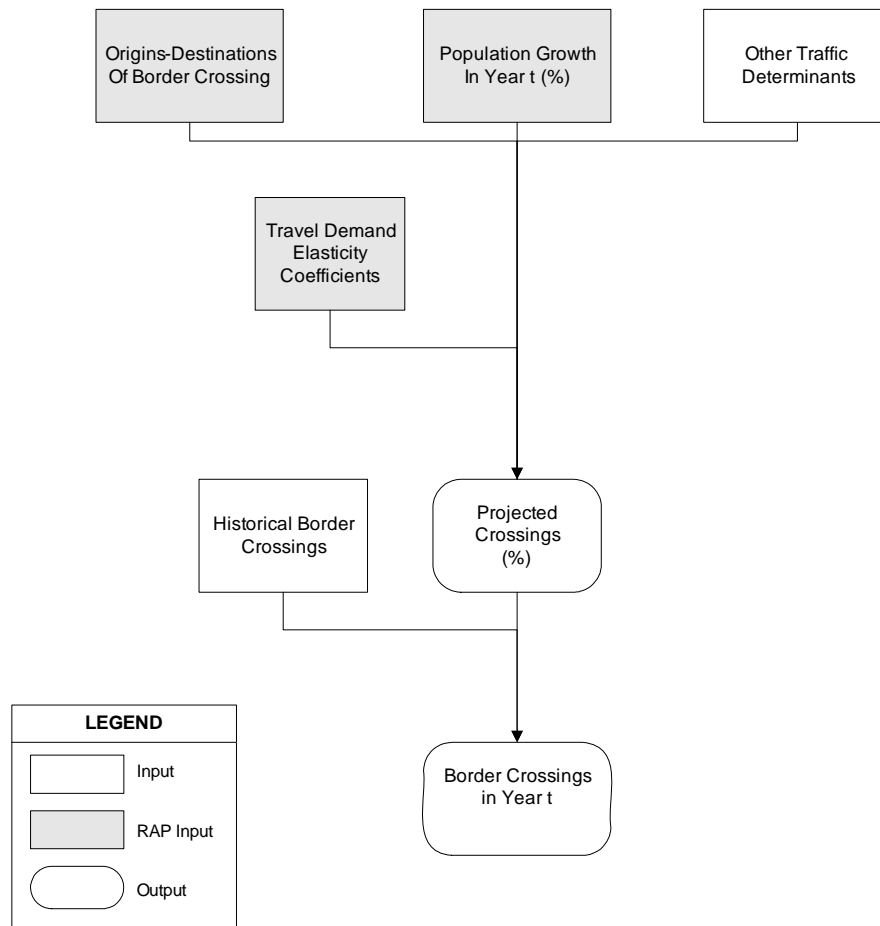
The Risk Analysis Process involves four steps:

- Step 1. Define the structure and logic of the forecasting problem;
- Step 2. Assign estimates and ranges (probability distributions) to each variable and forecasting coefficient in the forecasting structure and logic;
- Step 3. Engage experts and stakeholders in assessment of model and assumption risks (the “RAP Session”); and
- Step 4. Issue forecast risk analysis.

Step 1. Define Structure and Logic of the Forecasting Problem

A “structure and logic model” depicts the variables and cause and effect relationships that underpin the forecasting problem at-hand (Figure A-1). Although the structure and logic model is written down mathematically to facilitate analysis, it is also depicted graphically in order to permit stakeholder scrutiny and modification in Step 3 of the process.

Figure A-1: Example of a Structure and Logic Model



Step 2. Assign Central Estimates and Conduct Probability Analysis

Each variable is assigned a central estimate and a range (a probability distribution) to represent the degree of uncertainty. Special data sheets are used (see Figure A-2) to record input from panelists. The first column gives an initial median while the second and third columns define an uncertainty range representing an 80 percent confidence interval. This is the range within which there exists an 80 probability finding the actual outcome. The greater the uncertainty associated with a forecast variable the wider the range.

Figure A-2: Data Sheet for Population Growth, an Illustration

Year	Median	10% Lower Limit	10% Higher Limit
2005-2010	2.5	1.7	3.4
2011-2020	2.0	1.5	4.1
2021 and after	1.8	1.0	4.7

Probability ranges are established on the basis of both statistical analysis and subjective probability. Probability ranges need not be normal or symmetrical -- that is, there is no need to assume the bell shaped normal probability curve. The bell curve assumes an equal likelihood of being too low and being too high in forecasting a particular value. It might well be, for example, that if a projected growth rate deviates from expectations; circumstances are such that it is more likely to be higher than the median expected outcome than lower.

The RAP computer program transforms the ranges as depicted above into formal probability distributions (or “probability density functions”). This liberates the non-statistician from the need to appreciate the abstract statistical depiction of probability and thus enables stakeholders to understand and participate in the process whether or not they possess statistical training.

From where do the central estimates and probability ranges for each assumption in the forecasting structure and logic framework come? There are two sources. The first is an historical analysis of statistical uncertainty in all variables and an error analysis of the forecasting “coefficients.” “Coefficients” are numbers that represent the measured impact of one variable (say, income) on another (such as retail sales). While these coefficients can only be known with uncertainty, statistical methods help uncover the magnitude of such error (using diagnostic statistics such as “standard deviation,” “standard error,” “confidence intervals” and so on).

The uncertainty analysis outlined above is known in the textbooks as “frequentist” probability. The second line of uncertainty analysis employed in risk analysis is called “subjective probability” (also called “Bayesian” statistics, for the mathematician Bayes who developed it). Whereas a frequentist probability represents the measured frequency with which different outcomes occur (i.e., the number of heads and tails after thousands of tosses) the Bayesian probability of an event occurring is the degree of belief held by an informed person or group that it will occur. Obtaining subjective probabilities is the subject of Step 3.

Step 3. Conduct Expert Evaluation: The RAP Session

Step 3 involves the formation of an expert panel and the use of facilitation techniques to elicit, from the panel, risk and probability beliefs about:

1. The structure of the forecasting framework; and
2. Uncertainty attaching to each variable and forecasting coefficient within the framework.

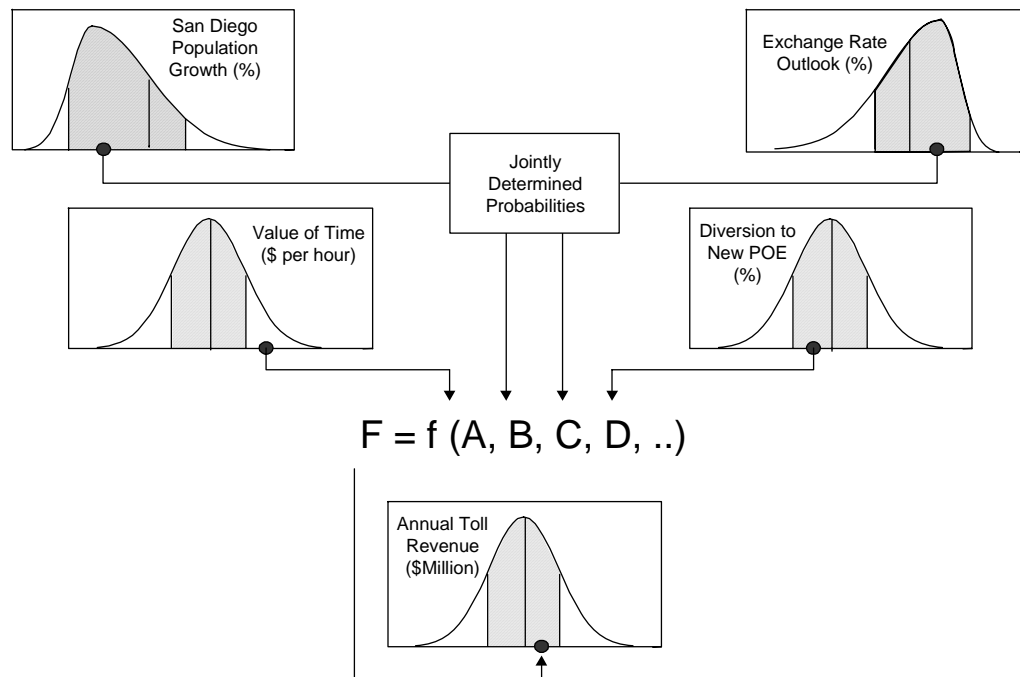
In (1), experts are invited to add variables and hypothesized causal relationships that may be material, yet missing from the model. In (2), panelists are engaged in a discursive protocol during which the frequentist-based central estimates and ranges, provided to panelists in advance of the session, are

modified according to subjective expert beliefs. This process is aided with an interactive “groupware” computer tool that permits the visualization of probability ranges under alternative belief systems.

Step 4. Issue Risk Analysis

The final probability distributions are formulated by the risk analyst (HDR|HLB) and represent a combination of “frequentist” and subjective probability information drawn from Step 3. These are combined using a simulation technique (Monte Carlo analysis) that allows each variable and forecasting coefficient to vary simultaneously according to its associated probability distribution (see Figure A-3).

Figure A-3: Combining Probability Distributions



The end result is a central forecast, together with estimates of the probability of achieving alternative outcomes given uncertainties in underlying variables and coefficients (see Figures A-4 and A-5).

Figure A-4: Risk Analysis of Annual Toll Revenue, an Illustration

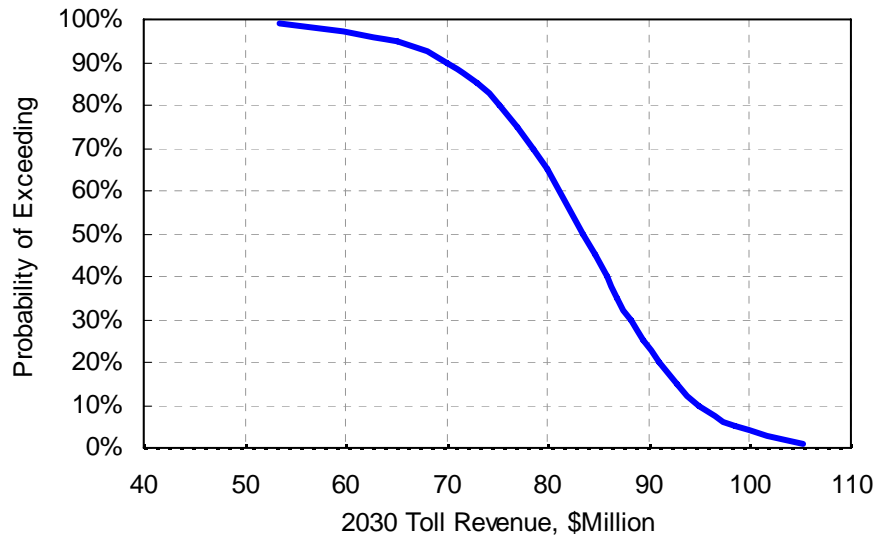


Figure A-5: Risk Analysis of Annual Toll Revenue, an Illustration

Projected Toll Revenue (In Millions of Dollars)	Probability of Exceeding Value Shown at Left
105.3	0.01
98.4	0.05
94.9	0.10
91.0	0.20
88.2	0.30
85.8	0.40
83.5	0.50
81.2	0.60
78.5	0.70
75.2	0.80
71.3	0.90
65.0	0.95
53.5	0.99
82.9	Mean Expected Outcome

APPENDIX 3: PANELIST INPUTS

On November 2, 2006, a risk analysis workshop was held in San Diego, to discuss the forecasting process and gather inputs both on the forecasting models as well as on the key variables driving the forecasts. The panel consisted of local professionals representing both the public and the private sectors including Federal Highway Administration (FHWA), California Department of Transportation (Caltrans), and San Diego Association of Governments (SANDAG).

A summary of panelist inputs for the following variables is provided on the next pages:

- Population growth in primary market area, %
- Population growth in San Diego County, %
- Population growth in Tijuana, %
- Population growth in Baja California, %
- Nominal exchange rate outlook, %
- San Diego Real Gross Regional Product growth, %
- Value of time for passenger vehicles and trucks (\$ per hour, and % growth in real terms)
- Waiting Times for passenger vehicles and trucks
- Percentage of traffic in peak period
- S.R. 11 traffic ramp-up: opening year level and years to steady state
- Impact of Tijuana-Tecate Toll Road for passenger vehicles and trucks
- Potential of pedestrian crossings at EOM
- Other risks to border crossings

Average of Panelist Inputs

Primary Market Area Population Growth

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	2.0%	1.8%	2.1%	3	3	3
2010 - 2020	1.3%	1.4%	1.5%	3	2	2
2020 - 2030	0.9%	1.0%	1.2%	3	2	2
After 2030	0.9%	1.0%	1.2%	3	2	2

San Diego County Population Growth

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	1.15%	1.03%	1.15%	1	1	1
2010 - 2020	0.95%	0.85%	1.15%	1	1	1
2020 - 2030	0.95%	0.75%	1.25%	1	1	1
After 2030	0.95%	0.75%	1.25%	1	1	1

Municipality of Tijuana Population Growth

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	2.70%	2.30%	4.10%	0	0	0
2010 - 2020	2.20%	2.10%	2.30%	0	0	0
2020 - 2030	1.65%	1.50%	1.80%	0	0	0
After 2030	1.65%	1.50%	1.80%	0	0	0

Baja California Population Growth

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	2.55%	2.45%	2.65%	1	1	1
2010 - 2020	2.10%	1.90%	2.30%	1	1	1
2020 - 2030	1.60%	1.40%	1.80%	1	1	1
After 2030	1.60%	1.40%	1.80%	1	1	1

Nominal Exchange Rate Outlook

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	2%	0.0%	4.0%	1	0	0
2010 - 2020	1%	-3.0%	3.0%	1	0	0
2020 - 2030	1%	-3.0%	3.0%	1	0	0
After 2030	1%	-3.0%	3.0%	1	0	0

San Diego Real Gross Regional Product Growth

(Annual Percent Change)

Year	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
2005 - 2010	3.7%	3.70%	3.90%	2	1	1
2010 - 2020	3.4%	3.10%	3.50%	2	1	1
2020 - 2030	3.4%	3.10%	3.50%	2	1	1
After 2030	3.4%	3.10%	3.50%	2	1	1

Value of Time for Passenger Vehicles with home in the US, in Base Year

Purpose of Trip	Median (\$/hr)	Lower 10% (\$/hr)	Upper 10% (\$/hr)	Number of Observations		
				Median	Lower 10%	Upper 10%
Commuting	12.0	8.0	16.0	0	0	0
Non Work	6.0	4.0	8.0	0	0	0
Airport	20.0	12.0	28.0	0	0	0

Value of Time for Passenger Vehicles with home in the Mexico, in Base Year

Purpose of Trip	Median (\$/hr)	Lower 10% (\$/hr)	Upper 10% (\$/hr)	Number of Observations		
				Median	Lower 10%	Upper 10%
Commuting	6.7	4.4	8.9	0	0	0
Non Work	3.4	2.2	4.5	0	0	0
Airport	11.25	6.7	15.7	0	0	0

Value of Time for Trucks, in Base Year

Country of Origin	Median ^(a) (\$/hr)	Lower 10% (\$/hr)	Upper 10% (\$/hr)	Number of Observations		
				Median	Lower 10%	Upper 10%
US	45	30	75	1	1	1
Mexico	45.0	30.0	60.0	0	0	0

Real Annual Growth of the Value of Time for Passenger Vehicles and Trucks

	Variable	Median	Lower 10%	Upper 10%	Number of Observations		
					Median	Lower 10%	Upper 10%
Passenger Vehicles	US	1.0%	0.5%	1.25%	0	0	0
	Mexico	1.0%	0.5%	1.25%	0	0	0
Trucks	US	1.75%	1.5%	2.0%	1	1	1
	Mexico	1.75%	1.5%	2.0%	1	1	1

Waiting Times for Passenger Vehicles at OM (minutes)

		Median	Lower 10%	Upper 10%	Number of Observations		
					Median	Lower 10%	Upper 10%
Normal Lanes	Peak	45	25	60	2	2	2
	Off Peak	30	10	55	2	2	2
SENTRI Lanes	Peak	12.5	2	40	2	2	2
	Off Peak	6	1	12.5	2	2	2

Waiting Times for Passenger Vehicles at SY (minutes)

		Median	Lower 10%	Upper 10%	Number of Observations		
					Median	Lower 10%	Upper 10%
Normal Lanes	Peak	75	40	120	1	1	1
	Off Peak	40	10	60	1	1	1
SENTRI Lanes	Peak	20	10	40	1	1	1
	Off Peak	5	1	20	1	1	1

Waiting Times for Trucks at OM (minutes)

		Median	Lower 10%	Upper 10%	Number of Observations		
					Median	Lower 10%	Upper 10%
Normal Lanes	Peak	120	90	200	1	1	1
	Off Peak	60	50	120	1	1	1
SENTRI Lanes	Peak	15	5	55	0	0	0
	Off Peak	10	1	35	0	0	0

S.R. 11 and EOM Traffic Ramp-up

Variable	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
Opening Year Traffic Level	54%	37%	56%	5	4	4
Ramp-up Period (years to steady state)	2	0.9	2.3	4	3	3

Percentage of Traffic in Peak Period

% Traffic in Peak Period	OM			SY			Number of Observations		
	Median	Lower 10%	Upper 10%	Median	Lower 10%	Upper 10%	Median	Lower 10%	Upper 10%
Passenger Vehicles	60%	45%	75%	60%	45%	75%	1	1	1
Trucks	60%	45%	75%	NA			1	1	1

Impact of Integration of Tijuana-Tecate Toll Road to New POE

Variable	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
Opening Year	2015	2014	2025	2	2	2
Impact on S.R. 11/EOM Vehicle Use	15%	10%	20%	2	2	2

Potential of Pedestrian Crossing at EOM

Variable	Median	Lower 10%	Upper 10%	Number of Observations		
				Median	Lower 10%	Upper 10%
Opening Year	2020	2015	2025	0	0	0
Impact on S.R. 11/EOM Vehicle Use	-3%	-0.5%	-5%	1	1	1

Additional Uncertainty in Border Crossing at EOM

Potential Risks	Probability of Occurring	% Impact on EOM Border Crossings			Number of Observations			
		Median	Lower 10%	Upper 10%	Probability of Occurring	Median	Lower 10%	Upper 10%
Opening of Punta Colonet	27.4%	10%	5%	20%	5	1	1	1
Expanded Mass Transit at SY and/or OM	65%	5%	3%	2%	4	1	1	1
Increased Border Security and/or Visa Limits	75%	5%	2%	7%	3	1	1	1
Compliance with NAFTA Rules of Mexican Based Trucks	60%	5%	3%	7%	4	1	1	1

APPENDIX 4: ASSESSMENT OF S.R. 11 AS A TOLL ROAD IN LIGHT OF STANDARD RATING CRITERIA

The chart below details factors of rating criteria deemed standard by Fitch and JP Morgan. The impact of these factors and the assessment of the factor to S.R. 11 and the EOM POE are outlined by HDR|HLB.

Project Attributes	Factors	Impact	Assessment
Demographic and Socio-Economic Projections	To what extent are population and employment expected to grow in the immediate vicinity of the project? In the project corridor? In the region?	High	Population growth in the immediate vicinity of S.R. 11 is projected to grow approximately 1% annually on the US side and 1.5% in Mexico through 2030.
	How do population and employment growth forecasts in the project corridor compare to similar corridors in the region? In the state?	High	The rates of growth in Tijuana and the primary market area in San Diego are higher than in other parts of their states, respectively.
	Are population and employment growth forecasts deemed robust? Or are they likely to vary with (minor) fluctuations in the local, regional and national economy?	Medium	<ul style="list-style-type: none"> Population growth has a large impact on estimating transaction forecasts. Population projections are generally robust. Mexican population projections in the model are conservative compared to responses from some of the RAP panelists. Annual growth in San Diego gross regional product is likely to vary more than population. Growth can be flat for extended periods – depressing demand for truck crossings. Future changes in the nominal exchange rate are largely uncertain. RAP panelists tended to believe that the dollar would continue to get stronger. Given past history, the peso is in a relatively stable period. The effect of past crises tends to be relatively short-lived. The effect of exchange rates is larger on trucks than passenger vehicles.
	Are existing projections supported by strong historical evidence and sound forecasting techniques?	High	<ul style="list-style-type: none"> Population and an indicator of the regional economy (San Diego GRP) are commonly used in traffic growth econometric models. Exchange rates have been determined as an important indicator of cross border traffic for trucks and passenger vehicles. A fairly wide range of potential values captures potential for large changes.
Traffic Growth Forecast	To what extent traffic is expected to grow in the project corridor?	High	The traffic in the project area is expected to grow at an average annual rate of 2% over the next thirty years.
	Does the projected traffic growth rely on a few well-established and predictable factors? Or is it contingent upon the realization of (uncertain) new developments and structural changes?	High	<ul style="list-style-type: none"> Population and exchange rate data to estimate and forecast passenger vehicle crossing growth. Exchange rates and San Diego GRP are used to estimate and forecast truck crossing growth.
Toll Road and POE Usage	Will the toll road and POE offer access to multiple origins and destinations?	Medium	<ul style="list-style-type: none"> S.R. 11 connects with the junction of S.R. 905 and S.R. 125, both of which provide access to San Diego, a common final destination for cross border travelers. Completion of the Tijuana-Rosarito corridor and its connection to EOM will improve access in Mexico to Tijuana, Ensenada, Rosarito, and Tecate.
	Will traffic on the toll road and POE be dominated by single journey purpose (such as commuting or airport traffic)?	Medium	Cross border surveys at existing facilities suggest that approximately 20% of passenger vehicles are on a multiple purpose trip.

Project Attributes	Factors	Impact	Assessment
	Will the toll road and POE serve a high-income time sensitive market?	High	Yes. The congestion pricing-based toll rates are likely to appeal to a relatively specific passenger vehicle market that has a high value of time. This especially includes commuters. Trucks with high value cargo are likely to take advantage of the toll road more quickly than passenger vehicles because of the significant reduction in waiting times and high value of time.
	Is travel demand in the toll road corridor relatively flat (by time-of-day, day-of-week, season etc.)? Or is it highly seasonal / peaky?	Medium	Peak travel periods can be observed for both types of lanes and both types of vehicle on both weekend and weekday by examining CBP waiting times. Seasonally, higher waiting times are often observed during the holidays.
	Will the toll road and POE offer clear time and operating cost savings to trucks and other commercial vehicles?	High	Yes. EOM and S.R.11 will be priced to maintain a relatively constant level of service in terms of a maximum wait time.
Facility Alignment and Access Configuration	Will the toll road and POE be located within a highly congested corridor?	High	Yes. The San Diego-Tijuana region is the largest urban border area along the entire US-Mexican border. Modifications at existing POEs have limited options for expanding capacity.
	Are there only a few competing roads and POEs?	High	SY and OM are the only reasonable border crossing alternatives for the coastal populations in San Diego and Baja California. Trucks can only cross at OM.
	Will the toll road and POE compete with other modes (such as public transportation for commuters, or rail for commercial vehicles?)	Low	Pedestrian crossing with a bus rapid transit system has been considered for EOM. If so, pedestrians would pay a nominal toll. The impact on revenue is estimated to be minimal. A proposed railway from a proposed port at Punta Colonet could divert freight traffic and manufacturing from the EOM market area. The impact on revenue is estimated to be small.
	Will the proposed toll road and POE provide a clear competitive advantage (in terms of potential travel time savings, reliability, safety, etc.) over existing and planned free roads?	High	Significant travel time savings and travel time reliability in using EOM will more than make up for the additional driving distance required for travelers who would find OM and SY more convenient. On the other hand, improvements and capacity expansion at existing facilities would lower the waiting time advantage at EOM.
	Is the toll road and POE stand alone facilities or do they rely on other proposed highway improvements? Will existing and planned feeder roads offer an acceptable level of service?	Medium	No. S.R. 11 and EOM are necessarily joint projects. A Tijuana bypass road and connection to a Tijuana-Tecate toll road offer additional attractiveness to the project.
	Will the toll road offer appropriate access points to residential and/or commercial cluster?	High	S.R. 11 would have two local interchanges prior to connecting with S.R. 905 and S.R. 125, both of which lead to important economic centers in San Diego County and beyond.
	Will it be easy to expand the toll road and POE in the future (to maintain the level of service in case of excess volume growth)?	Low	EOM would be designed with an expandable capacity that could triple its initial size.
Tolling Culture (Uncertainty over toll acceptance)	Are there other toll roads in the vicinity of the project? Have they been well accepted and successful?	Medium	<ul style="list-style-type: none"> S.R. 11 would join the S.R. 125 toll road (currently under construction), a north-south inland corridor in San Diego County. Two toll roads in Mexico would pass within the vicinity of the EOM: the Tijuana-Ensenada toll road and the Tijuana-Tecate toll road. There is a strong likelihood that these roads could be directly connected to EOM.
	How likely is California to pass a "free alternative legislation?"	Medium	In the short-term, there is no pending legislation in the State of California or efforts by the current Governor. The long-run picture is uncertain.

Sources: Risk factors from Standard and Poor's Infrastructure Finance, "Traffic Risk in Start-Up Toll Facilities," September 2002 and updates; Fitch Research, "Guidelines for Rating Start-Up Toll Roads," July 1997; JP Morgan, "Start-Up Toll Roads: Separating Winners from Losers," May 2002; HDR Research.

APPENDIX 5: READING DSCR PROBABILITY TABLES

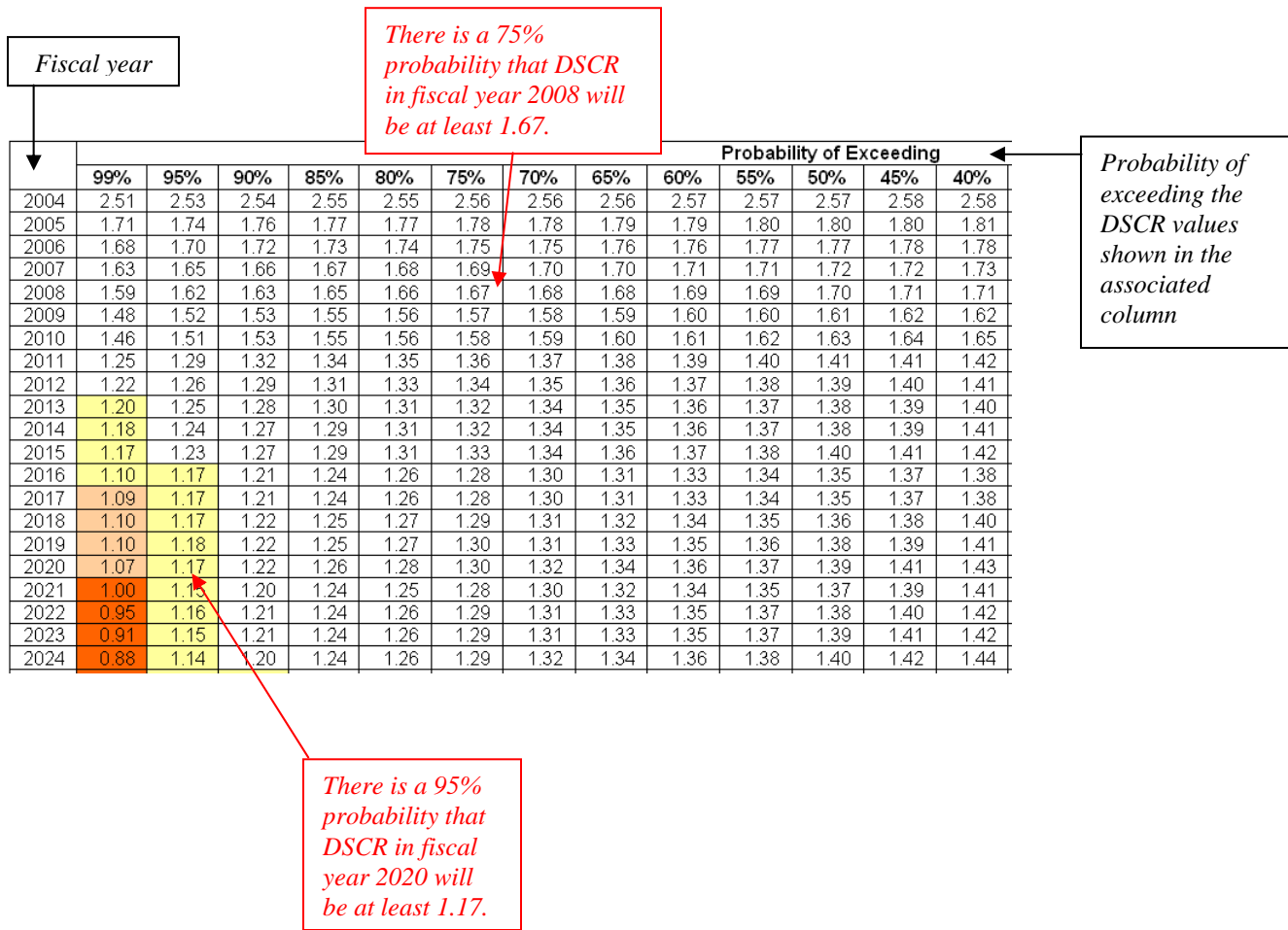
This appendix explains, through an example, how the Debt Service Coverage Ratio (DSCR) probability tables presented in this report should be interpreted.

The tables provide, for each fiscal year, a decumulative probability distribution for the simulated DSCR. The distribution is summarized through twenty-one percentiles or probability levels, ranging from left to right, from 99% (99% probability of exceeding) to 1% (1% of exceeding).

In the example below, Monte Carlo simulation results indicate that:

- In fiscal year 2008, there is a 75% chance that the DSCR will exceed 1.67 (upper text box); from the neighboring cells (on the same row), it appears that there is less than a 1% percent chance that the DSCR will fall below 1.59 in that year.
- In fiscal year 2020 (lower text box), the DSCR will exceed 1.17 with a 95% probability. In other words, there is less than 5% chance that the DSCR will be less than 1.17.

Figure 17: Reading DSCR Probability Tables



APPENDIX 6: SAMPLE OF EXISTING TOLL BORDER CROSSINGS

The chart below summarizes other existing toll bridges that connect POEs.

	Toll Rates	
	PV	Commercial
U.S. - Mexico		
Eagle Pass, TX-Piedras Negras	\$2.00	\$7.00/2 axle; \$3.00 per additional axle
Laredo, TX-Nuevo Laredo Bridge System	\$3.00	\$2.75 per axle
Brownsville, TX-Matamoros	\$2.00	\$2.00/ 2 axle; \$2 per additional axle
McAllen, TX-Hidalgo	\$2.00	\$4.00/ 2 axle; \$2 per additional axle
Pharr, TX to Reynosa, MX	\$2.00	\$5.00/ 2 axle; \$2 per additional axle
U.S. - Canada		
Ambassador Bridge	\$3.25	\$3.00/ 2 axle; \$2.25 per additional axle
Detroit Windsor Tunnel	\$3.50	\$3.50 plus \$0.03 per 100 lbs gross weight
Peace Bridge	\$5.00	\$5.00/ 2 axle; \$3 per additional axle

Sources: <http://www.cityoflaredo.com/bridgesys/Bridgesystem.htm>, <http://expressbridge.com/bmsite.tolls.html>, <http://www.mcallen.net/bridge/#>, <http://www.cityofpharr.com/index.asp?NID=218>, www.ambassadorbridge.com/an_overview_toll_rates_usf.html, <http://www.dwtunnel.com/rate.html>, <http://www.peacebridge.com/ntr.php>, <http://www.cityofeaglepass.com/bridge/home.htm>

APPENDIX 7: NOTES FROM DISCUSSION WITH MBIA

These are the notes of the discussion, taken by SANDAG that HDR|HLB, Caltrans and SANDAG had with Richard Langberg from MBIA Insurance Corporation on November 28, 2006.

Participants:

MBIA Insurance: Richard Langberg

HDR|HLB: Khalid Bekka

Caltrans: Charles “Muggs” Stoll

SANDAG: Gary Gallegos, Marney Cox, Elisa Arias

After self-introductions, Khalid Bekka provided a brief summary of the work conducted and preliminary findings of the study, based on the presentation to the Expert Panel on November 16, 2006.

The purpose of the conference call was to obtain input from MBIA Insurance on the analysis conducted from the perspective of the investor market.

Main comments from Richard Langberg are summarized below:

- Even though the “raw” financial picture is evaluated closely, other qualitative issues also are considered. For example, institutional issues due to various levels of government involvement need for agreements to outline how entire project would be built and operated, which agencies assume certain risks and responsibilities, etc.
- In terms of the financial aspects, there is a deal that MBIA could do. Different financial tools would have to be evaluated to address specific proposal to structure a deal around it (e.g. grace period, cash flow, refinancing).
- Some issues with underperforming toll roads have been assumptions for growth in truck traffic, which doesn’t necessarily grow at the same rate as GDP.
- The S.R. 11-EOM project involves two countries and Mexico has had a volatile economic history. For example, can a Tequila crisis be modeled?
- Changes in laws are a potential challenge, such as punitive taxes/fees imposed on cross-border truck traffic.
- To get a feel for traffic in the area, visits would be made to SY, OM, S.R. 125, and south of the border.
- It’s an interesting project with a reasonable baseline scenario. Alignment of interests among different government agencies is important.

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