Virginia Department of Transportation

ON-CALL TOLL CONSULTING SERVICES
TASK ORDER 4
COLEMAN BRIDGE TOLL RATE STUDY

REPORT - VERSION FINAL

MAY 11, 2005

IBI GROUP

CRA

Final Report

COLEMAN BRIDGE TOLL RATE STUDY

PREPARED FOR

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Date: May 11, 2005

CRA No. D06626

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DISCLAIMER

This report was prepared by Charles River Associates as a subcontractor to IBI Group through an agreement with the Virginia Department of Transportation. This toll study was prepared using the best available tools and information. Some of that information was prepared by others and, therefore, we cannot assure its accuracy. To support our analysis, we made a number of assumptions regarding future conditions. Although we believe these assumptions to be reasonable, they depend on future events, and actual conditions that may vary from our assumptions.

1 Executive Summary

EXECUTIVE SUMMARY

The George P. Coleman Bridge spans the York River connecting Gloucester and York Counties in Virginia. It was built and opened to traffic as a 2-lane toll bridge in 1952. In 1996, the bridge was widened from two lanes to four lanes to combat traffic and congestion growth. In order to complete the project much sooner than would have been possible through the traditional VDOT funding method, a tolled financing approach was selected. Bonds were issued and funds were borrowed from the Toll Facilities Revolving Account (TFRA) to finance the widening. The bond covenant stipulates that net toll revenue (after toll operations and maintenance) must cover debt service obligations, as well as provide for contributions to a long-term maintenance and replacement fund. Currently, toll revenue only covers toll collection operations costs and debt service, forcing Virginia Department of Transportation to finance bridge maintenance including snow removal. Table 1-1 highlights this fact by showing the estimated cumulative revenue shortfall for FY 2004 – FY 2009 to be $10.3 million. This estimated revenue shortfall is in addition to the existing TFRA obligation $40.2 million as of the end of FY 2004. The bridge expansion planning had already identified the possibility of 1996 toll levels producing inadequate revenue to fund anticipated extraordinary maintenance needs, and called for an increase in the toll schedule around 2006. It is now necessary to increase tolls in order to generate sufficient revenue to meet the obligations of the outstanding bonds, provide for long-term maintenance and replacement, and repay the obligation to the TFRA.

Table 1-1. Coleman Bridge Forecasted 5-Year Revenue Shortfall

	Actual	Estimated				
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
REVENUES						
Toll Revenue & Interest	$4,891,956	$4,978,712	$5,033,477	$5,088,846	$5,144,823	$5,201,416
EXPENSES						
Operations	$2,941,611 [1]	$1,908,040	$1,879,469	$1,920,047	$1,961,549	$2,003,997
Bridge Oper/Ordinary Maint	$501,485	$598,560	$612,326	$627,022	$642,071	$657,480
Debt Service	$3,378,493	$3,451,268	$3,448,743	$3,448,863	$3,452,188	$3,467,463
Maint. & Reserve Fund Deposits	$0	$450,000	$1,051,350	$1,136,648	$555,910	$569,252
Total Expenses	$6,821,589	$6,407,868	$6,991,888	$7,132,580	$6,611,718	$6,698,192
ANNUAL REVENUE SHORTFALL	-$1,929,633	-$1,429,156	-$1,958,411	-$2,043,734	-$1,466,895	-$1,496,776
CUMULATIVE REVENUE SHORTFALL		-$3,358,789	-$5,317,200	-$7,360,934	-$8,827,829	-$10,324,605

Data source: Virginia Department of Transportation, Charles River Associates, 2005

[1] Includes cost of toll system upgrade.

1 Executive Summary

This study was commissioned to identify a toll schedule that provides toll revenues that cover all the requirements of the outstanding bond covenants. During the preparation of this study, the project team visited the facility and the surrounding street network, and observed traffic conditions. We also had phone conversations with local officials to ascertain levels of planning and development that may impact the Coleman Bridge.

The current toll schedule provides automated vehicle identification (AVI) equipped commuter vehicles with a 75% discount over manually collected two-axle vehicles.[1] The Commuter, or Class 2, AVI segment represents roughly three-quarters of all bridge users; most of the remaining users are manually collected two-axle vehicles (21%), with about another 1% each for three-axle and four-axle and greater vehicles. Since the manually collected two-axle vehicles already pay a large premium relative to the AVI commuter vehicles, this segment of users was not expected to provide a significant source of additional revenue. Similarly, given the small size of the higher axles vehicle segments, these segments were also not likely to provide significant additional revenue. Accordingly, the study primarily focused on toll alternatives for Class 2 AVI vehicles. We tested the following six toll alternatives, of which the last five focused exclusively on changing the toll for Class 2 AVI vehicles:

1. Alternative A: increase Class 2 AVI collection toll to $0.70, Class 2 manual collection toll to $2.50, Class 3 toll to $4.25, and Class 4 and greater toll to $5.50 with collection in the northbound direction only

2. Alternative B: increase Class 2 AVI toll to $0.75 with collection in the northbound direction only

3. Alternative C: increase Class 2 AVI toll to $0.85 with collection in the northbound direction only

4. Alternative D: increase Class 2 AVI toll to $0.75 and to $1.00 in FY 2015 with collection in the northbound direction only

5. Alternative E: increase Class 2 AVI toll to $1.00 with collection in the northbound direction only

6. Alternative F: increase Class 2 AVI toll to $0.38 with collection in both directions ($0.75 roundtrip toll)

Table 1-2 summarizes the key measure of toll alternative analysis – the year in which all debts are paid. It is important to note "all debts" includes the outstanding TFRA obligation, plus any

[1] $0.50 per roundtrip as compared to $2.00.

additional draws. In each alternative, under all scenarios, the outstanding bonds will be fully repaid when due in 2021. Alternatives C, D, and E are the only alternatives that pay off all debt, requiring an additional 6 - 13 years beyond the final payment on the outstanding bonds, with Alternative E the only one to pay off all debt across all scenarios.

Table 1-2. Year All Coleman Bridge Debt is Paid

	Scenario					
Toll Alternative	Base Case	High AVI Usage	High Trip Reduction	High Traffic Growth	Low Traffic Growth	Monte Carlo Simulation
Do Nothing						
Alternative A						
Alternative B						
Alternative C	2033		2034	2032		2034
Alternative D	2031		2032	2030	2033	2032
Alternative E	2028	2031	2029	2027	2030	2029
Alternative F						

Source: Charles River Associates, 2005

Based on our analysis, we determined that tolls should continue to be collected in the northbound direction only. In addition to significantly lowering costs, northbound toll collection only provides a smoother traffic flow.

We propose Alternative C as the selected toll increase, provided it is acceptable to VDOT that certain conditions[2] may cause toll revenue to be insufficient, or that there may be years which require limited additional borrowing from the TFRA to supplement toll revenue to finance long-term maintenance and replacements. In the case of the additional borrowing from the TFRA, excess revenue in subsequent years can make up for the lack of coverage in a given year. This proposed $0.85 toll still represents a 57.5% savings from manually collected tolls. If VDOT requires the highest confidence that despite extreme conditions, toll revenue will be adequate to satisfy all financial requirements then we recommend Alternative E. This $1.00 toll represents a 50% savings from the current manually collected toll.

[2] Such as the High Commuter AVI share of 85% or low traffic growth of 0.8% annually tested in this study. In particular, the high AVI scenario is quite extreme, as the Commuter AVI segment already accounts for over 75% of total traffic and has not exhibited growth in recent years.

1 Executive Summary

2 Introduction

INTRODUCTION

The George P. Coleman Bridge spans the York River connecting Gloucester and York Counties in Virginia. Figure 2-1 displays the Coleman Bridge and surrounding area, showing that the nearest alternate crossing of the York River is approximately 25 miles upstream. The Coleman Bridge was built and opened to traffic as a 2-lane toll bridge in 1952. A one-way passenger toll of $0.75, with a commuter ticket option of $0.30, was in place for passenger vehicles until the tolls were removed in 1976. In 1994, increased traffic and congestion made it necessary to add capacity to the bridge. After several design options were considered, it was decided to expand the existing bridge from two lanes to four. Previously designed to carry a maximum of 15,000 vehicles per day, the reconstructed bridge can now sustain traffic of up to 50,000 daily vehicles.[3] After construction was completed in 1996, the Coleman Bridge became the second largest double-swing span bridge in the world.

Figure 2-1. Coleman Bridge location

[3] Building Big Wonders of the World databank, "George P. Coleman Bridge", http://www.pbs.org/wgbh/buildingbig/wonder/structure/george_p_coleman.html. Access Date 12-27-2004.

2 Introduction

In order to complete the project much sooner than would have been possible through the traditional VDOT funding method, a tolled financing approach was selected. Tolls were added back to the bridge to fund the debt incurred from the widening project. Table 2-1 shows the toll rates that were collected in the northbound direction only after the reopening of the bridge. Shortly after these rates were implemented, the heavy vehicle toll rates were reduced to those in the right column of the table. Since then, tolls have not been changed. The $0.50 toll charged to commuter vehicles with AVI is lower than the $0.30 commuter toll in each direction that was in place in 1976. In fact, after adjusting for inflation, the current AVI toll represents only 25% of the 1976 roundtrip commuter toll.

Table 2-1. 1996 and Current Toll Rates on George P. Coleman Bridge

Vehicle Class	1996 Toll Rate	Current Toll Rate
Commuters (with AVI)[1]	$0.50	$0.50
2-Axle Vehicles	$2.00	$2.00
3-Axle Vehicles	$6.00	$3.00
4+-Axle Vehicles	$8.00	$4.00

Data source: Virginia Department of Transportation

[1] Includes motorcycles.

Reinstituting tolls on the Coleman Bridge was necessary to finance the capital expenditure of the bridge expansion. In addition to paying the debt service for the bonds used to finance this expenditure, the tolls are also used to cover operational costs of the bridge. Debt service is currently about $3.4 million each year, and operations costs are about $1.9 million annually.

Since toll revenues are currently insufficient, maintenance costs and improvements are currently paid for by the Virginia Department of Transportation (VDOT). This contradicts the bond covenant for the bridge widening which stipulates that net revenue (after toll operations and maintenance) must cover debt service obligations, as well as provide for contributions to a long-term maintenance and replacement fund. Before a recent repair, there were times when the bridge became stuck in the open position delaying traffic and causing considerable aggravation to area motorists. Setting aside funds to take care of future problems is necessary. In addition to the bond debt service, the Coleman Bridge has an obligation to repay $40.2 million to the Toll Facility Revolving Account (TFRA). Table 2-2 highlights the financial situation of the bridge, indicating an estimated revenue shortfall for the next 5 years of $10.3 million. The bridge expansion planning had already identified the possibility of 1996 toll levels producing inadequate revenue to fund anticipated extraordinary maintenance needs, and called for an increase in the toll schedule around 2006. It is now necessary to increase tolls in order to generate sufficient revenue to meet the obligations of the outstanding bonds, provide for long-term maintenance and replacements, and repay the obligation to the TFRA.

Table 2-2. Coleman Bridge Forecasted 5-Year Revenue Shortfall

	Actual	Estimated				
	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
REVENUES						
Toll Revenue & Interest	$4,891,956	$4,978,712	$5,033,477	$5,088,846	$5,144,823	$5,201,416
EXPENSES						
Operations	$2,941,611 [1]	$1,908,040	$1,879,469	$1,920,047	$1,961,549	$2,003,997
Bridge Oper/Ordinary Maint	$501,485	$598,560	$612,326	$627,022	$642,071	$657,480
Debt Service	$3,378,493	$3,451,268	$3,448,743	$3,448,863	$3,452,188	$3,467,463
Maint. & Reserve Fund Deposits	$0	$450,000	$1,051,350	$1,136,648	$555,910	$569,252
Total Expenses	$6,821,589	$6,407,868	$6,991,888	$7,132,580	$6,611,718	$6,698,192
ANNUAL REVENUE SHORTFALL	-$1,929,633	-$1,429,156	-$1,958,411	-$2,043,734	-$1,466,895	-$1,496,776
CUMULATIVE REVENUE SHORTFALL		-$3,358,789	-$5,317,200	-$7,360,934	-$8,827,829	-$10,324,605

Data source: Virginia Department of Transportation, Charles River Associates, 2005
[1] Includes cost of toll system upgrade.

While Table 2-1 displays 4 segments of traffic available to toll rate increases, the traffic shares of each segment reveal that they are not equal. Commuter AVI is the largest segment representing over three-quarters of all bridge users, followed by manually collected two-axle vehicles (21%) and three-axle and four-axle and greater vehicles (about 1% each). Given their relatively small sizes, the three-axle and four-axle and greater segments are not expected to contribute significant additional revenue through a toll increase. Even if these segments were larger, they may not be feasible targets for a large toll increase given the toll reduction for these segments a year after the bridge reopened. That leaves Commuter AVI and manually collected two-axle vehicles as the most likely candidate segments for toll increases. But given that manually collected two-axle vehicles already pay a large premium relative to the AVI commuter vehicles, this segment of users may not prove a viable candidate for a toll increase, leaving the Commuter AVI segment as the most viable toll increase candidate segment. In this study we do investigate toll rate increases to all segments, but with an emphasis on the Commuter AVI segment.

In order to qualify for the Commuter AVI segment, the commuter must use AVI and make three trips across the bridge in 90 days. This requirement is much less stringent than commuter definitions used elsewhere in the country. Examples of other commuter programs include 20 trips per month for the New York Thruway,[4] 25 trips in 60 days for the Maryland Transportation Authority,[5] and 20 trips within 35 days for the Port Authority of New York and New Jersey.[6] Instituting such a

[4] Found at http://www.thruway.state.ny.us/tolls2005/discount_plans.html on May 4, 2005.
[5] Found at http://www.mdta.state.md.us/mdta/servlet/dispatchServlet?url=/EToll/ezpass.jsp on May 4, 2005.
[6] Found at http://www.panynj.gov/tbt/ezpass/ezbmain.htm on May 4, 2005.

definition change would increase toll revenues for the Coleman Bridge since less traffic would qualify for the discount program.

In the following chapters, we present the framework we use for analysis, the results of our analysis, and recommendations for a toll rate increase.

3 Analysis Framework

ANALYSIS FRAMEWORK INTRODUCTION

In order to identify the toll rate increase required to provide for the self-sufficiency of the Coleman Bridge, we must account for all costs associated with the bridge and relate these costs to revenues generated by the bridge. In this chapter, we discuss the costs and the method used to estimate the toll increase needed to provide sufficient revenue to cover these costs. Further details on the development of these cost and revenue estimates are provided in the Technical Appendix.

COST ELEMENTS

As indicated in the Introduction, not all Coleman Bridge costs are financed by toll revenue. Currently, toll revenue only covers toll operations and debt service. However, to satisfy the conditions of bonds issued for the expansion of the bridge, net revenue (after toll operations and maintenance) must cover debt service, as well as provide for contributions to a long-term maintenance and replacement fund. Accordingly, toll revenues must pay for costs in the following order:

- Toll Operations
- Maintenance
- Bridge Tender Operations
- Debt Service
- Long-term Maintenance and Replacement

Additional to these cost categories, is an obligation of $40,211,000 to the Toll Facilities Revolving Account (TFRA). There are no specific TFRA costs for a particular year, but rather the general commitment that this balance is paid off over the next 30 years. Table 3-1 shows the future cost expenditures of the Coleman Bridge, excluding the TFRA obligation. We describe each of these cost items below.

3 Analysis Framework

Table 3-1. Coleman Bridge Cost Summary (2005-2034)[1] (Current Dollars)

Fiscal Year	Total Operations Costs[2]	Ordinary Maintenance	Bridge Tender Operations	Total Debt Payments[3]	Maintenance & Replacement	Total
2005	$1,908,040	$353,560	$245,000	$3,451,268	$450,000	$6,407,867
2006	$1,879,469	$361,691	$250,635	$3,448,743	$1,051,350	$6,991,888
2007	$1,920,047	$370,372	$256,650	$3,448,863	$1,136,648	$7,132,580
2008	$1,961,549	$379,261	$262,810	$3,452,188	$555,910	$6,611,718
2009	$2,003,997	$388,363	$269,117	$3,467,463	$569,252	$6,698,192
2010	$2,047,413	$397,684	$275,576	$3,466,013	$582,914	$6,769,600
2011	$2,093,502	$407,626	$282,465	$3,465,763	$597,487	$6,846,844
2012	$2,140,688	$417,817	$289,527	$3,468,763	$612,424	$6,929,219
2013	$2,188,997	$428,262	$296,765	$3,470,881	$627,735	$7,012,640
2014	$2,238,456	$438,969	$304,184	$3,467,363	$643,428	$7,092,400
2015	$2,289,093	$449,943	$311,789	$3,468,206	$468,623	$6,987,654
2016	$2,340,938	$461,191	$319,584	$3,462,900	$480,338	$7,064,952
2017	$2,394,020	$472,721	$327,573	$3,466,444	$492,347	$7,153,106
2018	$2,448,369	$484,539	$335,763	$3,468,069	$504,656	$7,241,396
2019	$2,504,017	$496,653	$344,157	$3,467,519	$517,272	$7,329,617
2020	$2,560,994	$509,069	$352,761	$3,464,538	$530,204	$7,417,565
2021	$2,619,334	$521,796	$361,580	$3,463,869	$543,459	$7,510,037
2022	$2,679,070	$534,841	$370,619	—	$557,045	$4,141,575
2023	$2,740,236	$548,212	$379,885	—	$570,971	$4,239,304
2024	$2,802,867	$561,917	$389,382	—	$585,246	$4,339,412
2025	$2,867,000	$575,965	$399,116	—	$599,877	$4,441,958
2026	$2,932,670	$590,364	$409,094	—	$614,874	$4,547,002
2027	$2,999,916	$605,123	$419,322	—	$630,246	$4,654,607
2028	$3,068,777	$620,251	$429,805	—	$646,002	$4,764,834
2029	$3,139,291	$635,758	$440,550	—	$662,152	$4,877,750
2030	$3,211,500	$651,652	$451,564	—	$678,706	$4,993,421
2031	$3,285,446	$667,943	$462,853	—	$695,673	$5,111,914
2032	$3,361,170	$684,641	$474,424	—	$713,065	$5,233,300
2033	$3,438,717	$701,757	$486,285	—	$730,892	$5,357,650
2034	$3,518,131	$719,301	$498,442	—	$749,164	$5,485,038

Data source: Charles River Associates, 2005.

[1] FY 2005 through FY 2034 operations costs, ordinary maintenance costs, bridge tender operations, and maintenance improvements inflated using CPI published in *Blue Book Economic Indicators*, March 2004.

[2] For FY 2006, the $475,000 budgeted allowance for AVI transactions was removed from the total operations budget of $2,006,067 and the calculated AVI transaction cost of $348,402 was added in its place.

[3] Total debt payments include interest and principal from all debt series (1994,1996, 1998, and 2002), and excludes repayment of TFRA obligation of $40.2 million. Repayment of TFRA obligations cannot commence until at least 2022 without a toll increase.

3 Analysis Framework

TOLL OPERATIONS COSTS

There are a number of costs associated with toll bridge operations, ranging from telephone expenses to employee salaries. We obtained toll operations cost estimates for VDOT's FY 2005 and FY 2006 budgets and established the schedule of future costs, shown in the second column of Table 3-1 (above). A portion of the toll operations costs is the AVI transaction fee, which is assumed to remain at the rate of $0.08 per transaction.[7] We expect total operations costs to increase with inflation and the volume of AVI traffic in future years, reaching about $3.5 million in FY 2034.

MAINTENANCE COSTS

Currently VDOT funds all maintenance costs associated with the Coleman Bridge. We reviewed the budgeted values for these maintenance costs, as well as an appropriate allowance for unforeseen short-term maintenance repairs, and expect maintenance costs to rise with inflation, from $353,560 in 2005 to $719,301 in FY 2034. We present the full schedule of ordinary maintenance costs in the third column of Table 3-1 (above).

BRIDGE TENDER OPERATIONS

Being a swing bridge, the Coleman Bridge requires additional staff in operations to monitor bridge openings. We received the budgeted bridge tender operations cost and expect these costs to increase with inflation from $245,000 in FY 2005 to $498,442 in FY 2034. We present the complete schedule of Bridge Tender Operations Costs in the fourth column of Table 3-1 (above).

DEBT SERVICE

The remaining debt service schedule from the outstanding bonds issued for the expansion is the largest cost associated with the Colman Bridge, and it is currently funded entirely with toll revenue. The Coleman Bridge toll revenue will continue to pay debt service through the end of FY 2021. Throughout this period, debt service will remain almost constant around $3.45 million per year.

[7] The AVI transaction rate is scheduled to change from $0.09 to $0.08 starting in FY 2006.

3 Analysis Framework

LONG-TERM MAINTENANCE AND REPLACEMENT

As the Coleman Bridge gets older, several parts will need replacement. For example, a project was recently completed to repair the hydraulic mechanisms and limit switches. Due to the uncertainty regarding the exact timing of most long-term maintenance and replacement projects, we convert those project costs into an annual cost stream and add them to those projects already programmed in the budget to create the schedule of costs contained in the sixth column of Table 3-1 (above).

TOTAL COLEMAN BRIDGE COSTS

The Coleman Bridge total costs include the categories described above. We expect total costs to generally rise, and then decrease when the outstanding debt service schedule ends in FY 2021 before rising again. The last column of Table 3-1 (above) shows the schedule of total costs for the Coleman Bridge. In addition to these costs is the current outstanding obligation of $40.2 million to the TFRA.

TOLL REVENUE

The revenue collected is a function of the toll schedule, traffic, and traffic mix. The toll schedule sets the price for each vehicle segment, while the total traffic and traffic mix determines the number of transactions for each of those vehicle segments. Toll rate changes can affect the travel demand for the bridge, and accordingly we use a traffic forecasting model to predict the level of traffic in response to toll changes. In the following sections, we present our determination of future toll revenue, detailing the current toll schedule, the likely level of future traffic, the expected mix of that traffic, and our method for estimating traffic remaining after a toll increase. A more detailed discussion of these elements is presented in Technical Appendix B.

CURRENT TOLL SCHEDULE

The current toll schedule is presented in Table 3-2. The Commuter AVI rate of $0.50 is considerably lower than for manual collection and represents a 75% savings. Therefore, we identified this segment as a viable candidate for a toll increase.

Table 3-2. Current Toll Rates on George P. Coleman Bridge

Vehicle Class	1996 Toll Rate	Current Toll Rate
Commuters (with AVI)[1]	$0.50	$0.50
2-Axle Vehicles	$2.00	$2.00
3-Axle Vehicles	$6.00	$3.00
4+-Axle Vehicles	$8.00	$4.00

Data source: Virginia Department of Transportation
[1] Includes motorcycles.

TOTAL TRAFFIC

Using historical traffic levels and a moderate growth rate of 1.1%,[8] we forecast the levels of total Coleman Bridge traffic presented in Table 3-3, which we use as a base for predicting the traffic levels under different toll alternatives.

[8] Please see Technical Appendix B for a discussion of the determination of the traffic growth rate applied in the analysis.

Table 3-3. 2004 Through 2034 Total Pre –Toll Increase Traffic[1]

Fiscal Year	Pre-Diversion Toll Transactions
2004	5,505,425
2005	5,565,985
2006	5,627,211
2007	5,689,110
2008	5,751,690
2009	5,814,959
2010	5,878,923
2011	5,943,591
2012	6,008,971
2013	6,075,070
2014	6,141,895
2015	6,209,456
2016	6,277,760
2017	6,346,815
2018	6,416,630
2019	6,487,213
2020	6,558,573
2021	6,630,717
2022	6,703,655
2023	6,777,395
2024	6,851,946
2025	6,927,318
2026	7,003,518
2027	7,080,557
2028	7,158,443
2029	7,237,186
2030	7,316,795
2031	7,397,280
2032	7,478,650
2033	7,560,915
2034	7,644,085

Data source: Chares River Associates, 2005
[1] 2004 represents actual traffic.

TRAFFIC MIX

We reviewed historical Coleman Bridge traffic by collection method and vehicle classification, and compiled Table 3-4 which presents the mix of Coleman Bridge traffic. Coleman Bridge vehicles are classified as: two-axle vehicles (Class 2),[9] three axle vehicles (Class 3), and four axle vehicles and

[9] For our analysis, we group motorcycles with Class 2 AVI vehicles, and subject motorcycles to the same toll changes.

greater (Class 4+). The overwhelming majority of total bridge traffic is Class 2 or Commuter AVI traffic, which is often our study segment.

Table 3-4. 2004 Toll Traffic by Vehicle Class and Collection Method

Collection Method	Class 2		Class 3		Class 4+		Total Revenue Traffic	
AVI	*4,194,173*	76%	*29,960*	1%	*36,643*	1%	4,260,775	77%
Manual	*1,179,041*	21%	*29,513*	1%	*36,096*	1%	*1,244,650*	23%
TOTALS	*5,373,213*	*98%*	*59,473*	*1%*	*72,739*	*1%*	5,505,425	100%

Data source: Row and column totals based on *VDOT data*: *Coleman Memorial Bridge Toll Facility, Total Traffic for 2004,* and *Monthly Traffic Activity by Classification* Report; CRA calculated remaining cells using *George P. Coleman Memorial Bridge Toll Facility Revenue and Transaction Comparisons,* and MS Excel solver operation.

POST-TOLL TRAFFIC PREDICTION

Since the different segments of bridge users experience varying degrees of toll increase, we must predict the resulting impact on the level of these trips. Traffic for all collection-class combinations which are not presented with a toll increase remains unchanged.

There are four types of responses available to the Coleman Bridge Commuter AVI segment in response to a toll increase:

1. Use a different route
2. Reduced trip frequency
3. Choose a different destination
4. No change in trip

We use a route choice model to calculate the traffic volume change from the first type of response, and a trip frequency reduction and redistribution rate to predict the second and third types of responses. The traffic remaining after accounting for the first three types of responses represents the trips that will continue to use the bridge after the toll increase.

3 Analysis Framework

COMPARING REVENUE TO COSTS

In order to gauge the financial performance of each alternative, the revenues must be applied to the costs. The revenues are used to pay for toll operations, routine maintenance (including a reserve for unforeseen short-term repairs), bridge tender operations, and debt service in that order, with the balance to finance long-term maintenance and replacements. As noted earlier, due to the uncertainty regarding the exact timing of the long-term maintenance and replacement projects, we convert the project costs into an annual cost stream. For tracking purposes, rather than create a separate account of the maintenance and replacement fund, we treat these improvements as another cost component that is subtracted from the remaining revenue after debt service and other costs have been subtracted. Any remaining revenues are used to pay down the TFRA obligation. Since the Coleman Bridge currently has an obligation to the TFRA, this $40,211,000 commitment is the starting (negative) balance. In the event that there is inadequate revenue to pay all costs for a year, the remaining costs are covered by an additional draw from the TFRA and the cumulative balance is adjusted. After the TFRA obligation has been fully repaid, we grow positive cumulative balances at a conservative interest rate comparable to a savings account, and these funds are available for subsequent years' costs.

3 Analysis Framework

TOLL ALTERNATIVES

Our study investigates toll increases to all traffic segments, but given the reasons previously discussed, primarily focuses on increases to the Commuter AVI toll rate since travelers of this segment currently receive a 75% discount compared to manual toll collection. We detail the toll alternatives in the following paragraphs.

ALTERNATIVE A: ORIGINAL PROPOSED TOLL INCREASE

The toll feasibility study performed by Parsons Brinckerhoff for the widening of the Coleman Bridge recommended an increase to the entire toll schedule after the bridge was reopened for ten years.[10] Table 3-5 presents the roundtrip toll increases recommended in the earlier study, while the right column contains the toll rates we test in Alternative A. As the table displays, we reduced the earlier toll increases for Class 3 and Class 4 and greater to reflect the toll rate adjustment to these classes shortly after bridge reopening.[11]

Table 3-5. Alternative A toll rates

Vehicle Class	Initially Proposed	Alternative A
Commuters (with AVI)[1]	$0.70	$0.70
2-Axle Vehicles	$2.50	$2.50
3-Axle Vehicles	$11.00	$4.25
4+-Axle Vehicles	$11.00	$5.50

Data Source: VDOT: George P. Coleman Bridge Toll Collection Alternatives prepared by Parsons Brinckerhoff, 1994, & CRA 2005.
[1] Includes motorcycles.

ALTERNATIVE B: $0.75 COMMUTER AVI TOLL

For Alternative B, we increase the Commuter AVI toll rate to $0.75. While this toll rate is slightly higher than that recommended during the mid 1990s, there are two justifications for this increase: the only toll increase at this time is for the Commuter AVI segment, and heavy vehicle toll rates are currently lower than those used to develop the earlier recommendations.

[10] Parsons Brinckerhoff Quade & Douglas, *George P. Coleman Bridge Toll Collection Alternatives*, 1994.
[11] For Class 4 and greater, the 2006 increase was planned to increase the 2-way toll from $8.00 to $11.00, and thus we proportioned the current $4.00 toll to $5.50. For Class 3, we applied the current ratio of Class 4 to Class 3 (4:3) to the Class 4 toll to determine a value of $4.13 which we rounded to $4.25.

ALTERNATIVE C: $0.85 COMMUTER AVI TOLL

For Alternative C, we increase the Commuter AVI toll rate to $0.85. This alternative tests a further increase in the toll for the Commuter AVI segment.

ALTERNATIVE D: $0.75 COMMUTER AVI TOLL AND $1.00 COMMUTER AVI TOLL IN 2015

Alternative D is designed to offset inflation effects, and therefore increases the Commuter AVI toll rate by $0.25, first to $0.75 and then to $1.00 in FY 2015. The advantage of this alternative is that it gradually increases the toll rate, but it does require multiple toll increases, each of which could be unpopular.

ALTERNATIVE E: $1.00 COMMUTER AVI TOLL

We designate Alternative E as a doubling of the existing toll from $0.50 to $1.00 for Commuter AVI traffic. Alternative E still represents a 50% savings for this segment compared to manual toll collection.

ALTERNATIVE F: $0.38 COMMUTER AVI TOLL IN EACH DIRECTION

We define Alternative F as a $0.38 toll collected in each direction. Since tolls are currently collected only in one direction, travelers may choose to use the Coleman Bridge in the free direction but to use an alternate route in the tolled direction. However, if smaller tolls are collected in both directions, travelers are less likely to avoid paying the toll. We test the toll rate of $0.38, which is essentially the same total round-trip toll applied in Alternative B. This alternative also includes additional costs associated with collecting tolls in both directions, such as construction of southbound toll booths and an increase in toll employees. Further details on the analysis of this alternative are presented in Technical Appendix C.

EVALUATION SCENARIOS

In this section we define a set of circumstances or conditions used to test each of the toll alternatives presented above. Each scenario is comprised of a combination of conditions, which we define in order to evaluate each of the five alternatives under a variety of circumstances. These conditions are discussed in detail in the Technical Appendix.

3 Analysis Framework

BASE CASE

The Base Case represents the set of conditions which we believe best characterizes the forecast horizon. These conditions include the magnitude of costs associated with Coleman Bridge, the various factors that influence the level of bridge traffic in response to the toll increase[12], and elements of the financial framework.[13] The specific values of these conditions used in the base case are those described above and in the Technical Appendix.

CONDITION 2 - HIGH AVI SHARE

In the High AVI Share condition, we assume that the share of Commuter AVI traffic will grow to 85% of total traffic from the current rate of 76%. There are reasons for and against such a large share of Commuter AVI traffic. On the one hand, this traffic segment receives a substantial discount compared to manual collection and should continue to attract the conversion of previously manual collection vehicles. On the other hand, the current 76% Commuter AVI share is already quite high, and most vehicles that could qualify as Commuter AVI are likely already capitalizing on the large savings. In spite of these countering arguments, this large AVI share is meant to test the toll alternatives under a financially challenging situation. In addition to lowering revenue as more travelers use discounted AVI, the increase in AVI share also lowers operations costs. We provide details of the implementation of these cost savings in Technical Appendix C.

CONDITION 3 - HIGH LOSS OF TRAFFIC

The biggest challenge of any toll study is to estimate the amount of traffic that will continue to use the toll facility following a toll increase. In our evaluation framework, we predict this level of lost traffic through separate modeling of route diversion, trip frequency and redistribution. This alternative removes the traffic modeling from the evaluation framework and assumes a constant 3% loss in traffic for each $0.25 increase in toll.

CONDITION 4 - HIGH TRAFFIC GROWTH

The future level of traffic has a direct impact on the toll revenue generated in each alternative, as this level of traffic provides the base of trips before accounting for losses in traffic due to the toll increase. As we detail in Section B of the Technical Appendix, we identified several candidate traffic growth rates. In this case, we use the largest annual traffic growth rate of 1.3% instead of

[12] Such as the total traffic growth rate, the AVI share of traffic, values of time and vehicle operations costs, and work trip and non-work trip shares of total trips.

[13] Such as the interest rate on positive balances, or the future inflation rate.

1.1% in the base case. The 1.3% growth rate is based on the historical growth of Coleman Bridge traffic from FY 2001 to FY 2004.

CONDITION 5 - LOW TRAFFIC GROWTH

Similar to the high traffic growth scenario, the low traffic growth scenario uses another possible traffic growth rate identified in our research. This scenario uses the 0.8% rate, based on the projected population growth for Gloucester, Mathews and Middlesex Counties, to grow total Coleman Bridge traffic.

MONTE CARLO SIMULATION

Toll projects inherently experience a number of risks as decisions are based on estimates of costs and revenues. The exact values of these costs and revenues are not truly known and may change over the lifetime of the project: costs could increase due to poor estimation or changes in inflation, or the traffic and revenue may not reach forecast targets due to improvements of competing facilities or changes in travel behavior. Understanding these risks and their financial implications can facilitate a better-informed decision regarding the appropriate size of a proposed toll increase. We use Monte Carlo simulation as a tool to test the toll alternatives over a large range of possible conditions.

Monte Carlo simulation is a powerful tool to measure and prepare for uncertainty by considering many possible outcomes rather than a single solution. To apply Monte Carlo simulation to our evaluation framework, we input a probability distribution of likely values for each input. Monte Carlo simulation then generates many scenarios that are combinations of randomly selected values for each input (based upon the input probability distributions). Thus, the Monte Carlo simulation does not simply provide evaluation of another combination of conditions, but rather we use it to generate 20,000 different sets of conditions for evaluating the toll alternatives. The “Crystal Ball” add-in to Excel performs the Monte Carlo simulation. Further details on our Monte Carlo simulation approach are provided in Technical Appendix D.

4 Findings

RESULTS

We evaluated the six toll alternatives under each of the five conditions affecting future toll revenue described above for a 30-year period. We also analyzed the "Do Nothing" alternative to provide a baseline for comparison. The results are summarized for each alternative-condition scenario combination below. Detailed results for every toll alternative-condition scenario combination are provided in Technical Appendix E. All values are in current dollars.

We present several financial measures in the columns of Tables 4-1 to 4-5 which we use to evaluate the results of each toll alternative. The first measure, "FY 2034 Balance", is the cumulative balance at the end of the 30-year period. Positive values of this measure indicate that the toll increase produced enough revenue to cover all costs and pay back the TFRA obligation. The second measure, "Years Net Income < Debt Service", shows how many years experienced net income less than the debt service obligation. We present this because a condition of the outstanding bonds is that debt service must be covered by net income. The third measure, "Years with TFRA Draw", identifies the number of years in which there was an additional draw from the TFRA. The fourth and fifth measures, "Largest Deficit Year" and "Largest Deficit Balance", show the size of the largest deficit and the year in which it occurred. In all alternatives and conditions, the outstanding bonds are fully repaid when due in 2021. The final measure, "Year Debt is Paid Off", identifies when all debt including TFRA obligations is retired.

SCENARIO 1 - BASE CASE SCENARIO

Table 4-1 presents the results for the base case scenario, which clearly illustrate the need for a toll increase. "Do Nothing" results in a cumulative deficit for all 30 years, including after the outstanding debt service has been retired, with the deficit growing as large as $66.9 million in the last year of the debt service schedule (FY 2021) and decreasing to $45.8 million at the end of the 30-year period (FY 2034). Alternative A, the toll increase planned during the bridge reconstruction project, does not result in a cumulative positive balance. Instead it results in a FY 2034 deficit of $8.6 million, with the cumulative deficit growing from the initial $40.2 million owed the TFRA to $47.3 million in FY 2021. The relative size of the final cumulative balance of Alternatives B through E is as expected; Alternative E ($1.00 Class 2 AVI) generates the largest balance at the end of the forecast period while Alternative B ($0.75 Class 2 AVI) generates the smallest end balance. Alternatives A through E fully satisfy the requirement that net income is greater than debt service. Only Alternative E does not require an additional draw from the TFRA, followed by Alternatives C and D which require an additional draw in 9 and 10 years respectively.

4 Findings

Table 4-1. Coleman Bridge Summary of Base Scenario Alternatives (Current Dollars)

Toll Alternative	FY 2034 Balance	Years Net Income < Debt Service	Years with TFRA Draw	Largest Deficit		Year Debt is Paid Off
				Year	Balance	
Do Nothing	($45,773,230)	17	17	2021	($66,896,144)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($8,608,764)	—	17	2021	($47,341,095)	—
Alternative B: $0.75 Commuter AVI	($10,058,016)	—	17	2021	($48,103,638)	—
Alternative C: $0.85 Commuter AVI	$4,215,820	—	9	2014	($41,476,932)	2033
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	$15,013,537	—	10	2014	($45,749,226)	2031
Alternative E: $1.00 Commuter AVI	$26,390,432	—	—	2005	($39,632,473)	2028
Alternative F: 2-way collection $0.38 Commuter AVI	($39,476,277)	17	17	2021	($63,039,090)	—

Source: Charles River Associates, 2005

Alternatives B ($0.75 northbound toll) and F ($0.38 toll in each direction) are essentially the same alternative, except that tolls are collected in both directions for Alternative F. The financial measures presented in Table 4-1 suggest that the additional toll revenue collected in Alternative F due to the lower rate of diversion to avoid the toll are not enough to offset the extra costs associated with collecting tolls in both directions. Since Alternative B was far superior financially to Alternative F, we did not analyze Alternative F in subsequent scenarios.

SCENARIO 2 - HIGH AVI SHARE

This scenario represents an extreme situation that would lead to much lower toll revenues than the base scenario since a larger share of traffic would be paying the lower tolls charged Commuter AVI users. In fact, there has been little growth in the share of AVI traffic.[14] Table 4-2 presents the financial performance of the alternatives. Under this scenario, only Alternative E has a positive FY 2034 cumulative balance, with all debt paid off in FY 2030. Unlike in the base case scenario, Alternative E does have a couple years when it requires an additional draw from the TFRA. The

[14] According to VDOT data, the total AVI share of traffic has been 77.95%, 77.44%, 78.07%, and 77.39% respectively for FY 2001 through 2004.

relative performance of Alternatives C and D is interesting. While Alternative D results in a much smaller deficit and requires fewer years of additional TFRA draw, it fails to satisfy the requirement that net income is greater than debt service in 10 years while Alternative C only fails this requirement for one year.

Table 4-2. Coleman Bridge Summary of High AVI Usage Alternatives (Current Dollars)

Toll Alternative	FY 2034 Balance	Years Net Income < Debt Service	Years with TFRA Draw	Largest Deficit		Year Debt is Paid Off
				Year	Balance	
Do Nothing	($67,601,547)	17	17	2021	($78,664,819)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($29,175,924)	17	17	2021	($58,446,157)	—
Alternative B: $0.75 Commuter AVI	($27,752,610)	17	17	2021	($57,697,245)	—
Alternative C: $0.85 Commuter AVI	($11,893,910)	1	17	2021	($49,352,825)	—
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	($211,227)	10	10	2014	($51,251,410)	—
Alternative E: $1.00 Commuter AVI	$11,711,614	—	2	2007	($40,814,688)	2031

Source: Charles River Associates, 2005

SCENARIO 3 - HIGH LOSS OF TRAFFIC

The results of Scenario 3, which we used to represent a more sensitive response to toll increases, are presented in Table 4-3. In this scenario, Alternatives C, D, and E completely pay off all debt. It is interesting that Alternative A almost leads to a positive FY 2034 cumulative balance while it had a much larger cumulative deficit in the Base Case Scenario. This occurs because the "high" trip reduction rate is actually lower than the calculated diversion rate of the manually collected class 2 vehicle segment, leading to this result. The fact illustrates the challenge of focusing a toll increase on the manually collected class 2 vehicles who already pay a large toll premium and are more unlikely to accept an additional increase. Of the alternatives with a positive FY 2034 cumulative balance, Alternative E has the largest balance of $21.7 million. Alternatives A, C, and E fully satisfy the requirement that net income is larger than the debt service obligation. Alternative E has the fewest years requiring an additional TFRA draw, followed by Alternatives C and D.

Table 4-3. Coleman Bridge Summary of High Trip Reduction Alternatives (Current Dollars)

Toll Alternative	FY 2034 Balance	Years Net Income < Debt Service	Years with TFRA Draw	Largest Deficit		Year Debt is Paid Off
				Year	Balance	
Do Nothing	($45,773,230)	17	17	2021	($66,896,144)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($660,852)	—	17	2021	($43,158,972)	—
Alternative B: $0.75 Commuter AVI	($11,345,315)	1	17	2021	($48,780,714)	—
Alternative C: $0.85 Commuter AVI	$1,796,917	—	10	2014	($42,220,431)	2034
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	$11,472,760	1	10	2014	(46,131,947)	2032
Alternative E: $1.00 Commuter AVI	$21,747,748	—	2	2007	($39,919,020)	2029

Source: Charles River Associates, 2005

SCENARIO 4 - HIGH TRAFFIC GROWTH

Scenario 4 represents the most favorable conditions for producing toll revenue as displayed in Table 4-4. Even under this favorable scenario, "Do Nothing" produces a FY 2034 cumulative deficit of $40.4 million. Again, Alternatives C, D, and E completely pay off all debt, with Alternative E paying off the debt the soonest in FY 2026. Alternatives A through E all satisfy the requirement that net income is greater than the debt service requirement. Alternative E does not require any additional funds from the TFRA, while Alternative C only requires an additional draw in 3 years.

Table 4-4. Coleman Bridge Summary of High Traffic Growth Alternatives (Current Dollars)

Toll Alternative	FY 2034 Balance	Years Net Income < Debt Service	Years with TFRA Draw	Largest Deficit		Year Debt is Paid Off
				Year	Balance	
Do Nothing	($40,385,030)	17	17	2021	($65,301,378)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($1,996,943)	—	17	2021	($45,384,155)	—
Alternative B: $0.75 Commuter AVI	($3,493,912)	—	17	2021	($46,160,821)	—
Alternative C: $0.85 Commuter AVI	$11,408,332	—	3	2007	($41,280,334)	2032
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	$23,093,411	—	10	2014	(45,089,213)	2030
Alternative E: $1.00 Commuter AVI	$34,859,611	—	—	2005	($39,619,419)	2027

Source: Charles River Associates, 2005

SCENARIO 5 - LOW TRAFFIC GROWTH

Table 4-5 presents the results for the low travel demand growth of Scenario 5, which represents a more financially challenging situation for the toll alternatives. Only Alternatives D and E pay off all debt, with Alternative E retiring all debt first in FY 2029. Alternatives C and E are the only alternatives to fully satisfy the net income greater than debt service requirement. It is interesting that Alternative C satisfies this requirement but fails to pay off all debt, while Alternative D fails this requirement for 2 years, but does pay off all debt in FY 2032.

Table 4-5. Coleman Bridge Summary of Low Traffic Growth Alternatives (Current Dollars)

Toll Alternative	FY 2034 Balance	Years Net Income < Debt Service	Years with TFRA Draw	Largest Deficit		Year Debt is Paid Off
				Year	Balance	
Do Nothing	($53,468,528)	17	17	2021	($69,225,034)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($18,051,609)	6	17	2021	($50,198,881)	—
Alternative B: $0.75 Commuter AVI	($19,432,713)	9	17	2021	($50,940,799)	—
Alternative C: $0.85 Commuter AVI	($5,887,468)	—	17	2021	($43,664,264)	—
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	$3,779,900	2	10	2014	(46,724,513)	2033
Alternative E: $1.00 Commuter AVI	$14,512,552	—	1	2007	($39,674,876)	2030

Source: Charles River Associates, 2005

MONTE CARLO SIMULATION

As discussed above, unlike the other scenarios which represent a change to one input condition, the Monte Carlo simulation scenario is comprised of thousands of scenarios developed as combinations of all input conditions. As such, there are thousands of financial outputs. Accordingly, we present slightly different results for the Monte Carlo simulation. Table 4-6 presents some of the same measures – FY 2034 Balance, Largest Deficit, Largest Deficit Year, and Year Debt is Paid Off – for the mean result of the 20,000 individual scenarios. Table 4-6 also includes three measures relating to the number of years with deficit – for one standard deviation above the mean, for the mean, and for one standard deviation below the mean of predictions. These additional measures help provide insight into the possible range of years with deficits. Similar to the other scenarios, Alternative E has the largest positive mean FY 2034 cumulative balance and pays off all debt the soonest. The only other toll alternatives to pay off all debt are Alternatives C and D.

Table 4-6. Coleman Bridge Summary of Monte Carlo Simulation (Current Dollars)

Toll Alternative	FY 2034 Mean Balance	Number of Years with Deficit: Minus One Standard Deviation	Number of Years with Deficit: Mean Balance	Number of Years with Deficit: Plus One Standard Deviation	Largest Deficit: Year	Largest Deficit: Mean Balance	Year Debt is Paid Off
Do Nothing	($49,330,347)	30	30	30	2021	($68,566,185)	—
Alternative A: $0.70, $2.50, $4.25, $5.50	($12,512,525)	30	30	30	2021	($49,161,972)	—
Alternative B: $0.75 Commuter AVI	($13,345,678)	30	30	30	2021	($49,595,966)	—
Alternative C: $0.85 Commuter AVI	$1,074,781	30	29	26	2014	($42,225,934)	2034
Alternative D: $0.75 Commuter AVI & $1.00 2015 Commuter AVI	$11,892,802	29	27	25	2014	($46,524,717)	2032
Alternative E: $1.00 Commuter AVI	$23,289,348	26	24	22	2007	($39,729,299)	2029

es

Source: Charles River Associates, 2005

REVIEW OF ALTERNATIVES PERFORMANCE

We can summarize the financial performance of the toll alternatives as follows. The results of "Do Nothing" clearly indicate that a toll increase is necessary. Under each alternative, outstanding bonds are fully repaid when due in 2021. Of the toll alternatives, only Alternatives C, D, and E pay off all TFRA debt, requiring 6 - 13 years beyond the final payment on the outstanding bonds, as shown in Table 4-7. This table indicates the year in which all bridge debt is fully paid for all toll alternatives across the condition scenarios. The absence of a year indicates that TFRA debt remains.

Table 4-7. Year All Coleman Bridge Debt is Paid

Toll Alternative	Scenario					
	Base Case	High AVI Usage	High Trip Reduction	High Traffic Growth	Low Traffic Growth	Monte Carlo Simulation
Do Nothing						
Alternative A						
Alternative B						
Alternative C	2033		2034	2032		2034
Alternative D	2031		2032	2030	2033	2032
Alternative E	2028	2031	2029	2027	2030	2029
Alternative F						

Source: Charles River Associates, 2005

Alternative A, which was the toll rate increase called for in the prior planning study, does not pay off all debt in any scenario. The reason this toll alternative fails to provide adequate revenue is at least partially caused by the lower heavy vehicle toll structure than that recommended in the prior planning study. It is unlikely that the higher tolls on heavy vehicles initially proposed would be accepted since there has already been one successful initiative to lower heavy vehicle toll rates since the bridge reopened.

Alternative B ($0.75 for Class 2 AVI) does not meet the financial requirements. It does not produce enough toll revenue to fully repay the debt of the Coleman Bridge in any scenario, and it only satisfied the condition that net revenue is greater than debt service in the Base Case Scenario and Scenario 4 – High Traffic Growth.

Alternative C ($0.85 for Class 2 AVI) generally meets the financial requirements across the scenarios. It only fails to pay off all debt in Scenario 2 - High AVI and Scenario 5 – Low Traffic Growth. Scenario 2 – High AVI is also the only scenario for which Alternative C does not produce net income greater than debt service for all years, however it fails this requirement only for one year.

4 Findings

Alternative D ($0.75 for Class 2 AVI and $1.00 for Class 2 AVI in 2015) has a mixed performance. In all scenarios except for Scenario 2 - High AVI it produces a positive FY 2034 cumulative balance. However, in all scenarios except the Base Case Scenario and Scenario 4 – High Traffic Growth it also fails, at least for one year, the requirement that net income is greater than the debt service commitment. In reflection, this mixed performance is reasonable given the occurrences of net income less than debt service happens in the early years before the second toll increase, which later provides a greater revenue stream ultimately leading to the positive FY 2034 cumulative balances.

Alternative E ($1.00 Class 2 AVI) produces solid financial performance across all scenarios. For all scenarios it pays off all debt while satisfying that net income is greater than debt service. It does experience three scenarios when it requires an additional draw from the TFRA, but this only occurs in one or two years.

4 Findings

5 Recommendations

RECOMMENDATIONS

We draw several conclusions from the performance of the toll alternatives across the various scenarios. First, it is not financially advantageous to collect tolls in both directions. The performance of Alternative B ($0.75 in northbound direction) dominates that of Alternative E ($0.38 in each direction), indicating that the extra revenue collected due to less toll diversion is not nearly enough to offset the extra costs of constructing the southbound toll booths and to pay for additional staff. This financial analysis coincides with earlier planning work that indicated that collecting tolls in only the northbound direction was better financially and provides better traffic operations than collection in both directions.[15] Thus, we recommend that tolls continue to be collected in the northbound direction only.

It is also clear that Alternative A, the toll increase called for in prior planning work,[16] is inadequate to provide self-sufficiency for the Coleman Bridge. A contributing factor for this, as noted above, is that the toll rates for heavy vehicles is lower than included in the prior planning study.

The toll alternative we recommend is conditional upon the expected scenario of conditions confronting the Coleman Bridge. To make our recommendation, we use the basic selection criteria requiring the selected toll alternative to produce a positive FY 2034 cumulative balance while satisfying the outstanding bond obligation requirement that stipulates that debt service is paid for by net income while making contributions to long-term maintenance improvements.

We recommend toll Alternative C ($0.85 Class 2 AVI) under all sets of conditions except for those represented by Scenario 2 - High AVI and Scenario 5 - Low Traffic Growth. The conditions of Scenario 2 are quite extreme and highly unlikely to occur, while the conditions of Scenario 5 are at the lower bound of expectations. Under all other sets of conditions, Alternative C produces enough revenue to pay off all debt. For some of these scenarios, there are years which would require an additional draw from the TFRA before repaying the entire obligation. But since these increases are generally small and all other financial requirements are satisfied, we recommend Alternative C.

We recommend Alternative E if there are legitimate concerns that a high share of AVI traffic will exist, such as in Scenario 2, or if low traffic growth is expected, such as in Scenario 5. We also recommend this alternative under a more restrictive criteria that limits additional borrowing from the TFRA. This alternative requires the fewest years with an additional draw from the TFRA in all

[15] Parsons Brinckerhoff Quade & Douglas, *George P. Coleman Bridge Toll Collection Alternatives*, 1994.

[16] With our adjustments to Class 3 and Class 4 and greater toll rates, as described in Chapter 3, to reflect the decrease in toll rates for these vehicles shortly after the bridge reopening.

scenarios. Alternative E robustly meets the toughest selection criterion across the full range of conditions, thus a high level of confidence surrounds its ability to generate the necessary revenue.

APPENDIX A: DETERMINATION OF COLEMAN BRIDGE COSTS

In order to ensure that toll revenues cover all costs associated with the Coleman Bridge, it is essential to first determine what those costs will be. In this section of the technical appendix, we document our methodology for determining those costs. Table A-1 presents the schedule of costs for the Coleman Bridge broken out by cost category, while Figure A-1 displays the cost schedule graphically. In addition to the cost categories depicted in Table A-1, there is a current repayment obligation of $40,211,000 to the Toll Facilities Revolving Account (TFRA). In the following sections we discuss how these cost schedules were prepared.

Table A-1. Coleman Bridge Cost Summary (Current Dollars) (2005-2034)[1]

Fiscal Year	Total Operations Costs[2]	Ordinary Maintenance	Bridge Tender Operations	Total Debt Payments[3]	Maintenance & Replacement	Total
2005	$1,908,040	$353,560	$245,000	$3,451,268	$450,000	$6,407,867
2006	$1,879,469	$361,691	$250,635	$3,448,743	$1,051,350	$6,991,888
2007	$1,920,047	$370,372	$256,650	$3,448,863	$1,136,648	$7,132,580
2008	$1,961,549	$379,261	$262,810	$3,452,188	$555,910	$6,611,718
2009	$2,003,997	$388,363	$269,117	$3,467,463	$569,252	$6,698,192
2010	$2,047,413	$397,684	$275,576	$3,466,013	$582,914	$6,769,600
2011	$2,093,502	$407,626	$282,465	$3,465,763	$597,487	$6,846,844
2012	$2,140,688	$417,817	$289,527	$3,468,763	$612,424	$6,929,219
2013	$2,188,997	$428,262	$296,765	$3,470,881	$627,735	$7,012,640
2014	$2,238,456	$438,969	$304,184	$3,467,363	$643,428	$7,092,400
2015	$2,289,093	$449,943	$311,789	$3,468,206	$468,623	$6,987,654
2016	$2,340,938	$461,191	$319,584	$3,462,900	$480,338	$7,064,952
2017	$2,394,020	$472,721	$327,573	$3,466,444	$492,347	$7,153,106
2018	$2,448,369	$484,539	$335,763	$3,468,069	$504,656	$7,241,396
2019	$2,504,017	$496,653	$344,157	$3,467,519	$517,272	$7,329,617
2020	$2,560,994	$509,069	$352,761	$3,464,538	$530,204	$7,417,565
2021	$2,619,334	$521,796	$361,580	$3,463,869	$543,459	$7,510,037
2022	$2,679,070	$534,841	$370,619	—	$557,045	$4,141,575
2023	$2,740,236	$548,212	$379,885	—	$570,971	$4,239,304
2024	$2,802,867	$561,917	$389,382	—	$585,246	$4,339,412
2025	$2,867,000	$575,965	$399,116	—	$599,877	$4,441,958
2026	$2,932,670	$590,364	$409,094	—	$614,874	$4,547,002
2027	$2,999,916	$605,123	$419,322	—	$630,246	$4,654,607
2028	$3,068,777	$620,251	$429,805	—	$646,002	$4,764,834
2029	$3,139,291	$635,758	$440,550	—	$662,152	$4,877,750
2030	$3,211,500	$651,652	$451,564	—	$678,706	$4,993,421
2031	$3,285,446	$667,943	$462,853	—	$695,673	$5,111,914
2032	$3,361,170	$684,641	$474,424	—	$713,065	$5,233,300
2033	$3,438,717	$701,757	$486,285	—	$730,892	$5,357,650
2034	$3,518,131	$719,301	$498,442	—	$749,164	$5,485,038

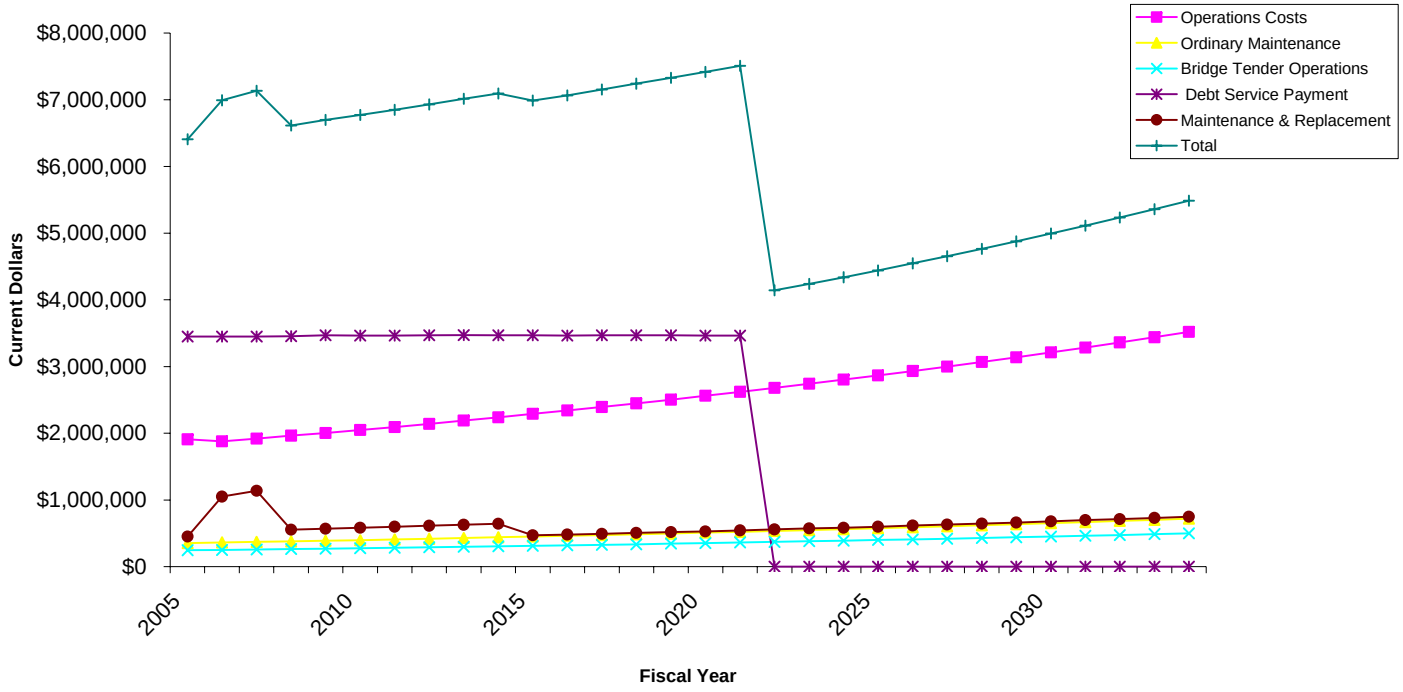
Data source: Charles River Associates, 2005

[1] FY 2005 through FY 2034 operations costs, ordinary maintenance costs, bridge tender operations, and maintenance improvements inflated using CPI published in *Blue Book Economic Indicators*, March 2004.

[2] For FY 2006, the $475,000 budgeted allowance for AVI transactions was removed from the total operations budget of $2,006,067 and the calculated AVI transaction cost of $348,402 was added in its place.

[3] Total debt payments include interest and principal from all debt series (1994,1996, 1998, and 2002), and excludes repayment of TFRA Obligation of $40.2 million. Repayment of TFRA obligations cannot commerce until at least 2022 without a toll increase.

Figure A-1. Coleman Bridge Cost Summary (Current Dollars) (2005-2034)



Data source: Charles River Associates, 2005

Notes: (1) FY 2005 through FY 2034 toll operations costs, ordinary maintenance costs, bridge tender operations, and maintenance improvements inflated using CPI published in *Blue Book Economic Indicators*, March 2004.

(2) For FY 2006, the $475,000 budgeted allowance for AVI transactions was removed from the total operations budget of $2,006,067 and the calculated AVI transaction cost of $348,402 was added in its place.

(3) Total debt service includes interest and principal from all debt series (1994,1996, 1998, and 2002), and excludes repayment of TFRA Obligation of $40.2 million.. Repayment of TFRA obligations cannot commerce until at least 2022 without a toll increase.

Technical Appendix A

TOLL OPERATIONS

We obtained the toll operations cost estimates used in VDOT's budget for FY 2006, which is $2,006,067. This cost estimate includes a budgeted allowance for AVI transactions of $475,000. To determine the FY 2006 toll operations expense and to estimate future year costs, we split out the AVI transaction cost and estimate it based on the volume of AVI traffic for that given year.[17] For FY 2006, the AVI transaction fee is scheduled to be reduced from $0.09 to $0.08 per transaction. By removing the $475,000 budgeted AVI transaction cost, the non-AVI transaction toll operation costs are $1,531,067. For FY 2006, we calculate the AVI transaction cost to be $348,402 (with no toll change), thus producing the $1,879,469 toll operations cost. We determined the non-AVI transaction portion of future toll operation costs by growing the non-AVI transaction component by inflation. To represent inflation, we use the long term forecasts of the Consumer Price Index (CPI) published in *Blue Chip Economic Indicators.*[18] The forecasts included projected CPIs for each year from 2004 through 2010, and five-year averages from 2006-10 and 2011-15. We extended the 2011-15 CPI inflation rate projections through the end of our forecast period. Using this method, we projected total toll operations costs to rise from $1,879,469in FY 2006 to $3,518,131in FY 2034, all in current (inflated) dollars.

MAINTENANCE COSTS

Currently VDOT pays all maintenance costs associated with the Coleman Bridge. We reviewed the budgeted values for these maintenance costs, as well as an appropriate allowance for unforeseen short-term maintenance repairs for the Coleman Bridge, which are contained in Table A-2. We treat these values as FY 2004 and use forecasted CPI as the inflation rate to develop the schedule of ordinary maintenance, presented in the third column of Table A-1 (above).

Table A-2 Budgeted Maintenance Costs

Category	Budget Value
Pavement markings	$3,500
Highway lighting	$36,100
Snow removal & preparations	$120,000
Hydraulic oil in the 2 reserves	$15,000
Pipes & culverts	$7,000
Signs	$13,000
Short-term maintenance repairs	$150,000
Total	$344,600

Data source: Virginia Department of Transportation, 2005.

[17] Please see Technical Appendix B for a discussion of the determination of future traffic.
[18] *Blue Chip Economic Indicators*, Oct 2004.

Technical Appendix A

BRIDGE TENDER OPERATIONS

Being a swing bridge, the Coleman Bridge requires additional staff in operations to monitor bridge openings. We received the FY 2005 bridge tender operations cost of $245,000 from VDOT. Using forecasted CPI as the inflation rate, we developed the schedule of bridge tender operations presented in the fourth column of Table A-1 (above).

DEBT SERVICE

Historical and projected debt service data was collected from VDOT in an electronic file. Data for fiscal years 2000 through 2004 included yearly totals for principal and interest. The fifth column of Table A-1 shows the total annual debt service through 2021 when the final bonds will be retired. It is important to note that this debt service is different from the outstanding obligation of $40,211,000 to the TFRA.

LONG-TERM MAINTENANCE AND REPLACEMENT

As the Coleman Bridge ages, certain improvements will become necessary. Our discussions with VDOT staff identified the long-term maintenance and replacement projects and values presented in Table A-3. Due to the uncertainty regarding the exact timing of most long-term maintenance and replacement projects, we convert those project costs into an annual cost stream and add them to those costs already programmed in the budget. To complete the creation of the schedule of maintenance improvements, we inflated the cost values presented in Table A-3 using forecasted CPI as inflation. For most of the improvement categories, we need to make adjustments to the cost in the first several years since it has already been 10 years since the bridge reopened and there has been no financial preparation for these projects to date. In particular, we doubled repainting and lightning protection obligations for FY 2005 – FY 2014. Further, since the booth cleaning and painting, and the violation enforcement system are programmed for FY 2006 and the programmable logic controller, transformer replacement, access control system, and closed circuit television are programmed for FY 2007, we incur the full cost in the programmed year and then begin the annual obligation. We present this schedule in column 6 of Table A-1 (above).

Table A-3 Long-Term Maintenance and Replacement Requirements

Category	Replacement Value	Replacement Frequency	Annual Obligation
Replacement of hydraulic motors	NA	annually	$150,000
Repainting	$1,000,000	20 years	$50,000
Lightning Protection	$2,000,000	20 years	$100,000
North Wall Repair	$75,000	FY06 only	
Booth Cleaning & Painting	$30,000	10 years	$3,000
Violation Enforcement System	$486,000	15 years	$32,400
Programmable Logic Controller	$500,000	20 years	$25,000
Transformer replacement	$40,000	30 years	$1,333
Access Control System	$39,000	10 years	$3,900
Closed Circuit Television	$50,000	10 years	$5,000
Total			$370,633

Data source: Virginia Department of Transportation, 2005

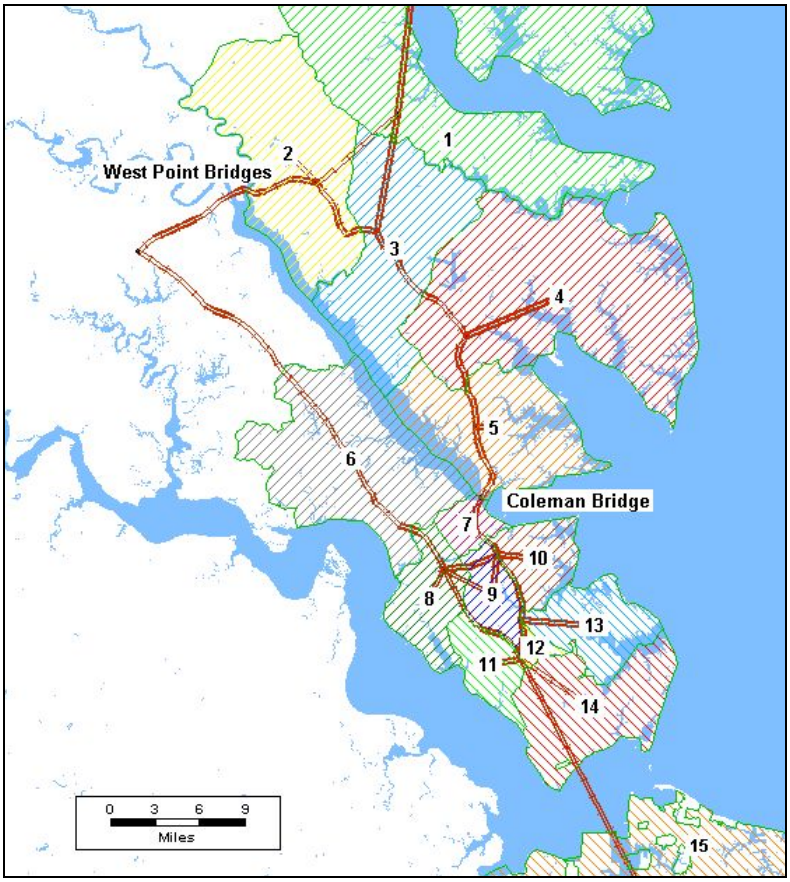
APPENDIX B: DETERMINATION OF TOLL REVENUE

In this appendix, we describe the methodology we use to determine the toll revenue associated with each toll alternative. We first describe the highway network, then discuss the development of the trip table used for the analysis, and finally detail the process we use to predict traffic levels for each toll alternative.

REPRESENTATIVE NETWORK

We developed a roadway network (see figure B-1) to support the development of a trip table and as a way to determine the travel distances and costs for use in our travel forecasting model. The relevant catchment area includes 15 Traffic Analysis Zones (TAZ), with 5 to the north of the York River and 10 to the south of the River.

Figure B-1. Network and Traffic Analysis Zones



We based the network on Caliper Corporation's Streets CD, which is a representation of the U.S. Census TIGER/Line network.[19] The network link distances were taken from the TIGER/Line file. To create travel times, we based the speed of each TIGER/Line file link on their U.S. Census Bureau road type classification. We used this file and the classification categories to calibrate a class-speed relationship. Using this relationship, we calculated the travel time of each TIGER/Line file link, which we in turn summed to calculate the travel time of the aggregated links in our network. As a reality check on calculated travel times, we also drove the network to confirm the reasonableness of the method.

TRIP TABLE

In order to predict the number of travelers that will use the Coleman Bridge for the various toll alternatives, we must first understand the demand that exists for the bridge. For purposes of travel forecasting we built a base year trip table containing the number of trips that desire to travel between each origin-destination (OD) pair. Drawing on available data, we employed a three-staged approach for developing our trip table:

1. Determine aggregate volumes of Coleman Bridge traffic (only northbound travelers are charged the toll).

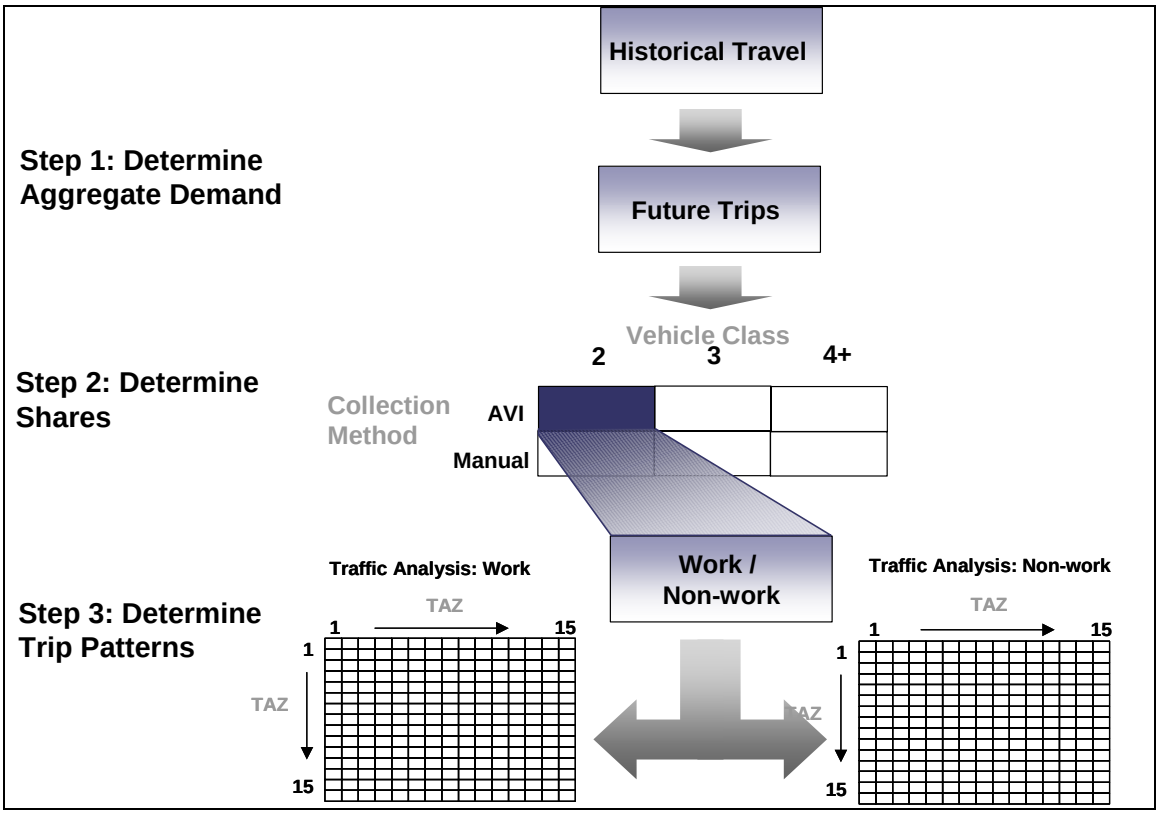
2. Determine the likely share of these trips by vehicle class and toll collection method.

3. Determine the OD traffic patterns of these trips.

Figure B-2 illustrates our approach. In the following sections, we discuss the data and methodology we employed to complete each of these steps.

[19] TIGER/Line files are extracts of geographic and cartographic information maintained in the Census Bureau's TIGER® (Topologically Integrated Geographic Encoding and Referencing) database and are primarily sourced from the 1:100,000 US Geographical Survey topographic maps. The database contains information about roads including location in coordinates, road names, and type classification.

Figure B-2. CRA approach to modeling future demand for Coleman Bridge



Aggregate Traffic Level

The first step is to determine the total volume of future northbound Coleman Bridge travel. Two sources of traffic data containing total traffic counts are available. *Coleman Memorial Bridge Toll Facility, Total Traffic for 2001, 2002, 2003, and 2004* are reports that contain total traffic, broken down by collection method.[20] We present the monthly northbound traffic summary, annual traffic levels, and growth rates in Table B-1. According to *Coleman Memorial Bridge Toll Facility, Total Traffic for 2004,* total northbound traffic was 5,524,417 in 2004, consisting of 18,992 non-revenue transactions and 5,505,425 toll transactions.

[20] This source also includes average daily traffic, authorized run-throughs, violations, and non-revenue traffic.

Table B-1. Northbound Traffic 2001 through 2004

	FY 2001	FY 2002		FY 2003		FY 2004		
Month	Total Traffic	Total Traffic	% Change	Total Traffic	% Change	Total Traffic	% Change	Avg. Annual Growth
January	466,004	480,033	3.0%	492,299	2.6%	507,919	3.2%	2.9%
February	478,518	488,512	2.1%	498,877	2.1%	506,471	1.5%	1.9%
March	438,426	441,758	0.8%	451,182	2.1%	424,664	-5.9%	-1.0%
April	453,411	463,171	2.2%	467,647	1.0%	486,579	4.0%	2.4%
May	426,966	442,948	3.7%	436,832	-1.4%	443,178	1.5%	1.3%
June	430,619	450,863	4.7%	448,764	-0.5%	455,372	1.5%	1.9%
July	411,794	407,047	-1.2%	405,112	-0.5%	410,948	1.4%	-0.1%
August	386,362	403,273	4.4%	378,715	-6.1%	411,761	8.7%	2.3%
September	441,674	457,804	3.7%	451,199	-1.4%	463,310	2.7%	1.6%
October	446,437	459,564	2.9%	456,395	-0.7%	459,512	0.7%	1.0%
November	468,151	486,265	3.9%	481,147	-1.1%	478,346	-0.6%	0.7%
December	465,946	475,202	2.0%	481,831	1.4%	476,357	-1.1%	0.7%
TOTALS	5,314,308	5,456,440	2.7%	5,450,000	-0.1%	5,524,417	1.4%	1.3%

Data source: *Coleman Memorial Bridge Toll Facility, Total Traffic for 2001, 2002, 2003, and 2004* Virginia DOT.

Monthly Traffic Activity by Classification Reports contains daily northbound traffic by vehicle class from July 2003 through June 2004. We calculated the average weekday traffic for the entire FY 2004 period to be 15,744, and the average weekend traffic to be 13,299. According to *Monthly Traffic Activity by Classification Reports*, total toll traffic for FY 2004 was 5,505,474, which is 49 transactions greater than toll traffic reported in *Coleman Memorial Bridge Toll Facility, Total Traffic for 2004* after adjusting for non-revenue traffic.[21]

To estimate future traffic levels, a baseline annual growth rate is needed if the toll is unchanged. The observed annual growth rate of Coleman Bridge traffic from FY 2000 through FY 2004 was 1.3%. We considered the expected regional population change as another measure of growth. Table B-2 shows the population estimates over the 2000 to 2030 period for Gloucester County individually, Gloucester, Mathews, and Middlesex Counties combined, and the larger region in which our TAZs are located. Due to its location immediately north of the Coleman Bridge, Gloucester County residents constitute a large number of Coleman Bridge users. The population of Gloucester County is expected to grow between 0.8% and 1.1% annually. Mathews and Middlesex Counties border Gloucester County to the east and north, and these three counties combined account for most of the Coleman Bridge commuter traffic. The population of these three counties combined is expected to grow between 0.7% and 0.9% annually. The population for the larger region in which our TAZs are located is expected to grow between 0.6% and 0.7% annually over the 2000 to 2030 period.

[21] There were 18,992 non-revenue vehicles in FY 2004, thus 5,505,425 revenue transactions (5,524,417 – 18,992 = 5,505,425).

Table B-2. Regional population growth projections

Year	Full Region Projection	Implied Annual Percent Change	Gloucester, Mathews, and Middelsex Counties Projection	Implied Annual Percent Change	Gloucester County Projection	Implied Annual Percent Change
2000	538,234		54,053		34,780	
2010	572,100	0.6%	59,000	0.9%	38,900	1.1%
2020	612,399	0.7%	64,000	0.8%	42,700	0.9%
2030	651,699	0.6%	68,499	0.7%	46,199	0.8%
2000 - 2030		0.6%		0.8%		1.0%

Data source: Virginia Employment Commission Virginia's Electronic Labor Market Access System, State Demographer http://www.vec.virginia.gov/vecportal/. Year 2000 values are U.S. Census population estimates from the same website.

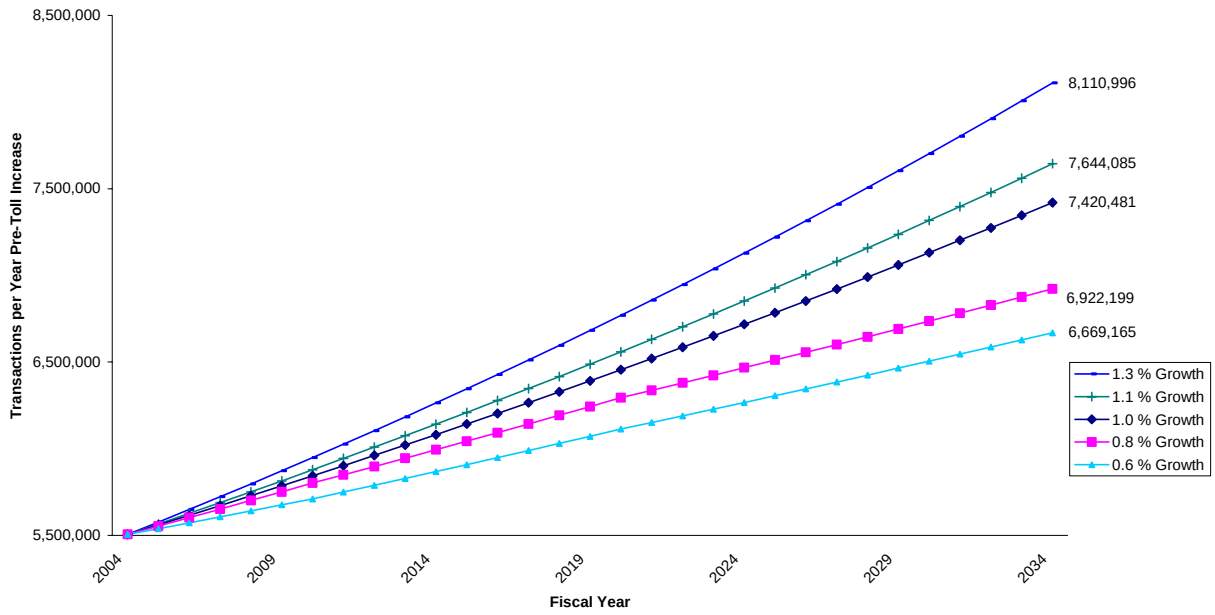
Note: Full Region includes: Essex County, Gloucester County, King and Queen County, Mathews County, Middlesex County, James City County, York County, Hampton City, Newport News City, Poquoson City, and Williamsburg City

We calculated separate growth rate estimates using the available travel demand models. The Virginia Statewide travel demand model generates traffic conditions throughout the state of Virginia, and estimates the traffic of the Coleman Bridge to grow by 1.1% annually from 2000 to 2025. The Hampton Roads model is based upon detailed land use forecasts developed by the Metropolitan Planning Organization containing the Coleman Bridge, and predicts the Coleman Bridge two-way traffic as 31,500 in 2000 and 41,000 in 2026, equal to an annual (compound) growth rate of 1.1%. We place more importance on traffic model growth rates than on population predictions because they are based on the full range of factors that determine future travel.

In the course of our study we also spoke with Gloucester County officials to ascertain levels of planning and development that may impact future traffic demands. The net effect of commuting patterns based on these discussions did not warrant revisions to our estimates.

Based on the analyzed growth factors, we assumed a baseline (pre-diversion) 1.1% annual growth rate to forecast future revenue traffic levels. While this growth rate is lower than the recently experienced growth, it is higher than the forecasted population growth, and consistent with the growth rates predicted by the travel demand models. Figure B-3 presents future northbound Coleman Bridge traffic levels using each of the calculated growth rates, while Table B-3 presents the full schedule of annual northbound Coleman Bridge traffic calculated using the 1.1% growth rate. Toll traffic rises from 5,505,425 in 2004 to 7,644,085 in 2034.

Figure B-3. Northbound Coleman Bridge traffic under different growth rates



Source: Charles River Associates, 2005

Note: "0.8% growth rate" calculated as 0.88% for 2005 through 2010, 0.82% for 2011 through 2020, 0.68% for 2021 through 2034, and "0.6% growth rate" calculated as 0.61% for 2005 through 2010, 0.68% for 2011 through 2020, 0.62% for 2021 through 2034.

Table B-3. Projected northbound Coleman Bridge traffic (2004 through 2034)[1]

Fiscal Year	Pre-Diversion Toll Transactions
2004	5,505,425
2005	5,565,985
2006	5,627,211
2007	5,689,110
2008	5,751,690
2009	5,814,959
2010	5,878,923
2011	5,943,591
2012	6,008,971
2013	6,075,070
2014	6,141,895
2015	6,209,456
2016	6,277,760
2017	6,346,815
2018	6,416,630
2019	6,487,213
2020	6,558,573
2021	6,630,717
2022	6,703,655
2023	6,777,395
2024	6,851,946
2025	6,927,318
2026	7,003,518
2027	7,080,557
2028	7,158,443
2029	7,237,186
2030	7,316,795
2031	7,397,280
2032	7,478,650
2033	7,560,915
2034	7,644,085

Data source: FY 2004 based on VDOT data. CRA calculated future toll traffic using 1% annual growth rate.
[1] 2004 represents actual traffic.

Traffic by Vehicle Class and Collection Method

The second step of our approach is to determine the share of total traffic by vehicle class and collection method. To execute this step, we combined data from three sources. Using VDOT data on *Monthly Traffic Activity by Classification*, we calculated the proportion of traffic that falls in three vehicle class groupings: two-axle vehicles[22] (Class 2), three axle vehicles (Class 3), and four

[22] Class 2 also includes motorcycles.

axle vehicles and greater (Class 4+). Based on average daily traffic counts for FY 2004, 97.6% of toll traffic was Class 2, 1.1% was Class 3, and 1.3 % was Class 4+.

VDOT data in *Coleman Memorial Bridge Toll Facility, Total Traffic for 2004* provides the breakdown of total toll transactions by collection method: 4,260,775 (77%) used AVI and 1,244,650 (23%) used manual collection in FY 2004.

VDOT data on *George P. Coleman Memorial Bridge Toll Facility Revenue and Transaction Comparisons* contains toll traffic and revenue for AVI and manual transactions for FY 2004. This source reported revenues of $2,333,536 from AVI traffic and $2,587,556 from manual traffic. Note that Class 2 AVI users currently pay $0.50 northbound toll while manual collection Class 2 users pay $2.00 and all Class 3 and 4 users pay $3.00 and $4.00 respectively.

Using these three data sets for FY 2004, we constructed a collection method (rows) vs. vehicle class (columns) matrix. We used the percentages of total traffic falling into each class and collection method (described above) to obtain the row and column totals of the matrix. We used revenue data by transaction method, along with the FY 2004 toll schedule, to estimate the share of total traffic for each cell of the matrix such that the total toll revenue calculated using these shares matched the actual revenue, while maintaining the row and column totals. To facilitate the share calculation, we assumed that vehicle classes three and four had the same distribution between collection methods. We estimated that Class 2 AVI vehicle accounts for 76.2% of all trips. Table B-4 shows the FY 2004 matrix of total traffic by collection method and vehicle classification . We used these collection method - vehicle classification combination shares in later steps of the analysis.

Table B-4. Matrix of vehicle class and collection method for FY 2004

Collection Method	Class 2		Class 3		Class 4+		Total Revenue Traffic	
AVI	*4,194,173*	76%	*29,960*	1%	*36,643*	1%	4,260,775	77%
Manual	*1,179,041*	21%	*29,513*	1%	*36,096*	1%	*1,244,650*	23%
TOTALS	*5,373,213*	*98%*	*59,473*	*1%*	*72,739*	*1%*	5,505,425	100%

Data source: Row and column totals based on *VDOT data*: *Coleman Memorial Bridge Toll Facility, Total Traffic for 2004,* and *Monthly Traffic Activity by Classification* Report; CRA calculated remaining cells using *George P. Coleman Memorial Bridge Toll Facility Revenue and Transaction Comparisons*, and MS Excel solver operation.
Note: percentages shown are of total toll traffic.

Determine Traffic Patterns

The third stage of our approach is to determine the OD traffic patterns associated with Coleman Bridge traffic. It is necessary to identify these traffic patterns since travel decisions are based on total travel costs which vary by OD pair.

In our approach, we use two trip purposes – nonwork and work– and identify the traffic patterns separately for each purpose.

Nonwork Trips

We utilized the Hampton Roads Regional Travel Demand Model to determine nonwork trip patterns. As its name implies, non-work trips are those that serve non-work purposes, such as shopping and other leisure activities. Since the Coleman Bridge provides access to nearby Virginia-area beaches, a substantial amount of vacation traffic is included in the non-work trips. The Hampton Roads Regional Demand Model is a traditional four-step travel demand model that includes 1,480 Traffic Analysis Zones (TAZ), three trip purposes[23], vehicle types broken down by HOV / SOV, and an all day traffic assignment. The model system has undergone extensive validation and has served as the basis for numerous regional studies. The Hampton Roads model network contains the Coleman Bridge. However, the network does not extend beyond our TAZ 3 to the west and it does not include the West Point bridges. If the entire study area, including the West Point bridges, had been covered by the Hampton Roads model, we could have exclusively used the Hampton Roads model for the entire diversion exercise.[24] But, the Hampton Roads model did provide us with useful information including OD patterns of bridge users, which is the information necessary for this step of the trip table development.[25] The use of the Hampton Roads model provides a reliable foundation for our analysis given its credibility from previous use in numerous other studies.

Using the select link assignment feature of our transportation modeling software, we captured the OD pairs of all trips using the Coleman Bridge within the Hampton Roads model. Home Based Other, Non-Home Based, and External trips from the Hampton Roads model were included as nonwork trips.

[23] Home Based Work, Home Based Other, and Non-Home Based

[24] The entire exercise includes the representative network already discussed, the trip table currently being discussed, and the diversion process soon to be discussed.

[25] Since we will not test toll decreases, we do not need the West Point bridges users' traffic patterns, since we can assume that they will continue to use the West Point bridges. Thus, we only need to capture the traffic patterns of the Coleman Bridge users, because it is the possible diversion of these users in response to toll increases that we are trying to quantify.

We related mapped Hampton Roads model TAZs to our model TAZs as shown in Table B-5. We used this to aggregate the nonwork trips extracted from the Hampton Roads model into a trip table corresponding to our 15 by 15 TAZ zone system.

Table B-5. TAZ Relationship between Hampton Roads and Toll Study TAZs

CRA TAZ	Hampton Roads Network Model TAZ
1	1474
2	
3	1478
4	1427-31, 1442,1446-47, 1471, 1476-77
5	1432-41, 1443-45
6	1259-80, 1306-16, 1318-51, 1386-1401, 1403-04, 1406, 1461-65
7	1381-85
8	1110-16, 1188-91, 1194, 1198-99, 1202-03, 1205
9	1183-85, 1187, 1201, 1204, 1369-72, 1402
10	1373-79
11	1101-03, 1106-09, 1155-61, 1165-76, 1181-82, 1192-93, 1200
12	1093, 1177-78, 1363-64
13	1010-11, 1224-34, 1365-68
14	1001-09, 1012-18, 1020-31, 1033-56, 1058-65, 1067-73, 1076, 1078-1092, 1094-97, 1104-05, 1117-19, 1121-30, 1133-47. 1149-51
15	1-43, 45-66, 68-82, 85-202, 204-33, 235-310, 312-15, 317-38, 340-48, 350-90, 392-93, 397, 402-07, 409-29, 434-41, 444, 446-85, 488-91, 494-99, 501-04, 506-08, 510-11, 513, 515-20, 522, 525-31, 533, 535, 537-38, 540, 542-48, 550-79, 581-87, 589-94, 596-97, 599-601, 603, 606-10, 612, 614, 616-18, 620-39, 641-42, 645, 647, 650-58, 661-69, 671-72, 674-87, 692-99, 703-04, 706-09, 711, 715-19, 721, 724, 726-46, 750-66, 831-37, 839-47, 849-57, 859-81, 885, 887, 889-95, 902, 907, 910-17, 1120, 1131-32, 1380

Source: Charles River Associates, 2005

Since we are only concerned about traffic in the toll collection direction, we removed all southbound trips. Southbound (free of tolls) volumes on the bridge are only one percent higher than northbound volumes, so this assumption of symmetry is justified. Of the remaining northbound trips, we calculated the share of trips for each OD pair. Table B-6 presents this matrix of trip shares representing nonwork travel patterns. Note there are no nonwork trips destined to TAZs 2 and 3. TAZ 2 is further northwest than the Hampton Roads network preventing any relationship, while TAZ 3 is shown in the Hampton Roads model as not having any Coleman Bridge nonwork trips.

Table B-6. Nonwork Coleman Bridge traffic patterns

	Destination TAZ					
Origin TAZ	**1**	**2**	**3**	**4**	**5**	**Total**
6	2.1%	0.0%	0.0%	6.1%	7.5%	**15.8%**
7	0.3%	0.0%	0.0%	0.9%	1.3%	**2.4%**
8	1.0%	0.0%	0.0%	2.9%	4.9%	**8.8%**
9	0.1%	0.0%	0.0%	1.8%	3.5%	**5.4%**
10	1.0%	0.0%	0.0%	1.9%	2.7%	**5.7%**
11	1.5%	0.0%	0.0%	2.4%	3.7%	**7.6%**
12	0.2%	0.0%	0.0%	0.4%	0.8%	**1.4%**
13	0.8%	0.0%	0.0%	0.9%	1.3%	**3.0%**
14	3.0%	0.0%	0.0%	10.4%	5.5%	**18.9%**
15	15.6%	0.0%	0.0%	8.4%	7.1%	**31.1%**
Total	**25.6%**	**0.0%**	**0.0%**	**36.0%**	**38.5%**	**100.0%**

Data source: CRA adjustments to Hampton Roads Regional Travel Demand Model nonwork trip purposes, 2005

Work Trips

While the Hampton Roads model also provides information about work trips, we identified a more appropriate data source. The Census Transportation Planning Package (CTPP), contains detailed transportation statistics based on the 2000 U.S. Census. CTPP presents state-level data divided into three parts: tables showing (1) place of residence, (2) place of work, and (3) journey to work. We used the recently released Part 3 of the CTPP data for Virginia to collect detailed information on the number of people traveling to and from work at the census tract level. Similar to how we related the Hampton Roads model TAZs to our model TAZs, we related the census tracts to our model TAZs. These relationships are depicted in Table B-7. Again, we aggregate the trips into a 15 by 15 TAZ trip table corresponding to our zone system.

Table B-7. Relationship between Census Tract and Toll Study TAZs

CRA TAZ	Census Tract (County Code Tract Codes)	
1	**057**	950800
	103	990100-300
	119	950900, 951000-200
	133	990200-300
	159	990100-200
2	**097**	950500
3	**073**	100100
4	**073**	100200
	115	951300-400
5	**073**	100300-500
6	**095**	080101-02, 080201-02
	199	050600-800
	830	370100-300
7	**199**	050500
8	**700**	032001, 032123-24, 032211, 032221-22, 032300-400
9	**199**	050301
	700	032113, 032116, 032125
10	**199**	050303-04, 050401-02
11	**700**	031500, 031602, 031700-900, 032002, 032004-05, 032114-15, 03212
12	**199**	05203-04
	700	032117
13	**199**	050205-06
	650	010200
	735	340100-300
14	**650**	010101, 010103-04, 010304-10, 010400, 010501-02, 010601-02, 010701-03, 010800-012000
	700	030100, 030300, 030400, 030600, 030800-900, 031100-1400, 031601
15	**550**	020001-03, 020100-400, 020501, 020600-700, 020801, 020804-07, 020901, 020903-04, 021004-09, 021102, 021200, 021301-02, 021401-04, 021501-02, 021601-02
	710	000201-02, 000600, 000900, 001200, 001400, 001700-800, 002200-300, 002500-3400, 003501-02, 003600-3900, 004001-02, 004200-300, 004500-5300, 005500, 005601-02, 005701-02, 005800, 005901-03, 006000-6400, 006502, 006601-07, 006700-800, 006901-02, 007001-02
	740	210200-500, 210700-900, 211100, 211400-900, 212100-600, 212701-02, 212800-900, 213001-02, 213101, 213103
	800	075100-200, 075500
	810	040000, 040200, 040403-04, 041200, 041400, 041600, 041801, 042201-02, 042400, 042600, 042801-02, 043001-02, 043200, 043800, 044001-02, 044200, 044401-02, 044600, 044805, 044807-08, 045000, 045200, 045405-08, 045410, 045412, 045417-18, 045420, 045601-02, 045801, 045803, 045806-09, 046002, 046005, 046008-12, 046204-05, 046206-07, 046211-13, 046215-16, 046218, 046400

Source: Charles River Associates, 2005

Unlike the Hampton Roads model, the CTPP does not represent daily travel, but only travel to work. In order to capture the return trip, we transposed the matrix. We added the original and transposed matrix to create a table of total daily work travel. Another difference from the Hampton Roads model is that the CTPP data represents person-trips, not vehicle-trips as required for our toll analysis. In order to convert person-trips to vehicle-trips we used the 1.11 vehicle occupancy rate for work trips in the Hampton Roads model. Table B-8 presents the resulting work travel patterns.

Diversion is only an issue for trips between TAZ pairs originating on the south side of the bridge and terminating on the north side, since the toll is only collected in the northbound direction. Thus, we removed all southbound traffic and calculated the percentage of total work trips represented by each of the remaining northbound cells to represent our work trip travel patterns. Table B-9 presents the work travel patterns.

Table B-8. Work Coleman Bridge traffic patterns

	Destination TAZ					
Origin TAZ	**1**	**2**	**3**	**4**	**5**	**Total**
6	0.3%	0.3%	0.6%	9.6%	13.5%	**24.4%**
7	0.0%	0.0%	0.1%	0.9%	1.3%	**2.4%**
8	0.0%	0.0%	0.3%	4.2%	4.7%	**9.2%**
9	0.4%	0.0%	0.5%	3.2%	4.4%	**8.5%**
10	0.2%	0.0%	0.5%	1.6%	2.9%	**5.1%**
11	0.1%	0.0%	0.3%	4.7%	7.5%	**12.7%**
12	0.0%	0.0%	0.1%	0.0%	0.0%	**0.1%**
13	0.0%	0.1%	0.1%	1.4%	2.7%	**4.3%**
14	0.5%	0.1%	0.6%	11.2%	12.1%	**24.5%**
15	0.1%	0.1%	0.2%	3.8%	4.4%	**8.7%**
Total	**1.7%**	**0.8%**	**3.4%**	**40.6%**	**53.5%**	**100.0%**

Data source: CRA adjustments to U.S. Census Bureau 2000 Census Transportation Planning Package, 2005

We checked the reasonableness of our data by comparing TAZ 4 and TAZ 5, which together constitute a majority of the work person trips (3,324 and 4,377 trips from south of the river respectively). We compared the number of trips for these TAZ to the number of households they contain (8,289 and 6,378 respectively, based on their component census tracks). It is logical that TAZ 5 would have more trips even though it contains less households, simply because it is adjacent to the bridge while TAZ 4 is further removed.

Determining Total Work / Nonwork Split

Once we identify the traffic patterns of work and nonwork trips, we need to determine the trip purpose split. It is necessary to determine this traffic split because the value of time, a key component for toll diversion, varies by the trip purpose. We employed a three-step process to determine the total work / nonwork split.

1. *Determine the share of traffic on weekdays and the weekend.* Our review of current total Coleman Bridge traffic identified that 75% of all trips occur during weekdays while the remaining 25% occur on the weekend.

2. *Determine the work / nonwork split for weekdays and weekend.* The number of trips included in the CTPP constitute 47% of weekday traffic. Thus we use a weekday work / nonwork split of 47% / 53%. We had no data to base the weekend work / nonwork split, and thus estimated a split of 10% work trips and 90% nonwork trips.

3. *Apply the weekday and weekend shares as a weighting for work / nonwork split.* By combining the weekday / weekend split with the work / nonwork splits we calculated the total share of work trips to be 38% and nonwork trips to be 62%.[26]

PREDICTION OF TRIPS FOR EACH TOLL ALTERNATIVE

Since the toll increase will only apply to the Commuter AVI segment, we only need to predict the resulting impact on AVI equipped trips. All other collection-class segments are assumed to remain unchanged by the toll increase to the Commuter AVI segment.

For the Coleman Bridge Commuter AVI segment, there are four types of travel behavior responses we can expect due to a toll increase:

1. Use a different route

2. Do not make trip (reduced trip frequency)

3. Choose a different destination

4. No change in the trip

To predict the trips that use the Coleman Bridge at each toll level, we need to estimate the magnitude of each of these responses. The way to estimate the magnitude of the first type of response is

[26] Work = (0.75 * 0.47) + (0.25 * 0.10) = 38%;
Nonwork = (0.75 * 0.53) + (0.25 * 0.90) = 62%

through a route diversion model. The second type of response, foregoing the trip, can be thought of as the opposite of induced demand, where in this case, travel conditions have worsened due to the increased toll. The method to predict the third type of response is by a redistribution of trips. All trips remaining after accounting for the other responses constitute the fourth type of response, the remaining trips. In the following sections, we describe our prediction of each response to the toll increase.

Trip Diversion

To estimate the number of Coleman Bridge trips that would divert to the West Point bridges due to a Coleman Bridge toll increase, we compute the total travel cost on each route for each OD pair. The standard method for computing the total cost of travel is through a generalized travel cost equation (GTC). We use the following generalized travel cost equation to determine the costs of the Coleman Bridge route and the West Point bridges route:

GTC = [Time (in min) / 60 * VOT] + [VOC * distance (in miles)] + toll

where: VOT = value of time: work = $8.14 / hour and nonwork = $4.07 / hour

VOC = vehicle operating cost: work = $0.11 / mile and nonwork = $0.07 / mile

The values of time and operating costs used above are discussed in the next sections. Once we compute the generalized travel cost for each OD pair, we assign trips to the route having the lowest GTC. Thus, all trips that have a lower total cost for the Coleman Bridge route continue to use the Coleman Bridge while all trips that have a lower cost for the West Point route are diverted.

Value of Time

The VOT converts travel time into a cost unit. VOT calculations are generally based on the average wage rate. According to the U.S. Census Bureau, the median annual household income was $42,472 in 2000 for the Norfolk-Virginia Beach-Newport News MSA.[27] Following the procedure specified by the U.S. Department of Transportation, we converted this income to an hourly wage of $21.24.[28] Charles River Associates has previously performed in-depth analyses of several mode choice models and found that work trips exhibit a VOT of approximately 40% of the average wage rate, while the percentage for nonwork trips is about 20%. CRA has also observed that people tend to have a higher VOT for mode choice than for route choice and thus, we identified reasonable wage rate factors for

[27] Virginia's Electronic Labor Market Access, http://www.velma.vec.state.va.us/vecweb/poptot/390515720.pdf, last viewed December 21, 2004.

[28] U.S. Department of Transportation, Office of the Secretary of Transportation, "Departmental Guidance for the Valuation of Travel Time in Economic Analysis", found at http://ostpxweb.dot.gov/policy/Data/VOT97guid.pdf, July 2, 2004. This document describes the calculation of the hourly wage rate as "median annual household income, as reported by the Bureau of the Census, divided by 2,000 hours."

the Coleman Bridge study of 35% for work and 17.5% for nonwork. Applying these factors to the average wage rate yields VOT estimates of $8.14 for work trips and $4.07 for nonwork trips in year 2004 dollars.

These values are comparable to values CRA found during the Dulles Greenway Traffic and Revenue Update Study; which ranged from $3.61 to $5.63 / hour for 3 route choice models developed.[29]

Vehicle Operating Costs

Vehicle Operating Cost (VOC) is the other parameter in the generalized travel cost function. VOC converts travel distance into an out-of-pocket expenditure. The American Automobile Association identifies an average VOC of 12.6 cents / mile.[30] We divided this number by vehicle occupancy to account for the number of passengers in the vehicle. As previously noted, the average occupancy of work trips in the Hampton Roads model is 1.11. For nonwork trips, a study in Virginia found the nonwork trip vehicle occupancy to be 1.87.[31] This occupancy rate is almost the same as the 1.88 nonwork vehicle occupancy found in the 2001 National Household Travel Survey.[32] Using the 1.11 and 1.87 vehicle occupancy rates, we calculated VOCs of $0.11 / mile and $0.07 / mile for work and nonwork trips respectively.

Adjustments for Indifference Areas

A drawback of using TAZs of any finite size, and their centroid connectors for loading trips to a network is that this method is always an approximation of true conditions. Our all-or-nothing assignment loads trips in these areas uniformly to a route, though some trips may actually select an alternative route based on its true origin and destination locations. This simplification of loading trips onto the network at the centroid connector becomes important in this study for the areas that are nearly indifferent between alternate routes. Therefore, we treat these indifference areas in more detail to account for how these trips truly access the road network.

For the toll changes being considered in this study, TAZ 3 and TAZ 6 contain the relevant indifference areas. While the loading of trips on the network is not uniform from the other TAZs, loading approximations in these zones are not likely to impact the selected route, and thus we do not adjust their loadings.

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[29] Charles River Associates, "Working Paper on Phase 2 Dulles Greenway Traffic and Revenue Update Study" June 25, 1996.

[30] AAA, *Your Driving Costs 2004*, http://www.ouraaa.com/news/library/drivingcost/driving.html, last viewed December 21, 2004.

[31] Lockwood, Philomena B., and Michael J. Demtsky, "Methodology for Nonwork Travel Analysis in Suburban Communities: Final Report" Virginia Transportation Research Council, November 1994.

[32] U.S. Department of Transportation, The 2001 National Household Travel Survey: daily trip file extracts.

Table B-9 displays the adjustments we applied to better account for actual network loadings from the indifference zones. We made these adjustments based on the size and shape of the TAZ and the characteristics of the network. For TAZ 3, 20% of the TAZ can load onto the network much closer to the Coleman Bridge, and accordingly this 20% of the TAZ experiences a travel time 3.5 minute shorter and a travel distance two miles shorter for the Coleman Bridge route than do the trips which load onto the network from the centroid connector. Conversely, 20% of the TAZ can load onto the network more favorably for the West Point bridges route, with similar travel time and distance improvements. For TAZ 6, 3% of trips have true network loadings more favorable for the Coleman Bridge route while 15% load more favorably for the West Point bridges route. The indifference areas are asymmetric for this TAZ because of its trip composition. Some of the Hampton Roads model TAZ that are included in TAZ 6 are external, and thus their trips are not truly located in TAZ 6, but rather further northwest. This also explains why the travel time and distance savings for the West Point bridges are greater.

Table B-9. Indifference area adjustments

TAZ	Route	Percent of Trips	Travel Time Advantage	Travel Distance Advantage
3	Coleman Bridge	20%	3.5 minutes	2 miles
3	West Point bridges	20%	3.5 minutes	2 miles
6	Coleman Bridge	3%	6 minutes	5 miles
6	West Point bridges	15%	9 minutes	7.5 miles

Source: Charles River Associates, 2005

Test Diversion Results

After developing the route diversion model, we used it to predict the likely level of diversion from a toll increase from $0.50 to $0.75 for Commuter AVI vehicles. This $0.25 toll increase diverted only 0.6% of vehicles from the Coleman Bridge. This very small diversion closely corresponds to the prevailing belief that traffic is 1% higher in the southbound direction (free) than in the northbound direction (tolled). We reviewed directional volume data for 2002 and 2003, and they show these 1% differences, but in different directions for each year.[33] Data on the first three months of fiscal year 2004 show 1.7% more traffic in the southbound direction. The low 0.6% diversion is reasonable since the toll represents a small part of the total generalized travel cost.

[33] In 2002, the southbound to northbound ratio is 101.2%, supporting the insights we were provided. However, in 2003, this ratio was only 98.8%.

Demand elasticity is a common method used to measure the impact of a toll increase. However, it is important to note the behavior being changed. In this case, we use the linear arc elasticity method to calculate the diversion elasticity, with respect only to the vehicle operating cost, as follows:

Diversion elasticity = [(Q2 - Q1)*(P2 + P1)] / [(P2 - P1)*(Q2 + Q1)]

where: P1 = cost before toll change,
P2 = cost after toll change,
Q1 = traffic volume before toll change, and
Q2 = traffic volume after toll change.

The diversion model provides the before and after traffic volumes. To determine the before and after costs, we need to calculate the total out-of-pocket expenditure, comprised of the toll and the vehicle operating cost. Above, we noted that the VOC is $0.11 / mile for work trips and $0.07 / mile for nonwork trips. Thus, to calculate the operating cost for Coleman Bridge users, we need the average trip length for work and nonwork trips, as well as the split of work and nonwork trips. The average work trip is 29 miles and the average nonwork trip is 42 miles.[34] Since the work / nonwork split of trips is 38% / 62%, the resulting average vehicle operating cost is $3.01. When combined with the initial toll level of $0.50, the average total expense is $3.51 before the toll increase and $3.76 after. Thus, the corresponding 0.6% reduction in traffic translates into a toll diversion elasticity of -0.09.

Reduced Vehicle Miles Traveled

The second and third behavioral responses to a Coleman Bridge toll increase are reducing the trip frequency and changing destination choices to closer / nearby destinations. Both of these result in reduced vehicle miles traveled (VMT).

[34] Note that nonwork trips include long-distance external trips from the Hampton Roads model.

Comparison with other Toll Price Elasticities

The most extensive literature on VMT changes in response to changes in the price of travel is for changes in fuel prices. Goodwin reviewed a number of studies that provide such elasticities, and found a short-tem price elasticity of -0.16 and a long-term price elasticity of -0.33.[35] In the short term most of the response to increases in fuel prices consist of less travel (VMT). But in the long-term, people can purchase more fuel efficient vehicles, resulting in higher long-term price elasticities. For this analysis, we make the conservative assumption that the entire -0.16 is the result only of reduced VMT. Therefore, we can add the diversion elasticity of -0.09 to the VMT elasticity of -0.16 to calculate the total elasticity of -0.25, representing the demand elasticity associated with trip diversions, redistribution and reduction in trip frequency. This translates into a 1.1% reduction in Coleman Bridge traffic for every additional $0.25 toll increase. We apply this elasticity to calculate the total level of traffic remaining after a toll increase.

Table B-10 presents several studies reporting demand elasticities associated with bridges. The demand elasticity values from other toll bridges range from -0.021 to -0.362. While it is useful to consider elasticity values from other studies, we must exercise caution in doing so since the conditions surrounding each bridge vary. However, the most well known and studied bridges such as the Golden Gate, Delaware Memorial and Chesapeake Bay Bridges have toll elasticities in the same range or lower than the toll elasticity of -0.25 that we have estimated for the Coleman Bridge. These other bridges are also characterized by competing bridges located a considerable distance away. Thus, this comparison provides considerable confidence that our use of a -0.25 toll price elasticity for the Coleman Bridge is conservative, and not result in overestimates of additional revenue from toll increases. The elasticity found in these studies is heavily dependent on the network topology surrounding the bridge (such as availability of alternate routes), the characteristics of travelers (such as their value of time), and the composition of trip patterns (such as major employment only on one side of bridge). Further, each study may use a different method to calculate elasticity, such as point elasticity, linear arc elasticity, or log arc elasticity. These factors make it difficult to compare demand elasticities with each other We need to consider these factors and the particular situation of the Coleman Bridge when comparing it to other toll bridges. For example, the nearest alternate crossing is about 25 miles upriver, and there are a limited number of jobs in Gloucester County, as indicated by a majority of Gloucester County residents working outside Gloucester County.[36]

[35] Goodwin, P. B., "A Review of New Demand Elasticities with Special Reference to Short and Long Run Effects of Price Changes", *Journal of Transport Economics and Policy*, Vol. XXVI, No. 2, May 1992

[36] Virginia's Electronic Labor Market Access providing US Census Commuting Patterns for Gloucester County shows that only 41% of Gloucester County work trips are destined to Gloucester County, http://velma.virtuallmi.com/analyzer/session/session.asp?CAT=POP, last viewed December 21, 2004.

Table B-10. Compilation of toll bridge travel demand elasticity estimates

Location	Type of Toll	Elasticity	Paper	Source
Midpoint Bridge, Lee County Florida	Variable rate, based on time of day	-0.056 to -0.362	Burris, M.W."The Toll-Price Component of Travel Demand Elasticity" *International Journal of Transport Economics.* Vol. 30 no. 1. February 2003.	Author
Cape Coral Bridge, Lee County Florida	Variable rate discount, based on time of day	-0.021 to -0.203	Burris, M.W.	Author
Golden Gate Bridge	Brief raise-flat rate	-0.15	Burris, M.W.	Gifford and Talkington, 1996
Golden Gate Bridge	Friday traffic only-flat rate	-0.19	Burris, M.W.	Gifford and Talkington, 1996
San Francisco Bay Bridge	Flat rate	<-0.05	Burris, M.W.	Harvey, 1994
Deleware Memorial Bridge	N/A	-0.26 (Pass. Cars) -0.13 (Commuters) -0.25 (Commercial)	Weustefield, N.H. and Regan, E.J. "Impact of Rate Increases on Toll Facilities" *Traffic Quarterly* Vol 35. No. 4. October, 1981, p. 639-655	Author
Chesapeake Bay Bridge Tunnel	N/A	-0.15 (Pass. Cars) -0.26 (Commercial)	Weustefield, N.H. and Regan, E.J.	Author
Cape May County Bridges	N/A	-0.31	Weustefield, N.H. and Regan, E.J.	Author
Maximum:		*-0.386*		
Minimum:		*-0.021*		

Data source: sources noted

Calculation of Toll Revenue

By adjusting the traffic levels in response to toll increases as described above, we identify the post-diversion Coleman Bridge traffic levels for each vehicle class – collection method combination. We calculate the total toll revenue by applying the toll for each vehicle class – collection method combination to the corresponding post-diversion traffic level.

Technical Appendix B

APPLYING REVENUE TO COSTS

In order to gauge the financial performance of each alternative, the revenues must be applied to the costs. The revenues are used to pay for toll operations, routine maintenance (including a reserve for unforeseen short-term repairs), bridge tender operations, and debt service in that order, with the balance to finance long-term maintenance and replacements. As noted earlier, due to the uncertainty regarding the exact timing of the long-term maintenance and replacement projects, we convert the project costs into an annual cost stream. For tracking purposes, rather than create a separate account of the maintenance and replacement fund, we treat these improvements as another cost component which is subtracted from the remaining revenue after debt service and other costs have been subtracted. Any remaining revenues are used to pay down the TFRA obligation. Since the Coleman Bridge currently has an obligation to the TFRA, this $40,211,000 commitment is the starting (negative) balance. In the event that there is inadequate revenue to pay all costs for a year, the remaining costs are covered by an additional draw from the TFRA and the cumulative balance is adjusted. After the TFRA obligation has been fully repaid, we grow positive cumulative balances at a 2% interest rate, and these funds are available for subsequent years' costs.

APPENDIX C: ALTERNATIVE AND SCENARIO DETAILS

ALTERNATIVE F: TOLL COLLECTION IN BOTH DIRECTIONS

Introduction

Currently tolls are collected only in the northbound direction for travel on the Coleman Bridge. The belief is that traffic in the southbound direction is about 1% higher than in the northbound direction, as travelers divert to other routes to avoid paying the toll.[37] We created Alternative F to evaluate the financial performance of collecting tolls in both directions. This alternative includes an increase in the Commuter AVI toll to $0.38 in each direction, with all other roundtrip tolls held constant.[38] Thus, this alternative is very similar to Alternative B ($0.75 toll in the northbound direction only).

Methodology

The merits of the two-way toll depend on the associated costs and revenues. We made a few modifications to our analysis framework to account for toll collection in both directions. First we include the additional costs associated with the added infrastructure and labor needed to collect tolls in the southbound direction. In its 1994 study for VDOT, Parsons Brinckerhoff estimated that additional infrastructure alone in the southbound direction would cost about $513,000.[39] This includes the cost for additional median barriers, lane-switching equipment, changes to roadside sign requirements, toll booths, toll islands, canopy, and tunnels. We inflate this estimate to 2004 dollars using the CPI index and find a current additional infrastructure cost of $655,269,[40] and therefore assume an additional draw of $655,269 from the TFRA. To calculate the additional labor costs of staffing the southbound toll booths we again use information from the Parsons Brinckerhoff report, along with current labor costs. Our analysis of the Coleman Bridge 2004 operations costs found current labor costs to be 31% of total operations costs. Thus, we calculate labor costs for each year in the study period as 31% of total operations costs. The Parsons Brinckerhoff report estimates the number of additional staff required for two-way collection to be 85% of the number required for

[37] In 2002, the southbound to northbound ratio is 101.2%, supporting the insights we were provided. However, in 2003, this ratio was only 98.8%. Data on the first three months of fiscal year 2004 show 1.7% more traffic in the southbound direction.

[38] Tolls of $1.00, $1.50, and $2.00 are charged in each direction for 2-axle manual collection, and all 3-xle and 4-axle vehicles respectively.

[39] "George P. Coleman Bridge Toll Collection Alternatives", Prepared for Virginia Department of Transportation. Parsons Brinckerhoff Quade & Douglas Inc. September 1994, p.4.

[40] This is a lower bound cost in 2004 dollars, as construction costs have been escalating faster than the CPI.

collection in only one direction.[41] We therefore estimate additional labor costs for 2-way toll collection for each year by calculating 85% of that year's labor cost and add these costs to the one-way toll collection operations costs to estimate total operations costs for 2-way collection.

We also adjust the revenue portion of our analysis. We assume that when half the current northbound tolls are collected in each direction, the 1% fewer southbound trips would no longer divert to another route. This assumption is reasonable given the relatively small portion of the total travel cost that tolls comprise.[42] We estimate the number of trips remaining after a toll increase similar as for one-way toll collection, as described in Technical Appendix B, except the trip frequency and redistribution rate of 1.1% is applied per $0.125 increase in each directional toll ($0.25 round-trip increase). This reduction results from motorist decisions to either change their destination or not make the trip. To find final revenues from this alternative, we double the revenues resulting from the same toll increase for traffic only in the northbound direction. As with the other alternatives, comparing all costs and total revenues allows us to estimate the cumulative balance for each year in the study period.

[41] "George P. Coleman Bridge Toll Collection Alternatives", Prepared for Virginia Department of Transportation. Parsons Brinckerhoff Quade & Douglas Inc. September 1994, p.10,12.

[42] Please refer to the "Prediction of Trips for each Toll Alternative" section of Technical Appendix B for a more detailed discussion of the total travel cost.

SCENARIO 2: HIGH AVI SHARE

Operations Cost Reduction Calculation

Reducing the labor expense is one of the benefits of automated toll collection. Labor costs represent nearly a third of total toll operations costs. Reaching the AVI usage of 85% supposed in Condition 2 would enable a reduction in the number of toll collectors, supervisory staff, and support personnel required to operate the Coleman Bridge Toll Facility. We adjusted operating costs in the High AVI Share scenario to account for these labor savings. The Coleman Bridge Toll Facility employed an estimated 33 employees.[43] Not all positions would experience reductions due to increased AVI usage. We estimated the number of toll collectors required to operate the Coleman Bridge toll lanes would decrease from 14 to seven, Plaza Supervisors from five to three, and Accounting Clerks from five to two, yet the number of employees in other positions would remain at nine. We checked that the ratio of manual transactions to toll collectors remained mostly constant in the High AVI Share condition, confirming that our predicted labor reduction would not overburden future employees. The total reduction in employees from 33 to 24 would decrease associated salaries and other labor costs by 27%. In FY 2004 labor costs made up 31% of total operations costs. Thus, the labor savings would translate to a reduction in total operations costs of 8.5%. We applied this 8.5% reduction to total operations costs estimates for FY 2005 through FY 2034 in the High AVI Share scenario.

Similar to the other scenarios, the AVI transaction cost component of the operations costs is determined by the volume of AVI traffic. Thus, this portion of the operations cost will increase for the High AVI scenario.

[43] Parsons Brinckerhoff Quade & Douglas, "George P. Coleman Bridge Toll Collection Alternatives", 1994. Virginia Department of Transportation.

APPENDIX D: MONTE CARLO SIMULATION

INTRODUCTION

There are many financial risks associated with toll bridge projects. The financing plans for these projects are based upon estimates of future costs and revenues. The values of these future costs and revenues are not known with certainty and may change over the lifetime of the project from the estimates in this report: Costs could increase due to unforeseen circumstances, including changes in inflation rates, or the traffic and revenue may not reach their forecasts due to improvements of competing facilities or changes in travel behavior. Understanding these risks and their financial implications can help make a better-informed decision regarding the appropriate size of the toll increase.

Monte Carlo simulation is a way to analyze the risk associated with a project or elements of a project. It is a tool for measuring and preparing for uncertainty by considering many possible outcomes rather than a single solution, and it provides for the presentation of results as a range of outcomes rather than as a single result. To apply Monte Carlo simulation to our financial framework, we input a distribution of likely values rather than use a single input value for various financial elements. Monte Carlo simulation then generates many scenarios that are combinations of randomly selected values for each input (based upon the input probability distributions).

This section describes the methodology we employ for Monte Carlos Simulation.

Technical Appendix D

METHODOLOGY

We implement Monte Carlo Simulation into our financial framework using Crystal Ball Excel add-in. The first step of this implementation is to select the parameters to adjust and to specify the input distribution of likely values for each of these parameters. We identified a list of inputs that could have a significant impact on the success of the toll increase for the Coleman Bridge:

- Traffic Growth Rate – rate used to increase future year total traffic level
- Commuter AVI Share – the Commuter AVI share of total traffic; this share determines the shares of all other vehicle class – collection methods
- Weekday Work Share – the work share of weekday travel; this share determines the nonwork share of weekday travel
- Weekend Work Share – the work share of weekend travel; this share determines the nonwork share of weekend travel
- Toll Operations Cost Factor – the factor used to scale the base toll operations costs
- Maintenance Cost Factor – the factor used to scale the base maintenance costs
- Bridge Tender Operations Cost Factor – the factor used to scale the bridge tender operations costs
- Maintenance and Replacement Cost Factor – the factor used to scale the long-term maintenance and replacement cost estimates
- Inflation Rate Factor – the factor used to scale the CPI-based inflation rate forecasts
- Work Value of Time – value used in the generalized travel cost equation to convert travel time for work trips into monetary terms
- Nonwork Value of Time – value used in the generalized travel cost equation to convert travel time for nonwork trips into monetary terms
- Work Vehicle Operating Cost – value used in the generalized travel cost equation to convert travel distance for work trips into monetary terms
- Nonwork Vehicle Operating Cost – value used in the generalized travel cost equation to convert travel distance for nonwork trips into monetary terms
- Trip Frequency Reduction and Redistribution Rate – rate used to discount travel to account for trip frequency reduction and trip redistribution in response to toll increase
- Improvement Fund Interest Rate – interest rate applied to grow the improvement fund

We specified the input value distributions for each toll alternative, assuming a triangular probability distribution with the initial value (i.e., that used in the other scenarios) as the most frequent point, declining to the specified upper and lower limits shown in Table D-1. In the next several paragraphs, we describe the logic we used to determine upper and lower limits used for each of the projects.

Table D-1. Parameter input distributions

Parameter	Initial Value	Low Value	High Value	Value Range Based On
Traffic Growth Rate	1.1%	0.8%	1.3%	Low: population growth forecast High: historical traffic growth trend
Commuter AVI Share	76%	70%	85%	More upper movement possibilities
Weekday Work Share	47%	35%	59%	Initial value plus / minus 25%
Weekend Work Share	10%	0%	20%	None / double initial value
Toll Operations Cost Factor	1.0	0.8	1.2	Initial value plus / minus 20%
Maintenance Cost Factor	1.0	0.8	1.2	Initial value plus / minus 20%
Bridge Tender Operations Cost Factor	1.0	0.8	1.2	Initial value plus / minus 20%
Maintenance and Replacement Cost Factor	1.0	0.8	1.2	Initial value plus / minus 20%
Inflation Rate Factor	1.0	0.8	1.2	Initial value plus / minus 20%
Work Value of Time Factor	$8.14	$6.11	$10.18	Initial value plus / minus 25%
Non-work Value of Time Factor	$4.07	$3.05	$5.09	Initial value plus / minus 25%
Work Vehicle Operating Cost Factor	$0.11	$0.09	$0.14	Initial value plus / minus 25%
Non-work Vehicle Operating Cost Factor	$0.07	$0.05	$0.08	Initial value plus / minus 25%
Trip Frequency Reduction and Redistribution Rate	1.1%	0.0%	2.2%	None / double initial value
Improvement Fund Interest Rate	2.0%	1.0%	3.5%	More upper movement possibilities

Source: Charles River Associates, 2005

In Technical Appendix B, we described the three approaches we used to identify Traffic Growth Rates and how we selected the average of these rates for our analysis. We based the input distribution of the traffic growth rate parameter on this research, using the forecast population growth rate of 0.8% for Gloucester, Mathews and Middlesex Counties as the low value and the historical growth of Coleman Bridge traffic as the high value.

Similar information was not available for the rest of the parameters and we had to base the input range on logical reasoning. For the Commuter AVI Share, we defined the input range from 70% to 85%. While the current 76% share of total traffic is quite high, we believe that it is more probable that the Commuter AVI share would increase rather than decrease.

For the next twelve parameters in Table D-1, we believe that the distribution of likely values are symmetric. For the Weekday Work Share, we specified that this share could increase or decrease by as much as 25%, while for the Weekend Work Share, this share could range from as much as double our initial assumption of 10% to no share at all. For all cost factors, as well as the inflation rate used to adjust the costs, these values could prove to be 20% higher or lower than the initial estimates. The parameters used for the generalized travel cost equation, VOT and VOC factors, could be 25% higher or lower than the initial values. The Trip Frequency Reduction and Redistribution Rate is another parameter that could be as high as double the initial value and as low as zero.

Technical Appendix D

In our analysis we use two interest rates relating to the maintenance improvements. The first is the interest rate used to grow the balance in the Improvement Fund, while the second is the interest rate used to pay the cost of borrowing money to finance improvements that exceed available funds. Interest rates are currently low. We believe that it is more probable that these rates will increase than decrease and thus the input distribution included a larger increase over the initial value than decrease.

APPENDIX E: SCENARIO RESULTS

Table E-1. Coleman Bridge Balance Sheet: Base Case, Do Nothing(Current Dollars)

Base Case
Do Nothing

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$4,978,712	$1,908,040	$353,560	$245,000	$2,472,112	$3,451,268	$450,000	($41,640,155)	($1,429,155)
2006	$5,033,477	$1,879,469	$361,691	$250,635	$2,541,682	$3,448,743	$1,051,350	($43,598,566)	($1,958,411)
2007	$5,088,846	$1,920,047	$370,372	$256,650	$2,541,776	$3,448,863	$1,136,648	($45,642,301)	($2,043,734)
2008	$5,144,823	$1,961,549	$379,261	$262,810	$2,541,203	$3,452,188	$555,910	($47,109,196)	($1,466,895)
2009	$5,201,416	$2,003,997	$388,363	$269,117	$2,539,938	$3,467,463	$569,252	($48,605,972)	($1,496,776)
2010	$5,258,632	$2,047,413	$397,684	$275,576	$2,537,959	$3,466,013	$582,914	($50,116,940)	($1,510,968)
2011	$5,316,477	$2,093,502	$407,626	$282,465	$2,532,883	$3,465,763	$597,487	($51,647,307)	($1,530,367)
2012	$5,374,958	$2,140,688	$417,817	$289,527	$2,526,926	$3,468,763	$612,424	($53,201,568)	($1,554,261)
2013	$5,434,082	$2,188,997	$428,262	$296,765	$2,520,058	$3,470,881	$627,735	($54,780,126)	($1,578,558)
2014	$5,493,857	$2,238,456	$438,969	$304,184	$2,512,248	$3,467,363	$643,428	($56,378,669)	($1,598,542)
2015	$5,554,290	$2,289,093	$449,943	$311,789	$2,503,464	$3,468,206	$468,623	($57,812,033)	($1,433,365)
2016	$5,615,387	$2,340,938	$461,191	$319,584	$2,493,673	$3,462,900	$480,338	($59,261,598)	($1,449,565)
2017	$5,677,156	$2,394,020	$472,721	$327,573	$2,482,841	$3,466,444	$492,347	($60,737,548)	($1,475,949)
2018	$5,739,605	$2,448,369	$484,539	$335,763	$2,470,933	$3,468,069	$504,656	($62,239,339)	($1,501,791)
2019	$5,802,740	$2,504,017	$496,653	$344,157	$2,457,914	$3,467,519	$517,272	($63,766,215)	($1,526,876)
2020	$5,866,571	$2,560,994	$509,069	$352,761	$2,443,747	$3,464,538	$530,204	($65,317,210)	($1,550,994)
2021	$5,931,103	$2,619,334	$521,796	$361,580	$2,428,393	$3,463,869	$543,459	($66,896,144)	($1,578,934)
2022	$5,996,345	$2,679,070	$534,841	$370,619	$2,411,815	—	$557,045	($65,041,374)	$1,854,770
2023	$6,062,305	$2,740,236	$548,212	$379,885	$2,393,973	—	$570,971	($63,218,373)	$1,823,001
2024	$6,128,990	$2,802,867	$561,917	$389,382	$2,374,824	—	$585,246	($61,428,794)	$1,789,578
2025	$6,196,409	$2,867,000	$575,965	$399,116	$2,354,328	—	$599,877	($59,674,343)	$1,754,451
2026	$6,264,570	$2,932,670	$590,364	$409,094	$2,332,441	—	$614,874	($57,956,776)	$1,717,567
2027	$6,333,480	$2,999,916	$605,123	$419,322	$2,309,119	—	$630,246	($56,277,903)	$1,678,873
2028	$6,403,148	$3,068,777	$620,251	$429,805	$2,284,315	—	$646,002	($54,639,589)	$1,638,314
2029	$6,473,583	$3,139,291	$635,758	$440,550	$2,257,984	—	$662,152	($53,043,757)	$1,595,832
2030	$6,544,792	$3,211,500	$651,652	$451,564	$2,230,077	—	$678,706	($51,492,385)	$1,551,371
2031	$6,616,785	$3,285,446	$667,943	$462,853	$2,200,544	—	$695,673	($49,987,515)	$1,504,870
2032	$6,689,569	$3,361,170	$684,641	$474,424	$2,169,334	—	$713,065	($48,531,246)	$1,456,269
2033	$6,763,155	$3,438,717	$701,757	$486,285	$2,136,396	—	$730,892	($47,125,742)	$1,405,504
2034	$6,837,549	$3,518,131	$719,301	$498,442	$2,101,676	—	$749,164	($45,773,230)	$1,352,512

Table E-2. Coleman Bridge Balance Sheet: Base Case, Alternative A (Current Dollars)

Base Case			
Commuter AVI Toll	$0.70	3-Axle	$4.25
2-Axle Manual Collection	$2.50	4-Axle & Greater	$5.50

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,025,338	$1,901,598	$353,560	$245,000	$3,525,180	$3,451,268	$450,000	($40,587,087)	($376,087)
2006	$6,091,617	$1,873,680	$361,691	$250,635	$3,605,610	$3,448,743	$1,051,350	($41,481,569)	($894,482)
2007	$6,158,624	$1,914,194	$370,372	$256,650	$3,617,408	$3,448,863	$1,136,648	($42,449,672)	($968,103)
2008	$6,226,369	$1,955,632	$379,261	$262,810	$3,628,666	$3,452,188	$555,910	($42,829,103)	($379,432)
2009	$6,294,859	$1,998,015	$388,363	$269,117	$3,639,364	$3,467,463	$569,252	($43,226,454)	($397,351)
2010	$6,364,103	$2,041,364	$397,684	$275,576	$3,649,478	$3,466,013	$582,914	($43,625,903)	($399,449)
2011	$6,434,108	$2,087,387	$407,626	$282,465	$3,656,629	$3,465,763	$597,487	($44,032,524)	($406,621)
2012	$6,504,883	$2,134,506	$417,817	$289,527	$3,663,033	$3,468,763	$612,424	($44,450,677)	($418,154)
2013	$6,576,437	$2,182,747	$428,262	$296,765	$3,668,663	$3,470,881	$627,735	($44,880,631)	($429,953)
2014	$6,648,778	$2,232,137	$438,969	$304,184	$3,673,488	$3,467,363	$643,428	($45,317,934)	($437,303)
2015	$6,721,914	$2,282,705	$449,943	$311,789	$3,677,477	$3,468,206	$468,623	($45,577,286)	($259,352)
2016	$6,795,855	$2,334,480	$461,191	$319,584	$3,680,600	$3,462,900	$480,338	($45,839,924)	($262,638)
2017	$6,870,610	$2,387,491	$472,721	$327,573	$3,682,824	$3,466,444	$492,347	($46,115,890)	($275,966)
2018	$6,946,186	$2,441,768	$484,539	$335,763	$3,684,116	$3,468,069	$504,656	($46,404,498)	($288,608)
2019	$7,022,594	$2,497,343	$496,653	$344,157	$3,684,442	$3,467,519	$517,272	($46,704,846)	($300,348)
2020	$7,099,843	$2,554,247	$509,069	$352,761	$3,683,767	$3,464,538	$530,204	($47,015,821)	($310,975)
2021	$7,177,941	$2,612,512	$521,796	$361,580	$3,682,053	$3,463,869	$543,459	($47,341,095)	($325,274)
2022	$7,256,899	$2,672,173	$534,841	$370,619	$3,679,266	—	$557,045	($44,218,875)	$3,122,220
2023	$7,336,724	$2,733,263	$548,212	$379,885	$3,675,365	—	$570,971	($41,114,482)	$3,104,393
2024	$7,417,428	$2,795,818	$561,917	$389,382	$3,670,312	—	$585,246	($38,029,416)	$3,085,066
2025	$7,499,020	$2,859,873	$575,965	$399,116	$3,664,066	—	$599,877	($34,965,227)	$3,064,189
2026	$7,581,509	$2,925,465	$590,364	$409,094	$3,656,586	—	$614,874	($31,923,514)	$3,041,712
2027	$7,664,906	$2,992,632	$605,123	$419,322	$3,647,829	—	$630,246	($28,905,930)	$3,017,584
2028	$7,749,220	$3,061,412	$620,251	$429,805	$3,637,752	—	$646,002	($25,914,180)	$2,991,750
2029	$7,834,461	$3,131,846	$635,758	$440,550	$3,626,308	—	$662,152	($22,950,024)	$2,964,157
2030	$7,920,640	$3,203,973	$651,652	$451,564	$3,613,453	—	$678,706	($20,015,277)	$2,934,747
2031	$8,007,767	$3,277,835	$667,943	$462,853	$3,599,137	—	$695,673	($17,111,813)	$2,903,463
2032	$8,095,853	$3,353,476	$684,641	$474,424	$3,583,312	—	$713,065	($14,241,567)	$2,870,247
2033	$8,184,907	$3,430,938	$701,757	$486,285	$3,565,927	—	$730,892	($11,406,531)	$2,835,036
2034	$8,274,941	$3,510,267	$719,301	$498,442	$3,546,932	—	$749,164	($8,608,764)	$2,797,768

Table E-3. Coleman Bridge Balance Sheet: Base Case, Alternative B (Current Dollars)

Base Case	
Commuter AVI Toll	$0.75

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,984,203	$1,901,490	$353,560	$245,000	$3,484,154	$3,451,268	$450,000	($40,628,113)	($417,113)
2006	$6,050,030	$1,873,583	$361,691	$250,635	$3,564,121	$3,448,743	$1,051,350	($41,564,085)	($935,972)
2007	$6,116,580	$1,914,096	$370,372	$256,650	$3,575,462	$3,448,863	$1,136,648	($42,574,134)	($1,010,049)
2008	$6,183,862	$1,955,533	$379,261	$262,810	$3,586,259	$3,452,188	$555,910	($42,995,973)	($421,839)
2009	$6,251,885	$1,997,914	$388,363	$269,117	$3,596,490	$3,467,463	$569,252	($43,436,198)	($440,225)
2010	$6,320,656	$2,041,263	$397,684	$275,576	$3,606,133	$3,466,013	$582,914	($43,878,992)	($442,794)
2011	$6,390,183	$2,087,285	$407,626	$282,465	$3,612,807	$3,465,763	$597,487	($44,329,435)	($450,443)
2012	$6,460,475	$2,134,402	$417,817	$289,527	$3,618,729	$3,468,763	$612,424	($44,791,893)	($462,458)
2013	$6,531,540	$2,182,642	$428,262	$296,765	$3,623,871	$3,470,881	$627,735	($45,266,638)	($474,745)
2014	$6,603,387	$2,232,031	$438,969	$304,184	$3,628,203	$3,467,363	$643,428	($45,749,226)	($482,588)
2015	$6,676,024	$2,282,598	$449,943	$311,789	$3,631,695	$3,468,206	$468,623	($46,054,361)	($305,135)
2016	$6,749,461	$2,334,371	$461,191	$319,584	$3,634,314	$3,462,900	$480,338	($46,363,285)	($308,924)
2017	$6,823,705	$2,387,381	$472,721	$327,573	$3,636,029	$3,466,444	$492,347	($46,686,047)	($322,762)
2018	$6,898,765	$2,441,657	$484,539	$335,763	$3,636,806	$3,468,069	$504,656	($47,021,965)	($335,918)
2019	$6,974,652	$2,497,231	$496,653	$344,157	$3,636,612	$3,467,519	$517,272	($47,370,144)	($348,179)
2020	$7,051,373	$2,554,133	$509,069	$352,761	$3,635,410	$3,464,538	$530,204	($47,729,475)	($359,331)
2021	$7,128,938	$2,612,398	$521,796	$361,580	$3,633,165	$3,463,869	$543,459	($48,103,638)	($374,163)
2022	$7,207,356	$2,672,057	$534,841	$370,619	$3,629,839	—	$557,045	($45,030,844)	$3,072,794
2023	$7,286,637	$2,733,146	$548,212	$379,885	$3,625,395	—	$570,971	($41,976,421)	$3,054,423
2024	$7,366,790	$2,795,700	$561,917	$389,382	$3,619,792	—	$585,246	($38,941,875)	$3,034,546
2025	$7,447,825	$2,859,753	$575,965	$399,116	$3,612,991	—	$599,877	($35,928,761)	$3,013,114
2026	$7,529,751	$2,925,344	$590,364	$409,094	$3,604,949	—	$614,874	($32,938,686)	$2,990,075
2027	$7,612,578	$2,992,509	$605,123	$419,322	$3,595,624	—	$630,246	($29,973,307)	$2,965,378
2028	$7,696,317	$3,061,288	$620,251	$429,805	$3,584,972	—	$646,002	($27,034,337)	$2,938,971
2029	$7,780,976	$3,131,721	$635,758	$440,550	$3,572,948	—	$662,152	($24,123,540)	$2,910,796
2030	$7,866,567	$3,203,846	$651,652	$451,564	$3,559,505	—	$678,706	($21,242,741)	$2,880,800
2031	$7,953,099	$3,277,708	$667,943	$462,853	$3,544,596	—	$695,673	($18,393,818)	$2,848,923
2032	$8,040,583	$3,353,347	$684,641	$474,424	$3,528,171	—	$713,065	($15,578,712)	$2,815,106
2033	$8,129,030	$3,430,807	$701,757	$486,285	$3,510,180	—	$730,892	($12,799,423)	$2,779,289
2034	$8,218,449	$3,510,135	$719,301	$498,442	$3,490,571	—	$749,164	($10,058,016)	$2,741,407

Table E-4. Coleman Bridge Balance Sheet: Base Case, Alternative C (Current Dollars)

Base Case	
Commuter AVI Toll	$0.85

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,385,196	$1,857,658	$353,560	$245,000	$3,928,979	$3,451,268	$450,000	($40,183,288)	$27,712
2006	$6,455,434	$1,872,083	$361,691	$250,635	$3,971,024	$3,448,743	$1,051,350	($40,712,357)	($529,069)
2007	$6,526,443	$1,912,580	$370,372	$256,650	$3,986,841	$3,448,863	$1,136,648	($41,311,026)	($598,669)
2008	$6,598,234	$1,954,000	$379,261	$262,810	$4,002,163	$3,452,188	$555,910	($41,316,961)	($5,934)
2009	$6,670,815	$1,996,365	$388,363	$269,117	$4,016,970	$3,467,463	$569,252	($41,336,706)	($19,745)
2010	$6,744,194	$2,039,696	$397,684	$275,576	$4,031,237	$3,466,013	$582,914	($41,354,396)	($17,689)
2011	$6,818,380	$2,085,701	$407,626	$282,465	$4,042,587	$3,465,763	$597,487	($41,375,058)	($20,662)
2012	$6,893,382	$2,132,801	$417,817	$289,527	$4,053,237	$3,468,763	$612,424	($41,403,007)	($27,949)
2013	$6,969,209	$2,181,023	$428,262	$296,765	$4,063,159	$3,470,881	$627,735	($41,438,464)	($35,457)
2014	$7,045,871	$2,230,394	$438,969	$304,184	$4,072,323	$3,467,363	$643,428	($41,476,932)	($38,467)
2015	$7,123,375	$2,280,943	$449,943	$311,789	$4,080,700	$3,468,206	$468,623	($41,333,061)	$143,871
2016	$7,201,732	$2,332,698	$461,191	$319,584	$4,088,259	$3,462,900	$480,338	($41,188,041)	$145,020
2017	$7,280,951	$2,385,690	$472,721	$327,573	$4,094,967	$3,466,444	$492,347	($41,051,864)	$136,176
2018	$7,361,042	$2,439,947	$484,539	$335,763	$4,100,793	$3,468,069	$504,656	($40,923,796)	$128,068
2019	$7,442,013	$2,495,502	$496,653	$344,157	$4,105,702	$3,467,519	$517,272	($40,802,885)	$120,911
2020	$7,523,875	$2,552,385	$509,069	$352,761	$4,109,660	$3,464,538	$530,204	($40,687,966)	$114,919
2021	$7,606,638	$2,610,631	$521,796	$361,580	$4,112,632	$3,463,869	$543,459	($40,582,662)	$105,304
2022	$7,690,311	$2,670,271	$534,841	$370,619	$4,114,580	—	$557,045	($37,025,127)	$3,557,535
2023	$7,774,904	$2,731,340	$548,212	$379,885	$4,115,468	—	$570,971	($33,480,630)	$3,544,496
2024	$7,860,428	$2,793,874	$561,917	$389,382	$4,115,256	—	$585,246	($29,950,620)	$3,530,010
2025	$7,946,893	$2,857,907	$575,965	$399,116	$4,113,905	—	$599,877	($26,436,592)	$3,514,028
2026	$8,034,309	$2,923,477	$590,364	$409,094	$4,111,373	—	$614,874	($22,940,093)	$3,496,499
2027	$8,122,686	$2,990,622	$605,123	$419,322	$4,107,619	—	$630,246	($19,462,720)	$3,477,373
2028	$8,212,036	$3,059,381	$620,251	$429,805	$4,102,599	—	$646,002	($16,006,122)	$3,456,597
2029	$8,302,368	$3,129,792	$635,758	$440,550	$4,096,269	—	$662,152	($12,572,005)	$3,434,117
2030	$8,393,694	$3,201,897	$651,652	$451,564	$4,088,583	—	$678,706	($9,162,128)	$3,409,877
2031	$8,486,025	$3,275,736	$667,943	$462,853	$4,079,493	—	$695,673	($5,778,308)	$3,383,820
2032	$8,579,371	$3,351,354	$684,641	$474,424	$4,068,952	—	$713,065	($2,422,421)	$3,355,887
2033	$8,673,744	$3,428,793	$701,757	$486,285	$4,056,910	—	$730,892	$903,597	$2,422,421
2034	$8,769,156	$3,508,098	$719,301	$498,442	$4,043,315	—	$749,164	$4,215,820	—

Table E-5. Coleman Bridge Balance Sheet: Base Case, Alternative D (Current Dollars)

Base Case	
Commuter AVI Toll	$0.75
Commuter AVI Toll 2015	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,984,203	$1,901,490	$353,560	$245,000	$3,484,154	$3,451,268	$450,000	($40,628,113)	($417,113)
2006	$6,050,030	$1,873,583	$361,691	$250,635	$3,564,121	$3,448,743	$1,051,350	($41,564,085)	($935,972)
2007	$6,116,580	$1,914,096	$370,372	$256,650	$3,575,462	$3,448,863	$1,136,648	($42,574,134)	($1,010,049)
2008	$6,183,862	$1,955,533	$379,261	$262,810	$3,586,259	$3,452,188	$555,910	($42,995,973)	($421,839)
2009	$6,251,885	$1,997,914	$388,363	$269,117	$3,596,490	$3,467,463	$569,252	($43,436,198)	($440,225)
2010	$6,320,656	$2,041,263	$397,684	$275,576	$3,606,133	$3,466,013	$582,914	($43,878,992)	($442,794)
2011	$6,390,183	$2,087,285	$407,626	$282,465	$3,612,807	$3,465,763	$597,487	($44,329,435)	($450,443)
2012	$6,460,475	$2,134,402	$417,817	$289,527	$3,618,729	$3,468,763	$612,424	($44,791,893)	($462,458)
2013	$6,531,540	$2,182,642	$428,262	$296,765	$3,623,871	$3,470,881	$627,735	($45,266,638)	($474,745)
2014	$6,603,387	$2,232,031	$438,969	$304,184	$3,628,203	$3,467,363	$643,428	($45,749,226)	($482,588)
2015	$7,781,667	$2,278,063	$449,943	$311,789	$4,741,872	$3,468,206	$468,623	($44,944,183)	$805,043
2016	$7,867,265	$2,329,786	$461,191	$319,584	$4,756,704	$3,462,900	$480,338	($44,130,718)	$813,465
2017	$7,953,805	$2,382,745	$472,721	$327,573	$4,770,765	$3,466,444	$492,347	($43,318,743)	$811,974
2018	$8,041,297	$2,436,971	$484,539	$335,763	$4,784,024	$3,468,069	$504,656	($42,507,443)	$811,300
2019	$8,129,751	$2,492,493	$496,653	$344,157	$4,796,449	$3,467,519	$517,272	($41,695,785)	$811,658
2020	$8,219,179	$2,549,343	$509,069	$352,761	$4,808,006	$3,464,538	$530,204	($40,882,520)	$813,264
2021	$8,309,590	$2,607,555	$521,796	$361,580	$4,818,659	$3,463,869	$543,459	($40,071,189)	$811,331
2022	$8,400,995	$2,667,161	$534,841	$370,619	$4,828,374	—	$557,045	($35,799,861)	$4,271,329
2023	$8,493,406	$2,728,196	$548,212	$379,885	$4,837,113	—	$570,971	($31,533,719)	$4,266,142
2024	$8,586,833	$2,790,695	$561,917	$389,382	$4,844,839	—	$585,246	($27,274,125)	$4,259,594
2025	$8,681,289	$2,854,694	$575,965	$399,116	$4,851,514	—	$599,877	($23,022,488)	$4,251,637
2026	$8,776,783	$2,920,229	$590,364	$409,094	$4,857,096	—	$614,874	($18,780,267)	$4,242,222
2027	$8,873,327	$2,987,338	$605,123	$419,322	$4,861,544	—	$630,246	($14,548,968)	$4,231,299
2028	$8,970,934	$3,056,060	$620,251	$429,805	$4,864,818	—	$646,002	($10,330,152)	$4,218,816
2029	$9,069,614	$3,126,435	$635,758	$440,550	$4,866,872	—	$662,152	($6,125,432)	$4,204,720
2030	$9,169,380	$3,198,503	$651,652	$451,564	$4,867,662	—	$678,706	($1,936,475)	$4,188,957
2031	$9,270,243	$3,272,305	$667,943	$462,853	$4,867,143	—	$695,673	$2,234,995	$1,936,475
2032	$9,372,216	$3,347,885	$684,641	$474,424	$4,865,266	—	$713,065	$6,431,895	—
2033	$9,475,310	$3,425,285	$701,757	$486,285	$4,861,983	—	$730,892	$10,691,625	—
2034	$9,579,539	$3,504,552	$719,301	$498,442	$4,857,244	—	$749,164	$15,013,537	—

Table E-6. Coleman Bridge Balance Sheet: Base Case, Alternative E (Current Dollars)

Base Case	
Commuter AVI Toll	$1.00

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,975,271	$1,896,916	$353,560	$245,000	$4,479,795	$3,451,268	$450,000	($39,632,473)	$578,527
2006	$7,051,999	$1,869,473	$361,691	$250,635	$4,570,200	$3,448,743	$1,051,350	($39,562,365)	$70,107
2007	$7,129,571	$1,909,941	$370,372	$256,650	$4,592,608	$3,448,863	$1,136,648	($39,555,268)	$7,097
2008	$7,207,996	$1,951,332	$379,261	$262,810	$4,614,593	$3,452,188	$555,910	($38,948,773)	$606,496
2009	$7,287,284	$1,993,667	$388,363	$269,117	$4,636,136	$3,467,463	$569,252	($38,349,351)	$599,422
2010	$7,367,444	$2,036,969	$397,684	$275,576	$4,657,215	$3,466,013	$582,914	($37,741,063)	$608,288
2011	$7,448,486	$2,082,944	$407,626	$282,465	$4,675,451	$3,465,763	$597,487	($37,128,862)	$612,201
2012	$7,530,419	$2,130,013	$417,817	$289,527	$4,693,062	$3,468,763	$612,424	($36,516,987)	$611,875
2013	$7,613,254	$2,178,205	$428,262	$296,765	$4,710,022	$3,470,881	$627,735	($35,905,581)	$611,406
2014	$7,697,000	$2,227,545	$438,969	$304,184	$4,726,302	$3,467,363	$643,428	($35,290,070)	$615,511
2015	$7,781,667	$2,278,063	$449,943	$311,789	$4,741,872	$3,468,206	$468,623	($34,485,027)	$805,043
2016	$7,867,265	$2,329,786	$461,191	$319,584	$4,756,704	$3,462,900	$480,338	($33,671,562)	$813,465
2017	$7,953,805	$2,382,745	$472,721	$327,573	$4,770,765	$3,466,444	$492,347	($32,859,587)	$811,974
2018	$8,041,297	$2,436,971	$484,539	$335,763	$4,784,024	$3,468,069	$504,656	($32,048,287)	$811,300
2019	$8,129,751	$2,492,493	$496,653	$344,157	$4,796,449	$3,467,519	$517,272	($31,236,629)	$811,658
2020	$8,219,179	$2,549,343	$509,069	$352,761	$4,808,006	$3,464,538	$530,204	($30,423,364)	$813,264
2021	$8,309,590	$2,607,555	$521,796	$361,580	$4,818,659	$3,463,869	$543,459	($29,612,033)	$811,331
2022	$8,400,995	$2,667,161	$534,841	$370,619	$4,828,374	—	$557,045	($25,340,704)	$4,271,329
2023	$8,493,406	$2,728,196	$548,212	$379,885	$4,837,113	—	$570,971	($21,074,563)	$4,266,142
2024	$8,586,833	$2,790,695	$561,917	$389,382	$4,844,839	—	$585,246	($16,814,969)	$4,259,594
2025	$8,681,289	$2,854,694	$575,965	$399,116	$4,851,514	—	$599,877	($12,563,332)	$4,251,637
2026	$8,776,783	$2,920,229	$590,364	$409,094	$4,857,096	—	$614,874	($8,321,111)	$4,242,222
2027	$8,873,327	$2,987,338	$605,123	$419,322	$4,861,544	—	$630,246	($4,089,812)	$4,231,299
2028	$8,970,934	$3,056,060	$620,251	$429,805	$4,864,818	—	$646,002	$129,004	$4,089,812
2029	$9,069,614	$3,126,435	$635,758	$440,550	$4,866,872	—	$662,152	$4,336,305	—
2030	$9,169,380	$3,198,503	$651,652	$451,564	$4,867,662	—	$678,706	$8,611,987	—
2031	$9,270,243	$3,272,305	$667,943	$462,853	$4,867,143	—	$695,673	$12,955,697	—
2032	$9,372,216	$3,347,885	$684,641	$474,424	$4,865,266	—	$713,065	$17,367,011	—
2033	$9,475,310	$3,425,285	$701,757	$486,285	$4,861,983	—	$730,892	$21,845,443	—
2034	$9,579,539	$3,504,552	$719,301	$498,442	$4,857,244	—	$749,164	$26,390,432	—

Table E-7. Coleman Bridge Balance Sheet: Base Case, Alternative F (Current Dollars)

Base Case
Two-Way Commuter AVI Toll $0.38

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,003,806	$2,689,694	$353,560	$245,000	$2,715,553	$3,451,268	$450,000	($42,051,984)	($1,840,984)
2006	$6,069,848	$2,625,524	$361,691	$250,635	$2,831,997	$3,448,743	$1,051,350	($43,720,079)	($1,668,095)
2007	$6,136,616	$2,679,576	$370,372	$256,650	$2,830,018	$3,448,863	$1,136,648	($45,475,572)	($1,755,493)
2008	$6,204,119	$2,734,827	$379,261	$262,810	$2,827,221	$3,452,188	$555,910	($46,656,449)	($1,180,877)
2009	$6,272,364	$2,791,304	$388,363	$269,117	$2,823,579	$3,467,463	$569,252	($47,869,584)	($1,213,135)
2010	$6,341,360	$2,849,036	$397,684	$275,576	$2,819,064	$3,466,013	$582,914	($49,099,447)	($1,229,863)
2011	$6,411,115	$2,910,181	$407,626	$282,465	$2,810,843	$3,465,763	$597,487	($50,351,854)	($1,252,407)
2012	$6,481,638	$2,972,743	$417,817	$289,527	$2,801,550	$3,468,763	$612,424	($51,631,491)	($1,279,637)
2013	$6,552,936	$3,036,758	$428,262	$296,765	$2,791,150	$3,470,881	$627,735	($52,938,957)	($1,307,466)
2014	$6,625,018	$3,102,259	$438,969	$304,184	$2,779,606	$3,467,363	$643,428	($54,270,142)	($1,331,185)
2015	$6,697,893	$3,169,283	$449,943	$311,789	$2,766,878	$3,468,206	$468,623	($55,440,093)	($1,169,951)
2016	$6,771,570	$3,237,867	$461,191	$319,584	$2,752,927	$3,462,900	$480,338	($56,630,404)	($1,190,311)
2017	$6,846,057	$3,308,049	$472,721	$327,573	$2,737,714	$3,466,444	$492,347	($57,851,481)	($1,221,077)
2018	$6,921,364	$3,379,866	$484,539	$335,763	$2,721,195	$3,468,069	$504,656	($59,103,010)	($1,251,529)
2019	$6,997,499	$3,453,360	$496,653	$344,157	$2,703,330	$3,467,519	$517,272	($60,384,471)	($1,281,461)
2020	$7,074,471	$3,528,569	$509,069	$352,761	$2,684,072	$3,464,538	$530,204	($61,695,140)	($1,310,669)
2021	$7,152,291	$3,605,537	$521,796	$361,580	$2,663,378	$3,463,869	$543,459	($63,039,090)	($1,343,949)
2022	$7,230,966	$3,684,305	$534,841	$370,619	$2,641,201	—	$557,045	($60,954,934)	$2,084,156
2023	$7,310,506	$3,764,917	$548,212	$379,885	$2,617,493	—	$570,971	($58,908,412)	$2,046,522
2024	$7,390,922	$3,847,418	$561,917	$389,382	$2,592,205	—	$585,246	($56,901,453)	$2,006,960
2025	$7,472,222	$3,931,853	$575,965	$399,116	$2,565,287	—	$599,877	($54,936,042)	$1,965,410
2026	$7,554,417	$4,018,271	$590,364	$409,094	$2,536,687	—	$614,874	($53,014,229)	$1,921,814
2027	$7,637,515	$4,106,718	$605,123	$419,322	$2,506,353	—	$630,246	($51,138,122)	$1,876,107
2028	$7,721,528	$4,197,244	$620,251	$429,805	$2,474,228	—	$646,002	($49,309,896)	$1,828,226
2029	$7,806,465	$4,289,900	$635,758	$440,550	$2,440,258	—	$662,152	($47,531,790)	$1,778,106
2030	$7,892,336	$4,384,737	$651,652	$451,564	$2,404,384	—	$678,706	($45,806,111)	$1,725,678
2031	$7,979,151	$4,481,808	$667,943	$462,853	$2,366,548	—	$695,673	($44,135,236)	$1,670,875
2032	$8,066,922	$4,581,168	$684,641	$474,424	$2,326,689	—	$713,065	($42,521,613)	$1,613,623
2033	$8,155,658	$4,682,873	$701,757	$486,285	$2,284,743	—	$730,892	($40,967,761)	$1,553,852
2034	$8,245,370	$4,786,979	$719,301	$498,442	$2,240,648	—	$749,164	($39,476,277)	$1,491,484

Table E-8. Coleman Bridge Balance Sheet: High AVI Usage, Do Nothing(Current Dollars)

High AVI Usage
Do Nothing

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$4,242,544	$1,822,879	$353,560	$245,000	$1,821,105	$3,451,268	$450,000	($42,291,163)	($2,080,163)
2006	$4,289,212	$1,788,921	$361,691	$250,635	$1,887,964	$3,448,743	$1,051,350	($44,903,291)	($2,612,128)
2007	$4,336,393	$1,826,810	$370,372	$256,650	$1,882,561	$3,448,863	$1,136,648	($47,606,241)	($2,702,950)
2008	$4,384,093	$1,865,553	$379,261	$262,810	$1,876,470	$3,452,188	$555,910	($49,737,869)	($2,131,628)
2009	$4,432,319	$1,905,169	$388,363	$269,117	$1,869,669	$3,467,463	$569,252	($51,904,915)	($2,167,046)
2010	$4,481,074	$1,945,680	$397,684	$275,576	$1,862,134	$3,466,013	$582,914	($54,091,707)	($2,186,793)
2011	$4,530,366	$1,988,645	$407,626	$282,465	$1,851,629	$3,465,763	$597,487	($56,303,328)	($2,211,621)
2012	$4,580,200	$2,032,623	$417,817	$289,527	$1,840,233	$3,468,763	$612,424	($58,544,282)	($2,240,954)
2013	$4,630,582	$2,077,636	$428,262	$296,765	$1,827,918	$3,470,881	$627,735	($60,814,980)	($2,270,698)
2014	$4,681,518	$2,123,711	$438,969	$304,184	$1,814,654	$3,467,363	$643,428	($63,111,117)	($2,296,137)
2015	$4,733,015	$2,170,874	$449,943	$311,789	$1,800,409	$3,468,206	$468,623	($65,247,536)	($2,136,420)
2016	$4,785,078	$2,219,150	$461,191	$319,584	$1,785,153	$3,462,900	$480,338	($67,405,622)	($2,158,085)
2017	$4,837,714	$2,268,567	$472,721	$327,573	$1,768,852	$3,466,444	$492,347	($69,595,560)	($2,189,938)
2018	$4,890,929	$2,319,153	$484,539	$335,763	$1,751,474	$3,468,069	$504,656	($71,816,811)	($2,221,251)
2019	$4,944,729	$2,370,937	$496,653	$344,157	$1,732,983	$3,467,519	$517,272	($74,068,619)	($2,251,808)
2020	$4,999,121	$2,423,946	$509,069	$352,761	$1,713,345	$3,464,538	$530,204	($76,350,015)	($2,281,396)
2021	$5,054,112	$2,478,212	$521,796	$361,580	$1,692,524	$3,463,869	$543,459	($78,664,819)	($2,314,804)
2022	$5,109,707	$2,533,765	$534,841	$370,619	$1,670,482	—	$557,045	($77,551,383)	$1,113,436
2023	$5,165,914	$2,590,637	$548,212	$379,885	$1,647,180	—	$570,971	($76,475,174)	$1,076,209
2024	$5,222,739	$2,648,859	$561,917	$389,382	$1,622,581	—	$585,246	($75,437,838)	$1,037,335
2025	$5,280,189	$2,708,464	$575,965	$399,116	$1,596,643	—	$599,877	($74,441,072)	$996,766
2026	$5,338,271	$2,769,487	$590,364	$409,094	$1,569,325	—	$614,874	($73,486,621)	$954,451
2027	$5,396,992	$2,831,962	$605,123	$419,322	$1,540,585	—	$630,246	($72,576,282)	$910,339
2028	$5,456,359	$2,895,925	$620,251	$429,805	$1,510,378	—	$646,002	($71,711,905)	$864,376
2029	$5,516,379	$2,961,411	$635,758	$440,550	$1,478,660	—	$662,152	($70,895,397)	$816,509
2030	$5,577,059	$3,028,458	$651,652	$451,564	$1,445,385	—	$678,706	($70,128,717)	$766,680
2031	$5,638,407	$3,097,105	$667,943	$462,853	$1,410,506	—	$695,673	($69,413,885)	$714,833
2032	$5,700,429	$3,167,390	$684,641	$474,424	$1,373,973	—	$713,065	($68,752,976)	$660,908
2033	$5,763,134	$3,239,354	$701,757	$486,285	$1,335,738	—	$730,892	($68,148,130)	$604,846
2034	$5,826,528	$3,313,038	$719,301	$498,442	$1,295,748	—	$749,164	($67,601,547)	$546,584

Table E-9. Coleman Bridge Balance Sheet: High AVI Usage, Alternative A (Current Dollars)

High AVI Usage			
Commuter AVI Toll	$0.70	3-Axle	$4.25
2-Axle Manual Collection	$2.50	4-Axle & Greater	$5.50

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,324,292	$1,815,776	$353,560	$245,000	$2,909,956	$3,451,268	$450,000	($41,202,311)	($991,311)
2006	$5,382,859	$1,782,537	$361,691	$250,635	$2,987,995	$3,448,743	$1,051,350	($42,714,408)	($1,512,097)
2007	$5,442,070	$1,820,356	$370,372	$256,650	$2,994,692	$3,448,863	$1,136,648	($44,305,227)	($1,590,818)
2008	$5,501,933	$1,859,028	$379,261	$262,810	$3,000,835	$3,452,188	$555,910	($45,312,490)	($1,007,263)
2009	$5,562,454	$1,898,572	$388,363	$269,117	$3,006,402	$3,467,463	$569,252	($46,342,804)	($1,030,313)
2010	$5,623,641	$1,939,010	$397,684	$275,576	$3,011,371	$3,466,013	$582,914	($47,380,359)	($1,037,556)
2011	$5,685,502	$1,981,903	$407,626	$282,465	$3,013,507	$3,465,763	$597,487	($48,430,102)	($1,049,742)
2012	$5,748,042	$2,025,806	$417,817	$289,527	$3,014,892	$3,468,763	$612,424	($49,496,396)	($1,066,294)
2013	$5,811,271	$2,070,744	$428,262	$296,765	$3,015,499	$3,470,881	$627,735	($50,579,514)	($1,083,118)
2014	$5,875,194	$2,116,744	$438,969	$304,184	$3,015,298	$3,467,363	$643,428	($51,675,007)	($1,095,493)
2015	$5,939,822	$2,163,829	$449,943	$311,789	$3,014,260	$3,468,206	$468,623	($52,597,576)	($922,569)
2016	$6,005,160	$2,212,028	$461,191	$319,584	$3,012,356	$3,462,900	$480,338	($53,528,458)	($930,882)
2017	$6,071,216	$2,261,367	$472,721	$327,573	$3,009,555	$3,466,444	$492,347	($54,477,694)	($949,236)
2018	$6,138,000	$2,311,874	$484,539	$335,763	$3,005,824	$3,468,069	$504,656	($55,444,595)	($966,901)
2019	$6,205,518	$2,363,577	$496,653	$344,157	$3,001,131	$3,467,519	$517,272	($56,428,255)	($983,660)
2020	$6,273,779	$2,416,506	$509,069	$352,761	$2,995,443	$3,464,538	$530,204	($57,427,553)	($999,299)
2021	$6,342,790	$2,470,690	$521,796	$361,580	$2,988,724	$3,463,869	$543,459	($58,446,157)	($1,018,603)
2022	$6,412,561	$2,526,160	$534,841	$370,619	$2,980,940	—	$557,045	($56,022,261)	$2,423,895
2023	$6,483,099	$2,582,948	$548,212	$379,885	$2,972,054	—	$570,971	($53,621,179)	$2,401,083
2024	$6,554,413	$2,641,086	$561,917	$389,382	$2,962,029	—	$585,246	($51,244,396)	$2,376,783
2025	$6,626,512	$2,700,606	$575,965	$399,116	$2,950,825	—	$599,877	($48,893,448)	$2,350,948
2026	$6,699,403	$2,761,542	$590,364	$409,094	$2,938,403	—	$614,874	($46,569,919)	$2,323,529
2027	$6,773,097	$2,823,930	$605,123	$419,322	$2,924,722	—	$630,246	($44,275,443)	$2,294,476
2028	$6,847,601	$2,887,804	$620,251	$429,805	$2,909,741	—	$646,002	($42,011,704)	$2,263,739
2029	$6,922,924	$2,953,201	$635,758	$440,550	$2,893,416	—	$662,152	($39,780,440)	$2,231,264
2030	$6,999,076	$3,020,158	$651,652	$451,564	$2,875,704	—	$678,706	($37,583,442)	$2,196,998
2031	$7,076,066	$3,088,713	$667,943	$462,853	$2,856,558	—	$695,673	($35,422,558)	$2,160,884
2032	$7,153,903	$3,158,906	$684,641	$474,424	$2,835,932	—	$713,065	($33,299,691)	$2,122,866
2033	$7,232,596	$3,230,777	$701,757	$486,285	$2,813,777	—	$730,892	($31,216,805)	$2,082,886
2034	$7,312,155	$3,304,366	$719,301	$498,442	$2,790,046	—	$749,164	($29,175,924)	$2,040,882

Table E-10. Coleman Bridge Balance Sheet: High AVI Usage, Alternative B (Current Dollars)

High AVI Usage	
Commuter AVI Toll	$0.75

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,364,413	$1,815,571	$353,560	$245,000	$2,950,282	$3,451,268	$450,000	($41,161,985)	($950,985)
2006	$5,423,421	$1,782,353	$361,691	$250,635	$3,028,741	$3,448,743	$1,051,350	($42,633,337)	($1,471,351)
2007	$5,483,079	$1,820,170	$370,372	$256,650	$3,035,886	$3,448,863	$1,136,648	($44,182,961)	($1,549,624)
2008	$5,543,393	$1,858,840	$379,261	$262,810	$3,042,482	$3,452,188	$555,910	($45,148,577)	($965,616)
2009	$5,604,370	$1,898,382	$388,363	$269,117	$3,048,507	$3,467,463	$569,252	($46,136,784)	($988,208)
2010	$5,666,018	$1,938,818	$397,684	$275,576	$3,053,940	$3,466,013	$582,914	($47,131,771)	($994,987)
2011	$5,728,344	$1,981,708	$407,626	$282,465	$3,056,544	$3,465,763	$597,487	($48,138,477)	($1,006,705)
2012	$5,791,356	$2,025,609	$417,817	$289,527	$3,058,403	$3,468,763	$612,424	($49,161,261)	($1,022,784)
2013	$5,855,061	$2,070,546	$428,262	$296,765	$3,059,488	$3,470,881	$627,735	($50,200,389)	($1,039,129)
2014	$5,919,467	$2,116,543	$438,969	$304,184	$3,059,771	$3,467,363	$643,428	($51,251,410)	($1,051,020)
2015	$5,984,581	$2,163,626	$449,943	$311,789	$3,059,222	$3,468,206	$468,623	($52,129,016)	($877,607)
2016	$6,050,411	$2,211,823	$461,191	$319,584	$3,057,813	$3,462,900	$480,338	($53,014,442)	($885,426)
2017	$6,116,966	$2,261,160	$472,721	$327,573	$3,055,511	$3,466,444	$492,347	($53,917,721)	($903,279)
2018	$6,184,252	$2,311,664	$484,539	$335,763	$3,052,286	$3,468,069	$504,656	($54,838,160)	($920,438)
2019	$6,252,279	$2,363,365	$496,653	$344,157	$3,048,104	$3,467,519	$517,272	($55,774,846)	($936,686)
2020	$6,321,054	$2,416,292	$509,069	$352,761	$3,042,933	$3,464,538	$530,204	($56,726,654)	($951,808)
2021	$6,390,586	$2,470,473	$521,796	$361,580	$3,036,737	$3,463,869	$543,459	($57,697,245)	($970,591)
2022	$6,460,882	$2,525,941	$534,841	$370,619	$3,029,481	—	$557,045	($55,224,810)	$2,472,436
2023	$6,531,952	$2,582,727	$548,212	$379,885	$3,021,129	—	$570,971	($52,774,652)	$2,450,157
2024	$6,603,803	$2,640,862	$561,917	$389,382	$3,011,643	—	$585,246	($50,348,255)	$2,426,397
2025	$6,676,445	$2,700,379	$575,965	$399,116	$3,000,985	—	$599,877	($47,947,147)	$2,401,108
2026	$6,749,886	$2,761,313	$590,364	$409,094	$2,989,114	—	$614,874	($45,572,907)	$2,374,241
2027	$6,824,135	$2,823,698	$605,123	$419,322	$2,975,992	—	$630,246	($43,227,161)	$2,345,746
2028	$6,899,200	$2,887,570	$620,251	$429,805	$2,961,575	—	$646,002	($40,911,588)	$2,315,573
2029	$6,975,092	$2,952,964	$635,758	$440,550	$2,945,820	—	$662,152	($38,627,920)	$2,283,668
2030	$7,051,818	$3,019,919	$651,652	$451,564	$2,928,684	—	$678,706	($36,377,942)	$2,249,978
2031	$7,129,388	$3,088,471	$667,943	$462,853	$2,910,121	—	$695,673	($34,163,494)	$2,214,447
2032	$7,207,811	$3,158,662	$684,641	$474,424	$2,890,084	—	$713,065	($31,986,475)	$2,177,019
2033	$7,287,097	$3,230,529	$701,757	$486,285	$2,868,525	—	$730,892	($29,848,842)	$2,137,634
2034	$7,367,255	$3,304,116	$719,301	$498,442	$2,845,396	—	$749,164	($27,752,610)	$2,096,232

Table E-11. Coleman Bridge Balance Sheet: High AVI Usage, Alternative C (Current Dollars)

High AVI Usage	
Commuter AVI Toll	$0.85

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,811,817	$1,813,709	$353,560	$245,000	$3,399,548	$3,451,268	$450,000	($40,712,719)	($501,719)
2006	$5,875,747	$1,780,680	$361,691	$250,635	$3,482,740	$3,448,743	$1,051,350	($41,730,072)	($1,017,352)
2007	$5,940,380	$1,818,479	$370,372	$256,650	$3,494,879	$3,448,863	$1,136,648	($42,820,703)	($1,090,631)
2008	$6,005,724	$1,857,130	$379,261	$262,810	$3,506,524	$3,452,188	$555,910	($43,322,277)	($501,574)
2009	$6,071,787	$1,896,653	$388,363	$269,117	$3,517,653	$3,467,463	$569,252	($43,841,338)	($519,061)
2010	$6,138,577	$1,937,070	$397,684	$275,576	$3,528,247	$3,466,013	$582,914	($44,362,018)	($520,680)
2011	$6,206,101	$1,979,941	$407,626	$282,465	$3,536,069	$3,465,763	$597,487	($44,889,199)	($527,181)
2012	$6,274,368	$2,023,823	$417,817	$289,527	$3,543,202	$3,468,763	$612,424	($45,427,184)	($537,985)
2013	$6,343,386	$2,068,739	$428,262	$296,765	$3,549,620	$3,470,881	$627,735	($45,976,181)	($548,997)
2014	$6,413,164	$2,114,717	$438,969	$304,184	$3,555,294	$3,467,363	$643,428	($46,531,678)	($555,497)
2015	$6,483,709	$2,161,780	$449,943	$311,789	$3,560,196	$3,468,206	$468,623	($46,908,311)	($376,633)
2016	$6,555,029	$2,209,956	$461,191	$319,584	$3,564,298	$3,462,900	$480,338	($47,287,252)	($378,941)
2017	$6,627,135	$2,259,273	$472,721	$327,573	$3,567,567	$3,466,444	$492,347	($47,678,475)	($391,223)
2018	$6,700,033	$2,309,756	$484,539	$335,763	$3,569,975	$3,468,069	$504,656	($48,081,224)	($402,750)
2019	$6,773,733	$2,361,436	$496,653	$344,157	$3,571,488	$3,467,519	$517,272	($48,494,528)	($413,303)
2020	$6,848,245	$2,414,341	$509,069	$352,761	$3,572,073	$3,464,538	$530,204	($48,917,196)	($422,668)
2021	$6,923,575	$2,468,502	$521,796	$361,580	$3,571,698	$3,463,869	$543,459	($49,352,825)	($435,630)
2022	$6,999,735	$2,523,948	$534,841	$370,619	$3,570,327	—	$557,045	($46,339,544)	$3,013,281
2023	$7,076,732	$2,580,711	$548,212	$379,885	$3,567,924	—	$570,971	($43,342,592)	$2,996,952
2024	$7,154,576	$2,638,824	$561,917	$389,382	$3,564,453	—	$585,246	($40,363,385)	$2,979,207
2025	$7,233,276	$2,698,319	$575,965	$399,116	$3,559,875	—	$599,877	($37,403,387)	$2,959,998
2026	$7,312,842	$2,759,231	$590,364	$409,094	$3,554,153	—	$614,874	($34,464,108)	$2,939,279
2027	$7,393,283	$2,821,593	$605,123	$419,322	$3,547,246	—	$630,246	($31,547,108)	$2,917,000
2028	$7,474,609	$2,885,441	$620,251	$429,805	$3,539,112	—	$646,002	($28,653,997)	$2,893,110
2029	$7,556,830	$2,950,812	$635,758	$440,550	$3,529,711	—	$662,152	($25,786,439)	$2,867,559
2030	$7,639,955	$3,017,743	$651,652	$451,564	$3,518,997	—	$678,706	($22,946,147)	$2,840,291
2031	$7,723,995	$3,086,272	$667,943	$462,853	$3,506,927	—	$695,673	($20,134,893)	$2,811,254
2032	$7,808,959	$3,156,438	$684,641	$474,424	$3,493,455	—	$713,065	($17,354,503)	$2,780,390
2033	$7,894,857	$3,228,281	$701,757	$486,285	$3,478,534	—	$730,892	($14,606,860)	$2,747,642
2034	$7,981,701	$3,301,843	$719,301	$498,442	$3,462,115	—	$749,164	($11,893,910)	$2,712,951

Table E-12. Coleman Bridge Balance Sheet: High AVI Usage, Alternative D (Current Dollars)

High AVI Usage	
Commuter AVI Toll	$0.75
Commuter AVI Toll 2015	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,364,413	$1,815,571	$353,560	$245,000	$2,950,282	$3,451,268	$450,000	($41,161,985)	($950,985)
2006	$5,423,421	$1,782,353	$361,691	$250,635	$3,028,741	$3,448,743	$1,051,350	($42,633,337)	($1,471,351)
2007	$5,483,079	$1,820,170	$370,372	$256,650	$3,035,886	$3,448,863	$1,136,648	($44,182,961)	($1,549,624)
2008	$5,543,393	$1,858,840	$379,261	$262,810	$3,042,482	$3,452,188	$555,910	($45,148,577)	($965,616)
2009	$5,604,370	$1,898,382	$388,363	$269,117	$3,048,507	$3,467,463	$569,252	($46,136,784)	($988,208)
2010	$5,666,018	$1,938,818	$397,684	$275,576	$3,053,940	$3,466,013	$582,914	($47,131,771)	($994,987)
2011	$5,728,344	$1,981,708	$407,626	$282,465	$3,056,544	$3,465,763	$597,487	($48,138,477)	($1,006,705)
2012	$5,791,356	$2,025,609	$417,817	$289,527	$3,058,403	$3,468,763	$612,424	($49,161,261)	($1,022,784)
2013	$5,855,061	$2,070,546	$428,262	$296,765	$3,059,488	$3,470,881	$627,735	($50,200,389)	($1,039,129)
2014	$5,919,467	$2,116,543	$438,969	$304,184	$3,059,771	$3,467,363	$643,428	($51,251,410)	($1,051,020)
2015	$7,218,192	$2,158,566	$449,943	$311,789	$4,297,893	$3,468,206	$468,623	($50,890,345)	$361,064
2016	$7,297,592	$2,206,707	$461,191	$319,584	$4,310,109	$3,462,900	$480,338	($50,523,474)	$366,871
2017	$7,377,865	$2,255,988	$472,721	$327,573	$4,321,583	$3,466,444	$492,347	($50,160,682)	$362,792
2018	$7,459,022	$2,306,435	$484,539	$335,763	$4,332,285	$3,468,069	$504,656	($49,801,122)	$359,560
2019	$7,541,071	$2,358,079	$496,653	$344,157	$4,342,183	$3,467,519	$517,272	($49,443,730)	$357,392
2020	$7,624,023	$2,410,947	$509,069	$352,761	$4,351,246	$3,464,538	$530,204	($49,087,225)	$356,505
2021	$7,707,887	$2,465,070	$521,796	$361,580	$4,359,442	$3,463,869	$543,459	($48,735,111)	$352,114
2022	$7,792,674	$2,520,478	$534,841	$370,619	$4,366,736	—	$557,045	($44,925,421)	$3,809,690
2023	$7,878,393	$2,577,204	$548,212	$379,885	$4,373,093	—	$570,971	($41,123,299)	$3,802,122
2024	$7,965,056	$2,635,278	$561,917	$389,382	$4,378,479	—	$585,246	($37,330,066)	$3,793,233
2025	$8,052,671	$2,694,734	$575,965	$399,116	$4,382,856	—	$599,877	($33,547,087)	$3,782,979
2026	$8,141,251	$2,755,606	$590,364	$409,094	$4,386,186	—	$614,874	($29,775,775)	$3,771,312
2027	$8,230,804	$2,817,928	$605,123	$419,322	$4,388,431	—	$630,246	($26,017,589)	$3,758,186
2028	$8,321,343	$2,881,736	$620,251	$429,805	$4,389,551	—	$646,002	($22,274,040)	$3,743,549
2029	$8,412,878	$2,947,067	$635,758	$440,550	$4,389,504	—	$662,152	($18,546,688)	$3,727,352
2030	$8,505,420	$3,013,956	$651,652	$451,564	$4,388,248	—	$678,706	($14,837,145)	$3,709,543
2031	$8,598,979	$3,082,443	$667,943	$462,853	$4,385,740	—	$695,673	($11,147,078)	$3,690,067
2032	$8,693,568	$3,152,567	$684,641	$474,424	$4,381,935	—	$713,065	($7,478,207)	$3,668,870
2033	$8,789,197	$3,224,368	$701,757	$486,285	$4,376,787	—	$730,892	($3,832,312)	$3,645,896
2034	$8,885,879	$3,297,887	$719,301	$498,442	$4,370,249	—	$749,164	($211,227)	$3,621,085

Table E-13. Coleman Bridge Balance Sheet: High AVI Usage, Alternative E (Current Dollars)

High AVI Usage	
Commuter AVI Toll	$1.00

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,470,187	$1,810,468	$353,560	$245,000	$4,061,159	$3,451,268	$450,000	($40,051,108)	$159,892
2006	$6,541,359	$1,777,768	$361,691	$250,635	$4,151,265	$3,448,743	$1,051,350	($40,399,935)	($348,827)
2007	$6,613,314	$1,815,534	$370,372	$256,650	$4,170,758	$3,448,863	$1,136,648	($40,814,688)	($414,752)
2008	$6,686,061	$1,854,153	$379,261	$262,810	$4,189,837	$3,452,188	$555,910	($40,632,948)	$181,739
2009	$6,759,608	$1,893,644	$388,363	$269,117	$4,208,483	$3,467,463	$569,252	($40,461,180)	$171,768
2010	$6,833,963	$1,934,027	$397,684	$275,576	$4,226,676	$3,466,013	$582,914	($40,283,431)	$177,749
2011	$6,909,137	$1,976,865	$407,626	$282,465	$4,242,180	$3,465,763	$597,487	($40,104,501)	$178,931
2012	$6,985,137	$2,020,713	$417,817	$289,527	$4,257,081	$3,468,763	$612,424	($39,928,607)	$175,894
2013	$7,061,974	$2,065,595	$428,262	$296,765	$4,271,351	$3,470,881	$627,735	($39,755,872)	$172,735
2014	$7,139,656	$2,111,538	$438,969	$304,184	$4,284,965	$3,467,363	$643,428	($39,581,698)	$174,174
2015	$7,218,192	$2,158,566	$449,943	$311,789	$4,297,893	$3,468,206	$468,623	($39,220,634)	$361,064
2016	$7,297,592	$2,206,707	$461,191	$319,584	$4,310,109	$3,462,900	$480,338	($38,853,763)	$366,871
2017	$7,377,865	$2,255,988	$472,721	$327,573	$4,321,583	$3,466,444	$492,347	($38,490,970)	$362,792
2018	$7,459,022	$2,306,435	$484,539	$335,763	$4,332,285	$3,468,069	$504,656	($38,131,410)	$359,560
2019	$7,541,071	$2,358,079	$496,653	$344,157	$4,342,183	$3,467,519	$517,272	($37,774,018)	$357,392
2020	$7,624,023	$2,410,947	$509,069	$352,761	$4,351,246	$3,464,538	$530,204	($37,417,513)	$356,505
2021	$7,707,887	$2,465,070	$521,796	$361,580	$4,359,442	$3,463,869	$543,459	($37,065,399)	$352,114
2022	$7,792,674	$2,520,478	$534,841	$370,619	$4,366,736	—	$557,045	($33,255,709)	$3,809,690
2023	$7,878,393	$2,577,204	$548,212	$379,885	$4,373,093	—	$570,971	($29,453,587)	$3,802,122
2024	$7,965,056	$2,635,278	$561,917	$389,382	$4,378,479	—	$585,246	($25,660,354)	$3,793,233
2025	$8,052,671	$2,694,734	$575,965	$399,116	$4,382,856	—	$599,877	($21,877,375)	$3,782,979
2026	$8,141,251	$2,755,606	$590,364	$409,094	$4,386,186	—	$614,874	($18,106,063)	$3,771,312
2027	$8,230,804	$2,817,928	$605,123	$419,322	$4,388,431	—	$630,246	($14,347,877)	$3,758,186
2028	$8,321,343	$2,881,736	$620,251	$429,805	$4,389,551	—	$646,002	($10,604,328)	$3,743,549
2029	$8,412,878	$2,947,067	$635,758	$440,550	$4,389,504	—	$662,152	($6,876,976)	$3,727,352
2030	$8,505,420	$3,013,956	$651,652	$451,564	$4,388,248	—	$678,706	($3,167,433)	$3,709,543
2031	$8,598,979	$3,082,443	$667,943	$462,853	$4,385,740	—	$695,673	$522,634	$3,167,433
2032	$8,693,568	$3,152,567	$684,641	$474,424	$4,381,935	—	$713,065	$4,201,957	—
2033	$8,789,197	$3,224,368	$701,757	$486,285	$4,376,787	—	$730,892	$7,931,892	—
2034	$8,885,879	$3,297,887	$719,301	$498,442	$4,370,249	—	$749,164	$11,711,614	—

Table E-14. Coleman Bridge Balance Sheet: High Trip Reduction, Do Nothing (Current Dollars)

High Trip Reduction
Do Nothing

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$4,978,712	$1,908,040	$353,560	$245,000	$2,472,112	$3,451,268	$450,000	($41,640,155)	($1,429,155)
2006	$5,033,477	$1,879,469	$361,691	$250,635	$2,541,682	$3,448,743	$1,051,350	($43,598,566)	($1,958,411)
2007	$5,088,846	$1,920,047	$370,372	$256,650	$2,541,776	$3,448,863	$1,136,648	($45,642,301)	($2,043,734)
2008	$5,144,823	$1,961,549	$379,261	$262,810	$2,541,203	$3,452,188	$555,910	($47,109,196)	($1,466,895)
2009	$5,201,416	$2,003,997	$388,363	$269,117	$2,539,938	$3,467,463	$569,252	($48,605,972)	($1,496,776)
2010	$5,258,632	$2,047,413	$397,684	$275,576	$2,537,959	$3,466,013	$582,914	($50,116,940)	($1,510,968)
2011	$5,316,477	$2,093,502	$407,626	$282,465	$2,532,883	$3,465,763	$597,487	($51,647,307)	($1,530,367)
2012	$5,374,958	$2,140,688	$417,817	$289,527	$2,526,926	$3,468,763	$612,424	($53,201,568)	($1,554,261)
2013	$5,434,082	$2,188,997	$428,262	$296,765	$2,520,058	$3,470,881	$627,735	($54,780,126)	($1,578,558)
2014	$5,493,857	$2,238,456	$438,969	$304,184	$2,512,248	$3,467,363	$643,428	($56,378,669)	($1,598,542)
2015	$5,554,290	$2,289,093	$449,943	$311,789	$2,503,464	$3,468,206	$468,623	($57,812,033)	($1,433,365)
2016	$5,615,387	$2,340,938	$461,191	$319,584	$2,493,673	$3,462,900	$480,338	($59,261,598)	($1,449,565)
2017	$5,677,156	$2,394,020	$472,721	$327,573	$2,482,841	$3,466,444	$492,347	($60,737,548)	($1,475,949)
2018	$5,739,605	$2,448,369	$484,539	$335,763	$2,470,933	$3,468,069	$504,656	($62,239,339)	($1,501,791)
2019	$5,802,740	$2,504,017	$496,653	$344,157	$2,457,914	$3,467,519	$517,272	($63,766,215)	($1,526,876)
2020	$5,866,571	$2,560,994	$509,069	$352,761	$2,443,747	$3,464,538	$530,204	($65,317,210)	($1,550,994)
2021	$5,931,103	$2,619,334	$521,796	$361,580	$2,428,393	$3,463,869	$543,459	($66,896,144)	($1,578,934)
2022	$5,996,345	$2,679,070	$534,841	$370,619	$2,411,815	—	$557,045	($65,041,374)	$1,854,770
2023	$6,062,305	$2,740,236	$548,212	$379,885	$2,393,973	—	$570,971	($63,218,373)	$1,823,001
2024	$6,128,990	$2,802,867	$561,917	$389,382	$2,374,824	—	$585,246	($61,428,794)	$1,789,578
2025	$6,196,409	$2,867,000	$575,965	$399,116	$2,354,328	—	$599,877	($59,674,343)	$1,754,451
2026	$6,264,570	$2,932,670	$590,364	$409,094	$2,332,441	—	$614,874	($57,956,776)	$1,717,567
2027	$6,333,480	$2,999,916	$605,123	$419,322	$2,309,119	—	$630,246	($56,277,903)	$1,678,873
2028	$6,403,148	$3,068,777	$620,251	$429,805	$2,284,315	—	$646,002	($54,639,589)	$1,638,314
2029	$6,473,583	$3,139,291	$635,758	$440,550	$2,257,984	—	$662,152	($53,043,757)	$1,595,832
2030	$6,544,792	$3,211,500	$651,652	$451,564	$2,230,077	—	$678,706	($51,492,385)	$1,551,371
2031	$6,616,785	$3,285,446	$667,943	$462,853	$2,200,544	—	$695,673	($49,987,515)	$1,504,870
2032	$6,689,569	$3,361,170	$684,641	$474,424	$2,169,334	—	$713,065	($48,531,246)	$1,456,269
2033	$6,763,155	$3,438,717	$701,757	$486,285	$2,136,396	—	$730,892	($47,125,742)	$1,405,504
2034	$6,837,549	$3,518,131	$719,301	$498,442	$2,101,676	—	$749,164	($45,773,230)	$1,352,512

Table E-15. Coleman Bridge Balance Sheet: High Trip Reduction, Alternative A (Current Dollars)

High Trip Reduction			
Commuter AVI Toll	$0.70	3-Axle	$4.25
2-Axle Manual Collection	$2.50	4-Axle & Greater	$5.50

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,247,072	$1,897,872	$353,560	$245,000	$3,750,641	$3,451,268	$450,000	($40,361,627)	($150,627)
2006	$6,315,790	$1,870,331	$361,691	$250,635	$3,833,132	$3,448,743	$1,051,350	($41,028,587)	($666,960)
2007	$6,385,264	$1,910,809	$370,372	$256,650	$3,847,433	$3,448,863	$1,136,648	($41,766,665)	($738,078)
2008	$6,455,502	$1,952,209	$379,261	$262,810	$3,861,221	$3,452,188	$555,910	($41,913,541)	($146,877)
2009	$6,526,512	$1,994,554	$388,363	$269,117	$3,874,477	$3,467,463	$569,252	($42,075,779)	($162,238)
2010	$6,598,304	$2,037,866	$397,684	$275,576	$3,887,178	$3,466,013	$582,914	($42,237,528)	($161,749)
2011	$6,670,885	$2,083,851	$407,626	$282,465	$3,896,943	$3,465,763	$597,487	($42,403,835)	($166,307)
2012	$6,744,265	$2,130,930	$417,817	$289,527	$3,905,991	$3,468,763	$612,424	($42,579,031)	($175,196)
2013	$6,818,452	$2,179,132	$428,262	$296,765	$3,914,293	$3,470,881	$627,735	($42,763,355)	($184,323)
2014	$6,893,455	$2,228,482	$438,969	$304,184	$3,921,820	$3,467,363	$643,428	($42,952,326)	($188,971)
2015	$6,969,283	$2,279,010	$449,943	$311,789	$3,928,541	$3,468,206	$468,623	($42,960,614)	($8,288)
2016	$7,045,945	$2,330,744	$461,191	$319,584	$3,934,426	$3,462,900	$480,338	($42,969,427)	($8,813)
2017	$7,123,450	$2,383,714	$472,721	$327,573	$3,939,442	$3,466,444	$492,347	($42,988,776)	($19,349)
2018	$7,201,808	$2,437,950	$484,539	$335,763	$3,943,557	$3,468,069	$504,656	($43,017,944)	($29,168)
2019	$7,281,028	$2,493,482	$496,653	$344,157	$3,946,736	$3,467,519	$517,272	($43,055,998)	($38,055)
2020	$7,361,119	$2,550,344	$509,069	$352,761	$3,948,946	$3,464,538	$530,204	($43,101,794)	($45,795)
2021	$7,442,092	$2,608,567	$521,796	$361,580	$3,950,150	$3,463,869	$543,459	($43,158,972)	($57,178)
2022	$7,523,955	$2,668,184	$534,841	$370,619	$3,950,311	—	$557,045	($39,765,706)	$3,393,265
2023	$7,606,718	$2,729,230	$548,212	$379,885	$3,949,391	—	$570,971	($36,387,286)	$3,378,420
2024	$7,690,392	$2,791,741	$561,917	$389,382	$3,947,353	—	$585,246	($33,025,179)	$3,362,107
2025	$7,774,987	$2,855,751	$575,965	$399,116	$3,944,155	—	$599,877	($29,680,902)	$3,344,278
2026	$7,860,511	$2,921,297	$590,364	$409,094	$3,939,756	—	$614,874	($26,356,020)	$3,324,882
2027	$7,946,977	$2,988,418	$605,123	$419,322	$3,934,114	—	$630,246	($23,052,152)	$3,303,868
2028	$8,034,394	$3,057,152	$620,251	$429,805	$3,927,185	—	$646,002	($19,770,968)	$3,281,184
2029	$8,122,772	$3,127,539	$635,758	$440,550	$3,918,926	—	$662,152	($16,514,194)	$3,256,774
2030	$8,212,123	$3,199,619	$651,652	$451,564	$3,909,289	—	$678,706	($13,283,611)	$3,230,583
2031	$8,302,456	$3,273,434	$667,943	$462,853	$3,898,227	—	$695,673	($10,081,058)	$3,202,554
2032	$8,393,783	$3,349,026	$684,641	$474,424	$3,885,692	—	$713,065	($6,908,431)	$3,172,627
2033	$8,486,115	$3,426,439	$701,757	$486,285	$3,871,634	—	$730,892	($3,767,689)	$3,140,742
2034	$8,579,462	$3,505,718	$719,301	$498,442	$3,856,001	—	$749,164	($660,852)	$3,106,837

Table E-16. Coleman Bridge Balance Sheet: High Trip Reduction, Alternative B (Current Dollars)

High Trip Reduction	
Commuter AVI Toll	$0.75

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,943,382	$1,896,591	$353,560	$245,000	$3,448,231	$3,451,268	$450,000	($40,664,036)	($453,036)
2006	$6,008,759	$1,869,181	$361,691	$250,635	$3,527,252	$3,448,743	$1,051,350	($41,636,877)	($972,841)
2007	$6,074,855	$1,909,645	$370,372	$256,650	$3,538,188	$3,448,863	$1,136,648	($42,684,200)	($1,047,323)
2008	$6,141,679	$1,951,033	$379,261	$262,810	$3,548,575	$3,452,188	$555,910	($43,143,723)	($459,523)
2009	$6,209,237	$1,993,365	$388,363	$269,117	$3,558,392	$3,467,463	$569,252	($43,622,046)	($478,323)
2010	$6,277,539	$2,036,664	$397,684	$275,576	$3,567,615	$3,466,013	$582,914	($44,103,358)	($481,312)
2011	$6,346,592	$2,082,635	$407,626	$282,465	$3,573,865	$3,465,763	$597,487	($44,592,743)	($489,385)
2012	$6,416,404	$2,129,701	$417,817	$289,527	$3,579,359	$3,468,763	$612,424	($45,094,571)	($501,828)
2013	$6,486,985	$2,177,889	$428,262	$296,765	$3,584,068	$3,470,881	$627,735	($45,609,119)	($514,548)
2014	$6,558,342	$2,227,226	$438,969	$304,184	$3,587,962	$3,467,363	$643,428	($46,131,947)	($522,828)
2015	$6,630,483	$2,277,740	$449,943	$311,789	$3,591,011	$3,468,206	$468,623	($46,477,765)	($345,818)
2016	$6,703,419	$2,329,460	$461,191	$319,584	$3,593,183	$3,462,900	$480,338	($46,827,820)	($350,055)
2017	$6,777,156	$2,382,416	$472,721	$327,573	$3,594,446	$3,466,444	$492,347	($47,192,165)	($364,345)
2018	$6,851,705	$2,436,637	$484,539	$335,763	$3,594,766	$3,468,069	$504,656	($47,570,124)	($377,959)
2019	$6,927,074	$2,492,156	$496,653	$344,157	$3,594,109	$3,467,519	$517,272	($47,960,806)	($390,682)
2020	$7,003,271	$2,549,002	$509,069	$352,761	$3,592,439	$3,464,538	$530,204	($48,363,108)	($402,302)
2021	$7,080,307	$2,607,210	$521,796	$361,580	$3,589,721	$3,463,869	$543,459	($48,780,714)	($417,606)
2022	$7,158,191	$2,666,813	$534,841	$370,619	$3,585,918	—	$557,045	($45,751,842)	$3,028,873
2023	$7,236,931	$2,727,844	$548,212	$379,885	$3,580,990	—	$570,971	($42,741,823)	$3,010,019
2024	$7,316,537	$2,790,339	$561,917	$389,382	$3,574,899	—	$585,246	($39,752,169)	$2,989,653
2025	$7,397,019	$2,854,334	$575,965	$399,116	$3,567,604	—	$599,877	($36,784,442)	$2,967,727
2026	$7,478,386	$2,919,865	$590,364	$409,094	$3,559,063	—	$614,874	($33,840,253)	$2,944,189
2027	$7,560,649	$2,986,970	$605,123	$419,322	$3,549,234	—	$630,246	($30,921,265)	$2,918,988
2028	$7,643,816	$3,055,688	$620,251	$429,805	$3,538,071	—	$646,002	($28,029,196)	$2,892,070
2029	$7,727,898	$3,126,059	$635,758	$440,550	$3,525,531	—	$662,152	($25,165,816)	$2,863,380
2030	$7,812,905	$3,198,122	$651,652	$451,564	$3,511,567	—	$678,706	($22,332,955)	$2,832,861
2031	$7,898,846	$3,271,921	$667,943	$462,853	$3,496,130	—	$695,673	($19,532,498)	$2,800,457
2032	$7,985,734	$3,347,496	$684,641	$474,424	$3,479,172	—	$713,065	($16,766,390)	$2,766,107
2033	$8,073,577	$3,424,893	$701,757	$486,285	$3,460,642	—	$730,892	($14,036,640)	$2,729,751
2034	$8,162,386	$3,504,155	$719,301	$498,442	$3,440,489	—	$749,164	($11,345,315)	$2,691,325

Table E-17. Coleman Bridge Balance Sheet: High Trip Reduction, Alternative C (Current Dollars)

High Trip Reduction	
Commuter AVI Toll	$0.85

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,311,441	$1,892,012	$353,560	$245,000	$3,820,869	$3,451,268	$450,000	($40,291,398)	($80,398)
2006	$6,380,866	$1,865,065	$361,691	$250,635	$3,903,475	$3,448,743	$1,051,350	($40,888,016)	($596,618)
2007	$6,451,056	$1,905,485	$370,372	$256,650	$3,918,549	$3,448,863	$1,136,648	($41,554,977)	($666,962)
2008	$6,522,018	$1,946,827	$379,261	$262,810	$3,933,120	$3,452,188	$555,910	($41,629,955)	($74,978)
2009	$6,593,760	$1,989,112	$388,363	$269,117	$3,947,167	$3,467,463	$569,252	($41,719,503)	($89,548)
2010	$6,666,291	$2,032,364	$397,684	$275,576	$3,960,667	$3,466,013	$582,914	($41,807,763)	($88,260)
2011	$6,739,620	$2,078,288	$407,626	$282,465	$3,971,241	$3,465,763	$597,487	($41,899,772)	($92,009)
2012	$6,813,756	$2,125,307	$417,817	$289,527	$3,981,106	$3,468,763	$612,424	($41,999,854)	($100,081)
2013	$6,888,707	$2,173,446	$428,262	$296,765	$3,990,234	$3,470,881	$627,735	($42,108,236)	($108,382)
2014	$6,964,483	$2,222,734	$438,969	$304,184	$3,998,596	$3,467,363	$643,428	($42,220,431)	($112,195)
2015	$7,041,093	$2,273,199	$449,943	$311,789	$4,006,162	$3,468,206	$468,623	($42,151,098)	$69,333
2016	$7,118,545	$2,324,869	$461,191	$319,584	$4,012,900	$3,462,900	$480,338	($42,081,436)	$69,662
2017	$7,196,849	$2,377,774	$472,721	$327,573	$4,018,780	$3,466,444	$492,347	($42,021,447)	$59,989
2018	$7,276,014	$2,431,944	$484,539	$335,763	$4,023,767	$3,468,069	$504,656	($41,970,404)	$51,043
2019	$7,356,050	$2,487,411	$496,653	$344,157	$4,027,829	$3,467,519	$517,272	($41,927,365)	$43,039
2020	$7,436,967	$2,544,206	$509,069	$352,761	$4,030,931	$3,464,538	$530,204	($41,891,176)	$36,190
2021	$7,518,773	$2,602,361	$521,796	$361,580	$4,033,037	$3,463,869	$543,459	($41,865,467)	$25,709
2022	$7,601,480	$2,661,910	$534,841	$370,619	$4,034,110	—	$557,045	($38,388,402)	$3,477,064
2023	$7,685,096	$2,722,888	$548,212	$379,885	$4,034,112	—	$570,971	($34,925,262)	$3,463,141
2024	$7,769,632	$2,785,328	$561,917	$389,382	$4,033,005	—	$585,246	($31,477,502)	$3,447,759
2025	$7,855,098	$2,849,268	$575,965	$399,116	$4,030,749	—	$599,877	($28,046,630)	$3,430,872
2026	$7,941,504	$2,914,743	$590,364	$409,094	$4,027,303	—	$614,874	($24,634,201)	$3,412,429
2027	$8,028,861	$2,981,792	$605,123	$419,322	$4,022,624	—	$630,246	($21,241,823)	$3,392,378
2028	$8,117,178	$3,050,453	$620,251	$429,805	$4,016,669	—	$646,002	($17,871,155)	$3,370,667
2029	$8,206,467	$3,120,766	$635,758	$440,550	$4,009,394	—	$662,152	($14,523,914)	$3,347,242
2030	$8,296,738	$3,192,771	$651,652	$451,564	$4,000,752	—	$678,706	($11,201,867)	$3,322,046
2031	$8,388,002	$3,266,511	$667,943	$462,853	$3,990,696	—	$695,673	($7,906,844)	$3,295,023
2032	$8,480,270	$3,342,027	$684,641	$474,424	$3,979,178	—	$713,065	($4,640,731)	$3,266,113
2033	$8,573,553	$3,419,363	$701,757	$486,285	$3,966,149	—	$730,892	($1,405,474)	$3,235,257
2034	$8,667,862	$3,498,564	$719,301	$498,442	$3,951,555	—	$749,164	$1,796,917	$1,405,474

Table E-18. Coleman Bridge Balance Sheet: High Trip Reduction, Alternative D (Current Dollars)

High Trip Reduction	
Commuter AVI Toll	$0.75
Commuter AVI Toll 2015	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,943,382	$1,896,591	$353,560	$245,000	$3,448,231	$3,451,268	$450,000	($40,664,036)	($453,036)
2006	$6,008,759	$1,869,181	$361,691	$250,635	$3,527,252	$3,448,743	$1,051,350	($41,636,877)	($972,841)
2007	$6,074,855	$1,909,645	$370,372	$256,650	$3,538,188	$3,448,863	$1,136,648	($42,684,200)	($1,047,323)
2008	$6,141,679	$1,951,033	$379,261	$262,810	$3,548,575	$3,452,188	$555,910	($43,143,723)	($459,523)
2009	$6,209,237	$1,993,365	$388,363	$269,117	$3,558,392	$3,467,463	$569,252	($43,622,046)	($478,323)
2010	$6,277,539	$2,036,664	$397,684	$275,576	$3,567,615	$3,466,013	$582,914	($44,103,358)	($481,312)
2011	$6,346,592	$2,082,635	$407,626	$282,465	$3,573,865	$3,465,763	$597,487	($44,592,743)	($489,385)
2012	$6,416,404	$2,129,701	$417,817	$289,527	$3,579,359	$3,468,763	$612,424	($45,094,571)	($501,828)
2013	$6,486,985	$2,177,889	$428,262	$296,765	$3,584,068	$3,470,881	$627,735	($45,609,119)	($514,548)
2014	$6,558,342	$2,227,226	$438,969	$304,184	$3,587,962	$3,467,363	$643,428	($46,131,947)	($522,828)
2015	$7,635,719	$2,266,387	$449,943	$311,789	$4,607,600	$3,468,206	$468,623	($45,461,176)	$670,771
2016	$7,719,712	$2,317,982	$461,191	$319,584	$4,620,955	$3,462,900	$480,338	($44,783,460)	$677,716
2017	$7,804,629	$2,370,811	$472,721	$327,573	$4,633,523	$3,466,444	$492,347	($44,108,728)	$674,732
2018	$7,890,480	$2,424,905	$484,539	$335,763	$4,645,272	$3,468,069	$504,656	($43,436,179)	$672,548
2019	$7,977,275	$2,480,294	$496,653	$344,157	$4,656,171	$3,467,519	$517,272	($42,764,799)	$671,380
2020	$8,065,025	$2,537,011	$509,069	$352,761	$4,666,184	$3,464,538	$530,204	($42,093,356)	$671,443
2021	$8,153,740	$2,595,087	$521,796	$361,580	$4,675,278	$3,463,869	$543,459	($41,425,406)	$667,950
2022	$8,243,431	$2,654,556	$534,841	$370,619	$4,683,415	—	$557,045	($37,299,036)	$4,126,370
2023	$8,334,109	$2,715,453	$548,212	$379,885	$4,690,560	—	$570,971	($33,179,447)	$4,119,589
2024	$8,425,784	$2,777,811	$561,917	$389,382	$4,696,674	—	$585,246	($29,068,019)	$4,111,429
2025	$8,518,468	$2,841,668	$575,965	$399,116	$4,701,719	—	$599,877	($24,966,177)	$4,101,842
2026	$8,612,171	$2,907,060	$590,364	$409,094	$4,705,653	—	$614,874	($20,875,398)	$4,090,779
2027	$8,706,905	$2,974,024	$605,123	$419,322	$4,708,436	—	$630,246	($16,797,207)	$4,078,190
2028	$8,802,681	$3,042,600	$620,251	$429,805	$4,710,025	—	$646,002	($12,733,184)	$4,064,023
2029	$8,899,510	$3,112,827	$635,758	$440,550	$4,710,377	—	$662,152	($8,684,959)	$4,048,225
2030	$8,997,405	$3,184,745	$651,652	$451,564	$4,709,446	—	$678,706	($4,654,219)	$4,030,740
2031	$9,096,377	$3,258,396	$667,943	$462,853	$4,707,186	—	$695,673	($642,707)	$4,011,512
2032	$9,196,437	$3,333,822	$684,641	$474,424	$4,703,549	—	$713,065	$3,347,777	$642,707
2033	$9,297,598	$3,411,068	$701,757	$486,285	$4,698,487	—	$730,892	$7,382,328	—
2034	$9,399,871	$3,490,178	$719,301	$498,442	$4,691,950	—	$749,164	$11,472,760	—

Table E-19. Coleman Bridge Balance Sheet: High Trip Reduction, Alternative E (Current Dollars)

High Trip Reduction	
Commuter AVI Toll	$1.00

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,844,447	$1,885,142	$353,560	$245,000	$4,360,745	$3,451,268	$450,000	($39,751,522)	$459,478
2006	$6,919,736	$1,858,892	$361,691	$250,635	$4,448,518	$3,448,743	$1,051,350	($39,803,097)	($51,575)
2007	$6,995,853	$1,899,244	$370,372	$256,650	$4,469,588	$3,448,863	$1,136,648	($39,919,020)	($115,923)
2008	$7,072,808	$1,940,517	$379,261	$262,810	$4,490,220	$3,452,188	$555,910	($39,436,897)	$482,122
2009	$7,150,609	$1,982,733	$388,363	$269,117	$4,510,395	$3,467,463	$569,252	($38,963,217)	$473,680
2010	$7,229,265	$2,025,915	$397,684	$275,576	$4,530,090	$3,466,013	$582,914	($38,482,054)	$481,163
2011	$7,308,787	$2,071,768	$407,626	$282,465	$4,546,928	$3,465,763	$597,487	($37,998,376)	$483,678
2012	$7,389,184	$2,118,714	$417,817	$289,527	$4,563,126	$3,468,763	$612,424	($37,516,437)	$481,939
2013	$7,470,465	$2,166,781	$428,262	$296,765	$4,578,656	$3,470,881	$627,735	($37,036,398)	$480,040
2014	$7,552,640	$2,215,996	$438,969	$304,184	$4,593,491	$3,467,363	$643,428	($36,553,698)	$482,700
2015	$7,635,719	$2,266,387	$449,943	$311,789	$4,607,600	$3,468,206	$468,623	($35,882,927)	$670,771
2016	$7,719,712	$2,317,982	$461,191	$319,584	$4,620,955	$3,462,900	$480,338	($35,205,210)	$677,716
2017	$7,804,629	$2,370,811	$472,721	$327,573	$4,633,523	$3,466,444	$492,347	($34,530,478)	$674,732
2018	$7,890,480	$2,424,905	$484,539	$335,763	$4,645,272	$3,468,069	$504,656	($33,857,930)	$672,548
2019	$7,977,275	$2,480,294	$496,653	$344,157	$4,656,171	$3,467,519	$517,272	($33,186,550)	$671,380
2020	$8,065,025	$2,537,011	$509,069	$352,761	$4,666,184	$3,464,538	$530,204	($32,515,107)	$671,443
2021	$8,153,740	$2,595,087	$521,796	$361,580	$4,675,278	$3,463,869	$543,459	($31,847,157)	$667,950
2022	$8,243,431	$2,654,556	$534,841	$370,619	$4,683,415	—	$557,045	($27,720,787)	$4,126,370
2023	$8,334,109	$2,715,453	$548,212	$379,885	$4,690,560	—	$570,971	($23,601,198)	$4,119,589
2024	$8,425,784	$2,777,811	$561,917	$389,382	$4,696,674	—	$585,246	($19,489,769)	$4,111,429
2025	$8,518,468	$2,841,668	$575,965	$399,116	$4,701,719	—	$599,877	($15,387,928)	$4,101,842
2026	$8,612,171	$2,907,060	$590,364	$409,094	$4,705,653	—	$614,874	($11,297,148)	$4,090,779
2027	$8,706,905	$2,974,024	$605,123	$419,322	$4,708,436	—	$630,246	($7,218,958)	$4,078,190
2028	$8,802,681	$3,042,600	$620,251	$429,805	$4,710,025	—	$646,002	($3,154,935)	$4,064,023
2029	$8,899,510	$3,112,827	$635,758	$440,550	$4,710,377	—	$662,152	$893,290	$3,154,935
2030	$8,997,405	$3,184,745	$651,652	$451,564	$4,709,446	—	$678,706	$4,941,896	—
2031	$9,096,377	$3,258,396	$667,943	$462,853	$4,707,186	—	$695,673	$9,052,246	—
2032	$9,196,437	$3,333,822	$684,641	$474,424	$4,703,549	—	$713,065	$13,223,775	—
2033	$9,297,598	$3,411,068	$701,757	$486,285	$4,698,487	—	$730,892	$17,455,846	—
2034	$9,399,871	$3,490,178	$719,301	$498,442	$4,691,950	—	$749,164	$21,747,748	—

Table E-20. Coleman Bridge Balance Sheet: High Traffic Growth, Do Nothing (Current Dollars)

High Traffic Growth
Do Nothing

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$4,988,561	$1,908,807	$353,560	$245,000	$2,481,194	$3,451,268	$450,000	($41,631,073)	($1,420,073)
2006	$5,053,412	$1,880,849	$361,691	$250,635	$2,560,236	$3,448,743	$1,051,350	($43,570,929)	($1,939,856)
2007	$5,119,106	$1,922,142	$370,372	$256,650	$2,569,942	$3,448,863	$1,136,648	($45,586,498)	($2,015,568)
2008	$5,185,655	$1,964,376	$379,261	$262,810	$2,579,208	$3,452,188	$555,910	($47,015,387)	($1,428,890)
2009	$5,253,068	$2,007,572	$388,363	$269,117	$2,588,015	$3,467,463	$569,252	($48,464,087)	($1,448,699)
2010	$5,321,358	$2,051,754	$397,684	$275,576	$2,596,344	$3,466,013	$582,914	($49,916,670)	($1,452,583)
2011	$5,390,536	$2,098,628	$407,626	$282,465	$2,601,816	$3,465,763	$597,487	($51,378,104)	($1,461,434)
2012	$5,460,613	$2,146,617	$417,817	$289,527	$2,606,652	$3,468,763	$612,424	($52,852,639)	($1,474,535)
2013	$5,531,601	$2,195,746	$428,262	$296,765	$2,610,827	$3,470,881	$627,735	($54,340,428)	($1,487,790)
2014	$5,603,511	$2,246,046	$438,969	$304,184	$2,614,313	$3,467,363	$643,428	($55,836,906)	($1,496,478)
2015	$5,676,357	$2,297,542	$449,943	$311,789	$2,617,083	$3,468,206	$468,623	($57,156,653)	($1,319,746)
2016	$5,750,150	$2,350,266	$461,191	$319,584	$2,619,108	$3,462,900	$480,338	($58,480,783)	($1,324,130)
2017	$5,824,902	$2,404,247	$472,721	$327,573	$2,620,360	$3,466,444	$492,347	($59,819,213)	($1,338,430)
2018	$5,900,625	$2,459,515	$484,539	$335,763	$2,620,809	$3,468,069	$504,656	($61,171,129)	($1,351,916)
2019	$5,977,334	$2,516,101	$496,653	$344,157	$2,620,423	$3,467,519	$517,272	($62,535,497)	($1,364,368)
2020	$6,055,039	$2,574,039	$509,069	$352,761	$2,619,170	$3,464,538	$530,204	($63,911,068)	($1,375,571)
2021	$6,133,754	$2,633,361	$521,796	$361,580	$2,617,018	$3,463,869	$543,459	($65,301,378)	($1,390,310)
2022	$6,213,493	$2,694,100	$534,841	$370,619	$2,613,933	—	$557,045	($63,244,490)	$2,056,888
2023	$6,294,269	$2,756,292	$548,212	$379,885	$2,609,881	—	$570,971	($61,205,581)	$2,038,909
2024	$6,376,094	$2,819,971	$561,917	$389,382	$2,604,824	—	$585,246	($59,186,002)	$2,019,579
2025	$6,458,983	$2,885,174	$575,965	$399,116	$2,598,728	—	$599,877	($57,187,151)	$1,998,851
2026	$6,542,950	$2,951,939	$590,364	$409,094	$2,591,553	—	$614,874	($55,210,472)	$1,976,679
2027	$6,628,008	$3,020,303	$605,123	$419,322	$2,583,261	—	$630,246	($53,257,457)	$1,953,015
2028	$6,714,173	$3,090,305	$620,251	$429,805	$2,573,812	—	$646,002	($51,329,647)	$1,927,810
2029	$6,801,457	$3,161,986	$635,758	$440,550	$2,563,164	—	$662,152	($49,428,635)	$1,901,012
2030	$6,889,876	$3,235,386	$651,652	$451,564	$2,551,275	—	$678,706	($47,556,066)	$1,872,569
2031	$6,979,444	$3,310,548	$667,943	$462,853	$2,538,101	—	$695,673	($45,713,638)	$1,842,428
2032	$7,070,177	$3,387,514	$684,641	$474,424	$2,523,597	—	$713,065	($43,903,106)	$1,810,532
2033	$7,162,089	$3,466,330	$701,757	$486,285	$2,507,718	—	$730,892	($42,126,280)	$1,776,826
2034	$7,255,196	$3,547,039	$719,301	$498,442	$2,490,414	—	$749,164	($40,385,030)	$1,741,250

Table E-21. Coleman Bridge Balance Sheet: High Traffic Growth, Alternative A (Current Dollars)

High Traffic Growth			
Commuter AVI Toll	$0.70	3-Axle	$4.25
2-Axle Manual Collection	$2.50	4-Axle & Greater	$5.50

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,037,257	$1,902,352	$353,560	$245,000	$3,536,346	$3,451,268	$450,000	($40,575,922)	($364,922)
2006	$6,115,742	$1,875,037	$361,691	$250,635	$3,628,379	$3,448,743	$1,051,350	($41,447,636)	($871,714)
2007	$6,195,246	$1,916,254	$370,372	$256,650	$3,651,970	$3,448,863	$1,136,648	($42,381,176)	($933,540)
2008	$6,275,785	$1,958,411	$379,261	$262,810	$3,675,303	$3,452,188	$555,910	($42,713,971)	($332,795)
2009	$6,357,370	$2,001,530	$388,363	$269,117	$3,698,359	$3,467,463	$569,252	($43,052,327)	($338,356)
2010	$6,440,016	$2,045,634	$397,684	$275,576	$3,721,122	$3,466,013	$582,914	($43,380,133)	($327,805)
2011	$6,523,736	$2,092,428	$407,626	$282,465	$3,741,216	$3,465,763	$597,487	($43,702,167)	($322,034)
2012	$6,608,544	$2,140,336	$417,817	$289,527	$3,760,864	$3,468,763	$612,424	($44,022,489)	($320,322)
2013	$6,694,456	$2,189,384	$428,262	$296,765	$3,780,044	$3,470,881	$627,735	($44,341,061)	($318,572)
2014	$6,781,483	$2,239,601	$438,969	$304,184	$3,798,730	$3,467,363	$643,428	($44,653,123)	($312,061)
2015	$6,869,643	$2,291,014	$449,943	$311,789	$3,816,897	$3,468,206	$468,623	($44,773,055)	($119,932)
2016	$6,958,948	$2,343,653	$461,191	$319,584	$3,834,520	$3,462,900	$480,338	($44,881,773)	($108,718)
2017	$7,049,414	$2,397,547	$472,721	$327,573	$3,851,573	$3,466,444	$492,347	($44,988,991)	($107,218)
2018	$7,141,057	$2,452,728	$484,539	$335,763	$3,868,027	$3,468,069	$504,656	($45,093,689)	($104,698)
2019	$7,233,891	$2,509,227	$496,653	$344,157	$3,883,854	$3,467,519	$517,272	($45,194,625)	($100,936)
2020	$7,327,931	$2,567,075	$509,069	$352,761	$3,899,026	$3,464,538	$530,204	($45,290,340)	($95,715)
2021	$7,423,194	$2,626,306	$521,796	$361,580	$3,913,513	$3,463,869	$543,459	($45,384,155)	($93,815)
2022	$7,519,696	$2,686,954	$534,841	$370,619	$3,927,282	—	$557,045	($42,013,918)	$3,370,237
2023	$7,617,452	$2,749,052	$548,212	$379,885	$3,940,303	—	$570,971	($38,644,587)	$3,369,332
2024	$7,716,479	$2,812,637	$561,917	$389,382	$3,952,542	—	$585,246	($35,277,290)	$3,367,297
2025	$7,816,793	$2,877,745	$575,965	$399,116	$3,963,966	—	$599,877	($31,913,201)	$3,364,089
2026	$7,918,411	$2,944,413	$590,364	$409,094	$3,974,540	—	$614,874	($28,553,535)	$3,359,666
2027	$8,021,351	$3,012,679	$605,123	$419,322	$3,984,226	—	$630,246	($25,199,554)	$3,353,981
2028	$8,125,628	$3,082,583	$620,251	$429,805	$3,992,990	—	$646,002	($21,852,566)	$3,346,988
2029	$8,231,261	$3,154,163	$635,758	$440,550	$4,000,791	—	$662,152	($18,513,927)	$3,338,639
2030	$8,338,268	$3,227,462	$651,652	$451,564	$4,007,591	—	$678,706	($15,185,042)	$3,328,885
2031	$8,446,665	$3,302,520	$667,943	$462,853	$4,013,349	—	$695,673	($11,867,366)	$3,317,676
2032	$8,556,472	$3,379,383	$684,641	$474,424	$4,018,024	—	$713,065	($8,562,407)	$3,304,959
2033	$8,667,706	$3,458,092	$701,757	$486,285	$4,021,572	—	$730,892	($5,271,727)	$3,290,680
2034	$8,780,386	$3,538,695	$719,301	$498,442	$4,023,949	—	$749,164	($1,996,943)	$3,274,785

Table E-22. Coleman Bridge Balance Sheet: High Traffic Growth, Alternative B (Current Dollars)

High Traffic Growth	
Commuter AVI Toll	$0.75

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,996,042	$1,902,244	$353,560	$245,000	$3,495,238	$3,451,268	$450,000	($40,617,029)	($406,029)
2006	$6,073,990	$1,874,939	$361,691	$250,635	$3,586,725	$3,448,743	$1,051,350	($41,530,397)	($913,368)
2007	$6,152,952	$1,916,155	$370,372	$256,650	$3,609,775	$3,448,863	$1,136,648	($42,506,133)	($975,736)
2008	$6,232,940	$1,958,311	$379,261	$262,810	$3,632,558	$3,452,188	$555,910	($42,881,672)	($375,539)
2009	$6,313,969	$2,001,429	$388,363	$269,117	$3,655,059	$3,467,463	$569,252	($43,263,328)	($381,656)
2010	$6,396,050	$2,045,531	$397,684	$275,576	$3,677,259	$3,466,013	$582,914	($43,634,996)	($371,668)
2011	$6,479,199	$2,092,324	$407,626	$282,465	$3,696,783	$3,465,763	$597,487	($44,001,463)	($366,467)
2012	$6,563,429	$2,140,231	$417,817	$289,527	$3,715,854	$3,468,763	$612,424	($44,366,796)	($365,333)
2013	$6,648,753	$2,189,277	$428,262	$296,765	$3,734,448	$3,470,881	$627,735	($44,730,964)	($364,168)
2014	$6,735,187	$2,239,492	$438,969	$304,184	$3,752,541	$3,467,363	$643,428	($45,089,213)	($358,250)
2015	$6,822,744	$2,290,904	$449,943	$311,789	$3,770,108	$3,468,206	$468,623	($45,255,934)	($166,721)
2016	$6,911,440	$2,343,542	$461,191	$319,584	$3,787,123	$3,462,900	$480,338	($45,412,050)	($156,115)
2017	$7,001,289	$2,397,435	$472,721	$327,573	$3,803,559	$3,466,444	$492,347	($45,567,281)	($155,231)
2018	$7,092,305	$2,452,614	$484,539	$335,763	$3,819,389	$3,468,069	$504,656	($45,720,616)	($153,335)
2019	$7,184,505	$2,509,111	$496,653	$344,157	$3,834,585	$3,467,519	$517,272	($45,870,822)	($150,206)
2020	$7,277,904	$2,566,958	$509,069	$352,761	$3,849,116	$3,464,538	$530,204	($46,016,447)	($145,625)
2021	$7,372,517	$2,626,188	$521,796	$361,580	$3,862,954	$3,463,869	$543,459	($46,160,821)	($144,374)
2022	$7,468,359	$2,686,834	$534,841	$370,619	$3,876,066	—	$557,045	($42,841,801)	$3,319,021
2023	$7,565,448	$2,748,931	$548,212	$379,885	$3,888,421	—	$570,971	($39,524,351)	$3,317,449
2024	$7,663,799	$2,812,514	$561,917	$389,382	$3,899,986	—	$585,246	($36,209,611)	$3,314,740
2025	$7,763,428	$2,877,621	$575,965	$399,116	$3,910,726	—	$599,877	($32,898,762)	$3,310,849
2026	$7,864,353	$2,944,287	$590,364	$409,094	$3,920,608	—	$614,874	($29,593,028)	$3,305,734
2027	$7,966,590	$3,012,551	$605,123	$419,322	$3,929,593	—	$630,246	($26,293,680)	$3,299,348
2028	$8,070,155	$3,082,453	$620,251	$429,805	$3,937,646	—	$646,002	($23,002,036)	$3,291,645
2029	$8,175,067	$3,154,032	$635,758	$440,550	$3,944,728	—	$662,152	($19,719,459)	$3,282,576
2030	$8,281,343	$3,227,329	$651,652	$451,564	$3,950,800	—	$678,706	($16,447,365)	$3,272,094
2031	$8,389,001	$3,302,386	$667,943	$462,853	$3,955,819	—	$695,673	($13,187,219)	$3,260,146
2032	$8,498,058	$3,379,246	$684,641	$474,424	$3,959,746	—	$713,065	($9,940,538)	$3,246,681
2033	$8,608,532	$3,457,954	$701,757	$486,285	$3,962,536	—	$730,892	($6,708,894)	$3,231,645
2034	$8,720,443	$3,538,554	$719,301	$498,442	$3,964,146	—	$749,164	($3,493,912)	$3,214,982

Table E-23. Coleman Bridge Balance Sheet: High Traffic Growth, Alternative C (Current Dollars)

High Traffic Growth	
Commuter AVI Toll	$0.85

	Toll Revenue	Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,397,828	$1,900,572	$353,560	$245,000	$3,898,697	$3,451,268	$450,000	($40,213,571)	($2,571)
2006	$6,481,000	$1,873,434	$361,691	$250,635	$3,995,239	$3,448,743	$1,051,350	($40,718,424)	($504,853)
2007	$6,565,253	$1,914,630	$370,372	$256,650	$4,023,600	$3,448,863	$1,136,648	($41,280,334)	($561,910)
2008	$6,650,601	$1,956,766	$379,261	$262,810	$4,051,764	$3,452,188	$555,910	($41,236,668)	$43,666
2009	$6,737,059	$1,999,864	$388,363	$269,117	$4,079,714	$3,467,463	$569,252	($41,193,669)	$42,999
2010	$6,824,640	$2,043,946	$397,684	$275,576	$4,107,434	$3,466,013	$582,914	($41,135,162)	$58,508
2011	$6,913,361	$2,090,718	$407,626	$282,465	$4,132,551	$3,465,763	$597,487	($41,065,860)	$69,301
2012	$7,003,234	$2,138,604	$417,817	$289,527	$4,157,287	$3,468,763	$612,424	($40,989,761)	$76,100
2013	$7,094,277	$2,187,629	$428,262	$296,765	$4,181,620	$3,470,881	$627,735	($40,906,757)	$83,003
2014	$7,186,502	$2,237,823	$438,969	$304,184	$4,205,526	$3,467,363	$643,428	($40,812,022)	$94,735
2015	$7,279,927	$2,289,213	$449,943	$311,789	$4,228,982	$3,468,206	$468,623	($40,519,870)	$292,153
2016	$7,374,566	$2,341,828	$461,191	$319,584	$4,251,962	$3,462,900	$480,338	($40,211,146)	$308,724
2017	$7,470,435	$2,395,699	$472,721	$327,573	$4,274,441	$3,466,444	$492,347	($39,895,496)	$315,650
2018	$7,567,551	$2,450,856	$484,539	$335,763	$4,296,393	$3,468,069	$504,656	($39,571,827)	$323,668
2019	$7,665,929	$2,507,330	$496,653	$344,157	$4,317,789	$3,467,519	$517,272	($39,238,829)	$332,998
2020	$7,765,586	$2,565,154	$509,069	$352,761	$4,338,602	$3,464,538	$530,204	($38,894,969)	$343,861
2021	$7,866,539	$2,624,360	$521,796	$361,580	$4,358,803	$3,463,869	$543,459	($38,543,493)	$351,475
2022	$7,968,804	$2,684,983	$534,841	$370,619	$4,378,361	—	$557,045	($34,722,178)	$3,821,316
2023	$8,072,398	$2,747,056	$548,212	$379,885	$4,397,246	—	$570,971	($30,895,903)	$3,826,275
2024	$8,177,339	$2,810,615	$561,917	$389,382	$4,415,426	—	$585,246	($27,065,723)	$3,830,180
2025	$8,283,645	$2,875,696	$575,965	$399,116	$4,432,867	—	$599,877	($23,232,733)	$3,832,990
2026	$8,391,332	$2,942,338	$590,364	$409,094	$4,449,536	—	$614,874	($19,398,071)	$3,834,662
2027	$8,500,419	$3,010,577	$605,123	$419,322	$4,465,398	—	$630,246	($15,562,919)	$3,835,152
2028	$8,610,925	$3,080,453	$620,251	$429,805	$4,480,416	—	$646,002	($11,728,505)	$3,834,414
2029	$8,722,867	$3,152,005	$635,758	$440,550	$4,494,554	—	$662,152	($7,896,102)	$3,832,402
2030	$8,836,264	$3,225,276	$651,652	$451,564	$4,507,773	—	$678,706	($4,067,035)	$3,829,067
2031	$8,951,135	$3,300,306	$667,943	$462,853	$4,520,034	—	$695,673	($242,674)	$3,824,360
2032	$9,067,500	$3,377,140	$684,641	$474,424	$4,531,295	—	$713,065	$3,575,556	$242,674
2033	$9,185,378	$3,455,820	$701,757	$486,285	$4,541,516	—	$730,892	$7,457,691	—
2034	$9,304,788	$3,536,393	$719,301	$498,442	$4,550,652	—	$749,164	$11,408,332	—

Table E-24. Coleman Bridge Balance Sheet: High Traffic Growth, Alternative D (Current Dollars)

High Traffic Growth	
Commuter AVI Toll	$0.75
Commuter AVI Toll 2015	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,996,042	$1,902,244	$353,560	$245,000	$3,495,238	$3,451,268	$450,000	($40,617,029)	($406,029)
2006	$6,073,990	$1,874,939	$361,691	$250,635	$3,586,725	$3,448,743	$1,051,350	($41,530,397)	($913,368)
2007	$6,152,952	$1,916,155	$370,372	$256,650	$3,609,775	$3,448,863	$1,136,648	($42,506,133)	($975,736)
2008	$6,232,940	$1,958,311	$379,261	$262,810	$3,632,558	$3,452,188	$555,910	($42,881,672)	($375,539)
2009	$6,313,969	$2,001,429	$388,363	$269,117	$3,655,059	$3,467,463	$569,252	($43,263,328)	($381,656)
2010	$6,396,050	$2,045,531	$397,684	$275,576	$3,677,259	$3,466,013	$582,914	($43,634,996)	($371,668)
2011	$6,479,199	$2,092,324	$407,626	$282,465	$3,696,783	$3,465,763	$597,487	($44,001,463)	($366,467)
2012	$6,563,429	$2,140,231	$417,817	$289,527	$3,715,854	$3,468,763	$612,424	($44,366,796)	($365,333)
2013	$6,648,753	$2,189,277	$428,262	$296,765	$3,734,448	$3,470,881	$627,735	($44,730,964)	($364,168)
2014	$6,735,187	$2,239,492	$438,969	$304,184	$3,752,541	$3,467,363	$643,428	($45,089,213)	($358,250)
2015	$7,952,686	$2,286,269	$449,943	$311,789	$4,904,685	$3,468,206	$468,623	($44,121,358)	$967,855
2016	$8,056,071	$2,338,846	$461,191	$319,584	$4,936,449	$3,462,900	$480,338	($43,128,148)	$993,211
2017	$8,160,800	$2,392,679	$472,721	$327,573	$4,967,826	$3,466,444	$492,347	($42,119,112)	$1,009,036
2018	$8,266,890	$2,447,796	$484,539	$335,763	$4,998,792	$3,468,069	$504,656	($41,093,044)	$1,026,067
2019	$8,374,360	$2,504,231	$496,653	$344,157	$5,029,319	$3,467,519	$517,272	($40,048,516)	$1,044,529
2020	$8,483,226	$2,562,014	$509,069	$352,761	$5,059,382	$3,464,538	$530,204	($38,983,875)	$1,064,641
2021	$8,593,508	$2,621,179	$521,796	$361,580	$5,088,953	$3,463,869	$543,459	($37,902,249)	$1,081,626
2022	$8,705,224	$2,681,760	$534,841	$370,619	$5,118,004	—	$557,045	($33,341,291)	$4,560,958
2023	$8,818,392	$2,743,791	$548,212	$379,885	$5,146,504	—	$570,971	($28,765,758)	$4,575,532
2024	$8,933,031	$2,807,308	$561,917	$389,382	$5,174,424	—	$585,246	($24,176,580)	$4,589,178
2025	$9,049,160	$2,872,347	$575,965	$399,116	$5,201,732	—	$599,877	($19,574,725)	$4,601,855
2026	$9,166,799	$2,938,945	$590,364	$409,094	$5,228,396	—	$614,874	($14,961,202)	$4,613,523
2027	$9,285,968	$3,007,140	$605,123	$419,322	$5,254,383	—	$630,246	($10,337,065)	$4,624,138
2028	$9,406,685	$3,076,971	$620,251	$429,805	$5,279,659	—	$646,002	($5,703,408)	$4,633,657
2029	$9,528,972	$3,148,478	$635,758	$440,550	$5,304,187	—	$662,152	($1,061,373)	$4,642,035
2030	$9,652,849	$3,221,703	$651,652	$451,564	$5,327,931	—	$678,706	$3,587,852	$1,061,373
2031	$9,778,336	$3,296,687	$667,943	$462,853	$5,350,854	—	$695,673	$8,314,789	—
2032	$9,905,454	$3,373,473	$684,641	$474,424	$5,372,916	—	$713,065	$13,140,936	—
2033	$10,034,225	$3,452,106	$701,757	$486,285	$5,394,077	—	$730,892	$18,066,940	—
2034	$10,164,670	$3,532,631	$719,301	$498,442	$5,414,297	—	$749,164	$23,093,411	—

Table E-25. Coleman Bridge Balance Sheet: High Traffic Growth, Alternative E (Current Dollars)

High Traffic Growth	
Commuter AVI Toll	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,989,070	$1,897,661	$353,560	$245,000	$4,492,849	$3,451,268	$450,000	($39,619,419)	$591,581
2006	$7,079,928	$1,870,813	$361,691	$250,635	$4,596,788	$3,448,743	$1,051,350	($39,522,723)	$96,696
2007	$7,171,967	$1,911,975	$370,372	$256,650	$4,632,969	$3,448,863	$1,136,648	($39,475,265)	$47,458
2008	$7,265,202	$1,954,077	$379,261	$262,810	$4,669,054	$3,452,188	$555,910	($38,814,308)	$660,956
2009	$7,359,650	$1,997,140	$388,363	$269,117	$4,705,029	$3,467,463	$569,252	($38,145,994)	$668,315
2010	$7,455,325	$2,041,186	$397,684	$275,576	$4,740,879	$3,466,013	$582,914	($37,454,042)	$691,952
2011	$7,552,245	$2,087,923	$407,626	$282,465	$4,774,230	$3,465,763	$597,487	($36,743,061)	$710,980
2012	$7,650,424	$2,135,772	$417,817	$289,527	$4,807,308	$3,468,763	$612,424	($36,016,940)	$726,121
2013	$7,749,879	$2,184,761	$428,262	$296,765	$4,840,091	$3,470,881	$627,735	($35,275,466)	$741,475
2014	$7,850,628	$2,234,917	$438,969	$304,184	$4,872,557	$3,467,363	$643,428	($34,513,699)	$761,766
2015	$7,952,686	$2,286,269	$449,943	$311,789	$4,904,685	$3,468,206	$468,623	($33,545,844)	$967,855
2016	$8,056,071	$2,338,846	$461,191	$319,584	$4,936,449	$3,462,900	$480,338	($32,552,633)	$993,211
2017	$8,160,800	$2,392,679	$472,721	$327,573	$4,967,826	$3,466,444	$492,347	($31,543,598)	$1,009,036
2018	$8,266,890	$2,447,796	$484,539	$335,763	$4,998,792	$3,468,069	$504,656	($30,517,530)	$1,026,067
2019	$8,374,360	$2,504,231	$496,653	$344,157	$5,029,319	$3,467,519	$517,272	($29,473,002)	$1,044,529
2020	$8,483,226	$2,562,014	$509,069	$352,761	$5,059,382	$3,464,538	$530,204	($28,408,360)	$1,064,641
2021	$8,593,508	$2,621,179	$521,796	$361,580	$5,088,953	$3,463,869	$543,459	($27,326,735)	$1,081,626
2022	$8,705,224	$2,681,760	$534,841	$370,619	$5,118,004	—	$557,045	($22,765,777)	$4,560,958
2023	$8,818,392	$2,743,791	$548,212	$379,885	$5,146,504	—	$570,971	($18,190,244)	$4,575,532
2024	$8,933,031	$2,807,308	$561,917	$389,382	$5,174,424	—	$585,246	($13,601,066)	$4,589,178
2025	$9,049,160	$2,872,347	$575,965	$399,116	$5,201,732	—	$599,877	($8,999,211)	$4,601,855
2026	$9,166,799	$2,938,945	$590,364	$409,094	$5,228,396	—	$614,874	($4,385,688)	$4,613,523
2027	$9,285,968	$3,007,140	$605,123	$419,322	$5,254,383	—	$630,246	$238,449	$4,385,688
2028	$9,406,685	$3,076,971	$620,251	$429,805	$5,279,659	—	$646,002	$4,876,875	—
2029	$9,528,972	$3,148,478	$635,758	$440,550	$5,304,187	—	$662,152	$9,616,447	—
2030	$9,652,849	$3,221,703	$651,652	$451,564	$5,327,931	—	$678,706	$14,458,002	—
2031	$9,778,336	$3,296,687	$667,943	$462,853	$5,350,854	—	$695,673	$19,402,342	—
2032	$9,905,454	$3,373,473	$684,641	$474,424	$5,372,916	—	$713,065	$24,450,239	—
2033	$10,034,225	$3,452,106	$701,757	$486,285	$5,394,077	—	$730,892	$29,602,430	—
2034	$10,164,670	$3,532,631	$719,301	$498,442	$5,414,297	—	$749,164	$34,859,611	—

Table E-26. Coleman Bridge Balance Sheet: Low Traffic Growth, Do Nothing (Current Dollars)

Low Traffic Growth
Do Nothing

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$4,963,938	$1,906,890	$353,560	$245,000	$2,458,489	$3,451,268	$450,000	($41,653,779)	($1,442,779)
2006	$5,003,649	$1,877,405	$361,691	$250,635	$2,513,918	$3,448,743	$1,051,350	($43,639,953)	($1,986,174)
2007	$5,043,679	$1,916,921	$370,372	$256,650	$2,499,735	$3,448,863	$1,136,648	($45,725,728)	($2,085,775)
2008	$5,084,028	$1,957,341	$379,261	$262,810	$2,484,616	$3,452,188	$555,910	($47,249,210)	($1,523,482)
2009	$5,124,700	$1,998,687	$388,363	$269,117	$2,468,533	$3,467,463	$569,252	($48,817,392)	($1,568,182)
2010	$5,165,698	$2,040,980	$397,684	$275,576	$2,451,458	$3,466,013	$582,914	($50,414,861)	($1,597,469)
2011	$5,207,023	$2,085,926	$407,626	$282,465	$2,431,006	$3,465,763	$597,487	($52,047,105)	($1,632,244)
2012	$5,248,680	$2,131,947	$417,817	$289,527	$2,409,389	$3,468,763	$612,424	($53,718,903)	($1,671,798)
2013	$5,290,669	$2,179,070	$428,262	$296,765	$2,386,572	$3,470,881	$627,735	($55,430,948)	($1,712,045)
2014	$5,332,994	$2,227,321	$438,969	$304,184	$2,362,520	$3,467,363	$643,428	($57,179,219)	($1,748,271)
2015	$5,375,658	$2,276,729	$449,943	$311,789	$2,337,198	$3,468,206	$468,623	($58,778,850)	($1,599,632)
2016	$5,418,664	$2,327,322	$461,191	$319,584	$2,310,567	$3,462,900	$480,338	($60,411,522)	($1,632,672)
2017	$5,462,013	$2,379,129	$472,721	$327,573	$2,282,590	$3,466,444	$492,347	($62,087,723)	($1,676,201)
2018	$5,505,709	$2,432,180	$484,539	$335,763	$2,253,227	$3,468,069	$504,656	($63,807,220)	($1,719,497)
2019	$5,549,755	$2,486,506	$496,653	$344,157	$2,222,439	$3,467,519	$517,272	($65,569,571)	($1,762,351)
2020	$5,594,153	$2,542,138	$509,069	$352,761	$2,190,185	$3,464,538	$530,204	($67,374,128)	($1,804,556)
2021	$5,638,906	$2,599,109	$521,796	$361,580	$2,156,422	$3,463,869	$543,459	($69,225,034)	($1,850,906)
2022	$5,684,017	$2,657,451	$534,841	$370,619	$2,121,106	—	$557,045	($67,660,973)	$1,564,061
2023	$5,729,489	$2,717,199	$548,212	$379,885	$2,084,194	—	$570,971	($66,147,751)	$1,513,222
2024	$5,775,325	$2,778,388	$561,917	$389,382	$2,045,639	—	$585,246	($64,687,358)	$1,460,393
2025	$5,821,528	$2,841,051	$575,965	$399,116	$2,005,395	—	$599,877	($63,281,839)	$1,405,518
2026	$5,868,100	$2,905,228	$590,364	$409,094	$1,963,414	—	$614,874	($61,933,299)	$1,348,540
2027	$5,915,045	$2,970,953	$605,123	$419,322	$1,919,647	—	$630,246	($60,643,898)	$1,289,401
2028	$5,962,365	$3,038,267	$620,251	$429,805	$1,874,042	—	$646,002	($59,415,857)	$1,228,041
2029	$6,010,064	$3,107,208	$635,758	$440,550	$1,826,549	—	$662,152	($58,251,460)	$1,164,397
2030	$6,058,145	$3,177,816	$651,652	$451,564	$1,777,114	—	$678,706	($57,153,052)	$1,098,408
2031	$6,106,610	$3,250,133	$667,943	$462,853	$1,725,682	—	$695,673	($56,123,044)	$1,030,008
2032	$6,155,463	$3,324,201	$684,641	$474,424	$1,672,197	—	$713,065	($55,163,912)	$959,132
2033	$6,204,707	$3,400,063	$701,757	$486,285	$1,616,602	—	$730,892	($54,278,202)	$885,710
2034	$6,254,344	$3,477,763	$719,301	$498,442	$1,558,838	—	$749,164	($53,468,528)	$809,674

Table E-27. Coleman Bridge Balance Sheet: Low Traffic Growth, Alternative A (Current Dollars)

Low Traffic Growth			
Commuter AVI Toll	$0.70	3-Axle	$4.25
2-Axle Manual Collection	$2.50	4-Axle & Greater	$5.50

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,007,459	$1,900,467	$353,560	$245,000	$3,508,432	$3,451,268	$450,000	($40,603,835)	($392,835)
2006	$6,055,518	$1,871,650	$361,691	$250,635	$3,571,542	$3,448,743	$1,051,350	($41,532,385)	($928,550)
2007	$6,103,962	$1,911,120	$370,372	$256,650	$3,565,820	$3,448,863	$1,136,648	($42,552,076)	($1,019,690)
2008	$6,152,794	$1,951,494	$379,261	$262,810	$3,559,229	$3,452,188	$555,910	($43,000,944)	($448,869)
2009	$6,202,016	$1,992,793	$388,363	$269,117	$3,551,743	$3,467,463	$569,252	($43,485,916)	($484,972)
2010	$6,251,633	$2,035,039	$397,684	$275,576	$3,543,334	$3,466,013	$582,914	($43,991,509)	($505,593)
2011	$6,301,646	$2,079,937	$407,626	$282,465	$3,531,617	$3,465,763	$597,487	($44,523,142)	($531,633)
2012	$6,352,059	$2,125,910	$417,817	$289,527	$3,518,804	$3,468,763	$612,424	($45,085,525)	($562,382)
2013	$6,402,875	$2,172,985	$428,262	$296,765	$3,504,863	$3,470,881	$627,735	($45,679,278)	($593,753)
2014	$6,454,098	$2,221,187	$438,969	$304,184	$3,489,758	$3,467,363	$643,428	($46,300,311)	($621,033)
2015	$6,505,731	$2,270,546	$449,943	$311,789	$3,473,453	$3,468,206	$468,623	($46,763,687)	($463,376)
2016	$6,557,777	$2,321,089	$461,191	$319,584	$3,455,912	$3,462,900	$480,338	($47,251,014)	($487,326)
2017	$6,610,239	$2,372,846	$472,721	$327,573	$3,437,098	$3,466,444	$492,347	($47,772,706)	($521,693)
2018	$6,663,121	$2,425,847	$484,539	$335,763	$3,416,972	$3,468,069	$504,656	($48,328,459)	($555,753)
2019	$6,716,426	$2,480,123	$496,653	$344,157	$3,395,494	$3,467,519	$517,272	($48,917,756)	($589,297)
2020	$6,770,157	$2,535,704	$509,069	$352,761	$3,372,624	$3,464,538	$530,204	($49,539,873)	($622,118)
2021	$6,824,319	$2,592,623	$521,796	$361,580	$3,348,320	$3,463,869	$543,459	($50,198,881)	($659,008)
2022	$6,878,913	$2,650,914	$534,841	$370,619	$3,322,539	—	$557,045	($47,433,387)	$2,765,494
2023	$6,933,945	$2,710,610	$548,212	$379,885	$3,295,239	—	$570,971	($44,709,120)	$2,724,267
2024	$6,989,416	$2,771,745	$561,917	$389,382	$3,266,372	—	$585,246	($42,027,994)	$2,681,126
2025	$7,045,331	$2,834,356	$575,965	$399,116	$3,235,894	—	$599,877	($39,391,976)	$2,636,017
2026	$7,101,694	$2,898,478	$590,364	$409,094	$3,203,757	—	$614,874	($36,803,093)	$2,588,883
2027	$7,158,508	$2,964,150	$605,123	$419,322	$3,169,913	—	$630,246	($34,263,426)	$2,539,667
2028	$7,215,776	$3,031,409	$620,251	$429,805	$3,134,310	—	$646,002	($31,775,117)	$2,488,309
2029	$7,273,502	$3,100,295	$635,758	$440,550	$3,096,899	—	$662,152	($29,340,370)	$2,434,747
2030	$7,331,690	$3,170,848	$651,652	$451,564	$3,057,627	—	$678,706	($26,961,449)	$2,378,921
2031	$7,390,343	$3,243,109	$667,943	$462,853	$3,016,439	—	$695,673	($24,640,684)	$2,320,765
2032	$7,449,466	$3,317,121	$684,641	$474,424	$2,973,280	—	$713,065	($22,380,469)	$2,260,215
2033	$7,509,062	$3,392,926	$701,757	$486,285	$2,928,094	—	$730,892	($20,183,267)	$2,197,202
2034	$7,569,134	$3,470,570	$719,301	$498,442	$2,880,822	—	$749,164	($18,051,609)	$2,131,658

Table E-28. Coleman Bridge Balance Sheet: Low Traffic Growth, Alternative B (Current Dollars)

Low Traffic Growth	
Commuter AVI Toll	$0.75

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,966,446	$1,900,359	$353,560	$245,000	$3,467,528	$3,451,268	$450,000	($40,644,740)	($433,740)
2006	$6,014,178	$1,871,553	$361,691	$250,635	$3,530,298	$3,448,743	$1,051,350	($41,614,534)	($969,794)
2007	$6,062,291	$1,911,023	$370,372	$256,650	$3,524,246	$3,448,863	$1,136,648	($42,675,798)	($1,061,264)
2008	$6,110,790	$1,951,396	$379,261	$262,810	$3,517,323	$3,452,188	$555,910	($43,166,573)	($490,775)
2009	$6,159,676	$1,992,694	$388,363	$269,117	$3,509,501	$3,467,463	$569,252	($43,693,786)	($527,213)
2010	$6,208,953	$2,034,939	$397,684	$275,576	$3,500,754	$3,466,013	$582,914	($44,241,959)	($548,173)
2011	$6,258,625	$2,079,837	$407,626	$282,465	$3,488,697	$3,465,763	$597,487	($44,816,512)	($574,553)
2012	$6,308,694	$2,125,809	$417,817	$289,527	$3,475,541	$3,468,763	$612,424	($45,422,158)	($605,646)
2013	$6,359,163	$2,172,883	$428,262	$296,765	$3,461,253	$3,470,881	$627,735	($46,059,521)	($637,363)
2014	$6,410,037	$2,221,084	$438,969	$304,184	$3,445,799	$3,467,363	$643,428	($46,724,513)	($664,992)
2015	$6,461,317	$2,270,442	$449,943	$311,789	$3,429,143	$3,468,206	$468,623	($47,232,199)	($507,686)
2016	$6,513,008	$2,320,985	$461,191	$319,584	$3,411,248	$3,462,900	$480,338	($47,764,190)	($531,991)
2017	$6,565,112	$2,372,741	$472,721	$327,573	$3,392,076	$3,466,444	$492,347	($48,330,905)	($566,715)
2018	$6,617,633	$2,425,741	$484,539	$335,763	$3,371,589	$3,468,069	$504,656	($48,932,040)	($601,135)
2019	$6,670,574	$2,480,015	$496,653	$344,157	$3,349,749	$3,467,519	$517,272	($49,567,082)	($635,042)
2020	$6,723,938	$2,535,596	$509,069	$352,761	$3,326,512	$3,464,538	$530,204	($50,235,311)	($668,229)
2021	$6,777,730	$2,592,514	$521,796	$361,580	$3,301,840	$3,463,869	$543,459	($50,940,799)	($705,488)
2022	$6,831,952	$2,650,804	$534,841	$370,619	$3,275,687	—	$557,045	($48,222,157)	$2,718,642
2023	$6,886,607	$2,710,499	$548,212	$379,885	$3,248,012	—	$570,971	($45,545,116)	$2,677,040
2024	$6,941,700	$2,771,633	$561,917	$389,382	$3,218,768	—	$585,246	($42,911,595)	$2,633,522
2025	$6,997,234	$2,834,243	$575,965	$399,116	$3,187,909	—	$599,877	($40,323,563)	$2,588,032
2026	$7,053,211	$2,898,365	$590,364	$409,094	$3,155,388	—	$614,874	($37,783,048)	$2,540,514
2027	$7,109,637	$2,964,036	$605,123	$419,322	$3,121,156	—	$630,246	($35,292,138)	$2,490,911
2028	$7,166,514	$3,031,294	$620,251	$429,805	$3,085,164	—	$646,002	($32,852,975)	$2,439,162
2029	$7,223,846	$3,100,179	$635,758	$440,550	$3,047,360	—	$662,152	($30,467,768)	$2,385,208
2030	$7,281,637	$3,170,731	$651,652	$451,564	$3,007,691	—	$678,706	($28,138,782)	$2,328,985
2031	$7,339,890	$3,242,991	$667,943	$462,853	$2,966,103	—	$695,673	($25,868,352)	$2,270,430
2032	$7,398,609	$3,317,002	$684,641	$474,424	$2,922,542	—	$713,065	($23,658,876)	$2,209,477
2033	$7,457,798	$3,392,806	$701,757	$486,285	$2,876,950	—	$730,892	($21,512,817)	$2,146,058
2034	$7,517,461	$3,470,449	$719,301	$498,442	$2,829,269	—	$749,164	($19,432,713)	$2,080,105

Table E-29. Coleman Bridge Balance Sheet: Low Traffic Growth, Alternative C (Current Dollars)

Low Traffic Growth	
Commuter AVI Toll	$0.85

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,366,249	$1,898,695	$353,560	$245,000	$3,868,995	$3,451,268	$450,000	($40,243,273)	($32,273)
2006	$6,417,179	$1,870,062	$361,691	$250,635	$3,934,790	$3,448,743	$1,051,350	($40,808,575)	($565,302)
2007	$6,468,517	$1,909,520	$370,372	$256,650	$3,931,974	$3,448,863	$1,136,648	($41,462,111)	($653,536)
2008	$6,520,265	$1,949,881	$379,261	$262,810	$3,928,313	$3,452,188	$555,910	($41,541,896)	($79,785)
2009	$6,572,427	$1,991,167	$388,363	$269,117	$3,923,779	$3,467,463	$569,252	($41,654,832)	($112,936)
2010	$6,625,006	$2,033,400	$397,684	$275,576	$3,918,346	$3,466,013	$582,914	($41,785,412)	($130,581)
2011	$6,678,006	$2,078,285	$407,626	$282,465	$3,909,629	$3,465,763	$597,487	($41,939,033)	($153,620)
2012	$6,731,430	$2,124,245	$417,817	$289,527	$3,899,841	$3,468,763	$612,424	($42,120,378)	($181,346)
2013	$6,785,282	$2,171,306	$428,262	$296,765	$3,888,948	$3,470,881	$627,735	($42,330,047)	($209,668)
2014	$6,839,564	$2,219,496	$438,969	$304,184	$3,876,915	$3,467,363	$643,428	($42,563,922)	($233,876)
2015	$6,894,281	$2,268,841	$449,943	$311,789	$3,863,708	$3,468,206	$468,623	($42,637,044)	($73,121)
2016	$6,949,435	$2,319,370	$461,191	$319,584	$3,849,289	$3,462,900	$480,338	($42,730,993)	($93,949)
2017	$7,005,030	$2,371,114	$472,721	$327,573	$3,833,622	$3,466,444	$492,347	($42,856,161)	($125,169)
2018	$7,061,071	$2,424,101	$484,539	$335,763	$3,816,668	$3,468,069	$504,656	($43,012,218)	($156,056)
2019	$7,117,559	$2,478,362	$496,653	$344,157	$3,798,388	$3,467,519	$517,272	($43,198,621)	($186,403)
2020	$7,174,500	$2,533,929	$509,069	$352,761	$3,778,741	$3,464,538	$530,204	($43,414,622)	($216,001)
2021	$7,231,896	$2,590,834	$521,796	$361,580	$3,757,686	$3,463,869	$543,459	($43,664,264)	($249,642)
2022	$7,289,751	$2,649,111	$534,841	$370,619	$3,735,180	—	$557,045	($40,486,129)	$3,178,135
2023	$7,348,069	$2,708,792	$548,212	$379,885	$3,711,180	—	$570,971	($37,345,920)	$3,140,209
2024	$7,406,853	$2,769,913	$561,917	$389,382	$3,685,642	—	$585,246	($34,245,524)	$3,100,396
2025	$7,466,108	$2,832,509	$575,965	$399,116	$3,658,518	—	$599,877	($31,186,883)	$3,058,641
2026	$7,525,837	$2,896,617	$590,364	$409,094	$3,629,762	—	$614,874	($28,171,995)	$3,014,888
2027	$7,586,044	$2,962,274	$605,123	$419,322	$3,599,325	—	$630,246	($25,202,916)	$2,969,080
2028	$7,646,732	$3,029,518	$620,251	$429,805	$3,567,158	—	$646,002	($22,281,759)	$2,921,156
2029	$7,707,906	$3,098,389	$635,758	$440,550	$3,533,210	—	$662,152	($19,410,701)	$2,871,058
2030	$7,769,569	$3,168,926	$651,652	$451,564	$3,497,428	—	$678,706	($16,591,979)	$2,818,722
2031	$7,831,726	$3,241,172	$667,943	$462,853	$3,459,758	—	$695,673	($13,827,894)	$2,764,085
2032	$7,894,380	$3,315,168	$684,641	$474,424	$3,420,146	—	$713,065	($11,120,813)	$2,707,081
2033	$7,957,535	$3,390,958	$701,757	$486,285	$3,378,535	—	$730,892	($8,473,170)	$2,647,643
2034	$8,021,195	$3,468,586	$719,301	$498,442	$3,334,866	—	$749,164	($5,887,468)	$2,585,702

Table E-30. Coleman Bridge Balance Sheet: Low Traffic Growth, Alternative D (Current Dollars)

Low Traffic Growth	
Commuter AVI Toll	$0.75
Commuter AVI Toll 2015	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$5,966,446	$1,900,359	$353,560	$245,000	$3,467,528	$3,451,268	$450,000	($40,644,740)	($433,740)
2006	$6,014,178	$1,871,553	$361,691	$250,635	$3,530,298	$3,448,743	$1,051,350	($41,614,534)	($969,794)
2007	$6,062,291	$1,911,023	$370,372	$256,650	$3,524,246	$3,448,863	$1,136,648	($42,675,798)	($1,061,264)
2008	$6,110,790	$1,951,396	$379,261	$262,810	$3,517,323	$3,452,188	$555,910	($43,166,573)	($490,775)
2009	$6,159,676	$1,992,694	$388,363	$269,117	$3,509,501	$3,467,463	$569,252	($43,693,786)	($527,213)
2010	$6,208,953	$2,034,939	$397,684	$275,576	$3,500,754	$3,466,013	$582,914	($44,241,959)	($548,173)
2011	$6,258,625	$2,079,837	$407,626	$282,465	$3,488,697	$3,465,763	$597,487	($44,816,512)	($574,553)
2012	$6,308,694	$2,125,809	$417,817	$289,527	$3,475,541	$3,468,763	$612,424	($45,422,158)	($605,646)
2013	$6,359,163	$2,172,883	$428,262	$296,765	$3,461,253	$3,470,881	$627,735	($46,059,521)	($637,363)
2014	$6,410,037	$2,221,084	$438,969	$304,184	$3,445,799	$3,467,363	$643,428	($46,724,513)	($664,992)
2015	$7,531,401	$2,266,053	$449,943	$311,789	$4,503,616	$3,468,206	$468,623	($46,157,726)	$566,787
2016	$7,591,652	$2,316,560	$461,191	$319,584	$4,494,317	$3,462,900	$480,338	($45,606,648)	$551,078
2017	$7,652,386	$2,368,281	$472,721	$327,573	$4,483,810	$3,466,444	$492,347	($45,081,629)	$525,019
2018	$7,713,605	$2,421,246	$484,539	$335,763	$4,472,057	$3,468,069	$504,656	($44,582,296)	$499,333
2019	$7,775,313	$2,475,484	$496,653	$344,157	$4,459,020	$3,467,519	$517,272	($44,108,067)	$474,229
2020	$7,837,516	$2,531,028	$509,069	$352,761	$4,444,658	$3,464,538	$530,204	($43,658,150)	$449,917
2021	$7,900,216	$2,587,910	$521,796	$361,580	$4,428,930	$3,463,869	$543,459	($43,236,548)	$421,603
2022	$7,963,418	$2,646,163	$534,841	$370,619	$4,411,795	—	$557,045	($39,381,798)	$3,854,749
2023	$8,027,125	$2,705,821	$548,212	$379,885	$4,393,208	—	$570,971	($35,559,562)	$3,822,237
2024	$8,091,342	$2,766,918	$561,917	$389,382	$4,373,125	—	$585,246	($31,771,682)	$3,787,880
2025	$8,156,073	$2,829,490	$575,965	$399,116	$4,351,502	—	$599,877	($28,020,057)	$3,751,625
2026	$8,221,321	$2,893,574	$590,364	$409,094	$4,328,289	—	$614,874	($24,306,642)	$3,713,416
2027	$8,287,092	$2,959,206	$605,123	$419,322	$4,303,441	—	$630,246	($20,633,446)	$3,673,195
2028	$8,353,389	$3,026,426	$620,251	$429,805	$4,276,907	—	$646,002	($17,002,541)	$3,630,905
2029	$8,420,216	$3,095,272	$635,758	$440,550	$4,248,637	—	$662,152	($13,416,056)	$3,586,485
2030	$8,487,578	$3,165,785	$651,652	$451,564	$4,218,578	—	$678,706	($9,876,184)	$3,539,872
2031	$8,555,478	$3,238,005	$667,943	$462,853	$4,186,678	—	$695,673	($6,385,180)	$3,491,004
2032	$8,623,922	$3,311,976	$684,641	$474,424	$4,152,881	—	$713,065	($2,945,364)	$3,439,816
2033	$8,692,913	$3,387,740	$701,757	$486,285	$4,117,131	—	$730,892	$440,875	$2,945,364
2034	$8,762,457	$3,465,342	$719,301	$498,442	$4,079,372	—	$749,164	$3,779,900	—

Table E-31. Coleman Bridge Balance Sheet: Low Traffic Growth, Alternative E (Current Dollars)

Low Traffic Growth	
Commuter AVI Toll	$1.00

Toll Revenue		Operations and Maintenance Costs				Debt Service and Improvements			
Fiscal Year	Toll Revenue	Toll Operations Costs	Maintenance Costs	Bridge Tender Operations	Net Income	Debt Service	Maintenance & Replacement	Cumulative Balance	TFRA Payment
2004								($40,211,000)	
2005	$6,954,573	$1,895,799	$353,560	$245,000	$4,460,214	$3,451,268	$450,000	($39,652,053)	$558,947
2006	$7,010,209	$1,867,467	$361,691	$250,635	$4,530,415	$3,448,743	$1,051,350	($39,621,730)	$30,323
2007	$7,066,291	$1,906,904	$370,372	$256,650	$4,532,364	$3,448,863	$1,136,648	($39,674,876)	($53,146)
2008	$7,122,821	$1,947,245	$379,261	$262,810	$4,533,506	$3,452,188	$555,910	($39,149,468)	$525,408
2009	$7,179,804	$1,988,510	$388,363	$269,117	$4,533,814	$3,467,463	$569,252	($38,652,369)	$497,099
2010	$7,237,242	$2,030,721	$397,684	$275,576	$4,533,261	$3,466,013	$582,914	($38,168,035)	$484,334
2011	$7,295,140	$2,075,585	$407,626	$282,465	$4,529,464	$3,465,763	$597,487	($37,701,821)	$466,214
2012	$7,353,501	$2,121,524	$417,817	$289,527	$4,524,634	$3,468,763	$612,424	($37,258,374)	$443,447
2013	$7,412,329	$2,168,563	$428,262	$296,765	$4,518,739	$3,470,881	$627,735	($36,838,251)	$420,123
2014	$7,471,628	$2,216,730	$438,969	$304,184	$4,511,745	$3,467,363	$643,428	($36,437,297)	$400,954
2015	$7,531,401	$2,266,053	$449,943	$311,789	$4,503,616	$3,468,206	$468,623	($35,870,510)	$566,787
2016	$7,591,652	$2,316,560	$461,191	$319,584	$4,494,317	$3,462,900	$480,338	($35,319,432)	$551,078
2017	$7,652,386	$2,368,281	$472,721	$327,573	$4,483,810	$3,466,444	$492,347	($34,794,413)	$525,019
2018	$7,713,605	$2,421,246	$484,539	$335,763	$4,472,057	$3,468,069	$504,656	($34,295,080)	$499,333
2019	$7,775,313	$2,475,484	$496,653	$344,157	$4,459,020	$3,467,519	$517,272	($33,820,851)	$474,229
2020	$7,837,516	$2,531,028	$509,069	$352,761	$4,444,658	$3,464,538	$530,204	($33,370,934)	$449,917
2021	$7,900,216	$2,587,910	$521,796	$361,580	$4,428,930	$3,463,869	$543,459	($32,949,332)	$421,603
2022	$7,963,418	$2,646,163	$534,841	$370,619	$4,411,795	—	$557,045	($29,094,582)	$3,854,749
2023	$8,027,125	$2,705,821	$548,212	$379,885	$4,393,208	—	$570,971	($25,272,346)	$3,822,237
2024	$8,091,342	$2,766,918	$561,917	$389,382	$4,373,125	—	$585,246	($21,484,466)	$3,787,880
2025	$8,156,073	$2,829,490	$575,965	$399,116	$4,351,502	—	$599,877	($17,732,841)	$3,751,625
2026	$8,221,321	$2,893,574	$590,364	$409,094	$4,328,289	—	$614,874	($14,019,426)	$3,713,416
2027	$8,287,092	$2,959,206	$605,123	$419,322	$4,303,441	—	$630,246	($10,346,230)	$3,673,195
2028	$8,353,389	$3,026,426	$620,251	$429,805	$4,276,907	—	$646,002	($6,715,325)	$3,630,905
2029	$8,420,216	$3,095,272	$635,758	$440,550	$4,248,637	—	$662,152	($3,128,840)	$3,586,485
2030	$8,487,578	$3,165,785	$651,652	$451,564	$4,218,578	—	$678,706	$411,032	$3,128,840
2031	$8,555,478	$3,238,005	$667,943	$462,853	$4,186,678	—	$695,673	$3,910,257	—
2032	$8,623,922	$3,311,976	$684,641	$474,424	$4,152,881	—	$713,065	$7,428,277	—
2033	$8,692,913	$3,387,740	$701,757	$486,285	$4,117,131	—	$730,892	$10,963,082	—
2034	$8,762,457	$3,465,342	$719,301	$498,442	$4,079,372	—	$749,164	$14,512,552	—

Table E-32. Monte Carlo Simulation Summary, Do Nothing (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($41,718,422)	($41,706,143)	$302,643	($42,668,529)	($40,828,333)	$1,840,197	($42,323,707)	($42,021,065)	($41,415,779)	($41,113,137)
2006	($43,757,000)	($43,733,017)	$615,053	($45,750,495)	($41,928,034)	$3,822,461	($44,987,107)	($44,372,053)	($43,141,946)	($42,526,893)
2007	($45,883,261)	($45,851,638)	$934,381	($48,947,151)	($43,085,983)	$5,861,168	($47,752,022)	($46,817,641)	($44,948,880)	($44,014,499)
2008	($47,435,005)	($47,387,898)	$1,247,320	($51,502,108)	($43,692,470)	$7,809,638	($49,929,646)	($48,682,326)	($46,187,685)	($44,940,365)
2009	($49,019,074)	($48,961,128)	$1,565,259	($54,106,647)	($44,309,845)	$9,796,802	($52,149,592)	($50,584,333)	($47,453,815)	($45,888,556)
2010	($50,619,825)	($50,548,564)	$1,888,201	($56,745,402)	($44,922,020)	$11,823,382	($54,396,227)	($52,508,026)	($48,731,624)	($46,843,423)
2011	($52,242,516)	($52,159,833)	$2,216,345	($59,424,269)	($45,533,419)	$13,890,850	($56,675,206)	($54,458,861)	($50,026,171)	($47,809,826)
2012	($53,891,695)	($53,793,372)	$2,549,867	($62,148,089)	($46,148,099)	$15,999,990	($58,991,429)	($56,441,562)	($51,341,828)	($48,791,960)
2013	($55,567,816)	($55,458,014)	$2,888,973	($64,917,620)	($46,766,020)	$18,151,600	($61,345,762)	($58,456,789)	($52,678,843)	($49,789,870)
2014	($57,266,621)	($57,142,012)	$3,233,886	($67,728,906)	($47,382,410)	$20,346,495	($63,734,393)	($60,500,507)	($54,032,735)	($50,798,849)
2015	($58,802,980)	($58,665,299)	$3,582,129	($70,370,065)	($47,825,782)	$22,544,284	($65,967,237)	($62,385,109)	($55,220,851)	($51,638,722)
2016	($60,358,350)	($60,207,318)	$3,936,708	($73,049,252)	($48,263,249)	$24,786,004	($68,231,766)	($64,295,058)	($56,421,642)	($52,484,934)
2017	($61,942,974)	($61,777,333)	$4,297,867	($75,790,658)	($48,704,516)	$27,086,142	($70,538,708)	($66,240,841)	($57,645,107)	($53,347,240)
2018	($63,556,368)	($63,374,189)	$4,665,869	($78,669,427)	($49,148,550)	$29,520,877	($72,888,107)	($68,222,238)	($58,890,499)	($54,224,630)
2019	($65,197,840)	($65,004,678)	$5,040,995	($81,611,946)	($49,594,094)	$32,017,851	($75,279,831)	($70,238,835)	($60,156,844)	($55,115,849)
2020	($66,866,483)	($66,664,887)	$5,423,543	($84,618,267)	($50,039,668)	$34,578,600	($77,713,569)	($72,290,026)	($61,442,940)	($56,019,397)
2021	($68,566,185)	($68,357,714)	$5,813,825	($87,693,265)	($50,488,568)	$37,204,697	($80,193,836)	($74,380,011)	($62,752,360)	($56,938,535)
2022	($66,835,370)	($66,614,182)	$6,212,172	($87,376,374)	($47,478,614)	$39,897,760	($79,259,713)	($73,047,541)	($60,623,198)	($54,411,026)
2023	($65,139,578)	($64,905,525)	$6,618,928	($87,134,177)	($44,474,731)	$42,659,446	($78,377,434)	($71,758,506)	($58,520,650)	($51,901,722)
2024	($63,480,534)	($63,236,851)	$7,034,455	($86,969,469)	($41,478,011)	$45,491,459	($77,549,444)	($70,514,989)	($56,446,079)	($49,411,625)
2025	($61,860,016)	($61,605,094)	$7,459,130	($86,885,128)	($38,489,584)	$48,395,544	($76,778,277)	($69,319,147)	($54,400,886)	($46,941,756)
2026	($60,279,856)	($60,018,822)	$7,893,349	($86,884,116)	($35,510,620)	$51,373,496	($76,066,553)	($68,173,205)	($52,386,507)	($44,493,158)
2027	($58,741,940)	($58,477,405)	$8,337,522	($86,969,483)	($32,542,328)	$54,427,156	($75,416,983)	($67,079,462)	($50,404,418)	($42,066,896)
2028	($57,248,213)	($56,980,286)	$8,792,078	($87,144,369)	($29,585,958)	$57,558,411	($74,832,370)	($66,040,291)	($48,456,135)	($39,664,057)
2029	($55,800,679)	($55,526,185)	$9,257,466	($87,412,006)	($26,642,805)	$60,769,201	($74,315,611)	($65,058,145)	($46,543,213)	($37,285,747)
2030	($54,401,402)	($54,119,379)	$9,734,150	($87,775,721)	($23,714,203)	$64,061,518	($73,869,702)	($64,135,552)	($44,667,252)	($34,933,101)
2031	($53,052,507)	($52,759,723)	$10,222,617	($88,238,938)	($20,801,535)	$67,437,403	($73,497,741)	($63,275,124)	($42,829,890)	($32,607,274)
2032	($51,756,185)	($51,459,979)	$10,723,370	($88,805,183)	($17,906,227)	$70,898,956	($73,202,926)	($62,479,555)	($41,032,815)	($30,309,445)
2033	($50,514,691)	($50,216,124)	$11,236,936	($89,478,083)	($15,029,754)	$74,448,329	($72,988,563)	($61,751,627)	($39,277,755)	($28,040,818)
2034	($49,330,347)	($49,029,886)	$11,763,861	($90,261,373)	($12,173,639)	$78,087,734	($72,858,069)	($61,094,208)	($37,566,486)	($25,802,625)

Table E-33. Monte Carlo Simulation Summary, Alternative A (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($40,670,884)	($40,661,830)	$305,032	($41,775,496)	($39,457,955)	$2,317,541	($41,280,948)	($40,975,916)	($40,365,851)	($40,060,819)
2006	($41,651,397)	($41,634,112)	$620,117	($43,956,707)	($39,153,841)	$4,802,865	($42,891,630)	($42,271,513)	($41,031,280)	($40,411,164)
2007	($42,708,286)	($42,685,170)	$942,216	($46,243,582)	($38,902,814)	$7,340,768	($44,592,717)	($43,650,502)	($41,766,070)	($40,823,854)
2008	($43,179,229)	($43,144,538)	$1,258,038	($47,879,645)	($38,129,705)	$9,749,940	($45,695,305)	($44,437,267)	($41,921,192)	($40,663,154)
2009	($43,670,945)	($43,625,285)	$1,579,023	($49,556,084)	($37,367,079)	$12,189,004	($46,828,991)	($45,249,968)	($42,091,921)	($40,512,898)
2010	($44,167,665)	($44,109,482)	$1,905,209	($51,257,439)	($36,598,399)	$14,659,040	($47,978,082)	($46,072,874)	($42,262,456)	($40,357,247)
2011	($44,674,523)	($44,604,819)	$2,236,823	($52,989,516)	($35,768,783)	$17,220,733	($49,148,169)	($46,911,346)	($42,437,700)	($40,200,877)
2012	($45,195,937)	($45,120,973)	$2,574,074	($54,757,061)	($34,929,313)	$19,827,748	($50,344,085)	($47,770,011)	($42,621,863)	($40,047,789)
2013	($45,732,235)	($45,649,409)	$2,917,198	($56,560,735)	($34,079,687)	$22,481,048	($51,566,631)	($48,649,433)	($42,815,037)	($39,897,839)
2014	($46,279,028)	($46,184,856)	$3,266,451	($58,396,488)	($33,214,872)	$25,181,616	($52,811,931)	($49,545,479)	($43,012,576)	($39,746,125)
2015	($46,651,053)	($46,549,288)	$3,619,380	($60,052,342)	($32,151,499)	$27,900,843	($53,889,813)	($50,270,433)	($43,031,674)	($39,412,294)
2016	($47,029,637)	($46,916,453)	$3,979,032	($61,736,352)	($31,067,714)	$30,668,638	($54,987,701)	($51,008,669)	($43,050,604)	($39,071,572)
2017	($47,424,885)	($47,300,731)	$4,345,686	($63,458,961)	($29,972,923)	$33,486,038	($56,116,256)	($51,770,571)	($43,079,199)	($38,733,514)
2018	($47,836,180)	($47,708,341)	$4,719,636	($65,219,891)	($28,865,784)	$36,354,107	($57,275,451)	($52,555,816)	($43,116,544)	($38,396,909)
2019	($48,262,690)	($48,126,938)	$5,101,197	($67,018,655)	($27,744,720)	$39,273,934	($58,465,084)	($53,363,887)	($43,161,493)	($38,060,296)
2020	($48,703,372)	($48,559,982)	$5,490,701	($68,854,558)	($26,607,923)	$42,246,635	($59,684,773)	($54,194,073)	($43,212,671)	($37,721,970)
2021	($49,161,972)	($49,017,986)	$5,888,494	($70,731,701)	($25,458,349)	$45,273,352	($60,938,959)	($55,050,465)	($43,273,478)	($37,384,984)
2022	($46,176,771)	($46,019,632)	$6,294,938	($69,188,722)	($20,833,468)	$48,355,255	($58,766,647)	($52,471,709)	($39,881,832)	($33,586,894)
2023	($43,213,167)	($43,040,574)	$6,710,413	($67,691,383)	($16,197,841)	$51,493,542	($56,633,994)	($49,923,581)	($36,502,754)	($29,792,341)
2024	($40,272,741)	($40,090,096)	$7,135,313	($66,241,629)	($11,552,188)	$54,689,441	($54,543,367)	($47,408,054)	($33,137,428)	($26,002,115)
2025	($37,357,123)	($37,179,826)	$7,570,048	($64,841,464)	($6,897,253)	$57,944,211	($52,497,218)	($44,927,170)	($29,787,075)	($22,217,028)
2026	($34,467,995)	($34,294,301)	$8,015,044	($63,492,946)	($2,233,808)	$61,259,138	($50,498,083)	($42,483,039)	($26,452,952)	($18,437,908)
2027	($31,607,097)	($31,419,430)	$8,470,745	($62,198,194)	$2,437,349	$64,635,543	($48,548,587)	($40,077,842)	($23,136,352)	($14,665,607)
2028	($28,776,217)	($28,593,584)	$8,937,622	($60,959,386)	$7,169,937	$68,129,323	($46,651,462)	($37,713,840)	($19,838,595)	($10,900,973)
2029	($25,977,181)	($25,786,890)	$9,416,250	($59,778,763)	$12,014,466	$71,793,229	($44,809,682)	($35,393,432)	($16,560,931)	($7,144,680)
2030	($23,211,819)	($23,023,288)	$9,907,371	($58,658,629)	$16,972,557	$75,631,186	($43,026,562)	($33,119,190)	($13,304,447)	($3,397,076)
2031	($20,481,837)	($20,288,517)	$10,412,207	($57,601,351)	$22,045,836	$79,647,187	($41,306,252)	($30,894,045)	($10,069,630)	$342,578
2032	($17,788,513)	($17,595,177)	$10,933,037	($56,609,366)	$27,235,934	$83,845,299	($39,654,588)	($28,721,551)	($6,855,476)	$4,077,561
2033	($15,132,305)	($14,945,485)	$11,473,624	($55,685,177)	$32,544,487	$88,229,665	($38,079,553)	($26,605,929)	($3,658,682)	$7,814,942
2034	($12,512,525)	($12,334,519)	$12,039,230	($54,831,359)	$37,973,137	$92,804,496	($36,590,986)	($24,551,755)	($473,295)	$11,565,935

Table E-34. Monte Carlo Simulation Summary, Alternative B (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($40,694,235)	($40,684,669)	$267,138	($41,590,971)	($39,874,919)	$1,716,052	($41,228,512)	($40,961,374)	($40,427,097)	($40,159,959)
2006	($41,698,412)	($41,679,784)	$544,801	($43,585,804)	($40,054,436)	$3,531,369	($42,788,014)	($42,243,213)	($41,153,612)	($40,608,811)
2007	($42,779,219)	($42,754,052)	$829,517	($45,684,436)	($40,249,760)	$5,434,675	($44,438,253)	($43,608,736)	($41,949,701)	($41,120,184)
2008	($43,274,336)	($43,237,264)	$1,106,397	($47,130,369)	($39,900,655)	$7,229,714	($45,487,130)	($44,380,733)	($42,167,939)	($41,061,542)
2009	($43,790,484)	($43,744,493)	$1,388,235	($48,614,773)	($39,551,269)	$9,063,503	($46,566,954)	($45,178,719)	($42,402,249)	($41,014,013)
2010	($44,311,899)	($44,258,060)	$1,675,065	($50,122,170)	($39,185,306)	$10,936,863	($47,662,028)	($45,986,963)	($42,636,834)	($40,961,770)
2011	($44,843,716)	($44,779,036)	$1,967,133	($51,658,344)	($38,806,759)	$12,851,585	($48,777,982)	($46,810,849)	($42,876,583)	($40,909,450)
2012	($45,390,358)	($45,311,650)	$2,264,664	($53,228,024)	($38,419,450)	$14,808,575	($49,919,686)	($47,655,022)	($43,125,693)	($40,861,029)
2013	($45,952,153)	($45,866,986)	$2,567,912	($54,831,852)	($38,023,089)	$16,808,762	($51,087,978)	($48,520,066)	($43,384,241)	($40,816,328)
2014	($46,524,717)	($46,424,981)	$2,877,155	($56,465,756)	($37,612,659)	$18,853,097	($52,279,026)	($49,401,871)	($43,647,562)	($40,770,407)
2015	($46,922,789)	($46,814,431)	$3,189,653	($57,917,738)	($37,022,195)	$20,895,543	($53,302,095)	($50,112,442)	($43,733,137)	($40,543,484)
2016	($47,327,699)	($47,215,300)	$3,508,793	($59,395,834)	($36,412,907)	$22,982,926	($54,345,286)	($50,836,493)	($43,818,906)	($40,310,112)
2017	($47,749,557)	($47,629,316)	$3,834,873	($60,910,466)	($35,794,230)	$25,116,236	($55,419,302)	($51,584,429)	($43,914,684)	($40,079,812)
2018	($48,187,747)	($48,053,711)	$4,168,209	($62,461,335)	($35,164,854)	$27,296,482	($56,524,164)	($52,355,955)	($44,019,538)	($39,851,329)
2019	($48,641,440)	($48,494,812)	$4,509,138	($64,115,938)	($34,523,236)	$29,592,702	($57,659,716)	($53,150,578)	($44,132,301)	($39,623,163)
2020	($49,109,596)	($48,954,607)	$4,858,016	($65,866,737)	($33,867,604)	$31,999,133	($58,825,629)	($53,967,613)	($44,251,580)	($39,393,564)
2021	($49,595,966)	($49,448,151)	$5,215,213	($67,674,466)	($33,200,953)	$34,473,513	($60,026,393)	($54,811,179)	($44,380,752)	($39,165,539)
2022	($46,638,833)	($46,476,604)	$5,581,117	($66,078,453)	($29,060,793)	$37,017,659	($57,801,067)	($52,219,950)	($41,057,716)	($35,476,598)
2023	($43,703,599)	($43,544,019)	$5,956,131	($64,545,167)	($24,911,731)	$39,633,437	($55,615,860)	($49,659,729)	($37,747,468)	($31,791,337)
2024	($40,791,846)	($40,628,497)	$6,340,674	($63,077,293)	($20,754,529)	$42,322,764	($53,473,194)	($47,132,520)	($34,451,172)	($28,110,498)
2025	($37,905,209)	($37,736,188)	$6,735,182	($61,677,595)	($16,586,783)	$45,090,812	($51,375,573)	($44,640,391)	($31,170,027)	($24,434,845)
2026	($35,045,374)	($34,871,103)	$7,140,107	($60,348,922)	($12,365,758)	$47,983,163	($49,325,588)	($42,185,481)	($27,905,267)	($20,765,160)
2027	($32,214,083)	($32,038,411)	$7,555,918	($59,094,207)	($8,136,938)	$50,957,269	($47,325,919)	($39,770,001)	($24,658,165)	($17,102,247)
2028	($29,413,131)	($29,231,059)	$7,983,100	($57,916,475)	($3,901,369)	$54,015,106	($45,379,332)	($37,396,231)	($21,430,030)	($13,446,930)
2029	($26,644,373)	($26,458,857)	$8,422,158	($56,818,841)	$339,863	$57,158,704	($43,488,688)	($35,066,530)	($18,222,215)	($9,800,058)
2030	($23,909,721)	($23,708,371)	$8,873,612	($55,804,513)	$4,589,274	$60,393,787	($41,656,944)	($32,783,332)	($15,036,109)	($6,162,497)
2031	($21,211,101)	($21,002,647)	$9,338,144	($54,876,797)	$8,919,476	$63,796,273	($39,887,388)	($30,549,244)	($11,872,957)	($2,534,814)
2032	($18,550,282)	($18,344,110)	$9,817,003	($54,039,097)	$13,446,890	$67,485,987	($38,184,288)	($28,367,285)	($8,733,279)	$1,083,724
2033	($15,928,411)	($15,738,662)	$10,312,899	($53,294,918)	$18,087,280	$71,382,198	($36,554,208)	($26,241,310)	($5,615,512)	$4,697,386
2034	($13,345,678)	($13,171,577)	$10,830,166	($52,647,872)	$22,842,336	$75,490,209	($35,006,010)	($24,175,844)	($2,515,512)	$8,314,654

Table E-35. Monte Carlo Simulation Summary, Alternative C (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($40,245,887)	($40,237,462)	$252,485	($41,126,632)	($39,474,825)	$1,651,807	($40,750,857)	($40,498,372)	($39,993,401)	($39,740,916)
2006	($40,840,205)	($40,824,790)	$517,288	($42,698,691)	($39,251,035)	$3,447,655	($41,874,781)	($41,357,493)	($40,322,917)	($39,805,629)
2007	($41,506,773)	($41,484,947)	$789,229	($44,370,312)	($39,058,128)	$5,312,184	($43,085,230)	($42,296,001)	($40,717,544)	($39,928,315)
2008	($41,583,225)	($41,554,797)	$1,052,702	($45,384,956)	($38,316,456)	$7,068,501	($43,688,628)	($42,635,926)	($40,530,523)	($39,477,821)
2009	($41,676,232)	($41,635,740)	$1,321,160	($46,433,751)	($37,570,120)	$8,863,631	($44,318,552)	($42,997,392)	($40,355,072)	($39,033,912)
2010	($41,769,984)	($41,719,957)	$1,594,648	($47,501,175)	($36,802,774)	$10,698,401	($44,959,281)	($43,364,632)	($40,175,335)	($38,580,687)
2011	($41,869,566)	($41,809,911)	$1,873,439	($48,592,968)	($36,018,363)	$12,574,606	($45,616,445)	($43,743,005)	($39,996,127)	($38,122,687)
2012	($41,979,351)	($41,913,240)	$2,157,779	($49,713,815)	($35,220,656)	$14,493,159	($46,294,909)	($44,137,130)	($39,821,573)	($37,663,794)
2013	($42,099,619)	($42,028,424)	$2,447,946	($50,864,313)	($34,409,317)	$16,454,996	($46,995,511)	($44,547,565)	($39,651,674)	($37,203,728)
2014	($42,225,934)	($42,146,343)	$2,744,241	($52,040,345)	($33,579,274)	$18,461,071	($47,714,417)	($44,970,176)	($39,481,693)	($36,737,451)
2015	($42,172,986)	($42,085,123)	$3,043,815	($53,029,868)	($32,564,512)	$20,465,357	($48,260,617)	($45,216,801)	($39,129,171)	($36,085,355)
2016	($42,122,051)	($42,017,384)	$3,350,224	($54,040,872)	($31,526,188)	$22,514,684	($48,822,499)	($45,472,275)	($38,771,826)	($35,421,602)
2017	($42,083,187)	($41,969,193)	$3,663,790	($55,083,733)	($30,473,684)	$24,610,049	($49,410,766)	($45,746,977)	($38,419,398)	($34,755,608)
2018	($42,055,727)	($41,928,008)	$3,984,855	($56,158,104)	($29,405,637)	$26,752,468	($50,025,437)	($46,040,582)	($38,070,872)	($34,086,017)
2019	($42,038,789)	($41,909,579)	$4,313,783	($57,263,431)	($28,320,450)	$28,942,981	($50,666,355)	($46,352,572)	($37,725,006)	($33,411,222)
2020	($42,031,278)	($41,896,313)	$4,650,955	($58,398,951)	($27,216,296)	$31,182,655	($51,333,188)	($46,682,233)	($37,380,324)	($32,729,369)
2021	($42,036,891)	($41,897,408)	$4,996,766	($59,676,866)	($26,096,115)	$33,580,751	($52,030,422)	($47,033,657)	($37,040,125)	($32,043,359)
2022	($38,593,856)	($38,453,984)	$5,351,630	($57,572,743)	($21,497,361)	$36,075,383	($49,297,115)	($43,945,485)	($33,242,226)	($27,890,596)
2023	($35,167,519)	($35,027,845)	$5,715,975	($55,526,596)	($16,884,582)	$38,642,014	($46,599,468)	($40,883,493)	($29,451,544)	($23,735,569)
2024	($31,759,407)	($31,614,263)	$6,090,246	($53,541,063)	($12,258,488)	$41,282,575	($43,939,898)	($37,849,652)	($25,669,161)	($19,578,915)
2025	($28,371,097)	($28,226,712)	$6,474,903	($51,618,863)	($7,619,813)	$43,999,051	($41,320,902)	($34,845,999)	($21,896,194)	($15,421,291)
2026	($25,004,218)	($24,851,592)	$6,870,422	($49,762,800)	($2,969,321)	$46,793,479	($38,745,061)	($31,874,640)	($18,133,797)	($11,263,375)
2027	($21,660,454)	($21,493,123)	$7,277,294	($47,975,762)	$1,692,195	$49,667,957	($36,215,043)	($28,937,748)	($14,383,160)	($7,105,865)
2028	($18,341,534)	($18,181,003)	$7,696,055	($46,260,727)	$6,460,217	$52,720,944	($33,733,644)	($26,037,589)	($10,645,479)	($2,949,424)
2029	($15,049,084)	($14,876,732)	$8,127,698	($44,620,763)	$11,402,098	$56,022,861	($31,304,479)	($23,176,782)	($6,921,386)	$1,206,312
2030	($11,783,779)	($11,610,795)	$8,575,439	($43,059,033)	$16,474,975	$59,534,008	($28,934,656)	($20,359,218)	($3,208,341)	$5,367,098
2031	($8,544,146)	($8,373,684)	$9,045,990	($41,578,793)	$21,681,119	$63,259,912	($26,636,126)	($17,590,136)	$501,844	$9,547,834
2032	($5,325,651)	($5,187,031)	$9,548,864	($40,183,400)	$27,022,823	$67,206,223	($24,423,380)	($14,874,515)	$4,223,214	$13,772,078
2033	($2,121,794)	($2,004,398)	$10,093,008	($38,876,312)	$32,502,399	$71,378,711	($22,307,809)	($12,214,801)	$7,971,214	$18,064,222
2034	$1,074,781	$1,117,336	$10,684,794	($37,661,092)	$38,122,180	$75,783,272	($20,294,806)	($9,610,013)	$11,759,574	$22,444,368

Table E-36. Monte Carlo Simulation Summary, Alternative D (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($40,694,235)	($40,684,669)	$267,138	($41,590,971)	($39,874,919)	$1,716,052	($41,228,512)	($40,961,374)	($40,427,097)	($40,159,959)
2006	($41,698,412)	($41,679,784)	$544,801	($43,585,804)	($40,054,436)	$3,531,369	($42,788,014)	($42,243,213)	($41,153,612)	($40,608,811)
2007	($42,779,219)	($42,754,052)	$829,517	($45,684,436)	($40,249,760)	$5,434,675	($44,438,253)	($43,608,736)	($41,949,701)	($41,120,184)
2008	($43,274,336)	($43,237,264)	$1,106,397	($47,130,369)	($39,900,655)	$7,229,714	($45,487,130)	($44,380,733)	($42,167,939)	($41,061,542)
2009	($43,790,484)	($43,744,493)	$1,388,235	($48,614,773)	($39,551,269)	$9,063,503	($46,566,954)	($45,178,719)	($42,402,249)	($41,014,013)
2010	($44,311,899)	($44,258,060)	$1,675,065	($50,122,170)	($39,185,306)	$10,936,863	($47,662,028)	($45,986,963)	($42,636,834)	($40,961,770)
2011	($44,843,716)	($44,779,036)	$1,967,133	($51,658,344)	($38,806,759)	$12,851,585	($48,777,982)	($46,810,849)	($42,876,583)	($40,909,450)
2012	($45,390,358)	($45,311,650)	$2,264,664	($53,228,024)	($38,419,450)	$14,808,575	($49,919,686)	($47,655,022)	($43,125,693)	($40,861,029)
2013	($45,952,153)	($45,866,986)	$2,567,912	($54,831,852)	($38,023,089)	$16,808,762	($51,087,978)	($48,520,066)	($43,384,241)	($40,816,328)
2014	($46,524,717)	($46,424,981)	$2,877,155	($56,465,756)	($37,612,659)	$18,853,097	($52,279,026)	($49,401,871)	($43,647,562)	($40,770,407)
2015	($45,804,282)	($45,702,303)	$3,155,552	($56,771,994)	($35,972,123)	$20,799,872	($52,115,387)	($48,959,834)	($42,648,729)	($39,493,177)
2016	($45,078,721)	($44,965,549)	$3,441,299	($57,092,868)	($34,301,037)	$22,791,831	($51,961,319)	($48,520,020)	($41,637,421)	($38,196,122)
2017	($44,358,015)	($44,231,532)	$3,734,716	($57,438,685)	($32,608,706)	$24,829,979	($51,827,448)	($48,092,732)	($40,623,299)	($36,888,582)
2018	($43,641,419)	($43,514,522)	$4,036,158	($57,809,029)	($30,893,687)	$26,915,342	($51,713,736)	($47,677,577)	($39,605,261)	($35,569,103)
2019	($42,927,972)	($42,798,623)	$4,346,005	($58,203,275)	($29,154,304)	$29,048,971	($51,619,982)	($47,273,977)	($38,581,967)	($34,235,962)
2020	($42,216,500)	($42,072,152)	$4,664,660	($58,642,497)	($27,388,649)	$31,253,847	($51,545,820)	($46,881,160)	($37,551,840)	($32,887,180)
2021	($41,510,619)	($41,370,213)	$4,992,547	($59,206,458)	($25,599,581)	$33,606,877	($51,495,712)	($46,503,165)	($36,518,072)	($31,525,525)
2022	($37,348,475)	($37,207,462)	$5,330,107	($56,355,042)	($20,324,471)	$36,030,571	($48,008,690)	($42,678,582)	($32,018,368)	($26,688,261)
2023	($33,195,333)	($33,053,787)	$5,677,801	($53,554,609)	($15,027,785)	$38,526,825	($44,550,936)	($38,873,135)	($27,517,532)	($21,839,731)
2024	($29,052,637)	($28,911,121)	$6,036,105	($50,807,735)	($9,710,145)	$41,097,590	($41,124,847)	($35,088,742)	($23,016,532)	($16,980,427)
2025	($24,921,879)	($24,774,971)	$6,405,511	($48,117,072)	($4,372,203)	$43,744,869	($37,732,900)	($31,327,389)	($18,516,368)	($12,110,858)
2026	($20,804,604)	($20,659,912)	$6,786,527	($45,485,356)	$1,031,869	$46,517,226	($34,377,657)	($27,591,130)	($14,018,077)	($7,231,550)
2027	($16,702,404)	($16,558,141)	$7,179,690	($42,915,411)	$6,482,118	$49,397,528	($31,061,784)	($23,882,094)	($9,522,714)	($2,343,024)
2028	($12,616,715)	($12,476,079)	$7,586,135	($40,410,144)	$12,077,554	$52,487,698	($27,788,985)	($20,202,850)	($5,030,580)	$2,555,555
2029	($8,547,115)	($8,397,590)	$8,011,015	($37,972,556)	$17,891,141	$55,863,697	($24,569,145)	($16,558,130)	($536,100)	$7,474,915
2030	($4,488,240)	($4,340,570)	$8,466,262	($35,605,740)	$23,864,627	$59,470,367	($21,420,764)	($12,954,502)	$3,978,022	$12,444,285
2031	($428,855)	($331,395)	$8,966,413	($33,312,883)	$30,001,049	$63,313,932	($18,361,681)	($9,395,268)	$8,537,557	$17,503,970
2032	$3,645,482	$3,693,880	$9,521,245	($31,097,271)	$36,303,485	$67,400,757	($15,397,009)	($5,875,764)	$13,166,727	$22,687,972
2033	$7,749,014	$7,727,688	$10,133,316	($28,962,292)	$42,775,053	$71,737,345	($12,517,619)	($2,384,303)	$17,882,330	$28,015,646
2034	$11,892,802	$11,862,380	$10,799,857	($26,911,435)	$49,418,909	$76,330,344	($9,706,911)	$1,092,945	$22,692,658	$33,492,515

Table E-37. Monte Carlo Simulation Summary, Alternative E (Current Dollars)

	Predicted Value Summary Statistics						Predicted Value Percentiles			
Year	Mean Improvement Fund Balance	Median Improvement Fund Balance	Standard Deviation	Range Minimum	Range Maximum	Range Width	Minus Two Standard Deviations	Minus One Standard Deviation	Plus One Standard Deviation	Plus Two Standard Deviations
2005	($39,688,032)	($39,681,621)	$235,819	($40,552,956)	($38,957,850)	$1,595,106	($40,159,669)	($39,923,850)	($39,452,213)	($39,216,394)
2006	($39,675,781)	($39,664,734)	$483,192	($41,500,364)	($38,164,117)	$3,336,247	($40,642,166)	($40,158,973)	($39,192,589)	($38,709,397)
2007	($39,729,299)	($39,713,282)	$737,886	($42,541,076)	($37,398,628)	$5,142,449	($41,205,070)	($40,467,184)	($38,991,413)	($38,253,527)
2008	($39,186,148)	($39,165,164)	$983,247	($42,918,491)	($36,077,980)	$6,840,511	($41,152,643)	($40,169,396)	($38,202,901)	($37,219,654)
2009	($38,652,932)	($38,624,864)	$1,233,665	($43,323,672)	($34,746,203)	$8,577,468	($41,120,261)	($39,886,596)	($37,419,267)	($36,185,602)
2010	($38,113,765)	($38,079,438)	$1,489,214	($43,741,034)	($33,386,880)	$10,354,153	($41,092,193)	($39,602,979)	($36,624,551)	($35,135,337)
2011	($37,573,663)	($37,536,070)	$1,750,210	($44,176,252)	($32,003,881)	$12,172,371	($41,074,083)	($39,323,873)	($35,823,452)	($34,073,242)
2012	($37,036,924)	($36,991,273)	$2,016,939	($44,633,947)	($30,600,903)	$14,033,044	($41,070,801)	($39,053,863)	($35,019,986)	($33,003,047)
2013	($36,503,756)	($36,449,390)	$2,289,719	($45,114,648)	($29,177,534)	$15,937,114	($41,083,195)	($38,793,475)	($34,214,037)	($31,924,318)
2014	($35,969,647)	($35,908,890)	$2,568,895	($45,614,173)	($27,728,627)	$17,885,547	($41,107,438)	($38,538,543)	($33,400,752)	($30,831,857)
2015	($35,249,212)	($35,188,621)	$2,851,454	($45,920,412)	($26,088,090)	$19,832,322	($40,952,121)	($38,100,667)	($32,397,758)	($29,546,304)
2016	($34,523,651)	($34,462,509)	$3,141,209	($46,241,286)	($24,417,005)	$21,824,281	($40,806,069)	($37,664,860)	($31,382,442)	($28,241,234)
2017	($33,802,946)	($33,730,246)	$3,438,521	($46,587,102)	($22,724,673)	$23,862,429	($40,679,988)	($37,241,467)	($30,364,425)	($26,925,904)
2018	($33,086,350)	($33,018,824)	$3,743,776	($46,957,446)	($21,009,655)	$25,947,792	($40,573,902)	($36,830,126)	($29,342,574)	($25,598,798)
2019	($32,372,903)	($32,298,767)	$4,057,376	($47,351,693)	($19,270,272)	$28,081,420	($40,487,655)	($36,430,279)	($28,315,526)	($24,258,150)
2020	($31,661,431)	($31,581,780)	$4,379,743	($47,769,007)	($17,504,617)	$30,264,390	($40,420,917)	($36,041,174)	($27,281,688)	($22,901,945)
2021	($30,955,549)	($30,871,773)	$4,711,313	($48,213,348)	($15,715,549)	$32,497,800	($40,378,175)	($35,666,862)	($26,244,236)	($21,532,923)
2022	($26,793,406)	($26,701,437)	$5,052,538	($45,223,214)	($10,440,439)	$34,782,775	($36,898,481)	($31,845,943)	($21,740,868)	($16,688,330)
2023	($22,640,264)	($22,541,741)	$5,403,884	($42,375,292)	($5,143,752)	$37,231,540	($33,448,032)	($28,044,148)	($17,236,380)	($11,832,496)
2024	($18,497,567)	($18,382,796)	$5,765,833	($39,628,418)	$173,887	$39,802,305	($30,029,234)	($24,263,401)	($12,731,734)	($6,965,901)
2025	($14,366,809)	($14,252,809)	$6,138,882	($36,937,755)	$5,514,732	$42,452,487	($26,644,574)	($20,505,692)	($8,227,927)	($2,089,045)
2026	($10,249,347)	($10,136,353)	$6,524,060	($34,306,039)	$10,964,368	$45,270,407	($23,297,466)	($16,773,407)	($3,725,287)	$2,798,772
2027	($6,144,272)	($6,031,489)	$6,927,194	($31,736,093)	$16,620,012	$48,356,105	($19,998,660)	($13,071,466)	$782,922	$7,710,116
2028	($2,043,739)	($1,915,492)	$7,362,921	($29,230,827)	$22,506,751	$51,737,578	($16,769,581)	($9,406,660)	$5,319,182	$12,682,103
2029	$2,067,439	$2,141,800	$7,846,750	($26,793,239)	$28,555,581	$55,348,820	($13,626,061)	($5,779,311)	$9,914,189	$17,760,938
2030	$6,207,448	$6,236,300	$8,385,641	($24,426,423)	$34,769,615	$59,196,038	($10,563,833)	($2,178,193)	$14,593,089	$22,978,730
2031	$10,391,574	$10,382,571	$8,977,377	($22,133,566)	$41,152,012	$63,285,578	($7,563,180)	$1,414,197	$19,368,951	$28,346,328
2032	$14,629,913	$14,602,267	$9,616,014	($19,917,954)	$47,705,971	$67,623,925	($4,602,115)	$5,013,899	$24,245,926	$33,861,940
2033	$18,928,233	$18,909,751	$10,296,135	($17,782,975)	$54,434,735	$72,217,710	($1,664,038)	$8,632,098	$29,224,369	$39,520,504
2034	$23,289,348	$23,288,235	$11,014,517	($15,732,118)	$61,341,589	$77,073,706	$1,260,315	$12,274,832	$34,303,865	$45,318,381

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