

# ATLANTA REGIONAL MANAGED LANE SYSTEM PLAN

## FINANCIAL FEASIBILITY ANALYSIS

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# Atlanta Regional Managed Lane System Plan

## Technical Memorandum 10: Financial Analysis

*Prepared for:*

**Georgia Department of Transportation**

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600 West Peachtree Street NW

Atlanta, Georgia 30308

*Prepared by:*

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# FINANCIAL ANALYSIS

## A. Introduction

The planning team conducted a financial analysis as part of the evaluation process for the managed lane corridors. Using project costs and revenue forecasts as inputs, the planning team calculated key financial indicators, including capital distribution, the year of debt payoff, and public sector contribution (i.e. funding gap). These indicators were critical in determining the ultimate recommendations for managed lanes implementation in Metro Atlanta. The objective of this effort was to evaluate the overall financial feasibility of various managed lane concepts on the study corridors and to examine opportunities for minimizing any projected funding gap associated with these projects. It is important to note that this is a preliminary financial analysis, based on a preliminary traffic and revenue analysis, and is not intended for direct use in support of project financing. In addition, these results do not replace additional business case studies expected to be completed as individual projects move toward implementation.

The traditional planning process can leave a gap between the policy-based and performance-based set of recommendations and the business case for revenue-generating projects. This chapter describes the process used to bridge this gap by tying together costs and traffic and revenue analysis with financial feasibility. The combination of these elements provided a more complete framework from which to develop an implementation program for managed lanes in Metro Atlanta. The financial analysis helped isolate the preferred managed lane treatment from among a set of potential opportunities. This analysis also provided insight into the extent to which corridor revenue streams could be leveraged to fund capital costs and annual operations and maintenance requirements.

This chapter presents a summary of the financial analysis conducted for the study corridors, including an overview of the methodology and assumptions used, and the detailed results and conclusions that followed.

## B. Methodology

The following section outlines the methodology and assumptions used for the managed lanes financial analysis and describes the inputs, parameters, and outputs involved with this process.

### I. Inputs

A number of inputs were required as part of the financial analysis. Some of these came directly from the traffic and revenue analysis, while others were based on recent data from the financial marketplace and previous experience with toll-financed transportation infrastructure. The list below highlights these inputs.

**■ Capital Structure Type**

The capital structure type could take one of two values: public-private partnership (P3) or public-public arrangement. The key difference between these two is the involvement of a private developer who provides up-front equity to help finance the capital cost under the P3 arrangement. The public structure assumes no such private sector contribution. Both P3 and public structures were studied as part of this financial analysis.

Public-private partnerships (P3s) refer to a broad family of public delivery mechanisms and innovative financing methods that strategically assign a greater amount of risk and responsibility to the private sector. P3s often involve design-build-finance, design-build-operate-maintain, availability payments and full concessions. The capital structures can take a variety of forms but typically utilizes public subsidies/grants, toll revenue/municipal bonds, private activity bonds, a TIFIA loan and the leveraging of private equity. Toll revenue risk can reside with the public sector (availability) or private sector (concessions). Project debt can be structured such that is either recourse or non-recourse to the owner.

A public arrangement combines traditional project delivery mechanisms and innovative financing methods, typically utilizing design-bid-build or design-build for delivery. The capital structure typically consists of public subsidies/grants, toll revenue/municipal bonds and a TIFIA loan. Private capital or equity is specifically excluded from the public model and toll revenue risk resides with the public sector. The public sector typically takes a more pronounced role in long-term operations and maintenance than under a P3 structure.

**■ Opening Year for Traffic**

The opening year for traffic is the year in which the facility opens for revenue service. The financial model used in this effort could accept any whole number value between 2013 and 2050. This value was used as a reference to pull the corresponding revenue value for that year. That revenue value was then used as the starting point for the project term, and all revenue values for previous years were ignored.

**■ Number of Revenue Generating Years**

The number of revenue generating years was a proxy for the life of the project and could be input as any value between 30 and 75. If the opening year was set at 2015 and the number of revenue generating years was set at 35, the life of the project was assumed to be from 2015 to 2049 (after which major capital investment would be required to continue operation). The revenue stream across those years was then used to calculate financial output.

**■ Interest Rate for Current Interest Bonds**

The interest rate for current interest bonds (CIB's) can be any value from 0% to 99%. The value used reflects the cost of money from this revenue source. CIB's are bonds on which interest payments are made to the bondholders on a periodic basis. This is in contrast to capital appreciation bonds, where interest and principle are paid in full at bond maturity.

**■ TIFIA Loan Interest Rate**

TIFIA loan interest rates can also be any value between 0% and 99%. The Transportation Infrastructure Finance and Innovation Act (TIFIA) of 1998 established a Federal credit program for eligible transportation projects of national or regional significance under which the U.S. Department of Transportation may provide credit assistance (Source: <http://tifa.fhwa.dot.gov/>. Last accessed 10/05/09). This government sponsored loan is

typically a cheaper source of money than bonds issued through the financial marketplace, but the extent to which this source of funds can be leveraged for a particular project is limited.

▪ **Developer Required Internal Rate of Return**

A developer required internal rate of return (IRR) is assumed if a private sector partner is included in project development. This rate can vary from 1% to 99% and represents the profit that the developer expects on their investment in the project.

▪ **Toll Operations O&M as a Percent of Revenue**

Operations and maintenance costs for the tolling system must be considered over the life of the project. At this level of analysis, these O&M costs are typically estimated as a percentage of the total number of transactions, or corresponding revenue, along the facility. For this financial analysis, the value could be any positive percentage specified by the analyst.

▪ **Roadway Operations O&M as a Percent of Capital Expenditures**

Operations and maintenance costs for the roadway itself must also be considered over the life of the project. Nationally, these O&M costs are typically estimated as a percentage of the initial capital expenditures of the facility. For this financial analysis, the value for roadway O&M could be any positive percentage specified by the analyst.

▪ **Capital Expenditures in 2008 Dollars**

Finally, the estimate for capital cost of the project was also included. These values were determined in a separate costing effort that is described in the project cost chapter.

## II. Parameters

A set of parameters was also included in the financial analysis. These values were held constant throughout the study, but were critical to the operation of the financial model. The parameters are highlighted in the following table. National averages were used for these values, which is consistent with financial analysis techniques that are standard in the industry.

<b>Description</b>	<b>Acceptable Values</b>	<b>Values Used</b>
Grants and Earmarks	\$0 to \$100,000,000,000	0
Debt Service Coverage Ratio for Senior Debt	1.00 x to 3.00 x	1.75 x
Capital Appreciation Bond Term in Years	5 to 40 (whole numbers)	10
Interest Premium for Capital Appreciation Bonds	0% to 99%	0.75%
Capital Appreciation Bond Maturity Multiple	\$5,000	\$5,000
Capital Appreciation Bond Variable Issuance Cost per Bond	\$25	\$25
Capital Appreciation Bond Fixed Cost	\$250,000	\$250,000
Current Interest Bond Term in Years	20 to 50 (whole numbers)	30
Current Interest Bond Maturity Multiple	\$5,000	\$5,000
Current Interest Bond Variable Issuance Cost per Bond	\$15	\$15
Current Interest Bond Fixed Cost	\$250,000	\$250,000
Debt Service Coverage Ratio for Junior Debt	1.00 x to 3.00 x	1.15 x
Premium Adder for Bond Anticipation Notes	100 basis points	1.00%
Bond Anticipation Note Maturity Multiple	\$5,000	\$5,000
Bond Anticipation Note Variable Issuance Cost per Bond	\$25	\$25
Bond Anticipation Note Fixed Cost	\$250,000	\$250,000
TIFIA Loan Term in Years	10 to 35 (whole numbers)	35

TIFIA Loan Administration Fee Rate	0.05%	0.05%
TIFIA Loan Fixed Issuance Cost	\$330,000	\$330,000
Discount Rate for State	1% to 99%	5.00%
Annual Consumer Price Index Increase	0% to 99%	2.5%
Annual Producer Price Index Increase	0% to 99%	2.6%
Reserve Maintenance Funding as a Percent of O&M Cost	0% to 99%	12.00%
Bond Insurance Premium as a Percent of Debt Service	0% to 99%	0.00%
Interest Rate for Debt Service Reserve Fund	0% to 99%	2.00%
Developer Income Tax Rate	0% to 99%	40.00%

### III. Outputs

Inputs and parameters were fed into a financial model that was capable of estimating the financial support that a project could achieve under both a generalized public sector structure and a generalized P3 structure. This model also generated descriptive output on capital distribution and the year in which the debt was paid off. The list below describes these outputs in more detail.

#### ■ Net Present Value of Public Cash Outflows

This represents the present value of the public sector investment required to build the project. If this value is greater than zero, it indicates that the projected revenue stream is not sufficient to cover the amortized capital cost for the project. A high value for this number means that there is a large “gap” between the cost of the project and the revenue expected for the project. A low value is desirable for NPV of public outflows, because this shows the project is nearer to paying for itself and requires minimal public sector subsidy for implementation.

#### ■ Net Present Value of Concessionaire Investment

Under a P3 structure, this value is the up-front private sector investment in the project. This is essentially seed capital that the public sector is not responsible for. It does not count against legally established bond ceilings of the public entity, and represents a transfer of some risk associated with the project to the private sector. The required internal rate of return, described in the inputs section, is applied to this value and used to calculate the ultimate payment the private partner will receive from their investment.

#### ■ Capital Distribution

Capital expenditures will be borne by various funding sources. However, the extent to which the revenue stream can be leveraged to cover capital costs is not known prior to the financial analysis. The capital distribution output shows the percent contribution from toll backed bonds (current interest bonds, capital appreciation bonds, etc.), TIFIA bonds, developer mix (only if P3 structure), and public mix. This information summarizes the sources of capital outlays, with these four components summing to 100%.

#### ■ Net Present Value of Public Cash Inflows

In contrast to the NPV of public cash outflows, this value shows the projected surplus associated with a project. If this value is greater than zero, it indicates that the projected revenue stream exceeds the amortized capital cost for the project, and that there is a present value net financial benefit to the public sector associated with its implementation.

### ■ Operating Year of Debt Payoff

The financial model is also capable of determining if the projected revenues will pay down the capital debt associated with construction of the project over its revenue-generating life. If so, the value is reported for the year of debt payoff.

## C. Results

As described in previous sections, the financial model processed information on revenue, cost, and interest rate assumptions to produce a set of financial outputs. This output was important to understanding the relative financial feasibility of various managed lane corridor treatments, and the overall financial reality of managed lane investment. The following sections outline the key results of this analysis for the managed lane corridors. The first two sections describe the initial financial analysis used to determine the preferred managed lane operational treatment. The third and final section describes the financial summaries of the recommended solutions on the managed lane corridors.

### I. Public-Private Partnership Structure

The first set of results is based on the assumption of a public-private partnership structure. Table 2 shows the input assumptions and output for SR 400 from I-285 to SR 20 as an example. The complete results for all corridors are presented later in this report.

**Table 2: SR 400 Public-Private Model Financial Analysis Results**

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 783,825,000	\$ 647,330,000	\$ 792,373,000	\$ 759,037,000	\$ 1,066,374,000
<b>CapEx - Interchange (@285)</b>	\$ 380,955,728	\$ 380,955,728	\$ 320,091,004	\$ 320,091,004	\$ 320,091,004
<b>Annual Facility O&amp;M</b>	\$ 3,919,125	\$ 3,236,650	\$ 3,961,865	\$ 3,795,185	\$ 5,331,870
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,066,440,286	\$ 1,241,409,842	\$ 740,229,672	\$ 956,015,169	\$ 740,229,672
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 159,966,043	\$ 186,211,476	\$ 111,034,451	\$ 143,402,275	\$ 111,034,451
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 608,368,719</b>	<b>\$ 453,614,486</b>	<b>\$ 659,787,193</b>	<b>\$ 585,097,512</b>	<b>\$ 872,512,116</b>
<b>NPV of Concessionaire Investment</b>	\$ 72,915,053	\$ 65,180,144	\$ 69,352,607	\$ 67,798,796	\$ 86,043,351

The financial assumptions were held constant across the five configuration scenarios included in the table. This allowed for an unbiased comparison of the results. Three basic operational concepts were studied as part of this analysis: bi-directional at-grade, reversible at-grade, and reversible elevated<sup>1</sup>. Two additional opportunities, general purpose lane conversion for the bi-

<sup>1</sup> An initial comparison of revenues and costs led to the removal of the bi-directional elevated concept from consideration on all corridors. Without exception, the ratio of revenues to costs was lowest for this configuration, which indicated that others would be more efficient.

directional and reversible at-grade scenarios, were also examined for comparison purposes.

Capital expenditures for the roadway and associated interchange(s) were included in the total capital cost of the facility. In this case, the interchange at SR 400 and I-285 was considered. Annual facility operations and maintenance, and toll system operations and maintenance, were calculated from the capital cost and cumulative gross revenue, respectively. The net present value of public sector outflows shows the gap from the public perspective. This value, \$608M in the case of a bi-directional at grade facility, is the amount that the State of Georgia would need to contribute up front to cover the cost of constructing this project (given these assumptions). The balance of the nearly \$1.2B total project cost would be financed through toll-backed bonds, TIFIA, and the private sector partner, who would invest nearly \$73M in this case (shown in the table as the NPV of Concessionaire Investment). Capital distribution over the life of the project is shown in Figure 1 for the bi-directional at-grade alternative.

**Figure 1: SR 400 Public-Private Model Capital Distribution**

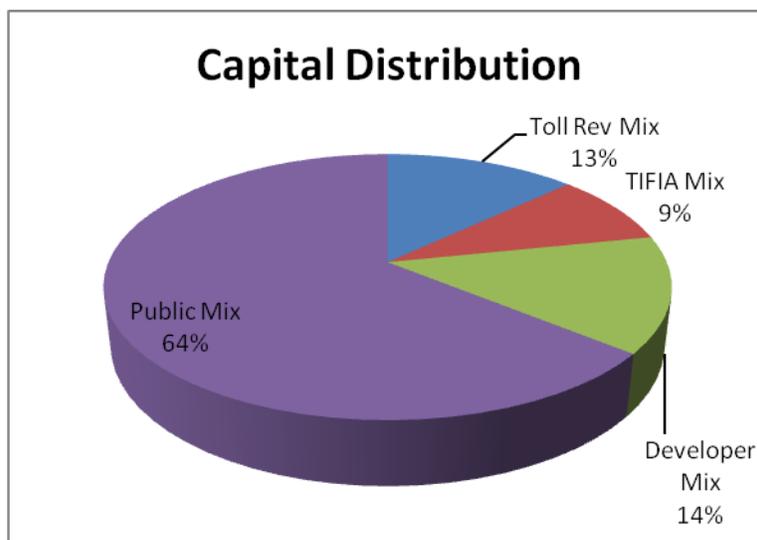


Figure 1 indicates that the public sector will provide 64% of the capital funding, the developer will provide 14%, and the remaining 22% will be covered by toll-backed bonds and TIFIA. The pie chart only reflects capital outlays, however. If total project cost was considered (including ongoing tolling and roadway O&M), the developer contribution would be greater than 14% and the public mix would be less than 64% since the developer is responsible for these costs during the concession period, as assumed under the P3 structure.

Similar figures were produced for the other managed lane configurations, and this information was coupled with that from Table 2 in order to determine which alternative would be recommended for each corridor. For SR 400, the bi-directional at-grade configuration is the most efficient, as demonstrated by the lowest gap value among the three competing configurations (\$608M vs. \$660M and \$872M for the two reversible options). For this reason, the recommendation from the financial analysis is that SR 400 be constructed as a bi-directional, at-grade facility. The general purpose conversion alternatives do shrink the public sector gap significantly, but the facility still does not generate enough revenue to pay for itself.

## II. Public-Public Structure

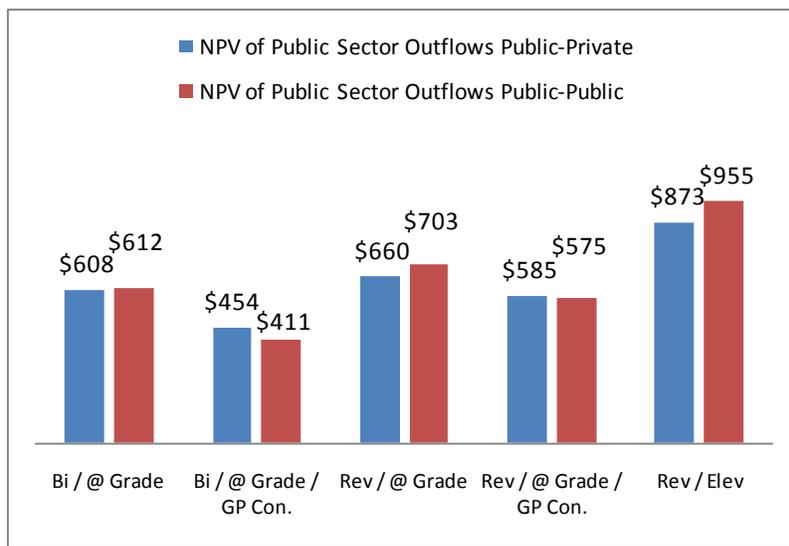
The second set of results is based on the assumption of no private sector partner. Under this arrangement, the public sector would secure toll revenue bonds and TIFIA support independent of any developer contribution. Table 3 highlights results for this structure in the same format as Table 2. The NPV of concessionaire investment, by definition, is zero in this case.

**Table 3: SR 400 Public-Public Model Financial Analysis Results**

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 783,825,000	\$ 647,330,000	\$ 792,373,000	\$ 759,037,000	\$ 1,066,374,000
<b>CapEx - Interchange (@285)</b>	\$ 380,955,728	\$ 380,955,728	\$ 320,091,004	\$ 320,091,004	\$ 320,091,004
<b>Facility O&amp;M</b>	\$ 3,919,125	\$ 3,236,650	\$ 3,961,865	\$ 3,795,185	\$ 5,331,870
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,066,440,286	\$ 1,241,409,842	\$ 740,229,672	\$ 956,015,169	\$ 740,229,672
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 159,966,043	\$ 186,211,476	\$ 111,034,451	\$ 114,721,820	\$ 111,034,451
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 611,622,735</b>	<b>\$ 410,750,919</b>	<b>\$ 703,333,908</b>	<b>\$ 575,362,729</b>	<b>\$ 955,137,468</b>
<b>NPV of Concessionaire Investment</b>	\$ -	\$ -	\$ -	\$ -	\$ -

While the magnitude of the public sector outflows has changed slightly, the same pattern is evident in this table as was shown in Table 2 for the public-private arrangement. The bi-directional at-grade alternative again appears to require the least public sector contribution (\$611M vs. \$703M and \$955M for the two reversible concepts). This result confirms the previous conclusion that, from a financial perspective, bi-directional at-grade is the preferred treatment on this corridor. Figure 2 shows a comparison of the P3 and public-public model results across alternatives. The public sector gap is similar in each case. In fact, the differences are so small, that conclusions remain the same under both P3 and public-public financial structures. The five alternatives considered include bi-directional at-grade (Bi / @ Grade), bi-directional at-grade with GP lane conversion (Bi / @ Grade / GP Con.), reversible at-grade (Rev / @ Grade), reversible at-grade with GP lane conversion (Rev / @ Grade / GP Con.), and reversible elevated (Rev / Elev).

In Figure 2, the gap shown for the public-public model is higher than the gap for the public-private model in some instances, and the reverse is true in other instances. For project configurations with smaller gaps, the public-public arrangement is more efficient because no developer rate of return is required. At higher gap levels (approximately \$600M and over), the public-private arrangement is more efficient, because the benefit from the transfer of operations and maintenance responsibility exceeds the additional cost associated with the developer's required return on investment.

**Figure 2: SR 400 Net Present Value (NPV) of Public Sector Outflows (Gap) Comparison**

### III. Corridor Recommendations

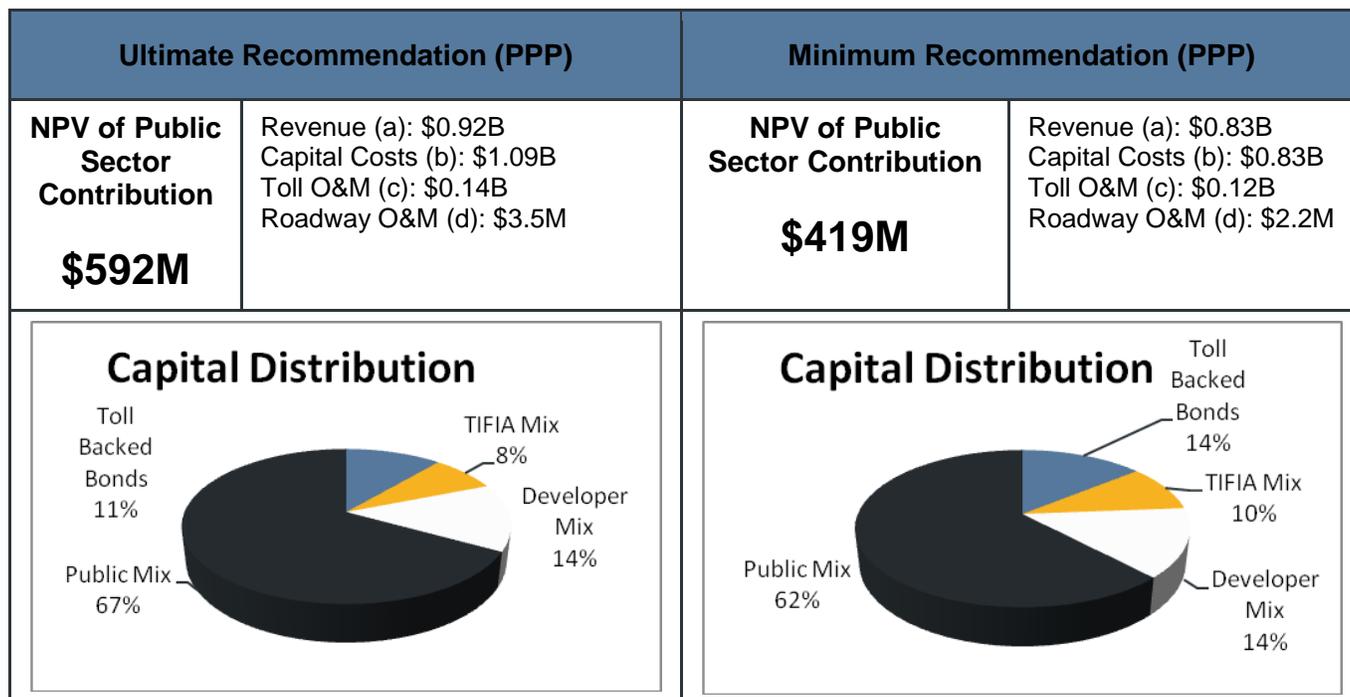
The financial analysis was used as part of the project screening process described in Technical Memorandum 12. Results obtained through the study of P3 and public-public structures helped drive specific recommendations for each managed lane corridor. Technical Memorandum 12 outlines the complete process used to arrive at the set of ultimate recommendations for the region. An additional financial analysis effort was then employed to investigate the ultimate recommendation on each corridor and a minimum, or interim, recommendation on each corridor. For SR 400, the ultimate and minimum recommendations are as follows:

- **Ultimate Recommendation:** Two lanes in each direction from I-285 to Kimball Bridge Rd. and one lane in each direction to just south of Peachtree Parkway;
- **Minimum Recommendation:** Two lanes in each direction from I-285 to Holcomb Bridge Rd. and one lane in each direction to South of McFarland Rd.

Traffic and revenue results were coupled with cost estimates of these alternatives, and the planning team conducted financial model runs to produce output in same manner as for the screening analysis. This time, however, the objective was not to eliminate alternatives based on results; rather it was to identify the financial realities of the two recommended solutions.

Figure 3 shows the results for SR 400 under a P3 structure. These results include gap and capital distribution. Revenue and cost-related information is also presented with detailed explanation below the figure. For SR 400, the public sector must contribute nearly \$600M to implement the ultimate recommendation and over \$400M to implement the minimum recommendation.

Figure 3: SR 400 Recommendation Set Financial Analysis



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

The financially-based screening analysis and financial summary were performed for each corridor in the managed lane system. Following are the output tables and figures for each of these corridors. The configuration recommendations are summarized for each corridor in Table 20 at the end of this series of outputs.

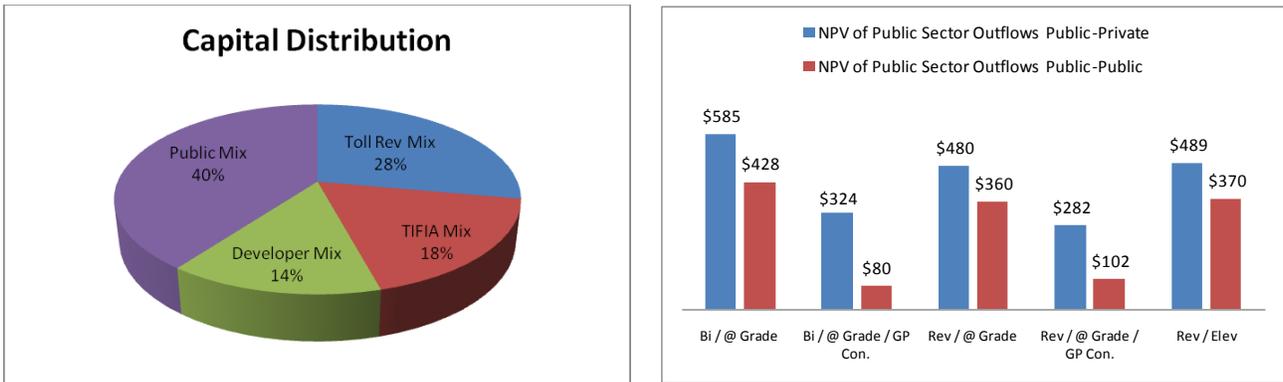
Table 4: I-75 North Public-Private Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 Years	35 Years	35 Years	35 Years	35 Years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 1,220,646,000	\$ 1,015,233,000	\$ 1,097,006,000	\$ 1,002,745,000	\$ 1,108,154,000
<b>CapEx - Interchange (@575, @285)</b>	\$ 571,045,882	\$ 571,045,882	\$ 334,080,081	\$ 334,080,081	\$ 334,080,081
<b>Facility O&amp;M</b>	\$ 6,103,230	\$ 5,076,165	\$ 5,485,030	\$ 5,013,725	\$ 5,540,770
<b>Accumulative 35 year Gross Revenue</b>	\$ 2,843,978,952	\$ 3,212,331,970	\$ 2,228,375,399	\$ 2,636,567,089	\$ 2,228,375,399
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 426,596,843	\$ 481,849,795	\$ 334,256,310	\$ 395,485,063	\$ 334,256,310
<b>NPV of Public Sector Outflows Public</b>	\$ 585,279,447	\$ 323,515,792	\$ 480,458,772	\$ 281,745,120	\$ 489,135,549
<b>NPV of Concessionaire Investment</b>	\$ 115,369,254	\$ 104,143,111	\$ 91,996,031	\$ 87,249,148	\$ 92,661,776

Table 5: I-75 North Public-Public Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 Years	35 Years	35 Years	35 Years	35 Years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 1,220,646,000	\$ 1,015,233,000	\$ 1,097,006,000	\$ 1,002,745,000	\$ 1,108,154,000
<b>CapEx - Interchange (@575, @285)</b>	\$ 571,045,882	\$ 571,045,882	\$ 334,080,081	\$ 334,080,081	\$ 334,080,081
<b>Facility O&amp;M</b>	\$ 6,103,230	\$ 5,076,165	\$ 5,485,030	\$ 5,013,725	\$ 5,540,770
<b>Accumulative 35 year Gross Revenue</b>	\$ 2,843,978,952	\$ 3,212,331,970	\$ 2,228,375,399	\$ 2,636,567,089	\$ 2,228,375,399
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 426,596,843	\$ 481,849,795	\$ 334,256,310	\$ 316,388,051	\$ 334,256,310
<b>NPV of Public Sector Outflows Public</b>	\$ 427,910,519	\$ 80,176,498	\$ 360,009,965	\$ 102,197,353	\$ 370,231,911
<b>NPV of Concessionaire Investment</b>	\$ -	\$ -	\$ -	\$ -	\$ -

Figures 4 & 5: I-75 North Public-Private Model Capital Distribution and Gap Comparison



- **Ultimate Recommendation:** 2 reversible, elevated lanes from I-285 to I-575 on the west side, and 1 reversible lane at-grade in the middle to SR 113;
- **Minimum Recommendation:** 2 reversible, elevated lanes from I-285 to I-575 on the west side, and 1 reversible lane at-grade in the middle to North of Hickory Grove Rd.

Figure 6: I-75 North Recommendation Set Financial Analysis

Ultimate Recommendation (PPP)		Minimum Recommendation (PPP)	
<b>NPV of Public Sector Contribution</b>	Revenue (a): \$2.24B Capital Costs (b): \$1.52B Toll O&M (c): \$0.34B Roadway O&M (d): \$5.9M	<b>NPV of Public Sector Contribution</b>	Revenue (a): \$1.69B Capital Costs (b): \$1.10B Toll O&M (c): \$0.25B Roadway O&M (d): \$3.8M
<b>\$533M</b>		<b>\$365M</b>	

Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

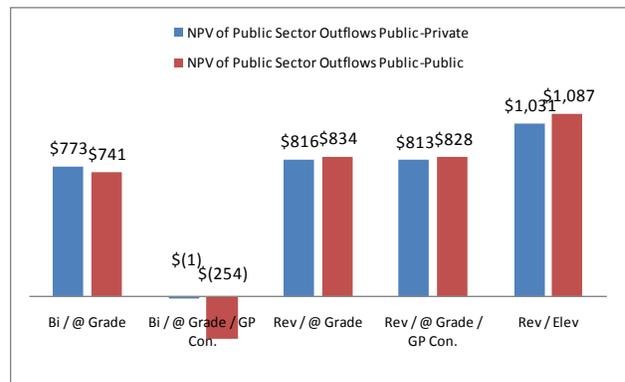
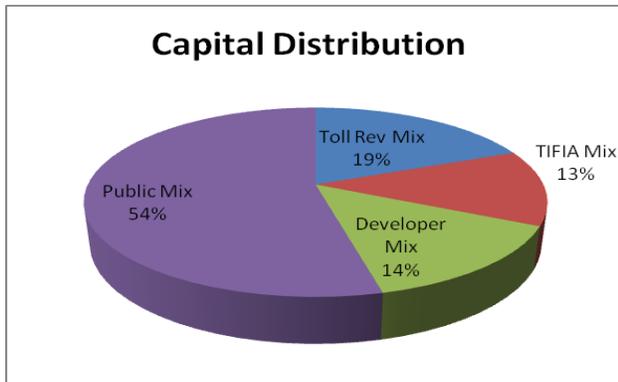
**Table 6: I-85 North Public-Private Model Financial Analysis Results**

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 1,236,816,000	\$ 601,461,000	\$ 1,218,727,000	\$ 1,218,727,000	\$ 1,494,766,296
<b>CapEx - Interchange (@985, @285)</b>	\$ 531,984,520	\$ 531,984,520	\$ 383,149,170	\$ 383,149,170	\$ 383,149,170
<b>Annual Facility O&amp;M</b>	\$ 6,184,080	\$ 3,007,305	\$ 6,093,635	\$ 6,093,635	\$ 7,473,831
<b>Accumulative 35 year Gross Revenue</b>	\$ 2,076,455,116	\$ 3,039,513,565	\$ 1,495,109,885	\$ 1,507,250,586	\$ 1,495,109,885
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 311,468,267	\$ 455,927,035	\$ 224,266,483	\$ 226,087,588	\$ 224,266,483
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 772,555,630</b>	<b>\$ (508,718)</b>	<b>\$ 815,932,270</b>	<b>\$ 813,096,305</b>	<b>\$ 1,030,810,927</b>
<b>NPV of Concessionaire Investment</b>	\$ 111,532,528	\$ 76,259,197	\$ 99,994,822	\$ 100,031,708	\$ 116,580,364

**Table 7: I-85 North Public-Public Model Financial Analysis Results**

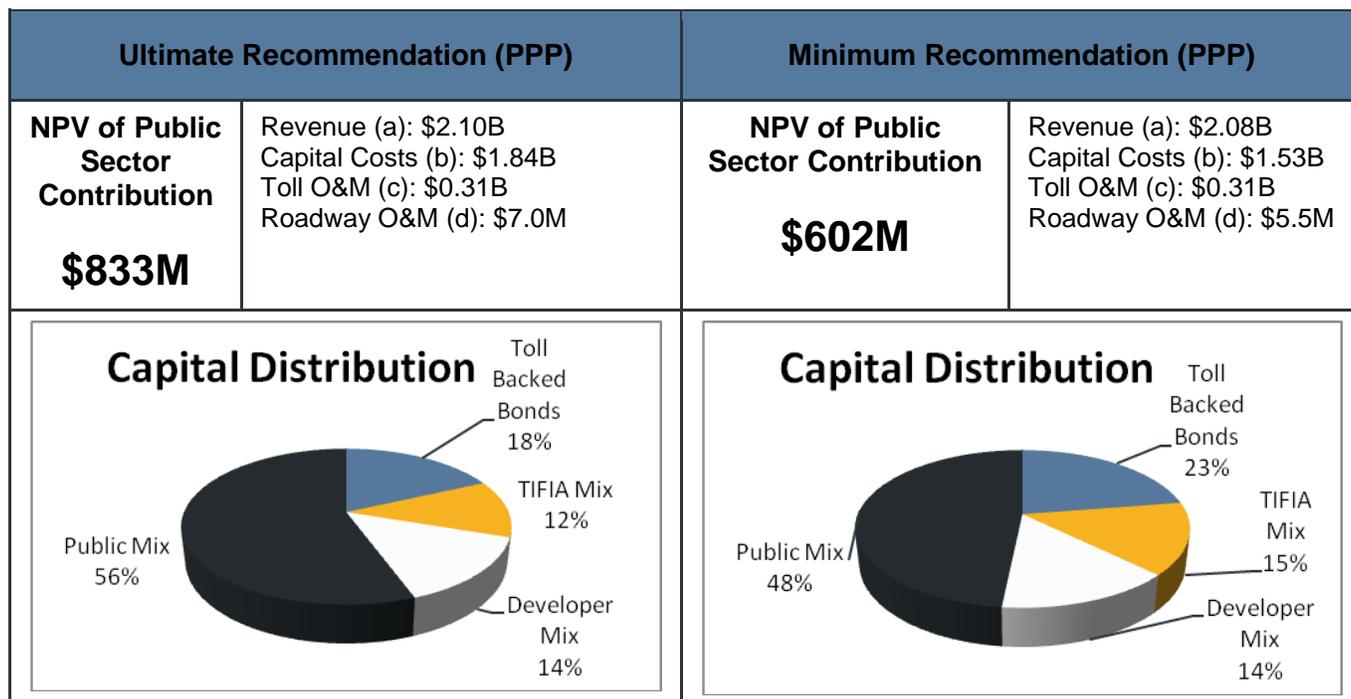
	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 1,236,816,000	\$ 601,461,000	\$ 1,218,727,000	\$ 1,218,727,000	\$ 1,494,766,296
<b>CapEx - Interchange (@985, @285)</b>	\$ 531,984,520	\$ 531,984,520	\$ 383,149,170	\$ 383,149,170	\$ 383,149,170
<b>Facility O&amp;M</b>	\$ 6,184,080	\$ 3,007,305	\$ 6,093,635	\$ 6,093,635	\$ 7,473,831
<b>Accumulative 35 year Gross Revenue</b>	\$ 2,076,455,116	\$ 3,039,513,565	\$ 1,495,109,885	\$ 1,507,250,586	\$ 1,495,109,885
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 311,468,267	\$ 455,927,035	\$ 224,266,483	\$ 180,870,070	\$ 224,266,483
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 741,013,146</b>	<b>\$ (253,792,449)</b>	<b>\$ 833,693,547</b>	<b>\$ 828,251,210</b>	<b>\$ 1,087,377,564</b>
<b>NPV of Concessionaire Investment</b>	\$ -	\$ -	\$ -	\$ -	\$ -

**Figures 7 & 8: I-85 North Public-Private Model Capital Distribution and Gap Comparison**



- **Ultimate Recommendation:** 2 lanes in each direction from I-285 to I-985 and 1 lane in each direction to South of Hamilton Mill Rd.;
- **Minimum Recommendation:** 2 lanes in each direction from I-285 to SR 316 and 1 lane in each direction to South of Hamilton Mill Rd.

**Figure 9: I-85 North Recommendation Set Financial Analysis**



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

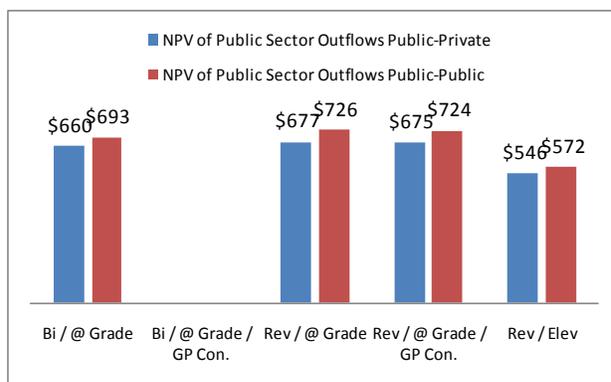
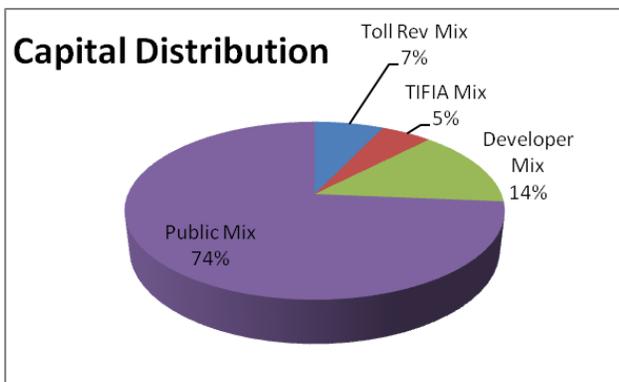
Table 8: I-20 East Public-Private Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 803,666,000		\$ 859,809,000	\$ 859,809,000	\$ 691,567,000
<b>CapEx - Interchange (@285)</b>	\$ 295,683,151		\$ 195,647,535	\$ 195,647,535	\$ 195,647,535
<b>Annual Facility O&amp;M</b>	\$ 4,018,330	\$ -	\$ 4,299,045	\$ 4,299,045	\$ 3,457,835
<b>Accumulative 35 year Gross Revenue</b>	\$ 729,138,475		\$ 555,467,056	\$ 560,101,251	\$ 555,467,056
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 109,370,771	\$ -	\$ 83,320,058	\$ 84,015,188	\$ 83,320,058
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 659,508,130</b>		<b>\$ 676,671,257</b>	<b>\$ 675,385,355</b>	<b>\$ 546,305,765</b>
<b>NPV of Concessionaire Investment</b>	\$ 68,881,505		\$ 66,290,136	\$ 66,294,363	\$ 55,906,381

Table 9: I-20 East Public-Public Model Financial Analysis Results

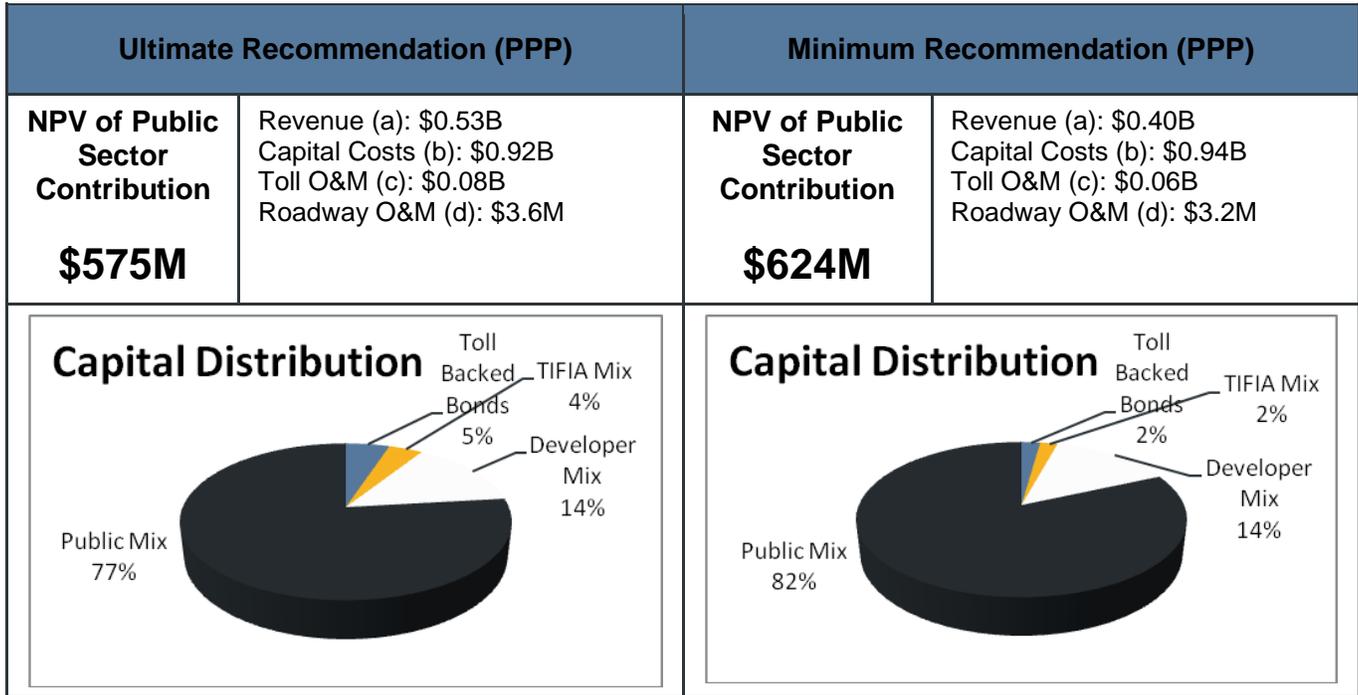
	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 803,666,000		\$ 859,809,000	\$ 859,809,000	\$ 691,567,000
<b>CapEx - Interchange (@285)</b>	\$ 295,683,151		\$ 195,647,535	\$ 195,647,535	\$ 195,647,535
<b>Facility O&amp;M</b>	\$ 4,018,330	\$ -	\$ 4,299,045	\$ 4,299,045	\$ 3,457,835
<b>Accumulative 35 year Gross Revenue</b>	\$ 729,138,475		\$ 555,467,056	\$ 560,101,251	\$ 555,467,056
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 109,370,771	\$ -	\$ 83,320,058	\$ 67,212,150	\$ 83,320,058
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 693,172,226</b>		<b>\$ 726,226,523</b>	<b>\$ 724,233,318</b>	<b>\$ 571,565,579</b>
<b>NPV of Concessionaire Investment</b>	\$ -		\$ -	\$ -	\$ -

Figures 10 & 11: I-20 East Public-Private Model Capital Distribution and Gap Comparison



- **Ultimate Recommendation:** 2 reversible, elevated lanes from I-285 to Sigman Rd. on the north side, and 1 reversible elevated lane on the north side to Salem Rd.;
- **Minimum Recommendation:** 2 lanes in each direction from I-285 to Miller Rd. and 1 lane in each direction to Salem Rd.

**Figure 12: I-20 East Recommendation Set Financial Analysis**



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

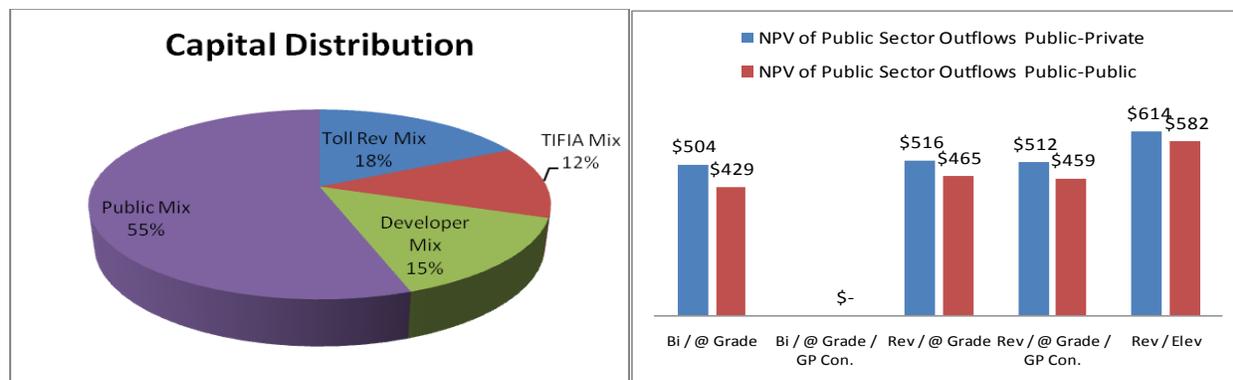
Table 10: I-20 West Public-Private Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 783,659,000	\$ -	\$ 745,235,000	\$ 745,235,000	\$ 871,977,000
<b>CapEx - Interchange (@285)</b>	\$ 335,269,670		\$ 284,541,820	\$ 284,541,820	\$ 284,541,820
<b>Annual Facility O&amp;M</b>	\$ 3,918,295	\$ -	\$ 3,726,175	\$ 3,726,175	\$ 4,359,885
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,375,773,514	\$ -	\$ 1,097,289,092	\$ 1,112,806,347	\$ 1,097,289,092
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 206,366,027	\$ -	\$ 164,593,364	\$ 166,920,952	\$ 164,593,364
<b>NPV of Public Sector Outflows Public</b>	\$ 504,461,435		\$ 516,412,146	\$ 512,089,960	\$ 613,936,296
<b>NPV of Concessionaire Investment</b>	\$ 71,595,742		\$ 65,663,557	\$ 65,709,787	\$ 73,836,066

Table 11: I-20 West Public-Public Model Financial Analysis Results

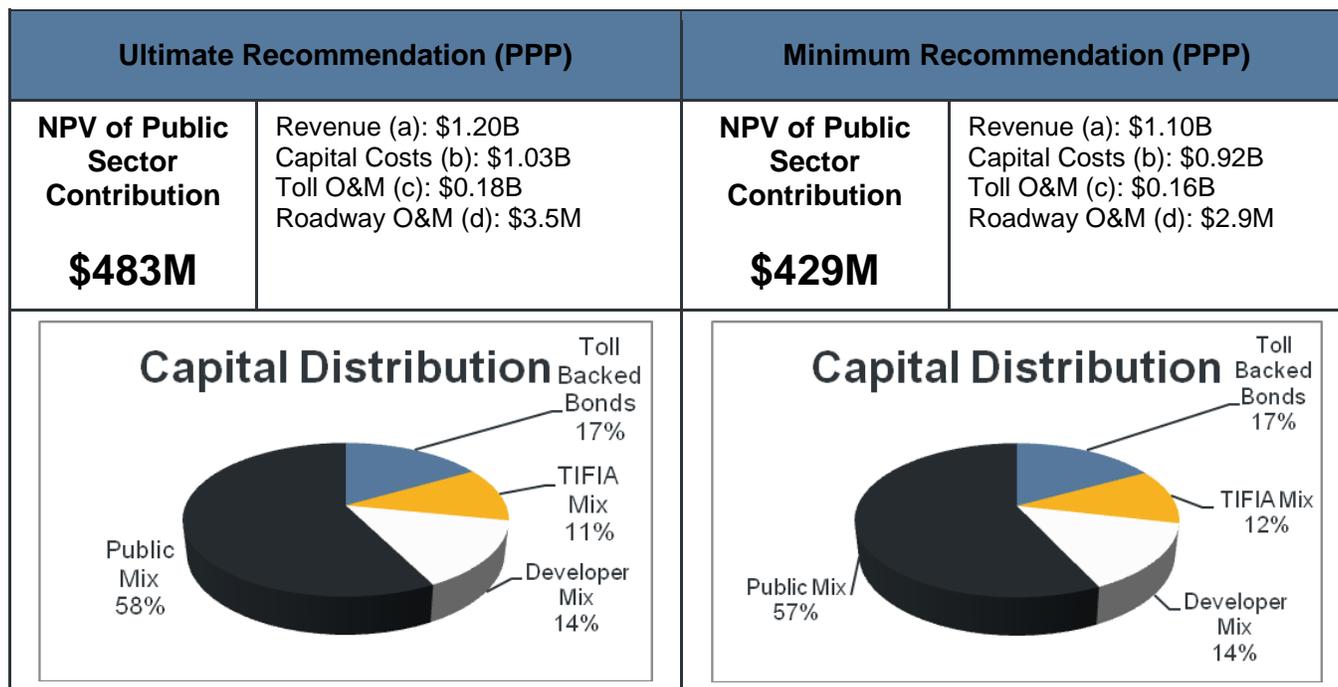
	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 783,659,000	\$ -	\$ 745,235,000	\$ 745,235,000	\$ 871,977,000
<b>CapEx - Interchange (@285)</b>	\$ 335,269,670		\$ 284,541,820	\$ 284,541,820	\$ 284,541,820
<b>Facility O&amp;M</b>	\$ 3,918,295	\$ -	\$ 3,726,175	\$ 3,726,175	\$ 4,359,885
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,375,773,514	\$ -	\$ 1,097,289,092	\$ 1,112,806,347	\$ 1,097,289,092
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 206,366,027	\$ -	\$ 164,593,364	\$ 133,536,762	\$ 164,593,364
<b>NPV of Public Sector Outflows Public</b>	\$ 428,876,094	\$ -	\$ 465,350,131	\$ 458,663,329	\$ 581,831,894
<b>NPV of Concessionaire Investment</b>	\$ -		\$ -	\$ -	\$ -

Figures 13 & 14: I-20 West Public-Private Model Capital Distribution and Gap Comparison



- **Ultimate Recommendation:** 2 lanes in each direction from I-285 to Presley Mill Rd. and 1 lane in each direction to Bright Star Rd.;
- **Minimum Recommendation:** 2 lanes in each direction from I-285 to Mt. Vernon Rd. and 1 lane in each direction to Bright Star Rd.

**Figure 15: I-20 West Recommendation Set Financial Analysis**



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

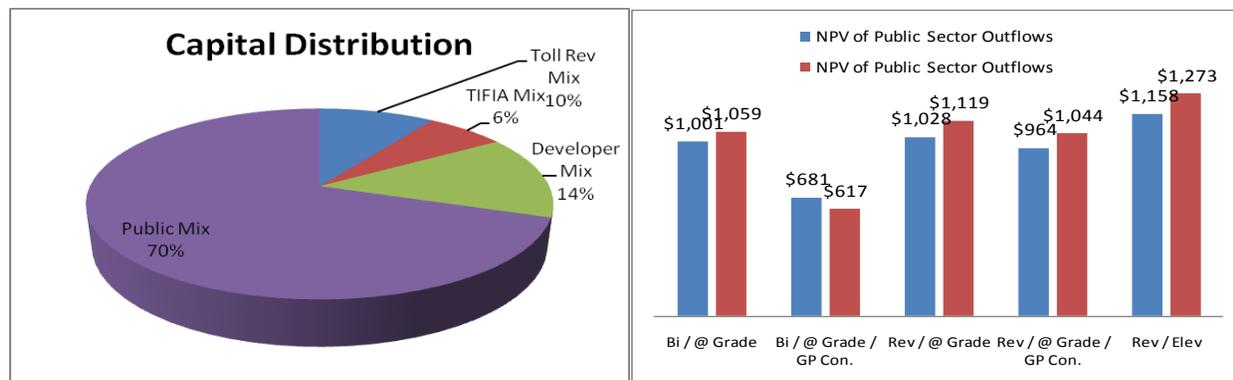
Table 12: I-75 South Public-Private Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
Current Interest Bonds	5.00%	5.00%	5.00%	5.00%	5.00%
TIFIA	4.00%	4.00%	4.00%	4.00%	4.00%
Term	35 years	35 years	35 years	35 years	35 years
Facility O&M	0.50%	0.50%	0.50%	0.50%	0.50%
Toll System O&M	15.00%	15.00%	15.00%	15.00%	15.00%
Developer Required IRR	12.50%	12.50%	12.50%	12.50%	12.50%
CapEx - Roadway	\$ 1,352,371,000	\$ 1,158,001,000	\$ 1,280,065,000	\$ 1,232,802,000	\$ 1,447,932,000
CapEx - Interchange (@675, @285)	\$ 409,166,438	\$ 409,166,438	\$ 325,397,382	\$ 325,397,382	\$ 325,397,382
Annual Facility O&M	\$ 6,761,855	\$ 5,790,005	\$ 6,400,325	\$ 6,164,010	\$ 7,239,660
Accumulative 35 year Gross Revenue	\$ 1,304,517,837	\$ 1,916,172,909	\$ 819,519,193	\$ 897,951,896	\$ 819,519,193
Toll System O&M (15% of Gross)	\$ 195,677,676	\$ 287,425,936	\$ 122,927,879	\$ 134,692,784	\$ 122,927,879
NPV of Public Sector Outflows	\$ 1,001,279,051	\$ 680,833,896	\$ 1,027,845,706	\$ 964,192,577	\$ 1,158,006,232
NPV of Concessionaire Investment	\$ 110,025,933	\$ 99,439,100	\$ 100,124,171	\$ 96,982,390	\$ 110,433,896

Table 13: I-75 South Public-Public Model Financial Analysis Results

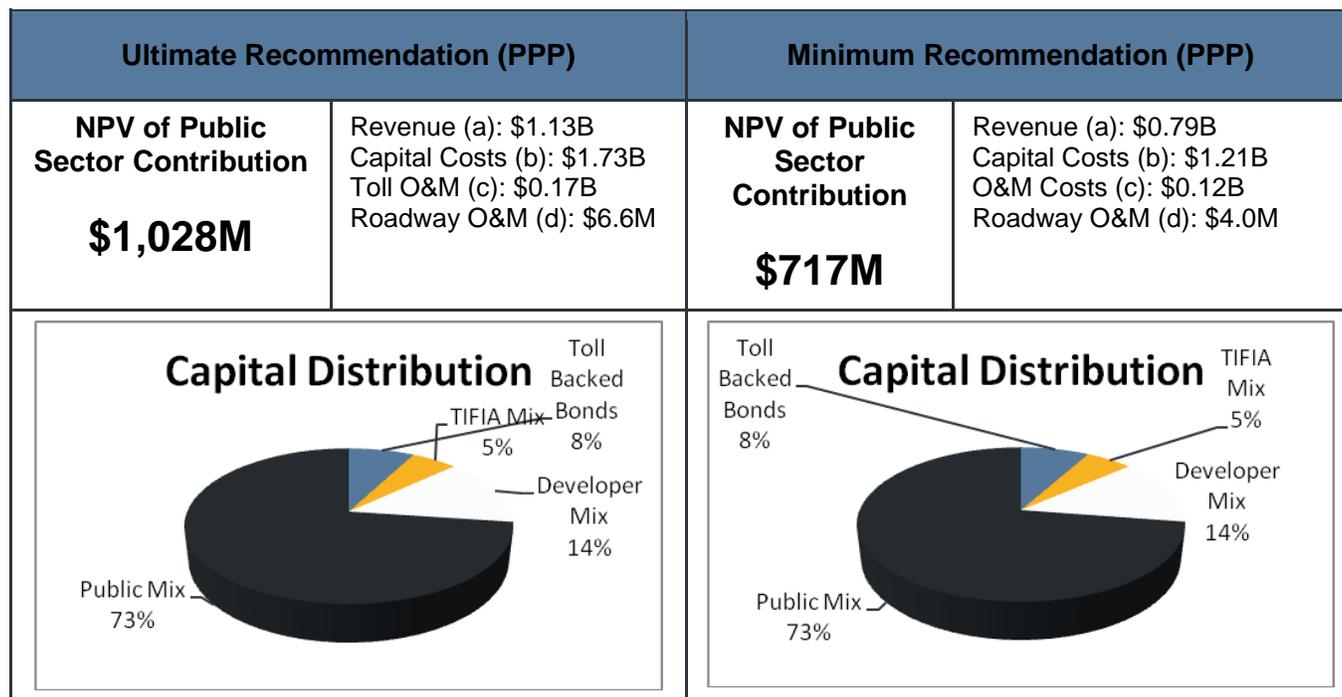
	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
Current Interest Bonds	5.00%	5.00%	5.00%	5.00%	5.00%
TIFIA	4.00%	4.00%	4.00%	4.00%	4.00%
Term	35 years	35 years	35 years	35 years	35 years
Facility O&M	0.50%	0.50%	0.50%	0.50%	0.50%
Toll System O&M	15.00%	15.00%	15.00%	12.00%	15.00%
Developer Required IRR	12.50%	12.50%	12.50%	12.50%	12.50%
CapEx - Roadway	\$ 1,352,371,000	\$ 1,158,001,000	\$ 1,280,065,000	\$ 1,232,802,000	\$ 1,447,932,000
CapEx - Interchange (@675, @285)	\$ 409,166,438	\$ 409,166,438	\$ 325,397,382	\$ 325,397,382	\$ 325,397,382
Facility O&M	\$ 6,761,855	\$ 5,790,005	\$ 6,400,325	\$ 6,164,010	\$ 7,239,660
Accumulative 35 year Gross Revenue	\$ 1,304,517,837	\$ 1,916,172,909	\$ 819,519,193	\$ 897,951,896	\$ 819,519,193
Toll System O&M (15% of Gross)	\$ 195,677,676	\$ 287,425,936	\$ 122,927,879	\$ 107,754,227	\$ 122,927,879
NPV of Public Sector Outflows	\$ 1,058,858,604	\$ 616,719,426	\$ 1,119,059,707	\$ 1,044,071,922	\$ 1,273,339,036
NPV of Concessionaire Investment	\$ -	\$ -	\$ -	\$ -	\$ -

Figures 16&17: I-75 South Public-Private Model Capital Distribution and Gap Comparison



- **Ultimate Recommendation:** 2 lanes in each direction from I-285 to Bill Gardner Pkwy and 1 lane in each direction to South of Locust Grove Rd.;
- **Minimum Recommendation:** 1 lane in each direction from I-285 to South of Locust Grove Rd.

**Figure 18: I-75 South Recommendation Set Financial Analysis**



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

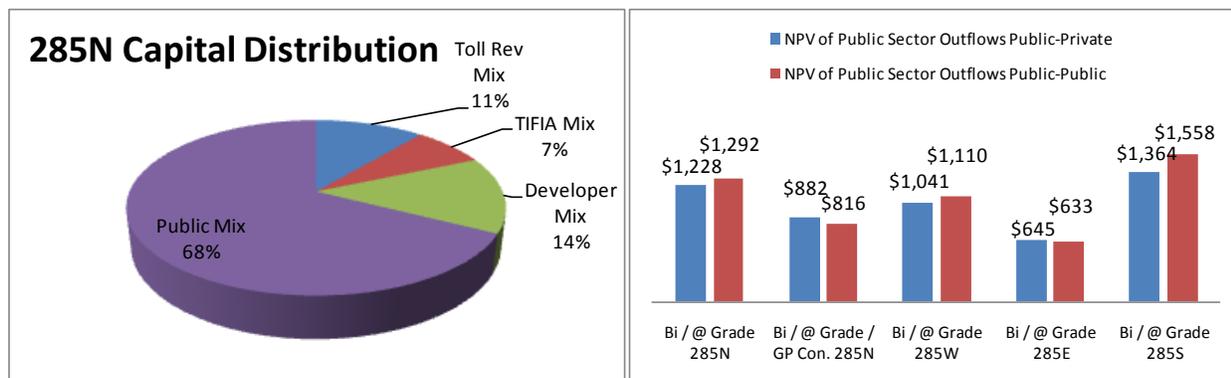
Table 14: I-285 Public-Private Model Financial Analysis Results

	Bi-Directional At Grade 285 North	Bi-Dir GPCon At Grade 285 North	Bi-Directional At Grade 285 West	Bi-Directional At Grade 285 East	Bi-Directional At Grade 285 South
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 919,962,000	\$ 719,906,000	\$ 918,541,000	\$ 678,257,000	\$ 781,275,000
<b>CapEx - Interchange (@ all radials)</b>	\$ 1,316,125,700	\$ 1,316,125,700	\$ 877,377,572	\$ 688,745,221	\$ 1,216,564,357
<b>Annual Facility O&amp;M</b>	\$ 4,599,810	\$ 3,599,530	\$ 4,592,705	\$ 3,391,285	\$ 3,906,375
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,782,945,995	\$ 2,463,920,347	\$ 1,259,007,495	\$ 1,459,364,342	\$ 652,560,773
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 267,441,899	\$ 369,588,052	\$ 188,851,124	\$ 218,904,651	\$ 97,884,116
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 1,228,250,706</b>	<b>\$ 881,948,377</b>	<b>\$ 1,041,132,809</b>	<b>\$ 644,834,970</b>	<b>\$ 1,364,282,237</b>
<b>NPV of Concessionaire Investment</b>	\$ 139,805,302	\$ 128,812,782	\$ 111,974,244	\$ 85,886,556	\$ 122,822,095

Table 15: I-285 Public-Public Model Financial Analysis Results

	Bi-Directional At Grade 285 North	Bi-Dir GPCon At Grade 285 North	Bi-Directional At Grade 285 West	Bi-Directional At Grade 285 East	Bi-Directional At Grade 285 South
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 919,962,000	\$ 719,906,000	\$ 918,541,000	\$ 678,257,000	\$ 781,275,000
<b>CapEx - Interchange (@ all radials)</b>	\$ 1,316,125,700	\$ 1,316,125,700	\$ 877,377,572	\$ 688,745,221	\$ 1,216,564,357
<b>Facility O&amp;M</b>	\$ 4,599,810	\$ 3,599,530	\$ 4,592,705	\$ 3,391,285	\$ 3,906,375
<b>Accumulative 35 year Gross Revenue</b>	\$ 1,782,945,995	\$ 2,463,920,347	\$ 1,259,007,495	\$ 1,459,364,342	\$ 652,560,773
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 267,441,899	\$ 369,588,052	\$ 188,851,124	\$ 175,123,721	\$ 97,884,116
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 1,292,206,659</b>	<b>\$ 815,789,609</b>	<b>\$ 1,109,893,824</b>	<b>\$ 632,579,155</b>	<b>\$ 1,557,756,778</b>
<b>NPV of Concessionaire Investment</b>	\$ -	\$ -	\$ -	\$ -	\$ -

Figures 19&20: I-285 Public-Private Model Capital Distribution and Gap Comparison



■ **Ultimate Recommendations:**

- **I-285 North:** 2 lanes in each direction from I-75N to I-85N;
- **I-285 East:** 2 lanes in each direction from I-85N to I-20E;
- **I-285 West:** 2 lanes in each direction from I-75N to I-85S;
- **I-285 South:** 2 lanes in each direction from I-85S to I-20E

■ **Minimum Recommendations:**

- **I-285 North:** N/A
- **I-285 East:** N/A
- **I-285 West:** 2 lanes in each direction from I-75N to I-20W and 1 lane in each direction from I-20W to I-85S;
- **I-285 South:** 1 lane in each direction from I-85S to I-20E

**Figure 21: I-285 North Recommendation Set Financial Analysis**

Ultimate Recommendation (PPP)		Minimum Recommendation (PPP)											
<p><b>NPV of Public Sector Contribution</b></p> <p><b>\$204M</b></p>	<p>Revenue (a): \$2.00B                      Capital Costs (b): \$0.98B                      Toll O&amp;M (c): \$0.30B                      Roadway O&amp;M (d): \$4.9M</p>	<p><b>NPV of Public Sector Contribution</b></p> <p><b>N/A</b></p>	<p>Revenue (a): N/A                      Capital Costs (b): N/A                      O&amp;M Costs (c): N/A                      Roadway O&amp;M (d): N/A</p>										
<p><b>Capital Distribution</b></p> <table border="1"> <caption>Capital Distribution Data</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Public Mix</td> <td>26%</td> </tr> <tr> <td>Bonds</td> <td>36%</td> </tr> <tr> <td>TIFIA Mix</td> <td>23%</td> </tr> <tr> <td>Developer Mix</td> <td>15%</td> </tr> </tbody> </table>		Category	Percentage	Public Mix	26%	Bonds	36%	TIFIA Mix	23%	Developer Mix	15%	<p><b>N/A</b></p>	
Category	Percentage												
Public Mix	26%												
Bonds	36%												
TIFIA Mix	23%												
Developer Mix	15%												

Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

Figure 22: I-285 East Recommendation Set Financial Analysis

Ultimate Recommendation (PPP)		Minimum Recommendation (PPP)	
<b>NPV of Public Sector Contribution</b>  <b>\$136M</b>	Revenue (a): \$1.54B Capital Costs (b): \$0.73B Toll O&M (c): \$0.23B Roadway O&M (d): \$3.7M	<b>NPV of Public Sector Contribution</b>  <b>N/A</b>	Revenue (a): N/A Capital Costs (b): N/A O&M Costs (c): N/A Roadway O&M (d): N/A
<b>Capital Distribution</b> 		<h1>N/A</h1>	

Figure 23: I-285 West Recommendation Set Financial Analysis

Ultimate Recommendation (PPP)		Minimum Recommendation (PPP)	
<b>NPV of Public Sector Contribution</b>  <b>\$440M</b>	Revenue (a): \$1.19B Capital Costs (b): \$0.99B Toll O&M (c): \$0.18B Roadway O&M (d): \$5.0M	<b>NPV of Public Sector Contribution</b>  <b>\$234M</b>	Revenue (a): \$1.05B Capital Costs (b): \$0.68B O&M Costs (c): \$0.16B Roadway O&M (d): \$3.4M
<b>Capital Distribution</b> 		<b>Capital Distribution</b> 	

Figure 24: I-285 South Recommendation Set Financial Analysis

Ultimate Recommendation (PPP)		Minimum Recommendation (PPP)	
<b>NPV of Public Sector Contribution</b>  <b>\$464M</b>	Revenue (a): \$0.63B Capital Costs (b): \$0.82B Toll O&M (c): \$0.10B Roadway O&M (d): \$4.1M	<b>NPV of Public Sector Contribution</b>  <b>\$267M</b>	Revenue (a): \$0.43B Capital Costs (b): \$0.50B O&M Costs (c): \$0.06B Roadway O&M (d): \$2.5M
<b>Capital Distribution</b> 		<b>Capital Distribution</b> 	

Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

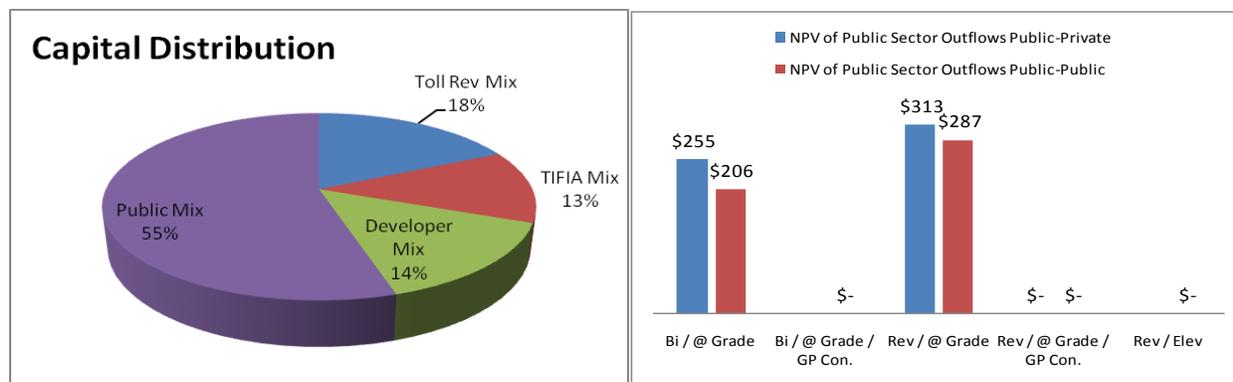
Table 16: I-575 Public-Private Model Financial Analysis Results

	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	15.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 536,271,000	\$ -	\$ 575,874,000	\$ -	\$ -
<b>CapEx - Interchange (@75)</b>	\$ 35,767,105		\$ 30,744,451		
<b>Annual Facility O&amp;M</b>	\$ 2,681,355	\$ -	\$ 2,879,370	\$ -	\$ -
<b>Accumulative 35 year Gross Revenue</b>	\$ 729,223,147	\$ -	\$ 616,073,570	\$ -	\$ -
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 109,383,472	\$ -	\$ 92,411,036	\$ -	\$ -
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 255,304,636</b>	<b>\$ -</b>	<b>\$ 312,968,514</b>	<b>\$ -</b>	<b>\$ -</b>
<b>NPV of Concessionaire Investment</b>	\$ 36,780,796	\$ -	\$ 38,601,546	\$ -	\$ -

Table 17: I-575 Public-Public Model Financial Analysis Results

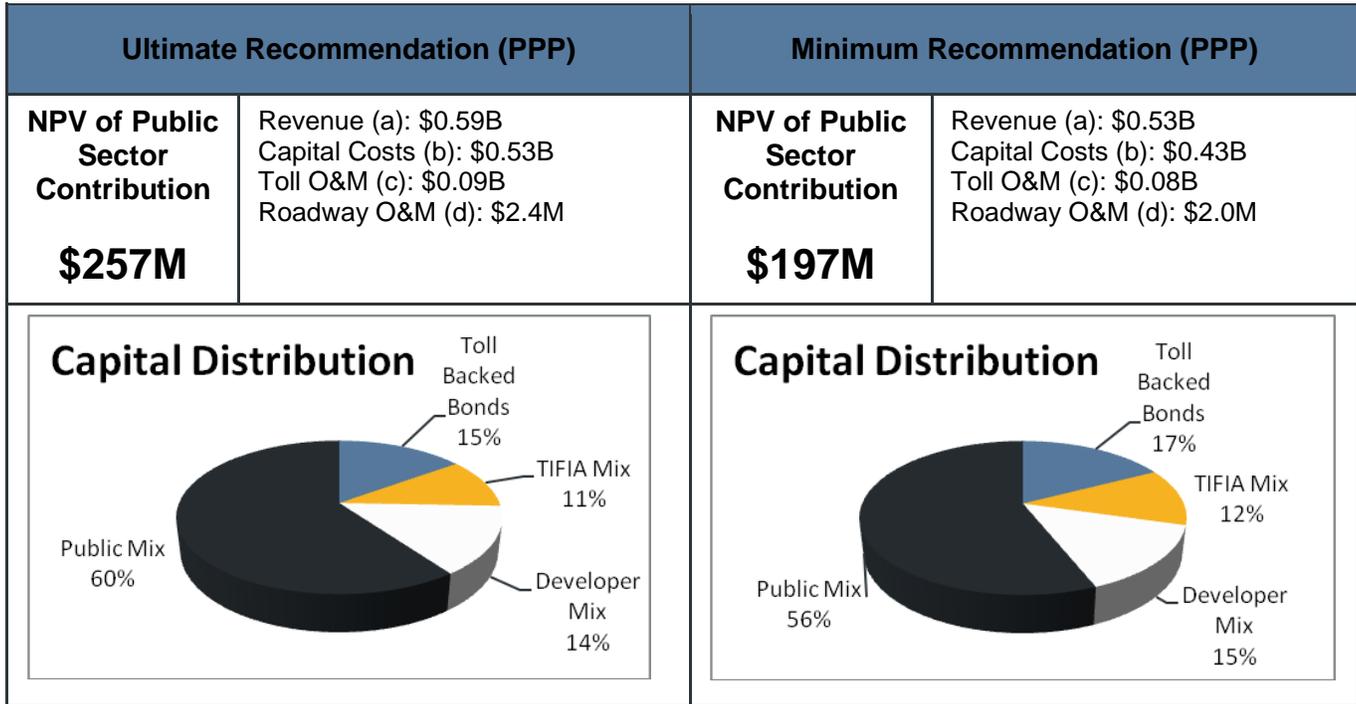
	Bi-Directional At Grade	Bi-Directional At Grade Conv. GP	Reversible At Grade	Reversible At Grade Conv. GP	Reversible Elevated
<b>Financial Assumptions</b>					
<i>Current Interest Bonds</i>	5.00%	5.00%	5.00%	5.00%	5.00%
<i>TIFIA</i>	4.00%	4.00%	4.00%	4.00%	4.00%
<i>Term</i>	35 years	35 years	35 years	35 years	35 years
<i>Facility O&amp;M</i>	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Toll System O&amp;M</i>	15.00%	15.00%	15.00%	12.00%	15.00%
<i>Developer Required IRR</i>	12.50%	12.50%	12.50%	12.50%	12.50%
<b>CapEx - Roadway</b>	\$ 536,271,000	\$ -	\$ 575,874,000	\$ -	\$ -
<b>CapEx - Interchange (@75)</b>	\$ 35,767,105		\$ 30,744,451		
<b>Facility O&amp;M</b>	\$ 2,681,355	\$ -	\$ 2,879,370	\$ -	\$ -
<b>Accumulative 35 year Gross Revenue</b>	\$ 729,223,147		\$ 616,073,570	\$ -	
<b>Toll System O&amp;M (15% of Gross)</b>	\$ 109,383,472	\$ -	\$ 92,411,036	\$ -	\$ -
<b>NPV of Public Sector Outflows Public-</b>	<b>\$ 206,467,268</b>	<b>\$ -</b>	<b>\$ 287,304,397</b>	<b>\$ -</b>	<b>\$ -</b>
<b>NPV of Concessionaire Investment</b>	\$ -	\$ -	\$ -	\$ -	\$ -

Figures 25 & 26: I-575 Public-Private Model Capital Distribution and Gap Comparison



- **Ultimate Recommendation:** 1 reversible, at-grade lane from I-75N to North of Canton Rd. in the median;
- **Minimum Recommendation:** 1 reversible, at-grade lane from I-75N to South of Sixes Rd. in the median

**Figure 27: I-575 Recommendation Set Financial Analysis**

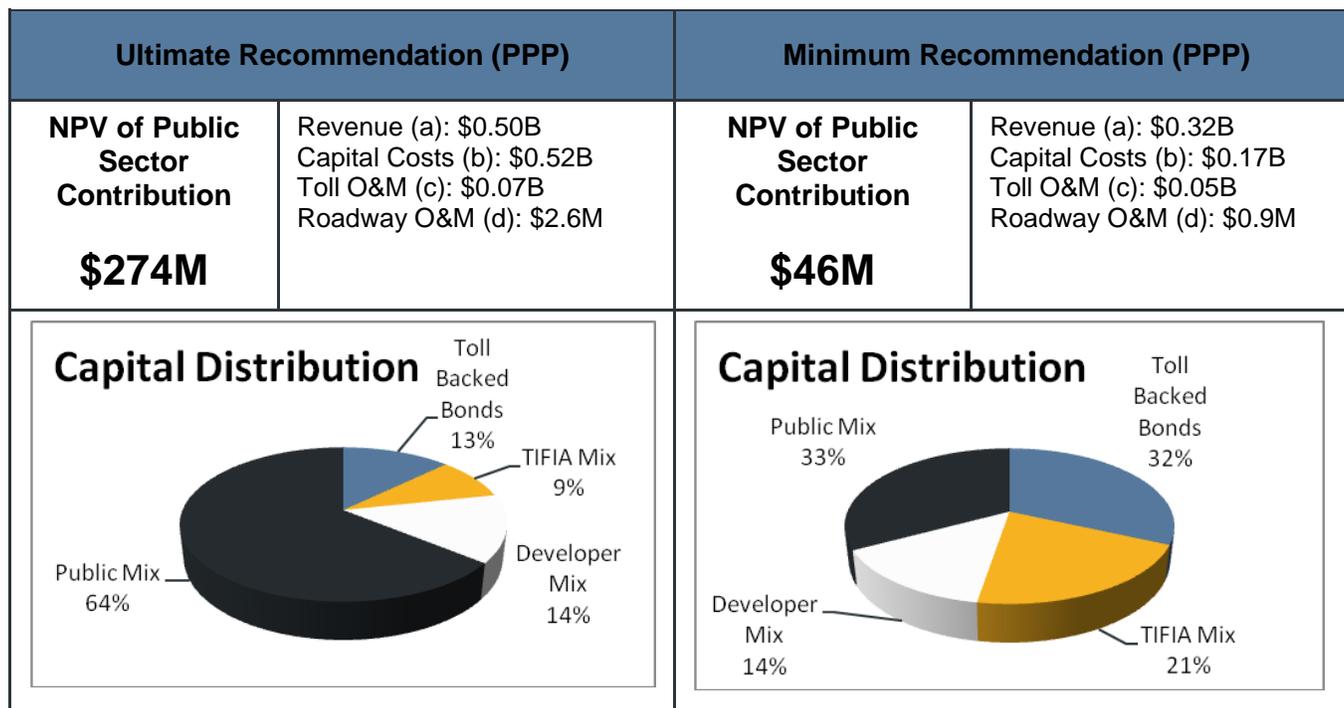


Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

- **Ultimate Recommendation:** 1 lane in each direction from I-85N to East of SR 81 in the median;
- **Minimum Recommendation:** 1 lane in each direction from I-85N to East of Hi-Hope Rd. in the median;

**Figure 28: SR 316 Recommendation Set Financial Analysis**



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

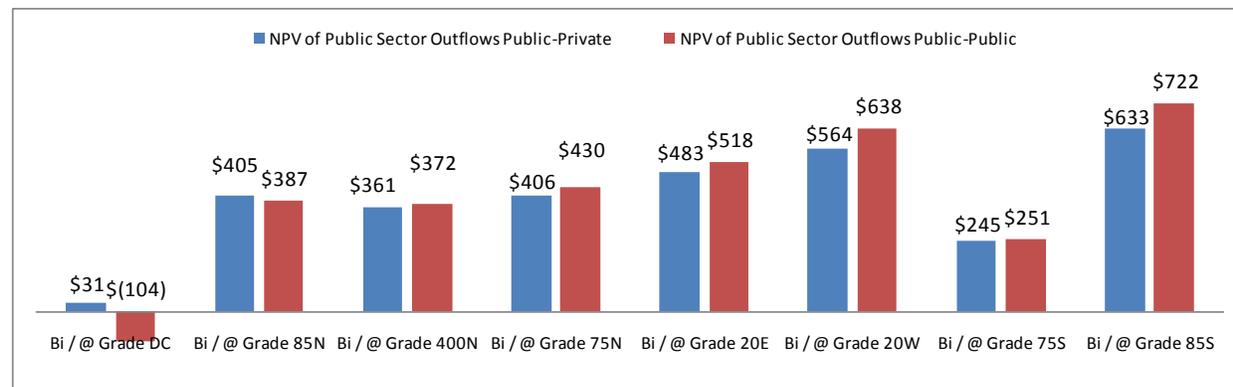
Table 18: Inside I-285 Public-Private Model Financial Analysis Results

	Bi-Dir GPCon At Grade DC	Bi-Directional At Grade 85 North	Bi-Directional At Grade 400 North	Bi-Directional At Grade 75 North	Bi-Directional At Grade 20 East	Bi-Directional At Grade 20 West	Bi-Directional At Grade 75 South	Bi-Directional At Grade 85 South
<b>Financial Assumptions</b>								
Current Interest Bonds	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
TIFIA	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Term	35 years	35 years	35 years	35 years	35 years	35 years	35 years	35 years
Facility O&M	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Toll System O&M	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%	15.00%
Developer Required IRR	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%
CapEx - Roadway	\$ 84,718,000	\$ 169,560,000	\$ 60,134,000	\$ 122,100,000	\$ 122,026,000	\$ 68,239,000	\$ 38,196,000	\$ 349,000,000
CapEx - Interchange (@ all points)	\$ 565,657,228	\$ 717,952,758	\$ 639,467,091	\$ 608,487,229	\$ 715,459,933	\$ 755,046,451	\$ 445,142,138	\$ 575,718,536
Annual Facility O&M	\$ 423,590	\$ 847,800	\$ 300,670	\$ 610,500	\$ 610,130	\$ 341,195	\$ 190,980	\$ 1,745,000
Accumulative 35 year Gross Revenue	\$ 1,645,268,309	\$ 1,002,422,384	\$ 635,252,574	\$ 566,656,479	\$ 589,382,372	\$ 274,740,394	\$ 453,507,010	\$ 299,543,799
Toll System O&M (15% of Gross)	\$ 246,790,246	\$ 150,363,358	\$ 95,287,886	\$ 84,998,472	\$ 88,407,356	\$ 41,211,059	\$ 68,026,051	\$ 44,931,570
NPV of Public Sector Outflows Public-	\$ 30,895,789	\$ 404,814,553	\$ 361,216,954	\$ 405,598,488	\$ 483,343,596	\$ 564,465,766	\$ 244,592,427	\$ 633,431,745
NPV of Concessionaire Investment	\$ 43,375,806	\$ 55,900,216	\$ 43,590,152	\$ 45,302,416	\$ 51,753,396	\$ 51,063,718	\$ 30,129,813	\$ 56,947,829

Table 19: Inside I-285 Public-Public Model Financial Analysis Results

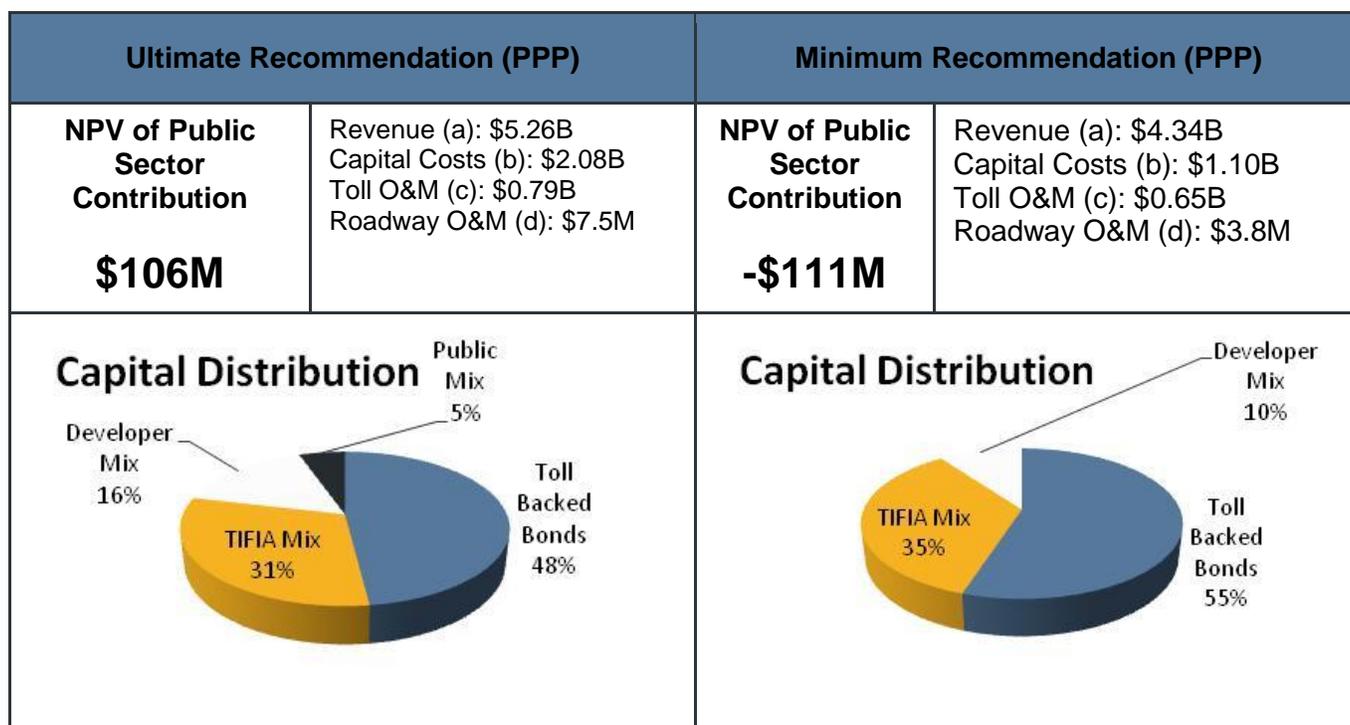
	Bi-Directional At Grade 285 North	Bi-Dir GPCon At Grade 285 North	Bi-Directional At Grade 285 West	Bi-Directional At Grade 285 East	Bi-Directional At Grade 20 East	Bi-Directional At Grade 20 West	Bi-Directional At Grade 75 South	Bi-Directional At Grade 285 South
<b>Financial Assumptions</b>								
Current Interest Bonds	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
TIFIA	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%	4.00%
Term	35 years	35 years	35 years	35 years	35 years	35 years	35 years	35 years
Facility O&M	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Toll System O&M	15.00%	15.00%	15.00%	12.00%	15.00%	15.00%	15.00%	15.00%
Developer Required IRR	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%	12.50%
CapEx - Roadway	\$ 84,718,000	\$ 169,560,000	\$ 60,134,000	\$ 122,100,000	\$ 122,026,000	\$ 68,239,000	\$ 38,196,000	\$ 122,026,000
CapEx - Interchange (@ all points)	\$ 565,657,228	\$ 717,952,758	\$ 639,467,091	\$ 608,487,229	\$ 715,459,933	\$ 755,046,451	\$ 445,142,138	\$ 575,718,536
Facility O&M	\$ 423,590	\$ 847,800	\$ 300,670	\$ 610,500	\$ 610,130	\$ 341,195	\$ 190,980	\$ 610,130
Accumulative 35 year Gross Revenue	\$ 1,645,268,309	\$ 1,002,422,384	\$ 635,252,574	\$ 566,656,479	\$ 589,382,372	\$ 274,740,394	\$ 453,507,010	\$ 589,382,372
Toll System O&M (15% of Gross)	\$ 246,790,246	\$ 150,363,358	\$ 95,287,886	\$ 67,998,777	\$ 88,407,356	\$ 41,211,059	\$ 68,026,051	\$ 88,407,356
NPV of Public Sector Outflows Public-	\$ (104,150,122)	\$ 386,665,269	\$ 372,122,871	\$ 429,718,062	\$ 517,823,726	\$ 638,066,847	\$ 251,368,875	\$ 721,898,363
NPV of Concessionaire Investment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Figure 29: Inside I-285 Gap Comparison



- **Ultimate Recommendation:** 2 lanes in each direction on the Downtown Connector; 1 lane in each direction on I-75N, I-75S, I-85N, I-85S, I-20E, I-20W, SR 400; GP lane convert on Connector and I-20W
- **Minimum Recommendation:** 2 lanes in each direction on the Downtown Connector; 1 lane in each direction on I-75N, I-75S, I-85N, I-85S, I-20E; GP lane convert on Connector

Figure 30: Inside I-285 Recommendation Set Financial Analysis



Notes: (a) 35-year accumulated gross revenues from 2020 to 2055. (b) Costs include corridor and interchange components. (c) 35-year toll operations O&M as a percent of revenue. (d) Annual roadway operations O&M as a percent of capital expenditures.

Interest rates: 5% for toll-backed bonds, 4% for TIFIA, and 12.5% for developer required IRR. All dollar amounts in \$2008.

The tables and figures above highlight the financial screening and summary results for the managed lane corridors. Table 20 summarizes the configuration treatments selected for each corridor, based in part on the financial screening process described previously.

Corridor	Configuration
I-75 North Outside I-285	Reversible elevated
SR 400 North Outside I-285	Bi-directional at-grade
I-85 North Outside I-285	Bi-directional at-grade
I-575 North Outside I-285	Reversible elevated
I-20 East Outside I-285	Reversible elevated

I-20 West Outside I-285	Bi-directional at-grade
I-75 South Outside I-285	Bi-directional at-grade
SR 316 Outside I-285	Bi-directional at-grade
Downtown Connector	Bi-directional at-grade
I-20 East Inside I-285	Bi-directional at-grade
I-75 North Inside I-285	Bi-directional at-grade
I-85 North Inside I-285	Bi-directional at-grade
I-75 South Inside I-285	Bi-directional at-grade
I-85 South Inside I-285	Bi-directional at-grade
I-20 West Inside I-285	Bi-directional at-grade
SR 400 North Inside I-285	Bi-directional at-grade

## D. Conclusions

The Georgia Department of Transportation's Managed Lanes System Plan provides a phased implementation approach for managed lanes throughout the Metro Atlanta region. The financial analysis described in this chapter helped the planning team craft this approach, and provided valuable insight into the financial realities associated with such a system. Revenue generating transportation infrastructure is rare in Georgia. The only existing tolled facility in the entire state is a short stretch of SR 400 in Metro Atlanta. For this reason, it was critical to understand the financial implications of priced managed lanes. The ultimate system, which is comprised of the individual ultimate recommendations on all of the managed lane corridors, has a total capital cost of over \$16 Billion. However, the financial analysis shows that the funding gap is approximately \$7 Billion. That is, around half of the cost for the entire recommended managed lane system can be covered through forecast toll revenues. The other half would come from the State of Georgia or some other source of funds.