Lafayette Metropolitan Expressway Commission

LAFAYETTE METROPOLITAN EXPRESSWAY FEASIBILITY STUDY

EXECUTIVE SUMMARY

IMPLEMENTATION PLAN

JUNE, 2005

HNTB

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IMPLEMENTATION PLAN

INTRODUCTION

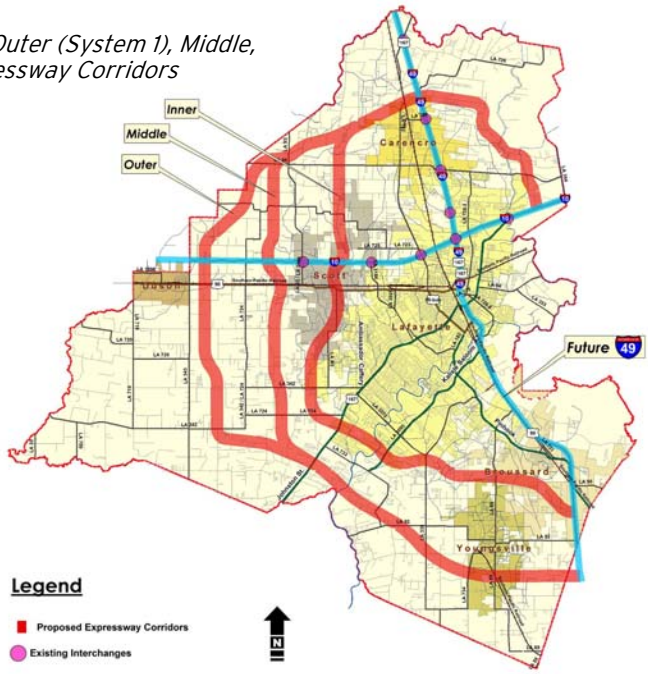
The Lafayette Metropolitan Expressway Commission (LMEC) was formed in 2003 in accordance with Act No. 893 of the 2003 Regular Session of the Louisiana Legislature, which directed that a highway loop be studied around Lafayette using toll revenues and other innovative revenue streams for financing. If feasible, the LMEC will implement the loop facility. HNTB Corporation was retained by the LMEC to study the preliminary feasibility of the loop. This report summarizes the findings of the studies and presents an implementation plan for consideration by the LMEC in conjunction with other components of government.

INITIAL ALTERNATIVES

The limits of the study initially have been confined to the area within Lafayette Parish because this is the jurisdiction of the LMEC as defined by its enabling legislation. The preliminary feasibility study focused on three general corridors: outer, middle and inner. Given the geography of Lafayette Parish and the jurisdictional limits, the loop project would cover three quadrants of the grid formed by I-10 (east-west) and I-49 (north-south). The fourth quadrant, the southeast quadrant, was not included in the initial studies because of the Parish boundary being so close to I-49 and the lack of space for a facility given the dense development and pristine wetlands in the area.

The facility is envisioned as a free flow facility with fully directional interchanges at crossings with I-10, I-49, and Johnston Street. Diamond type interchanges would be provided at other crossing streets. It would initially be constructed as four lanes with room for expansion to six lanes as conditions warrant.

Proposed Outer (System 1), Middle, Inner Expressway Corridors



The three corridors range in length from 31 to 38 miles. The implementation cost estimate, including planning, design, right of way acquisition, and construction, is generally about the same for the various corridors ($760 million in 2005 dollars). This occurs because although the inner corridor is shorter in length, costs for right of way and displacements are higher because it is nearer the urban area. Similarly, the outer corridor is longer but the costs of right of way and displacements are less due to its more rural nature.

Preliminary Revenue Estimates

Alternative Corridor	Opening Year (2012) Annual Revenue
Outer	$10.1M
Middle	$10.6M
Inner	$14.2M

Source: Wilbur Smith Associates

The preliminary environmental reconnaissance study showed no fatal flaws that would preclude construction of the facility. No significantly meaningful environmental discriminators that would indicate a favorability of one alternative over another were identified.

TRAFFIC AND REVENUE ESTIMATES

A preliminary traffic and revenue study was performed by Wilbur Smith Associates for the three corridors to estimate the amount of traffic and toll revenue that would be generated over time by each alternative. The basis for this study is the Lafayette MPO regional transportation model that has been updated recently (completed early 2005). This model establishes a base year of land use, population, and other variables and then projects these variables to future years. Traffic and revenue estimates for the toll facility are heavily impacted by the existing and projected land use and development in the proximity of the facility.

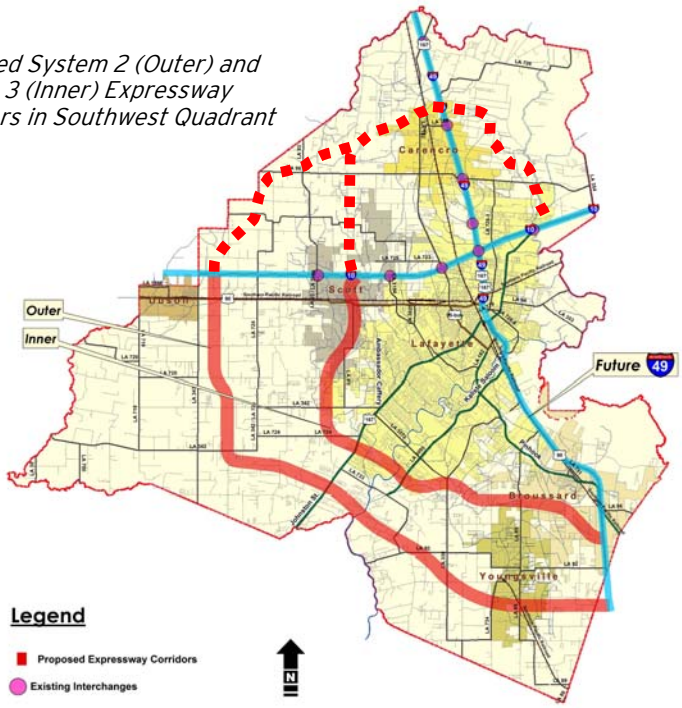
Ten cents per mile was determined to be the optimum toll rate (generally, this is a rate that generates the highest total revenue and reflects a balance between the cost of using the facility and the amount of traffic that the facility will attract). The first cut study included a phased implementation plan where the southwest quadrant would open in 2012, the northwest quadrant would open in 2016, and the northeast quadrant would open in 2020.

The table at left shows that the inner corridor would generate the most revenue in the initial year due to its proximity to existing developed land use and population centers. The outer and middle routes are relatively similar and would generate less revenue in the initial years due to their location in currently undeveloped areas. Based on review of the data, it was determined that the entire loop (three quadrants) would be approximately 20 percent financially feasible for an initial project.

Phased Implementation

Focus was then placed on the section that would generate the most traffic and revenue, the southwest quadrant (alternatives shown below). The southwest quadrant is considered the most likely for initial implementation, with other sections of the loop facility to be constructed over time. Subsequent phases are shown dashed.

Proposed System 2 (Outer) and System 3 (Inner) Expressway Corridors in Southwest Quadrant



BONDED TOLL REVENUE

HNTB consulted with Citigroup to obtain pro forma analysis and opinions regarding the financial feasibility of the toll road and the revenue it would generate. Relevant factors used in the proforma that most affect the analysis include:

- Bond interest rate -- Although interest rates have been rising recently, they are still generally favorable compared to historic rates.
- Coverage ratio -- The coverage ratio can be viewed as a factor of safety required by bond holders and reflects the uncertainty inherent in traffic and revenue predictions. Should the actual traffic and revenue equal or exceed the amount predicted, then excess revenue would accrue to the LMEC beyond what is represented in the proforma analysis of revenue bonds potential.
- Construction inflation -- Highway construction costs in the last couple of years have been increasing greater than the general rate of inflation due to material cost increases. This higher rate, 5.0%, has been used in projecting 2005 construction cost estimates forward to the years of construction activity and has a negative impact on the proforma results. Should the construction rates stabilize to historic norms, this would have a positive impact on the financial feasibility of the project.
- O & M inflation – Operations and maintenance inflation has been taken to be 3.0% which reflects an industry standard for this level of study.
- Annual Reserve Maintenance Fund – Annual reserve maintenance inflation has been taken to be 3.0% which reflects an industry standard for this level of study.

For the southwest quadrant, with an estimated total cost of $580 million in the years of implementation (2010 to 2012), the preliminary analysis estimates that toll revenue for the outer loop project could support approximately $110 million in toll revenue bonds, or approximately 20% of the project's cost. It is estimated that toll revenue for the inner loop project could support approximately $270 million in toll revenue bonds, representing approximately 45% of the project's cost. The bonded revenue estimates include an estimated level of participation from the federal TIFIA loan program.

SUPPLEMENTAL FUNDING OPPORTUNITIES

The proforma analyses discussed above indicates that toll revenues alone will not support the total cost of the proposed loop project. The lack of 100% funding by toll revenue bonds is common on new toll road start up projects across the United States and is not unique to the LMEC project. Therefore, supplemental funding must be identified in order to make the project financially feasible. Traditional supplemental funding sources are shown at left.

TRADITIONAL SUPPLEMENTAL FUNDING SOURCES

- *LADOTD Funds*
- *Federally Earmarked Funds*
- *State Funds*
- *Local Funds*
- *Private Funds*
- *TIFIA Loans*

In Louisiana, the LA 1 south toll bridge project over the Intracoastal Waterway (first phase to begin construction later this year) is a relevant example of using toll revenue bonds and some of the supplemental sources to make a toll project feasible. For LA 1 (first phase cost of $238 million), toll revenue bonds including TIFIA loans of approximately $161.5 million have been supplemented by O & M commitment from DOTD, $58.4 million equity commitment from DOTD, and $18.2 million from federal funds. DOTD has worked through the Louisiana Transportation Authority, created by the legislature as a statewide toll authority in 2001, in order to contribute to the LA 1 toll project.

However, given the magnitude of the difference between toll revenue bonds and construction costs for the LMEC project, it is clear that DOTD will not be able to provide supplemental revenues of the magnitude necessary to make the project financially feasible. Likewise, it is not likely that the other sources alone would suffice in order to make the project financially feasible. These factors mean that in addition to the Lafayette Loop, other needed toll projects and mega-projects across the state such as the Baton Rouge bypass and completion of I-49 also will not be financially feasible unless large dedicated funds are identified. It is also likely that future phases of the LA 1 project could be in jeopardy due to an inability by DOTD to provide ample supplemental funding.

Louisiana Mobility Fund

Given the above, procedures in use in other states were researched to determine potential applicability in Louisiana in order to make needed toll mega-projects financially feasible. In Texas, legislation was enacted in 2003 that created a new state level fund that is used to supplement toll revenues generated at the local project level. This model has been researched and refined, and several state legislators introduced proposed legislation for Louisiana in the 2005 session (HB 667 and HB 702) that would be similar to the successful Texas model. A summary of the proposed Louisiana legislation is provided following:

The Louisiana Mobility Fund would provide funding for mega-transportation projects across Louisiana.

BACKGROUND

State legislation was enacted in Louisiana in 1997, 2001, and 2003 regarding the creation of toll authorities to plan, design, construct, and operate toll roads. This legislation includes a bill that permits the formation of local toll authorities for any Parish or contiguous Parishes in the state (1997), the Louisiana Transportation Authority which has statewide jurisdiction for toll roads (2001), and the LMEC toll authority charged specifically with implementing a loop around Lafayette (2003). These acts by the legislature indicate an understanding of the need for highway improvements in Louisiana and the lack of funding that is available from traditional sources to implement these improvements.

However, new start up toll roads are difficult to be fully financed by the bonded revenue that is generated by tolls. Observed across the country, this is due to numerous factors which include competing "free" roads, bond coverage requirements, and sometimes lower traffic streams in the early years. Therefore, little activity has occurred in the actual development of toll roads in Louisiana despite all of the enabling legislation (an exception is the LA 1 south project where project toll revenues are being supplemented with O & M and cash from DOTD as well as TIFIA loans).

GOALS

The goal is to enact legislation creating a state level Mobility Fund (LMF) to provide funding leverage for mega transportation projects across Louisiana, taking advantage of the toll enabling legislation previously passed. Money from the fund would be used to bridge the funding gap between local project toll revenues (and other project level revenues) and the cost of the project. Only toll projects would qualify for the state level supplemental funding (this will provide project level revenue that enables the state level fund to be leveraged to a larger total program). The LMF will enable new projects to go forward or existing systems could be expanded.

PROPOSED LEGISLATION

Rep. William Daniel, Vice-Chair of the House Transportation Committee and Rep. Don Trahan, from Lafayette, have sponsored the legislation. The legislation includes funding sources, revenue streams, the eligible projects in the capital improvements program, and provisions for

LMF PROJECTS

The DOTD completed the latest update of its Statewide Transportation Plan in 2003. This plan identifies needed mega-projects statewide and categorizes these projects into four categories. The vast majority of these mega-projects are unfunded. Some of the mega-projects have potential to be constructed and operated as toll facilities.

Projects that could be eligible for LMF funding would come from the DOTD's Statewide Transportation Plan mega-project list, Tiers 1 through 4, and would need to be suited as a toll facility. Such projects could include the following:

- Lafayette Loop
- I-49 – I-20 to Arkansas border
- I-49 – New Orleans (West Bank Expressway) to Lafayette
- Baton Rouge Loop
- New Orleans MPO Region
- Sampson Street (LA 378) Extension over Calcasieu River to U.S. 171—Lake Charles
- New bridge over Ouachita River (part of Ouachita Loop) -- Monroe

These projects represent broad needs and geographic coverage areas across the state.

administration of the program by the LTA.

The legislation has been proposed to have two primary components.

1. Louisiana Mobility Fund

The first component of the legislation is the LMF, which would be created for the purpose of generating and collecting a new annual revenue stream. Two sources are currently being proposed: increases in truck registration fees and surcharges on moving violations and DWIs statewide. The first source would bring Louisiana's truck fees in line with the regional and national rates. The second source is referred to as the Driver Responsibility Act and is patterned after similar successful legislation in Texas. These two sources could generate $100 million to $200 million annually, which would yield bonded funds of $1.0 to $2.5 billion. When matched with local project toll funds and other potential project funds (estimated at 50% on average), this is estimated to yield a leveraged program in the range of $2 to $5 billion. A first tier set of projects with statewide appeal, including the completion of I-49 and several urban area bypasses, are anticipated. As initial bonds are paid off, additional projects will be identified and the LMF will become an economic engine for continued transportation projects into the future. See description at left.

2. LMF Administration

The second primary component of the legislation will be to set up a procedure to administer the funds generated by the LMF. This component envisions amending existing legislation in place for the Louisiana Transportation Authority (LTA), which has statewide authority to implement and operate toll roads. The LTA is governed by a board that includes the Governor, the DOTD Secretary, the DED Secretary, Senate President, House Speaker, Senate and House Transportation Committee Chairmen, a member of the Louisiana Planning Council, and an at large business leader. The amended legislation will create a mechanism for LTA fiduciary administration of the LMF. Other existing (and future) Louisiana toll agencies would continue to exist and operate under their enabling legislation and will in no way be affected by amending the LTA legislation. The fiduciary responsibilities of LTA would consist of the administration of the LMF as set forth by rules in the enabling LMF legislation. The LTA toll agency function as well as other existing and future toll agencies would have equal access to the funds being administered by the LTA in accomplishment of the projects from the Statewide Transportation Plan.

Initially, no general fund revenue streams or Transportation Trust Fund revenue streams are proposed to be impacted by the proposed legislation. It is possible that existing truck fees that are deposited in the general fund could be transferred to the LMF over a phased period of years as a part of the funding stream for the LMF.

The proposed funding streams for the LMF legislation have generated the most discussion. With this understanding, it is possible that the framework of the legislation could be enacted first, creating the Louisiana Mobility Fund and providing the administrative function within the Louisiana Transportation Authority, while revenue streams could continue to be discussed, identified, refined, and enacted in 2006 or 2007 (which would be about the time that environmental documents would be completed and revenues would be needed for design and construction to proceed).

During the course of the 2005 Legislative regular session, a decision was made to withdraw the proposed legislation to provide a greater opportunity to coordinate with interested parties, including the DOTD and industry interest groups. It is planned that the LMF Legislation will be re-introduced in an upcoming session of the legislation.

Four toll road systems were studied including two with I-49 and two without I-49.

IMPLEMENTATION PLANS FOR LMEC PROJECT

Refined Alternatives

Three corridors were initially studied and previously discussed – outer, middle, and inner. Based on review by HNTB of the costs and revenue potentials, along with input by LMEC regarding alignments, a refined set of alternatives has been identified for initial implementation. The refined alternative set includes only two corridors which represent a combination of the inner and outer alternatives. The initial construction of these two alternatives would include only the southwest quadrant, approximately 18 miles in length, which has been identified as having the highest traffic and revenue generation and thus provides the greatest portion of its implementation cost through toll revenue bonds.

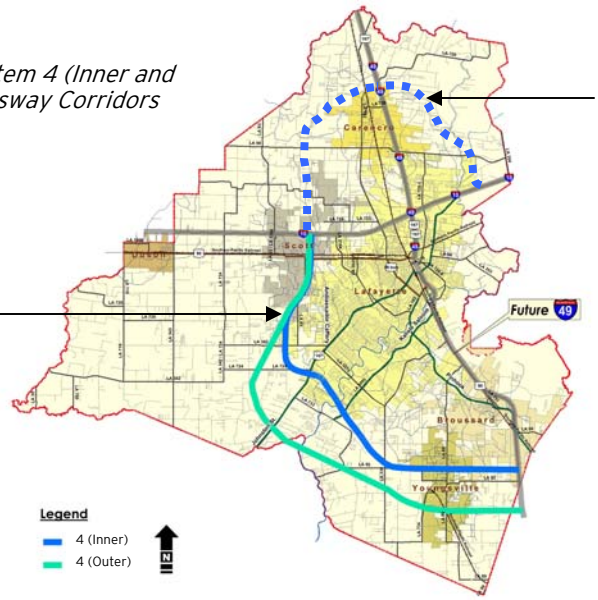
In addition to providing a focus on the southwest quadrant for initial construction, the LMEC has identified that the future I-49 Corridor could have the potential to function as the eastern leg of the toll loop in Lafayette Parish. Included alongside the I-49 toll facility for the full length of the corridor would be a continuous parallel "free" roadway, which will enable travelers to choose the route they prefer. The EIS and ROD for the I-49 Connector (the section from I-10 to south of the Lafayette Regional Airport) has been completed and the project is currently in preliminary design by DOTD, but funding does not exist for right of way acquisition and construction. The section of future I-49 south of the Lafayette Regional Airport is scheduled for completion of an EIS and ROD for mid-2005, again with no funding for implementation. Review of current federal transportation legislation (reauthorization of TEA-21) does not indicate the likelihood of large enough funding blocks for I-49 to enable completion of the project. For this preliminary feasibility study, the section of I-49 south of the urban core area of Lafayette has been included in the implementation planning package for consideration. The urban core area of I-49, generally that which is represented by the I-49 Connector project, is considered difficult from the standpoint of implementing a toll collection system within the constraints of the constricted urban area and therefore has been excluded from the preliminary toll systems.

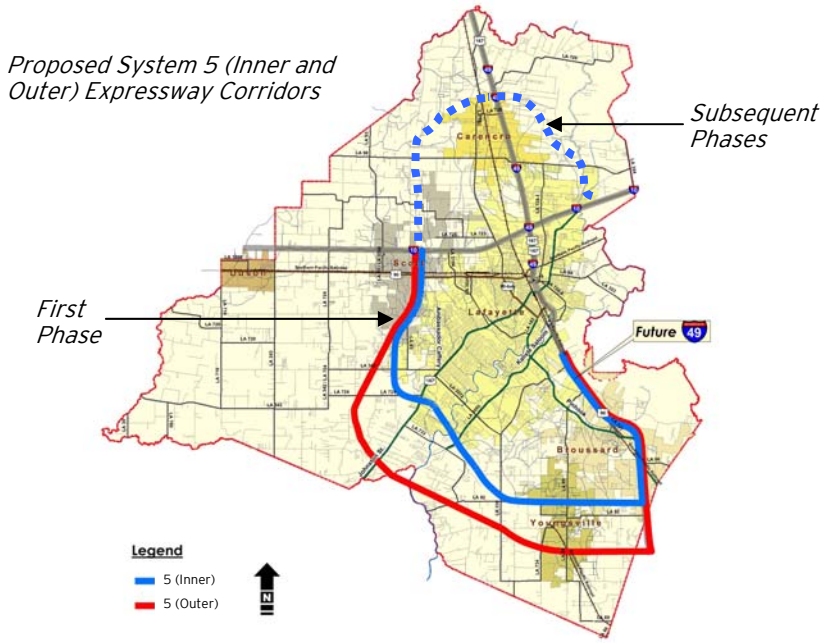
The refined set of alternatives is shown on the two drawings below and includes options both including and excluding I-49 in the LMEC toll system. The toll systems are labeled 4 and 5. It is important to note that any alternatives identified and discussed here are for the purpose of judging feasibility and implementation planning, and are subject to review and modification based on the results of the EIS which will be performed subsequent to this preliminary study.

Proposed System 4 (Inner and Outer) Expressway Corridors

Subsequent Phases

First Phase





The implementation costs, given in 2005 dollars, for the refined set of alternatives are estimated as follows (System 5 does not include the cost of the I-49 Connector which would not be a part of the toll system):

System 4 (Inner) -- $401,000,000
System 4 (Outer) -- $416,000,000
System 5 (Inner) -- $756,000,000
System 5 (Outer) -- $814,000,000

Refined Traffic and Revenue Estimates

Traffic and revenue estimates were prepared by WSA for the refined set of alternatives. Phased implementation calls for the southwest quadrant to open 2012 and the section of I-49 (if applicable) to open 2011. The optimum toll rate remains 10 cents per mile. The updated traffic and revenue study results are summarized below:

TRAFFIC AND TOLL REVENUE ESTIMATES

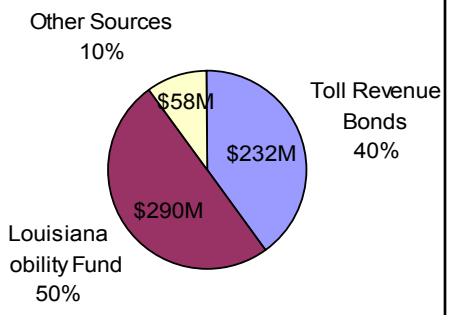
System	Opening Year (2012) Traffic (ADT) *	Opening Year (2012) Annual Revenue ($M)	Year 2030 Annual Revenue ($M)
4 (Inner)	31,200	$26.9	$60.1
4 (Outer)	23,100	$26.4	$59.6
5 (Inner)	26,600	$40.4	$91.0
5 (Outer)	18,100	$39.7	$89.9

Source: Wilbur Smith Associates

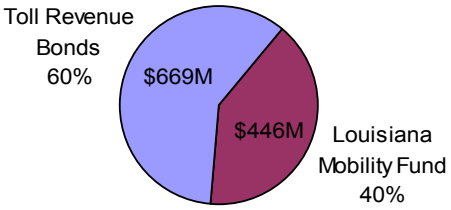
*ADT reported for the mainline plaza between Johnston Street and future I-49 South.

While the mainline plaza volumes presented are significantly different, revenues between the Inner and Outer alternatives remain similar for two reasons. First, the rate per mile for toll charges and the longer distances associated with the Outer alternatives, leads to a higher toll value per transaction on the Outer alternatives and therefore greater revenue.

System 4 Funding*



System 5 Funding*



*Costs shown are total implementation costs and include the inflated construction cost, debt service reserve, bond insurance and cost of issuance.

Additionally, on a system wide basis, various tolled locations, such as LA 342, experience higher transactions on the Outer alternative than the Inner alternative. This makes up for some of the toll revenue that is lost due to lower volumes at the presented mainline plaza.

Potential Financing Packages

The refined set of alternatives was studied with regard to implementation cost estimates, traffic and revenue estimates, and the ability of toll revenue to cover the costs of implementation. The proforma analyses prepared by Citigroup have been used as a guide by HNTB to judge the toll feasibility for the refined set of alternatives. Results indicate that the four systems could be estimated to be toll funded in the range of 40% to 60%. These results indicate the need for supplemental funding.

The proposed Louisiana Mobility Fund legislation could fund up to 50% of the cost of the initial phase of the Lafayette Loop. Other sources, if needed, could include LADOTD funds, federally earmarked funds, state funds, local funds, private funds and TIFIA loans. Ballpark funding packages for systems with and without I-49 are represented graphically at left.

Actual toll revenues and cost estimates will be more precisely determined when the final alignment is set during the EIS process. The two scenarios are presented for illustration purposes only to show viable funding potential. This information is intended to be used for planning purposes at this time and will be refined and updated as the project progresses.

Next Steps

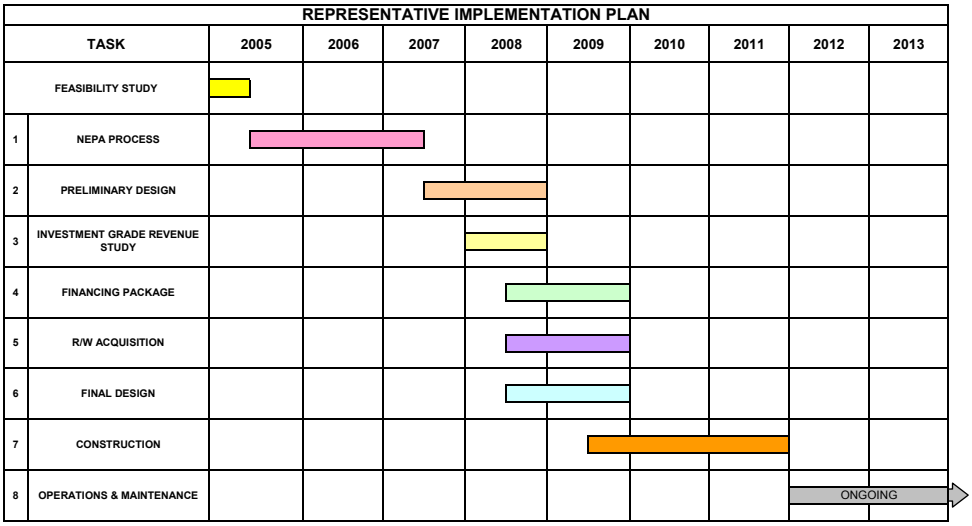
Taking that a reasonable level of confidence is attained regarding the potential for funding sources for future design and construction, the next step in development of the LMEC loop project is an Environmental Impact Statement and Record of Decision. This document is required under federal NEPA legislation in order to qualify for federal funds of any kind, and has become a standard of practice for any substantial highway project even if it does not use federal funds. The EIS and ROD will identify the precise location of the facility, its engineering design features, its right of way footprint, any environmental impacts, and commitments and mitigation measures to offset any impacts. The EIS phase of project development is where the community and involved state and federal agencies will have input to the project development.

The expenses that will be necessary to prepare the EIS and secure a ROD should be considered project related expenditures and typically are included in the total development cost of the project. If these costs are incurred by the LMEC today, it is anticipated that they would be eligible for reimbursement to the source from the Louisiana Mobility fund or other funding sources for the financing packages outlined above.

If the financing packages as outlined can be developed rapidly through the legislature or other means, then the project can move directly from the EIS into the design, construction, and operational phases. If delays occur in fully developing a funding package, then the EIS and ROD can be used to begin a corridor preservation phase. Corridor preservation is currently being practiced on the I-49 Connector project in Lafayette and is a tool to be utilized to preserve undeveloped rights of way so that future development of the project when funds do become available will not be inhibited. Corridor preservation should also be considered a planning tool that will help guide investment and development decisions in Lafayette.

Implementation Schedule

A representative implementation schedule for the continuation of the Lafayette toll road project is shown below. The NEPA process could begin as early as July 2005. Construction of the toll road could begin in early 2010 and be fully operational in 2012.



If implemented as a toll facility, a supplemental EIS would need to be prepared for I-49 and is estimated to take up to one year.

The schedule shown is for a new loop in the southwest quadrant. The I-49 section, if included in the toll system, could be accelerated by approximately one year because the NEPA process (EIS and ROD) are scheduled to be completed mid-2005. If implemented as a toll facility, a supplemental EIS would need to be prepared for I-49 and is estimated to take up to one year.

Lafayette Metropolitan Expressway

Technical Memorandum 1

TOLL ROAD ENGINEERING

Submitted By:

HNTB

In association with:

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PENSCO

Lafayette Metropolitan Expressway Commission

February, 2005

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INTRODUCTION

The Toll Road Engineering Technical Memorandum summarizes the following tasks outlined in the scope of services for the Lafayette Metropolitan Expressway (LME) Toll Feasibility Study: Alignment Alternatives, Design Features of Project, Capital Cost Estimates and Operation and Maintenance Estimates. The LME Toll Feasibility Study is being coordinated by the Lafayette Metropolitan Expressway Commission (LMEC), which is responsible for pursuing alternative and innovate funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, maintenance, and operation of a safe and efficient limited access highway system exclusively within Lafayette Parish.

This technical memorandum documents the selection of alternative corridors for the purpose of this feasibility study. The design features section documents the design elements used to develop preliminary cost estimates for roadway and toll equipment construction and toll road operation and maintenance. *Figure 1-1* shows the study area located within Lafayette Parish.

Lafayette Metropolitan Expressway

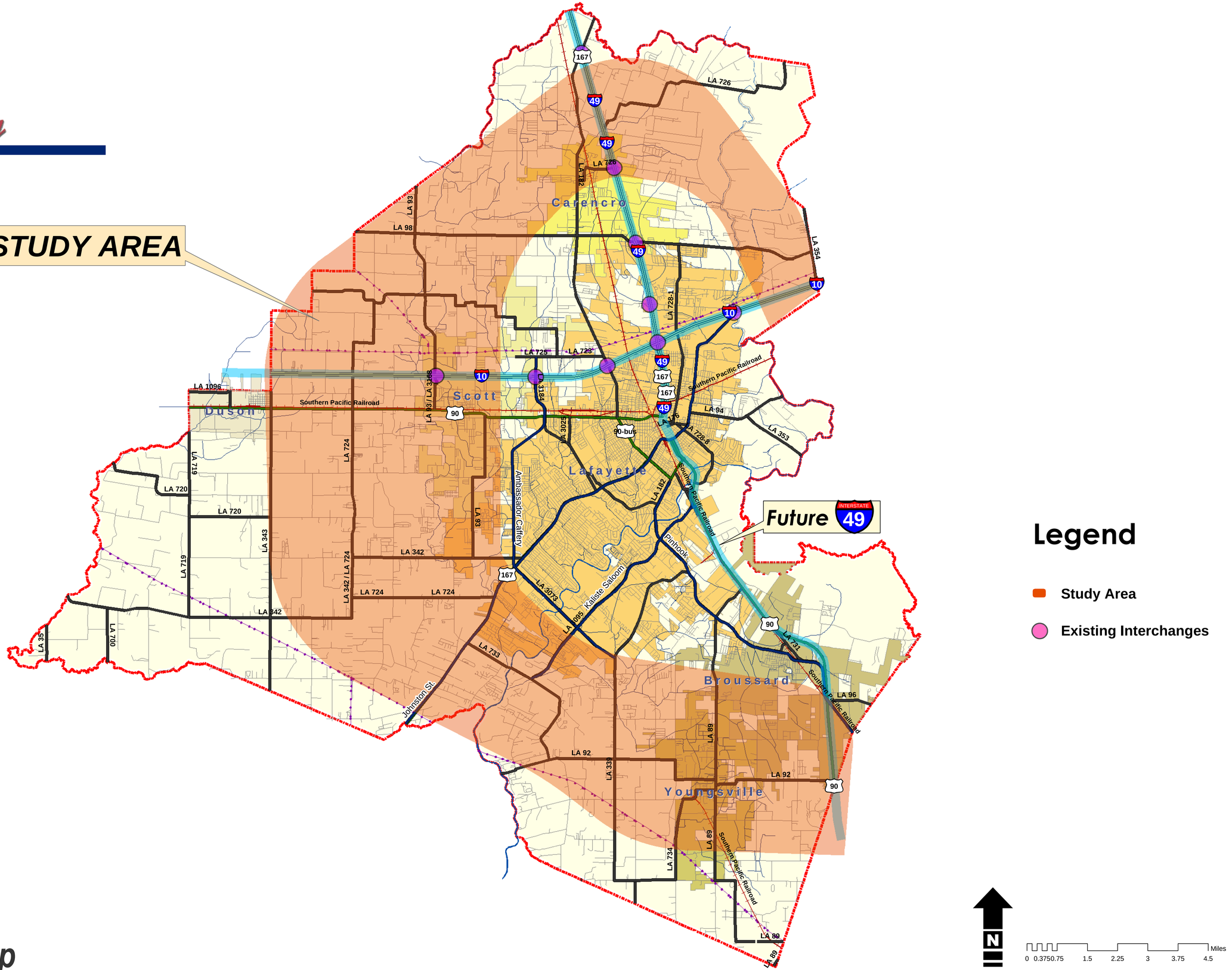


Figure 1-1

Study Area Map

PREVIOUS ENGINEERING STUDIES

During the course of the LMEC Feasibility Study, several engineering studies were reviewed for corridor alignment or cost estimation purposes. These studies include the North-South Beltway Bypass, I-49 Connector Environmental Impact Statement (EIS), I-49 South EIS and the Ambassador Caffery Parkway Extension South EIS.

ALIGNMENT ALTERNATIVES

This section summarizes the alignment alternatives identified as "study corridors" for developing preliminary cost estimates for roadway and toll facilities construction. Approximately ten corridors within the study area as shown in *Figure 1-1* were narrowed down into three corridors for planning purposes for this study. The corridors were identified based on the overall project goal to relieve existing traffic congestion where possible, to support projected new land development, to minimize environmental impacts, and to maximize toll revenues. It should be noted that during the next phase of the project, alternatives will be studied more closely to avoid significant impacts.

For the purpose of this study, the corridors have been named Alternative 1, Alternative 2 and Alternative 3. All three alternatives follow the same corridor from I-10 just west of the eastern boundary of Lafayette Parish to the north across I-49 at Rue Des Etoiles to about the intersection of Mardi Gras and Dillon. From there the corridor splits into three possible alternative corridors that move south across I-10 and then cross Johnston Street/US 167. The three corridors then form two different corridors that move east, terminating at US 90 or the future I-49. The three study corridors are shown in *Figure 1-2* and summarized below.

ALTERNATIVE 1

Alternative 1 corridor (outer route) is the furthest from the city of Lafayette and is the longest route at 38.4 miles. Approximately 90 percent of the corridor is undeveloped and would require a new alignment. The proposed improvements would be a four-lane tollway. For cost estimating purposes, it has been assumed that approximately 10 percent of the system would include one-way frontage roads. A total of 11 diamond interchanges, three fully directional system-to-system interchanges, two halves of the system-to-system interchanges, and a new major river crossing over the Vermilion River are proposed for this corridor.

ALTERNATIVE 2

The middle route or Alternative 2 corridor is 35.3 miles in length. The Alternative 2 corridor is approximately 90 percent undeveloped and would require a new alignment. The proposed improvements would include a four-lane tollway. For cost estimating purposes, it has been assumed that approximately 10 percent of the system would include one-way frontage roads. A total of 12 diamond interchanges, three full system-to-system interchanges, two halves of a system-to-system interchange, and a new major river crossing over the Vermilion River are proposed for this corridor.

ALTERNATIVE 3

The internal route or Alternative 3 corridor is the shortest route at 31.0 miles in length. Alternative 3 is the closest to the city of Lafayette and would require a new alignment. Approximately 80 percent of the

corridor is undeveloped. The proposed improvements would include a four-lane tollway. For cost estimating purposes, it has been assumed that approximately 10 percent of the system would include frontage roads. A total of 12 diamond interchanges, three full system-to-system interchanges, two halves of a system-to-system interchange, and a new major river crossing over the Vermilion River are proposed for this corridor.

Table 1-1: Summary of Corridors

CORRIDOR NAME	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Approx. Length (miles)	38.4 miles	35.3 miles	31.0 miles
Approx. ROW (acres)	1,465 acres	1,270 acres	1,160 acres
Planned Improvements	4-lane expressway w/ a portion of frontage roads	4-lane expressway w/ a portion of frontage roads	4-lane expressway w/ a portion of frontage roads
No. of Diamond Interchanges	11	12	12
No. of System-to-System Interchanges	3 full, 2 halves	3 full, 2 halves	3 full, 2 halves
New Vermilion Bridge Crossing	Yes	Yes	Yes

Lafayette Metropolitan Expressway

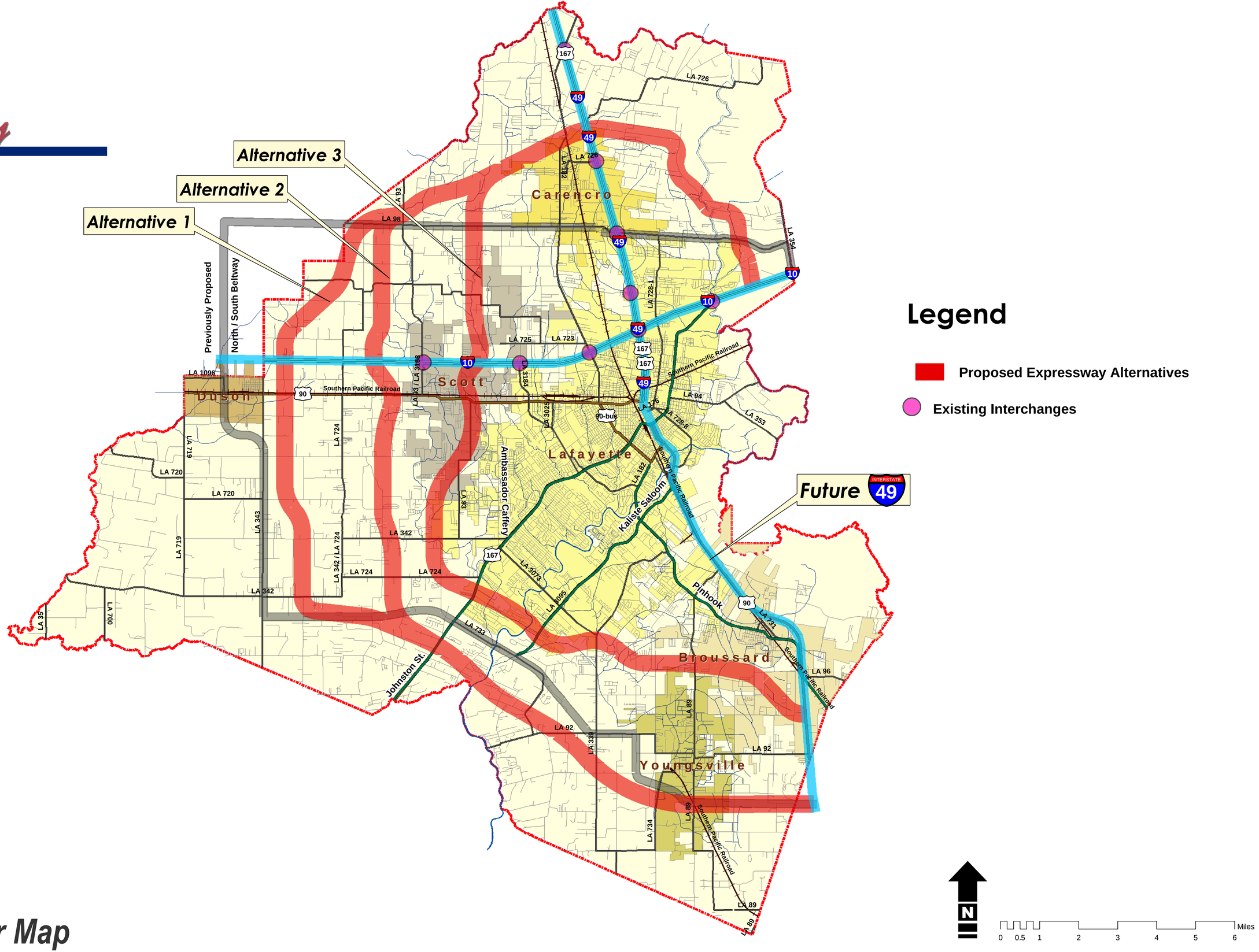


Figure 1-2

Study Corridor Map

DESIGN FEATURES

In order to provide improved service to the traveling public in Lafayette, it was assumed that if a toll facility were to be implemented in Lafayette Parish, it would be designed to meet the standards of the Louisiana Department of Transportation and Development (LADOTD). Design features including design standards, typical sections, interchange types, frontage roads and river crossing are summarized below.

DESIGN STANDARDS

Roadway and roadside design standards used in this study were primarily based on LADOTD *Design Standards for Freeways* and the American Association of State Highway and Transportation Officials' (AASHTO) 2001 publications, *A Policy on Geometric Design of Highways and Streets*, and *Roadside Design Guide*. For this study, LADOTD design standards for urban freeways (F-2) were utilized as shown in *Table 1-2* below. As design progresses, adjustments can be made to meet the preferences/guidelines of the LMEC or other toll agency.

Table 1-2: Design Standards for Freeways

ITEM NO.	ITEM	URBAN (F-2)
1	Design Speed (mph)	60
2	Level of Service	C
3	Number of Lanes (minimum)	4
4	Width of Travel Lanes (ft)	12
5	Width of Shoulders	
	(a) Inside	6
	(b) Outside	10
6	Shoulder Type	Paved
7	Width of Median (minimum) (ft)	
	(a) Depressed	51
	(b) Continuous Barrier (4 lane)	15
	(c) Continuous Barrier (6 lanes)	27
8	Fore Slope (vertical-horizontal)	1:6
9	Back Slope (vertical-horizontal)	1:4
10	Pavement Cross Slope (%)	2.5
11	Stopping Sight Distance (ft)	570
12	Maximum Superelevation (%)	10
13	Minimum Radius (ft) (with 10% superelevation)	1,100
14	Maximum Grade (%)	3
15	Minimum Vertical Clearance (ft)	16
16	Width of Right-of-Way (ft)	
	(a) Depressed Median	As Needed
	(b) Median Barrier	As Needed
	(c) Minimum from edge of bridge structure	15-20
17	Bridge Design Live Load	AASHTO
18	Minimum Width of Bridges (face to face of bridge rail at gutter line) (ft)	Roadway Width
19	Horizontal Clearance (from edge of travel lane) (ft)	
	(a) 1:4 Fore Slope	N/A
	(b) 1:6 Fore Slope	32

These criteria have been developed to provide a summary of methodologies and standards used in preliminary cost estimates of the study corridors.

TYPICAL SECTIONS

Typical roadway improvement standards were developed for two types of potential corridor improvements and are shown in figures below. Design standards are shown in both figures to represent the added benefits that a tollway user would realize with conversion to a toll system. *Figure 1-3* shows the typical design standards for a four-lane freeway/expressway. A 6-foot inside and 10-foot outside shoulder, 12-foot lanes, and a median width of 51 feet from edge of driving lane to edge of driving lane was assumed. A smaller median width than the Urban Freeway F-2 design standard of 68-foot minimum was assumed to allow for possible future conversion to a six-lane freeway/expressway with a 12-foot shoulder and a 3-foot concrete barrier.

Figure 1-3: 4-Lane Toll Road Typical Section

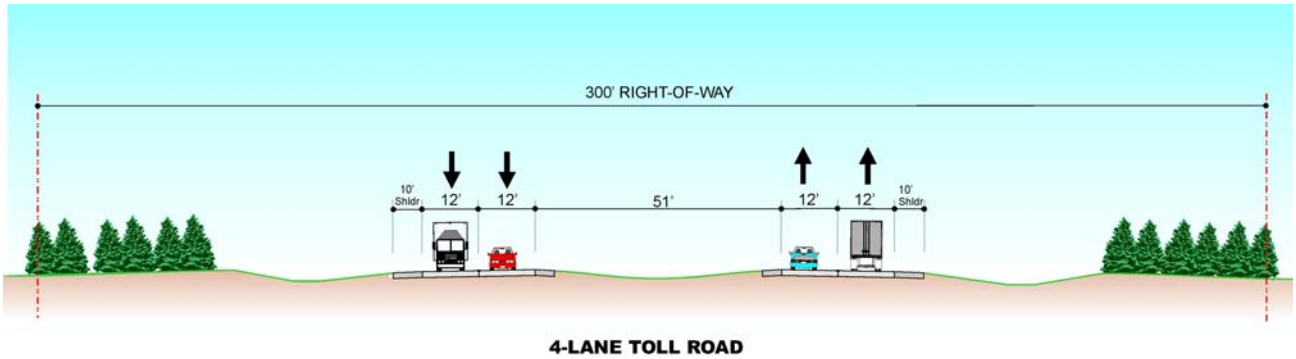
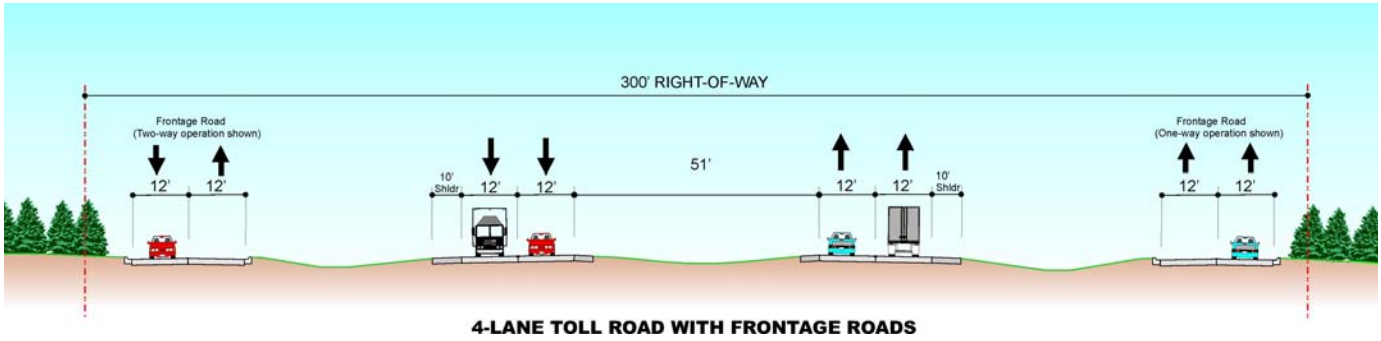


Figure 1-4 shows the typical design standards for a four lane freeway/expressway with frontage roads. A 6-foot inside and 10-foot outside shoulder, 12-foot lanes, and a median width of 51 feet from edge of driving lane to edge of driving lane was assumed. A smaller median width than the Urban Freeway F-2 design standard of 68-foot minimum was assumed to allow for possible future conversion to a six-lane freeway/expressway with a 12-foot shoulder and a 3-foot concrete barrier. The frontage roads are assumed to be two 12-foot lanes with curb and gutter. Approximately 10 percent of new toll road corridors is expected to include frontage roads. Sections along I-49 would have continuous one-way frontage roads that would be toll free.

Figure 1-4: 4-Lane Toll Road with Frontage Roads Typical Section



INTERCHANGES

Two interchange types were assumed for the toll road system: diamond and system-to-system. The diamond interchange would occur at the intersection of the mainline toll road and major cross streets. *Figures 1-5 and 1-6* show layout examples.

Figure 1-5: Typical Diamond Interchange Layout

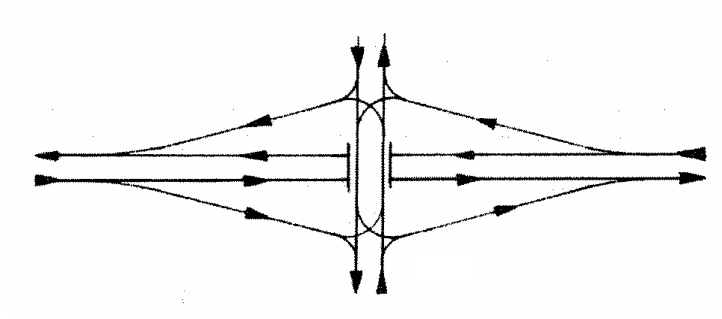
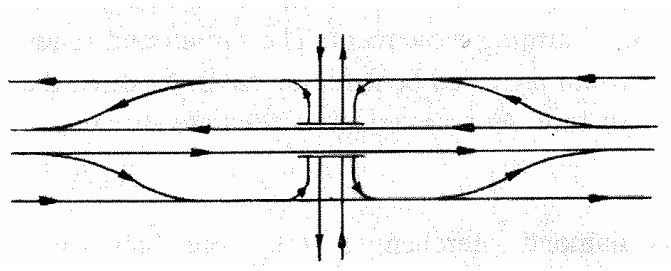


Figure 1-6: Typical Diamond Interchange with One-Way Frontage Roads Layout



The fully directional system-to-system interchange would occur where the mainline toll road meets a major highway such as I-10 or I-49. *Figures 1-7* and *1-8* show a typical layout and photograph of a typical system-to-system interchange.

Figure 1-7: Typical Fully Directional System-to-System Interchange Layout

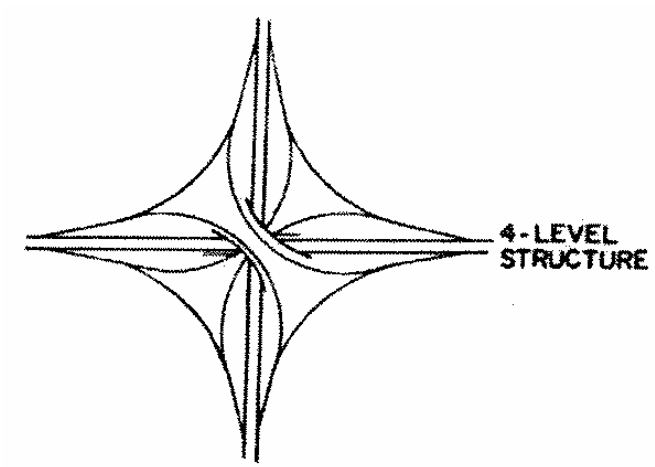
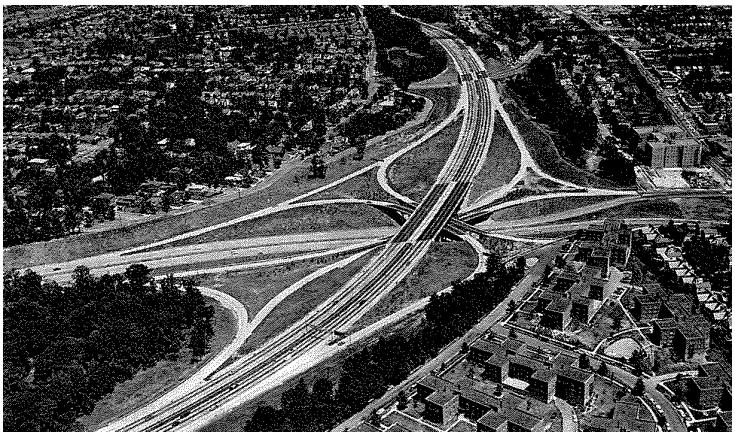


Figure 1-8: Fully Directional System-to-System Interchange Aerial Photo



Source: *A Policy on Geometric Design of Highway and Streets, Fourth Edition, AASHTO, 2001.*

FRONTAGE ROADS

For the purpose of preliminary cost estimation, frontage roads were assumed to be approximately 10 percent of the new toll road corridors. *Figure 1-4* above shows the typical cross section of the mainline toll road with frontage roads.

RIVER CROSSING

All three toll road corridors cross the Vermilion River in the southeast quadrant, where the river is considered a navigable waterway. Each study corridor would require a major bridge crossing with 50-feet vertical clearance.

PROJECT PHASING

For preliminary analysis, the study corridors were broken into phases of construction. Phase B runs south of I-10 to U.S. 90, Phase C1 runs northeast of I-10 to I-49 north and Phase D runs east of I-49 back south to I-10. Because the entire toll road system will most likely not be built all at one time, the phasing option allows for staging construction to accommodate funding limitations. Phase B has an estimated opening date of 2012 with subsequent phases every three or four years. *Figure 1-9* shows the phasing layout and schedule for each study corridor that has been used for this study. *Table 1-3* summarizes the phasing lengths for each study corridor.

Table 1-3: Study Corridor Phasing Summary

PHASES	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
B	21.0 miles	19.0 miles	16.4 miles
C1	10.5 miles	9.4 miles	7.7 miles
D	6.9 miles	6.9 miles	6.9 miles
Total	**38.4 miles**	**35.3 miles**	**31.0 miles**

Lafayette Metropolitan Expressway

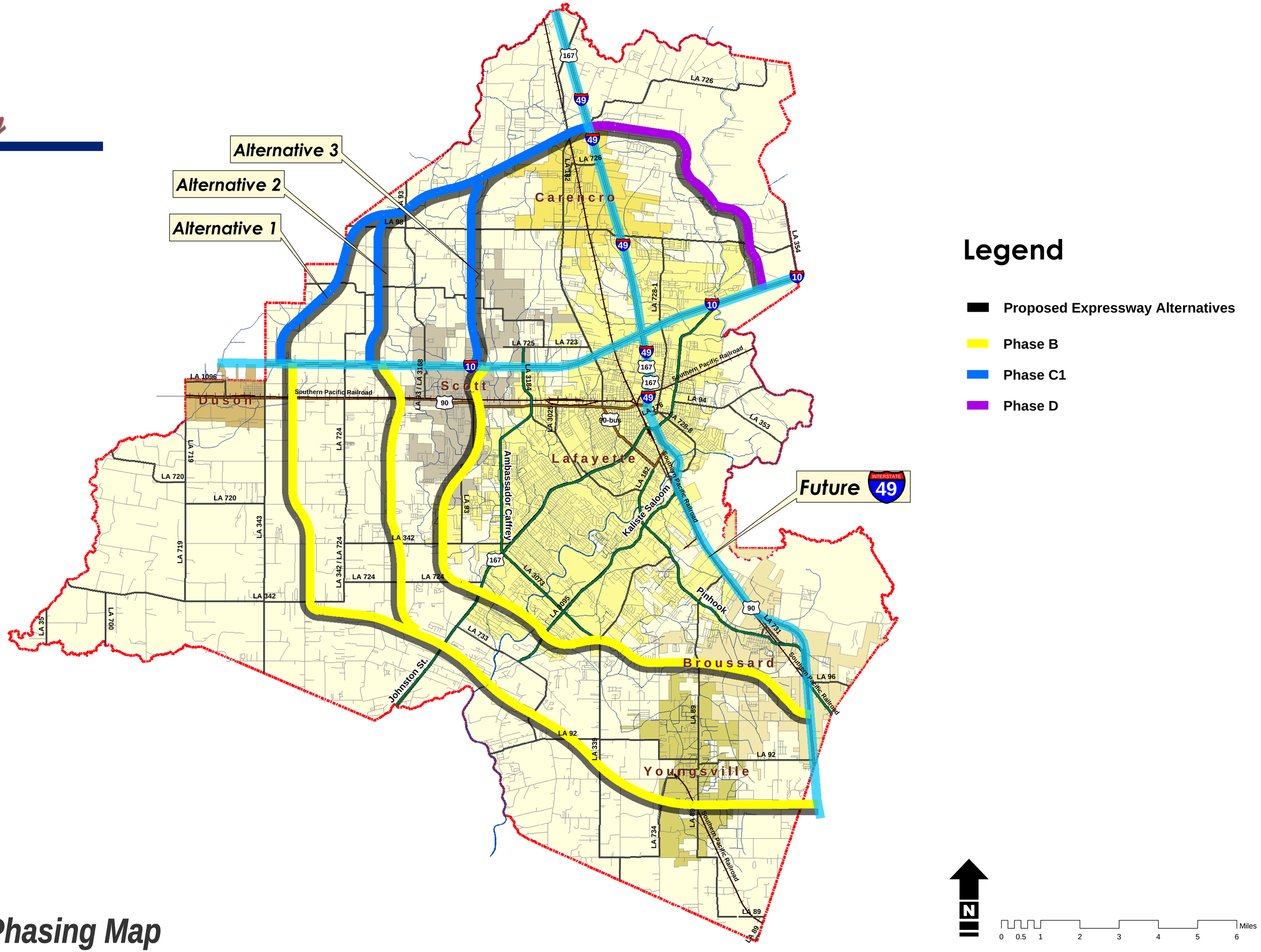


Figure 1-9

Construction Phasing Map

COST ESTIMATES

This section describes the approach used to estimate implementation costs, operations and maintenance costs and the reserve fund deposit for the highway corridors and major bridge crossings.

METHODOLOGY

All cost analyses were done under the assumption of a closed-barrier toll system, and were estimated in current dollars. Cost inflationary factors were applied if cost estimates from previous studies were used in this study. It should be noted that all costs are approximate and preliminary for this feasibility study.

Mainline Toll Road Methodology

Typical roadway standards were developed for a four-lane expressway with frontage roads and a four-lane expressway without frontage roads. The standards were then translated into a cost per linear mile for each mainline. The cost per linear mile for each mainline type includes cost estimates for the paving, grading, and major and minor drainage elements. Quantities were estimated for pavement, base course, embankment, seeding and fertilizing, striping, etc. to develop a cost per mile price for the main roadway and frontage roads. For estimating purposes, it was assumed that 10 percent of a given length of a particular phase of the expressway project would be constructed with frontage roads and the remaining 90 percent of the length would be constructed without frontage roads. Exact locations of the limits of expressway with and without frontage roads were not identified. Unit prices were derived using the LADOTD Bid Item Weighted Unit Prices for the 3rd Quarter of 2004 as listed on the DOTD website.

Interchange Methodology

Interchange cost estimates were developed for both a typical diamond interchange and a system-to-system interchange. The cost estimate for a typical diamond interchange was developed using the recently constructed Louisiana Avenue Interchange, modified as appropriate, as a basis for lane widths, ramp lengths and geometry. The typical section for the mainline roadway was used for pavement, base course, etc. thicknesses for ramp quantity calculations. Drainage and lighting costs were derived through reviews of recently bid or constructed LADOTD interchange projects of similar size and nature.

Fully directional system-to-system interchanges can vary greatly in cost depending on the circumstances of design needs. For preliminary purposes, the cost estimate for a fully directional system-to-system interchange was assumed to be $50,000,000.

Mainline Vermilion River Crossing Methodology

The cost estimate for the Vermilion River crossing was determined by developing a cost per square foot that has been updated based on the 3rd quarter weighted averages of 2004. The cost per square foot was then increased by 10 percent to account for addition complexity of building two spans over the river and the increase in height. The bridge width is in accordance with LADOTD Design Standards for urban freeway classification, F-2.

ASSUMPTIONS

Construction cost estimates for each study corridor and major bridge crossing were developed based on an assessment of each corridor's or bridge's infrastructure needs. A review of the existing and planned

roadway infrastructure was performed to determine the extent and nature of the existing roadway infrastructure. Construction cost estimates were developed for a closed barrier toll collection system.

Mainline Toll Road

The corridor development plan consisted of providing a four-lane, fully access-controlled highway meeting current AASHTO guidelines for an interstate type facility. In most cases, the toll road would require complete new construction on new alignment. Frontage roads were assumed for 10 percent of the corridor length.

Toll Facilities

Generic, typical toll plaza configurations and unit costs for ramp and mainline locations were developed and included in the construction cost estimates accordingly. The unit costs for toll collection equipment and installation were based on recent bid tabulations from other comparable tollway authorities as well as previous team experience on other toll projects. The mainline toll plaza assumed two multi-mode booth lanes in each direction (i.e., able to accept cash, coin machines and ETC toll transactions) and two electronic toll collection (ETC) express lanes in each direction. Each ramp toll plaza included two multi-mode booth lanes. An example toll collection layout can be seen in *Technical Memorandum #2, Figure 2-4*. Start up toll system costs for ETC and the information systems for the toll road were also included in the toll cost estimate. The ETC and information systems software was assumed to be a pre-packaged, off-the-shelf product that is not customized specifically for this project.

CAPITAL COSTS

Construction cost estimates include grading, drainage, surfacing and paving for a four-lane interstate-type facility. For new construction, unit costs per mile for an interstate facility were developed based on LADOTD bid tabs, planning procedures and earlier studies. Special considerations were given for interchanges and toll plazas on an individual lump-sum basis. Major bridge crossings and other special features were added accordingly. Other incidental costs include erosion control, signing and paving, maintenance of traffic and utility relocations. Right-of-way costs were developed using recent real estate transactions by LADOTD and local experts and are included. Design and construction administration costs were also included.

Included in Appendix A to this report are more details regarding the estimates of the construction costs for the corridors and bridges. As shown in the Appendix, grading, drainage, surfacing and paving unit costs range from $3.6 million to $5.4 million per linear mile. Add-ons include miscellaneous items such as major utilities, local road reconstruction and interchange signalization. A design and construction contingency of 25 percent to account for design, design unknowns and construction administration was included. Right-of-way costs, where needed, were developed using recent LADOTD right-of-way real estate transactions and recent residential and commercial properties transaction information from real estate data. ROW cost estimates range from $1.2 million to $2.3 million per mile. Toll plaza costs were included appropriately assuming lump sum unit costs of $6 million each for mainline toll plazas and $1.9 million per tolled interchange for ramp plazas. *Table 1-4* presents the total construction cost estimates (2004) for the study corridors and *Table 1-5* summarizes the capital cost estimates by phase.

Table 1-4: Summary of Capital Cost Estimates ($ in millions)

COST ITEM	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
Roadway/Bridge Construction	$523.8M	$521.6M	$485.8M
Toll Plaza Construction	$45.6M	$47.6M	$47.5M
Right-of-Way	$47.8M	$47.3M	$71.2M
Design, CEI, and Contingency (additional)	$142.9M	142.2M	$139.2M
Total	**$760.1M**	**$758.7M**	**$743.7M**
Cost Per Mile	$19.8M per mile	$21.5M per mile	$24.0M per mile

Table 1-5: Summary of Capital Cost Estimates by Phase ($ in millions)

	Length (miles)	Capital Cost	Cost Per Mile
Alternative 1	38.4	$760.1M	$19.8M
Phase B	21.0	$420.3M	$20.0M
Phase C1	10.5	$194.7M	$18.5M
Phase D	6.9	$145.1M	$21.0M
Alternative 2	35.3	$758.7M	$21.5M
Phase B	19.0	$412.7M	$21.7M
Phase C1	9.4	$201.1M	$21.4M
Phase D	6.9	$144.9M	$21.0M
Alternative 3	31.0	$743.7M	$24.0M
Phase B	16.4	$407.4M	$24.8M
Phase C1	7.7	$191.2M	$24.8M
Phase D	6.9	$145.1M	$21.0M

As shown in *Table 1-5*, Alternative 1 has the largest capital cost estimate as a whole system however the cost per mile is lower than Alternatives 2 and 3. Alternative 3 has the lowest capital cost estimate however the cost per mile is the highest.

ANNUAL OPERATIONS & MAINTENANCE COSTS

Planning level estimates of the annual Operations and Maintenance (O&M) costs were developed for each of the study corridors. The derivation of this data was, in part, based on the similar tollway systems currently in operation in neighboring states as well as team experience on similar toll studies. O&M costs refer to the perpetual costs associated with the operations and upkeep of the tollway system. These costs represent the annual revenue necessary to responsibly operate and maintain the toll road in a manner similar with customary practice. The annual O&M costs for the feasibility study included cost estimates for the following cost categories:

- **Administration** – The annual costs associated with toll authority staff and activities, public relations, communications, salaries, and materials/supplies.

- **Insurance** – The annual costs to insure the toll facility including facility, liability and business interruption insurance.

- **Toll Collection** – Toll collection costs are those costs directly incurred through the fare collection process, including toll collector salaries and related expenses. Toll collection costs are directly proportional to the toll collection staffing labor requirements. As a measure of the total toll collection requirements, the number of manual toll booth lanes and the number of electronic toll collection (ETC) lanes were estimated for the toll system. The number of manned lanes for each system depends on the traffic volumes and the extent of automatic coin machine and ETC utilization.

  Toll collection staff was assumed to include one manager, one supervisor per shift, four toll collectors at the mainline toll plaza and one at each ramp plaza (two ramps tolled per interchange). Three, 8-hour shifts were assumed for the mainline toll plaza and two, 8-hour shifts for each ramp plaza (the ramps were assumed to be unmanned at night). An annual cost for cash pickup (i.e. Brinks) was also included in the toll collection costs.

- **Toll Facility and Toll Collection System Maintenance** – Toll facility maintenance is the annual cost to maintain the buildings associated with the toll system and was based on a unit cost per square footage of facility buildings. The toll facility maintenance assumes facility maintenance area to be 10,000 square feet per mainline toll plaza and 2,000 square feet per ramp toll plaza. Toll collection system maintenance includes annual maintenance for the manual and ETC equipment and is estimated on a per lane basis for both manual booth lanes and ETC lanes.

- **Roadway Maintenance** – Roadway maintenance costs are those associated with the upkeep of the turnpike pavement and roadside, including mowing, sign and guardrail repair, minor bridge repair, and pavement resurfacing. The annual costs to maintain the entire length of the four-lane facility were developed as an annual cost per lane-mile.

- **Utilities** – The annual costs associated with the utilities for the toll system lanes, including both the manual booth lanes and the ETC lanes.

- **Engineering/Traffic Consulting** – The annual costs associated with retaining an independent engineering and traffic consultant for the toll system.

- **Highway Patrol** – The annual costs to employ highway patrol for the toll facility for enforcement and safety. This includes patrol operating at all times, assuming three shifts – weekdays, weeknights and weekends. It also includes vehicle operating and maintenance costs.

- **Customer Care Center** – The annual costs associated with leasing space and paying salaries for a Customer Care Center where customers of the toll facility can go to purchase ETC transponders and maintain their accounts. Supplies for the Customer Care Center are covered within Administration and the ETC software and hardware needs are covered within the capital costs.

The 2004 annual O&M costs for the project are shown in *Table 1-6*.

Table 1-6: Summary of Operations & Maintenance Cost Estimates for Alternative 1

	Phase B	Phase C1	Phase D	TOTAL
Annual Operations and Maintenance	$5,010,000	$2,470,000	$1,878,000	$9,360,000

THE REPLACEMENT RESERVE MAINTENANCE FUND

Included in the annual costs of operating and maintaining a turnpike system are replacement reserve maintenance fund considerations as shown in *Table 1-7* below. On an annual basis, the Annual Reserve Maintenance Fund (ARMF) needs to be deposited for the replacement of the system's infrastructure to replace or refurbish the system at the end of its service life, assumed to be 30 years. The depreciation of the system's value is a function of the system's use and the extent that annual maintenance activities are able to defer major system reconstruction. It is assumed that upon reaching maturity, the system's driving surface, including the pavement and bridge decks, will require reconstruction in its original configuration. The remaining value of these elements, consisting of the pavement base and the bridge substructure, would depend on the rate of the system's deterioration due to use and weathering. Upgrades of the system for increased capacity demands or new design standards would not be included. Assuming a typical construction value for these elements of the system's infrastructure of around 15 percent of the original construction costs, necessary deposits into a "sinking" fund are assumed to accrue during the typical life of the system to provide the necessary funds to reconstruct the system upon reaching its service life. Using a discount rate of six percent, an annual deposit approximately equaling 0.19 percent of the original construction cost would be necessary during the life of the Project. The RMF deposits would likely have to be supplemented by potential bond refinancing or sale of additional debt if the costs to reconstruct exceed available monies in this fund. Other considerations such as toll increases and major maintenance bond issues are considerations for additional funds, of course, assuming the Project toll revenues could support this process. The annual deposit into the reserve maintenance fund is shown in *Table 1-7* below.

Table 1-7: Summary of O&M and ARMF Cost Estimates for Alternative 1

ANNUAL COST CATEGORY	Phase B	Phase C1	Phase D	Total
Annual Operations and Maintenance	$5,010,000	$2,470,000	$1,878,000	$9,360,000
Annual Reserve Maintenance Fund	$800,000	$370,000	$280,000	$1,450,000
Total Annual Cost	**$5,810,000**	**$2,840,000**	**$2,158,000**	**$10,808,000**

APPENDIX A

ALTERNATIVE 1

QUANTITIES AND UNIT COSTS SUPPLIED BY ***HNTB, PENSCO and C.H. Fenstermaker***

Item No.	Cost Item	Units	Unit Cost	Item	Phase B		Phase C1		Phase D		TOTAL
	Mainline				**Quant.**	**Cost**	**Quant.**	**Cost**	**Quant.**	**Cost**	
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,374,000.00**	Cost for paving, grading, and drainage.[1]	**2.10**	**$11,285,400.00**	**1.05**	**$5,642,700.00**	**0.69**	**$3,708,060.00**	**$20,636,160.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,635,000.00**	Cost for paving, grading, and drainage.[1]	**18.90**	**$68,701,500.00**	**9.45**	**$34,350,750.00**	**6.21**	**$22,573,350.00**	**$125,625,600.00**
	Subtotal				21.00	$79,986,900.00	10.50	$39,993,450.00	6.90	$26,281,410.00	**$146,261,760.00**
	Interchanges (Including Bridges)										
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**	**3**	**$19,500,000.00**	**2**	**$13,000,000.00**	**$71,500,000.00**
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**	**1**	**$50,000,000.00**	**1**	**$50,000,000.00**	**$200,000,000.00**
	Subtotal					$139,000,000.00		$69,500,000.00		$63,000,000.00	**$271,500,000.00**
	Bridges/Structures										
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**		**$0.00**		**$0.00**	**$17,700,000.00**
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**20.0** [B]	**$30,000,000.00**	**12.0** [B]	**$18,000,000.00**	**4.5** [B]	**$6,750,000.00**	**$54,750,000.00**
	Subtotal					$47,700,000.00		$18,000,000.00		$6,750,000.00	**$72,450,000.00**
	Miscellaneous										
7	- Major Utilities	Lump Sum	**$11,937,000.00**	Cost of relocating major utilities.	**Lump**	**$9,229,000.00**	**Lump**	**$2,166,000.00**	**Lump**	**$542,000.00**	**$11,937,000.00**
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**	**4**	**$5,600,000.00**	**3**	**$4,200,000.00**	**$21,000,000.00**
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D]Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**	**1.5**	**$180,000.00**	**1**	**$120,000.00**	**$660,000.00**
9	- R/W	Acres	Varies			$27,780,500		$11,800,000		$8,206,000	**$47,786,500**
	Subtotal					$48,569,500.00		$19,746,000.00		$13,068,000.00	**$81,383,500.00**
10	**SUBTOTAL**					$315,256,400.00		$147,239,450.00		$109,099,410.00	**$571,595,260.00**
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above		$78,814,100.00		$36,809,862.50		$27,274,852.50	**$142,898,815.00**
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00	1	$4,753,300.00	1	$4,753,300.00	**$19,013,200.00**
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	1	$5,000,000.00	n/a		n/a		**$5,000,000.00**
14	- Ramp Toll Plazas (two per interchange)	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00	3	$5,885,700.00	2	$3,923,800.00	**$21,580,900.00**
15	**TOTAL**					$420,348,500.00		$194,688,312.50		$145,051,362.50	**$760,088,175.00**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

ALTERNATIVE 2

QUANTITIES AND UNIT COSTS SUPPLIED BY *HNTB, PENSCO and C.F. Fenstermaker*

Item No.	Cost Item	Units	Unit Cost	Item	Phase B		Phase C1		Phase D		TOTAL
	Mainline				**Quant.**	**Cost**	**Quant.**	**Cost**	**Quant.**	**Cost**	
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,339,000.00**	Cost for paving, grading, and drainage.[1]	**1.90**	**$10,144,100.00**	**0.94**	**$5,018,660.00**	**0.69**	**$3,683,910.00**	**$18,846,670.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,616,000.00**	Cost for paving, grading, and drainage.[1]	**17.10**	**$61,833,600.00**	**8.46**	**$30,591,360.00**	**6.21**	**$22,455,360.00**	**$114,880,320.00**
	Subtotal				19.00	$71,977,700.00	9.40	$35,610,020.00	6.90	$26,139,270.00	$133,726,990.00
	Interchanges (Including Bridges)										
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**	**4**	**$26,000,000.00**	**2**	**$13,000,000.00**	$78,000,000.00
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**	**1**	**$50,000,000.00**	**1**	**$50,000,000.00**	$200,000,000.00
	Subtotal					$139,000,000.00		$76,000,000.00		$63,000,000.00	$278,000,000.00
	Bridges/Structures										
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**		**$0.00**		**$0.00**	$17,700,000.00
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**21.0** [B]	**$31,500,000.00**	**12.0** [B]	**$18,000,000.00**	**4.5** [B]	**$6,750,000.00**	$56,250,000.00
						$49,200,000.00		$18,000,000.00		$6,750,000.00	$73,950,000.00
	Miscellaneous										
7	- Major Utilities	Lump Sum	**$12,817,000**	Cost of relocating major utilities.	**Lump**	**$10,109,000.00**	**Lump**	**$2,166,000.00**	**Lump**	**$542,000.00**	$12,817,000.00
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**	**5**	**$7,000,000.00**	**3**	**$4,200,000.00**	$22,400,000.00
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D]Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**	**2**	**$240,000.00**	**1**	**$120,000.00**	$720,000.00
9	- R/W	Acres	Varies			$27,304,500		$11,790,000		$8,206,000	$47,300,500.00
						$48,973,500.00		$21,196,000.00		$13,068,000.00	$83,237,500.00
10	**Subtotal**					$309,151,200.00		$150,806,020.00		$108,957,270.00	$568,914,490.00
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above minus toll plazas		$77,287,800.00		$37,701,505.00		$27,239,317.50	$142,228,622.50
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00	1	$4,753,300.00	1	$4,753,300.00	$19,013,200.00
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	1	$5,000,000.00					$5,000,000.00
14	- Ramp Toll Plazas	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00	4	$7,847,600.00	2	$3,923,800.00	$23,542,800.00
15	**TOTAL**					**$412,717,000.00**		**$201,108,425.00**		**$144,873,687.50**	**$758,699,112.50**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

ALTERNATIVE 3

QUANTITIES AND UNIT COSTS SUPPLIED BY *HNTB, PENSCO and C.H. Fenstermaker*

Item No.	Cost Item	Units	Unit Cost	Item	Phase B		Phase C1		Phase D		TOTAL
	Mainline				**Quant.**	**Cost**	**Quant.**	**Cost**	**Quant.**	**Cost**	
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,347,000.00**	Cost for paving, grading, and drainage. [1]	**1.64**	**$8,769,080.00**	**0.77**	**$4,117,190.00**	**0.69**	**$3,689,430.00**	$16,575,700.00
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,645,000.00**	Cost for paving, grading, and drainage. [1]	**14.76**	**$53,800,200.00**	**6.93**	**$25,259,850.00**	**6.21**	**$22,635,450.00**	$101,695,500.00
					16.4	$62,569,280.00	7.7	$29,377,040.00	6.9	$26,324,880.00	$118,271,200.00
	Interchanges (Including Bridges)										
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**	**4**	**$26,000,000.00**	**2**	**$13,000,000.00**	$78,000,000.00
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**	**1**	**$50,000,000.00**	**1**	**$50,000,000.00**	$200,000,000.00
						$139,000,000.00		$76,000,000.00		$63,000,000.00	$278,000,000.00
	Bridges/Structures										
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**		**$0.00**		**$0.00**	$17,700,000.00
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**14.0** [B]	**$21,000,000.00**	**10.0** [B]	**$15,000,000.00**	**4.5** [B]	**$6,750,000.00**	$42,750,000.00
						$38,700,000.00		**$15,000,000.00**		**$6,750,000.00**	$60,450,000.00
	Miscellaneous										
7	- Major Utilities	Lump Sum	**$5,919,000**	Cost of relocating major utilities.	**Lump**	**$2,189,000.00**	**Lump**	**$3,188,000.00**	**Lump**	**$542,000.00**	$5,919,000.00
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**	**5**	**$7,000,000.00**	**3**	**$4,200,000.00**	$22,400,000.00
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D]Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**	**2**	**$240,000.00**	**1**	**$120,000.00**	$720,000.00
9	- R/W	Acres	Varies			$50,885,875		$12,062,500		$8,206,000	$71,154,375.00
						$64,634,875.00		$22,490,500.00		$13,068,000.00	$100,193,375.00
10	**Subtotal**					$304,904,155.00		$142,867,540.00		$109,142,880.00	$556,914,575.00
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above		$76,226,038.75		$35,716,885.00		$27,285,720.00	$139,228,643.75
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00	1	$4,753,300.00	1	$4,753,300.00	$19,013,200.00
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	1	$5,000,000.00					$5,000,000.00
14	- Ramp Toll Plazas	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00	4	$7,847,600.00	2	$3,923,800.00	$23,542,800.00
15	**TOTAL**					**$407,408,193.75**		**$191,185,325.00**		**$145,105,700.00**	**$743,699,218.75**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

Lafayette Metropolitan Expressway

Addendum - TM#1 and TM#4

TOLL ROAD ENGINEERING & ENVIRONMENTAL RECONNAISSANCE

Submitted By:

HNTB

In association with:

Wilbur Smith Associates
C.H. Fenstermaker & Associates, Inc.
PENSCO

Lafayette Metropolitan Expressway Commission

May, 2005

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INTRODUCTION

After review of the original set of alternatives described in Technical Memorandum #1, the LMEC requested HNTB to further research additional alternative corridors for Phase A of the LME Feasibility Study. This Addendum summarizes additions made to previously submitted Technical Memorandums #1 – Toll Road Engineering and #4 – Environmental Reconnaissance as part of the preliminary feasibility study. The corridors referred to in these technical memorandums were named Alternatives 1, 2 and 3 or Outer, Middle, and Inner, respectively. Based on review by HNTB of the costs and revenue potentials, along with input by LMEC regarding corridors, a refined set of alternatives were identified for initial implementation. The refined alternative set includes only two corridors which represent a combination of the inner and outer alternatives. The additional alternative corridors will be referred to in this Addendum as Alternatives 4 and 5. Also the proposed I-49 corridor section south of the urban core of Lafayette is included for study. These alternatives are illustrated in *Figure 1* and summarized below.

The recent Preliminary Engineering Report and EIS for I-49 South from Lafayette Regional Airport to Route LA 88 was utilized for this study. Currently, right-of-way and construction costs for the future I-49 corridor are unfunded. It should be noted that the decision to use I-49 as part of the toll system in Lafayette Parish has not been made and is included in this feasibility study addendum for evaluation purposes.

SYSTEM SUMMARY

Previously studied systems included Systems 1, 2 and 3. HNTB initially studied System 1 which included the entire Alternative 1 corridor made up of Segments B, C1, C2 and D. Based on the analysis of System 1 traffic and revenue, a decision was made to concentrate on Segment B which is located in the southwest quadrant. This quadrant has the highest population density and vehicle trip volume. It was determined to further study Segment B only for Alternatives 1 and 3. System 2 included Segment B for Alternative 1 and System 3 included Segment B for Alternative 3. LMEC then provided additional guidance to identify two additional corridors in the southwest quadrant that are a combination of Segment B from Alternatives 1 and 3. These additional corridors are called Alternatives 4 and 5 and are summarized below. Also, the proposed I-49 corridor section south of the urban core of Lafayette is included for further study as Segment A2.

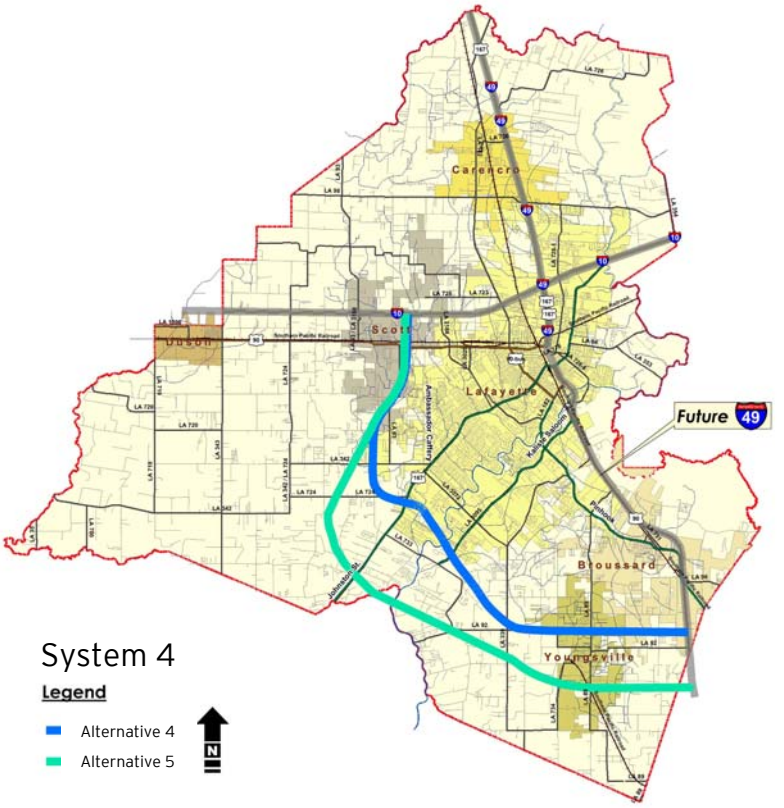
SYSTEMS 4 AND 5

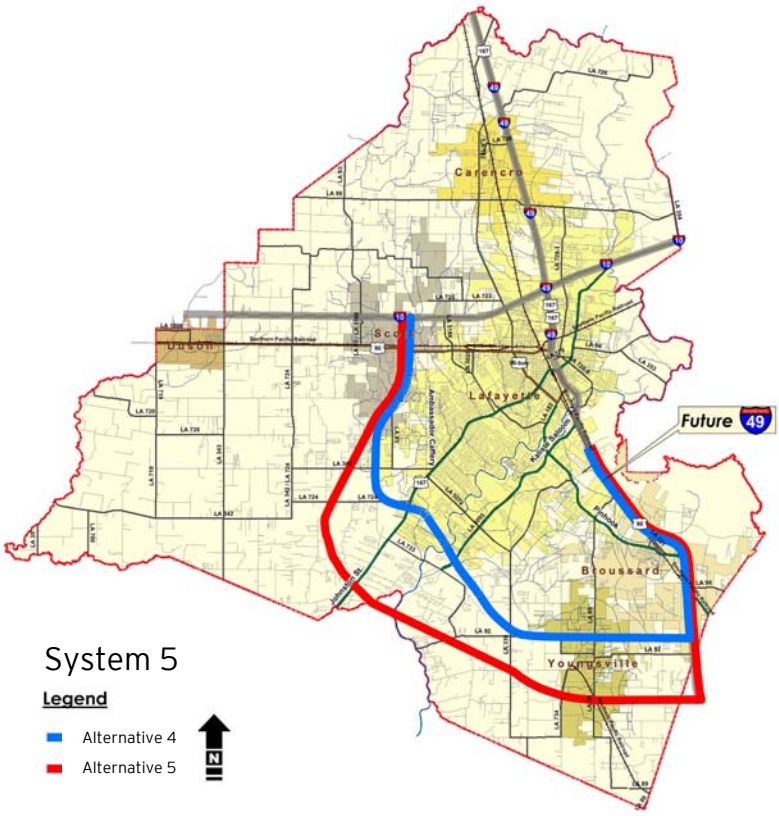
System 4 includes Segment B only of either Alternative 4 or 5 and System 5 includes Segments A2 and B of either Alternative 4 or 5. Alternatives 4 and 5 are described below.

ALTERNATIVES 4 AND 5

Both corridor alternatives begin at the proposed I-49 South. Alternative 4 continues from I-49 South along a new alignment within the southwest portion of Lafayette Parish just north of LA 92. It then turns north and terminates at I-10 between the existing LA 3168 and LA 3184 interchanges. Alternative 5 continues from I-49 south along a new alignment within the southwest portion of Lafayette Parish approximately 1.5 miles south of LA 92. It then turns north near Johnston Street and also terminates at I-10 between the existing LA 3168 and LA 3184 interchanges. Alternatives 4 and 5 essentially represent a combination of the southwest portions of the inner and outer corridors previously studied.

Figure 1: Systems 4 and 5 Corridor Maps





ENVIRONMENTAL RECONNAISSANCE

The environmental reconnaissance addresses the existing human and natural environmental conditions that could potentially be affected by each corridor. It is intended to provide a broad summary and description of the natural, cultural, community resources, land uses, and environmental factors that exist.

I-49 south of the Lafayette Regional Airport is currently in the EIS phase with a record of decision expected mid-2005. This TM addresses the environmental reconnaissance for Segment B of Alternatives 4 and 5. Both alternatives traverse mostly vacant, agricultural and scattered, low-density residential land uses. Both corridors will serve to facilitate future development and managed growth opportunities for these areas in the parish. Alternative 5 has the least impacts to low and high-density residential areas and parks and recreational uses. The two proposed corridors have been developed to avoid and minimize impacts to wetlands and encroachment within the 100-year floodplain to the extent feasible. About 30 percent of each corridor will fall within the 100-year floodplain while impacts to wetlands are minimal. A summary of the selected human and natural environment impacts for each alternative are estimated in *Table 1* below.

Table 1: Environmental Evaluation Measures

ALTERNATIVE EVALUATION MEASURES		
	Alternative	
Environmental Factors	4	5
% of Alternative through floodplains	30%	30%
% of Alternative through undeveloped land	80%	88%
% of Alternative through wetlands	2%	1.5%
Community Services Within or Adjacent to Alternatives		
Schools	2	1
Churches	1	0
Cemeteries	1	0
Parks & Recreation Areas	0	0

More detailed investigations and determinations will be made on all community, natural and cultural resources within any and all alternatives carried forward from this study. For the level of investigation conducted at this time, it is felt that the construction of either Alternative 4 or 5 is feasible and the economic benefits, higher levels of traffic service, travel time reductions and the new hurricane evacuation benefits that would result, will outweigh the projected environmental impacts.

TOLL ROAD ENGINEERING

This section documents the preliminary cost estimates for toll road construction and operation and maintenance for Systems 4 and 5. The segment description for each system is described below.

SEGMENT B, ALTERNATIVE 4 SUMMARY

Segment B, Alternative 4, is approximately 17 miles in length. About 80 percent of the corridor is undeveloped with a majority of the undeveloped land. The proposed improvements for this corridor would be a four-lane tollway. For cost estimating purposes, it has been assumed that 10 percent of the system would include one-way frontage roads. A total of six diamond interchanges, two fully directional system-to-system interchanges and a new major river crossing over the Vermilion River are proposed for this project.

SEGMENT B, ALTERNATIVE 5 SUMMARY

Alternative 5 is approximately 20 miles in length. About 88 percent of the corridor is undeveloped with a majority of the undeveloped land. The proposed improvements for this corridor would be a four-lane tollway. For cost estimating purposes, it has been assumed that 10 percent of the system would include one-way frontage roads. A total of six diamond interchanges, two fully directional system-to-system interchanges and a new major river crossing over the Vermilion River are proposed for this project.

SEGMENT A2, I-49 SUMMARY

The proposed improvements for the I-49 section would be a six-lane toll road with continuous one-way parallel frontage roads. The approximate length of I-49 that connects to Segment B of Alternative 4 is seven miles. For Segment B of Alternative 5, the approximate length of I-49 is nine miles.

Table 2 summarizes the alternative corridors including the I-49 roadway portion.

Table 2: Summary of Corridor Segments

ITEM	Segment B		Segment A2 (I-49)	
	Alternative 4	Alternative 5	Alternative 4	Alternative 5
Approx. Length (miles)	17	19.8	7.1	8.7
Planned Improvements	4 to 6-lane expressway w/ a portion of frontage roads	4 to 6-lane expressway w/ a portion of frontage roads	6-lane expressway w/ continuous frontage roads	6-lane expressway w/ continuous frontage roads
No. of Diamond Interchanges	6	6	5	6
No. of System-to-System Interchanges	3	3	0	0
New Vermilion River Crossing	1	1	0	0

For toll road sections that may include I-49, a six-lane mainline section would be provided.

PROJECT PHASING

For preliminary analysis, two systems have been developed for consideration. System 4 is Segment B only. System 5 is Segment B plus I-49 or Segment A2. Because the Record of Decision for I-49 South of the airport to LA 88 is scheduled to be issued in mid-2005, the I-49 section is expected to be constructed first (although a supplemental EIS will need to be prepared taking into consideration the toll nature of the project and perhaps changes in logical termini). Segment A2 has an estimated opening of 2011 with Segment B opening 2012. *Table 3* summarizes the segment lengths for Alternatives 4 and 5.

Table 3: Summary of Construction Phasing for Systems 4 and 5

SEGMENT	SYSTEM 4		SYSTEM 5	
	Alternative 4	Alternative 5	Alternative 4	Alternative 5
A2	--	--	7.1 miles	8.7 miles
B	17.0 miles	19.8 miles	17.0 miles	19.8 miles
Total	**17.0 miles**	**19.8 miles**	**24.1 miles**	**28.5 miles**

CAPITAL COST ESTIMATES

This section summarizes the preliminary estimated construction costs associated with Systems 4 and 5. Costs for I-49 South were derived from the EIS and Preliminary Engineering Report documents (prepared by others) that have been developed for this section. Included in *Appendix A* to this report are more details regarding the estimates of the construction costs for the corridors for Segment B. *Table 4* presents the total construction cost estimates (2005) for the study corridors and *Table 5* summarizes the capital cost estimates by phase.

Table 4: Summary of Capital Cost Estimates ($ in millions)

COST ITEM	SYSTEM 4 (Segment B)		SYSTEM 5 (Segments A2 and B)	
	Alternative 4	Alternative 5	Alternative 4	Alternative 5
Roadway/Bridge Construction, ROW, Design, CEI, Toll Plaza Construction and Contingency (additional)	$401M	$416M	$706M	$764M
Cost Per Mile	$23.6M per mile	$21.0M per mile	$29.4M per mile	$26.8M per mile

Table 5: Summary of Capital Cost Estimates by Segment ($ in millions)

SYSTEM	Length (miles)	Capital Cost	Cost Per Mile
System 4, Alternative 4			
Segment B	17.0	$401M	$23.6M per mile
System 4, Alternative 5			
Segment B	19.8	$416M	$21.0M per mile
System 5, Alternative 4			
Segment A2	7.1	$310M	$43.7M per mile
Segment B	17.0	$396M	$23.3M per mile
System 5, Alternative 5			
Segment A2	8.7	$352M	$40.54M per mile
Segment B	19.8	$412M	$20.8M per mile

ANNUAL OPERATIONS & MAINTENANCE COSTS

The 2004 annual O&M costs for the project are shown in *Table 6*.

Table 6: Summary of Operations & Maintenance Cost Estimates ($ in millions)

System	Segment A2	Segment B	TOTAL
System 4, Alternative 4	--	$4.8M	$4.8M
System 4, Alternative 5	--	$5.0M	$5.0M
System 5, Alternative 4	$2.6M	$4.6M	$7.2M
System 5, Alternative 5	$3.0M	$4.8M	$7.8M

REPLACEMENT RESERVE MAINTENANCE FUND

Included in the annual costs of operating and maintaining a toll road system are replacement reserve maintenance fund (RMF) considerations as shown in *Tables 7 and 8* below.

Table 7: Summary of O&M and RMF Cost Estimates for System 4

ANNUAL COST CATEGORY	Alternative 4	Alternative 5
Annual Operations and Maintenance	$4,800,000	$5,000,000
Annual Reserve Maintenance Fund	$760,000	$790,000
Total Annual Cost	**$5,560,000**	**$5,790,000**

Table 8: Summary of O&M and RMF Cost Estimates for System 5

ANNUAL COST CATEGORY	Alternative 4	Alternative 5
Annual Operations and Maintenance	$7,200,000	$7,800,000
Annual Reserve Maintenance Fund	$1,340,000	$1,450,000
Total Annual Cost	**$8,540,000**	**$9,250,000**

APPENDIX A

SYSTEM 4, ALTERNATIVE 4

QUANTITIES AND UNIT COSTS SUPPLIED BY ***HNTB, PENSCO and C.H. Fenstermaker***

Item No.	Cost Item	Units	Unit Cost	Item	Segment B	
	Mainline				**Quant.**	**Cost**
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,374,000.00**	Cost for paving, grading, and drainage. [1]	**1.70**	**$9,135,800.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,635,000.00**	Cost for paving, grading, and drainage. [1]	**15.30**	**$55,615,500.00**
	Subtotal				17.00	$64,751,300.00
	Interchanges (Including Bridges)					
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**
	Subtotal					$139,000,000.00
	Bridges/Structures					
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**20.0** [B]	**$30,000,000.00**
	Subtotal					$47,700,000.00
	Miscellaneous					
7	- Major Utilities	Lump Sum	**$11,937,000.00**	Cost of relocating major utilities.	**Lump**	**$9,229,000.00**
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D] Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**
9	- R/W	Acres	Varies			$27,780,500
	Subtotal					$48,569,500.00
10	**SUBTOTAL**					$300,020,800.00
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above		$75,005,200.00
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	1	$5,000,000.00
14	- Ramp Toll Plazas (two per interchange)	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00
15	**TOTAL**					$401,304,000.00

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

2. Phase A2 construction costs were taken from the I-49 South Route US 90, Lafayette Regional Airport to Route LA 88 Preliminary Engineering Report and EIS dated 2002 and inflated to 2005 dollars using Engineering News Record Construction Cost Index History.

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

SYSTEM 4, ALTERNATIVE 5

QUANTITIES AND UNIT COSTS SUPPLIED BY *HNTB, PENSCO and C.H. Fenstermaker*

Item No.	Cost Item	Units	Unit Cost	Item	Segment B	
	Mainline				**Quant.**	**Cost**
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,339,000.00**	Cost for paving, grading, and drainage.[1]	**1.98**	**$10,571,220.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,616,000.00**	Cost for paving, grading, and drainage.[1]	**17.82**	**$64,437,120.00**
	Subtotal				19.80	$75,008,340.00
	Interchanges (Including Bridges)					
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**
	Subtotal					$139,000,000.00
	Bridges/Structures					
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**21.0** [B]	**$31,500,000.00**
						$49,200,000.00
	Miscellaneous					
7	- Major Utilities	Lump Sum	**$12,817,000**	Cost of relocating major utilities.	**Lump**	**$10,109,000.00**
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D]Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**
9	- R/W	Acres	Varies			$27,304,500
						$48,973,500.00
10	**Subtotal**					$312,181,840.00
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above minus toll plazas		$78,045,460.00
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	1	$5,000,000.00
14	- Ramp Toll Plazas	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00
15	**TOTAL**					**$416,505,300.00**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

2. Phase A2 construction costs were taken from the I-49 South Route US 90, Lafayette Regional Airport to Route LA 88 Preliminary Engineering Report and EIS dated 2002 and inflated to 2004 dollars using Engineering News Record Construction Cost Index History.

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

SYSTEM 5, ALTERNATIVE 4

QUANTITIES AND UNIT COSTS SUPPLIED BY *HNTB, PENSCO and C.H. Fenstermaker*

Item No.	Cost Item	Units	Unit Cost	Item	Segment B		Segment A2[2]		TOTAL
	Mainline				**Quant.**	**Cost**	**Quant.**	**Cost**	
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,374,000.00**	Cost for paving, grading, and drainage.[1]	**1.70**	**$9,135,800.00**		**$0.00**	**$9,135,800.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,635,000.00**	Cost for paving, grading, and drainage.[1]	**15.30**	**$55,615,500.00**		**$0.00**	**$55,615,500.00**
	Subtotal				17.00	$64,751,300.00	0.00	$0.00	**$64,751,300.00**
	Interchanges (Including Bridges)								
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**	**0**	**$0.00**	**$39,000,000.00**
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**	**0**	**$0.00**	**$100,000,000.00**
	Subtotal					$139,000,000.00		$0.00	**$139,000,000.00**
	Bridges/Structures								
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**		**$0.00**	**$17,700,000.00**
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**20.0** [B]	**$30,000,000.00**	**0**	**$0.00**	**$30,000,000.00**
	Subtotal					$47,700,000.00		$0.00	**$47,700,000.00**
	Miscellaneous								
7	- Major Utilities	Lump Sum	**$11,937,000.00**	Cost of relocating major utilities.	**Lump**	**$9,229,000.00**	**Lump**	**$0.00**	**$9,229,000.00**
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**	**0**	**$0.00**	**$11,200,000.00**
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D] Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**	**0**	**$0.00**	**$360,000.00**
9	- R/W	Acres	Varies			$27,780,500		$0	**$27,780,500**
	Subtotal					$48,569,500.00		$0.00	**$48,569,500.00**
10	**SUBTOTAL**					$300,020,800.00		$292,320,000.00	**$592,340,800.00**
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above		$75,005,200.00		$0.00	**$75,005,200.00**
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00	1	$4,753,300.00	**$14,259,900.00**
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	0	$0.00	1	$5,000,000.00	**$5,000,000.00**
14	- Ramp Toll Plazas (two per interchange)	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00	4	$7,847,600.00	**$19,619,000.00**
15	**TOTAL**					$396,304,000.00		$309,920,900.00	**$706,224,900.00**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

2. Phase A2 construction costs were taken from the I-49 South Route US 90, Lafayette Regional Airport to Route LA 88 Preliminary Engineering Report and EIS dated 2002 and inflated to 2004 dollars using

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

SYSTEM 5, ALTERNATIVE 5

QUANTITIES AND UNIT COSTS SUPPLIED BY *HNTB, PENSCO and C.H. Fenstermaker*

Item No.	Cost Item	Units	Unit Cost	Item	Segment B		Segment A2[2]		TOTAL
	Mainline				**Quant.**	**Cost**	**Quant.**	**Cost**	
1	- 4-Lane Toll Road w/ Frontage Roads	CL Mile	**$5,339,000.00**	Cost for paving, grading, and drainage.[1]	**1.98**	**$10,571,220.00**	**0.00**	**$0.00**	**$10,571,220.00**
2	- 4-Lane Toll Road w/out Frontage Roads	CL Mile	**$3,616,000.00**	Cost for paving, grading, and drainage.[1]	**17.82**	**$64,437,120.00**	**0.00**	**$0.00**	**$64,437,120.00**
	Subtotal				19.80	$75,008,340.00	0.00	$0.00	$75,008,340.00
	Interchanges (Including Bridges)								
3	- Typical Diamond Interchange (new)	Ea.	**$6,500,000.00**	Cost for new interchange, including mainline grade separation, slip ramps, cross street, and lighting.	**6**	**$39,000,000.00**	**0**	**$0.00**	$39,000,000.00
4	- Typical System-to-System Interchange (new)	Ea.	[C] **$50,000,000.00**	Cost for new directional interchange, including mainline grade separation, ramps (grade and structures), cross street, and lighting.	**2**	**$100,000,000.00**	**0**	**$0.00**	$100,000,000.00
	Subtotal					$139,000,000.00		$0.00	$139,000,000.00
	Bridges/Structures								
5	- Mainline - Vermilion River Crossing	Ea.	**$17,700,000.00**	Cost for construction of a major river bridge.	**1**	**$17,700,000.00**		**$0.00**	$17,700,000.00
6	- Other Mainline Bridges	Ea.	**$1,500,000.00**	Cost for construction of other bridges (bayous, local roads, etc.).	**21.0** [B]	**$31,500,000.00**	**0**	**$0.00**	$31,500,000.00
						$49,200,000.00		$0.00	$49,200,000.00
	Miscellaneous								
7	- Major Utilities	Lump Sum	**$12,817,000**	Cost of relocating major utilities.	**Lump**	**$10,109,000.00**	**Lump**	**$0.00**	$10,109,000.00
8	- Local Roads	Ea.	**$1,400,000.00**	Cost to reconstruct cross-roads that are not accounted for in Items 3 and 4.	**8**	**$11,200,000.00**	**0**	**$0.00**	$11,200,000.00
8a	-Interchange Signallization	Ea.	**$120,000.00**	[D]Cost of Signallization for diamond interchanges.	**3**	**$360,000.00**	**0**	**$0.00**	$360,000.00
9	- R/W	Acres	Varies			$27,304,500		$0	$27,304,500.00
						$48,973,500.00		$0.00	$48,973,500.00
10	**Subtotal**					$312,181,840.00		$332,640,000.00	$644,821,840.00
11	- Engineering and Contingency	% of Construct. Costs	25%	Contingency funds applied to total of construction costs above minus toll plazas		$78,045,460.00		$0.00	$78,045,460.00
12	- Mainline Toll Plazas	Ea.	**$4,753,300**	Cost of Mainline Toll Plaza	2	$9,506,600.00	1	$4,753,300.00	$14,259,900.00
13	- Mainline Startup Costs (First phase only)	Lump Sum	**$5,000,000**	Cost of System Software & Hardware	0	$0.00	1	$5,000,000.00	$5,000,000.00
14	- Ramp Toll Plazas	Ea.	**$1,961,900**	Cost of two Ramp Toll Plazas per interchange	6	$11,771,400.00	5	$9,809,500.00	$21,580,900.00
15	**TOTAL**					**$411,505,300.00**		**$352,202,800.00**	**$763,708,100.00**

1. Paving includes roadway surface, base and shoulders. Grading assumes 5' embankment height. Drainage includes major structures (box culverts) and minor structures (culverts).

2. Phase A2 construction costs were taken from the I-49 South Route US 90, Lafayette Regional Airport to Route LA 88 Preliminary Engineering Report and EIS dated 2002 and inflated to 2004 dollars using

PENSCO NOTES

[A] ***Quantity adjusted to account for total estimated cost of work for this phase.***

[B] ***R.R. Overpass Bridges equivalent to 7.0 X Unit Cost. Vermilion River Crossing (Non-navigable) equivalent to 2.5 X Unit Cost.***

[C] ***As per HNTB***

[D] ***Includes 2 signals per interchange.***

Lafayette Metropolitan Expressway

Technical Memorandum 2

TRAFFIC & TOLL REVENUE

Submitted By:

HNTB

In association with:

Wilbur Smith Associates
C.H. Fenstermaker & Associates, Inc.
PENSCO

Lafayette Metropolitan Expressway Commission

February, 2005

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INTRODUCTION

The Traffic and Toll Revenue Technical Memorandum summarizes the following tasks outlined in the scope of services for the Lafayette Metropolitan Expressway (LME) Toll Feasibility Study: Tolling System, Traffic and Toll Revenue Estimates, Traffic Operational Analysis and Economic Development Assessment. The LME Toll Feasibility Study is being coordinated by the Lafayette Metropolitan Expressway Commission (LMEC), which is responsible pursuing alternative and innovate funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, maintenance, and operation of a safe and efficient limited access highway system exclusively within Lafayette Parish.

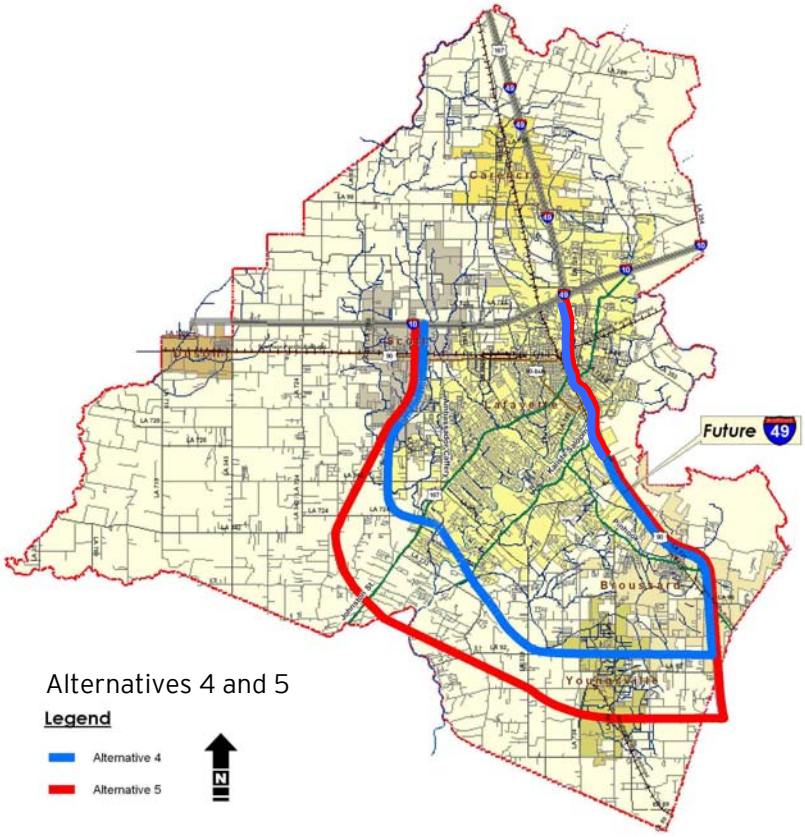
The Toll Collection Concepts section will cover the tolling system. A summary of toll rates made by other toll agencies will be included, along with a discussion of the type of toll collection schemes envisioned for the LME. The next section, Project Methodology, provides information on how traffic volumes will be developed and for the alternative project arrangements under consideration. The Economic Development Analysis section includes a verification of forecasts of socioeconomic data made by the Lafayette Consolidated Government (LCG) Metropolitan Planning Organization (MPO) as well as an assessment of areas that may be candidates for additional development. The final section presents data on Traffic and Toll Revenue, showing the toll revenue that can be expected and providing an estimate of the capital and operating costs associated with the selected toll collection system. Included in the discussion on Traffic and Toll Revenue will be a discussion of the Traffic Operational Analysis. That is, a few brief statements will be made concerning potential congestion on the project as well as the effect of the proposed project on other area roadways.

The study area is represented graphically in *Figure 2-1*. This area represents the boundaries of the Lafayette MPO and includes all of Lafayette Parish and portions of St. Martin, Iberia, Vermilion, and Acadia Parishes. The alternative corridors that are to be considered as part of this study are presented in this figure; however, details regarding each alternative may be found in the Traffic and Toll Revenue Analysis section.

This technical memorandum summarizes traffic and toll revenue analyses for several toll road systems. Wilbur Smith Associations (WSA) initially studied Alternatives 1, 2 and 3 for toll sensitivity to select one corridor for further analysis. Alternative 1 (Segments B, C1, C2 and D) was selected. ` Based on the traffic and toll revenue analysis of this corridor, a decision was made to concentrate on Segment B which is located in the southwest quadrant. This quadrant has the highest population density and vehicle trip volume. Segment B for Alternatives 1 and 3 were then analyzed for traffic and toll revenue.

The LMEC then provided additional guidance to identify two additional corridors in the southwest quadrant that are a combination of Segment B from Alternatives 1 and 3. These additional corridors are called Alternatives 4 and 5. Also, the proposed I-49 corridor section south of I-10 to the Parish line were included in the analysis with Alternatives 4 and 5. The I-49 section includes Segments A1 and A2.

Figure 2-1: Study Corridor Maps



TOLL COLLECTION CONCEPTS

The interest in use of tolls has dramatically grown in recent years, as funding from traditional federal and state sources has become increasingly scarce. Policymakers are looking for new options to assist in transportation finance, and tolls are also increasingly being considered as a strategy to "manage demand" to achieve more efficient operation of our existing transportation resources.

Perhaps the biggest problem with tolls has been the methods used to collect them. Traditional cash collection facilities have typically required motorists to stop and pay; sometimes resulting in extensive delays and congestion. Indeed, on many of the nation's more heavily used toll facilities, the toll plaza has become a major constraint to traffic and revenue growth and a major "flash point" in arguments against the use of the toll concept. Provided in *Figure 2-2* are sample mainline and ramp plaza configurations from various tolling facilities in the United States.

Figure 2-2: Sample Barrier and Ramp Plazas

Illinois Tollway

Mainline Barrier with Express ETC Lanes

Greenville Southern Connector

Ramp Unattended with Mixed Use Lane

Oklahoma Turnpike

Ramp Plaza Unattended with Express ETC Lane

TRADITIONAL TOLLING CONCEPTS

This section discusses the traditional cash toll collection concepts, followed by a discussion of new developments in electronic toll collection. Historically, there have been three general types of cash collection toll concepts used on toll road facilities. These include:

- Closed ticket systems;
- Closed barrier systems; and
- Open barrier systems.

Closed Ticket Systems

In a closed ticket system, users obtain a toll ticket on entry and surrender the ticket on exit. The toll amount is based on actual distance traveled, and, of course, classification of vehicle. There are typically no mainline toll plazas along the route, except at each end of the turnpike facility.

Examples of closed ticket systems include the New Jersey Turnpike, Pennsylvania Turnpike, Ohio Turnpike and Indiana Toll Road. Ticket systems are most commonly used on longer-distance, inter-city toll facilities without closely spaced interchanges. In most cases, the use of a ticket system requires complex "trumpet" interchange configurations, where all possible travel movements at a given interchange are funneled through a single toll collection location. This could be extremely costly and right-of-way intensive, and is not well adapted for urban environments. The primary advantages of a ticket system are maximization of toll equity between different users of the toll road and the elimination of the need for frequent stops at mainline toll plazas.

Since most new toll facilities in the United States are typically being built in urban areas, it is no longer common to use the closed ticket system of collection. In several cases, such as the Oklahoma and Maine Turnpike Systems, facilities originally constructed as ticket systems have been converted to barrier operations.

Closed Barrier Systems

In a closed barrier system, a series of mainline and ramp toll collection facilities are constructed. At each of the toll plaza locations, a fixed toll amount (for a given vehicle class) is collected, regardless of points of entry or exit. All tolls are collected at the fixed collection locations. Ramp tolls are typically provided to "close the system" and prohibit "toll-free" travel between mainline barriers. In many cases, ramp toll collection facilities are operated in an unattended "honor-system" mode with coin machines, electronic toll collection or both.

Examples of closed barrier systems in the United States include the Richmond Expressway System, the Illinois Tollway and the Harris County Tollway System in Texas. Mainline and ramp plazas typically include manual lanes and, in many cases, automatic coin machines for passenger vehicles with exact change. In recent years, electronic toll collection has been added to help speed the flow of traffic through the barrier locations.

Open Barrier System

The open barrier concept is the same as the closed barrier system, except that no ramp plazas are constructed. This permits some level of toll-free travel between mainline locations. It has the advantage of significantly reducing the number of collection points and operating costs, but may have implications on revenue potential. The open barrier system is also generally considered the least equitable type of system, since some users pay a very high toll at a limited number of locations while many other users pay no toll at all.

Examples of open barrier systems include the Delaware and Maryland Turnpikes, as well as the Miami-Dade Expressway System in Florida. Either the open or closed barrier system is much more likely to be applicable on urban toll facilities which have been constructed in recent years and likely to be constructed

in the future. Both types of systems allow for relatively simple interchange design and relatively fast transaction processing (as compared to ticket systems). However, the longer a toll facility is, the more mainline plazas which may be required, thus increasing the number of stops required on a typical trip resulting in a decrease in patron convenience.

Barrier systems (open or closed) tend to have lower operating costs per transaction than ticket systems. However, depending on the overall toll facility configuration, the ticket system may have lower total operating costs since barrier systems on longer toll facilities typically result in a larger number of transactions.

ELECTRONIC TOLL COLLECTION

The advent of the current generation of electronic toll collection in the 1980s has had a profound impact on the toll industry. The vast majority of existing toll facilities in the United States now have at least added electronic toll collection to the menu of options for toll payment. More importantly, electronic toll collection has proven to be extremely popular among patrons. For example, after ETC was introduced in the greater New York region, more than 50 percent of all transactions had been converted from cash to electronic within three years, and in peak periods the ETC market share reached as much as 75-80 percent. This dramatically reduced congestion at toll plazas on facilities such as the TBTA Bridges in New York, New Jersey Turnpike, New York Thruway and more.

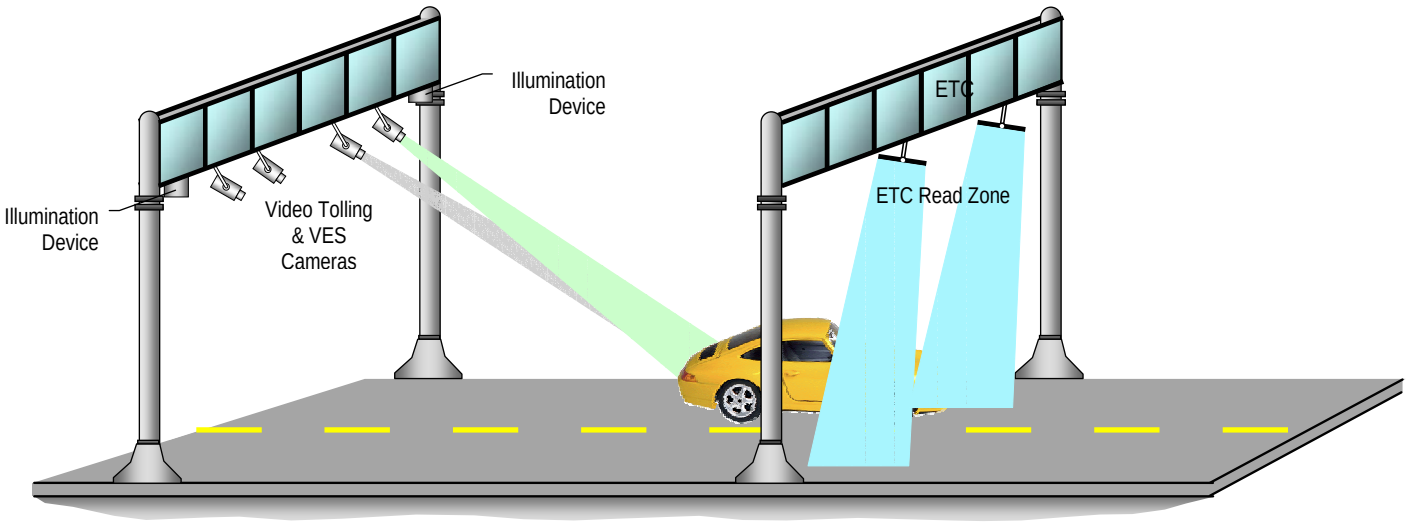
The real potential impact of electronic toll collection is just now being seen. New toll facilities such as Highway 407 in Toronto and the CityLink project in Melbourne, Australia are operated entirely with electronic toll collection with no toll plazas or toll collectors at all. The Toronto system collects over $200 million per year in revenue without a single toll attendant. Electronic toll collection has also enabled deployment of value pricing, and the emergence of managed lanes and other demand management strategies. Indeed, ETC has certainly broadened, and brightened, the outlook for expanded use of tolls throughout America.

OVERVIEW

Electronic toll collection systems have been widely deployed throughout the United States, although no absolute interoperability standard has been established at the national level. Regional interoperability standards have been established throughout the Northeast, known as E-ZPass (which includes the Maryland toll facilities), in California and (defacto) in the Texas/Oklahoma/Kansas region. The state of Florida also has a statewide SUNPASS system which is now used on each of the many toll facilities in the state of Florida through a centralized clearinghouse operation. However, regionally, different technologies are used, not always fully interoperable or compatible with each other.

All the technologies currently in use in North America fall within an overall category of Dedicated Short-Range Communication (DSRC) type. Simply stated, this involves roadside equipment, such as an antenna and reader, which communicates with a small transponder device typically mounted on the vehicle windshield. In most cases, pre-paid accounts are opened by patrons participating in the ETC program. The transponder communicates the account number to the roadside reader and the appropriate toll amount is deducted from a centrally maintained account balance. *Figure 2-3* provides a graphical depiction of how a vehicle equipped with a transponder would traverse an ETC tolling location.

Figure 2-3: Typical Open Road Tolling Zone and Enforcement Process



DSRC-type electronic toll collection systems have been generally reliable, with most systems exceeding 98 percent reliability, or much higher. Violation experience in electronic toll lanes ranges from facility to facility, but generally averages 2-7 percent. Effective violation enforcement systems (VES) can substantially reduce violation potential and actually can be "revenue positive" when combined with a program of administrative fees assessed to violators.

ALTERNATIVE DEPLOYMENT METHODS

For the most part, today's ETC systems have been retroactively deployed onto existing toll facilities, which historically had been using exclusively cash collection. There are generally three alternative approaches which have been used by existing toll agencies:

- Mixed operation, in which ETC and cash patrons share the same toll lanes;
- Dedicated ETC lanes, in which certain toll lanes at a particular toll plaza are dedicated to ETC traffic, with cash vehicles using other lanes; and
- ETC express lanes, in which ETC patrons can typically pass through toll plazas at high speeds, in some cases full freeway speeds, with some degree of physical separation from adjacent lanes used to process cash vehicles.

The earliest deployments were mostly "mixed" operations. Toll facility operators were concerned that ETC utilization rates would not be sufficient to warrant dedicated capacity. In most cases, these same agencies have ultimately shifted to at least dedicated lanes, and in some cases, express lanes.

There are some disadvantages to mixed operation. First of all, much of the time savings advantages of the electronic toll collection process can be lost if ETC customers need to wait in the same lines as cash paying customers. There also tends to be an increased risk of accidents in the toll lanes, in cases where most users have electronic toll collection but an occasional cash customer comes to a surprising stop.

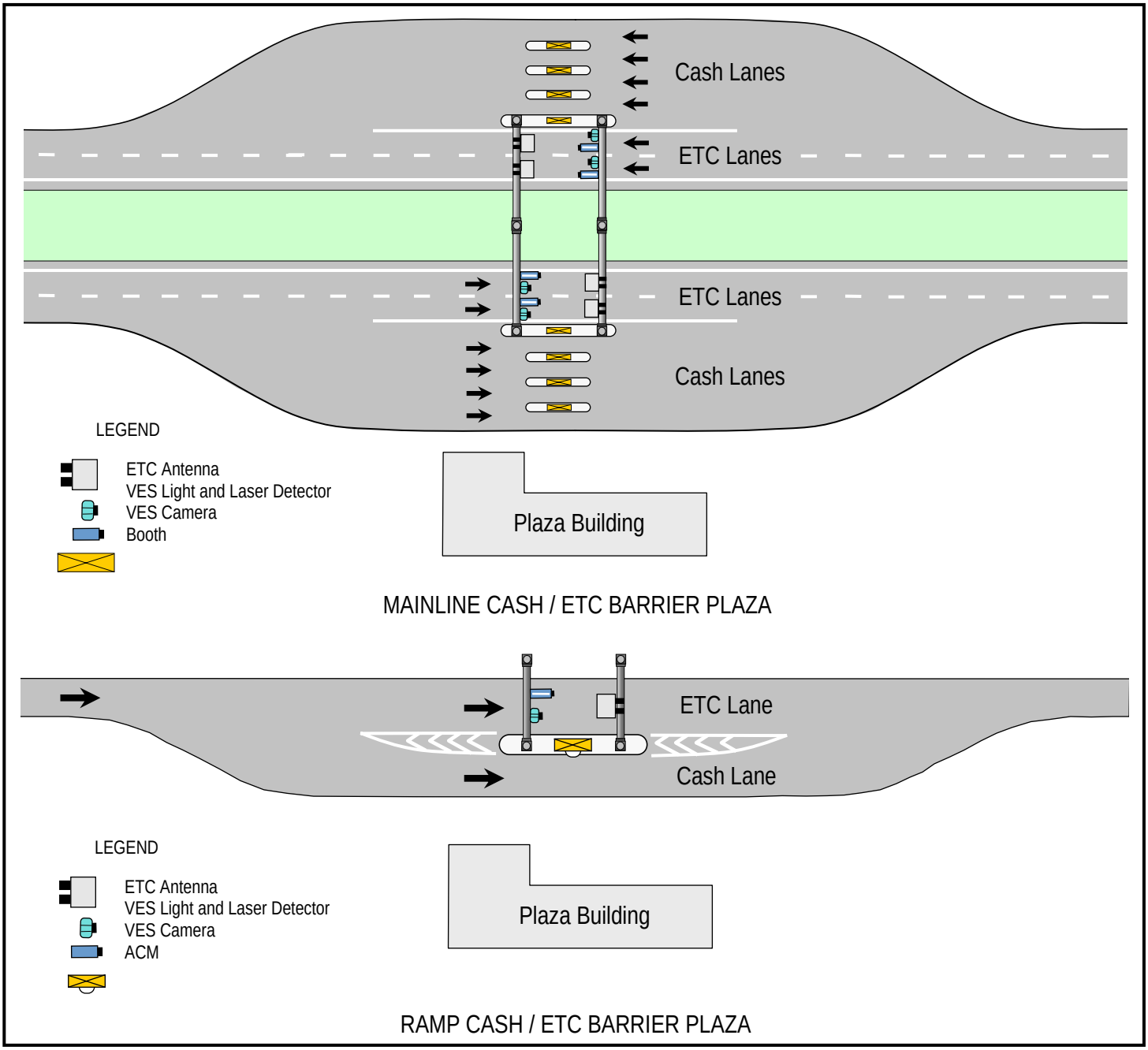
Mixed use lanes are still common, even where agencies have gone to dedicated lanes. These are used to handle "spill over" from the dedicated lanes, as well as in special cases where there are "close-in" entry or exit ramps making it difficult to weave to or from dedicated ETC lanes.

Most toll agencies have at least begun to deploy dedicated lanes, and in some cases more than one in each travel direction. Dedicated ETC lanes typically involve only minimal modifications to the physical toll lane itself, are designed for low speed, non-stop operation and have only minimal physical separation between the ETC lanes and cash-paying queues. It is important, however, to the maximum extent possible to provide a "clear channel" access to the dedicated ETC lanes, thereby providing a potential time savings incentive for motorists to switch to electronic collection.

Dedicated lanes can have some disadvantages. In most cases, they have been deployed in toll plazas which may require toll attendants and other plaza personnel to walk between toll booths, creating some additional safety risk. They are also typically relatively narrow in width and, despite signing and other strategies, ETC users tend to pass through the lanes at relatively high speeds.

The newer generation of toll facilities constructed during the 1990s have mostly been designed in the post-ETC era. As such, most of these facilities have been designed with ETC express lanes, where motorists in the electronic toll program pass through or around the toll plazas at full freeway speeds. Examples include the San Joaquin, Foothill Eastern toll facilities in Orange County, California, the new Pocahontas Parkway in Virginia and several more. *Figure 2-4* represents typical mainline plaza and ramp plaza layouts expected for the LME toll system.

Figure 2-4: Typical Toll Plaza and Ramp Layouts



Express lanes typically have a capacity limited only by the capacity of the roadway itself. Express lanes are normally constructed with a cross-section of two or more lanes in each direction. In most cases, express lanes may be opened to all vehicle classes. This fully electronic toll operation presents some challenges for automatic vehicle classification and enforcement, but has been relatively successful overall. The high-speed, multi-lane environment of express lanes has proven to be difficult for some ETC technologies, and in some cases is requiring system or software redesigns. However, in planning for future toll facilities, it is

reasonable to assume that express lanes at barrier plazas "will be the norm" and necessary improvements in vehicle collection and violation enforcement technologies will be made.

Express lanes have also been retroactively deployed on some older toll facilities in the United States. In many cases, this has proven to be quite costly, especially where long physical separations between the express lanes and the traditional cash lanes have evolved. Depending on the ultimate design, it may not be possible to deploy high-speed express lanes on certain types of toll facilities, such as ramp interchanges on ticket systems or barrier plazas immediately adjacent to toll bridges or tunnels. Express lanes are most ideally suited for mainline toll plazas with relatively good sight distance.

Most new toll facilities being planned for barrier collection will likely be designed with express lanes. In fact, in many cases, electronic toll collection facilities will simply be constructed over the mainline travel lanes while limited cash collection facilities will be constructed to the side of the pavement. This makes the toll collection process virtually transparent to frequent users of the toll facility, while still providing limited cash collection facilities for non-local or less frequent users.

ADVANTAGES OF ELECTRONIC TOLL COLLECTION

Regardless of the method of deployment, electronic toll collection has been an overwhelming success in most cases. The toll collection process has shifted from cash in the toll lane to back office account management and electronic funds transfers. In most cases, patrons select to link ETC accounts directly to credit cards, and as account balances decline, additional funds are automatically obtained from a credit card account, with virtually no action required on the part of the patron. Electronic toll collection operating costs will, ultimately, prove to be less costly then cash collection, although in the early "ramp-up" phase of most systems, this has proven to not be the case.

Electronic toll collection brings with it a whole new set of operating challenges, principally related to violation enforcement, customer service centers and back office account management operations. Since ETC systems have been deployed mostly in parallel with cash systems, this has resulted in "two systems" for most agencies, thereby sometimes resulting in an increase in operating cost, at least over the short term. Over the longer term, and especially if one considers the capital cost associated with expanding cash collection plazas, electronic toll collection will prove to be more cost-effective.

CAPITAL COSTS

In contemplating the future toll collection system for a new toll facility, capital cost reflects the cost of the toll plaza facility itself, the toll technology systems and associated software and incremental right-of-way or other design changes which may be needed to accommodate a certain type of toll collection. For example, use of the ticket system concept is rated "poor" because it is likely to have the highest capital cost both in terms of toll systems and, most notably, the high cost of interchange design to accommodate ramp toll plazas. A closed barrier system will be somewhat less costly, depending on ultimate project configuration, since it would normally permit relatively simple interchange configurations. An open barrier system would include less toll plazas and have no impact on interchange design.

In terms of electronic toll collection deployment, the least costly method is through mixed operations while the most costly method is to retroactively construct express lanes to existing plazas. However,

express lanes may actually be less costly if integrated into the original design of a new toll facility. Video tolling will have a relatively high capital cost due to requirement for dozens of relatively expensive video cameras and high data communications system costs due to the high amount of video data traffic. However, it has relatively low cost implications on right-of-way and construction.

OPERATING COSTS

Ticket systems would typically have the highest operating costs of the traditional cash systems, except on very long intercity facilities with long distances between interchanges. In such cases, there would be a substantially reduced number of transactions, as compared with a barrier system alternative, may offset the higher per-transaction cost associated with ticket system operations. The least costly is an ETC only electronic system; the highest operating cost would typically be associated with any type of video tolling operation, although that may improve in the future.

PROJECT METHODOLOGY

ASSUMPTIONS

The preparation of traffic and revenue forecasts necessarily involves certain assumptions which could be invalidated by future events. For example, WSA must assume that LMEC would construct the proposed projects in forms identical to those shown here, especially with regard to:

- Alignment (location and limits)
- Number of lanes
- Access points
- Toll rates and tolling system
- Permitted vehicle types
- Opening year

Future toll rate changes will be limited to approximately 10 percent every four years. This rate of increase in toll charges is consistent with the an assumed annual rate of inflation of 2.33 percent; this rate of inflation assumption is based on the annual rate of increase in the Consumer Price Index for southern urban areas in the United States over the last five years. Toll collection was assumed to be based on a conventional closed-barrier toll system.

Good management is also needed for any toll road to achieve its forecasted revenue potential. This includes the following:

- Adequate signage
- Effective marketing
- Enforcement of violation penalties

The traffic and revenue forecasts presented here could be rendered invalid by future events over which LMEC may have little or no control. These include:

- Unplanned transportation system modifications by other agencies

- Departures of inflation rates from expectations
- Unexpected changes in socioeconomic growth patterns and trends
- Unexpected changes in fuel prices and average fuel economy
- Major local, regional, or national emergencies
- Fundamental shifts in technology making highway use obsolete

These hypothetical future events, while possible, cannot be reliably predicted, and are therefore assumed not to occur. The inflation rate is assumed to be 2.33 percent per annum, and vehicle operating costs are expected to rise at this same rate. It would be very difficult to predict major departures from these assumptions. However, if such departures were to occur, WSA would be more than willing to provide estimates of their impact upon the traffic and revenue forecasts shown here.

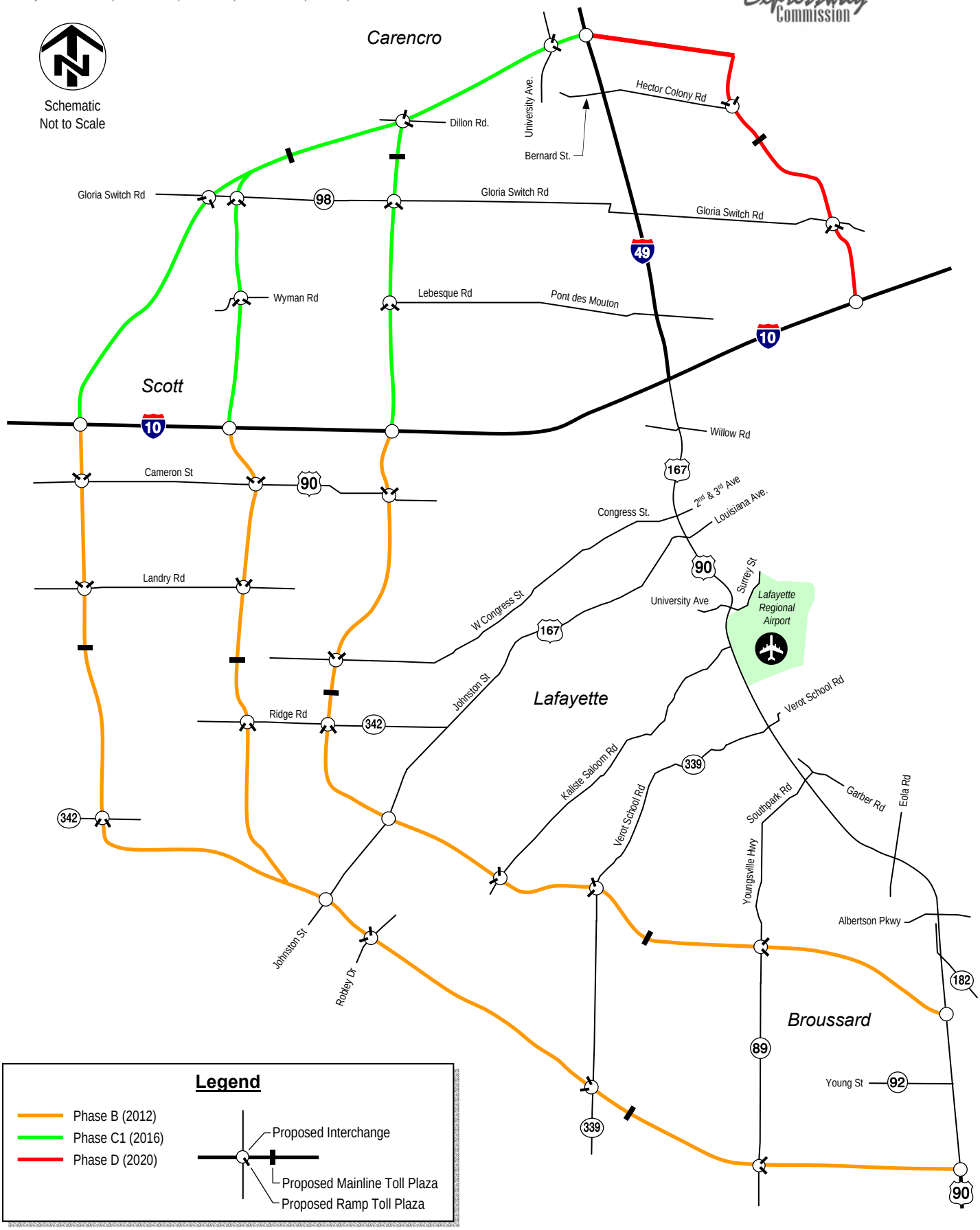
TRANSCAD MODEL

The Lafayette MPO recently went through a process in which their travel forecasting models were updated based on 2000 data. These models created forecasts of network configuration and travel demand through 2030. In addition, the platform on which the forecast estimates were based was upgraded from TRANPLAN to TRANSCAD. The Lafayette MPO provided the updated TRANSCAD-based network and forecast data to HNTB. The updated information not only provided data for 2000 and 2030, but also for all the years in between. It also indicated which of the projects yet to be built had actually been funded and which had not.

In order to prepare forecasts of traffic and revenue that could be expected from a toll facility, however, WSA must use a diversion model that runs as part of a TRANPLAN application. For that reason, it was necessary to translate the TRANSCAD network supplied by the MPO into a TRANPLAN network.

TOLL PLAZA LOCATIONS AND RATES

Figure 2-5 presents a schematic showing the toll plaza locations assumed in the analysis of three alternative routing plans for the LME.



TOLLING PLAN FOR LME

FIGURE 2-5

In order to provide useful information for deciding on facility location and rates, toll sensitivity curves were created for each of the three alternative routings using each of five possible toll rate schedules. These schedules were based on nominal rates of $0.05, $0.10, $0.15, $0.20 and $0.25 per mile. The system was designed with several tolling zones, all of which had the following characteristics:

1. Each tolling zone would have a toll-free interchange on each end of it (for example one of the tolling zones lies between Johnston Street and I-10). The tolling zones are selected so that they will be between five and fifteen miles in length and the interchanges on each end of them represent connections to other major arteries. The advantage of this is that ramps at busy interchanges can be kept free of toll barriers.

2. The toll for the mainline plaza in the tolling zone is set at the nominal per mile rate multiplied by the length of the zone and then rounded up to the next $0.25 increment. As a result, the actual rate per mile will generally be higher than the nominal rate by a small amount. An advantage is that patrons using cash need only use quarters to pay exact change – nickels and dimes are not required.

3. The toll plazas at each ramp are placed so that it not possible to get a free ride. For example, the toll plazas on the ramps at LA 342 are set so that patrons traveling northbound on the project will need to pay a toll upon exiting. This is because they could have entered the facility at Johnston Street without paying a toll and should pay one when exiting. Similarly, patrons entering the project in the southbound direction at LA 342 should pay the toll needed to travel to Johnston Street. Patrons traveling the opposite directions in each case need not pay a toll; they would have paid or will pay at the main line plaza just to the north.

4. The amount of toll to be paid at each ramp plaza is the distance from it to the free interchange that is in the opposite direction from the nearest main line plaza, with the amount round up to the next quarter.

Based on the preceding rules, the toll schedules were developed for each of the alternative alignments and nominal rates per mile. *Table 2-1* shows the toll rates for all toll rate schedules and alignment options.
For comparison purposes, *Table 2-2* provides information on current toll rates charged for various similar facilities around the country. As that table shows, rates ranging form five to twenty-five cents per mile cover the existing range quite well.

Table 2-1: Toll Rates in Toll Sensitivity Analysis

	Alternative Alignment 1					Alternative Alignment 2					Alternative Alignment 3				
	Toll Scenario					Toll Scenario					Toll Scenario				
Location of Toll Plaza	5 ct/mi	10 ct/mi	15 ct/mi	20 ct/mi	25 ct/mi	5 ct/mi	10 ct/mi	15 ct/mi	20 ct/mi	25 ct/mi	5 ct/mi	10 ct/mi	15 ct/mi	20 ct/mi	25 ct/mi
Gloria Switch Rd (East)	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
Mainline Northeast	$0.50	$0.75	$1.00	$1.50	$1.75	$0.50	$0.75	$1.00	$1.50	$1.75	$0.50	$0.75	$1.00	$1.50	$1.75
Hector Colony Rd	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75
University Ave	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
Ira St	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75
Mainline Northwest	$0.50	$1.00	$1.50	$2.00	$2.50	$0.50	$1.00	$1.50	$2.00	$2.50	$0.50	$0.75	$1.25	$1.50	$2.00
Gloria Switch Rd (West)	$0.25	$0.50	$0.75	$1.00	$1.25	---	---	---	---	---	$0.25	$0.50	$0.75	$0.75	$1.00
Wyman Rd	---	---	---	---	---	$0.25	$0.25	$0.50	$0.50	$0.50	---	---	---	---	---
Dugas Rd	---	---	---	---	---	---	---	---	---	---	$0.25	$0.50	$0.50	$0.75	$0.75
Cameron St	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
Ole Colony Rd	---	---	---	---	---	---	---	---	---	---	$0.25	$0.25	$0.50	$0.50	$0.50
Landry Rd	$0.25	$0.25	$0.50	$0.50	$0.75	$0.25	$0.25	$0.50	$0.50	$0.75	---	---	---	---	---
Mainline West	$0.50	$1.00	$1.50	$2.00	$2.50	$0.50	$0.75	$1.00	$1.50	$1.75	$0.50	$0.75	$1.00	$1.50	$1.75
Ridge Rd	$0.25	$0.50	$0.75	$1.00	$1.25	$0.25	$0.50	$0.50	$0.50	$0.75	$0.25	$0.25	$0.50	$0.50	$0.75
Golden Grain Rd	$0.25	$0.50	$0.75	$0.75	$1.00	---	---	---	---	---	---	---	---	---	---
Breaux Rd	---	---	---	---	---	$0.25	$0.25	$0.50	$0.50	$0.75	---	---	---	---	---
Lagneaux Rd	$0.25	$0.25	$0.25	$0.50	$0.50	---	---	---	---	---	---	---	---	---	---
Robley Dr	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25	$0.25
E Milton Rd	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75
Mainline Southwest	$0.50	$1.00	$1.50	$2.00	$2.50	$0.50	$1.00	$1.50	$2.00	$2.50	$0.50	$1.00	$1.50	$2.00	$2.50
Guillot Rd	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75	$0.25	$0.50	$0.50	$0.75	$0.75

Table 2-2: Toll Comparison Between Contemporary Facilities

Facility	Length (miles)	Thru Trip Toll: Passenger Car	Thru Trip Toll: 5-axle	Rate Per Mile: Passenger Car	Rate Per Mile: 5-axle
Louisiana DOTD Crescent City Connection	2.8	$ 1.00	$2.50	$0.3570	$ 0.8000
California - San Joaquin	15.0	4.00	9.00	0.2667	0.6000
California - Foothill Eastern	13.5	2.50	10.00	0.1852	0.7000
South Carolina Hilton Head Cross Island Pkwy	5.6	1.00	3.75	0.1786	0.6000
Delaware Turnpike	11.2	2.00	5.00	0.1786	0.4000
Lake Pontchartrain Greater New Orleans Expwy	24.0	3.00	7.50	0.1250	0.3100
Texas - Sam Houston w/o Exact Change	64.3	8.00	--	0.1244	--
Virginia - Richmond Express	6.3	0.70	1.30	0.1111	0.2000
Texas - DNT	21.0	2.25	5.40	0.1071	0.2500
Texas - Sam Houston Exact Change	64.3	6.00	27.00	0.0933	0.4000
Texas - Hardy - w/o Exact Change	21.7	2.00	--	0.0922	--
Texas - Hardy - Exact Chanage	21.7	1.50	7.50	0.0691	0.3000
Oklahoma - Cherokee Turnpike	32.9	2.25	7.50	0.0684	0.2200
Colorado - E-470	49.0	2.75	2.75	0.0561	0.0560
Oklahoma - Muskogee Turnpike	53.1	2.50	8.00	0.0471	0.1500
Oklahoma - Indian Nation Turnpike	105.2	4.75	16.00	0.0452	0.1520
New Jersey Turnpike	122.4	5.50	20.55	0.0449	0.1600
Oklahoma - Cimarron Turnpike	59.2	2.50	10.00	0.0422	0.1600
Oklahoma - Turner Turnpike	86.0	3.50	14.25	0.0407	0.1600
Oklahoma - Will Rogers Turnpike	88.5	3.50	14.25	0.0395	0.1600
New Hampshire - Central Turnpike	44.7	1.50	6.00	0.0336	0.1340
Kansas Turnpike	231.0	7.75	23.25	0.0335	0.1000
New Hampshire - Spaulding Turnpike	33.3	1.00	5.00	0.0300	0.1500

TOLL SENSITIVITY ANALYSIS

In order to assist in selecting an alignment option, potential revenue from each alignment was estimated for each toll rate schedule. The highway network procured from the MPO was used as a starting point for preparing the estimates of future volume on the planned facilities. The 2000 network, the 2030 network, and the list of changes that have been identified as funded were provided. Generally, forecasts are based on the existing network plus improvements for which funding has already been identified. As all funded projects are expected to be completed by 2012, all future networks were identical, except for project links.

The socioeconomic data provided with the MPO's model were interpolated between 2000 and 2030 in order to develop the trip tables for 2012, 2016, and 2020. These trip tables were then assigned to the network, supplemented by project links as defined earlier. Tolls on the links were set in accordance with the rates shown in *Table 2-3*. Assignments used the proprietary diversion curve that has been successfully applied to a wide variety of projects in the past. As the curve considers the generalized costs of traveling

via the tolled route and non-tolled routes, it is necessary to understand the value of time (VOT) and the vehicle operating cost (VOC) for the year in which the assignment is made.

Table 2-3: Toll Rates for Alternative 1

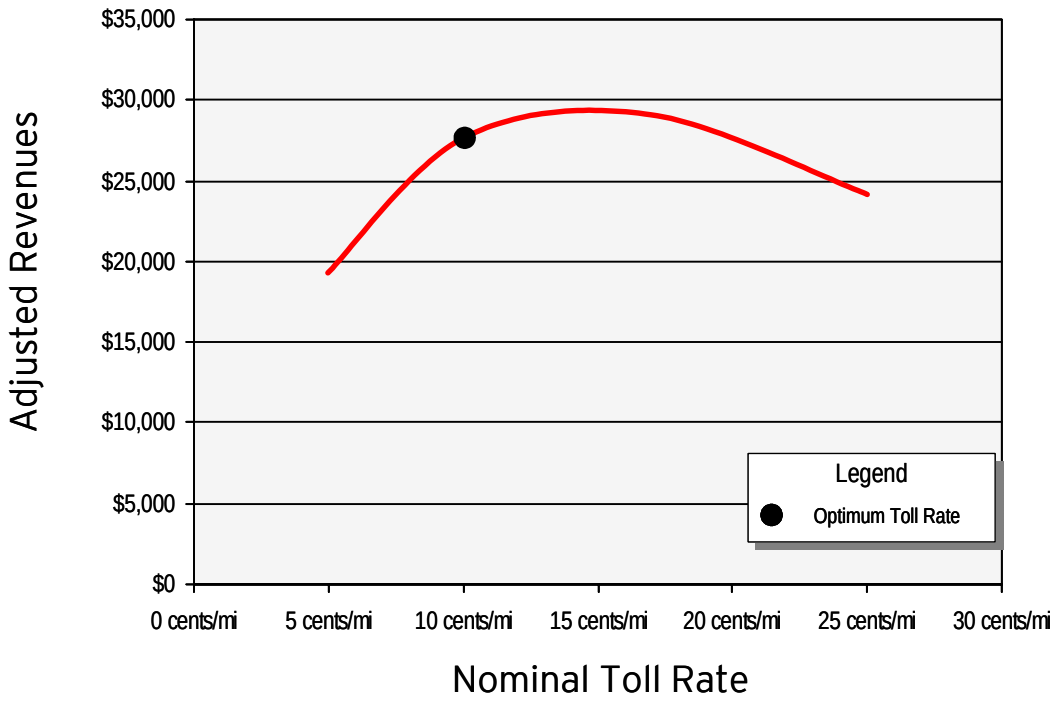
Location Toll Plaza	Phase B (2012)	Phase C1 (2016)	Phase D (2020)	Phase D (2030)
Gloria Switch Rd (East)	---	---	$0.25	$0.25
Mainline Northeast	---	---	$1.00	$1.00
Hector Colony Rd	---	---	$0.50	$0.50
University Ave	---	$0.25	$0.25	$0.25
Dillon Rd	---	$0.50	$0.50	$0.50
Mainline Northwest	---	$1.25	$1.50	$1.75
Gloria Switch Rd (West)	---	$0.50	$0.75	$0.75
Cameron St	$0.25	$0.25	$0.25	$0.25
Landry Rd	$0.25	$0.50	$0.50	$0.50
Mainline West	$1.00	$1.25	$1.25	$1.50
LA 342	$0.50	$0.75	$0.75	$0.75
Robley Dr	$0.25	$0.25	$0.25	$0.25
Verot School Rd	$0.75	$0.75	$0.75	$1.00
Mainline Southwest	$1.25	$1.25	$1.50	$1.75
LA 89	$0.50	$0.50	$0.50	$0.50

The resulting revenues were then summed so that the relationship between toll rate and total revenue could be developed for each alternative. These relationships are depicted in *Figures 2-6 through 2-8*.

Figure 2-6 shows a pair of charts that provides the relationship between transactions and toll rates for Alternative 1. As the revenue curve shows, maximum revenue would be generated at a rate between $0.10 and $0.15 per mile. *Figures 2-7 and 2-8* show transactions and revenue for Alternatives 2 and 3, respectively. In each of those cases, maximum revenues occur at a rate between $0.10 and $0.15 per mile.

Clearly, Alternative 3 provides that largest amount of revenue. However, a large part of its margin is based on the ability of motorists to obtain access efficiently to residential and commercial areas along Johnston Street that are already developed. To the extent that opening new capacity along Alternative 3 would stimulate new development which is not already planned, that corridor could generate additional revenue. Once this study moves beyond a preliminary assessment, an independent economist will assess the extent to which new highway capacity could stimulate such development. In this particular case, no additional development beyond that expected already has been assumed. For additional analysis, the LMEC has selected Alternative 1. This corridor, while not generating the largest amount of revenue, may have the best potential for stimulating growth.

Figure 2-6: Toll Sensitivity Curves for Alternative 1



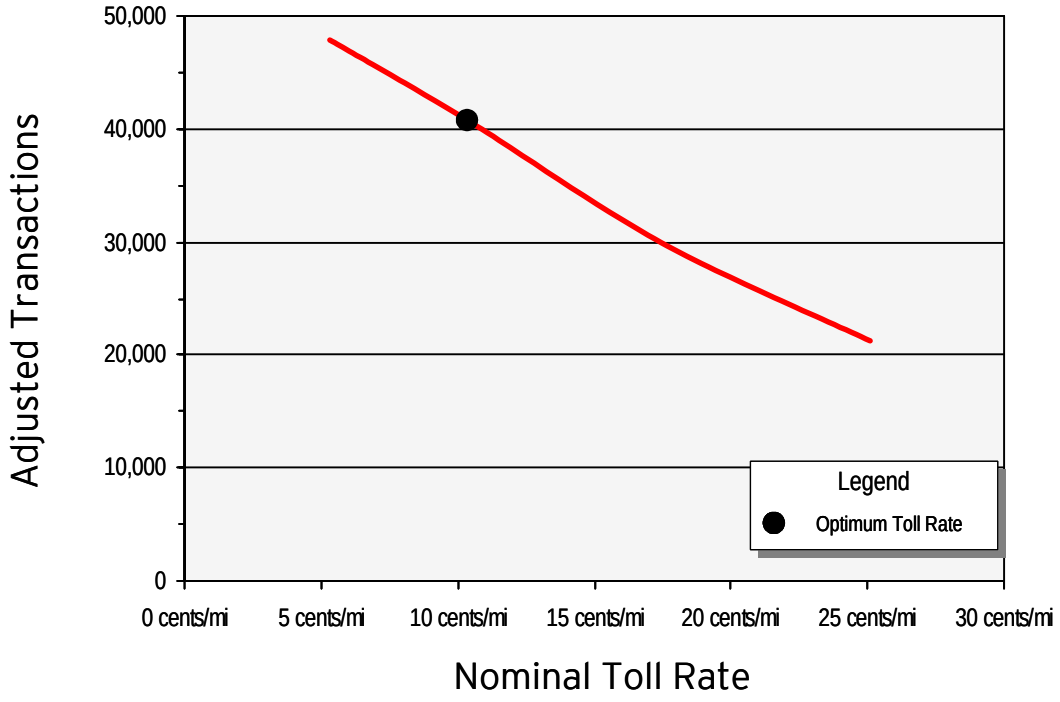
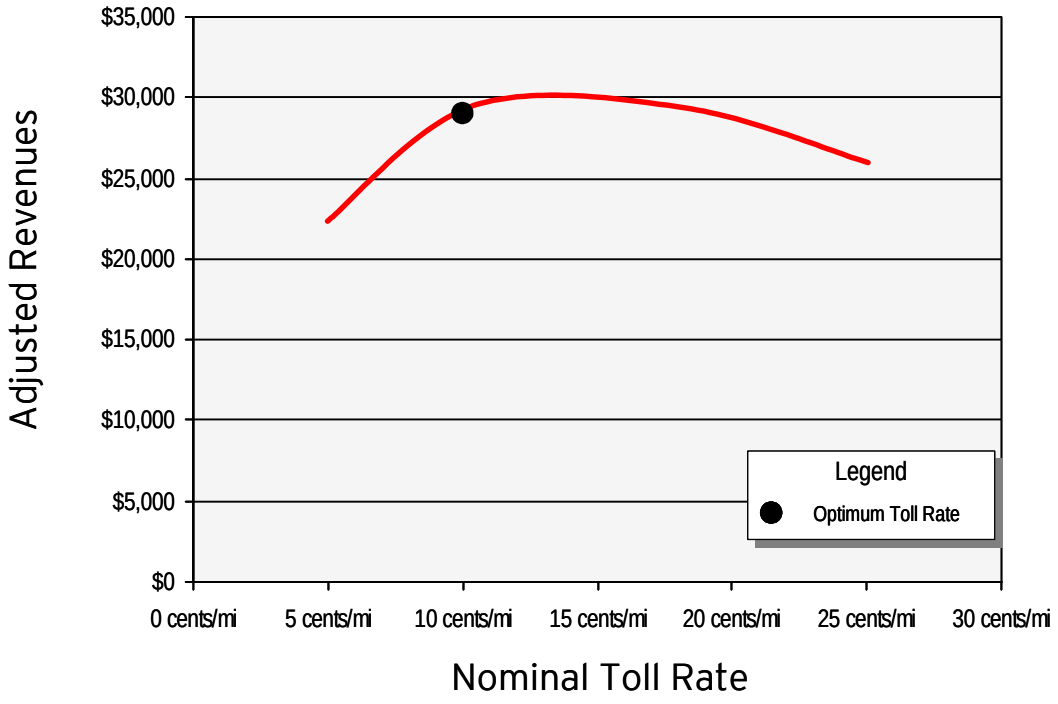


Figure 2-7: Toll Sensitivity Curves for Alternative 2



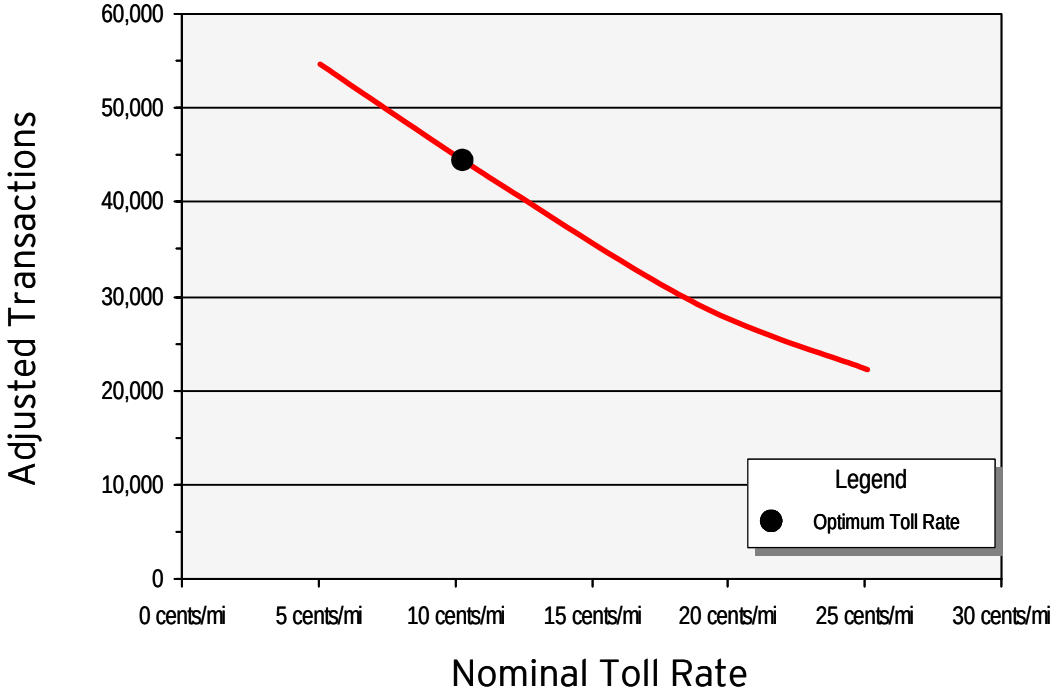
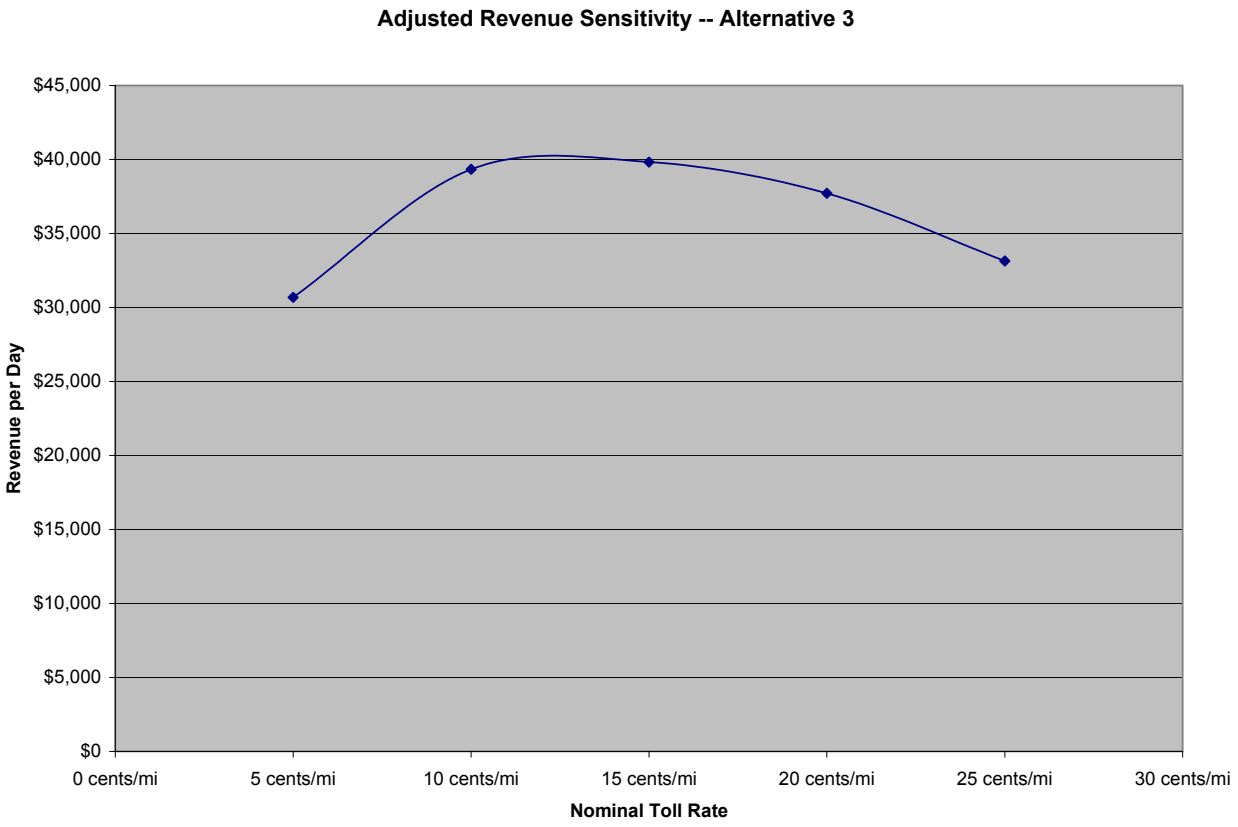
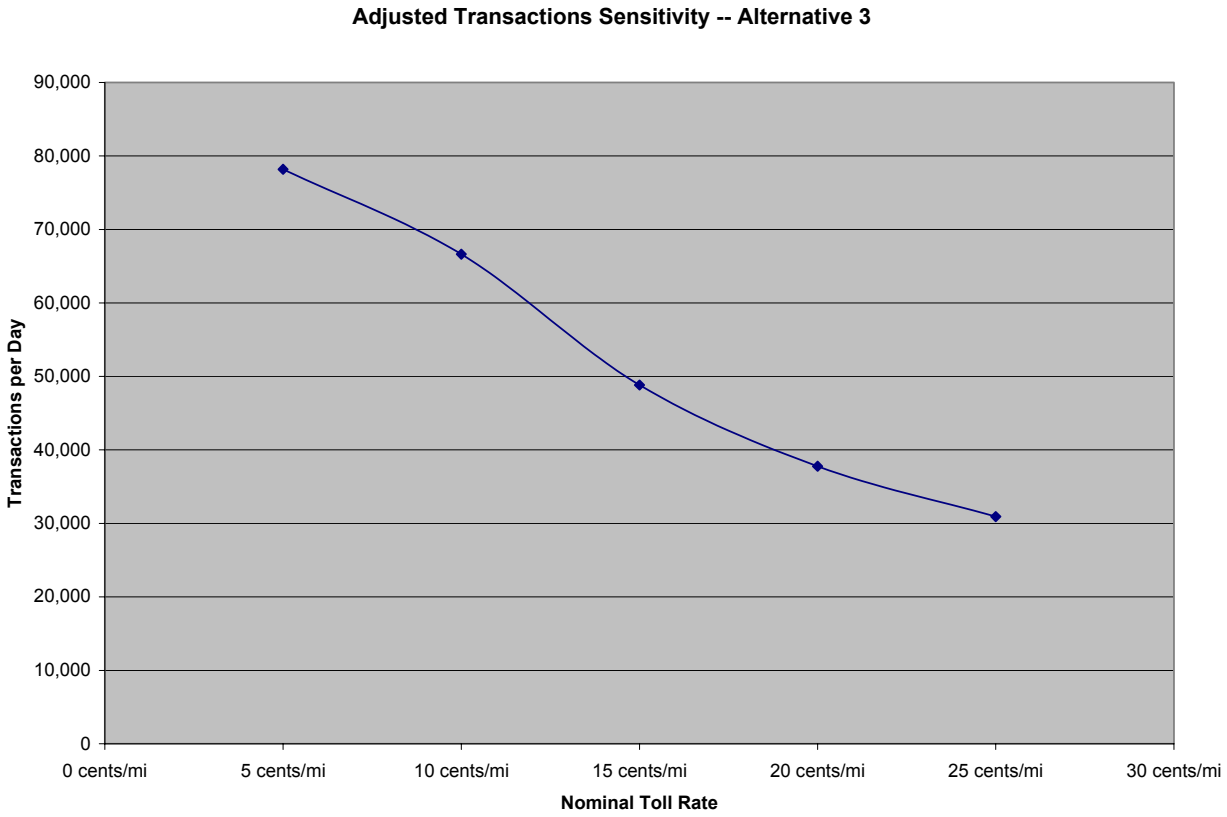


Figure 2-8: Toll Sensitivity Curves for Alternative 3





SELECTED TOLL RATE

The toll rate given consideration for further analysis is one that is close to but does not exceed the one yielding maximum revenue. This approach is a conservative one as it allows for the following:

1. If future conditions result in the LMEC needing additional funds, they can be raised by increasing the toll.

2. If a recession were to occur that lowers travel demand or decreases the value of time then demand for the facility would decline and so would the optimum toll rate.

By selecting a rate that is slightly below optimum, LMEC will maintain needed flexibility. As the toll sensitivity curves show, the optimum rate would be at about a nominal $0.12 per mile. In light of flexibility needs, WSA would recommend a rate of $0.10 per mile. This rate compares reasonably with one that was used in an earlier study of the I-49 extension. That study indicated that a rate of about $0.07 per mile would be good for 2000. With the opening year for this project being 2012 and the rate of inflation being 2.33 percent annually, that translates into a bit more than $0.09 per mile.

Commercial vehicles are assumed to have a rate that is, on average, 2.5 times the rate of the passenger car. The assignment of vehicles to the Lafayette network assumes a value of time that is 3.0 times that of the passenger car, an operating cost that is 5.5 times that of the passenger car. These factors for toll rate, VOT, and operating cost are based on similar amounts chosen in previous studies.

PROJECT PHASING

In addition to showing corridors for all three alternatives, *Figure 2-5* provides information on project phasing. As *Figure 2-5* shows, the LME would encircle about three quarters of the City of Lafayette.

The three corridors vary by the lateral position of the links on the west side. Alternative 1 lies farthest west, Alternative 2 lies in the center, and Alternative 3 lies farthest east. All three routes share east-west segments on the north and northeast sides of the city.

On the south side of the city, Alternatives 1 and 2 follow the same east/west path while Alternative 3 follows a more northerly course, closer to the city.

In 2012, Segment B will be open to traffic. That segment includes all of the miles in the southwest section connecting I-10 with future I-49. In 2016, Segment C1 will be constructed. It includes the portion of the facility connecting I-10 with I-49 in the northwest. Segment D, which is common to all three alignments, will be constructed and open by 2020.

One important element for determining the corridor to be selected for further analysis is the amount of revenue that it could generate. For that part of the analysis, it was assumed that all segments would be constructed and open to traffic by 2012. Then a comparison of toll revenue at the optimum toll rate was made to see which alternative would have the capacity for the largest amount of revenue so that the revenue-generation potential could be considered when selecting a corridor.

Once an alternative had been selected, it was analyzed with construction proceeding according to the planned segments. This resulted in a year-by-year cash flow estimate for the facility.

ECONOMIC DEVELOPMENT ASSESSMENT

This section begins with an evaluation of the forecasts of employment and population made by the Lafayette MPO. Forecasts of population and employment play a vital role in the creation of traffic and revenue estimates for toll facilities. Population and employment cause the underlying demand for transportation and form the basis by which growth in traffic volumes occur. Population and employment are also the underlying cause for changes in the distribution of traffic in the future. MPOs, such as the Lafayette Consolidated Government (LCG), periodically undertake forecasts of demographic variables. These forecasts are used for many purposes, one of which is long-range transportation planning.

For the socioeconomic data review portion of this study, Wilbur Smith Associates (WSA) had two major tasks. The first was to review the population and employment forecasts prepared by the LCG. WSA also assessed the potential land development that could be induced as a result of constructing the Lafayette Metropolitan Expressway. That assessment was made on a qualitative basis, providing the MPO with an understanding of the types of development that may be attracted as a result of the roadway's construction.

In order to review the LCG's forecasts of population and employment for the region WSA first gathered population data on Lafayette Parish. The table shows population for the entire Parish, broken down into incorporated and unincorporated areas. This information is presented in *Table 2-4*.

Table 2-4: Lafayette Parish Historical Population Growth

	1970	AAPC	1980	AAPC	1990	AAPC	2000
Broussard	1,707	5.53	2,923	0.95	3,213	6.22	5,874
Carencro	2,302	4.89	3,712	3.88	5,429	1.21	6,120
Duson	1,199	0.44	1,253	0.31	1,292	0.71	1,387
Lafayette	68,908	1.75	81,961	1.43	94,440	1.56	110,257
Scott	1,334	5.31	2,239	8.17	4,912	4.83	7,870
Youngsville	1,102	-0.45	1,053	1.27	1,195	12.82	3,992
Incorporated Subtotal	***76,552***	1.98	***93,141***	1.72	***110,481***	2.06	***135,500***
Unincorporated Areas	35,091	4.95	56,876	-0.47	54,281	0.13	55,003
Total	***111,643***	3.00	***150,017***	0.94	***164,762***	1.46	***190,503***

As shown, population growth in Lafayette parish has been strong over the last 30 years. Growing by almost two percent a year, the population in the incorporated areas of the Lafayette Parish has increased by nearly 60,000 people. After growing at a very robust rate of nearly five percent annually between 1970 and 1980, population in the unincorporated areas of the Parish remained nearly unchanged at about 56,000 between 1980 and 2000. Overall, population growth has remained steady, growing by almost 1.5 percent annually from 1990 to 2000.

For comparison purposes, WSA also compared the population growth rate contained in the Lafayette Consolidated Government's forecast to that of Woods and Poole Economists, Inc. WSA typically uses sources such as Woods and Poole to verify and compare growth rates produced by the local MPO. *Table 2-5* shows this comparison.

Table 2-5: Comparison of Average Annual Percent Change in Population

	2000	AAPC	2010	AAPC	2020	AAPC	2030
Lafayette Consolidated Government	218,895	1.16%	245,619	0.96%	270,203	0.80%	292,596
Woods and Poole Economics, Inc.	239,250	0.94%	262,720	0.99%	290,010	1.00%	320,430

The comparison shows that both the LCG and Woods and Poole, Inc are anticipating similar growth for the region through 2030. While the forecast produced by the LCG shows slightly higher growth between 2000 and 2010 than does the Woods and Poole forecast, the growth rate is still much lower than population growth between 1990 and 2000 in Lafayette Parish.

Based on the Lafayette Region's historical population growth and the comparison between forecasts for the region, WSA feels comfortable with the growth assumed in the LCG's forecast. WSA has therefore utilized the LCG's forecasted population and employment for the purpose of this preliminary-level study.

POTENTIAL LAND DEVELOPMENT

In the Lafayette Consolidated Government's long-range planning document, Lafayette in a Century, it was noted that by increasing industry within the community, an increase in population is likely to follow. This process then continues to businesses such as retail, which are necessary to serve the additional population. In order to stimulate this process, a strong emphasis has been placed on economic development in Lafayette Parish. Many economic development tools such as Tax Increment Financing (TIF) and Seed/Venture Capital are discussed as potential options. As stated in *Lafayette in a Century*, the responsible implementation of TIF in Lafayette Parish can be used for encouraging specific development in targeted areas.

The plan also includes recommendations about infrastructure development as it pertains to economic development. The plan recognizes that the development of infrastructure can have a significant impact on economic development. For example, businesses cannot locate in the area unless the infrastructure needed to service their basic requirements (for example, water lines) is readily available. Another example of basic infrastructure needs is provision of adequate transportation infrastructure.

The factors that influence the decision-making process that a business would use to determine location are unique to that business. Each company must determine which factors are most important in the placement of their business. Transportation infrastructure can be a key factor though, for many reasons. Companies in which transportation costs accounting for a large portion of their total costs may be more likely to invest in a location that has the transportation infrastructure in place to lower their transportation costs. Businesses that require large numbers of employees but cannot pay large salaries would be very interested in locating where a large labor force exists as well as the transportation infrastructure that would allow employees to get to and from the work site quickly and easily.

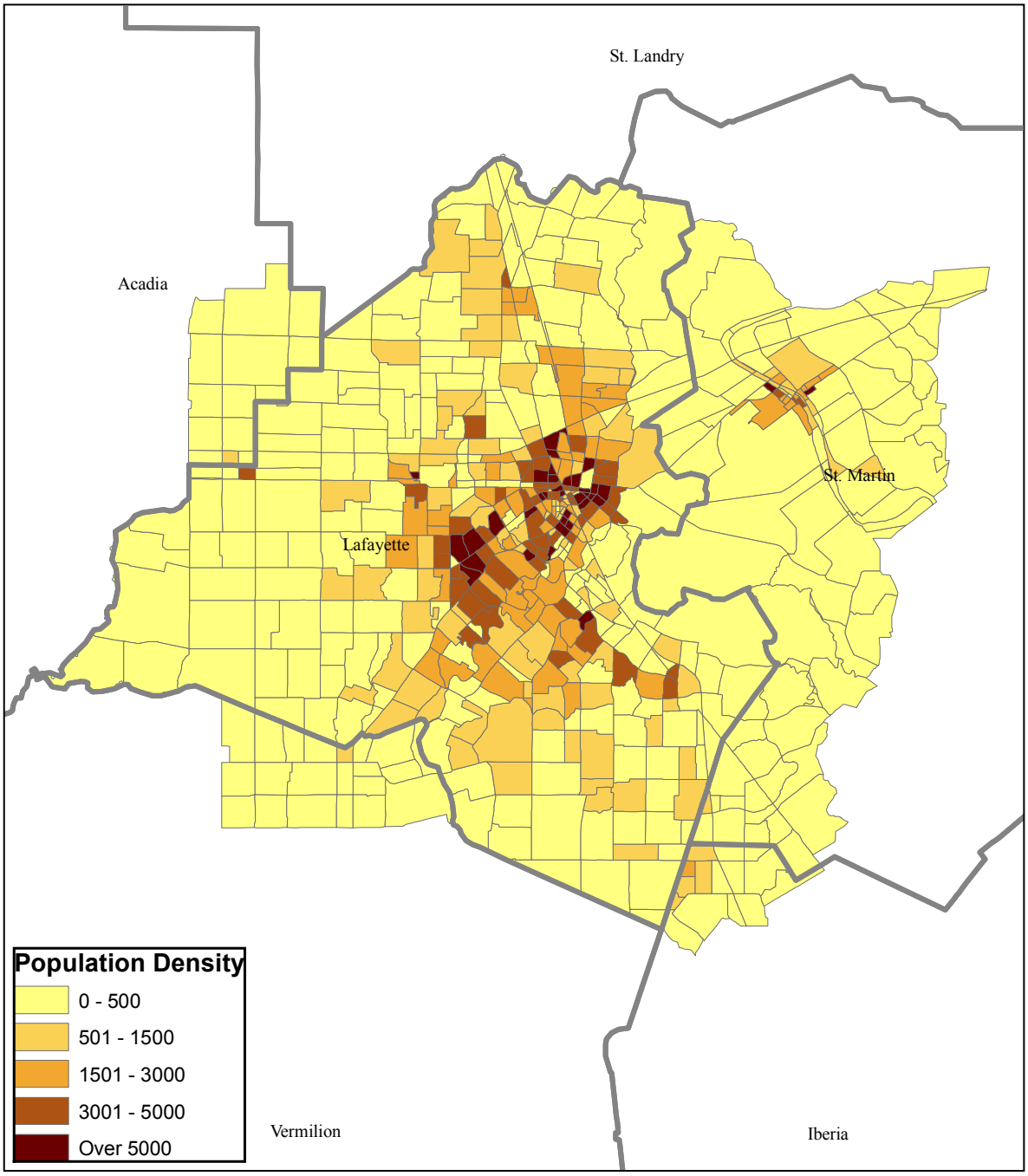
Also, when considering transportation in the context of making a location decision, companies which use a just-in-time (JIT) manufacturing approach will consider the transportation system's impact on the timely arrival of goods. In order to effectively implement a JIT system, the transportation system must not hinder the delivery of manufacturing inputs or the shipment of completed goods. Therefore,

companies that depend on the shipment of goods may place a high importance on transportation infrastructure.

Also, transportation infrastructure plays a vital role in location decisions by improving, or hindering, access to the business. For retail businesses, having an effective transportation system is important in ensuring customers can reach your business. Transportation systems can also have an impact on how easy it is for employees to travel to work. Better transportation systems allow businesses to attract employees from further distances.

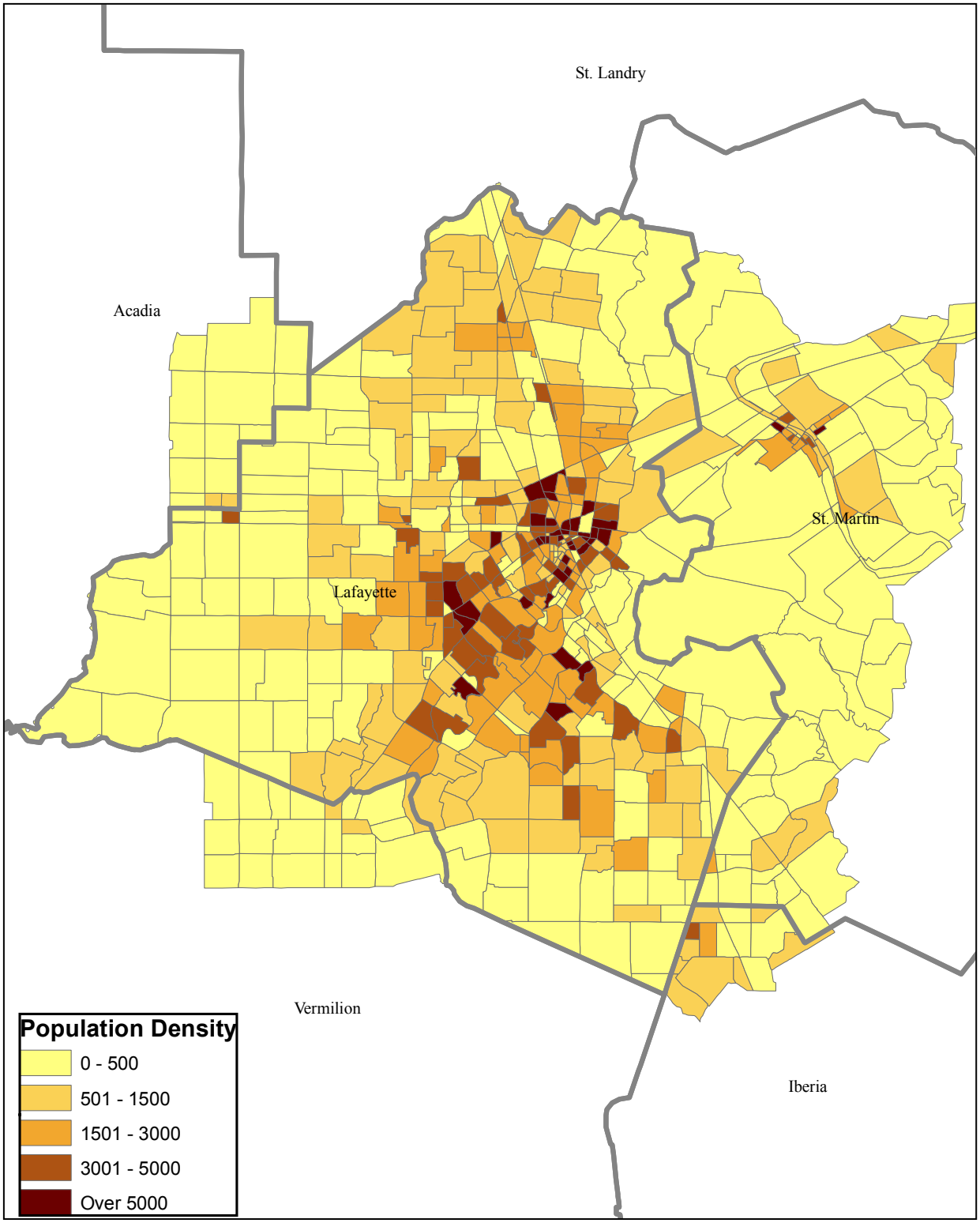
For this project, the anticipated growth in the various transportation analysis zones of the Lafayette area was closely examined. As is demonstrated by the 2000 and 2030 population density maps, *Figures 2-9 and 2-10*, higher density population areas will already be reaching the location of the project, regardless of the alignment alternative selected, by 2030. This shows that not only can the project be viewed as a tool to stimulate growth in the region, but also as a necessary transportation artery to serve the growth that is already anticipated.

Figure 2-9: Lafayette Area Population Density, 2000



Source: 2000 U.S. Census Bureau.

Figure 2-10: Lafayette Area Population Density, 2030



Source: Lafayette Consolidated Government MPO.

The west side of the proposed toll road is primarily located in low density areas of Lafayette Parish. Compared to the other parts of the parish, the TAZs in the western corridor are not expected to see significant population growth in the next 25 years. Construction of the toll road could make additional growth more likely in this area. The transportation system improvements in the area could stimulate additional residential and business development. Depending on the amount of residential development, retail and service oriented businesses might locate to the area to serve the expanding population. The amount of such additional growth would be difficult to determine.

The northern and southern corridors of the proposed toll road are also located in primarily low density areas of the parish, but are denser than the western corridor of the project. These two areas are forecasted to gain more population than will the western portion of the parish. This means that the toll road would not only provide a stimulus for development, but also serve to meet the travel needs of the future population in these areas. Because these areas are expected to have a higher population density than the western part of Lafayette Parish, business development might be more likely to happen in these corridors due to the additional transportation capacity provided by the toll road.

Another consideration when evaluating the amount of development which may occur as a result of the toll road is the amount of the corridor which is in a 100-year flood plain. In the western corridor, all three alternatives are at least partially located within a 100-year flood plain. Development on a flood plain is generally held to standards that are stricter than development not located in a flood plain. The additional cost of flood insurance may also have an impact on the development that might occur in these areas

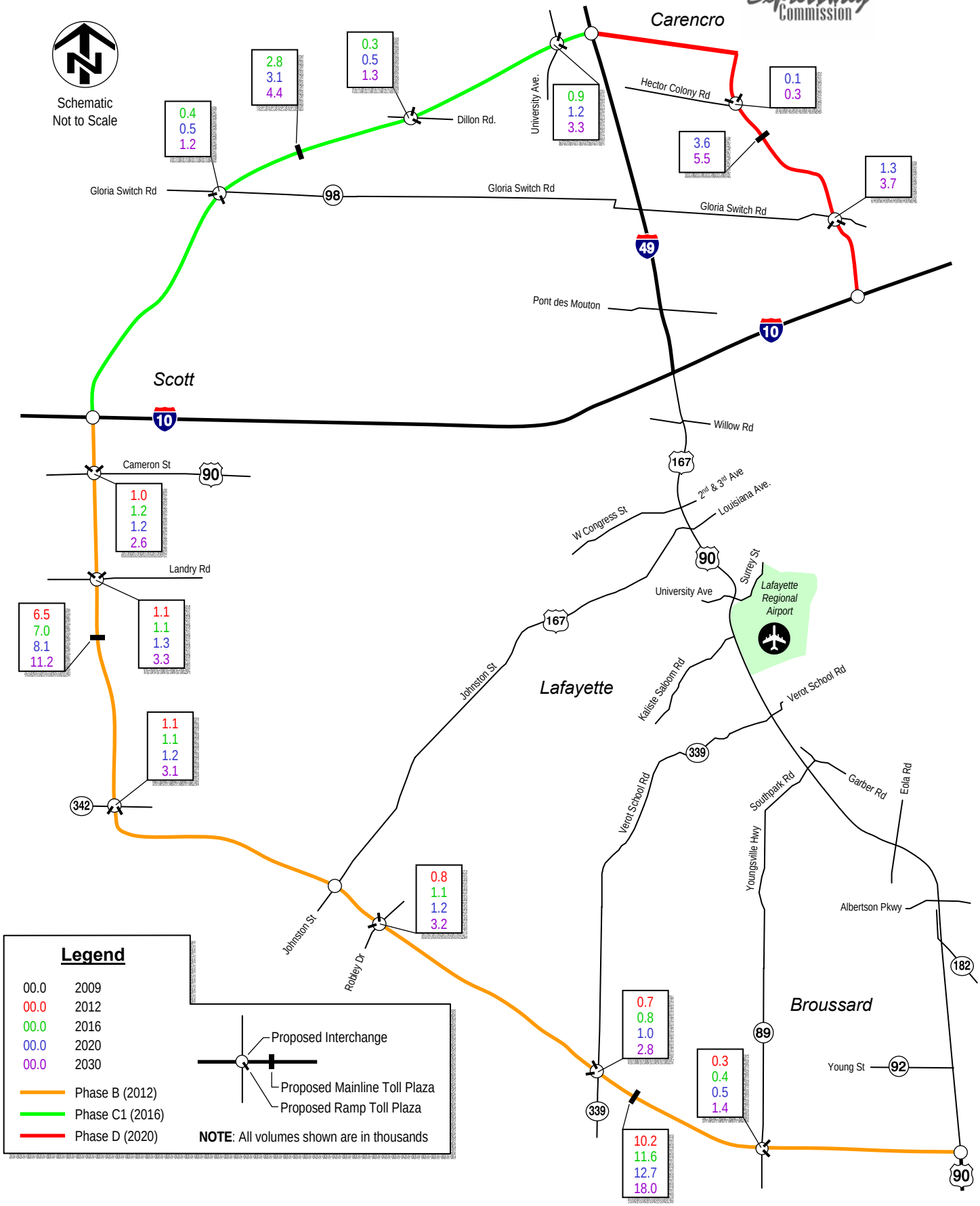
While the western portion of the project could see the largest amount of attracted growth, it also has the most difficulty with respect to development occurring on a flood plain. While the construction of the toll road may provide a stimulus for the development of land in western Lafayette Parish, this study does not account for this potential development. By not including any additional growth that might occur due to the toll road's construction, WSA believes that the socioeconomic data used in this study are a conservative estimate of future growth in Lafayette Parish.

TRAFFIC AND TOLL REVENUE ANALYSIS

TRAFFIC AND TOLL REVENUE FOR ALTERNATIVE 1

Based on input from the LMEC, Alternative 1 was studied in more detail for traffic and toll revenue. Results of these studies are to be used in preliminary financial feasibility analyses. *Figure 2-11* shows the estimated traffic on the toll facilities for 2012, 2016, and 2020 and 2030 as alternative alignment 1 is constructed in its various segments. These segments are as follows:

- Segment B, to be open to traffic by 2012: the southwest portion of the facility, between I-10 on the west side and the extension of I-49.
- Segment C1, to be open by 2016: the northwest portion of the facility, between I-49 on the north side and I-10 on the west side.
- Segment D, to be open by 2020: the northeast portion of the facility, between I-49 on the north side and I-10 on the east side.



ESTIMATED VOLUMES FOR ALTERNATIVE 1

FIGURE 2-11

The volumes shown in the figure are in thousands of vehicles per day for each of the project links that carry a toll. To determine the revenue at each tolling location, it is important to consider passenger cars and commercial vehicles separately. *Tables 2-6 and 2-7* summarize this information. *Table 2-6* provides expected daily volumes for both passenger cars and commercial vehicles at each toll plaza. *Table 2-7* shows the annual revenue at each location, calculated by adding the daily passenger car tolls collected with the daily commercial vehicle tolls collected and multiplying by 365.

Table 2-6: Tolled Volumes for Alternative 1

	2012			2016			2020			2030		
Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	600	100	700	700	100	800	900	100	1,000	1,300	100	1,400
Mainline Southwest	8,600	1,600	10,200	9,900	1,700	11,600	10,900	1,800	12,700	15,900	2,200	18,100
Verot School Rd	1,000	400	1,400	1,200	500	1,700	1,400	500	1,900	2,500	600	3,100
Robley Dr	1,400	300	1,700	1,900	300	2,200	2,100	400	2,500	3,000	400	3,400
LA 342	1,300	800	2,100	1,300	800	2,100	1,500	900	2,400	2,600	1,000	3,600
Mainline West	4,500	2,000	6,500	4,900	2,200	7,100	5,800	2,300	8,100	8,700	2,600	11,300
Landry Rd	1,800	400	2,200	1,800	400	2,200	2,100	400	2,500	3,000	500	3,500
Cameron St	1,500	400	1,900	1,900	500	2,400	2,000	500	2,500	2,400	500	2,900
Gloria Switch Rd (West)	---	---	---	500	400	900	500	400	900	900	400	1,300
Mainline Northwest	---	---	---	1,900	900	2,800	2,000	1,000	3,000	3,200	1,200	4,400
Dillon Rd	---	---	---	600	100	700	700	200	900	1,100	200	1,300
University Ave	---	---	---	1,700	200	1,900	2,100	300	2,400	3,100	400	3,500
Hector Colony Rd	---	---	---	---	---	---	100	---	100	300	100	400
Mainline Northeast	---	---	---	---	---	---	2,800	800	3,600	4,500	1,000	5,500
Gloria Switch Rd (East)	---	---	---	---	---	---	2,300	400	2,700	3,500	400	3,900

	2012			2016			2020			2030		
Section	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
Phase B (2012)	20,600	6,000	26,600	23,600	6,500	30,100	26,600	6,800	33,400	39,300	7,900	47,200
Phase C1 (2016)	---	---	---	4,700	1,600	6,300	5,400	1,900	7,300	8,400	2,300	10,700
Phase D (2020)	---	---	---	---	---	---	5,200	1,200	6,400	8,200	1,400	9,600
Grand Total	20,600	6,000	26,600	28,300	8,100	36,400	37,200	9,900	47,100	55,900	11,600	67,500

Table 2-7: Annual Revenues for Alternative 1

	2012			2016			2020			2030		
Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	$111,000	$35,000	$146,000	$132,000	$38,000	$170,000	$159,000	$42,000	$201,000	$237,000	$54,000	$291,000
Mainline Southwest	$3,916,000	$1,861,000	$5,777,000	$4,530,000	$1,952,000	$6,482,000	$5,955,000	$2,458,000	$8,413,000	$10,132,000	$3,433,000	$13,565,000
Verot School Rd	$273,000	$283,000	$556,000	$337,000	$319,000	$656,000	$396,000	$329,000	$725,000	$916,000	$543,000	$1,459,000
Robley Dr	$126,000	$60,000	$186,000	$170,000	$73,000	$243,000	$190,000	$84,000	$274,000	$271,000	$92,000	$363,000
LA 342	$243,000	$365,000	$608,000	$363,000	$552,000	$915,000	$403,000	$583,000	$986,000	$722,000	$671,000	$1,393,000
Mainline West	$1,625,000	$1,846,000	$3,471,000	$2,213,000	$2,467,000	$4,680,000	$2,635,000	$2,618,000	$5,253,000	$4,736,000	$3,544,000	$8,280,000
Landry Rd	$162,000	$94,000	$256,000	$336,000	$196,000	$532,000	$382,000	$205,000	$587,000	$548,000	$249,000	$797,000
Cameron St	$138,000	$92,000	$230,000	$170,000	$120,000	$290,000	$180,000	$116,000	$296,000	$217,000	$118,000	$335,000
Gloria Switch Rd (West)	---	---	---	$95,000	$166,000	$261,000	$144,000	$258,000	$402,000	$256,000	$302,000	$558,000
Mainline Northwest	---	---	---	$863,000	$989,000	$1,852,000	$1,121,000	$1,392,000	$2,513,000	$2,028,000	$1,897,000	$3,925,000
Dillon Rd	---	---	---	$108,000	$48,000	$156,000	$132,000	$82,000	$214,000	$207,000	$110,000	$317,000
University Ave	---	---	---	$152,000	$53,000	$205,000	$191,000	$68,000	$259,000	$284,000	$87,000	$371,000
Hector Colony Rd	---	---	---	---	---	---	$24,000	$23,000	$47,000	$46,000	$26,000	$72,000
Mainline Northeast	---	---	---	---	---	---	$1,008,000	$721,000	$1,729,000	$1,644,000	$871,000	$2,515,000
Gloria Switch Rd (East)	---	---	---	---	---	---	$210,000	$83,000	$293,000	$318,000	$94,000	$412,000

0	2012			2016			2020			2030		
Section	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
Phase B (2012)	$6,593,000	$4,635,000	$11,228,000	$8,252,000	$5,718,000	$13,970,000	$10,300,000	$6,434,000	$16,734,000	$17,779,000	$8,704,000	$26,483,000
Phase C1 (2016)	---	---	---	$1,219,000	$1,256,000	$2,475,000	$1,587,000	$1,800,000	$3,387,000	$2,775,000	$2,396,000	$5,171,000
Phase D (2020)	---	---	---	---	---	---	$1,242,000	$826,000	$2,068,000	$2,008,000	$992,000	$3,000,000
Grand Total	$6,593,000	$4,635,000	$11,228,000	$9,471,000	$6,974,000	$16,445,000	$13,128,000	$9,061,000	$22,189,000	$22,562,000	$12,092,000	$34,654,000

Table 2-8 provides a summary of annual revenue for the entirety of Alternative 1 for the LME for all years from 2012 through 2030. Revenues in intermediate years are calculated with constant growth factors from one known year to the next.

Table 2-8: Cash Flow for Alternative 1, 2012-2030

Year	Toll Revenue
2012	$ 11,229,000
2013	$ 11,580,000
2014	$ 11,942,000
2015	$ 12,315,000
2016	$ 16,445,000
2017	$ 16,955,000
2018	$ 17,481,000
2019	$ 18,022,000
2020	$ 22,189,000
2021	$ 23,207,000
2022	$ 24,268,000
2023	$ 25,378,000
2024	$ 26,537,000
2025	$ 27,748,000
2026	$ 29,012,000
2027	$ 30,332,000
2028	$ 31,711,000
2029	$ 33,151,000
2030	$ 34,654,000

Construction of the LME will result in other area roadways carrying either more or less traffic depending on whether tolls placed on existing routes will divert traffic from them or whether construction of new capacity will result in diversion of traffic from the non-toll roadways onto the new capacity.

Several locations where an effect may be noticeable are of concern to the local government agencies:

1. Ambassador Caffery Parkway at Johnston Street
2. Johnston Street and South College Drive
3. Kaliste-Saloom at Pinhook Road
4. Ambassador Caffery Parkway at Congress Street

In order to determine how the proposed facilities will affect traffic at those locations, the assignment for 2030 was examined. This assignment shows the number of vehicles that are estimated to traverse those locations on a daily basis in that year. Since one assignment was made with no facilities built and one assignment with the LME built (Alternative 1), it will be possible to make a preliminary investigation of the effect of the facility construction on volumes in those locations.

This effect is summarized in *Table 2-9*. That table shows the raw assignment volumes for each direction over each link at the intersections in question. A difference between the volumes and a ratio is provided in each case. For Alternative 1, none of the links in the intersection appear to enjoy significant congestion relief as a result of the project being constructed. Alternative 3, which is closer to the existing congested areas, would be expected to have a more noticeable benefit.

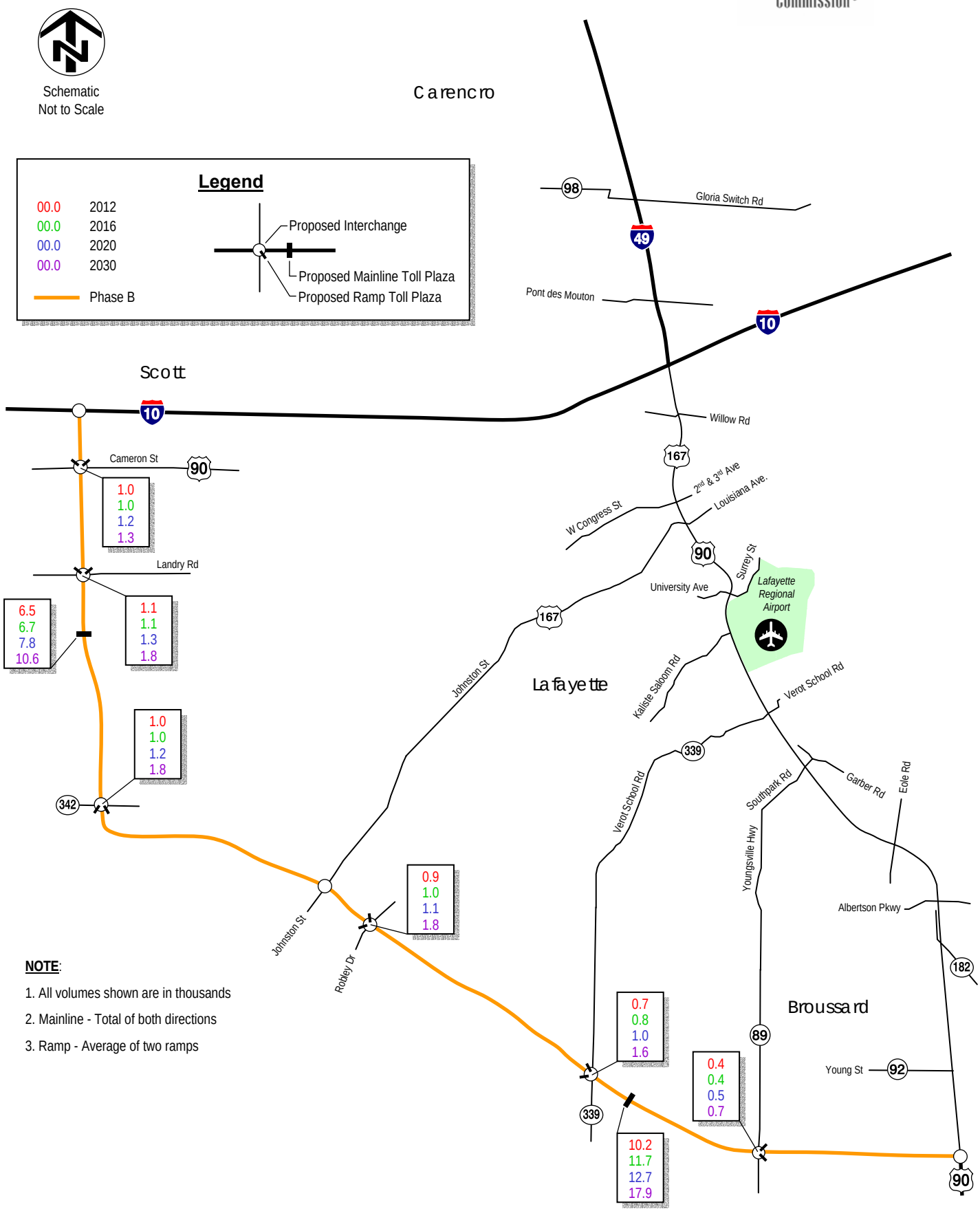
Table 2-9: Effect of Alternative 1 Toll System on Other Routes

Intersection	*Approach Volumes*				*Departure Volumes*			
Ambassador Caffery Parkway and Johnston Street	Ambassador-Caffery Parkway		Johnston Street		Ambassador-Caffery Parkway		Johnston Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	47,360	23,900	40,360	20,940	48,390	23,710	40,590	19,860
Volume with LME	45,030	21,060	41,850	21,990	45,960	21,010	41,960	20,990
Volume Difference	-2,330	-2,840	1,490	1,050	-2,430	-2,700	1,370	1,130
Volume Ratio	95.1%	88.1%	103.7%	105.0%	95.0%	88.6%	103.4%	105.7%
Johnston Street and College Road	Johnston Street		College Road		Johnston Street		College Road	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	18,520	13,580	24,020	17,580	17,760	13,890	24,000	18,050
Volume with LME	21,030	13,700	24,800	16,720	19,760	17,490	22,600	16,410
Volume Difference	2,510	120	780	-860	2,000	3,600	-1,400	-1,640
Volume Ratio	113.6%	100.9%	103.2%	95.1%	111.3%	125.9%	94.2%	90.9%
Kaliste Saloom Road at Pinhook Rd	Kaliste Saloom Rd		Pinhook Rd		Kaliste Saloom Rd		Pinhook Rd	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,280	6,380	38,800	18,060	30,480	8,770	36,600	17,680
Volume with LME	29,990	6,230	38,680	17,870	30,150	10,180	34,720	17,730
Volume Difference	-290	-150	-120	-190	-330	1,410	-1,880	50
Volume Ratio	99.0%	97.6%	99.7%	98.9%	98.9%	116.1%	94.9%	100.3%
Ambassador-Caffery Parkway at Congress Street	Ambassador-Caffery Parkway		Congress Street		Ambassador-Caffery Parkway		Congress Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,730	37,040	8,330	16,820	30,570	37,230	8,450	16,670
Volume with LME	29,490	36,270	8,550	17,020	29,340	36,410	8,710	16,880
Volume Difference	-1,240	-770	220	200	-1,230	-820	260	210
Volume Ratio	96.0%	97.9%	102.6%	101.2%	96.0%	97.8%	103.1%	101.3%

No final judgment about any capacity problems that may exist can be made until one considers manual adjustments to the raw assignments that may be required to add realism. These adjustments would need to consider the effects of design characteristics of the intersection at hand as well as other routes that could service the volumes here. In addition, a more thorough understanding of the individual turning movements and the design characteristics of each intersection are needed to provide a thorough review of the detailed capacity impacts for these locations. A more thorough analysis of facility impacts on non-tolled links should be prepared before making any final conclusions.

TRAFFIC AND TOLL REVENUE ANALYSIS FOR SEGMENT B ONLY

The traffic and toll revenue potential for the construction of only Segment B of the LME was analyzed for Alternative 1 and Alternative 3. *Figure 2-12* shows the estimated traffic on Alternative 1 for Segment B only, for the years 2012, 2016, 2020 and 2030. Similarly, *Figure 2-13* shows the estimated traffic on Alternative 3 for Segment B only for the same years. It is assumed that Segment B will open as a fully built facility in 2012 for both alternatives. Alternative 3 exhibits much higher volumes as compared to Alternative 1 due to Alternative 3 being much closer to current development.

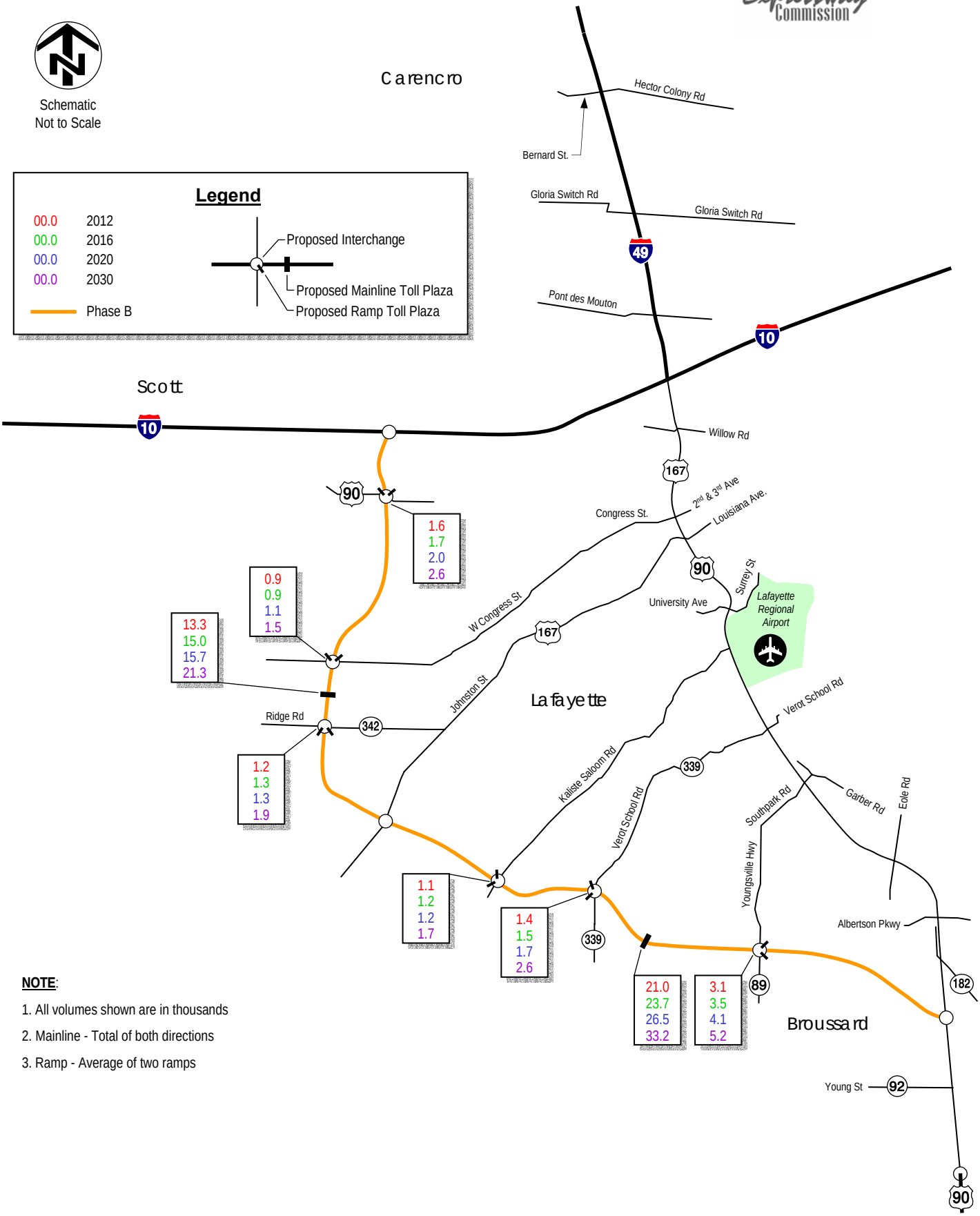


NOTE:

1. All volumes shown are in thousands
2. Mainline - Total of both directions
3. Ramp - Average of two ramps

ESTIMATED DAILY VOLUMES FOR LME – SEGMENT B, ALTERNATIVE 1

FIGURE 2-12



NOTE:

1. All volumes shown are in thousands
2. Mainline - Total of both directions
3. Ramp - Average of two ramps

ESTIMATED DAILY VOLUMES FOR LME – SEGMENT B, ALTERNATIVE 3

FIGURE 2-13

Table 2-10 shows the daily traffic for each ramp and mainline plaza for Segment B, Alternative 1 and *Table 2-11* displays the same information for Segment B, Alternative 3. *Tables 2-12* and *2-13* show resulting revenues for Alternative 1 and Alternative 3, respectively, detailed to the vehicle type. As noted previously, Alternative 3 captures much more traffic and therefore produces more revenue than Alternative 1. *Table 2-14* displays this, showing gross expected toll revenue for both Alternatives from 2012 through 2030.

Table 2-10: Tolled Volumes for Segment B, Alternative 1

	2012			2016			2020			2030		
Plaza Location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	600	100	700	700	100	800	900	100	1,000	1,300	100	1,400
Mainline Southwest	8,600	1,600	10,200	10,000	1,700	11,700	10,900	1,800	12,700	15,800	2,100	17,900
Verot School Rd	1,000	400	1,400	1,200	400	1,600	1,500	500	2,000	2,500	600	3,100
Robley Dr	1,400	300	1,700	1,700	300	2,000	1,800	300	2,100	3,100	400	3,500
LA 342	1,300	800	2,100	1,300	800	2,100	1,500	900	2,400	2,600	1,000	3,600
Mainline West	4,500	2,000	6,500	4,700	2,000	6,700	5,600	2,200	7,800	8,200	2,400	10,600
Landry Rd	1,800	400	2,200	1,900	400	2,300	2,100	400	2,500	3,000	500	3,500
Cameron St	1,500	400	1,900	1,600	400	2,000	1,900	400	2,300	2,200	400	2,600
Grand Total	20,600	6,000	26,600	23,100	6,200	29,300	26,100	6,600	32,700	38,800	7,600	46,400

Table 2-11: Tolled Volumes for Segment B, Alternative 3

	2012			2016			2020			2030		
Plaza Location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	5,800	400	6,200	6,600	400	7,000	7,600	500	8,100	9,800	600	10,400
Mainline Southwest	18,000	3,000	21,000	20,500	3,200	23,700	23,100	3,400	26,500	29,400	3,800	33,200
Verot School Rd	2,000	700	2,700	2,200	700	2,900	2,500	800	3,300	4,200	900	5,100
Kaliste Saloom Rd	1,800	300	2,100	2,100	300	2,400	2,100	300	2,400	2,900	500	3,400
LA 342	1,500	800	2,300	1,700	900	2,600	1,700	900	2,600	2,800	900	3,700
Mainline West	10,300	3,000	13,300	11,800	3,200	15,000	12,400	3,300	15,700	17,600	3,700	21,300
Congress St	1,500	200	1,700	1,600	200	1,800	1,900	200	2,100	2,700	300	3,000
Cameron St	2,900	300	3,200	3,100	300	3,400	3,600	300	3,900	4,800	300	5,100
Grand Total	43,700	8,600	52,300	49,700	9,200	58,900	54,900	9,700	64,600	74,100	11,000	85,100

Table 2-12: Annual Revenues for Segment B, Alternative 1

	2012			2016			2020			2030		
Plaza Location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	$111,000	$35,000	$146,000	$132,000	$38,000	$170,000	$158,000	$42,000	$200,000	$238,000	$54,000	$292,000
Mainline Southwest	$3,916,000	$1,861,000	$5,777,000	$4,544,000	$1,956,000	$6,500,000	$5,974,000	$2,454,000	$8,428,000	$10,122,000	$3,416,000	$13,538,000
Verot School Rd	$273,000	$283,000	$556,000	$338,000	$306,000	$644,000	$399,000	$324,000	$723,000	$918,000	$518,000	$1,436,000
Robley Dr	$126,000	$60,000	$186,000	$151,000	$67,000	$218,000	$165,000	$75,000	$240,000	$282,000	$96,000	$378,000
LA 342	$243,000	$365,000	$608,000	$368,000	$556,000	$924,000	$402,000	$588,000	$990,000	$721,000	$686,000	$1,407,000
Mainline West	$1,625,000	$1,846,000	$3,471,000	$2,135,000	$2,334,000	$4,469,000	$2,537,000	$2,480,000	$5,017,000	$4,510,000	$3,314,000	$7,824,000
Landry Rd	$162,000	$94,000	$256,000	$340,000	$183,000	$523,000	$377,000	$193,000	$570,000	$546,000	$234,000	$780,000
Cameron St	$138,000	$92,000	$230,000	$146,000	$89,000	$235,000	$174,000	$101,000	$275,000	$200,000	$99,000	$299,000
Grand Total	$6,593,000	$4,635,000	$11,229,000	$8,153,000	$5,530,000	$13,684,000	$10,186,000	$6,258,000	$16,444,000	$17,535,000	$8,418,000	$25,954,000

Table 2-13: Annual Revenues for Segment B, Alternative 3

	2012			2016			2020			2030		
Plaza Location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
LA 89	$1,066,000	$179,000	$1,245,000	$1,206,000	$196,000	$1,402,000	$1,389,000	$218,000	$1,607,000	$1,781,000	$273,000	$2,054,000
Mainline Southwest	$8,200,000	$3,426,000	$11,626,000	$9,336,000	$3,645,000	$12,981,000	$10,559,000	$3,879,000	$14,438,000	$18,763,000	$6,103,000	$24,866,000
Verot School Rd	$358,000	$311,000	$669,000	$397,000	$330,000	$727,000	$447,000	$358,000	$805,000	$1,153,000	$602,000	$1,755,000
Kaliste Saloom Rd	$163,000	$66,000	$229,000	$194,000	$80,000	$274,000	$379,000	$147,000	$526,000	$529,000	$208,000	$737,000
LA 342	$136,000	$182,000	$318,000	$155,000	$195,000	$350,000	$319,000	$396,000	$715,000	$514,000	$430,000	$944,000
Mainline West	$2,821,000	$2,062,000	$4,883,000	$3,240,000	$2,194,000	$5,434,000	$4,537,000	$3,009,000	$7,546,000	$8,018,000	$4,207,000	$12,225,000
Congress St	$266,000	$87,000	$353,000	$301,000	$90,000	$391,000	$341,000	$102,000	$443,000	$743,000	$178,000	$921,000
Cameron St	$265,000	$62,000	$327,000	$287,000	$63,000	$350,000	$324,000	$68,000	$392,000	$434,000	$79,000	$513,000
Grand Total	$13,275,000	$6,376,000	$19,651,000	$15,116,000	$6,794,000	$21,909,000	$18,296,000	$8,178,000	$26,474,000	$31,936,000	$12,080,000	$44,017,000

Table 2-14: Cash Flow for Segment B, Alternatives 1 and 3

Year	Toll Revenue	
	Alternative 1	Alternative 3
2012	$ 11,229,000	$ 19,651,000
2013	$ 11,916,000	$ 20,193,000
2014	$ 12,646,000	$ 20,749,000
2015	$ 13,420,000	$ 21,321,000
2016	$ 13,684,000	$ 21,909,000
2017	$ 14,937,000	$ 23,135,000
2018	$ 15,665,000	$ 24,430,000
2019	$ 16,429,000	$ 25,797,000
2020	$ 16,444,000	$ 26,474,000
2021	$ 17,212,000	$ 27,855,000
2022	$ 18,015,000	$ 29,308,000
2023	$ 18,857,000	$ 30,836,000
2024	$ 19,737,000	$ 32,445,000
2025	$ 20,659,000	$ 34,137,000
2026	$ 21,623,000	$ 35,917,000
2027	$ 22,633,000	$ 37,790,000
2028	$ 23,690,000	$ 39,761,000
2029	$ 24,796,000	$ 41,835,000
2030	$ 25,954,000	$ 44,017,000

Table 2-15 and *2-16* show the effects that each of the two alternatives has on specific intersections in Lafayette in the 2030 forecast year. These are the same intersections examined earlier in this section. It would appear that Segment B, Alternative 3 may reduce the traffic in some of these locations by a larger amount than Segment B, Alternative 1.

Table 2-15: Effect of Segment B, Alternative 1 on Other Routes

Intersection	*Approach Volumes*				*Departure Volumes*			
Ambassador Cafferey Parkway and Johnston Street	Ambassador-Cafferey Parkway		Johnston Street		Ambassador-Cafferey Parkway		Johnston Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	47,360	23,900	40,360	20,940	48,390	23,710	40,590	19,860
Volume with LME	45,190	21,070	42,070	21,990	46,170	20,990	42,150	21,000
Volume Difference	-2,170	-2,830	1,710	1,050	-2,220	-2,720	1,560	1,140
Volume Ratio	95.4%	88.2%	104.2%	105.0%	95.4%	88.5%	103.8%	105.7%
Johnston Street and College Road	Johnston Street		College Road		Johnston Street		College Road	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	18,520	13,580	24,020	17,580	17,760	13,890	24,000	18,050
Volume with LME	17,860	13,520	22,530	16,860	17,110	13,840	22,590	17,210
Volume Difference	-660	-60	-1,490	-720	-650	-50	-1,410	-840
Volume Ratio	96.4%	99.6%	93.8%	95.9%	96.3%	99.6%	94.1%	95.3%
Kaliste Saloom Road at Pinhook Rd	Kaliste Saloom Rd		Pinhook Rd		Kaliste Saloom Rd		Pinhook Rd	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,280	6,380	38,800	18,060	30,480	8,770	36,600	17,680
Volume with LME	30,030	7,066	37,780	17,750	30,140	10,030	34,790	17,670
Volume Difference	-250	686	-1,020	-310	-340	1,260	-1,810	-10
Volume Ratio	99.2%	110.8%	97.4%	98.3%	98.9%	114.4%	95.1%	99.9%
Ambassador-Cafferey Parkway at Congress Street	Ambassador-Cafferey Parkway		Congress Street		Ambassador-Cafferey Parkway		Congress Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,730	37,040	8,330	16,820	30,570	37,230	8,450	16,670
Volume with LME	29,500	36,410	8,550	17,030	29,630	36,550	8,720	16,859
Volume Difference	-1,230	-630	220	210	-940	-680	270	189
Volume Ratio	96.0%	98.3%	102.6%	101.2%	96.9%	98.2%	103.2%	101.1%

Table 2-16: Effect of Segment B, Alternative 3 on Other Routes

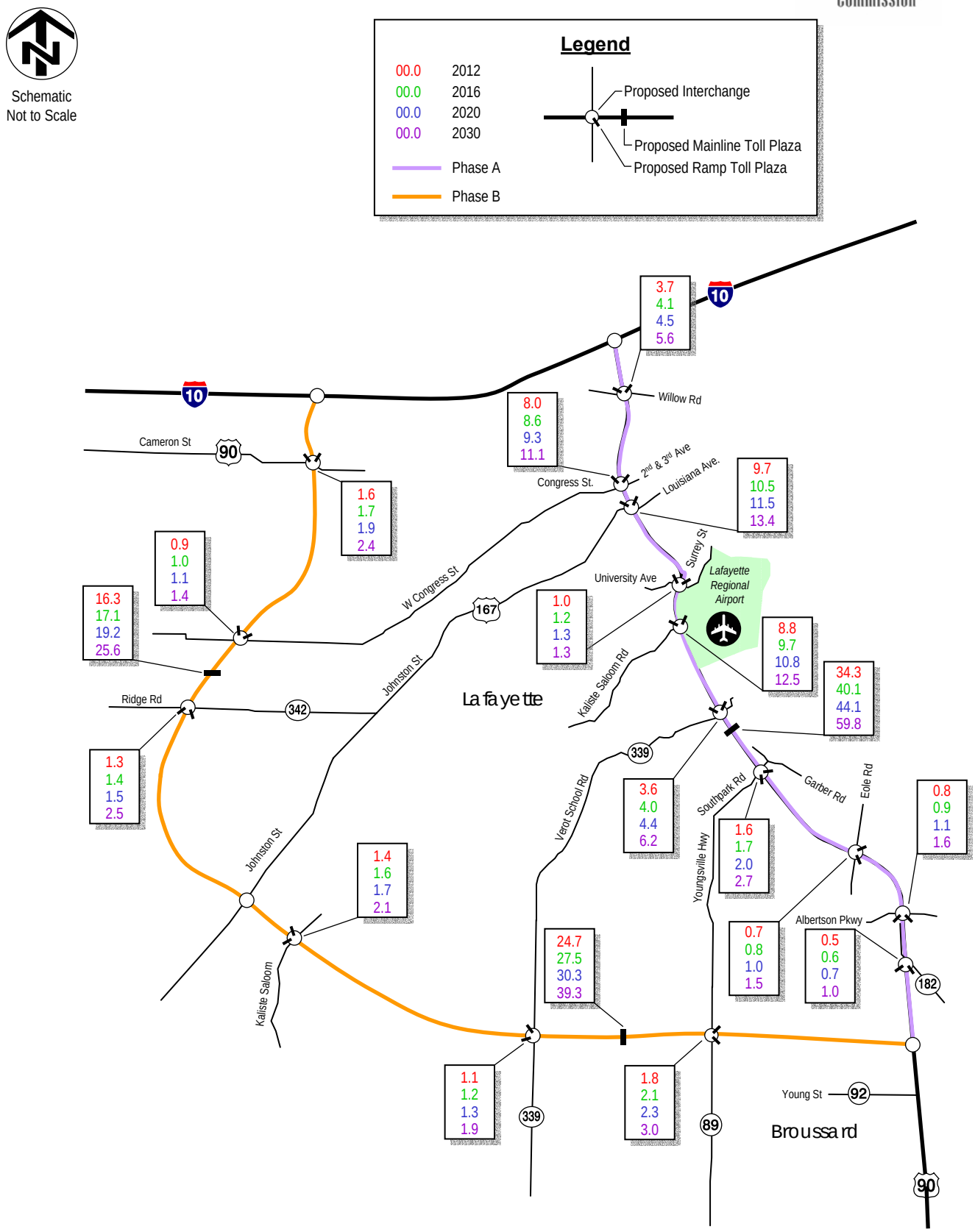
Intersection	*Approach Volumes*				*Departure Volumes*			
Ambassador Cafferey Parkway and Johnston Street	Ambassador-Cafferey Parkway		Johnston Street		Ambassador-Cafferey Parkway		Johnston Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	47,360	23,900	40,360	20,940	48,390	23,710	40,590	19,860
Volume with LME	42,830	21,190	36,960	21,260	43,630	21,110	37,230	20,260
Volume Difference	-4,530	-2,710	-3,400	320	-4,760	-2,600	-3,360	400
Volume Ratio	90.4%	88.7%	91.6%	101.5%	90.2%	89.0%	91.7%	102.0%
Johnston Street and College Road	Johnston Street		College Road		Johnston Street		College Road	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	18,520	13,580	24,020	17,580	17,760	13,890	24,000	18,050
Volume with LME	17,450	13,450	22,270	16,990	16,640	13,750	22,430	17,340
Volume Difference	-1,070	-130	-1,750	-590	-1,120	-140	-1,570	-710
Volume Ratio	94.2%	99.0%	92.7%	96.6%	93.7%	99.0%	93.5%	96.1%
Kaliste Saloom Road at Pinhook Rd	Kaliste Saloom Rd		Pinhook Rd		Kaliste Saloom Rd		Pinhook Rd	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,280	6,380	38,800	18,060	30,480	8,770	36,600	17,680
Volume with LME	29,630	7,480	37,980	18,570	29,930	8,220	37,410	18,870
Volume Difference	-650	1,100	-820	510	-550	-550	810	1,190
Volume Ratio	97.9%	117.2%	97.9%	102.8%	98.2%	93.7%	102.2%	106.7%
Ambassador-Cafferey Parkway at Congress Street	Ambassador-Cafferey Parkway		Congress Street		Ambassador-Cafferey Parkway		Congress Street	
	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2	Direction 1	Direction 2
Volume without LME (no-build)	30,730	37,040	8,330	16,820	30,570	37,230	8,450	16,670
Volume with LME	26,670	33,110	8,220	16,600	26,120	33,460	8,450	16,540
Volume Difference	-4,060	-3,930	-110	-220	-4,450	-3,770	0	-130
Volume Ratio	86.8%	89.4%	98.7%	98.7%	85.4%	89.9%	100.0%	99.2%

TRAFFIC AND TOLL REVENUE ANALYSIS FOR SEGMENT B and I-49

The traffic and revenue potential of constructing Segment B in addition to Segment A (I-49) was studied for Segment B, Alternatives 4 and 5. Under this idea, I-49 has the potential to be tolled from I-10 to near LA 92. Segment A1, which runs from I-10 to just south of the Lafayette Regional Airport, was assumed to open in 2009. Segment A2, which runs from just south of the Lafayette Airport to near LA 92, was assumed to open in 2011. Regardless of alternative, Segment B was assumed to open in 2012, later than both portions of I-49. As such traffic and revenue are shown starting in 2012.

SEGMENTS B4, A1 and A2

Figure 2-14 shows the estimated daily volumes for Segments B4, A1, and A2 for the four model years of 2012, 2016, 2020 and 2030. *Table 2-17* also presents estimated daily volumes but shows the total volume for each interchange, not for an individual ramp as is shown in *Figure 2-14*. *Table 2-18* shows the corresponding estimated annual revenues that would be generated under this scenario. *Table 2-19* shows gross expected toll revenue, by Segment, from 2012 to 2030.



ESTIMATED DAILY VOLUMES - ALTERNATIVES B4, A1 AND A2

FIGURE 2-14

Table 2-17: Tolled Volumes for Segment B, Alternative 4 and Segments A1 and A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Willow Rd	6,600	800	7,400	7,300	900	8,200	8,000	1,000	9,000	10,000	1,100	11,100
I-49 Extension	Congress St (I-49Ext)	14,000	2,000	16,000	15,100	2,000	17,100	16,400	2,100	18,500	19,600	2,500	22,100
I-49 Extension	Johnston St/Louisiana Ave	17,300	2,000	19,300	18,800	2,100	20,900	20,800	2,200	23,000	24,200	2,600	26,800
I-49 Extension	University/Surry St	1,800	200	2,000	2,000	300	2,300	2,300	300	2,600	2,300	300	2,600
I-49 Extension	Kaliste Saloom Rd (I-49Ext)	15,200	2,300	17,500	16,800	2,500	19,300	18,800	2,700	21,500	21,900	3,100	25,000
I-49 Extension	Verot School Rd (I-49Ext)	5,800	1,400	7,200	6,500	1,500	8,000	7,200	1,600	8,800	10,600	1,800	12,400
I-49 Extension	Mainline East	30,300	4,000	34,300	35,700	4,400	40,100	39,700	4,400	44,100	54,300	5,500	59,800
I-49 Extension	Southpark Rd	3,000	200	3,200	3,100	300	3,400	3,700	300	4,000	4,900	400	5,300
I-49 Extension	Eola St	1,200	100	1,300	1,400	100	1,500	1,800	200	2,000	2,700	200	2,900
I-49 Extension	Albertson Pkwy	1,300	200	1,500	1,600	200	1,800	1,900	300	2,200	2,900	300	3,200
I-49 Extension	Moulin Rd	800	200	1,000	900	200	1,100	1,100	200	1,300	1,700	300	2,000
I-49 Extension	**Grand Total**	**98,300**	**13,600**	**111,900**	**110,300**	**14,700**	**125,000**	**123,100**	**15,600**	**138,700**	**157,100**	**18,400**	**175,500**
LME	LA 89	3,300	200	3,500	3,800	300	4,100	4,300	300	4,600	5,600	400	6,000
LME	Mainline Southwest	21,200	3,500	24,700	23,800	3,700	27,500	26,400	3,900	30,300	34,900	4,400	39,300
LME	Verot School Rd	1,700	500	2,200	1,800	500	2,300	2,000	500	2,500	3,200	600	3,800
LME	Kaliste Saloom Rd	2,300	400	2,700	2,700	400	3,100	3,000	400	3,400	3,600	500	4,100
LME	LA 342	1,700	900	2,600	1,700	1,000	2,700	1,900	1,000	2,900	3,800	1,100	4,900
LME	Mainline West	12,600	3,700	16,300	13,300	3,800	17,100	15,100	4,100	19,200	21,100	4,500	25,600
LME	Congress St	1,500	200	1,700	1,700	200	1,900	1,900	200	2,100	2,600	200	2,800
LME	Cameron St	2,900	300	3,200	3,100	300	3,400	3,400	300	3,700	4,400	400	4,800
LME	**Grand Total**	**47,200**	**9,700**	**56,900**	**51,900**	**10,200**	**62,100**	**58,000**	**10,700**	**68,700**	**79,200**	**12,100**	**91,300**

Table 2-18: Annual Revenues for Segment B, Alternative 4 and Segments A1 and A2

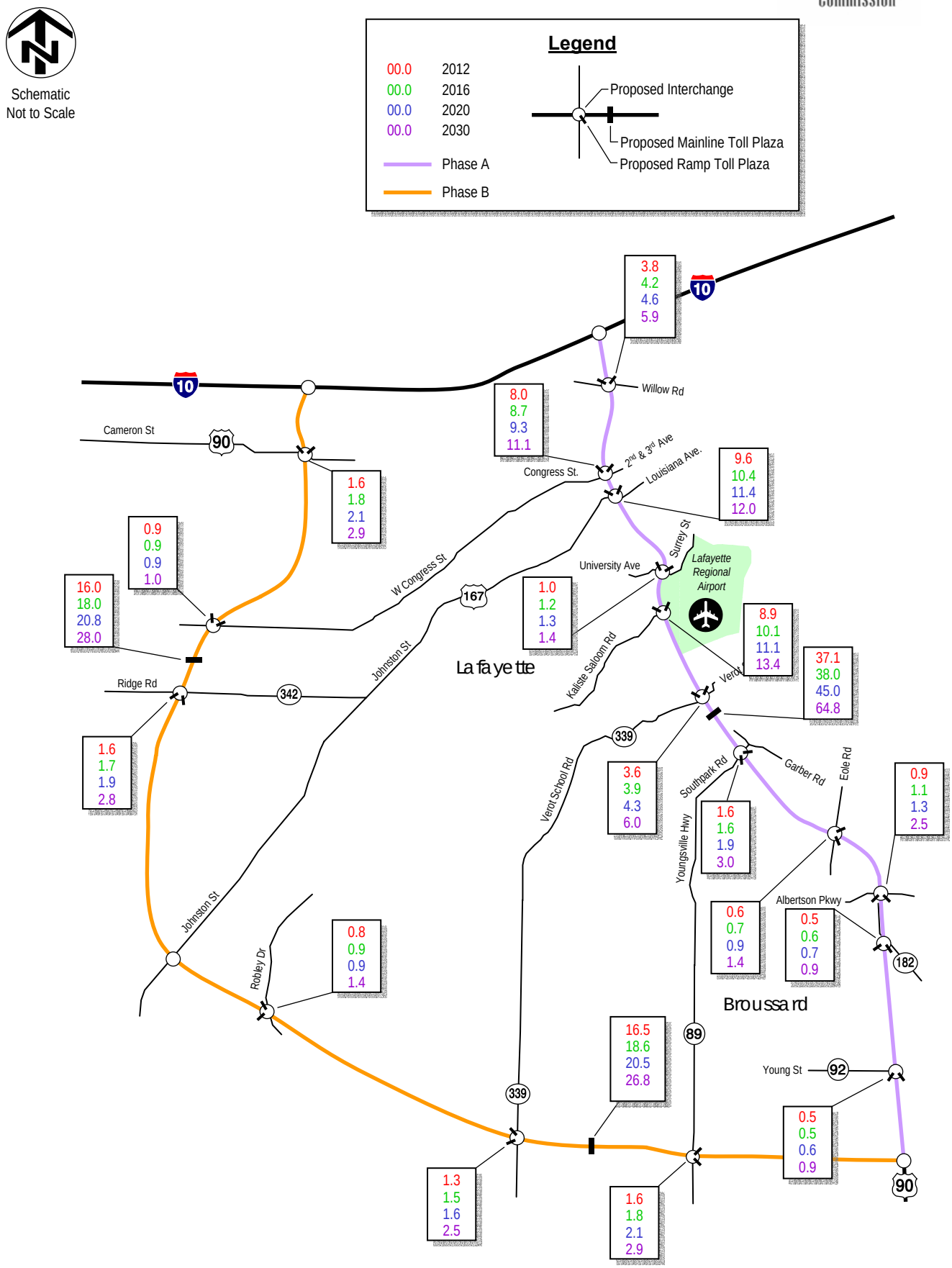
		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Willow Rd	$605,000	$193,000	$798,000	$664,000	$202,000	$866,000	$731,000	$218,000	$949,000	$915,000	$244,000	$1,159,000
I-49 Extension	Congress St (I-49Ext)	$1,282,000	$445,000	$1,727,000	$1,379,000	$458,000	$1,837,000	$1,500,000	$483,000	$1,983,000	$3,569,000	$1,118,000	$4,687,000
I-49 Extension	Johnston St/Louisiana Ave	$1,581,000	$452,000	$2,033,000	$1,716,000	$476,000	$2,192,000	$3,787,000	$1,018,000	$4,805,000	$4,412,000	$1,172,000	$5,584,000
I-49 Extension	University/Surry St	$324,000	$113,000	$437,000	$364,000	$116,000	$480,000	$412,000	$134,000	$546,000	$641,000	$235,000	$876,000
I-49 Extension	Kaliste Saloom Rd (I-49Ext)	$2,767,000	$1,047,000	$3,814,000	$3,071,000	$1,131,000	$4,202,000	$5,159,000	$1,835,000	$6,994,000	$5,994,000	$2,104,000	$8,098,000
I-49 Extension	Verot School Rd (I-49Ext)	$1,588,000	$949,000	$2,537,000	$1,772,000	$1,012,000	$2,784,000	$1,968,000	$1,066,000	$3,034,000	$3,852,000	$1,638,000	$5,490,000
I-49 Extension	Mainline East	$16,578,000	$5,481,000	$22,059,000	$22,817,000	$7,006,000	$29,823,000	$25,368,000	$7,050,000	$32,418,000	$44,605,000	$11,318,000	$55,923,000
I-49 Extension	Southpark Rd	$833,000	$171,000	$1,004,000	$1,132,000	$242,000	$1,374,000	$1,342,000	$272,000	$1,614,000	$2,251,000	$419,000	$2,670,000
I-49 Extension	Eola St	$319,000	$80,000	$399,000	$396,000	$90,000	$486,000	$487,000	$113,000	$600,000	$979,000	$214,000	$1,193,000
I-49 Extension	Albertson Pkwy	$237,000	$99,000	$336,000	$286,000	$110,000	$396,000	$346,000	$122,000	$468,000	$805,000	$227,000	$1,032,000
I-49 Extension	Moulin Rd	$145,000	$98,000	$243,000	$171,000	$106,000	$277,000	$209,000	$112,000	$321,000	$476,000	$203,000	$679,000
I-49 Extension	**Grand Total**	**26,259,000**	**9,128,000**	**35,387,000**	**33,768,000**	**10,949,000**	**44,717,000**	**41,309,000**	**12,423,000**	**53,732,000**	**68,499,000**	**18,892,000**	**87,391,000**
LME	LA 89	$594,000	$85,000	$679,000	$702,000	$143,000	$845,000	$764,000	$155,000	$919,000	$1,010,000	$153,000	$1,163,000
LME	Mainline Southwest	$9,691,000	$4,041,000	$13,732,000	$10,872,000	$4,183,000	$15,055,000	$14,431,000	$5,352,000	$19,783,000	$22,320,000	$7,034,000	$29,354,000
LME	Verot School Rd	$462,000	$349,000	$811,000	$494,000	$335,000	$829,000	$546,000	$337,000	$883,000	$1,166,000	$560,000	$1,726,000
LME	Kaliste Saloom Rd	$208,000	$98,000	$306,000	$245,000	$88,000	$333,000	$275,000	$93,000	$368,000	$654,000	$222,000	$876,000
LME	LA 342	$157,000	$195,000	$352,000	$162,000	$227,000	$389,000	$171,000	$239,000	$410,000	$679,000	$479,000	$1,158,000
LME	Mainline West	$3,460,000	$2,520,000	$5,980,000	$4,845,000	$3,500,000	$8,345,000	$5,501,000	$3,771,000	$9,272,000	$9,629,000	$5,098,000	$14,727,000
LME	Congress St	$275,000	$87,000	$362,000	$308,000	$90,000	$398,000	$350,000	$98,000	$448,000	$717,000	$145,000	$862,000
LME	Cameron St	$262,000	$65,000	$327,000	$280,000	$68,000	$348,000	$309,000	$70,000	$379,000	$401,000	$87,000	$488,000
LME	**Grand Total**	**15,109,000**	**7,440,000**	**22,549,000**	**17,908,000**	**8,634,000**	**26,542,000**	**22,347,000**	**10,115,000**	**32,462,000**	**36,576,000**	**13,778,000**	**50,354,000**

Table 2-19: Cash Flow for Segment B, Alternative 4 and Segments A1 and A2

Year	Toll Revenue	
	Phase B Alternative 4	Phase A Segments 1 and 2
2012	$ 22,549,000	$ 35,387,000
2013	$ 23,594,000	$ 37,912,000
2014	$ 24,686,000	$ 40,618,000
2015	$ 25,830,000	$ 43,517,000
2016	$ 26,542,000	$ 44,717,000
2017	$ 28,140,000	$ 47,131,000
2018	$ 29,835,000	$ 49,676,000
2019	$ 31,632,000	$ 52,358,000
2020	$ 32,462,000	$ 53,732,000
2021	$ 33,893,000	$ 56,396,000
2022	$ 35,386,000	$ 59,193,000
2023	$ 36,946,000	$ 62,128,000
2024	$ 38,574,000	$ 65,208,000
2025	$ 40,275,000	$ 68,441,000
2026	$ 42,050,000	$ 71,835,000
2027	$ 43,903,000	$ 75,397,000
2028	$ 45,838,000	$ 79,135,000
2029	$ 47,858,000	$ 83,059,000
2030	$ 50,354,000	$ 87,391,000

SEGMENTS B5, A1 and A2

WSA also evaluated Segment B, Alternative 5 assuming that both portions of I-49 (A1 and A2) were tolled. *Figure 2-15* and *Table 2-20* present the estimated daily volumes under this condition. Comparing volumes between Alternatives 4 and 5 shows that Alternative 4 would experience higher volumes, as a whole, than would Alternative 5. This is likely due to Alternative 4's closer spatial location to the City of Lafayette. Additionally, Alternative 5 is approximately two miles longer than Alternative 4 from I-10 to I-49. As a result of lower volumes, estimated revenues for Alternative 5 are lower than Alternative 4, as shown in *Tables 2-21 and 2-22*.



ESTIMATED DAILY VOLUMES - ALTERNATIVES B5, A1 AND A2

FIGURE 2-15

Table 2-20: Tolled Volumes for Segment B, Alternative 5 and Segments A1 and A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Willow Rd	6,700	900	7,600	7,400	900	8,300	8,100	1,000	9,100	10,600	1,200	11,800
I-49 Extension	Congress St (I-49Ext)	14,100	1,900	16,000	15,300	2,000	17,300	16,500	2,100	18,600	19,700	2,400	22,100
I-49 Extension	Johnston St/Louisiana Ave	17,200	2,000	19,200	18,700	2,100	20,800	20,500	2,200	22,700	21,700	2,300	24,000
I-49 Extension	University/Surry St	1,800	200	2,000	2,000	300	2,300	2,300	300	2,600	2,400	400	2,800
I-49 Extension	Kaliste Saloom Rd (I-49Ext)	15,500	2,300	17,800	17,500	2,600	20,100	19,400	2,700	22,100	23,500	3,200	26,700
I-49 Extension	Verot School Rd (I-49Ext)	5,800	1,300	7,100	6,400	1,400	7,800	7,100	1,500	8,600	10,300	1,600	11,900
I-49 Extension	Mainline East	30,700	6,400	37,100	31,600	6,400	38,000	37,900	7,100	45,000	56,100	8,700	64,800
I-49 Extension	Southpark Rd	2,900	200	3,100	2,900	300	3,200	3,500	300	3,800	5,500	400	5,900
I-49 Extension	Eola St	1,000	100	1,100	1,300	100	1,400	1,600	200	1,800	2,500	200	2,700
I-49 Extension	Albertson Pkwy	1,600	200	1,800	1,900	300	2,200	2,300	300	2,600	4,400	500	4,900
I-49 Extension	Moulin Rd	800	200	1,000	1,000	200	1,200	1,200	200	1,400	1,400	300	1,700
I-49 Extension	Young St	800	100	900	900	100	1,000	1,100	100	1,200	1,700	100	1,800
I-49 Extension	**Grand Total**	**98,900**	**15,800**	**114,700**	**106,900**	**16,700**	**123,600**	**121,500**	**18,000**	**139,500**	**159,800**	**21,300**	**181,100**
LME	LA 89	3,000	200	3,200	3,200	400	3,600	3,800	400	4,200	5,300	400	5,700
LME	Mainline Southwest	14,100	2,400	16,500	16,100	2,500	18,600	17,900	2,600	20,500	23,900	2,900	26,800
LME	Verot School Rd	2,000	600	2,600	2,400	600	3,000	2,600	600	3,200	4,200	700	4,900
LME	Robley Dr	1,400	200	1,600	1,500	200	1,700	1,600	200	1,800	2,500	200	2,700
LME	LA 342	2,000	1,100	3,100	2,300	1,100	3,400	2,600	1,200	3,800	4,300	1,300	5,600
LME	Mainline West	12,200	3,800	16,000	14,000	4,000	18,000	16,500	4,300	20,800	23,300	4,700	28,000
LME	Congress St	1,500	200	1,700	1,500	200	1,700	1,600	200	1,800	1,800	200	2,000
LME	Cameron St	2,900	300	3,200	3,300	400	3,700	3,800	400	4,200	5,200	500	5,700
LME	**Grand Total**	**39,100**	**8,800**	**47,900**	**44,300**	**9,400**	**53,700**	**50,400**	**9,900**	**60,300**	**70,500**	**10,900**	**81,400**

Table 2-21: Annual Revenues for Segment B, Alternative 5 and Segments A1 and A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Willow Rd	$609,000	$196,000	$805,000	$673,000	$211,000	$884,000	$739,000	$227,000	$966,000	$963,000	$283,000	$1,246,000
I-49 Extension	Congress St (I-49Ext)	$1,288,000	$444,000	$1,732,000	$1,396,000	$457,000	$1,853,000	$1,509,000	$479,000	$1,988,000	$3,592,000	$1,080,000	$4,672,000
I-49 Extension	Johnston St/Louisiana Ave	$1,573,000	$449,000	$2,022,000	$1,710,000	$472,000	$2,182,000	$3,749,000	$1,005,000	$4,754,000	$3,966,000	$1,035,000	$5,001,000
I-49 Extension	University/Surry St	$327,000	$114,000	$441,000	$369,000	$118,000	$487,000	$416,000	$137,000	$553,000	$654,000	$244,000	$898,000
I-49 Extension	Kaliste Saloom Rd (I-49Ext)	$2,835,000	$1,070,000	$3,905,000	$3,189,000	$1,166,000	$4,355,000	$5,310,000	$1,865,000	$7,175,000	$6,429,000	$2,185,000	$8,614,000
I-49 Extension	Verot School Rd (I-49Ext)	$1,575,000	$924,000	$2,499,000	$1,744,000	$959,000	$2,703,000	$1,936,000	$1,026,000	$2,962,000	$3,742,000	$1,421,000	$5,163,000
I-49 Extension	Mainline East	$16,812,000	$8,718,000	$25,530,000	$20,198,000	$10,261,000	$30,459,000	$24,192,000	$11,325,000	$35,517,000	$46,038,000	$17,846,000	$63,884,000
I-49 Extension	Southpark Rd	$799,000	$169,000	$968,000	$1,060,000	$235,000	$1,295,000	$1,271,000	$263,000	$1,534,000	$2,503,000	$501,000	$3,004,000
I-49 Extension	Eola St	$277,000	$80,000	$357,000	$345,000	$85,000	$430,000	$426,000	$106,000	$532,000	$900,000	$211,000	$1,111,000
I-49 Extension	Albertson Pkwy	$284,000	$112,000	$396,000	$353,000	$127,000	$480,000	$425,000	$141,000	$566,000	$1,201,000	$311,000	$1,512,000
I-49 Extension	Moulin Rd	$152,000	$91,000	$243,000	$177,000	$99,000	$276,000	$218,000	$106,000	$324,000	$394,000	$190,000	$584,000
I-49 Extension	Young St	$71,000	$20,000	$91,000	$84,000	$24,000	$108,000	$101,000	$25,000	$126,000	$151,000	$34,000	$185,000
I-49 Extension	**Grand Total**	**26,602,000**	**12,387,000**	**38,989,000**	**31,298,000**	**14,214,000**	**45,512,000**	**40,292,000**	**16,705,000**	**56,997,000**	**70,533,000**	**25,341,000**	**95,874,000**
LME	LA 89	$540,000	$134,000	$674,000	$567,000	$152,000	$719,000	$691,000	$162,000	$853,000	$978,000	$198,000	$1,176,000
LME	Mainline Southwest	$6,432,000	$2,724,000	$9,156,000	$7,348,000	$2,841,000	$10,189,000	$9,821,000	$3,602,000	$13,423,000	$15,237,000	$4,659,000	$19,896,000
LME	Verot School Rd	$542,000	$407,000	$949,000	$661,000	$427,000	$1,088,000	$723,000	$415,000	$1,138,000	$1,518,000	$630,000	$2,148,000
LME	Robley Dr	$126,000	$48,000	$174,000	$138,000	$50,000	$188,000	$147,000	$43,000	$190,000	$225,000	$42,000	$267,000
LME	LA 342	$376,000	$532,000	$908,000	$431,000	$505,000	$936,000	$480,000	$524,000	$1,004,000	$1,192,000	$875,000	$2,067,000
LME	Mainline West	$4,458,000	$3,486,000	$7,944,000	$6,382,000	$4,595,000	$10,977,000	$7,508,000	$4,882,000	$12,390,000	$12,770,000	$6,444,000	$19,214,000
LME	Congress St	$275,000	$89,000	$364,000	$274,000	$99,000	$373,000	$291,000	$90,000	$381,000	$495,000	$135,000	$630,000
LME	Cameron St	$263,000	$69,000	$332,000	$300,000	$86,000	$386,000	$347,000	$91,000	$438,000	$476,000	$116,000	$592,000
LME	**Grand Total**	**13,012,000**	**7,489,000**	**20,501,000**	**16,101,000**	**8,755,000**	**24,856,000**	**20,008,000**	**9,809,000**	**29,817,000**	**32,891,000**	**13,099,000**	**45,990,000**

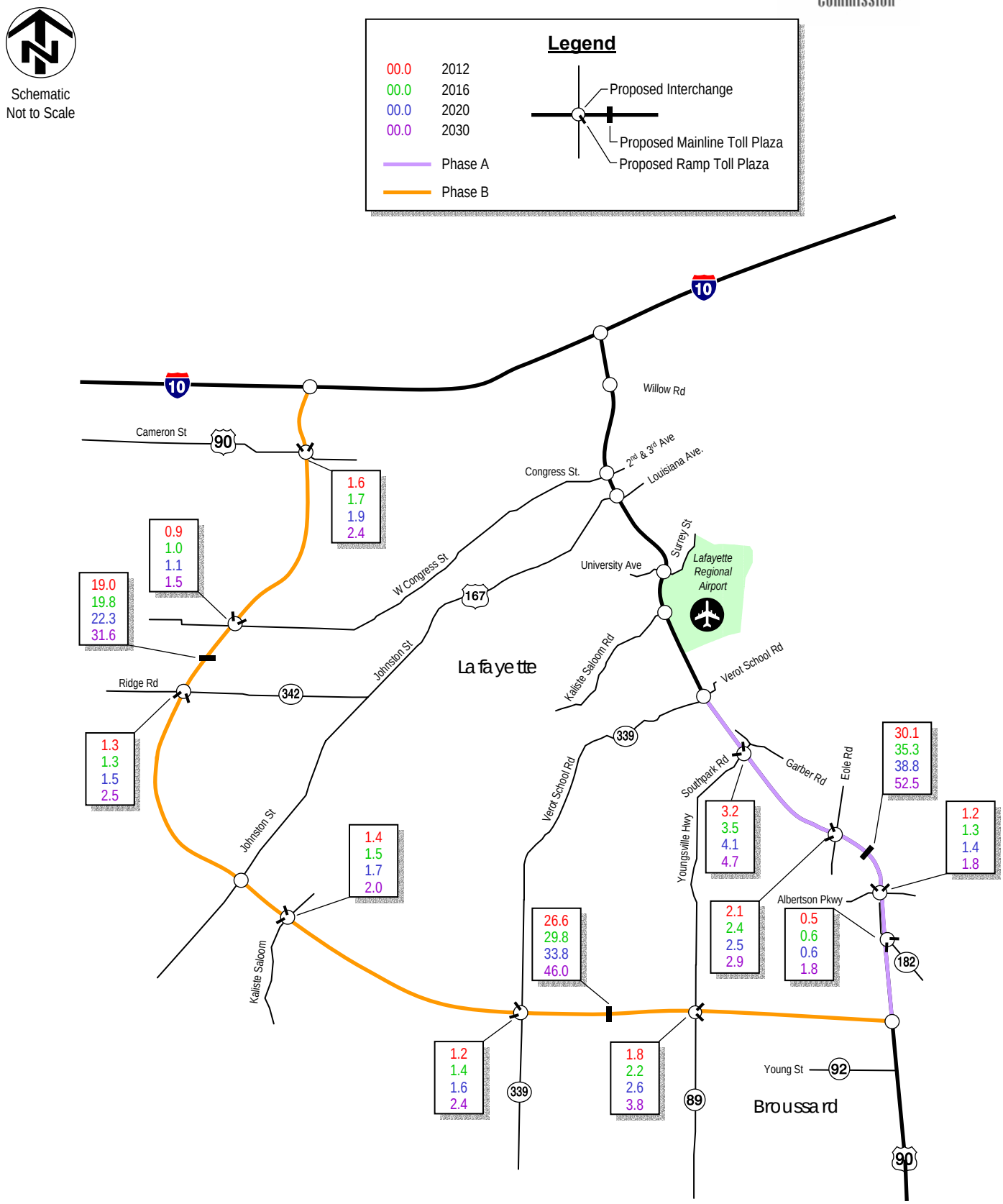
Table 2-22: Cash Flow for Segment B, Alternative 5 and Segments A1 and A2

Year	Toll Revenue	
	Phase B Alternative 5	Phase A Segments 1 and 2
2012	$ 20,501,000	$ 38,989,000
2013	$ 21,663,000	$ 40,682,000
2014	$ 22,891,000	$ 42,448,000
2015	$ 24,189,000	$ 44,291,000
2016	$ 24,856,000	$ 45,512,000
2017	$ 26,184,000	$ 48,635,000
2018	$ 27,582,000	$ 51,973,000
2019	$ 29,055,000	$ 55,539,000
2020	$ 29,817,000	$ 56,997,000
2021	$ 31,112,000	$ 60,047,000
2022	$ 32,462,000	$ 63,261,000
2023	$ 33,872,000	$ 66,646,000
2024	$ 35,342,000	$ 70,213,000
2025	$ 36,877,000	$ 73,970,000
2026	$ 38,478,000	$ 77,929,000
2027	$ 40,148,000	$ 82,099,000
2028	$ 41,891,000	$ 86,492,000
2029	$ 43,710,000	$ 91,121,000
2030	$ 45,990,000	$ 95,874,000

Segment B, Alternatives 4 and 5 were also studied under a scenario which tolled only Segment A2 of I-49, which runs from south of the Lafayette Airport to near LA 92.

SEGMENTS B4 AND A2

The estimated daily traffic for alternative 4 for this scenario is shown in *Figure 2-16* and *Table 2-23*. Corresponding annual revenue is shown in *Table 2-24* and the annual revenue stream is shown in *Table 2-25*. As shown, both volumes and revenue are higher on Segment B under this scenario compared to the scenario where all of I-49 is tolled. Tolling the northern portion of I-49 would likely result in greater travel time savings which would in turn pull patrons off of Segment B4 and onto I-49.



ESTIMATED DAILY VOLUMES - ALTERNATIVES B4 AND A2

FIGURE 2-16

Table 2-23: Tolled Volumes for Segment B, Alternative 4 and Segment A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Southpark Rd	5,300	1,100	6,400	5,700	1,200	6,900	6,700	1,400	8,100	7,700	1,600	9,300
I-49 Extension	Eola St	3,300	800	4,100	3,800	900	4,700	4,000	900	4,900	4,600	1,100	5,700
I-49 Extension	Mainline East	26,600	3,500	30,100	31,400	3,900	35,300	34,900	3,900	38,800	47,700	4,800	52,500
I-49 Extension	Albertson Pkwy	1,800	500	2,300	2,000	600	2,600	2,200	600	2,800	2,700	800	3,500
I-49 Extension	Moulin Rd	700	300	1,000	800	300	1,100	900	300	1,200	1,300	300	1,600
I-49 Extension	**Grand Total**	**37,700**	**6,200**	**43,900**	**43,700**	**6,900**	**50,600**	**48,700**	**7,100**	**55,800**	**64,000**	**8,600**	**72,600**
LME	LA 89	3,300	200	3,500	4,100	200	4,300	4,900	200	5,100	7,200	300	7,500
LME	Mainline Southwest	22,600	4,000	26,600	25,600	4,200	29,800	29,300	4,500	33,800	40,700	5,300	46,000
LME	Verot School Rd	1,800	600	2,400	2,100	700	2,800	2,400	700	3,100	3,900	800	4,700
LME	Kaliste Saloom Rd	2,300	400	2,700	2,600	400	3,000	2,900	400	3,300	3,500	400	3,900
LME	LA 342	1,700	900	2,600	1,700	900	2,600	1,900	1,000	2,900	3,800	1,100	4,900
LME	Mainline West	14,500	4,500	19,000	15,200	4,600	19,800	17,400	4,900	22,300	26,000	5,600	31,600
LME	Congress St	1,500	200	1,700	1,700	200	1,900	1,900	200	2,100	2,700	200	2,900
LME	Cameron St	2,900	300	3,200	3,100	300	3,400	3,400	300	3,700	4,400	400	4,800
LME	**Grand Total**	**50,600**	**11,100**	**61,700**	**56,100**	**11,500**	**67,600**	**64,100**	**12,200**	**76,300**	**92,200**	**14,100**	**106,300**

Table 2-24: Annual Revenues for Segment B, Alternative 4 and Segment A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Southpark Rd	$481,000	$262,000	$743,000	$522,000	$281,000	$803,000	$612,000	$315,000	$927,000	$706,000	$368,000	$1,074,000
I-49 Extension	Eola St	$603,000	$366,000	$969,000	$693,000	$407,000	$1,100,000	$725,000	$425,000	$1,150,000	$845,000	$502,000	$1,347,000
I-49 Extension	Mainline East	$9,724,000	$3,239,000	$12,963,000	$11,457,000	$3,554,000	$15,011,000	$12,751,000	$3,598,000	$16,349,000	$21,767,000	$5,424,000	$27,191,000
I-49 Extension	Albertson Pkwy	$322,000	$230,000	$552,000	$369,000	$263,000	$632,000	$605,000	$426,000	$1,031,000	$734,000	$520,000	$1,254,000
I-49 Extension	Moulin Rd	$127,000	$121,000	$248,000	$148,000	$126,000	$274,000	$165,000	$132,000	$297,000	$241,000	$146,000	$387,000
I-49 Extension	**Grand Total**	**11,257,000**	**4,218,000**	**15,475,000**	**13,189,000**	**4,631,000**	**17,820,000**	**14,858,000**	**4,896,000**	**19,754,000**	**24,293,000**	**6,960,000**	**31,253,000**
LME	LA 89	$624,000	$86,000	$710,000	$766,000	$93,000	$859,000	$890,000	$102,000	$992,000	$1,332,000	$120,000	$1,452,000
LME	Mainline Southwest	$10,308,000	$4,598,000	$14,906,000	$11,671,000	$4,848,000	$16,519,000	$16,049,000	$6,191,000	$22,240,000	$26,008,000	$8,470,000	$34,478,000
LME	Verot School Rd	$493,000	$425,000	$918,000	$577,000	$464,000	$1,041,000	$658,000	$466,000	$1,124,000	$1,425,000	$731,000	$2,156,000
LME	Kaliste Saloom Rd	$209,000	$85,000	$294,000	$240,000	$91,000	$331,000	$264,000	$97,000	$361,000	$644,000	$192,000	$836,000
LME	LA 342	$150,000	$215,000	$365,000	$158,000	$219,000	$377,000	$181,000	$226,000	$407,000	$693,000	$500,000	$1,193,000
LME	Mainline West	$3,976,000	$3,080,000	$7,056,000	$5,537,000	$4,187,000	$9,724,000	$6,354,000	$4,491,000	$10,845,000	$11,870,000	$6,360,000	$18,230,000
LME	Congress St	$271,000	$87,000	$358,000	$313,000	$91,000	$404,000	$344,000	$97,000	$441,000	$743,000	$145,000	$888,000
LME	Cameron St	$264,000	$64,000	$328,000	$284,000	$67,000	$351,000	$311,000	$70,000	$381,000	$402,000	$87,000	$489,000
LME	**Grand Total**	**16,295,000**	**8,640,000**	**24,935,000**	**19,546,000**	**10,060,000**	**29,606,000**	**25,051,000**	**11,740,000**	**36,791,000**	**43,117,000**	**16,605,000**	**59,722,000**

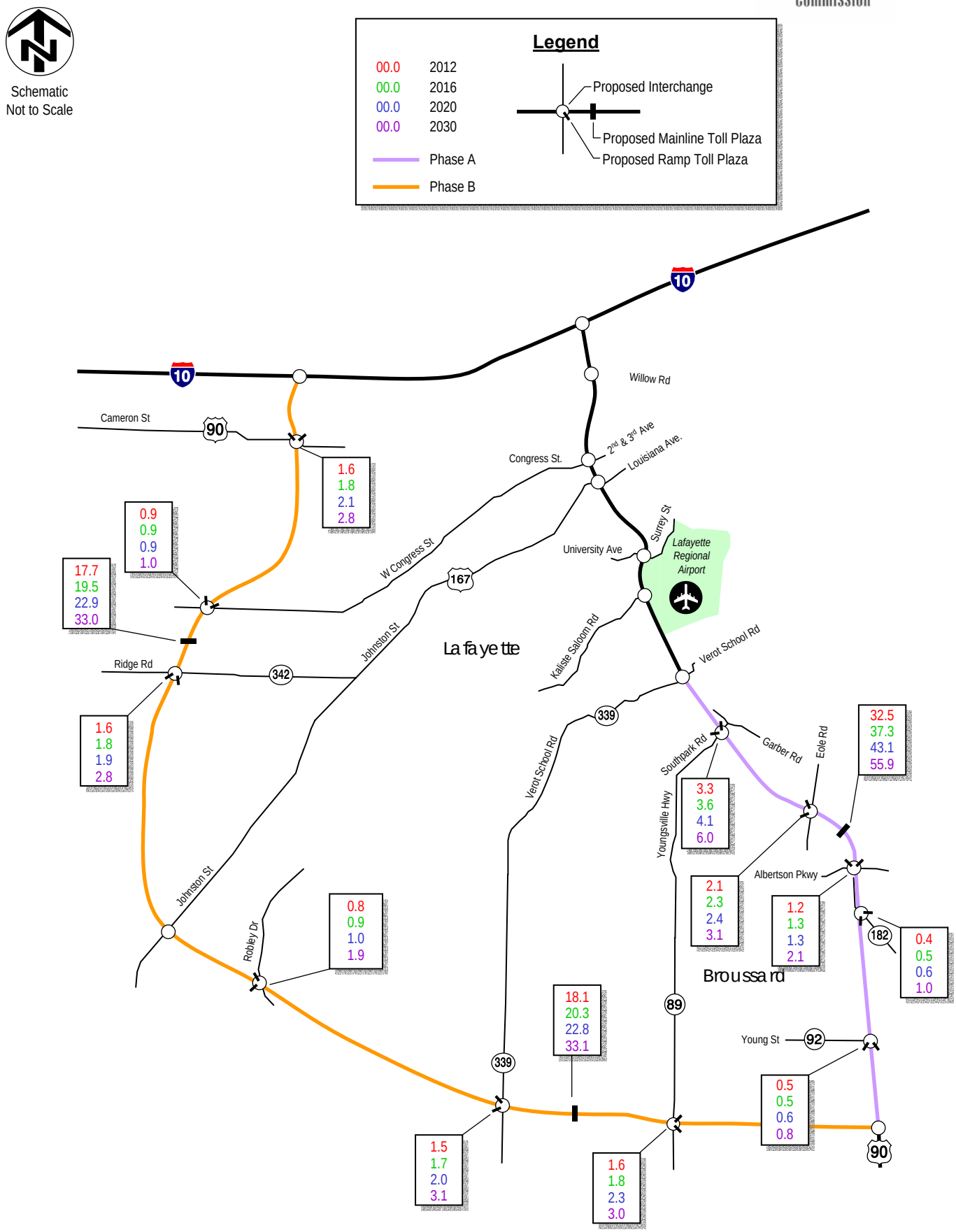
Table 2-25: Cash Flow for Segment B, Alternative 4 and Segment A2

Year	Toll Revenue	
	Phase B Alternative 4	Phase A Segment 2
2012	$ 24,935,000	$ 15,475,000
2013	$ 26,165,000	$ 16,074,000
2014	$ 27,456,000	$ 16,696,000
2015	$ 28,811,000	$ 17,342,000
2016	$ 29,606,000	$ 17,820,000
2017	$ 31,556,000	$ 18,284,000
2018	$ 33,635,000	$ 18,760,000
2019	$ 35,850,000	$ 19,249,000
2020	$ 36,791,000	$ 19,754,000
2021	$ 38,607,000	$ 20,670,000
2022	$ 40,512,000	$ 21,628,000
2023	$ 42,512,000	$ 22,631,000
2024	$ 44,610,000	$ 23,681,000
2025	$ 46,812,000	$ 24,779,000
2026	$ 49,123,000	$ 25,928,000
2027	$ 51,547,000	$ 27,130,000
2028	$ 54,091,000	$ 28,388,000
2029	$ 56,761,000	$ 29,704,000
2030	$ 59,722,000	$ 31,253,000

Segment B, Alternative 5 carries less traffic, and therefore generates smaller revenues, than Segment B, Alternative 4 in this scenario. The main factor continues to be Alternatives 5's distance from the City of Lafayette and greater distance from I-10 to I-49. This additional distance makes through trips less likely to use Alternative 5 than Alternative 4.

SEGMENTS B5 AND A2

Estimated daily average volumes are presented in *Figure 2-17* and *Table 2-26*. Estimated revenue by interchange and annual revenue streams are shown in *Tables 2-27 and 2-28*. Volumes and revenues are higher under this scenario, for Segment B, than the scenario where both segments of I-49 are tolled.



ESTIMATED DAILY VOLUMES - ALTERNATIVES B5 AND A2

FIGURE 2-17

Table 2-26: Tolled Volumes for Segment B, Alternative 5 and Segment A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Southpark Rd	5,300	1,200	6,500	5,900	1,300	7,200	6,700	1,400	8,100	10,000	1,900	11,900
I-49 Extension	Eola St	3,300	800	4,100	3,600	900	4,500	3,900	900	4,800	4,900	1,300	6,200
I-49 Extension	Mainline East	28,700	3,800	32,500	33,300	4,000	37,300	38,800	4,300	43,100	50,900	5,000	55,900
I-49 Extension	Albertson Pkwy	1,800	500	2,300	2,000	600	2,600	2,000	600	2,600	3,300	800	4,100
I-49 Extension	Moulin Rd	600	200	800	700	200	900	900	200	1,100	1,600	300	1,900
I-49 Extension	Young St	800	100	900	900	100	1,000	1,100	100	1,200	1,400	100	1,500
I-49 Extension	**Grand Total**	**40,500**	**6,600**	**47,100**	**46,400**	**7,100**	**53,500**	**53,400**	**7,500**	**60,900**	**72,100**	**9,400**	**81,500**
LME	LA 89	3,000	200	3,200	3,300	400	3,700	4,100	400	4,500	5,600	400	6,000
LME	Mainline Southwest	15,500	2,600	18,100	17,600	2,700	20,300	19,900	2,900	22,800	29,700	3,400	33,100
LME	Verot School Rd	2,200	700	2,900	2,600	700	3,300	3,100	800	3,900	5,200	900	6,100
LME	Robley Dr	1,400	200	1,600	1,500	200	1,700	1,700	200	1,900	2,600	200	2,800
LME	LA 342	2,000	1,100	3,100	2,300	1,100	3,400	2,600	1,100	3,700	4,300	1,300	5,600
LME	Mainline West	13,500	4,200	17,700	15,200	4,300	19,500	18,200	4,700	22,900	27,700	5,300	33,000
LME	Congress St	1,500	200	1,700	1,600	200	1,800	1,600	200	1,800	1,800	200	2,000
LME	Cameron St	2,900	300	3,200	3,200	400	3,600	3,700	400	4,100	5,100	500	5,600
LME	**Grand Total**	**42,000**	**9,500**	**51,500**	**47,300**	**10,000**	**57,300**	**54,900**	**10,700**	**65,600**	**82,000**	**12,200**	**94,200**

Table 2-27: Annual Revenues for Segment B, Alternative 5 and Segment A2

		2012			2016			2020			2030		
Project	Plaza location	PC	CV	Total	PC	CV	Total	PC	CV	Total	PC	CV	Total
I-49 Extension	Southpark Rd	$487,000	$263,000	$750,000	$542,000	$286,000	$828,000	$614,000	$316,000	$930,000	$916,000	$435,000	$1,351,000
I-49 Extension	Eola St	$594,000	$363,000	$957,000	$661,000	$396,000	$1,057,000	$720,000	$421,000	$1,141,000	$899,000	$579,000	$1,478,000
I-49 Extension	Mainline East	$10,492,000	$3,511,000	$14,003,000	$12,160,000	$3,657,000	$15,817,000	$14,176,000	$3,933,000	$18,109,000	$23,219,300	$5,691,400	$28,910,700
I-49 Extension	Albertson Pkwy	$330,000	$236,000	$566,000	$368,000	$263,000	$631,000	$549,000	$411,000	$960,000	$891,000	$521,000	$1,412,000
I-49 Extension	Moulin Rd	$117,000	$88,000	$205,000	$125,000	$91,000	$216,000	$170,000	$99,000	$269,000	$299,000	$133,000	$432,000
I-49 Extension	Young St	$74,000	$21,000	$95,000	$79,000	$23,000	$102,000	$98,000	$27,000	$125,000	$127,000	$34,000	$161,000
I-49 Extension	**Grand Total**	**12,094,000**	**4,482,000**	**16,576,000**	**13,935,000**	**4,716,000**	**18,651,000**	**16,327,000**	**5,207,000**	**21,534,000**	**26,351,300**	**7,393,400**	**33,744,700**
LME	LA 89	$535,000	$132,000	$689,000	$622,000	$146,000	$784,000	$751,000	$162,000	$935,000	$1,028,000	$192,000	$1,250,000
LME	Mainline Southwest	$7,059,000	$2,930,000	$10,380,000	$8,042,000	$3,114,000	$11,574,000	$10,916,000	$3,946,000	$15,431,000	$18,968,000	$5,406,000	$25,159,000
LME	Verot School Rd	$589,000	$465,000	$1,203,000	$710,000	$489,000	$1,370,000	$835,000	$551,000	$1,560,000	$1,902,000	$798,000	$2,978,000
LME	Robley Dr	$126,000	$44,000	$185,000	$139,000	$45,000	$201,000	$152,000	$42,000	$216,000	$235,000	$48,000	$313,000
LME	LA 342	$358,000	$479,000	$860,000	$411,000	$504,000	$947,000	$464,000	$526,000	$1,030,000	$1,192,000	$887,000	$2,158,000
LME	Mainline West	$4,943,000	$3,807,000	$9,102,000	$6,946,000	$4,879,000	$12,315,000	$8,316,000	$5,340,000	$14,192,000	$15,148,000	$7,260,000	$23,178,000
LME	Congress St	$273,000	$97,000	$354,000	$293,000	$85,000	$372,000	$290,000	$89,000	$370,000	$493,000	$135,000	$612,000
LME	Cameron St	$265,000	$72,000	$327,000	$292,000	$85,000	$362,000	$338,000	$90,000	$411,000	$464,000	$114,000	$553,000
LME	**Grand Total**	**14,148,000**	**8,026,000**	**23,100,000**	**17,455,000**	**9,347,000**	**27,925,000**	**22,062,000**	**10,746,000**	**34,145,000**	**39,430,000**	**14,840,000**	**56,201,000**

Table 2-28: Cash Flow for Segment B, Alternative 5 and Segment A2

Year	Toll Revenue	
	Phase B Alignment 5	Phase A Segment 2
2012	$ 23,100,000	$ 16,576,000
2013	$ 24,386,000	$ 17,085,000
2014	$ 25,743,000	$ 17,609,000
2015	$ 27,176,000	$ 18,150,000
2016	$ 27,925,000	$ 18,651,000
2017	$ 29,604,000	$ 19,398,000
2018	$ 31,385,000	$ 20,175,000
2019	$ 33,272,000	$ 20,983,000
2020	$ 34,145,000	$ 21,534,000
2021	$ 35,886,000	$ 22,507,000
2022	$ 37,715,000	$ 23,523,000
2023	$ 39,637,000	$ 24,585,000
2024	$ 41,658,000	$ 25,696,000
2025	$ 43,782,000	$ 26,856,000
2026	$ 46,013,000	$ 28,069,000
2027	$ 48,359,000	$ 29,337,000
2028	$ 50,824,000	$ 30,662,000
2029	$ 53,415,000	$ 32,120,000
2030	$ 56,201,000	$ 33,744,711

Lafayette Metropolitan Expressway

Technical Memorandum 3

FINANCING

Submitted By:

HNTB

In association with:

Wilbur Smith Associates
C.H. Fenstermaker & Associates, Inc.
PENSCO

Lafayette Metropolitan Expressway Commission

May, 2005

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INTRODUCTION

The Financing Technical Memorandum summarizes the following tasks outlined in the scope of services for the Lafayette Metropolitan Expressway (LME) Toll Feasibility Study: Toll Revenue Bonding Capacity and Pro Forma Analysis, Innovative Financing Options and Pro Forma of Combined Toll and Supplemental Funding Alternatives. The LME Toll Feasibility Study is being conducted by the Lafayette Metropolitan Expressway Commission (LMEC), which is responsible for pursuing alternative and innovate funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, maintenance, and operation of a safe and efficient limited access highway system exclusively within Lafayette Parish.

METHODOLOGY AND ASSUMPTIONS

The financial assessment is intended to provide a general indication of the amount of capital funding that could be provided from toll financing for the project under the toll collection and governance assumptions of this study. The assessment estimates the amount of capital funding that can reasonably be expected to be achieved for the project based on the project's estimated toll revenues less the estimated annual costs of toll collection and maintenance of that project. While the financial assessment does provide an indication of the financial feasibility of implementing the project as a toll road, it is still preliminary in nature and should not be relied upon for assessing the actual amount of capital that can be raised for a project. Financial analysis in support of actual project financing would be done within future, more detailed studies, including an Investment Grade Study.

The toll-based financial feasibility for each project is reported as both a dollar amount and as a percentage of the estimated capital cost of each project.

The following specific assumptions relating to each project's construction, operation and financing were used in estimating the pro forma financing assessment for each project. Assumptions are general in nature and would require refinement for the specifics of the project should an Investment Grade Study be conducted.

METHODOLOGY FOR PRO FORMAS

The assumptions incorporated into the analyses include each project's capital costs, annual toll revenues, annual operations and maintenance costs for both roadway and toll collection, and renewal and replacement fund deposits.

Each project cost factors share the following characteristics:

- Project Capital Costs – provided in 2005 dollars, inflated at 5.0 percent annually to first year of construction;
- Annual Toll Revenues – provided in actual values for year of collection;
- Roadway and Toll Collection Operation and Maintenance Costs – provided in 2005 dollars, inflated at 3.00 percent from 2005 to the year of incurred expense; and
- Annual Renewal and Replacement Fund Deposit – provided in 2005 dollars.

Each project was evaluated utilizing the following financial methodology:

First, the total costs for each project assumed the combination of project costs and bond costs. Bond costs for each project included the following assumptions:

- Cost of Issuance – assumed at $2.00 per bond of estimated standard bond issuance expenses including legal fees, underwriting fees and rating agency fees, among others;
- Interest Earnings on Capitalized Interest and Construction Fund – 2.50 percent for three years; and
- Interest Rates – Current rates and, for market sensitivity analysis, current rates plus 150 bps.

Second, each project was stressed to maximize the amount of senior lien bonds that could be issued, subject to certain constraints. These constraints, as listed below, are those likely to be imposed on a start-up toll road bond program by rating agencies, bond insurers and/or investors.

- Principal Amortization Period – 30 years;
- Senior Lien Coverage Requirement – 1.75 times net revenues. Net revenues equal gross toll revenues less annual operation and maintenance expenses, plus annual debt service reserve fund interest earnings; and
- Interest Rates on Senior Lien Current Interest Bonds – rates as of February 7, 2005 and April 12, 2005.

The financial methodology employed is based on industry practice and comparable startup toll road methodologies. Startup toll roads' senior lien financial structure must be rated at least "investment grade" ("BBB-"or greater) by one of the three major rating agencies to obtain efficient, broad market access. In general, ratings agencies assign BBB- credit ratings to startup toll roads that meet a minimum senior lien coverage constraint of 1.75 times, have a reliable traffic and revenue study, and have a strong management team. The coverage for a toll road is calculated by dividing total net revenues by total debt service (i.e., the road must project at least $1.75 in annual net revenues for each $1.00 of annual bond debt service).

PROJECT SUMMARY

Five different projects were evaluated for financial feasibility. The projects are a combination of five different corridor alignments broken into segments. They are described below and summarized in *Table 3-1* and shown in Figure 3-1:

SYSTEM 1

The LME feasibility initially studied the financial feasibility of System 1 which is the entire Alternative 1 corridor including Segments B, C1 and D. During the financial analysis of this system, the revenue generated from the entire system was found to generate approximately 20 percent of its cost from tolls.

SYSTEM 2 AND 3

In coordination with the LMEC, HNTB then concentrated on Segment B due to the higher traffic volumes and revenue streams for this segment of the overall route. Segment B is located in the southwest quadrant

of Lafayette Parish. System 2 includes Segment B only of Alternative 1 corridor. System 3 includes Segment B only of Alternative 3 corridor.

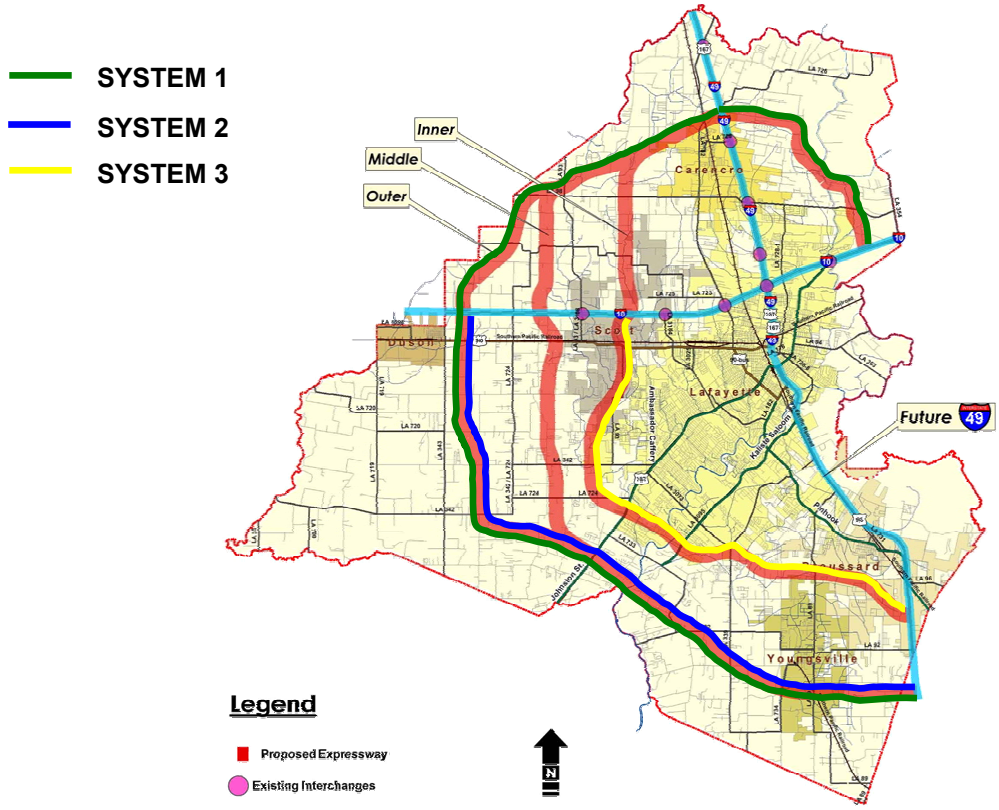
SYSTEM 4 AND 5

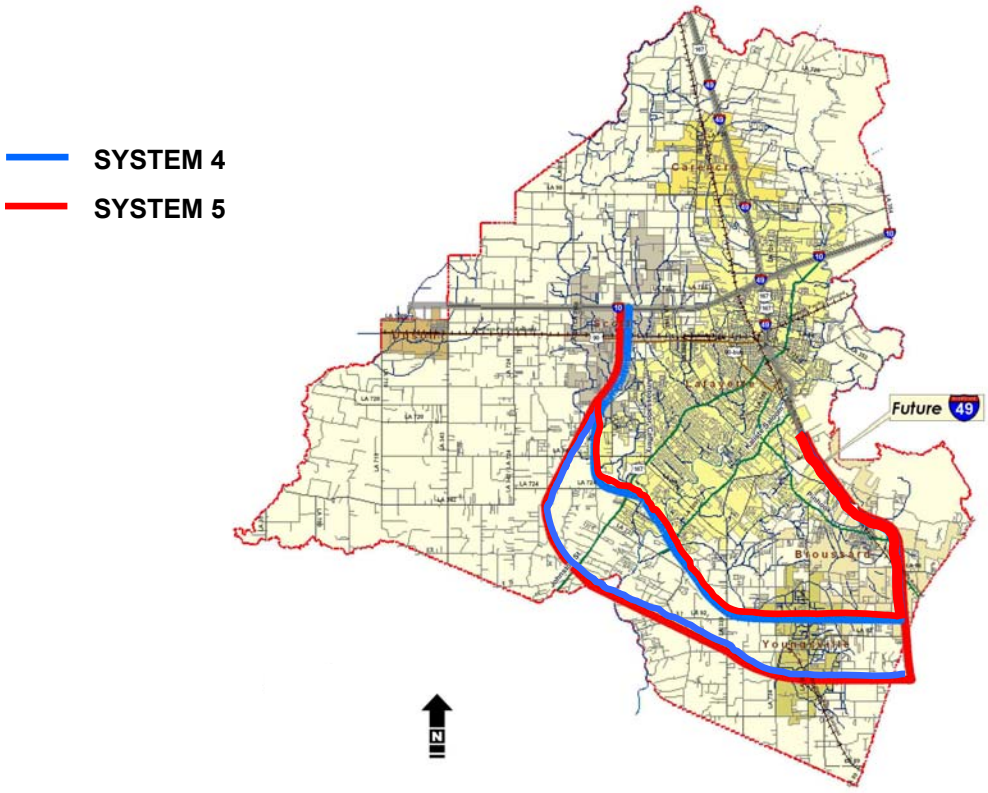
The LMEC provided additional guidance to identify two additional corridors in the southwest quadrant that were a combination of Segment B from Alternative 1 and Alternative 3. Also, inclusion of a portion of I-49 within Lafayette Parish was considered. Segment A2 includes the portion of I-49 from the Lafayette Regional Airport south to Segment B. System 4 was then defined to include the Segment B of either Alternative 4 or 5 (no I-49). System 5 was defined to include Segment A2 of I-49 and Segment B of either Alternative 4 or 5.

Table 3-1: Summary of Projects

System	Segments	Alternative
1	B, C1 and D	1
2	B Only	1
3	B Only	3
4	B Only	4 or 5
5	A2 and B	4 or 5

Figure 3-1: Systems Summary Map





TOLL FINANCING ASSESSMENT

Table 3-2 shows the financial feasibility for the five systems previously described. Pro formas were completed by Citigroup for Systems 2, 3 and 5. The pro formas are included as Appendix A.

Table 3-2: Project Financial Feasibility

System	Total 2012 Project Cost with COI[1]	Total Bond Proceeds	Excess/(Shortfall)	% of Project Cost[3]
System1[2]	--	--	--	<20%
System 2	$557.0M	$109.8M	($447.2M)	20%
System 3	$596.7M	$267.8M	($328.9M)	45%
System 4 [2]	--	--	--	40%
System 5 (Alt. 4)	$1.14B	$586.2M	($553.3M)	55%
System 5 (Alt. 5)	$1.09B	$614.3M	($477.1M)	65%

1: Cost of Issuance
2: Detailed pro formas unavailable for Systems 1 and 4. The percentage of project cost shown is estimated by HNTB based on available information from other analyses.
3: The percentage of project cost was derived by dividing the total bonded funds by the total construction cost inflated to opening year and rounded to nearest 5%.

Traditionally, any project that has an "excess" of funding (toll revenue bond proceeds can cover 100 percent of project costs) would be considered a feasible candidate for toll financing, while any project that has a "shortfall" of funding would not be considered a feasible toll financing candidate. As shown in the table, the System 5 project including Segments A2 and B of Alternative 5 has a financial feasibility of approximately 65 percent, meaning that 65 percent of the project's costs could be covered through toll revenue bond financing. This indicates that the magnitude of the gap in funding is large enough that refinements that could be made during a more detailed analysis would not likely be capable of making up the difference. Though it is not likely that this project could be funded solely from toll revenue bonds, it is possible that the toll bonding capacity could be leveraged with other non-toll revenue to complete the project. In recent years, toll projects have increasingly been funded from multiple sources rather than solely from tolls.

SENSITIVITY OF RESULTS TO ASSUMPTIONS

It is important to recognize that these results are a product of multiple assumptions, variations in which would have a significant impact on the proportion of the project's capital cost that is estimated can be funded from toll-based financing. Adjustments in any of these assumptions could lead to significant change in the estimated toll financing capacity for the project.

SUPPLEMENTAL FUNDING MECHANISMS

To develop the nation's transportation infrastructure, a variety of funding sources have been used. These include annual formula and discretionary funds from federal transportation programs, state funded programs, local funded programs, and private funding sources (bond program) supported by user fees (tolls) and/or special taxes. The following sections outline a number of funding options that are eligible to

be utilized for the LMEC project, however the availability of the funds in the magnitude that may be required is in question.

DOTD FUNDS

In fiscal year 2000, the Department of Transportation and Development (DOTD) established a new project and program funding mechanism. This new structure assigned all project and programs into five categories: System Preservation, Capacity, Safety, Operation, and Miscellaneous. System preservation funds are for maintenance of the existing infrastructure, capacity funds are for expansion and construction of new highway facilities, safety funds are to address safety related projects, operation funds are used to enhance traffic operation and to provide motorist assistance, and the miscellaneous funding category is for urban, enhancement, and other minor category projects.

Since the implementation of this new system, the annual allocation of funds to capacity projects has been about $90 million for construction. This number consists of 80 percent in federal with 20 percent in state match. To qualify for this category of funding, a project must have support of the local MPO, the respective DOTD district, and must fit within the district's annual allocation. For example, District 03 annual allocation is $8.3 million. Therefore a project costing $17 million in the city of Lafayette will exhaust a two-year allocation for District 03.

FEDERALLY EARMARKED FUNDS

Federal government funding for the nation's transportation system is through a congressionally enacted 6-year transportation program. The last transportation authorization bill was passed in 1998, named as Transportation Equity Act of 21st Century or better known as TEA-21. As of this writing, TEA-21 has not been re-authorized. In the enactment process of such legislations, members of Congress also include funding for special projects over the life of the bill. This project specific funding is in addition to the recipient state's annual formula funding. Such allocations, referred to as "earmarked funding," are common practice by senior and powerful members of Congress. The earmarked funds, much like the regular program, require a 20 percent match by the recipient entity.

Congress can also provide earmarked funding during the annual budget and appropriation process. As the annual budget of the US Department of Transportation goes through congressional budget hearings and appropriation process, powerful members usually attach to the bill funding for their special projects. These funds also require a 20 percent match by the recipient entity.

STATE FUNDS

On a yearly basis, the Louisiana legislature funds a state construction program (separate from the DOTD program) through issuing general obligation bonds of approximately $250 million in value. The list is put together by the Division of Administration based on requests made by various state and local agencies. The final list is approved by both houses of the legislature and the final bill is signed by the governor.

Currently, the total cost of the backlog of unfunded projects exceeds the annual bond issue by several times. However, this mechanism remains a viable means to fund a transport project if the governor and legislature deem that project a priority.

LOCAL FUNDS

Traditionally, local funds are used for construction and maintenance of local roads and other public facilities. The regional and state highways are the responsibility of DOTD. The funding sources for local roads are form the municipality's annual budget, through general obligation bonds issued by the local entity, or from the funds that the local entity receives from the state. Property and sales taxes are the normal sources of revenue for local entities.

In Louisiana, local entities do not have the authority to levy gasoline taxes. All fuel taxes are collected at the state level and the available funds are appropriated by the legislature. One penny of gasoline tax at the state level is generating approximately $27 million. Similarly, one penny of sales tax, without exemptions, generates approximately $660 million annually at the state level. Taking a simple population ratio, one penny sales tax should generate approximately $29 million in Lafayette Parish.

Other possible sources of revenue available to a local community include:

- Levying additional property tax which will require a public vote.
- Imposing a traffic impact fee. This would apply to developments along a highway based on the volume of vehicular traffic that is generated.
- Property value increase fee. This fee applies to properties that are positively affected by the proposed highway.
- Creating a taxing district. This is similar to property value increase fee where special taxes are levied on properties on businesses that are positively affected by the construction of the new highway.

PRIVATE FUNDS

One way to expedite construction of a highway is to borrow the needed funds. Government agencies, as well as private enterprises, borrow from the public by issuing bonds. Government agencies can issue general obligation or revenue bonds.

General obligation bonds are issued based on the faith and credit of the state or a municipality. These bonds are usually long term (20 to 30 years) and are serviced through the state's or a municipality's general funds. The state's credit rating, issued by the financial houses on Wall Street in New York establishes the attractiveness of the issued bonds.

Revenue bonds are issued by the state or its subdivision based on the anticipated future revenues as the consequence of building the project. One way to generate the needed revenue is through tolls. Toll bonds are usually long term (20-30 years) and must meet a set of stringent requirements.

To ensure the highest level of security for the investors, the bond rating agencies prefer processes that minimize investors' risk. On such process is design/build method of project development. In contrast, the traditional process of design/bid/build is a common practice. The design/build process minimizes adversarial relationships, ensures on-time completion of projects and prevents cost overruns. Currently, Louisiana laws do not allow for design/build with the exception of one specific project. Bond rating

agencies also prefer additional revenue pledges such as allocating the gross revenues to retire bonds. In such a case, another agency must accept the cost of operation and maintenance of the facility.

The TEA-21 legislation, for the first time, allowed federal transportation fund recipients to issue bonds guaranteed by the annual federal allocation. This innovative funding plan is called a Grant Anticipation Revenue Vehicle or GARVEE. GARVEEs enable states to pay debt service and other bond-related expenses with future Federal-aid highway apportionments. In Louisiana, DOTD through the state's Bond Commission will issue bonds to be serviced through allocation of annual federal transportation funds dedicated to the state. These bonds are usually short term (10 to 12 years). By state legislation, the total value of GARVEE bonds that DOTD can issue is restricted to an amount that is serviceable by 10 percent of the federal annual allocation (approximately $50 million).

TIFIA – TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT

Another innovative financing mechanism introduced in TEA-21 allows for leveraging capital raised in the public markets with federal support. TIFIA can fund up to 1/3 of project costs and allows states to borrow directly from or use credit of U.S. Treasury in support of major transportation project. TIFIA operates as a federal line of credit or as a loan and can be utilized in conjunction with taxable and/or tax-exempt financing. TIFIA's requirements are not as restrictive as revenue bonds and thus facilitates implementation of projects that otherwise could not be done through ordinary bonding process. The pro forma analyses presented previously include some allowance for TIFIA bonds.

LA 1 FUNDING EXAMPLE

In Louisiana, the LA 1 south toll bridge project over the Intracoastal Waterway (first phase to begin construction later this year) is a relevant example of using toll revenue bonds and some of the supplemental sources to make a toll project feasible. For LA 1 (first phase cost of $238 million), toll revenue bonds including TIFIA loans of approximately $161.5 million were supplemented by O&M commitment from DOTD, $58.4 million equity commitment from DOTD, and $18.2 million from federal funds. DOTD has worked through the Louisiana Transportation Authority, created by the legislature as a statewide toll authority in 2001, in order to contribute to the LA 1 toll project.

However, given the magnitude of the difference between toll revenue bonds and construction costs for the LMEC project, it is clear that DOTD will not be able to provide supplemental revenues of the magnitude necessary to make the project financially feasible. Likewise, it is not likely that the other sources alone would suffice in order to make the project financially feasible. These factors mean that in addition to the Lafayette Loop, other needed toll projects and mega-projects across the state such as the Baton Rouge bypass and completion of I-49 also will not be financially feasible unless large dedicated funds are identified.

LA MOBILITY FUNDS

Given the above, procedures in use in other states were researched to determine potential applicability in Louisiana in order to make needed toll mega-projects financially feasible. In Texas, legislation was enacted in 2003 that created a new state level fund that is used to supplement toll revenues generated at the local project level. The Texas Mobility Fund model has been researched and refined for proposed legislation for Louisiana in the 2005 session. Such a structure will require creation of a new state level

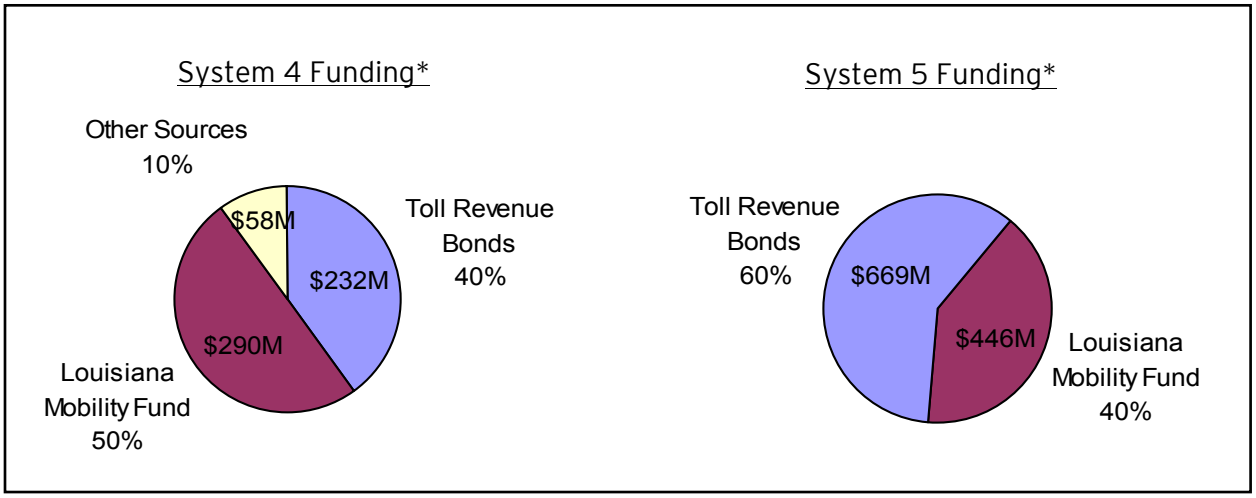
fund with revenue sources such as impaired driver surcharge fines and truck registration fees. The Mobility Fund will issue bonds in support of qualified projects. A qualified project must produce at least 50 percent of its cost from revenue sources (such as tolls or local) other than the Mobility Fund. Creation of such a mechanism will require legislative approval. A summary of the LMF legislation that has been filed in the 2005 Louisiana Legislative Session is provided as Appendix B.

IMPLEMENTATION PLAN

Each toll system was studied with regard to implementation costs estimates, traffic and revenue estimates, and the ability of toll revenue to cover the costs of implementation. The pro forma analyses prepared by Citigroup have been used as a guide by HNTB to judge the toll feasibility for each system. Results indicated that Systems 4 and 5 could be estimated to be toll funded in the range of 40 to 60 percent. These results indicate the need for supplemental funding.

The proposed Louisiana Mobility Fund legislation could fund up to 50 percent of the cost of the initial phase of the Lafayette Loop. Other sources, if needed, could include LADOTD funds, federally earmarked funds, state funds, local funds, private funds and TIFIA loans. *Figure 3-2* shows the possible funding packages for Systems 4 and 5 if the Mobility Fund is used as the means to bridge the funding gap.

Figure 3-2: Potential System Funding Packages



*Costs shown are total implementation costs and include the inflated construction cost, debt service reserve, bond insurance and cost of issuance.

Actual toll revenues and cost estimates will be more precisely determined after the final alignment is set during the EIS process. The two scenarios in *Figure 3-2* are presented for illustration purposes only to show viable funding potential. This information is intended to be used for planning purposes at this time and will be refined and updated as the project progresses.

IMPLEMENTATION PROCESS

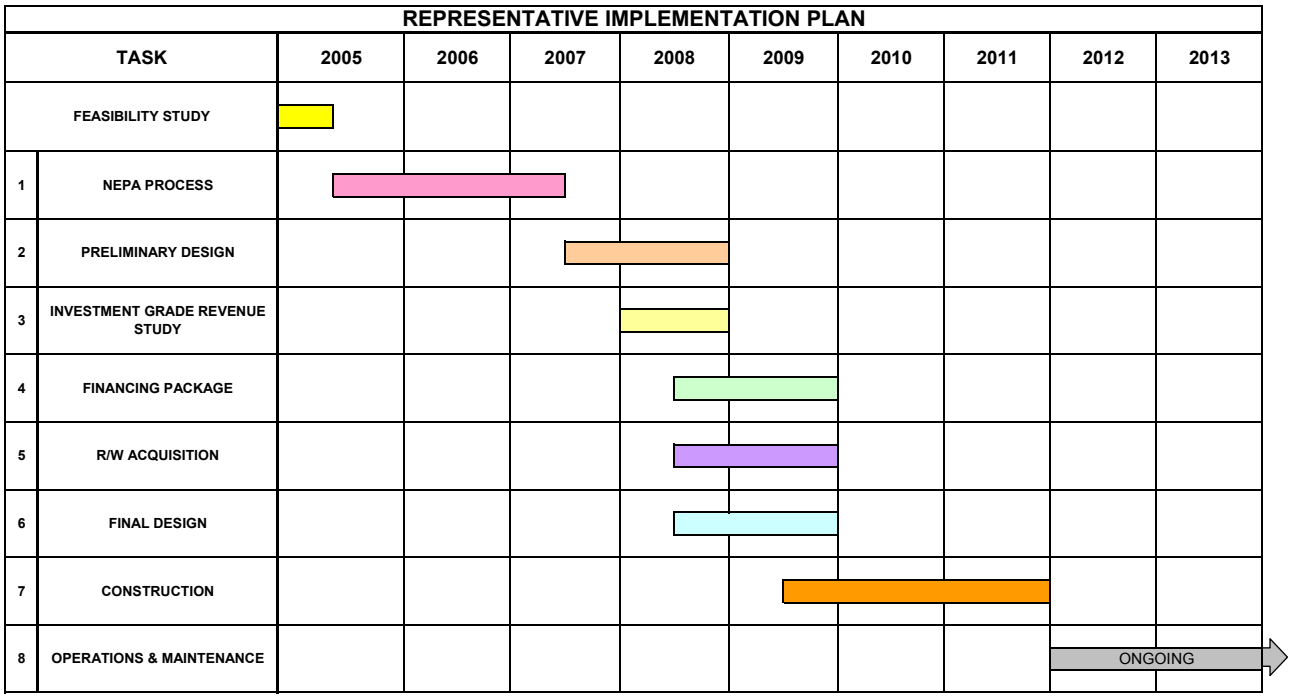
The next step in development of the LMEC loop project is an Environmental Impact Statement (EIS) and Record of Decision (ROD). This document is required under federal NEPA legislation in order to qualify

for federal funds of any kind, and has become a standard of practice for any substantial highway project even if it does not use federal funds. The EIS and ROD will identify the precise location of the toll facility, its engineering design features, its right-of-way footprint, any environmental impacts, and commitments and mitigation measures to offset any impacts. The EIS phase of project development is where the community and involved state and federal agencies will have input to the project development.

The expenses that will be necessary to prepare the EIS and secure a ROD should be considered project related expenditures and typically are included in the total development cost of the project. If a financing package is identified, then the project can move directly from the EIS phase into the design, construction and operational phases. If delays occur while developing a funding package, the EIS and ROD can be utilized to begin a corridor preservation phase. This tool is used to preserve undeveloped rights-of-way so that future development of the project will not be inhibited when funds do become available. Corridor preservation is currently being practiced on the I-49 Connector and should be considered a planning tool that will help guide investment and development decisions in Lafayette.

A representative implementation schedule for the continuation of the LMEC toll road project is shown in *Figure 3-3* below. The NEPA process could begin as early as July 2005. Construction of the toll road could begin in early 2010 and will be fully operational in 2012.

Figure 3-3: Implementation Process



The schedule shown is for a new loop in the southwest quadrant (Segment B). The I-49 section (Segment A2), if included in the toll system, could be accelerated by approximately one year because the NEPA process (EIS and ROD) are scheduled to be completed mid-2005. If implemented as a toll facility, a supplemental EIS would need to be prepared for I-49 and is estimated to take up to one year.

APPENDIX A

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - Segment B
Cash Flow Analysis - Assumptions for Systems 2 and 3

Series 2009	
Dated	1/1/2009
Delivery	1/1/2009
First Interest Payment	7/1/2012
First Principal Payment	1/1/2013
All-in Cost of Issuance ($/bond)	$2.00
Bond Insurance Premium (Sr. only)	150 bps
Rates as of:	2/7/2005

Assumed Ratings	
Senior Bond Ratings	AAA
Senior Underlying Ratings	BBB-
Subordinate Ratings	BB+

Target Debt Service Coverage	
Senior Lien	1.75x
Subordinate Lien	1.30x

Earnings Rates	
Construction Fund	2.50%
Capitalized Interest Fund	2.50%
Debt Service Reserve Funds	4.00%

Assumed Annual Inflation Rates until 2012	
Toll Revenues	0%
O&M	3.00%
Maintenance Reserve	3.00%
Construction Costs	5.00%

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - Segment B
Cash Flow Analysis - Alternative 1 - System 2

	Net Revenues					Series 2009			
	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Net Revenues Available For Debt Service	Senior Debt Service	Senior Coverage	Sub Debt Service	Sub Coverage
2012	11,229,000	414,461	1,013,416	6,333,850	4,296,194	2,667,250	1.61x	170,777	1.51x
2013	11,916,000	414,461	1,043,819	6,523,866	4,762,776	2,667,250	1.79x	995,262	1.30x
2014	12,646,000	414,461	1,075,133	6,719,582	5,265,746	2,952,250	1.78x	1,095,262	1.30x
2015	13,420,000	414,461	1,107,387	6,921,169	5,805,904	3,263,000	1.78x	1,200,262	1.30x
2016	13,684,000	414,461	1,140,609	7,128,804	5,829,047	3,277,500	1.78x	1,205,262	1.30x
2017	14,937,000	414,461	1,174,827	7,342,669	6,833,965	3,849,750	1.78x	1,405,262	1.30x
2018	15,665,000	414,461	1,210,072	7,562,949	7,306,440	4,121,750	1.77x	1,495,262	1.30x
2019	16,429,000	414,461	1,246,374	7,789,837	7,807,250	4,407,000	1.77x	1,595,262	1.30x
2020	16,444,000	414,461	1,283,765	8,023,532	7,551,163	4,259,000	1.77x	1,545,262	1.30x
2021	17,212,000	414,461	1,322,278	8,264,238	8,039,944	4,538,500	1.77x	1,645,262	1.30x
2022	18,015,000	414,461	1,361,946	8,512,165	8,555,349	4,834,250	1.77x	1,745,262	1.30x
2023	18,857,000	414,461	1,402,805	8,767,530	9,101,125	5,144,500	1.77x	1,855,262	1.30x
2024	19,737,000	414,461	1,444,889	9,030,556	9,676,015	5,472,500	1.77x	1,970,262	1.30x
2025	20,659,000	414,461	1,488,236	9,301,473	10,283,752	5,821,250	1.77x	2,085,262	1.30x
2026	21,623,000	414,461	1,532,883	9,580,517	10,924,061	6,188,500	1.77x	2,210,262	1.30x
2027	22,633,000	414,461	1,578,869	9,867,933	11,600,659	6,572,000	1.77x	2,350,262	1.30x
2028	23,690,000	414,461	1,626,235	10,163,971	12,314,255	6,981,500	1.76x	2,490,349	1.30x
2029	24,796,000	414,461	1,675,022	10,468,890	13,066,549	7,412,750	1.76x	2,636,919	1.30x
2030	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,798,619	1.30x
2031	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,798,619	1.30x
2032	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,793,619	1.30x
2033	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,796,831	1.30x
2034	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,797,081	1.30x
2035	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,794,063	1.30x
2036	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,794,063	1.30x
2037	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,794,063	1.30x
2038	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,794,063	1.30x
2039	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,794,375	1.30x
2040	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,795,000	1.30x
2041	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,795,000	1.30x
2042	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,795,000	1.30x
2043	25,954,000	414,461	1,725,273	10,782,956	13,860,231	7,863,000	1.76x	2,795,000	1.30x
2044	25,954,000	10,775,974	1,725,273	10,782,956	24,221,745	12,453,000	1.95x	6,175,000	1.30x
						206,965,500		75,007,365	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	53,345,000	16,255,000	69,600,000
Principal Amount - Capital Appreciation Bonds	28,348,227	7,477,991	35,826,218
Original Issue Discount/Premium	4,420,836	-	4,420,836
Total	**86,114,064**	**23,732,991**	**109,847,054**
Uses			
Deposit to Construction Fund (Net Funded)	412,441,516	119,819,854	532,261,370
Deposit to Capitalized Interest Fund	8,514,080	2,473,456	10,987,535
Deposit to Debt Service Reserve Fund	8,028,984	2,332,529	10,361,513
Bond Insurance (150 bps)	3,184,500	-	3,184,500
Cost of Issuance	163,386	47,466	210,852
Total	**432,332,467**	**124,673,304**	**557,005,771**
Shortfall	**(346,218,403)**	**(100,940,314)**	**(447,158,717)**

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - Segment B
Cash Flow Analysis - Alternative 3 - System 3

Year	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Revenues Available For Debt Service	Senior Debt Service	Debt Service Coverage	Sub Debt Service	Sub Coverage
2012	19,651,000	987,749	1,013,416	6,333,850	13,291,483	7,648,750	1.74x	441,714	1.64x
2013	20,193,000	987,749	1,043,819	6,523,866	13,613,065	7,648,750	1.78x	2,821,578	1.30x
2014	20,749,000	987,749	1,075,133	6,719,582	13,942,034	7,833,750	1.78x	2,886,578	1.30x
2015	21,321,000	987,749	1,107,387	6,921,169	14,280,193	8,029,500	1.78x	2,951,578	1.30x
2016	21,909,000	987,749	1,140,609	7,128,804	14,627,336	8,230,000	1.78x	3,021,578	1.30x
2017	23,135,000	987,749	1,174,827	7,342,669	15,605,254	8,784,500	1.78x	3,216,578	1.30x
2018	24,430,000	987,749	1,210,072	7,562,949	16,644,729	9,379,750	1.77x	3,421,578	1.30x
2019	25,797,000	987,749	1,246,374	7,789,837	17,748,538	10,012,250	1.77x	3,636,578	1.30x
2020	26,474,000	987,749	1,283,765	8,023,532	18,154,452	10,243,500	1.77x	3,716,578	1.30x
2021	27,855,000	987,749	1,322,278	8,264,238	19,256,233	10,871,750	1.77x	3,936,578	1.30x
2022	29,308,000	987,749	1,361,946	8,512,165	20,421,638	11,536,250	1.77x	4,171,578	1.30x
2023	30,836,000	987,749	1,402,805	8,767,530	21,653,414	12,243,250	1.77x	4,411,578	1.30x
2024	32,445,000	987,749	1,444,889	9,030,556	22,957,304	12,988,500	1.77x	4,666,578	1.30x
2025	34,137,000	987,749	1,488,236	9,301,473	24,335,041	13,772,750	1.77x	4,941,578	1.30x
2026	35,917,000	987,749	1,532,883	9,580,517	25,791,350	14,606,500	1.77x	5,231,578	1.30x
2027	37,790,000	987,749	1,578,869	9,867,933	27,330,948	15,484,500	1.77x	5,536,578	1.30x
2028	39,761,000	987,749	1,626,235	10,163,971	28,958,544	16,416,500	1.76x	5,855,035	1.30x
2029	41,835,000	987,749	1,675,022	10,468,890	30,678,837	17,401,500	1.76x	6,194,294	1.30x
2030	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,794	1.30x
2031	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,794	1.30x
2032	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,558,338	1.30x
2033	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,558,119	1.30x
2034	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,750	1.30x
2035	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,313	1.30x
2036	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,313	1.30x
2037	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,555,313	1.30x
2038	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,250	1.76x	6,558,750	1.30x
2039	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,436,500	1.76x	6,555,625	1.30x
2040	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,750	1.76x	6,555,000	1.30x
2041	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,750	1.76x	6,555,000	1.30x
2042	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,750	1.76x	6,555,000	1.30x
2043	44,017,000	987,749	1,725,273	10,782,956	32,496,520	18,438,750	1.76x	6,555,000	1.30x
2044	44,017,000	25,681,485	1,725,273	10,782,956	57,190,255	29,342,250	1.95x	14,650,000	1.30x
						490,610,250		177,493,815	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	152,975,000	45,945,000	198,920,000
Principal Amount - Capital Appreciation Bonds	45,662,061	12,485,421	58,147,482
Original Issue Discount/Premium	10,729,570	-	10,729,570
Total	**209,366,631**	**58,430,421**	**267,797,052**
Uses			
Deposit to Construction Fund (Net Funded)	411,460,949	121,033,993	532,494,942
Deposit to Capitalized Interest Fund	24,271,391	7,139,592	31,410,983
Deposit to Debt Service Reserve Fund	19,080,947	5,612,788	24,693,735
Bond Insurance (150 bps)	7,588,616	-	7,588,616
Cost of Issuance	397,274	116,861	514,135
Total	**462,799,178**	**133,903,235**	**596,702,412**
Shortfall	**(253,432,547)**	**(75,472,813)**	**(328,905,360)**

Louisiana Metropolitan Expressway Toll Commission

LME Expansion Project - Segments A2 and B

Cash Flow Analysis - Assumptions for System 5, Alternatives 4 and 5

Series 2006	
Dated	1/1/2006
Delivery	1/1/2006
First Interest Payment	1/1/2009
First Principal Payment	1/1/2009
All-in Cost of Issuance ($/bond)	$5.00
Bond Insurance Premium (Sr. only)	150 bps
Rates as of:	4/12/2005

Assumed Ratings	
Senior Bond Ratings	AAA
Senior Underlying Ratings	BBB-
Subordinate Ratings	BB+

Target Debt Service Coverage	
Senior Lien	1.75x
Subordinate Lien	1.30x

Earnings Rates	
Construction Fund	2.50%
Capitalized Interest Fund	2.50%
Debt Service Reserve Funds	4.00%

Assumed Annual Inflation Rates until 2030	
Toll Revenues	0%
O&M	3.00%
Maintenance Reserve	3.00%
Construction Costs	5.00%

Series 2009	
Dated	1/1/2009
Delivery	1/1/2009
First Interest Payment	1/1/2012
First Principal Payment	1/1/2012
All-in Cost of Issuance ($/bond)	$5.00
Bond Insurance Premium (Sr. only)	150 bps
Rates as of:	4/12/2005

Assumed Ratings	
Senior Bond Ratings	AAA
Senior Underlying Ratings	BBB-
Subordinate Ratings	BB+

Target Debt Service Coverage	
Senior Lien	1.75x
Subordinate Lien	1.30x

Earnings Rates	
Construction Fund	2.50%
Capitalized Interest Fund	2.50%
Debt Service Reserve Funds	4.00%

Assumed Annual Inflation Rates until 2030	
Toll Revenues	0%
O&M	3.00%
Maintenance Reserve	3.00%
Construction Costs	5.00%

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - System 5 - Phase A2, Alternative 4
Cash Flow Analysis - Series 2006

	Net Revenues					Series 2006			
Year	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Revenues Available For Debt Service	Net Senior Debt Service	Debt Service Coverage	Net Sub Debt Service	Sub Coverage
2009	13,820,000	728,955	869,456	3,062,767	10,616,732	3,060,087	3.47x	1,554,913	2.30x
2010	14,351,000	728,955	895,539	3,154,650	11,029,765	4,753,331	2.32x	1,890,968	1.66x
2011	14,902,000	728,955	922,405	3,249,290	11,459,260	6,456,750	1.77x	2,234,904	1.32x
2012	15,475,000	728,955	950,078	3,346,769	11,907,109	6,711,750	1.77x	2,324,904	1.32x
2013	16,074,000	728,955	978,580	3,447,172	12,377,203	6,981,750	1.77x	2,414,904	1.32x
2014	16,696,000	728,955	1,007,937	3,550,587	12,866,431	7,261,750	1.77x	2,509,904	1.32x
2015	17,342,000	728,955	1,038,175	3,657,104	13,375,675	7,551,750	1.77x	2,614,904	1.32x
2016	17,820,000	728,955	1,069,321	3,766,817	13,712,817	7,741,750	1.77x	2,684,904	1.32x
2017	18,284,000	728,955	1,101,400	3,879,822	14,031,732	7,926,750	1.77x	2,744,904	1.31x
2018	18,760,000	728,955	1,134,442	3,996,217	14,358,296	8,111,750	1.77x	2,809,904	1.31x
2019	19,249,000	728,955	1,168,476	4,116,103	14,693,376	8,301,750	1.77x	2,874,904	1.31x
2020	19,754,000	728,955	1,203,530	4,239,586	15,039,839	8,501,750	1.77x	2,944,904	1.31x
2021	20,670,000	728,955	1,239,636	4,366,774	15,792,545	8,931,750	1.77x	3,094,904	1.31x
2022	21,628,000	728,955	1,276,825	4,497,777	16,582,353	9,381,750	1.77x	3,252,100	1.31x
2023	22,631,000	728,955	1,315,130	4,632,710	17,412,115	9,856,750	1.77x	3,411,188	1.31x
2024	23,681,000	728,955	1,354,583	4,771,692	18,283,680	10,356,750	1.77x	3,581,028	1.31x
2025	24,779,000	728,955	1,395,221	4,914,842	19,197,891	10,876,750	1.77x	3,765,083	1.31x
2026	25,928,000	728,955	1,437,078	5,062,288	20,157,589	11,426,000	1.76x	3,956,203	1.31x
2027	27,130,000	728,955	1,480,190	5,214,156	21,164,609	12,001,000	1.76x	4,156,203	1.31x
2028	28,388,000	728,955	1,524,596	5,370,581	22,221,778	12,606,000	1.76x	4,362,083	1.31x
2029	29,704,000	728,955	1,570,333	5,531,698	23,330,923	13,241,000	1.76x	4,580,243	1.31x
2030	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,001,000	1.76x	4,848,443	1.31x
2031	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,002,500	1.76x	4,846,883	1.31x
2032	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,004,500	1.76x	4,847,989	1.31x
2033	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,001,250	1.76x	4,848,316	1.31x
2034	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,001,250	1.76x	4,847,743	1.31x
2035	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,003,250	1.76x	4,845,295	1.31x
2036	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,001,000	1.76x	4,850,000	1.31x
2037	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,003,500	1.76x	4,845,000	1.31x
2038	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,004,250	1.76x	4,845,000	1.31x
2039	31,253,000	728,955	1,617,443	5,697,649	24,666,862	14,002,000	1.76x	4,850,000	1.31x
2040	31,253,000	18,952,824	1,617,443	5,697,649	42,890,731	22,165,500	1.94x	7,670,000	1.44x
						344,228,669		119,908,624	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	134,240,000	36,645,000	170,885,000
Principal Amount - Capital Appreciation Bonds	18,853,225	5,607,405	24,460,631
Original Issue Discount/Premium	4,632,409	-	4,632,409
Total	**157,725,634**	**42,252,405**	**199,978,040**
Uses			
Deposit to Construction Fund (Net Funded)	352,551,288	97,301,105	449,852,393
Deposit to Capitalized Interest Fund	24,727,406	6,824,550	31,551,957
Deposit to Debt Service Reserve Fund	14,282,126	3,941,743	18,223,869
Bond Insurance (150 bps)	5,522,944	-	5,522,944
Cost of Issuance	765,466	211,262	976,728
Total	**397,849,230**	**108,278,660**	**506,127,891**
Shortfall	**(240,123,596)**	**(66,026,255)**	**(306,149,851)**

Total Project Cost	$ 459,130,888
% of Project funded with Bond Proceeds	43.56%

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - System 5 - Phase B, Alternative 4
Cash Flow Analysis - Series 2009

	Net Revenues					Series 2009			
Year	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Revenues Available For Debt Service	Net Senior Debt Service	Debt Service Coverage	Net Sub Debt Service	Sub Coverage
2012	24,935,000	1,538,276	861,404	5,797,880	19,813,992	5,557,538	3.57x	2,917,462	2.34x
2013	26,165,000	1,538,276	887,246	5,971,816	20,844,214	8,934,098	2.33x	3,579,902	1.67x
2014	27,456,000	1,538,276	913,863	6,150,971	21,929,442	12,341,750	1.78x	4,272,220	1.32x
2015	28,811,000	1,538,276	941,279	6,335,500	23,072,497	12,991,750	1.78x	4,502,220	1.32x
2016	29,606,000	1,538,276	969,517	6,525,565	23,649,193	13,321,750	1.78x	4,612,220	1.32x
2017	31,556,000	1,538,276	998,603	6,721,332	25,374,341	14,306,750	1.77x	4,957,220	1.32x
2018	33,635,000	1,538,276	1,028,561	6,922,972	27,221,743	15,366,750	1.77x	5,317,220	1.32x
2019	35,850,000	1,538,276	1,059,418	7,130,661	29,198,197	16,491,750	1.77x	5,712,220	1.31x
2020	36,791,000	1,538,276	1,091,200	7,344,581	29,893,495	16,891,750	1.77x	5,847,220	1.31x
2021	38,607,000	1,538,276	1,123,936	7,564,918	31,456,421	17,781,750	1.77x	6,157,220	1.31x
2022	40,512,000	1,538,276	1,157,654	7,791,866	33,100,755	18,721,750	1.77x	6,482,220	1.31x
2023	42,512,000	1,538,276	1,192,384	8,025,622	34,832,270	19,711,750	1.77x	6,827,220	1.31x
2024	44,610,000	1,538,276	1,228,156	8,266,391	36,653,730	20,751,750	1.77x	7,187,220	1.31x
2025	46,812,000	1,538,276	1,265,000	8,514,382	38,570,893	21,851,750	1.77x	7,562,220	1.31x
2026	49,123,000	1,538,276	1,302,950	8,769,814	40,588,512	23,001,750	1.76x	7,964,556	1.31x
2027	51,547,000	1,538,276	1,342,039	9,032,908	42,710,329	24,216,750	1.76x	8,383,455	1.31x
2028	54,091,000	1,538,276	1,382,300	9,303,895	44,943,080	25,491,750	1.76x	8,825,590	1.31x
2029	56,761,000	1,538,276	1,423,769	9,583,012	47,292,495	26,831,750	1.76x	9,291,118	1.31x
2030	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,750	1.76x	9,871,118	1.31x
2031	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,750	1.76x	9,871,118	1.31x
2032	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,750	1.76x	9,875,198	1.31x
2033	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,750	1.76x	9,871,758	1.31x
2034	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,527,500	1.76x	9,874,518	1.31x
2035	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,524,250	1.76x	9,874,518	1.31x
2036	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,527,750	1.76x	9,872,460	1.31x
2037	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,500	1.76x	9,871,902	1.31x
2038	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,523,500	1.76x	9,876,948	1.31x
2039	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,526,500	1.76x	9,875,000	1.31x
2040	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,527,750	1.76x	9,875,000	1.31x
2041	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,524,750	1.76x	9,875,000	1.31x
2042	59,722,000	1,538,276	1,423,769	9,583,012	50,253,495	28,525,000	1.76x	9,875,000	1.31x
2043	59,722,000	39,995,172	1,423,769	9,583,012	88,710,390	45,790,500	1.94x	15,850,000	1.44x
2044						-			
						731,195,636		254,608,249	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	256,200,000	70,080,000	326,280,000
Principal Amount - Capital Appreciation Bonds	63,667,684	17,208,852	80,876,536
Original Issue Discount/Premium	7,130,313	-	7,130,313
Total	**326,997,997**	**87,288,852**	**414,286,849**
Uses			
Deposit to Construction Fund (Net Funded)	371,539,217	101,389,522	472,928,739
Deposit to Capitalized Interest Fund	47,312,538	12,911,142	60,223,680
Deposit to Debt Service Reserve Fund	30,212,258	8,244,638	38,456,896
Bond Insurance (150 bps)	11,654,899	-	11,654,899
Cost of Issuance	1,599,338	436,444	2,035,783
Total	**462,318,250**	**122,981,746**	**585,299,997**
Shortfall	**(135,320,253)**	**(35,692,895)**	**(171,013,148)**

Total Project Cost	$ 482,683,199
% of Project funded with Bond Proceeds	85.83%

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - System 5 - Phase A2, Alternative 5
Cash Flow Analysis - Series 2006

	Net Revenues					Series 2006			
Year	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Revenues Available For Debt Service	Net Senior Debt Service	Debt Service Coverage	Net Sub Debt Service	Sub Coverage
2009	15,129,000	776,712	904,234	3,492,037	11,509,441	3,374,314	3.41x	1,700,686	2.27x
2010	15,592,000	776,712	931,361	3,596,798	11,840,553	5,119,109	2.31x	2,030,251	1.66x
2011	16,069,000	776,712	959,302	3,704,702	12,181,708	6,863,750	1.77x	2,376,302	1.32x
2012	16,576,000	776,712	988,081	3,815,843	12,548,788	7,073,750	1.77x	2,446,302	1.32x
2013	17,085,000	776,712	1,017,723	3,930,319	12,913,670	7,278,750	1.77x	2,521,302	1.32x
2014	17,609,000	776,712	1,048,255	4,048,228	13,289,229	7,493,750	1.77x	2,596,302	1.32x
2015	18,150,000	776,712	1,079,702	4,169,675	13,677,335	7,718,750	1.77x	2,671,302	1.32x
2016	18,651,000	776,712	1,112,093	4,294,765	14,020,853	7,913,750	1.77x	2,741,302	1.32x
2017	19,398,000	776,712	1,145,456	4,423,608	14,605,647	8,248,750	1.77x	2,856,302	1.32x
2018	20,175,000	776,712	1,179,820	4,556,317	15,215,575	8,593,750	1.77x	2,981,302	1.31x
2019	20,983,000	776,712	1,215,215	4,693,006	15,851,491	8,958,750	1.77x	3,101,302	1.31x
2020	21,534,000	776,712	1,251,671	4,833,796	16,225,245	9,173,750	1.77x	3,176,302	1.31x
2021	22,507,000	776,712	1,289,221	4,978,810	17,015,681	9,623,750	1.77x	3,331,302	1.31x
2022	23,523,000	776,712	1,327,898	5,128,174	17,843,640	10,098,750	1.77x	3,497,665	1.31x
2023	24,585,000	776,712	1,367,735	5,282,020	18,711,958	10,593,750	1.77x	3,669,977	1.31x
2024	25,696,000	776,712	1,408,767	5,440,480	19,623,465	11,113,750	1.77x	3,851,770	1.31x
2025	26,856,000	776,712	1,451,030	5,603,695	20,577,988	11,661,250	1.76x	4,036,510	1.31x
2026	28,069,000	776,712	1,494,561	5,771,805	21,579,346	12,230,750	1.76x	4,237,646	1.31x
2027	29,337,000	776,712	1,539,397	5,944,960	22,629,355	12,830,750	1.76x	4,442,646	1.31x
2028	30,662,000	776,712	1,585,579	6,123,308	23,729,824	13,460,750	1.76x	4,658,446	1.31x
2029	32,120,000	776,712	1,633,147	6,307,008	24,956,558	14,160,750	1.76x	4,904,766	1.31x
2030	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,955,750	1.76x	5,178,566	1.31x
2031	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,953,000	1.76x	5,181,326	1.31x
2032	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,955,000	1.76x	5,176,326	1.31x
2033	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,952,000	1.76x	5,180,104	1.31x
2034	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,955,750	1.76x	5,176,683	1.31x
2035	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,954,750	1.76x	5,175,414	1.31x
2036	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,953,000	1.76x	5,180,000	1.31x
2037	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,954,250	1.76x	5,180,000	1.31x
2038	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,957,000	1.76x	5,175,000	1.31x
2039	33,744,711	776,712	1,682,141	6,496,218	26,343,064	14,954,750	1.76x	5,175,000	1.31x
2040	33,744,711	20,194,513	1,682,141	6,496,218	45,760,865	23,651,250	1.93x	8,190,000	1.44x
						366,781,672		127,798,103	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	142,890,000	39,035,000	181,925,000
Principal Amount - Capital Appreciation Bonds	19,859,760	5,869,067	25,728,827
Original Issue Discount/Premium	4,938,117	-	4,938,117
Total	**167,687,878**	**44,904,067**	**212,591,945**
Uses			
Deposit to Construction Fund (Net Funded)	352,574,138	97,278,255	449,852,393
Deposit to Capitalized Interest Fund	26,321,950	7,262,454	33,584,404
Deposit to Debt Service Reserve Fund	15,218,802	4,198,999	19,417,801
Bond Insurance (150 bps)	5,884,384	-	5,884,384
Cost of Issuance	813,749	224,520	1,038,269
Total	**400,813,022**	**108,964,228**	**509,777,250**
Shortfall	**(233,125,144)**	**(64,060,161)**	**(297,185,306)**

Total Project Cost	$ 476,740,753
% of Project funded with Bond Proceeds	44.59%

Louisiana Metropolitan Expressway Toll Commission
LME Expansion Project - System 5 - Phase B, Alternative 5
Cash Flow Analysis - Series 2009

	Net Revenues					Series 2009			
Year	Toll Revenues	Total DSRF Earnings	Maintenance Reserve	O&M	Revenues Available For Debt Service	Net Senior Debt Service	Debt Service Coverage	Net Sub Debt Service	Sub Coverage
2012	23,100,000	1,392,143	962,745	6,048,650	17,480,748	4,812,841	3.63x	2,562,159	2.37x
2013	24,386,000	1,392,143	991,628	6,230,109	18,556,406	7,930,888	2.34x	3,182,415	1.67x
2014	25,743,000	1,392,143	1,021,376	6,417,013	19,696,754	11,084,000	1.78x	3,836,779	1.32x
2015	27,176,000	1,392,143	1,052,018	6,609,523	20,906,603	11,774,000	1.78x	4,076,779	1.32x
2016	27,925,000	1,392,143	1,083,578	6,807,809	21,425,756	12,069,000	1.78x	4,181,779	1.32x
2017	29,604,000	1,392,143	1,116,086	7,012,043	22,868,015	12,894,000	1.77x	4,466,779	1.32x
2018	31,385,000	1,392,143	1,149,568	7,222,404	24,405,171	13,774,000	1.77x	4,766,779	1.32x
2019	33,272,000	1,392,143	1,184,055	7,439,076	26,041,012	14,709,000	1.77x	5,091,779	1.32x
2020	34,145,000	1,392,143	1,219,577	7,662,249	26,655,318	15,059,000	1.77x	5,211,779	1.31x
2021	35,886,000	1,392,143	1,256,164	7,892,116	28,129,863	15,899,000	1.77x	5,506,779	1.31x
2022	37,715,000	1,392,143	1,293,849	8,128,880	29,684,415	16,789,000	1.77x	5,811,779	1.31x
2023	39,637,000	1,392,143	1,332,665	8,372,746	31,323,733	17,724,000	1.77x	6,141,779	1.31x
2024	41,658,000	1,392,143	1,372,645	8,623,928	33,053,571	18,714,000	1.77x	6,481,779	1.31x
2025	43,782,000	1,392,143	1,413,824	8,882,646	34,877,673	19,759,000	1.77x	6,836,779	1.31x
2026	46,013,000	1,392,143	1,456,239	9,149,126	36,799,779	20,854,000	1.76x	7,221,979	1.31x
2027	48,359,000	1,392,143	1,499,926	9,423,599	38,827,618	22,014,000	1.76x	7,620,996	1.31x
2028	50,824,000	1,392,143	1,544,924	9,706,307	40,964,913	23,234,000	1.76x	8,045,797	1.31x
2029	53,415,000	1,392,143	1,591,271	9,997,496	43,218,376	24,524,000	1.76x	8,486,597	1.31x
2030	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,919,000	1.76x	8,971,597	1.31x
2031	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,919,000	1.76x	8,971,597	1.31x
2032	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,919,000	1.76x	8,970,877	1.31x
2033	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,919,000	1.76x	8,970,197	1.31x
2034	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,917,250	1.76x	8,972,957	1.31x
2035	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,914,250	1.76x	8,972,957	1.31x
2036	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,914,250	1.76x	8,972,349	1.31x
2037	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,918,750	1.76x	8,970,142	1.31x
2038	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,915,500	1.76x	8,971,783	1.31x
2039	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,917,750	1.76x	8,970,000	1.31x
2040	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,918,000	1.76x	8,970,000	1.31x
2041	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,919,000	1.76x	8,970,000	1.31x
2042	56,201,000	1,392,143	1,639,009	10,297,421	45,656,713	25,918,250	1.76x	8,970,000	1.31x
2043	56,201,000	36,195,727	1,639,009	10,297,421	80,460,296	41,543,250	1.94x	14,385,000	1.44x
						662,089,979		230,540,745	

Sources and Uses of Funds

Sources	**Senior**	**Subordinate**	**Total**
Principal Amount - Current Interest Bonds	229,825,000	62,865,000	292,690,000
Principal Amount - Capital Appreciation Bonds	58,789,183	15,793,846	74,583,029
Original Issue Discount/Premium	6,384,222	-	6,384,222
Total	**294,998,405**	**78,658,846**	**373,657,250**
Uses			
Deposit to Construction Fund (Net Funded)	415,321,638	113,191,668	528,513,306
Deposit to Capitalized Interest Fund	42,455,839	11,570,905	54,026,744
Deposit to Debt Service Reserve Fund	27,349,702	7,453,882	34,803,583
Bond Insurance (150 bps)	10,547,723	-	10,547,723
Cost of Issuance	1,443,071	393,294	1,836,365
Total	**497,117,972**	**132,609,749**	**629,727,721**
Shortfall	**(202,119,567)**	**(53,950,903)**	**(256,070,470)**

Total Project Cost	$ 539,414,234
% of Project funded with Bond Proceeds	69.27%

APPENDIX B

LOUISIANA MOBILITY FUND 2005

OVERVIEW

BACKGROUND

State legislation was enacted in Louisiana in 1997, 2001, and 2003 regarding the creation of toll authorities to plan, design, construct, and operate toll roads. This legislation includes a bill that permits the formation of local toll authorities for any Parish or contiguous Parishes in the state (1997), the Louisiana Transportation Authority which has statewide jurisdiction for toll roads (2001), and the LMEC toll authority charged specifically with implementing a loop around Lafayette (2003). These acts by the legislature indicate an understanding of the need for highway improvements in Louisiana and the lack of funding that is available from traditional sources to implement these improvements.

However, new start up toll roads are difficult to fully finance by the bonded revenue that is generated by tolls. True across the country, this is due to numerous factors which include bond coverage requirements and sometimes lower traffic streams in the early years. Therefore, little activity has occurred in the actual development of toll roads in Louisiana despite all of the enabling legislation (an exception is the LA 1 south project where project toll revenues are being supplemented with O & M and cash from DOTD as well as TIFIA loans).

GOALS

The goal is to enact legislation in Louisiana creating a state level Mobility Fund (LMF) to provide funding leverage for mega transportation projects across Louisiana, taking advantage of the toll enabling legislation previously passed. Money from the fund would be used to bridge the funding gap between local project toll revenues (and other project level revenues) and the cost of the project. Only toll projects would qualify for the state level supplemental funding (this will provide project level revenue that enables the state level fund to be leveraged to a larger total program). The LMF will enable new projects to go forward or existing systems could be expanded.

PROPOSED LEGISLATION

The legislation covers funding sources, revenue streams, the individual projects in the capital improvements program, and administration of the program. The legislation is proposed to have two primary components.

1. Louisiana Mobility Fund

The first component of the legislation will be the LMF, which would be created for the purpose of generating and collecting a new annual revenue stream. Two sources are currently being proposed: increases in truck registration fees and surcharges on moving violations and DWIs statewide. The first source would bring Louisiana's truck fees in line with the national average. The second source is referred to as the Driver Responsibility Act and is patterned after similar successful legislation in Texas. These two sources could generate $150 million to $200 million annually, which would yield bonded funds of $1.5 to $2.5 billion. When matched with local project toll funds and other potential project funds (estimated at 50% on average), this is estimated to yield a

leveraged program in the range of $3 to $5 billion. A first tier set of projects with statewide appeal, including the completion of I-49 and several urban area bypasses, are envisioned under the program. A second tier of projects may qualify under the program depending on the availability of funding. As initial bonds are paid off, a third tier set of projects may be identified and the LMF will become an economic engine for continued transportation projects into the future.

Candidate projects would come from the Louisiana Statewide Transportation Plan, most recently updated in 2003 by LDOTD. The LMEC project is currently included in the statewide transportation plan list of projects.

2. Mobility Fund Administration

The second primary component of the legislation will be to set up a procedure to administer the funds generated by the LMF. This component envisions amending existing legislation in place for the Louisiana Transportation Authority (LTA), which has statewide authority to implement and operate toll roads. The LTA is governed by a board that includes the Governor, the DOTD Secretary, the DED Secretary, Senate President, House Speaker, Senate and House Transportation Committee Chairmen, a member of the Louisiana Planning Council, and an at large business leader. The amended legislation would provide for fiduciary administration of the LMF. Other existing (and future) Louisiana toll agencies would continue to exist and operate under their enabling legislation and will in no way be affected by amending the LTA legislation. The responsibilities of LTA would consist of the administration of the LMF as set forth by rules in the enabling LMF legislation. The LTA toll agency function as well as other existing and future toll agencies would have equal access to the funds being administered by the LTA in accomplishment of the qualified projects listed in the statewide transportation plan.

Impacts to General Fund

No general fund revenue streams or Transportation Trust Fund revenue streams initially would be impacted by the proposed legislation. It is possible that existing truck fees that are deposited in the general fund could be transferred to the LMF over a phased period of years as a part of the funding stream for the LMF.

Lafayette Metropolitan Expressway

Technical Memorandum 4

ENVIRONMENTAL RECONNAISSANCE

Submitted By:

HNTB

In association with:

Wilbur Smith Associates
C.H. Fenstermaker & Associates, Inc.
PENSCO

Lafayette Metropolitan Expressway Commission

February, 2005

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INTRODUCTION

The Lafayette Metropolitan Expressway (LME) Toll Feasibility Study is being coordinated by the Lafayette Metropolitan Expressway Commission (LMEC), which is responsible for the pursuit of alternative and innovate funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, maintenance, and operation of a safe and efficient limited access highway system exclusively within Lafayette Parish.

This Environmental Reconnaissance Technical Memorandum addresses the existing human and natural environmental conditions that could potentially be affected by each of three alternatives for the proposed corridor. It is intended to provide a broad summary and description of the natural, cultural, community resources, land uses and environmental factors that exist.

LME PROJECT PURPOSE AND NEED

The goals of the study are to determine the feasibility and identify potential financing plans, determine any environmental constraints, gauge public acceptance of the project and develop a project implementation plan and implementation strategies to cover subsequent phases, including Phase B, which would include any environmental study and documentation required under the National Environmental Policy Act (NEPA).

This project would demonstrate purpose and need as identified below:

- Improve Lafayette's transportation system as existing facilities are congested and needed improvements are unfunded;
- Improve the regional and national system by supplementing Interstate 10 and Interstate 49 connectivity through the metro area;
- Prepare for future growth and traffic demand;
- Promote economic development with jobs, tourism, education, recreation, retail and medical services, and
- Improve hurricane evacuation system.

CORRIDOR ALTERNATIVES

The LME feasibility study has identified several possible corridors throughout Lafayette Parish that were narrowed into three corridors for this preliminary study. This technical memorandum summarizes both the human and natural environmental constraints for each corridor that may require further study in Phase B. For the purpose of this study, the corridors have been named Alternative 1, Alternative 2 and Alternative 3. All three alternatives follow the same corridor from I-10 just west of the eastern boundary of Lafayette Parish to the north across I-49 at Rue Des Etoiles to about the intersection of Mardi Gras Street and Dillon Street. From there the corridor splits into three possible alternative corridors that move south across I-10 and then cross Johnston Street/US 167. The three corridors then form two different corridors that move east, terminating at US 90 or the future I-49. *Figure 4-1* illustrates the three study corridor alternatives.

Lafayette Metropolitan Expressway

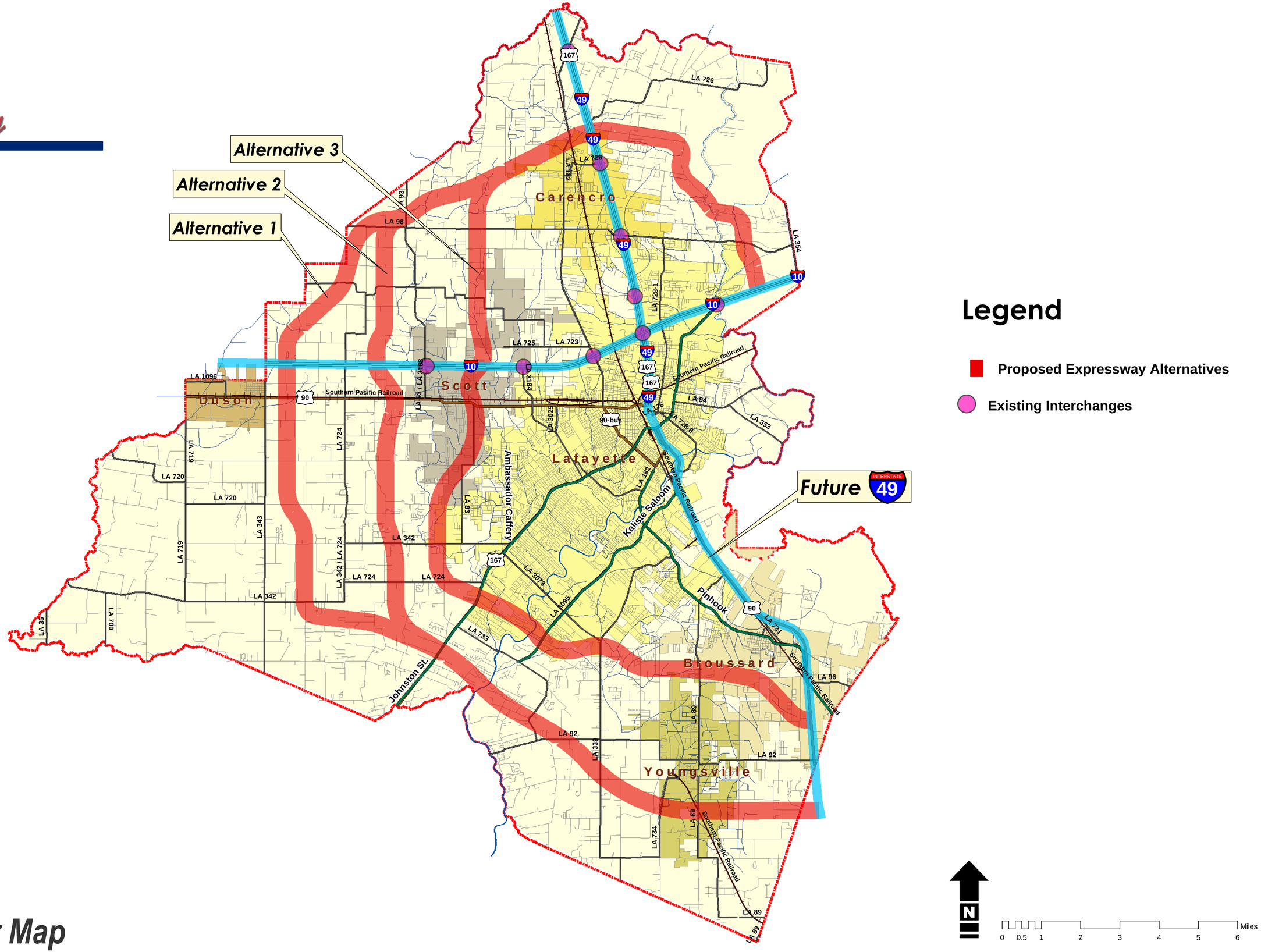


Figure 4-1

Study Corridor Map

HUMAN AND NATURAL ENVIRONMENT OVERVIEW

The three proposed alternatives are located mostly in the middle to western portions of the parish. Most of these areas of Lafayette Parish contain agricultural, rural, or low-density residential land uses. The proposed alternatives lie within the Terrace Upland physiographic region of the parish which comprises the area west of the escarpment of the Mississippi River Alluvial Plain. Elevations in this region range from 60 feet in the northern part of the parish to 25 feet along the southern edge. This relatively flat region contains soils that are somewhat poorly drained but are suitable for such commercial crops as soybean and rice.

The landscape of this area of the parish consists of a series of naturally treeless areas broken only by forested riparian systems along bayous and streams. However, these indigenous forested areas were once more abundant than they are today because of clearing that has taken place over the last 200 years to facilitate agriculture and other types of development. The major forested areas remaining are on the outer edges of the parish, with small pockets of native vegetation found in scattered locations. Because of the small amount of remaining wooded and forested habitat, there are relatively low populations of wildlife found in the parish. The largest populations of birds and other animals that are found are those associated with open land habitats such as doves and cottontail rabbits. The scattered amounts of forested areas that do remain provide habitat for both flora and fauna not found elsewhere in the parish – including deer, swamp rabbits, and wood ducks.

Although the natural landscape within the parish and the study area has seen changes since early European settlement, it is still a picturesque landscape that is rich in both history and natural habitat. The vast acreage of agriculture land that exists today in and around the corridor study area supports a variety of commercial crops including sorghum, wheat, rice, soybeans, sugarcane and hay-alfalfa.

Although it is not certain when the first European settlers first inhabited the Lafayette area, some historic evidence indicates that a few trappers, traders and ranchers were present in the region before the beginning of Spanish occupation in 1766. The most significant cultural impact on the region occurred in the 18th century when a large number of Acadians in French Canada were expelled by the ruling British in 1755. A significant number of these Acadian exiles migrated to the bayous of southwestern Louisiana, including the Lafayette area, where they could live according to their own beliefs and customs. The French Revolution of 1789 also had an impact on the Lafayette area as many French Loyalists fled to Louisiana to settle.

Today, Lafayette represents the heart of Acadiana, an area of south Louisiana populated by persons of this Acadian or "Cajun" descent. The "Cajun" notoriety of the area helps generate more than $200 million in tourism annually for the parish. The residents of Lafayette Parish are strongly bound by their Acadian heritage and ties to the past.

THE HUMAN ENVIRONMENT

EXISTING LAND USE

Lafayette Parish contains a large unincorporated area and six municipalities: Lafayette, Broussard, Carencro, Duson, Scott, and Youngsville. With the exception of the city of Lafayette, the remaining five

municipalities currently have no zoning regulations. The city of Lafayette is relatively compact, encompassing about 50 square miles with a fairly concentrated urban core. The five remaining smaller municipalities mostly serve as single-family residential communities with scattered agricultural, light industrial, commercial, and vacant land uses. Lafayette's city limits contain a strong mix of land-use types that primarily include low, medium, and high-density residential, retail and office, industrial, and open space/parks. The city of Lafayette represents the center of the economy for the parish and has significant land use impacts on each of the remaining five communities.

As illustrated in *Figure 4-2*, the three proposed alternatives for the LME fall within the middle to western portions of the parish. These areas have a predominance of agriculture and undeveloped land use with scattered, smaller pockets of low-density residential use. Agriculture and undeveloped areas make up the largest percentage of land use in the entire parish and involve raising such crops as sugarcane, rice and soybean. These types of land use areas are found almost entirely in the unincorporated areas of the parish.

Alternative 3, the eastern most of the three alternatives, is the only one of the three that has a portion falling within Lafayette's city limits. However, like the other two alternatives, most of the land use types that this alternative traverses consists of vacant, agriculture, and scattered, low-density residential. Additionally, Alternative 3 also passes near small portions of light industrial land uses. This alternative also travels through incorporated areas of Scott, located in the central portion of the parish, and Broussard in the southern end of the parish. It also passes in proximity to Southside Regional Park, near its southern termini, just outside the city of Broussard. This park is about 225 acres in size and is comprised of ball fields and an 18-hole golf course. At this time, it is not anticipated that Section 4(f) of the Department of Transportation Act 49 USC 1653 (f) would be applicable with regard to this park. However, more detailed studies will be made during any future environmental documentation occurring beyond this study to determine full compliance with federal regulations regarding the use of land from, or impact to, a park or recreation area.

Lafayette Metropolitan Expressway

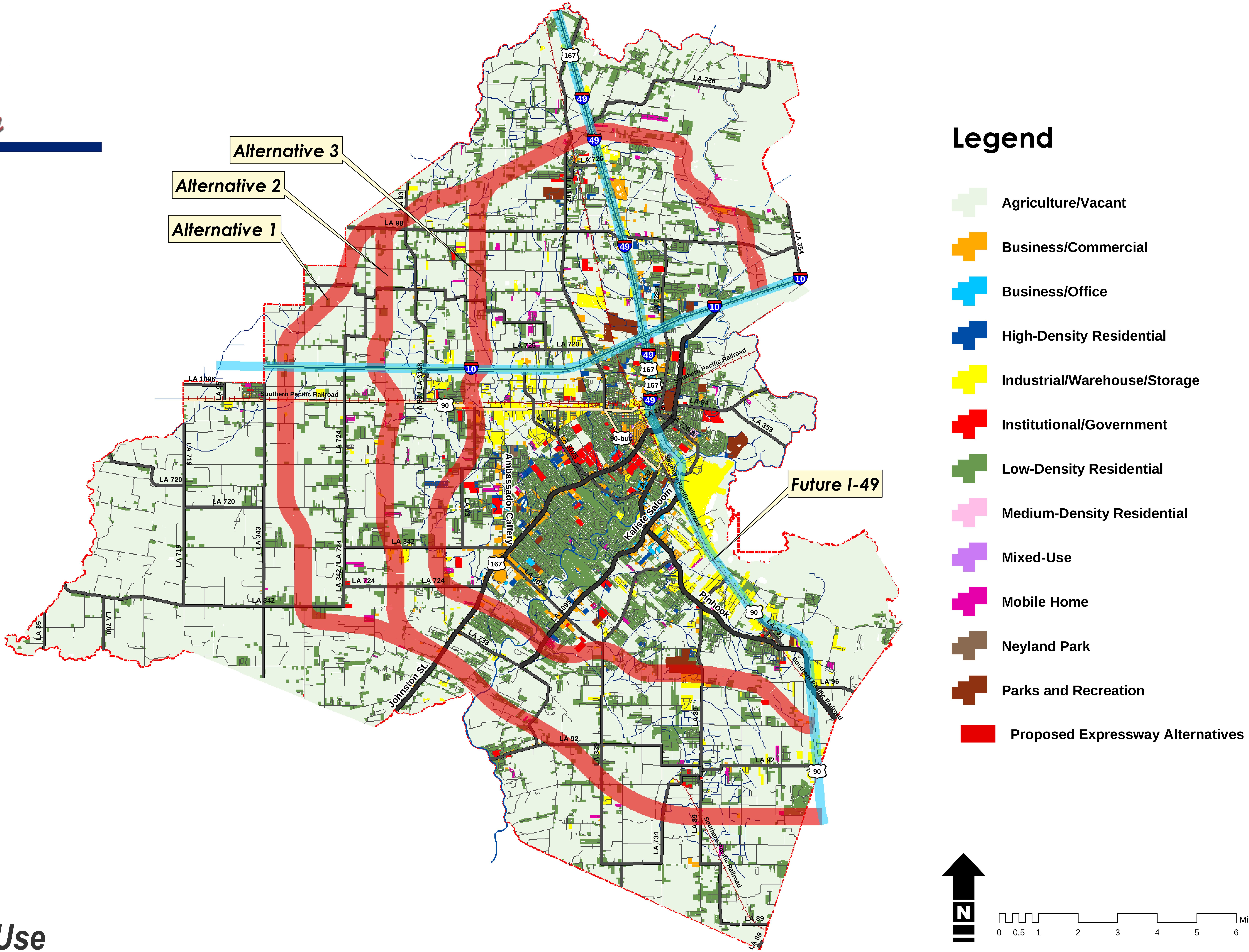


Figure 4-2

Existing Land Use

FUTURE LAND USE

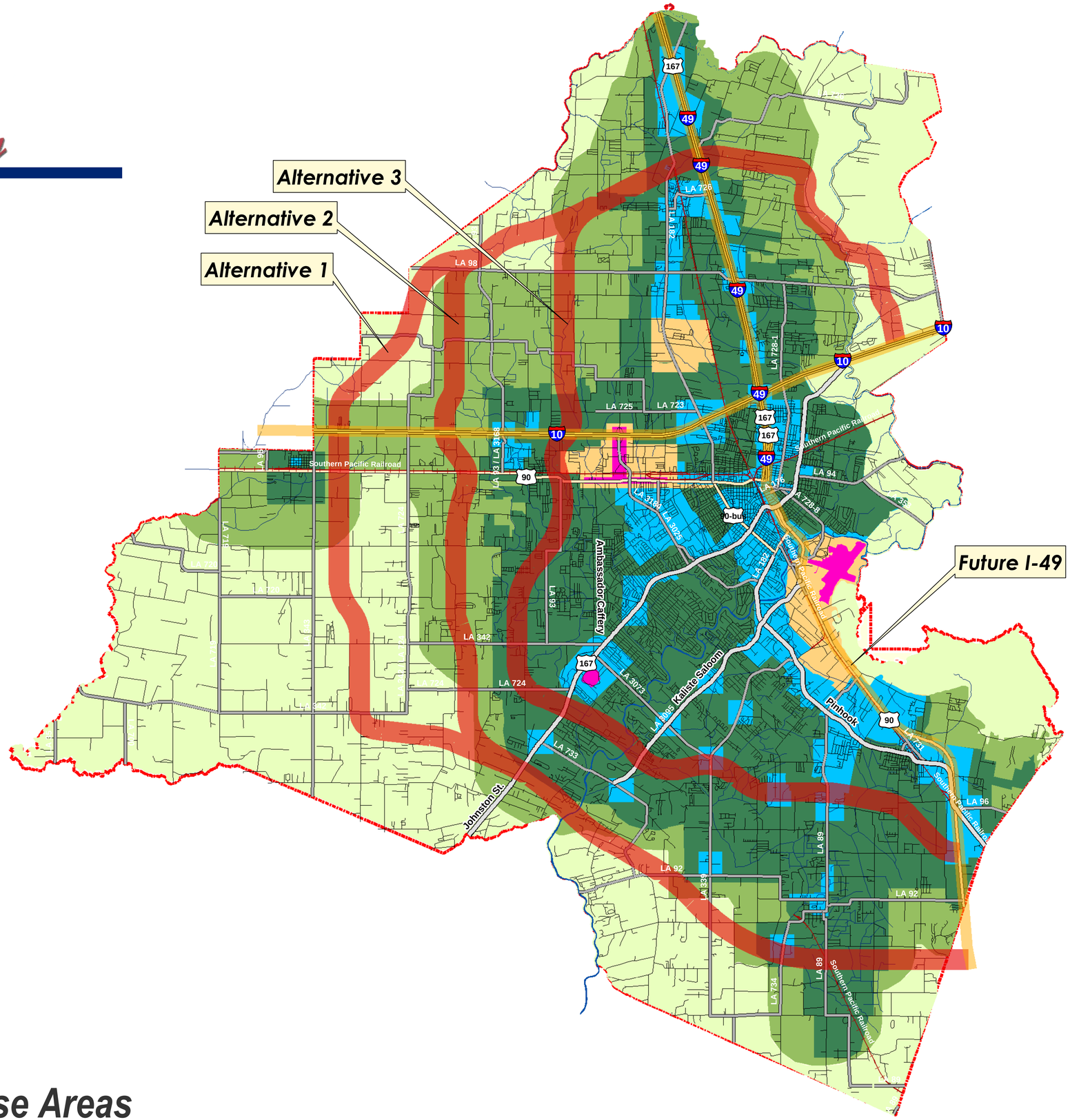
Figure 4-3 illustrates proposed future land use areas as developed for the Lafayette Parish Land Use Master Plan and Land Use Policy Plan, September, 2002. Alternative 3 passes through a large amount of proposed urban neighborhood use areas in its southern half as well as smaller, scattered portions of proposed mixed-use areas. The northern portion of alternative 3 would pass through mostly proposed low-intensity use areas. Alternatives 1 and 2 would only pass through a relatively small amount of proposed urban neighborhood and mixed-use areas near their southern termini and along the southern edge of the city of Youngsville. The remainders of these two alternatives travel through a majority of proposed rural use areas and proposed low-intensity use areas. It should be noted that, as of this writing, this proposed Future Land Use Area plan has not yet been officially adopted by the Lafayette Consolidated Government.

The city of Lafayette, as well as the remaining areas of the parish over the years, has reflected a compact and ordered community development pattern that is primarily due to the prominence of wetland and floodplain constraints. In the 1990's however, Lafayette parish saw new commercial and residential development occur in its southern and western portions, including areas within and around the communities of Broussard and Youngsville. These new residential developments make up the main component of what is characteristic of a sprawling development pattern. This low-density residential sprawl can be defined as one or two houses per acre, consuming a large amount of land for relatively few people. These land uses are typically located the farthest distance from retail, commercial and office use areas and are the most consumptive of resources. The continuation of this land use trend in the parish will greatly increase the need for significant transportation and other infrastructure improvements such as the Lafayette Metropolitan Expressway. Lafayette has the potential to capitalize on several other key transportation projects in addition to the LME such as improvements to major arterial roadways as well as the I-49 and I-10 corridors.

The majority of the land uses in the parish where all three alternatives are located remain undeveloped with scattered areas of low-density residential. Each of the three alternatives will serve to facilitate future development and managed growth opportunities for these areas of the parish. Most importantly, they will serve to improve travel time savings for motorists in the Lafayette metropolitan area due to improved accessibility and an expanded transportation network. Additionally, these facilities could attract more tourism-related traffic and improve the efficient mobility of goods and services.

Overall, because all three alternatives pass through low-intensity to undeveloped use areas of the parish, none are anticipated to negatively impact the existing land use or future land use plans for the parish.

Lafayette Metropolitan Expressway



Legend

- High-Intensity Areas
- Low-Intensity Areas
- Mixed-Use Areas
- Rural Areas
- Special Nodes
- Urban Neighborhoods
- Proposed Expressway Alternatives

N

0 0.5 1 2 3 4 5 6 Miles

Figure 4-3

Future Land Use Areas

POPULATION CHARACTERISTICS AND TRENDS

The population of Lafayette Parish has grown from 57,743 in 1950 to 190,503 in 2000, an increase of over 300 percent in the last 50 years. The largest rate of growth occurred during the decade of the 1950's, and a substantial rate of growth also occurred between 1980 and 1990. The Lafayette Consolidated Government Department of Planning, Zoning, and Codes has projected that by the year 2015, more than 221,400 persons will be living in Lafayette Parish. This reflects an average annual growth rate of 1.1 percent over the 20 years between 1995 and 2015. Major growth is expected to occur in the southern and western portions of the parish, including within and around the cities of Broussard and Youngsville, while another area of growth is anticipated to be north of I-10 and west of I-49.

Per Capita Personal Income

According to the Bureau of Economic Analysis, Lafayette parish had a per capita personal income of $29,646 in 2002. This ranked third in the state and was 117 percent of the state average of $25,296 and 96 percent of the national average of $30,906. The parish generally has had per capita income levels higher than the State over the last 30 years. However, when analysing the 2000 census data regarding households by income, this data indicates a significant disparity between the wealthier and poorer segments of the parish population. It should be noted that this trend is becoming more common throughout the rest of the country as well.

Development Patterns

Both past and present development patterns in Lafayette parish have been characterized by compact development. This historic trend is beginning to show signs of sprawl as growth and development pressures within the parish become more intensive. Recently, historic development constraints including natural landform, infrastructure limitations, wetlands, and floodplains have helped generate innovative types of residential housing in the Parish. These new types of housing trends include new urbanism style developments such as River Ranch. These developments yield higher density communities that efficiently use the landscape to create socially desirable and environmentally sensitive dwellings and neighborhoods.

As previously described, the current major growth areas are in the southern and western areas of the city of Lafayette as well as the parish, including the municipalities of Broussard and Youngsville. Recent subdivision development in these areas has created undeveloped pockets in the parish's overall layout. These undeveloped pockets have the potential of creating a variety of land-use problems such as lack of infrastructure, incompatible adjacent land-use, compounded transportation problems, and the fragmentation of agricultural land. In recent years, Broussard, Youngsville and the southern unincorporated areas of the parish have seen a significant increase in residential construction. This has placed enormous pressures on infrastructure in these areas including roads, schools and all types of public utilities. *Figure 4-4* shows the population density for the Lafayette Parish according to the 2000 U.S. Census.

Lafayette Metropolitan Expressway

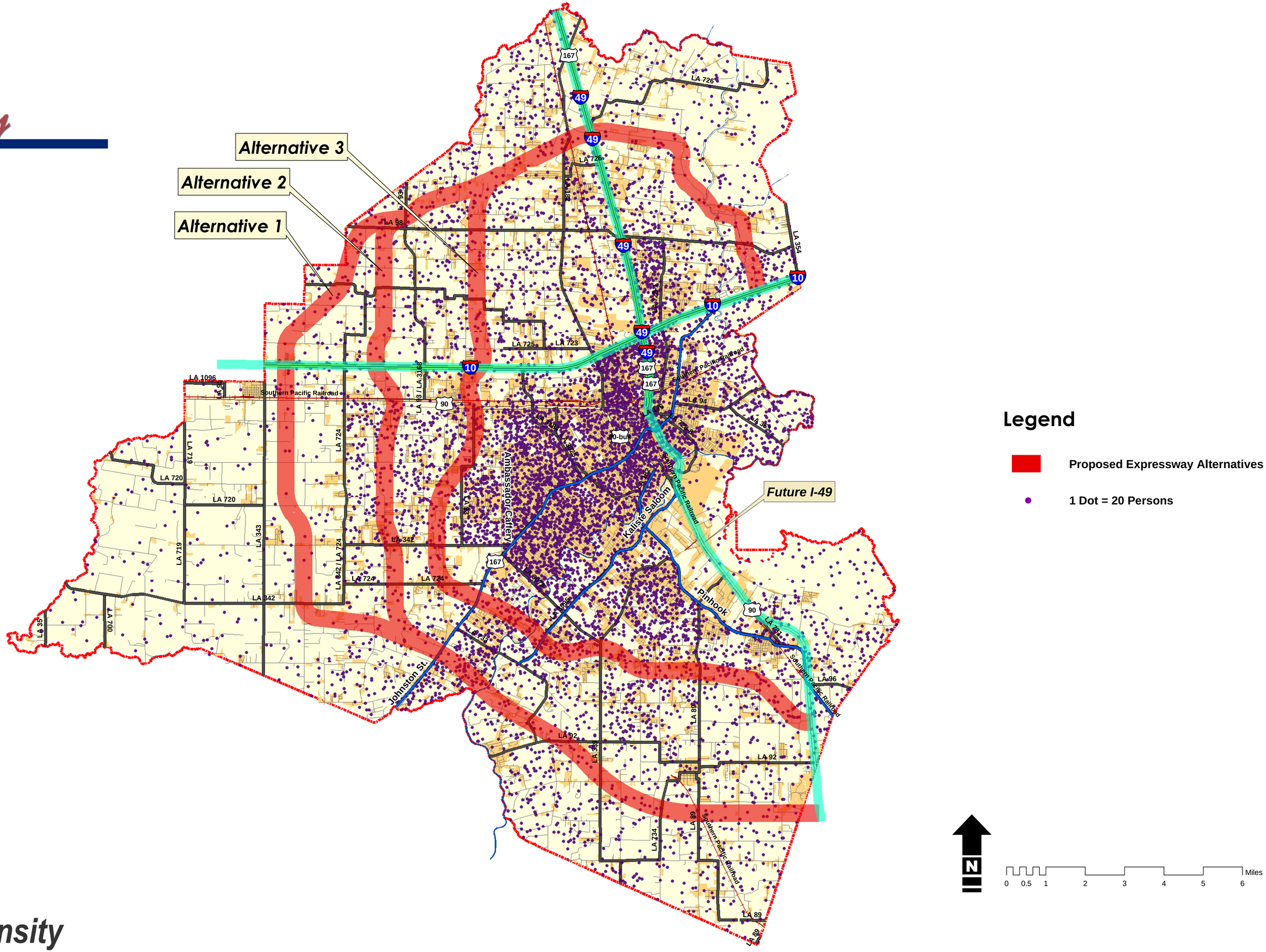


Figure 4-4

Population Density

PUBLIC FACILITIES AND SERVICES

Many types of public facilities and services accommodate people in specific areas and are subject to impacts resulting from a new transportation facility. Schools are typically one of the most impacted types of public facility since they sometimes have defined service areas. As defined for this study, other public facilities include churches, medical facilities and hospitals, cemeteries and parks and recreational facilities. These facilities located within the overall study area are listed below with the number corresponding to the facilities shown on *Figure 4-5*:

Schools

1. Carencro Heights Elementary
2. Carencro Middle School
3. Carencro Catholic Elementary School
4. Rogee School
5. Ossun Elementary School
6. Westside Elementary
7. L. Leo Judice Elementary School
8. Scott Middle School
9. Family Life Christian Academy
10. Acadiana High School
11. Alleman Center School
12. New Hope Center School
13. Judice High School
14. Indice High School
15. Saint Thomas More Catholic High School
16. Verot School
17. Simon School
18. Green T. Linon Elementary School
19. Youngsville Middle School
20. Burke School

Churches

1. St. Annes Catholic Church
2. Central Church
3. Kimble Chapel
4. Bethel Church
5. Family Life Christian Fellowship
6. St. Peters Catholic Church

Parks and Recreational Facilities

1. Southside Regional Park
2. Pelican Park

Medical and Emergency Facilities

There are no medical or emergency facilities located within the study area.

Cemeteries

1. Anderson Cemetery
2. Bethel Cemetery
3. Simon Cemetery
4. Broussard Cemetery 1
5. Broussard Cemetery 2

Because the characteristic of the landscape through which most of the proposed alternatives will be passing through consists of low-density residential, undeveloped or agriculture land-use, at this time, adverse impacts to residences and community services, including any environmental justice issues are anticipate to be minimal. More detailed investigations and determinations on community service facilities will be made during any future environmental documentation occurring beyond this study. The proposed alternatives will be designed to avoid and minimize effects to all community service facilities to the extent feasible.

CULTURAL RESOURCES

Archaeology

An archaeological records search was not conducted during this study. If this project proceeds to future environmental documentation, records will be searched at the Division of Archaeology (DOA), Department of Culture, Recreation and Tourism for any known historic or prehistoric archaeological sites found within any preferred alternative corridor study area.

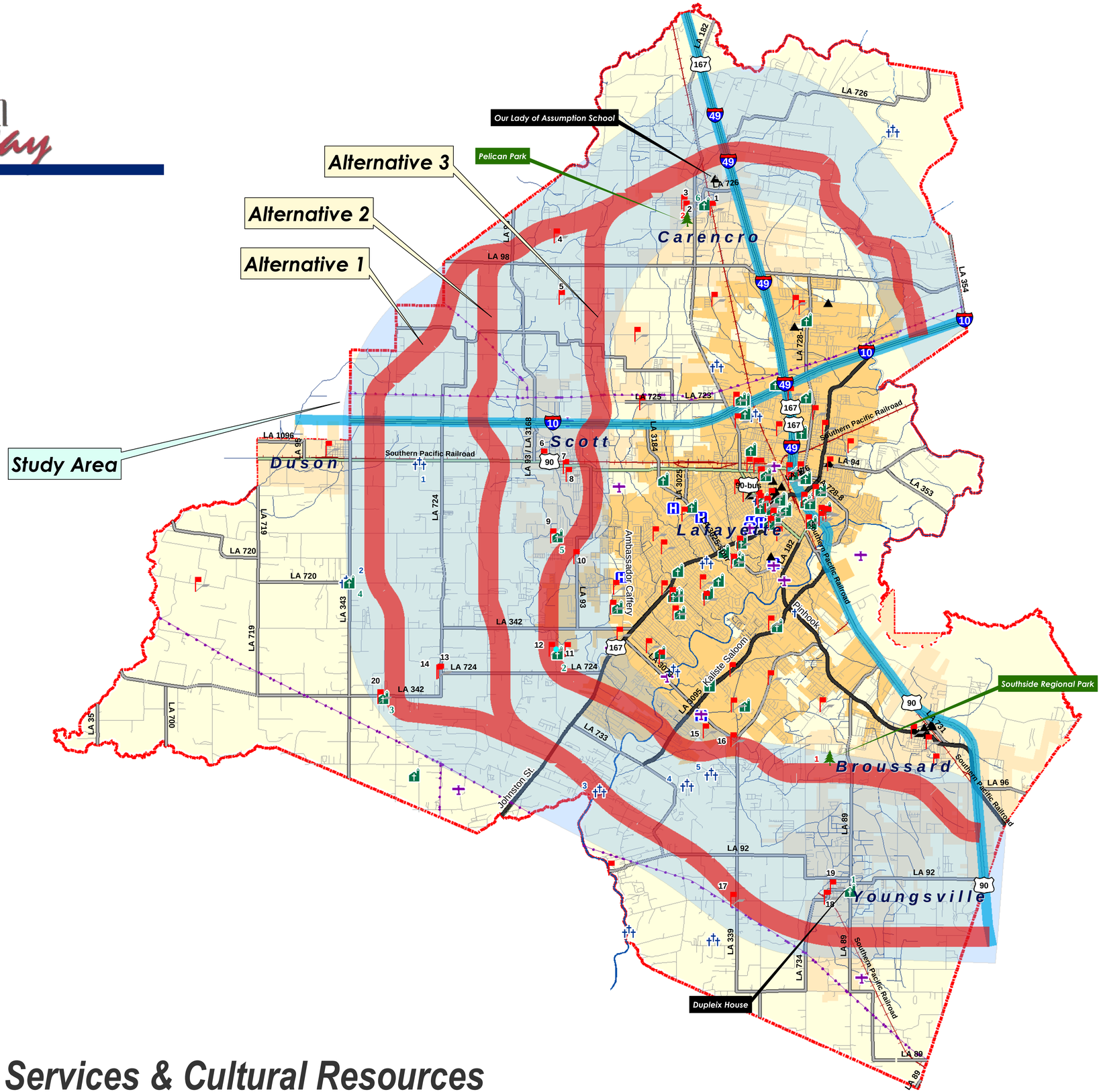
Historic Sites

According to the Louisiana Department of Culture Recreation and Tourism, there are two structures listed on the National Register of Historic Places (NRHP) within the overall study area. One of these structures is the Dupleix House, a circa 1895, two-story frame residence with Queen Anne Revival and Colonial Revival elements. This structure is located near the southern portion of the study area in downtown Youngsville. The other structure is Our Lady of the Assumption School, a circa 1934, one-story, un-styled frame school building. This historic school building was constructed for African Americans and stands within a small Roman Catholic religious complex located near the northern portion of the study area in Carencro. The locations of these two structures are shown on *Figure 4-5*. Neither of these structures falls directly within or is adjacent to any of the three preliminary corridor alignments.

A more intensive standing structure survey will be conducted during any future environmental documentation occurring beyond this study. At that time, records will be searched on the standing structures within any preferred alternative corridor study area that are over 50 years of age to determine historical, cultural and architectural significance that could make them eligible for the NRHP. This research and investigation will be conducted in order to comply with the Section 106 (National Historic

Preservation Act) process requiring federal, federally assisted, and federally licensed undertakings to take into account the proposed effects of the undertaking on properties included on or eligible for the NRHP.

Lafayette Metropolitan Expressway



Legend

- Existing & Future Interstate Corridors
- Proposed Expressway Alternatives
- Airports / Heliports
- Schools
- Hospitals
- Cemeteries
- Churches
- Historic Sites Listed on NRHP
- Parks and Recreation Areas

N

0 0.5 1 2 3 4 5 6 Miles

Figure 4-5

Community Services & Cultural Resources

AIR QUALITY

The Federal Clean Air Act of 1970 required the adoption of ambient air quality standards. These were established in order to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for six pollutants considered harmful to public health and the environment: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. Congress directed that the standards should be reviewed at least every five years by EPA to keep up with current science, and that proposals to revise them should be based solely on public health effects, not economic impacts.

The LME study area is located in Lafayette Parish, which previously had been in non-attainment for ozone. In 1995, EPA re-designated the Lafayette Parish from ozone non-attainment to ozone attainment with limited maintenance plan requirements. Lafayette Parish is in attainment for all other criteria pollutants of the National Ambient Air Quality Standards.

Projected construction activities and the motor vehicles that will use a completed Lafayette Metropolitan Expressway are not expected to jeopardize the existing maintenance plan requirements. An Air Quality Study will be conducted as part of any future NEPA documentation for the proposed project.

NOISE

The Federal Highway Administration's (FHWA) Noise Abatement Criteria and the LaDOTD Highway Traffic Noise Policy will be used in the analysis of the acoustic impact of the three proposed alternatives during any future environmental documentation occurring beyond this study.

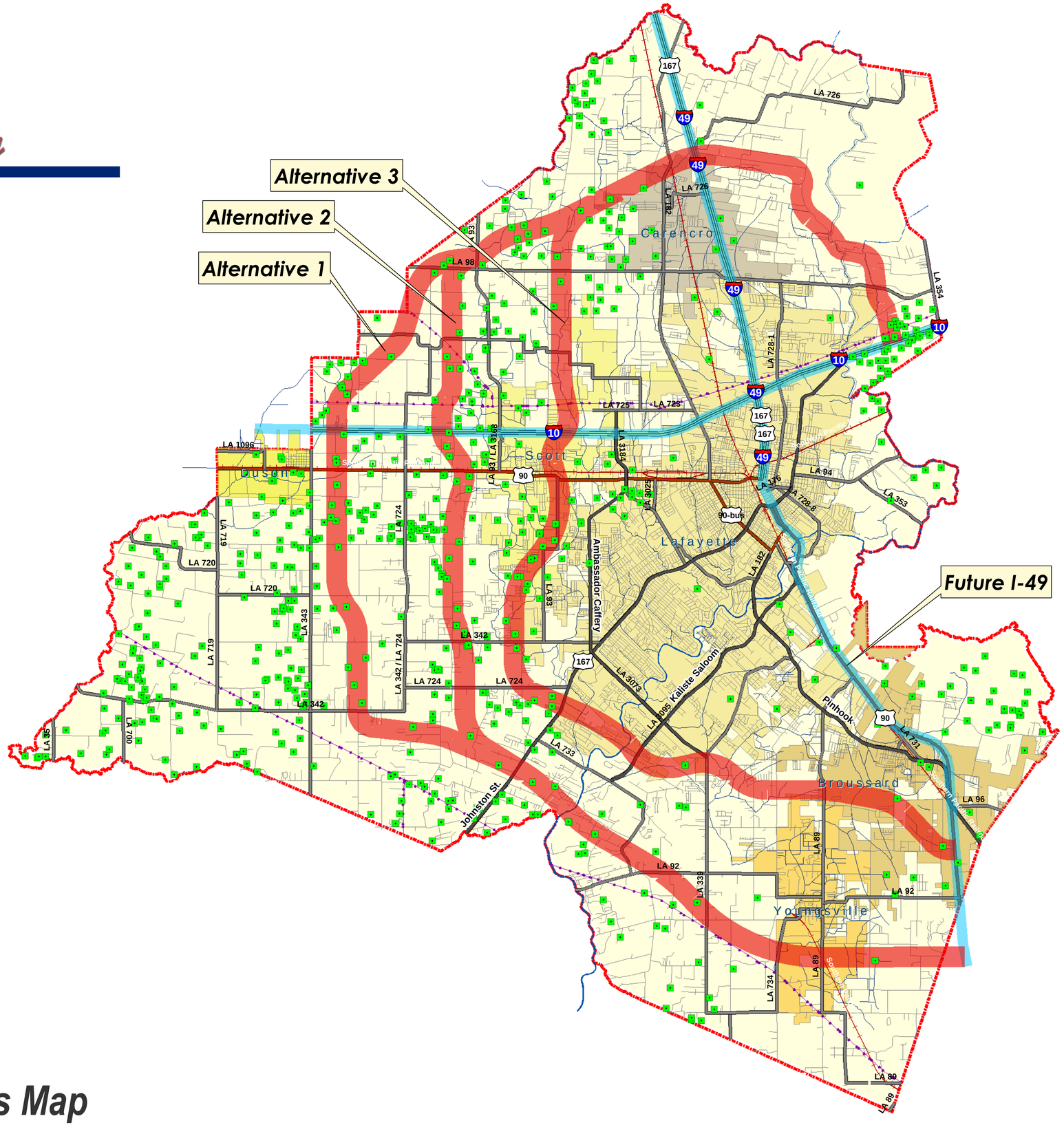
HAZARDOUS WASTE SITES

A Phase I site assessment was not conducted during this study. An intensive hazardous waste and storage tank study will be conducted during any future environmental documentation of selected alternatives occurring beyond this study. At that time, a Phase I site assessment will be performed to identify specific substances contained in these sites as well as identification of any potential new waste sites or underground storage tanks.

OIL AND GAS WELLS

Information and locations for oil and gas wells within Lafayette Parish were provided in Geopgraphic Information System (GIS) format by the Louisiana Geographic Information Center of Louisiana State University and are shown in *Figure 4-6*. This data contains the current record for all of the wells permitted and drilled in Lafayette Parish. A more intensive oil and gas well study will be conducted in any future environmental documentation occurring beyond this study. At that time, active, abandoned or capped status for each well will be identified, and the potential for impact from construction operations of the proposed alternatives will be assessed.

Lafayette Metropolitan Expressway



Legend

- Oil & Gas Wells
- Proposed Expressway Alternatives

N

0 0.5 1 2 3 4 5 6 Miles

Figure 4-6

Oil & Gas Wells Map

THE NATURAL ENVIRONMENT

WETLANDS

Figure 4-7 provides a map showing potential wetland areas in the parish. This data is based on GIS information obtained from the National Wetland Inventory. Wetlands are important ecosystems which help filter waste waters associated with heavy industrial usage and decrease storm water runoff by slowing rates through absorption. An area is designated as a wetland if it possesses three mandatory technical criteria: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Wetlands are a tremendous environmental and economic asset to Louisiana. Louisiana's wetlands provide habitat to more than five million wintering waterfowl each year and provide refuge for many endangered species.

The largest continuous areas of wetlands in the parish appear to occur within the floodplains along the eastern edge of the parish. The three proposed alternatives have been developed to avoid and minimize impacts to the wetlands in these areas. The U.S. Army Corps of Engineers (COE) is the regulatory authority that would evaluate and permit any implementation of this project that crosses jurisdictional wetlands. Any unavoidable impacts are subject to mitigation to the extent appropriate and practicable by initially requiring steps to minimize impacts and then to compensate for wetland and aquatic resource values. Policies set forth by the COE and EPA articulate procedures to be used in the determination of the types and level of mitigation that will be necessary for compliance.

FLOODPLAINS

All three alternatives traverse areas identified as floodplains as shown in *Figure 4-7*. This information is based on information obtained from Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) and provided in GIS format by the Louisiana Geographic Information Center of Louisiana State University. All three alternatives have been designed to avoid and minimize encroachment within the 100-year floodplain to the extent feasible.

Detailed studies will be made during any future environmental documentation occurring beyond this study to determine full compliance with federal, state, and local regulations regarding floodplains.

GROUNDWATER

The project study area is underlain by an extensive groundwater formation know as the Chicot Aquifer. This aquifer has been designated as a sole source aquifer by the EPA. This designation indicates that the aquifer is the sole or principal drinking water source for the designated area. The Chicot Aquifer can be described as a hydrologic system with high permeability, plentiful recharge and high sustained yields to wells. Because of its importance as a designated sole source water supply, the federal government has taken measures to safeguard the aquifer by requiring that a project not pose a contamination hazard before it agrees to participate in the project.

According to the Ground Water Protection Division (GWPD) of the Louisiana Department of Environmental Quality (LDEQ), Lafayette does not at this time have an officially designated Wellhead Protection Program. However, any well impacted by the construction of the project would be dealt with in accordance with regulations set forth by GWPD, Water Well Rules and Standards of the Water Resources Division of LADOTD, and any other federal, state, or local regulation that are applicable. This

would include plugging all affected wells and borings to prohibit potential entry of contaminants into the Chicot Aquifer.

THREATENED & ENDANGERED SPECIES

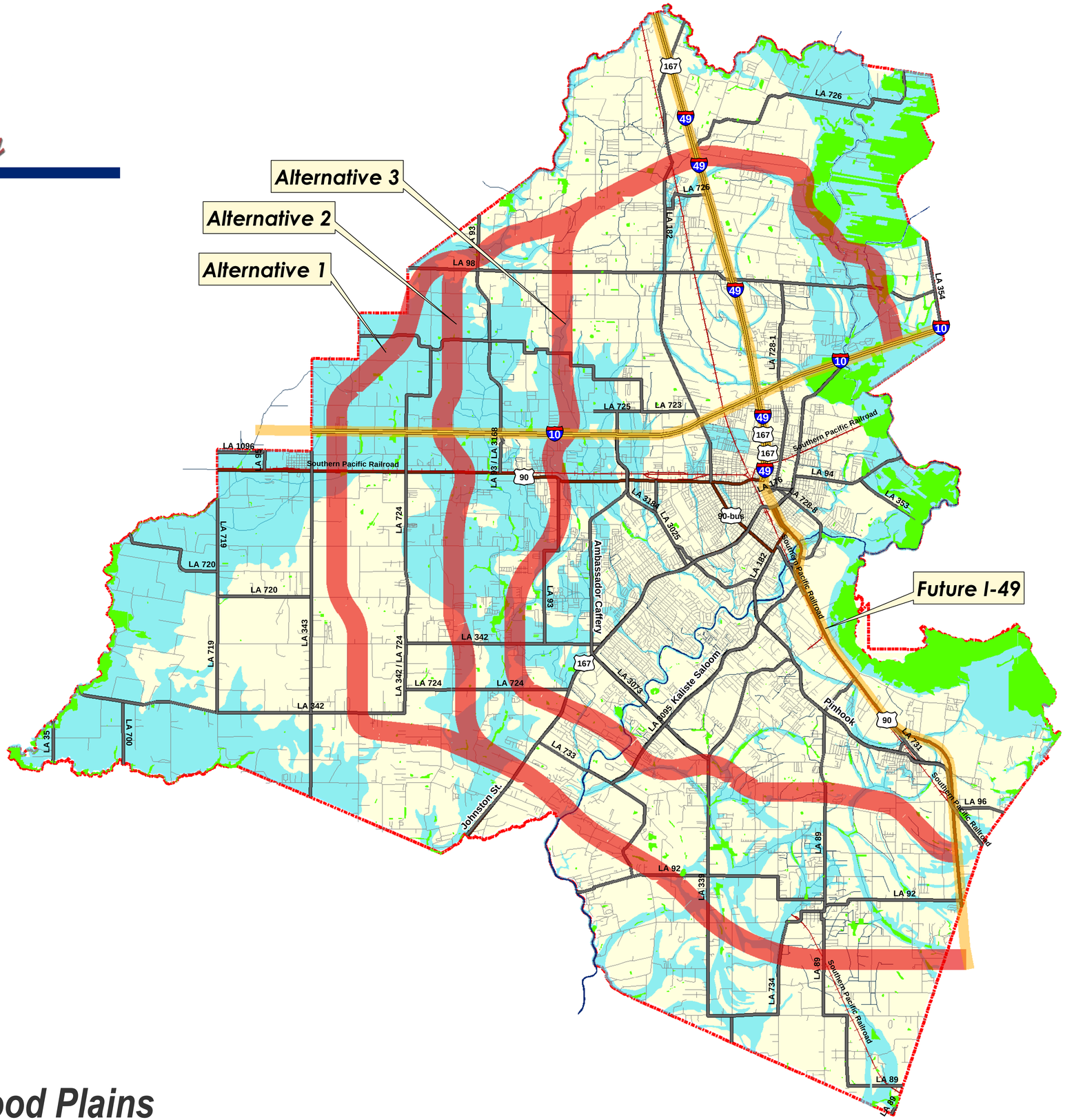
Information from The Louisiana Department of Wildlife and Fisheries' Natural Heritage Program was researched regarding the presence of threatened and endangered, or otherwise rare plant and animal species throughout Lafayette Parish. For the purposes of this study, a list of all current rare, threatened and endangered species within the entire parish was obtained and is found in *Table 4-1* below:

Table 4-1: Threatened and Endangered Species in Lafayette Parish

STATE COMMON NAME	STATE SCIENTIFIC NAME
EASTERN HARVEST MOUSE	*REITHRODONTOMYS HUMULIS*
EVENING RAINLILY	*COOPERIA DRUMMONDII*
HERBERTIA	*HERBERTIA LAHUE SSP CAERULEA*
OLD PRAIRIE CRAWFISH	*FALLICAMBARUS MACNEESEI*
POWDERY THALIA	*THALIA DEALBATA*
RINGTAIL	*BASSARISCUS ASTUTUS*

A detailed investigation of records as well as field analysis will be conducted during any future environmental documentation occurring beyond this study. At that time, the occurrence of any threatened or endangered species or critical habitat for them within this study area as well as the potential for adverse impacts to them from proposed roadway construction will be determined.

Lafayette Metropolitan Expressway



Legend

- Proposed Expressway Alternatives
- 100-Year Flood Zone
- Wetlands

N

0 0.5 1 2 3 4 5 6 Miles

Figure 4-7

Wetlands & Flood Plains

ALTERNATIVES EVALUATION

Selected human and natural environment impacts for each alternative are estimated in *Table 4-2* below:

Table 4-2: Environmental Evaluation Measures

ALTERNATIVE EVALUATION MEASURES			
	Alternative		
Environmental Factors	1	2	3
% of Alternative through floodplains	33%	46%	37%
% of Alternative through undeveloped land	90%	90%	80%
% of Alternative through wetlands	1.5%	2%	3%
Community Services Within or Adjacent to Alternatives			
Schools	1	1	2
Churches	0	0	1
Cemeteries	1	1	0
Parks & Recreation Areas	0	0	1

Alternative 1 has the least impact to both wetlands and floodplains. The majority of land through which it passes also contains the highest percentage of undeveloped or agricultural land. Additionally, the table above reveals that Alternative 1, along with Alternative 2, has the least impact to community services. Although it has relatively minimal impacts to wetlands, Alternative 2 would have the most impacts to the 100-year floodplain.

The abundance of undeveloped land in Alternatives 1 and 2 could facilitate the development of new retail, commercial and residential development along a new corridor. Growth and an increased pace in development that results from a new facility could leverage significant economic benefits for the parish including the creation of new jobs and the generation of future property and sales taxes. This anticipated growth and development should be managed utilizing a progressive land use planning framework that guides future development decisions, ensures adequate development densities to support infrastructure investment, and preserves the natural as well as the cultural resources of the area.

Like Alternatives 1 and 2, Alternative 3 passes through a majority of agricultural or vacant land use, but impacts more existing residential land use and small amounts of light industrial land use. Alternative 3 is located closer toward the core of the City of Lafayette and crosses the city limits in the southern portion of Lafayette. This alternative has the potential to impact a slightly higher amount of jurisdictional wetlands as well. Because it passes through relatively larger amounts of developed areas than alternatives 1 and 2, the construction of this alternative may be more disruptive to existing transportation routes as well as neighborhoods.

CONCLUSION

As described above, more detailed investigations and determinations will be made on all community, natural and cultural resources within any and all alternatives carried forward from this study. For the level of investigation conducted at this time, it is felt that the construction of any of the three alternatives is feasible and the economic benefits, higher levels of traffic service, travel time reductions and the new hurricane evacuation benefits that would result, will outweigh the projected environmental impacts.

Lafayette Metropolitan Expressway

Technical Memorandum 5

PUBLIC INVOLVEMENT

Submitted By:

HNTB

In association with:

Wilbur Smith Associates
C.H. Fenstermaker & Associates, Inc.
PENSCO

Lafayette Metropolitan Expressway Commission

May, 2005

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Exhibit 8 ..... 2nd Community Meeting Handout
Exhibit 9 ..... 2nd Community Meeting Results

APPENDIX: News Articles

INTRODUCTION

The Public Involvement Technical Memorandum #5 documents the public involvement efforts associated with the LME Feasibility Study. The purpose of this inventory was to assess and summarize the various public events, publications and activities prepared to inform and involve the public. The following items were produced or organized as part of the public outreach effort:

- **LME Information Network** – A database including contact information of community groups, homeowner/tenants associations and other organizations representing different perspectives within the study area;
- **LMEC Website** – The website, www.lafayettexpressway.com, designed and maintained by the Acadiana Regional Development District (ARDD) including project overview, meeting notices and summaries, and contact information;
- **Project Brochure** – A brochure that includes the project overview and schedule, history on tolling and toll road information;
- **Media Briefings, News Releases, and Newspaper and Television Articles**, and
- **Public Meetings and Presentations** – Including: Community Meetings, Stakeholder Meetings, Briefings and Presentations.

PROJECT BROCHURE

The project brochure identified the study area, study schedule, an explanation of toll road history, toll road benefits and toll road operations. The brochure was used for widespread distribution to the community throughout the course of the feasibility study. The project brochure is included as *Exhibit 1*.

LMEC WEBSITE

The LMEC website is designed and maintained by the Acadiana Regional Development District (ARDD). HNTB has provided the ARDD with meeting notices, meeting summaries and presentations to be posted on the LMEC website throughout the length of the study. The website is located at www.lafayettexpressway.com and includes the contact information, project overview, meeting notices and summaries.

MEDIA BRIEFINGS AND NEWS RELEASES

LMEC and HNTB staff held numerous discussions and interviews with the media concerning the Lafayette Metropolitan Expressway Feasibility Study. As part of the public involvement efforts, HNTB worked with and supported the Lafayette Consolidated Government's Metropolitan Planning Organization (MPO) office. HNTB coordinated the media by providing news releases, conducting interviews and press briefings.

HNTB prepared several press releases and media briefings to inform the public about the progress of the study and upcoming meetings. The news releases announced community meetings held on October 27, 2004 and February 22, 2005 and included a brief overview of the study and planned activities for the meeting. The news releases are included as *Exhibits 2 and 3*. News releases were sent to various television news stations and radio stations. Staff also provided several briefings to the media including The Daily Advertiser and The Advocate. Copies of related news articles can be found at the end of this report in the Appendix.

- October 27, 2004 – A news release to announce the first community meeting for the Lafayette Metropolitan Expressway Feasibility Study on Wednesday, October 27, 2004 from 6:30 to 8:30 PM. The meeting was held at the Clifton Chenier Auditorium located at 220 West Willow Street in Lafayette, Louisiana (Exhibit 2).

- February 22, 2005 – A news release to announce the second community meeting for the Lafayette Metropolitan Expressway Feasibility Study on February 22, 2005 from 5:30 to 7:30 PM. The meeting was held at the Clifton Chenier Auditorium located at 220 West Willow Street in Lafayette, Louisiana (Exhibit 3).

PUBLIC MEETINGS AND PRESENTATIONS

As part of the public involvement efforts, several public meetings and presentations were held with the community. The various events are summarized below.

PROJECT KICKOFF MEETING

The project kickoff meeting was held September 7, 2004 at the Lafayette Chamber of Commerce with the LMEC members and the HNTB team to begin the feasibility study. The kickoff meeting included six workshop sessions including Session 1: Toll Road Basics, Session 2: How to Start Up and Operate Your Toll Road, Session 3: Traffic and Toll Revenue, Session 4: Fundamentals of Toll Road Finance, Session 5: LMEC Phase A Feasibility Study and Session 6: Summary/Discussion.

LMEC MONTHLY MEETINGS

The LMEC holds public monthly meetings at the Lafayette Economic Development Agency (LEDA). HNTB staff attended these meetings to provide updates on the feasibility study.

1st COMMUNITY MEETING – OCTOBER 27, 2004

The first community meeting for the LME Feasibility Study was held on Wednesday, October 27, 2004 from 6:30 to 8:30 PM at the Clifton Chenier Auditorium in Lafayette, Louisiana. The first community meeting was hosted by HNTB Corporation to present the feasibility study process and concept of tolling to the community. Members of LMEC were in attendance. The meeting flyer and the meeting handout are included as *Exhibits 4 and 5*. A summary of the first community meeting is included as *Exhibit 6*.

2nd COMMUNITY MEETING – FEBRUARY 22, 2005

The second community meeting for the LME Feasibility Study was held on Tuesday, February 22, 2005 from 5:30 to 7:30 PM at the Clifton Chenier Auditorium in Lafayette, Louisiana. The second community meeting presented preliminary feasibility findings for a toll route within Lafayette Parish. Approximately 44 Lafayette residents, LMEC members and consultants were in attendance. The meeting flyer and the meeting handout are included as *Exhibits 7 and 8*. A summary of the first community meeting is included as *Exhibit 9*.

ROTARY CLUB PRESENTATION

HNTB made a presentation to the Lafayette Rotary Club on February 13, 2005 regarding the project.

STAKEHOLDERS COMMITTEE

A list of potential stakeholders was developed to include various parties and interests from across Lafayette Parish who may have an interest in the project *(See Table 5-1)*. These stakeholders will be engaged and play an important part in the EIS, design, implementation, and operational stages of the project.

Table 5-1: Potential Stakeholders Committee

STAKEHOLDER	AFFILIATION
Mr. Bill Rucks	CAC Chair
Mr. Greg Roberts	TTC Chair
Mr. Don Bertrand	TPC Chair
Mr. Lucien Gastineau	PC Chair
Mr. Tony Tramel	Director T&T
Mr. Tom Carroll	Director PW
Mr. John Lagneaux	Mayor of Duson
Mr. Wilson Viator	Mayor of Youngsville
Mr. Charles Langlinais	Mayor of Broussard
Mr. Conrad Comeaux	Tax Assessor
Mr. Kerry Collins	Bayou Vermilion District
Mr. Terry Huval	LUS
Mr. Bill Vincent	911 Director
Mr. Don Hebert	Conservation-Pipeline Division
Mr. Gerald Boudreaux	Parks & Recreation
Mr. Luther Arceneaux	CAC District 5
Ms. Hazel Myers	Mayor of Scott
Mr. Glenn Brasseaux	Mayor of Carencro

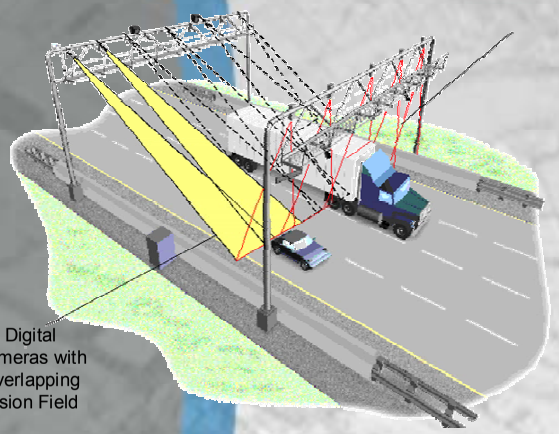
LESSONS LEARNED

A meaningful public involvement program requires an early and continuing dialogue with the affected community and study partners. A variety of public involvement tools were used ranging from a brochure and community flyers to media briefings and formal public meetings. The community meetings provided an arena for the public to review the study objectives and progress and have the opportunity to provide comments. The importance of collaboration with the public is essential to create a plan that adequately responds to the needs of residents. The LME Feasibility Study – Phase A study process enabled community leaders and residents to voice their issues and concerns and shape the future of their community. Public involvement will continue throughout the Lafayette toll study as it progresses to the next stage, including stakeholder committee involvement and additional community meetings.

EXHIBITS

Electronic Toll Collection (ETC)

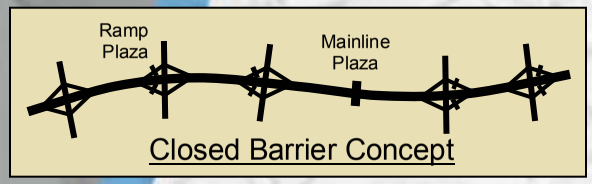
ETC allows travelers to pass through plazas and pay tolls without ever tapping their brakes. On a modern toll road, motorists don't even have to slow down – ETC can read transponders at highway speeds. In addition, current practice is to also provide cash-collection booths at the toll plazas. The key difference will be that cash customers will pull into booths that are away from the main lanes of high speed traffic. This system clears the way for ETC users and is safer for travelers and toll collectors. On some toll roads throughout the country, motorists who use the ETC receive discounted rates.



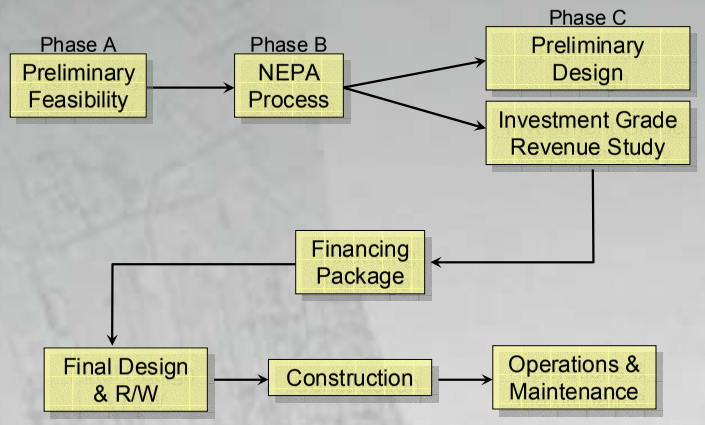
Toll Road Operations

Closed-Barrier Concept

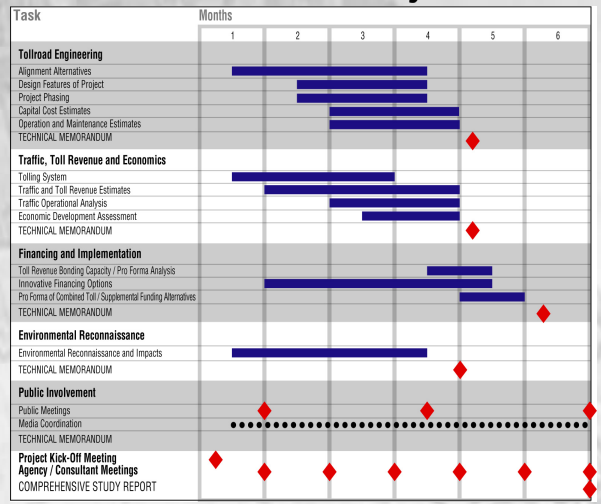
A closed-barrier toll collection system can have both mainline and ramp toll collection locations. Users generally pay tolls that are directly related to the distance traveled on the system.



LMEC Project Implementation Process



Phase A Six Month Study Schedule



TO LEARN MORE ABOUT LMEC and the Lafayette Metropolitan Expressway Feasibility Study, visit the website: www.lafayettexpressway.com or contact Mickey Mangham, LMEC Chair, P.O. Box 60485, Lafayette, LA 70596-0485, Phone: (337) 233-6200; or Krista Goodin, HNTB, 8281 Goodwood Blvd., Suite J, Baton Rouge, LA 70806, Phone: (225) 927-8392, Fax: (225) 927-8355, Email: kgoodin@hntb.com.

Study Director:

Lafayette Metropolitan Expressway Commission

Study Consultant:

HNTB and Team

Lafayette Metropolitan Expressway

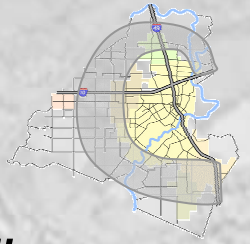
Connecting Lafayette Parish… through the Metropolitan Expressway

Lafayette Metropolitan Expressway Commission

What is LMEC?

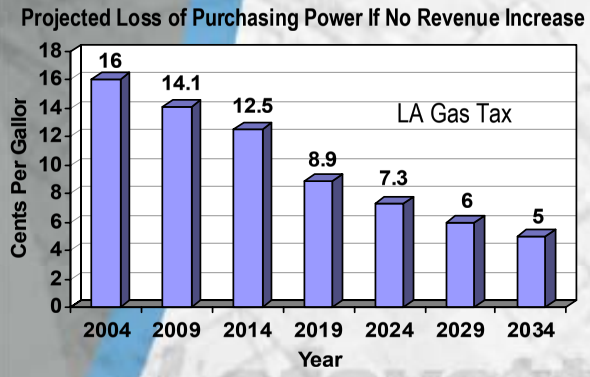
The Lafayette Metropolitan Expressway Commission (LMEC) was formed in 2003 to implement Act No. 893 of the 2003 Regular Session of the Louisiana Legislature. Act No. 893 declares the importance of developing a limited access highway system in Lafayette to promote continued economic growth and provide a high quality of life for the people of Lafayette. Act 893 recognizes that public revenue, including federal funds, has not kept pace with the area's growing transportation system needs. The first task of the LMEC is to conduct a preliminary analysis to determine the feasibility of a limited access expressway wholly contained within Lafayette Parish.

Lafayette Metropolitan Expressway Commission



Funding Challenges

Our nation, including Louisiana, faces a transportation funding shortfall. Improvements needed for continued growth and economic development in Louisiana are not being funded. Our neighboring states and much of the country are increasingly turning to toll roads as a way of overcoming the funding shortfall.



History of Tolling

Louisiana

Louisiana's history of tolled facilities dates back to the late 1960s with the formation of the Greater New Orleans Expressway Commission that developed the Lake Pontchartrain Causeway toll bridge. Also in that era, the Mississippi River Bridge Authority developed the Crescent City Connection toll bridge. State legislation in 1997 also permits regional toll authorities, one of which has been formed to study the Baton Rouge Bypass loop. The Louisiana Transportation Authority legislation, passed in 2001, has enabled a financing package and construction to begin in 2005 on the LA-1 Toll Project. More recently the LMEC legislation was passed in 2003.

Toll Facilities in the U.S.

Over two-thirds of the states in the U.S. (blue and white states) have existing or future tolled facilities.

What is a Toll Road?

Toll roads offer a financial boost to help fund needed transportation improvements that would likely never be built under the traditional tax funded highway program. With toll roads, the users of the highway system pay the cost of its construction, operations and maintenance. Toll roads will not replace the existing tax funded highway infrastructure but will supplement those roads by providing an option for motorists who choose to use them.

Benefits of Toll Roads

- Funding source not tied to gas usage;
- Revenue stream increases as traffic grows;
- Reduces congestion on existing crowded facilities;
- User based fee (if you don't use it, you don't pay), and
- Frees up tax funding for other needed highway projects.

Technology Changed the Toll Industry

The role of technology has had a large influence on the toll industry. The increase of technology has improved user convenience, eliminated congestion at plazas, improved air quality, enabled variable pricing and allowed for differing plaza types such as express lanes and electronic toll collection lanes. These things have led to a culture in the U.S. where toll roads are accepted more as a means of improving mobility and quality of life.

Lafayette Metropolitan Expressway

NEWSRELEASE

For Immediate Release

Date: October 13, 2004
Contact: Lafayette Metropolitan Expressway Commission
Phone: 337.233.6200
www.lafayettexpressway.com

Lafayette Toll Road Feasibility Study – First Community Meeting

Lafayette Parish, Louisiana —October 13, 2004—The community is invited to the first community meeting for the Lafayette Metropolitan Expressway Feasibility Study. HNTB Corporation, as consultants to the Lafayette Metropolitan Expressway Commission (LMEC), will host a community meeting on October 27th, 2004 at 6:30 PM. LMEC is in the first phase of a feasibility study to pursue alternative and innovative funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, operation, and maintenance of a safe and efficient limited access highway exclusively within Lafayette Parish. The first phase of the study is scheduled for completion by February of 2005.

The first community meeting for the Lafayette Metropolitan Expressway Feasibility Study will be held at the following time and location:

Lafayette Metropolitan Expressway Workshop
October 27, 2004, 6:30 to 8:30 PM
Clifton Chenier Town Hall
220 West Willow, Building C
Lafayette, Louisiana 70501

The public is encouraged to attend and participate in the meeting. For more information, contact the Lafayette Metropolitan Expressway Commission by telephone at 337.233.6200. Persons with disabilities who require accommodations should make arrangements at least 48 hours prior to the meeting. For additional project information, please visit the project website at www.lafayettexpressway.com.

EXHIBIT 3

NEWS

www.hntb.com

FOR IMMEDIATE RELEASE

HNTB

Engineers
Architects
Planners

For more information contact:
Bob Schmidt,
HNTB Corporation
8281 Goodwood Boulevard, Suite J
Baton Rouge, LA 70806
(225)927-8392

The HNTB Companies

Lafayette Toll Road Feasibility Study – 2nd Community Workshop
LME Commission to host community workshop to present initial toll road feasibility findings for Lafayette Parish.

Lafayette Parish, Louisiana — February 9, 2005 — The Lafayette community is invited to attend the second community meeting for the Lafayette Metropolitan Expressway Feasibility Study. HNTB Corporation, as consultants to the Lafayette Metropolitan Expressway Commission (LMEC), will host a community meeting on February 22nd, 2005 at 5:30 PM. The presentation will include preliminary feasibility findings for the funding of a toll loop corridor within Lafayette Parish. The first phase of the study is scheduled for completion by early March, 2005.

The second community meeting for the Lafayette Metropolitan Expressway Feasibility Study will be held at the following time and location:

Lafayette Metropolitan Expressway Workshop
February 22, 2005, 5:30 to 7:30 PM
Clifton Chenier Community Service Center
220 West Willow, Town Hall Building C
Lafayette, Louisiana 70501

Representatives of LMEC and the study team will be available to receive comments and answer questions related to this study. All interested citizens are invited and encouraged to attend. For more information, contact Bob Schmidt with HNTB Corporation by telephone at 225.927.8392. For additional project information, please visit the project website at www.lafayettexpressway.com.

EXHIBIT 4

Lafayette Metropolitan Expressway Commission

Connecting Lafayette Parish… through the Metropolitan Expressway

Help Shape the Future of Your Community!

You Are Cordially Invited To Attend the Lafayette Metropolitan Expressway First Community Meeting

HNTB Corporation, as consultants to the Lafayette Metropolitan Expressway Commission (LMEC), will host a community meeting on the Lafayette Metropolitan Expressway Feasibility Study on **October 27, 2004 at 6:30 PM**.

The LMEC is in the first phase of a feasibility study to pursue alternative and innovative funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, operation, and maintenance of a safe and efficient limited access highway exclusively within Lafayette Parish. The meeting will include a short presentation on the feasibility study process and the concept of tolling. An open-house format will follow and members of the public are encouraged to view displays, discuss the project with study team members and make comments for the study record.

Clifton Chenier Town Hall
220 West Willow, Building C
Lafayette, LA 70501
Wednesday, October 27, 2004
6:30 to 8:30 PM

For more information, please contact the Lafayette Metropolitan Expressway Commission at 337.233.6200 or visit the project website at www.lafayettexpressway.com.

LAFAYETTE METROPOLITAN EXPRESSWAY COMMISSION
LAFAYETTE METROPOLITAN EXPRESSWAY FEASIBILITY STUDY

First Community Meeting
October 27, 2004

LMEC is in the first phase of a feasibility study to pursue alternative and innovative funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, operation and maintenance of a safe and efficient limited access highway exclusively within Lafayette Parish. The purpose of this first community meeting is to present the toll road feasibility study process and the concept of tolling. An open-house format will follow and members of the public are encouraged to view displays, discuss the project with study team members and make comments for the study record.

AGENDA

6:30 – Sign In/Orientation
6:45 – Welcoming Remarks – Bob Schmidt, HNTB
7:00 – Presentation – Bob Schmidt, HNTB and Krista Goodin, HNTB
7:30 – Open House
8:30 – Adjourn

PLEASE USE THIS FORM TO RECORD YOUR THOUGHTS OR CONCERNS REGARDING THE FEASIBILITY STUDY.

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PLEASE TURN THIS SHEET IN TO A FACILITATOR AT THE END OF THE MEETING, OR FAX TO HNTB (225) 927-8355 BY NOVEMBER 5, 2004

Results of the First Community Meeting

Summary

HNTB staff, on behalf of the Lafayette Metropolitan Expressway Commissioners held a community meeting on October 27, 2004, from 6:30 – 8:30 PM, at the Clifton Chenier Auditorium to discuss the Lafayette Metropolitan Expressway Feasibility Study. The purpose of the community meeting was to present the toll road feasibility process and the concept of tolling. The workshop was attended by approximately 29 Lafayette residents as well as LMEC members and consultants. The meeting included a presentation by consultants from HNTB followed by an open-house allowing members of the public to view displays, discuss the project with study team members and make comments for the study record.

Meeting Format

The meeting format consisted of opening remarks from HNTB staff, followed by a presentation on the status of the transportation industry, toll roads and the LMEC feasibility study. After the presentation, attendees were asked to fill out provided forms with any comments or concerns regarding the study and discuss the project with study team members.

Comments

Two comment forms were received and the comments are shown below:

- As a toll road loop freeway should be developed to provide an alternate route for vehicles on the mainline routes, which are not local, but merely pass through traffic, I encourage this route to be free to cargo trucks and buses, however, the fee for single user passenger cars, should border on the punitive, excepting for evacuation situations.
- The route should include excess reserved space for long-term future commuter rail lines. Additionally the option for private rail companies should be included, so as to allow for hazardous rail cargo to avoid the core of the city. These two ideas are not mutually inclusive based on my subsequent suggestions…
- So, as to discourage suburban sprawl from ease of use of the facility afforded, the tollway to local road interchanges should be no closer than 3 miles apart.
- Collaboration should ensue with local government, to develop a land use plan focusing on high density, mixed use development, otherwise it will strangle local government with congested sprawl traffic near interchanges.
- Interchanges can not unnecessarily bisect local roads that are higher order than neighborhood streets, i.e. arterials and collectors, if it would cause motorists to divert around tollway by more than ½ mile.
- Commission should utilize any funding mechanism other than user-choice, toll based fee structure. Any tax on public would be undemocratic, if we cannot vote by plebiscites for membership of commission.
- Let's go full steam ahead!
- I'll bet the state would pitch in and help pay for a good portion after initial success.
- Good commercial development would occur, but must be carefully controlled and then surrounded with adequate service roads paralleling the toll road.

EXHIBIT 7

Lafayette Metropolitan Expressway Commission

Connecting Lafayette Parish… through the Metropolitan Expressway

Help Shape the Future of Your Community!

You Are Cordially Invited To Attend the Lafayette Metropolitan Expressway Second Community Meeting

HNTB Corporation, as consultants to the Lafayette Metropolitan Expressway Commission (LMEC), will host a community meeting on the Lafayette Metropolitan Expressway Feasibility Study on **February 22, 2005 at 5:30 PM**.

The LMEC is in the first phase of a feasibility study to pursue alternative and innovative funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, operation, and maintenance of a safe and efficient limited access highway exclusively within Lafayette Parish. The meeting will include a presentation on the preliminary feasibility findings for the funding of a toll loop within the Lafayette Parish. All interested citizens are invited and encouraged to attend.

Clifton Chenier Community Service Center
220 West Willow, Town Hall Building C
Lafayette, LA 70501
Tuesday, February 22, 2005
5:30 to 7:30 PM

For more information, please contact Bob Schmidt with HNTB Corporation at 225.927.8392 or visit the project website at www.lafayettexpressway.com.

Second Community Meeting
February 22, 2005

LMEC is in the first phase of a feasibility study to pursue alternative and innovative funding sources, including but not limited to tolls, to supplement public revenue sources for the construction, operation and maintenance of a safe and efficient limited access highway exclusively within Lafayette Parish. The purpose of this community meeting is to present preliminary feasibility findings for a toll loop within Lafayette Parish. Members of the public are encouraged to view displays, discuss the project with study team members and make comments for the study record.

AGENDA

5:30 – Sign In/Open House
5:45 – Welcoming Remarks
6:00 – Presentation – Bob Schmidt, HNTB
6:30 – Break
6:45 – Questions and Answers

PLEASE USE THIS FORM TO RECORD YOUR THOUGHTS OR CONCERNS REGARDING THE FEASIBILITY STUDY.

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PLEASE TURN THIS SHEET IN TO A FACILITATOR AT THE END OF THE MEETING, OR FAX TO HNTB (225) 927-8355 BY FEBRUARY 28, 2005

RESULTS OF THE SECOND COMMUNITY MEETING

SUMMARY

HNTB staff, on behalf of the Lafayette Metropolitan Expressway Commissioners held a community meeting on February 22, 2005, from 5:30 – 7:30 PM, at the Clifton Chenier Auditorium to discuss the Lafayette Metropolitan Expressway Feasibility Study. The purpose of the community meeting was to present preliminary feasibility findings for a toll route within Lafayette Parish. The workshop was attended by approximately 44 Lafayette residents, LMEC members, state representatives and mayors, and consultants. The final results of Phase A of the LME Feasibility Study will be presented to the LMEC on March 17th.

MEETING FORMAT

The meeting format consisted of opening remarks from HNTB staff, followed by a presentation on the environmental constraints summary, preliminary cost estimates, a preliminary traffic and toll revenue study, preliminary financing analysis, and possible funding options. After the presentation, attendees were able to visit with study team members to ask individual questions. After a 15 minute break, attendees were able to ask questions from the floor.

COMMENTS

Two public comments were made during the question and answer session and no comment forms were turned into facilitators. However, one comment sheet was faxed to the study team after the community meeting. The comments are below:

- I am concerned that there will be, by your own study, a gap in funding and that local residents will have to pay the difference in some form of local taxation. The project should be done only if it will pay for itself.
- The relatively low cost per mile and the environmental and community advantages of this route should cause community leaders to work to make this ground level route the path of the I-49 segment through Lafayette. Federal and state money would be available.
- This roadway should be built with hurricane evacuation in mind. All low-lying areas should be raised to above 500 year flood stage.
- The impact of the completion of I-49 along the Evangeline Thruway (or along any other route near Lafayette that would be toll free) must be studied. This segmented route's revenues would be severely negatively impacted by a near-by non-toll alternative route.

APPENDIX

INTERCHANGE LOCATION STUDY

LAFAYETTE REGIONAL XPRESSWAY

State Project No. 700-28-0222
Federal Aid Project No. STP-2810(506)
TIER 1 EIS

Prepared For:

Louisiana Department of Transportation and Development

Prepared By:

C. H. FENSTERMAKER & ASSOCIATES, INC.
135 Regency Square
Lafayette, LA 70508

Revised:

June 23, 2011

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1.0 INTRODUCTION

The Lafayette Metropolitan Expressway Commission (LMEC) is currently preparing a Tier 1 Environmental Impact Statement (EIS) for a proposed tolled facility in Lafayette Parish called the Lafayette Regional Xpressway (LRX). The LRX is expected to connect to existing and future interstate highways including I-10, I-49 north of I-10, and Future I-49 South of I-10. This Interchange Location Study documents the methodology conducted to determine potential interstate connections and analyzes the spacing requirements for controlled access interstate interchanges. While this report summarizes the efforts to date, a more detailed review and study will be conducted to determine locations and the configuration of interchanges during the Tier 2 Phase of this study as well as preparation of a Interchange Justification Request (IJR) typically required by both LADOTD and FHWA.

2.0 METHODOLOGY

The following criteria were used in locating the LRX major interchanges with existing and future interstate highways:

American Association of State Highway Transportation Officials (AASHTO) publication, *A Policy on Geometric Design of Highways and Streets* (2004)
"Interstate spacing has a pronounced effect on freeway operations. In areas of concentrated urban development, proper spacing usually is difficult to obtain because of traffic demand for frequent access. Minimum spacing of arterial interchanges (distance between intersecting streets with ramps) is determined by weaving volumes, ability to sign, signal progression, and lengths of speed change lanes. A general rule of thumb for minimum interchange spacing is 1 mile in urban areas and 2 miles in rural areas. In urban areas, spacing of less than 1 mile may be developed by grade-separated ramps or by adding collector-distributor roads."

American Association of State Highway Transportation Officials (AASHTO) publication, *A Policy on Design Standards Interstate System* (2005)
"Spacing of Interchanges has a significant effect on the operation of interstate highways. In areas of concentrated development, proper spacing may be difficult to obtain because of demand for frequent access. As a rule, minimum spacing should be 1 mile in urban areas and 3 miles in rural areas, based on crossroad to crossroad spacing. In urban areas, spacing of less than 1 mile may be developed by grade-separated ramps or by collector-distributor roads."

***Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) (2009), Section 2E.33:**
"For major and intermediate interchanges (see section 2E.32), Advance Guide signs should be placed at ½ mile and at 1 mile in advance of the exit with a third Advanced Guide sign placed at 2 miles in advance of the exit if spacing permits." Under section 2E.50, MUTCD also provides guidance for advance sign placements if the interchanges are spaced at less than 2 miles in urban areas.

The first two design criteria recommendations listed above are similar except for rural highway interchange spacing criteria (i.e. two versus three mile spacing criteria). LRX is proposed to be a free flowing toll facility designed using guidelines for interstates, thus the second recommendation from AASHTO listed above is more applicable given the context of this project.

In accordance with AASHTO's general recommendations, spacing of interchanges at a minimum of one mile is adequate in urbanized areas of the LRX corridors. All conceptual LRX interchanges located at existing and future interstate highways are situated in urbanized areas of Lafayette. AASHTO recommends that urban area interchange spacing of less than one mile may be permitted when constraints warrant and interchanges are designed accordingly.

While it is understood that a three mile desired minimum spacing between interchanges in rural areas cannot always be achieved due to various constraints, it should also be understood that the minimum one mile spacing that is allowed, when there are no further options, is not the spacing that should be strived for when a new interchange is planned. This report discusses options for situations where the proposed interchange spacings are less than three miles to meet the most generous criteria. The individual interchange locations are analyzed based upon the above cited minimum spacing criteria.

2.1 Urban Limits of Lafayette

According to the *Lafayette Highway Functional Classification Urbanized Map* published by Louisiana DOTD, the urbanized area of Lafayette begins at the I-49/LA 182 Interchange just north of the City of Carencro. The southern urban limits include the areas along US 90 (Future I-49 South) up to the US 90/LA 88 Interchange. Along I-10, the urbanized area for Lafayette along the western boundary begins at the I-10/LA 1096 Interchange and ends on the eastside of the City of Carencro approximately one mile east of the I-10/ LA 328 Interchange. In general, the western limit of this urbanized area terminates at LA 724 *(See Figure 1)*.

2.2 LRX Corridors Descriptions

The proposed LRX Corridors begin north of the City of Carencro at I-49 then traversing west around the City of Lafayette, thence across I-10, and terminating at US 90 south near the Cities of Broussard and Youngsville. There is one proposed northern LRX corridor called Common 1 and 2 that begins at I-49 near the northern corporate limits of the City of Carencro. Two proposed LRX corridor alternatives called Common 1 and Common 2 intersect I-10 to the west and east of the City of Scott. There are three LRX southern corridor alternatives entitled Inner, Middle, and Outer Corridors which all terminate at US 90 (Future I-49 South). The LRX Outer Corridor contains a sub-alternative corridor that crosses US 90 and terminates east of US 90 providing access to the Acadiana Regional Airport. All three southern corridors have proposed interchanges at US 90 (Future I-49 South) *(See Figure 2)*.

2.3 LRX Interchange Spacing

The LRX toll facility is envisioned as a free flow facility with fully directional interchanges at crossings with US 90 (Future I-49 South), US 167 (Johnston Street), I-10, and I-49. Diamond interchanges would be provided at other major cross streets. Most of the corridors studied in this study are approximately one mile wide. Therefore, the spacing of any interchange from a proposed LRX Interchange could be within one mile more and one mile less than the interchange spacings mentioned in this study. Most LRX proposed interchanges were assumed to be located at the middle of the corridor for estimating the interchange spacing for this study. These locations would be finalized in future phases of the project based on future traffic operations and AASHTO minimum interchange spacing

criteria. The locations of the proposed LRX Interchanges will be further evaluated in the IJR in the Tier 2 stage of this project.

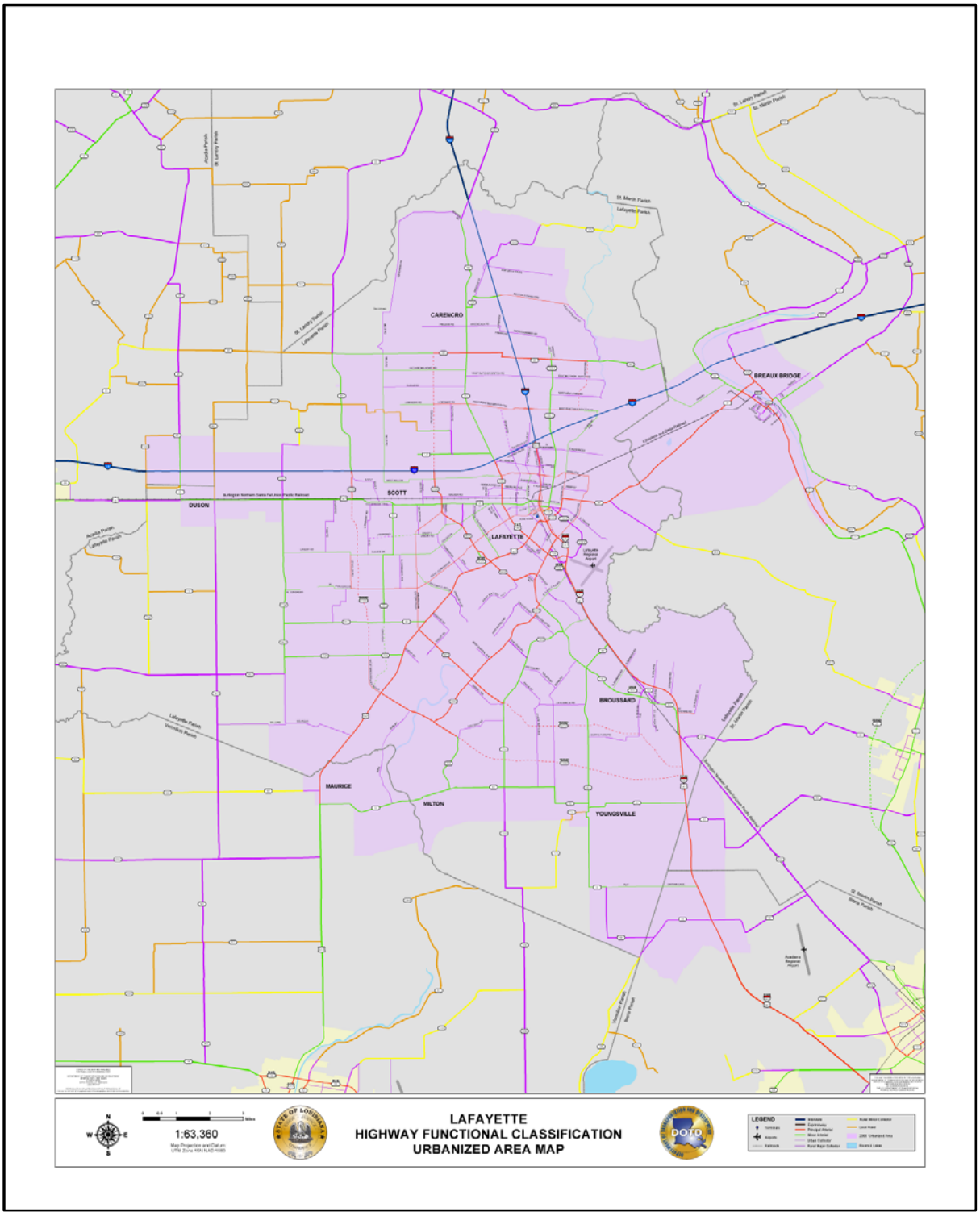


Figure 1 – Urbanized Map of Lafayette (Source: Louisiana DOTD)

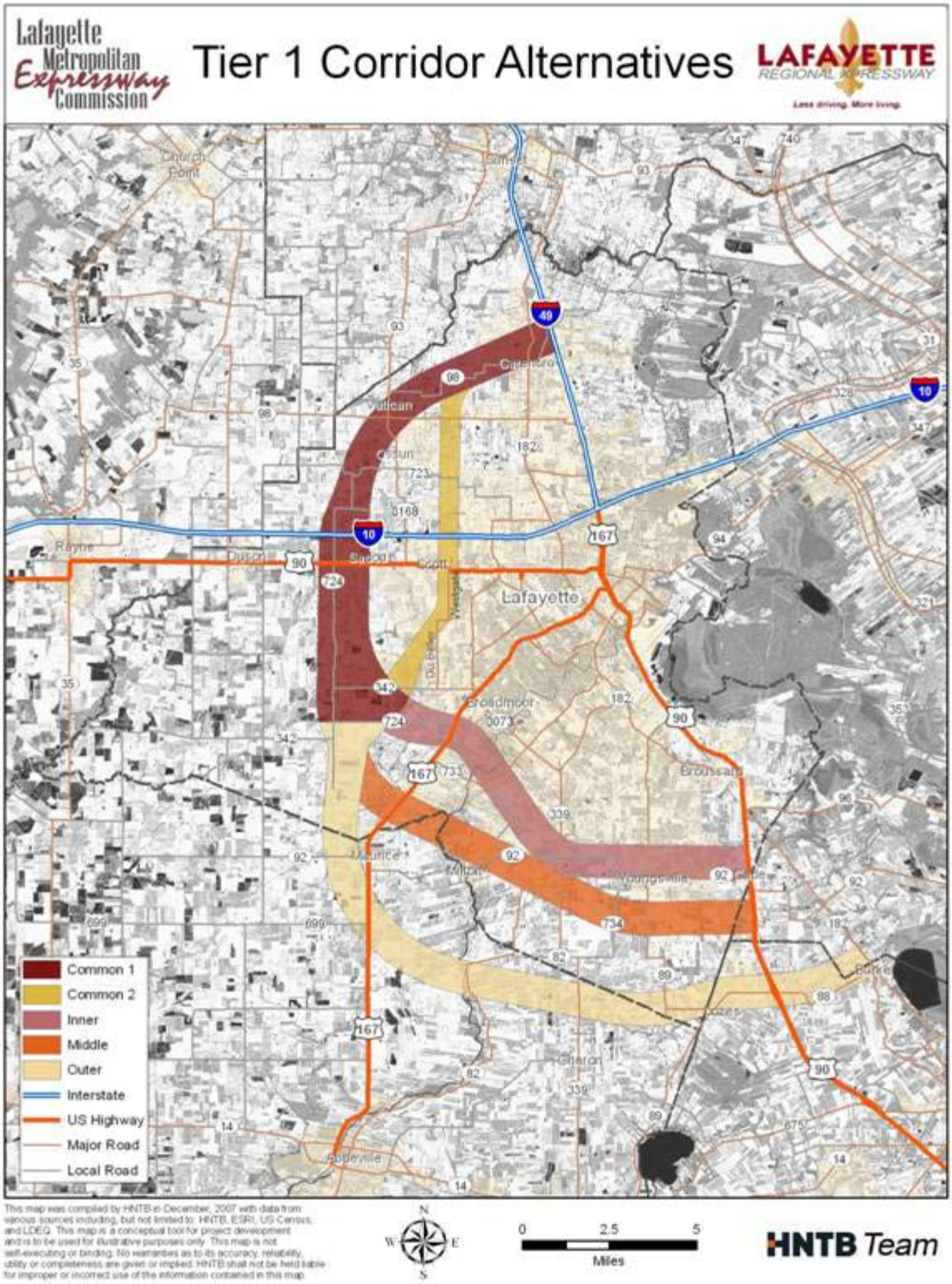
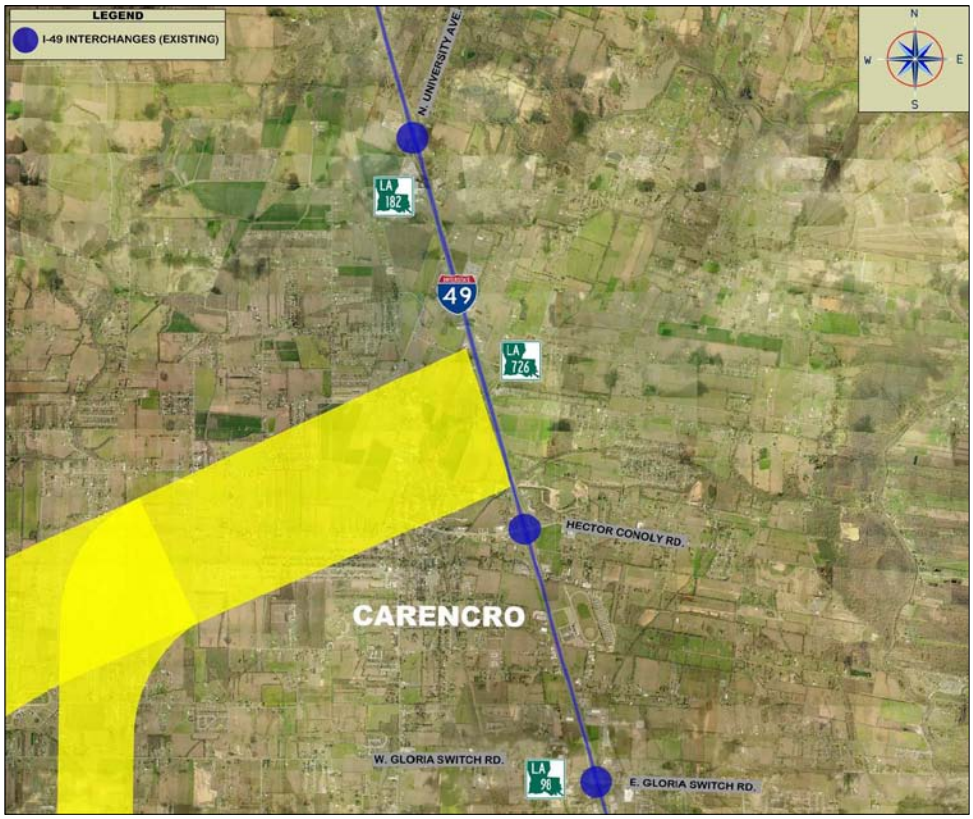


Figure 2 – LRX Corridors

3.0 EXISTING I-49 INTERCHANGE LOCATION

The proposed LRX has one connection with existing I-49 for Common 1 and 2 *(See Figure 3)*. A proposed half system-to-system interchange at I-49 is located between the existing I-49 interchanges at Hector Connoly Road and N. University Avenue. The Common 1 and 2/I-49 Interchange is located approximately 1.8 miles south of the I-49/N. University Avenue Interchange and approximately 1.2 miles north of the I-49/Hector Connoly Road Interchange. The existing interchanges at Hector Connoly and N. University Avenue are located approximately three miles apart. There are 2 existing interchanges between the I-49/Hector Connoly Road Interchange and the I-49/I-10 Interchange spaced at 1, 1.6, and 1.9 miles.

Figure 3: I-49 Interchange Location



Two additional options were considered during the Tier 1 EIS process to determine how to accommodate the rural three mile desired interchange spacing criteria:

Option 1: Option 1 is to move the termination point of the corridor further north along I-49 until it is located generally in the area between two consecutive existing interchanges spaced at more than four miles apart. This option can be met between the existing interchanges at I-49/LA 93 and at I-49/LA 3233, which are located approximately 10 miles north of the City of Carencro. The spacing between these interchanges is 4.7 miles. This will require moving the corridor to approximately 10 miles north of the currently proposed location. It is anticipated that this location would discourage local users from using the LRX facility and may not meet the purpose and need of the Tier 1 EIS.

Option 2: Option 2 is to move the termination point of the corridor along I-49 to a location such that its intersection with I-49 would utilize either the existing interchange at Hector Connoly Road or N. University Avenue. In doing so, it is anticipated that a larger "foot print" of area would be required at these existing interchanges as a result of the new interchange ramps required to accommodate the traffic movement between two control of access facilities. Both of these existing interchanges are surrounded by commercial and residential development. It is anticipated that several businesses and residents may need to be relocated to accommodate this option. This option does not meet the three mile spacing minimum between rural interchanges.

As discussed above, Options 1 and 2 were found to not be feasible. The proposed location of the LRX Common 1 and 2 Corridor/I-49 Interchange meets the criteria of minimum spacing of one mile between urban interchanges and Common 1 and 2/I-49 Interchange is located within the urban limits of the city of Lafayette. The proposed location for the LRX Common 1 and 2 Corridor/I-49 Interchange, as described above, meets AASHTO Geometric Design Guidelines and Advance Guide Signs can be placed in accordance with the MUTCD recommendations. During the Tier 1 EIS, the proposed location was also found to have the least impacts to the environment.

4.0 I-10 INTERCHANGE LOCATIONS

The proposed LRX has two possible intersection options with I-10, which are Common 1 or Common 2 *(See Figure 4)*. These locations were selected during the Tier 1 EIS with the understanding that these intersections with I-10 may represent an interim terminus during the multi-phased construction of the LRX facility.

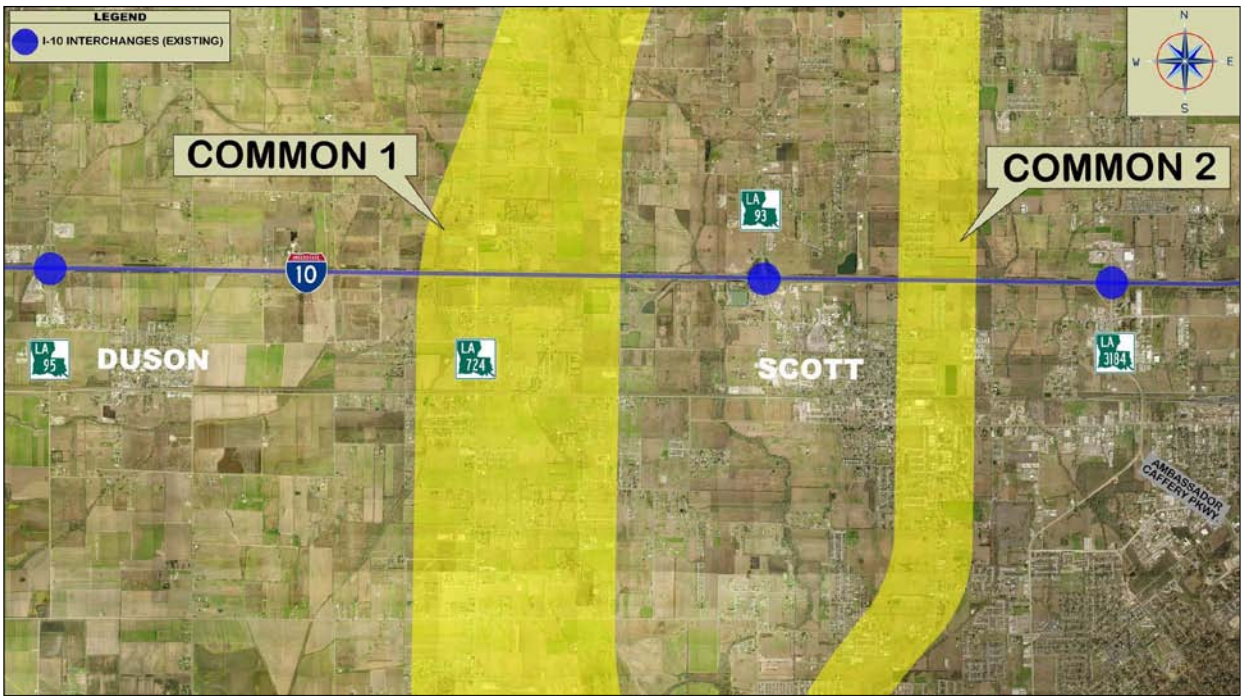
4.1 LRX Common 1/I-10 Interchange Location

This proposed interchange is a full system-to-system interchange located between the existing I-10 interchanges at LA 93 and LA 95 *(See Figure 4)*. The LRX Common 1/I-10 Interchange is proposed to be located approximately 1.8 miles west of the I-10/LA 93 Interchange and approximately 3.3 miles east of the I-10/LA 95 Interchange. The existing I-10 interchanges at LA 93 and LA 95 are located approximately 5.1 miles apart.

The proposed interchange location does meet the three mile desired minimum interchange spacing on the west side of the proposed interchange, but it does not meet the criteria on east side of the proposed interchange. There are two existing interchanges between the I-10/LA 93 Interchange and the I-49/I-10 Interchange. These interchanges are spaced at 1.4, 1.9 and 2.5 miles. Another option was also considered as Corridor 2 (described in section 4.2 below) however; this option also does not meet the desired three miles minimum criteria on either side the proposed interchange.

The Corridor 1 interchange with I-10 is within the urban limits of the city of Lafayette. The proposed interchange spacing meets the criteria of minimum spacing of one mile between interchanges in an urban location. The proposed location for the LRX Common 1/I-10 Interchange, as described above, meets the AASHTO Geometric Design Guidelines and Advanced Guide Signs can be placed in accordance with MUTCD recommendations.

Figure 4: I-10 Interchange Locations



4.2 LRX Common 2/I-10 Interchange Location

The LRX Common 2 was studied in order to have the LRX traverse near the City of Scott, thus making LRX more accessible to the residents of Scott and the surrounding densely populated areas of the parish. This proposed interchange is a full system-to-system interchange located between the existing I-10 interchanges at LA 93 and Ambassador Caffery Parkway (LA 3073). The LRX Common 2/I-10 Interchange is proposed approximately 1.1 miles west of the I-10/Ambassador Caffery Parkway Interchange and about 1.4 miles east of the I-10/LA 93 Interchange *(See Figure 4)*. This proposed interchange is within the urban limits of the city of Lafayette. Another option was also considered as Corridor 1 (described in 4.1); however this option also does not meet the desired three miles minimum criteria on either side the proposed interchange.

The existing I-10 interchanges at LA 93 and Ambassador Caffery Parkway (LA3073) are approximately 2.5 miles apart. There is one interchange between the I-10/Ambassador Caffery Parkway Interchange and the I-49/I-10 Interchange to the east. This interchange is spaced at 1.4 and 1.9 miles from these aforementioned existing interchanges respectively. The existing interchange spacing meets the criteria of minimum spacing of one mile between urban interchanges; however it does not meet the criteria of a desired minimum of three mile spacing between interchanges in rural areas. The LRX Common 2/I-10 Interchange location meets the minimum criteria of one mile spacing between the interchanges for urban areas. The proposed location for the LRX Common 2 Corridor/I-10 Interchange, as described above, will meet the AASHTO Geometric Design Guidelines and Advanced Guide Signs can be placed in accordance with MUTCD recommendations.

5.0 US 90 (FUTURE I-49 SOUTH) INTERCHANGE LOCATIONS

The proposed LRX has three southern corridor options that connect to US 90 (Future I-49 South) called Outer Corridor, Middle Corridor, and Inner Corridor *(See Figure 3)*. The Tier 1 EIS reviewed and recognized the planned interchange layouts presented in the *Future I-49 South – Lafayette Regional Airport to LA 88 Environmental Impact Statement* (I-49 South EIS) during the development of alternatives. The Future I-49 South EIS received a Record of Decision (ROD) on November 1, 2005.

Future I-49 South EIS interchanges are proposed at Young Street (LA 92 West) and at relocated LA 92 East (now named Petroleum Parkway). The southern terminus of Future I-49 South in this EIS is located at the beginning of the entrance and exit ramps for the existing US 90/LA 88 Interchange. The planned interchanges on Future I-49 South are spaced at a minimum of one mile in urban areas. Beginning from the US 90/LA 88 Interchange and heading north, the spacing of the planned interchanges are approximately 2.2 miles (LA 92 relocated or Petroleum Parkway), 1.4 miles (LA 92 West or Young Street) and 1.1 miles (Future Ambassador Caffery Parkway Extension).

All planned interchanges along Future I-49 South from Lafayette Airport to LA 88 are "X" Ramp Interchanges where the entrance ramps are placed before the interchange and the exit ramps are placed after the interchanges. This arrangement provides better access to the businesses along the frontage roads between the interchanges. With "X" Ramp Interchange configurations; the minimum interchange spacing of one mile for urban interchanges is still valid.

Although the location for the future LRX interchanges are the same as those approved under the EIS/ROD and EA (LA 88), the Lafayette LA 88 to Airport EIS/ROD may need to be revised during the Tier 2 EIS process once the impacts caused to this EIS/ROD from the LRX are identified.

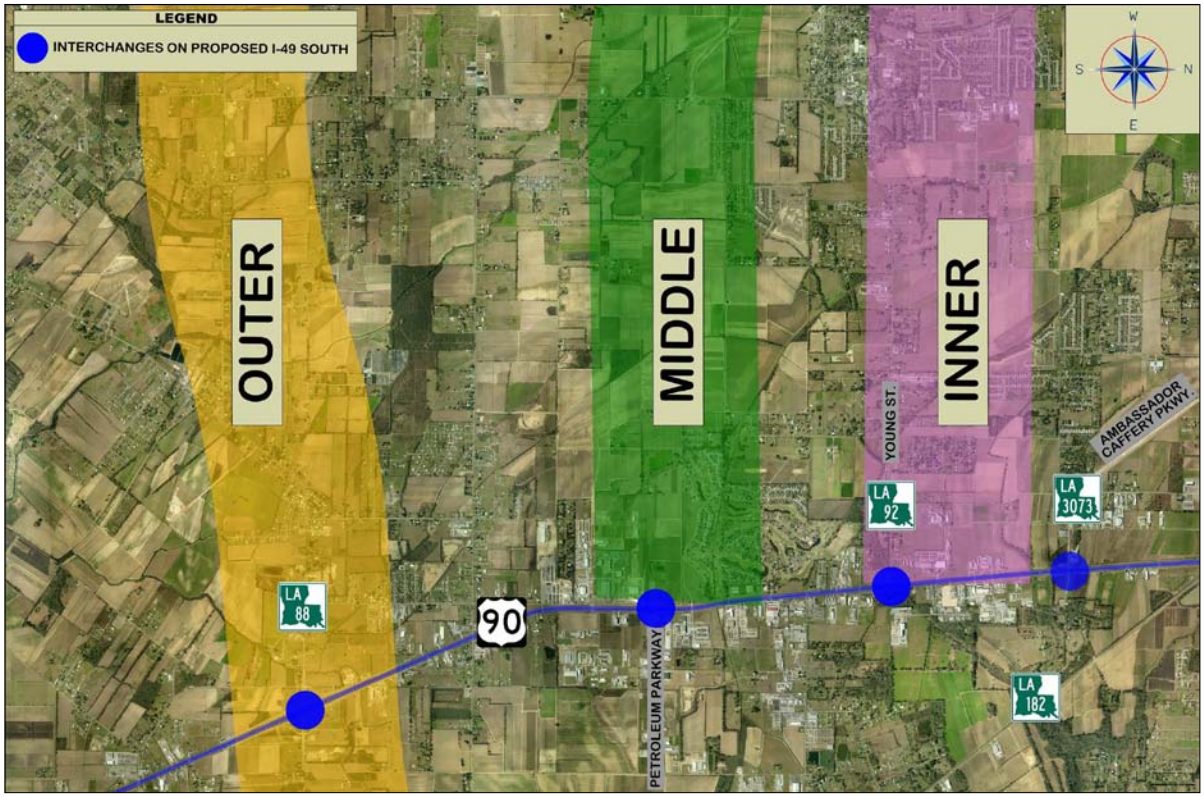
5.1 LRX Inner Corridor

The proposed Inner Corridor connection to Future I-49 South is a half system-to-system interchange at US 90 (Future I-49 South) located just north of Young Street (US 90 West). The Inner Corridor connects to US 90 (Future I-49 South) at the planned location of the Future I-49 South/LA 92 West Interchange *(See Figure 5)*.

During the preparation of the Tier 2 EIS and IJR, it is recommended that the LRX Inner Corridor/Future I-49 South Interchange include design details to accommodate the traffic movements between the Future I-49 South, proposed LRX, and LA 92 West. The planned adjacent interchanges along Future I-49 South will be 1.4 miles south and 1.1 miles north of the LRX Inner Corridor/Future I-49 South/LA 92 West Interchange. The LRX Inner Corridor/US 90 interchange is within the urban limits of the City of Lafayette. The interchange locations proposed in the I-49 South Environmental Impact Study (EIS) meet the minimum one mile spacing for interchanges in urban area.

The proposed location of the LRX Inner Corridor/Future I-49 South/LA 92 West Interchange, as described above, meets the AASHTO Geometric Design Guidelines and advanced guide signs can be placed in accordance with MUTCD recommendations.

Figure 5: US 90 (Future I-49 South) Interchange Locations



5.2 LRX Middle Corridor

The proposed Middle Corridor connection to Future I-49 South is a half system-to-system interchange at US 90 (Future I-49 South) located opposite to the Petroleum Parkway (Relocated US 90 East). The Middle Corridor connects to US 90 (Future I-49 South) at the planned location of the Future I-49 South/LA 92 East Interchange *(See Figure 5)*.

During the preparation of the Tier 2 EIS and IJR, it is recommended that the LRX Middle Corridor/Future I-49 South Interchange include design details to accommodate the traffic movements between the Future I-49 South, proposed LRX, and LA 92 East. The adjacent existing and planned Future I-49 South interchange locations will be 2.2 miles south and 1.4 miles north of the LRX Middle Corridor/Future I-49 South/LA 92 East Interchange. The LRX Middle Corridor/US 90 interchange is within the urban limits of the city of Lafayette. The interchange locations proposed in the I-49 South EIS meet the minimum one mile spacing for interchanges in urban areas.

The proposed location of the LRX Middle Corridor/Future I-49 South/LA 92 East Interchange, as described above, meets the AASHTO Geometric Design Guidelines and Advance Guide Signs can be placed in accordance with MUTCD recommendations.

5.3 LRX Outer Corridor

The proposed Outer Corridor interchange with US 90 (Future I-49 South) is a half system-to-system interchange or a full system-to-system interchange if the Outer Corridor sub-alternative crossing at US 90 is advanced. The Outer Corridor connects to US 90 (Future I-49 South) at the existing US 90/LA 88 Interchange which is a diamond interchange. The proposed Outer Corridor sub-alternative continues east after crossing US 90 to provide access to the Acadiana Regional Airport *(See Figure 5)*.

During the preparation of the Tier 2 EIS and IJR, it is recommended that the LRX Outer Corridor/Future I-49 South Interchange include design details to accommodate the traffic movements between the Future I-49 South, proposed LRX, and existing LA 88. The adjacent existing and planned Future I-49 South interchange locations will be 4.4 miles south and 2.2 miles north of the LRX Outer Corridor/Future I-49 South/LA 88 Interchange. The LRX Outer Corridor/US 90 interchange is within the urban limits of the city of Lafayette. The interchange locations proposed in the I-49 South EIS meet the minimum one mile spacing for interchanges in urban areas.

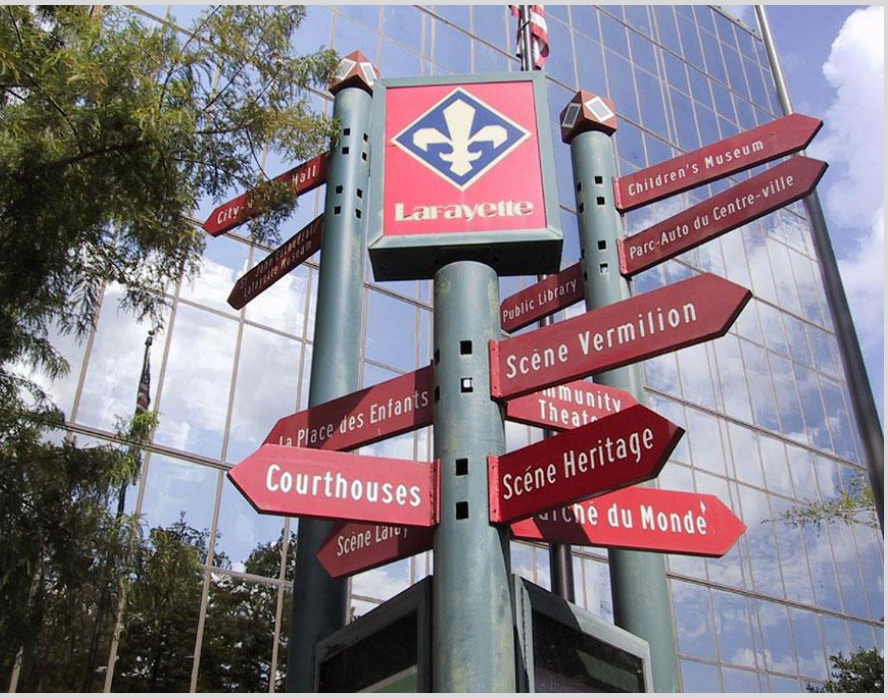
The proposed location of the LRX Outer Corridor/Future I-49 South/LA 88 Interchange, as described above, meets the AASHTO Geometric Design Guidelines and Advance Guide Signs can be placed in accordance with MUTCD recommendations.

6.0 CONCLUSION

In summary, the major interchanges for the proposed LRX with existing and future interstate highways are located at least one mile from existing and planned interchanges as permitted in urban areas. During the LRX Tier 2 EIS and IJR phases of this project, the minimum and desirable interchange criteria will be evaluated in detail to meet the criteria suggesting three mile spacing for interchanges where possible.

Due to constraints of existing development, there are challenges to meeting the three mile minimum interchange spacing criteria when the proposed interchange is being located on an existing interstate highway in an urban environment. For this study, there were few instances where interchange spacing of six miles or more existed between two existing interchanges. Because of this reason and the fact that most of the project area is considered to be urbanized, the proposed interchanges studied during the Tier 1 EIS did not all meet a desired minimum of three miles interchange spacing criteria for rural areas. If the proposed interchange is located at an existing interchange or at the location of a previously approved EIS Interchange, the proposed revisions to the interchange should be conducted during the Tier 2 EIS process and in the IJR.

The LRX southern corridor's major interchanges with US 90 (Future I-49 South) will need to be located at planned and existing interchanges to meet the AASHTO urban interchange spacing criteria. The traffic movements will need to be accommodated at these locations during the Tier 2 EIS and IJR process. During final determination of the location and configuration of the interchanges during the Tier 2 and IJR Phase, the advanced guide signs will be placed in accordance with the MUTCD recommendations.



Lafayette Regional Xpressway (LRX)- Level I Traffic and Revenue Study- FINAL

Stantec

Prepared for:

HNTB

and LMEC

June 21, 2016

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1.0 INTRODUCTION

The Lafayette Metropolitan Expressway Commission (LMEC) and HNTB Corporation (prime consultant) retained Stantec Consulting in March of 2016 as a sub consultant to perform a Level 1 Traffic and Revenue Study for the Lafayette Regional Xpressway (LRX). This study is to inform the Tier 1 Draft Environmental Impact Statement for the proposed toll facility.

Several prior studies have been prepared. In 2004 Wilbur Smith Associates prepared a Level 1 Traffic and Revenue Study. In 2010 Stantec prepared a Level 2 Traffic and Revenue Study in which six alternative alignments and tolling scenarios were evaluated for their toll revenue potential, as well impacts on regional mobility. Since the completion of that study six years have passed and the regional model maintained by the MPO has been updated. Regional socioeconomic trends have stabilized post Katrina and recovery from the 2008 recession has occurred. Thus the current study integrates all available current data and produces updated forecasts for the toll facility. The current study is a Level 1 Study as it relies on the current existing regional model with minimal modifications reflecting the study's assumption; it uses only publicly available LADOTD annual average daily counts.

There are typically three levels of a toll road studies. The first, a Level 1 Study, is a preliminary review of the potential for traffic to be attracted to a new project. This type of study generally relies on existing traffic information available in the project study area and its intent is to provide a general indication of the revenue potential of a proposed project. This level of study is appropriate for a Tier 1 Environmental Study.

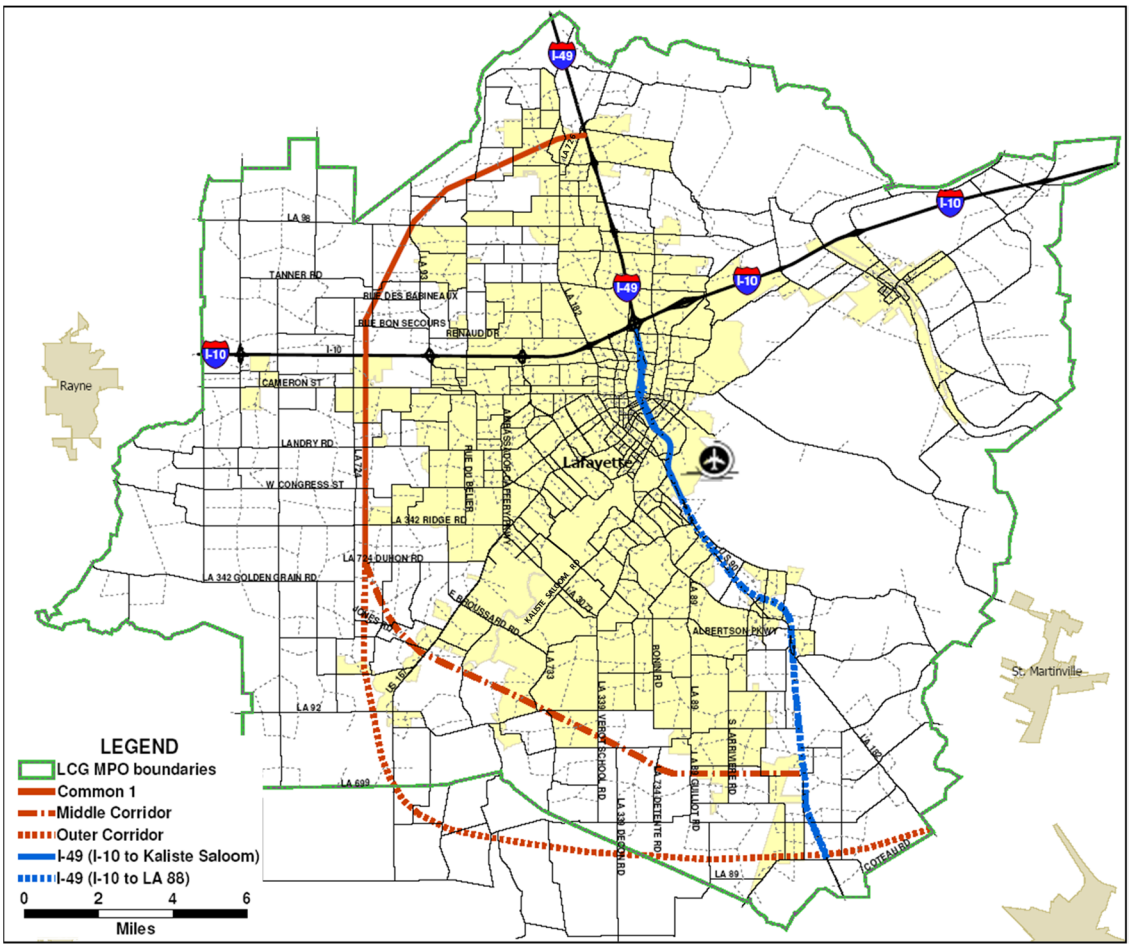
A Level 2 Study is the next level of complexity and is often undertaken when the project appears to have some potential for further study but may not yet warrant the time and expense of an investment grade study because of where the project is in the planning process. A Level 2 study would include a traffic count program and limited calibration and validation of the existing regional traffic model.

Level 3 or Investment Grade Study would require in-depth traffic counts, detailed information on origin-destination patterns, a detailed review of socio-economic factors and a more rigorous traffic forecasting model calibration effort. An Investment Grade study would provide the level of detail expected by rating agencies when considering an Investment Grade bond rating.

1.1 STUDY AREA

Figure 1 shows the study area for the project and the outlines of the proposed corridors including the future I-49 corridor. The study area is defined by the boundaries of the Lafayette MPO which includes all of Lafayette Parish and portions of St. Martin, Iberia, Vermilion, and Acadia Parishes. The LRX Toll Road is proposed as a partial beltway scribing a half-circle that circumvents, to the west, downtown Lafayette from US 90 South (Future I-49), crossing I-10, and then to I-49 north of Lafayette.

Figure 1 Study Area



1.2 ALTERNATIVE CORRIDORS

In the previous Stantec study three corridors were examined for the Lafayette Regional Xpressway: the Common 1 Corridor in the northwest quadrant between I-10 and I-49; the Middle Corridor and the Outer Corridor as alternatives for the southeast quadrant alignment. Combining the Common 1 Corridor with the Middle Corridor or the Common 1 Corridor with the Outer Corridor provided the bases for the six scenarios evaluated in the 2010 Level 2 Traffic and Revenue Report.

For this study the evaluation will focus only on the Common 1 Corridor and the Outer Corridor alignments. The opening year considered for the Project is 2030.

The proposed Common 1 Corridor has a southern terminus at Duhon Road-LA 724 approximately 3.3 miles west of the intersection of LA 724 and US 167. The alignment proceeds north through diamond interchanges with LA 342 and Landry Road and passes west of the City of Scott through a multi-level interchange at I-10. Then the alignment extends north through the Village of Vatican. The proposed roadway passes a diamond interchange with LA 98 Gloria Switch Road and continues northwesterly through a half-diamond interchange with LA 182. The Common 1 Segment terminates at I-49 near the

existing LA 726 interchange for the City of Carencro. The Common 1 Segment total distance is approximately 15.1 miles. Proposed frontage roads for this segment will extend from US 90 Cameron Street to I-10 and from LA 182 to I-49 North.

The Outer Corridor has an eastern terminus at West Old Spanish Trail Highway-LA 182 near its intersection with Coteau Road-LA 88. It progresses westward through a multi-level interchange at US 90 and through diamond interchanges at LA 89 and Decon Rd-LA 339. The Vermilion River crossing is located approximately 11.9 mi from the eastern terminus and is followed by a change in the alignment's direction from westerly to northwesterly. The alignment continues through a diamond interchange at Placide Road, a multi level interchange at US 167 and diamond interchanges at LA 92 and Bourque Road. The Outer Corridor ends at an overpass at Duhon Road-LA 724. The Outer Segment total distance is approximately 21.1 miles from the eastern terminus. Frontage roads are proposed from West Old Spanish Trail Highway-LA 182 to Placide Road and from Bourque Road to US 167.

In the current study US 90/ Future I-49 is assumed to be improved to interstate standards as envisioned in the I-49 Connector Project by year 2025. It will be operated as a toll-free facility.

Table 1 below lists the scenarios evaluated for the current study. Two alignment scenarios were studied under toll and toll-free operation, along with a baseline no build scenario.

Table 1 System Scenarios

System Scenario	Toll Assumption	Description
1	Tolled	LRX only Outer Alignment in southwest quadrant
	Toll-Free	LRX only Outer Alignment in southwest quadrant
2	Tolled	LRX Outer Alignment in southwest quadrant and Common I alignment in northwest quadrant
	Toll-Free	LRX Outer Alignment in southwest quadrant and Common I alignment in northwest quadrant
3	na	No Build LRX

1.3 TOLL COLLECTION

Toll collection on the proposed LRX is being considered to be fully electronic with cashless collection to minimize operating costs. This will be accomplished via sticker tags issued to registered customers as well as by pay-by-plate identification. Toll charges will be mileage based with trucks paying a traditionally higher rate based on the number of axles. With a fully electronic collection system, pay-by-plate tolls may be set higher than sticker tags to account for system losses due to poor images or the inability to identify and/or ultimately collect from some of the drivers.

2.0 MODELING METHODOLOGY

This section summarizes the modeling methodology, toll diversion procedures, and the application of the models to forecast tolled and toll-free traffic in the LRX study area. Model runs were carried out for the base year, 2010 and the future years 2030 and 2040.

Similar to the work completed for the 2010 Level 2 Traffic and Revenue Study, the current forecasts of future traffic for the Lafayette Regional Xpressway were prepared by employing the existing travel demand model for the Acadiana Metropolitan Planning Organization (MPO), which is a TransCad (software) based model. This was followed with a supplemental model within which a customized toll diversion assignment process was carried out using Cube Voyager (TP+) software.

The modeling process used for the estimation of traffic and revenue associated with the LRX corridor consisted of reviewing the LPM TransCad model, converting it to the TP+ software format and then imposing tolling algorithms in accordance to the scenario's toll assumptions. Since this Traffic and Revenue Study is of Level 1 caliber it does not include in-depth calibration and validation procedures; instead it relies on the regional model inputs and their accuracy.

2.1 BACKGROUND

The Acadiana Metropolitan Planning Organization (MPO), formerly known as Lafayette MPO, is an active division of the Acadiana Planning Commission which was organized to plan for the future development in the Louisiana Parishes of Acadia, Evangeline, Iberia, Lafayette, St. Landry, St. Martin, and Vermilion. The current Travel Demand Model (TDM) maintained by the MPO was updated in December of 2014 to support the MPO's Metropolitan Transportation Plan 2040.

Model changes between the version used in the Stantec 2010 study and the current version include:

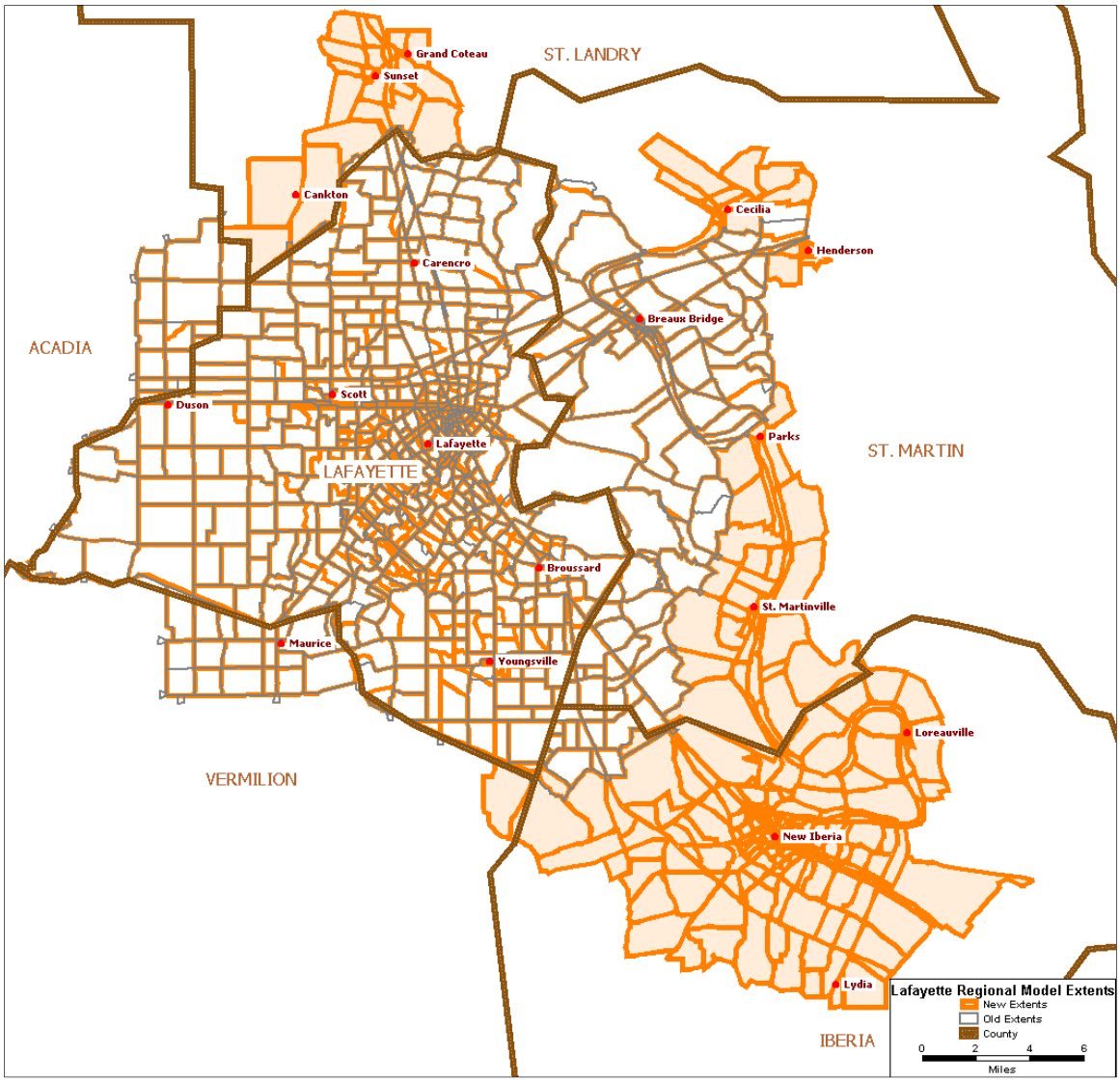
- The area covered by the model was expanded to include Iberia Parish, portions of St. Landry Parish and portions of St. Martin Parish. The new model extents were devised based on changes in the Metropolitan Statistical Area geographic delineation updated by the Office of Management and Budget of the federal government. Figure 2 shows, shaded in orange, the new areas added to the model.

- Additional zonal and network details were added. Transportation Analysis Zones were split, new centroids and centroid connectors added to the highway networks. Figure 2 shows in grey outline the old zonal structure overlaid on top of the new zonal structure with orange outline. It can be seen that within Lafayette Parish the new zones are smaller and often contained within the old zones. The old model included 600 internal zones whereas the new one contains 986. The number of external zones also increased from 30 to 42.

- The population and employment forecasts were updated and extended to future year 2040.

- The new model version adds details in the time of day distribution and incorporates four time periods.
- The model networks were updated to reflect currently completed highway improvement projects as well as changes in the planned highway projects.

Figure 2 Expanded Model Extents



The TDM has distinct components utilized to estimate different elements of travel. The first component of the model is trip generation, which estimates the number of trips generated by discrete zones within the study area based on socioeconomic characteristics such as population, households and employment. These estimated trips are then distributed in the second model step based on the attractiveness of destination activities and the degree of spatial separation between trip-producing and trip-attracting zones. The model does not have a transit component and thus models only auto trips. Commercial vehicle traffic is introduced as an additional trip purpose. The final step of the model is the highway assignment process which loads the trips onto the

highway network. The MPO's TransCad-based regional model assigns trips on a route choice / travel time basis; it does not reflect the cost basis associated with tolled routes.

The model has a well-developed user interface that allows execution of the entire process or the individual steps of trip generation, trip distribution and trip assignment.

2.2 TDM BASE YEAR MODEL ASSUMPTIONS AND MODEL RESULTS REVIEW

The current TDM base year is 2010 and it is used as a base year for this study. Population and employment estimates for the base year in the current model are listed in Table 2 and Table 3. These tables also list Stantec's estimates for population and employments from the study carried out in 2010 along with estimates by Woods and Poole an independent socioeconomic data provider. It should be noted that when the previous study was underway the regional model included pre-recession socioeconomic inputs; as part of the 2010 effort Stantec carried out updates to bring them in line with current trends.

The increase of the geographic area covered in the current model adds 91,000 residents and 36,000 jobs. The larger area aims to represent in more detail the travel patterns in the region.

Lafayette Parish is the only parish fully included in both the current and the old model; all other counties were only fractionally included in the old model and have somewhat expanded coverage in the new model. For Lafayette Parish the new model shows slightly higher population (4%) and employment (2%) when compared to Stantec's assumptions in the 2010 study.

Table 2 Base Year Population Estimates by Parish

Population Totals						
Parish	Lafayette	Iberia(1)	St Martin(1)	St Landry(1)	Vermilion(1)	Total
Current Model	220,033	60,368	41,233	7,690	4,851	334,175
Old Model	212,088	4,322	22,985	-	2,810	242,205
Woods & Poole	222,107	73,260	52,259	83,503	58,086	489,215
Population Differences						
Current Model	-	-	-	-	-	-
Old Model	7,945	56,046	18,248	7,690	2,041	91,970
Woods & Poole	(2,074)	(12,892)	(11,026)	(75,813)	(53,235)	(155,040)
Population Percent Difference						
Current Model	-	-	-	-	-	-
Old Model	4%	93%	44%	100%	42%	28%
Woods & Poole	-1%	-21%	-27%	-986%	-1097%	-46%

NOTES: (1) The Parishes Iberia, St Martin, St Landry and Vermilion had only fractions of these parish areas included in the new model. Woods & Poole estimates are for the full parishes.

Table 3 Base Year Employment Estimates by Parish

Employment Totals						
Parish	Lafayette	Iberia(1)	St Martin(1)	St Landry(1)	Vermilion(1)	Total
Current Model	123,422	27,173	13,610	1,358	860	166,423
Old Model	121,303	583	7,437	-	552	129,875
Woods & Poole	174,373	42,856	18,207	34,894	20,921	291,251
Employment Differences						
Current Model	-	-	-	-	-	-
Old Model	2,119	26,590	6,173	1,358	308	36,548
Woods & Poole	(50,951)	(15,683)	(4,597)	(33,536)	(20,061)	(124,828)
Employment Percent Differences						
Current Model	-	-	-	-	-	-
Old Model	2%	98%	45%	100%	36%	22%
Woods & Poole	-41%	-58%	-34%	-2470%	-2333%	-75%

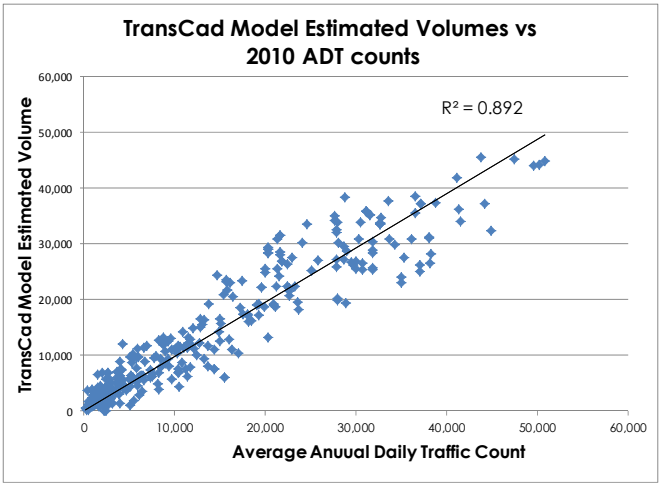
NOTES: (1) The Parishes Iberia, St Martin, St Landry and Vermilion had only fractions of these parish areas included in the new model. Woods & Poole estimates are for the full parishes.

2.2.1 Review of Base Year Results

The model review process involved comparison of regional TransCad model outputs against available ground counts. The review included selection of screenlines capturing the major traffic on corridors of interest for the study as well as a comparison to available state and local counts.

The regional model network has coded in 340 annual daily traffic counts from the year 2010. The overall performance of the TransCad regional model vs these counts is shown in Figure 3, the model replicates the counts with R^2 of 0.892 indicating overall a reasonable fit between predicted volumes and actual counts.

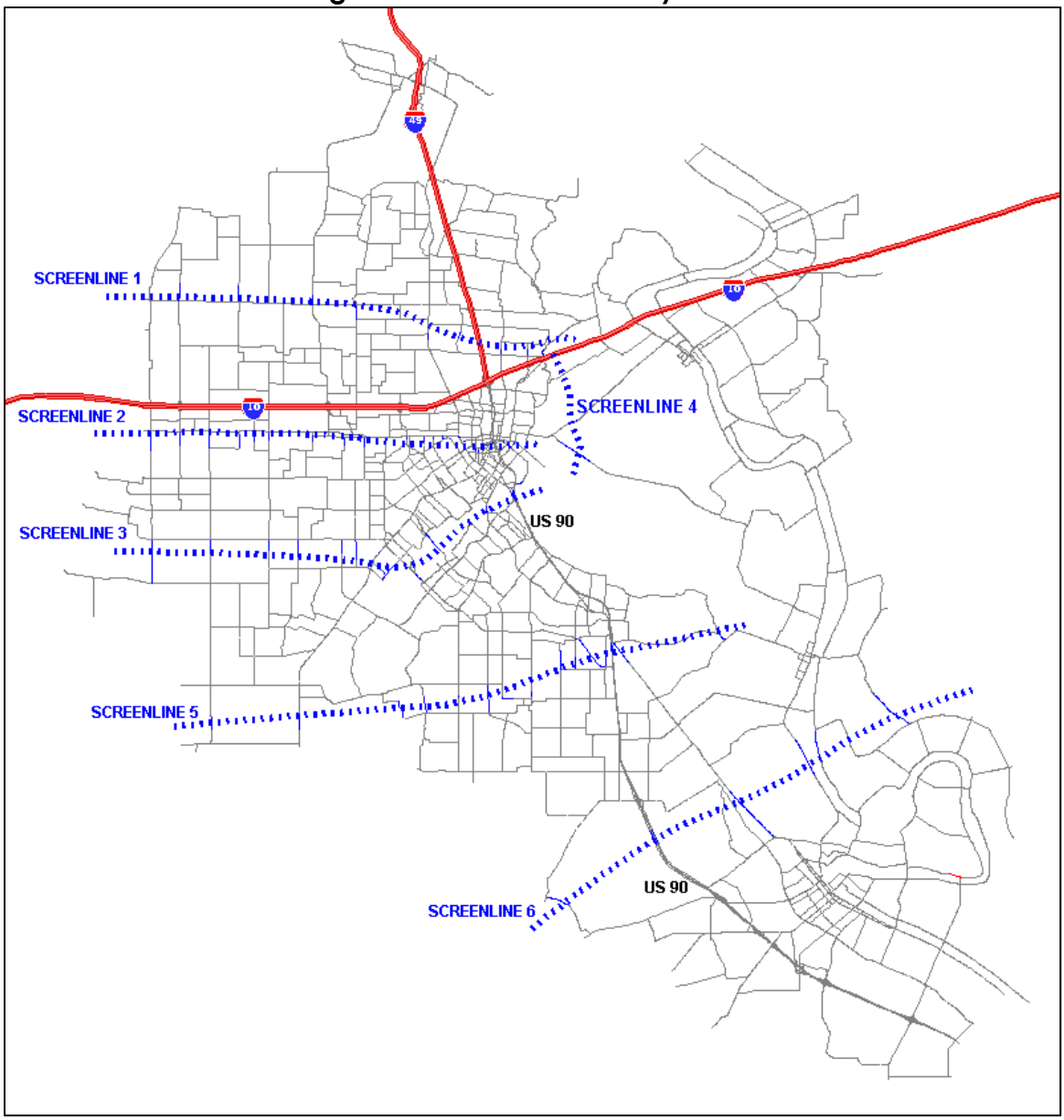
Figure 3 TransCad Model Estimated Volumes vs ADT



The screenlines selected for the study are shown in Figure 4; they capture traffic flows parallel or potentially feeding into the proposed toll road. The regional model accuracy was within 15 percent on the screenline totals within Lafayette Parish but showed higher

discrepancies at the border of Lafayette and Iberia Parish at screenline 6, where the model was expanded in its most recent update. Results are shown in Table 4.

Figure 4 Screenlines in Study Area



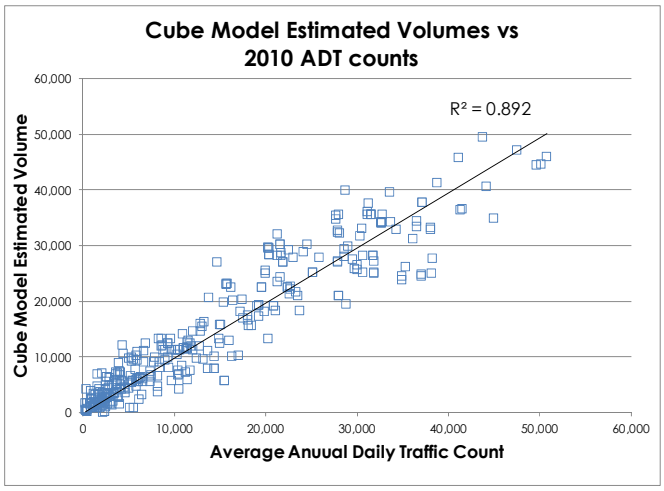
Cube (TP+) transportation planning software was selected for use in the toll diversion modeling. This software was selected because of its ease of use and versatility. The second step in the process involved converting the TransCad model into TP+ and then comparing screenline totals to assure that it replicated total trips in the MPO district. Table 4 shows the regional TransCad output along with Cube's screenline results.

Figure 5 provides a graphical comparison of the Cube model estimated volumes vs. the available 2010 average annual daily counts. These comparisons show that a valid replication and successful conversion of the TransCad model into TP+ was made.

Table 4 Screenline Totals

Screenlines		Count	TCAD Two-Way Volumes	% Diff w Counts	Cube Two-Way Volume	% Diff w Counts
ID	Name					
1	North of I-10	88,428	103,125	17%	100,772	14%
2	East West through CBD	222,468	251,921	13%	245,310	10%
3	East West through Vermilion river	252,522	282,354	12%	277,179	10%
4	US90 to I-10 southeast quadrant	88,647	95,381	8%	90,182	2%
5	East West through Youngsville	124,275	121,356	-2%	118,257	-5%
6	Border of Lafayette and Iberia	46,192	93,870	103%	89,942	95%

Figure 5 Cube Model Estimated Volumes vs ADT



The LRX loop crosses US 90 just north of the border of Lafayette and Iberia Parishes. The modeled volume estimates are poor in that area (+95%) as reflected in screenline 6 results. Since the TransCad regional model is overestimating volumes on that screenline, and this could lead to overestimating LRX volumes, Stantec undertook modest model adjustments to improve the agreement between model output and ground counts. Table 5 shows the model results after these adjustments.

Table 5 Screenline Totals after adjustments

Screenlines		Count	Cube Two-Way Volume after Mod	% Diff w Counts
ID	Name			
1	North of I-10	88,428	98,602	12%
2	East West through CBD	222,468	240,575	8%
3	East West through Vermilion river	252,522	257,063	2%
4	US90 to I-10 southeast quadrant	88,647	88,803	0%
5	East West through Youngsville	124,275	99,813	-20%
6	Border of Lafayette and Iberia	46,192	61,969	34%

While additional adjustments can be carried out under a calibration process, no further adjustments were made due to the limited scope of this study.

2.2.2 Commercial Vehicle Review

The representation of commercial vehicle activity in the model was evaluated. The regional TransCad model has a separate class for commercial vehicles, but the split between autos (personal vehicles) and commercial vehicles has been developed based on general industry standards rather than local data.

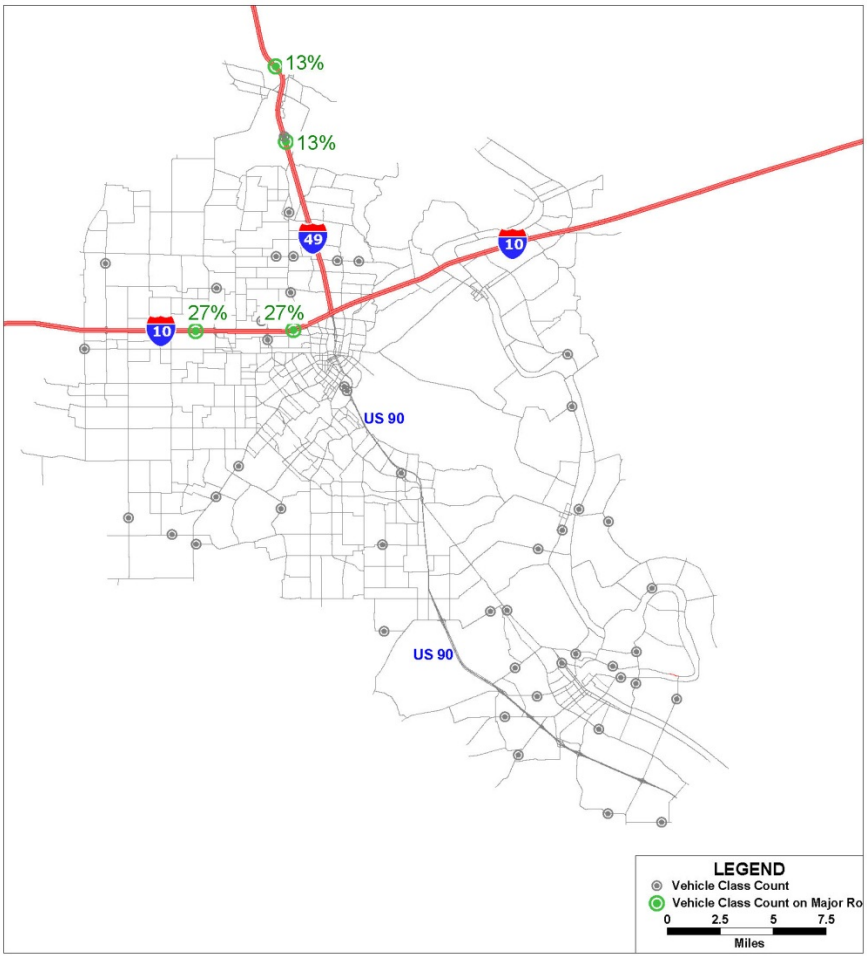
Vehicle classification count data received from the LADOTD for this study is shown in Figure 6. The vehicle classification data contained counts carried out between 2013 and 2015 and while geographically spread-out, the data did not contain comprehensive coverage on major roads. From counts covering the parishes of Lafayette, Iberia, St Martin, St Landry and Vermilion there were only 2 counts along I-10, 2 counts along I-49, and no counts along US90.

From the 2010 study count data along US 90 were available for two locations, the first just south of Lafayette in Iberia Parish and the second approaching the CBD (just past the airport). Both showed a truck share at 20%. With current ongoing construction along US 90 and construction related heavy vehicle traffic, the current observed truck share is expected to be temporarily higher than normal pre-construction levels.

The truck share along I-49 heading north of the Lafayette central business district was 15% based on counts used in the 2010 study. The new counts along I-49 obtained from LADOTD show a similar share of truck activity at 13% in 2015.

The overall observations of truck traffic along US 90 indicate that there is not strong north-south trucking movement through Lafayette. Our observations are that the predominant truck movements are east –west along I-10 as well as truck movements to/from the south and east.

Figure 6 LADOTD Vehicle Classification Counts



Truck activity along I-10 is stronger. Just west of the I-49 interchange the truck share on I-10 is 26% according to counts used in the previous study. The share increases heading west as local Lafayette traffic diminishes. Outside Lafayette to the west, the share of trucks on I-10 reaches about 35%. It appears that I-10 as a major route connecting New Orleans and Baton Rouge with Houston carries a significant share of through truck traffic. The newest counts along I-10 west of N University Ave and west of LA 93 indicate truck share level at 27% in 2015.

In lieu of better data on truck patterns, and because of the level of detail in this study, (substantially less than an investment grade effort), estimates of trucks were made using the truck share volumes found in the available count data.

2.2.3 Toll Diversion Component

Toll diversion models include "route choice" algorithms permitting travelers to select between the best toll and non-toll routes. The inputs used for this are the future networks and trip tables. For the LRX study a time-period based model was created by examining the purpose-stratified models from previous work completed by Stantec and with adjustments made to reflect the Lafayette area.

The completed model essentially determines the "probability" of selecting a toll road based on travel time and cost tradeoffs. This probability reflects the share of trips between a given origin-destination zonal pair that will utilize the toll facility.

The value of time (VOT) assumptions were kept the same as in the 2010 study. Users of the toll road in the night and midday period were assumed have an average value of time of 9.10[$/hr], whereas users in the AM and PM peak hours were assumed to have average value of time of 13.33[$/hr] and $12.13[$/hr] correspondingly. These values are a blend of the values of time for various trip purposes by time period. Since the AM and PM periods have higher share of work related trips, more users are likely to pay a higher toll in order to save time compared to discretionary non-work related trips during midday.

The sensitivity of time, toll and distance are presented graphically in Figure 7, Figure 8 Figure 9. Each figure has the AM, PM and Off peak (Midday and Night) period behavior plotted.

Figure 7 Sensitivity to Time Savings

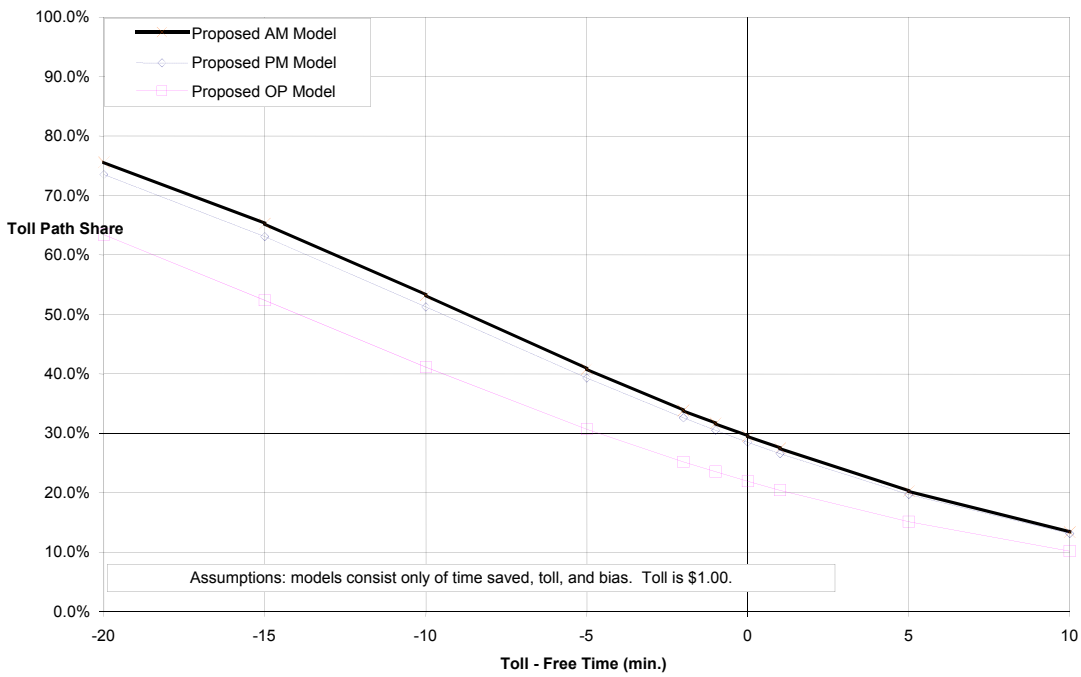


Figure 8 Sensitivity to Toll

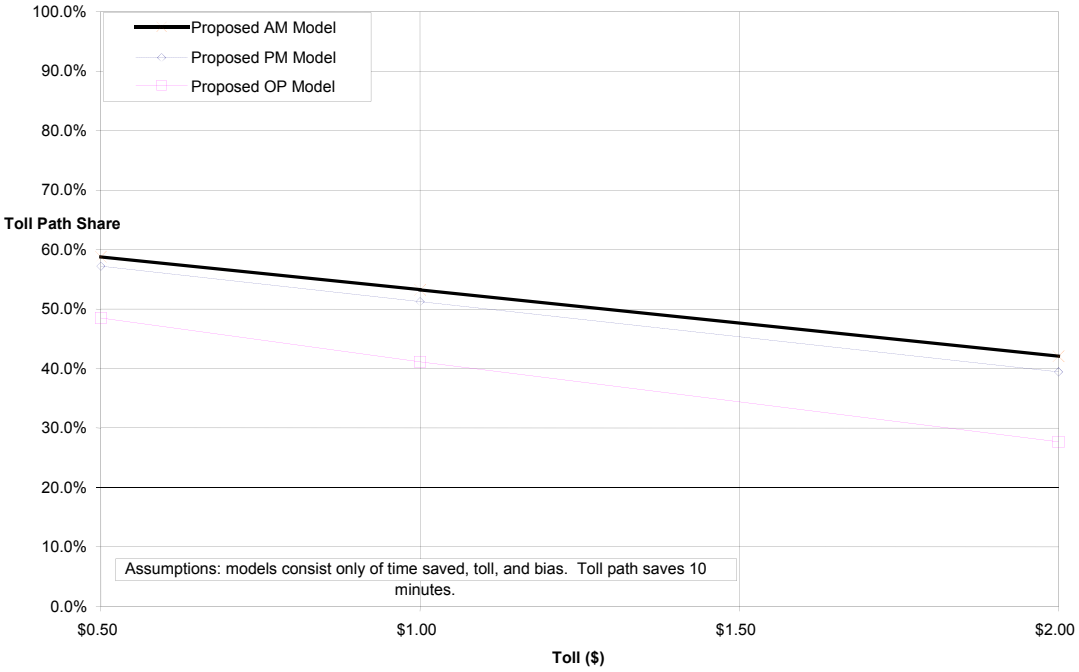
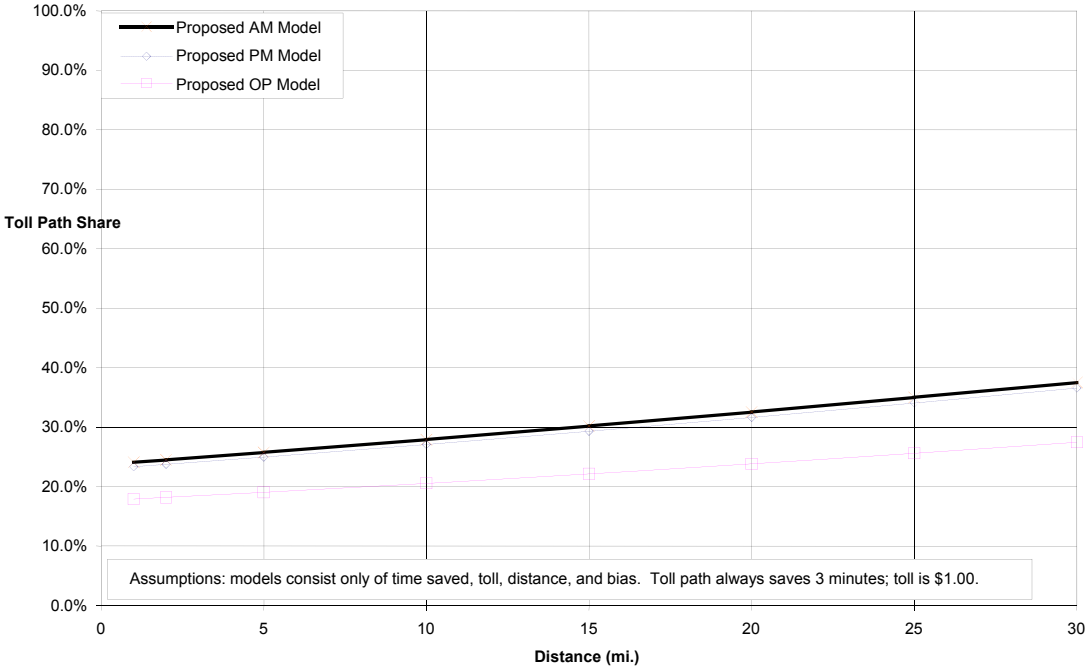


Figure 9 Sensitivity to Trip Distance



3.0 FUTURE DEVELOPMENT

To prepare estimates of future traffic conditions, estimates are needed of the future population, employment and changes in the transportation network. The following describes each of these areas.

3.1 POPULATION AND EMPLOYMENT ASSUMPTIONS

The most recent forecasts of population and employment made by the Lafayette MPO for the Metropolitan Transportation Plan 2040 are reflected in the regional model dated December 2014. The base year for these forecasts is 2010, the future years are 2020, 2030 and 2040.

Population and employment forecasts for the future years used in the current model are listed in Table 6. For comparison, the table also list Stantec's forecasts for population and employment from the 2010 study; these had been adjusted for recession trends. The independent forecasts from Woods and Poole are listed alongside the model forecasts for a general reference. While Woods and Poole forecasts are for the full parishes, the model totals include only the population and employment falling within the model boundary.

Table 6 Future Year Population and Employment Forecasts

Population Forecast Totals New Model			
Parish	2010	2030	2040
Lafayette	220,033	272,645	293,862
Iberia	60,368	70,335	74,753
St Martin	41,233	51,381	56,041
St Landry	7,690	10,405	11,898
Vermilion	4,851	7,495	8,969
Acadia	2,659	4,093	4,845
Total	336,834	416,354	450,368

Employment Forecast Totals New Model		
2010	2030	2040
123,422	166,862	187,364
27,173	35,475	39,597
13,610	18,537	21,196
1,358	1,944	2,252
860	1,316	1,511
447	659	748
166,870	224,794	252,669

Population Forecast Annual Growth Rates			
	New Model	Old Model	Woods & Poole
Parish	'10-'40	'10-'30	'10-'40
Lafayette	1.0%	0.9%	1.8%
Iberia	0.7%	1.8%	0.8%
St Martin	1.0%	1.3%	1.4%
St Landry	1.5%	na	0.4%
Vermilion	2.1%	1.2%	0.9%
Acadia	2.0%	1.4%	0.7%

Employment Forecast Annual Growth Rates		
New Model	Old Model	Woods & Poole
'10-'40	'10-'30	'10-'40
1.4%	1.0%	1.7%
1.3%	2.4%	1.6%
1.5%	1.5%	2.1%
1.7%	na	1.3%
1.9%	1.1%	1.1%
1.7%	1.0%	1.5%

Lafayette Parish represents about 65% of the population and 75% of the jobs reflected in the model. Lafayette's growth rate for population in the new model is consistent with the assumptions of the previous study, but the new model has a slightly faster rate of growth for employment at 1.4% average annual growth compared to the previous annual rate of 1.0%.

3.2 FUTURE NETWORK CHANGES

The Lafayette Planning model includes in its interface a list of all proposed future improvements included in the Transportation Improvement Plan (TIP) and the Financially Constrained Transportation Plan FCTP for the region. Representatives of the Lafayette MPO identified six projects from the Vision list likely to be advanced and built by 2030, the opening year of the LRX. These projects along with the existing and committed projects are listed in Table 7 below and shown in Figure 10 and Figure 11. The I-49 Connector was also assumed to be built by 2025. While the I-49 Connector project does not have committed funding at this time it has wide public support and is included on the statewide long range plan; currently I-49 is in its conceptual design phase.

Table 7 Regional Network Improvements

Plan	Future Improvement Project	Build Year	NETWORK PROJECT_ID		
E+C	Duhon Rd -Center Turn Lane , Rue Du Belier to Southcity Pkwy	2020	1		
E+C	Dulles Dr -Center Turn Lane , Westgate Rd to Ambassador Caffery Pwky	2020	2		
E+C	Louisiana Ave -Widen to 5 Lanes , Mayview Farm Rd to E Butcher Switch Rd	2020	3		
E+C	N Saint Antoine St Ext -New 3 Lane , I-10 to W Pont Des Mouton Rd	2020	4		
E+C	Verot School Rd -Widen to 4 Lane Blvd , Vincent Rd to Feu Follet Rd	2020	5		
E+C	US 90 -Widen to 6 Lanes , Pinhook Rd to Saint Nazaire Rd	2020	6		
E+C	Chemin Metairie Pkwy Ext -New 2 Lane Blvd , Guillot Rd to US 90	2020	7		
E+C	Rue Du Belier Ext -New 4 Lane Blvd , Dulles Dr to Old Spanish Trl	2020	8		
E+C	Kaliste Saloom Rd -Widen to 5 Lanes , E Broussard Rd to Ambassador Caffery Pkwy	2020	9		
E+C	N University Ave -Widen to 4 Lane Blvd , Renaud Dr to W Pont Des Mounton Rd	2020	10		
E+C	S Bernard Rd Ext -New 3 Lane , Fortune Rd to Main St	2020	11		
E+C	I-10 -Widen to 6 Lanes , I-49 to Eastern Study Area Boundary	2020	12		
E+C	US 90 -Widen to 6 Lanes , Albertson Pkwy to Ambassador Caffery Pkwy	2020	13		
E+C	E Pont Des Mouton -Widen to 4 Lane Blvd , I-49 to Louisiana Ave	2020	14		
E+C	US 90 Frontage Roads -Remove from network , 0.7 Miles East of Darnall Rd to College Rd	2020	15		
E+C	US 90 Access Management -US 90 Intersection Improvements , Various Locations from Tower Dr to Hughes Rd	2020	16		
Vision	I-49 Connector	2030	402		
Vision	E Broussard Rd –widen to 4 lane boulevard Johnston St to Kaliste Saloom Rd	2040	492		
Vision	Southcity Parkway- New 4 lane Boulevard +bridge Robley Dr to Vincent Rd	2030	477	405	404
Vision	Youngsville Hwy - widen to 4 lane boulevard –Amb. Caffery Pkwy South Ext to Youngsville Pkwy	2040	406		
Vision	Pinhook Rd- widen to 3 lane boulevard from Southpark Rd to S Morgan	2040	427		
Vision	Ambassador Caffery North- new four lane boulevard Renaud to I-49	2040	441	421	
Vision	N University Ave-widen to 4 lane boulevard Renaud to I-49	2040	484	485	493

Figure 10 Existing and Commited Projects

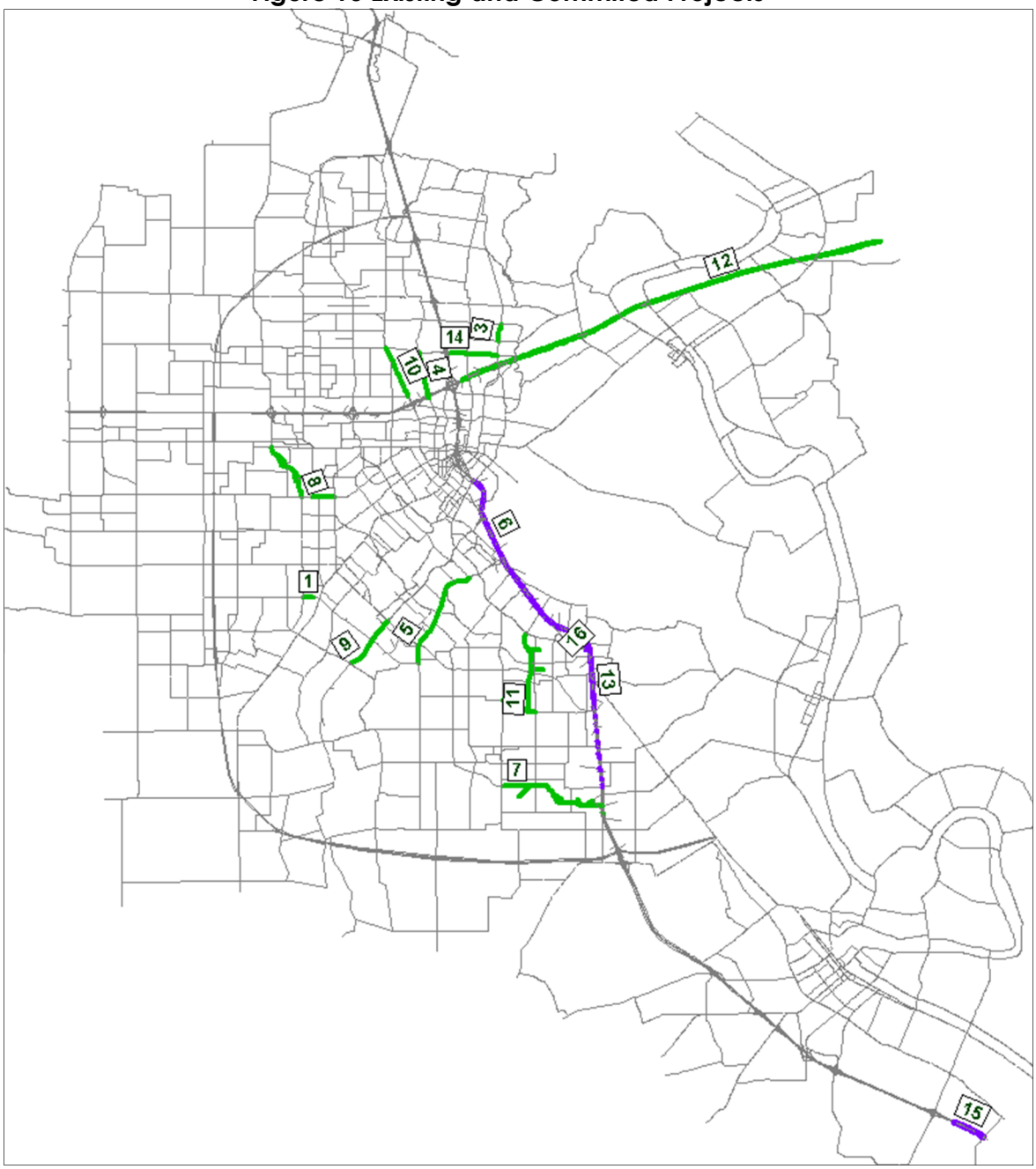
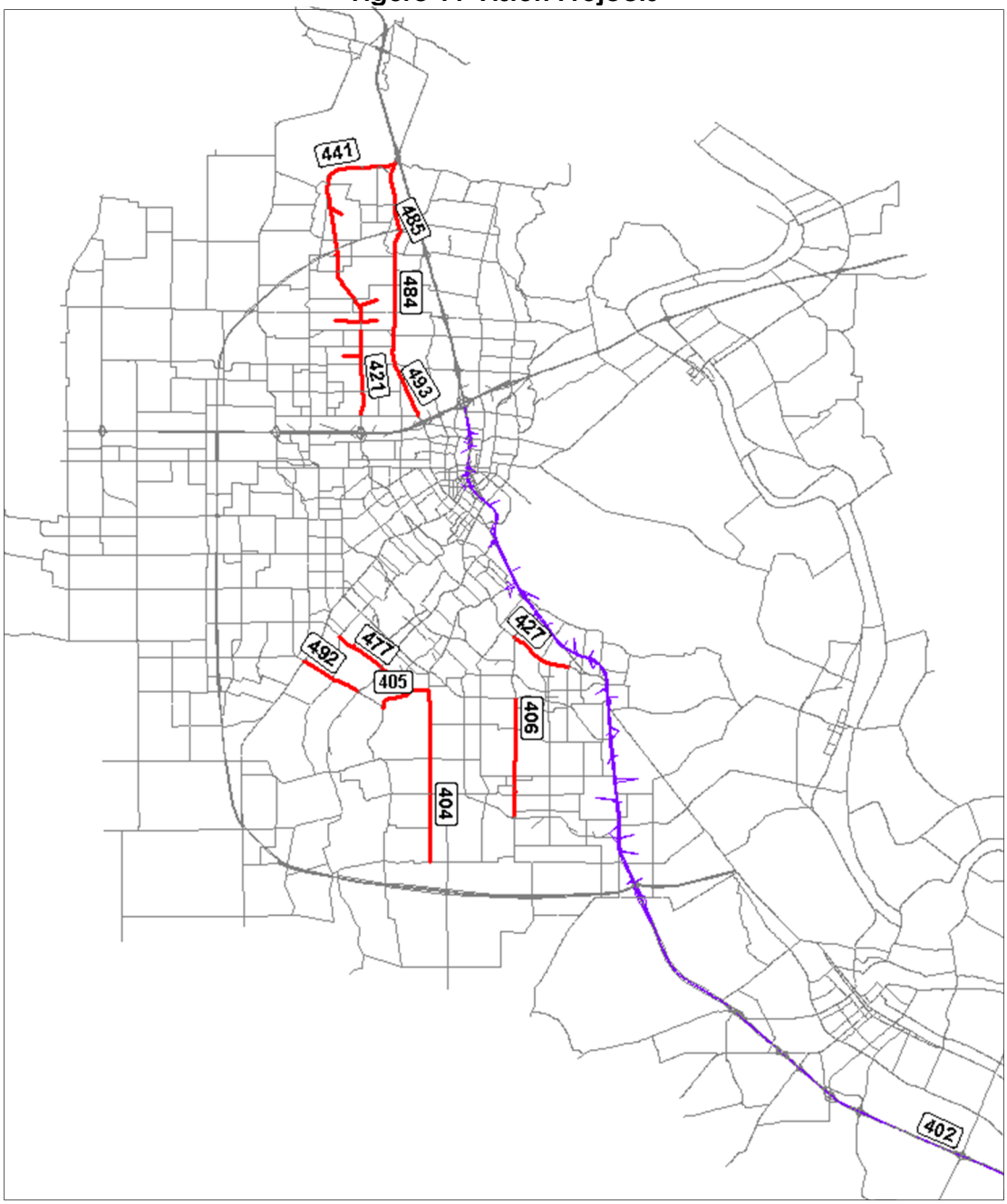


Figure 11 Vision Projects

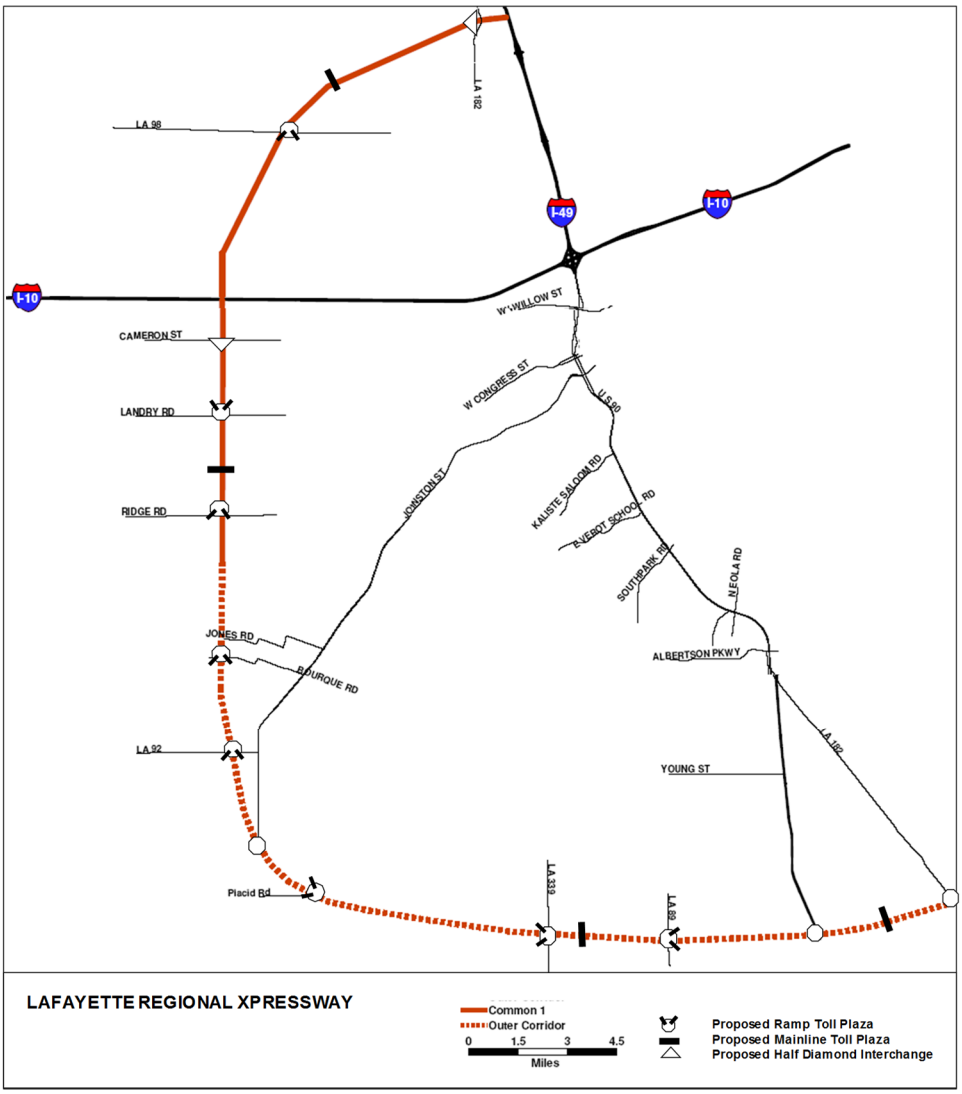


4.0 TRAFFIC AND TOLL REVENUE ANALYSIS

4.1 TOLL COLLECTION SYSTEM

There are several toll collection system options that are available: either a closed barrier system or a true on-off closed system. For assumed cost savings of infrastructure, a Closed Barrier System with Electronic Toll Collection (ETC) at all pay points was selected for analysis. In a closed barrier system, a series of mainline and ramp toll collection facilities are constructed. At each of the toll plaza locations, a fixed toll amount (for a given vehicle class) is collected, regardless of points of entry or exit. All tolls are collected at the fixed collection locations. Ramp tolls are typically provided to "close the system" and prohibit "toll-free" travel between mainline barriers. The selected tolling locations are shown in Figure 12.

Figure 12 Proposed Paypoints



4.2 TOLL RATES

For purposes of this analysis, the study assumes that the end–to-end tolls on the LRX will be at a rate of $0.13 per mile in 2016 dollars. That assumption is consistent with the toll rate assumed at $0.12 in the 2010 traffic and revenue study, grown at the consumer price index for urban consumers in the south.

The rate favorably compares with the toll rates on other existing toll facilities with similar suburban character. Figure 13 provides information on toll rates charged for various facilities around the country. The proposed toll schedule for the LRX scenarios is presented in the Table 8.

Figure 13 Comparable Toll Rates

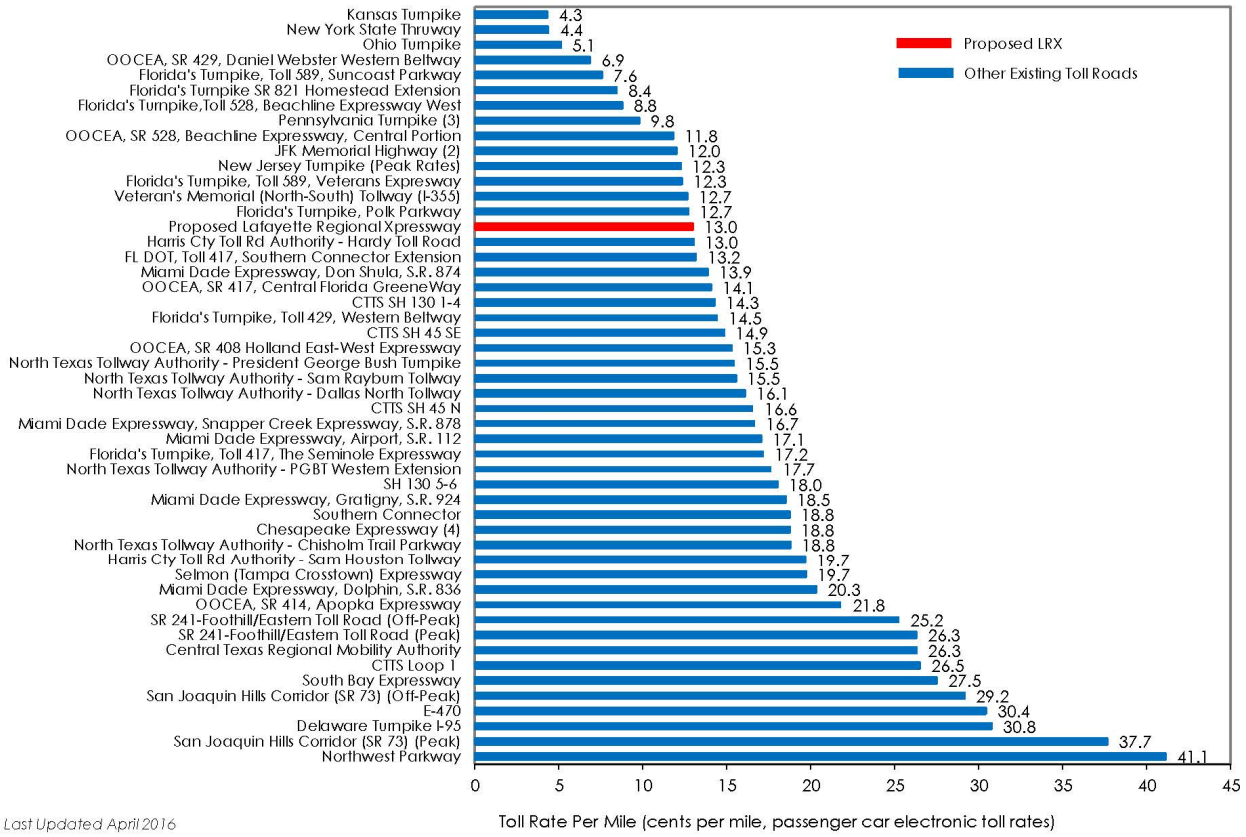
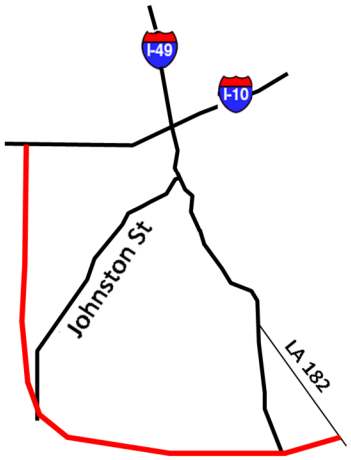
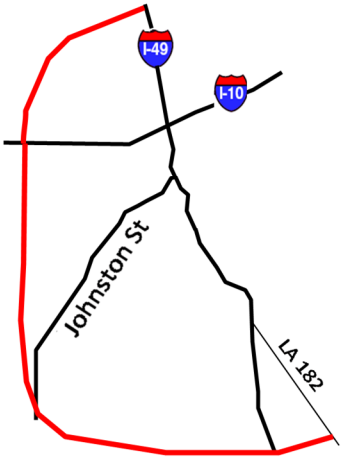


Table 8 Proposed Toll Schedule Scenario 1 and Scenario 2

Location of Toll Plaza	Scenario 1	Scenario 2
ML North	na	1.25
LA 98 Gloria Switch Rd	na	0.50
Landry Rd	0.50	0.50
ML West	1.50	1.50
LA 342	1.00	1.00
Bourque Rd	0.50	0.50
LA 92	0.25	0.25
LA 339	1.00	1.00
ML South	1.50	1.50
LA 89	0.50	0.50
ML South 2	0.50	0.50
Scenario Schematic Legend: Lafayette Regional Xpressway Toll Facility Regional Highways		

4.3 ASSUMPTIONS

4.3.1 Toll Technology

As discussed earlier, toll collection is assumed to be fully electronic. The closed system, which does not allow for any free trips, would collect tolls via either sticker tags read by roadside/overhead readers and by pay-by-plate photo. Pay-by-plate user's vehicles would be read by camera equipment overhead and plates would be matched to DMV addresses. An invoice would be sent to the owner of the vehicle. Pay-by-plate toll amount would be set at a rate which compensates fully for any revenue leakage that might occur such as no readable image and non-payment.

4.3.2 Truck Tolls

Truck tolls proposed follow traditional practice and use the formula below.

Truck toll = passenger car toll * (N-1), where N is the number of truck axles

Thus, for example, a 5 axle truck's toll would be 4 times that of a passenger car. It is estimated that the average size truck passing through the study, has 3.8 axles and therefore the average toll for trucks would be 2.8 times the passenger car toll.

4.3.3 Annualization

The annualization factor is the number by which the average weekday traffic (from the model) is multiplied to obtain an annual volume. If no traffic were traveling on the weekend, the average factor would be 260 (52 weeks times 5 days). If the average weekday traffic was the same as the average weekend day the factor would be 365. Since weekend travel is lower than weekday travel, congestion is lower and the average trip type is less oriented to business and travel to/from work, the reasonable value of 300 has been used for annualization.

4.3.4 Ramp up

When preparing a traffic and revenue forecast using modeling information, adjustments must be made in the early years of the project to account for the behavioral changes to occur. The model, by design, assumes that all population and employment increases are in place, all improvements are completed and that drivers make informed decisions regarding travel being aware of all the choices and options. Ramp-up accounts for the reality that it takes time for users to become aware of the road, break old travel habits and become aware of the potential habits of the road. Map data bases also need updating so that unfamiliar drivers are aware of the option. Additionally, users need to get accustomed to paying a toll, especially in an area where tolls do not currently exist.

The Lafayette Xpressway has been assumed to have a five year ramp up period. This is consistent with data Stantec has available from a variety of toll road projects nationwide. The table below summarizes the factors that have been applied.

Table 9 Summary of Ramp up factors

Year from Opening	Factor
1	0.41
2	0.63
3	0.80
4	0.93
5	1.00

4.4 TRAFFIC AND TOLL REVENUE

Traffic and toll revenue estimates have been prepared for the two toll scenarios and are presented below, using the factors determined earlier. Traffic volumes in the intermediate years from 2030 to 2040 are calculated by interpolating between the model results for 2030 and 2040. The average annual growth rate (AAGR) of traffic was estimated to be 1.5% for 2040-2050. Beyond 2050 growth is estimated to be 1% for the period 2050 to 2060.

Revenues were calculated by multiplying average weekday traffic projected at toll locations by the effective toll for each location and then totaled over the entire project corridor. Transactions and revenue are then adjusted to account for the presence of commercial vehicles, which will pay higher tolls. An annualization factor of 300 was used to convert average weekday traffic and revenues to annual traffic and revenues.

4.4.1 Scenario 1

Scenario 1 includes a portion of Common 1 Segment south of I-10 and the Outer Corridor for a total length of 26.7mi. Under this scenario the Lafayette Regional Xpressway is the only toll facility in the study area. The estimated year for start of operations is 2030. Figure 14 presents the forecasted tolled traffic volumes for the years 2030 and 2040 at all pay points along the alignment. Figure 15 shows the results for Scenario 1 alignment but assuming toll-free operations. The toll traffic retained in the toll scenario versus the traffic attracted in a toll free scenario is 58% in 2030 and 62% in 2040 when comparing the total traffic volumes at pay points. Table 10 shows details by ramp and plaza location for the tolled and toll-free assignment results from the two modeled years 2030 and 2040. As congestion in the region grows in 2040 more drivers are willing to pay a toll and save time by opting to use the LRX.

The average annual toll transactions and revenue are presented in Table 11 for the period from 2030 through 2050. As shown in the table, revenues are estimated to increase from $10.9 million in 2030 to $29.6 million in 2034, the last year of ramp up effects.

Table 10 Traffic Volumes for Scenario 1 Toll-Free and Tolled

Scenario 1	2030		2040	
	Toll-Free	Tolled	Toll-Free	Tolled
Landry Rd	6.1	4.2	5.9	4.3
ML West	43.2	21.9	52.2	28.5
LA 342	4.8	3.3	4.8	4.6
Bourque Rd	2.4	1.2	4.5	1.9
LA 92	2.8	4.1	4.4	6.0
Placid Rd	0.8	0.3	1.2	0.4
LA 339	2.2	1.6	3.2	2.1
ML South	32.9	17.1	39.7	22.3
LA 89	3.5	2.2	4.2	2.6
ML South 2	14.1	9.3	15.7	11.3
Total	112.9	65.1	135.7	84.1
		58%		62%

Figure 14 Scenario 1 Forecasted Tolled Daily Traffic Volumes for 2030 and 2040

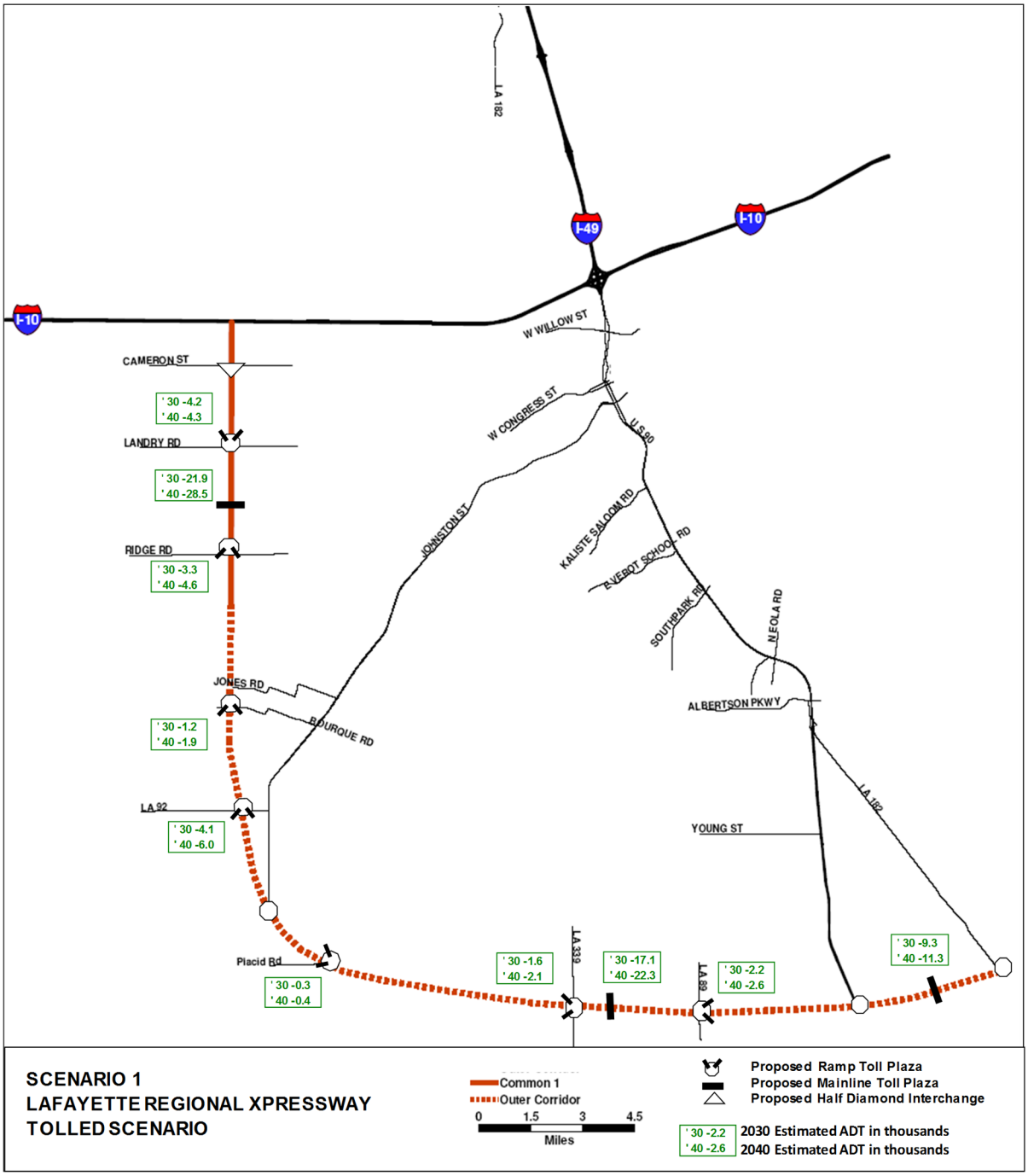


Figure 15 Scenario 1 Forecasted Toll-Free Daily Traffic Volumes for 2030 and 2040

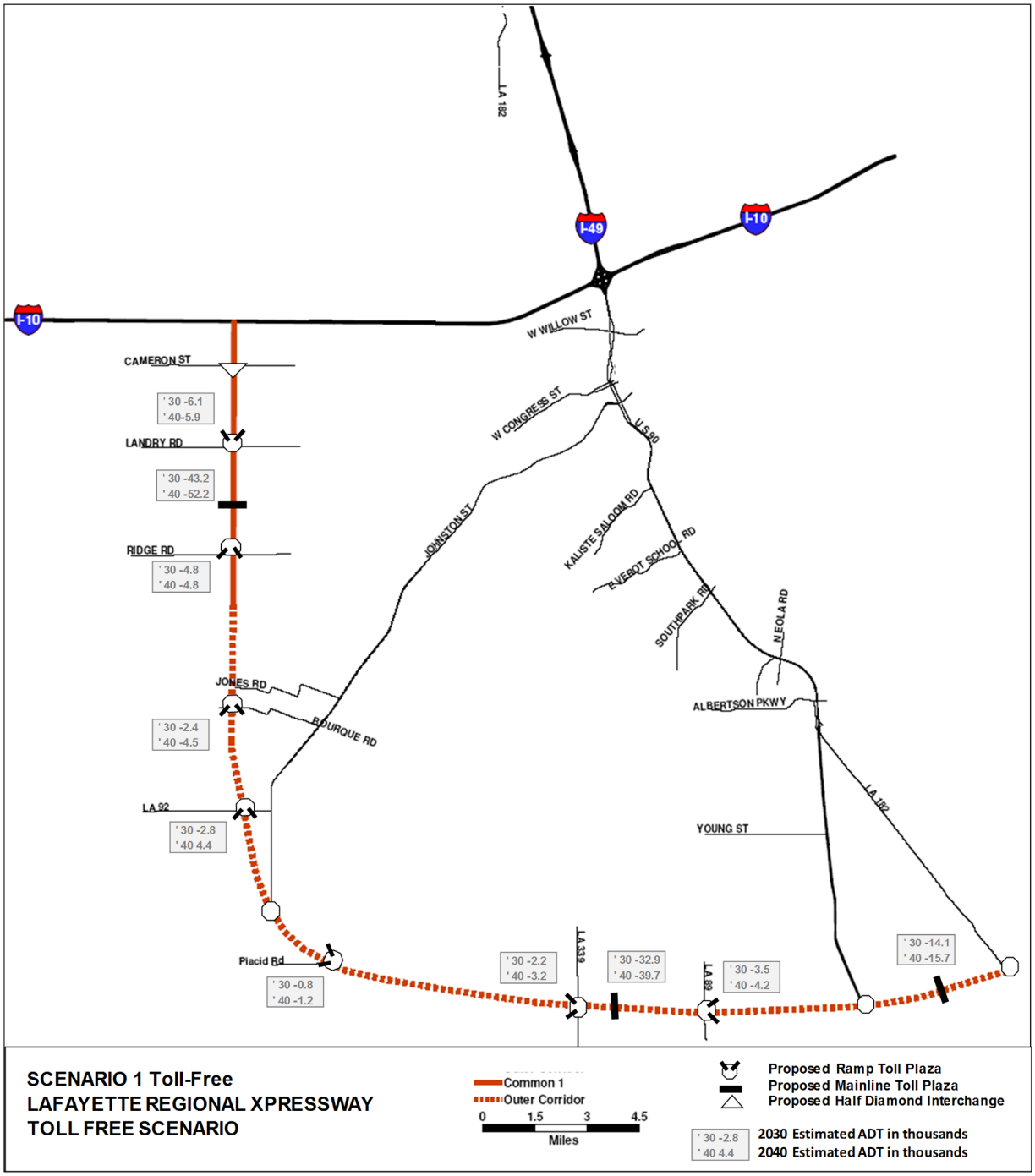


Table 11 Scenario 1 Revenue Projections 2030-2050

Year	PC Toll Transactions	CV Toll Transactions	Total Toll Transactions	PC Toll Revenue	CV Toll Revenue	Total Toll Revenue
2030	7,437,992	571,829	8,009,822	$8,986,169	$1,948,640	$10,934,810
2031	11,729,852	897,260	12,627,111	$14,180,478	$3,058,370	$17,238,848
2032	15,286,993	1,163,490	16,450,483	$18,492,682	$3,966,807	$22,459,489
2033	18,238,753	1,188,112	16,877,362	$18,991,510	$4,051,751	$23,043,261
2034	20,127,615	1,516,570	21,644,184	$24,379,742	$5,173,141	$29,552,883
2035	20,657,246	1,548,664	22,205,910	$25,037,370	$5,283,917	$30,321,286
2036	21,200,814	1,581,438	22,782,252	$25,712,736	$5,397,064	$31,109,801
2037	21,758,685	1,614,906	23,373,591	$26,406,320	$5,512,635	$31,918,955
2038	22,331,236	1,649,082	23,980,318	$27,118,614	$5,630,680	$32,749,294
2039	22,918,853	1,683,980	24,602,833	$27,850,120	$5,751,253	$33,601,373
2040	23,521,932	1,719,618	25,241,550	$28,601,359	$5,874,408	$34,475,767
2041	23,874,761	1,745,412	25,620,173	$29,030,379	$5,962,524	$34,992,903
2042	24,232,882	1,771,593	26,004,476	$29,465,835	$6,051,962	$35,517,797
2043	24,596,376	1,798,167	26,394,543	$29,907,823	$6,142,741	$36,050,564
2044	24,965,321	1,825,140	26,790,461	$30,356,440	$6,234,882	$36,591,322
2045	25,339,801	1,852,517	27,192,318	$30,811,787	$6,328,406	$37,140,192
2046	25,719,898	1,880,305	27,600,203	$31,273,963	$6,423,332	$37,697,295
2047	26,105,697	1,908,509	28,014,206	$31,743,073	$6,519,682	$38,262,755
2048	26,497,282	1,937,137	28,434,419	$32,219,219	$6,617,477	$38,836,696
2049	26,894,741	1,966,194	28,860,935	$32,702,507	$6,716,739	$39,419,246
2050	27,298,162	1,995,687	29,293,849	$33,193,045	$6,817,490	$40,010,535

4.4.2 Scenario 2

Scenario 2 includes the full length of the Common 1 Segment and the Outer Corridor for a total length of 36.2 miles. The estimated year for start of operations for the full LRX alignment is 2030.Figure 16 presents the forecasted traffic volumes for the years 2030 and 2040 at all pay points along the alignment. Figure 15 shows the results for Scenario 1 assuming toll-free operations. The toll traffic retained in the toll scenario versus the traffic attracted in a toll-free scenario is 61% in 2030 and 66% in 2040 when comparing the total traffic volumes at pay points. Table 12 shows details by ramp and plaza location for the tolled and toll-free assignment results from the two modeled years 2030 and 2040. As congestion in the region grows in 2040 more drivers are willing to pay a toll and save time by opting to use the LRX.

The average annual toll transactions and revenue are presented in Table 13 for the period from 2030 through 2050. As shown in the table, revenues are estimated to increase from $12.7 million in 2030 to $34.2 million in 2034 the last year of ramp up effects.

Table 12 Traffic Volumes for Scenario 2 Toll-Free and Tolled

Scenario 2	2030		2040	
	Toll-Free	Tolled	Toll-Free	Tolled
ML North	22.7	12.6	23.0	14.9
LA 98 Gloria S	10.3	7.2	12.5	8.8
Landry Rd	7.4	6.6	6.7	6.3
ML West	49.9	28.5	58.8	36.6
LA 342	4.9	2.7	5.0	4.2
Bourque Rd	2.4	1.1	4.5	1.9
LA 92	2.7	4.0	4.0	5.8
Placid Rd	0.9	0.3	1.3	0.4
LA 339	2.4	1.7	3.5	2.2
ML South	32.8	18.1	40.5	24.0
LA 89	3.4	2.1	4.0	2.5
ML South 2	14.2	9.1	15.7	11.1
	154	94	180	119
		61%		66%

Figure 16 Scenario 2 Forecasted Tolled Daily Traffic Volumes for 2030 and 2040

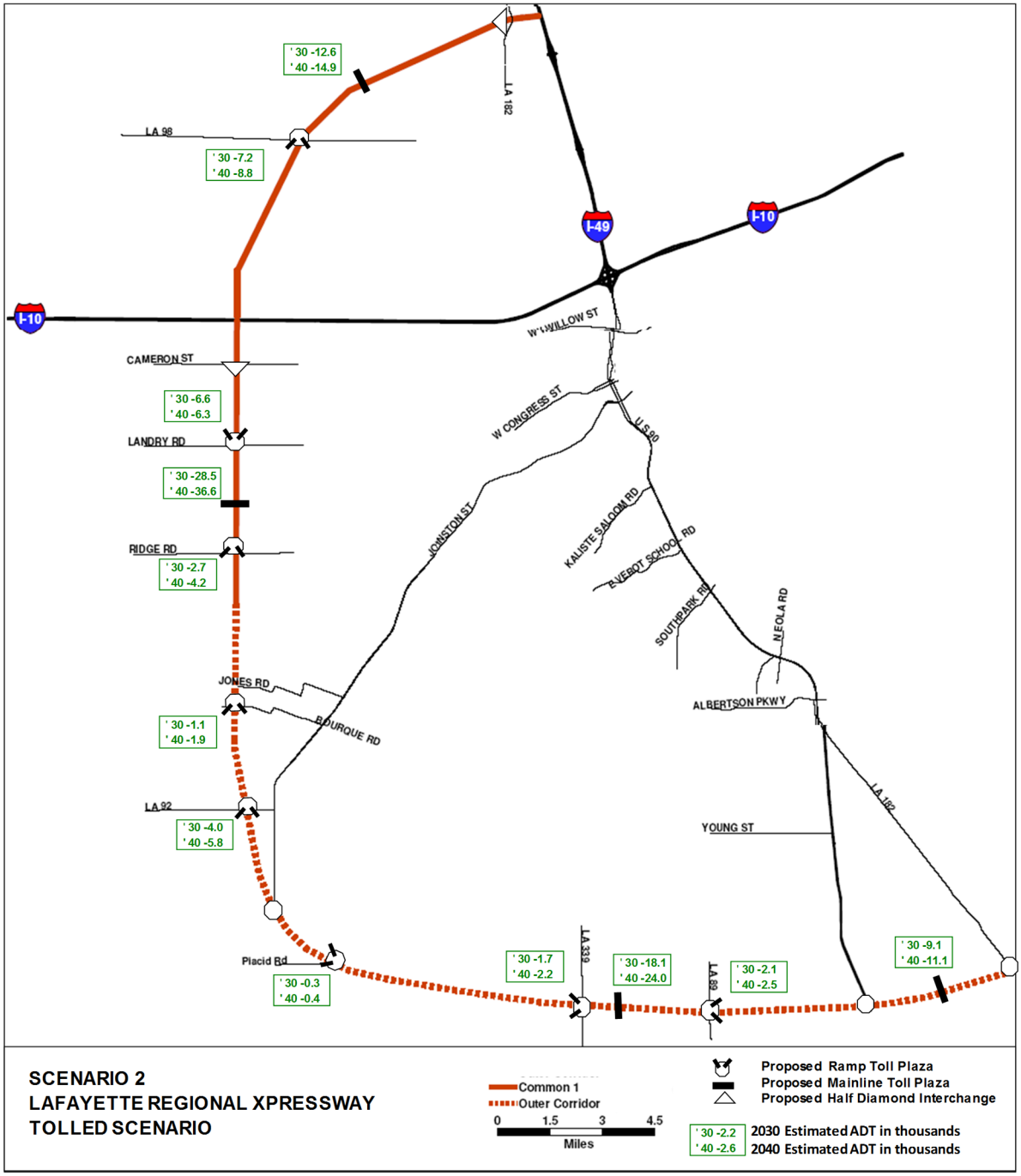


Figure 17 Scenario 2 Forecasted Toll-Free Daily Traffic Volumes for 2030 and 2040

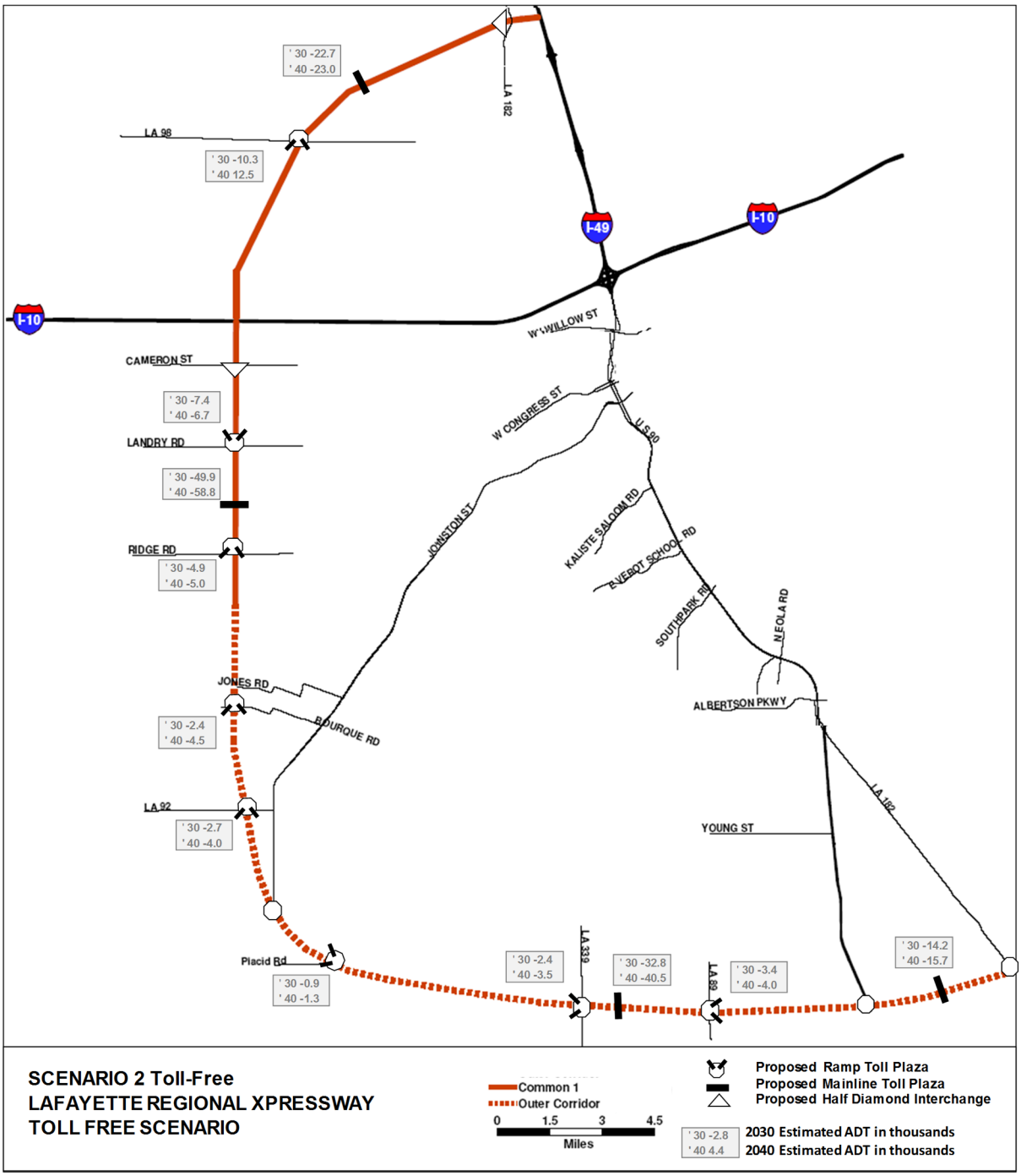


Table 13 Scenario 2 Revenue Projections 2030-2050

Year	PC Toll Transactions	CV Toll Transactions	Total Toll Transactions	PC Toll Revenue	CV Toll Revenue	Total Toll Revenue
2030	10,966,018	623,349	11,589,368	$10,532,334	$2,135,661	$12,667,995
2031	17,247,407	978,267	18,225,674	$16,611,678	$3,353,927	$19,965,605
2032	22,417,718	1,268,750	23,686,469	$21,651,855	$4,352,789	$26,004,644
2033	26,674,883	1,295,822	24,241,958	$22,224,259	$4,448,690	$26,672,949
2034	29,358,762	1,654,339	31,013,101	$28,514,744	$5,683,380	$34,198,124
2035	30,050,790	1,689,639	31,740,429	$29,268,580	$5,808,596	$35,077,177
2036	30,759,131	1,725,691	32,484,822	$30,042,345	$5,936,572	$35,978,917
2037	31,484,168	1,762,513	33,246,681	$30,836,566	$6,067,367	$36,903,933
2038	32,226,295	1,800,121	34,026,415	$31,651,784	$6,201,044	$37,852,828
2039	32,985,915	1,838,530	34,824,445	$32,488,553	$6,337,666	$38,826,219
2040	33,763,440	1,877,760	35,641,200	$33,347,444	$6,477,298	$39,824,741
2041	34,269,892	1,905,926	36,175,818	$33,847,655	$6,574,457	$40,422,113
2042	34,783,940	1,934,515	36,718,455	$34,355,370	$6,673,074	$41,028,444
2043	35,305,699	1,963,533	37,269,232	$34,870,701	$6,773,170	$41,643,871
2044	35,835,285	1,992,986	37,828,271	$35,393,761	$6,874,768	$42,268,529
2045	36,372,814	2,022,881	38,395,695	$35,924,668	$6,977,889	$42,902,557
2046	36,918,406	2,053,224	38,971,630	$36,463,538	$7,082,558	$43,546,095
2047	37,472,182	2,084,022	39,556,205	$37,010,491	$7,188,796	$44,199,287
2048	38,034,265	2,115,283	40,149,548	$37,565,648	$7,296,628	$44,862,276
2049	38,604,779	2,147,012	40,751,791	$38,129,133	$7,406,077	$45,535,210
2050	39,183,851	2,179,217	41,363,068	$38,701,070	$7,517,168	$46,218,238

APPENDIX A - LEVEL OF SERVICE ANALYSES

As part of the modeling effort, and associated with the ongoing environmental impact studies, comparative levels of service for representative links within the study area have been estimated. The model's volume to capacity outputs has formed the bases for estimating level of service.

Ten major corridors and the proposed toll facility in the study area were evaluated for level of service under the no build alternative and each of the build scenarios. Along these corridors major intersections were selected. For these intersections the volume to capacity ratio at the approach links (direct output from the model) was tabulated. The corridors selected have facility class urban arterial with the exception of the proposed toll roads which would function as freeways. The following criteria were used to convert the model volume to capacity ratios into level of service.

A	B	C	D	E	F
<0.33	<0.62	<0.81	<1.13	<1.34	>=1.34

The Lafayette Regional Model network has arterials coded with capacities varying from 550 vehicles per hour per lane up to 637 vehicles per hour per lane depending on type of median and the provision of left turning lanes. These capacities are generally lower than capacities at LOS E used in the modeling practice. The criteria listed above accounts for the low capacities coded in the network.

Summary of Level of Service (LOS) 2030 No Build and Scenarios 1 and 2 Tolled and Toll-Free

Corridor	Selected Major Intersections in the Corridor	LOS at approches to major intersections	No Build	Scenario1 LRX Tolled	Scenario2 LRX Tolled
			NB/EB	NB/EB	SB/WB
Johnston St	6	LOS E or F	4	3	3
		LOS D	7	7	7
		LOS C or better	1	2	2
University Ave.	7	LOS E or F	1	1	1
		LOS D	4	4	4
		LOS C or better	9	9	9
Ambassador Caffery Pkwy.	7	LOS E or F	7	7	7
		LOS D	7	7	6
		LOS C or better	0	0	1
Kaliste Saloom Rd.	4	LOS E or F	3	2	2
		LOS D	3	4	4
		LOS C or better	2	2	2
Fielfdspan Rd. (LA724)	5	LOS E or F	1	1	0
		LOS D	4	0	1
		LOS C or better	5	9	9
Milton Rd.	4	LOS E or F	0	1	1
		LOS D	3	1	1
		LOS C or better	5	6	6
Verot School Rd.	5	LOS E or F	0	0	0
		LOS D	6	5	5
		LOS C or better	4	5	5
LA 93	6	LOS E or F	3	3	3
		LOS D	5	5	4
		LOS C or better	4	4	5
LA 89	5	LOS E or F	1	1	1
		LOS D	2	2	2
		LOS C or better	7	7	7
US 90/ I-49	11	LOS E or F	7	6	4
		LOS D	9	9	9
		LOS C or better	6	7	9
Lafayette Regional Expressway(1)	5-8	LOS E or F	0	0	0
		LOS D	0	0	0
		LOS C or better	0	12	16

NOTE:

(1) For Scenario 1 five locations along the Lafayette Regional Xpressway were evaluted for level of service and for Scenario 2 eight locations were evaluted.

12 LOS estimate for toll road segments