

2009

Tennessee Tollway Act of 2007: Status Report



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Tennessee Department of Transportation

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Executive Summary

With the signing of the Tennessee Tollway Act of 2007 on June 28, 2007, the Tennessee Department of Transportation (TDOT) was charged with exploring tolling as a possible alternative financing mechanism for the construction and operation of highway and bridge projects. The Tennessee Tollway Act was passed in response to discussions with the Legislature regarding alternative methods of transportation financing as well as possible projects that might be candidates for some form of toll financing.

The legislation authorized TDOT to study and present to the General Assembly candidates for pilot toll projects. The legislation provided for the possible selection of one “highway” toll project and one “bridge” toll project. The legislation also required TDOT to hold public meetings across the state on the concept of tolling. Three such meetings were held in 2008. Two had very low attendance and one (Knoxville) had more attendance because of interest in a local project.

Eight potential tolling candidate projects have been identified and studies of such have been undertaken. Four of the projects are bridges and four are highway projects:

Bridge Projects

- Mississippi River Bridge – Memphis Area
- Tennessee River Bridge – Chattanooga/Hamilton County
- Tennessee River Bridge – Benton/Houston Counties
- Hadley Bend Connector – Nashville Area

Highway Projects

- State Route 475 (Knoxville Parkway) Knoxville Area
- State Route 374 Extension– Clarksville/Montgomery County
- Intra-County Parkway – Sevier County
- Mack Hatcher Parkway Extension – Franklin Area/Williamson County

The technical methodology used to evaluate these projects incorporates three components: traffic and revenue studies; conceptual engineering analysis; and, conceptual feasibility analysis.

Additional review criteria included: tolling only new construction; availability of alternative free facilities; public support; local elected official support; consistency with planning and environmental requirements; and, use of existing state bond financing mechanisms and TDOT management

No single project fully met all criteria. The Mississippi River Bridge project will require significant additional non-toll revenues and TDOT plans further discussion with local officials. The Tennessee River Bridge project in Hamilton County has a slightly better toll potential and, like the Mississippi River Bridge project, further discussion with local officials is recommended. The Tennessee River Bridge project in Benton and Houston counties is not recommended as feasible. The Hadley Bend Connector project, while possibly feasible, is not recommended for further study given public and legislative opposition.

The Knoxville Parkway project is technically feasible as a toll project but not recommended for further study given local opposition and the lack of consistent local official support. The State Route 374 project in Montgomery County is not recommended for further study given a lack of needed toll revenues. The Intra-County Parkway project in Sevier County is also not recommended for further study given a lack of needed toll revenues. The analysis of the Mack Hatcher Parkway Extension project in Williamson County is just underway and no results are expected until April, 2009.

Six issues for further discussion emerged during the course of these studies:

1. A “project feasibility” approach to tolling using current criteria has led to mixed results.
2. The criteria that only new facilities be tolled may need to be revisited.
3. Tolling as a “programmatic” way to raise transportation revenues may need to be examined.
4. “Congestion pricing” (including “HOT” lanes) warrants further study.
5. While not a part of this analysis, “public-private partnerships” are an additional option in the structuring of tolling projects.
6. Continuing public education about tolling technology and rationale is essential.

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Introduction

With the signing of the Tennessee Tollway Act of 2007 on June 28, 2007, the Tennessee Department of Transportation (TDOT) was charged with exploring tolling as a possible alternative financing mechanism for the construction and operation of highway and bridge projects. The Tennessee Tollway Act was passed in response to discussions with the legislature regarding alternative methods of transportation financing as well as possible projects that might be candidates for some form of toll financing.

The Tennessee Tollway Act of 2007 required that TDOT report back to the General Assembly by January 1, 2009, on the status of implementing the requirements incorporated in the legislation. This report has been prepared in compliance with those requirements and serves as a communication with the General Assembly regarding the feasibility of tolling transportation projects in Tennessee. Following a discussion of the statewide public meetings held to discuss tolling as a financing strategy, the report provides both a brief description of the various candidate projects explored for tolling feasibility and a review of the current assessment of these projects as serious tolling candidates. The report concludes with a summary of possible next steps that includes both specific projects as well as programmatic options for the development of a comprehensive statewide tolling approach to continue the study of projects recommended for further study and to identify additional candidate projects.

Tennessee Tollway Act of 2007: Status

TDOT was authorized to explore tolling with the signing of the Tennessee Tollway Act of 2007. The legislation required statewide public meetings on the use of tolling as a possible solution to address funding shortfalls for needed transportation projects. The legislation also authorized TDOT to study candidate tolling projects and recommend to the General Assembly up to two pilot toll projects, one being a highway project and the other being a bridge project.

Statewide Public Involvement Meetings

In addition to reviewing specific projects, the legislation required communication with the public on the general topic of tolling. To fulfill this requirement, TDOT held three statewide public meetings in July, 2008. The purpose of these public meetings (held in Memphis, Nashville, and Knoxville) was to present an overview of tolling as an alternative funding mechanism and to gather public comments. The format of the meetings was a formal presentation by TDOT staff, including the Commissioner, and tolling experts retained by the department. The presentation discussed an overview of why Tennessee is exploring tolling, current tolling practices in the United States, and a brief overview of what the project specific toll feasibility studies would entail. A copy of the agenda used for these meetings is included in Appendix 1.

Each public meeting was advertised in accordance with the Department's established public meeting guidelines. Public meeting notices were placed in local newspapers notifying the public of the upcoming meetings. The advertisements also included instructions on how and where questions and/or comments regarding tolling could be submitted.

The public turnout for the Memphis and Nashville public meetings was extremely low. The Knoxville meeting, however, attracted a larger audience of approximately 60-70 citizens. The higher public turnout at this meeting was due, in part, to the interest of local residents in the proposed Knoxville Parkway project. While the meeting had been advertised in same manner as the Memphis and Nashville meetings, local media and citizens viewed the meeting as an opportunity to discuss the Knoxville Parkway project, a candidate tolling project. The majority of the public comments received during and after this meeting dealt directly with the Knoxville Parkway and not with tolling in general.

Consideration of specific candidate tolling projects

Technical Approach

To assist in determining which of the candidate projects should move forward in the pilot tolling program, TDOT utilized a “toll feasibility study” approach, an industry standard recommended by both the state’s bond financial advisor, Scott-Balice Associates, and TDOT’s tolling consultants, Wilbur Smith Associates. Toll feasibility studies are a standard industry practice for examining how a candidate project would operate as a tolled facility and to estimate how much of the project costs could be paid for by toll revenues. Toll feasibility studies consist of three components: 1) Traffic and Revenue Studies, 2) Conceptual Engineering Analysis, and 3) Conceptual Financial Feasibility Analysis. These analyses are explained in further detail below. Toll feasibility studies have been or are currently being conducted on each of the pilot toll project candidates.

1. Traffic and Revenue Studies

Traffic and Revenue studies are used to estimate how much revenue could be generated on a proposed toll facility given assumed or estimated levels of traffic. In general, there are three levels of traffic and revenue studies: sketch, preliminary, and investment grade.

The purpose of the Sketch level traffic and revenue study is to examine whether a proposed toll facility warrants further in-depth analysis. Sketch level traffic and revenue studies are an initial review of proposed toll facilities thus the term “sketch,” referring to the high-level nature of these planning studies. The inputs into a Sketch level traffic and revenue study come from existing reputable sources such as Metropolitan/Transportation Planning Organization models, Census, Bureau of Labor Statistics and TDOT traffic data. These inputs assist in forming basic assumptions for the operation of the proposed toll facility, such as how much traffic volume would occur at certain times and basic socioeconomic information regarding the potential users of the toll facility. Toll rates are also assumed, but at general levels congruent with similar projects. These studies typically take about two to four months to complete. A decision is usually made at this point whether a project would continue to the next level of study.

Preliminary traffic and revenue studies, contrary to the popular definition of “preliminary,” are the second level of analysis of toll facilities. During the Preliminary level of analysis, more “robust” data from existing sources as mentioned above are used to refine the traffic forecasts and revenue estimates developed during the previous Sketch level traffic and revenue study. At this stage, there is some level of original data collection in terms of socioeconomic data and traffic counts although the data sources

from the Sketch level of analysis are still relied upon heavily. These studies typically take longer than the Sketch level analysis due to the heightened detail of study and typically require six to eight months to complete. As with the previous level of study, a decision is made at this point regarding continuation to the next, and final, level of study.

The third tier of analysis is a more comprehensive analysis called an Investment Grade traffic and revenue study. This level of study further refines the traffic and revenue data to ensure bond investor confidence in a project's financing. Investment Grade traffic and revenue studies have an extremely short shelf-life of approximately three to six months after they have been finalized. This is due to the specificity of the forecasts and high day-to-day variance in the municipal bond market. The interest rates, repayment term, and bonding capacity are all based upon the data included in the investment grade traffic and revenue study.

For the purposes of the toll feasibility studies discussed in this report, TDOT completed Sketch level traffic and revenue studies for the proposed toll projects.

2. Conceptual Engineering Analysis

A Conceptual Engineering Analysis assists in determining the anticipated cost of a proposed project. This process includes the identification of potential corridors and alignments; estimation of project costs utilizing the Department's cost estimation worksheets, and/or other cost information as available; and, "windshield" surveys of proposed alternatives to identify any potential issues that could affect alignments or costs. This analysis does not include a specific environmental or right-of-way review, although some sensitivity to environmental and right-of-way factors is included to assist in estimating the total project cost.

3. Conceptual Financial Feasibility Analysis

A Conceptual Financial Feasibility Analysis matches the results of the Traffic and Revenue Analysis with the Conceptual Engineering Analysis. This high-level analysis is the first effort to estimate whether the projected toll revenues would provide coverage for the associated construction, operations and maintenance and debt service costs of the proposed project. Also part of this analysis is the estimation of "bonding capacity" for each proposed project. Bonding capacity is essentially an estimation of the maximum amount of money, or "credit," an investor will extend to a bond issuer. Due to the market basis of bond finance, ensuring investor confidence in a project is a high priority. Projects that exhibit a high probability of being financially feasible tend to earn better bond ratings (which are similar in function to an individual's personal consumer credit score).

Additional Review Criteria

In addition to the study of candidate tolling projects using the methodology described above, additional review criteria were examined for each candidate project. These criteria were based on the requirements of the legislation as passed by the General Assembly and the legislative intent expressed during the hearings leading to the passage of the legislation.

1. Tolling only new construction

Any recommended project will toll only roadways and/or bridges that are constructed as a part of the toll project. Roadways or bridges previously constructed and currently carrying traffic will not be tolled.

2. Availability of alternative facilities

Any recommended project will not prevent alternative free facilities from being available to motorists and truckers. While such alternative free facilities may certainly require more travel time and pass through areas of greater congestion, the toll facility cannot become a virtual monopoly for access to origins and destinations within the study area.

3. Public Support

Any recommended project will have at least a modest level of public support for implementation. As a “pilot” for one of Tennessee’s first tolling projects, major public opposition to the project itself would make it extremely difficult to focus on establishing an effective tolling system when project issues would become confused with the implementation of tolling procedures. While this criterion certainly does not assume there will be no project opposition, it simply states that a highly controversial project would not make a strong tolling project pilot.

4. Local Elected Official Support

As with the previous criteria, project support by local elected officials is a significant factor in recommending a pilot tolling project. In Tennessee’s urban areas, this includes the Metropolitan/Transportation Planning Organization. A successful tolling pilot will require continuing advocacy by both state and local officials. Given no history of tolling in our state, the toll pilot(s) will need continuing support from a majority of elected officials in the project area, as well as education of citizens as to the benefits of a tolling strategy.

5. Consistency with Planning and Environmental Requirements

The tolling legislation specifically requires that candidate tolling projects be developed consistent with existing transportation project planning and environmental requirements. Projects, in order to proceed, will be included in the Long Range Transportation Plan. Assumptions used in both the Traffic and Revenue Studies as well as the Conceptual Engineering Analysis may not differ from those used in routine transportation projects.

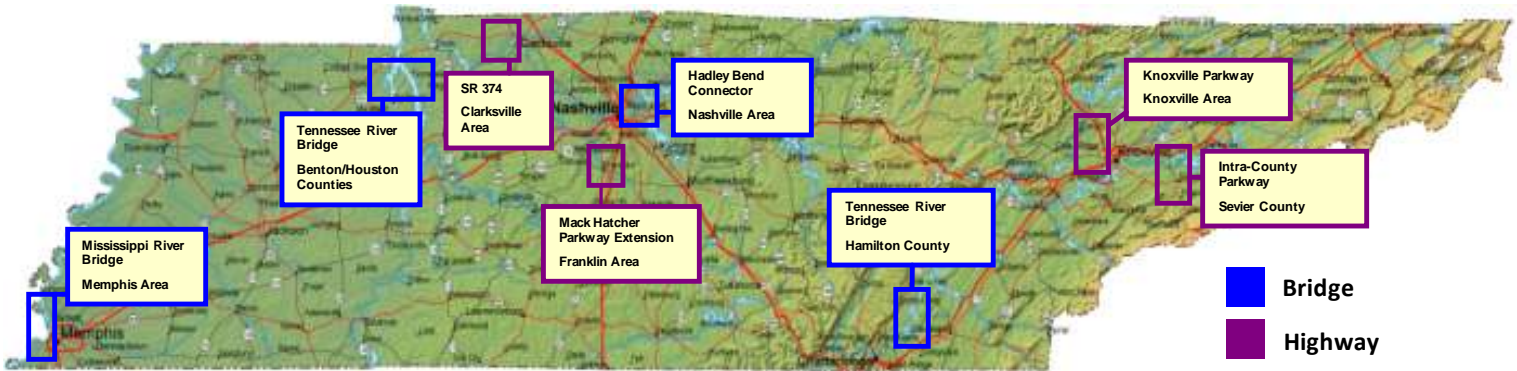
6. Utilization of Existing State Bond Financing Mechanisms and TDOT Management

A number of tolling financing and management models exist across the United States. The Tennessee tolling legislation is very specific in describing the model to be used with any pilot tolling project. Bonds will be issued using the existing state bonding process, managed by the State Finance Board. Management of the tolling project will be under the direction of the Commissioner of TDOT. Review of all the candidate projects assumes bond financing and project management will be done in this manner.

Candidate Pilot Toll Project Descriptions and Analysis

The following sections of the report are descriptions of the various projects considered for tolling under the Tennessee Tollway Act. The listings are divided into the Bridge Projects and the Highway Projects for simplicity and include analysis of the results of the Toll Feasibility Studies completed to date.

Figure 1: Statewide View of All Candidate Toll Projects



Bridge Projects

Mississippi River Bridge – Memphis Area

Initial Planning Studies and Background

Congress set aside federal funding in 2003 from the National Corridor Planning and Development Program to initiate a study of potential locations for a new crossing of the Mississippi River near Memphis, Tennessee. This study, the Mississippi River Crossing Feasibility and Location Study, was completed in June 2006 and identified potential locations for a new bridge. This study did not explore tolling as part of the financing method for the new bridge crossing. Through several screening processes, this feasibility and location study identified five alternative crossings of the Mississippi River in the Memphis, Tennessee area.

A new Mississippi River Bridge crossing is included in the Memphis Metropolitan Planning Organization's Long Range Transportation Plan (LRTP) and includes a \$1.48 billion associated cost. Specific alternatives are not included in the LRTP for this project.

Alternatives Studied

Each of the five alternatives includes a crossing of the Mississippi River, and connections to the Interstate highway system east and west of the river, that would complement the two existing Interstate bridges in the Memphis area. Each of the alternatives would also add capacity and increased mobility for cross-river traffic in the Memphis area. These five alternatives have been the basis for the initial toll study and are displayed in the following map. A detailed description of each alternative is included in the Appendix 2 of this report.

Figure 2: Mississippi River Bridge Study Map & Alternatives



Study Methodology

TDOT utilized the above mentioned toll feasibility study methodology consisting of a sketch level traffic and revenue study, conceptual engineering analysis and conceptual financial feasibility analysis to assess whether the alternatives identified in the 2006 study would support tolling this project. The alternatives identified by the original study were carried over into this toll feasibility study. Many environmental and engineering issues had been previously revealed through the earlier screening process.

Although the initial desire was to study the bridge as a multi-modal facility, including the Class I Railroads in the Memphis area, discussions led to little interest from the railroads in participating in the development of a toll bridge across the Mississippi River in Shelby County. Therefore, the toll analysis did not consider rail traffic as a part of the conceptual feasibility study for this project.

Public Involvement

A public meeting on the proposed Mississippi River Bridge was held on July 28, 2008 in Memphis. The purpose of this meeting was to provide an overview of the study being conducted and to elicit input from the public. The level of turnout at the meeting was around 40-50 people. Many concerns and questions dealt with the alternatives' location and the need for a new river crossing.

A stakeholders' meeting was held in September to discuss the study and project. Several key stakeholders were invited to attend: Arkansas Highway and Transportation Department, Mississippi Department of Transportation, TDOT, Memphis Regional Chamber of Commerce, City of Memphis, and Shelby County.

TDOT intends to hold another stakeholder meeting to discuss the results of this toll feasibility study in early 2009.

Local Elected Official Participation

Development of the toll feasibility study was conducted in close coordination with the Memphis Metropolitan Planning Organization and the Memphis Regional Chamber of Commerce. A formal letter from John Dudas, Chair of the Memphis Regional Chamber Major Roads Committee, was sent on October 9, 2007 encouraging TDOT to study a multi-modal bridge over the Mississippi River as a toll project. No formal opposition to the project from local elected officials has been expressed.

Review of Results

The results of the sketch level toll feasibility study indicate that a substantial amount of non-toll revenues would be required to cover the project costs. Table 1 below shows the total projected costs and the percent of the project cost that can be funded through tolls.

Table 1: Mississippi River Bridge Toll Feasibility Study Results (in millions)

Study Title	Project Cost*	Percent Toll Funded
Mississippi River Bridge		
Alternative 1	\$1,004.50	34.20%
Alternative 2	\$798.90	22.10%
Alternative 3	\$708.50	49.00%
Alternative 4	\$657.80	56.60%
Alternative 5	\$656.20	69.00%

* **Project Cost** consists of Construction and Engineering costs only.

Suggested Next Steps

The Department is continuing its coordination with the Memphis Metropolitan Planning Organization to fully examine the information that will be included in the Mississippi River Bridge Sketch Level Toll Feasibility Study Final Report due to TDOT in February 2009. It is TDOT's intention to provide the local agencies, officials and citizens with an accurate and appropriate report upon which further study of a Mississippi River Bridge can be based. TDOT also intends to hold a stakeholders' meeting in early 2009 to discuss the toll feasibility study with local leaders in the Memphis regional area. A decision on how to proceed will be made following those discussions.

Tennessee River Bridge – Chattanooga/Hamilton County

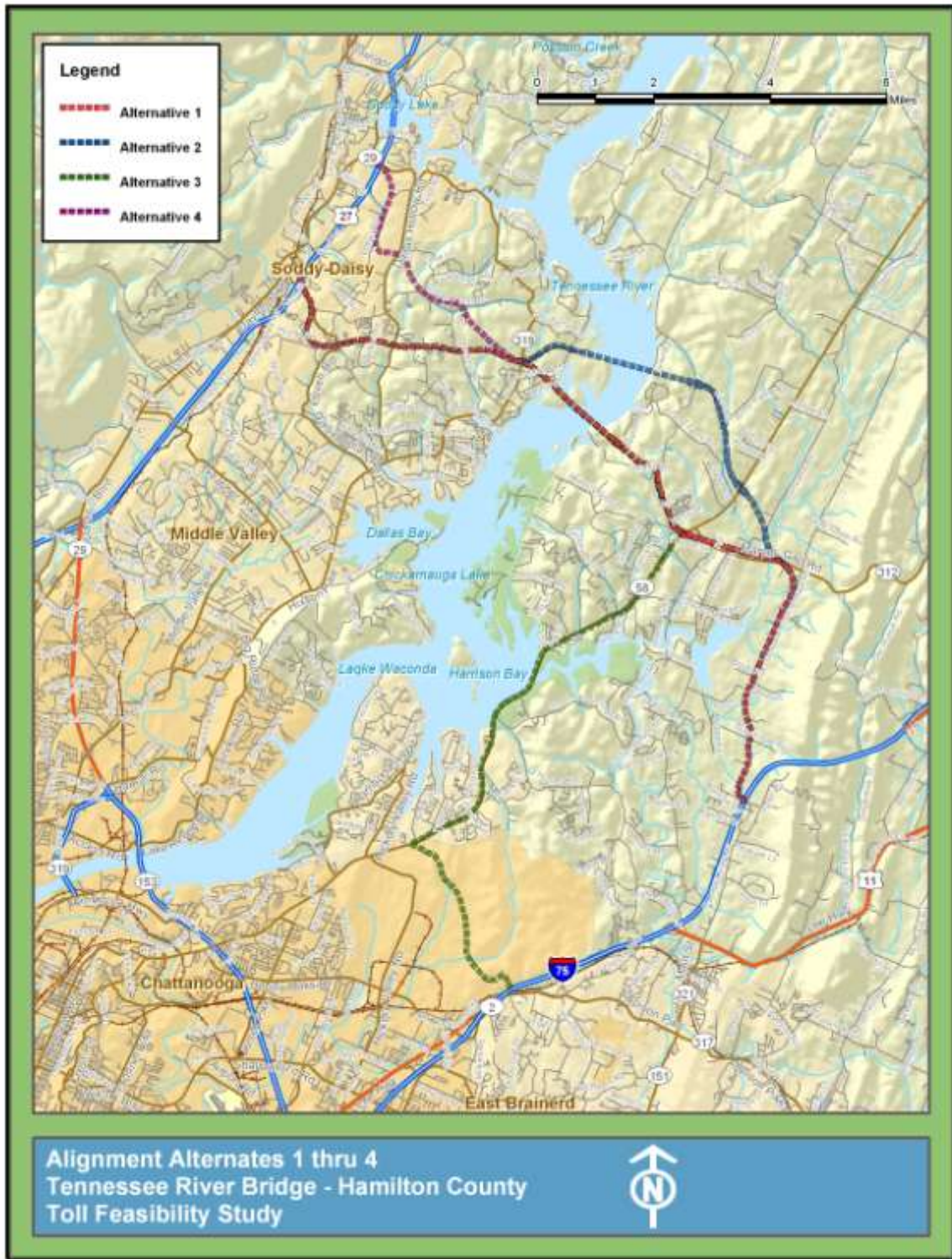
Initial Planning Studies and Background

On June 12, 2007, a House Joint Resolution was signed, thereby creating the Hamilton County Bridge Committee. The purpose of this committee was to evaluate the feasibility of constructing a new Tennessee River Bridge in northern Hamilton County to connect the communities of Soddy-Daisy and Harrison. TDOT was directed to assist in this evaluation process and identification of alternatives. An initial planning study, the Tennessee River Bridge Feasibility Study, was completed in January 2008 by the Department's Long Range Planning Division. On April 25, 2008 the Tennessee River Bridge Committee met and requested that TDOT study four alternative alignments to cross the Tennessee River Bridge generally between US 27 in Soddy-Daisy and Harrison. The first three alternatives are set forth in the January 2008 TDOT study. The fourth alternative, referred to by the Committee as Revised Route 4, was outlined in a May 2, 2008 letter to TDOT.

Alternatives Studied

The four Tennessee River Bridge alternatives included in this analysis run generally between Soddy-Daisy to Harrison, as shown in Figure 3 below. A detailed description of each alternative is included in Appendix 2 of this report.

Figure 3: Tennessee River Bridge (Hamilton County) Alternatives



Study Methodology

Even though two studies had been completed prior to the start of this toll feasibility study, this project did not have the advantage of more refined alternatives or the identification of potential environmental issues. The study alternatives used in this toll feasibility study, which were revised by the Hamilton County Bridge Committee in May 2008, were taken from TDOT's January 2008 planning study. Further coordination with the Chattanooga-Hamilton County/North Georgia Transportation Planning Organization (CHCNGA-TPO) has also occurred to ensure that the data and information used in this study are valid.

The recently announced Volkswagen manufacturing facility is still being incorporated into the CHCNGA-TPO's regional models and therefore the impacts of the facility and associated parts suppliers are not included in this study.

Public Involvement

Two public meetings have been held regarding the proposed Tennessee River Bridge project. The first meeting was held in Soddy-Daisy in early September 2008. The public turnout at this meeting was approximately 140-150 people including local officials, state legislators, and members of the media. The second public meeting was held in Ooltewah in early November 2008. This meeting was held at the request of citizens who attended the previous meeting. For both meetings, the questions, comments, and concerns raised focused on the location of the proposed bridge, proposed toll rate, and how much time motorists could expect to save by using the toll bridge. Several citizens also asked when they would be able to use the bridge (how soon it could be built).

Local Elected Official Participation

The Hamilton County Mayor, Engineer, and a County District Commissioner are members of the Hamilton County Bridge Committee and have contributed to the development of this project. The CHCNGA-TPO has been supportive of TDOT's feasibility study efforts as well.

Review of Results

As seen in many new toll facilities, the proposed Tennessee River Bridge in northern Hamilton County would require some level of non-toll revenue to cover the project's costs. However, the initial analysis shows a substantial amount of the projected costs could be covered with toll revenues.

TDOT recognizes that once the appropriate data on the traffic projections from the Volkswagen manufacturing facility are available, the feasibility of the Tennessee River Bridge project could change. The timing of the release of the Volkswagen information may coincide with the next level of analysis and the impacts of such would be addressed then.

Table 2: Tennessee River Bridge Toll Feasibility Study Results (in millions)

Study Title	Project Cost*	Percent Toll Funded
Tennessee River Bridge (Hamilton County)		
Alternative 1	\$304.90	77.50%
Alternative 2	\$369.70	57.90%
Alternative 3	\$235.60	71.90%
Alternative 4	\$433.40	54.50%

* *Project Cost* consists of Construction and Engineering costs only.

Suggested Next Steps

TDOT will receive the final Sketch toll conceptual feasibility study in February 2009. Based on the potentially favorable results of this study as mentioned above, the Department has decided to move Alternatives 1 and 3 forward to the next level of analysis. This Preliminary level of analysis will include more in-depth traffic and revenue assessments and more refined financial analysis, including additional traffic and economic information on the Volkswagen manufacturing facility.

Tennessee River Bridge – Benton/Houston County

Initial Planning Studies and Background

An initial planning study was conducted in 1987 on a proposed bridge over the Tennessee River that would connect State Route 69A in Benton County to State Route 147 in Houston County. The Long Range Planning Division of TDOT updated the 1987 study in 2008.

Additionally, ferry operations were reinstated in November 2007. The total revenue between the reinstatement date and August 2008 was \$6,343. Total ridership for this period was just over 13,000 vehicles with approximately 42 vehicles per day. The total revenue is considerably less than the total ridership due to the ferry's "pay once, unlimited daily travel" policy.

Alternatives Studied

The study area for this proposed Tennessee River Bridge lies between the communities of Big Sandy and McKinnon. The proposed alignment would begin at State Route 69A near Big Sandy and continue across the Tennessee River to the western terminus of State Route 147 near McKinnon.

Figure 4: Tennessee River Bridge (Benton/Houston Counties) Study Map



Study Methodology

Although previous studies have been completed on this proposed bridge, no previous toll studies have been completed on this bridge. The existing ferry service information and data were used as a basis for the analysis of toll feasibility. TDOT used the statewide travel demand model to estimate traffic volumes for the year 2030.

Public Involvement

No formal public involvement has been conducted to date for the proposed Tennessee River Bridge between Benton and Houston Counties.

Local Elected Official Participation

Although several letters expressing support for a bridge in this location were received in 1987, the letters did not address tolling the proposed bridge. Additionally, TDOT has not received any recent indication of support or opposition from the local governments.

Review of Results

The model assumed that the proposed bridge would be built as a non-toll facility. The projected volume of 750 vehicles per day was generated by the model if the bridge existed today. The model estimated that 1,250 vehicles would use the bridge in 2030. The high project cost of approximately \$100 million combined with the low projected traffic volumes indicate that this project may not be the best application of tolling for Tennessee.

Suggested Next Steps

Due to the declining population and low traffic volumes projected for this study area, TDOT's toll consultants suggested that this project not be further pursued as a toll facility.

Hadley Bend Connector – Nashville Area

Initial Planning Studies and Background

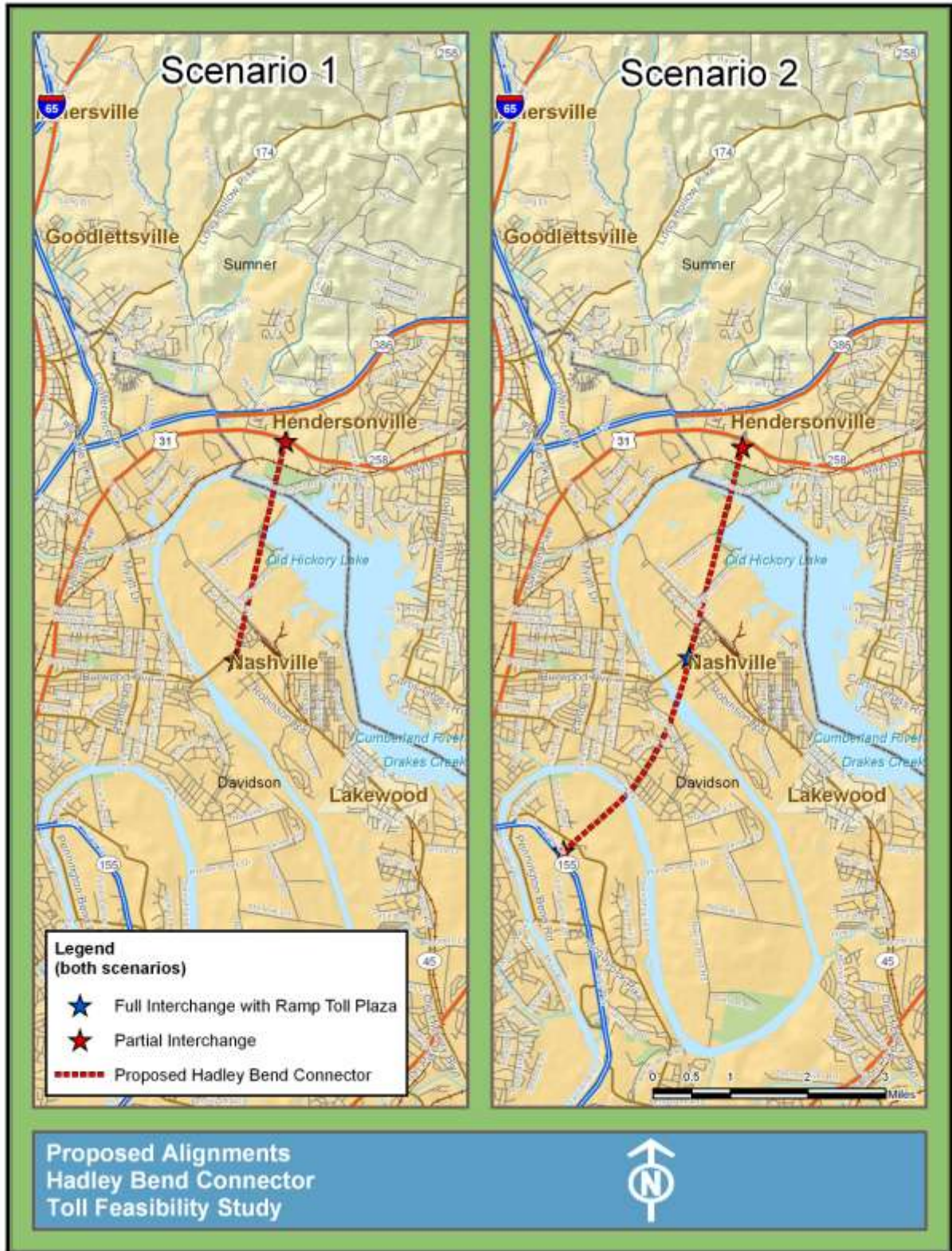
A proposed Hadley Bend Connector has been in Metropolitan Nashville/Davidson County's Major Thoroughfare Plan for many years and initial planning studies began on this project at TDOT in 1994. The project is included in the current Nashville Area MPO's 2030 Long Range Transportation Plan as a bridge over the Cumberland River offering a north-south connection from SR 45 (Old Hickory Boulevard) in Davidson County to SR 386 (Vietnam Veterans Boulevard) in Sumner County. Currently, the only north-south connection over the Cumberland River into and out of Sumner County is SR 109, which connects Sumner and Wilson Counties.

Alternatives Studied

The Hadley Bend Connector Sketch toll feasibility study considered the alignment listed in the Nashville Area MPO's Long Range Transportation Plan as stated above as Scenario 1 and also added a second configuration extending the roadway further south to SR 155 (Briley Parkway), completing a bypass for I-65 trips to southeast Nashville, and other destinations further south as seen in Scenario 2. Scenario 2 is

not included in the current Nashville MPO 2030 Long Range Transportation Plan. A detailed description of each alternative is included in Appendix 2 of this report.

Figure 5: Hadley Bend Connector Alternatives



Study Methodology

The previously described toll feasibility study methodology was used to assess the Hadley Bend Connector and complete the Sketch level conceptual feasibility report, which was completed in April 2007.

Public Involvement

Three public meetings were held to discuss the proposed Hadley Bend Connector study. The first two meetings were held in April 2008 in Sumner and Davidson Counties. The third meeting was held in August 2008 in Sumner County. The purpose of these meetings was to provide an overview of the toll feasibility study and provide an opportunity for input from the public. The Sumner County meetings were generally positive towards the facility and tolling, while the Davidson County meetings were overwhelmingly negative towards the toll project.

Local Elected Official Participation

Senator Diane Black has been a strong champion of the Hadley Bend Connector and TDOT has received support for this project from other legislative delegates in Sumner County. There was no support for this project from the Davidson County delegation. No position towards this project has been received from Sumner or Davidson County local governments.

Review of Results

Two scenarios were studied for this project with one connecting Sumner County to the Old Hickory area (Scenario 1) and the other connecting Sumner County to Nashville (Scenario 2). Scenario 2 has emerged as having a higher percent of project costs being funded through tolls.

Table 3: Hadley Bend Connector Toll Feasibility Study Results (in millions)

Study Title	Project Cost*	Percent Toll Funded
Hadley Bend Connector		
Scenario 1	\$145.90	46.30%
Scenario 2	\$266.50	66.20%

* *Project Cost* consists of Construction and Engineering costs only.

Suggested Next Steps

The Department decided not to pursue additional studies due to mixed public opinion as well as the lack of legislative support for the project, especially in the Davidson County portion of the project area. TDOT will support any future study on the proposed Hadley Bend Connector conducted by the Nashville Area MPO. It is recommended that the Hadley Bend Connector be included in the Nashville Area MPO's Northeast Corridor Major Improvements Study to better evaluate the project in the regional transportation context.

Highway Projects

State Route 475 (Knoxville Parkway) – Knoxville Area

Initial Planning Studies and Background

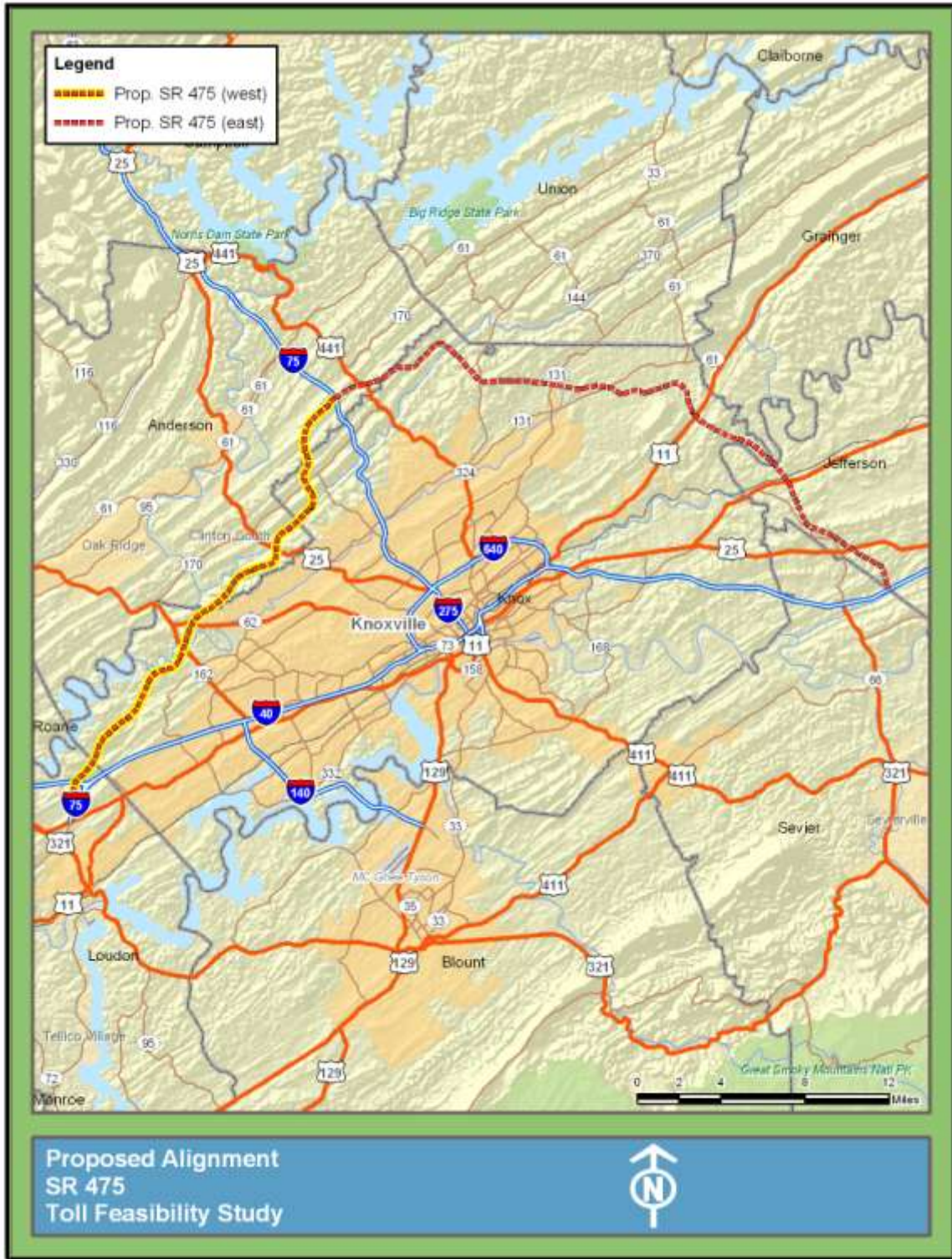
The proposed State Route 475/Knoxville Parkway project has been identified through the long range planning process at the Knoxville Transportation Planning Organization (Knoxville TPO) as a future corridor of interest. State Route 475/Knoxville Parkway would provide significant access improvements for the regional transportation network and would provide an alternate route for I-75 traffic desiring to bypass Knoxville and the traffic congestion along I-40 and I-40/I-75 during the peak weekday travel periods.

An Environmental Impact Statement (EIS) is being conducted for the western portion of this project (from I-75/I-40 west of Knoxville to I-75 north of Knoxville) but no further study has been completed for the eastern segment (between I-75 and I-40 to the east of Knoxville). Given the long and intense controversy over this corridor, TDOT and the Knoxville TPO have worked with a diverse group of stakeholders to refine the alignment and design for the western portion of SR 475 through a Context Sensitive Solutions process beginning in 2003.

Alternatives Studied

In general, State Route 475/Knoxville Parkway is proposed as approximately 59 miles in length starting from its western terminus at a new, major interchange with I-40/I-75 west of Knoxville in Loudon County to its eastern terminus at I-40 (east of Knoxville) near mile-marker 409. Although the western and eastern segments of this project are in different levels of project development, SR 475 was examined in its entirety rather than by segment for the purposes of this toll feasibility study.

Figure 6: State Route 475/Knoxville Parkway Study Map



Study Methodology

The previously described methodology for a Sketch level toll feasibility traffic and revenue and conceptual feasibility studies was used to evaluate the SR 475/Knoxville Parkway project as a toll facility. However, the eastern portion of SR 475 between Interstate 75 (north of Knoxville) and Interstate 40 (east of Knoxville) was not included in the Knoxville Regional Travel Demand Model's highway network and trip tables. Although traffic analysis was completed based on other sources for the eastern portion, any future studies would need to gather more specific travel information to validate results. The conceptual feasibility study from which these results were generated was completed in April 2007.

Public Involvement

No formal public involvement has been conducted to date for the proposed SR 475 toll project. As previously mentioned, numerous comments of opposition to the SR 475 project were expressed at the statewide tolling public meeting held in July 2008. Numerous letters to TDOT and in the press have expressed opposition to SR 475 as a toll facility as well as opposition to the project itself.

Local Elected Official Participation

The Knoxville TPO passed a resolution on February 27, 2008 requesting TDOT to update the toll feasibility study completed in 2007 to confirm the feasibility of SR 475/Knoxville Parkway. Additionally, Knox County and Anderson County Boards of Commissioners passed resolutions in the summer of 2008 to express their opposition to tolling the SR 475/Knoxville Parkway.

Review of Results

The conceptual feasibility results indicate the project could be financed mostly through toll revenues, although additional study and project cost updates would need to be done before any final conclusions are made.

Table 4: State Route 475 Toll Feasibility Study Results (in millions)

Study	Project Cost*	Percent Toll Funded
State Route 475 (Knoxville Parkway)	\$556.20	86.40%

* *Project Cost* consists of Construction and Engineering costs only.

Suggested Next Steps

Due to strong public opposition to the project as well as lack of strong support from local elected officials, the Department has decided not to continue to study the SR/475Knoxville Parkway as a toll facility and did not update the current Sketch level toll feasibility study (April 2008) from which these results were derived. However, if further study is requested by the General Assembly or unified support from local leadership emerges on this issue, TDOT will proceed with a more thorough preliminary level of study on the feasibility of SR 475/ Knoxville Parkway as a toll facility.

State Route 374 Extension – Clarksville/Montgomery County

Initial Planning Studies and Background

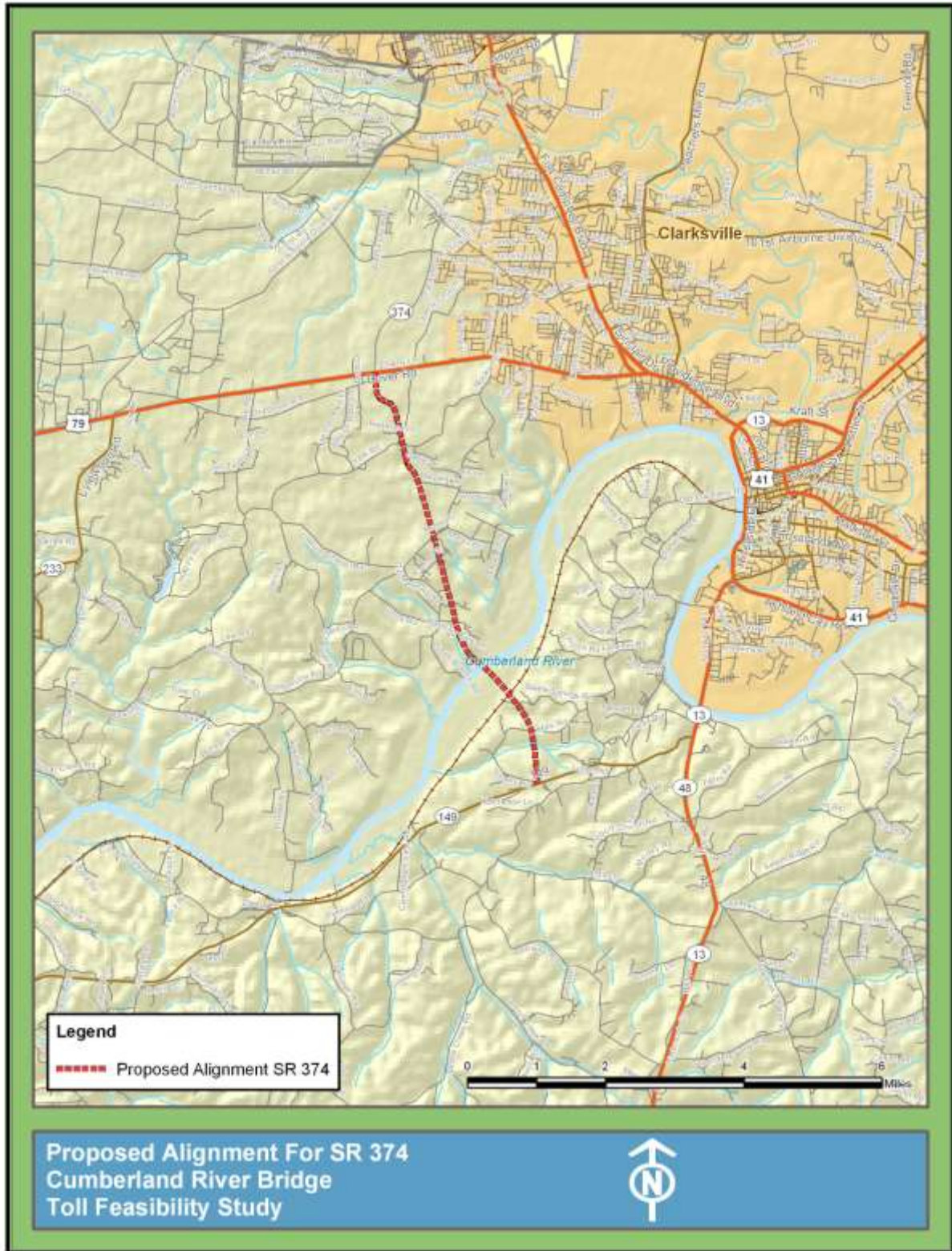
The approximately seven (7) mile extension of SR 374 in Clarksville was identified through the regional transportation plan of the Clarksville Urbanized Area Metropolitan Planning Organization (Clarksville MPO) in 1995 and is included in the current Clarksville MPO Long Range Plan. The request to study this project as toll facility came from the Clarksville MPO in April 2008 as a way to fund the completion of the roadway. To date, this project has been funded for preliminary engineering through TDOT's established project development process and the Draft Environmental Impact Statement (EIS) is expected to be completed in early 2009.

An Advance Planning Report (APR) was completed in 1996 for the section of SR 374 between SR 75 and Zinc Plant Road. This proposed project is included in the Clarksville MPO Long Range Plan, Major Route Plan, and Corridor/Economic Growth Plans. The Clarksville MPO requested that TDOT consider the SR 374 Extension as a toll project in April 2008, spurring this toll feasibility study.

Alternatives Studied

SR 374 Extension is proposed as a cross-town arterial road that will serve as a loop around Clarksville. The location studied in the toll feasibility report was established through the Draft EIS and would require a bridge over the Cumberland River and the CSX Railroad.

Figure 7: State Route 374 Study Map



Study Methodology

The previously described methodology for toll feasibility traffic and revenue and conceptual feasibility studies was used to determine toll feasibility for the SR 374 Extension project.

Public Involvement

Corridor and design public meetings were held in 1997, 2000, and 2002, but these meetings did not address tolling the proposed SR 374 Extension. There has been no formal public involvement to date regarding the tolling study of the SR 374 Extension.

Local Elected Official Participation

The County and City Mayors have expressed support for exploring tolling options for the proposed SR 374 Extension through a request from the Clarksville MPO in April 2008.

Review of Results

The toll feasibility study determined that this project would generate insufficient traffic and revenue to fund itself as a toll facility. A substantial amount of revenue from sources other than tolls would be required to cover the total projected costs. Further, the at-grade intersection configurations would preclude almost all controlled access, some degree of which is essential for effective toll facilities.

Table 5: State Route 374 Extension Toll Feasibility Study Results (in millions)

Study	Project Cost*	Percent Toll Funded
State Route 374 Extension	\$145.20	19.40%

* *Project Cost* consists of Construction and Engineering costs only.

Suggested Next Steps

The final SR 374 Extension toll conceptual feasibility report will be completed in February 2009, however based on the preliminary results and due to the substantial amount of funding that will be needed from sources other than tolls, TDOT's consultant does not recommend that this project move forward as a potential tolled facility.

Intra-County Parkway – Sevier County

Initial Planning Studies and Background

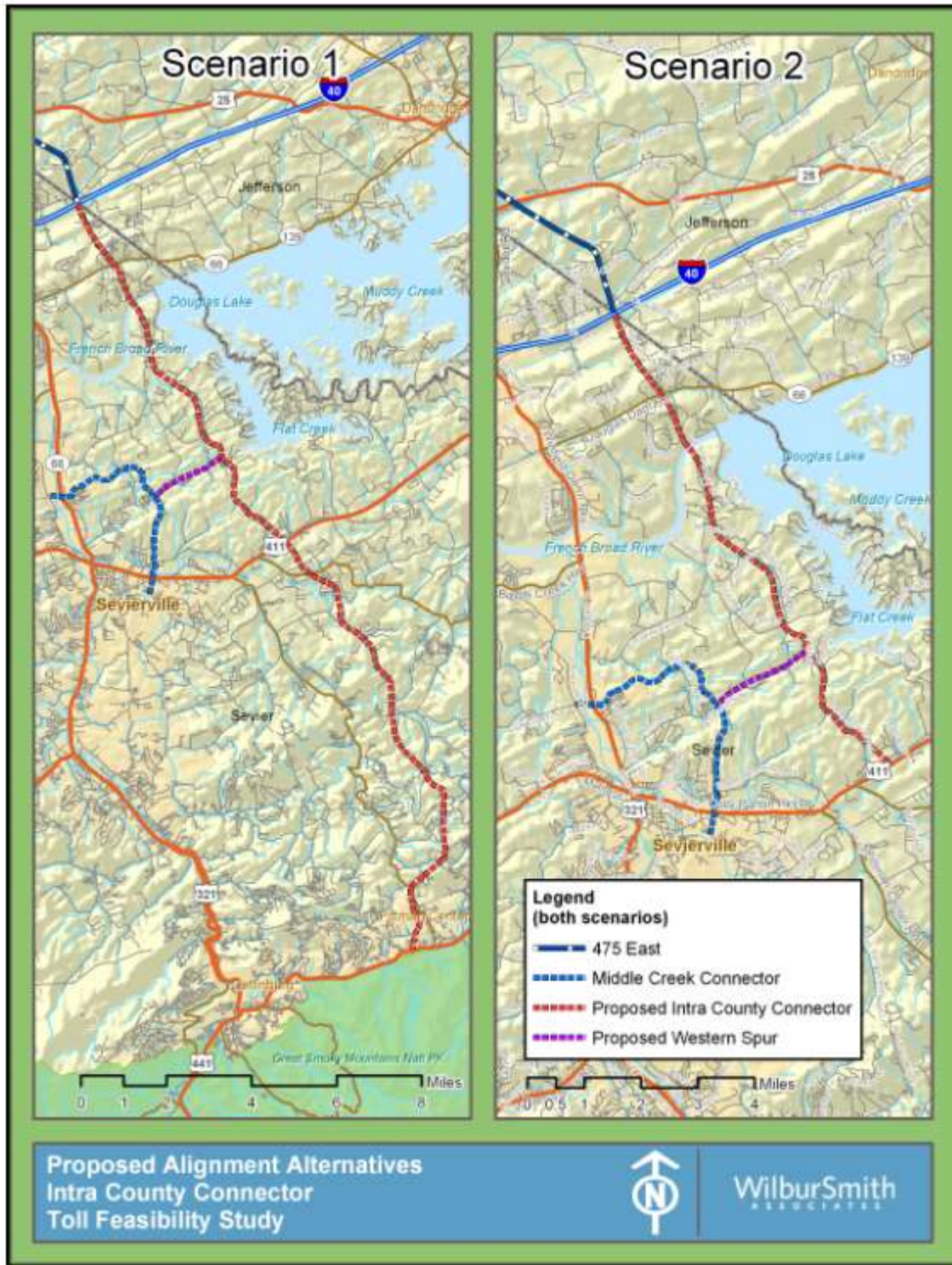
Due to rising congestion levels on SR-66, the concept of an alternative route connecting I-40 to the Great Smoky Mountains National Park has been discussed for many years. The route was initiated in the Sevier County Major Road Plan with a project study commissioned by the Sevier County Transportation Board in the early 1990s. Because of the estimated cost of the project at that time, no further studies were completed. With the interest of the Tennessee General Assembly in the use of tolling as a means of financing needed projects, TDOT chose this roadway as one of its first toll feasibility studies.

Alternatives Studied

State Route 66 connects Interstate 40 east of Knoxville and runs through the cities of Sevierville, Pigeon Forge, and Gatlinburg before it enters the Great Smoky Mountains National Park. The route is heavily developed with almost continuous commercial frontage on either side, resulting in traffic congestion from tourists, local shoppers and commuters.

The toll study identified two possible scenarios. Scenario 1 is approximately 21.5 miles in length starting at a new interchange with I-40 and terminating at US 321. Scenario 2 also begins at I-40 but the overall length of the project for this scenario is significantly shorter covering approximately 9.9 miles, terminating at SR 411 just northeast of Sevierville. Proposed interchanges within these alignments differ based on the scenario.

Figure 8: Intra-County Parkway Alternatives



Study Methodology

The previously described methodology for toll feasibility traffic and revenue and conceptual feasibility studies was used to determine toll feasibility for the Intra-County Parkway. The final conceptual feasibility report was completed in April 2007. However, the lack of detailed traffic analysis information within the Knoxville Regional Travel Demand Model used for this study limits the conclusiveness of the toll feasibility analysis.

Public Involvement

There has been no formal public involvement to date regarding the toll study for the Intra-County Parkway in Sevier County.

Local Elected Official Participation

Local officials have been made aware of the study and provided opportunities to express project support. However, due to the lack of financial feasibility based on the results of the toll study, TDOT has had very little dialog with local officials in Sevier County and the surrounding region about the need for this project.

Review of Results

For both scenarios of this project, a substantial amount of funding would be required from sources other than toll revenues to cover project costs.

Table 6: Intra-County Parkway Toll Feasibility Study Results (in millions)

Study	Project Cost*	Percent Toll Funded
Intra County Connector		
Scenario 1	\$309.50	29.50%
Scenario 2	\$163.80	19.80%

* *Project Cost* consists of Construction and Engineering costs only.

Suggested Next Steps

The Department has decided not to move the project to the next level of analysis because of the need for substantial amounts of funding from sources other than toll revenues. However, TDOT is open to discussions with stakeholders from Sevier County and the surrounding region if they would like to continue to study the toll potential for the Intra-County Parkway.

Mack Hatcher Parkway Extension – Franklin/Williamson County

Initial Planning Studies and Background

The proposed Mack Hatcher Parkway Extension is in the Nashville MPO Long Range Plan. The location was identified through TDOT's planning process which began in 2001 and the approval of the Draft Environmental Impact Study (EIS) was received from the Federal Highway Administration. This project

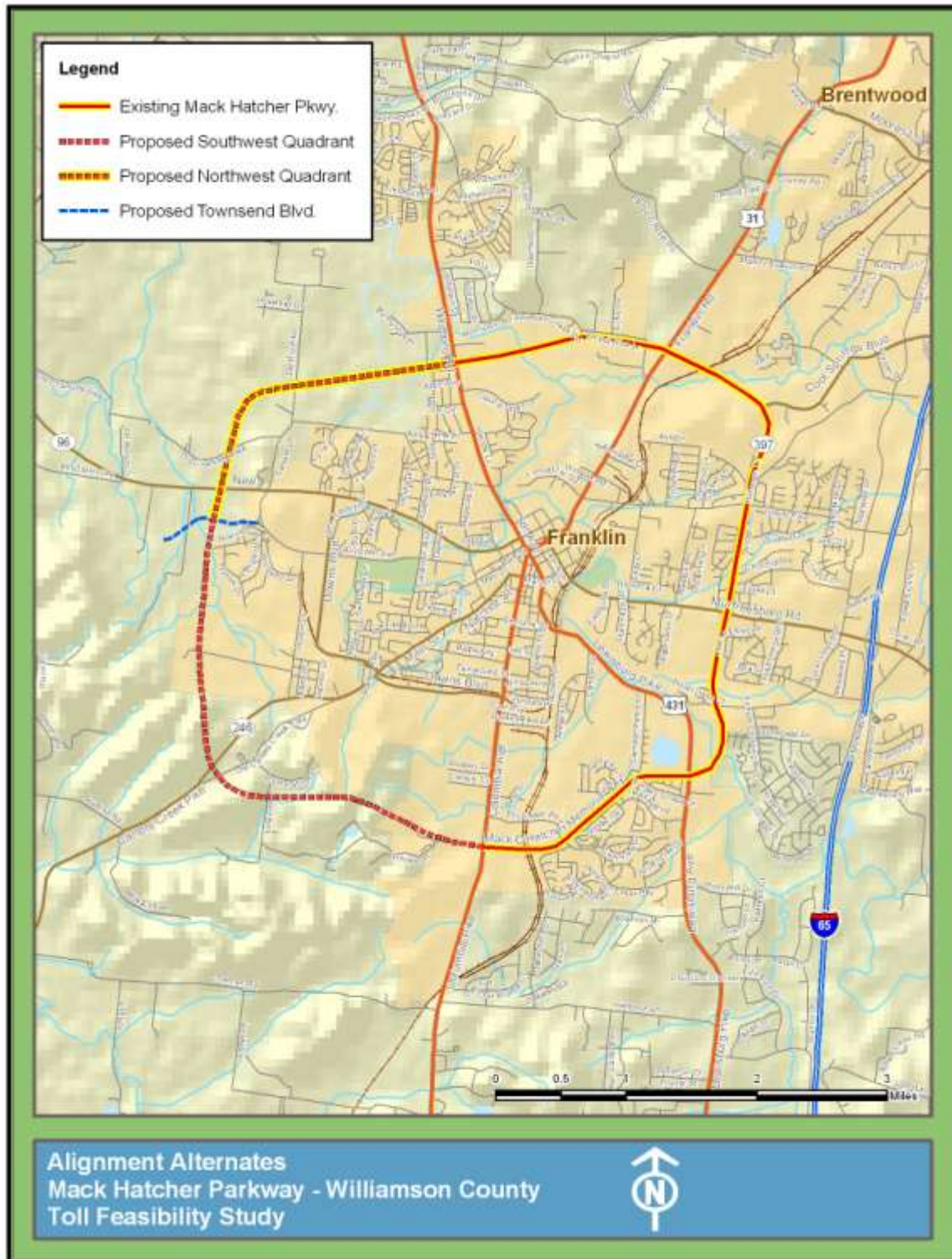
has been consistently supported by Williamson County and the City of Franklin as a priority. In March 2006, TDOT and the City of Franklin partnered with citizens and stakeholders of this project to use a Context Sensitive Design process for the design concepts of the roadway. The process was successful; however, funding of right-of-way and construction have remained an issue in moving the project forward. Because of this, in September 2008, Franklin officials asked TDOT to look at the feasibility of this project as a toll facility to aid in funding the completion of the roadway.

Alternatives Studied

Although the current planned alignment for the Mack Hatcher Parkway Extension is not a limited access roadway, for tolling purposes, the following alternatives will be studied to determine which one will be the most feasible for tolling.

- **Alternative 1** – Toll the planned western half assuming that access will be provided via at-grade intersections and roundabouts.
- **Alternative 2** – Toll the planned western half assuming that access will be provided via grade-separated interchanges (no at-grade intersections or roundabouts).
- **Alternative 3** – Toll the entire roadway assuming that the western half will be constructed as planned (with access being provided via at-grade intersections and roundabouts) and that the eastern half will be upgraded to four lanes with access provided via grade-separated interchanges.
- **Alternative 4** – Toll the entire roadway assuming that access along the western half will be provided via grade-separated intersections (no at-grade intersections or roundabouts) and that the eastern half will be upgraded to four lanes with access provided via grade-separated interchanges.
- **Alternative 5** – Construct and toll the northwest quadrant from Hillsboro Road to just south of Highway 96 West (to Townsend Boulevard) assuming that access will be provided via at-grade intersections and roundabouts.
- **Alternative 6** – Construct and toll the northwest quadrant from Hillsboro Road to just south of Highway 96 West (to Townsend Boulevard) assuming that access will be provided via grade-separated interchanges (no at-grade intersections or roundabouts).

Figure 9: Mack Hatcher Parkway Extension



Study Methodology

The previously described methodology for toll feasibility traffic and revenue and conceptual feasibility studies will be used to study the toll feasibility for the Mack Hatcher Parkway Extension. However, due to the unique nature of this alignment and potential for several at-grade intersections, the tolling collection technology suggested may be different. The Department is currently investigating what the best technology assumptions would be for this particular project and level of study.

Public Involvement

Currently, there has not been any formal involvement with the public on the issue of tolling for the Mack Hatcher Parkway Extension. Depending on the results of toll feasibility analysis, formal public meetings will be held to discuss the tolling opportunities for this project once the study is completed.

Local Elected Official Participation

As previously stated, the City of Franklin's Mayor and Board of Alderman requested TDOT to study the Mack Hatcher Parkway Extension's potential for toll feasibility in order to have discussions about the usefulness of tolling to complete the project in a timely and cost-effective manner.

Review of Results

This study is currently underway; therefore, study results are unavailable. The final report for this toll feasibility study should be ready for release in April 2009.

Suggested Next Steps

TDOT will complete the feasibility study and work with the local officials and the public in Franklin and Williamson County to determine whether to proceed with more detailed study for tolling of the Mack Hatcher Parkway Extension.

Next Steps for Pilot Toll Program

Based on the preceding descriptions of the current candidate pilot tolling projects, TDOT will take the following next steps to complete its analysis of these projects:

- Mississippi River Bridge – Memphis Area: receive final Conceptual Feasibility Report (February, 2009) and conduct reviews with Memphis MPO and local elected officials to determine interest in initiating the next level of formal toll analysis
- Tennessee River Bridge – Chattanooga/Hamilton County: receive final Conceptual Feasibility Report (February, 2009) and conduct reviews with Bridge Committee, TPO and local elected officials; incorporate Volkswagen facility data if available; determine interest in initiating the next level of formal toll analysis
- Tennessee River Bridge – Benton/Houston Counties: do not initiate Conceptual Feasibility Study
- Hadley Bend Connector – Nashville Area: do not proceed to the next level of formal toll analysis unless directed by local elected officials in both Sumner and Davidson Counties as well as the Nashville MPO
- State Route 475 (Knoxville Parkway) – Knoxville Area: do not proceed to the next level of formal toll analysis unless directed by local elected officials in the Parkway corridor as well as the Knoxville TPO
- State Route 374 Extension – Clarksville/Montgomery County: consult with local elected officials and Clarksville MPO with recommendation not to proceed with the next level of formal toll analysis given preliminary indications of poor feasibility results
- Intra-County Parkway – Sevier County: do not proceed to the next level of formal toll analysis unless directed by local elected officials after additional review of traffic, revenue and construction assumptions
- Mack Hatcher Parkway Extension – Williamson County: continue with completion of Conceptual Feasibility Report (April 2009) and conduct reviews with City of Franklin and Williamson County officials to determine interest in initiating the next level of formal toll analysis

Topics for further consideration

Throughout the process of undertaking these toll studies and through information gained from other states' experiences with tolling, TDOT staff has identified several topics that may be of value for further consideration by the General Assembly. These are listed here simply to initiate discussion.

1. Initiating the study of tolling as a transportation financing tool in Tennessee through the study of project-specific tolling applications leads to mixed results, as indicated in this report. While the potential still exists for two or three of these projects to be recommended to the General

Assembly at some future point as pilot projects, the criteria used to evaluate these projects make it very unlikely that tolling will become even a minor means to finance the State's highway and bridge needs.

2. The criterion that tolling occur only on new facilities eliminates consideration of tolling opportunities that may be feasible. An example is where a portion of an existing facility combined with new construction could provide an ideal candidate for a toll facility with very logical termini.
3. The potential for tolling as a tool to develop and finance portions of the transportation program in Tennessee can be approached in ways other than evaluating the feasibility of specific highway or bridge projects. Many states use tolling in a programmatic way to provide a supplementary source of transportation funding used in conjunction with traditional funding sources. This would require the development of a statewide strategic tolling policy and program, including establishing clear objectives for the use of tolling. Projects would then be developed that fit within this strategy. The financial feasibility of the overall program would be evaluated rather than each individual project separately.
4. Several states are looking at tolling in the form of congestion pricing as a way to encourage the most efficient use of the transportation system already in existence. High Occupancy Toll (HOT) lanes, a type of managed lanes, are an efficient way of utilizing less physical capacity to achieve more efficient way of moving people on existing facilities. Congestion pricing has the value of not only assisting with transportation funding, but also providing a tool to manage congestion in ways that may avoid the costs of new construction, especially in urban areas.
5. Public-private partnerships have not been evaluated as a means to structure the financing of toll facilities in this study. A number of states have used this mechanism to develop tolling programs. There are obvious advantages and disadvantages. As Tennessee looks ahead at possible ways to develop options for an effective tolling program, public-private partnerships may be worth examining.
6. No matter how Tennessee chooses to move forward with tolling as a transportation tool, it has become very clear that public education regarding the technology of tolling as well as the revenue and congestion circumstances that require us to look at tolling receive a very high priority.

Appendix 1: Statewide Tolling Public Meeting Agenda



State of Tennessee

Department of Transportation

An Overview of Tolling

AGENDA

- Welcome & Introductions
- Tennessee Tollway Act
- Why Tolling?
 - History
 - Funding shortfall
 - Revenue Option
- Tolling in the U.S.
- Current Toll Technology
- Proposed Toll Studies
- Conclusion and Question/Answer Session

Appendix 2: Project Study Area Detailed Descriptions

Candidate Project Detailed Alternative Descriptions

Mississippi River Bridge – Memphis Area

The five Mississippi River Bridge crossing alternatives run generally in a west-east direction between West Memphis, Arkansas and Memphis, Tennessee. A brief description of each of the five alternatives is presented below:

- **Alternative 1** – The western terminus of Alternative 1 is located on I-55 approximately four miles west of the interchange between Interstates 55 and 40 in West Memphis. Alternative 1 is by far the most southerly alternative with its eastern terminus located on I-55 approximately five miles south of the Tennessee-Mississippi state line. Intermediate full access interchanges are assumed with Mound City Rd, US 61, and Goodman Rd. As assumed, Alternative 1 spans approximately 23.5 miles.
- **Alternative 2** – The western terminus of Alternative 2 is the same as Alternative 1. The eastern terminus is located near Interchange 8 of I-55 southwest of Downtown Memphis. Alternative 2 extends for approximately 13.5 miles and includes an intermediate full access interchange with Mound City Rd.
- **Alternative 3** – The western terminus of Alternative 3 is located at the interchange between Interstates 55 and 40 in West Memphis. The alternative heads northeast before turning straight east and terminating at the interchange between Interstate 40 and Tennessee State Route (SR) 300. Alternative 3 has a full access interchange assumed with Mound City Road and in total covers approximately ten miles.
- **Alternative 4** – Alternative 4 is quite similar to Alternative 3. The only major change between Alternatives 4 and 3 is that the eastern terminus of Alternative 4 is located at the Interchange between SR 300 and US 51, approximately one mile northwest of the Alternative 3 eastern terminus. Similar to Alternative 3, Alternative 4 is approximately 9.5 miles long and includes a full access interchange at Mound City Road.
- **Alternative 5** – Alternative 5 is the most northerly of the five alternatives studied. The western terminus is located along Interchange 55 approximately five miles northwest of its interchange with Interstate 40. The eastern terminus of Alternative 5 is located along US 51 near Firestone Park, north of Downtown Memphis. Alternative 5 has no assumed intermediate interchanges and spans approximately 10.5 miles.

Tennessee River Bridge – Hamilton County

The four Tennessee River Bridge alternatives included in this analysis run generally between US 27 in Soddy-Daisy, Tennessee to Harrison, Tennessee. The four alternatives are presented in Figure 4 of Appendix 1. A brief description of each of the four alternatives is presented below:

- **Alternative 1** – The western terminus of Alternative 1 is located at the interchange between US 27 and Sequoyah Road. Alternative 1 generally heads in a southeast direction and has an eastern terminus on I-75 at approximately mile marker 13. Intermediate full access interchanges are assumed at Harrison Bay Road, State Route (SR) 58, and Ooltewah-Georgetown Road. The total length of Alternative 1 is approximately 15 miles.
- **Alternative 2** – The western terminus of Alternative 2 is the same as Alternative 1. In general, Alternative 2 is slightly farther north than Alternative 1. Alternative 2, which spans approximately 16 miles, meets up with Alternative 1 east of SR 58 and continues south to terminate on I-75 at approximately mile marker 13.
- **Alternative 3** – From its western terminus to SR 58, Alternative 3 is the same as Alternative 1. At SR 58, Alternative 3 turns south onto SR 58 until turning east onto Enterprise Park Drive and terminating on I-75 near mile marker 8. Alternative 3 is by far the most southerly alternative and covers approximately 20 miles.

Alternative 4 – Alternative 4 is the most northerly alternative and terminates in the west at the existing interchange between US 27 and SR 319. Alternative 4 crosses the Tennessee River and then turns south eventually terminating in the east at I-75 near mile marker 13. In total, Alternative 4 covers approximately 16 miles.

Hadley Bend Connector – Nashville Area

The proposed Hadley Bend Connector is located in the northeastern portion of the metropolitan Nashville region. If constructed this new route would provide an additional north-south route between Davidson and Sumner Counties via bridges over the Cumberland River. Currently, the only north-south connection over the Cumberland River into and out of Sumner County is State Route 109, which connects Sumner and Wilson Counties. According to the Nashville Area MPO's recently adopted 2030 Long Range Transportation Plan, the Hadley Bend Connector would bridge the Cumberland River connecting State Route 45 (Old Hickory Boulevard) and State Route 386 (Vietnam Veterans Boulevard). According to the plan, the approximate distance for the connector (bridge and roadway) is 3.6 miles and it would be a four-lane facility.



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