

Evaluation of Public Private Partnership Proposals

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University Transportation Center for Alabama
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16. Abstract In Alabama, a shortage of transportation funds requires the Alabama Department of Transportation (ALDOT) to combat that shortage by implementing innovative programs. Nationwide, Public Private Partnerships (PPP) in transportation projects are increasingly gaining acceptance as an alternative to the traditional approaches of project delivery and public financing. It is expected that ALDOT will be authorized soon to conduct PPP projects. Therefore, there is urgent need for the state agency to understand nationwide PPP practices and develop a proposal evaluation procedure for PPP projects. This report documents the current practices of Public-Private Partnerships in transportation investment, summarizes the PPP evaluation and implementation processes in leading states, investigates alternative financing options available for transportation projects, and assesses the legal environment and public opinion with respect to PPP implementation. The I-10 connector project has been used as an example to illustrate an appropriate method for Alabama to evaluate the economic viability of PPP proposals in an effort to protect public interest.			
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Disclaimer

The contents of this report reflect the views of the authors, who are responsible for the opinions, findings, and conclusions presented herein. The contents do not necessarily reflect the official views or policies of the Alabama Department of Transportation (ALDOT) or the Federal Highway Administration (FHWA). This report does not constitute a standard, specification, or regulation, nor is it intended for construction, bidding, or permit purposes.

Acronyms and Abbreviations

AADT	Annual average daily traffic
AASHTO	American Associate of State Highway and Transportation Officials
AGC	Associated General Contractors
ALDOT	Alabama Department of Transportation
ATRBTA	Alabama Toll Road, Bridge, and Tunnel Authority
BAN	Bond Anticipation Notes
BDB	Bid-Design-Build
BOOT	Build-Own-Operate-Transfer
BOT	Build- Operate-Transfer
CTTS	Central Texas Turnpike System
CDA	Comprehensive Development Agreement
CDOT	Colorado Department of Transportation
DB	Design-Build
DBF	Design-Build-Finance
DBOM	Design-Build-Operate-Maintain
DOT	Department of Transportation
DSCR	Debt Service Coverage Ratio
ETC	Electronic Toll Collection
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
GARVEE	Grant Anticipated Revenue Vehicle
GO Bond	General Obligation Bond
HOT	High Occupancy Toll
HOV	High Occupancy Toll
IDB	Industrial Development Bond
IRB	Industrial Revenue Bond
IRR	Internal Rate of Return
ITS	Intelligent Transportation Systems
LOV	Low Occupancy Vehicle
MnDOT	Minnesota Department of Transportation
NTP	Notice to Proceed
O & M	Operation and Maintenance
PAB	Private Activity Bond
PPPs	Public Private Partnerships
RFP	Request for Proposal
RFQ	Request for Qualification
ROR	Rate of Return
SAFETEA-LU	Safe Accountable, Flexible, Efficient Transportation Equity Act
SIB	State Infrastructure Bank
SMP	Statewide Mobility Partner
SOV	Single Occupant Vehicle
TIFIA	Transportation Infrastructure Finance and Innovation Act

TIP
TxDOT
UTCA

Transportation Improvement Program
Texas Department of Transportation
University Transportation System for Alabama

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Executive Summary

A growing economy and aging infrastructure in Alabama require an increasing investment in transportation system improvements. Under the current highway funding mechanisms, however, the Alabama Department of Transportation (ALDOT) depends largely upon federal aid and the collection of gasoline and motor fuel taxes to support new projects and rehabilitation projects. It is expected that ALDOT's revenue will be seriously threatened by low fuel consumption from the introduction of hybrid and alternative fuel vehicles in coming years. Alternative means of financing must be developed to address increasing shortfalls in Alabama's transportation funding. It is ALDOT's recommendation and Governor Riley's desire that ALDOT move towards Public Private Partnerships (PPP) whenever possible to improve roadway infrastructure.

This report summarizes the findings of the ALDOT funded research. The research goal is to document the current practices of Public Private Partnerships in transportation investment and investigate the PPP evaluation and implementation processes in leading states. Additional research objectives follow:

- Evaluation of alternative financing options and the PPP legal environment
- PPP feasibility study of the I-10 Connector project

The research team at the University of Alabama and University of Maryland conducted the research and prepared this report. The report consists of seven sections. Section 1 describes the state of the art of PPP practices in transportation projects. A nationwide survey is reported with respect to the current PPP practices in the US. Several case studies are presented in Section 2 to highlight best practices and lessons learned in other states. Section 3 compares the standard PPP evaluation processes in the leading states of Texas, Georgia, Florida, and Virginia. Legal environment evaluation is included in Section 4. Section 5 is devoted to available financing options for transportation projects. Section 6 illustrates the PPP proposal evaluation process using the I-10 Connector project in southeast Alabama. A summary is presented in Section 7.

This study considers debt and equity financing options while evaluating the feasibility of the I-10 Connector project. Both senior and subordinated bonds secured by net operating revenues are evaluated to calculate bonding capacity. Major findings of the study follow:

- The project does not provide sufficient debt service with net operating revenue. Under an EE-boosted base scenario, a \$99 million gap must be filled with equity investment, either from the public agency or a private entity.
- The project is a promising PPP candidate. The Rate of Return for the private investments could be up to 20%. However, private equity investment will be limited due to its low profitability and high risk.

- ALDOT may need to provide \$20 million debt service reserve to cover the debt service during the ramp-up period. The reserve would drive up the profitability of the project, thus encouraging aggressive concessioners to invest up to \$40 million private capital.
- Alternative analysis shows that the equity investment will be around \$52 million under a 40-year concession agreement. The net operating revenue could cover the debt service if, under the best case scenario, the toll revenue growth is substantial.

1.0 State of Practice of Public Private Partnerships

Introduction

A Public Private Partnership (PPP) is an agreement between a public agency (federal, state, or local) and a private sector in a contractual manner. It involves bringing in creative skills and management efficiency from business practice and reducing government risk involvement in the provision of public services by using private companies for an effective approach to enhance project productivity.

Public Private Partnerships can provide services or infrastructure in a cost-effective manner by putting together the strengths of both the public and private sectors. In several parts of the world, PPP arrangements have been extensively utilized and have been considerably accepted. A worldwide database of projects indicates that between 1985, and 2004, 1,211 PPP infrastructure projects representing \$450.9 B worth of investment were funded, with the majority of the projects being in Europe, Asia, and the Far East. Several types of PPPs have been utilized, including the common build-operate-transfer (BOT) and its variants such as build-transfer-operate (BTO), design-build-finance-operate (DBFO), build-own-operate (BOO), design-build-operate-maintain (DBOM), and several others.

A PPP is an arrangement where the government states its need for long-lived, capital-intensive infrastructure projects. A facility is then built using a complex combination of private and government financing. It is then operated by a private entity under a long term franchise, contract, or lease. The capital, construction, maintenance, and operation costs are usually spread over 25 to 99 years. Facilities include roads, bridges, ports, airports, and railways; power, water supply, and waste disposal systems; telecommunication networks and other services of information technology; schools, hotels, hospitals, prisons, and even military facilities.

History of Public Private Partnerships

Association with public service by the private sector is not a new phenomenon. In ancient times, many of the public services like harbors, public parks, and markets were completed by private providers. In the 5th century this type of practice disappeared, although it re-appeared in the middle ages for the construction of new towns and the occupation of new lands in the South West region of France. This system of granting public work to financial investors was very common in France during the 16th and 17th century. Projects included road paving, construction of riverbeds, construction of canals, mail distribution, and public transportation. This system was not so well used in the other parts of Europe.

PPP has a long history in many countries, but it became popular worldwide in the 1980s. Public Private Partnership has the longest tradition in the US. In the 1950s and 1960s, public private partnership was used by government as a tool to increase private investment in city and regional privatization. Private providers were assumed capable of providing higher quality and service with a lower cost. It was also assumed or taken for granted that they were reducing government's responsibilities and tasks. PPP was also a key component of urban policy in President Clinton's administration.

The US was not the only place in which Public Private Partnership grew in importance in the second half of the twentieth century. For instance, in the 1960s, toll roads were developed in Spain by 1968. In the United Kingdom during the 1980s, the government turned to Public Private Partnership as the preferred method for economic regeneration.

Use of PPP has also started in other parts of Europe. The Netherlands has announced that they will involve the private sector to pursue their policies. In prosperous Norway, PPP has been introduced in the last decade. Previously, it was argued that due to its oil revenue, Norway had little or no incentive to embark on risk sharing with the private sector. Now the government is co-operating with the private sector in infrastructure development.

Types of PPP Arrangements in Transportation Projects

Public Private Partnership is an alternative project delivery system that has been in existence since long before World War II. It is similar to the traditional project delivery system-- design-build-- in technical aspects. PPP originated with a lack of public funds to meet the demand of rising roadway congestion and pressure to maintain the infrastructure. The term Intellectual Privatization was coined by Milton Friedman, and Privatization in United States was first suggested in 1969 by the Austrian born American Management Professor Peter F. Drucker. Today, government develops partnerships with the private companies for better results and more efficient service. There are five major types of PPP arrangements for delivering transportation projects.

- **Private Contract Services Approach** – It is the most common form of private sector involvement in surface transportation projects and service delivery in which a public partner (Federal, State, or Local government) contracts with a private partner to operate, maintain and manage the system providing a service. There are two types of contract services: Operation and Maintenance; Operations, Maintenance, and Management.
- **Alternative Project Delivery Approach** – The Associated General Contractors (AGC) defines project delivery method as “The comprehensive process of assigning the contractual responsibilities for designing and constructing a project. A delivery method identifies the primary parties taking contractual responsibility for the performance of the work”. The alternative project delivery approach has several combinations based on the phases in which the private partner takes responsibility. The following are the primary combinations:

- Design-Bid-Build (DBB)
- Construction Manager-at-Risk (CM@Risk)
- Design-Build (DB)
- Design-Build with a Warranty (DBW)
- Design-Build-Operate-Maintain (DBOM)
- Design-Build-Finance-Operate (DBFO)
- Build-Operate-Transfer (BOT)
- Build-Own-Operate (BOO)
- **Multimodal Partnerships** – Multimodal Partnerships are increasing in the United States because of the potential benefits not only in highway applications but also in other transportation modes including transit, rail, and airports. Some public and quasi-public agencies are involved with the PPPs and multimodal partnership projects.
- **Joint Development** – Joint development means public agencies like transit agencies provide private developers the rights to design and construct a residential, commercial, or mixed use building on or above the transit property in return for negotiated payment. The developer payment to the transit agencies varies accordingly with the lease period. There are many advantages of mixed use development such as increased revenue for transit agencies, aesthetics, and safer environment for the public. The improved environment may in turn allow increased fares in the transit system.
- **Long-term Lease or Concession Agreements** – Long-term lease arrangements involve publicly financed projects. The governmental agency engages the private sector for developing and delivering the project, and for maintenance and operation of that project for a specific time period. In that concession period, the private sector collects the revenue for the facility and pays a lease fee. Examples of this type of project include toll roads, parking garages, etc.

State of Practice in the United States

To identify the current practices of PPPs in transportation projects, the research team prepared a short questionnaire that targeted state transportation planning engineers. The questionnaire was designed to be specific and easy to administer to encourage wide industry participation. The development of the questionnaire involved a cooperative effort between the research team at the University of Alabama and the ALDOT project advisory committee. The final questionnaire included ten questions covering such issues as PPP practice, financing mechanisms, PPP performance and satisfaction, and major risks associated with PPP. The contact information for State DOT planning engineers was obtained from AASHTO website. The questionnaire was distributed via e-mail on July 17, 2008. The questionnaire allowed three methods to submit responses: Adobe web submission, email, and fax. In the week after the questionnaire was sent out, the researchers made phone calls to follow-up with every state DOT planning engineer who had not yet replied. Several questionnaires were filled out over the phone. By August 1st, 2008, the research team had received a total of 34 questionnaires: 7 via telephone, 22 via Adobe Acrobat, 1 via fax, and 4 via e-mail (Figure 1-1). The following sections of this report summarize the research team's findings, while Appendices A presents the questionnaire and Appendix B presents detailed responses to the questionnaire.

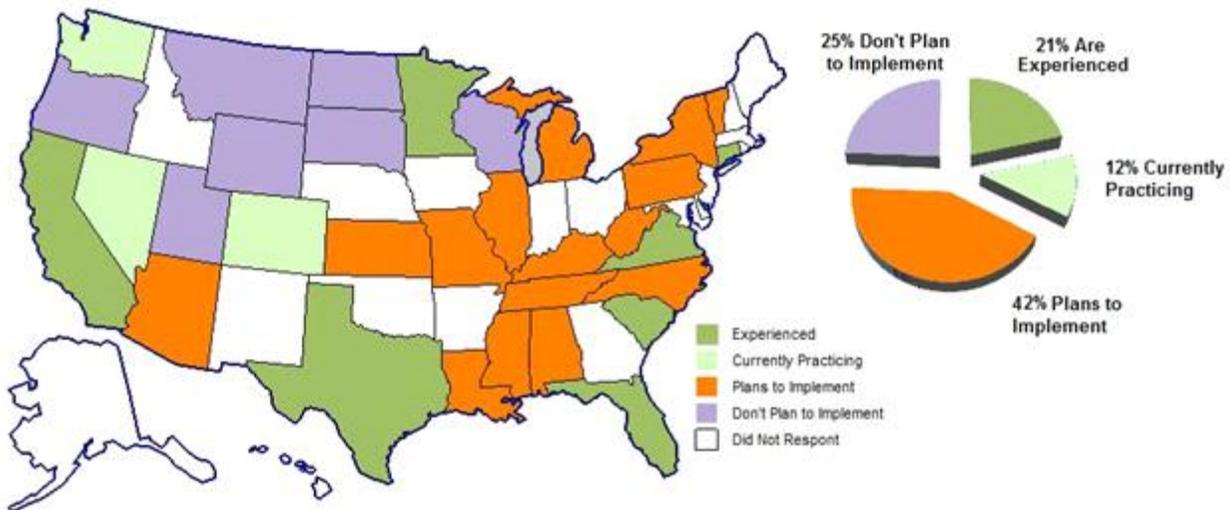


Figure 1-1. Survey responses by state and PPP experience.

State of Art

After the survey responses were obtained online, by fax, by telephone, and by emails, the results were coded to maintain uniformity in survey responses which was necessary to carry out the analysis. It was observed that experience concerning Public Private Partnerships has varied from state to state because it is still quite a new concept in transportation projects. The survey responses were then grouped in four major categories:

- Category 1 includes states that claimed significant experience in PPP projects, which includes California, Connecticut, Florida, Minnesota, South Carolina, Texas, and Virginia (Figure 1-1)
- Category 2 includes four states that responded that they are currently involved in PPP projects
- Category 3 includes 14 states that responded that they are planning to implement PPP projects in the near future and
- Category 4 includes 8 states that responded that they have not yet planned to implement PPPs in the near future. These states are located towards the northern part of the US and have not yet planned to implement PPPs primarily due to relatively low traffic volume

The categorization allowed researchers to observe that out of the eight Category 4 states, (not yet planning to implement PPP), seven states do not have legislation about PPP, and one of the states has a bill in process. Moreover, out of the 14 Category 3 states that plan to implement PPP in the future, five states have the legislation, eight states do not have legislation, and only one state has a PPP bill in process. It is interesting to know that most (8 out of 14) of these states are planning to implement PPPs in the near future though there is no legislation binding the DOTs to use PPPs. This finding indicates a major acceptance by those DOTs.

Of the 11 experienced or practicing states, 82% (9 out of 11) of the Category 1 and 2 states reported that the PPPs have been successful in achieving their objective (Table 1-1). Washington DOT reported PPPs to be a failure, and one state did not answer this question. It should be noted that Washington DOT only used design-build contracts in PPP projects. There is no financing, operation, or maintenance service involved in the PPP contract. Ninety-one percent (10 out of 11) states that have used PPPs reported that by using PPP on their projects the projects remained under budget and within schedule. California considers their PPPs to have been a success, although they were behind schedule and over budget. Delaware is not represented in Figure 1-1 or Table 1-1 because of its variation in responses to the questionnaire. Delaware's response indicates that it was disappointed with the PPP projects.

Table 1-1. Experienced and Currently Practicing vs. Success and Failure

	Success	Failure
Experienced	California, Connecticut, Florida, Minnesota, South Carolina, Texas, Virginia	None
Currently Practicing	Colorado, Nevada	Washington

Question 1 asked the Category 1 and the Category 2 groups which PPP type they used. The majority of states indicate that their PPP projects are performed using Design-Build, and results are shown in Table 1-2. It was observed that no state used the Build-Operate-Transfer (answer 2b) type of PPP, while the Build-Own-Operate (answer 2e) type of PPP was only adopted in the state of North Carolina. It was surprising to know that though the Build-Operate-Transfer (BOT) has been a very popular PPP option in Asian countries, there was no acceptance to this form of PPP project in the US. This type of unexpected result is assumed to occur due to confusion in the terminologies that define types of PPP projects.

There are many states that use different terminologies that mean the same thing. For example, South Carolina says they have a PPP that is Design-Build-Finance-Operate-Transfer, but some states would refer to that type of project as Build-Operate-Transfer. If Alabama implements a PPP, the state will need to be certain that all contractors and engineers use the same terminology system. This research follows the terminology system defined by the FHWA. FHWA's PPP types include Pre-Development Agreements, Build-Operate-Transfer, Long Term Lease Agreements, Design-Build-Finance-Operate, Build-Own-Operate, and other types. Their recent usage in transportation projects is summarized in Table 1-2.

It was also observed that the states of Texas and Virginia have tried 3 different types of PPP projects, and both the states have reported that the projects were under budget and under schedule. Moreover, Texas and Virginia have reported neutral to very satisfied ratings respectively for overall satisfaction. Furthermore, the respondent from Texas DOT has also reported to have used seven out of the eight financial instruments listed in the survey. Since this state also has the experience of going through a high number of PPP types (as reported in answer 2) the results and opinions from Texas may be closely studied for a successful implementation.

Moreover, the respondent from Virginia DOT has reported to have used six different financial instruments, and the success of PPP in Virginia also provides a good area for study.

Table 1-2. Popular PPP Types Being Used in the United States

PPP Type	States using PPP Type
Pre-Development Agreements	California, Colorado, Minnesota, Nevada, New York, Texas, Virginia
Long term lease agreements	California, Colorado, Texas, Virginia
Design-Build-Finance-Operate	Florida, North Carolina, Texas, Virginia, West Virginia

Figure 1-2 illustrates the primary reasons for which states enter into PPP projects. Four possible answers were listed, and Financing is the major reason (57%), while the second most popular reason was Cost and Time Savings (22%). Surprisingly, none of the states have selected the risk transfer as a reason for adopting PPP projects. Apparently, negligible consideration is given towards the risk transfer aspect when using the PPPs for highways.

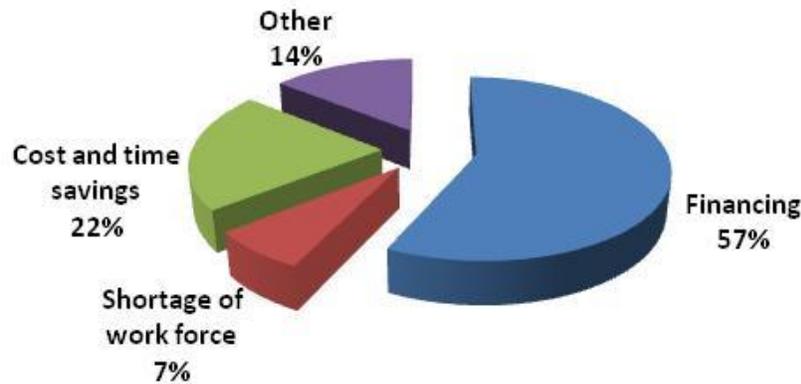


Figure 1-2. Reasons for adopting PPP projects.

PPP Performance Evaluation

Effectiveness of communication with the private sector is a critical factor to having success in a Public Private Partnership. The questionnaire asked the states how they would rate the effectiveness of communication with the private sector on a scale of 1 to 5, where 1 means not satisfied and 5 means very satisfied. The majority of state DOTs were satisfied with the communication in PPP projects, with 4.15 as the average response. FL, SC, WA, and NC ranked highest in terms of this issue.

One of the main reasons to enter into a PPP is to have the project completed on schedule and within budget. All respondent states except CA indicate that they have completed their projects on schedule and within budget.

Another question was related to overall satisfaction with the PPP process on the same 1 to 5 scale. Table 1-3 shows the overall satisfaction is moderate, with an average score of 3.75.

Table 1-3. Individual State's General Satisfaction Rating

Satisfaction Rating	States
1	None
2	Delaware
3	California, Colorado, New York, Texas, Washington
4	Nevada, South Carolina
5	Connecticut, Florida, Minnesota, Virginia

Financing Methods for PPP Projects

Respondents were supplied the following list of financial instruments that are currently being used in PPP projects and were asked to specify which instruments are used in their states:

- Grant Anticipation Bonds (GARVEEs and GANs)
- General obligation bonds
- Flexible matching (including toll credits)
- Section 129 Loans
- Transportation Infrastructure Finance and Innovation Act (TIFIA) credit
- Direct user charges (tolls and transit fares) leveraged to obtain bonds
- Equity partnerships and revenue sharing
- Concessions and long term leases
- Other methods

Figure 1-3 illustrates the different responses that were received. All eight instruments have been used, with GARVEEs and GANs, TIFIA credit, and concessions and long term leases mentioned most frequently. Among the “Other” financing methods listed, Transportation Infrastructure Bonds was listed most frequently (twice). A complete list of responses is found in Appendix A.

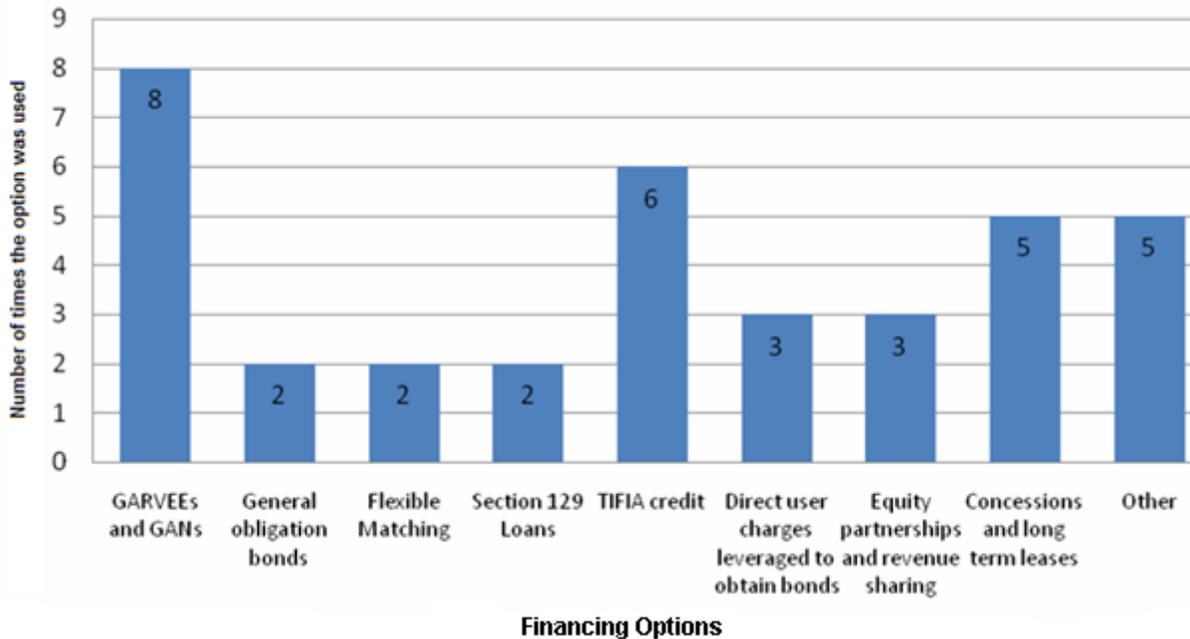


Figure 1-3. Financial instruments being used in the United States.

Risks in Using PPPs

A Public Private Partnership is a risk-sharing relationship between the public and private sectors. Therefore, the partner that is most qualified for a certain risk manages that particular risk. When establishing PPPs, there is a great deal of risk involved. The most common risk is that the private entity would fail financially and would not complete the project. Each project will have similar and unique risk components that need to be discussed and assessed in a risk matrix. However, risks vary by project and type of PPP, and the public and private sectors must set the risk levels that they are comfortable with. The risks reported by the states in response to Question 8 include public acceptance, right-of-way, environmental issues, operation and maintenance costs, political and governmental issues, loss of owner control, and delays due to legal issues.

Summary

The survey indicates that a number of states are willing to implement PPP in transportation projects, even though some of these states are not legislatively ready to do so. The survey also shows that the benefit of PPP in terms of transferring project risks from agencies to contractors has not been fully realized. It is also interesting to note that uniform terminology in PPP areas is apparently lacking, although the USDOT has published several guidelines to help the states implement PPP successfully.

Florida, Georgia, Texas, and Virginia are leaders in using Public Private Partnerships in transportation projects. The majority of the responding states is satisfied with the PPP practices and indicates that PPP projects are typically completed on time and within budget.

2.0 Case Studies on Current PPPs

Introduction

One purpose of this study is to describe the successes and failures of five state toll roads to gain an understanding of Public Private Partnerships (PPP) in the US. The five toll roads are the Dulles Greenway in Loudoun Virginia, the Pocahontas Parkway in Richmond Virginia, the Indiana Toll Road in northern Indiana, Texas SH 130 (segments 5 & 6 particularly), and The Northwest Parkway in Colorado. Table 2-1 summarizes the five projects, which are described in more detail later in this chapter.

Table 2-1. Summary of Case Study Projects

Project	Contract Type	Value	Original Financing	PPP
Pocahontas Parkway, VA	Design Build / Long Term Lease	\$346 million	5% public transportation fund, 95% PPA bonds	Transurban, private financing
Indiana Toll Road, IN	Long Term Lease	\$3.8 billion	Public financing	Statewide Mobility Partners, Private Financing
Dulles Greenway, VA	Design, Build, Finance, Operate	No public information	Private Financing: Shenandoah Group (86.5%); Brown & Root (13.3%)	Macquarie bondholders
SH130 (segments 5&6), TX	Design Build / Long Term Lease	\$1.3- billion	Private Finance: Senior Bank Loans (\$683 million), TIFIA Loan (\$430 million), equity contribution (\$196 million)	Cintra-Zachry
Northwest Parkway, CO	Long Term Lease	\$415 million	Brista 90% CCR 10%	Private-city financing in construction/ Private operation

The five toll roads were built under different contracts. The Pocahontas Parkway was built under a Design/Build contract but ultimately transferred to a Long Term Lease. The Indiana Toll Road and Texas SH 130 (segments 5 & 6) were also built under a Long Term Lease agreement. The more innovative Dulles Greenway used a Design, Build, Finance, Operate agreement. The Northwest Parkway in Colorado was built using private money but was transferred to a private company for a 99 year lease due to lack of revenue. Despite the differences, the five projects are related in their reliance on a private entity for construction and/or operations. In each case, production of revenue and transfer of risk are important elements to observe.

Route 895, Pocahontas Parkway, VA

The Pocahontas Parkway was not originally intended to use private funds. Federal 4R funds were to be used to fund the project, but those funds were not used because of the private funding involved in this project. The Pocahontas Parkway was built under a joint venture of the Virginia Department of Transportation (VDOT), Fluor Daniel, and Washington Group International (formerly Morrison Knudsen). The consortium of Fluor Daniel and Washington Group International completed this highway under the Design/Build delivery method. They developed the final design based on VDOT's preliminary drawings, and they also acquired the right of way and performed the construction.

The Pocahontas Parkway was financed through the Pocahontas Parkway Association (PPA), a private entity created by Fluor Daniel and the Commonwealth Transportation Board. The PPA's primary task was to administer PPA bonds to VDOT to use for the project. While the bulk of the risk fell on the PPA to return their bondholders money, decisions were primarily made by Fluor Daniel and VDOT. In this way, VDOT limited their risk by transferring it to the PPA. A clear example is VDOT's decision to build the Parkway in one phase. The initial recommendation was to build the project in two phases, with the second phase being built only as traffic allowed. Traffic levels did not meet expectations, staying between 25% and 50% lower than predicted for the first year. The result of the decision was more infrastructure for VDOT, more construction work for Fluor Daniel, and a bigger development fee from the single phase approach. Meanwhile, the association bondholders suffered loss. "This misplacement of risk and the inherent inflexibility of the not-for-profit, no-equity, all debt financed model has doomed it to failure" (Samuel, 2006).

In May 2006, Governor Tim Kaine transferred the operations of the Pocahontas Parkway to Transurban of Melbourne, Australia and its bank, DEPFA Bank of Dublin, Ireland. Prior to this transaction, risk was split among public and private entities. Transurban's purchase signified the transfer of risk entirely to the private sector. Transurban's operations included a payment of \$611 million toward existing PPA debt, reimbursement of VDOT's cost to operate, maintain, and repair the Pocahontas Parkway, responsibility for the cost of all future maintenance and operations, the establishment of limits on toll levels and increases, and the finance and building of Route 895 Airport Connector road. This placement of risk has much to do with the Pocahontas Parkway's success. Transurban will perform their duties under a 99 year lease, at which time they will return the project to VDOT.

The other issue characterizing the project's success is Transurban's ability to produce revenue. To start, Transurban plans to increase tolls in accordance with inflation. It is more difficult for the state to raise tolls, because many agencies have to be involved. Secondly, Transurban has contracted with private backers to begin work on the 1,185 acre Wilton development on the eastern bank of the James River to provide another revenue stream. Thirdly, the consortium is attempting to obtain federal money to complete the interchange that will allow Richmond International Airport to connect to the parkway. Finally, Transurban, with a market capitalization of \$5billion, is advertising the Parkway around the Richmond area.

Indiana Toll Road

The state of Indiana created the Toll Road Commission in 1951 to finance the Indiana Toll Road. This group was responsible for selling the bonds to build the toll road. Construction was completed in 1956. Money from tolls was used to maintain the road and keep up with debt service. By 1985, the toll road was producing enough revenue to finance smaller transportation projects not associated with the Indiana Toll Road. However, the cost of maintenance rose, and revenue began to decline. Originally built with \$280 million in bonds, the toll road has earned less than \$7 million per year since 1999, barely enough to finance its own operations and maintenance.

In 2006, Governor Mitch Daniels transferred the Indiana Toll Road to a private consortium of Cintra Concesiones de Infraestructuras de Transporte SA (Cintra) of Mexico and Macquarie Infrastructure Group (MIG) of Australia for a sum of \$3.8 billion. The consortium, known as Statewide Mobility Partners (SMP), agreed to perform maintenance and operations under a 75 year lease while retaining revenue gained from tolling during that time. There were two opinions on the Governor's decision. Opponents claimed that traffic had increased and the state would be losing revenue by leasing the toll road. They also expressed concern regarding transferring operations to a company based outside the United States. Detractors believed that many state employees would lose their jobs as well. Alternatively, proponents harped on the profit that could be made from the transfer. Many road projects that could not otherwise be accomplished were able to be completed.

The difference in the two opinions lies in the placement of risk and production of revenue. There are several reasons why the state desired to reduce their risk by transferring the toll road's responsibility. Firstly, it was questionable as to when the Indiana Toll Road would produce capital gain for the state. By selling the toll road, they are receiving several years' worth of revenue up front. Secondly, the state was formerly paying interest on outstanding debt service and bonds. The upfront revenue was subsequently invested by the government, which reported gains of \$500,000 a day. Finally, the available cash and the money from investments will fund several necessary Indiana road projects. While Indiana is seeing road improvements without tax increase, neighbor states such as Ohio are scaling back on transportation projects until federal money can be secured.

One year later, there is some evidence of the Statewide Mobility Partner's success. Under state operation, tolls were as low as 15 cents at some booths, while each booth cost an average of 34 cents per vehicle to operate. Under the consortium's control, tolls now run at \$4.65 for the entire 157 mile trip, and electronic systems are being developed for all booths. Also, the road is adequately maintained, and snowplows are being run when necessary. It appears that the toll road is sustaining its popularity, because a third lane is being developed to relieve congestion.

Dulles Greenway

The Dulles Greenway project began as a joint venture of Mr. John Miller and Mr. Bill Allen. Both men understood the need for a road to combat the urban sprawl of Washington D.C., but Virginia did not have legislation in place to allow the development of a privately owned toll road. The two men secured legislation under the backing of Miller's firm, Municipal Development Corporation (MDC). MDC was bought by the private company Toll Road Corporation of Virginia (TRCV) shortly thereafter.

The TRCV was created to perform three tasks: secure financing, start construction, and operate the completed Dulles Greenway. The TRCV created the Toll Road Investors Partnerships (TRIP I) to help with construction and TRIP II to buy out the TRCV and perform its operations. Under the DBFO contract, TRIP II receives the proceeds from the tolls to recoup their investment. Operation and maintenance responsibilities will revert back to the state of Virginia after 42.5 years.

The Greenway was a successful project because most of the risk had been transferred to the private sector while much of the oversight was retained by the state. Firstly, TRIP II agreed to transfer the Dulles Greenway back to the state at no extra cost. In essence, the cost to the state is future maintenance after the lease agreement ends. Secondly, the commonwealth has agencies at hand to ensure that the private entity makes sound decisions. One such agency is the State Utility Commission which is in place to facilitate road development. Another agency is the State Corporation Committee, which has the power to deny toll raises set by TRIP II. These agencies limit the state's risk by helping the private sector return to the state a successful project. The third area of risk is unique to the Greenway. Not only is the private sector paying for debt service and operations, they are paying local property taxes and paying state police to patrol the facility. The Greenway pays \$2 million annually in property taxes and an additional \$175,000 to the state patrol service.

Another reason for the Dulles Greenway's success was the private consortium's ability to produce revenue. While the Greenway struggled initially due to lack of interest and high tolls, it redeemed itself under the Australian firm Macquarie International Group. Macquarie bought out TRIP II in 2005 and immediately set the toll road up for success. This includes paying off current bondholders and issuing new bonds as well as restructuring toll prices.

Texas SH 130

State Highway 130 (SH 130) is a part of the Central Texas Turnpike System (CTTS), which is a new transportation system that will improve overall traffic mobility, facilitate access to regional services, and increase travel safety for Central Texas residents, workers, and visitors. The system initially consisting of SH 130 (49 miles), SH 45N (approximately 13 miles), and the Loop 1 Extension (approximately three miles) were built under a Public Private Partnership agreement. The project was being financed in part with the proceeds of bond obligations. Additional funding was provided through state, local, federal, and private sources from investment earnings.

In addition to previous four segments, Segments 5 and 6 of SH 130 started to be constructed in 2006 under a similar agreement between TxDOT and a private company, and those segments are the subject of this review.

This project is providing 65 miles of new roadway to Central Texas. Total project financing is \$3.6 billion, including design, construction, right of way acquisition, and other financing costs (insurance, debt service, interest, etc.). Financing for the entire Central Texas Turnpike, of which SH 130 is one component, is as follows: senior bond proceeds: \$1,367.8 million, TIFIA loan: \$916.8 million, state funds: \$700.0 million, grants: \$511.7 million, investment income: \$163.6 million, Total: \$3,659.9 billion. The completion of the project is estimated to be almost 25 years sooner than conventional transportation construction projects could be completed due to the innovative financing (a combination of public, private, bond financing) and, in the case of SH 130, a new contractual arrangement referred to as a Comprehensive Development Agreement (CDA). Under the CDA, a single contractor or consortium of contractors is retained for design, construction, right of way, permitting, and other aspects of project completion.

Of the approximately \$2.2 million in capital market debt issued at financial close, \$900 million were issued as low interest Bond Anticipation Notes (BANs) maturing in 2007 and 2008. As the BANs become due, the Texas Turnpike Authority (TTA) can retire them by drawing down the TIFIA loan, by selling additional long-term bonds, or by using any other available funds. Assuming TTA draws the TIFIA loan, payments of principal and interest would begin in 2010. The final maturity of the loan is scheduled for 2042.

The private partner of the CTTS project for the first four segments is Design-Builder Lone Star Infrastructure (LSI) which is a joint venture between Fluor Daniel Corporation, Balfour Beatty Construction, and T.J. Lambrecht Co specifically organized to deliver SH 130. The project team also includes more than a dozen firms specializing in design engineering, utility relocation, public outreach, and environmental planning. SH130 is the state's first highway to be developed under a CDA, allowing the work of property acquisition, design, and construction to be undertaken simultaneously.

A \$1.3billion private investment, Texas' first concession agreement was approved June 29, 2006 by the Texas Transportation Commission for the construction of the southern 40 miles of State Highway 130 known as segments 5 and 6. This 1.3 million will come from Senior Bank Loans (\$682.6 million), TIFIA Loan (\$430.0million), and equity contribution (\$196.4 million). The agreement is with the Spanish-American joint venture, Cintra-Zachry to build the extension of SH 130 from US 183 east of Austin to I-10 in Seguin. Cintra-Zachry is proposing to finance the project at its own expense, pay the state \$25 million up front, and share future toll revenues for the right to collect a portion of the tolls for 50 years. The financing package also includes millions in right of way costs to be paid by Cintra-Zachry, lifting the financial burden from Caldwell, Guadalupe and Travis counties. The toll road is expected to be open to traffic in 2012. TxDOT estimates that the state could receive approximately \$1.6 billion over the next 50 years in toll revenue. State transportation officials stress SH 130 will be a state-owned toll road with title to any property purchased to be held by the state. Subject to environmental clearance, Cintra-Zachry will be responsible for the financing, design, construction, operation, and

maintenance over 50 years. The state will be responsible for the customer service and business operation of toll collections.

To protect the public interest, according to the concession agreement, the maximum base rate for tolls is established at 12.5 cents per mile for most vehicles (more for large trucks). There will be no toll plazas on segments 5 and 6 of SH 130. Tolls will be collected electronically at certain points along the roadway, meaning motorists will not have to slow down or stop. Traffic will be 100% free flowing. There will be a minimum of two tolled main lanes in each direction of the highway.

Colorado Northwest Parkway

The Northwest Parkway is a 70-mile per hour toll road in Colorado built under a design / build contract by the Northwest Parkway Public Highway Authority (NWPPHA). The Parkway opened to traffic on November 24, 2003, and toll collection commenced on January 1, 2004. The NWPPHA used toll revenue bonds, not taxes, to finance the construction bonds, so no public vote was required. Bonds worth \$386 million were issued in early summer 2001. The final cost of the toll way was about \$415million.

The Parkway is a 100% privately funded road. No federal funds were used on the Parkway. The NWPPHA operated the highway for 3 years, but they were not able to attain the revenues estimated in their project feasibility studies. Actual revenue reportedly was only 50% of the estimated revenue due to low traffic volumes in the highway. Therefore, on November 21, 2007, the Northwest Parkway LLC (the "Concessionaire"), a joint venture between Brisa Auto-Estradas S.A. (Brisa) and Companhia de Concessões Rodoviárias (CCR), entered into a 99-year concession and lease agreement for the operation and maintenance of the Parkway from NWPPHA. When Brisa/CCR took over operation of the road, part of the agreement was paying off NWPPHA's outstanding bonds. The NWPPHA Board chairman and mayor of Broomfield Karen Stuart said in a statement: "The board believes this milestone agreement that retires all bonded debt, provides a mechanism for future expansion of the road, and turns over operations to a well qualified and globally respected professional team in Brisa/CCR is in the best interests of the communities that make up the authority."

Under the \$603 million deal, Brisa/CCR will operate and maintain the toll road for 99 years. While NWPPHA will continue to own the road, Brisa/CCR will be responsible for toll and fine collection, maintenance, and improvements to the toll-highway. Under the agreement, \$503M will be paid at closing, with another \$100 million conditioned on extensions of a 15km (9 mile) toll-road to the southwest. \$40 million is put in interest earning escrow for the first extension. \$60 million is pledged to be paid for the second extension. The \$503 million will be used to pay back the NWPPHA's long term debt, which is estimated to be \$480 million to \$485 million, depending on interest rate movements. The NWPPHA estimates it will have about \$20 million cash at closing, which it will use to pay down debt of about \$30.5 million to its three constituent municipalities. In addition, the concessionaire must pay an average of just over \$2 million a year over 99 years (totaling \$200 million) to help cover the NWPPHA's ongoing costs as owner of

the toll road and administrator of the lease concession. The NWPPHA is responsible for its own costs; it keeps any surplus and has to make up any deficit.

To protect the customers' rights, NWPPHA put toll rate controls in the agreement. From closing to the end of 2009, the maximum toll should be \$3.00 for 2-axle vehicles and \$3 per additional axles. After January 1, 2010 the maximum annual increase in toll rates should be the greater of inflation index, per capita GDP, or 2%. However, lower toll rates and discounts are permitted. To retain employees, the concessionaire is required to interview all current seven NWPPHA employees, with the exception of the Authority's executive director. If the employees are not offered at least their present pay, the concessionaire will pay them 12-months salary and benefits.

Lessons Learned

There are three important lessons to be learned from the Public Private Partnership projects discussed previously. First, Public Private Partnerships can create value by advancing transportation infrastructure projects. Much of the value comes from the private partner's operation efficiency, limited social responsibilities, increased market capitalization, and combined financial and decision making authorities in the partnerships (i.e., the personnel making decisions on tolls and development are also the ones taking the financial risk). In the case of the Indiana Toll Road, the immediate receipt of money by the state outweighed the possibility of future benefit. With the upfront money, the state earned interest and moved forward with other useful road projects. Indiana taxpayers and businesses increased mobility, while other states continued to wait for Federal money. In the case of the Dulles Greenway, the private entity had an advantage due to its ability to restructure and refinance. Second, it is a complex and lengthy process to form a public private partnership in transportation projects. A successful Public Private Partnership lies in three important factors: financing structure, risk sharing, and revenue allocation. Third, partnership agreements need to be carefully examined to protect the interest of all stakeholders involved in infrastructure projects. One can see potential conflicts of interest between the public agency and the private partner, between the private partner and the community, between the private firm and its employees, and so on. Therefore, attention should be paid to evaluate the impact of various agreement provisions on different stakeholders, e.g., a non-compete clause, toll rate control, employee protection, etc.

3.0 PPP Evaluation Process

Introduction

Each state has its own approach to selecting PPP proposals. Although details are different, most states follow a general process for solicited proposals which includes issuing a request for qualifications (RFQ) that leads to a short-list of the most qualified firms, which are then issued a request for proposals (RFP). The best proposal is then selected based on a best value evaluation which takes into consideration not only the price but the technical approach to the project.

Unsolicited PPP proposals often require a multi-step approach. The first submission from an interested proposer is usually a conceptual proposal. Once this unsolicited proposal has been received, the state agency provides a time period for submission of competing proposals from other firms for the same project. The time period allowed varies among the states, but selecting the correct time period is important. If the time period selected is too short, it will limit the number of competing proposals, which in turn reduces the amount of competition. However, selecting a timeframe that is too long may reduce the incentive to submit unsolicited proposals in the first place.

States typically use pre-established criteria for determining the best value. Some of the criteria include time savings, tolling system, construction sequencing, traffic management during construction, operation and maintenance costs, and financial planning. This evaluation process considers the overall business plan and risk of execution of the proposer along with the price, instead of the traditional low bid selection method. To get a better understanding of the process used by other states in selecting PPP proposals, this chapter will take a brief look at a few states currently using PPPs. The processes used in the following states will be examined: Texas, Georgia, Florida, and Virginia.

Texas DOT CDA

The Texas Transportation Commission has been given power by the state legislature to enter into Public Private Partnerships (PPP) termed Comprehensive Development Agreements (CDA). House Bill 2702 of the 79th Legislature, passed in June 2005, defines the scope of a CDA. “A CDA is an agreement with a private entity that, at a minimum, provides for the design and construction of a turnpike project and may also provide for the financing, acquisition, maintenance, or operation of a turnpike”. HB 2702 authorizes the use of a broad range of PPP types including DB projects, DBOM, pre-development agreements, concessions, and others. The concessions model is the preferred approach. HB 2702 allows for both solicited and unsolicited proposals to be accepted. Figure 3-1 illustrates the process a proposal undergoes.

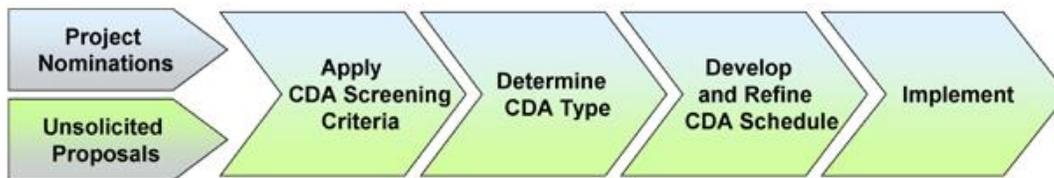


Figure 3-1. TxDOT CDA process (Source: TxDOT).

The selection of a CDA is a two-phase competitive process that is initiated by an unsolicited proposal or solicited proposals submitted at TxDOT’s request. In either case, the process is the same and begins with conceptual proposals. The conceptual proposals are evaluated based on their compatibility with regional and state transportation plans as well as a proposal’s ability to support the department’s goals.

Solicited projects are initiated by TxDOT issuing a Request for Qualifications (RFQ). In the RFQ, potential proposers are to describe their technical and engineering experience and provide a conceptual strategy explaining how the project could be completed. On some occasions, a company may be asked to submit a financial plan as well. Each proposal is then reviewed and scored based on financial strength, experience, management stability, technological capability, and many other business factors that would enable a company to successfully complete the project. The conceptual strategies are reviewed, and then companies are short listed based on their qualifications and receive a Request for Detailed Proposals (RFDP). For some projects, TxDOT will issue a draft RFDP that allows them to meet with each short-listed company to receive their input before releasing the final RFDP. If a private company’s idea is incorporated into the RFDP, the company is compensated for the intellectual property. Once the detailed proposals are evaluated, the company offering the best value is selected. TxDOT then enters into negotiations with the company to finalize the agreement. The whole evaluation process may take several years. The CDA timeline for the Oklahoma to Mexico segment of the Trans-Texas Corridor is shown on Table 3-1.

Texas law allows for private entities to submit an unsolicited proposal for transportation projects. For an unsolicited proposal, a \$20,000 review fee is assessed. State law requires unsolicited proposals to include the following:

- Information regarding the proposed project location, scope, and limits;
- Information regarding the private entity’s qualifications, experience, technical competence, and capability to develop the project; and
- Any other information the department considers relevant or necessary.

The same process used to evaluate solicited proposals is used for unsolicited proposals. If the unsolicited proposal is considered to have merit, then to provide a fair and competitive process, TxDOT must issue a Request for Competing Proposals and Qualifications (RFPQ). The current legislation does not provide a timeframe within which competing proposals must be received. The companies responding to the RFPQ are short-listed, and then an RFDP is issued to the short-listed companies using the same process used for solicited projects.

Table 3-1. CDA Development Process

Date	Activity	Comment
November 13, 2002	Received unsolicited proposal	Submitted by Fluor Enterprises, Inc.
July 25, 2003	Issued request for competing proposals and qualifications	In response to the unsolicited proposal submitted by Fluor, TxDOT requested competing proposals.
September 23, 2003	Deadline to receive request for proposal and qualifications	The three private sector firms submitted competing proposals and qualifications -- Cintra-Zachry, Fluor Enterprises and Trans-Texas Express.
September 24 - October 29, 2003	Evaluated proposal and developer qualifications	All three private sector firms were advanced to the next stage of the selection process.
Fall 2003 - Summer 2004	Industry review process	This included drafting a request for detailed proposals, meeting with, and receiving comments from the proposers.
February 2004	Notice of Intent published in federal and state registers	This is the official notification that TxDOT intends to begin an environmental study for this element of the Trans-Texas Corridor.
April 7 - June 15, 2004	Spring 2004 public meetings	TxDOT held 26 public meetings throughout the study area to introduce this project and solicit public comments.
April 29, 2004	Issued request for detailed proposals	TxDOT formally asked the three proposers to submit detailed proposals.
August 23, 2004	Deadline to submit detailed proposals	The three shortlisted firms -- Cintra-Zachry, Fluor Enterprises and Trans-Texas Express -- submitted detailed proposals.
October 19 - November 18, 2004	Fall 2004 public meetings	TxDOT held 44 public meetings throughout the study area to introduce corridor alternatives and solicit public comments on TTC-35.
Fall 2004	Evaluations of detailed proposals	TxDOT performed comprehensive review of each proposal to determine the best value proposal for the state.
December 16, 2004	Transportation Commission action	The Commission approved the selection of Cintra-Zachry as the developer.
Late 2004-Early 2005	Finalized terms of the comprehensive development agreement (CDA)	TxDOT and Cintra-Zachry discussed terms and conditions of the CDA.
February 7 - March 31, 2005	Spring 2005 public meetings	TxDOT held 47 public meetings throughout the study areas to gather public comments on possible routes for TTC-35.
March 11, 2005	CDA signed	TxDOT and Cintra-Zachry agree on long-term strategic partnership.
Total time required to complete agreement: 28 months		

Source: Texas Department of Transportation

By using the CDA procurement method, TxDOT is able to reduce its risk. Under a CDA, the developer is responsible for risks related to design, environmental impacts (other than NEPA), existing assets, site condition, right-of-way acquisition, and non discriminatory changes related to operations and maintenance contracts. The state is responsible for related environmental risks (NEPA) and discriminatory changes related to operations and maintenance contracts.

A few more details of the process and selection method used by TxDOT to evaluate proposals follow. The evaluation begins with a Recommendation Committee. This committee relies on four subcommittees consisting of Legal/Administrative, Financial, Management, and Development to perform detailed evaluations. The Recommendation Committee reviews the findings and submits them to the Texas Turnpike Authority (TTA) Director. The TTA director reviews the report and makes a recommendation to the TxDOT Executive Director. The Director also evaluates the reports and makes his recommendation to the Transportation Commission. The scoring system that was used was based on a weighted average of five different elements listed in Table 3-2.

Table 3-2. TTC-35 Proposal Scoring System

Proposal Element	Weight (%)
Conceptual Development Plan	41%
Conceptual Financial Plan + Proposer Financial Strength	40%
Project Management Plan	10%
Quality Management Plan	5%
Price (for Initial Scope of Work – Planning Effort)	4%

Georgia DOT PPI

Georgia’s version of Public Private Partnerships was introduced in the Georgia legislature in 2003 as Public Private Initiatives (PPI). PPI in Georgia were implemented under Senate Bill 257, giving the Georgia Department of Transportation (GDOT) a process to consider unsolicited proposals from private entities to build transportation projects. In 2005, Senate Bill 270 was passed which amended SB 257 and gave GDOT the power to solicit proposals, extended the time for receiving competing proposals from 90 to 135 days, and also allowed more opportunities for public review and input. Georgia’s legislation does not limit the types of PPP into which the GDOT may enter.

GDOT requires all proposals to be submitted in a standard format, which makes it easy to evaluate and compare proposals. The requirements are broken into six tabs and weighted as follows:

	<u>Weight</u>
• Tab 1 - Qualifications, Capabilities and Experience	20%
• Tab 2 - Project Characteristics	25%
• Tab 3 - Project Financing	25%
• Tab 4 - Public Support	15%
• Tab 5 - Project Benefit and Compatibility	10%
• Tab 6 - Special Deliverables	5%

Details for the requirements of each tab can be found in the GDOT PPI Proposal Evaluation Form. Georgia requires a \$10,000 fee to review unsolicited and competing proposals.

GDOT utilizes a five phase process to evaluate both solicited and unsolicited proposals. To assist in the evaluation process, two committees have been established. The first is an Advisory Committee consisting of not less than three members, all of whom shall be employees of GDOT. The Deputy Commissioner, the Chief Engineer, and the Treasurer must be members. All other members are appointed from the ranks of the Department’s Division Directors by the Commissioner. The second committee is an Evaluation Committee that includes a designee of the Governor, a designee with a background in finance to be named by the Governor, the commissioner of the Department of Transportation, the director of the State Road and Toll way Authority, and the director of the Georgia Regional Transportation Authority. Figure 3-2 illustrates the five phase process used by GDOT.

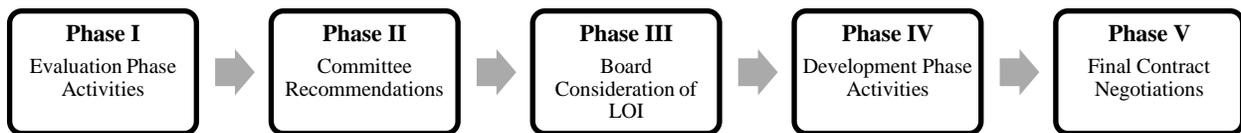


Figure 3-2. Georgia DOT PPI process.

Phase I consists of a department screening process to evaluate which potential projects are best suited for a solicited PPI. The Advisory Committee performs these processes. Based on the results from the screening process, projects which are feasible for solicitation will have a draft Request for Qualifications drawn up. Then a Notice of Intent to Solicit is issued to allow for public input for a minimum of 30 days. After including any information gathered from the public and potential proposers, the Department finalizes and issues a Request for Qualifications (RFQ). Once the deadline for responses to the RFQ has been reached, the Department evaluates qualifications and short-lists the most qualified proposers. A Request for Proposals (RFP) is then issued to the short-listed proposers.

Phase II consists of the Advisory Committee reporting its findings and recommendations to the Evaluation Committee. The Evaluation Committee reviews these findings and recommendations and finalizes their recommendation. Phase II concludes with a recommendation to the State Transportation Board to accept or to reject the proposal.

If the proposal is accepted, Phase III consists of submitting a draft Letter of Intent (LOI) to the Board along with the recommendation provided by both committees. Prior to the approval of the

Florida DOT PPP

The Florida DOT was given the authority in 2004, with the amendment of Florida Statute Section 334.30, to enter into PPP for the building, operation, ownership, or financing of transportation facilities. In 2007, the Florida Legislation passed HB 985 that provided an update to Section 334.30 by adding more control and oversight to the process, extending the time for receiving competing proposals from 60 to 120 days, and clearing up areas of confusion in the 2004 amendment. The department may receive or solicit proposals.

The PPP process begins with either the department soliciting proposals with a RFQ or by receiving an unsolicited proposal. If an unsolicited proposal is submitted, the department must publish a notice in the newspaper at least once a week for two weeks stating it has received a proposal and will accept other proposals for 120 days. When unsolicited proposals are submitted, a \$50,000 fee is required. Proposers should be qualified and meet department standards for professional engineering services and road and bridge contracting prior to submitting a proposal.

Once the period for public notice has ended, the department ranks the proposals and creates a short list. When ranking the proposals, according to HB 985, *“The department may consider factors that include, but are not limited to, professional qualification, general business terms, innovative engineering or cost-reduction terms, finance plans, and the need for state funds to deliver the project.”* The department then issues a RFP to the short listed proposers. Once the deadline for submitting proposals has passed, the department will evaluate the proposals, and selection is made on a best value criteria. The department holds the right to terminate negotiations with the proposer if it is not satisfied with the results. At that time, the department may negotiate with the second ranked and lower ranked firms, in order, should there be more than one proposer. The department may reject all proposals at any point in the process up to completion of a contract with the proposer. The department must provide an independent analysis of the proposed PPP that demonstrates the cost-effectiveness and overall public benefit before it can proceed with procurement and awarding the contract. HB 985 limits the term of PPPs to 50 years and, with the approval of the secretary of the department, up to 75 years. Any agreements that exceed 75 years must be approved by the legislature.

The process used to evaluate proposals is still evolving. To build a repeatable PPP process, the FDOT created three teams - finance, procurement, and engineering and operations - to assist in the proposal evaluation. The first process is to evaluate the proposer’s qualifications and create a short list. FDOT has established financial and technical criteria that are used for evaluation. At the time of this report, FDOT was in the process of revising the guidelines for PPP evaluation.

Virginia PPTA

The Public Private Transportation Act (PPTA) of 1995, amended in 2005, is Virginia’s equivalent to a PPP. The PPTA of 1995, as amended, allows for both solicited and unsolicited project proposals. The major steps involved in evaluating, selecting, and implementing the

projects are similar for both solicited and unsolicited proposals. Virginia uses a six phase process to evaluate PPTA proposals.

- Phase 1: Quality Control
- Phase 2: Independent Review Panel
- Phase 3: Oversight Board Recommendation
- Phase 4: Submission and Selection of Detailed Proposals
- Phase 5: Negotiations
- Phase 6: Comprehensive Agreement

When issuing a request for proposal, the following information is included by the department to proposers: deadline for submission of the proposals, the factors which will be used in evaluating the proposals, the designated single point of contact, and any qualifications which will be required of private entities submitting proposals. The department may issue a request for information (RFI) to allow private entities to show interest in developing and/or operating transportation facilities that have been selected as potential PPP candidates.

For an unsolicited proposal, the department has 30 days after the receipt of such proposal to initiate a review and determine if it meets all the legal and policy requirements for further evaluation. Competing proposals are due between 90 and 120 days later, depending on whether the initial proposal requires federal oversight. Virginia requires a \$50,000 review fee for all unsolicited proposals where the total cost of the project is estimated to be greater than \$50 million. This fee is subdivided based on the proposal's progress through the conceptual and detailed proposal process. A fee of \$10,000 must be submitted with a conceptual proposal and the remaining \$40,000 submitted with the detailed proposal.

Once the deadline has been reached for either competing or solicited proposals, the department will review all proposals for quality control and determine whether the proposal is compliant with applicable laws and PPTA guidelines as part of Phase 1. Phase 2 involves a review, evaluation, and recommendation of one or more conceptual proposals by an Independent Review Panel that is made up of senior transportation officials and other individuals with appropriate expertise to evaluate PPTA projects. Phase 3 is a review and either acceptance or rejection of the conceptual proposal by the Oversight Board. For transportation projects, the Oversight Board is the state transportation board, and a positive recommendation allows the department to seek a detailed proposal from accepted conceptual proposals. Phase 4 is the final selection of the successful detailed proposal(s). The department may select none, one, or more proposals to advance to Phase 5 for negotiations. Phase 6 is the final stage of review prior to the execution of the comprehensive agreement. Table 3-4 illustrates the duration of each phase listed above.

Table 3-4. Virginia PPTA Proposal Evaluation Timeline (Source: Virginia DOT)

1. Quality Control	5 to 6 months
a. Proposal meets requirements of Act	1 month
b. Public notice	3 to 4 month (minimum)
c. QC review	1 month
2. Independent Review Panel	5 to 8 months**
a. Assemble panel and schedule meetings	1 to 2 months
b. Panel meetings	4 to 6 months
3. Oversight Board Recommendation	2 months
4. Submission and Selection of Detailed Proposals	8 to 14 months**
a. Department develop and issue Request for Detailed Proposals	2 months
b. Develop and submit proposals	4 to 8 months
c. Department evaluation and selection	2 to 4 months
5. Negotiations	2 to 6 months**
6. Review and Signing of Interim or Comprehensive Agreement	1 month

** These timetables are goals which are dependent on project complexity and private sector objectives.

4.0 Legal Issues and Public Opinion

Legal Issues for PPP

Over the years, legislation in the United States has sometimes facilitated PPPs and sometimes hindered PPPs. A legal framework that provides flexibility and certainty is required for transportation agencies to create PPPs and for private companies to show interest. Before specific legal issues can be addressed, there must be the political will to make PPPs happen. The political environment can be influenced by public opinion and the opinion of professional organizations and lobbyists. If the political environment becomes favorable toward PPPs, the government can consider key legal issues impacting PPPs including procurement, financing, project characteristics, and legal authority of the owner.

In recent years, the executive branch of the United States government has sought to encourage PPPs, particularly in the area of transportation. In Executive Order 12803, President George W. Bush encouraged states and local governments to privatize public infrastructure. Privatization is identified as a method for public agencies to harness the resources of the private sector to adequately develop and maintain infrastructure for economic growth. Heads of executive departments and agencies are directed to facilitate privatization by simplifying federal requirements related to privatization of federally funded projects. Reflecting this philosophy, the Secretary of Transportation, Mary Peters, gave a speech to state governors on Feb. 25, 2008 where she advocated market-based funding and management of roads. She praised California and Pennsylvania for their leadership in harnessing the power of private capital through PPPs. Peters stated, "America's transportation system can be better, and my goal is to clear federal obstacles to innovation and investment so you can make that happen."

George W. Bush's administration took steps to move the U.S. transportation system toward a Public Private Partnership model. In addition to Mary Peters, other government officials such as Tyler Duvall, Assistant Secretary of Transportation Policy, and D.J. Gribbin, the Department of Transportation's General Counsel, have promoted policies to reduce government financing of transportation projects and ease government restrictions against privatizing transportation. These actions have attracted investment money from private equity funds focused on transportation. Specific government actions to promote PPPs include the following:

- Investing an average of \$10 million per year since the 1990's to research tolling.
- Encouraging congestion pricing by allocating nearly \$850 million to New York, San Francisco, Minneapolis, Miami, and Seattle through a pilot project called Urban Partnerships.
- Reducing competition with transit systems by making it harder for rail projects to qualify for federal funding.

- Making available \$15 billion in tax exempt bonds to private transportation companies.
- Providing sample legislation written by DOT for public agencies. PPP legislation is now in place in 24 states and territories.

To assist states in enacting effective PPP legislation in the 50 states, the FHWA has identified 28 key elements. Each of these elements asks questions that suggest how the legislation should be written. These 28 key elements can be divided into four main areas: procurement (9), financing (7), project characteristics (3), and legal authority of the owner (9).

Procurement

- Does the relevant law allow solicited and unsolicited proposals for PPP projects?
- Does the relevant law permit all kinds of procurements for PPP project delivery? These might include, for example, calls for projects, competitive RFQ and RFPs, qualifications review followed by an evaluation of proposer concepts, use of design build, procurements based on financial terms such as return on equity rather than on price, long-term asset leases for some period of up to 60 years or longer from the time operations commence.
- Are there explicit exemptions/supplemental procurement authority from the application of the state's general procurement laws?
- Does the relevant law permit the public sector to make payments to unsuccessful bidders for work product contained in their proposals?
- Can the agency charge application fees to offset its proposal review costs?
- Does the relevant law allow adequate time for the preparation, submission, and evaluation of competitive proposals? Note that the agency should have the authority to establish these deadlines on a case-by-case basis depending on the complexity and scope of the initial proposal or other factors that might promote competition (e.g., more review time during holiday periods).
- Does the relevant law specify evaluation criteria for PPP proposals received under a given procurement approach?
- Does the relevant law specify the structure and participants for the review process involving PPP proposals?
- Does the relevant law protect the confidentiality of PPP proposals and any related negotiations in the period prior to execution of the PPP agreement?

Financing

- Does the relevant law permit local/state/federal funds to be combined with private sector funds on a PPP project?
- Who has rate-setting authority to impose user fees, and under what circumstances may they be changed or otherwise reviewed?
- Does the relevant law permit TIFIA loans to be used on PPP projects?
- Is there a legal requirement to remove tolls after the repayment of project debt?
- Is there a restriction that prevents the revenues from PPP projects from being diverted to the state's general fund or for other unrelated uses?

- Does the public sector have the authority to issue toll revenue bonds or notes?
- Does the public sector have the authority to form nonprofits and let them issue debt on behalf of a public agency?

Project Characteristics

- Is the number of PPP projects limited to only a few “pilot” or “demonstration” projects?
- Are there restrictions concerning the geographic location of PPP projects?
- Are there restrictions concerning the particular mode of transportation eligible to be developed as a PPP project (e.g., truck, passenger auto, freight rail, passenger rail)?

Legal Authority

- Does the relevant law permit the conversion of existing or partially constructed highways into toll roads?
- Is prior legislation approval required when an individual PPP proposal is received?
- Are there any similar requirements that subject the PPP proposal or the negotiated PPP agreement to a local veto?
- Does the relevant law authorize the public sector to grant long-term leases/franchises for the construction, operation, and maintenance of toll facilities?
- Does the relevant public agency have the authority to hire its own technical and legal consultants?
- Is the public sector required to maintain comparable non-toll routes when it establishes new toll roads?
- Are there any non-compete clause prohibitions?
- Is the authority to enter into PPPs restricted to the state DOT or state turnpike authority, or may regional or local entities also do so?
- Does the relevant law provided for the ability of the public sector to outsource long-term operations and maintenance and other asset management duties to the private sector?

These elements suggest that when flexibility and certainty are introduced into issues of procurement, financing, project characteristics, and legal authority, then PPPs become more feasible.

By August 2006, the FHWA had identified 24 U.S. states/territories with significant transportation PPP legislation. The degree of flexibility and certainty varies by issue and by state. In some legislation, there is no specific guidance regarding solicited versus unsolicited bids. In other legislation, there are specific guidelines. For example, when Georgia receives an unsolicited bid, the legislation provides 135 days for competitors to submit responses. North Carolina has a restriction on unsolicited bids. Most legislation grants the existing state DOT or transportation authority the right to enter into PPPs, but Missouri legislation creates a new special purpose non-profit entity for overseeing PPPs, the Transportation Corporation, while Puerto Rican legislation establishes a toll transportation facility authority.

Some states are entering the PPP arena cautiously. For example, Arizona established a pilot program allowing up to two solicited and two unsolicited projects. Legislation in two states, Alaska and Indiana, cite specific projects for PPPs, while some states prohibit certain types of projects. For example, California excludes tolling on State Highways and Nevada excludes toll bridges and toll roads.

Public Opinion of PPPs

While the executive branch of the federal government has shown strong support for PPPs, the legislative branch, state governments, professional organizations, and the public have exhibited mixed reactions. Public concern has been raised in New Jersey, Pennsylvania, and Texas where PPPs have been put on hold. Many citizens are not persuaded that private firms will watch over the public interest as well as the government can. Some fear that tolls or other revenues will make private firms wealthy instead of allowing revenue to be reinvested into transportation infrastructure. There is also the danger that PPPs will be developed for the most favorable financial transportation projects, leaving unfavorable but needed projects without adequate resources.

The public hears different messages about PPPs from political leaders and industry. Public concern is raised when agencies like the Government Accountability Office indicate that private tolls tend to be higher than public tolls. Unfamiliarity with tolls in some states, or reluctance to see toll rates raised are cause for some public concern. The future of tolling may be related to the gas tax. Without an increase in the gas tax, the national Highway Trust Fund will wither, and without the assistance of federal funding, states may be forced to transition to toll roads.

Legislative Branch's Opinions of PPPs

On May 10, 2007, the U.S. House of Representatives Committee on Transportation and Infrastructure sent a letter to governors, state legislators, and state transportation officials regarding PPPs. In contrast to the Bush administration's support of PPPs, the purpose of the Committee's letter was to "strongly discourage you from entering into Public Private Partnership agreements that are not in the long-term public interest in a safe integrated national transportation system that can meet the needs of the 21st Century." While acknowledging the need for increased funding of transportation infrastructure in the anticipated reauthorization of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU), the Committee expresses concern regarding the use of PPPs and the intent to undo PPPs that compromise national transportation interests. One of the committee's concerns is over new types of foreign and domestic management of highways, which they believe is in contrast to the federal-state partnerships which characterized the national highway system as begun in 1956. They caution against PPPs that "may favor parochial and private interests" at the expense of the national transportation network. The committee cites additional concerns: concessions containing non-compete clauses that limit improvements to reduce congestion on adjacent highways and streets; long term leases that may favor private investors over public

benefit; and sustainable financing. To counter the “model legislation” provided by the USDOT to the States, the Committee promised to provide a discussion paper outlining critical aspects to consider before moving forward with PPP legislation.

Jack Schenendorf, Vice Chair of the National Surface Transportation Policy and Revenue Study Commission, gave testimony before the Full Committee on Transportation and Infrastructure of the U.S. House of Representatives regarding the findings and recommendations in the Commission’s report called *Transportation for Tomorrow*. This study was mandated as part of SAFETEA-LU. The report highlights the urgent need for policy as well as funding reforms. In addition to encouraging Congress to promote the use of PPPs, the Commission recommends the removal of barriers to tolling and congestion pricing.

Professional Organization’s Opinions of PPPs

Organizations such as the American Association of State Highway and Transportation Officials (AASHTO) and the Association of American Railroads (AAR) have supported the need for PPPs to improve the transportation infrastructure in the US.

Pete Rahn, representing AASHTO, gave testimony on the National Surface Transportation Policy and Revenue Study Commission’s report called *Transportation for Tomorrow*. He stated that both the Commission’s report and AASHTO’s own 2007 report, *Transportation: Invest in Our Future*, identify a variety of potential funding methods, including PPPs. However, Rahn notes that with forecasts suggesting that tolling revenue could meet only 7-9% of future highway funding needs, other funding sources are also needed to support the highway transportation system.

Jeff Moller, representing AAR, gave testimony to U.S. House of Representatives Committee on Transportation and Infrastructure Subcommittee on Railroads, Pipelines, and Hazardous Materials regarding the value of PPPs for freight and passenger rail and related impacts to highways. On a network of over 140,000 rail miles, railroads comprise approximately 40% of U.S. freight ton-miles. Even after spending \$420 billion on railroad infrastructure and equipment between 1980 and 2007, financing is lagging behind the need. Moller suggests PPPs as a way to bridge the gap to the benefit of the public and private entities. He states, “Without a partnership, projects that promise substantial public benefits in addition to private benefits are likely to be delayed, or never started at all, because it would be too difficult for either side to justify the full investment needed to complete them.” Moller believes that Class I railroads could contribute up to \$96 billion of the \$148 billion required by 2035, creating an opening for PPPs to fund \$39 billion remaining. Public benefits of railroad PPPs include lower pollution; lower energy consumption; lower greenhouse gas emissions; less highway congestion; lower shipping costs; increased competitive advantage for farmers, manufactures, and miners in the global economy; and overall enhanced mobility, safety, and security. Examples of PPPs in the railroad industry include the Alameda Corridor (Long Beach to Los Angeles), the Chicago Region Environmental and Transportation Efficiency Program, the Heartland Corridor (the East Coast to Chicago), the Reno Trench, and the New Orleans Gateway. Moller emphasizes the public benefit for railroads

and highways by quoting the January 2003 report by AASHTO that states, “Realizing the public benefits of a strong freight-rail system at a national level will require a new partnership among the railroads, the states, and the federal government....Relatively small public investments in the nations’ freight railroads can be leveraged into relatively large benefits for the nation’s highway infrastructure, highway users, and freight shippers.”

Laws Impacting PPP Financing

Financing is an important area of PPP agreements. Prior to 1997, government agencies could not contract with private firms for more than 5 years without loss of government tax-exempt bond status. This situation created a large barrier for PPPs because PPPs generally involve long term agreements. In January 1997, Internal Revenue Service regulations changed, allowing public debt to be tax-exempt for up to 15 years for transportation projects.

In the mid-1980s, state DOTs and transit agencies slowly began to increase outsourcing various planning and development activities to private sources. Examples of PPP procurement methods include design-build, design-build-operate, design-build-maintain, and design-build-operate-maintain. By 1998, federal assistance for PPPs was available in the Transportation Equity Act for the 21st Century. Additionally, the Transportation Infrastructure Finance and Innovation Act (TIFIA) established state infrastructure banks (SIBs) to attract private investment in public transportation projects. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users of 2005 (SAFETEA-LU) further encouraged PPPs. For example, TIFIA programs were improved, SIBs were extended to all 50 states, and federal income tax exemptions were applied to private activity bonds (PABs) up to \$15 billion. Texas is the first state to implement PAB funding, which is to be used for a highway near Austin. SAFETEA-LU also impacted PPP opportunities under the Federal Transit Administration (FTA) through the Public Private Partnership Pilot Program, or Penta-P. This was considered a pilot program to identify advantages and disadvantages of PPPs for transit. The first project under this program is the Oakland Airport Connector, a fully automated train system providing a 3 mile link to the Coliseum Bay Area Rapid Transit station.

A strong legal foundation for PPPs is necessary before potential public and private partners will be willing to enter into partnerships. If a partnership is formed and projects undertaken are later determined to be beyond the jurisdiction of the public partner, the partners could find themselves in a situation where they have invested time and money in a project that must be abandoned or totally restructured. Uncertainty as to how the law will interpret the ability of PPPs to set tolls or hold intellectual property rights of specially designed electronic tolling systems, for example, creates a barrier to PPPs. The FHWA outlines a list of relevant legal issues:

- Legal capacity of parties and legal requirement of sponsor to provide services
- Ability of private firms to be more involved in infrastructure development and control, including the nature and extent of participation by foreign firms
- Existence and legal basis of cost recovery and tolling (if applicable)
- Authority to regulate toll rates, exemptions to tolling, and services

- Dispute resolution and liability provisions
- Competition and anti-trust regulations
- Avoiding conflicts of interest among private and public parties to a PPP
- Special provisions associated with use of Federal funds – Davis-Bacon, Buy-America, Section 13c of the Federal Transit Act, etc.
- Public sector borrowing restrictions/debt limitations
- Tax and accounting liabilities
- Adequacy of procurement and selection procedures
- Contract provisions and surety requirements
- Property and intelligent property laws protecting proprietary technologies and know-how
- Authority of other government entities over infrastructure assets and access rights
- Property issues of land acquisition – condemnation, use, and disposal

This list, as with FHWA’s list of key elements for legislation, emphasizes flexibility and certainty as it relates to the legal framework. Predictability and reasonableness of the legal framework was identified as one of 47 sub factors for PPP success in infrastructure, with particular impact on creating a favorable investment environment.

In contrast, the domination of design-bid-build procurement in most public agencies has left a legal environment that is uncertain about how to handle many aspects of PPPs. To eliminate legal uncertainties, the FHWA has developed a number of recommendations regarding the authority States should grant to transportation agencies, including:

- Bundle a wide range of services from pre-development through long-term operations
- Allow various project delivery systems, including DB, DBOM, DBFO, and concessions
- Use qualifications-based procurement, such as two-stage “best value” procurements
- Apply selection criteria that result in the choice of the best developer able to provide the greatest value to the project sponsor
- Use alternative forms of financial security
- Negotiations with private partners during early planning stages of project development

Without the certainty that the transportation agency has the authority to establish flexible PPPs as outlined here, agencies and private firms will tend to avoid establishing PPPs.

It is important that PPP contracts are negotiated to have clearly defined responsibilities and risks that are shared fairly. PPP contracts may extend over long periods of time. The public may believe that the government should not give up control over valuable infrastructure. Private partners may worry that public agencies may not be flexible when future travel demands or technology changes more than predicted. The FHWA outlines important issues to be negotiated in PPP contracts.

- Administrative coordination
- Adequacy of oversight and monitoring procedures
- Ability and restrictions over transfer of private sector contract duties to other parties

- Contract re-negotiation, re-financing, hand-back provisions, and assignment of rights
- Provisions regarding the ability of the public sector or other parties to build or expand competing facilities
- Treatment of “windfall” profits due to traffic growth or congestion pricing
- Public control over limitations on private refinancing of project debt
- Currency and profit repatriation rules
- Authority over advertising or facility branding rights and treatment of proceeds
- Ability to provide guarantees
- Changes in design standards or construction specifications during development
- Shifts in public policy towards PPPs or technology changes that impact project viability

The goal of clear negotiations on each of these items is intended to reduce uncertainty and define risk.

PPP Legislation in Alabama

Serious shortfalls in highway and transportation funding have forced ALDOT to pursue alternative financing mechanisms to build lasting transportation infrastructure in Alabama. The private sector has expressed great interest in financing and building transportation facilities and receiving a return through the collection of tolls. House Bill 217, sponsored by Representative Terry Spicer, addresses this urgent need and allows the Alabama Toll Road, Bridge, and Tunnel Authority to issue bonds and enter into Public Private Partnerships to construct and privatize toll roads, bridges, tunnels, or any other transportation facility in the state. In May 2009, the Alabama House and Senate gave final approval to HB217, now signed into law as Act #2009-769. The legislation repeals the state law that prevents interstate highways, including tunnels and bridges, from tolling and bonded indebtedness. According to Rep. Spicer, the new provision will give the state more options for strengthening infrastructure.

First, the legislation amends eight sections of the Code of Alabama 1975 relating to the Alabama Toll Road, Bridge, and Tunnel Authority (ATRBTA), and authorizes ATRBTA to enter into agreements to construct and operate toll roads, bridges, or tunnels that are part of the federal interstate system. The act specifically charges ALDOT with the administration and management of the planning, construction, and operation of toll projects.

Second, ATRBTA is authorized to issue and pay off revenue bonds for any of its corporate purposes. The bonds shall mature in no more than 75 years. The act also authorizes the authority to issue notes from time to time maturing in not later than 8 years.

Third, under the act, ATRBTA and ALDOT are able to enter into contracts, agreements, or understandings with other public agencies and private parties. These partnerships include design-build contracts, design-build-operate contracts, design-build-own-operate contracts, design-build-own-operate-maintain contracts, or other similar arrangements. ATRBTA and ALDOT will also be able to implement shadow toll projects financed via availability payments, and to lease assets and enter into concession agreements when deemed appropriate.

Fourth, the act authorizes ALDOT to expend funds from any available source for preliminary engineering work on toll projects. The department shall be reimbursed for the preliminary engineering costs from the proceeds of revenue bonds. The toll facilities shall be transferred to the state when all bonds and other debts have been paid off; and leases or concessions have expired or terminated.

In summary, the legislation, HB217/Act 2009-769, opens various opportunities for accommodating private participation in developing new transportation facilities. Instead of awarding projects based on the lowest bid, ALDOT will be able to select contractors based on qualifications of participants or best value, and taking into consideration the best interest of the State of Alabama. Additionally, the act is silent on unsolicited proposals. Most PPP legislation in other states and FHWA's working draft specify that the state must respond in a certain time period when it receives an unsolicited proposal. However, in those other states, an unsolicited proposal may lead to a competition process between the proposer and other private companies to determine which company will be awarded the project. Thus, if ALDOT were given the power to receive unsolicited proposals, that power might limit its flexibility to fund and construct the project itself. Under the enacted HB217, ALDOT can either respond to unsolicited proposals or build toll projects with public funds so that the public interest is better protected.

5.0 Financing Options

Introduction

In the Alabama Department of Transportation, the Federal-Aid Project Modifications for funding transportation projects are prepared and reported by Bureau of Finance and Audits at the appropriate level to ensure the maximum collection of Federal funds. According to the 2007 ALDOT Annual Report, a total of \$706,712,512 was collected from the Federal government during the 2007 fiscal year as reimbursement for work performed under Federal supervision. The projects can be either financed using Federal funds in the traditional way (known as pay-as-you-go) or innovative ways can be used in financing of new projects. This chapter discusses these new methods in detail.

Traditionally, projects are financed using one of the following methods: pay-as-you-go, bonds, or on balance sheet financing. Pay-as-you-go is a system of paying transportation services as they are incurred. This is the financing method which has been used for years and is well known by everyone. However, it has weaknesses. The main weakness is that states are not able to gather enough funds to finish projects on time. Especially with the recent financial crisis and economy recession, there are many concerns about the ability of the federal government to provide enough funds to infrastructure projects. In addition, the ability of states to raise funds through their main source of revenue, fuel taxes, has dropped significantly due to the emergence of hybrid cars, and also due to the public trend towards buying new fuel efficient cars.

According to the Statewide Transportation Plan 2008, the state of Alabama will need approximately \$62 billion through 2035 to finance its projects. However, the anticipated project funding through 2035 is only about \$49 B to \$53 billion. It means that the state will face a shortfall of approximately \$10 billion dollars in the next 27 years. Those statistics were published in July 2008, meaning they do not reflect the current recession that US has faced starting September 2008. Therefore, Alabama should search for options to close this gap. Otherwise, the state will face a serious lack of funds not only for construction of new infrastructure systems, but also in maintenance of the current projects. As a result, "Transportation Secretary Mary Peters said administration officials are crafting an overhaul plan... The goal would be to give states more flexibility to set transportation spending, while making it easier for them to tap private-sector dollars."

Figure 5-1 describes ALDOT funding sources during fiscal year 2007. The following paragraphs describe some financing options that the state is already using and provides a description of new financing options that the state can use to increase receipts and to close the \$10 billion dollar shortfall gap.

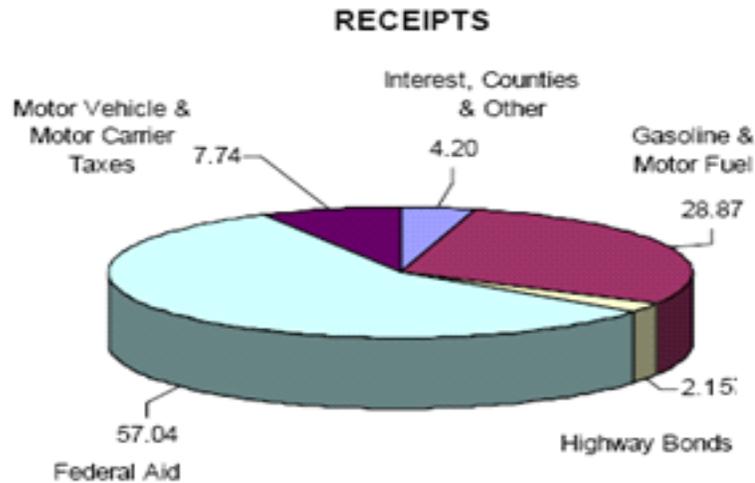


Figure 5-1. ALDOT receipts in 2007 (ALDOT 2008).

Debt Financing

General Obligation Bonds

General obligation bonds are debt instruments issued by states and local governments to raise funds for public works. What makes general obligation bonds, or GO bonds, unique is that they are backed by the full faith and credit of the issuing governmental unit. This means that the unit commits its full resources to paying bondholders, including general taxation and the ability to raise more funds through credit. The ability to back up bond payments with tax funds is what makes GO bonds distinct from revenue bonds, which are repaid using the revenue generated by the specific project the bonds are issued to fund (fees from a public parking garage or tolls from a toll road, for example).

GO bonds give municipalities a tool to raise funds for projects that will not provide direct sources of revenue--roads and bridges, parks and equipment, and the like. As a result, GO bonds are typically used to fund public projects that will serve the entire community; revenue bonds, on the other hand, are used to fund projects that will serve specific populations, who provide revenue to repay the debt through user fees and user taxes.

GO bonds are associated with low risk because they are backed by the government. The government has the option of raising taxes to meet its obligations in paying the principal and interest of GO bonds. Various kinds of fees, such as license fees, can also be used to pay GO bonds. However, in most cities, property and real estate taxes are the most common types of ad valorem taxes available to municipalities to pay such bonds. For example, if a town creates a bond issue to fund a new bridge over an intersection, it may increase the property tax rate to ensure that it will have sufficient income to meet its obligations to bondholders. It is also possible for municipalities to repay bondholders by borrowing more money. When interest rates

fall, municipalities may call a bond issue, which means the bond issuer repays the principal before the bond matures. The municipality may then re-fund the debt by making a new bond issue at a lower rate of interest, saving itself money in the process. This perception of low risk can potentially allow a local government to borrow at a lower interest rate, saving its taxpayers money over the life of the bonds.

General obligation bonds are prized for their relative safety as investments. Because the credit of a municipality stands behind them, GOs typically have high bond ratings, higher than revenue bonds tend to. However, as with other examples of low-risk investments, the trade-off for safety is lower returns. GO bonds typically pay lower interest than revenue bonds, precisely because the credit behind them makes the possibility of default so remote. However, many GO bonds offer tax-free returns, which can make up for lower interest rates, especially for investors in higher tax brackets.

Many states, such as Alabama, do not allow local governments to issue unlimited-tax general obligation debt without a public vote. According to the ALDOT website, The Division of Debt Management, “pursuant to Section 213 of the Constitution of Alabama of 1901, as amended by Amendment 26 (the “Constitutional Budget Amendment”) the [Alabama] State is prohibited from incurring debt, and the only method by which general obligation debt of the State can be incurred is by an amendment of the Constitution.” Such amendments historically have been adopted through a procedure which requires them to be proposed by a favorable vote of three-fifths of all members of each house of the legislature and approved by a majority of the voters of the State voting in a statewide election.

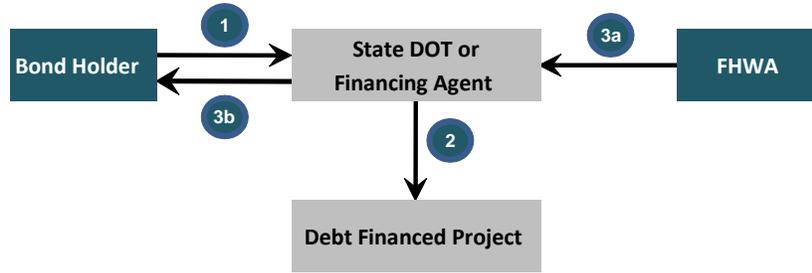
Grant Anticipation Bonds (GARVEE)

A Grant Anticipation Revenue Vehicle (GARVEE) is a debt financing instrument where debt service and related financing costs can be reimbursed by Federal-aid highway funds. GARVEEs can be issued by a State, a political subdivision of a State, or a public authority. States can receive Federal-aid reimbursements for a wide array of debt-related costs incurred in connection with an eligible debt financing instrument, such as a bond, note, certificate, mortgage, or lease. Reimbursable debt-related costs include interest payments, retirement of principal, and any other cost incidental to the sale of an eligible debt instrument. The GARVEE program enables States and other public authorities to issue debt-financing instruments, such as bonds, to pay for current expenditures on transportation construction projects and repay the debt using future Federal apportionments. Although bond financing imposes interest and other debt-related costs, bringing a project to construction more quickly than otherwise possible can sometimes offset these costs. Delaying projects can impose costs that derive from a variety of sources: inflation, lost driver time, freight delays, wasted fuel, and forgone or deferred economic development. Any analysis of the financial costs and benefits of debt financing weighs the costs of borrowing against the economic, safety, and mobility benefits of completing the project sooner than would be possible with pay-as-you-go funding. In recent years, Federal policy makers have examined strategies under which Federal-aid funds can better support states that elect to accelerate projects through borrowing.

Candidates for GARVEE financing are typically projects, or a program of projects, that are large enough to merit borrowing rather than pay-as-you-go grant funding, with the costs of delay outweighing the costs of financing. GARVEE candidates do not have access to another source of revenue stream, such as local taxes or tolls, and other forms of repayment are not feasible. The sponsors must be willing to reserve a portion of future Federal-aid highway funds to satisfy debt service requirements. States are finding GARVEEs to be an attractive financing mechanism to bridge funding gaps and accelerate construction of major corridor projects.

The main advantage of the GARVEE financing mechanism is that it generates upfront capital to keep major highway projects moving forward at tax-exempt rates and enables a State to construct a project earlier than is possible with traditional pay-as-you-go financing. As a result of the fast tracking process, the inflation effect can be eliminated and the costs will be lower. In addition, the public will enjoy the safety and accessibility of projects sooner, so the public satisfaction will be higher. Moreover, by paying with future Federal highway reimbursements, the cost of the infrastructure is spread over its useful life rather than just over the construction period, enabling the department to fund more projects. Although GARVEEs cannot be issued by private entities, they can facilitate the creation of Public Private Partnerships by making financing available for transportation projects in a way that could attract greater private sector involvements. They can provide an immediate and reliable source of funds that would make a project more attractive to the private sector. In addition, they can expand access to capital markets, as a supplement to general obligation or revenue bonds, and they can make very large projects possible.

As illustrated in Figure 5-2, debt is issued by the state or its designated financing agent, and construction proceeds on the project(s) using proceeds of the GARVEE issue to fund eligible costs. Funds are obligated as debt service comes due, generally through the use of partial conversion of advance construction (PCAC). PCAC is an especially appropriate technique, since debt service payments will spread out over a number of years and states will find it advantageous to consume only the necessary amount of obligation authority each year. Debt service payments can be sent to either a state-designated account or a trustee.



- 1 State DOT Issues bonds and receives bond proceeds.
- 2 State DOT expends bond proceeds to construct Federal-aid debt-financed projects.
- 3a State receives "cost-reimbursement" from FHWA for debt service expenses from the annual Federal-aid obligation authority.
- 3b State DOT passes through Federal-aid reimbursement as debt service payment to bondholders over a multi-year term.

Figure 5-2. GARVEE bonds (USDOT 2002).

States are finding GARVEEs to be an attractive financing mechanism to bridge funding gaps and accelerate construction of major corridor projects. As of June 2004, 10 States and the Virgin Islands have issued just over \$5 billion in GARVEE bonds. Figure 5-3 illustrates the States that have issued GARVEEs, the States that have the authority to issue GARVEEs, and the states that are considering or seeking the authority to issue GARVEEs as of June 2004. Ohio, the first State to leverage Federal dollars through GARVEEs, sold five GARVEE issues in the FY 1998-2004 period, totaling \$439 million. The proceeds of these issues are helping to finance Spring-Sandusky corridor improvements, the new Maumee River Bridge, and the Southeast Ohio Plan.

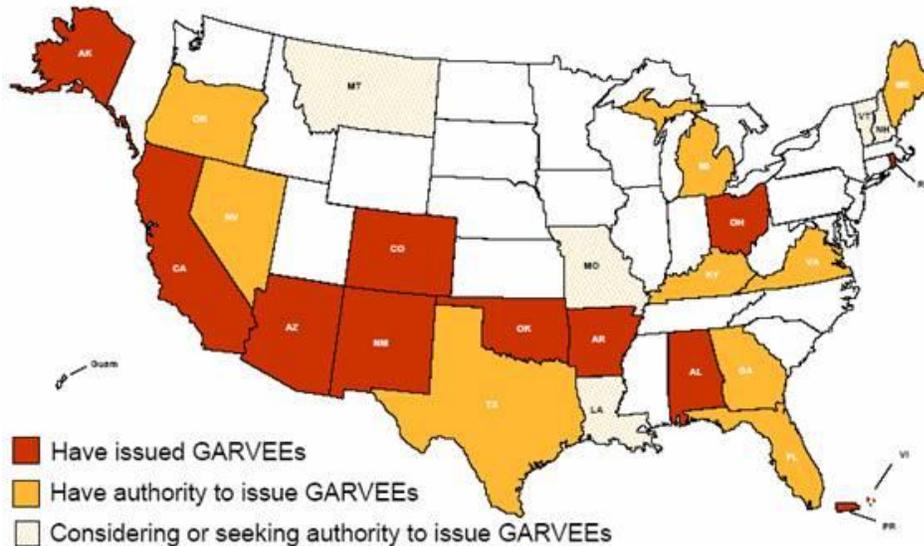


Figure 5-3. GARVEEs: state participation as of June 2004.

In the state of Alabama, on November 7, 2000, Amendment One was overwhelmingly passed by a vote of the people. This amendment provided \$50 million to match \$200 million in GARVEE

Table 5-1. GARVEE BONDS - SERIES 2002-A (Source: ALDOT Annual Report 2008).

YEAR	BONDS OUTSTANDING	REDEMPTION	INTEREST	TOTAL
2007-2008	\$147,740,000.00	\$11,920,000.00	\$7,135,812.50	\$19,055,812.50
2008-2009	\$135,820,000.00	\$12,450,000.00	\$6,526,562.50	\$18,976,562.50
2009-2010	\$123,370,000.00	\$13,010,000.00	\$5,890,062.50	\$18,900,062.50
2010-2011	\$110,360,000.00	\$13,605,000.00	\$5,258,700.00	\$18,863,700.00
2011-2012	\$96,755,000.00	\$14,245,000.00	\$4,587,545.13	\$18,832,545.13
2012-2013	\$82,510,000.00	\$14,930,000.00	\$3,830,618.75	\$18,760,618.75
2013-2014	\$67,580,000.00	\$15,660,000.00	\$3,027,631.25	\$18,687,631.25
2014-2015	\$51,920,000.00	\$16,445,000.00	\$2,195,136.68	\$18,640,136.68
2015-2016	\$35,475,000.00	\$17,285,000.00	\$1,341,625.00	\$18,626,625.00
2016-2017	\$18,190,000.00	<u>\$18,190,000.00</u>	<u>\$454,750.00</u>	<u>\$18,644,750.00</u>
		<u>\$147,740,000.00</u>	<u>\$40,248,444.31</u>	<u>\$187,988,444.31</u>

bond funds previously passed by the legislature to replace deficient county bridges. As of October 1, 2007, 580 county bridges have been completed, and nine bridges are under construction. It is anticipated that the 67 counties in Alabama will be able to replace approximately 600 bridges under this five-year program. Also in April 2002, the Alabama Federal Aid Highway Finance Authority was authorized to issue a sum of \$200 million GARVEE Bonds, Series 2002-A. A summary of these bonds is explained in detail in Table 5-1. The amount of GARVEE bonds being issued by ALDOT in fiscal year 2007 was over \$27 million which was only about 3% of the total revenue for the department. In other states such as Maryland, this amount can be much higher. In Maryland, the GARVEE program along with other financing options is being considered to partly finance the proposed Intercounty Connector, a new highway that would link major travel corridors in Montgomery and Prince George's Counties, MD, north of Washington, DC. The Maryland General Assembly passed legislation giving the Maryland Transportation Authority, an agency under the Maryland Department of Transportation (MDOT), permission to issue up to \$750 million in GARVEE bonds specifically for the project.

Direct User Charges

Road pricing is an economic concept regarding the various direct charges applied for the use of roads. The road charges include fuel taxes, license fees, parking taxes, tolls, and congestion charges, including those which may vary by time of day, by the specific road, or by the specific vehicle type being used. Road pricing has two distinct objectives: revenue generation, usually for road infrastructure financing, and congestion pricing for demand management purposes (see Table 5-2). Toll roads are the typical example of revenue generation. Charges for using high-

occupancy toll lanes or urban tolls for entering a restricted area of a city are typical examples of using road pricing for congestion management purposes.

Table 5-2. Comparing Road Pricing Objectives (Victoria Transport Policy Institute, 2008)

Revenue Generation	Congestion Management
<ul style="list-style-type: none"> • Generates funds. • Rates set to maximize revenues or recover specific costs. • Revenue often dedicated to roadway projects. • Shifts to other routes and modes not desired (because this reduces revenues). 	<ul style="list-style-type: none"> • Reduces peak-period vehicle traffic. • Is a TDM strategy. • Revenue not dedicated to roadway projects. • Requires variable rates (higher during congested periods). • Travel shifts to other modes and times considered desirable.

It should be mentioned that the main portion of the current revenue of the states comes from fuel taxes, which is dropping annually due to the use of more fuel efficient motors in cars and to the public desire of using hybrid cars. However, road pricing can be another source of revenue which can be used by the states to maintain this shortfall in fuel tax revenues.

States may apply toll revenues used for capital expenditures to build or improve public highway facilities to earn Federal toll credits. Toll credits are earned when a State, a toll authority, or a private entity funds a new capital highway project with toll revenues from existing facilities. The amount of toll revenues spent on non-Federal highway capital improvement projects earns the State a toll credit.

Toll credits provide States with more flexibility in financing projects. For example, by using toll credits, (1) Federal-aid projects can be advanced when traditional-matching funds are not available, (2) State and local funds normally required for matching may then be directed to other transportation projects, or (3) project administration may be simplified when a single funding source is used. States wishing to take advantage of the toll credit provision must apply toll revenues to capital improvements and meet the maintenance of effort test.

Toll credits are being used extensively by States with toll facilities. As of November 24, 2003, 21 States had accumulated \$13.2 billion in toll credits. The credits are being applied in a variety of ways, depending on the State's needs. Missouri reserves its toll credits for situations where project matching funds are unavailable in order to effectively increase Federal funding to 100 percent of project costs. Ohio uses toll credits as a match on GARVEE projects and also shares its toll credits with local government agencies for both highway and transit projects. The Florida DOT has been applying toll credits on a statewide basis since 1993. Today, Florida is using toll credits on almost every new Federal-aid project, so that most of its Federal highway program is effectively 100 percent federally funded, freeing up State dollars for State-administered projects. However, toll credits do not increase the funding available for transportation.

Federal Credit Assistance

One of the most significant developments in Federal transportation finance during the 1990s was the advent of new ways for Federal transportation funds to help project sponsors access credit more easily. These strategies are known collectively as Federal credit assistance.

Federal credit assistance can take one of two forms: loans, where a project sponsor borrows Federal highway funds directly from a state DOT or the Federal government; and credit enhancement, where a state DOT or the Federal government makes Federal funds available on a contingent (or standby) basis. Credit enhancement helps reduce risk to investors and thus allows the project sponsor to borrow at lower interest rates. Loans can provide the capital necessary to proceed with a project or reduce the amount of capital borrowed from other sources. In this latter case, Federal loans can serve a dual function. Not only do they provide capital directly, but under certain conditions they can also serve a credit enhancement function by reducing the risk borne by other investors.

Federal transportation funds can provide credit assistance - rather than grant funding - through several mechanisms as shown in Table 5-3. First, states may directly lend their apportioned Federal-aid highway funds to individual projects through Section 129 loans. Second, states may use their regularly apportioned Federal-aid highway funds, under specific Federal legislative provisions, to capitalize revolving loan funds (in the transportation sector, known as State Infrastructure Banks). Third, the Transportation Infrastructure Finance and Innovation Act (TIFIA) allows USDOT itself to provide special credit assistance funding to project sponsors directly.

Table 5-3. Federal Credit Assistance (FHWA)

Technique	What Does It Do?
Section 129 Loans	Allows states to use regular Federal-aid highway apportionments to fund direct loans to projects with dedicated revenue streams.
State Infrastructure Banks	Allows certain states to use regular Federal-aid highway apportionments to capitalize state-administered revolving funds known as State Infrastructure Banks (SIBs). SIBs can offer loans and credit enhancement to both public and private transportation project sponsors. Banks can also be capitalized with state funds.
TIFIA	Allows USDOT to provide direct credit assistance to sponsors of major transportation projects. Credit assistance can take the form of loans, loan guarantees, or lines of credit; the total amount of credit cannot exceed 33 percent of eligible project costs.

TIFIA Credit

The TIFIA program, which was enacted in 1998 as part of TEA-21, allows the USDOT to provide direct credit assistance to sponsors of major transportation projects. While GARVEE bonds help States obtain funding that will be repayable from future Federal-aid streams, the TIFIA program provides assistance to projects with their own repayment streams, such as tolls or other dedicated funding sources. Under TIFIA, the USDOT provides direct credit assistance--up to 33 percent of eligible project costs--to sponsors of major transportation projects. The TIFIA credit program offers three distinct types of financial assistance—direct loans, loan guarantees, and standby lines of credits. These instruments are designed to address the varying requirements of projects throughout their life cycles. TIFIA interest rate was 4.18% for a 35-year loan on Wednesday, October 29, 2008.

Projects must meet certain threshold criteria to apply for TIFIA assistance. The project's estimated eligible costs must be at least \$100 million or 50% of the State's annual Federal-aid highway apportionments, whichever is less, or at least \$30 million for intelligent transportation systems (ITS) projects. The project must be supported in whole or part from user charges or other non-Federal dedicated funding sources, and be included in the State's Transportation Improvement Plan. The project is subject to all Federal requirements.

Qualified projects are evaluated and selected based on eight criteria. Before TIFIA assistance can be committed, the project must receive an investment grade rating on its senior obligations and have completed the Federal environmental review process. TIFIA assistance provides improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in private capital markets for similar instruments. The TIFIA can help advance expensive projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues. While TIFIA has been a valuable tool in developing projects, some TIFIA recipients have expressed concern that the credit approval process is too long and cumbersome.

Example approved TIFIA projects range in cost from a \$217 million intermodal facility improvement project to a \$3.7 billion start-up toll road project. The TIFIA assistance is also being provided to transit and ferry systems, as well as bridge and rail corridor projects. Two of the approved projects are new toll facilities, including the 9.2-mile SR 125 South Toll Road in southern California and a toll road in central Texas that will span 122 miles. For these projects, the TIFIA credit assistance offers the project sponsors a way to boost debt service coverage and enhances senior obligations at an affordable cost. Also, flexible repayment terms will facilitate these toll financings, enabling a better match of loan repayments to expected revenue flows.

Because of their size, many of the approved TIFIA projects would have been either unfunded in the near term or had large funding gaps without TIFIA funding. For some projects, the TIFIA assistance enhanced market access and reduced borrowing costs; for others, it provided an alternative to grant funding, enabling the project sponsor to conserve regular Federal funds for smaller projects that could not be supported through user charges or dedicated revenue streams.

As of June 2004, \$3.5 billion in TIFIA credit assistance has been made available to 11 projects, supporting over \$15 billion in project costs. One huge project using TIFIA financing is the Central Texas Turnpike, a 196-kilometer (122-mile) toll facility in the Austin-San Antonio corridor designed to relieve congestion, improve safety, and enhance freight movement through central Texas. A \$917 million TIFIA loan will finance nearly one third of the cost of phase one of the project. The Texas Turnpike Authority will repay the loan using toll revenues. Figure 5-4 illustrates some instances where TIFIA assistance has been available.

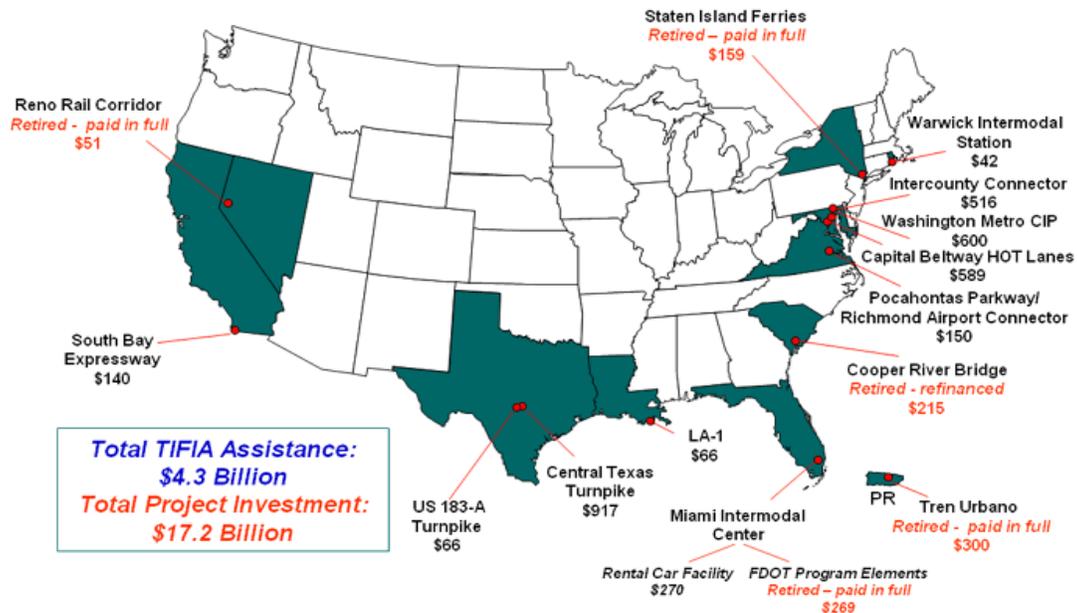


Figure 5-4. TIFIA PROJECT DATA (FHWA)

Private Activity Bond

Before 1987, industrial development bonds (IDB) (also known as industrial revenue bonds (IRB)) were widely available as a tax-exempt tool for economic development. The federal Tax Reform Act of 1986 eliminated industrial development bonds but replaced them with a new category, tax-exempt private activity bonds (PAB). The terminology is somewhat confusing, but most people use the terms IDB, IRB, and PAB interchangeably.

Tax-exempt bonds are valid debt obligations of state and local governments, commonly referred to as “issuers” — the interest on which is tax-exempt. This means that the interest paid to bondholders is not includable in their gross income for federal income tax purposes. This tax-exempt status remains throughout the life of the bonds, provided that all applicable federal tax laws are satisfied. For a PAB to be tax-exempt, 95% or more of the net bond proceeds must be used for one of the several qualified purposes described in sections 142 through 145, and 1394 of the IRS Code.

Private Activity Bonds are a hybrid of municipal and corporate finance. In essence, the municipality lends its name and tax-exempt status to a private company to enable it to finance a

project that will create jobs in the municipality and/or expand its economy and tax base. It should be noted that PABs are not a direct obligation of the municipality. No tax money or other municipal revenues are pledged for their retirement. PABs are paid solely from revenues generated by the industrial project and other security provided by the private user. However, many municipalities examine projects carefully since their name is on the bonds and their credit rating is at least indirectly at stake. While municipalities are generally exempt from the liability provision of the Securities Act of 1933 and the Securities and Exchange Act of 1934, municipalities are not exempt from the Section 17(a) antifraud provisions of the 1933 Act. There are many advantages related to PABs. These bonds have comparatively lower interest rate and have long term credit -- maturities can extend to 35 years or more (depending on the project's useful life). In addition, depending on the bond purchaser, 100% financing may be possible. Although PABs have many advantages, they have some disadvantages: high front money costs, public sector involvement and public disclosure requirements, and also capital expenditure limitations on small issue bonds.

State Infrastructure Bank

Section 350 of the National Highway System Designation Act of 1995 (NHS Act) (Public Law 104-59) authorized the U.S. Department of Transportation (USDOT) to establish the State Infrastructure Bank (SIB) Pilot Program. A SIB is a revolving fund mechanism for financing a wide variety of highway and transit projects through loans and credit enhancement. SIBs are designed to complement traditional Federal-aid highway and transit grants by providing States increased flexibility for financing infrastructure investments. A SIB functions much like a bank by offering loans and other credit products to public and private sponsors of title 23, United States Code, highway construction projects or title 49, United States Code, transit capital projects. Federally capitalized SIBs were first authorized under the provisions of the NHS Act. The pilot program was originally available to only 10 States and was later expanded to include 38 States and Puerto Rico (see Figure 5-5). The initial infusion of Federal funds and State matching funds was critical to the start-up of a SIB, but States have the opportunity to contribute additional State or local funds to enhance capitalization. The state of Alabama has not established an SIB.

Table 5-4. States with More Active SIBs

State	Number of Agreements	Loan Agreement Amount (thous.)	Disbursements to Date (thous.)
South Carolina	5	1,502,289	510,428
Florida	32	465,000	94,000
Arizona	23	373,192	156,850
Ohio	35	146,624	102,550
Texas	32	88,900	70,016
Missouri	10	69,251	66,754
Subtotal	137	\$2,645,256	\$1,000,598
Other States	108	245,931	179,358
Total	245	\$2,891,187	\$1,179,956

There are many benefits of SIBs both to the state and the federal government. First, flexible project financing, such as low interest loans and credit assistance that can be tailored to the individual projects; second, accelerated completion of projects; third, reduced congestion and travel delays; fourth, incentive for increased State and/or local investment; fifth, enhanced opportunities for private investment by lowering the financial risk and creating a stronger market condition; and finally, recycling of funds to provide financing for future transportation projects. Additionally, using SIB funding increases efficiency in investment because it loosens Federal constraints on a State's choice of projects, because the Federal funds used to capitalize the SIB are available to fund any project eligible under title 23, United States Code. Due to the fewer restrictions on the state's decisions, a State is free to choose projects with the highest overall economic returns and not just the highest returns within each category of Federal aid, as traditional financing would require.

Although SIBs have many advantages, several states have indicated that certain obstacles or challenges have slowed progress in implementing SIB programs. Many States lack the legislative authority to leverage their funds and thereby increase the capitalization level of the SIB. Capitalization constrains the SIB maximum loan size and loan portfolio. Several project sponsors noted that Federal requirements for smaller projects can significantly delay construction schedules and increase overall project costs. A few States noted that insufficient demand for loans was a factor affecting program implementation. However, the lack of interest or demand in some instances may be attributed to limited marketing efforts. In general, many states believe that the SIB financing mechanism is an effective tool, but there are opportunities to improve its effectiveness.

Section 129(a) Loan

Traditionally, Federal-aid highway funds were provided as grants to reimburse costs for eligible highway projects. Section 129(a) allows States to loan some of its Federal-aid funds to pay for projects with dedicated revenue streams. A State may directly lend apportioned Federal-aid

funding to projects generating a toll or that have some other dedicated revenue such as excise taxes, sales taxes, property taxes, motor vehicle taxes and other beneficiary fees. The State must receive a pledge from the project sponsor to use those revenues to repay the loans, as shown in Figure 5-6.

Section 129(a) loans provide States with a means to recycle Federal-aid highway funds by lending them out, obtaining repayments from project revenues, and then reusing the repaid funds on other highway projects. This gives States the opportunity to get more mileage out of the annual apportionments. There are many benefits to section 129(a) loans. Private investors find Section 129(a) loans attractive for several reasons. First, the loans can be used to offset up-front capital requirements that might otherwise have to be borrowed in the open market at higher rates. In addition, it can be subordinate to other debt so that other investors in the project, such as bondholders, can have a first or senior lien on project revenues. This allows the State to absorb a share of the risk that revenues will fall short of debt service requirements. The amount of senior debt remaining is now smaller, and therefore less risky, so it is more likely to obtain an investment grade rating and, as a consequence of the higher rating, a lower interest rate.

There are some requirements for projects which want to use section 129(a) bonds. In general, any Federal-aid highway project is a potential candidate for a Section 129(a) loan, so long as the project sponsor pledges revenues from a dedicated source for repayment of the loan. Loans can be in any amount, up to 80 percent of the project cost, provided that a State has sufficient obligation authority to fund the loan. Borrowers must begin to repay Section 129(a) loans within five years after the project is opened to traffic or was otherwise completed. In addition, the loan must be wholly repaid within 30 years from the date Federal funds are authorized for the loan. States have discretion to set interest rates, so long as the rates are at or below market rates and improve the financial feasibility of the project receiving the loan. Moreover, all projects receiving Section 129(a) loans must comply with all Federal regulations that attach to any other Federal-aid highway project.

The repayment of section 129(a) loans can be used by states to fund any project eligible for funding under Title 23, or credit enhancement in the form of bond insurance purchases, or as a capital reserve for project debt. No Federal requirements attach to projects advanced with loan repayments. This means that, once the Federal funds cycle through the first loan, they no longer retain Federal character and may be used without complying with Federal requirements and laws that attach to Federal-aid highway projects.



Figure 5-6. Section 129 flow of funds (FHWA).

Concessions and Leases

A Comprehensive Development Agreement (CDA) is a project delivery tool by the Texas DOT to design, construct, rehabilitate, expand, and improve a transportation facility. A CDA may also include finance, right of way acquisition, and maintenance and/or operation of a transportation facility. There are some conditions associated with this kind of sale or lease. A lease or sale of a facility funded by Federal-aid highway funds must be made under the following conditions:

- Fair Market Value. The State must charge, at a minimum, fair market value
- Toll Agreement. The state should ensure the customers' rights are saved
- Continued Maintenance Responsibility. The State must ensure that the facility is properly maintained.
- State Retains Adequate Interest in Property. The State must continue to have adequate interests in the property that would permit it to construct, operate, and maintain the facility in the event the private entity was unable to do so.
- Real Property Devoted Exclusively to Public Highway Purposes. The State must continue to ensure that all real property, including air space, within the right-of-way boundaries is devoted exclusively to public highway purpose.
- Specific Lease Provisions.
- Design Standards and National Network Requirements.
- Ensure Compliance with Federal Requirements.

Generally, three types of CDAs are being used by different states such as TxDOT to develop projects: design/build, pre-development agreements, and a concession agreement. Design/Build CDAs (which can include operations and maintenance) are used for well-defined projects. With pre-development agreements, a consortium (a team of private sector firms) is responsible for the project's overall master development plan, master financial plan, and facility implementation plan. In return, the consortium has the ability to negotiate with the state to develop a certain amount of individual projects that are identified in the master development plan. A design/build or concession agreement may be utilized to deliver the individual projects with the consortium. For a concession agreement, the project scope is usually well-defined; however, a record of decision may or may not exist, and engineering/technical investigations may only be at the conceptual stage. In addition, right of way acquisition may or may not be in process. Under a design/build CDA, the contract is fulfilled after construction is completed. For a concession agreement however, the project is completed at the end of the concession period (or earlier if there are early termination provisions).

There are some critical issues about the concession and lease which should be addressed. Tolls have historically been used to fund highway projects that were too expensive to be paid for from taxes. Traditional toll facilities financed by municipal bonds and governed by public or quasi-public agencies typically aimed to keep tolls at the minimum level necessary to retire the bonds and fund needed reserves. Because of fears that tolls will rise excessively due to the attempt of private companies to make more revenue, the public sector must control the rate that tolls escalate in a private concession by explicitly stating escalation formulas and growth indices in the concession agreement. The policy for toll escalation can also be specified in enabling

legislation following public input. Unfortunately, decisions on tolling policy have been confused with decisions regarding the concession. The main point is that these are two separate decisions, each deserving a separate analysis and therefore different debate.

Another concern which rises is that the privately operated facilities will be inferior to their public counterparts. This concern must also be addressed in the concession agreement. Contracts should include detailed performance requirements and third-party performance assessments. Additionally, the concessionaire should be contractually obligated to maintain these performance levels so maintenance funding is not subject to the annual public budget process. If the facility is not maintained to these requirements, it can be taken back by the public sector with the loss of private equity.

The concession model grew from the reality that our transportation system needs far more money than is available from traditional sources. The concession approach to project financing has many advantages over traditional methods, but there are many concerns with these nontraditional techniques. At this point, very few people have a complete picture of the short- and long-term implications of different approaches and the associated tradeoffs. Many of the concerns with long-term concessions are legacies from past agreements that have been rectified as both the public and private sectors have learned and adapted.

6.0 I-10 Connector Project Analysis

Project Overview

This chapter provides two PPP example analyses of a project known as the I-10 Connector Project near Dothan, AL. Dothan, popularly known as “Peanut Capital of the World” and “Hub of the Wiregrass” is the county seat of Houston County, Alabama. Dothan is located about 104 miles from Montgomery and about 200 miles from Birmingham and Mobile. Dothan is about a four hour drive from the growing metro of Atlanta, Georgia. Dothan has no interstate access but is connected by major arterial roads as shown in Figure 6-1.

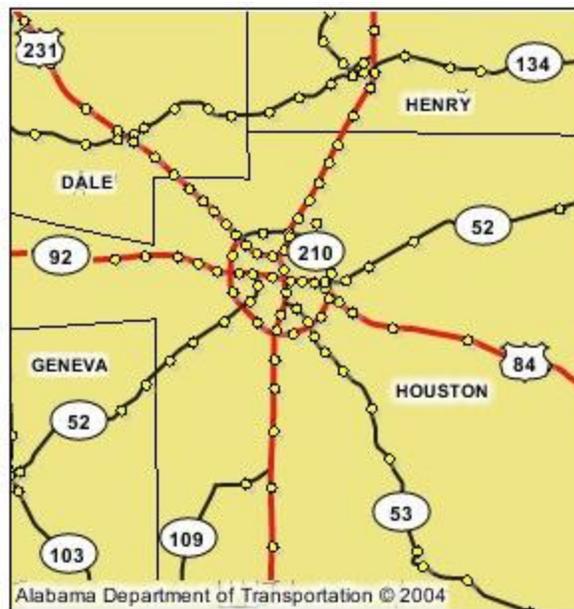


Figure 6-1. Current network of roads serving Dothan (ALDOT).

Dothan has a diversified economy with retail, agriculture, aviation, and health care. Without interstate access, Dothan has been less competitive for economic projects. Given that a good transportation network can boost the economy, the construction of a U.S. 231/I10 connector road has been discussed for the last 25 years with an expectation to improve economic conditions of the region as well as to ensure an increase in travel demand in the future. The feasibility reports indicate that variables like population, employment, and household income have historically grown at a steady but conservative pace. Though the studies indicate relatively moderate growth for Dothan, the Gulf Coast towns to its south were found to have significant growth. This growth will also impact the infrastructure need of the region.

A proposal has been put forward to connect U.S. 231 with Interstate I-10 (an east-west Interstate route south of Dothan) by an approximately 23 mile connector. This connector is proposed to start from U.S. 231 in Dale County, northwest of Dothan. The connector will follow a southerly direction, pass through Geneva County and finally re-merge with U.S. 231 near the Alabama/Florida Stateline. This alignment will allow traffic to bypass Dothan city, thus helping to relieve current congestion problems in the city. If this connector is further extended by 20 miles, it would connect to I-10 in Florida. Figure 6-2 shows the alignment proposed for the connector.

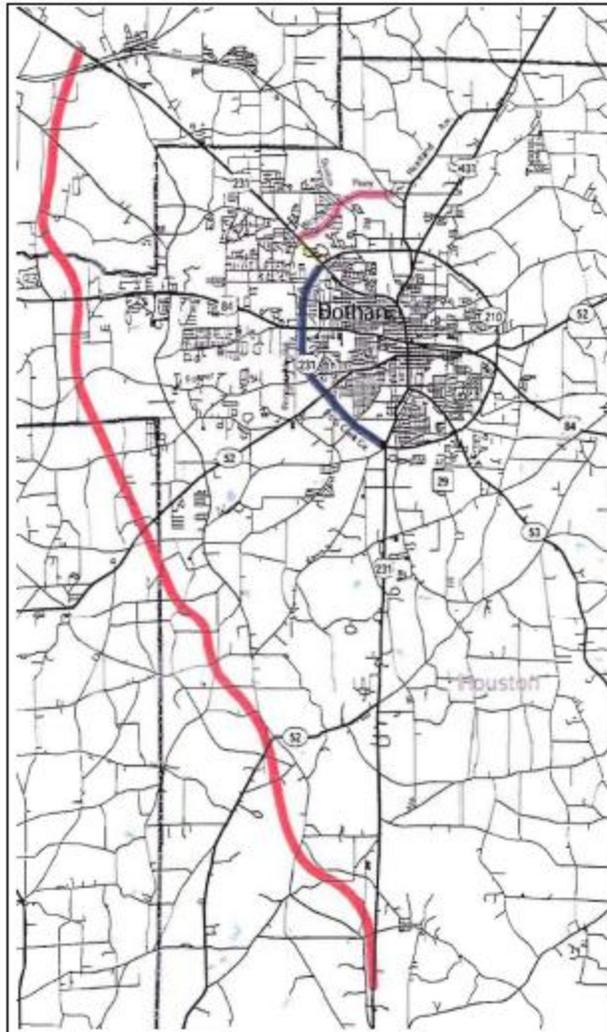


Figure 6-2. Proposed alignment of US231/I-10 connector (ALDOT).

Need for the Project

Improvement of Current Transportation System

A preliminary traffic and revenue study performed by Wilbur Smith Associates ascertained the feasibility of the U.S. 231/I-10 Connector project. The results indicate that the current network of roads is insufficient, with the average speed in the corridor being 46 mph. Because all the traffic using the corridor passes through Ross Clark Circle which has numerous signals, the congestion at the Ross Clark Circle affects the speeds of all vehicles using the network. The study noticed that the average speed on a weekday in the month of February (an off-seasonal month) was merely 32 mph.

Results from Average Annual Daily Traffic (AADT) and monthly traffic variation studies indicate an increasing trend in traffic in almost all the roads in the network around Dothan. The results for U.S. 231 show that the traffic peak in the month of July is about 126 percent of the AADT. Moreover, the results indicate that the traffic on U.S. 231 is 39 percent higher on a weekday, while for Ross Clark Circle just south of US 84 it is 13 percent higher on a weekday than on a weekend day.

High Priority, Public Demand and Acceptance

On May 15th, 2008, The Birmingham News reported that several counties from Alabama and Florida collectively held meetings with the Wiregrass economic development group and developers regarding building the state's first toll road connecting Alabama and Florida. The local developers and Wiregrass economic development groups proposed to design, build, and operate a connector to Interstate Highway 10. The proposed connector would affect Houston, Dale, and Geneva counties in Alabama and Jackson, Washington, and Bay counties in Florida. The article also reported that Dothan was recently eliminated from a list of potential sites for a new Volkswagen plant because of its lack of an Interstate road connection. It was also noted that the supporters of the project knew about the non availability of federal or state funds to build the road and were keen to build the road through Public Private Partnerships.

It is reported that Focus 2000 of the Wiregrass, LLC will be responsible for funding the project, and no federal funds or incentives will be requested in the initial phase of the project. The project will be sponsored entirely on the county level. It is also estimated that for every B dollars spent on the project, 45,000 new jobs will be created. It is also estimated that after completion, this project will generate a minimum of \$6 billion worth of economic impact to the partnering counties.

Lastly, the project to plan an I-10/U.S. 231 Connector from Dothan to Florida has been earmarked by an amount of \$2,400,000 and will be available for the fiscal years 2005 through 2009 (Public Law 109-59-AUG. 10, 2005, High Priority Projects, Sec. 1702 Project Authorizations, 2872). This situation reflects high-priority public demand and acceptance from officials in the region.

Traffic Studies and Estimation

ALDOT awarded a contract to Wilbur Smith Associates to estimate the traffic volume and project revenue. This section summarizes the results of that study and discusses factors that can affect growth of traffic in the region.

Traffic Trends (AADT Study)

The traffic trends observed during the feasibility study are summarized in Table 6-1. The values were obtained for the period 1994 through 2004. The results indicate that a general, modest increase in the traffic volume was observed for that time period in the region.

Table 6-1. Percentage Growth Trend on Roads Networks Through Dothan (1994 – 2004)

Screenline	Roads Included	Percentage Growth	Overall Percentage Growth
Northernmost Screenline	U.S. 84	3.1%	2%
	U.S. 231	--	
	U.S. 431	1.1%	
Second Screenline	Ross Clark Circle	-0.1%	Approximately no growth.
	SR 52	--	
	U.S. 231	1.1%	
Southernmost Screenline	SR 103	--	3.1%
	SR 109	--	
	U.S. 231	5.4%	
	SR 53	--	

Source: ALDOT

Monthly Traffic Variation

The study by Wilbur Smith Associates further indicates that there is considerable seasonal variation on U.S. 231. As previously cited in Section 6.2.1, the results show that traffic peaks in the month of July at about 126 percent of the average annual traffic.

Hourly Traffic Variation

Wilbur Smith Associates conducted an hourly traffic variation study at the same three locations described in Table 6-1. The results indicate that hourly traffic variations on U.S. 231 in Dale County were indicative of commuter traffic, while the results for Ross Clark Circle just south of U.S. 84 indicates that the variations on this route are not commuter oriented. The hourly traffic variation on U.S. 231 just south of Stateline shows heavy peak between 11 A.M. and 3 P.M., indicating heavy summer weekend traffic for the month of July.

Congestion in the Corridor – Speed and Delay Studies

Wilbur Smith Associates conducted speed and delay studies to understand the congestion levels during peak (morning and evening) and off peak (noon) periods for the corridor. This study was conducted in the month of February between SR 134 in the north to the Stateline in the south through Ross Clark Circle. Because these runs were conducted during the off season period, it might not be appropriate to conclude that the results from this study were representative of the traffic speeds existing during the other seasons of the year. On the contrary, it would be reasonable to expect higher congestion levels in the summer season. The average speed for the corridor was observed to be 46 mph. The average speed for U.S. 231 north of Ross Clark Circle was 47 mph, and for U.S. 231 south of Ross Clark Circle it was 56 mph. It was observed that the average speed on Ross Clark circle was 32 mph.

Traffic Volume and Revenue Estimation

To estimate the traffic volume, screenline analyses and trend line analyses were conducted for the data from future year trip tables. Data so obtained was used for modeling the travel demand, which could be used to predict revenue for the years 2010 and 2030. The data that was used for the modeling was synthesized from the following networks:

- Base Year: 2000
- 2030 E + C (Existing plus Committed) and
- 2030 Test (“Build” network with proposed project included)

Trip-end growth analysis was performed, and results showed that the trip ends pattern directly correlated to employment and household forecasts and followed similar trends. Select link analysis technique was used to determine the primary destinations of the traffic in the model and to find the pattern of destinations for the northbound U.S. 231 traffic starting at the AL/FL state line for the 2010 “Base Year” and for the 2030 “No Build” assignment.

To estimate the toll from the facility, toll diversion methodology was used, which involved the use of an algorithm to determine the minimum time path between each zone pair. Best non-toll alternative route was compared with the estimated trips using the I-10 Connector based on travel time and distance.

Validation of the model was established by conducting the following tests: Percent Error Region-wide Test, Percent Deviation by Functional Classification, Percent Deviation by Volume Group, Coefficient of Determination, and Speed and Travel Time Tests. The model produced results within desirable deviations as established by the FHWA.

Basic Assumptions and Risks

The preliminary feasibility study report includes several assumptions, many of which are time dependent. Because of the natural uncertainty that exists on projects, each assumption may have

a significant impact on project success. In addition to the assumptions explained in the preliminary traffic study report, several issues are briefly discussed below:

- The Estimation of Direct Cost. The estimated project cost was reported to be US \$208million. This estimate was recognized as a preliminary level estimate, which may increase after the detailed estimate and soil condition investigation are complete. In the worst case scenario where the soil investigation report recommends realignment, the direct costs to the project may exceed \$208million.
- Proposed Airport at Panama City. The existing airport at Panama City, Florida may be replaced by the new Panama City – Bay County International Airport in the near future. The preliminary feasibility reports were prepared in 2006 and did not take into consideration the traffic volume impact due to the relocation of the international airport. It is unknown how the airport relocation would change the traffic pattern and whether the traffic estimate of the project was underestimated as a result.
- Market Share Diversion Issue. The preliminary feasibility report assumes that initially 45% of the market share will be diverted towards electronic toll collection (ETC). This share will increase to 100% after the first 10 years of operation. This assumption allows reducing operation and maintenance costs in the year 2020 by \$376,000 which will affect the cash flows for subsequent years. Because the market share transfer impacts the cash flows by a large amount, an error in this assumption affects all subsequent financial analyses.
- Accuracy of Synthesized Data. The preliminary feasibility report contains an alternative, synthesized trip table that triples from 8% to 24% the through traffic on US 231 that travels from the AL/FL state line all the way through the system. The table is called the external to external through traffic movement (EE Boosted Trip Tables). It is not known at this time which scenario may best represent future conditions.

Traffic Analysis Summary

In a nutshell, it can be said that results indicate that the existing corridor lacks sufficient capacity for the region. The proposed U.S. 231/I-10 Connector project will improve traffic moving southwards to bypass Dothan city and will relieve the traffic congestions in the corridor.

Debt Financing Test

UTCA researchers performed a debt-financing analysis on the project as a way to evaluate whether the project can be feasibly performed through debt-only financing. The analysis is used to examine whether a project generates enough cash flow to bear the debt service. If the project cash flows are enough to repay the debt, the public agency needs to further compare the economics of public financing vs. the PPP method. If the debt-only financing is not justified, the analysis identifies the necessary funding shortage.

This analysis does not examine the reliability of the traffic estimates for the I-10 Connector project that were performed by Wilbur Smith Associates. It assumes that the traffic studies

conducted by the ALDOT or its consultant are reliable and that revenue streams (cash flows) based on the traffic studies are reasonable. Other major assumptions follow:

- ALDOT's project cost estimate of \$208 million is appropriate.
- Wilbur Smith Associates' traffic projections are reasonable.
- Wilbur Smith Associates' toll rate schedule is used.
- Operation and maintenance expense grows at 1.4%.
- Major repair and rehabilitation work remains the responsibility of ALDOT.
- Discount rate is 6%.
- A 1.50 Debt Service Coverage Ratio is used.
- Tax issues are not considered.

UTCA researchers produced Tables 6-2 and 6-3, which list the estimated toll revenue and bonding capacity with a pledge of net operating revenue. UTCA conducted a base case scenario analysis and also conducted sensitivity analyses to examine the impact of estimate errors.

Table 6-2 employs the discounted cash flow approach to calculate the present value of future benefits. The present values of project gross revenues are calculated at a 6% discount rate (see bottom of Table 6-2). A 5% discount rate is also used to demonstrate the present value of gross toll revenue at a low cost of borrowing. The calculations include the original scenario (of 8% through traffic) and the EE-Boosted scenario (24% through traffic). In all, three traffic growth rates are used, each based on 2008 dollars:

- Base case with a 4.6% annual traffic growth rate for all 30 years
- Moderate case with a 4.6% annual growth rate for the first 10 years, 8% for the second 10 years, and 4.6% for the last 10 years
- Aggressive case with 4.6% annual growth rate for the first 10 years and 8% for the next 20 years.

Analysis of existing toll road performance indicated that long term revenue growth could reach 10% for startup toll roads. Chicago Skyway shows a higher than 9% revenue growth during the period of 1990--2000. The Indiana Toll Road experienced an average 5% revenue growth, although the toll rate growth has continued to be considerably lower than the inflation rate.

Table 6-2. Estimated Revenue under Various Growth Rates (\$ in millions)

	Base Scenario		Moderate Scenario		Aggressive Scenario	
	Original	EE-Boosted	Original	EE-Boosted	Original	EE-Boosted
2010	4.01	5.85	4.01	5.85	4.01	5.85
2011	4.19	6.12	4.19	6.12	4.19	6.12
2012	4.39	6.40	4.39	6.40	4.39	6.40
2013	4.59	6.70	4.59	6.70	4.59	6.70
2014	4.80	7.00	4.80	7.00	4.80	7.00
2015	5.02	7.33	5.02	7.33	5.02	7.33
2016	5.25	7.66	5.25	7.66	5.25	7.66
2017	5.49	8.01	5.49	8.01	5.49	8.01
2018	5.75	8.38	5.75	8.38	5.75	8.38
2019	6.01	8.77	6.01	8.77	6.01	8.77
2020	6.29	9.17	6.49	9.47	6.49	9.47
2021	6.58	9.59	7.01	10.23	7.01	10.23
2022	6.88	10.04	7.57	11.05	7.57	11.05
2023	7.20	10.50	8.18	11.93	8.18	11.93
2024	7.53	10.98	8.83	12.88	8.83	12.88
2025	7.87	11.49	9.54	13.92	9.54	13.92
2026	8.23	12.01	10.30	15.03	10.30	15.03
2027	8.61	12.57	11.13	16.23	11.13	16.23
2028	9.01	13.14	12.02	17.53	12.02	17.53
2029	9.42	13.75	12.98	18.93	12.98	18.93
2030	9.86	14.38	14.01	20.45	14.01	20.45
2031	10.31	15.04	14.66	21.39	15.14	22.08
2032	10.79	15.73	15.33	22.37	16.35	23.85
2033	11.28	16.46	16.04	23.40	17.65	25.76
2034	11.80	17.22	16.78	24.48	19.07	27.82
2035	12.34	18.01	17.55	25.60	20.59	30.04
2036	12.91	18.84	18.36	26.78	22.24	32.44
2037	13.51	19.70	19.20	28.01	24.02	35.04
2038	14.13	20.61	20.08	29.30	25.94	37.84
2039	14.78	21.56	21.01	30.65	28.02	40.87
2040	15.46	22.55	21.97	32.06	30.26	44.14
Gross Revenue (6%)	\$86.11	\$125.62	\$102.69	\$149.81	\$109.28	\$159.43
Gross Revenue (5%)	\$101.47	\$148.03	\$122.51	\$178.72	\$131.27	\$191.51

Gross revenue values for the base case scenario in Table 6-2 are \$86million and \$126million. Those values are input to Table 6-3 along with values for estimated operation and maintenance (O&M) expenses from Wilbur Smith Associates. Net revenue is then calculated by subtracting O&M from gross revenue, resulting in \$66 million and \$106 million for the base case. Assuming a 1.50 Debt Service Coverage Ratio, the bonding capacities with a pledge of net operating revenue for the base case are \$44 million and \$70 million, respectively. Because the project cost is estimated at \$208 million dollars, this limited bonding capacity cannot cover the project cost. When 10% finance charges such as bond sale expenses, reserve fund, etc. are considered, the funding shortage is \$145 million to \$170 million. It should be noted that the bonding capacity

can be improved if the bond is secured by the gross revenue, or even by fuel tax. However, ALDOT must budget extra to cover the maintenance and operation of the toll facility.

Table 6-3. Debt Financing Capacity (\$ in millions)

Growth Rate	Base Scenario		Moderate Scenario		Aggressive Scenario	
	Original	EE-Boosted	Original	EE-Boosted	Original	EE-Boosted
Gross Revenue (6% discount rate)	\$86.11	\$125.62	\$102.69	\$149.81	\$109.28	\$159.43
Gross Revenue (5% discount rate)	101.47	148.03	122.51	178.72	131.27	191.51
O&M (6%)	19.83	19.83	20.82	20.82	21.42	21.42
O&M (5%)	22.58	22.58	23.71	23.71	24.39	24.39
Net Revenue (6%)	66.28	105.79	81.87	128.98	87.87	138.01
Net Revenue (5%)	78.89	125.45	98.80	155.01	106.89	167.12
Debt capacity (6%)	44.19	70.53	54.58	85.99	58.58	92.01
Debt capacity (5%)	52.59	83.63	65.86	103.34	71.26	111.41

In addition to net revenue pledge debt service, federal credit assistance is also available for infrastructure projects: for example, a TIFIA loan. TIFIA is a credit instrument subordinated to senior bonds that can be repaid through the project's subordinate cash flow (see chapter 5 for details). Other subordinated (junior) bonds could be available at a low debt service coverage ratio but at a high interest rate. In this analysis, a TIFIA loan is used due to its low interest rate and financial fees. The state agency should refer to the TIFIA program office for the availability of the loan or credit.

Table 6-4 lists the debt financing structure. Project cost is again \$208 million. The debt proceeds from Table 6-3 (\$44 million and \$70 million) were reduced by 10% to cover finance charges, resulting in values of \$40 million and \$63 million. Under the 4.6% base case with EE-boosted scenario, the funding shortage is \$145 million before subordinated loans. TIFIA and other subordinated loans could provide a maximum amount of \$46 million, which reduces the funding gap to \$99 million. The gap must be closed by an equity investment, which can be state funds or private investments. Under the moderate revenue growth scenario (4.6% to 8.0%), the gap for the EE-boosted scenario is \$75 million.

Table 6-4. Debt and Equity Financing Structure (\$ in millions)

Growth Rate	Base Scenario		Moderate Scenario		Aggressive Scenario	
	Original	EE-Boosted	Original	EE-Boosted	Original	EE-Boosted
Project Cost	\$208	\$208	\$208	\$208	\$208	\$208
Debt Proceeds	40	63	49	77	53	83
Shortage	168	145	159	131	155	125
TIFIA or other	22	46	35	56	38	60
Equity Financing	\$146	\$99	\$123	\$75	\$117	\$65

Equity Financing Evaluation

Equity financing is different than debt financing. Debts must be repaid no matter the performance of the toll roads. Equity investors will take the risks of loss when the performance is lower than expectations, with an aim toward gaining greater returns if the facilities turn in a better than expected performance. It has been reported that most toll roads are not financially viable under the debt-only financing environment. When public agencies have funding shortfalls, using private money becomes a promising solution. A collaboration or partnership between public agencies and private organizations must be structured as a mechanism where both parties share risks and benefits from the collaboration.

The PPP feasibility essentially lies in a win-win situation where equity investments, risks, and profits are properly distributed between the parties. UTCA researchers performed an equity financing analysis using the base case with 4.6% revenue growth. Only the EE boosted scenario is examined because of the project characteristics and obvious advantages of fast penetration of the ETC technology. Aside from the assumptions in Section 6.4, additional major assumptions follow:

- Project is financed at its maximum debt capacity.
- Public benefits are measured by direct cost savings to the public agency.
- Additional debts to cover negative cash flows during ramp-up period are not considered, although this assumption may slightly overestimate the project profitability. Furthermore, a \$20 million debt service reserve from ALDOT is assumed in the alternative analysis.
- Operation and traffic volume risks are shifted to the private entity; therefore, the private entity retains all operating profits.
- Operation efficiency due to privatization is negligible.
- The markup ratio is 5% for the contractor.

Based on the calculations in Section 6.4, the required equity investment is \$99 million. Various allocations between the public agency and private entity are examined. Given the fact that the project will be built at the full responsibility of the public agency under the traditional financing mechanism, the savings to the agency are considered public benefits. The researchers calculated the rate of return (ROR) for the private partner to examine the attractiveness of the project. The formula used in the analysis is

$$\sum_{t=0}^n \frac{(GR_t - OM_t - DS_t - EI_t)}{(1 + ROR)^t} = 0 \quad (6.1)$$

where, GR_t , OM_t , DS_t , EI_t are the gross revenue, operating and maintenance expense, debt service, and equity investment at Year t . “ n ” is the total analysis period. The ROR ratio is the standard indicator to describe the profitability of an investment. A high ROR ratio indicates that the project can afford a high cost of capital and is therefore much more attractive for the investor.

The agency's gains and project attractiveness to private partners are demonstrated in Figure 6-3. The base case scenario is calculated based on 4.6% revenue growth, while an 8% growth rate is assumed under the best scenario. The figure shows that the ROR increases as public funding increases. ROR1 represents the base case scenario. ROR2 is the best case scenario. Under the base case scenario, if the required ROR for private capital is 5%, the private partner will be willing to invest as high as \$60 million in equity (corresponding to 40% of total equity investment as public funds). The public will need to invest approximately \$40 million, which is about \$168 million less than the traditional public financing method (\$208M – \$40M = \$168M). If the required rate of return for private capital is 10%, there would be limited interest in this project from the private sector. Under the alternative case scenario when the revenue grows at 8%, the equity investment from the private entity will be approximately \$15 million if the required ROR is 10%. Considering the current market condition, it is expected that only aggressive private entities may invest up to \$15 million.

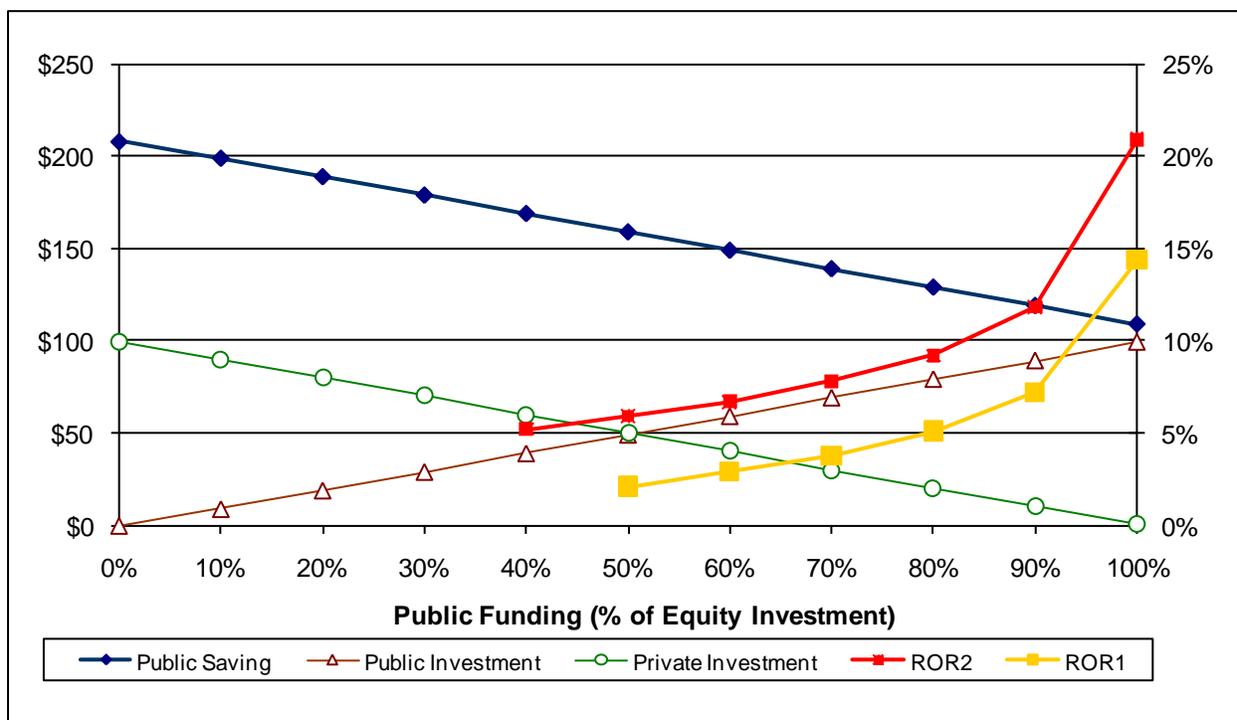


Figure 6-3. PPP feasibility analysis (base and aggressive case scenarios).

Many toll roads experience a ramp-up period of traffic and revenue. During the ramp-up period, the traffic volume is low, so the toll revenue may not be able to pay the amortization, or even the interest. This happens particularly for rural corridors. Low traffic volume during the ramp-up period causes insufficient net operating revenue and negative cash flows. Additional financing mechanisms must be arranged to cover the operation and interest expenses during the ramp-up period. The agency may either have the interest capitalized or establish a reserve line of funds (a debt service reserve) from other funding sources. There appears to be a need on the I-10 Connector project for this type of financing arrangement. Table 6-5 describes the affordability of debt service for the project. The Debt Service Coverage Ratio (DSCR) is calculated for each year

by dividing net operating revenue by debt service. During the first 10 years of the operation, the toll road expects \$20 million in 2008 dollars in shortfalls. Assuming that ALDOT will fund \$20 million in debt service reserve, the DSCR will jump to 1.0 for the ramp-up period.

Table 6-5. Financial Analysis of Revenues and Expenditures (Base Case Scenario)

	Base Case (4.6%)					
	Gross Revenue	O&M Expense	Net Operating Revenue	Debt Service	DSCR	DSCR*
2010	\$5.85	\$1.60	\$4.25	\$8.09	0.5	1.0
2011	\$6.12	\$1.61	\$4.51	\$8.09	0.6	1.0
2012	\$6.40	\$1.63	\$4.77	\$8.09	0.6	1.0
2013	\$6.70	\$1.65	\$5.05	\$8.09	0.6	1.0
2014	\$7.00	\$1.67	\$5.33	\$8.09	0.7	1.0
2015	\$7.33	\$1.69	\$5.63	\$8.09	0.7	1.0
2016	\$7.66	\$1.72	\$5.95	\$8.09	0.7	1.0
2017	\$8.01	\$1.74	\$6.27	\$8.09	0.8	1.0
2018	\$8.38	\$1.77	\$6.61	\$8.09	0.8	1.0
2019	\$8.77	\$1.81	\$6.96	\$8.09	0.9	1.0
2020	\$9.17	\$1.43	\$7.74	\$8.09	1.0	1.0
2021	\$9.59	\$1.44	\$8.15	\$8.09	1.0	1.0
2022	\$10.04	\$1.45	\$8.59	\$8.09	1.1	1.1
2023	\$10.50	\$1.46	\$9.04	\$8.09	1.1	1.1
2024	\$10.98	\$1.47	\$9.51	\$8.09	1.2	1.2
2025	\$11.49	\$1.48	\$10.01	\$8.09	1.2	1.2
2026	\$12.01	\$1.49	\$10.52	\$8.09	1.3	1.3
2027	\$12.57	\$1.50	\$11.07	\$8.09	1.4	1.4
2028	\$13.14	\$1.51	\$11.63	\$8.09	1.4	1.4
2029	\$13.75	\$1.52	\$12.23	\$8.09	1.5	1.5
2030	\$14.38	\$1.53	\$12.85	\$8.09	1.6	1.6
2031	\$15.04	\$1.54	\$13.50	\$8.09	1.7	1.7
2032	\$15.73	\$1.55	\$14.18	\$8.09	1.8	1.8
2033	\$16.46	\$1.56	\$14.90	\$8.09	1.8	1.8
2034	\$17.22	\$1.57	\$15.64	\$8.09	1.9	1.9
2035	\$18.01	\$1.59	\$16.42	\$8.09	2.0	2.0
2036	\$18.84	\$1.60	\$17.24	\$8.09	2.1	2.1
2037	\$19.70	\$1.61	\$18.09	\$8.09	2.2	2.2
2038	\$20.61	\$1.62	\$18.99	\$8.09	2.3	2.3
2039	\$21.56	\$1.63	\$19.92	\$8.09	2.5	2.5
2040	\$22.55	\$1.64	\$20.90	\$8.09	2.6	2.6
	Total		\$336.46	\$250.71	1.3	1.4
	Present Value		\$118.87	\$112.65	1.1	1.2

*DSCR adjusted with \$20 million debt service reserve from ALDOT

The debt service reserve funds from ALDOT also improve the financial performance for the private investment. The Rate of Return ratio for the private capital will be significantly improved (Figure 6-4). In that case, the maximal equity investment from the private entity in the best-case scenario (ROR2) jumps to \$40 million if the required cost of capital is 10%. (This is an increase from the \$20 million calculated previously.)

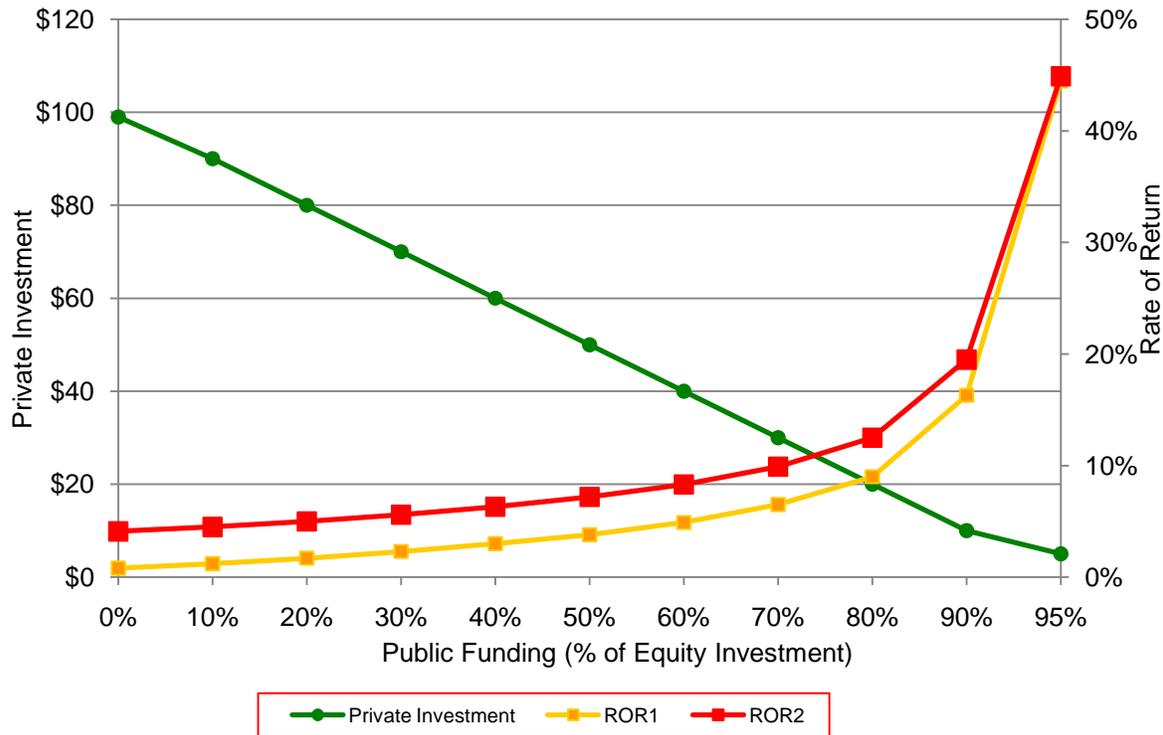


Figure 6-4. Rate of return for private investment with debt service reserve from ALDOT.

Alternative Analysis: 40-Year Concession Period

The maturity of a bond is the number of years over which the issuer promises to pay off the debt. There are government and corporate bonds of every maturity. Typical bond term varies from 10 to 30 years. A maturity period of more than 30 years can be arranged at a higher interest rate. The previous analysis assumed a 30-year investment horizon. Alternatively, in this section, a 40-year investment horizon is used to evaluate the project viability. The yield spread increases 25 basis points, meaning the discount rate increases to 6.25%. Additionally, commercial vehicles are assumed to constitute 15% of the overall traffic in the corridor.

The financing structure for the I-10 project is shown in Table 6-6. The equity requirement, including public funds from the state, is \$52 million under the EE boosted case scenario at 4.6% revenue growth rate. Under the best case scenario (8% revenue growth rate) the debt could be secured by the net operating revenue. The project is self-financed through bonds backed by the

project toll and other revenues. In this case, aggressive concessionaires may be willing to build the project without a penny of investment from the State of Alabama.

A moderate traffic growth (as shown in the middle columns of Table 6-6) will require a \$12 million investment from the state agency. Since ALDOT has already secured a \$40 million Federal earmark funding for the project, the project is viable for the state.

Table 6-6. Financing Structure under 40-Year Concession Period (\$ in millions)

Growth Rate	Base Scenario		Moderate Scenario		Aggressive Scenario	
	Original	EE-Boosted	Original	EE-Boosted	Original	EE-Boosted
Gross Revenue	\$133	\$197	\$163	\$240	\$194	\$285
Net Revenue	\$103	\$167	\$134	\$210	\$164	\$256
Debt Cap	\$69	\$111	\$89	\$140	\$110	\$170
Shortage	\$146	\$108	\$128	\$82	\$109	\$55
TIFIA	\$34	\$56	\$45	\$70	\$55	\$85
Equity Financing	\$112	\$52	\$83	\$12	\$55	-\$31

Risks and Other Issues

PPP feasibility analysis is based on numerous assumptions. The assumptions, although reasonable, significantly affect the reliability of the analysis. Several issues may produce an entirely opposite conclusion if even a small change takes place in the assumption. Several issues deserve further investigation:

- Traffic projections might be the biggest uncertainty in the analysis. Traffic estimates have not been accurate in any long term concession agreements.
- The \$208 million project cost is a conceptual estimate for the project. It is not clear which cost items are included, and it is difficult to establish a reasonable range of project contingency for this type of project.
- Cost of borrowing. The research uses 6% discount rate in the analysis. However, it is too early to conclude how the financial crisis will affect the municipal bond market.

7.0 Summary

Research Findings

Although there is no uniform terminology in Public Private Partnership (PPP) areas, a PPP typically refers to a contract between a public agency and a private firm to provide a facility or service to the public. PPP enables greater private sector involvement and risk-taking in the development, financing, operation, and/or maintenance of the transportation infrastructure. According to the degree of private sector responsibility and risk, PPP approaches range from alternative financing which involves tolling or value pricing, to full service long-term lease agreements or concessions that involve the lease of publicly financed facilities to a private sector organization.

PPP as an alternative to the traditional approaches of project delivery and public financing is increasingly gaining acceptance. A nationwide survey conducted in this research shows that at least 11 states have completed or are completing PPP projects, and at least 14 more states plan to implement them in the future. The major benefit of PPP has not yet been fully realized: transferring project risk from agencies to contractors.

In general, a majority of state highway agencies that have experienced or are currently using PPP are satisfied with them. In fact, 91% of these states report that their PPP projects remained under budget and were under or within schedule. Florida, Georgia, Texas, and Virginia are the forerunners in using PPP for transportation projects. Their experiences show that due to limited obligations, increased market capitalization, and combined financial and decision-making authorities, a private firm is likely more capable than a public entity to earn revenue from the toll road. However, the successful implementation of PPP projects needs careful evaluation of each candidate project. Protection of public interests must be addressed in the development of PPP evaluation process.

In the State of Alabama, the Public Private Partnership Bill was enacted in May 2009. HB 217/Act 2009-769 expands the powers of the Alabama Toll Road, Bridge, and Tunnel Authority, and authorizes the authority to enter into agreements to construct and operate toll roads, bridges, or tunnels that are part of the federal interstate system. The act specifically charges ALDOT with the administration and management of the planning, construction, and operation of toll projects. The act gives the Alabama Toll Road, Bridge, and Tunnel Authority and Alabama Department of Transportation the ability to enter into design-build, design-build-operate, design-build-operate-maintain contracts, long term leases and concessions, or other agreements with private parties to develop transportation projects. It also increases the bond issue date from 40 years to 75 years.

The researchers performed two alternative analyses of the I-10 Connector Project in Alabama to illustrate how these analyses may help ALDOT make decisions when projects are proposed. The preliminary analysis of the \$208 million project indicates that net operating revenue may secure \$109 million debt service under the base case scenario of 4.6% annual traffic growth, EE-boostered, and 30-year bonds. Private equity investment will be extremely limited (\$15 million if the private entity requires a 10% return) due to the low traffic volume expected. In that case, ALDOT needs to arrange \$80–\$110 million of financing to make the project meet the debt service requirement on the revenue bond. This condition may mean that the project is not a viable one under the given project parameters. If the revenues did cover the bond debt, ALDOT could also consider keeping the project for itself, as no private partner would be necessary.

An alternative analysis, however, indicates that the project may be attractive if the concession period is extended to 40 years from 30 years (40 years is a bit unusual). The equity investment—either from the state or from a private entity—is \$52 million under the base scenario. A moderate traffic growth will require \$12 million investment from the state agency. Under the best case scenario of 8% annual traffic growth during the 2020–2030 period, the debt could be secured by the net operating revenue. If ALDOT will commit a relatively small investment (\$12 million) for the project, the moderate traffic growth scenario project appears viable for the state. When the best case scenario is considered, aggressive concessionaires may be willing to build the project without a penny’s investment from the State of Alabama. Again, when revenues fully cover the bond debt, ALDOT could decide to keep the project for itself, although this report has listed advantages of engaging a PPP partner.

Recommendations and Future Research Needs

The new legislation allows the ATRBTA and ALDOT to partner with the private sector to build new toll facilities. To better serve the public and guarantee the long-term performance in a PPP agreement, ALDOT needs to develop rigorous up-front PPP evaluation guidelines to secure benefits and protect the public interest. A standard public decision process should be also developed to ensure transparency and accountability on the PPP projects.

ALDOT must build up its in-house ability to identify PPP opportunities, evaluate PPP proposals, design alternative financing structures, and negotiate PPP deals. PPP procurement usually involves complex contract negotiations and financial evaluations that are typically beyond the scope of engineers’ work. Research and training is urgently needed to help ALDOT engineers identify the cost of alternative financing and to understand negotiation guidelines in PPP deals.

ALDOT should develop performance based specifications to guarantee the performance in a long-term lease agreement. Implementation of PPP procurement requires the state agency to shift from methods specifications to performance specifications and develop a reliable pavement management system.

8.0 Bibliography

- ACS Infrastructure Development, "PPP Market: *The View of a Developer.*" USA.
- Ahadzi, M. and Bowles, G. (2004). "Public-private partnerships and contract negotiations: an empirical study." *Construction Management and Economics* (November 2004) 22, 967-978.
- Ahadzi, M. and Bowles, G., (2004). "Public-Private Partnerships and Contract Negotiations: *An empirical Study.*" Spon Press, United Kingdom. *Construction Management and Economics* (November 2004) 22, 967-978.
- ALDOT. (2008). *Annual Report.* Alabama Department of Transportation.
- Allen, G., (2001). "The Private Finance Initiative (PFI)." House of Commons Library. Economic Policy and Statistics Section. Research Paper 01/117.
- Alves, L.F., (2006). "Stochastic Approach to Risk Assessment of Project Finance Structures under Public Private Partnerships." UMI Microform. The George Washington University.
- Atwell, J.W., (2003). "Phase One Conceptual Proposal-Improvements to I-81 Corridor." STAR solutions, Virginia Department of Transportation.
- Atwell, J.W., (2004). "Working with VDOT to Make I-81 Safer for Everyone." STAR solutions, Virginia Department of Transportation.
- Behrens, M.W., (2005). "TxDOT's Request for Sep-15 Approval." Federal Highway Administration.
- Bennett, J., and Iossa, E., (2005). "Building and Managing Facilities for Public Services." CMPO Working Paper Series No. 05/137.
- Bentz, A., Grout, P.A., and Halonen, M., (2001). "Why Should the State Buy?" CMPO Working Paper Series No. 01/40. Dartmouth College, United Kingdom.
- Bettignies, J.-E. and Ross, T., (2004) "The Economics of Public-Private Partnerships (PPPs)." Sauder School of Business UBC PPP Project. The University of British Columbia.
- Bettignies, J.-E. and Ross, T., (2004) "The Economics of Public-Private Partnerships" University of Toronto Press, vol. 30 (2), 135-154, June
- BMI, (2002). "I-95 Collector-Distributor Access Feasibility Study." HNTB, Travesky & Associates Ltd., SG Associates Inc., Fitzgerald & Halliday Inc., and MCV Associates Inc.
- Boast, T., (2007). "A Conversation with the Financial Industry." Florida Department of Transportation.
- Borello, J., (2007) "I-595 Corridor Roadway Improvements Project." Florida Department of Transportation.
- Bourn, J., (2007). "Benchmarking and Market Testing the Ongoing Services Component of PFI Projects." National Audit Office, United Kingdom.
- Bourn, J., (2007). "Improving the PFI tendering process." National Audit Office, United Kingdom.
- Brown, S., (2007). "Contractor's Role in PPP Projects." Zachry American Infrastructure. Florida
- Brumby, J., (2004). "Establishing a National PPP Market." Speech Notes, United Kingdom.

- Bruner, R.F., "Project Financing: *An Economic Overview*." Darden Business Publishing, University of Virginia.
- Burger, P., (2007), "The Dedicated PPP Unit of the South African National Treasury." University of the Free State, South Africa.
- Buxbaum, J., (2006). "Comprehensive Tolling Study-Final Report." Cambridge Systematics. Cambridge Systematics, (2007). "Illiana Expressway Feasibility Study." The Indiana Department of Transportation.
- Capka, J.R., (2005). "Manual for using Public-Private Partnerships on Highway Projects." Federal Highway Administration.
- Capka, J. R. (2006). *Public Roads*. <http://www.tfhr.gov/pubrds/06jan/02.htm>
- CBI, (2007). "Going Global: *The world of Public Private Partnerships*." Confederation of British Industry (CBI), United Kingdom.
- Chong, A., and Lopez-de-Silanes, F., (2004). "Privatization in Latin America: *What Does the Evidence Say?*" *Economia*, 4 (2): 37-111, Spring 2004.
- Clary, L.R., "Public-Private Partnerships: *What's New in Florida*." Florida Department of Transportation.
- Colorado Tolling Enterprise, (2004). "Statewide Toll Feasibility Study Second-Tier Analysis."
- Compton, E., (2005). "Public/Private Partnerships: *King Coal Highway Red Jacket Project*." Federal Highway Administration. West Virginia.
- Congressional Requesters, (2008). "More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest." GAO-08-44.
- Crossroads 400 Group. (2005) "Executive Overview: *Compliant Proposal for the Development of GA 400 HOT Lane Project*." Georgia
- Crossroads 400 Group. "Unsolicited Proposal for the Development of: *GA 400 Crossroads Region*." Georgia Department of Transportation.
- Daley, K., (2006). "Public Private Initiative for the Perimeter Links Project." TOTal Mobility, Atlanta, Georgia.
- Daley, K., (2007). "Public Private Partnerships." Transurban, United States.
- Dalton, P.A., (2007). "Transportation Challenges Facing Congress and the Department of Transportation." GAO-07-545T.
- DeCorla-Souza, P., AICP, (2005). "A New Public Private Partnership Model for Road Pricing Implementation." Federal Highway Administration, Washington DC.
- Deloitte Financial Advisory LLP, (2007). "Independent Assessment or Auditable Unit B-Contracting and Project Delivery." Texas Department of Transportation,
- Dewatripont, M., (2005), "Public-Private Partnerships: *Contract Design and Risk Transfer*." The European Investment Bank Papers, 10 (1): 120-145.
- Dillard, R., (2007). "PPP Teams Update: *Procurement Team, Engineering and Operation Team, Financing Team*." Florida Department of Transportation.
- Doman, D.L., and AECOM Consult Team, (2007). "Case Studies of Transportation Public-Private Partnerships around the World." Work Order 05-002, Federal Highway Administration.
- Doman, D.L., and AECOM Consult Team, (2007). "User Guidebook on Implementing Public-Private Partnerships for Transportation Infrastructure Projects in the United States." Work Order 05-002, Federal Highway Administration.

- Dowling, M., (2005). "I-75/575 Northwest Corridor Board Presentation." Georgia Department of Transportation.
- Eggers, W.D., and Dovey, T., (2007). "Closing America's Infrastructure Gap: The Role of PPP." Deloitte Research. www.deloitte.com.
- Engel, E., Fischer, R., and Galetovic, A., (2000). "Least-Value-of-Revenue Auctions and Highway Franchising." National Bureau of Economic Research, Inc. NBER Working Papers, No. 6689.
- Engel, E., Fischer, R., and Galetovic, A., (2002). "A New Approach to Private Roads." *Regulation*, Fall 2002, 25 (3): 18-22.
- Engel, E., Fischer, R., and Galetovic, A., (2003). "Privatizing Highways in Latin America: *Is it Possible to Fix What Went Wrong?*" Yale University, NBER, and University of Chile
- Engel, E., Fischer, R., and Galetovic, A., (2003). "Soft Budgets and Highway Franchising." University of Chile, Center for Applied Economics (CEA) Working Paper No. 176.
- Engel, E., Fischer, R., and Galetovic, A., (2004). "Toll Competition Among Congested Roads." *Topics in Economic Analysis & Policy*, Vol. 4, Issue. 1, Article 4.
- Engel, E., Fischer, R., and Galetovic, A., (2006). "Renegotiation without holdup: *Anticipating Spending and Infrastructure Concessions.*" Cowles Foundation for Research in Economics, Yale University, Connecticut, Discussion Paper No. 1567.
- Engel, E., Fischer, R., and Galetovic, A., (2007). "The Basic Public Finance of Public-Private Partnerships." National Bureau of Economic Research, Massachusetts, Working Paper 13284.
- Finnerty, J.D., Ph.D., (2007), "Asset-Based Financial Engineering." Second Edition. John Wiley & Sons, Inc., New Jersey.
- Fitzgerald, R., (2006). "I-285 NW TOT Lanes Executive Summary." Goldman, Sachs & Co., Georgia.
- Fitzgerald, R., (2006). "Proposal to: *Georgia Department of Transportation.*" Goldman, Sachs & Co., Georgia.
- Florida Department of Transportation, (2007). "First Coast Outer Beltway." Public Private Partnerships Conference.
- Florida Department of Transportation, (2007). "I-595 Roadway Improvements." FTBA/FDOT Conference.
- Florida Department of Transportation, (2007). "PPP Projects: *Actual and Potential.*"
- Florida Department of Transportation, (2007). "Port Access Project: *The Port of Miami Tunnel.*" Miami-Dade County.
- Florida Department of Transportation, "I-595 Corridor Roadway Improvements Project" Project Selection Committee Briefing.
- Florida's Turnpike Enterprise, (2005). "St. Johns River Crossing Study."
- Forster, N., "PFI Value for Money Quantitative Assessment."
- Gaffney, D., Pollock, A.M., Price, D., and Shaoul, J., (1999). "PFI in the NHS: *Is There an Economic Case?*" *British Medical Journal*, 1999 July 10; 319 (7202): 116-119.
- GAO (2008). Federal-Aid Highways: Federal Requirements for Highways May Influence Funding Decisions and Create Challenges, but Benefits and Costs Are Not Tracked. GAO-09-36. US Government Accountability Office.
- GAO (2008). Highway Public-Private Partnerships: More Rigorous Up-front Analysis Could Better Secure Potential Benefits and Protect the Public Interest. GAO-08-44. US Government Accountability Office.

- Gatti, S. (2008). "Project Finance in Theory and Practice-*Designing, Structuring, and Financing Private and Public Projects.*" Elsevier Inc.
- Georgia Department of Transportation, "Proposal for the Northwest Corridor." Sections 2a-6i.
- Georgia Transportation Partners, (2004). "The Northwest Corridor: *Transportation Improvement Project.*" Georgia Department of Transportation.
- Gilroy, L.C., (2006). "Transforming Government Through Privatization." Annual Privatization Report, 2006. Reason Foundation.
- Glaister, S., (1999), "Past Abuses and Future Uses of Private Finance and Public Private Partnerships in Transport." *Public Money & Management* July-September, 29-36
- Goldberg, M.S., (1998). "Discount Rates for Government Investment Projects: *The Economic Logic Behind OMB Circular A-94*" *The Engineering Economist*, 43 (4), 290-307.
- Gonzalez, A., "I-285/I-20 Capacity Improvements: *A competing proposal to the Unsolicited Proposal #2006-UI.*" Georgia Mobility Partners.
- Grimsey, D. and Lewis, M.K., (2004). "Public Private Partnerships-*The Worldwide Revolution in Infrastructure Provisions and Project Finance.*" Edward Elgar Publishing Limited, United Kingdom and Massachusetts.
- Grimsey, D., and Lewis, M.K., (2000). "Evaluating the Risks of Public Private Partnerships for Infrastructure Projects." *International Journal of Project Management*, 20 (2002): 107-118.
- Grout, P.A., (1997). "The Economics of the Private Finance Initiative." *Oxford Review of Economic Policy*, 13 (4): 53-66.
- Grout, P.A., (2002). "Public and Private Sector Discount Rates in Public-Private Partnerships." Bristol University, CMPO Working Paper Series No. 03/059.
- Grout, P.A., (2005). "Value-for-Money Measurement in Public-Private Partnerships." *The European Investment Bank Papers*, 10 (1): 32-56.
- "Guidance Note: The Use of Internal Rates of Return in PFI PROJECTS."
- H.M. Treasury, (2003). "PFI: meeting the investment challenge." Crown copyright, United Kingdom.
- H.M. Treasury, (2006). "Interest-Rate & Inflation Risks in PFI Contracts." H.M. Treasury's Corporate and Private Finance Unit, United Kingdom.
- H.M. Treasury, (2006). "PFI: strengthening long-term partnerships." Crown copyright, United Kingdom.
- H.M. Treasury, (2006). "Value for Money Assessment Guidance." Crown copyright.
- H.M. Treasury, (2007). "Quantitative Assessment User Guide." Crown copyright, United Kingdom.
- Hart, O., (2002). "Incomplete Contracts and Public Ownership: *Remarks, and an Application to Public-Private Partnerships.*" Harvard University.
- Hart, O., Shleifer, A., and Vishny, R.W., (1997). "The Proper Scope of Government Theory and an Application to Prisons." *The Quarterly Journal of Economics*, November 1997. 1127-1161.
- Hefley, J., (2003). "Public-Private Partnerships Have Increased, but Long-Term Growth and Results are Uncertain." GAO-03-423.
- Hemming, R., (2006). "Public-Private Partnerships, Government Guarantees, and Fiscal Risk." International Monetary Fund Multimedia Services Division, Washington D.C.
- HNTB Corporation, (2006). "Value Pricing on the I-75 HOV/BRT Project." Georgia State Road and Toll way Authority."

- HNTB, (2002). "Missouri Toll Feasibility Study-Phase 1." Wilbur Smith Associates and Salomon Smith Barney.
- Holland, G.R., (2007). "Public Private Partnerships: *An Overview*." Florida Department of Transportation, Alternative Contracting/Design-Build Task Force, Public Private Partnerships Workshop.
- Homer, P.R., (2004). "I-81 Advisory Recommendation Letter." Commonwealth of Virginia.
- Inhofe, J.M, and Bond, C.S., (2006). "States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies." GAO-06-554.
- "Interstate 880 Value Pricing Feasibility Study-Summary & Conclusions" (2004).
- Irwin, T.C., (2007). "Government Guarantees: *Allocating and Valuing Risk in Privately Financed Infrastructure Projects*." The International Bank for Reconstruction and Development/The World Bank, Washington, DC.
- Itinere North America, (2007). "A New leader in Infrastructure Concessions." Sacyr Vallehermoso.
- James, A., (2007). "Oregon's Approach to PPPs." Oregon Department of Transportation.
- James, A., (2008). "Is Tolling in Oregon's Transportation Future?" Oregon Department of Transportation.
- James, A., (2008). "Oregon's PPP Experience." Oregon Department of Transportation.
- Jeffrey N. Buxbaum. (2007). *Protecting the Public Interest: The Role of Long-Term Concession Agreements for Providing Infrastructure Transportation*. the Keston Institute for Public Finance and Infrastructure Policy.
- Jensen, M., and Bailey, M. J., (1972). "Risk and the Discount Rate for Public Investment." *Studies in the Theory of Capital Markets*, M.C. Jensen, Editor (Praeger Publishers, 1972)
- Johnson, C.I., Luby, M.J., and Kurbanov, S.I. (2007) "Toll Road Privatization Transactions: The Chicago Skyway and Indiana Toll Road". 2007 Association for Budgeting and Financial Management (ABFM) Conference Paper.
- Johnson, M., Yarbrough, A., and Schiess, G., (2007). "Public Private Partnerships Practices." Florida Department of Transportation.
- Joyner, D.W., (2006). "Preliminary Financial Feasibility Study for the Triangle Parkway and Western Wake Parkway." North Carolina Turnpike Authority.
- Kang, M., (2007). "Alternative Contracting/Design-Build Task Force Public- Private Partnerships Workshop." Florida Department of Transportation.
- Kohyama, H., (2006). "Selecting Discount Rates for Budgetary Purposes." Harvard Law School, Federal Budget Policy Seminar. Briefing Paper No. 29.
- Kruger, D., Shiu, S. and Naylor, S. (2006) Estimating toll. road demand and revenue: a synthesis of highway practice. National Cooperative Highway Research Program's Synthesis 365, Washington DC.
- Kuchler, D.A., (2007). "Indiana's Experience with 3P Projects." Indiana Department of Transportation.
- Lambert, R. and Beeston, K., (2007). "Next Steps: *Priorities for Improving Public Services*." Confederation of British Industry (CBI), United Kingdom.
- Lambert, R., (2007). "Building on Success: *The Way Forward for PFI*." Confederation of British Industry (CBI), United Kingdom.
- Leahy, P., (2005). "Lessons from the Private Finance Initiative in the United Kingdom." European Investment Bank Papers, 10 (2): 58-71.

- Link, A., (1999). "Public/Private Partnerships in the United States." *Industry and Innovation*, 6, (2): 191-217, December 1999.
- Lopez-de-Silanes, F. (1996). "Determinants of Privatization Prices." National Bureau of Economic Research, MA. Working Paper 5494.
- Luca, A.D., (2000). "An Economic and Financial Analysis of Public Private Partnerships." The National Library of Canada. The University of Manitoba, Canada.
- Madison Jr., T.J., (2006). "Transportation Development Partnerships: *Tools for Innovative Transportation Operations and Finance*." New York State Department of Transportation.
- Maryland Agencies, (2005). "Current Practices in Public-Private Partnerships for Highways." KCI Technologies, Inc.
- Maryland Transportation Authority. "Transportation Public-Private Partnership Guidelines."
- Maskin, E., and Tirole, J., (2006). "Public-Private Partnerships and Government Spending Limits." Institute for Advanced Study, School of Social Science, Economic Working Papers, number 0075, New Jersey.
- Metropolitan Transportation Commission and Caltrans, (2007). "Bay Area High-Occupancy/Toll (HOT) Network Study Final Report." PB Americas, Inc. and ECONorthwest.
- Monteiro, R.S., (2005). "Public-Private Partnerships: *some lessons from Portugal*." European Investment Bank Papers, 10 (2): 72-81.
- MRŠNIK, M., (2007). "International Seminar on Strengthening Public Investment and Managing Fiscal Risks from Public-Private Partnerships." IMF, Hungarian Ministry of Finance, ICEG, Budapest.
- Naitove, R.M., (2007). "Design Build Finance." Florida Department of Transportation.
- National Council for Public-Private Partnerships, (2006). "Managing Transportation Utilities Through Public-Private Partnerships." Texas Department of Transportation.
- Nickerson, S.R., (2006). "State of Indiana: *Indiana East-West Toll Road Financial Analysis*." Crowe Chizek and Company LLC.
- Northwest TOT Team. "I-285 Northwest Truck Only Toll Lanes: *A Flexible Approach to Public Private Initiative*." Georgia Department of Transportation.
- NW X-Press Team. "I-285/I-20 TOT Lane Project: *Executive Summary*." Skanska, Citigroup, and Arcadis. Georgia.
- O'Connor, J.T., Gibson Jr., G.E., and Migliaccio, G.C., (2004). "2004 Annual Interim Report." Center for Transportation Research, The University of Texas at Austin. Report No. FHWA/TX-05/0-4661-1.
- Oregon Department of Transportation, Oregon Transportation Improvement Group, Oregon Innovative Partnerships Program, (2006). "Facts About the Summary Feasibility Review of the Newberg-Dundee Transportation Improvement Project."
- Oregon Department of Transportation, Oregon Transportation Improvement Group, Oregon Innovative Partnerships Program, (2006). "Tolling Option Considered for Newberg-Dundee Bypass Project."
- Oregon Transportation Improvement Group, (2006). "Feasibility Assessment."
- Oregon Transportation Improvement Group, (2006). "Newberg-Dundee Transportation Improvement Project: *PDA Reference Document, Milestone 1 Final Report*." Newberg-Dundee.

Oregon Transportation Improvement Group, (2006). "Oregon Roads Project: *Alternative Assessment: Summary Feasibility Review*." Newberg-Dundee Transportation Improvement Project.

Oregon Transportation Improvement Group, (2007). "South I-205 Corridor Project: *PDA Reference Document, Milestone 0 Final Report-Scoping Study*."

Oregon Transportation Improvement Group, (2007). "Sunrise Project and South I-205 Corridor Improvement Project."

Oregon Transportation Improvement Group, (2007). "The Sunrise Project: *PDA Reference Document, Milestone 0 Final Report-Scoping Study*."

Oregon Transportation Improvement Group, "Newberg-Dundee Transportation Improvement Project: *Appendices*."

Organization for Economic Co-operation and Development., (2008). "Public-Private Partnerships-*In Pursuit of Risk Sharing and Value for Money*." OECD.

Parsons Brinckerhoff (PB), (2007). "Selection Scoring Methodology." Florida Department of Transportation.

Parsons Brinckerhoff, (2002). "Regional Toll Revenue Feasibility Study." Washington State Department of Transportation.

Parsons Brinckerhoff, (2002). "SR 00: Alaskan Way Viaduct Project-Toll Feasibility Study." Washington State Department of Transportation.

Parsons Brinckerhoff, (2002). "SR-35 Columbia River Crossing Feasibility Study." Washington State Department of Transportation.

Parsons Brinckerhoff, (2002). "Technical Summary of Toll Analyses." Washington State Department of Transportation.

Partnerships Victoria, (2003) "Use of Discount Rates in the Partnerships Victoria Process." State Government Victoria-Department of Treasury and Finance, Australia.

Porta, R.L., and Lopez-de-Silanes, F., (1999). "The Benefits of Privatization: *Evidence from Mexico*." The Quarterly Journal of Economics, 114 (4), 1193-1242, November 1999.

Prezioso, R., (2003). "Review of Detailed Proposals received for I-81 PPTA Project." Virginia Department of Transportation.

Project Finance Portal. <http://www.people.hbs.edu/besty/projfinportal/> Harvard Business School.

Public Sector Research Centre, (2007). "The value of PFI: *Hanging in the balance (sheet)*?" Private Finance Initiative (PFI), United Kingdom.

Quirk, J. P., and Terasawa, K. L., (1987). "The Choice of Discount Rate Applicable to Government Resource Use: *Theory and Limitations*." The RAND Corporation, California.

Renda, A. and Schrefler, L., (2006), "Public-Private Partnerships-*National Experiences in the European Union*." DG Internal Policies of the Union, Directorate A, *Economic and Scientific Policy*. PE 369.858.

Sadka, E., (2006). "Public-Private Partnerships: *A Public Economics Perspective*." International Monetary Fund, Washington DC.

Samuel, D., (2006). "Transurban has \$522m agreement to take over Pocahontas Parkway VA." Retrieved from <http://www.tollroadsnews.com/node/1516>.

Shaoul, J., (2003). "A critical financial analysis of the Private Finance Initiative: *Selecting a Financing Method or Allocating Economic Wealth?*" Elsevier Ltd. United Kingdom. School of Accounting and Finance, University of Manchester.

Siggerud, K., (2006). "Overview of Highway Trust Fund Estimates." GAO-06-572T.

Smith, D., Chang-Albitres, C., and Stockton, Wm. R., P.E., (2004). "Estimating Revenues using Toll Viability Screening Tool." Texas Transportation Institute.

Smith, D.R., Chang-Albitres, C., Stockton, Wm.R., and Smith, C., (2005). "Summary Report: Development of a Toll Viability Screening Tool." Texas Transportation Institute.

Stutler Jr., D., (2006). "Economic Feasibility Development Process."

Ter-Minassian, T. (2006). "The Economics of Public-Private Partnerships." Fiscal Affairs Department International Monetary Fund. OECD Working Party of Senior Budget Officials Symposium on Agencies and Public-Private Partnerships, Madrid.

Texas Department of Transportation (2006). "The New Texas Roadmap."

Texas Department of Transportation and Texas Turnpike Authority, (2007). "Comprehensive Development Agreement Book 3 (Concession)."

Texas Department of Transportation and Texas Turnpike Authority, (2007). "Comprehensive Development Agreement Book 3 (Design-Build)."

Texas Department of Transportation, (2006). "Draft for Industry Review."

Texas Department of Transportation, (2006). "Launching the Next Generation of CDA Projects."

Texas Department of Transportation, (2006). "SH 161 Toll Road Project."

Texas Department of Transportation, (2007). "TxDOT: Open For Business: *Toll Feasibility Analysis*."

Texas Department of Transportation, (2007). Independent Assessment of Auditable Unit B - Contracting and Project Delivery for the Texas department of Transportation.

Texas Department of Transportation, (2008). "Grand Parkway (SH99) Toll Project Market Valuation Draft Terms and Conditions."

The Commonwealth of Virginia, (2005). "Public-Private Transportation Act of 1995, (as Amended): *Implementation Guidelines* including Appendices." Virginia Department of Transportation.

The National Council for Public-Private Partnerships. <http://ncppp.org>.

The Parkway Group, (2004). "Unsolicited Proposal for the Development of University Parkway." Georgia.

Thomson, C., and Goodwin, J., (2005). "Evaluation of PPP Projects Financed by the EIB." European Investment Bank Synthesis Report.

Thomson, C.C., (2005). "Private-Public partnerships: *prerequisites for prime performance*." European Investment Bank Papers, 10 (2): 112-129.

Transportation Research Board, (2007). "Estimating Toll Road Demand and Revenue." NCHRP syntheses 364.

Transportation Research Board, (2008). "Compilation of Public Opinion Data on Tolls and Road Pricing." NCHRP syntheses 377.

UNESCAP, Transport and Tourism Division, (2005), "PPP-Readiness Self-Assessment."

United States Department of Transportation, (2004). "Report to Congress on Public-Private Partnerships."

U.S. Department of Transportation. "Public-Private Partnership Toolkit for Highways." <http://www.ppptoolkit.fhwa.dot.gov>.

Välilä, T., (2005). "How Expensive are cost savings? On the Economics of Public-Private Partnerships." The European Investment Bank Papers, 10 (1): 94-119.

Vargas, D., (2007). "Potential Public & Private Partnerships." Texas Department of Transportation. Border-to-Border Transportation Conference 2007.

- Victoria Transport Policy Institute. (2008). *Road Pricing*. <http://www.vtpi.org/tdm/tdm35.htm>.
- Virginia Department of Transportation, (2002). "A Solicited Public-Private Transportation Act Request for Conceptual Proposals for Improvements to the Interstate 81 Corridor in Virginia."
- Virginia Department of Transportation, (2003). "Financial Evaluation of I-81 PPTA Solicited Proposals."
- Virginia Department of Transportation, (2003). "Financial Evaluation of I-81 PPTA Solicited Proposals."
- Virginia Department of Transportation, (2003). "Interstate 81 Improvements-Project Financing." STAR solutions. pp 3.1-3.38.
- Virginia Department of Transportation, (2004). "Interstate 81 PPTA Proposal Fact Sheet-Appendix E." STAR Solutions, INC.
- Virginia Department of Transportation, (2004). "Request for Information: *Midtown Tunnel Corridor Project (MTCP)*."
- Virginia Department of Transportation, (2008). "Downtown Tunnel/Midtown Tunnel/MLK Extension: *Solicitation for Proposals*."
- Waddock, S.A., (1985). "Development of Public-Private Partnership: *An Empirical and Conceptual Study*." University Microfilms International, Boston, MA.
- Wallace, A., (2007). "Concessions for Transportation Infrastructure." Macquarie Securities (USA) Inc. 2007 Public Private Partnership Conference.
- Werho, M., Linnenkohl, H., and Studstill, D., (2007). "I-20 Managed Lanes Corridor: *Pre-Solicitation Information Meeting*." Georgia Department of Transportation.
- Whitty, J., (2007). "Oregon's Experiments in Closing the Transportation Funding Gap." Oregon Department of Transportation.
- Whitty, J., (2007). "Sunrise Project and South I-205 Report Results." Oregon Department of Transportation.
- Wilbur Smith Associates, (2004). "CTE Preliminary Traffic and Revenue Study." HNTB Corporation and Felsburg Holt & Ullevig Citigroup.
- Wilbur Smith Associates, (2005). "CTE Preliminary Traffic and Revenue Study: *Executive Summary*." Colorado Tolling Enterprise.
- Wolfe, J., and Thorp, W., (2007). "Project Status and Traffic and Revenue" Florida Department of Transportation.
- World Bank (2006) Toolkit for Public-Private Partnerships in Highways." <http://www.ppiaf.org/documents/toolkits/highwaystoolkit/index.htm>.
- World Bank. "Public-Private Partnerships in Infrastructure." <http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAMS/PPPILP/0,,menuPK:461142~pagePK:64156143~piPK:64154155~theSitePK:461102,00.html> and <http://info.worldbank.org/etools/PPPI-Portal/eLibrary1.asp>.
- Yescombe, E.R., (2007), "Public-Private Partnerships-*Principles of Policy and Finance*." Yescombe Consulting Ltd., Elsevier Ltd., United Kingdom.
- Young, L., (2002). "Determining the Discount Rate for Government Projects." New Zealand Treasury Working Paper 02/21.

Appendices

Appendix A: Sample Questionnaire

1. What is your states experience in PPPs? (answer “c” or “d” go to question 10)
 - a. Experienced
 - b. Currently Practicing
 - c. Plan to implement in the future
 - d. Don’t plan to implement

2. Which of the following types of PPP have been used in your state? (Select all that apply)
 - a. Pre-Development Agreements
 - b. Build-Operate-Transfer
 - c. Long term lease agreement
 - d. Design-Build-Finance-Operate
 - e. Build-Own-Operate
 - f. Other (please specify):

3. What is the primary reason for implementing PPPs in your state?
 - a. Financing
 - b. Risk transfer
 - c. Shortage of work force
 - d. Cost and time savings
 - e. Other (please specify):

4. Has the PPP been successful in accomplishing its objectives?
 - a. Yes
 - b. No

5. What financial instruments have been used in your state? (Select all that apply)
 - a. Grant anticipation bonds (GARVEEs and GANs)
 - b. General obligation bonds
 - c. Flexible Matching (including toll credits)
 - d. Section 129 Loans
 - e. Transportation Infrastructure Finance and Innovation Act (TIFIA) credit
 - f. Direct user charges (tolls and transit fares) leveraged to obtain bonds
 - g. Equity partnerships and revenue sharing
 - h. Concessions and long term leases

- i. Other (please specify):
6. How would you rate the effectiveness of communication with the private sector?
(not satisfied = 1 2 3 4 5 = very satisfied)
7. Was the PPP project completed on schedule and within budget?
- a. On Schedule
 - i. Yes
 - ii. No
 - b. Within Budget
 - i. Yes
 - ii. No
8. Explain the risk that your state had to consider while entering into a PPP:
9. Overall, rate your general satisfaction on the PPP process:
(not satisfied = 1 2 3 4 5 = very satisfied)
10. Is there legislation on PPPs in your state?
- a. Yes
 - b. No
 - c. Bill in process

Comments:

We would greatly appreciate any other suggestions, advice, or lessons learned on the methods and feasibility of PPP projects within your state.

Appendix B: Survey Responses

State	Question 1		Question 2						Question 3	
	Q1	Q2a	Q2b	Q2c	Q2d	Q2e	Q2f	Q2f1	Q3	Q3e1
Arizona	c									
California	a	1	Off	1	Off	Off	Off		d	
Colorado	b	1	Off	1	Off	Off	Off		c	
Connecticut	a	Off	Off	Off	Off	Off	1	Innovative Financing	a	
Delaware	?									
Florida	a	Off	Off	Off	1	Off	1	Design-Build, Design-Build-Finance, Design-Build-Finance-Operate-Maintain	e	To better serve the public
Hawaii	d									
Illinois	c									
Kansas	c									
Kentucky	c									
Louisiana	c									
Maryland	c									
Michigan	c									
Minnesota	a	1	Off	Off	Off	Off	1	Design-Build, Design-Build-Operate	d	
Mississippi	c									
Missouri	c								a	
Montana	d									
Nevada	b	1	Off	Off	Off	Off	1	Private sector Designs-Builds and NDOT maintains; private sector finances and NDOT Design-Build-Maintain	a	
New York	c	1							a	
North Carolina	b				1	1			a	
North Dakota	d									
Oregon	d									
Pennsylvania	c									
South Carolina	a	Off	Off	Off	Off	Off	1	Design-Build-Finance-Operate-Transfer	a	
South Dakota	d									
Tennessee	c									
Texas	a	1	Off	1	1	Off	Off		a	
Utah	d									
Vermont	c									
Virginia	a	1	Off	1	1	Off	Off		a	
Washington	b	Off	Off	Off	Off	Off	1	Design-Build	e	Early(up-front) funding for pre-construction cost
West Virginia	c				1	Off	1	Design-Build-Finance	d	
Wisconsin	d									
Wyoming	d									

	Question 4	Question 5									
State2	Q4	Q5a	Q5b	Q5c	Q5d	Q5e	Q5f	Q5g	Q5h	Q5i	Q5i1
Arizona											
California	a	1	1	Off	Off	1	Off	Off	1	Off	
Colorado	a	1	Off								
Connecticut	a	Off	Off	Off	Off	Off	Off	Off	Off	Off	
Delaware	b	Off	Off	Off	Off	Off	Off	Off	Off	Off	
Florida	a	Off	Off	Off	Off	1	Off	1	Off	1	GARVEE but haven't used it, State Transportation Trust Fund, Toll Facilities Revolving Trust Fund, Private Activity Bonds
Hawaii											
Illinois											
Kansas											
Kentucky											
Louisiana											
Maryland											
Michigan											
Minnesota	a	Off	Off	Off	Off	Off	Off	Off	Off	1	I don't believe Mn/DOT has used any of these financial instruments.
Mississippi											
Missouri		1									
Montana											
Nevada	a	Off	Off	Off	Off	Off	Off	Off	Off	1	Traditional bonds backed by fuel taxes.
New York	b									1	Transportation Infrastructure Bank
North Carolina											
North Dakota											
Oregon											
Pennsylvania											
South Carolina	a	Off	1	Off	Off	1	Off	Off	1	1	South Carolina transportation Infrastructure Bank
South Dakota											
Tennessee											
Texas	a	1	Off	1	1	1	1	1	1	Off	
Utah											
Vermont											
Virginia	a	1	Off	Off	1	1	Off	1	1	Off	State and Federal Funds
Washington	b	1	Off	1	Off	Off	1	Off	Off	Off	
West Virginia		1					1				
Wisconsin											
Wyoming											

	Question 6	Question 7		Question 9	Question 10
State3	Q6	Q7a	Q7b	Q9	Q10
Arizona					b
California	Off	no	no	3	a
Colorado	4	yes	yes	3	a
Connecticut	4	yes	yes	5	a
Delaware				2	a
Florida	5	yes	yes	5	a
Hawaii					c
Illinois					b
Kansas					b
Kentucky					b
Louisiana					a
Maryland					a
Michigan					b
Minnesota	4	yes	yes	5	a
Mississippi					a
Missouri	3				b
Montana					b
Nevada	3	yes	yes	4	a
New York	4	yes	yes	3	a
North Carolina	5	yes	yes		a
North Dakota					b
Oregon					b
Pennsylvania					c
South Carolina	5	yes	yes	4	a
South Dakota					b
Tennessee					b
Texas	4	yes	yes	3	a
Utah					b
Vermont					b
Virginia	4	yes	yes	5	a
Washington	5	yes	yes	3	a
West Virginia	4				a
Wisconsin					b
Wyoming					b

Appendix C: Discount Rate

State	DOT	Discount Rate (%)	Real or Nominal	LCCA	Analysis Period (yrs)	Year recorded or year dollars used	Area
Wyoming	WyDOT	4		yes	30		Pavement
Wisconsin	WisDOT	5	real	yes	50	2000	Pavement
West Virginia	WVDOT						
Washington	WSDOT	4	real	yes	40	2000	Pavement
Virginia	VDOT	7					
Vermont	VTRANS	5		no	20	2008	Water Storage
Utah	UDOT	4			30	2002	Transportation
Texas	TxDOT	NA		no	NA		Pavement
Tennessee	TDOT	7		no	20	1999	ITS
South Dakota	SDDOT						
South Carolina	SCDOT	3.5		yes	30		Pavement
Rhode Island	RIDOT	NA		No	NA		Pavement
Puerto Rico	DTOP						
Pennsylvania	PennDOT	6	real	yes	20 to 40	2000	Pavement
Ohio	ODOT	3		yes	35		pavement
Ohio	ODOT	0 to 6	real	yes	35	2000	Pavement
Oregon	ODOT						
Oklahoma	ODOT	3.55		yes	30	1964	pavement
North Dakota	NDDOT						
North Carolina	NCDOT	4	real	yes	30	2000	Pavement
New York	NYSDOT	4		yes	50		pavement
New Mexico	NMDOT	7		no	30	2000	Transportation
New Jersey	NJDOT	4		yes	10,20,30,40		Pavement
New Hampshire	NHDOT						
Nevada	NDOT		real	yes	4	2000	Pavement
Nebraska	NDOR						
Montana	MDT	3		yes	40		Pavement
Missouri	MoDOT	3 to 4		yes	45		Pavement
Mississippi	MDOT						
Minnesota	MnDOT						
Michigan	MDOT						
Massachusetts	MassDOT						

State	DOT	Discount Rate (%)	Real or Nominal	LCCA	Analysis Period (yrs)	Year recorded or year dollars used	Area	
Maryland	MDOT	4			40	2006	Pavement	
Maine	MaineDOT	No Official Discount Rate						
Louisiana	DOTD							
kentucky	KYTC	2 to 10	real	yes	35 to 40	2000	Pavement	
Kansas	KsDOT	3		yes	40		Pavement	
Kansas	KsDOT	2		yes				
Iowa	Iowa DOT	3	nominal	no		2006	Bridge trusses	
Iowa	Iowa DOT	4		no		2007	Crash Costs	
Indiana	INDOT	4		yes	30,40		Pavement	
Illinois	IDOT	3		yes	40		Pavement	
Idaho	IDT							
Hawaii	Hawaii DOT	0.05	nominal	no	20	2007	Underwater Dive Attraction	
Geogia	GDOT	3		yes	10-HMA, 20-PCC, 25-CRC		Pavement	
Florida	FDOT	4		yes	40		Pavement	
Washington DC	DDOT	4.9	nominal	no	30	2008	Treasury Notes & Bonds	
Washington DC	DDOT	2.8	real	no	30	2008	Treasury Notes & Bonds	
Delaware	DELDOT	NA		no	NA		Pavement	
Connecticut	ConnDOT	7		no	17	2000	User Transp. Costs	
Colorado	CDOT	4		yes	40		Pavement	
Colorado	CDOT	4	real	yes	30	2000	Pavement	
California	CalTrans	1.6-3.2%	real	no				
Arkansas	AHTD	3.8		yes	35		Pavement	
Arizona	ADOT	4		yes	25	1991-1996	Pavement Asphalt Rubber	
Alaska	Alaska DOT&PF							
Alabama	ALDOT	4		yes	28		Pavement	
Quebec	QMOT	5		yes	50		Pavement	
Ontario	OMOT	5		yes	50		Pavement	
British Columbia	MOT OF BC	6		no	NA		Pavement	

Appendix D: PPP Legislation

State	Statute
AL	ALA. CODE §§ 23-1-80 to 23-1-95 HB 217/Act 2009-769
AK	ALASKA STAT. §§ 19.75.111, .113, .211, .221, .330, .332, .334, .336, .338, .340, .241, .915, .920, and 980
AZ	ARIZ.REV.STAT §§28-7701 to 28-7758 HB 2396
CA	CAL STS & HY CODE §§143, 149, CAL GOV CODE §§ 5956 SB 4b
CO	COLO. REV. STAT. §§43-1-1201 through 1209; COLO. REV. STAT. §§43-4-801 through 812 ; COLO. REV. STAT. §§ 43-3-201 through 43-3-416 ; SB 108
DE	DEL. CODE ANN. tit. 2, part II, ch. 20, §§ 2001 through 2012
FL	FLA. STAT. ANN. § 334.30 ; § 337.251 ; § 338.165 §§ 338.22 through 338.251 ; § 339.55 ; § 348.0004
GA	GA. CODE. ANN. §§ 32-2-78 through 32-2-80
IN	IND. CODE §§8-15; 8-15.5 ; 8-15.7; and 8-23-7-22 through 25
LA	LA. REV. STAT. ANN. §§48:2072(C) and (D); 48:2084 through 2084.15
MA	SB 2087
MD	MD CODE REGS. 11.07.06 ; MD. TRANSP.CODE ANN. §8-204 MD P3 Guidance
MN	MINN. STAT. ANN. §§ 160.84 through 160.93
MO	MO. REV. STAT. §§227.600 through .669 MO. REV. STAT. §§238.300 through .367 HB 683
MS	MISS. CODE ANN. §§ 65-43-1 through 65-43-13
NC	N.C. GEN. STATE. §§ 136-89.180 through 136-89.198 SB 648
NV	NEV. REV. STAT. §§ 338.161 through 168
OR	OR. REV. STAT. §§ 367.800 through 367.826 OR. REV. STAT. §§ 383.001 through 383.019
PR	9 Leyes P.R. An. §§ 2001 through 2021
SC	S.C. CODE § 57-3-200 S.C. CODE § 57-5-1310 through 1495
TN	TENN. CODE ANN. §§ 54-3-101 through 54-3-113 (Tenn. Tollway Act)
TX	TX. TRANSP. CODE ANN. Ch. 91 , 222 , 223, 227, 228, 366, and 370
UT	UT. CODE ANN. §§63-56-502.5 ; 72-6-118 ; 72-6-201 through 206
VA	VA. CODE ANN. §§ 56-556 through 56-575
WA	WASH. REV. CODE Ch. 47.29 WASH. REV. CODE Ch. 47.46