

Managed Lanes Network Development Strategy – Phase I

Managed Lanes Procurement and Financing Options

MARICOPA ASSOCIATION OF GOVERNMENTS

Prepared by:

PARSONS BRINCKERHOFF

In cooperation with:

ECONorthwest
HS Public Affairs

Revision History

Revision	Date	Description	Submitted by
1.0	12/30/2011	Draft for Internal Review	BGP
1.1	02/15/2012	Draft for Client Review	DJH
2.0	03/05/2012	Final submittal with client comments	DJH

Table of Contents

1.0	Background.....	1
1.1.	Purpose.....	1
2.0	Procurement Options for Managed Lane Projects.....	3
2.1.	Design-Build (DB).....	4
2.2.	Design-Build-Operate-Maintain (DBOM)	5
2.3.	Design-Build-Finance-Operate Maintain	5
2.4.	Procurement Phasing Options for DBFOM Concessions.....	7
2.4.1.	P3 Procurements for Projects with Environmental Approvals	7
2.4.2.	P3 Procurements Involving Project Definition	8
2.5.	Current Private Toll Highway and Managed Lane Activity in the U.S.....	9
3.0	Revenue Options for Managed Lane Projects.....	12
3.1.	Traditional Highway Revenue Sources.....	12
3.1.1.	Federal Funding	12
3.1.2.	State and Local Funding	12
3.2.	Dedicated Revenue Sources.....	13
3.2.1.	Federal Grants.....	13
3.2.2.	Local Revenue Initiatives.....	13
3.3.	Tolls / User Fees.....	14
3.4.	Availability Payments.....	15
4.0	Financing Options for managed lanes	17
4.1.	Traditional Municipal Finance Techniques	17
4.1.1.	Revenue and Special Tax Bonds	20
4.1.2.	Toll Revenue Bonds	20
4.2.	Federal Financial Tools	21
4.2.1.	GARVEE Bonds.....	21
4.2.2.	TIFIA.....	22
4.2.3.	Section 129 Loans.....	23
4.2.4.	SIB Loans.....	23
4.2.5.	Private Activity Bonds	24
4.3.	Private Financing Sources	24
4.3.1.	Private Equity	24
4.3.2.	Commercial Debt	25
4.4.	Overview of Recent Managed Lane Financing Packages	25
4.4.1.	Katy Freeway Reconstruction	25
4.4.2.	I-635 LBJ Managed Lanes.....	26
4.4.3.	North Tarrant Express.....	27

4.4.4. Capital Beltway Express Lanes.....	28
4.4.5. I-595 Express Corridor Roadway Improvements	29

List of Figures

Figure 2-1	Innovative Procurement Options.....	4
Figure 2-2	Typical DBFOM Concession Structure	7
Figure 4-1	Katy Freeway Reconstruction Sources of Financing: \$2.790 billion.....	26
Figure 4-2	I-635 LBJ Managed Lanes Sources of Financing: \$2.615 billion	27
Figure 4-3	North Tarrant Express Sources of Financing: \$2.101 billion	28
Figure 4-4	I-495 Capital Beltway Express Lanes Sources of Financing: \$2.068 billion ...	29
Figure 4-5	I-595 Corridor Roadway Improvements Sources of Financing: \$1.834 billion.....	30

List of Tables

Table 2-1	U.S. P3 Highway Projects in Operation and Construction.....	10
Table 4-1	Financing and Revenue Sources for Managed Lane Projects in Operation and Construction in the U.S.	18

1.0 BACKGROUND

The Maricopa Association of Governments (MAG) is working in cooperation with the Arizona Department of Transportation (ADOT) and other regional partner agencies to explore the possible development of a regional system of priced managed lanes system, including determining future needs for High-Occupancy Vehicle (HOV) system expansion and the potential for introducing enhanced lane management techniques such as value pricing in the form of High-Occupancy Toll (HOT) lanes, and active traffic management. The outcome of this effort will be a MAG Managed Lanes Network Development Strategy – Phase I Report that will guide future planning and investment in HOV and Managed Lanes facilities in the region.

The purpose of the MAG Managed Lanes Network Development Strategy – Phase I study is to examine the existing or planned freeways in the region to identify where managed lanes strategies, policies or actions could improve overall system efficiency. For those corridors where such strategies or policies are considered most promising and then provide a framework for subsequent analyses to define the network concept further, including a preliminary design, concept of operations, environmental clearance, financial feasibility assessment and ultimately implementation including business rules, market grade traffic and revenue forecasts, construction and operations.

To support the evaluation of the managed lanes network in the MAG region, Parsons Brinckerhoff is preparing a series of technical “white papers” on an array of strategic issues drawing upon the expanding experience around the nation with tolling and pricing and managed lanes programs. These white papers will assess the pros and cons associated with each relevant issue to better enable the regional partners to reach conclusions on the feasibility and specific technical aspects of managed lanes for the Phoenix area.

1.1. Purpose

The purpose of this paper is to identify the different implementation options available to MAG and partner agencies as they considers the possible development of a network of priced managed lanes in greater Phoenix. The paper assesses different procurement models that have been used to deliver large managed lane projects in other areas of the country as well as revenue and financing options that have been used to fund them. The paper explains what the different options are; the different ways in which they can be used, and the pros and cons of the different procurement and financing approaches. The intent of the paper is to provide MAG and partner agencies with an understanding of what procurement and financing approaches would be viable to support the development of a network of managed lanes in Maricopa County and to help focus future discussions, analyses and ultimately decisions on these important and strategic issues.

To accomplish purposes described above, it is helpful to begin by defining a number of basic terms of topics that are discussed in detail in the chapters that follow.

- *Project Procurement* – is the process a public agency or infrastructure owners use to complete the design and construction of transportation improvement projects. Project procurement centers around the development, award and execution of legal agreements, or contracts, between the project sponsor and the external entities it retains to complete these functions. The term “project procurement” is also often referred to as “project delivery.” These two terms may be considered to be synonymous.
- *Public-Private Partnerships (P3s)* – are project procurement options that allow for greater private sector participation in the delivery and/or financing of publicly sponsored transportation projects. P3s can range from design-build arrangements, to concessions and outright private ownership of transportation assets. These distinctions are described in greater detail in Chapter 2 of this paper.
- *Project Finance* – refers to financial mechanisms that can be used to leverage future revenues to borrow large sums of money that are needed up front in order to begin the implementation of capital improvement projects. The financial tools commonly used on toll highway projects include revenue bonds issued in the municipal bond market together with a number of Federal financial debt programs made available through USDOT. These different mechanisms are described in greater detail in Chapter 4 of this white paper.
- *Revenue* – refers to the income that is needed in order to meet debt service costs (interest and principal repayment) for any borrowed money that is used to pay for up-front implementation costs for transportation improvements, as well as ongoing maintenance and operations costs. Revenue sources dedicated to highway improvements come from a variety of sources including: Federal, state or local government funds, taxes, user fees such as tolls, and a variety of value capture techniques. Revenue options are described in Chapter 3 of this white paper.

In addition to the topics introduced above, the paper also references information on legal issues associated with the procurement and financing of managed lane projects. This information has been described in detail in a separate white paper titled *Managed Lanes Legal and Regulatory Issues* dated February 3, 2012 and prepared for MAG by Parsons Brinckerhoff.

2.0 PROCUREMENT OPTIONS FOR MANAGED LANE PROJECTS

There are a variety of innovative procurement options that transportation owners are using around the United States to implement transportation improvement programs, including managed lane projects. Many of these approaches are also considered to be P3 arrangements as they allow for greater private-sector participation and responsibility in the design, delivery, financing, operation and/or maintenance of transportation improvements. These delivery options are a departure from the traditional design-bid-build (DBB) approach where the government completes project design under one contract and then awards a separate contract to a contractor to build projects, thereafter owning and operating them.

As shown in Figure 2-1, innovative delivery approaches range from design-build procurements (where design and construction services are grouped into a single, fixed-price procurement), to concessions (where a private investor/operator is responsible for financing, designing, constructing, operating and maintaining new toll highway projects), and finally to options where private investors own roadways outright. In certain cases, P3 projects may also involve transferring the operation of existing highway facilities to private-sector operators who are also obligated to make capital improvements to the facilities.

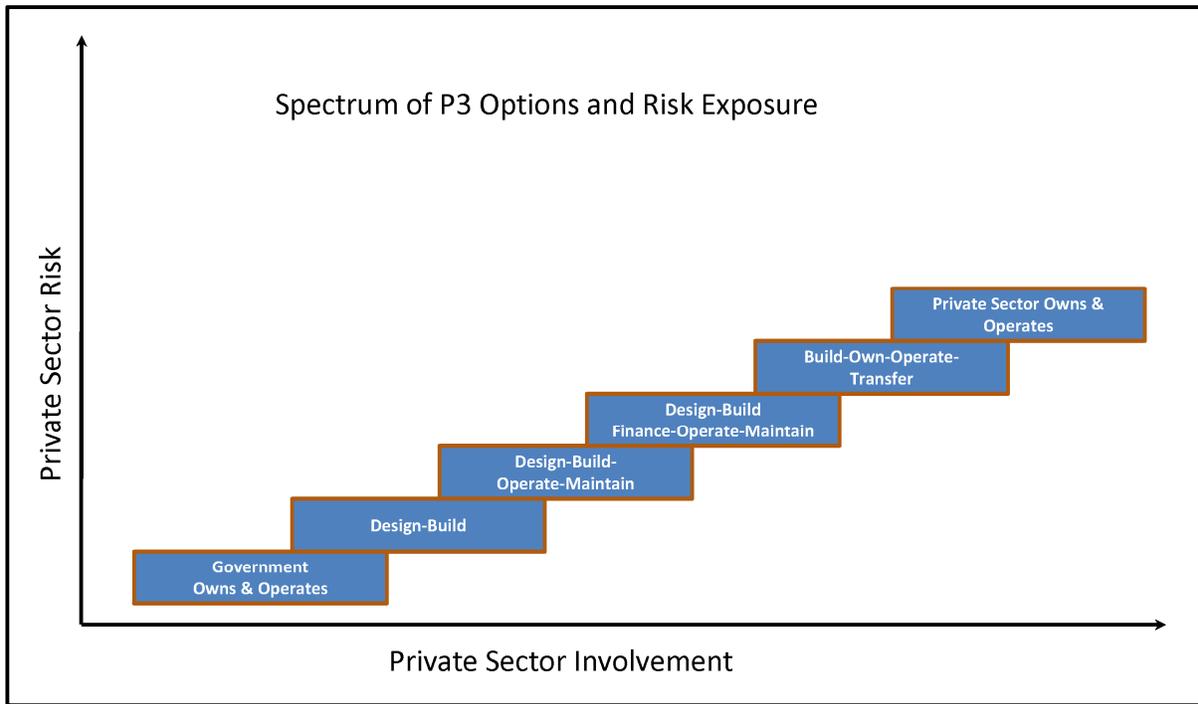
P3 models involving the outright ownership of assets are more common in the utility and buildings sectors and, in the United States, have only been used in the transportation sector in instances where private land owners have built their own roads providing access to their own developments. These models are not considered to be appropriate for important urban highway corridors or Interstate facilities and they are not discussed further in this report. However, the design-build (DB), design-build-operate-maintain (DBOM) and the design-build finance operate and maintain (DBFOM) models have been used in the implementation of highway assets and managed lane projects alike. These models are described in greater detail below.¹ Interestingly, DB and DBOM procurements can be used for individual components of managed lane projects – such as electronic toll collection systems – for projects delivered using either DBB or DBFOM concessions. Similarly DBFOM concessions involving the delivery of highway facilities almost always include a separate DB contract between the concession company and a constructor. This is even the case if the two limited-liability entities have shared ownership so that financial fire walls can be established in order allocate profit potential and the risk of cost overruns or revenue shortfalls.

Arizona law permits a wide range of innovative project delivery methods ranging from design-build to full concession P3s, and specifically provides for the use of predevelopment agreements.²

¹ The following descriptions are based largely on SHRP2 C12, *The Effect of Public-Private Partnerships and Non-Traditional Procurement Processes on Highway Planning, Environmental Review, and Collaborative Decision Making*, Task 3 – Technical Report, Parsons Brinckerhoff, March 2011.

² A.R.S. § 28-7703.

Figure 2-1 Innovative Procurement Options



2.1. Design-Build (DB)

Design-build is a project-delivery method that combines two, usually separate services into a single contract. With DB procurements, owners execute a single, fixed-fee contract for architectural/engineering services as well as construction. With DB delivery, the design-builder assumes responsibility for the majority of the design work and all construction activities, together with the risks associated with providing these services for a fixed fee. When using DB delivery, owners retain responsibility for financing, operating, and maintaining the project. However, the private-sector design-builder assumes a significant portion of the risk of construction cost overruns. While the DB procurement process has been prevalent in private-sector work for some time, over the past ten years it has gained acceptance among many public-sector transportation-infrastructure owners.

DB delivery offers a number of benefits to public agencies developing transportation improvements. It allows completion to be accelerated because design and construction work can proceed concurrently. Opportunities for creative design solutions and the ability to align the project design with construction techniques and equipment also provide the potential to accelerate implementation timeframes and may result in overall cost savings. Shifting the risk of design defects to the private sector eliminates one of the most common causes of construction claims, creating greater upfront cost

certainty for the public sponsor. The potential for owners to realize such benefits is greatest with more complex projects.

Another benefit of DB delivery is that it involves a single fixed-price contract for the design and construction of highway improvements. This transfers the risk of cost overruns to the private sector and enables the public sector sponsor to ascertain the actual cost of the project earlier on in the project development process. With standard DBB projects, costs are not known until construction bids are received. DB contracts are particularly helpful with projects that are going to be financed either all or in part by toll revenues because the implementation costs are known up front. This enables project sponsors – and private partners if there are any – to assess different financing options and determine the exact amount of any public subsidies that may be needed to make the project financially feasible.

The Arizona Department of Transportation (ADOT) has used DB procurement on recent High-Occupancy Vehicle (HOV) lane addition projects including State Route 202 Loop (SR-202L) Red Mountain Freeway from SR-101L to Gilbert Rd, and SR-202L Santan Freeway from Interstate 10 (I-10) to SR-101L.

2.2. Design-Build-Operate-Maintain (DBOM)

The DBOM P3 model combines the design and construction responsibilities of DB procurements with the ongoing operation and maintenance (OM) of the highway facility. These services are provided by a private-sector contractor through a single contract, with financing provided by the public sector. The advantage of DBOM procurements is that by combining these services, the private partner has an incentive to use cost-saving, life-cycle costing principles to align the design of the project with long-term maintenance activities. This delivery approach is used by highway operators around the world and is common in the transit sector. DBOM is known by several terms, including "turnkey" procurement and build-operate-transfer (BOT). With managed lane projects that are delivered with traditional DBB procurements, it is common for their electronic toll collection systems to be procured on a DBOM basis.

The ongoing implementation of Express Lanes on I-10 and I-110 in Los Angeles County, California, is an example of a DBOM procurement of a managed lanes project.

2.3. Design-Build-Finance-Operate Maintain

Design-build-finance-operate-maintain procurements are also commonly referred to as "concessions." With DBFOM procurements the private partner assumes responsibilities for designing, building, financing, and operating highway improvements for a designated period of time. In exchange, the private-sector partner has the right to collect the revenues generated by the facility during the concession period. Conversely, the public agency sponsoring the project may agree to make availability payments to the private-sector partner during the concession period, and retain any toll revenues generated itself. There is a great variety in DBFOM structures and the degree to which financial responsibilities are actually transferred to the private sector;

however, DBFOM projects are either partly or wholly financed by debt backed by project revenues. With DBFOM projects, future revenues are leveraged to issue bonds or other debt that provide funds for capital and project development costs. With real toll concessions, project revenues are often supplemented by public-sector grants in the form of money or contributions in kind, such as right-of-way or complementary construction projects.

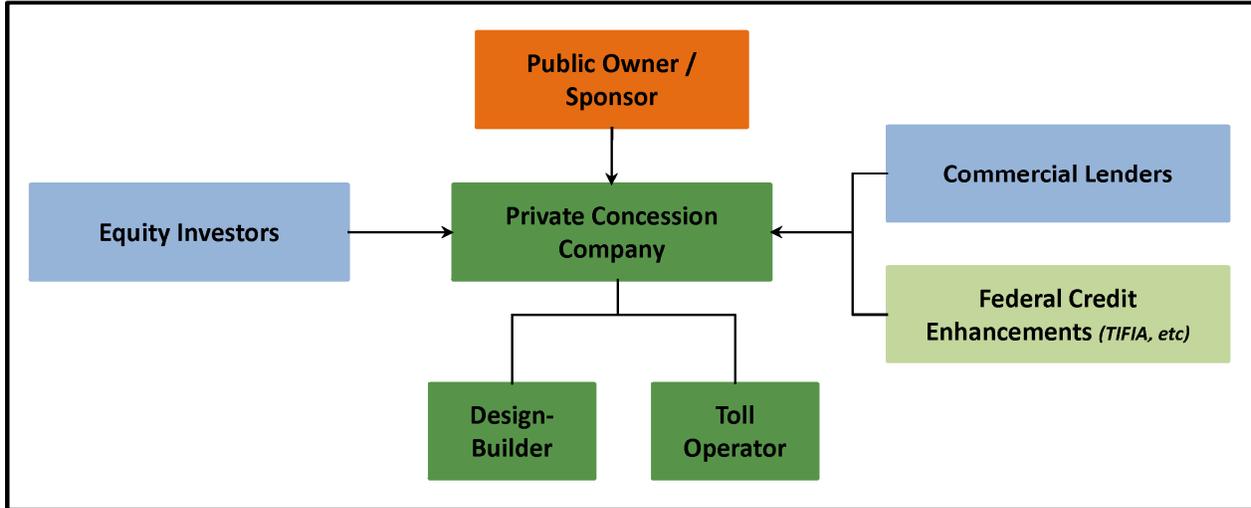
Most recent DBFOM concession projects in the U.S.—particularly those with a high implementation costs—have been financed using a combination of toll revenues, government grants, private debt, and private-investor equity. These transactions are often further enhanced by financial mechanisms such as the Transportation Innovation Finance Innovation Act (TIFIA) and private activity bonds (PABs). These Federal tools encourage the use of toll financing and P3s by providing flexible repayment terms, and potentially more favorable interest rates when compared to the private capital market. Together, these mechanisms help public agencies sponsoring real toll projects and their private investment partners mitigate the risk associated with these transactions.

DBFOM concessions often extend for 25 to 50 years or more and are awarded through competitive procurements (Arizona state law limits the maximum length of P3 concessions to 50 years). With the DBFOM approach, the public sponsor retains ownership of the highway assets and stipulates maintenance protocols and specific improvements to be made over the concession period, thereby ensuring that the assets are properly maintained and returned in good condition. DBFOM concessions are often attractive to public transportation agencies, as they can provide access to new sources of equity and financing, and deliver similar schedule and cost-efficiency benefits.

The structure of a typical DBFOM concession is shown in Figure 2-2. The agency sponsoring the project could be a state department of transportation (DOT), Metropolitan Planning Organization (MPO), transit agencies, public benefit corporation, toll highway authority or other state, regional and local agencies. The project sponsor awards the DBFOM procurement to a private limited-liability concession company which is usually comprised of a group of firms who have agreed to partner in the development of the project and to invest their own equity in the concession company. The concession company then leverages future revenues it will receive for operating the highway facility and raises debt to cover the cost of implementing from the municipal finance and commercial credit markets. In many cases these traditional sources of finance may be supplemented by Federal credit tools including private activity bonds (PABs), the Transportation Infrastructure Finance and Innovation Act (TIFIA) program, Section 129 loans, or state infrastructure bank (SIB) loans. With its financing in place, the concession company would then enter into a fixed-priced DB contract to implement the project and a separate OM contract to collect tolls and maintain the project. These contracts may be awarded to subsidiaries of the firms which formed the concession company.

The ongoing I-495 Capital Beltway Express Lanes project in Virginia is an example of DBFOM concession procurement model for a managed lanes project.

Figure 2-2 Typical DBFOM Concession Structure



2.4. Procurement Phasing Options for DBFOM Concessions

Public sponsors may make the decision to advance a transportation improvement as a DBFOM concession at different phases in the project development cycle. The more common approach is to issue DBFOM procurements for projects that have cleared all necessary environmental approvals; however, in certain cases, P3 concession procurements can be awarded prior to the completion of the environmental review process. When this is done, the private partner plays a supporting role in the public sponsor’s definition of the alternatives assessed in the environmental approval process. These two approaches are discussed below.

2.4.1. P3 Procurements for Projects with Environmental Approvals

One of the greatest unknowns in implementing transportation improvements is the timeframe for gaining the required environmental approvals. The environmental review and approval process usually involves many agencies and extensive public involvement. Over the course of the environmental process, the scope of the project can change substantially creating delay and schedule uncertainties. Construction costs may also escalate as a result of delays or changes in the scope or design of the project to mitigate identified impacts. Because of these risks, many potential private-sector development partners are likely to avoid pursuing P3 projects that have not received environmental approvals; particularly for first time toll projects in states like Arizona that do not have a history of tolling.

On the other hand, not involving the private sector partner at the environmental stage has risks as well. For example, public-sector project sponsors must be sure that the preferred alternatives emerging from the environmental approvals process include all the attributes and operational requirements (including tolling) that would be needed to implement the project on a P3 basis. Public-sector sponsors must also be willing to pay for the costs of location, design, and operational constraints or mitigation features that

could undermine the project's financial feasibility and the ability to implement projects on a DBFOM concession basis. The definition of the project should also include estimates of the costs of designing, constructing and operating the facility. This information is also helpful to public-sector sponsors, as it enables them to make direct comparisons of the costs and terms of DBFOM proposals it receives later. This also enables the sponsor to compare both the cost and schedule implications of a DBFOM delivery to those of a traditional public procurement.

2.4.2. P3 Procurements Involving Project Definition

A small but growing number of DOTs—including California, North Carolina, Georgia, Texas, and Oregon—have issued DBFOM procurements where the private partner is responsible for teaming with the sponsoring agency in the definition of P3 projects. Known often as Pre-Development Agreements (PDAs), this approach involves input from private partners in the environmental process with the hope of arriving at a preferred alternative that reflects technological innovation and will be less costly to implement and operate. The PDA typically involves the private partner in completing the preliminary design of the project during the environmental review process at either a reduced or deferred cost, in exchange for the right of first refusal to develop the project on a concession basis. While the public sponsor remains responsible for completing the environmental review process, it has the benefit of extensive input and technical support from the private development partner.

During the PDA process, the developer acts as a consultant to the public sponsor, and the public sponsor retains control over the development process and the choice of the preferred alternative. Once the PDA advances into the implementation phase, the delivery method can take the form of any P3 model or the project could be developed through a traditional competitive procurement (in which case the developer would typically be compensated for professional services provided, based on pre-agreed payment).

One of the reasons to seek early involvement from private partners is to capitalize on their capacity to develop and implement innovative solutions in a cost-effective manner. When private partners become involved later in the development process, many of the opportunities to refine the design or scope of projects may be limited particularly if the environmental process has already been completed. Following the Record of Decision (ROD), opportunities to solicit alternatives from P3 developers still exist but are more limited. In certain cases, the procurement process may allow bidders to propose alternative technical concepts, but usually the request for proposals includes constraints on alternatives, such as requiring them to stay within the confines of the ROD and be limited to small changes in alignment or footprint. Allowing more substantial changes to the project definition would require a formal re-evaluation of the ROD and, in certain cases, a Supplemental Environmental Impact Statement and an amendment to the ROD, which could take several months and would expose a project to new environmental permitting and approval risks.

2.5. Current Private Toll Highway and Managed Lane Activity in the U.S

Although privately financed motorways are common in countries around the world, they have not generally been favored in the U.S. during the modern Interstate era. There are two primary drivers behind this trend: the prohibition of tolling on the Interstate Highway System introduced in the 1956 Interstate Highway Act (with the exception of legacy toll facilities), and the municipal debt market, which enables public agencies to obtain cheaper, tax-exempt debt compared to the commercial credit markets available to private investors.

Beginning in the 1990s, however, a small number of privately financed DBFOM toll roads began to be built in the U.S. This is due in part to the added flexibility provided by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which allowed Federal funds to be used to support the construction of new non-Interstate toll highway, bridges and tunnels, and also introduced the use of congestion pricing on designated highway lanes including those on the Interstate system on a demonstration basis.

As state governments face budget gaps and revenue shortfalls, as is the case in Maricopa County, interest in tolling and the possible use of P3 procurements to deliver highway improvements continues to grow. As of September 2011, a total of 31 states and 1 U.S. territory have enacted P3 authorization legislation, and several of these bills – including Arizona’s – have been either enacted or expanded in the past 5 years.³ While the overall volume of P3 projects remains a fraction of the overall investment in highway infrastructure in the U.S., it is likely to expand in the near future.

As shown in Table 2-1, today nine P3 highway concessions with a combined construction value of nearly \$1.5 billion are operating in the U.S. In addition, five publicly procured toll facilities have been leased to private investors providing the public sponsors with over \$8.2 billion in private money. An additional seven DBFOM P3 toll facilities are currently under construction, representing a collective investment of nearly \$11.0 billion – demonstrating that the use of P3 procurements has accelerated over the past 5 years, and that P3s are now being used to deliver larger and more complex projects.

³ National Conference of State Legislatures, *Public Private Partnerships for Transportation: a Toolkit for Legislators*, September 2011 update.

<http://www.ncsl.org/documents/transportation/PPPTOOLKIT-update-Sept2011.pdf>

Table 2-1 U.S. P3 Highway Projects in Operation and Construction

	Project	State	Type	Location	Value (\$ millions)	Distance
Operating DBFOM P3 Projects						
1	Alabama River Parkway	AL	New private toll road	Montgomery Cty.	\$12	12.5 miles
2	Black Warrior Parkway	AL	New private toll road	Tuscaloosa County	\$25	7.5 miles
3	Emerald Mountain Expressway Bridge	AL	Private toll bridge	Montgomery Cty.	\$4	4.5 miles
4	Foley Beach Expressway	AL	New toll highway	Foley	\$44	13.5 miles
5	South Bay Expressway	CA	New toll highway	San Diego	\$658	9.3 miles
6	Northwest Parkway	CO	Lease of existing toll road	Denver	\$603	8.0 miles
7	Chicago Skyway	IL	Lease of existing toll road	Chicago	\$1,830	7.8 miles
8	Indiana Toll Road	IN	Lease of existing toll road	Northern Indiana	\$3,800	157.0 miles
9	PR-22 and PR-5 Lease	PR	Lease of existing toll road	Northern Puerto Rico	1,436	54.5 miles
10	Camino Columbia	TX	New toll highway	Laredo	\$90	21.8 miles
11	Greenville Southern Connector	SC	New toll highway	Greenville	\$240	16.0 miles
12	Adams Avenue Parkway	UT	New toll road and bridge	Ogden	\$9	1.0 mile
13	Dulles Greenway	VA	New toll highway	Northern Virginia	\$350	14.0 miles
14	Pocahontas Parkway	VA	Lease of toll road & new extension	Richmond	\$597	8.8 miles
				Total	\$9,698	
DBFOM P3 Projects in Construction						
1	I-595 Express Corridor Roadway Improvements	FL	Three reversible HOT lanes	Fort Lauderdale	\$1,834	10.5 miles
2	Port of Miami Tunnel	FL	Subaqueous tunnel	Miami	\$1,113	1.0 mile
3	SH 130 Segments 5&6	TX	New four-lane toll highway	Austin	\$1,328	40.0 miles
4	I-635 LBJ Managed Lanes	TX	Six new elevated managed lanes	Dallas	\$2,615	13.0 miles
5	North Tarrant Express	TX	Four new managed lanes, two g. p. lanes, 4 frontage road lanes	Dallas / Fort Worth	\$2,043	13.0 miles
6	New South Norfolk Jordan Bridge	VA	New two lane high-level bridge with shoulders	Chesapeake	\$100	1.0 mile
7	I-495 Capital Beltway Express Lanes	VA	New four-lane HOT facility in median	Northern Virginia	\$1,938	14.0 miles
				Total	\$10,971	

Source: Parsons Brinckerhoff, December 2011

Interestingly, four out of the seven P3 concession projects currently under construction in the U.S. are managed lane projects. These projects include:

- I-595 Express Corridor Roadway Improvements in Fort Lauderdale, Florida which will add three reversible HOT lanes and general purpose capacity at a cost of \$1.8 billion. This solicited P3 concession was initiated following the completion of project definition;
- I-495 Capital Beltway Express Lanes in Northern Virginia which will add four new HOT lanes in the median of a reconstructed highway corridor at a cost of \$1.9 billion. This unsolicited P3 concession was initiated during project definition following the release of a DEIS;
- The North Tarrant Express which will add four new managed lanes as well as general purpose and frontage road lanes to this highway in Fort Worth, Texas at a cost of \$2.0 billion. This solicited P3 project was awarded following the completion of project definition and environmental clearance.
- The I-635 Managed Lane Project in Dallas, Texas which will add six elevated managed lanes at a cost of \$2.6 billion.

It should be noted that each of these mega projects has relied on multiple sources of funding including public subsidies and that they would not be financially feasible without the use of multiple funding sources. Additional information on the revenue sources and financial tools used to implement these projects, as well as other managed lane facilities, is provided in Chapter 3 of this report.

One additional managed lane project was originally implemented on a DBFOM concession basis in the U.S. and has since been purchased by a public toll road operator. This is the \$134 million SR-91 Express Lanes project in Orange County, California which added four new HOT lanes in the median of an existing freeway. This project is unique in that it did generate adequate revenues to cover its entire implementation without public subsidy. Built in 1995 under California's A.B. 680 enabling legislation which allowed the implementation of four P3 concession projects on a demonstration basis, the highly successful 91 Express Lanes concession was later cancelled due to the constraints imposed by a non-compete clause in the concession agreement which limited the state's ability to expand the capacity of parallel non-tolled lanes in the corridor (non-compete clauses are prohibited by state law in P3 agreements in Arizona). Today, this facility is operated at a profit by the Orange County Transportation Authority (OCTA).

3.0 REVENUE OPTIONS FOR MANAGED LANE PROJECTS

Managed lanes project around the country have been implemented using revenue sources ranging from traditional transportation formula funding, to dedicated grants, local option sales tax measure revenues, and tolls. As shown in Table 2-1, the scope and scale of managed lane projects currently operating or under construction in the United States varies greatly, from conversions of existing HOV or bus rapid transit lanes costing less than \$10 million to large mega projects with implementation costs in excess of \$2.0 billion. This section of the white paper discusses the different revenue sources that could potentially be used to fund managed lane projects in Arizona.

3.1. Traditional Highway Revenue Sources

3.1.1. Federal Funding

The U.S. government uses its taxing authority to levy several taxes supporting transportation funding through the Highway Trust Fund. Some additional funding for surface transportation is provided from the General Fund of the U.S. Treasury. These funds are then allocated or “apportioned” to U.S. states and territories using statutory formulae based on the lane miles of different types of roadway, vehicle miles traveled, and payments into the Highway Trust Fund amount in each state. Funds are generally available to the different states at the beginning of the Federal fiscal year on October 1st of each year. Federal law also requires that certain monies be used only for designated purposes once they are apportioned to the different states and territories. In 2008 Arizona received a total of \$554 million in Federal transportation funding, representing approximately 18 percent of all transportation revenues in the state for that year.

3.1.2. State and Local Funding

Arizona collects taxes and fees from motor vehicle users and uses the revenues to support a variety of transportation needs and has greater flexibility in how they are spent compared with Federal funding. Arizona’s state motor fuel tax generated \$498 million in 2008, which represents 17 percent of the state’s transportation expenditures.⁴ The state’s 18 cent per gallon tax on gasoline has not been increased since 1990. Arizona also collects a vehicle excise tax which generated approximately \$210 million in 2008, or 7 percent of all transportation funding. The largest portion of Arizona’s transportation funding – \$1.069 billion, or 36 percent of all transportation funding in 2008 – comes from appropriations from the state’s General Fund. Arizona also uses bond proceeds to provide transportation revenues. These borrowed funds generated \$665 million in 2008, which represented 22 percent of all transportation funding in Arizona. Arizona also utilizes GARVEE bonds that leverage future Federal transportation allocations.

⁴ Statistics in this section come from the AASHTO Center for Excellence in Project Finance *Project Finance State-by-State Database*:

http://www.transportation-finance.org/tools/state_by_state/revenue_sources.aspx?state=az

3.2. Dedicated Revenue Sources

3.2.1. Federal Grants

While none of FHWA's six tolling programs provide dedicated capital funding for managed lane project, USDOT has instigated two one-time programs providing significant amounts of funding to support the implementation of pricing projects. In August 2007 USDOT announced the award of a total of \$853 million in Federal discretionary grants through its Urban Partnership Agreement (UPA) program for demonstrations of congestion pricing and other strategies to relieve congestion in Miami, Minneapolis/St. Paul, New York City, San Francisco, and Seattle. New York City was later unable to meet the terms of its agreement and its funding was subsequently redirected to Los Angeles and Atlanta through the Congestion Reduction Demonstration (CRD) program; a separate follow on to the UPA program.

Both programs integrate congestion pricing and transit improvement strategies. They also contain dedicated funding to monitor the performance of the different congestion pricing demonstrations. There is no indication that these one-time programs will be renewed. As a result, MAG should not anticipate that any dedicated Federal grants will be available to support the implementation of a network of managed lanes in greater Phoenix.

3.2.2. Local Revenue Initiatives

In November 2004, Maricopa County voters approved a 20-year ½ -cent sales tax millage supporting transportation needs from 2006 through 2025. Proposition 400, extended the Maricopa County Transportation Excise Tax initially implemented in 1985 and was initially expected to generate \$14.6 billion in transportation revenues over its 20-year duration.⁵ Proposition 400 allocates 66.7% of revenues received into the Maricopa County Regional Area Road Fund (RARF) consisting of:

- 56.2% for freeways and routes on the state highway system, including design, right-of-way, construction, maintenance and debt service for projects included in the regional transportation plan for Maricopa County; and
- 10.5% for major arterial streets and intersection improvements, including debt service, capital expense and implementation studies

The remaining 33.3% of Proposition 400 revenues are allocated to a public transportation fund to be used solely for capital costs, maintenance and operation of public transportation classifications along with capital costs and utility relocation costs associated with a light rail public transit system.⁶

⁵ Information in this section is taken from *Making the Case for Transportation Investment and Revenue: Maricopa County Sales Tax Referendum Case Study*

http://www.transportation-finance.org/pdf/featured_documents/nchrp_20_24_62_maricopa.pdf

⁶ Proposition 400 revenue distribution as reported on the ADOT Regional Area Road Fund webpage http://www.azdot.gov/Inside_ADOT/FMS/RARfund.asp

It was anticipated that RARF would fund 45 percent of Maricopa County's 20-year Regional Transportation Plan. However, as a result of the recent U.S. economic recession that affected Arizona especially, revenues for the remainder of the program are expected to be at least 24 percent lower than initially projected, with total program revenues now projected at \$8.7 billion. These reduced revenue levels are likely to delay the implementation of up to 11 highway improvement project in Maricopa County by as much as five years.⁷

It is possible that as the projects supported by RARF are further defined, some funding from the program could be used to support the implementation of managed lane projects. However, one of the reasons that the use of pricing is currently being considered in Maricopa County is the possibility that the resulting toll revenues could help bridge the region's existing funding gap as a result of the economic downturn. It is also possible that a new or increased tax measure could also be considered as a means to address current funding constraints.

3.3. Tolls / User Fees

User fees in the form of tolls are the most common revenue source supporting P3 highway projects. Traditionally, toll rates have been based on such variables as distance traveled, vehicle class, and number of trips. With managed lane projects, toll rates are typically based on time of day, vehicle occupancy, and congestion levels as a means to managed travel demand for the facility. The expanded use of tolling has been promoted in the last three federal transportation authorization acts and today is of increasing interest as an important funding source for transportation.

With 12 new priced managed lane facilities in operation since the passage of ISTEA and over 60 others currently under study or implementation, there is also a marked increase in the use of variably priced tolls as a tool to manage congestion. This trend has been complemented by the availability of new electronic toll collection technologies and open road tolling applications that enable the use of a wide variety of pricing options. The expanded use of pricing has also been supported by the establishment of new state and local agencies to implement and operate projects, and the use of P3 arrangements to finance and deliver toll projects. The application of electronic toll collection and variable pricing is discussed in detail in the draft companion paper titled *Managed Lane Pricing and Tolling Methods* dated December 27, 2011 and prepared for MAG by Parsons Brinckerhoff.

Managed lane projects feature variably-priced tolls as a means to meter the number of vehicles using the lanes in order to maintain desired traffic services levels even during congested peak periods. The user-fee approach involves the risk that revenue levels will not meet expectations or forecasts, particularly with greenfield projects. With publicly sponsored toll projects, the government assumes the revenue risks associated with tolling; however with real toll P3 concessions, this risk is transferred to the private partner.

⁷ "Prop. 400 shortage of funds to delay Valley road plans." *The Arizona Republic*, October 8, 2011. <http://www.azcentral.com/news/election/azelections/articles/2011/10/08/20111008maricopa-county-proposition-400-funds-shortage.html>

If forecasts indicate that toll revenues will not be sufficient to cover the complete cost of financing, implementing and operating a toll facility, the public sponsor may opt to provide a subsidy to make the project financeable. Public subsidies have been used to support toll-backed financings with publically and privately procured managed lane projects alike.

It should be noted that there are no toll facilities currently operating in the state of Arizona, and if the MAG region should opt to pursue the possible implementation of managed lanes or other toll applications, it would need to engage in an extensive outreach effort to educate elected officials and the community at large on the need for the new revenue that tolling would bring and benefits of variable pricing to the traveling public.

Arizona state law currently only permits the use of tolling on highway facilities involving capital improvements developed on a P3 basis. One of the purposes of the Managed Lanes Network Development Strategy is to assess the revenue generation potential of pricing managed lane capacity in Maricopa County and developing a detailed understanding of the extent to which tolls could cover the costs of implementing and operating a network of managed lanes. Any program to implement priced managed lanes on the highway system in the MAG region, particularly in the absence of major capital improvements and/or as a P3 procurement, would necessitate revisions to current Arizona state laws regarding tolling on highway facilities.

3.4. Availability Payments

Availability payments are a mechanism to compensate private partners for the provision of highway facilities and meeting specified performance levels. Project sponsors use traditional revenue sources to make the payments to the private partner based on the availability and overall performance of the facility. Availability and performance standards are set forth in the concession contract, and are usually based on metrics such as construction completion, incident management, snow removal, and maintenance-related lane closures. When these pre-determined availability and performance conditions are met, the facility is considered to be “available,” and the corresponding payments are made. If the performance conditions are not fully met, the payments are reduced based on rules defined in the concession contract and on the level of performance achieved.

Availability payments may be used on managed lane facilities, either to supplement insufficient user revenue or to isolate the private partner from underlying revenue risks. Availability payments may also be used if the public agency sponsoring a project wants to retain complete control over toll rates for policy reasons. Availability payments are often indexed to inflation. While there is a cap on upward revenue generation potential with availability payments, they are attractive to certain investors as they are far less risky than real toll concessions that must meet traffic and revenue benchmarks in order to be profitable. The funding used to make availability payments by project sponsors may be secured by a revenue pledge or subject to appropriations. For potential private partners and their lenders, the credit quality of availability payment concessions is

determined by the source of funds and the appropriation procedures used by the sponsor to obtain them rather than expected utilization levels.

Availability payments are often used for toll facilities that are not expected to generate adequate revenues to pay for their own construction and operation. In this case, the project sponsor (rather than the private partner) retains the underlying revenue risk associated with the toll facility, while the private partner receives a predictable, fixed set of payments over the life of the concession. As with real toll concessions, availability payment concessions are also likely to involve private equity, federal credit assistance, and commercial debt.

It should be emphasized that for project sponsors, availability payments are a liability much akin to debt and are considered as part of debt capacity in some jurisdictions. In addition, because availability payment projects create a long-term liability on the sponsor's budget, opting to use this approach effectively prioritizes funding for the project at hand over others. Therefore, from a policy perspective, public agencies should only consider using availability payment P3 arrangements on projects of the highest priority.

4.0 FINANCING OPTIONS FOR MANAGED LANES

Financing for managed lane projects is driven by the size and scale of the project, the type of entity responsible for implementing the project, and the procurement method used to implement the project. Smaller projects may be implemented with dedicated grant monies obtained from the USDOT or state or local sources. Larger projects implemented directly by public agencies may be financed with traditional highway funding including municipal debt leveraging toll proceeds or other local funding, including local sales tax revenue initiatives. These sources could also be enhanced by Federal financial tools such as grant anticipation bonds including GARVEE bonds, TIFIA credit enhancements, Section 129 loans, or SIB loans. The use of GARVEEs, TIFIA, and PABs, as well as toll revenue bonds is specifically allowed with P3 projects under Arizona state law.

Projects implemented on a DBFOM concession basis by a private partner are likely to rely on a different mix of financing sources. These could include private equity, commercial bank debt, and public subsidies, as well as Federal financial tools including private activity bonds, TIFIA credit enhancements, Section 129 loans, or SIB loans. As described in Chapter 3, the revenue sources backing P3 concession debt may include user fees in the form of tolls or availability payments, as well as public subsidies.

Table 4-1 provides an overview of the financial tools used to raise funding for all operating managed lane projects in the U.S., as well as other managed lane projects currently under construction. The projects included in the table are listed in descending order by capital cost. This enables readers to see the different types of revenue and financing options that have been used on managed lane projects of different sizes.

The remainder of this chapter is divided into two sections. The first provides an overview of the financing packages used to implement a number of recent or current managed lane projects in the U.S. The second section provides brief descriptions of the different financial tools that have been used in the funding of recent managed lane projects.

4.1. Traditional Municipal Finance Techniques

Municipal bonds are the primary mechanism state or local governments use to borrow money to pay for costly projects, such as highways or transit systems. The interest income earned from municipal bonds is exempt from Federal tax, and if issued in the investor's state of residence, from state and local taxes as well. The savings afforded to state and local issuers from this Federal tax exemption (and sometimes state and local tax exemptions) allows them to borrow more cheaply than other issuers. There is no single agency that handles municipal bond issues. However, there are brokerage firms that specialize in bringing out municipal bond issues.

Table 4-1 Financing and Revenue Sources for Managed Lane Projects in Operation and Construction in the U.S.

Facility	Location	Sponsor	Year Opened (first segment)	Project Type	Project Cost	P3 Delivery	Funding Sources and Financing Tools			Notes
							Federal grants	Other funding	Debt Instruments	
Katy Managed Lanes	Houston	HCTRA	Oct. 2008	HOT expansion	\$2,790 million	No	-	Federal, state, local funds, Tolls	Revenue bonds	
LBJ Managed Lanes	Dallas	TxDOT	2015	ETL expansion	\$2,615 million	DBFOM	-	State funds, private equity	PABs, TIFIA	
North Tarrant Express	Fort Worth	TxDOT	2015	ETL expansion	\$2,101 million	DBFOM	-	State funds, private equity	PABs, TIFIA	
Capital Beltway Express Lanes	Washington, DC	VDOT	2013	HOT expansion	\$2,068	DBFOM	-	State funds, private equity	PABs, TIFIA	
I-595 Express	Fort Lauderdale	FDOT	2014	HOT expansion	\$1,834 million	DBFOM	-	State funds, private equity	Commercial loan, TIFIA	Availability payments
I-15 Express Lanes (expansion)	San Diego	SANDAG	Sept. 2008	HOT expansion	\$1,429 million	No	-	Federal, state funds, local TransNet sales tax	GARVEE	Originally opened Dec. 1996; full expansion to open 2012
I-35W MnPASS Express Lanes	Minneapolis	MnDOT	Sept. 2009	HOT conversion	\$183 million	No	UPA grant	State and local funds	None	
I-15 Express Lanes	Salt Lake City	UDOT	Sept. 2006	HOT conversion	\$180 million	No	NA	NA	NA	Includes North Davis Zone and EXPRESSLink project
I-85 Express Lanes	Atlanta	GDOT	Oct. 2011	HOT conversion	\$147 million	No	CRD grant	State funds	None	
91 Express Lanes	Orange County	Caltrans	Dec. 1995	HOT expansion	\$134 million	Private franchise	-	-	Revenue bonds	Purchased by OCTA Jan. 2003 for \$208 million
95 Express Lanes (Phase 1A and 1B)	Miami	FDOT	Dec. 2008	HOT conversion	\$122 million	No	UPA grant	Federal earmark, State funds	None	
I-10/I-110 Metro ExpressLanes	Los Angeles	LA Metro	Feb. 2013/ Oct. 2012	HOT conversion	\$99.4 million	No	CRD grant	Federal, state, local funds	None	

Table 4-1 Financing and Revenue Sources for Managed Lane Projects in Operation and Construction in the U.S.
(continued)

Facility	Location	Sponsor	Year Opened (first segment)	Project Type	Project Cost	P3 Delivery	Funding Sources and Financing Tools			Notes
							Federal grants	Other funding	Debt Instruments	
I-680 Express Lane	Bay Area	Alameda County Transportation Commission	Sept. 2010	HOT conversion	\$36.6 million	No	-	Federal, state, local funds, local Measure B sales tax	None	
SR-167 HOT Lanes	Seattle	WSDOT	May 2008	HOT conversion	\$18 million	No	-	Federal, state funds	None	
SR 237/I-880 Express Connectors	Bay Area	Santa Clara Valley Transportation Authority	2012	HOT conversion	\$11.1 million	No	ARRA grant, VPPP grant	Local funding	None	
I-25 Express Lanes	Denver	CDOT	June 2006	HOT conversion	\$10 million	No	VPPP grant	State funds	None	
I-394 MnPASS Express Lanes	Minneapolis	MnDOT	May 2005	HOT conversion	\$10 million	No	-	State and local funds	None	
Northwest Freeway Quickride	Houston	Metropolitan Transit Authority of Harris County	Nov. 2000	HOT conversion	\$3 million	No	-	-	None	

Source: Parsons Brinckerhoff, December 2011

Large bond sales can greatly inflate the amount of revenue for projects in the year the bonds were sold, especially when total revenues are compared to prior and subsequent years. Similarly, total disbursements can vary greatly with the expenditure of the bond funds. States that do not use bond financing to pay for projects either by accumulating sufficient funds before beginning the project or paying for the project from current revenues. Those states tend to have a more consistent level of revenues and disbursements than states which use bond financing.

4.1.1. Revenue and Special Tax Bonds

Revenue bonds are used to finance municipal projects by leveraging public revenue streams. The revenue is used to make interest and principal payments to the bond holders. Often, states and their subdivisions create certain agencies and authorities to perform specific tasks. Many times, the agency or authority has the ability to levy charges and fees for its services. These bonds are analyzed in terms of historical or potential earnings compared with the bond requirements. Usually, the yield is higher than that of a general obligation bond due to greater risk. Taxes that would back a general obligation bond are more secure than most project-backed revenue sources.

Revenue bonds may pledge the proceeds of a dedicated tax passed to support specific needs, such as transportation improvements. This could involve a gasoline tax increment, a special assessment, incremental sales tax, or property tax levied in a specified area. Sales tax revenue bonds, for example, have been issued by several California transportation authorities and transit districts. The sales tax bonds differ from most transportation financings because the debt is paid from sales taxes and not from transportation revenues. This type of financing may require special enabling legislation to facilitate the direct disbursement of tax revenues from the tax collecting entity to the trustee of the bond issue in order to perfect the pledge of those tax revenues and to ensure higher credit ratings.

4.1.2. Toll Revenue Bonds

Most toll facilities are financed by borrowing debt backed by future toll revenues. Toll-based finance is similar to the municipal finance model. First, a public authority needs to be vested with the responsibility of developing toll roads within its given jurisdiction. After completing the appropriate feasibility studies, the authority issues bonds against anticipated toll revenues and uses the proceeds to fund the construction of the toll road. Once the toll road is open to traffic, the authority pays back its debt and interest costs using toll revenues collected on the facility. This model is attractive to investors as the interest they make on their holdings is exempt from federal and state income taxes. The toll-based finance model may also be used in conjunction with public-private partnerships. In this case, a private sector partner would arrange financing for the project and then repay the debt from toll revenues. Private activity debt for toll projects can be issued on a tax exempt basis using private activity bonds.

Reliance on toll-backed financing necessitates detailed financial feasibility assessments along with, financial planning (for the role of equity versus debt, and repayment structuring). It also demands rigorous traffic and revenue forecasts, subject to multiple sensitivity tests and some form of risk analysis. Such financing requires a variety of additional institutional arrangements, including debt issuing authority and a bond rating process.

4.2. Federal Financial Tools

Particularly since the early 1990s, transportation revenues have failed to keep pace with investment needs. In response USDOT has developed an array of financing tools to help expand the ability of the Federal-aid program to meet mobility needs. Today, the Federal financing tools available to state DOTs and other to project sponsors include: Section 129 Loans, State Infrastructure Banks, Grant Anticipation Revenue Vehicles (GARVEE), Transportation Infrastructure Finance and Innovation Act (TIFIA) Credit Assistance, and Private Activity Bonds (PAB). Used together with tolls, user fees, and other project-based revenue sources, these innovative finance tools, can substantially increase state and local governments' ability to deliver needed projects.

4.2.1. GARVEE Bonds

GARVEE are a grant anticipation debt instrument issued by state DOTs backed by a pledge of future Title 23 Federal-aid funding. GARVEEs allow states to receive Federal-aid reimbursements for a wide array of debt-related costs incurred in connection with an eligible debt financing if the proceeds are used to fund a project eligible for assistance under Title 23. Specifically, as stated in Section 122 of Title 23, debt financing instrument-related costs eligible for Federal-aid reimbursement include interest payments, retirement of principal, and any other cost incidental to the sale of an eligible debt issue. The issuer may be a state, political subdivision, or a public authority.

GARVEEs enable a state to accelerate construction timelines and spread the cost of a transportation facility over its useful life rather than just the construction period. The use of GARVEEs expands access to capital markets as an alternative or in addition to potential general obligation or revenue bonding capabilities. The upfront monetization benefit of these techniques needs to be weighed against consuming a portion of future years' receivables to pay debt service. This approach is appropriate for large, long-lived, non-revenue generating assets.

Before issuing GARVEE bonds, states must first enact enabling legislation allowing them use Federal transportation funds as collateral for debt instruments. Arizona was one of the first states to enact GARVEE enabling legislation and one of the first states to issue GARVEE bonds. Since June 2000, Arizona has issued a total of eight GARVEE transactions generating over \$742 million in upfront funding for capital construction programs. Arizona has used GARVEE bonds to fund highway improvement projects in Maricopa County. It's most recent issue – \$158.6 million in January 2011 – is being used to implement controlled access routes across the state.

4.2.2. TIFIA

The Transportation Infrastructure Finance and Innovation Act (TIFIA) is a Federal program that provides credit assistance to transportation projects of regional and national significance. TIFIA support is available for projects of over \$50 million with dedicated revenue streams and can cover up to 33 percent of implementation costs. State and local governments, transit agencies, railroad companies, special authorities, special districts, and private entities may all apply for TIFIA support. The TIFIA credit program is designed to fill market gaps and attract private and other public co-investment by providing supplemental and subordinate capital. In particular, the TIFIA program is designed to support projects using financing backed by tolls and other forms of user-backed revenue that often had difficulty obtaining funding at reasonable rates due to the uncertainties associated with these revenue sources. TIFIA assistance is usually made on more advantageous terms than those in the financial market making it possible to obtain financing for projects that might not otherwise be bankable.

Competition for TIFIA support has become increasingly stiff in recent years, with applications for assistance outstripping available funding by a ratio of approximately ten to one in 2011. Applicants must first submit an expression of interest to the TIFIA Joint Program Office and may only submit a formal application for TIFIA assistance if invited to do so. Candidate projects are evaluated against eight statutory criteria, including environmental impacts, significance to the national transportation system, general economic benefits, the ability to leverage private capital, and the use of innovative technologies.

The TIFIA credit program offers three types of financial assistance:

- Direct loans - Offers flexible repayment terms and provides combined construction and permanent financing of capital costs with a maximum term of 35 years from substantial completion. Repayments can start up to five years after substantial completion to allow time for facility construction and ramp-up.
- Loan guarantees - Provides full-faith-and-credit guarantees by the Federal Government and guarantees a borrower's repayments to non-Federal lender. Loan repayments to lender must commence no later than five years after substantial completion of project.
- Standby lines of credit - Provides a secondary source of funding in the form of a contingent Federal loan to supplement project revenues, if needed, during the first 10 years of project operations, available up to 10 years after substantial completion of project.

Direct loans are the by far the most common type of TIFIA assistance. As of December 2011, the TIFIA program has 20 active credit agreements providing over \$7.1 billion in direct loans to a portfolio of projects with a combined construction value of \$27.0 billion.⁸ TIFIA has not been used to date on projects within Arizona.

⁸ TIFIA Portfolio Table, December 2011.

http://www.fhwa.dot.gov/ipd/tifia/projects_project_profiles/tifia_portfolio.htm

4.2.3. Section 129 Loans

Section 129 of Title 23 allows USDOT to provide states with loans to support projects with dedicated revenue stream including tolls, excise taxes, sales taxes, real property taxes, motor vehicle taxes, incremental property taxes, or other beneficiary fees.

States may make Section 129 loans to a public or private entity to construct either a toll project that is eligible for Federal-aid funding or a non-toll highway project that has a revenue source specifically dedicated to support the project. The amount loaned by the state is considered an eligible Federal-aid project cost. Any Federal transportation program category can be used for a Section 129 loan as long as the project receiving the loan is eligible for funding from that category.

There are no Federal requirements that apply to how a state selects a public or private entity to be a recipient of a Section 129 loan. Rather, this selection process is governed by state law, and it is the state's responsibility to ensure that the recipient uses the loan for the specified purposes. Assuming that a project meets the test for eligibility, a loan can be made at any time. Loans must be repaid to the state, beginning within five years after construction is completed and the project is open to traffic. Repayment must be completed within 30 years after the date Federal funds were authorized for the loan.

To date only two Section 129 loans have been issued in the U.S. However, with the current limitations on credit assistance available through the TIFIA program, sponsors of projects failing to receive support from the TIFIA program may opt to pursue Section 129 loans, as any project qualifying for TIFIA support would also qualify for a Section 129 loan.

4.2.4. SIB Loans

State Infrastructure Banks are revolving infrastructure investment funds for surface transportation that are established and administered by states. A SIB can offer a range of loans and credit assistance enhancement products to public and private sponsors of highway projects. SIBs give states the capacity to leverage Federal resources by attracting non-Federal public and private investment. Alternatively, SIB capital may also be used as collateral to borrow in the bond market or to establish a guaranteed reserve fund. SIBs are capitalized with Federal-aid surface transportation funds and matching State funds (several states have established SIBs or separate SIB accounts capitalized solely with state funds). As loans or other credit assistance forms are repaid to the SIB, its initial capital is replenished and can be used to support a new cycle of projects.

Established by the state legislature in 1998, the Highway Extension and Expansion Loan Program (HELP) is Arizona's State Infrastructure Bank (SIB). It operates much like a commercial bank, providing financial assistance in the form of loans or credit enhancement for eligible projects. As borrowers repay principal and interest on loans, the bank is replenished and monies can be re-loaned. The intent is for HELP to become a self-sustaining revolving loan fund used to support transportation projects across the state.

As of 2011, HELP has issued a total of 47 loans since its establishment, most of which have ranged in value between \$500,000 and \$5.0 million.⁹ HELP's largest transaction was a \$100 million loan to ADOT for the purchase of urban freeway right-of-way in 1999. In 2008, Maricopa County received approval for a \$25.7 million loan for the MC 85 project, but has not yet drawn any funds from HELP. While HELP's 2011 Annual Report documents a balance of \$75 million in HELP's total net assets at over \$76 million, HELP is not currently accepting loan applications due to state budgetary constraints. At this time, it is not clear whether assistance from HELP would be available to the MAG region to support the development of managed lane projects. Additional information on HELP is available at: http://www.azdot.gov/Inside_ADOT/FMS/HELP.asp.

4.2.5. Private Activity Bonds

The *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users* (SAFETEA-LU) amended the Internal Revenue Code to allow privately financed highway and freight transfer facilities to qualify for tax-exempt private activity bonds (PABs). The total amount of such bonds to \$15 billion and is not subject to state volume caps. The purpose of this new tool is to encourage increased private investment in transportation infrastructure. Providing private developers with access to tax-exempt interest rates lowers the cost of capital significantly compared to financing available on the commercial credit markets, enhancing investment prospects. Increasing the involvement of private investors in highway and freight projects generates new sources of money, ideas, and efficiency. As of October 2011, PAB allocations approved by U.S. DOT total nearly \$8.1 billion supporting 13 projects and over \$2.1 billion in PABs had been issued. None of these projects are located in Arizona.

4.3. Private Financing Sources

4.3.1. Private Equity

In order for P3 developers to obtain financing to implement toll projects they normally must also invest their own up front equity, much like a down payment on a mortgage for a house. Investing larger amounts of equity lowers creditor risk and often enables private borrowers to gain access to lower interest rates. However, unlike a mortgage private investors require a return on their investment, so in many ways it is similar to a loan. Payments to equity investors to allow them to recover the initial investment and obtain a profit are generally made after other creditors have been paid. Given the longer length and greater risk associated with payments to equity investors, the returns on equity investments are comparatively high. Different investors have their own requirements on returns to equity, but most would not consider investing in a P3 toll project unless they can realize return on their investment of at least 15 percent.

Because of their longer investment horizons and desire for long-term healthy and sustained income, pension funds are well suited to investing to transportation P3

⁹ Arizona Department of Transportation, *Highway Extension and Expansion Program 2011 Annual Report*, http://www.azdot.gov/Inside_ADOT/FMS/PDF/helprpt11.pdf

opportunities. The Dallas Police and Fire and Pension System is a 10 percent equity investor in both the North Tarrant Express and I-635 LBJ Managed Lanes P3 concessions. While this is the first pension fund to invest in highway P3 opportunities in the United States, Canadian pension funds have made a number of equity investments in toll concessions in Canada.

4.3.2. Commercial Debt

Commercial debt involves loans made by banks to private sector investors. Unlike other parts of the world, the commercial debt market is smaller than the municipal debt market in the United States. As a result, interest rates are usually higher and many banks are selective about making these types of loans. This has been particularly true since the onset of the recent financial crisis in 2008. The only managed lane project to have used commercial debt is the I-595 Express in Fort Lauderdale. This was possible because the project is financed using availability payments and as a result has a much lower risk profile than projects using toll back debt. Investors in other recent privately financed managed lane projects including the Capital Beltway Express Lanes and the North Tarrant Express have opted not to use commercial debt, choosing PABs instead.

4.4. Overview of Recent Managed Lane Financing Packages

P3 projects do not all have the same financing structure or the same need for public sector funding. With managed lane projects involving significant highway expansion, it should be expected that projected revenues will not be sufficient to cover the entire cost of implementing a project and servicing the underlying debt. The following sections provide brief summaries of the five largest managed lane projects in the U.S. together with descriptions of their financing packages. The largest project, the Katy Freeway Reconstruction in Houston, Texas is operating and was publically procured using a mix of traditional funding sources and backing from a local toll authority (sometimes cited as a public-public partnership, or P2, concession model). The other four are currently under construction and all are being implemented on a DBFOM P3 concession basis. Three of the four are real toll concessions with significant public subsidies. The fourth is an availability payment concession funded primarily through a public subsidy and a pledge of future Federal funding receipts.

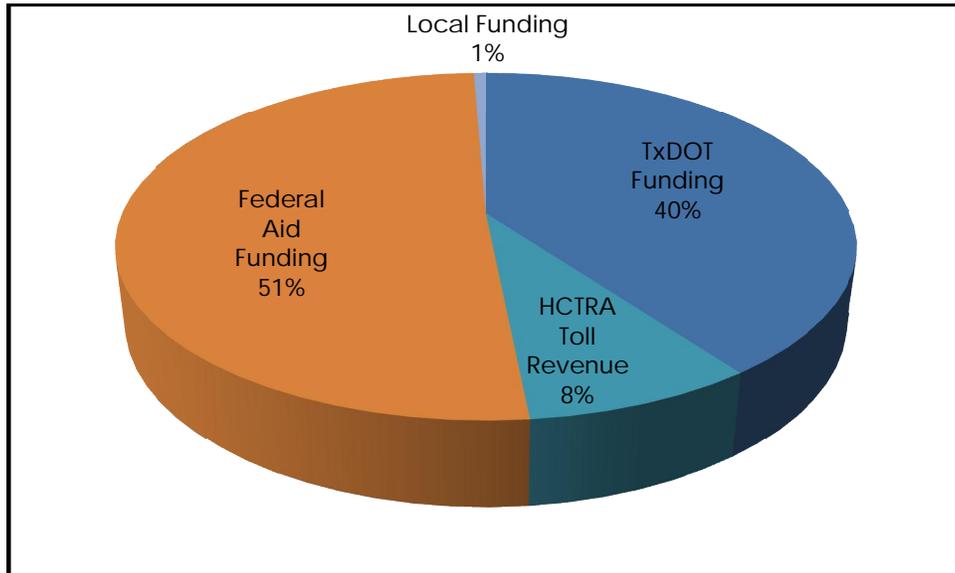
4.4.1. Katy Freeway Reconstruction

The Katy Freeway was a 40-mile segment of I-10 that runs east-west through Houston, Texas. The Katy Freeway was originally constructed as a six-lane highway with four frontage road lanes. A single reversible HOV lane, initially dedicated to transit and operated by the Harris County Metropolitan Transit Authority (Houston Metro), was added in 1984 along the median of a 13-mile stretch west of downtown. Gradually registered carpools were allowed to use the HOV lane. In 1998, the HOV lane was converted to a HOT lane, allowing carpools with 3 or more occupants (HOV 3+) and transit vehicles to use the lane for free along with paying vehicles with two occupants (HOV 2). The scheme was called Katy QuickRide.

Even with these changes, growing congestion necessitated a significant expansion of this section of the Katy Freeway. The success of the QuickRide system helped prompt the inclusion of two variably-priced HOT lanes in the highway's median as part of the Katy Freeway Reconstruction that doubled the general purpose lane capacity. Construction took place from 2003 to 2008 at a total project cost of \$2.79 billion and was delivered through a traditional design-bid-build procurement.

As shown in Figure 4-1, a mix of traditional highway funding (federal and state funds) totaling about \$2.53 billion was combined with \$238 million toll-backed debt issued by the Harris County Toll Road Authority (HCTRA) and small amount of local grant funding from Houston Metro, the City of Houston, and others. The new HOT lanes are operated by HCTRA which effectively received the concession rights in exchange for their finance contribution, while Houston Metro transit vehicles are still able to use the lanes at no cost.

Figure 4-1 Katy Freeway Reconstruction Sources of Financing: \$2.790 billion



Source: FHWA Office of Innovative Program Delivery, 2003 dollars

4.4.2. I-635 LBJ Managed Lanes

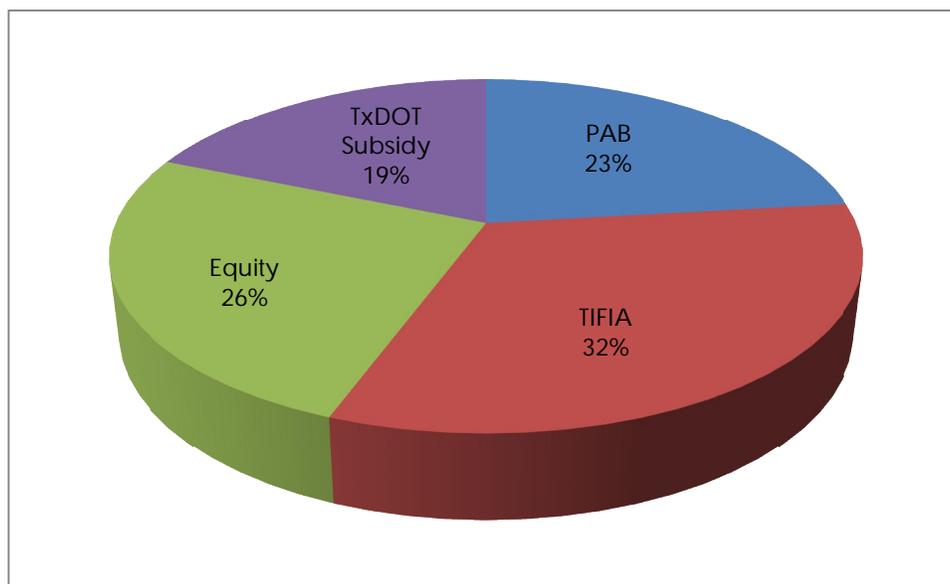
The I-635 LBJ Managed Lanes involves the reconstruction and expansion of portions of I-635 (10 miles) and I-35E (three miles) north of Dallas, Texas. The reconstruction of I-635 will add continuous frontage roads and four to six variably-priced managed lanes, much of them subsurface. Six elevated managed lanes will also be constructed along the reconstructed I-35E, connecting to those along I-635.

The project is being delivered as a P3 (Comprehensive Development Agreement, or CDA, in Texas' parlance) between TxDOT and a private consortium that includes Cintra US, Meridiam Infrastructure Finance, and the Dallas Police and Fire and Pension System.

A 52-year DBFOM concession was signed in September 2009 between the two partners. Construction began in April 2011 and is expected to be complete in 2015.

As shown in Figure 4-2, the \$2.62 billion project is being financed through a combination of toll-backed debt, private equity, and public subsidy. The private consortium is using an \$850 million TIFIA loan and \$606 million in private activity bonds backed by future toll revenues in combination with a \$672 million equity contribution. To complete the financing package and make the project feasible for the private partner, TxDOT is contributing \$490 million in traditional highway funding.

Figure 4-2 I-635 LBJ Managed Lanes Sources of Financing: \$2.615 billion



Source: TIFIA Joint Program Office, financial close September 2009

4.4.3. North Tarrant Express

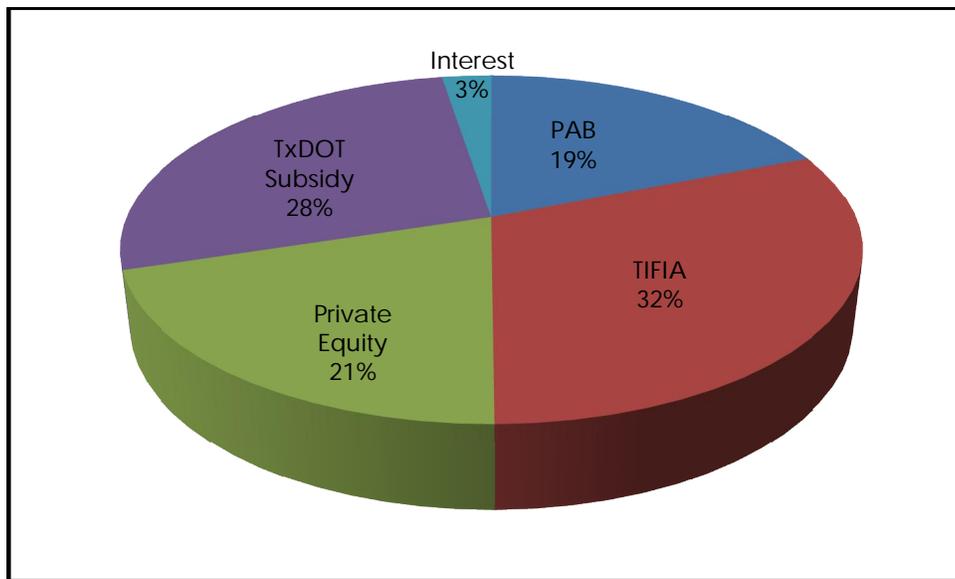
Phase I of the North Tarrant Express involves the reconstruction and expansion of 13.3 miles of freeway along I-820 (Segment 1) and State Highway 121 (SH 121)/SH 183 (Segment 2W) north and east of Fort Worth, Texas. These segments of highway will be reconstructed and widened to three general purpose lanes and two variably-priced managed lanes in each direction along with new frontage roads.

Like the LBJ Managed Lanes, the North Tarrant Express is being delivered as a P3 using a similar 52-year DBFOM concession with the same consortium. The concession was signed in June 2009, construction began in November 2010, and expected completion is 2015. Later in the concession term, a fourth general purpose lane in each direction will be constructed along Segment 1, and a third managed lane will be constructed along Segment 2W. Revenue will accrue to the private partner but be collected and managed by the North Texas Tollway Authority (NTTA). A second CDA between TxDOT and the private partner (Phase II) was awarded concurrently with Phase I to produce a

master development plan for similar improvements along five adjacent freeway segments, including additional segments of I-820 and SH 183, as well as three segments of I-35E from downtown Fort Worth to north of the city. The private partner retains the right to enter into negotiations with TxDOT to develop these segments per the outcome of the master plan.

As shown in Figure 4-3, financing for the Phase 1 CDA is also similar in structure to the LBJ Managed Lanes. The \$2.101 billion project includes a \$650 million TIFIA loan (and \$54 million in TIFIA capitalized interest) and \$398 million in private activity bonds backed by future toll revenues, as well as \$426 million in private equity and a \$573 million public subsidy from TxDOT.

Figure 4-3 North Tarrant Express Sources of Financing: \$2.101 billion



Source: TIFIA Joint Program Office, financial close June 2009

4.4.4. Capital Beltway Express Lanes

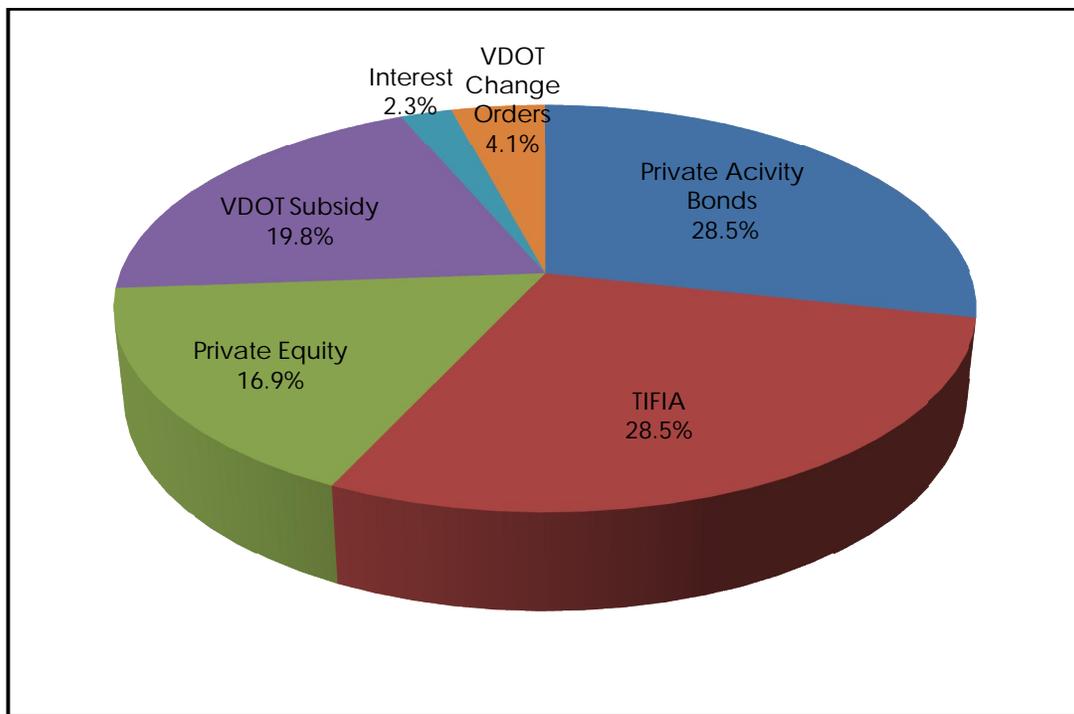
The I-495 Capital Beltway Express Lane project is a widening of an 11-mile segment of the Capital Beltway in Northern Virginia between the I-95/I-395 Springfield Interchange to a point north of the Dulles Toll Road, providing two new variably priced managed lanes in each direction. The eight existing general purpose lanes are also being reconstructed, along with 11 interchanges and the replacement of 53 bridges and overpasses. Dedicated HOV ramps connecting I-95 with the Capital Beltway are also included to provide seamless HOV connections between the two highways.

The \$2.1 billion project is a P3 between the Virginia Department of Transportation (VDOT) and a private partner joint venture of Fluor Enterprises and Transurban. VDOT had been studying improvements along this heavily traveled corridor of the Beltway for nearly two decades, when in response to a poorly received 2002 draft environmental

impact statement that assessed several costly HOV expansions, Fluor submitted an unsolicited proposal to VDOT to design, build, finance, operate, and maintain proposed HOT lanes along the corridor. Through a rather lengthy negotiation process, an 80-year concession agreement was ultimately reached and finalized in late 2007.

The Capital Beltway Express Lanes was the first project in the U.S. to utilize private activity bonds and the first to propose the use of dynamically priced variable tolls to leverage a complex financing package. As shown in Figure 4-4, the financing package for the project included \$589 million in PABs, a \$589 million TIFIA loan (and \$47 million in TIFIA capitalized interest), \$349 million in private equity, and a \$409 million public subsidy from VDOT. Since the agreement was reached, the project funding package includes (as of June 2010) additional VDOT funding of about \$86 million to cover change orders.

Figure 4-4 I-495 Capital Beltway Express Lanes Sources of Financing: \$2.068 billion



Source: VDOT June 2010 Financial Plan Update

4.4.5. I-595 Express Corridor Roadway Improvements

The east-west I-595 opened to traffic in 1989, connecting Fort Lauderdale, Florida to newly developing areas to the west, while crossing and linking several north-south corridors from I-95 near the Fort Lauderdale-Hollywood International Airport west to I-75 near the Everglades. Traffic volumes grew faster than anticipated, however, and the Florida Department of Transportation (FDOT) completed a master plan study for I-95/I-595 in 2003, identifying substantial improvements to the corridor.

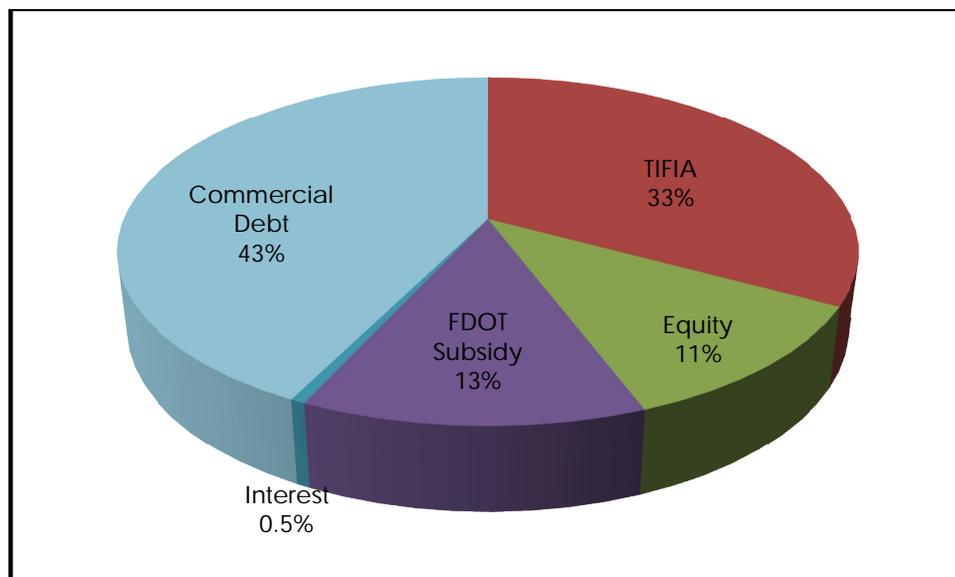
The I-595 Express Corridor Roadway Improvements project consists of 10.5 miles of reconstruction and widening of the I-595 mainline along with improvements to associated frontage roads and ramps. Three reversible variably-priced managed lanes (branded 595 Express) are being constructed in the highway's median along most of its length, with three direct access points. All lanes will operate in the eastbound direction during the AM peak and westbound during the PM peak.

The \$1.834 billion project is being implemented as a P3 between FDOT and a private concessionaire (ACS Infrastructure Development) to design, build, finance, operate, and maintain the roadway for a 35-year term. An agreement was reached in early 2009, with construction beginning that June; completion is expected in early 2014. In October 2011, ACS sold a 50 percent stake in the project to the teachers' pension fund manager TIAA-CREF for \$807 million in cash.

FDOT will make availability payments to the concessionaire at the completion of construction and throughout the operating period based on established performance targets. The final acceptance payment at construction completion is \$686 million (YOE) and maximum annual availability payments are \$65.9 (in \$2009 values) escalating annually and subject to downward adjustment. Availability payments will be made from traditional highway funding and toll receipts. FDOT will set the toll rates and retain the toll revenue.

As shown in Figure 4-5, the private concessionaire's financing package backed by these availability payments consists of \$781 million in commercial debt from a club of 12 banks and a \$603 million TIFIA loan. In addition, the project's financing includes \$208 million in private equity and \$232 million in FDOT qualifying development funds.

Figure 4-5 I-595 Corridor Roadway Improvements Sources of Financing: \$1.834 billion



Source: TIFIA Joint Program Office, financial close March 2009