

Innovative Financing for Rural Transportation

The Texas Experience with Pass-Through Tolling Agreements

KHALI R. PERSAD, PATRICIA FRANCO LAWHORN,
AND C. MICHAEL WALTON

The authors are with the University of Texas at Austin: Persad is Research Engineer, Center for Transportation Research; Lawhorn is in the master's degree program, Community and Regional Planning, School of Architecture; and C. Michael Walton, a member and past Chair of the TRB Executive Committee, is Ernest H. Cockrell Centennial Chair in Engineering.

Transportation funding in Texas is not keeping pace with a growing demand for infrastructure. Motor fuel taxes and vehicle registration fees, which generate revenue, have been static in Texas since 1993, yet vehicle miles traveled (VMT) on Texas roads have risen by more than 40 percent.

State Highway Fund revenues and expenditures per VMT have risen from approximately 2 cents per VMT in 1993 to approximately 3 cents (Figure 1, page 24)—mostly the result of bonds issued since 2002 (1). But with adjustments for construction inflation, the current expenditure equates to less than 1.5 cents per VMT in 1993 dollars. Transportation spending, therefore, has been falling behind needs in Texas.

According to U.S. Census figures, Texas is one of the fastest-growing states. During the past 25 years, the state's population increased by 57 percent, and road use increased by 95 percent—yet road capacity has grown by only 8 percent. Demographers estimate that in the next 25 years, the state population will increase by another 64 percent, road use will grow by 214 percent, and road capacity—without additional funding—will grow by approximately 6 percent (2).

Table 1 (page 24) shows roadway miles in Texas as of 2008 by functional classification and ownership, divided into urban and rural, in millions of VMT. Almost 70 percent of Texas road miles are rural and carry approximately 26 percent of VMT (3). In 2007, agriculture and oil and gas production—primarily rural activities—contributed approximately 8 percent to the gross state product of approximately \$1.2 trillion (1).

According to the report of the Texas 2030 Committee, Texas must spend about \$14 billion per year through 2030 to meet mobility and maintenance needs; the state currently spends around \$6 billion per year (4). With transportation funding methods falling further behind demand, the Texas Depart-



PHOTO: TEXAS TRANSPORTATION INSTITUTE

ment of Transportation (DOT) has encouraged tolling and other innovative financing mechanisms.

Monitoring highway traffic at a Texas DOT center; at the current rate of population growth in Texas, demand for road use may far outstrip road capacity in the next 25 years; capacity is projected to grow by 6 percent, but road use by more than 200 percent.

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Innovations in Financing

Innovative transportation financing generally requires state and local partnerships, with private-sector participation where possible. Recent Texas legislation permits new kinds of partnering arrangements for developing transportation facilities. These new local entities include special-purpose transportation districts and corporations that can borrow and raise revenues, and Regional Mobility Authorities (RMAs), created by counties to construct and operate transportation projects, including tolls. RMAs can enter into agreements with private entities.

The private sector usually requires guarantees or risk-sharing agreements—or both—in partnering with the public sector to provide transportation infrastructure. A range of options is available for public support of private investment in transporta-

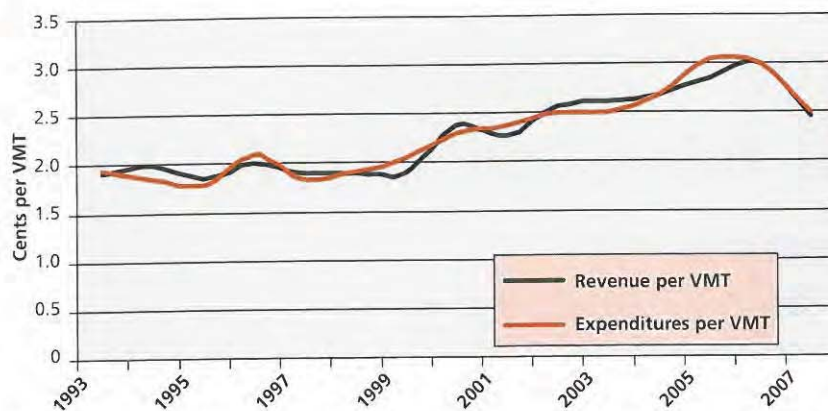


FIGURE 1 Texas State Highway Fund: revenues and expenditures per vehicle miles traveled (VMT), 1993–2007.

tion infrastructure, with varying degrees of risk exposure and ability to attract financing, as depicted in Figure 2 on page 25 (5). Four options appear to work well in balancing the government's exposure with the private sector's ability to raise financing: grants, subordinated loans, revenue guarantees, and shadow tolling, called pass-through tolling in Texas.

More than 45 alternative project-financing tools are available; Texas has applied 17 (6). An analysis of the tools indicates the importance of distinguishing up-front financing—a negative cash flow—from repayment—a positive cash flow. Up-front financing sources include grants, which do not require repayment, and debt, such as that incurred through bonds or loans. Sources of funds to repay debt include reimbursements, sale of assets, leases, fees, taxes, and tolls.

The varieties of up-front funding and repayment sources are summarized in Table 2 (page 26).¹ Any

combination from the two categories of sources defines a potential project financing mechanism. Choosing a combination requires identifying and estimating the feasible repayment options to match the available up-front financing.

Shadow Tolling

With shadow tolling, the private sector finances the construction and maintenance of a facility and is repaid in installments by the government according to a formula based on the amount of traffic. The government pays the tolls on behalf of the users. For low-traffic scenarios, the formula may allow a high toll rate per VMT or a minimum monthly payment, with the rate dropping as traffic increases; in high-traffic scenarios, this may cap out at a minimum rate per VMT or a maximum monthly payment.

The World Bank championed shadow tolling in the 1970s and 1980s to stimulate private investment in public infrastructure. The most well-known applications are in Britain, where the first agreement was executed in 1997. The payment period was set at 30 years, in line with typical debt financing.

The British government maintained that the projects would facilitate greater private-sector efficiency and innovation. Some experts have criticized these arrangements, however, as “government-licensed monopolies, with powers akin to taxation, and as such an alienation of revenue streams from the public to the private sector” (7).

The government's primary benefit from shadow tolling is that a facility is built up front, and the costs

¹ Details are available in Texas DOT Research Report 0-6034-1, www.utexas.edu/research/ctr/pdf_reports/0_6034_1.pdf.

TABLE 1 Miles of Roadway in Texas by Ownership and VMT, 2008 (3)

Functional Classification	Texas DOT	Counties	Municipal	Other Jurisdictions	Federal	Total Miles	VMT (millions)
Urban Interstate	1,176	—	—	—	—	1,176	39,492
Urban: other freeways	1,435	21	26	107	—	1,589	29,901
Urban: other principal arterials	4,137	134	1,512	13	—	5,796	20,166
Urban: minor arterials	2,338	772	5,031	1	—	8,142	429
Urban collectors	4,334	1,474	6,644	17	—	12,469	192
Urban local	228	10,269	53,735	—	—	64,232	2
Urban totals	13,648	12,670	66,948	138	—	93,404	90,182
Rural Interstate	2,058	—	—	—	—	2,058	15,397
Rural: other principal arterials	7,474	4	—	—	—	7,478	16,603
Rural: minor arterials	9,932	53	23	—	—	10,008	365
Rural: major collectors	33,095	1,309	64	5	84	34,557	118
Rural: minor collectors	13,611	4,532	175	0	47	18,365	1
Rural local	249	127,062	12,519	2	700	140,532	—
Rural totals	66,419	132,960	12,781	7	831	212,998	32,484
Totals	80,067	145,630	79,729	145	831	306,402	122,666



User-paid tolls are one of the ways agencies can repay road construction debt; (left:) the Park Street toll plaza on Texas Toll 183A. In shadow or pass-through tolling, by contrast, the government repays the investment of a private contractor in installments on behalf of road users.

are stretched over many years. A drawback is that the total payments may exceed the actual cost. The public benefits from the facility sooner but may have to pay additional taxes or fees.

If the developer is a public entity, the expected benefit is economic development and revenue for future projects. If the developer is private, the expected benefit is a profitable return on investment. The developer takes a risk that the traffic may be less than projected, so that the reimbursements fall short of debt service and the project becomes a drain on finances.

Britain has completed at least eight shadow toll projects (8). With experience, changes have been made to the original shadow tolling arrangement (9)—for example,

- ◆ Capping the total payout, to avoid the perception of excessive private profits at taxpayer expense;
- ◆ Awarding performance bonuses to the operator, based on user feedback;
- ◆ Making deductions when a facility is not available to users or when use is restricted;
- ◆ Offering incentives for safety improvements that could reduce accident rates—such as 25 percent of the economic cost for each personal injury avoided; and
- ◆ Requiring a 10-year life expectancy for roadways handed back to the government—if the facility is in substandard condition at that time, charges may be levied on the operator.

With the success of shadow tolling in Britain, other European countries—such as Finland, Spain, and Portugal—have adopted it. The United States only recently has applied a similar type of transportation financing, and Texas has led the way with its own version, called pass-through tolling agreements (PTAs).

Pass-Through Tolling in Texas

With the slogan, “Open for Business,” Texas DOT has encouraged partnerships to add capacity to its roadway system (10). According to Texas DOT, “in a pass-through financing agreement, the developer agrees to finance, construct, maintain and/or operate a project on the state highway system.” Texas DOT “reimburses the developer *the cost of the project* [sic] rather than assessing a toll directly on users,” and “makes periodic payments based on the number and types of vehicles using the facility” (9).

The Texas Mobility Fund (TMF) supports the Texas DOT PTA payments. In 2002, state Proposition 14 gave Texas DOT the authority to issue \$3 billion of bonds to establish the TMF, with debt backed by the state’s general obligation pledge, as well as by revenue from traffic fines and fees.

Project Criteria

A highway project is eligible for PTA funding in Texas (11) if it

FIGURE 2 Risk sharing and ability to raise financing under various public-private partnership arrangements (5).

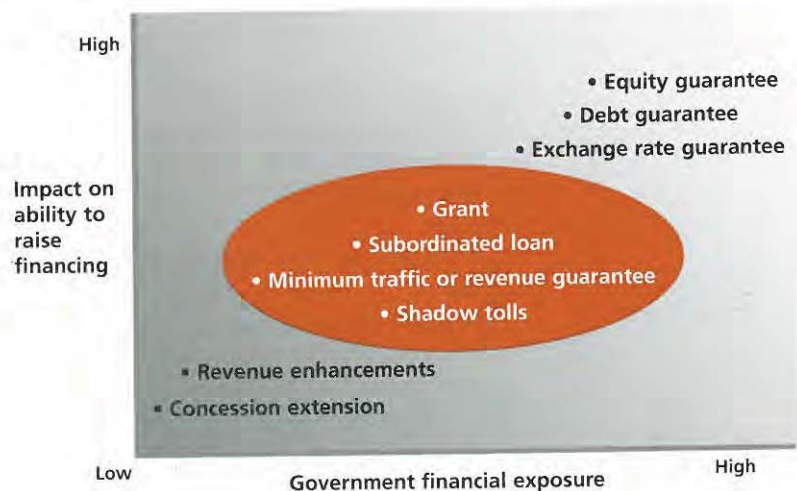
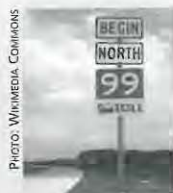


TABLE 2 Up-Front Financing and Repayment Sources

Financing Sources	Repayment Sources
Grants	Reimbursements
<i>Federal grants</i>	Pass-through (shadow) tolls
Community development block grants	Sales and Leases
Rural Safety Innovation Program	Sale of assets
Intelligent Transportation Systems Program	Leases and concessions
<i>State grants</i>	Fees and Fines
Texas toll equity	Traffic impact fee from developers
<i>Local contributions</i>	Property development fees
Private funds from landowners, developers, or businesses	Utility installation fee
Local government general funds	Transportation utility fee
Mix of public and private contributions	Transportation fees
Tapered matching on federal grants	Vehicle ownership fees
Transportation development credits	Road fees
	Miscellaneous traffic fines
Debt	Taxes
<i>Bonds</i>	<i>Property Taxes</i>
Tax-exempt bonds	Special tax districts
Tax credit bonds	Tax increment financing
<i>State Bonds</i>	<i>Sales Taxes</i>
Texas Mobility Fund	Dedicated sales tax
Grant anticipation bonds	Vehicle-related sales taxes
<i>Local Bonds</i>	Tolls
General obligation bonds	Corridor tolling
Limited obligation bonds	Cordon tolling: requires viable public transportation alternatives
<i>Private Activity Bonds</i>	Freight tolling
	VMT or mileage tolling
Loans	Congestion pricing
<i>Section 129 Loans</i>	
<i>TIFIA Loans</i>	
Secured (direct) loan	
Loan guarantee	
Line of credit	
<i>State Infrastructure Bank</i>	



Tolling on a segment of Texas State Highway 99 started in 2010.

- ◆ Promises financial benefits to the state;
- ◆ Demonstrates support from the local public;
- ◆ Is part of Texas DOT's Unified Transportation Program;
- ◆ Offers congestion relief for the state highway system;
- ◆ Shows potential benefits to regional air quality; and
- ◆ Is compatible with current and planned transportation facilities.

In addition, the proposing entity must have

experience in developing highway projects and the qualifications to complete the work. If the proposer is a public entity, it may designate a geographic area within its jurisdiction as a transportation reinvestment zone.

Basically, a project can qualify for a PTA if it is in the Unified Transportation Program and if public support can be demonstrated. The qualitative nature of the criteria has allowed a variety of projects to gain PTA funding.

PTA Projects

PTAs have been a popular financing tool in Texas—many counties and cities have petitioned the Texas DOT Commission for PTA projects. Between August 2005 and October 2007, Texas DOT authorized 13 PTAs for negotiation, in partnership with 10 different counties, two cities, and a private developer. Of the 13 projects, 4 failed to reach a contract. The data used here derive from the application and agreement documents for the 13 PTAs, supplemented by a questionnaire, interviews, and in-depth discussions with 23 agencies from Texas DOT districts and local governments.

All of the 9 PTAs that were executed use a fixed rate per VMT, regardless of the amount of traffic, but all have established a minimum and maximum monthly payment. The VMT rate varies among the agreements, with rural area projects receiving 15 cents per VMT; semiurban projects receiving from 10 cents, near San Antonio, to 14 cents, near Austin; and urban projects receiving 7 cents, as in Houston—Montgomery County.

The period of payments varies from 10 to 20 years. The lowest traffic scenarios result in payments that are stretched out over a longer period, and the highest traffic scenarios result in higher payouts initially, followed by lower amounts in later years. In most cases, Texas DOT participates in up-front financing in addition to the PTA payments; the agency's minimum PTA commitment is more than 90 percent of the up-front financing provided by the other partners.

Figure 3, page 27, shows the estimated Texas DOT commitments in PTAs approved as of October 2007 (6). Depending on the opening date of each facility, the traffic, and the resulting payout period, total commitments are estimated at approximately \$1.32 billion.

In October 2007, the PTA program exhausted its funding, and additional PTAs were placed on hold. Legislation enacted in July 2009 granted Texas DOT the authority to issue another \$2 billion in bonds backed by state general revenue, and the PTA funding resumed.

Findings

Four significant issues have arisen with the Texas PTA program (6):

1. Project selection.

The Texas DOT criteria for selecting PTA projects should be more rigorous. The criteria do not reflect lessons learned from shadow tolling in Europe—for example, that the technical characteristics of the project, its revenue potential, and the risks are key.

Criteria such as congestion relief and air quality improvements should be quantified. The decision to use PTA financing should relate to the objectives of the project. PTAs should be directed primarily to improving mobility—a statewide benefit—with local economic development a secondary goal.

2. Risk sharing.

PTA reimbursements should be tailored to the circumstances, with the risk shared in proportion to the expected benefits. Most of the PTAs guaranteed that the investors would recover most of the money they spend; in some cases, they also received the local revenue that was generated. Under this risk-free arrangement, the demand for PTA funding quickly outstripped availability. In contrast, British practice requires risk sharing, with many safeguards to reduce government exposure, including competition among investors and a cap on the total payout.

The Texas reimbursement rate per VMT appears inconsistent, with rural areas receiving 15 cents per VMT compared with 7 to 10 cents for urban areas. Gas taxes in Texas generate a revenue of less than 2 cents per VMT; paying 7 to 15 cents per VMT for road building therefore is exorbitant.

3. Cost-benefit analysis.

When public funds are involved, the benefits for each party should be properly estimated, and the costs and future revenues shared accordingly. Texas DOT includes economic development as part of its mission, yet revenues from sales taxes and local taxes are not contributed to transportation.

A cost-benefit analysis of PTAs should take into account the revenue streams from the project. No formal cost-benefit analysis, however, was performed for any of the PTAs, except for a qualitative review confirming benefit to the local economy. In two cases, preliminary toll feasibility estimates were performed; neither project proved toll-feasible.

4. Negotiating agreements.

Texas DOT district staff should receive guidance on negotiating innovative financing agreements. Traditionally, DOTs have accumulated revenue before

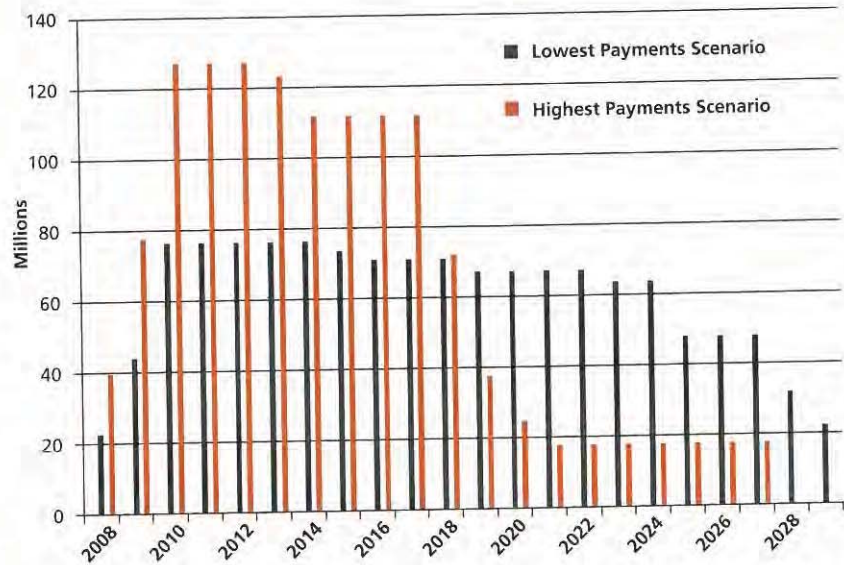


FIGURE 3 Texas DOT annual commitment amounts for pass-through toll agreements (6), assuming a project completion date 3 years from execution of agreement.

funding the construction of facilities; as a result, staff never dealt with project financing. As DOTs enter into debt financing, staff need appropriate training. In some cases, for example, Texas DOT contributed project planning, design, and construction management services without counting the costs. In other cases, staff fast-tracked any project for which another party offered financing.

Lessons Learned

In addition to these findings, the interviews frequently raised six points about partnerships in general and PTAs in particular:

1. **Explain the process.** All parties involved in a partnership need to understand the transportation project development process and timelines. Some nontransportation professionals, for example, may expect that construction will start as soon as the funding is available.

2. **Develop relationships.** Good relationships with local government, chambers of commerce, and political leaders are important for leveraging funding and gaining public support—or for mitigating any opposition.

3. **Clarify the details.** After potential partners enter discussions, the details of the partnering arrangements need to be clarified as soon as possible. For example, under PTAs, Texas DOT could reimburse for no more than the amount paid up front by another party but could not reimburse for interest.

4. **Set realistic schedules.** Addressing environmental requirements can be time-consuming.

An overpass on the 183A toll road at Brushy Creek in Williamson County, Texas. The toll-financed road opened in 2007 as the Central Texas Regional Mobility Authority's (RMA) first project; Texas RMAs can enter into agreements with private entities.



PHOTO: KIRK TUCK, CENTRAL TEXAS REGIONAL MOBILITY AUTHORITY

Although a key benefit of debt financing is getting projects built sooner, the parties cannot neglect the permitting process or the competing demands of other district projects.

5. Designate a leader and communicate. The responsibilities of each entity in a partnership must be clearly defined, including communication to all partners about critical updates. With regular meetings, the parties can discuss the project status, resolve any conflicts, and focus on action items.

6. Be flexible. The possibility of changes in the project's design and scope call for flexibility in the financial plan.

Improving the Practice

Texas has gained leading-edge experience with PTAs in the United States and with innovative financing arrangements for rural projects. PTAs are conceptually the same as shadow tolling, but the application in Texas differs somewhat from European models. A study of 13 PTA agreements in Texas revealed desirable improvements in four areas: project selection, risk sharing, cost-benefit analysis, and negotiating agreements.

Partnerships require the equitable sharing of project risks. Texas DOT needs to strengthen its procedures for selecting partnership projects and financing tools. Although Texas DOT includes economic development as a project goal, no formal procedure is in place for estimating or sharing economic benefits. Each party to an agreement expects to gain specific benefits, and an explicit estimate of these benefits is necessary for an equitable contract.

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