

Finding a New Route

Tollways and other alternative financing methods pave a new way to reducing congestion

By Pamela Bailey Campell
and Katharine Nees

Congestion in the United States is costing us every day and projections are it will only grow worse. By 2009, the economic cost of congestion in terms of lost productivity and wasted fuel could rise above \$90 billion, according to the Texas Transportation Institute (TTI). By 2020, the average motorist will spend almost 36 hours per year in gridlocked traffic, according to the United States Department of Transportation. But while the U.S. population has grown by almost 19 percent and the number of registered motor vehicles has increased 35 percent since 1982, less than five percent capacity has been added to the nation's roadways, according to TTI.

States find themselves caught between the reality of this growing demand and sparse funds to finance and build the needed roads. This is further complicated by the fact that many of the most needed transportation projects come at a high price as they are in urban areas with expensive rights-of-way, complicated interchanges, extensive traffic control, and costly construction.

State transportation budgets are further stretched by escalating maintenance costs. The nation's interstate freeways were for the most part constructed 25 to 30 years ago and are in a constant state of reconstruction and maintenance. Current and projected federal and state highway spending is not sufficient even to maintain the current asset value of the system, let alone cope with needed capacity expansion over the next two decades.

Even in the face of these critical transportation needs, as gas prices exceed \$2 per gallon, states are reluctant to even discuss an increase in taxes for fear of citizen revolt. The result? Too many people burning up time and fuel as they

inch forward during an ever-increasing rush hour.

In response, states have adopted several creative solutions to fund their transportation projects that hold the promise of decreasing congestion without imposing further strain on state highway funds. These solutions include toll roads, congestion management pricing, creative financing, and public/private ventures, used alone or in combination to provide new opportunities for adding capacity.

Toll Roads

Tollways have a long history in America: the first turnpike was chartered by Pennsylvania in 1772. Today, 29 states collect toll revenue in some form, and these funds are considered the most straightforward form of transportation user fees.

Often states create independent state toll authorities to build, operate, and maintain tollways, with several different models often existing side-by-side. In Texas, for example, toll roads can be built and operated by four types of organizations: the Texas Department of Transportation (TxDOT) through the Texas Turnpike Authority, regional toll authorities such as the North Texas Tollway Authority (NTTA), regional mobility authorities such as the Central Texas Regional Mobility Authority, and county toll authorities such as the Harris County Toll Road Authority (HCTRA).

Traditional toll roads work best when there is little competition in the corridor. A recent example is the George Bush Turnpike in Dallas, TX; an east-west freeway that stretches across the northern Dallas suburbs. Slated for development since the 1950s, the proj-



Traditional toll roads work best when there is nothing else in that corridor. A good example is the Highway 190/President George Bush Turnpike, an east-west freeway that stretches across the northern Dallas suburbs.

ect faced severe funding shortfalls with conventional gas tax funding. However, with the help of creative financing and the use of toll-generated revenues, the project was able to begin at least 20 years earlier than originally proposed. Today, 25 miles of the original 30-mile planned President George Bush Turnpike is open to traffic, with the last five-mile segment nearing completion.

Congestion Management

Toll roads are typically thought of for building entirely new facilities, but often the need in urban areas is for increased transportation capacity in existing corridors. To meet this need, the concept of “value pricing” models for congestion management is putting a new spin on toll roads. In these approaches, lanes are added on existing

highways and the price of the toll varies according to the demand. There are several variations on this theme:

Variations based on Vehicles:

- Express Lanes—All vehicles in the added lanes pay tolls. The toll is kept high enough that travel times are reduced on the new lanes.
- HOT (high-occupancy toll) lanes—High-occupancy vehicles pay no toll,

Alternative Financing Methods for Transportation

Recent years have seen several new approaches to transportation funding come into play. The following strategies are being used with great success around the United States, both alone and in combination.

TIFIA loans. The Transportation Infrastructure Finance and Innovation Act (TIFIA) of 1998 expanded the role of federal credit by enabling the United States DOT to provide up to \$10.6 billion in credit assistance through direct loans, loan guarantees, and lines of credit. TIFIA helps advance expensive projects that otherwise might be delayed or deferred because of size, complexity, or uncertainty over the timing of revenues. TIFIA loans work well for toll roads since toll revenues in the first years of a project can be unpredictable. TIFIA loans can have lengthy payback periods (up to 30 years), and the first principle and interest payments can be deferred for up to five years after a project's completion. Currently \$3.6 billion in TIFIA loans have been granted for projects from the Reno Rail Corridor to the Staten Island ferries.

GARVEE bonds. Grant Anticipation Revenue Vehicles (GARVEEs) are bonds or notes with the debt to be repaid by the issuer's pledge of future highway funds. GARVEEs generate up-front capital at tax-exempt rates and enable states to construct projects earlier than with pay-as-you-go resources. With GARVEEs, inflation costs are avoided, projects are delivered sooner, and actual costs are spread over the projects' lives. States find GARVEEs attractive to bridge funding gaps and accelerate construction of major projects. Colorado is advancing a multi-billion dollar program of strategic statewide projects through GARVEE financings, expected to total \$1.7 billion.

Section 129 loans. Section 129 loans allow states to lend apportioned federal highway funds to transportation projects with dedicated repayment sources such as tolls. Section 129 loans often assist public-private partnerships by providing additional start-up money and reducing the amount of debt that must be issued on capital markets. Further, Section 129 loans can be made subordinate to debt service payments on revenue bonds, enabling these senior bonds to secure higher ratings and better investor acceptance.

Financing for the President George Bush Turnpike includes a low-interest, long-term Section 129 loan for \$135 million of the project's total \$940 million cost. The loan ensured the affordability of the project's senior bonds as well as enabled the project to be completed at least a decade sooner than would otherwise have been possible.

SIBs. State Infrastructure Banks (SIBs) provide flexible transportation funding in the form of loans, lines of credit, loan guarantees, and other non-grant assistance. As loans are repaid, the SIB's capital is replenished and can support new projects.



Financing for Colorado's E-470 in suburban Denver, a 50-mile beltway around the eastern Denver metropolitan area, includes a highway expansion fee imposed on new construction within 1.5 miles on each side of the corridor.

As of March 2004, 32 states had authorized SIBs, entering into 373 loan agreements with a total value of \$4.8 billion. Florida, for example, has both a federal-funded and a state-funded SIB, which together have contributed toward almost 50 projects ranging from the purchase of trolleys to the construction of major interchanges.

Shadow or pass-through tolls. A repayment approach rather than financing mechanism, shadow or pass-through tolls are per-vehicle amounts paid to a facility operator or sponsoring government entity not by users but rather by another source such as the state. Shadow tolls spread out the payment for a transportation project over a set period and place the initial financial responsibility on the developer/operator, often a public-private partnership.

Texas embraced pass-through tolls in House Bill 3588 of 2003, which provides reimbursement of per-vehicle fees to regional mobility authorities by TxDOT for construction of state highways or as compensation for the cost of maintaining toll facilities.

Impact fees. Impact fees seek to charge those who benefit from transportation projects for their construction and maintenance. These approaches tax new development surrounding the project.

Financing for Colorado's E-470 in suburban Denver, a 50-mile beltway around the eastern Denver metropolitan area, includes a highway expansion fee imposed on new construction within 1.5 miles on each side of the corridor. The fee is designed to address the amount of new traffic a development will place on the freeway.

GE

or reduced tolls, to travel in the added lanes, while single-occupancy vehicles pay tolls on a value-priced basis.

- **Truck Toll Lanes**—While the trucking industry has historically opposed toll roads, the concept of dedicated truck lanes that allow truckers to haul heavier and longer loads is starting to gain support.

Variations based on Pricing:

- **Time of Day Pricing**—The application of value pricing is often applied based on analyzing the traffic patterns and setting a variety of prices based on particular times of day, days of the week, and direction of travel. They are monitored and periodically increased to assure free flow of traffic. Tolls are highest during peak travel periods and lowest during off-peak periods
- **Dynamic Pricing**—With dynamic pricing the assessed tolls are adjusted automatically based on the lane congestion at any given time. The volumes may be checked as often as every six to eight minutes. This provides the opportunity to react to changing conditions more rapidly.

These approaches give drivers a variety of transportation options. With HOT lanes, carpoolers can save a significant amount of travel time, as can single-occupancy drivers—if they choose to pay for the privilege. These lanes also provide improved travel times for buses—they are typically allowed to travel the lanes for no toll as well.

For example, SR 91 in Orange County, CA, is an excellent example of how HOT lane pricing can provide real value to travelers. Toll lanes going in each direction on the Riverside Freeway use a toll formula designed to keep traffic on the express lanes flowing freely at all times. Tolls range from \$1.00 to \$6.25 based on the time of day and day of the week. After transferring from the private owner to the Orange County Transportation Authority, HOV3+ motorists travel toll-free when they have three or more people in their vehicle during most of the day (during highest peak periods, they receive a 50 percent discount.)

Other states and toll authorities are eyeing the success of SR 91 and are con-

sidering adapting its strategies. HCTRA in Texas plans to add two HOT lanes in each direction to a 20-mile stretch of Interstate Highway 10 from Interstate Highway 610 in Houston to FM 1463 in Katy. The Fairfax Board of Supervisors has endorsed a proposal to widen the Washington Beltway in Northern Virginia by adding four HOT lanes. Austin, TX, has been discussing using congestion management pricing for increased capacity on Loop 1 and Loop 360.

Alternative Financing and Public-Private Ventures

Even though tollways provide money for transportation projects, millions of dollars must be spent to get to the point where the project is even ready for construction. To get over the start-up hurdle of planning, design, permitting, right-of-way, and construction, communities are also turning to public-private ventures and alternative financing mechanisms (See “Alternative Financing Methods for Transportation.”) In fact, many new funding mechanisms are designed to support private investment by making bonds more attractive, providing support for the required up-front investment, and encouraging private sector involvement.

Project delivery methods are one area where public-private partnerships can play an important role. In Austin, an experimental public-private comprehensive development program is underway on a tollway project. The state contracted with Lone Star Infrastructure LLC to deliver the State Highway 130 project of the Central Texas Turnpike, from design and construction to operations and maintenance. The turnpike, as a tollway project, is financed through tolls, state highway funds, community contributions, and a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan.

Some transportation projects are bypassing public funds altogether. Colorado’s Northwest Parkway, for example, includes ten miles of highway and 26 bridges, 100 percent toll funded. The Northwest Parkway Public Highway Authority, a quasi-governmental body, owns and manages the project.

Alternative Route to Future Transportation Projects

States and communities around the United States are embracing toll roads and alternative funding approaches as the best way to meet their pressing transportation needs in today’s tight economy. Some, like Texas and South Carolina, are driving ahead full steam.

Texas is pursuing a number of innovative transportation measures, one called the Trans-Texas Corridors Plan, which includes 4,000 miles of new highways criss-crossing the state, designed to loop traffic around Texas’ major cities and shuttle freight traffic through the state. Governor Rick Perry, who put forth the initial plan, has promised to veto any proposed increases in the state gasoline tax and proposes instead to pay for the massive project through tolls and bonds. Texas also recently passed legislation that would allow not only new but existing roads to become toll roads, authorizing the Texas Transportation Commission to convert regular state highways to toll facilities under Regional Mobility Authorities for expansion, reconstruction, operations, and maintenance. Texas put additional teeth behind this plan by authorizing bonding authority for TxDOT to invest into toll projects.

South Carolina is well underway on an unprecedented \$5 billion worth of road construction in its “27 in 7” Plan, that accomplishes 27 years of road and bridge projects in seven years to take advantage of low interest rates, avoid paying the inflation costs of construction, and get the job done faster. The state is utilizing a number of approaches, including outsourcing of project management for all of these projects to two firms, a leveraged State Infrastructure Bank (SIB), and state highway bonds.

These approaches are an alternate route to the future, but one many states are ready to take to reduce the cost and frustration of congestion on their highways. **GE**

Ms. Bailey Campbell and Ms. Nees share the title of vice president for Fort Worth based Carter & Burgess’s (www.c-b.com) Strategic Advisory Team, Transportation Division.

How Much Can Tolls Pay For?

BY ROBERT W. POOLE, JR.

One of the great question marks about proposed new market-priced congestion-relief lanes is the extent to which new-lane construction can be paid for out of toll revenues. (Or the flip side: to what extent will such projects produce “surplus revenues” that could be used for other purposes such as subsidizing mass transit?)

The two pioneering California HOT lane projects represent the two extremes of this question. By converting *already existing* HOV lanes on I-15 to a form of HOT lane, SANDAG (www.sandag.org) was able to generate significant surplus revenues, which it is using to subsidize express bus service in the corridor. By contrast, the 91 Express Lanes in Orange County represented over \$100 million in all-new construction, and while toll revenues are fully supporting the capital and operating costs of the HOT lanes, there is nothing left over for other purposes.

Recent studies of building networks of HOT lanes—in Atlanta, Denver, and Minneapolis/St. Paul—have reached dramatically different conclusions about the extent to which capital costs can be covered by toll revenue financing. I reviewed these three studies in my May 2005 column in *Public Works Financing*, noting that each used a somewhat different methodology and made somewhat different assumptions about pricing. The Atlanta study used much-too-low figures for HOT lane pricing (and did not adjust them for inflation as at least a proxy for the need to keep increasing them over time to keep traffic flowing smoothly). So not surprisingly, it concluded that toll revenues could at most cover operating and maintenance costs, but not capital costs. The Twin Cities study, with more realistic pricing assumptions, estimated that toll revenues could cover just 22 percent of capital costs. But the Denver study estimated that tolling could support 50 to 60 percent of capital costs. To be sure, all three studies were of basic networks of tolled lanes, so it may be unfair to compare them with studies of individual corridors. Certainly it would make sense for investors to look first at the most promising corridors, and both the Denver and Twin Cities studies found some corridors that looked like they could be self-supporting.

I mention this to put in context the most recent news on the private-sector proposal to add HOT lanes to the southwestern quadrant of the Beltway around Washington, DC. May's announcement by the Virginia

DOT (VDOT) and the Fluor/Transurban team was that their revised financing model will permit this \$900-million project to be done without any tax money. What has changed from the previous model (which would have required 15 to 20 percent of the cost to be paid for by VDOT) is the shift from an all-debt/30-year financing model to a debt-plus-equity model, financed over as much as 60 years. Australian developer/operator Transurban would provide at least 15 percent of the project cost as an equity investment, and would be willing to make much of its return on investment in the out-years, after the debt is paid off. So it appears that the choice of financing method can make a significant difference in terms of how much of the cost can be recovered from toll revenues. That means enabling legislation should welcome long-term (50+ year) franchise arrangements such as that now contemplated by VDOT.

The other key factor in how much toll revenues can finance is getting the pricing right. My colleague Peter Samuel (www.tollroad-news.com) in March did a quick analysis of the proposed financing of the Inter County Connector (ICC), a new congestion-relief highway in suburban Maryland. Given the level of congestion in the area, the ICC would be essentially an all-HOT-lanes facility. Samuel notes that the Draft Environmental Impact Statement (DEIS) from last December estimated that toll revenues could finance only a small fraction of the ICC's \$2.2 billion cost. That study assumed 17 cents/mi peak days. Drawing on income-level data for the area, and estimates that the ICC will save about 30 minutes over its full 18 miles during peak periods, Samuel suggests that peak toll rates should be more like 55 cents/mi, more than three times what the DEIS used. That suggests the annual toll revenues could be something like three times the \$60 million cited in the DEIS. And that, in turn, suggests that close to \$2 billion in capital costs could be financed—nearly the entire capital cost of the ICC.

These are early days in the development of serious urban congestion-relief toll lanes. Transportation planners clearly have a lot to learn about how these projects differ, fundamentally, from conventional toll roads. GE

Mr. Poole is the Director of Transportation Studies, Reason Foundation (www.rppi.org). The preceding has been excerpted from Surface Transportation Innovations (Issue No. 23, May 19, 2005), published by the Reason Foundation.

