

ADDING NEW TOLL ROADS

Description

Toll roads provide an alternative method of financing transportation construction costs. Toll facilities include toll roads, tunnels, and bridges. The toll is traditionally due when the patron passes a collection point in the form of a plaza or a gantry in the case of an open road facility (ORT). Advances in technology in the last few years are redefining the physical toll gantry concept with virtual toll points.



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Toll facility users (rather than the general public) pay for the construction of the facility, freeing public resources for other uses. Over half of the states in the United States have passed legislation to allow partial or total private investment in roadway construction, which is recouped through user tolls. Federal aid for some toll projects and advancements in electronic toll collection is spurring further interest in the toll road concept.

Many of the negative aspects historically associated with toll roads are related to the standard methods used to collect tolls.¹ The limited capacity of manual toll booths and automatic coin machines require expansive toll plazas with high operating costs and significant investments in right-of-way. Throughput of manual and coin machine lanes is well below the throughput of Electronic Toll Collection (ETC) lanes.

Target Market

The increasing budgetary restrictions at the federal, state, and local level are making toll roads a more frequent selection. Tolling is the only funding mechanism available for project advancement or to significantly accelerate project implementation in many cases. The target market for toll roads covers a broad

Cost:	●●●●●
Time:	Moderate
Impact:	Facility
Who:	Toll Authority
Hurdles:	Funding

spectrum from toll corridors connecting large metropolitan areas to local toll roads within medium and large size cities. In general tolls can generally be used to finance:

- Initial construction of new roads.
- Reconstruction or rehabilitation of existing toll roads.
- Reconstruction or rehabilitation of existing non-toll roads that include added capacity.

How Will This Help?

- New toll roads can provide a mechanism to fund projects where no public funds are available or are limited
- Tollways can accelerate both funded and partially funded project implementation. For example, Loop 49 in Tyler, Texas, was being slowly built in stages as funding became available with an estimated completion year of 2033. To complete the loop in a compressed timeframe, the Tyler District and its

partnering agencies evaluated Loop 49 for tolling, including application of tolling to the initial five-mile segment under construction and funded through gas tax revenues. By tolling Loop 49, the opening of the fully completed loop project was accelerated by as much as 20 years.³

- Revenues can be used to fund other transportation infrastructure needs in the region or support operations and maintenance activities for other non-toll roads.

Implementation Examples

Texas has a long history implementing toll roads. The first toll road built in Texas was the I-30 Dallas Fort Worth Turnpike by the Texas Turnpike Authority in 1957, which later became a free road after paying its bonds. The second toll road built in Texas in 1968 was the Dallas North Tollway, which continues operating as a toll road today and has been rebuilt and expanded multiple times.⁴ The Texas toll road systems in operation or being built are presented in the table below.⁵

Adding a new toll road provides multiple benefits such as congestion reduction, fuel savings, and property value increases. Estimating the congestion reduction benefits of adding a new toll road is rather difficult and varies on a case by case basis. The Transportation Corridor Agencies (TCA) in Orange County, California conducted a study to measure the impact of shifting toll road traffic from its network of toll roads, consisting of SR-241, SR-261, SR-133, and SR-73, into the

adjacent non-toll roadways. The study estimates that without TCA’s toll roads, travel time during peak periods at selected freeway choke points would increase from 3 to 75 percent and 4 to 69 percent on major arterials.⁹ A more recent example is the new Inter County Connector (ICC) in Montgomery County, Maryland, north of Washington D.C. This toll road provides a direct connection between IH 95 and IH 270. The ICC reduced the travel time by half from 45 minutes to 23 minutes compared to traveling the existing local roads.

Application Techniques and Principles

During the implementation of Loop 49 in Tyler, Texas, a comprehensive multi-year case study analysis of a mid-size urban/rural toll road implementation was conducted. The case study documented the development of Loop 49 as a toll facility, including the tolling concept, design, public acceptability, and environmental aspects of the project. The lessons learned in this project provide a robust set of guidelines to practitioners when implementing new toll roads.³

- Separate tolling from traditional highway project development issues.
- Build sustainable stakeholder support.
- Be flexible as project design elements evolve.
- Listen to the public and gauge public perception.
- Develop a public outreach plan using perception data.
- Clearly explain the benefits of tolling at the project level.

New Toll Roads in Texas						
Austin	Houston	Laredo	Tyler	Dallas	Managed Lanes	
183A	Fort Bend Parkway	Camino Colombia	Loop 49	Addison Airport Toll Tunnel	Houston - Katy Freeway/I-10	
Loop 1	Harris County Toll Roads	Toll Road		Dallas North Tollway	Fort Worth - North Tarrant Express (2015)	
SH 45 North				Lewisville Lake Toll Bridge	Dallas - I-635 LBJ Freeway (2014)	
SH 130				Mountain Creek Lake Bridge	DFW Connector (2014)	
				President George Bush Turnpike		
				Sam Rayburn Tollway		

For more information, please refer to: <http://mobility.tamu.edu/mip/strategies.php>.



- Link environmental review to public outreach, and coordinate closely with all players.
- Enlist key stakeholders in creating a Regional Mobility Authority (if one is required).

Issues

Obtaining the proper environmental clearances can cause delays for project implementation. The proposed project type (e.g., toll facility on new location versus tolling an existing facility) can provide an indication of the possible environmental issues. The environmental issues considered primarily pertain to construction and operation of the facility. A tolled facility with toll plazas may require additional right-of-way, may require changes in access, and may have differing impacts in terms of natural and cultural resources, air quality, noise, visual, and socio-economic impacts.⁶

Funding is another potential issue for new toll facilities. Toll roads can be financed through general obligation bonds, revenue bonds, revenue bonds with supplemented income, private financing, or combinations of sources. A number of public-private partnership models have been developed to finance, construct, and operate toll facilities, including¹ the following models:

Build-Own-Operate: A private organization finances, constructs, owns, and operates the facility.

Build-Operate-Transfer: A private organization finances, constructs, and operates the facility for a specified time period while collecting the tolls. Facility ownership is transferred to a governmental agency at the end of the phase.

Build-Transfer-Operate: A private organization finances and constructs the facility and transfers ownership to the governmental agency. The organization then leases the facility from the government and operates the facility.

Buy-Build-Operate: A private organization buys an existing facility from the government, upgrades the facility, and operates the tolls.

Lease-Develop-Operate: A private organization leases an existing facility from the government, upgrades the facility, and operates the tolls during the lease period.

Temporary Privatization: A private organization takes over operation of an existing toll road, upgrades the facility, and collects the tolls until the costs plus an agreed upon reasonable rate of return on capital is attained, at which time operations and maintenance revert back to the governmental agency that holds permanent ownership.

Who Is Responsible?

Several toll entities and toll authorities can take a leading role for building and operating tollways in Texas, including the regional tollway authorities (e.g., North Texas Tollway Authority), county toll authorities (e.g., Harris County Toll Road Authority), the state toll authority (e.g., TxDOT's Texas Turnpike Authority Division), comprehensive development agreement concessionaires (e.g., LBJ Infrastructure Group), and regional mobility authorities (e.g., Central Texas Regional Mobility Authority).

The metropolitan planning organizations (MPOs) and metropolitan transit agencies may also play a critical role in the planning, building, and operation of a toll facility.⁶

Project Timeframe

The timeframe for adding a new toll road can differ based upon the size of the facility and whether it is a new toll facility, an upgrade, or an addition to an existing toll facility. The typical timeframe for adding a new toll road may span several years to more than a decade when taking into consideration the environmental process, securing funding, and addressing the community concerns.

Cost

The cost for adding a new toll road can differ based upon the size of the facility and whether the project is a new toll facility, an upgrade, or an addition to an existing toll facility. The cost for right-of-way acquisition, and building and maintaining the road are similar for toll or non-toll facilities. Expenditures exclusive to toll facilities include the costs of deploying, operating, and maintaining the toll collection system, and servicing the debt. Some of the variables related to toll facilities that impact cost are:

- Size of the system (i.e., number of lanes and toll collection points).
- Location (rural vs. urban).
- Gantry and signage.
- Type of toll collection technology.
- Project type (i.e., new, upgrade, or addition).
- Back office operations (outsource vs. in-house).

The approach TxDOT uses to evaluate and implement highway projects has rapidly evolved since the passage of House Bill 3588 in 2003. The sweeping legislation that offered new

financing tools for TxDOT set in motion a number of policies related to the way added-capacity projects are all viewed for possible tolling.³

Built in a rural setting, the Texas State Highway 255 (Camino Colombia) near Laredo with a total length of 22 miles and mostly two lanes cost approximately \$90 million. In contrast built in an urban settings, the Sam Rayburn Tollway (formerly the 121 Tollway) in Dallas with a total length of 26 miles and 12 lanes (6 main + 6 frontage roads) cost \$1.434 billion and the DFW Connector in Dallas with a total length of 8.4 miles and 13/14 main lanes and four toll managed lanes is expected to cost \$1.02 billion when it opens in 2014.^{7,8}

Data Needs

When considering adding a new toll road, some of the most important data needs are justification and need for new toll road, the results of a traffic and revenue study, an environmental study, and an environmental justice and social issues assessment. This concept also requires the tolling technology selection and the desired level of interoperability.

Adding New Toll Roads Best Practice

- Type of Location: Rural and urban areas where public funding is limited.
- Agency Practices: Interoperability agreements with other in- and out-of-state toll agencies.
- Frequency of Reanalysis: Evaluate toll rates on semi-annual and annual basis.
- Supporting Policies or Actions Needed: Enforcement policy for out-of-state violators.
- Complementary Strategies: Acceleration/deceleration lanes, managed lanes, electronic toll collection systems, traveler information systems, active traffic management, variable pricing, and sustainable pavements.

For More Information and References

1. Lomax, Tim. Adding Capacity, Mobility Improvement Checklist Volume 3, Enhancing Mobility in The Houston-Galveston Region, College Station, Texas: Texas Transportation Institute, Texas A&M University, 2001.
2. Persad, Khali and Walton, C. Michael. *Toll Collection Technology and Best Practices*. Austin : Center for Transportation Research. Project 0-5217, 2007.
3. Goodin, Ginger and Collier, Tina. *Lessons Learned from Loop 49: Implementation of a New Toll Road in Tyler, Texas*, Report 5-4055-01-6. College Station, Texas: Texas Transportation Institute, Texas A&M University, 2001.
4. Sublett, Jesse. *History of the Texas Turnpike Authority*, Texas Turnpike Authority, 1995.
5. Texas Department of Transportation. Toll Road Systems. http://www.txdot.gov/travel/toll_roads.htm. Accessed: November 15, 2011.
6. Tally, Robert. *Policy for Planning, Environment and Project Development*, FHWA Texas Division, 2003.
7. A Tale of Two States, Two Tollroads - MD vs TX, ICC vs 121. <http://www.tollroadsnews.com/node/5381>. Accessed: December 13, 2011.
8. DFW Fact Sheets. <http://www.dfwconnector.com/factsheets.php>. Accessed: December 13, 2011.
9. Munroe, Tapan. *Economic Benefits of Toll Roads Operated by the Transportation Corridor Agencies*, LECG, 2006.