Tolling & Congestion Pricing

By Sean Slone [1]  
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States are increasingly turning to tolling not only as a revenue source to assist in funding improvements to highways but also as part of efforts to reduce congestion on the nation's roads. Although tolls appear to be more popular with the public than taxes for now, that popularity may be tested with continued expansion in the coming years. States are partnering with private companies to build and operate new toll roads. They're also turning to all-electronic tolling to increase efficiency, eliminate bottlenecks, save money and make payment of tolls more convenient. This brief explores the current state of tolling in the United States and prospects for future growth.

Executive Summary

- Tolls are collected on more than 5,000 miles of roads, bridges and tunnels in the U.S.
- Revenues from tolls equaled $7.75 billion in 2005, 5 percent of total highway revenues.
- Florida derived as much as 11 percent of its annual highway revenue from tolling in recent years.
- States are increasingly turning to tolling to fund roads as gas tax revenue is declining and because raising gas tax rates is politically unpopular.
- Tolling is a flexible funding mechanism that can also reduce traffic and congestion.
- Tolls can insulate lawmakers from political fallout when other entities are responsible for toll increases. Some states have considered placing toll collection points at state borders to limit the number of voters impacted, but the constitutionality of that strategy has been questioned.
- A recent survey showed that 8 in 10 Americans prefer tolls or no new roads at all over increased gas taxes. Some are concerned that toll road “popularity” may decline as toll roads proliferate nationwide.
- The trucking industry generally opposes increased tolling and fears its impact to its bottom line. Others are concerned that once enacted, tolls become a permanent revenue source.
- Tolls can be used as part of a congestion pricing strategy. One of the most common strategies is the High Occupancy Toll—or HOT—lane, which gives drivers the option to pay to drive in uncongested toll lanes.
- Truck-only toll lanes are another example of variably priced lanes. The first truck-only toll lanes in the U.S. will be built in the Tampa area.
- While the Northeast has had tolls for many years, states in the South and Midwest are now turning to tolling. North Carolina and Alabama are among states building or planning their first modern toll roads. Florida and Texas are among the states working with private companies to add toll lanes.
All-electronic tolling is used in California, Colorado, Illinois, Minnesota, Texas and Washington, and will soon be used on new toll roads in Maryland and North Carolina. Pennsylvania sought permission from the federal government to toll Interstate 80 and use the revenues to fund improvements to transit and highways statewide. Federal law currently does not allow this broad use of interstate toll revenues and the state was rejected three times. If the law is ever changed or if more flexibility is given to states to toll interstates, Connecticut, New Jersey and Wyoming are among those that might seek to do this. But, generalized tolling throughout the interstate highway system is unlikely due to its unpopularity.

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“I have a prediction for you,” Pennsylvania Gov. Ed Rendell told reporters at an April 6, 2010, news conference. “When there is a reauthorization (of federal transportation programs), (the federal government) will lift the ban on tolling. There is no appetite for raising the gasoline tax and (tolling the interstates) is one of the only ways for us to maintain these highways.”

Rendell made the prediction following the announcement that the state’s application to toll Pennsylvania’s Interstate 80 had again been rejected by the U.S. Department of Transportation. Federal law generally does not permit tolls on interstate highways constructed after 1956, because as in the case of I-80, they were built largely with federal funds. But under a pilot program enacted as part of the 1998-2003 authorization of federal surface transportation programs, up to three states are allowed to rebuild an interstate with toll financing. The catch is that toll revenues must be dedicated to improvements on the interstate itself. Pennsylvania, as it had done twice in the past, had proposed making I-80 tolls a major funding source for transit and highways statewide.

Pennsylvania’s effort reflects the desperation states are feeling in trying to finance infrastructure improvements. While tolling interstates has proved to be a tough sell at the federal level, states have had much more success tolling other roads and portions of roads, in some cases with the help of private partners.

**Tolling As a Financing Strategy for States**

Tolls are collected on more than 5,000 miles of roads, bridges and tunnels in the U.S. Toll-generated revenues equaled $7.75 billion in 2005, 5 percent of total highway revenues. Florida, with its extensive network of toll roads, derived as much as 11 percent of its annual highway revenue from tolling in recent years.

States are turning to tolling as the gas tax—the traditional source for road transportation funding—is fading. Gas taxes aren’t adjusted for inflation and revenues have been eroded. Lawmakers are reluctant to raise taxes in the economic downturn. Motorists are also driving fewer miles and more fuel-efficient vehicles, which means they are paying less in gas taxes.

Tolling, on the other hand, is a much more flexible funding mechanism. While tolling in the U.S. was once used almost exclusively to pay down bonds issued to pay for the construction of roads, today it can serve many purposes, including optimizing the performance of transportation systems and alleviating congestion. A number of states discovered revenues can be generated when tolls are installed as new lanes are added to existing roads. More revenue opportunities exist in partnering with private companies for the operation of toll roads and in moving from manned tollbooths to all-electronic tolling. Tolling can also insulate lawmakers from political fallout if public toll authorities or private companies are responsible for any toll rate hikes.

Virginia sought to further minimize the potential political fallout of increased tolling by proposing that
toll collection points be placed at state borders. That would allow it to collect toll revenues from out-of-state residents who don’t vote in the state and exempt many state residents who do vote there. But some question whether such policies would survive legal challenges under the Interstate Commerce Clause of the Constitution. A recent proposal by West Virginia legislators to cut existing turnpike tolls in half for local residents is also likely unconstitutional, analysts say.9

The Relative Popularity of Tolls
In a recent survey by the Kansas City-based architecture and engineering consulting firm HNTB Corporation, 8 in 10 Americans surveyed said they prefer tolls or no new roads at all over increased gas taxes. Nearly 4 in 10 of survey respondents would be willing to spend more money on tolls to put toward long-term transportation improvements, more than other likely funding options, including public transportation fares, vehicle registration fees, and gas, sales, income or property taxes.10

Of course it remains to be seen if tolls will remain popular if used on an ever-increasing number of roads and as those tolls escalate. In the Dallas area, which in recent years has seen an abundance of toll projects, even tolling authorities are worrying it might all be too much, too quickly.

“I do have concerns ... that the public will only tolerate a certain amount of tolling,” the chairman of the North Texas Tollway Authority, Paul Wageman, said at a news conference last year. “We understand that to get the roads built, there is going to be a tolling component (to help pay for them). But we are concerned because ultimately we must have public receptivity to tolling. We do not want to be in a position where that receptivity goes away as that ultimately affects the business we are in.”11

Plenty oppose increased tolling as well. The trucking industry, for example, is frequently among the most vocal opponents because paying additional tolls directly impacts its bottom line.

A number of lawmakers in state capitals around the country have concerns as well. In a USA Today article last year about the expansion of tolling in the Deep South, South Carolina Sen. Dave Thomas described tolls as a “Yankee plague” that the region had long resisted.

“The problem with tolls is that once you have them, rarely can you get rid of them,” he told USA Today. “With revenue sources dwindling all over the place, states are becoming desperate. But once (tolling becomes) a revenue source ... it never goes away.”12

Congestion Pricing
One increasingly common use for tolls is as part of a congestion pricing strategy. Congestion pricing works on the assumption that the majority of rush hour drivers on a typical urban highway are not commuters. The thinking goes if you charge a certain amount in tolls, you will discourage purely discretionary rush hour highway travel or prompt drivers to shift travel to other transportation modes such as public transit or to off-peak hours.13

Transportation analysts believe removing even 5 percent of the vehicles from a congested roadway will enable the system to flow more efficiently. Indeed, congestion pricing as advertised reduces congestion while producing shorter and more reliable travel times. Congestion in Central London declined by 30 percent when a congestion pricing scheme was put in place there.14 In New York City, morning rush traffic declined by 7 percent when congestion pricing was put in place for the bridges and tunnels from New Jersey.15 And a 2006 study of California State Route 91 showed that congestion charges that were large enough to increase the cost of a trip by 10 percent would reduce traffic by an estimated 3.6 percent.16 It can also result in more efficient highways by allowing existing highway capacity to carry more traffic at the same or a better level of performance. That can reduce the need for future expansion.
Policymakers can also use toll revenues from congestion pricing to determine where to make future investments in highways. The Congressional Budget Office explained it this way in a 2009 report: “In principle, congestion fees equal the cost of the delay that each highway user imposes on other users on the highway. The total of all congestion fees paid on a particular highway equals the value of the delays that could be avoided if capacity were greater. Viewed that way, congestion fees represent the return on investment in increasing that highway’s capacity. By thus helping to identify the need for new capacity at the right place and at the right time, congestion pricing can promote more efficient future investment, and it can help pay for its construction.”

Congestion pricing strategies can include area-wide charges (per-mile charges on all roads within an area that may vary by level of congestion), cordon charges (either variable or fixed charges to drive within or into a congested area within a city) and variable tolls on entire roadways (both on toll roads and bridges, as well as on existing toll-free facilities during rush hours). The most popular congestion pricing strategy in the U.S. is the use of variably priced lanes, such as High Occupancy Toll—or HOT—lanes. These lanes give drivers the option to pay to drive in uncongested toll lanes or drive for free in the untolled, but congested lanes. Carpoolers can also use the tolled lanes for free or at a reduced rate on some roads.

One of the main arguments against HOT lanes is they discriminate based on the ability of the driver to pay. HOT lanes have been dubbed “Lexus lanes” by some. But as an article in the University of California Transportation Center magazine Access recently put it: “Whether congestion tolls are regressive is an incomplete, and probably misleading, way to understand the fairness of tolls. A regressive charge is not automatically an unfair charge, and in public finance we frequently must decide between regressive alternatives, not between a regressive and a progressive choice.”

Concerns About Tolling & Congestion Pricing
Still, while states and communities may see some tangible benefits, some believe making the case for the benefits of congestion pricing and paying tolls to motorists can be difficult.

“Where revenues are used to benefit others (e.g., transit riders), society may be better off with congestion pricing, but individual drivers are worse off (because they do have to pay) and thus motivated to block adoption,” wrote New York City Deputy Transportation Commissioner Bruce Schaller in the journal Transport Policy. Schaller was one of the architects of a congestion pricing plan for Manhattan that failed to win support from the state legislature in 2008.

In addition, congestion pricing may present other challenges including increases in congestion on alternate routes. The cost of building and operating a congestion pricing system, including the large initial investment in electronic collection systems, must also be weighed against the potential benefit in congestion reduction.

Truck-Only Toll Lanes
Another variation on variably priced lanes expected to get some consideration in the years ahead is providing separate lanes for commercial vehicles, namely trucks. A study done for the departments of transportation in Missouri, Illinois, Indiana and Ohio found the best alternative for revamping the congested, aging Interstate 70 across those states is to rebuild it with truck-only lanes.

Other studies analyzed the potential benefits of truck-only lanes in both urban and long-haul settings. Among the benefits: operational efficiency (higher travel speeds, less delay and improved level of service), safety, the economy (enhanced travel options and improved freight productivity), and the environment (reduced vehicle emissions).

The nation’s first truck-only toll lanes will be built as part of a $650 million project to link the
Interstate 4 freeway and the Selmon Crosstown Expressway toll road in the Ybor City area of Tampa, Fla. Currently, trucks account for 20 percent of the traffic through the historic neighborhood on their way to and from the Port of Tampa. The new connector will be an elevated exchange between the two roadways with separate truck lanes. All traffic will pay electronic tolls using the statewide Sunpass system. Toll and fuel tax revenues will finance the project. 

**Spread of the ‘Yankee Plague’**

A review of operating and planned toll projects nationwide shows areas like the South and Midwest are betting big on tolling. The projects—and the plans for their funding and operation—are as diverse as the country itself:

- **Washington, D.C., area projects:** Tolling is being used to fund three major road projects in the area including the Inter-County Connector, an 18-mile, six-lane limited access road in Maryland; four new lanes of Interstate 495 (the Capital Beltway), and an additional express lane on Interstate 395/Interstate 95 in Northern Virginia. The Inter-County Connector is using public money to cover the road’s $2.6 billion cost and is using a variable pricing system that will charge motorists higher tolls during rush hour and other busy times. The state retains full ownership of the Inter-County Connector and will control toll rates and receive 100 percent of revenues. For I-495, Virginia is turning to two private companies to finance four-fifths of the project’s $2 billion cost. Fluor and Transurban will handle future maintenance expenses and absorb any project debt in exchange for a 75-year lease on toll revenues. The companies are allowed to charge whatever toll prices the market will bear in order to maintain speeds of at least 45 miles per hour on the Beltway. Virginia will retain ownership of the highway and will receive up to 30 percent of toll revenues once the companies achieve a return on investment of more than 8 percent.

- **Illiana Expressway:** In June, the governors of Illinois and Indiana signed an agreement to move forward with a toll road connecting Interstate 65 in Indiana with Interstates 55 and 57 in Illinois. No detailed route is selected yet and no full traffic and revenue study has been conducted, but the memorandum of understanding between the two states commits them to collaboration in “preliminary engineering, modeling, forecasting, planning and permitting necessary to deliver” the proposed expressway, according to the agreement. The highway is expected to cost anywhere from $2.9 billion to $6 billion.

- **Ohio River Bridges Project:** Tolls may be used to generate more than half of the $4.1 billion needed to build two new bridges across the Ohio River between Kentucky and southern Indiana and to revamp Spaghetti Junction, the interchange where three interstates come together near downtown Louisville. A recent report by the Wilbur Smith Associates consulting firm included five different possible toll scenarios that mixed and matched various options of charging to use various bridges and the interchange.

- **North Carolina:** The state began construction last year on its first modern toll road. The Triangle Expressway is an 18.8-mile system under construction in the Raleigh-Durham area. Portions of the $1 billion project, which will collect tolls electronically, are expected to open for traffic next year. To finance the project, the state used $270 million in toll-revenue bonds and $353 million in Build America bonds. The state also received $386 million in federal Transportation Infrastructure Finance and Innovation Act program loans from the U.S. Department of Transportation. North Carolina is now spending more than $6 million to study how to pay for improvements to Interstate 95 in the state. Preliminary estimates indicate the state could get in the range of $300 million to $350 million in annual revenue from tolling I-95.

- **Alabama:** The state is also planning its first state toll road. The $710 million project will add four toll lanes on a 16-mile stretch of U.S. 280 in Birmingham.
• **Florida:** The state’s Interstate 595 Expressway in Broward County is the first example of the “availability payment” model of public-private partnership in the U.S. A consortium of private investors will absorb the cost of improving 10.5 miles of the existing road and adding tolled express lanes, also taking care of operation and maintenance once construction is complete. Florida will then pay the investors more than $1.8 billion over the next 35 years to essentially rent the highway back from the private consortium. The payments are contingent on the contractor meeting certain performance standards. The state will maintain the power to set toll rates and keep all of the toll revenues.  

• **Texas:** The state is partnering with Zachry American Infrastructure and the Spanish company Cintra to finish construction of 40 miles of the 91-mile State Highway 130 toll road. The companies will finance most of the $1.4 billion project and will be responsible for operation and maintenance. The companies paid the state $26 million upfront for a 50-year lease on the right to collect and keep toll revenues. But Texas did maintain some public control with a cap on toll hikes and the state could share in the toll revenues if certain benchmarks are reached. But if the private companies default on loans or are unable to complete the project, the state would be responsible for paying off the debt and completing construction.  

• **California:** The state’s South Bay Expressway, an $840 million project which opened in 2007 south of San Diego, received $635 million in private funding from the Australia-based Macquarie Infrastructure Group. The company signed a 35-year lease and must pay for maintenance and operating costs. It has the power to set toll rates independent of state oversight but if its return on investment exceeds 18.5 percent, a revenue-sharing agreement with the state kicks in.  

• **Georgia:** The state is planning a network of HOT lanes on expressways around metropolitan Atlanta. First up is a 14-mile stretch of Interstate 85 that will see HOV (high occupancy vehicle or carpool) lanes converted to HOT lanes with variable tolls. It is expected to be operational next year at a cost of $147 million. HOT lanes are also planned for Interstates 75, 575, 285 and 20. Georgia’s Department of Transportation just last year repealed a 2005 ban on tolling existing lanes.  

• **Pennsylvania:** The Pennsylvania Turnpike next year will likely become the most expensive toll road of the 11 U.S. toll roads 100 miles or longer. It will increase from 7.7 to 8.5 cents per mile. A 2007 state law requires the turnpike to help fund non-turnpike transportation programs. The turnpike is required to pay the state department of transportation $450 million per year for the next 47 years and to raise tolls as necessary to meet those funding obligations.  

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**Toll Roads Going Electronic, Cashless**

The days of the manned tollbooth with accompanying traffic slowdowns are numbered in the U.S. When North Carolina’s Triangle Expressway opens next year, customers who travel the road regularly will be able to purchase a transponder that automatically charges for road use. For those without a transponder, overhead high-speed cameras will snap an image of their license plate and they will be billed according to the number of miles they drive on the road. All-electronic tolling is used in California, Colorado, Illinois, Minnesota, Texas and Washington. It will also begin this year on the Inter-County Connector in Maryland. All-electronic tolling can provide significant cost-savings since toll takers are no longer employed. It is more efficient, more convenient and better for the environment since it reduces bottlenecks and idling at interchanges. In addition, toll booths aren’t needed and the number of traffic crashes at toll plazas plummets, a 2009 report.
from the transportation consulting firm **PBS&J** showed.\(^{44}\)

**E-ZPass**, the most common electronic toll collection system in the country, is now in use in 14 states. More than 20 million transponders have been issued.\(^{45}\)

The conversion to all-electronic tolling is expected to continue across the country in the years ahead as well:

- **Miami:** The city’s outer beltway, the Homestead Extension of Florida’s Turnpike, plans to shut off cash collections by next spring. Drivers will use SunPass transponders or will go with Pay-by-Plate video tolling. Other roads under the Miami-Dade Expressway Authority will convert over the next few years. Tampa’s toll road, the Selmon Crosstown Expressway, is also going cashless this year.\(^{46}\)

- **San Francisco:** The operator of San Francisco’s iconic Golden Gate Bridge is considering moving toward a cashless toll system. The Golden Gate Bridge Highway and Transportation District authorized a study earlier this year to have tolls electronically collected by 2013. It’s hoped that the project would help relieve congestion and close a projected $132 million deficit faced by the district, which in addition to the bridge also operates transit buses and a ferry system.\(^{47}\) The study is due to be completed by November.\(^{48}\)

- **New York and New Jersey:** The Port Authority of New York and New Jersey will switch to cashless tolling as well. The Port Authority oversees four toll bridges, two toll tunnels and a total of 72 tolled lanes. The George Washington Bridge, with 14 travel lanes, has three toll plazas. The other bridges and tunnels each have one plaza.\(^{49}\) The new system will cost an estimated $175 million. The transition will take place between 2012 and 2014.\(^{50}\)

Technological advances are making tolling even easier and more convenient as well. All-electronic tolling in Ireland includes paying tolls by text message from a cell phone.\(^{51}\) An innovation by a start-up company in Austin called BancPass will soon allow motorists to pay tolls through an application on their smart phone. Motorists can use their phone to photograph their vehicle’s license plate and upload it when they set up their account. The pictures are used to compile a list of customers in good standing according to their plate numbers. Toll facilities then detect the vehicle with cameras and optical character recognition, match the plate number and register the transaction. Motorists can receive notifications on their phone about approaching tolls and about pre-approving toll charges.\(^{52}\)

**Nationwide Interoperability of Transponders and Payment Systems**

But states and toll authorities do face some important decisions and challenges in making the conversion to electronic tolling. For one thing, it’s important to consider whether the tolling system will be compatible with the transponders and pass readers used by other states.

North Carolina Turnpike Authority officials in designing the state’s toll system, took into account that the state sits between northeastern states that use the **E-ZPass** system (which extends from Maine to Virginia and as far west as Chicago) and Florida’s different SunPass system. The state went out to bid for a system that accommodates out-of-state transponders from both systems.\(^{53}\) In a contract with the company TransCore, it made the first purchase of **eZGo** Anywhere transponders that can be read by **EZPass** readers and also by the electronic toll systems of Florida, Texas and other southern states.\(^{54}\)

Another issue to consider is how to make electronic payment systems accessible to motorists without either a credit card or a bank account. Puerto Rico has just such a system called AutoExpreso, which allows toll road cash customers to access point-of-sale terminals at more than 150 gas stations and pharmacies in the territory. For $20, they receive a sticker tag with an **ID** number, $10 worth of
prepaid tolls tied to that ID number, a magnetic strip card and an instruction booklet. With the sticker tag on their windshield, customers can travel through toll lanes at the same highway speeds as other motorists. When the prepaid amount is depleted, they can replenish the account at one of the retail locations by using the magnetic strip card and cash. The system recognizes not only that not all potential customers have credit or debit cards, but also that not everyone is comfortable with records of their travel being created as transponders do. Off-line cash payment arrangements will most likely continue to be essential components of electronic toll systems.

The Future of Tolling
It remains to be seen whether Rendell’s prediction about the federal government lifting the ban on interstate tolling will ever come to pass. But clearly a lot of states hope they can one day use those interstate toll proceeds to fill huge gaps in infrastructure spending. Among the states that could seek to follow Pennsylvania’s lead:

- **Connecticut:** The state legislature debated putting tolls on Interstate 95 to help fund not only improved traffic flow on the interstate, but also the maintenance and reconstruction of state bridges and the expansion of mass transit.

- **New Jersey:** The state considered tolling Interstates 78, 80 and 287 to assist the state’s ailing Transportation Trust Fund.

- **Wyoming:** The state Senate in February approved a study to look into seeking federal approval to toll Interstate 80 in that state. As in Pennsylvania, the measure met opposition from the trucking industry and failed to win passage in the House.

While Congress could decide to change the laws regarding the use of interstate toll revenues in the next authorization of federal transportation programs or at least provide some more flexibility to states in that regard, generalized tolling throughout the Interstate Highway System appears highly unlikely. While Rendell and others might see this as the most logical solution to the inadequacy of motor fuel taxes and the most effective means of raising large sums of money to finance long-term transportation investments, many powerful advocates oppose this solution. As veteran public policy consultant Ken Orski pointed out in a blog post earlier this year, those opponents include U.S. House Transportation and Infrastructure Committee Chairman James Oberstar (who wrote the House version of the only authorization bill proposed to date) as well as the presidents of the American Trucking Association, AAA and the American Highway Users Alliance.

But as we’ve seen, even if the federal government doesn’t allow expanded interstate tolling, states have plenty of other options for employing tolls as both a transportation funding mechanism and a tool to improve the overall performance of the nation’s transportation system ... at least for as long as the public is willing to put up with them.

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