

Commission Briefing Paper 5A-04

Evaluation of Tolls as a Transportation Revenue Source

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Introduction

This paper is part of a series of briefing papers to be prepared for the National Surface Transportation Policy and Revenue Study Commission authorized in Section 1909 of SAFETEA-LU. The papers are intended to synthesize the state-of-the-practice consensus on the issues that are relevant to the Commission's charge outlined in Section 1909, and will serve as background material in developing the analyses to be presented in the final report of the Commission.

This paper presents information on the prospects for the use of highway tolls as a source of revenue for transportation systems. The financing of high capacity highways for long distance travel and major bridges is characterized by the need to make major "lumpy" front end commitments of capital to cover the costs of planning, engineering, land acquisition and clearance, preparation, construction and environmental mitigation. It often takes years to carry out these functions, during which time costs are high and toll revenues are not yet available. Highways and bridges are long-lived assets, however, and travelers can benefit from their use for many decades and in some cases even for centuries. It is logical, therefore, to finance construction by borrowing the capital needed to bring highways and bridges into operation, charging the users tolls that can be used over many decades to retire the debt and cover interest on the loans.

Background and Key Findings

From medieval times through the early years of the twentieth century the most common method of financing roads and bridges all around the world was through the direct payment of tolls by their users. In the US, the use of toll financing became less common in the twentieth century, though it remained far more common in other countries. Today, there are 5,100 miles of highways, bridges and tunnels in the US that employ tolls. In 2004, these facilities produced about \$6.6 billion in revenue, or about seven percent of transportation revenue collected by states and localities (Federal Highway Administration, 2005). While this is a small proportion of all transportation revenue, there are many indications that toll financing is today gaining in popularity in the US and that this proportion is likely to grow in coming years. Still, the environment for toll financing of highways is complex and its many subtleties must be appreciated.

- *Recent advances in the technology of electronic toll collection have removed some of the most important practical barriers to more general introduction of tolling.*
- *Because motor fuel taxes were widely used as substitutes for direct tolling, legal restrictions on tolling are common and would have to be amended for tolling to be more widely used on state roads and Interstate highways.*

- *While many organizations and individual citizens continue to object to the use of tolls on major highways, polls indicate that public opinion is becoming more favorable and public positions taken by key advocacy organizations have shifted to show that support for tolls is gradually increasing.*
- *Support for toll financing has far more support when it is used to finance new capacity rather than already existing roads. New capacity can involve new tolled lanes on already existing roads as well as entirely new roads.*
- *Several initiatives have been taken to “privatize” toll roads and bridges through long term leases to private organizations that have offered cash payments for the right to operate them for long periods of time and to receive the proceeds of the tolls to cover debt, operating costs, and fees.*
- *Tolls are similar in concept and complementary to the concepts of congestion pricing and the application of electronic road user fees. These concepts should be more widely considered in concert with one another.*

Tolls have been used to finance many popular and familiar high capacity roads and bridges throughout the US, and the tradition of doing so is often associated with the American policy preference to finance transportation facilities and programs on the basis of “user fees.” Tolling is the most fundamental form of user fee because a toll is a payment made directly by the user at the time and place of travel. Ironically, it was the rapid and widespread growth of automobile and truck travel that led to the decline of toll financing. Our collective effort, largely on the part of the states, to build extensive highway networks in the early twentieth century meant that roads were needed in many areas, including some that could only support light traffic. In lightly traveled areas the construction of toll booths and staffing them required a major commitment of resources despite the light traffic. If tolls were set high enough in such settings to recoup actual local costs they would have discouraged the use of the toll roads. Toll revenues were also more subject to pilferage in larger decentralized systems as they grew in extent and as traffic grew dramatically across the nation. Governments gradually adopted less direct user fees, primarily motor fuel taxes and vehicle fees and taxes, as substitutes for tolls. These other forms of revenue collection are discussed in other papers in this series.

While motor fuel taxes are also user fees, they are less direct than tolls in that they are not necessarily paid at the time and place of use. On the other hand, while operating toll collection systems in the early twentieth century cost as much as twenty to thirty percent of the revenue collected, the administration of motor fuel taxes was often below five percent of the revenue collected. Because motor fuel taxes are collected at the wholesale distribution points which are reasonably small in number, historically they kept administrative costs low and reduced opportunities for fraud and abuse.

The Rise of Electronic Tolling

One of the most important reasons for the growing popularity of toll financing is the recent decline in the cost of toll administration due to the introduction and continuing refinement of electronic toll collection. The administrative costs and potential for fraud and abuse can be dramatically reduced by reliance on electronic tolling systems, typified by the systems known commercially as “E-ZPASS” and “FasTrak.” In addition, electronic toll collection is of benefit because it

eliminates several burdens associated with traditional manual toll booths on busy urban roads. Toll plazas are points at which delays occur due to queuing, and this in turn causes additional fuel consumption and associated air pollution. Manual payment of tolls also causes drivers to fumble for change, distracting them from driving and causing higher rates of minor crashes than at other locations on the highway system. For purposes of this short paper we can safely assume that future toll roads will rely heavily on automated electronic toll collection and that this is one of the reasons toll road financing appears far more attractive in the future than it has been in the past. The Government Accountability Office (2006) recently reported that 23 states are planning to add new toll facilities to their highway systems, including 6 states that are planning to build toll roads for the first time.

The capacity to collect tolls electronically makes it possible to envision a much wider range of applications of toll roads in the future than existed in the past. Roads can charge tolls that vary with congestion levels, time of day, class of vehicle, and other variables. Given that goods movement on highways is increasing more rapidly than passenger movement, some proposals have recently been made to create truck only toll roads in major corridors of goods movement (Poole and Samuel, 2004). This could improve the efficiency and safety of traffic flow on both truck lanes and passenger lanes because delays and some crashes result from incompatibilities between vehicles of different classes. Costs might also be reduced by allowing roads to be designed somewhat differently if light and heavy vehicles were to be segregated in heavily traveled corridors.

Toll Roads in a Free Roads Environment

An important complication in American transportation policy potentially limits the extent to which tolling can be employed as a core element of a highway financing system. While there are already many toll roads operating in the US, most revenue derived from highway system users is generated by indirect user fees including motor fuel taxes and vehicle license fees. These user fees are applied universally - meaning that they are charged of motorists and truckers for travel on all roads - whether or not there are tolls on the particular roads that they choose to use. Thus, some make the argument that they are being charged twice when they use toll roads. Of course, in many situations there are alternative routes available that are toll free, and travelers who voluntarily choose to travel on a toll road must be doing so because they perceive that the benefits they will receive in the form of shorter travel time or greater safety will be worthy of the toll they have agreed to pay. Whenever it is suggested that tolls could be applied to roads that already exist, however, some interests claim that introducing tolls on existing roads would amount to charging their users twice. While an economic case can be made for incremental increases in tolls rather than motor fuel taxes, it seems likely that broader political consensus can be achieved on the use of tolls exclusively for the construction of new highway capacity. New capacity can be in the form of entirely new toll roads where no roads existed previously or the addition of new toll lanes added to existing toll-free highways.

Since motor fuel taxes are user fees that were conceived as alternatives to tolls, opposition to paying tolls on roads that already have been paid for by motor fuel taxes is not only a symbolic or political obstacle. The idea that tolls and fuel taxes are substitutes rather than complements to one another has a long history of being carefully written into law. In many states instituting new toll roads would require state legislation because of limitations on the power to toll state

highways that are reflective of the view that existing motor fuel taxes are functionally equivalent of tolls. Historically, at the Federal level it has similarly been explicitly forbidden under law to charge tolls on the Interstates. As a reflection of the fact that attitudes toward tolls are changing, several provisions of the most recent transportation bill, SAFETEA-LU, however, encourage and even promote tolling. Section 1121 of the bill authorizes states to build high occupancy toll lanes on both interstate and non-interstate highways. The bill also includes an “Interstate System Construction Toll Pilot Program,” and allows the tolling of existing Interstate highways, bridges, and tunnels to fund major reconstruction projects under the “Interstate System Reconstruction and Rehabilitation Pilot Program.” (Tolling of Interstate bridges and tunnels and non-Interstate federal-aid highways for rehabilitation and reconstruction was previously allowed under Section 129 of the US Code.) The bill continued the earlier “Value Pricing Pilot Program” and included an additional “Express Lanes Demonstration Program” which encourage projects that add toll lanes to existing roads. The fact that the bill allows and encourages new “exceptions” to the long standing prohibition on tolls is indicative of the change in attitude that is underway; yet the prohibition otherwise remains and there continues to be active opposition to retroactively adding tolls to Interstate Highways that already exist.

The existence of an extensive network of roads that was financed by other forms of user fees and is presently free of tolls presents another important challenge for those considering the addition to the network of new toll roads. Traffic demand for toll roads, and hence the ability to raise enough toll revenue to repay the debt, is dependent on the limited availability of parallel untolled roads or upon their being heavily congested. Obviously, toll roads cannot succeed financially in corridors in which there are ample, uncongested, alternative free routes. In many instances, bridges are today more likely to be tolled than highways because there are often fewer free alternative river crossings than there are alternative highway routes. In many instances, such as the Dulles Toll Road in Virginia and the Orange County Toll Authority Roads in California, demand for travel on the new toll roads did not meet forecasts and financial difficulties arose in large part because people chose to continue to travel on alternative free routes. Because untolled roads dominate the American highway network, the extent of additional demand for tolled facilities is an important test of market demand to justify investment in them. For this reason, it is reasonable to expect that new toll roads will be successful in relatively few corridors. Yet, where there is sufficient demand, toll financing may be very attractive because it can provide travelers with a clear alternative to congested free routes. In other words, toll roads have the potential to be successful in corridors in which congestion is causing the performance of the existing network to be notably poor, or in which extensive new development suggests that congestion will soon worsen as existing capacity becomes fully utilized.

Toll Roads and Public-Private Partnerships

One of the most important public policy questions is whether toll road financing should be administered by government agencies or by private concessionaires through arrangements that are increasingly referred to as “public-private partnerships.” Most existing toll roads have been directly financed by public agencies. In many instances toll road authorities have issued debt at favorable interest rates made more attractive to investors because it is tax exempt. Yet, for a variety of reasons, it is becoming increasingly attractive to finance toll roads through the participation of private investors. In Indiana, for example, a project is still emerging that would result in the construction of a 75-mile circumferential toll road around Indianapolis, using a

private contractor to design, build, operate and maintain the facility. Governor Mitch Daniels announced this project in late 2006, proposing that it be built “without a penny of borrowing or tax increase” to burden the public (Innovation Briefs, 2007).

Despite such assertions by advocates of private participation in toll road financing, important questions remain to be debated in state houses around the country. Private entities expect such transactions to be profitable, and in some instances rates of return on their investments in roads have been estimated to be in excess of twenty percent. Some question whether it is appropriate for public facilities to produce such returns for private investors from tolls paid by the public. On the other hand, some toll roads fail to produce forecast returns, and it is normal for businesses to balance the prospect for higher returns against the acceptance of project risk. By moving to private participation in toll roads, the public benefits from private assumption of risk as well as from the availability of private capital, and it is appropriate that investors be paid to produce those public benefits.

Tolls on public facilities often must be raised by explicit action by state legislatures or similar legislative bodies. Because toll increases often must be enacted in politically charged debates, toll rates on public bridges and roads often fail to rise with inflation and so the “real value” of toll revenue tends to decline over time. A benefit of private sector participation in toll road financing is that contracts with private operators often permit tolls to be raised periodically over many decades in order to keep pace with inflation. Thus, the question of political acceptability of increasing the tolls is addressed once, at the time the agreement is negotiated, rather than frequently throughout the life of the project. Privatization is thus politically attractive to elected officials because they can provide for tolls to rise as a realistic reflection of operating costs, while avoiding delicate and sometimes complex political debates. The public, however, will undoubtedly experience higher tolls over the life of a privatized project than they would have experienced had the same facility been operated by a public authority. Some critics oppose privatization of toll facilities precisely because it provides fewer opportunities for public opposition to toll increases throughout the life of the projects.

Privatizing Existing Toll Roads

In recent years a new phenomenon has arisen in response to the widespread perception that there is a shortage of funds from the most traditional revenue sources to support transportation programs and projects. Some toll roads that have existed for many decades have been “privatized,” meaning that they have been leased to private investment consortia for a relatively long time period – as long as 99 years – in exchange for a substantial cash payment to the public agency. The private operator enters into a lease under which it must operate and maintain the facility according to standards and conditions specified in the lease. The operator, under such an agreement, benefits from the collection of the tolls and is usually allowed to raise tolls with some specified frequency and within certain limits, for example, to keep pace with the rise in the consumer price index.

The City of Chicago, for example, raised \$1.83 billion by leasing the Chicago Skyway to the Macquarie-Cintra consortium for 99 years, allowing them to raise tolls periodically to keep pace with the CPI. A similar initiative resulted in the long-term lease of the Indiana Toll Road for a reported \$3.8 billion. While just a few projects of this type have already been initiated, others

are under consideration. The State of Pennsylvania has invited expressions of interest in similar “privatization” of the Pennsylvania Turnpike and similar proposals have been aired regarding the New Jersey Turnpike and the Garden State Parkway. In contrast, a proposal to consider privatizing the Illinois Toll Road led to widespread public opposition and open skepticism on the part of elected officials, and for the moment the proposal would appear to be unlikely to advance any further. Another proposal to privatize Houston’s tollways was rejected by the Houston County Toll Road Authority (HCTRA) Board.

It is possible to envision many ways in which existing transportation assets such as toll roads and bridges could produce infusions of needed capital through “privatization” via long term leases. Many believe that private operation of such facilities can produce additional benefits, such as improved operating efficiency for the public, in addition to the obvious benefits of an immediate infusion of cash. But, these benefits come with several obvious costs. Among the costs is the burden of interest payments to be made over many future decades. Another is that the private sector will not participate in such initiatives unless expected profits and fees make them financially worthwhile investments. Interest payments, fees, and profits are financial obligations that must be borne by those paying the tolls. While the cash benefits of privatizing such assets are realized in the short term, these costs continue over a much longer period. Political advantages may accrue to incumbent office holders by bringing in cash in the near term at the cost of a stream of charges that will accrue to those who follow in later years. The shifting of the costs to future generations should be explicitly considered as part of the process of deliberating and debating the privatization of toll facilities.

Political Support and Opposition to Tolling

With a widespread consensus that revenues in support of transportation systems need to be enhanced, and with so many recent initiatives that would rely on tolling to enhance transportation revenues, it is important to assess likely political support and opposition for this approach to the expansion of revenues. An examination of public positions taken by many interest groups and experts reveals that opinions differ, there is lively debate underway, and there is far from a consensus. Kenneth Orski, in his influential newsletter called **Innovation Briefs**, has reported on the ongoing debate and has concluded that public opinion and the positions taken by important organizations indicate that America is finally moving “beyond the tipping point,” meaning that opinion is shifting from widespread opposition to potential support for the expanded use of tolling.

A recent nationwide survey of nearly 2,400 members of the clubs that comprise the American Automobile Association (AAA) showed that tolls were the members’ favored approach to paying for increased roads. Some 52% of the respondents favored tolls over the use of general government revenues as the source of financing new highway capacity. However, 39% of the respondents expressed the view that tolls should only be employed on new highway capacity. The American Automobile Associations have collectively long agonized over what their position should be with respect to the addition of toll roads to the menu of possibilities for financing American highways. From a position of consistently opposing the adoption of toll roads, undoubtedly influenced by the changing attitudes of its members as revealed in the survey, the AAA has moved to a more neutral yet very cautious stance regarding the possibility of toll financing and the possible “privatization” of existing toll roads. It has recently published a

carefully worded “Bill of Rights for The Nation’s Motorists on Transportation Funding,” which includes, among other principles, the following very carefully chosen words:

Funding alternatives to supplement or eventually replace motor vehicle fuel taxes must be carefully evaluated as to their ability to be efficiently implemented, accepted by the public, allocated fairly, fully dedicated to transportation needs, and be resistant to fraud and evasion.

Public-private partnerships to increase transportation investments must be carefully managed to ensure that motorist fees are fair and equitable, that motorist fees are not diverted to non-transportation purposes, and that the facility is consistently maintained and improved.

Publicly-owned transportation facilities should only be sold or leased to private interests if agreements require the maintenance of high levels of service and remain under public oversight. Revenues resulting from the sale or lease must be used only for transportation purposes and compensate the public for the value of the facility.

Transportation fees, taxes, and other revenue collected from motorists should fairly represent their use of the system, and all transportation system users should bear a proportionate share of financing the system.

While a shift does gradually appear to be occurring among the Auto Clubs, in October of 2006, the American Trucking Associations, an important and influential transportation interest group, announced its opposition to the leasing of or the creation of concessions for existing toll facilities. The announcement cited the “the economic risk and loss of control in determining the future use, renovation and expansion of our nation’s vital strategic assets” as reason for its opposition and went on to state that “The ATA is prepared to lead a national coalition of highway users in opposition to these financing schemes” (American Trucking Associations, 2006).

Tolls that Vary in Response to Congestion Levels

While most “traditional” toll roads have charged a flat rate of toll based on the average cost of using the facility, the introduction of electronic tolling has made it possible with low marginal costs to the toll road operator to vary the toll rates as a function of time of day or the type of vehicle, and even to vary the tolls in real time as a function of the congestion level. Since 1920 economists have argued that road user charges should be set at rates that “internalize” the externalities associated with congestion by charging for them. If this is done tolls can be used to regulate the flow of traffic on high capacity roads and thus to increase the efficiency and equity of their operation. The possibility of charging higher tolls when and where roads are most likely to be congested are dealt with in another paper in this series.

In some corridors in which there are congested free roads, it is possible to add new capacity by privately financing the addition of some toll lanes to complement the existing capacity on the road without tolls. This provides travelers with an increased number of travel options, since they can endure the congestion on the free roads or choose to pay the toll to receive “premium” service in the form of less congested travel. Variations on the theme of congestion tolls include High Occupancy – Toll Lanes or “HOT” Lanes. This is possible where there are existing High Occupancy Vehicle (HOV) Lanes that are carrying fewer vehicles than their capacity. Some vehicles not meeting vehicle occupancy requirements (e.g., singly-occupied and two-person

carpools on an HOV-3 facility) are permitted to use the HOV lanes in exchange for paying a toll in order to gain the privilege of accessing them.

Conclusion

Electronic tolling represents one of the most promising opportunities there is for the enhancement of transportation revenue in the coming years. Tolling would be a return to the most traditional means of financing highways and tolls actually represent a more efficient and equitable form of user financing than most other and less direct user fees, including motor fuel taxes. Tolls cannot be applied everywhere, especially in a highway system that continues to employ motor fuel taxes. Tolls are most promising for financing the addition of new highway capacity in crowded corridors through the addition of new lanes to existing facilities, new bridges, new truck-only facilities, and entire new high capacity routes. The prospect for the future application of tolls as a source of revenue for transportation is very bright, though it will require legislation in many states and at the federal level to implement tolling on a much broader scale.

Another paper in this series deals with electronic road user fees, while yet another deals with congestion pricing. At some point in the not-too-distant future, the use of electronic tolls, congestion pricing, and electronic fees for different classes of vehicles on the basis of the miles they have driven on particular facilities, can eventually be merged into a single integrated system of electronic charges for highway use. This is, in fact, a vision for the long-term future of highway finance that should be carefully evaluated.

References

American Automobile Association, **Bill of Rights for The Nation's Motorists on Transportation Funding**, 2006.

American Trucking Associations, "American Trucking Associations Opposes Privatization of Nation's Toll Facilities," Press Release, October 31, 2006

Federal Highway Administration. **Toll Facilities in the United States, 2005** (<http://www.fhwa.dot.gov/ohm/tollpage.htm>)

Government Accountability Office. **Highway Finance: States' Expanding Use of Tolling Illustrates Diverse Challenges and Strategies**, GAO-06-554, 2006.

Innovation Briefs (<http://www.innobriefs.com>), Vol. 18, No. 1 (Jan./Feb. 2007), "Beyond the Tipping Point V."

Poole, Robert and Peter Samuel, **Corridors for Toll Truckways: Suggested Locations for Pilot Projects**, Policy Study 316, The Reason Foundation, February 2004

CONSOLIDATED COMMENTS FROM MEMBERS OF THE BLUE RIBBON PANEL OF TRANSPORTATION EXPERTS on PAPER 5A-04

Several reviewers combined their comments as follows:

Tolls are increasingly being looked at as an alternative to large increases in the federal and state motor fuel taxes. This is true not only for highways and bridges, but also for major mass transit projects. Accordingly, the issue of interoperability of transponders becomes even more important. Customers should be able to have single accounts and devices that will function wherever they choose to travel. Ideally public transit Smartcards should be integrated as well.

The Dulles Toll Road is a good example of tolls being used to fund a major mass transit project. But the reference on p. 4 to the “Dulles Toll Road” is inaccurate. It is true that the toll road west of Dulles Airport (called the Dulles Greenway) had financial difficulties initially due to overestimates of demand. However, the Dulles Toll Road, which is east of Dulles Airport, has always “enjoyed” strong demand – currently about 200,000 vehicles per day – and it has been widened several times. A portion of the toll revenues from the Dulles Toll Road are supporting the construction of an extension of Metrorail in that corridor. One of the purposes of the Metro extension is to relieve severe congestion on this highway.

Other examples of tolls being used for mass transit include the Port Authority of New York and New Jersey, which will fund a new commuter rail tunnel under the Hudson River between New York and New Jersey, and the Delaware River Port Authority which provided construction of the PATCO High Speed Line between Camden County, New Jersey and downtown Philadelphia.

Some motorists believe that tolls added to existing highways would constitute double charging for road use. That view assumes that current user fees for highways recover full costs from drivers. Some would say that that view is wrong, both in the aggregate and for individual classes of users, when such factors as congestion, pollution, accidents and road damage from overweight vehicles are considered.

As to the statement that “The public ... will undoubtedly experience higher tolls over the life of a privatized project than they would have experienced had the same facility been operated by a public authority”, some commentators would say that it is just as likely that the opposite is true. This is because private owners can have a longer horizon than public agencies for debt. They can also benefit from tax advantages and depreciation not available to governments. They may also manage the facility more efficiently. Thus, the discounted present value of tolls paid over the life of the project could very well be lower for a private facility. Thus, this question can only be answered by an analysis of each case.

Additional specific comments:

- It is easier to achieve a broad political consensus for tolling of new capacity rather than existing capacity. Recent experiences in San Antonio and Austin are illustrative.
- There are often cases in which the political acceptability of increasing the tolls is raised only at the outset of a “privatization” or concession agreement. Other cases, however, provide for

some degree of continuing public involvement or oversight in the toll-setting process throughout the life of the agreement.

- It may not be accurate to assume that HOV lanes operating at less than capacity can be readily converted to HOT lanes. The U.S. examples of HOT lanes provide two travel lanes in each direction, something that few HOV lanes do. Two lanes would appear to be essential for reliable HOT operation, as one lane is too vulnerable to disruption and cannot guarantee the premium trip the driver is paying for. “Conversion” would thus be much more expensive and controversial if either an additional lane is built or an existing general purpose lane is taken.

Another reviewer commented as follows:

Paper 5A-04 and Paper 5A-17 take a very optimistic view of tolling and privatization to provide needed revenue for transportation systems. While many of the benefits of these approaches are pointed out, the papers do not address in detail some of the problems that may be encountered. This reviewer finds it difficult to see these techniques as having a long-term positive impact on a system basis. The fact that tolls on all existing facilities provide about seven percent of total transportation revenue is itself an optimistic statement considering that it represents what is collected, not the revenues needed as pointed out in other papers in the series.

Much of the recent discussion and reports on highway funding has involved public private partnerships, lease/sale of toll road assets and provisions for new toll facilities. Many people and organizations are advocating these financing tools as solutions to the congestion that we face and as the best way forward in the face of under funding of facilities by the financing tools in place since 1956. They point out apparent successes such as the long term lease of the Chicago Skyway and the Indiana Toll Road, the increased use of High Occupancy Toll lanes such as the new Denver I-25 lanes, and new urban toll ways such as E-470 in Denver and 407 in Toronto. One could probably name a few more such facilities around the country but there have been only about 20 or 25 built in the last decade.

While the growing interest in such facilities has created much discussion, the mileage involved has hardly been measurable considering the mileage already built on the Federal-aid Systems and ongoing work. While there are probably many areas, mostly in urban centers, where such techniques are useful and should be supported, there are several reasons why such activities will not be able to replace facilities that are built and improved using fuel or a distance tax revenue on the existing Federal-aid System.

The States, using both State and Federal revenue, essentially operate in an assembly-line fashion in providing new facilities. Records indicate that there are over 10,000 Federal-aid construction projects let to contract per year. All provide needed facilities from maintenance overlays, to new bridges, to major facilities on new locations. This compares to less than two dozen toll and PPP projects put into service in the last decade. The impact of PPPs, HOT lanes, and new toll facilities on the national highway system is miniscule in the total of VMT necessary to sustain our economy and way of life.

As the number of toll facilities on new location grows, they will be subject to the same problems that Federal-aid projects experience. Such issues as environmental clearances, ROW Acquisition and the NIMBY effect will be felt as such projects increase. People may look at condemnation of their land for a private entity as another issue. Is a for-profit toll facility a “public purpose” as defined in the constitution? This could be an even more contentious issue when the “providers” are foreign investment banks.

Experience proves that toll roads will be used if time savings, comfort, and convenience are acceptable. However, the public may not be in favor of what they may perceive as double taxation. Travelers on toll roads pay the appropriate state and federal fuel taxes and then pay an additional “tax” for using the facility. The average fuel economy for all vehicles in the U.S. is about 17 miles per gallon. If the toll is 10 cents per mile, which is about average, the added fee is equivalent to a “fuel tax” of \$1.70 per gallon of fuel.

There are other important drawbacks to extensive imposition of tolls. If larger states with sufficient traffic were to support construction and operation of toll facilities to provide critically needed infrastructure, they may be supportive of raising gas taxes nationally. States in the northern plains and upper Rocky Mountains cannot support their existing systems without increased revenue at the State or Federal level. It is possible that without the equity provisions that a Federal tax provides that this United States could be faced with a doughnut hole of bad roads in the center of the country. This would impede economic vitality nationwide. In addition any tolls on trucks will eventually be passed on to consumers in the cost of products. This too could have an economic impact, particularly if federal law were changed to allow tolls on existing Interstates.

One of the strengths of the toll-free system is the corridor connectivity across jurisdictional boundaries and state lines. Considering the difficulties in getting agreement at State and City boundaries it would be very difficult to establish toll roads on a Regional basis. While there have been several projects built with open road tolling where all vehicles are photographed and the owners directly billed, the cost of extensive systems using that technology are not known.

In conclusion, there are certainly some situations in urban areas where tolling would be the best solution to congestion. The major support for transportation infrastructure, however, is going to have to come from user fees, either a fuel tax or a distance tax.