



# Road Pricing and Trucking: Framing the Issues

*By Randy Mullett and Robert Poole*

Despite its record \$295-billion funding levels, the recent passage of SAFETEA/TEA-LU has left many state and local governments searching for additional highway funds. The most talked about (and perhaps the most controversial) alternative funding mechanisms seem to involve road pricing.

Known alternately as road pricing, peak pricing, congestion pricing, value pricing, HOT lanes, and so on, to truckers especially they are simply tolls, and the use of different terminologies to refer to them does little to change their negative connotation for this large segment of highway users.

Few will argue the importance of the trucking industry to our economic well-being. According to the U.S. Department of Transportation's Bureau of Transportation Statistics, trucks carry three-quarters of the value of all freight shipped in the country and two-thirds of the weight. Those numbers have increased in recent years and are expected to climb further. In fact, Federal Highway Administration (FHWA) estimates indicate that highway freight levels will increase 73 percent by 2020 from 11 billion tons annually to 19 billion tons.

Regardless of one's opinion about the appropriate use of different road-pricing or tolling schemes, there are two items on which all seem to agree:

1. Current fuel taxes are inadequate to pay for rebuilding and expanding the capacity of the interstates and urban expressways; hence,

additional taxes or alternative sources of revenue need to be investigated to ensure adequate infrastructure investment.

2. Annual VMT (vehicle miles traveled) among all highway-user segments is increasing and will continue to do so. Most forecasts expect truck VMT to grow at a faster rate than car VMT over the next 20 years.

Within this framework, policymakers, truckers, road pricers, and other stakeholders are struggling to determine the appropriate funding mechanisms for achieving their common goal: a safe and efficient highway system that not only meets current needs but facilitates the future vitality and competitiveness of our economy. Many (including truckers) believe that road pricing can be part of that solution by making better use of existing capacity with peak pricing and HOT lanes and by providing funds to add capacity. That being said, truckers are generally suspicious of all road pricing and fear they may bear a disproportionately high share of the costs, with little or no perceived benefit, putting them at economic risk.

## Why Tolling Is at Issue

There are two compelling reasons why tolling has much to offer as we confront the need for increased goods-movement capacity. First, tolls make it possible to do large road projects all at once, thereby realizing the benefits of increased capacity years or decades sooner than normal. Second, tolling—in the form of value pricing, or variable tolls—is the most powerful tool yet developed for managing traffic flow to reduce delays and increase effective capacity during peak travel periods.

On the first point, consider a state DOT with a \$1-billion capital-spending budget that needs to widen several hundred miles of major interstate truck route. That project alone might cost a billion dollars these days. But political realities dictate that, just as Congress must divide up the federal Highway Trust Fund money so that every congressional district gets its share, so must a state legislature divide that \$1-billion budget statewide. Thus, it is very difficult to do a large-scale project like an interstate widening all at once; more likely, it will be broken into a number of smaller projects, spread out over a decade or two. That means (1) construction delays will plague that route for a much longer period, and (2) the full benefits of the added capacity will not be realized for a decade or more.



With tolls, however, if a traffic and revenue study shows that the project is viable, a financing package can be put together that raises the entire project budget up front, generally in the form of toll revenue bonds. That means a design–build contractor can be hired to design and construct the entire project (or a private concessionaire can be selected to design, build, operate, and maintain the project for a long period of time). Construction delays will last only a few years and the entire project can begin delivering benefits at that point.

Market-based tolls can also be a powerful tool to manage traffic congestion. Highway engineers are very familiar with a graph showing the relationship between speed and throughput as congestion builds up. As more vehicles enter the highway, speed gradually declines until throughput reaches (depending on the highway configuration), say, 2,000 vehicles per lane per hour. At that point, people begin hitting the brakes and the flow rapidly breaks down, from smooth travel to chaotic stop-and-go conditions. As these conditions progress, both speed and throughput decline, creating a significant loss of real highway capacity. The resulting curve looks something like a parabola on its side and is sometimes called a “bullet nose” or backward-bending curve.

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But when value pricing is used to manage traffic, this breakdown can be prevented. By raising the price as volume increases (via electronic toll collection), “marginal” highway trips can be avoided at the busiest times. The idea is to maximize throughput at the sweet spot on the curve (the 2,000 vehicles per lane per hour mentioned above), where speeds are still steady and high. This kind of performance can be observed every weekday on the two operational HOT lane facilities in Southern California, on I-15 and SR-91. On the latter, during the afternoon peak period, the two HOT lanes, representing 33 percent of the freeway’s eastbound capacity, carry nearly 50 percent of its traffic flow.

In other words, value pricing doesn’t just ration scarce capacity to the highest bidder; it actually increases the operational capacity of a congested highway by preventing traffic from decaying into chaotic, unstable conditions where throughput falls dramatically.

## Truckers and Pricers: Talking Past Each Other

### What Pricers Believe

A sizable community of transportation professionals has developed around the idea of road pricing over the past 20 years. With the development and widespread implementation of electronic toll collection and the success of value pricing on several HOT lane projects, the idea has moved from theory to practice, with researchers and practitioners at state DOTs, local metropolitan planning organizations, the FHWA, and academics designing pilot projects and doing both theoretical and empirical research.

Pricers fall into two camps, though there are significant overlaps. Some focus on pricing primarily as a better way of financing highway construction (the “builders”). This camp stresses the need to expand both urban expressway capacity and long-distance interstate capacity. Its members lament the political allocation of highway trust fund monies, in contrast with the market-driven allocation of funds to toll-based projects (there has to be a business case for a toll highway project, or you can’t sell the bonds). The other camp is far more interested in pricing as a form of

demand management, especially for congested urban freeways (the “planners”). Some believe we shouldn’t expand highway capacity but rather ration its use via pricing, shifting demand away from peaks and deterring low-priority trips altogether. The planner faction, in the extreme version, would like to see road pricing have the effect of shifting many drivers from cars to mass transit and much freight from trucks to trains.

There are tensions between these two camps of pricers. Both groups support HOT lanes, though builders emphasize adding them to congested freeways while planners prefer to convert existing HOV and general-purpose lanes to HOT lanes. Builders generally prefer voluntary pricing, whereby drivers of cars and trucks are given a choice between using existing general-purpose lanes at no charge (paid for by fuel taxes) or paying an electronic toll to get a higher level of service. Planners tend to favor mandatory pricing, arguing that the benefits outweigh the costs.

When it comes to tolls and trucking, the differences among pricers are reflected in the different kinds of proposals they’ve supported. Builders have generally proposed adding truck-only toll lanes as an option, relying on the value added to make it worth paying a toll to get (1) increased payloads via use of double- and triple-trailer rigs in states where these long combination vehicles (LCVs) are otherwise not allowed, and (2) time savings and reliable delivery times.



Planners have generally supported rebuilding existing interstates as toll roads, arguing that the increased capacity and reduced congestion justify requiring all users to pay tolls for what would be, in some respects, a new highway after reconstruction. But some builders have supported the interstate-toll-rebuild approach as well.

Whichever camp they belong to, pricers are puzzled by the extent of opposition they sense among truckers. They don’t believe claims that large numbers of truckers will go far out of their way on inferior state roads to avoid paying tolls. They find it baffling when truckers say tolls, unlike

fuel taxes, can't be passed along to shippers as part of the cost of delivery. They read articles on how modern logistics concepts have revolutionized business, putting a premium on just-in-time delivery to minimize inventories—and are mystified that this doesn't lead truckers to support value pricing that can reduce trip times and greatly increase the reliability of arrival times. And they can't understand why express-delivery firms like FedEx and UPS, and short-haul drayage operators, wouldn't be willing to pay for value-priced truck lanes in order to get more productive use out of their fleets each day.



### What Truckers Believe

Just as pricers are puzzled by the extent of opposition they sense among truckers, truckers are mystified by pricers' unwillingness to accept truckers' assertions about their business models and the impact that different pricing scenarios would have on both individual companies and the national freight transportation system.

It can be argued that much of the success of the U.S. economy in the past 25 years has resulted from the just-in-time (JIT) inventory practices made possible by an efficient national transportation system, based largely on the flexibility of trucking. Those dependent on this system are fearful that new funding mechanisms will focus on building and funding local and regional projects with little thought given to how that fits into a national transportation system designed not just to move commuters at peak periods but also to facilitate national (and often international) commerce. In the worst-case scenario, these fears are manifested in a transportation system composed of hundreds of individual tolling authorities, each responsible to local constituencies, with little or no interest in ensuring the viability of the national highway system.

Within this framework, it is easier to understand why truckers believe that pricers:

- Look at truckers as an “out of the area” revenue source rather than a stakeholder;
- Often appear more interested in social engineering than in infrastructure development;
- Favor tolling over taxes because tolls don’t need public approval once the tolling authority is established, and there is little federal or state oversight; and
- Are interested in local projects and not the national system.

Truckers are also puzzled by many of the assumptions made about the trucking industry by pricers trying to demonstrate the value associated with different pricing models. The most common questions from truckers include:

- Why do pricers think truckers haven’t already made operational changes to avoid congestion and delays? *In fact, truckers have already made significant operational changes to deal with congestion, lessening the assumed benefits to be derived from pricing. For example, they have changed driver start times and routes and have considered road congestion when building or moving trucking facilities. Some carriers have even changed their equipment configurations in order to use alternate routes.*
- Why do pricers think truckers aren’t capable of making cost–benefit decisions about road pricing and the use of alternatives? *Pricers seem*



*amazed at the number of trucks willing to divert to alternate routes and act like it's simply a knee-jerk reaction rather than a conscious, well-researched decision.*

- Why do pricers believe JIT trumps cost and that shippers will accept additional charges for tolls? *Varying service levels and resultant price structures are prevalent in all shipping industries, so many shippers aren't willing to pay for the time saved. Also, many trucks and drivers are compensated by the mile rather than by the hour. For these reasons, not all trucks have the same sensitivity to time as assumed in most road-pricing ROI justifications.*
- Why do pricers believe that congestion relief for commuters automatically translates into benefits for truckers? *Trucks have typically used alternate routes or moved at off hours to avoid the most congested commuter corridors.*

## Clearing the Air on Trucking

Lest the trucking community be labeled as the group that only says no, it is important to discuss the general positions of the trucking industry regarding road pricing as a viable part of any future system of adequate highway funding. The trucking industry recognizes that current fuel taxes are inadequate to pay for rebuilding and expanding the capacity of the interstates and urban expressways and that, therefore, additional taxes or alternative sources of revenue (including tolling) should be examined to ensure adequate investment in our national highway system's infrastructure.

In the simplest terms, the trucking industry's position includes the following:

- Existing lanes of the Interstate Highway System should not be tolled. *Since its creation, the interstate system has been financed under the philosophy that a tax-supported national highway network with unhindered access by all users is key to our national economic well-being and ensures that no segment of our population is hindered from using the system.*
- Road pricing, including tolls, is generally supported to develop additional capacity for the interstate system, as long as use of the tolled lanes is voluntary. *The user is then able to make an individual*



*cost-benefit decision that does not create two classes of drivers by forcing some entirely off a particular section of road.*

- Road pricing should result in a direct benefit for the user. *Ensuring a direct benefit for users is an important consideration when counting on the support of the trucking industry for specific projects. These benefits may take the form of increased size, weight, speeds, and so forth but must be more than the assumed savings resulting from decreased traffic delays.*

Adding to the confusion about the trucking industry's position on road pricing are the different responses coming from different industry segments. A common misconception among pricers is that all segments within the trucking industry use similar business models, pricing schedules, pay plans, and so on. The result has been a general belief among pricers that one set of assumptions applies to the entire trucking industry. Rather than go into a lengthy primer on segment differences, suffice it to say that the differences are many and significant, creating wide variations in sensitivity to price and time. The table (next page) offers a simplified introduction to the trucking industry's different segments.

## Reactions within Trucking to Recent Tolling Proposals

Although no toll truck lane projects have yet been built, several have been the subject of recent studies and, in one case, serious proposals from the private sector.

### I-81 Truck Toll Lanes

One of the longest running, and most discussed, toll proposals in the United States involves adding mandatory truck-only toll lanes to I-81 in Virginia. Made possible by language in TEA-21 (1998) authorizing up to three pilot projects to rebuild interstate facilities with toll financing, it was proposed to the Virginia DOT by Star Solutions, a consortium made up of road builders and engineering firms, as a public-private partnership. Though the future of the project appears in jeopardy because the requested amount of federal funding was not included in SAFETEA/TEA-LU, the I-81 story is worth telling.

In addition to the scale of this proposal (two lanes in each direction for 325 miles), the focus on separate lanes for trucks and autos has evoked much discussion, mostly due to the fact that only trucks would pay the tolls and that those rates would be up to 37 cents a mile—more than \$100 for a truck traveling the length of Virginia. At that level, there would be significant diversion to alternate routes. Other questions that have arisen regarding the proposal involve “equity” over which user group pays and the impact of such a project on local and regional economies (some businesses heavily dependent on I-81 have threatened to relocate).

Safety advocates believe the project will improve safety, while environmentalists say the Shenandoah Valley would suffer irreparable harm from effects such as increased pollution and destroyed habitat. Truckers, meanwhile, are worried about the cost and believe there would be no corresponding benefit to them. There are no significant delays on I-81 at this



<b>Segment</b>	<b>Industry Structure</b>	<b>Hours of Operation</b>	<b>Payment Basis</b>	<b>Who Pays Toll?</b>
Truckload (TL) for hire (Schneider, JB Hunt, etc.)	Large companies dominate; few terminal facilities	24/7	By the mile	Company
Owner/operator	Independent contractors or leased to large carriers	24/7	By the mile or percentage of revenue generated	Driver
Less than truckload (LTL) for hire (Yellow, Roadway, Con-Way)	Large companies dominate; large terminal networks	24/7 Monday through Friday, with limited weekend operations	Hourly in local operations; by the mile in intercity operations	Company
Local delivery (Shenandoah's Pride Dairy, Coca-Cola, Sysco Foods)	Varies widely—food, construction supplies, fuel, etc.	Daytime Monday through Friday, with some Saturday operations	Hourly	Company
Parcel/express (UPS, FedEx, DHL)	Dominated by UPS, FedEx, and DHL; large terminal networks	24/7 Monday through Friday, with limited weekend operations	Hourly in local operations; by the mile in intercity operations	Company
Private fleet (Wal-Mart, Kohl's, Tyson Foods)	Company fleets often moving goods from central warehouses to retail locations	24/7 Monday through Friday, with limited weekend operations	Mix of hourly and by the mile	Company



time; in Virginia, I-95 is the much more congested road. Nor would truckers get increased payloads, since there is no proposed size/weight increase for the truck-only lanes. As of this writing, state and national trucking organizations continue their all-out opposition to this project.

### Los Angeles Toll Truckways

Responding to the huge projected impact of truck traffic from the ports of Long Beach and Los Angeles on several key freeways, the Southern California Association of Governments (SCAG) has developed a plan to add a system of “toll truckways” to the I-710, SR-60, and I-15 freeways. Feasibility studies of the first two freeway links have been completed, and the third is under way. Overall, the studies suggest a project costing \$12 billion to \$15 billion, which wouldn’t be possible to fund out of federal and state highway (fuel tax) sources.

SCAG has adopted the toll truckway concept introduced in 2001 by the Reason Foundation, a nonprofit public policy research organization. Under this approach, trucking companies would be offered not only time savings but also significant payload increases in exchange for using the truckways and paying a toll. Long double- and triple-trailer rigs would be allowed to operate on the truckways, using special on-ramps and off-ramps connecting directly to the ports and to make-up/breakdown yards at key points along the truckways’ lengths. For conventional trucks that are legal on California highways, use of the truckways would be voluntary. But the LCVs, which are currently not allowed on regular highways, would be restricted to operating only on the truckways. Representatives of the trucking industry have been part of SCAG’s Goods Movement Committee, which is developing the proposal.

## Atlanta's TOT Lanes Study

Georgia's State Road & Tollway Authority in mid-2005 released a preliminary feasibility study of truck-only toll (TOT) lanes for the metro Atlanta area. The study is part of a series of studies looking into the costs and benefits of building out the planned network of HOV lanes as some form of "managed lanes" instead. A previous study evaluated HOT lanes, estimating the cost to build and operate them, the toll revenues they might produce, and how much they would reduce freeway congestion.

The TOT lanes study looked at three alternatives: adding TOT lanes to key freeways used by trucks in addition to HOT lanes, adding TOT lanes instead of HOT lanes, and opening up central-area HOV lanes to delivery trucks in between the morning and afternoon rush hours. All three scenarios assumed that truck use of the TOT lanes would be voluntary; consequently, the Georgia Motor Trucking Association was a willing participant—and has said positive things about the results.

The most cost-effective alternative of the three was the one that would build TOT lanes instead of HOT lanes on the most truck-intensive freeways. The study estimated that those lanes would save a truck 70 minutes getting through or around Atlanta at rush hour and would attract 60 percent of trucks going that way. As such, it would pay for itself out of toll revenues and would modestly reduce overall freeway congestion.

## Where Do We Go from Here?

### Lessons Learned

From this brief overview, several points should be apparent. Both truckers and pricers have been operating with limited understanding of the other's positions on tolling. There is significant overlap of interest between segments of the pricing community (those interested in modernizing the highway system) and segments of the trucking community (those most interested in operating LCVs and those with the greatest need for time-saving and on-time deliveries). But there are also clear differences. As the three above examples of proposed toll truck lane projects

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make clear, proposals that would force truckers to pay tolls to use existing free lanes will be opposed vociferously by the industry. But proposals that offer clear benefits in exchange for choosing to use new, tolled capacity seem likely to gain support from at least important segments of the industry. That clearly suggests the direction in which to go for the near term.

*To craft workable proposals for using tolls to expand the nation's goods-movement infrastructure, we need to learn a lot more about how goods movement works. The same kind of dialogue that has begun between [road] pricers and truckers needs to be expanded to include shippers and receivers.*

The new SAFETEA-LU legislation continues the TEA-21 pilot program for rebuilding up to three interstate facilities using tolls. Projects sought under that program may continue to be opposed by the trucking industry. But two other pilot programs lend themselves to the kinds of project that could be supported by the industry. One allows up to three brand-new interstate projects to be financed via tolls. These would be new links in the national network (for example, the long-sought I-69 from Texas to Indianapolis) that would otherwise not exist without toll financing. The second permits up to 15 projects to add tolled express lanes to interstates, some of which could be toll truck lanes along the Los Angeles or Atlanta models.

### Research Needs

It should also be clear that to craft workable proposals for using tolls to expand the nation's goods-movement infrastructure, we need to learn a lot more about how goods movement works. The same kind of dialogue that has begun between pricers and truckers needs to be expanded to include shippers and receivers. We need to learn more about who makes decisions on shipping rates

and the extent to which, say, guaranteed delivery times would be worth paying for. Previous research by the Transportation Research Board on the benefits of a national highway network rebuilt to handle LCVs should be redone to look at the costs and benefits of adding LCV-capable truck-only lanes rather than rebuilding all lanes to this standard. And more studies of the trade-offs between HOT lanes and TOT lanes, like Atlanta's, need to be done so that transportation planners in different metro areas can get a better handle on which types of lane additions would produce the most bang for the buck. This is hardly a comprehensive list, but it suggests how much we still need to learn.

In short, trucking and tolling, while not natural allies, aren't natural enemies, either. As each community learns more about the other, a large common ground will emerge, which will help this country meet its need for greatly improved goods-movement infrastructure.

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