A Guide to Trucking Toll Costs in America

PrePass®

Everything You Wanted to Know and More in the World of Tolling

More than 340 tolled facilities currently operate by over 125 tolling authorities in the United States. You know them by many names: toll roads, tollways, turnpikes, thruways, parkways, bridges, tunnels and even waterways.

In 1909, only 200,000 motorized vehicles traveled the roads of the United States. Just seven years later, there were 2.25 million cars. Demand for well-built and well-maintained roads grew. With no established method to pay for infrastructures such as vehicle registration fees and fuel taxes, states often granted charters to private enterprises to build and operate roads, tunnels, and bridges.

Even before state-sanctioned enterprises, miners and ranchers in America's developing west built their own private roads and assessed fees for their use. Those roads often served travelers seeking services such as general stores, hotels, and saloons where the road owners held an interest and allowed them to make an added profit.

The toll roads of today must still earn revenue. However, the business model, toll rate structure, and carrier strategies for using toll roads have grown far more complex and difficult to decipher.

This whitepaper will review how toll facilities are structured as businesses; factors that affect toll rates; what rules fleets must follow when working with toll roads; how methods of toll payment can impact costs; how to analyze costs and benefits; ways to minimize toll related costs; and how PrePass Safety Alliance can help fleets manage toll payments and administration.

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Tolled Facilities as Businesses

Whatever the reason for a tolled road, bridge, or tunnel, toll facilities operate like any business – they require an initial investment, earn revenue to cover expenses, pay their employees, and make a profit.

Modern toll roads in the U.S. fall into two financing and management models: the Build-Operate-Transfer (BOT) system and the "Turnpike Authority."

The BOT system is a Public Private Partnership (P3), in which states contract with private firms to build and run a tolled facility. The private firms then sell revenue bonds to finance that construction and maintenance. Investors buying those bonds understandably seek a return in yields and reliable dividends.

To meet investor expectation of return requires a steady stream of traffic over the tolled facility. To capture that stream of traffic, the private firms negotiate for an effective "franchise" over the route in the state contract. In other words, for the duration of the contract there is no direct competition to the toll road, bridge or tunnel from public roadways or facilities constructed with taxpayer money.

Turnpike authorities, on the other hand, often operate as a semi-autonomous government unit established by state legislation to build and manage tolled facilities.

This model would appear to place public interests first. In truth, many turnpike authorities understand the needs of their customers and work to meet them. However, under this model, the state legislature holds final "authority" over the tolled facility and may find other uses for the toll revenue.

For example, the Pennsylvania Turnpike Commission states that it "has been forced to raise toll rates for 11 straight years and has driven the agency's debt levels to more than $11 billion." The increased tolls and debt result from a legislative mandate that the Turnpike Commission turn over $450 million of its toll revenues to the state Department of Transportation (DOT) every year. The DOT then spends the toll revenues on an urban mass transit program.

The American Transportation Research Institute (ATRI), in its January 2020 report, "A Financial Analysis of Toll System Revenue: Who Pays & Who Benefits," estimates

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that over 50% of toll systems’ revenues pays for uses other than the operation and maintenance of the toll road itself. That diversion of toll revenue effectively leads to a 50% increase in cost to motor carriers and drivers who use tolled facilities.

In discussing a tolling proposal in Michigan, an article in Crain’s Detroit Business put it this way:

“In every debate about road funding, some motorists and politicians are fixated on laying more of the cost of repairing and rebuilding roads at the feet of heavy trucks.

Tolling is one way to do that, especially since there is not an easy way to bypass metro Detroit’s freeways. And if I-69 and U.S. 23 were also incorporated into a toll road system, it would be pretty hard for out-of-state truckers to avoid paying Michigan’s tolls.”

Pressure to increase toll rates and tolled facility revenues exists in both the BOT system and the state-established “turnpike authority” The results are more than anecdotal. Below are ATRI’s findings that show trends in toll revenue growth. The first chart shows the ten-year growth in annual toll revenues for 21 of the top toll agencies. Next is a comparison of toll facility revenue growth compared to the Consumer Price Index (CPI).

Clearly, toll rates themselves have increased significantly over time and are likely to continue, a factor that affects freight costs and, ultimately, the cost of goods and services.

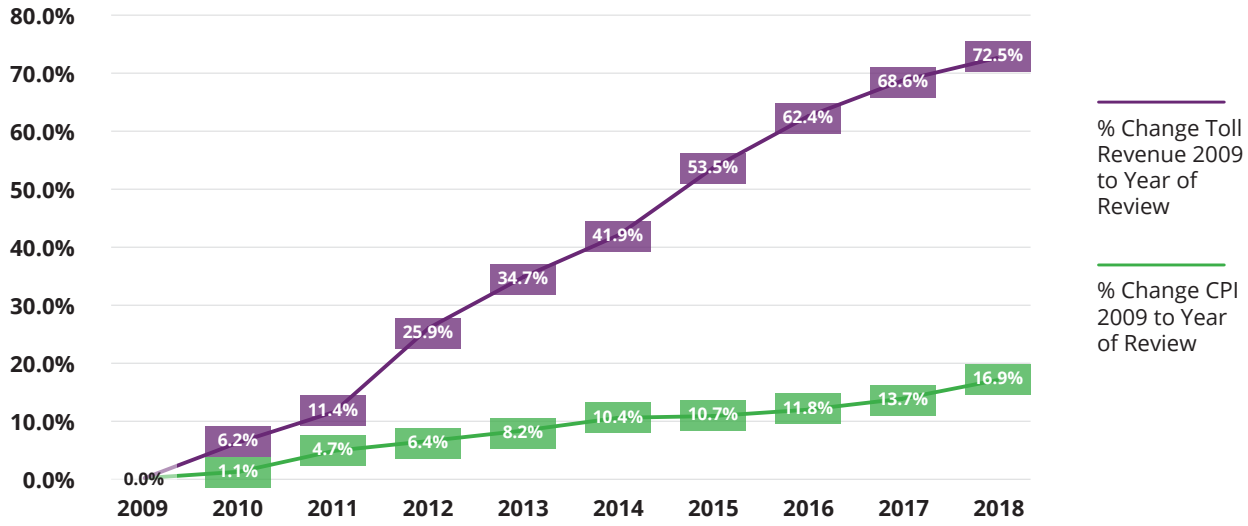
Revenue Trends*

Toll revenue in both 2009 and in 2018 for the study group, along with the percent increase in revenue over the 10-year time period.

		ANNUAL TOLL REVENUE		
Entity		2009	2018	% Increase
1	New Jersey Turnpike Authority	$952,419,000	$1,612,326,000	69.29%
2	Port Authority of NY/NJ B&T	$976,359,000	$1,689,985,000	73.09%
3	Metropolitan Transportation Authority	$1,332,000,000	$1,965,223,000	47.54%
4	New York State Thruway Authority	$611,600,000	$736,504,000	20.42%
5	Maryland Transportation Authority	$279,774,000	$724,847,000	159.08%
6	Delaware Turnpike (I-95)	$118,800,000	$135,048,183	13.68%
7	Illinois State Toll Highway Authority	$646,865,189	$1,411,520,072	118.21%
8	Pennsylvania Turnpike Commission	$615,604,000	$1,196,606,000	94.38%
9	Florida Turnpike Enterprise	$590,528,000	$1,017,303,000	72.27%
10	Oklahoma Turnpike Authority	$204,758,339	$317,716,266	55.17%
11	Harris County Toll Road Authority	$442,015,417	$740,272,353	67.48%
12	Bay Area Toll Authority (MTC)	$470,136,376	$727,350,000	54.71%
13	Ohio Turnpike	$187,278,000	$309,569,000	65.30%
14	Kansas Turnpike Authority	$79,474,841	$118,188,895	48.71%
15	North Texas Tollway System	$290,404,547	$841,491,016	189.77%
16	Delaware River Port Authority	$242,620,000	$335,588,000	38.32%
17	Central Florida Expressway Authority	$207,068,000	$442,065,000	113.49%
18	West Virginia Parkways Authority	$53,341,000	$95,288,000	78.64%
19	Maine Turnpike Authority	$100,451,393	$138,432,432	37.81%
20	Chesapeake Bay Bridge and Tunnel District	$45,105,820	$57,642,223	27.79%
21	Delaware River and Bay Authority	$77,272,070	$105,864,220	37.00%
Annual Total		**$8,530,505,992**	**$14,718,829,660**	**72.54%**

Growth Trends in Toll Revenue vs CPI *

10-year percent increase in toll revenue compared to change in Consumer Price Index.



*Short, Jeffery; Jonathan, Peters R. PhD. (2020). A Financial Analysis of Toll System Revenue:: Who Pays & Who Benefits. Arlington: American Transportation Research Institute.

Tolled Facilities Set Their Own Distinct Rates and Requirements

Toll facility managers must cover their costs and make a profit, so they impose "rules" that include toll rates, bonding and payment methods, and reconciliation of toll discrepancies and violations. To benefit from toll facilities, motorists and truckers alike must abide by those rules.

Trucking companies bear the brunt of toll rate increases because legislators and toll facility managers see them as businesses, not local residents or voters. Also, carriers make up a significant percentage of traffic on toll facilities. Legislators and toll facility managers often make the false assumption that carriers simply pass on higher toll costs to their customers. In reality, many carriers establish contracted rates with shippers that can not be raised so they must cover any increase in expenses, including toll rate increases.

Toll rates for commercial motor vehicles are commonly set by the number of axles in the truck combination, including tractor (power unit), converter dollies and trailers. The New York Thruway adds a truck height component to its rate calculation. Other facilities add a weight/mass component.

Motor carriers that use a range of configurations from a "bobtail" tractor to combinations of one, two, or three trailers, need to know how each configuration

will be identified and appropriately tolled. This may require assigning only certain tractors to pull the combinations that pay the highest toll rates. Indeed, the toll road itself may require visible markings on those assigned tractors or the purchase of separate transponders.

Some toll roads impose dynamic tolling. Tolls at these facilities increase during peak travel times by as much as 75% over off-peak rates. But avoiding peak times can be tough for drivers on a schedule. For instance, the New Jersey Turnpike considers all day Saturday and Sunday as peak times.

Simply put, it is far more expensive in terms of direct costs, for a truck operator to use a toll road than to use a non-tolled state or federal highway (public roadway). ATRI drew the stark comparison. Examining the financial records of 21 major U.S. toll authorities, ATRI found that the average annual toll revenues per mile are over 18 times greater than the per-mile revenues of the federal fuel tax on the National Highway System.

More pointedly, ATRI estimates that carriers pay 14.6 cents per mile through traditional taxes and fees for the use of public roadways. Comparatively, the average toll rate per mile is 45 cents and carriers must still pay those traditional state and federal taxes and fees.

How a Carrier Pays its Tolls Impacts How Much It Pays

For a toll road, the least expensive and most accurate means of administering payments is through radio frequency identification (RFID) transponders. Carriers can use PrePass transponders or get them directly from tolling authorities. Transponders communicate with overhead readers while trucks drive at highway speeds, so toll booths are not needed. Due to this efficient method of payment, transponder users may receive a corresponding toll discount.

By contrast, a staffed toll booth is the most expensive payment collection method for the toll agency. Therefore, individual cash or credit card transactions have the highest cost to both the customer and facility.

Some toll roads use videos or cameras (as part of a license plate reader or "LPR" system) to read license plates and associate them with registered vehicles and customer accounts. This method, called "plate reads" or "toll by plate," is less costly to administer than placing a human being in a toll booth to collect the toll. However, typically cameras are still more costly than RFID, and not nearly as precise.

Here are some reasons why license plate readers aren't always accurate: license plates and the cameras themselves get dirty; LPRs can have difficulty distinguishing lettering in some colors or against busy backgrounds; reflected light can blur images; and flat plate lettering is harder to read than raised lettering. These issues lead to mistakes in the amount of the toll, and which carrier receives the bill. So at times, toll facilities must use manual accounting to properly assign vehicles to the right customer accounts. Mistaken tolls can lead to lengthy and time-consuming dispute resolution processes.

All-Electronic Tolling, Hits & Misses

Toll facilities are rapidly moving away from toll booths due to higher administrative costs and safety issues caused by vehicles merging in and out of traffic. The result is all electronic tolling (AET) enforcement and collection.

AET uses two methods to electronically identify and bill toll facility users; camera systems that read license plates, and antennas that read transponders. Either method allows vehicles to continue uninterrupted at highway speeds, a major benefit of AET.

To be clear, even fleets that use transponders, such as the PrePass Plus service, will have their vehicle license plates photographed. This makes sure the agency can collect the toll in case the vehicle is not registered with the facility. So, why use transponders? Transponders are far more accurate and reliable. License plate readers that rely on cameras are also more expensive than transponders and those higher costs are passed on to motor carriers in the form of higher toll rates.

An additional hidden cost of license plate readers results from the need of toll facilities to manage vehicle lists. LPR cameras commonly only capture the trailer license plate and toll facilities must match it to a commercial motor vehicle. Administering vehicle lists costs toll facilities time and money. Carriers often bear that cost.

As a business practice, trailers move throughout the distribution system and may end up in areas where they are not registered with local toll authorities. Fleets also buy, sell, lease and even scrap trailers. Carriers must track and record power unit and trailer transactions with toll authorities. If they don't, inaccurate or increased toll costs may result.

Fleets should indeed maintain accurate vehicle lists with tolling authorities, but relying on license plate readers for all-electronic tolling leads to higher costs and toll rates. When it comes to AET, fleets should use transponders.

A 2018 study by the Minnesota DOT found that transponder transactions cost 10 cents per transaction for the tolling authority to process, while "plate read" or "toll by plate" transactions cost the toll operator 35 cents per transaction. The study also showed much higher rates of "leakage" or uncollectable tolls with video (camera or LPR) toll enforcement than with transponders. Toll facilities are businesses, so they pass on these higher "toll by plate" costs to toll road users who do not have a valid transponder. These costs show up in administrative fees added to toll invoices or through higher, non-discounted toll rates.

An increasing number of toll facilities are encouraging "cashless transactions." These include the use of transponders, not only because they reduce administrative costs, but also because they are demonstrably safer. Toll booths require vehicles to slow, change lanes and then re-enter traffic, perhaps while drivers juggle money, credit cards and toll receipts.

Many agencies are removing toll booths altogether and will process all transactions electronically. For motor carriers, the ability to maintain highway speeds and avoid slowdowns are major advantages of all-electronic tolling (AET). Transponders and license plate readers each facilitate AET, but transponders remain the most accurate and least expensive means of collecting and paying tolls. (See sidebar discussion of AET).

What Are the Benefits to Using a Tolled Facility?

Especially where alternate routes exist, tolled facilities like any business, try to make their service attractive regardless of its price. Toll roads often have a menu of features that speak to the convenience, comfort and productivity gained by using the toll road.

For example, drivers may find a variety of food services, shopping and even entertainment options at toll plazas. Truckers may find fuel vendors who offer company discounts. Toll authorities often offer complimentary truck parking. On the toll road itself, higher speed limits, lower traffic volumes, and the lack of stop signs or traffic signals reduce travel time in comparison to more congested "free" routes. Some toll roads also allow longer or heavier truck combinations. Each of these features makes using a toll road a more convenient choice and may offset some of the cost.

What is the relationship between PrePass Safety Alliance and toll agencies?

PrePass Safety Alliance has agreements with tolling authorities throughout the country that enables them to provide carriers a way to electronically pay tolls without stopping at toll plazas. Carriers that also subscribe to weigh station bypass may use the same device for electronic toll payment and receive one consolidated invoice through a service called PrePass Plus.

All discounted tolling rates that are offered by the various tolling authorities are passed on to PrePass Plus customers. As part of the PrePass Plus service, the Alliance can research, dispute, and reconcile mistaken or fraudulent tolls on behalf of its customers. As an added benefit, PrePass Plus includes INFORM™ Tolling at no additional cost. INFORM software provides access to toll transactions daily, equipping carriers to bill toll costs in real-time to shippers.

By facilitating electronic tolling, PrePass Safety Alliance provides at least two verifiable safety benefits: reducing traffic congestion in and around toll plazas by eliminating traffic queues and rear-end collisions; and incentivizing truckers to

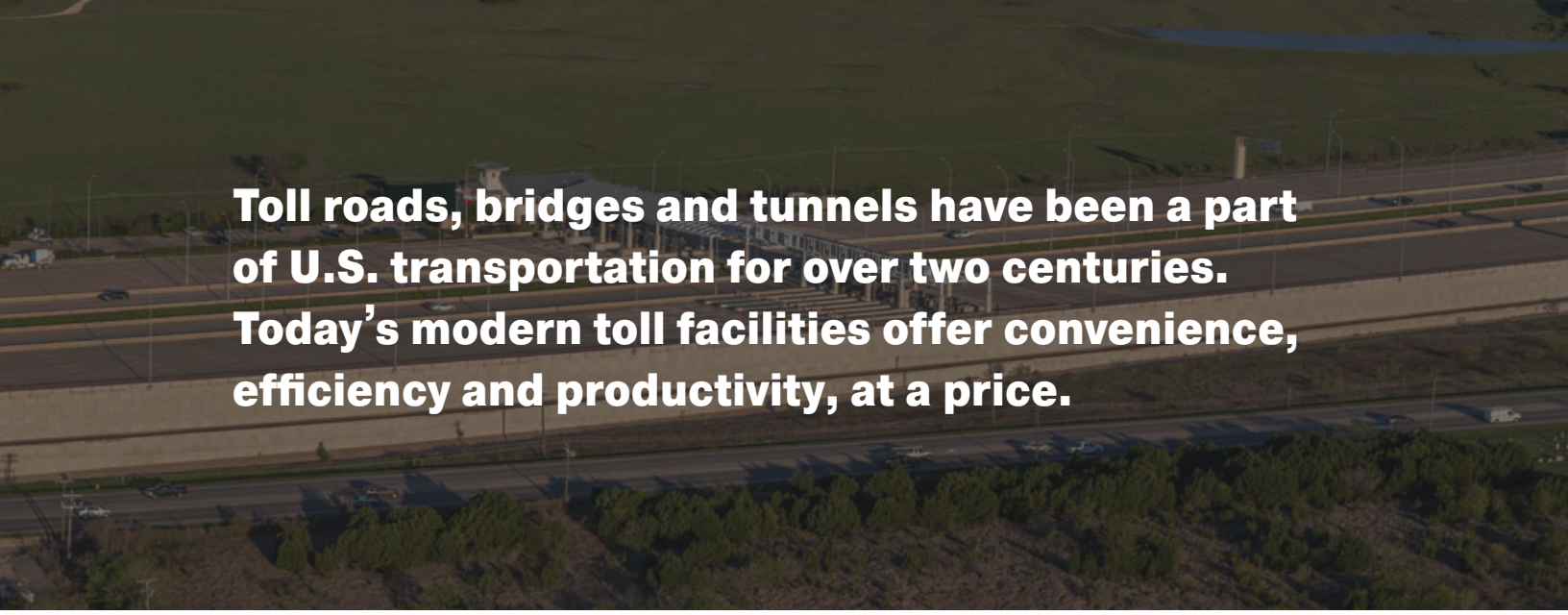
Balancing the Costs and Benefits of Using a Toll Road

So how can carriers consider all these factors when planning the best route? Some carriers build a matrix using information directly from a toll facility's website. The matrix helps to compare the potential gains in time and productivity from using a toll road, bridge or tunnel to the alternate "free" route between the same origin and destination.

Elements to include in a matrix:

- A to B Distance, Traffic Volume, Speed Limit, Overall Time in Transit
- Truck Parking, Fuel Vendors, Maintenance Services
- Size & Weight Productivity
- Driver Compensation
- Peak Tolling Times, Toll Discounts, Ease of Payment
- Overall Cost, Including Tolls and Taxes

Routing software may help with this process. Motor carriers who regularly use toll roads will build the costs into their rates or display itemized toll costs on their shipper invoices. Having these comparisons on a matrix can be useful when explaining the choice to use tolled facilities or avoid peak rates to customers.



Toll roads, bridges and tunnels have been a part of U.S. transportation for over two centuries. Today's modern toll facilities offer convenience, efficiency and productivity, at a price.

reduce their safety risk and that of other highway users by traveling on less congested toll roads. Two other key benefits of electronic tolling are eliminating the need for drivers to carry cash in the cab for payment and reducing tolling authorities' administrative costs, such as those inherent to license plate readers.

While the Alliance provides benefits to both carriers and tolling authorities, it has no position on the use of tolls for infrastructure support and has no part in setting rules or rates.

What Can Carriers Do to Minimize Toll Related Costs?

Any motor carrier that uses toll facilities should conduct a regular review of its accounts to identify erroneous or fraudulent tolls. The PrePass whitepaper, "5 Easy Steps to Reducing Toll Costs" details these important tips for optimizing the use of tolled facilities:

- Watch for toll violations.
- Be alert for vehicle misclassifications.
- Look for maximum tolls and plate reads.
- Avoid peak tolling times.
- Manage transponders to guard against abuse and fraud.

The first step toward reducing toll costs is using a transponder-based service such as PrePass Plus.

Toll roads, bridges and tunnels have been a part of U.S. transportation for over two centuries. Today's modern toll facilities offer convenience, efficiency and productivity, at a price. Carriers should build a matrix or a simple cost-benefit analysis when deciding whether and how to have their fleets use a tolled facilities, and then follow the rules to get the best results. Use a resource such as **PrePass INFORM™ Tolling** to actively monitor toll charges and act quickly to resolve discrepancies.

PrePass is Here to Help

PrePass provides consolidated, nationwide toll payment services and works to help carriers reduce toll-related costs. With PrePass Plus, carriers use one transponder for nationwide tolling coverage, meaning the convenience of one statement with the highest toll discounts available. In addition, carriers receive access to INFORM Tolling software.

INFORM helps fleets pinpoint toll cost trends, identify potential fraudulent activity and identify overcharges. In the event of a toll dispute or violation, PrePass can manage these transactions on the carriers' behalf with the toll agency. Contact PrePass today for more information and a free demonstration of PrePass tolling products and services.

Contact PrePass

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