What is open road tolling?

Open Road Tolling, also known as all electronic tolling, is the collection of tolls on toll facilities without the use of toll booths for cash toll collection. The major advantage to open road tolling is that users are able to drive through the toll collection zone at highway speeds without having to stop or even slow down to pay the toll. Tolls are typically collected using electronic toll collection for identification of customers and electronic payment of tolls. Many times electronic toll collection systems are supplemented by image capture systems that record license plate images that are used to identify customers that do not have an electronic toll collection account and a bill or violation notice can be sent.

How does open road tolling work?

Transponders, small electronic tags, are placed on the windshield of drivers' cars when drivers open an account with the toll operator. Tolls are collected as the transponder is read at normal highway speeds by electronic scanners suspended from gantries above the highway. Motorists can link their transponders to credit card accounts to automatically charge pre-determined amounts when their account is low. Accounts can also be quickly refilled through a phone call, trip to a kiosk or office or by visiting a website. Transponders may also emit a signal to drivers when their account is getting low.

If a customer does not have a transponder, then an image of the vehicle license plate is captured and used to look up the registered owner of the vehicle. Depending on the toll operator policies, this customer is either sent a violation notice or a toll invoice for payment. These payments can be made in various ways, similar to a transponder account replenishment.

Why are agencies considering open road tolling?

With Open road tolling, the toll collection transactions can be performed while vehicles travel at highway cruising speed. This method of toll collection is fast becoming globally accepted, as electronic toll collection technologies grow and demonstrate improved accuracy and affordability.

☑ **Higher performance and safety**
An electronic toll collection system provides uniform, highway speed travel for the public, without the stop and go and the accident potential of traditional toll collection systems.

☑ **Efficiency**
An all-electronic system provides more efficient toll collection operations by eliminating queues at toll booths, lowering toll collection costs and enhancing customer service.

☑ **Sustainability**
Open road tolling saves fuel and reduces vehicle emissions by eliminating waiting times at traditional toll booths. In addition, open road tolling allows for expanded capacity at toll locations without the need to build additional infrastructure, reducing right-of-way needs and associated impacts.

Additional benefits of open road tolling
- ✓ Enhances congestion/peak-hour pricing
- ✓ Customer convenience
- ✓ Interoperability
- ✓ Significantly reduces traffic congestion at toll locations
- ✓ Supports managed lane strategies

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What technology is used for open road tolling?

The most common technologies used in electronic toll collection systems that support open road tolling are described briefly below.

Automatic vehicle identification

Radio-frequency, automatic vehicle identification systems are used with electronic toll collection systems around the world. Current electronic toll collection systems use Radio-frequency identification transponders to automatically identify vehicles. These devices are sometimes simply referred to as tags. Common transponders are stickers with a very small silicon chip that uses the windshield for an antenna. There are also hard-case transponders with a chip and a small internal antenna that may also have a battery, display, and/or audio feature. The transponders work with roadside equipment consisting of an antenna and reader hardware to read and communicate with the transponder.

Automatic vehicle classification

Generally, tolls are differentiated by vehicle class. A vehicle's class can be determined by its physical attributes, number of occupants, emissions, or the purpose for which it is being used (or some combination of these characteristics). Most toll agencies use physical attributes of the vehicle and typically have 5–10 vehicle classes. Although the transponder is normally programmed with the vehicle class, most agencies confirm the class at the time of toll collection. Axle counting devices, vehicle profilers, and vehicle separators are used in the pavement and overhead for classification.

The open road tolling system on one of the Miami-Dade Expressway facilities.

Video enforcement systems

To determine the identification of customers without tags, license plate images are used. Specialized cameras and lighting units capture the images at the toll zone. Many toll operators use automatic license plate reader systems that use optical character recognition software to identify license plate information, thereby reducing labor costs.

How is toll collection enforced?

There are two forms of open road tolling that include: (i) all customers being required to have a transponder, and (ii) customers can either have a transponder or be billed for the trip. Depending on the toll operator's policies, toll enforcement can either be implemented at the time of travel
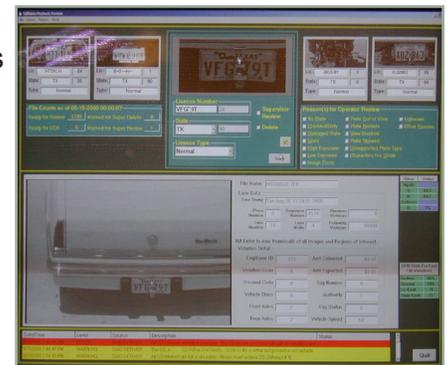
Violation Enforcement Workstation

under scenario (i) above or later in the billing process under scenario (ii) above. If the toll operator's policies require a transponder, then police issue tickets to supplement violation enforcement systems in the field. If the toll operator's policies allow video billing, then police enforcement is not used at the toll zone. License plate images are used to look up the vehicle owner and toll invoices are sent. If the toll invoice is not paid within the specified time, then violation notices are issued.

How do out-of-town motorists, or others who do not have a transponder, pay to travel through the tolled corridor?

• Video enforcement system to record visitor's license plates and toll invoices are issued.
• Issue a day pass for visitors.
• Provide roadside kiosk, customer convenience center, website, or phone number to register trip.

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