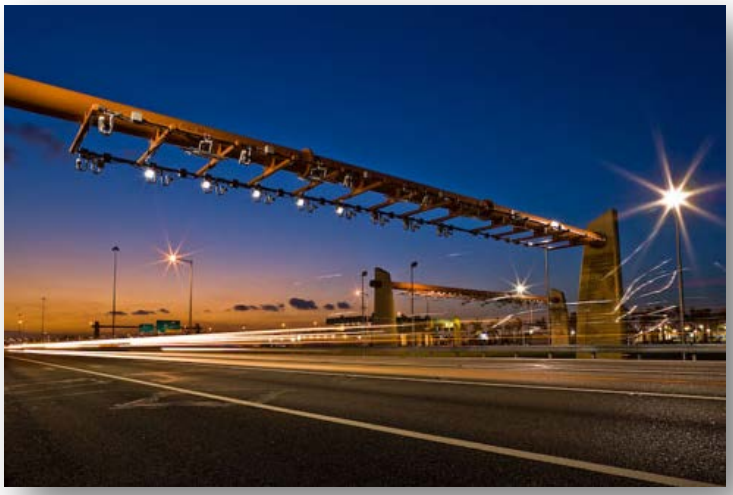
ELECTRONIC TOLL COLLECTION SYSTEMS

Description

Electronic Toll Collection (ETC) systems charge a toll to an established customer account without requiring any action by the driver as a car or truck passes through. The system electronically debits the accounts of registered car owners or identifies the license plate for later billing without requiring vehicles to stop. ETC can be added to any tolled facility through various technologies such as a bar code label affixed to the vehicle, a proximity card, a radio frequency transponder mounted in the vehicle, license plate recognition and recently via Global Positioning Systems (GPS). ETC is comprised of four subsystems:



Miami-Dade Expressway Authority

- Automatic vehicle classification (e.g., truck or car)
- Violation enforcement system
- Automatic vehicle identification (e.g., specific vehicle)
- Transaction processing including a customer service center

Cost:	●●○○○
Time:	**Moderate**
Impact:	**Facility**
Who:	**Toll Authority**
Hurdles:	**Technology**

The rise of smartphones has opened up new ETC methods. Georgia's Peach Pass system introduced a free smartphone app allowing drivers to designate occupancy/toll eligibility for its express lanes—simplifying the toll collection process. Other apps will allow users to pay for tolls using a PayPal or bank card account based on a license plate number.

How Will This Help?

- Increases throughput —an open road tolling ETC lane offers five times the capacity of a manual lane and 3.6 times the capacity of an automatic coin machine lane.
- Decreases emissions—researchers have modeled the impact on emissions when using ETC lanes, resulting in a 40 to 63 percent reduction of hydrocarbon and carbon monoxide and approximately a 16 percent reduction of nitrogen oxide in the study area.
- Cost effective—ETC lanes are less expensive to build and operate than manual or automatic lanes.

Success Stories

- Camino Colombia (State Highway 255) near Laredo, Texas, is one of the first facilities to allow non-U.S. residents to use the facility and pay via RFID or ALPR.
- Successful conversion to all-electronic tolling by the North Texas Tollway Authority.

Implementation Issues

Most technological issues have been overcome after two decades of successful ETC implementations. The current issues with implementing ETC systems relate to interoperability (using one tag in more than one system) and technology selection. Although all toll facilities within Texas are currently interoperable, there is a lack of interoperability with other states, with toll facilities located at border crossings and in Mexico. Newer technologies such as GPS tolling, and different devices with frequencies, will also present challenges as they are currently not interoperable.