



Highway Transportation Solutions

All-Electronic Tolling



Reliable, effective performance that delivers maximum revenue

Benefits

- Reduce congestion, travel times and vehicle emissions from the stop-and-go driving at existing toll plazas
- Maximize income collections with superior image clarity and automation
- Leverage market leading expertise for high-value, low-risk solutions
- Proven design, refined through multiple product generations and enhancements, and global deployments

Raytheon provides highly advanced and reliable all-electronic tolling (AET) systems. As an industry leader, we bring two decades of expertise delivering turn-key open-road tolling solutions that seamlessly integrate with tolling and traffic management systems.

From new construction to upgrading existing systems, we partner with our worldwide clientele to develop AET solutions that minimize cost and risk while maximizing revenue, ease of use, and overall performance. We tailor vehicle tracking technology to meet the specific needs of motorists, concessionaires and public agencies.

Our strength in design, system engineering, system test, and program management result in high-value, low-risk solutions for the most challenging highway projects.

Raytheon's AET solutions include:

- Implementing new toll roads.
- Adding a toll capability to an existing road.
- Upgrading an older toll road system to take advantage of the latest technical advances.
- Life-cycle sustainment and maintenance.

Industry Leading Experience

Through continuous innovation, developing and implementing new capabilities including the dynamically priced AETS, Raytheon is a market leader in highway tolling technology.

In 1997, Raytheon leveraged expertise in sensors and systems design to develop and deliver the world's first AET system on the 407 Express Toll Route in Toronto, Canada. With more than 369 toll zones operating in systems from Florida to Israel, Raytheon has designed, integrated and supported highly successful toll road operations for customers around the world.

All Electronic Tolling Features

Highly reliable ruggedized modular commercial-off-the-shelf components that are configured to support industry standards

- Modular COTS-based design for flexibility and scalability. Toll zone and host solutions can scale from one to hundreds of solutions.
- Ability to effectively integrate with customer service center systems.

System-engineered sensing vehicle identification and classification

- High-resolution color cameras capture superior front and rear vehicle images.
- Automated optical character recognition and fingerprinting capability.
- Directed LED white light illuminators reduces driver distraction while providing superior image capture.
- Redundant overhead and in-pavement sensor network provides high accuracy vehicle classification and accurate association.
- Redundant overhead imaging provides the capability to detect side-by-side motorcycles in the same lane.
- Reversible lane support.

Integrated roadside unit/Integrated generator unit

- IRU/IGU-packaged solutions installed adjacent to the gantry and behind the roadside barrier, eliminate the need for modular buildings and separate toll zone equipment installation, which decreases environmental impact and simplifies maintenance.
- IGU contains UPS and generator-sized power supplies to meet backup power requirements.
- IRU standard processor sized to handle 40,000 vehicles/lane/day.
- Energy efficient IRU ensures operating reliability, proven in the heat of Texas, the humidity of Florida and during Canadian winters.

Redundant, reliable AET host system proven design

- Open architecture and licensing allows integration with third-party systems.
- Raytheon's proven library of trip-building algorithms, and adaptable business logic – configurable to customer needs – improves trip continuity even if vehicles encounter traffic jams.
- Built-in physical, system and network security.
- Dynamic pricing system for optionally managing traffic demands to match lane capacity, in real time.
- Grouped manual reviews, using fingerprinting lowers image review costs, with one review for an entire trip.
- Universal financial message enables more efficient, lower cost customer service center operations and revenue collection.



For further information contact:

Intelligence, Information and Services

22260 Pacific Boulevard
Dulles, Virginia
20166 USA
iiscommunications@raytheon.com

www.raytheon.com

Raytheon

Customer Success Is Our Mission