

## **North Texas Tollway Authority (NTTA) converting ideas**

Progress and growth demand change. Throughout its history, the North Texas Tollway Authority (NTTA) has embraced change to benefit its customers and has implemented sophisticated technology, including pioneering some of the earliest open-road tolling facilities. In December 2010, the NTTA completed one of its most ambitious and beneficial acts – a strategic move to convert its entire facilities (more than 300 lanes) to all-electronic toll collection.

However, that wasn't always the plan. It all started a few years ago with NTTA's Wycliffe Avenue mainline toll plaza on the Dallas North Tollway (DNT).

The DNT is a highly travelled, 32-mile, six-lane tollway that serves as a major traffic conduit from three rapidly growing North Texas counties, through the bustling northern suburbs and central Dallas, to provide a major gateway to the prime business, government, and entertainment areas of downtown. Principally a commuter route, the DNT serves some of the fastest-growing cities in the United States, and the region has experienced explosive growth since its first plaza, the Wycliffe Avenue mainline plaza, opened to traffic in June 1968.

The Wycliffe Avenue mainline toll plaza is located at the southern end of the DNT and acts as a major access point to/from downtown Dallas. Currently the Wycliff Plaza processes on average 2.5 million transactions – 200,000 more than it did in 2007. The plaza was scheduled to be revamped to handle more volume by 2007, but a crash involving a dump truck and a toll booth at the Wycliff plaza altered plans and the schedule was brought forward.

### **All change**

The initial improvement project began in June 2006 and, as a result, in December, the southbound traffic was constricted to two traffic lanes that opened into two cash and two electronic payment lanes. NTTA had a plan to minimise the project's impact on traffic as much as possible, but not even off-peak construction schedules and other efforts could offset the congestion issues at this busy plaza. Northbound traffic was planned to be

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reduced to the same lane configuration in mid-January, which promised to increase the congestion issues.

A swift response was needed by NTTA. Thorough analysis was undertaken to find the root cause of the congestion. Of the 1.1 million transactions collected daily by NTTA, more than 80% are collected electronically through the NTTA's TollTag program supported by the RITE Solution end-to-end toll collection system. This analysis showed the small percentage of cash paying customers were the major cause of the issue.

Only having two cash collection lanes meant cash paying customer vehicles blocked the access to the express lanes for TollTag® users, especially in rush hour. Adding more cash lanes was not an option and it became apparent that in order to improve the flow of traffic through the Wycliffe Avenue plaza the NTTA would need to eliminate cash collection altogether.

Moving toll collection to all-electronic raised the issue of how tolls could be collected from vehicles without TollTags. Without an alternative solution, all vehicles without a TollTag would be treated as violators which could result in major customer relations issues for NTTA.

### **Innovative and creative**

Since an immediate remedy was needed, the quickest and most efficient course was to modify the existing system rather than invent something new. NTTA worked with its system integrator, ETC Corporation to design and implement the needed changes. Through this approach, the ZipCash® video tolling system was born. Toll customers are identified by either a vehicle-mounted transponder, such as a TollTag, or if this is not present, a picture of the vehicle licence plate is taken and the customer receives a bill for the toll. Intended as a temporary solution for the Wycliffe plaza during construction the result turned out to be the impetus for NTTA's move to AETC, providing a solution that will deliver benefits for years to come. Benefits which will have far reaching effects on financial and planning issues faced by authorities. As road authorities embrace the free flow revolution, they need to be sure the technologies they have installed can support the change in business rules.

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NTTA's existing Idris AT600 consists of Idris smart loops which register a vehicle travelling over the loop site and track it for the duration of its time within the site. All the data from the loop signature is collected by Idris and processed to provide a Per Vehicle Record (PVR). At the same time as Idris is collecting the data to create each vehicle's PVR, it is also triggering the camera's to capture the front and rear license plates with a precision of +/- 30cms (1ft) from the nominated trigger point, noting the lane and time of each read.

As a vehicle's PVR is being created, Idris analyses the position of vehicles over the site with respect to all ALPR reads which might be associated with the vehicle of interest. It then uses the spatial information available to match the vehicle it is processing to the correct ALPR record, associating the corresponding licence plate to this vehicle. If no acceptable ALPR record is found for a vehicle, a trigger is sent to the camera to take an overview picture of the vehicle for billing purposes.

The Idris system required no adjustments for the upgrade to AETC to take place. The functionality and capabilities of Idris are designed to enable continued development and progression of a tolling system.

### **New-age traffic flow**

During 2011, work in the lanes will continue as toll booths and other equipment associated with cash toll collection are removed. The move to AET has reduced congestion and improved safety levels. In addition, the move to AETC and its resulting reduction in air pollution levels was a factor in the NTTA being awarded the IBTTA's 2009 Excellence Award for Social Responsibilities. What started as a quick and simple plan to temporarily relieve construction congestion at a single toll plaza has led to a bright new future in toll collection that will deliver long-term benefits for an entire region.

For further information please visit:

[www.idris-technology.com](http://www.idris-technology.com)

[www.etcc.com](http://www.etcc.com)

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