

Evolution, revolution, other?

HAROLD WORRALL is back with his typically forthright views on congestion pricing and all-electronic ETC



Dr Harold Worrall is president of Transportation Innovations and is past chair of ITS Florida, ITS America and the International Bridge, Tunnel and Turnpike Association (IBTTA). From 1992 until 2004 he was executive director of the Orlando-Orange County Expressway Authority

The technological backbone for congestion pricing is the successful implementation of All Electronic Toll Collection (AETC).

The interest in congestion pricing in the US is high. Transportation policy officials understand that the connection between the price for a service and the use of that service must be established. The traditional use of gasoline tax as a revenue source for highway and transit capacity has created an environment in which there are few users of the transportation system that are familiar with the cost and use relationship.

The knock-on effect

Cities are considering cordon pricing, High Occupancy Toll (HOT) lanes are being developed by converting underutilized High Occupancy Vehicle (HOV) lanes and policy officials are considering Vehicle Miles Traveled (VMT) as the new revenue mechanism for transportation. These options are available because the technology is available to implement them.

A major stage of technology

development is now underway: AETC. Unlike previous stages in the development of electronic toll collection, AETC is not an evolutionary stage. The success of AETC implementation will have ramifications for congestion management in the US.

Cash lanes are disappearing and multilane free flow is the goal of many agencies. Some in the US have implemented AETC and many more are considering such a conversion. However, unlike the gradual and evolutionary developments in ETC, the success of AETC will depend upon an understanding of the infrequent customer and the kinds of prepayment programs offered. Conversion to AETC is not just one more step in the evolutionary development of ETC, but rather a true paradigm shift.

A steady evolution

From 1990 through to the present day ETC has evolved in stages. In the early stages of ETC, cash was accepted in the same lane with ETC and enforcement was provided by a boom that came down in

front of the vehicle until a satisfactory toll payment transaction was completed. Booms insured that all tolls were collected but throughput improvements were modest. To increase throughput booms were removed which precipitated the need license plate recognition.

As the penetration of ETC advanced, dedicated ETC lanes were provided which separated and simplified ETC and cash operations. Now multilane free flow is common.

In the development of ETC many assumptions were made about customer behavior that proved to be wrong. Customers would often not properly install the transponders or wave the device as they passed through the toll plaza.

Customers also tended to be lackadaisical in maintaining account information such as credit card, address, license plate and vehicle data.

Things change

As operational processing costs increased, an emphasis was placed on ETC business rules (business system) and

the legal framework. In the beginning, postage was the primary method of communicating with customers and customer service centers were seen as providing good customer service. Both have become major cost centers.

As violations mounted and video technology was deployed manual image review began to grow. Court administrators began to view the toll violation enforcement process as a way to create a new revenue source and penalties fees were used to defray court costs. All of these events conspired to create extraordinary back office costs associated with ETC. AETC systems create the need for a convenient method for the large numbers of cash paying customers to prepay tolls electronically.

Home truths

There is clearly a difference between the number of customers (accounts) and the number of transactions (revenue). Studies confirm that that a small portion of the customers (10-15 per cent) generate the majority of the trips and revenue (60-75 per cent). The converse is also true; 85-90 per cent of the customers will generate 25-40 per cent of the revenue.

To date there are few AETC operations worldwide and fewer still that were converted

from an existing ETC operation that previously accepted cash collections in the lanes. Further, many of the Greenfield projects utilizing AETC systems were developed as public-private ventures, and were not subject to the same rules and expectations as those for purely public ventures.

Most significantly, the performance of private concessions is a matter of profitability whereas the public agency performance is dependent upon the public view "efficient" and "complete" toll collection from all who used the road (i.e., the ability to collect all of the gross revenue).

Recipe for success

For AETC and, therefore congestion management, to be successful, provisions must be made for the infrequent customer. It must be convenient and financially motivating. If a customer uses a toll road very infrequently, the amount of data necessary to establish the account should be minimal.

For the extremely infrequent customer what more is needed than the license plate number and a valid payment method? Further, toll transaction pricing should encourage frequent customers to use transponders and infrequent customers to use prepaid license plate accounts.

One agency calculated that the annual cost to maintain an ETC account was US\$26, but the agency also had about 12 per cent of the accounts with no transactions for the entire year. Studies of several toll agencies would place the cost closer to US\$13 a year.

Perseverance is key

Collecting tolls only through electronic means is a challenging undertaking but it is the future because it provides more net revenue and more convenience for all customers. AETC offers the promise of significantly lower collection costs and higher net revenue which can be reinvested in more transportation capacity. Gross revenue minus leakage must not be the standard for evaluation. Though some additional revenue may be lost, the operational cost of collecting small amounts from large numbers of people is not cost-effective.

The need for establishing the connection between price and use in the transportation network is fundamental to demand management and congestion pricing concepts. The technology of AETC offers the means for establishing that connection but it must be implemented carefully for it is not an additional evolutionary step in the process of implementing electronic toll collection. **TH**

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