

All-inclusive tolling

The advent of multilane free-flow (MLFF) tolling – also known as all-electronic cashless tolling (AECT) – which uses electronic transponder technology, has enabled paying customers to drive through tolling points at highway speeds.

Operationally, AECT is maximizing benefits and revenues for toll operators, but how does it affect travelers?

Advantages include the elimination of barriers, stop-and-go traffic and queues at tolling plazas. While the higher rate of revenue collection is opaque to the traveler, the convenience of paying through an account reduces the need to have cash readily available. The traveler can simply set up an account, validate a debit/credit card for billing, and place an initial charge against it.

Optimization is key

Old toll operations typically had a mixture of manual lanes, semi-automatic lanes with coin machines and electronic toll collection (ETC) lanes. As with AECT, in order to use the ETC lanes, the traveler needed to establish an account using a debit/credit card.

Old, mixed tolling facilities are now looking to maximize benefits and revenues as they transition to AECT. The need to maximize toll revenues is foremost in the minds of tolling managers and individuals at senior state government levels.

Is maximizing myopic?

'Maximizing' refers to a primary focus on the immediate benefits in one's own domain – be it within an organization, on toll roads' needs, or on the reputation of an organization or manager. 'Optimization', on the other hand, refers



to the recognition and actualization of benefits to the larger system or ecosystem as a whole. While AECT/MLFF may maximize revenues and benefits for the toll organization, optimization may increase benefits to both the toll organization and the traveler. In many ways, 'optimize not maximize' is a golden rule that toll organizations should employ today.

Inclusion, not exclusion

To ensure the low cost of transactions in AECT maximization, all users of the system must have a transponder, an associated toll account and a bank account with a debit/credit card to make payments.

Unbankable travelers – those who do not have a bank account

Need to know

Features of A-to-Be's automatic toll payment machines include:

- > An easy-to-use interface with 10in (25cm) color screen displays
- > Versatile configuration options: full-featured; no change; cash only; and card only
- > Double-decked, to serve vehicles of different heights
- > An intercom that links machine users to remote service desks

or are not deemed financially stable enough to have a credit card – are a problem. The percentage of unbankable travelers varies according to location.

The net effect of unbankable, non-creditworthy and fiscally conservative travelers on a toll road can be approximated at 20% of the total number of travelers. This percentage is meaningful. It can mean that AECT/MLFF is excluding 20% of the potential users of a facility and is unknowingly discouraging potential users that previously paid by cash.

A result of this exclusion is high violation rates after an AECT conversion. This is something that the State of New York recently suffered when customers wanted to pay

their tolls, but did not have ETC accounts for the newly installed AECT system. New York State toll authorities were eventually forced to pardon the transgressions of violators by writing off millions of dollars in unpaid tolls and fines. While appeasement calmed the situation, this magnanimous action does not address the alienated customers, bad public relations and future avoidance of service by the affected drivers.

Steps should be taken to be all-inclusive and not prejudiced against any road users who have a right to access toll roads. At present, the discriminatory element of AECT/MLFF is seldom observed as a result of the rush to maximize operations. Instead, a holistic look at the impact on all potential users of the toll facility should be considered.

Semi-automation

Semi-automatic toll collection could make AECT more inclusive. In the past, the term 'semi-automatic toll collection' implied the use of automatic coin machines as a self-service toll collection method that did not employ a human toll collector. Unfortunately, this type of self-service methodology results in stop-and-go traffic in the payment lanes, which leads to tailbacks.

Toll authorities adapted by employing 'hybrid' configurations with dedicated AECT/MLFF lanes and another set of lanes for manual or semi-automatic operations. In these hybrid configuration cases, manual lanes can be eliminated and self-service lanes are able to handle the percentage of

travelers who do not want to be burdened with a toll account.

A new generation of self-service or semi-automatic toll collection machines has been used in Europe for years and is now finding its way onto US toll roads where operators wish to optimize rather than maximize. In locations in the southwest of the USA, and on the Illinois toll road, automatic toll payment machines (ATPM) developed by A-to-Be have been installed.

Unlike their semi-automatic predecessors, the new class of ATPMs caters for all payment methods – cash/coins, credit/debit/special gift cards, as well as digital payments through payment smartphone apps such as Apple Pay. In short, they can be used as part of a hybrid configuration with AECT lanes and ATPM lanes, and they do not discriminate against any method of payment. It is even feasible for the traveler to be issued a uniquely coded non-payment slip if all means to pay are lacking at the time of the transaction. Coded non-payment slips can be used to send payments online or via mail at a later date.

New generation

ATPMs represent a new generation of self-service for toll facilities. While conventional wisdom envisages a future cashless society, toll payments still need to be made during this interim period. Rather than ignoring travelers without toll accounts and focusing on maximization with tags and transponders, it may be better to optimize operations to the realities of the transition period and provide both AECT/MLFF and ATPMs. ○



Left: Automatic toll payment machines allow road users to pay for tolls using any means of payment
Above: A-to-Be's ATPMs are now in operation in Illinois, USA

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