



183A Toll road

The new normal

The Central Texas Regional Mobility Authority is keeping Austin moving through innovation and technology, as **Mike Heiligenstein** explains

As one of the fastest growing cities in the United States, Austin, Texas has built a worldwide reputation as an innovative, technology hotbed – attracting newcomers at a rate of 70 people every day according to recent studies. That kind of phenomenal growth has led to clogged roadways – earning the hip city a less popular

reputation as one of the most traffic-jammed cities in the country.

So, when the two counties that surround Austin created the Central Texas Regional Mobility Authority (CTRMA) in 2002 to provide innovative transportation programs to help ease traffic congestion, it was assumed that the Mobility Authority would have to serve its citizens

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with advanced technology. After all, Austin was the home of several high technology firms at the time, including Dell, Motorola, Advanced Micro Devices, IBM and Apple. Many more now call Austin home such as Google, Facebook, eBay, Samsung, Oracle and more. So there was a native population that not only was receptive to high tech solutions, but would also demand them on any effort to improve mobility.

With little or no state or federal transportation funding in site, the Mobility Authority began building a system of toll roads to re-connect the community. When the Mobility Authority opened its first toll road in 2007, it included gantries for Electronic Toll Collection (ETC), and also expensive, staffed, tollbooths built on land that cost hundreds of thousands of dollars. Why the frustrating duplication in toll collection methods? When it came to financing the toll roads, bond rating agencies and the investment community insisted that payment by cash was

necessary because the risks were too high to trust the certainty that “all electronic tolling” would not see high violation rates and reduced revenues. When actual experience proved that reliable revenue streams could be built on all ETC, the investor world relented and the cash tolling options were decommissioned. Since then, moving to all ETC has saved the Mobility Authority millions of dollars. The Authority was the first agency in the US to convert to all ETC from a mixed cash and ETC cash payment system.

OPTIONAL EXTRAS

As a result of technological innovation and the demand to ease traffic congestion, the Authority has aggressively pursued new layers of technology. Just a few years after the opening of the agency’s first tolled roadway, the Authority decided to offer customers that did not want electronic toll tags, or that only planned to occasionally use our toll roads, another option – video tolling,

which photographs a vehicle’s license plate and then generates an invoice to be mailed.

While more costly to the consumer than toll tag bills, video tolling provides another option and allows motorists to access nearly every toll facility in Texas. But advances in technology had only just begun – the world was changing, and tolling agencies (if they wanted to thrive) were becoming enterprises defined by finance and technology, not concrete and steel.

What made the adoption of innovative solutions important to the Authority was that it fashioned itself as an entrepreneurial entity – one that had to adapt and adopt. But with adoption of new technology comes risk. As an agency we decided to heed the advice of researcher and author Jim Collins from his book *Great by Choice* and adopt the “bullets before cannonballs” approach to change. The bullets began with all ETC and video tolling, and lent themselves to our next phase of development; managed or express lanes with all the tolling complexity that accompanies that method.

But before we entered that world, we decided to explore more travel options to determine whether we could offer our customers a more rewarding and cost effective travel experience. One research effort partnered with the Federal Highways Administration to determine if offering drivers a discount to drive on “shoulder” times would encourage off-peak trips. (Austin, like much of the nation, has particularly bad congestion during peak commuter hours). The drivers were offered a discount on their toll rates if they chose to do so. The point of all this is that we know that it’s not just about new capacity, or even new and better technologies that will be needed to address congestion – it’s also human



Construction of the MoPac Express Lanes



behavior and how the new technologies will interact with existing behavior patterns and alter or eliminate those elements that contribute to congestion.

To that end, we have invested in two smartphone technologies; a mobile app for ridesharing and another app to help drivers use existing capacity and avoid as much congestion as possible. The ride-sharing app helps drivers with similar destinations and time constraints to connect in order to share rides and the costs of driving and tolls. The Authority offers toll reimbursements to those that give the ride share option a chance to work for them.

In Austin, as in most American urban areas, a large percentage of commuters



290 Toll (Manor Expressway – top) as well as the adjacent shared use (hike and bike path – above)



This operations center will be the control center for the MoPac project

drive alone. That number equates to 900,000 empty car seats a day in Austin! It would be fair to ask: what in the world would a toll agency be doing to encourage drivers to share rides? Wouldn't that raise the prospect of diminishing the opportunity for toll paying customers? Of course it might, but in one of the fastest growing cities in America, in order to address congestion in meaningful way, all options need to be on the table, including behavior modification. After all, we are a Mobility Authority, not just a toll agency. With that in mind, we're also developing a mobile app that will help commuters navigate to their destination and help reduce capacity on our overcrowded roadways. By planning their trip ahead of time on the mobile app, the driver will receive a reward for using the designated route at the designated time – with greater rewards for off-peak trips. What coffee company in the world wouldn't want to have their product be part of that incentive package – by offering an incentive to drivers to get to their retail outlets in a more timely and reliable fashion?

A NEW NORMALITY

A key project we're implementing will combine technology and the science of human behavior to create a “new

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normal” in the world of transportation. Congestion pricing, or managed lanes, have taken on increasing importance in the United States. The Mobility Authority, after “firing bullets”, has decided to loft a few cannonballs to improve reliability on some of our more congested freeways. Austin, like most cities don't have available real estate to create new corridors of a sufficient width to provide multiple new lanes of capacity. In order to provide a more reliable trip time on one of our most congested corridors, the Authority is adding one new “express” lane in each direction of an 11-mile stretch of a very congested “core” artery. Advanced monitoring technology and back-end software will be generate sophisticated algorithms to dynamically price the lanes based on the elasticity demand – taking into consideration not only the managed express lane, but also the general purpose lanes and how they are operating. Having given due praise to technology and its benefits, I must also point out that while firing a cannonball, we also incorporated a safety valve for backup. We will have the ability to manually override the functioning of the algorithms in the operations center, especially during the first couple of years, in the event we see anomalies that need to be addressed on a real-time basis. This is truly the merging of finance, technology and micro-economics.

SEEING IS BELIEVING

Finally, smart technology cannot be limited to cars, toll gantries and back rooms. We, in the tolling industry must lead the way with new, smart roadways. Technology must be included and embedded in all new roadways so that those roadways will be able to accept the most innovative technologies coming out

of auto factories and research institutions. We must lead the way and ensure that our toll facilities are as safe as possible, and provide a premium experience for our customers. Vehicle to infrastructure communications is now entering a phase that will permit transportation agencies the opportunity to proactively avoid collisions on our highways. How many fatalities could be prevented if infrastructure could communicate with and shut down wrong way drivers who mistakenly enter an exit ramp before they become a deadly force, better yet, notify oncoming traffic to steer clear of such dangers?

Tolling agencies have learned that “seeing is believing.” That driving forward in the name of what our customers want is what really matters. By capitalizing on the relationships we've built with our customers over time, and integrating the many new, innovative features that technology has to offer, we can truly begin to bring roadway infrastructure into the future. Toll agencies offer a unique opportunity to lead the way and to study the results in a controlled environment that can improve the experience over time. We should offer a service on an entrepreneurial platform – and we should learn from and be just as inventive as our private sector peers. To do less would be a disservice to all who depend on us to keep our regions, states, and nation safe and mobile. 📍



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