

# All-Electronic Tolling Update

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# All-Electronic Tolling Overview



- All-Electronic Tolling (AET) on the Mass. Pike is scheduled to go live in October 2016
- The system is currently under construction and the first overhead gantries will soon become visible
- The \$50M in operating cost savings originally predicted failed to consider the life cycle costs
  - AET will reduce toll collection operating costs from \$56M to \$36M but may also reduce collections
  - Net toll revenue is projected to rise slightly
  - Additional capital costs will be incurred to demolish and reconfigure toll plazas
- The primary reason to implement AET is not cost savings, rather it is customer convenience and its safety, congestion and emission-reduction benefits

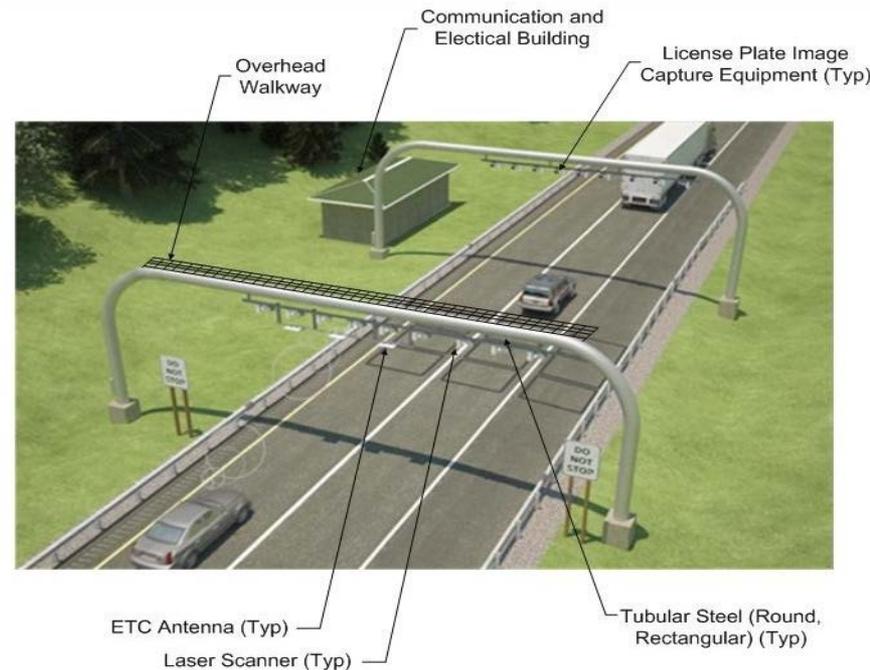
## Background: Massachusetts Toll Facilities



- Massachusetts toll facilities are comprised of the Western Turnpike (from NY border to Route 128), the Metropolitan Highway System (Boston Extension of the Turnpike from 128 east, Ted Williams Tunnel, and Sumner/Callahan Tunnels) and the Tobin Bridge
- The system as a whole generates 214 million toll transactions and \$375M in gross revenue annually: \$203.3M Metropolitan Highway System, \$138.7M Western Turnpike, \$32.9M Tobin Bridge
- Currently on the Mass. Pike tolls can be paid using cash or the E-Z Pass program; the Tobin has been piloting All-Electronic Tolling where non E-ZPass users are charged using a “Pay By Plate” system
- E-ZPass transponders are provided free of charge and Massachusetts has high rates of E-ZPass usage: 73% on the Western Turnpike, 81% on the Boston Extension and 74% on tunnels and bridge; the new Tobin system is currently at an 85% E-ZPass usage rate

## Background: How AET Works

- In the interest of improving safety, reducing congestion, and reducing carbon emissions, MassDOT decided to phase out manual toll collection and replace it with an All-Electronic Tolling (AET) System
- AET transactions will be processed either through E-ZPass or an invoice based on the license plate
  - System searches for E-ZPass transponder. If an E-ZPass is found, the system classifies the vehicle and charges the appropriate amount to the customer's account
  - If no E-ZPass is found, a camera captures an image of the license plate
  - The license plate is either matched with the customer's existing E-ZPass account or a bill is mailed to the address of the vehicle registration holder



## Background: Why AET?

- **Safety:** according to the NTSB, “toll authorities nationwide experience rear-end collision rates that exceed other types of collisions, in part because toll plazas interrupt the flow of high-speed traffic to intermittently collect tolls.”
  - For example, the crash rate for the Weston toll plaza is about 60% higher than the adjacent mainline section



## Background: Why AET?



- **Greater throughput and lower congestion:** Removing toll booths will ease travel on the turnpike, and eliminate congestion at the initial entry plazas. Studies suggest over 800 hours of vehicle delay savings per day, totaling over 280,000 hours annually
- **Environmental benefits:** Reducing idling and acceleration / deceleration caused by tollbooths will save between 500 and 2,500 gallons of gasoline per day (200,000 to 875,000 gallons annually), which will reduce greenhouse gas emissions by up to 7,800 tons per year
- **Reduced O&M Costs:** The end of cash tolls negates the need for toll-takers, allowing MassDOT to reduce headcount and either save personnel costs or reallocate some personnel resources to necessary core functions like roadway maintenance or capital projects

## Overview: Status of AET



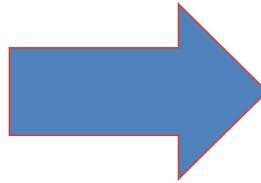
- Initial discussions occurred in 2010, and following a feasibility study in 2012 and procurement process, the MassDOT Board voted to award the construction contract to Raytheon in July 2014
- The All-Electronic Tolling system on the Mass. Pike is scheduled to go live in October 2016
- Progress on the project to date includes installation of gantry foundations, installation of toll modular buildings, and electrical work, with visible construction of the overhead gantries set to begin imminently
- In early 2016 MassDOT will need to undertake a public process to determine how rates will be set for passing under each gantry, the surcharge that pay-by-plate users will incur, and the new two-way tolls in the Airport tunnels\*

\*Currently drivers pay a single toll leaving the airport but the idea is that this toll would be two-way, with an approximately 50% reduction in the current toll level

# AET Scheduled to Go Live in Oct. 2016

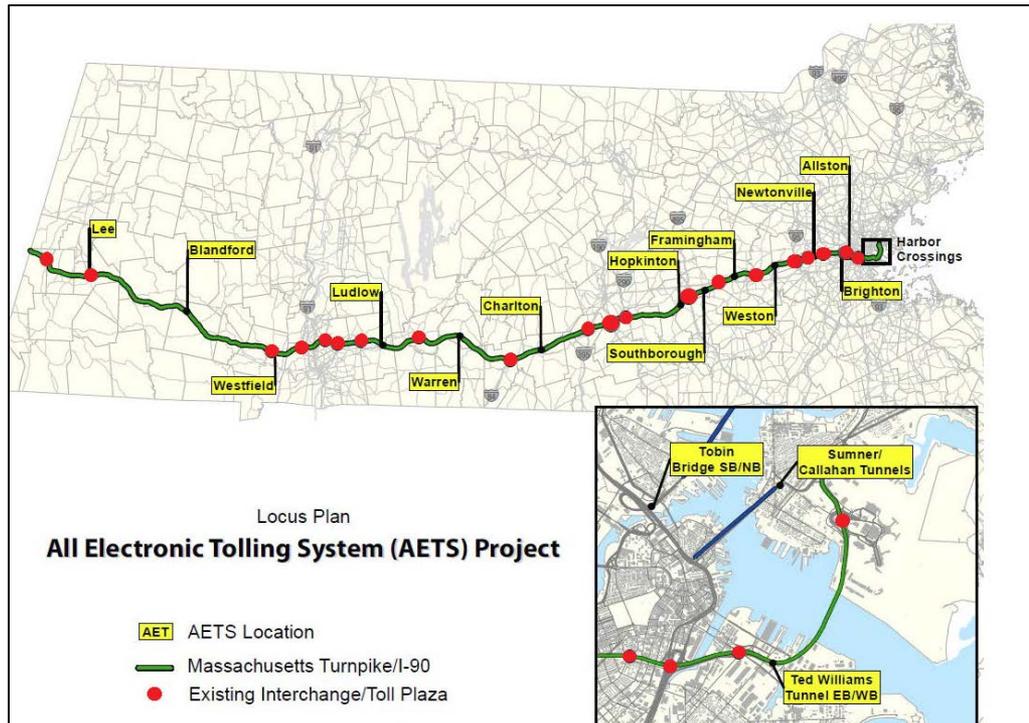
## Current System

- 24 toll plazas
- 5 E-ZPass customer centers



## All-Electronic Tolling

- 16 gantry locations
- 6 contractor operated service centers
- Improved and efficient customer communications



## Background: AET Operating Costs



- The current toll collection system costs \$56.4M for toll collector salaries, cash collection, E-ZPass processing and equipment maintenance.
- AET is estimated to cost \$35.9-\$36.9M for those costs; actual costs will vary depending on how many customers use E-ZPass and how many use Pay By Plate
  - The AET construction including gantries, detection equipment, and the host system was awarded in 2014 to Raytheon Co; approximately \$95.9M of this will be paid out of incoming toll revenues plus reserves, and the other approximately \$43.2M will be paid through 10 annual installments out of the toll operating budget. The contract value was \$130M
  - The AET “backoffice” and Customer Service Center contract was awarded in 2014 to TransCore (MassDOT’s current E-ZPass contractor); this includes \$6.9M in upfront capital plus annual payments paid over 10 years that vary based on the number of transactions. The contract value was \$204M

## Background: AET Capital Costs



### After completing Final Acceptance Testing

- Raytheon will have been paid approximately \$95.9M in capital costs for the buildout of the AET system
  - \$17.2M invoiced to date
  
- TransCore will have been paid approximately \$6.9M for buildout of the “back office”
  - \$0.7M invoiced to date
  
- Contract for demolition of the 24 existing toll plazas is still in design and has not been awarded, but MassDOT anticipates a total cost of up to \$130M; this work includes demolition work, electrical work, safety enhancements, and bringing the existing roads to grade
  
- It is expected that a portion of these capital expenses will come from toll reserves and a portion from “pay-go” capital; until the fiscal year is completed, it is not possible to determine the exact amount that will come out of reserves

## How Will AET Charges Be Set?



- Current plans call for
  - Gantry charges charged each time a vehicle passes a gantry (these would be different for different vehicle types) so that a customer driving from one end of I-90 to the other will pay the same total toll amount as they currently do
  - Tunnel tolls would be charged in each direction, rather than the current system where toll is paid only when departing the airport
  - Surcharge would be imposed for those who do not have E-ZPass transponders and are billed using Pay By Plate
  
- Key issues are
  - How to set gantry fees so tolls are revenue neutral, or as close as possible, based on a traffic and revenue study
  - What the Pay By Plate surcharge should be

- The Board will vote on gantry charges after a public review process
- Staff recommends that charges be set as follows:
  - New gantry charges should be revenue neutral and be set to return a level of toll collection similar to that presently collected.
  - Based on experience with the Tobin Bridge pilot, surcharges on Pay By Plate customers should be sufficient to recover the cost of toll collection and should not be designed to be punitive or to generate revenue beyond covering costs.

- MassDOT will appoint a tollpayer advocate to take part in the public discussion over AET and Pay By Plate pricing
  - The legislation creating MassDOT, Chapter 25 of the Acts of 2009, provides in section 167(a) that:

The tollpayer advocate shall serve without compensation and may attend all meetings of the board of directors of the department and all meetings of any subsidiary board. The tollpayer advocate shall advocate on behalf of the tollpayers to ensure that their interests are fully understood and considered by the board in its deliberations and decisions.

- Staff will begin process of establishing gantry charges and surcharge on Pay By Plate customers.

## **Additional Appendix Information on Tolls**

# Scheduled Installation of Gantries



| <b>Location</b>    | <b>Gantry #</b> | <b>Scheduled Date of Gantry Installation</b> |
|--------------------|-----------------|--|
| Weston             | Gantry 10       | 11/22/2015                                   |
| Southborough       | Gantry 8        | 12/31/2015                                   |
| Framingham         | Gantry 9        | 12/31/2015                                   |
| Lee                | Gantry 1        | 1/10/2016                                    |
| Blandford          | Gantry 2        | 1/10/2016                                    |
| Westfield          | Gantry 3        | 1/31/2016                                    |
| Boston (TWT)       | Gantry 14       | 2/7/2016                                     |
| Boston (Tobin)     | Gantry 15       | 3/3/2016                                     |
| Ludlow             | Gantry 4        | 4/7/2016                                     |
| E.Boston (Sum/Cal) | Gantry 16       | 4/13/2016                                    |
| Hopkinton          | Gantry 7        | 4/14/2016                                    |
| Warren             | Gantry 5        | 4/17/2016                                    |
| Newtonville        | Gantry 11       | 4/20/2016                                    |
| Charlton           | Gantry 6        | 4/24/2016                                    |
| Brighton           | Gantry 12       | 4/24/2016                                    |
| Allston            | Gantry 13       | 4/24/2016                                    |

# Operating & Revenue

## AET vs. Current Toll Collection



| Annual Revenue Sources  |  | Current System  | AET System (2017 Est)<br>\$0.50 Surcharge | AET System (2017 Est)<br>\$1 Surcharge |
|---|--|-----------------|---|--|
| Toll Revenue Collected <sup>1</sup>                                   |  | \$360.7M        | \$364.3M                                  | \$364.3M                               |
| Violation Fees Collected <sup>2</sup>                                 |  | \$14.0M         | \$0                                       | \$0                                    |
| Leakage <sup>3</sup> (Uncollected Toll Revenue)                       |  | N/A             | (-\$15.9M)                                | (-\$16.1M)                             |
| Diversion (Traffic Diverted Off Toll Facility)                        |  | N/A             | (-\$10.6M)                                | (-\$13.8M)                             |
| Surcharge Revenue (Pay By Plate Fee)                                  |  | N/A             | \$22.2M                                   | \$34.6M <sup>4</sup>                   |
| <b>Total Annual Revenues Collected</b>                                |  | <b>\$374.7M</b> | <b>\$360.0M</b>                           | <b>\$369.0M</b>                        |
| Operational Cost Categories   |  | Current System  | AET System (2017 Est)<br>\$0.50 Surcharge | AET System (2017 Est)<br>\$1 Surcharge |
| Salary and Benefits of Toll Collectors and Cash Collection Service    |  | \$34.4M         | \$0                                       | \$0                                    |
| Processing Costs for E-ZPass and Pay-by-Plate                         | TransCore Backoffice O&M Cost                      | \$12.1M         | \$19.0M <sup>5</sup>                      | \$18.5M <sup>4</sup>                   |
| Collection costs other than TransCore (ie: credit card fees, postage) | MassDOT Customer Service Center Costs <sup>6</sup> | \$4.4M          | \$14.0M <sup>5</sup>                      | \$13.5M <sup>4</sup>                   |
| Equipment Maintenance Costs <sup>7</sup>                              |  | \$5.5M          | \$3.9M <sup>8</sup>                       | \$3.9M <sup>8</sup>                    |
| <b>Estimated Annual Operational Cost</b>                              |  | <b>\$56.4M</b>  | <b>\$36.9M</b>                            | <b>\$35.9M</b>                         |
| <b>Net Revenue</b>  |  | <b>\$318.3M</b> | <b>\$323.1M</b>                           | <b>\$333.1M</b>                        |

<sup>1</sup>Assumes 1% annual growth in revenue

<sup>2</sup>With AET revenue from toll violations will go away

<sup>3</sup>Based on Tobin Bridge experience and 2012 Cambridge Systematic analysis

<sup>4</sup>Based on baseline 85% E-Zpass vs.15% Pay By Plate market

<sup>5</sup> Based on 82% EZ-Pass vs. 18% Pay-By-Plate market

(note: E-ZPass usage rate increases as surcharge increases)

<sup>6</sup> Costs incurred through Pay By Plate transactions outside the scope of AET contract (ie: credit card fees, postage, etc)

<sup>7</sup> Annual maintenance costs of equipment (current system under TransCore; AET maintenance performed by Raytheon)

<sup>8</sup>Raytheon Equipment Maintenance Cost for the first year (rises by approximately 0.1M each subsequent year)

## Toll Plaza Demolition Scope of Work



Contract for demolition of the 24 existing toll plazas is still in design, but MassDOT anticipates a total cost of around \$130M; this work includes:

- Demolition of the Toll Support Building at each site (~\$2M)
- Demolition of the Canopies, Toll booths, and Tunnels (~\$10M)
- Full Depth reconstruction at the plaza areas used to correct the horizontal alignment, vertical profile, superelevation, cross-slope, and drainage improvements (~\$45M)
- Mill and overlay of degraded pavement on the ramps (~\$15M)
- Replacement of Traffic Control Equipment (Signs/Pavement Markings/Signal Equipment) (~\$3M)
- Installation of Highway Lighting to maintain the existing light levels at the ramps (~\$10M)
- Hazardous material abatement for the Toll Support Buildings, Toll booths, and Tunnels (~\$3M)
- Temporary Traffic Control and earth support equipment required to maintain traffic flow throughout all stages of construction. (~\$10M)
- Structures (Earth Retaining & 1 Bridge) (~\$4M)
- Miscellaneous items, ie, Mobilization, Traffic Police, Incentives, Schedule, Field Offices etc (~\$15M)

# Current Level of Toll Reserves- FY 14



| As of June 30, 2014                                    |              | MHS      | WT       | Tobin   | MTA General | Total    |
|--|--------------|----------|----------|---------|-------------|----------|
| Funds held by Trustee for Debt Service                 | RESTRICTED   | \$323.4M | \$23.6M  | \$0     | \$0         | \$347M   |
| General Fund- Toll Operations and Capital Reinvestment | UNRESTRICTED | \$236.4M | 150.7M   | \$62.7M | 20.6M       | \$470.5M |
| Nonspendable Prepaid Expenditures                      | RESTRICTED   | \$2.1M   | \$0.7M   | \$0.03M |             | \$2.8M   |
| Fund Balance   |              | \$561.8M | \$175.1M | \$62.7M | \$20.6M     | \$820.3M |

\*FY2014 Audited Financials

\*Numbers may be off due to rounding

\*Non-inclusive of recent \$80.7M settlement approved by the MassDOT Board on November 19, 2014; this was paid out of the MHS Unrestricted Fund