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July 22, 2016

Mr. Peter Mills
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Subject: **Comments on Final eTrans Report “Shortfalls in MTA’s Response to the Army Corp of Engineers (March 30, 2016)”**

Dear Peter:

As requested, CDM Smith has reviewed the final eTrans Report “Shortfalls in MTA’s Response to the Army Corp of Engineers (March 30, 2016)”. This report summarizes our findings in light of the specific work we did regarding the York Mainline conversion to either AET or ORT and in light of our experience on other similar work throughout the United States.

Introduction

CDM Smith was (and still is in most cases) the traffic engineering consultant to a number of the agencies mentioned in the eTrans report where AET has been implemented, including for the Pennsylvania Turnpike Commission, the Central Florida Expressway Authority, and for Highway 407 in Toronto (the first AET facility in North America). In addition, the Florida Turnpike, the Maryland Transportation Authority, the E-470 Public Highway Authority (Colorado), the Harris County Toll Road Authority (Texas), and many more have deployed AET based on CDM Smith traffic and revenue studies. The same approach and considerations for those studies were taken into account as part of our analysis of AET and ORT impacts at the York Toll Plaza.

The CDM Smith Study for the Maine Turnpike Authority (MTA) was conducted without bias for either AET or ORT, but rather on the mix of variables specific to the York (and Gardiner) toll plaza. These variables are unique for each and every toll facility. The mix of in-state versus out-of-state cash customers, overall cash market share, license plate successful read rate, valid department of motor vehicle address records, toll diversion, and more, are all location specific. They determine the potential levels of revenue leakage under AET and ORT, as well as the level of video or cash surcharges required to make up any toll revenue shortfalls.

In the end, we did not recommend either AET or ORT, but rather only the measures required to ensure net revenue neutrality for both. Based upon the impacts of these measures, previous professional tolling recommendations, and an MTA staff recommendation, the MTA Board of





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Directors selected ORT. Based on our national experience and a number of technical project-specific risk factors including the percentage of MTA income at risk at York, the mix of out-of-state and Canadian traffic, the cash market share, the toll surcharge, and traffic diversion, it is our professional opinion that the MTA decision was prudent and consistent with good tolling practice nationally.

Following are responses to each section of the eTrans report, as they apply to the work conducted by CDM Smith and summarized in our "Maine Turnpike ORT/AET Impact Analysis (March 18, 2014)".

Response to eTrans Report: Cover Page

The cover page of the eTrans report provides a table which contrasts ORT versus AET on several key elements. All ORT characteristics are labeled as "marginal" or "poor", while those for AET are all labeled as "best". It is odd that a "toll cost to customer" category has not been included since this is the aspect of any toll road that most directly affects all users. If "toll cost to customer" were to be considered, ORT would be labeled as "best" since no changes would be required for cash or E-ZPass customers (compared to existing rates). AET would likely merit a "worst" label since a substantial \$3.00 surcharge would be required for video (current cash) customers in order to maintain net toll revenue neutrality.

It is also misleading for the author to show the "Life-cycle Costs/Retained Revenue" to be "best" under AET and "poor" for ORT. The only reason for the net positive result under AET is due to the \$3.00 video surcharge needed to recover lost revenue. Later in the eTrans report (see Section 3.3.d, page 17) the author says the \$3.00 video surcharge is "significantly greater than those likely to occur". Without that level of video surcharge, net toll revenue losses would be significant under AET (based on our analysis).

While the CDM Smith study did not analyze the other components this table ranks, I would take exception to the "poor" ranking under ORT for "Safety" and "Customer Service". Numerous studies (including experience at MTA's converted ORT facilities, as well as those in neighboring New Hampshire) have shown that ORT dramatically reduces accidents compared to traditional mixed use (cash and E-ZPass) toll plazas. Regarding "Customer Service", some of the top focus group responses we have had for those opposing AET is the loss of customer service via the toll attendants. Those motorists indicated that they liked the option to pay cash and ask toll attendants for directions or for help in case of emergencies. These are certainly not reasons to maintain toll collectors, but it does provide ORT with a heightened customer service option not available with AET.

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Response to eTrans Report: Section 1.0 (Executive Summary)

In Section 1.0, the author takes issue with the level of traffic diversion CDM Smith estimated under AET. He makes two arguments. First, the CDM Smith estimates of 3,400 to 5,500 daily trips diverting to alternative routes is far too high. And, second, that these levels of diversion are “assumed to be realized over the long term.”

The 3,400 daily diversion value is CDM Smith’s base case estimate for diversion assuming AET was implemented in 2015. The 5,500 daily diversion level is based on CDM Smith’s financial risk analysis assuming a 90 percent confidence level. Risk analyses are often performed in order to provide the financial community (rating agencies, bond insurers, and investors) with some level of assurance that a toll authority’s financial obligations can be met. A detailed description of CDM Smith’s risk analysis is provided in our Study Report.

The eTrans author seems to imply that there is no alternative road way capacity to absorb this level of diversion. Travel in the southern coastline area of Maine is highly seasonal. As shown in the table below, July and August traffic levels greatly exceed those in other months. Traffic volumes and congestion can be severe during these two peak summer months. Relatively little diversion would occur during these two months (though not necessarily during off peak night time periods). However, for half the year, traffic volumes are about half those during the two peak summer months. During these periods the alternative routes would have ample capacity to absorb significant levels of diversion to avoid a doubling of the video toll at York.

York Toll Plaza 2015 Monthly Traffic Variations	
Month	Monthly Variation
January	64.3 %
February	63.9
March	75.1
April	85.1
May	102.2
June	114.2
July	147.9
August	152.3
September	116.8
October	103.7
November	88.9
December	82.3
Average	100.0



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The eTrans author's second comment regarding diversion, that these levels of diversion are "assumed to be realized over the long term," is simply untrue. Table 5 (page 21) of the CDM Smith report provides the information summarized in the table below. As shown, CDM Smith base case diversion levels decrease from 3,449 per day in 2015 to less than half that level by 2025 (at 1,627 per day). These decreases in diversion are largely the result of the assumed continued shift from video transactions to E-ZPass (which has no AET toll surcharge) over time.

CDM Smith Estimated Annual Diversion at York Toll Plaza Assuming Conversion to AET		
Year	Estimated Annual Diversion	Estimated Daily Diversion
2015	1,259,000	3,449
2016	1,164,000	3,189
2017	1,076,000	2,948
2018	994,000	2,723
2019	918,000	2,515
2020	847,000	2,321
2021	782,000	2,142
2022	721,000	1,975
2023	664,000	1,819
2024	611,000	1,674
2025	594,000	1,627

In an attempt to support his statements regarding CDM Smith's high diversion levels, the author then uses experience on the Tobin Bridge (formally known as the Mystic River Bridge), which recently converted to AET.

In an attempt to demonstrate that the diversion rates we estimated at the York Toll Plaza are too high when AET is assumed, the eTrans report cites the fact that traffic volumes on the Tobin Bridge actually increased for the five month period including August through December 2015 compared to the same five month period in 2014. Over this period, traffic increased by 7.4 percent. His conclusion, therefore, is that AET does not result in toll diversion.

This example does not make any sense for three reasons. First, conversion to AET at the Tobin Bridge took place in July 2014. Thus, AET was operational during both of the time periods they analyzed. So, the growth rate they show really only reflects normal background growth or growth

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from other non-AET related sources. For this comparison to be meaningful, they would need to have compared August through December 2013, when there was no AET, versus August through December 2014, when there was AET.

Secondly, the toll diversion rates developed in the CDM Smith report are based on the \$3.00 (passenger car) toll increase that would be incurred by video customers under AET. This would be double the current cash toll rates. Toll rates on the Tobin Bridge were \$3.00 for cash and \$2.50 for E-ZPass (car rates) prior to conversion to AET. Upon conversion to AET, the rates remained unchanged at \$3.00 for video (also referred to as toll-by-plate) and \$2.50 for E-ZPass. So, even if the author had chosen the correct time periods to compare, we would not have expected any toll diversion to occur at the Tobin Bridge because there was no additional video toll surcharge.

Thirdly, even if the author had selected the correct time periods to compare and a similar toll increase had occurred at the Tobin Bridge, it is impossible to know, without careful analysis, what level of toll diversion would be expected at this highly urban location. Simply using this as an example because it converted to AET is not sufficient to say that diversion rates should also be similar those in the York corridor.

What is most important regarding the AET conversion at the Tobin Bridge is the actual impact it has had on toll revenue collection. The eTrans report does not mention the fact that video payment violations rates have been very high at this location. An April 1, 2015 article in the New Salem News (http://www.salemnews.com/news/local_news/motorists-racking-up-hefty-fines-for-unpaid-cashless-tolls/article_23bb90f3-ed93-5940-ae1b-7ff8aea11ed1.html) wrote the following:

“Figures from the state Department of Transportation reveal that from mid-July to Dec. 31 the state collected less than half of the \$2.7 million in pay-by-plate tolls billed to motorists crossing the Tobin during that time.”

[M]otorists who didn’t pay up after getting bills in the mail have been hit with more than \$3.2 million in late fees and other charges, with MassDOT collecting only \$600,000 of that by the end of the year.”

As a result of such high violation rates, MassDOT felt it necessary to forgive tolls through an amnesty program. Specifically, MassDOT issued the following notice on this subject: (<https://www.paybyplatema.com/pbp/Desktop/Default.aspx>):

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"Important Notice: Effective June 1st, 2015 all current delinquent customers will be offered an amnesty settlement. All Pay By Plate fees will be waived and all Registry of Motor Vehicles (RMV) holds will be removed. Only outstanding tolls will need to be paid in full. This amnesty program is for Tobin Bridge outstanding fees only."

Violation fees are meant to both deter motorists from not paying the toll and to help make up for lost toll revenue from those who do violate and never pay. So, while this amnesty program may help in collecting some lost toll revenue, the loss of fee revenue will result in continued net revenue losses.

For comparative purposes, the total video uncollectible rate assumed by CDM Smith for the York Toll Plaza is 42.2 percent (Table 1, page 14). This includes losses from both unbillable transactions and uncollectible transactions. In spite of the slightly lower video collection assumptions CDM Smith developed for the York Toll Plaza, the revenue risk is much higher compared to that for the Tobin Bridge.

In the case of the Tobin Bridge, video transactions account for only about 15 percent of total transactions. This means that a 50 percent video loss rate results in revenue leakage of only about 7.5 percent. In addition, the Tobin Bridge only accounts for about 7.7 percent of total MassDOT Turnpike System toll revenue. The situation at York, however, is quite different. At York, about 30 percent of current transactions are cash (versus 15 percent at Tobin Bridge), thus putting twice the revenue at this location at risk. In addition, the York Toll Plaza is the single highest revenue generating location on the Maine Turnpike accounting for just over 40 percent of total system revenue in 2015 (versus 7.7 percent for Tobin Bridge).

It is also almost comical that the eTrans report uses an example 60 miles south of the York Toll Plaza (on an entirely different road and in a different type of area) when the closest example of a successful toll conversion can be found just a 15 minute drive south of the York Toll Plaza on I-95 in Hampton, New Hampshire. The New Hampshire DOT converted the traditional mixed use (cash and E-ZPass) barrier toll plaza in Hampton to ORT in 2010. Following its success, they converted the Hooksett Mainline Toll Plaza in 2013. Current plans are for the conversion of the Dover and Rochester plazas by the 2021-2022 time period.

In 2011 Hampton Toll Plaza on Interstate 95 was selected as one of the top ten transportation projects in the country in that year's competition based upon judging in three categories: "on time", "under budget", and "innovative management". The competition was sponsored by the American Association of State Highway and Transportation Officials (AASHTO), AAA, and the U.S. Chamber of Commerce (<https://www.nh.gov/dot/media/nr2011/nro90m95.htm>).

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And upon conversion of the Hooksett Toll Plaza, NHDOT Turnpikes Administrator Chris Waszczuk noted that the benefits of implementing ORT at the Hooksett Tolls include (<https://www.nh.gov/dot/media/nr2013/20130522-open-road-tolling.htm>):

- Improved customer convenience
- Reduced travel time – 270,000 hours annually
- No lines or stopping to pay tolls
- Reduced fuel consumption – 465,000 gallons annually
- Improved air quality – less vehicle idling and delays
- Safer – no lane changing or slowing down
- 30% discount for E-ZPass "passenger type" vehicles

The author of the eTrans report seems to be so focused on promoting AET at all costs, that he neglects to see (or look for) any benefits afforded by ORT. The New Hampshire example is but one of many successful ORT conversions throughout the country. Other examples include the New Jersey Turnpike and Garden State Parkway (NJ), Pennsylvania Turnpike, Central Florida Expressway, and many more.

Response to eTrans Report: Section 2.0 (U.S. Army Corps of Engineers Observations/Requests and MTA's Response)

In Section 2.2 of the eTrans report the author states that toll revenue leakage under ORT has been underestimated, thus making it look more favorable versus AET. It is true, that intentional toll cheats would be able to use the E-ZPass lanes under ORT. But, the same is true with conventional toll plazas with dedicated E-ZPass lanes (which there are at the York Toll Plaza). Thus, conversion to ORT would not result in any (or only minimally more for those who mistakenly get in the express E-ZPass ORT lanes) additional revenue leakage compared to conventional toll plazas. Under AET, revenue leakage occurs when cameras do not take a clear image of the plate, when the department of motor vehicles has incorrect address information, or when motorists do not pay invoices.

Regardless of what the author says on this point, actual experience of ORT revenue collection on the Maine Turnpike at the converted New Gloucester Toll Plaza has shown that there is negligible revenue loss. CDM Smith is the traffic engineering consultant to the Pennsylvania Turnpike, the New Jersey Turnpike, and the Garden State Parkway (NJ). Toll revenue leakage at locations where ORT has been implemented has not been an issue. The same can be said for experience at the Hampton and Hooksett Toll Plazas in New Hampshire.

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For some reason, the eTrans report notes the following, which is totally irrelevant to their argument regarding increased ORT revenue leakage (page 5):

“In addition, E-ZPass lane violations are not limited to just open road lanes in ORT operations. For example, the E-ZPass lanes on the Pennsylvania Turnpike (gate-free lanes in the toll plazas) have been subject to such fraud and abuse that:

“When the Pennsylvania Turnpike’s fiscal year ended in May (2015), there were \$33.3 million still outstanding in unpaid tolls.”^{xxi}

Therefore, for this study to assume only modest violations in ORT lanes at the York Toll Plaza is overly optimistic and biases the results against AET.”

Citing this experience in Pennsylvania is irrelevant and misleading for several reasons. First, if, as the author asserts, this \$33.3 million in revenue loss is not attributable to ORT, but rather to gate free E-ZPass only lanes (referred to as “slip ramps” by the Pennsylvania Turnpike Commission), then it is plainly clear this has nothing to do with ORT. Secondly, had the author correctly understood what the \$33.3 million outstanding tolls referred to, he would not have made this argument at all. In fact, the \$33.3 million referred to represents unpaid tolls for the entire system, including ORT plazas, slip ramps, and conventional toll plazas (which form the vast majority of the Pennsylvania Turnpike toll system). They also represent the cumulative two-year total in unpaid tolls. It should also be noted that while \$33.3 million sounds like a substantial amount, given the total two-year revenue collection on the Pennsylvania Turnpike, this amounts to only a little more than 1.5 percent of systemwide toll revenue. But, again, the bigger point here is that the \$33.3 million dollar unpaid tolls referenced has nothing to do with ORT revenue loss (either on the Pennsylvania Turnpike or on the Maine Turnpike).

Further, if eTrans had read down a little farther in the Pennsylvania Turnpike article from which it quoted, it would have seen that Turnpike Commission Chair Sean Logan said his *“concern is the level of unpaid and uncollected tolls will increase dramatically if the turnpike continues down the road to all electronic tolling without the authority to go after violators with an enforcement mechanism that gets drivers attention”*.

In Section 2.4 the eTrans report again uses incomplete and misleading information from another real world example of AET conversion to argue that AET is good and ORT is bad. Unfortunately, this fails as well. They cite the Central Florida Expressway (CFX) Authority as having “recently



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studied AET deployment throughout the U.S. and Canada and elected to move forward with AET deployment..." CDM Smith is the traffic engineering consultant to the CFX Authority and conducted the traffic and revenue studies leading to their recent decision to implement AET.

Based on the eTrans report, one would be forgiven for interpreting this statement to mean that the CFX Authority decided to convert its entire system to AET. In fact, that is not the case. AET, in this case, will be implemented on a new expansion project as part of a western beltway around Orlando, FL. Total toll revenue on the new AET segment is estimated to amount to \$1.2 million after one year of operation. Total CFX toll revenue in that same year is estimated to amount to \$451.5 million; thus, AET revenue will account for 0.3 percent of total system toll revenue (revenue forecasts for the AET segment and total system are from the Central Florida Expressway Authority FY 2015 General Traffic and Earnings Consultant's Annual Report, CDM Smith, February 2016).

This proposed toll segment is, in many ways, a good candidate for AET. It will serve a highly commuter oriented market and is expected to have more than 80 percent SunPass (Florida's equivalent to E-ZPass) participation. In addition, it will serve as an ideal pilot program for any further expansion projects since any losses at this location would not present a revenue risk to the CFX Authority. None of these conditions are true of the York Toll Plaza. Finally, the eTrans author does not mention that all of the current CFX Authority toll system was converted from traditional toll collection to ORT several years ago; they have no plans to convert any of the existing ORT plazas to AET.

Response to eTrans Report: Section 3.0 (Environmental, Safety and Financial Issues Not Properly Addressed in MTA's Analysis)

Section 3.3 specifically deals with "Shortfalls in the MTA's Financial Analyses". The eTrans assertions here fall into the following categories:

1. The CDM Smith report should have considered a life-cycle cost analysis instead of a net revenue analysis.
2. The CDM Smith report limited its analysis to a 10-year time frame.
3. The CDM Smith report focused on a worst case scenario instead of a most likely scenario.
4. The AET video surcharge amounts are higher than those for other AET facilities and inconsistent with "Good Industry Practices".
5. CDM Smith estimates of toll diversion are too high.
6. CDM Smith underestimated cash revenue leakage rates under ORT.
7. CDM Smith assumed different business rules for AET than they did for ORT.

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Items #1 and #2 – These two are related. We provided net AET and ORT traffic and revenue impacts over a 16-year period from 2015 through 2030 (see CDM Smith report Tables 5 and 6). We also conducted a net present value analysis of the revenue impacts along with estimated capital costs for both AET and ORT over a ten-year period. CDM Smith did not recommend either AET or ORT based on this analysis, but rather provided technical analysis and a professional measurement of impacts, and left that decision up to the MTA.

The structure of the analysis, however, is consistent with studies CDM Smith has conducted for numerous other toll authorities. Furthermore, this is the type of information that is requested by the financial industry (rating agencies, bond insurers, and investors). Maximum focus, from their point of view, is on the risk to toll revenue and the ability of a toll agency to maintain minimum debt service coverage ratios. In this case, AET introduces more revenue risk than does ORT, thus the need for the \$3.00 video surcharge. Capital costs related to construction of a new toll plaza (be it AET or ORT) is substantially less risky. Cost incurred in construction are well established and represent a one-time expenditure. Revenue losses, on the other hand, can occur on an annual basis. Consistent with other tolling agency practices nationally, I would think that the MTA would be much more concerned with preservation of its long term revenue stream, when compared to the one time capital cost to construct a new toll facility.

Item #3 – This is simply not the case. CDM Smith's base case (see Tables 5 and 6 of the CDM Smith report) reflects "a most likely scenario". We incorporated actual experience at MTA regarding nearly every variable considered in the analysis. Table 1 of CDM Smith's report highlights several of the key assumptions in the model that MTA staff provided based on actual experience. The same is true on the cost side of the equation (image review costs, mailing costs, etc.). The author of the eTrans report may think these variables are too high or that they will change in the future. In order to maintain a strong bond rating, we must base our analysis on current operations. Rating agencies are not interested in "up-side" forecasts and do not rate toll agencies on what might happen in the future. If anything, they are much more interested in the "down-side". Thus, the CDM Smith report also conducted a risk analysis at both a 90 percent and 95 percent confidence level in order to provide the MTA (as well as rating agencies and others, if needed) some measure of confidence that debt service coverage levels could be maintained with either 90 percent or 95 percent confidence.

Item #4 – This is an odd statement. No toll rates (whether cash, E-ZPass, or video) are set based on "Industry Standards". Rates are set to meet operating, capital, and debt service needs. The video surcharges estimated for the York Toll Plaza are based on factors unique to this location, including a majority of out-of-state travelers (including a significant number of Canadian



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customers), high cash paying market share (which would be video under AET), a high number of invalid department of motor vehicle addresses, current violation payment experience, etc.

Item #5 – Diversion levels developed in the CDM Smith study were discussed above in detail.

Item #6 – The eTrans author again questions CDM Smith leakage rates for ORT, arguing they should be much higher. This, too, was discussed above in detail.

Item #7 – The CDM Smith analysis assumed the same business rules for both AET and ORT. The eTrans report does not give any examples of where different business rules were used, so it is difficult to respond beyond this. Perhaps they are conflating assumed cash leakage rate assumptions under ORT versus those assumed under AET as being based on business rules. Those types of assumptions are not business rules, but rather actual operating characteristics based on MTA's own experience and on the experience of other ORT facilities such as those in New Hampshire, New Jersey, Pennsylvania, and elsewhere.

Response to eTrans Report: Section 4.0 (Summary)

CDM Smith has no comments on this section.

To repeat what was said in the Introduction, CDM Smith entered into this assignment without a bias toward AET or ORT. We have conducted many studies where the preferred outcome was for conversion to, or the introduction of, AET. As clearly stated in our report, AET is not infeasible, but rather must be accompanied by a substantial video surcharge in order to maintain net toll revenue neutrality. ORT at York, on the other hand, would not require any additional toll surcharges to maintain revenue neutrality on MTA's system. The MTA selected ORT. Based on our national experience and a number of technical project-specific risk factors including the toll surcharge, the percentage of MTA income at risk at York, the mix of out-of-state and Canadian traffic, the cash market share, and traffic diversion, it is our professional opinion that the MTA decision was and remains prudent.

If you have any questions or comments, please do not hesitate to contact me at your convenience.

Very truly yours,

A handwritten signature in black ink, appearing to read "Gary T. Quinlin".

Gary T. Quinlin
Project Manager
CDM Smith, Inc.