ERC Toll System Action Plan

Elizabeth River Tunnels Project

October 28, 2016

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Purpose

The purpose of this Toll System Action Plan ("TSAP") is to enhance the quality and accuracy of toll transaction processing by the Elizabeth River Tunnels Project ("ERT" or "the Project"). In particular, this plan serves as a direct response to the Secretary of Transportation's call for action, as well as providing the Virginia Department of Transportation ("VDOT") clarity surrounding the current and planned activities being undertaken to improve the toll system and processes. Continued cooperation with and support from VDOT and E-ZPass are critical to success in this endeavor.

The key objectives in executing this plan are to:
- Provide documented Performance Verification of the Toll System
- Refine existing QA/QC and reporting processes to identify and mitigate billing inaccuracies or system issues
- Provide accurate billing and efficient customer service to the traveling public in accordance with Good Industry Practice
- Ensure compliance with the Comprehensive Agreement, Code of Virginia, and DMV Agreements

Introduction & Background

ERC commenced tolling operations on February 1, 2014. To date, the system has processed over 93 million transactions. Roughly 100,000 vehicles per day pass through the ERT Project. At this time, approximately 75% of customers utilize an E-ZPass transponder (a program administered by VDOT), while the other 25% are invoiced through ERT's Pay-By-Plate ("PBP") process.

Historical Toll System Performance

During the initial period of tolling in 2014, ERT experienced a number of system issues that resulted in backlogged transactions and negative impacts to routine processing. Some customers received invoices related to transactions several months old. With the support and cooperation of VDOT, ERC implemented the 2014 Toll System Improvement Action Plan (2014 TSIAP). This 2014 TSIAP was completed and resulted in many significant improvements, including: a maximum 60 business day rule for invoicing transactions, additional automation of many manual processes to ensure efficient invoicing, introduction of "missed a toll" functionality for unregistered customers to proactively pay toll, improved quality control and customer service, as well as additional communication and education related to tolling.

In 2015, the ERT Toll System operated efficiently in stable condition. During this period, an evaluation of the system was performed by a third party, and utilizing this data and our operational experience, an ambitious program was commenced late in 2015 to make further system improvements and provide enhanced functionality.

2016 Toll System Improvements

In 2016, ERC commenced a comprehensive program with two primary goals:

1. Continue to adjust the toll system functionalities to evolving customer service needs.
2. Incorporate new technologies to improve overall system performance and sustainability.

The program consisted of software development, hardware upgrades and additions, process improvement, and additional functionality. This effort involved significant man-hours and over a year in software development, quality control, testing, and implementation. Below is a summary of the improvements:

- Software Development (7 major software releases Jan-Sep 2016)
  - Database Re-Structuring to greatly increase efficiency and integrity of toll transaction and financial databases
  - Back Office System Optical Character Recognition (BOS OCR) to enhance license plate identification
  - Over 500 minor software improvements including customer account management processes
  - Automation of many processes through software development
  - Upgrade to Oracle Enterprise Edition
- Hardware Upgrades
  - Infrastructure upgrade covering firewalls, networks, back office storage, and system processing power in concert with security upgrades.
  - Roadside System Data Storage Replacement/Upgrade
  - Disaster Recovery capabilities
  - Interactive Voice Recognition / 24hr Automated Payment Capability By Phone
  - Maintenance Online Management System & Live Monitoring for Tolling System
- Process Improvement
  - License Plate Image Review Process improved with addition of BOS OCR
  - ERC Customer Service Manager added to better oversee Elizabeth River Tunnels Customer Service Center (ERT CSC) operations
  - ERT CSC staffing additions, management changes, and improved training
  - Third party Quality Assurance during User Acceptance Testing of software releases
- Additional Functionality
  - Violation Enforcement, including Court and DMV Hold processes
  - Improved customer communications through automated emails and receipts
  - Website improvements, including for registered customers
  - Achieving certification of a Payment Card Industry (PCI) compliant system including tokenization of credit card information to protect customer data (places ERC in the top 5% of any US company for compliance process and standards)
  - Implementation of SAP Lumira reporting software

During this 10+ month toll system enhancement program, ERC implemented a comprehensive quality assurance program based upon:
1. System supplier's enhanced software factory testing and verification process,

2. Independent testing and verification process, carried out by external subject matter experts contracted by ERC.

Even though this quality assurance program proved to be effective in mitigating the risks related to most 2016 system upgrades, ERC experienced two issues related to the latest upgrades which resulted in incorrect invoicing to customers. Neither was a result of faults in the new software programming, but rather temporary conditions caused by the upgrades – an out of sync E-ZPass customer file and unintended consequences of the previously effective customer dispute process. The impact of these isolated incidents was limited to a small portion of ERC customers (approximately 5,000 customers), who were immediately notified of the mistake by letter and the invoices waived by ERC. While 5,000 is a small portion of the 3,000,000 documents sent during the 2016 system upgrades, the goal remains zero errors. ERC is committed to providing an accurate and efficient toll collection and invoicing processes. For this reason, ERC has developed the following Toll System Action Plan to provide a more robust framework for the next phase of improvements. The following sections provide additional detail and action items for each of these areas.

Section 1: Performance Verification

The purpose of the Performance Verification (PV) is to validate the performance and functionality of the ERC Tolling system following the 2016 system upgrades outlined above. The testing regime is specifically engineered to validate the working condition of both the Hardware and Software deployed against specific criteria using a sample of 50,000 transactions proportionately extracted from each tolling element at various times of the day over a period of 30 days. ERC's Digital Video Audit System (DVAS) is used to ensure data and test integrity, independent from the actual toll system.

Data sampling commenced in September and analysis of the results is currently being conducted against 51 criteria commencing with the roadside performance and tracing transactions through back office to either E-ZPass or Pay-by-Plate video billing functions, and then to Customer Service operations where applicable.

Each element of the toll system is being examined for accuracy in the test regime against contracted criteria including:
- Toll Zone Sensors and Roadside Computing system
- Image Processing System – including the Lane and the newly introduced Back Office OCR
- The Host Computer
- The Back Office processes
- The Customer Service processes including operational and financial reporting.

The final PV Report will provide both a summary and detailed assessment against each of the test criteria including:

1.1 Roadside System PV
- Test Reference Number and Description of the Test including Required Performance standard
- Tested Performance level at each date, time, location of the test – data extraction

- Numbers of transactions in each test sample and the results – numbers passing, numbers failing
- Summary Results for each toll plaza
- Overall roadside system results

1.2 Back Office System and Customer Service Center PV
- Test Reference Number and Description of the Test including Required Performance standard
- Test/Data dates and performance against each of the required performance criteria
- Exceptions to performance against established levels including reasons for non-compliance

1.3 Summary
Performance Verification will provide an overall summary of system and operational performance including:
- Quantitative data based on the above
- Qualitative analysis
- Any detected system deficiencies (non-compliance)
- Proposed corrective actions

The outcome of this Performance Verification and Report will guide future system and process improvement efforts by ERC, if required.

Section 1 Actions:
1. Complete data sampling and analysis for Performance Verification
2. Conduct End-to-End review of selected transactions
3. Review and validate system functionality
4. Provide Summary Report of Performance Verification
5. Develop a corrective action plan for non-compliant items (if any)

Section 2: Quality Assurance & Quality Control (QA/QC)

ERC will continue to utilize multiple QA/QC methods and approaches to minimize and/or mitigate errors, improve customer satisfaction, and drive continuous improvement.

2.1 ERC Internal QA/QC Process
Currently, ERC performs daily Quality Control (QC) checks of a representative sample of each type of document (invoice, violations and final notices) produced by the system that day. Visual examination of the documents looks for irregularities and defects regarding transaction age, balance discrepancies, image versus document detail, and fee assignments. Documents flagged as potentially in error during the QC process are not sent to the customer. Data collected during the internal QC process is evaluated and communicated in an effort to eliminate the root cause of the non-conformance. Non-conforming documents have decreased from an average of 1% – 1.5% (previous to system improvements) to 0.02%, with the exception of the two issues experienced this summer mentioned above.

ERC will perform a complete review of the daily QC process and make the necessary adjustments to achieve the stated goal of identifying potential future system issues early and minimizing billing errors.

2.2 Third Party Reviews

All software releases are pre-planned and include very detailed test scripts for each test case. After signoff from the software development team QA/QC, every test script is reviewed by ERC and its independent 3rd Party tolling subject matter expert consultants. Execution of the test scripts during User Acceptance Testing (UAT) is done by both ERC and 3rd party consultants to ensure that the software change verified by the associated test script provides the expected result(s) without any detectible regression effects.

ERC and external partners will perform a complete review of the software release QA/QC and UAT process, with the aim of making an even more robust process to ensure quality and prevent system issues.

An additional 3rd Party evaluation of toll system performance occurs annually during the ERC's Financial Audit. The audit criteria call for an "end to end" trace of transactions from the travel lane through each associated processing flow (E-ZPass, Registered and Non-Registered Pay by Plate).

In response to customer feedback, and to ensure quality customer service, ERC will engage an independent 3rd Party to conduct a review of the ERT Customer Service Center ("ERT CSC") and its associated processes. The outputs of the review will provide a benchmark of the CSC's effectiveness, customer service quality and opportunities for improvement. Follow-up audits will provide independent feedback on the impact of process/program improvements implemented.

2.3 Continuous Training of Customer Service Representatives (CSR):

Current and standard training for all CSRs employed at the ERT CSC includes navigation/input to the BOS, professional handling of customer calls/requests and payment processing. Ad-hoc training is executed as a result of new initiatives, changes to the software, changes in business rules, feedback from customers, and evaluation of performance data (individual or system).

As part of the Toll System Action Plan, additional training and communication will be delivered to the CSRs to enhance their engagement, improve their customer focus, provide tools and information to better address customer inquiries/complaints, and to ensure that consistent/reliable methods are used when interacting with each of ERC's customers.

Section 2 Actions:
1. Review, revise, and provide documentation of Internal Invoice/Notice QA/QC Process
2. Revise and document Software Release QA/QC Process
3. Conduct Annual System Performance Audit as part of Financial Audit
4. Third Party to perform review and benchmarking of Customer Service Center
5. Develop and Document Refresher Training Program for CSRs

Section 3: System Dashboard and Reporting Tools

An essential element of the TSAP will be the development and implementation of a System and Operational Performance Dashboard and better utilization of existing reporting capabilities.

3.1 System Dashboard

ERC will develop and implement a System and Operational Performance Dashboard that will provide visibility and early warning of emerging system and/or process issues to the ERC Management Team including:

- Roadside and Back Office System Health and Performance
  - o Overall System Availability affecting customer interfaces (e.g. Web or IVR issues, invoice production delays, and OCR issues),
  - o Sensor Failure Rates affecting image capture, tag reads, transaction generation etc.
- Traffic Performance at each of the toll zones
  - o ERC has an historically balanced transaction distribution across each of the toll zones – variations indicate a potential issue with data capture
  - o Variations in traffic shown in the dashboard element correlate to invoice processes such as Image Review, invoice numbers, etc. – any significant variation from the baseline data in downstream processes highlight potential system delays or issues
  - o Invoice generation data together with escalation rates to violation notice and final notices.
- CSC Processing Performance such as call answering times, call durations, payment processing times, call drop off rates, complaint category trends, dispute rates, etc
  - o Visibility of these will alert the management team to potential process, staff or system issues,
- Software and Database Updates such as the Daily E-ZPass "white list" updates

3.2 Report Reconciliation

The ERC system generates a significant number of traffic and financial reports on a daily basis. These reports provide the opportunity to reconcile across a range of reported traffic and performance criteria, which is currently done on a daily "individual" basis. ERC will establish formal responsibility to deliver the reconciliation of report data in a structured output that will allow visibility and identification of emerging issues and trends within each of the reporting segments.

Section 3 Actions:
1. Develop and Implement System Dashboard to monitor system health and performance
2. Develop and Implement Daily Reconciliation Process across various reports into a structured output with the ability to:
   a. Reconcile and provide visibility of report data from the various data sources within the system, and
   b. Identify, through the detail contained in the reports and reconciliation process the system health and potential issues emerging in system processing

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Section 4: Additional ERC Staff to Support Tolling

This plan sets forth a comprehensive and proactive approach to ensuring an efficient and accurate toll system. Currently, ERC provides a layer of oversight, but relies on various tolling subcontractors to provide both oversight and staffing for operation of the Toll System. To ensure more robust oversight and provide the support necessary to achieve these goals and future operations, ERC will hire additional toll system management resources. The following new ERC positions will support future tolling services:

- **Tolling Software Engineer** – experienced in development or implementation of tolling software to provide additional oversight of toll system vendor and internal expertise to identify and troubleshoot potential issues.
- **Tolling System Administrator** – Knowledge of the database systems hardware necessary to operate the toll system.
- **Business Analyst** – Assist the tolling team with reporting and dashboard metrics, including review of system health and/or process improvement and data analysis projects.

The first two positions listed above require a unique skillset and therefore ERC will begin recruitment, the timeline for hire is driven by the ability to find the right individual with the requisite skills and experience. It is anticipated the Business Analyst position is available in the local job market and the individual can begin contributing before the end of 2016.

Section 4 Actions:
1. Develop Job Description and Commence Recruitment of Tolling Software Engineer
2. Develop Job Description and Commence Recruitment of Tolling System Administrator
3. Develop Job Description, Recruit and Hire Business Analyst

Section 5: Education and Communication

In advance of toll commencement at the Elizabeth River Tunnels Project, research showed that only 10% of ERT tunnel users were E-ZPass customers. Prior to toll commencement in February 1, 2014, ERC launched a communications campaign to educate Hampton Roads commuters about All Electronic Tolling (AET) and market E-ZPass as the most convenient and least expensive way to pay tolls at the ERT Project. Within the course of a few months, the number of E-ZPass users reached more than 70%, and that number has since grown to more than 75% E-ZPass usage at the ERT.

Since toll launch, ERC has maintained an ongoing toll education effort through owned, earned and paid media channels aimed at understanding the Pay by Plate invoicing process, encouraging E-ZPass acquisition and proper use of E-ZPass so as to avoid processing and administrative fees associated with Pay by Plate invoicing. We've also used strategic sponsorships with local venues to promote E-ZPass.

During the course of this TSAP, ERC will use owned media channels include visual and interactive toll educational information on the DriveERT.com website, featuring FAQs, infographics and clickable samples of the Pay by Plate Invoice, Violation Notice and Final

Notice, as well as samples of 1st and 2nd Notices of Debt from LBGS (ERC's Collection Agent). Content marketing also includes daily scheduled Tweets promoting E-ZPass acquisition with specialized hashtags - #StoptheFees, #GetanEZPass and #StoptheInvoices. We will also embark on an E-ZPass Twitter campaign engaging local businesses to encourage retweets to expand reach to more potential E-ZPass customers.

ERC will continue to utilize banners placed on the tunnel crash houses near the Downtown and Midtown tunnels and electronic message boards at tunnel entrances encouraging E-ZPass acquisition. In addition, ERC will continue the use of an annually purchased electronic billboard on I-264 Frederick Boulevard and Virginian Pilot online interactive ad space – both which continuously promote E-ZPass usage so customers may benefit from the lowest toll rate.

ERC will also commit to a new paid media endeavor in 2017 for E-ZPass education and ERT Project awareness, that features advertising in Virginia Travel Guide's printed publication and interactive online site – www.virginia.org/travelguide/. The ads will promote completion of the ERT Project and the connectivity it provides for visitors to the area as well as educating visitors on AET and methods of toll payment. Each year, 500,000 copies of the printed Virginia Travel Guide are distributed to all 17 Virginia Welcome Centers and through direct mail customer requests. Additionally, the digital version of the guide is prominently placed on Virginia.org, a unique and highly targeted website frequented by people planning to visit Virginia, with website traffic expected to exceed 10 million unique visitors in 2017.

Conversion incentive programs have been offered to all Pay by Plate customers since toll commencement and have garnered earned media throughout the tolling period to date. In Q4 2016, ERC is advertising a fee reduction incentive aimed at E-ZPass customers who've received invoices and notices due to insufficient funds. Additional earned media is anticipated when a reminder release is distributed ahead of the November 1 deadline.

Through a partnership with VDOT E-ZPass, ERC will also target and distribute email notifications to E-ZPass customers who've received Pay by Plate invoices due to insufficient funds. ERC will continue to work with E-ZPass to develop an incentive for customers who prefer to utilize cash rather than link E-ZPass to a credit card or banking institution.

Further, at ERC's expense, E-ZPass customer service representatives are located at the ERT CSC to better serve customers with E-ZPass related issues and also facilitate the conversion from Pay-by-Plate to E-ZPass.

In 2014, ERC established a CEO Email Account (CEO@DriveERT.com) for customers who feel they were not provided acceptable customer service by our staff. ERC will continue to provide this email account as a direct means to communicate with our Chief Executive Officer.

To implement this section and indeed the entire TSAP, extensive coordination required between ERC and VDOT. ERC will continue regular meetings and updates at the working level, but as part of this Plan, also suggests a quarterly touchpoint with the Office of the Secretary of Transportation in order to ensure alignment and efficient communication on relevant topics.

Section 5 Actions:
1. Educate users on invoicing and interaction with E-ZPass Insufficient funds (ongoing now)

2. Encourage the conversion to E-ZPass through incentives
3. Continue to work with VDOT in communicating the advantages of E-ZPass (including auto-replenishment) for not only the ERT Project, but other tolled facilities throughout the Commonwealth
4. Continue to fund and support E-ZPass Customer Service Representatives at ERT CSC to best serve our joint customers
5. Continue to provide the CEO Email Account as a means of receiving feedback and resolving customer issues that were not addressed in a satisfactory manner by the ERT CSC
6. Schedule quarterly meeting between ERC and Office of Secretary of Transportation

Conclusion

ERC is committed to the implementation of this TSAP. At the end of 2016, ERC will provide a report to the Commissioner of VDOT on the status of its progress in executing this Plan. Appendix 1 contains the Toll System Action Plan Resolution Matrix, which will be utilized to brief VDOT and interested parties on progress and final disposition of each Action Item.

Appendix 1

Toll System Action Plan Resolution Matrix

ERC OpCo Toll System Action Plan
Resolution Matrix

Toll System Action Plan Deliverables	Status
Section 1: Performance Verification	
1. Complete data sampling and analysis for Performance Verification	
2. Conduct End-to-End review of selected transactions	
3. Review and validate system functionality	
4. Provide Summary Report of Performance Verification	
5. Develop a corrective action plan for non-compliant items (if any)	
Section 2: Quality Assurance and Quality Control	
1. Review, revise, and provide documentation of Internal Invoice/Notice QA/QC Process	
2. Revise and document Software Release QA/QC Process	
3. Conduct Annual System Performance Audit as part of Financial Audit.	
4. Action: Third Party to perform review and benchmarking of Customer Service Center	
5. Develop and Document Refresher Training Program for CSRs	
Section 3: System Dashboard and Reporting Tools	
1. Develop and Implement System Dashboard to monitor system health and performance	
2. Develop and Implement Daily Reconciliation Process across various reports into a structured output with the ability to:	
a. Reconcile and provide visbility of report data from various sources within the system	
b. Identify, through the detail contained in the reports and reconciliation process the system health and potential issues emerging in system processing	
Section 4: Additional ERC Staff to Support Tolling	
1. Develop Job Description and Commence Recruitment of Tolling Software Engineer	
2. Develop Job Description and Commence Recruitment of Tolling System Administrator	
3. Develop Job Description, Recruit and Hire Business Analyst	
Section 5: Education and Communication	
1. Educate users on invoicing and interaction with E-ZPass insufficient funds	
2. Encourage the conversation to E-Zpass through incentives	
3. Continue to work with VDOT in communicating the advantages of E-ZPass (including auto-replenishnment) for not only the ERT Project, but other tolled facilities throughout the Commonwealth	
4. Continue to fund and Support E-Zpass Customer Service Representatives at ERT CSC to best serve our joint customers	
5. Continue to provide the CEO Email Account as a means of receiving feedback and resolving customer issues that were not addressed in a satisfactory manner by the ERT CSC	
6. Schedule quarterly meeting with ERC and Office of Secretary of Transportation	