



# Board of Directors Meeting

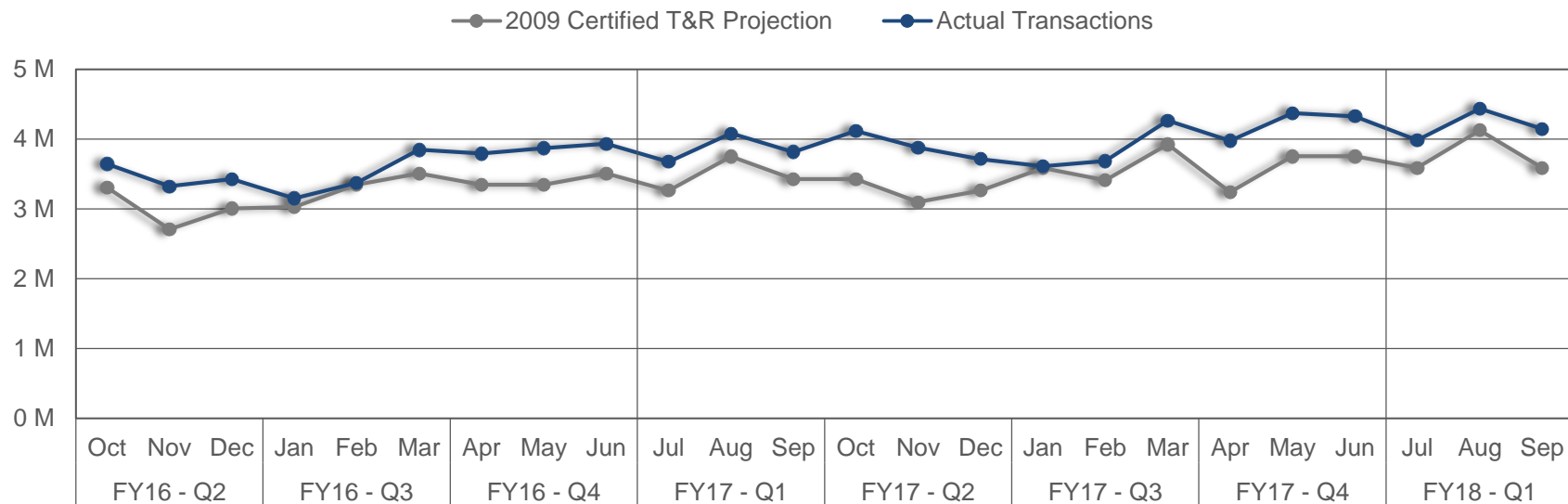
North Carolina Turnpike Authority

November 6, 2017

# Triangle Expressway – 1<sup>st</sup> Quarter Operations & Customer Service

Andy Lelewski, P.E.  
Director of Toll Operations

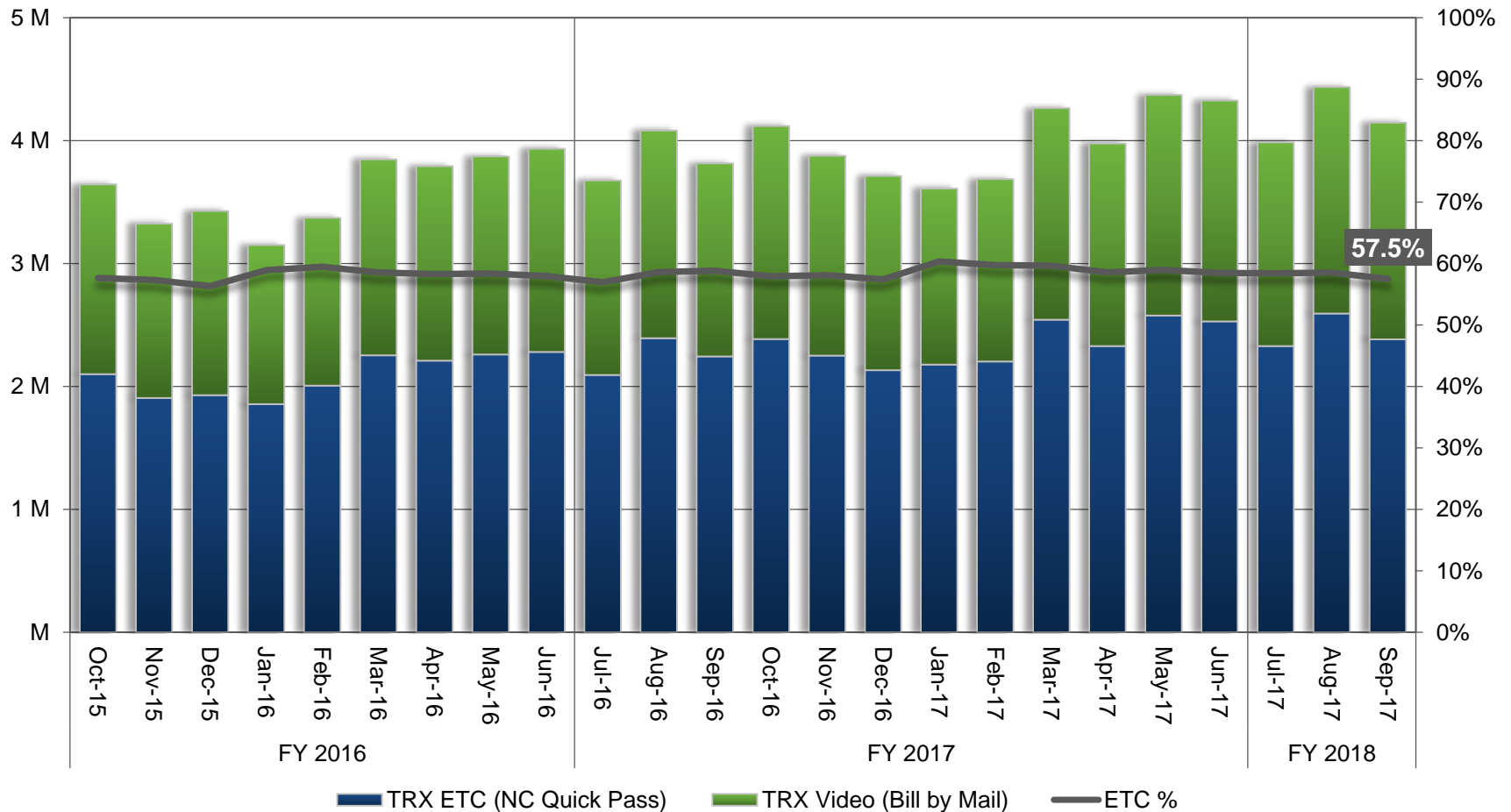
# Transaction Statistics



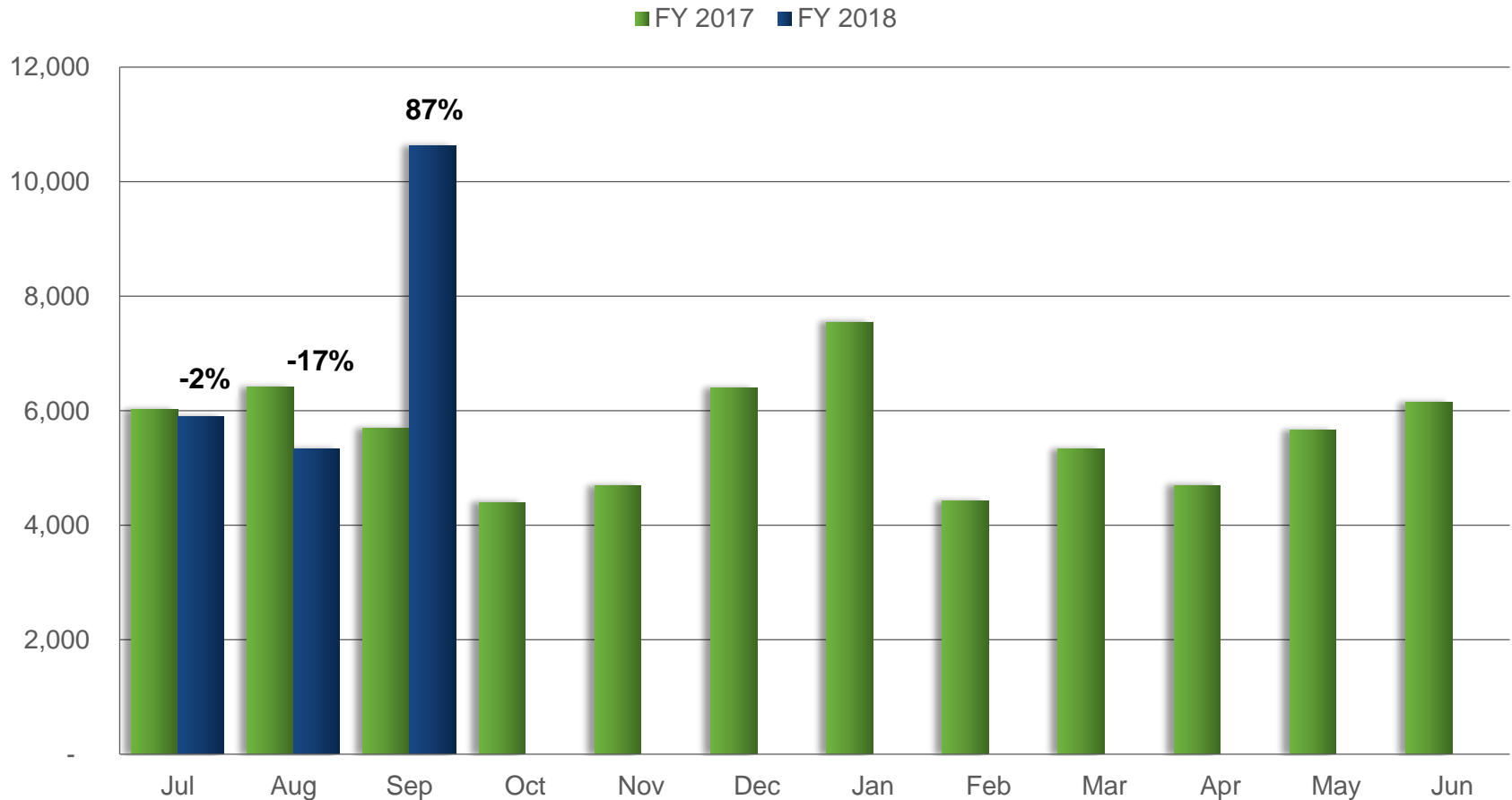
	FY16 - Q2	FY16 - Q3	FY16 - Q4	FY17 - Q1	FY17 - Q2	FY17 - Q3	FY17 - Q4	FY18 - Q1
<b>Actual Transactions</b>	10,393,787	10,370,030	11,596,894	11,570,102	11,706,855	11,561,253	12,675,376	12,566,202
<b>2009 Certified Traffic and Revenue<sup>1</sup></b>	9,021,687	9,882,200	10,200,979	10,210,606	10,802,362	11,371,706	10,748,373	11,300,881
<b>Delta</b>	1,372,100	487,830	1,395,915	1,359,496	904,493	189,547	1,927,003	1,265,321
<b>Percent of Actual vs. 2009 Base Case</b>	115%	105%	114%	113%	108%	102%	118%	111%

<sup>1</sup>Target monthly transaction data based on annualized numbers contained in the 2009 Certified Traffic and Revenue Report developed by CDM Smith

# Toll Transactions by Type



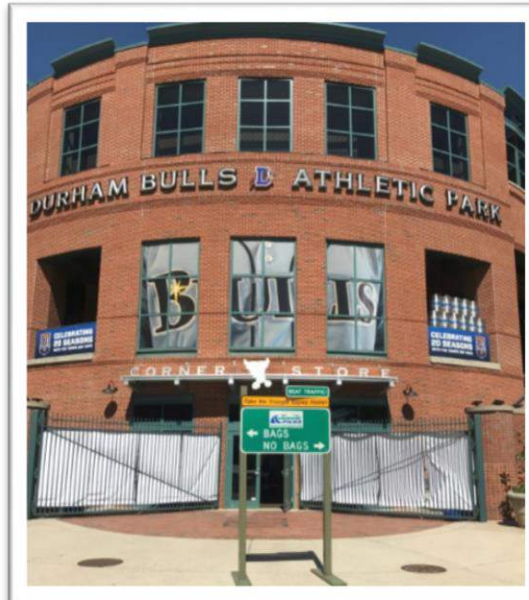
# Monthly Transponders Sold



# NC Quick Pass® Outreach Events



Cary Lazy Daze  
Information Booth  
August 26<sup>th</sup> & 27<sup>th</sup>



Wrapped up season  
sponsorship with  
Durham Bulls and Holly  
Springs Salamanders

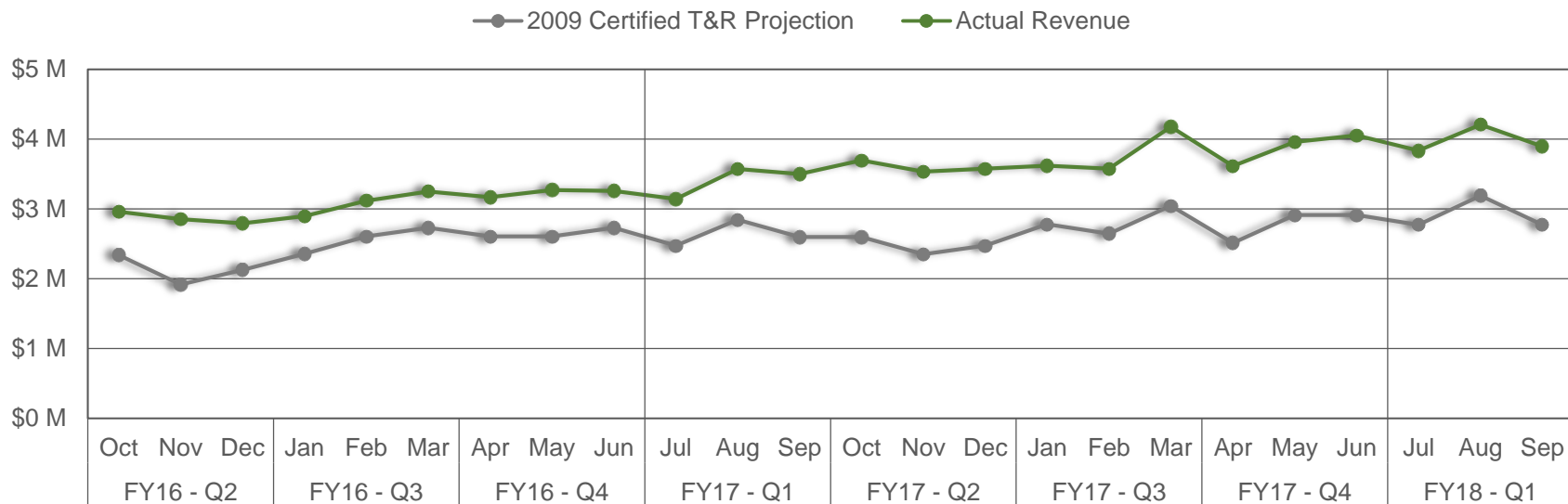
# Triangle Expressway – 1<sup>st</sup> Quarter Financials

David Roy

Director of Finance



# Revenue Statistics



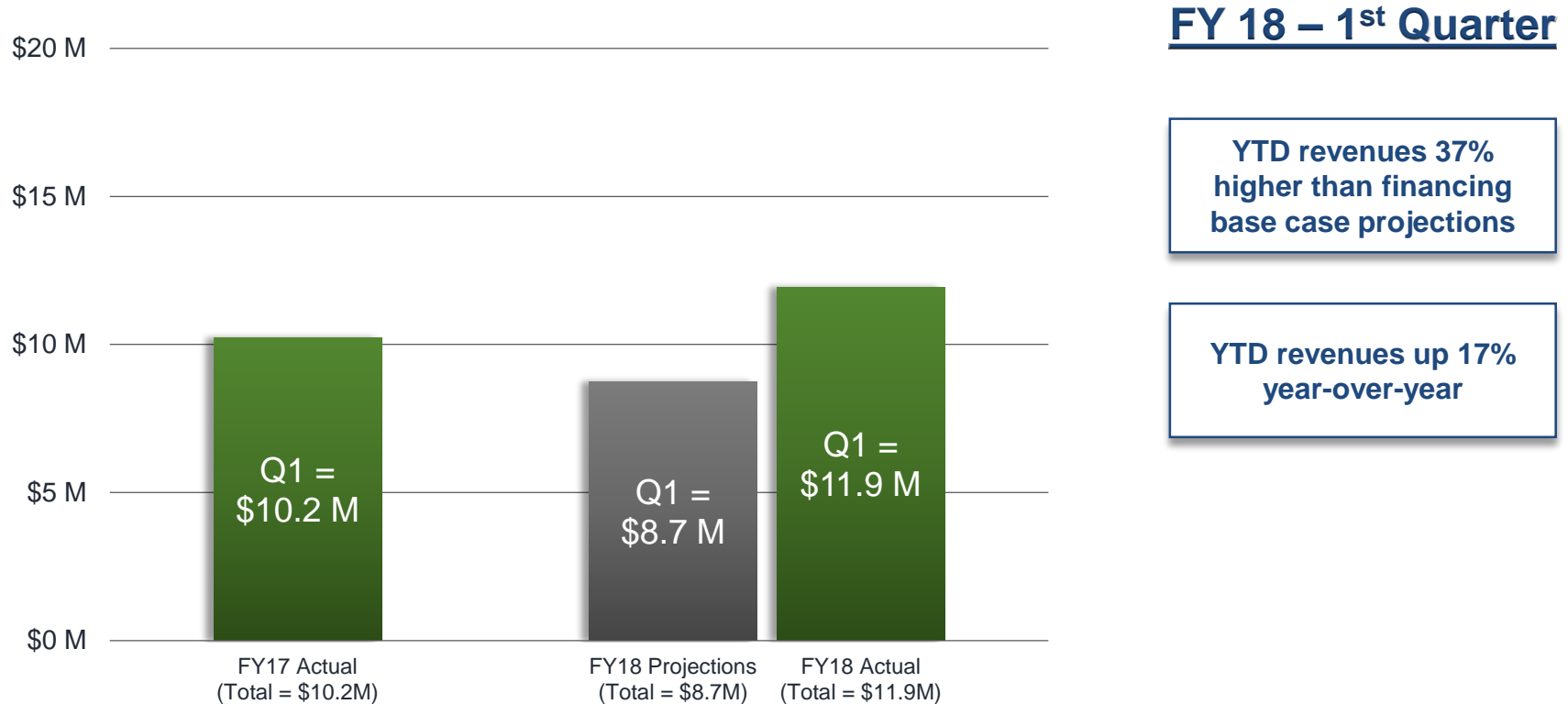
	FY16 - Q2	FY16 - Q3	FY16 - Q4	FY17 - Q1	FY17 - Q2	FY17 - Q3	FY17 - Q4	FY18 - Q1
<b>Actual Revenue<sup>1</sup></b>	\$ 8,607,686	\$ 9,262,129	\$ 9,695,119	\$10,210,606	\$10,802,362	\$11,371,706	\$11,625,254	\$11,938,800
<b>2009 Certified Traffic and Revenue<sup>2</sup></b>	\$ 6,381,979	\$ 7,690,252	\$ 7,938,325	\$ 7,913,993	\$ 7,419,368	\$ 8,468,479	\$ 8,336,160	\$ 8,735,177
<b>Delta (\$)</b>	\$ 2,225,707	\$ 1,571,877	\$ 1,756,794	\$ 2,296,613	\$ 3,382,994	\$ 2,903,227	\$ 3,289,094	\$ 3,203,623
<b>Percent of Actual vs. 2009 Base Case</b>	135%	120%	122%	129%	146%	134%	139%	137%

<sup>1</sup>Actual revenue is reported on a cash basis

<sup>2</sup>Target monthly revenue data based on annualized numbers contained in the 2009 Certified Traffic and Revenue Report developed by CDM Smith

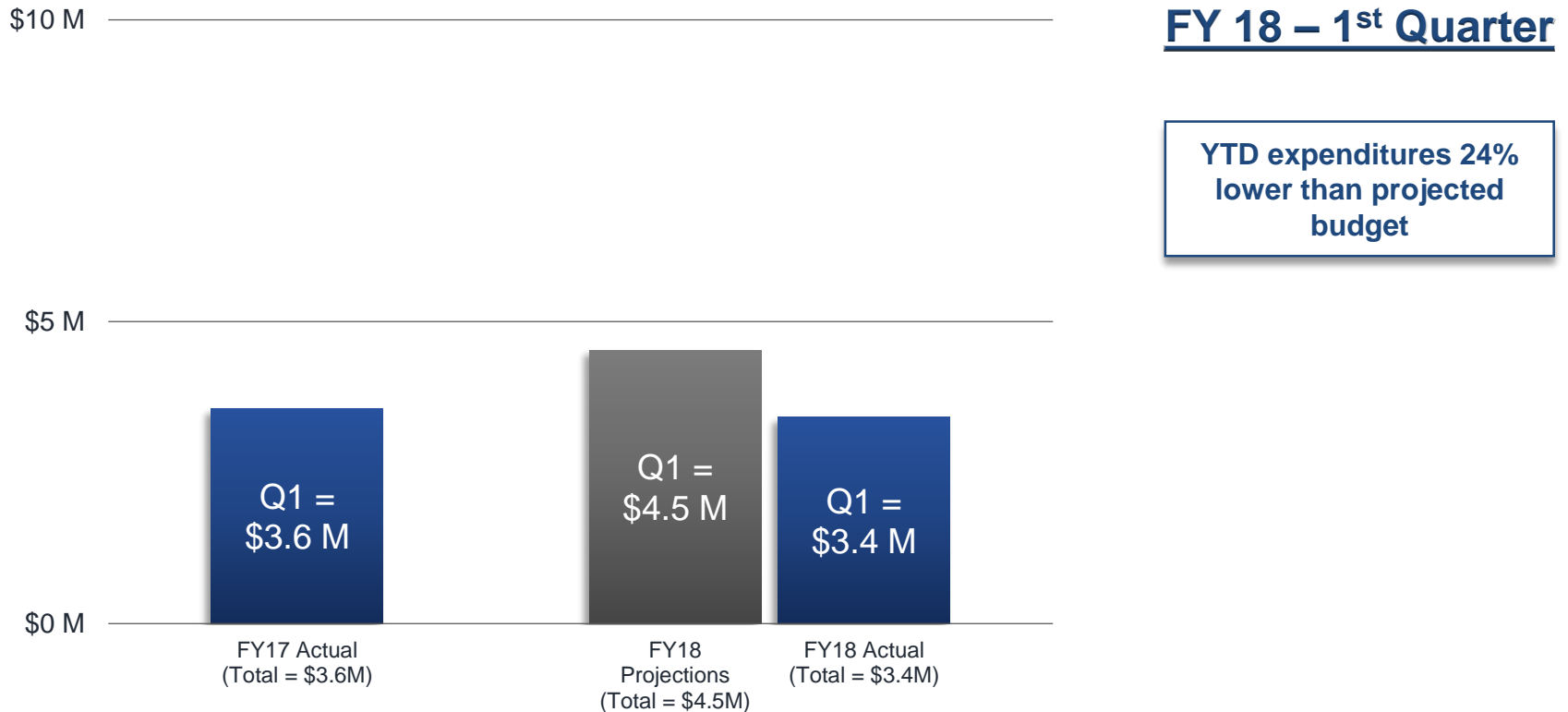


# Revenue Statistics



- Revenue figures are inclusive of all toll revenue and fees, but exclude transponder revenues (FY18 Q1 = \$172,724.71)
- Actual revenues reported on a cash basis

# Operating Expenditures

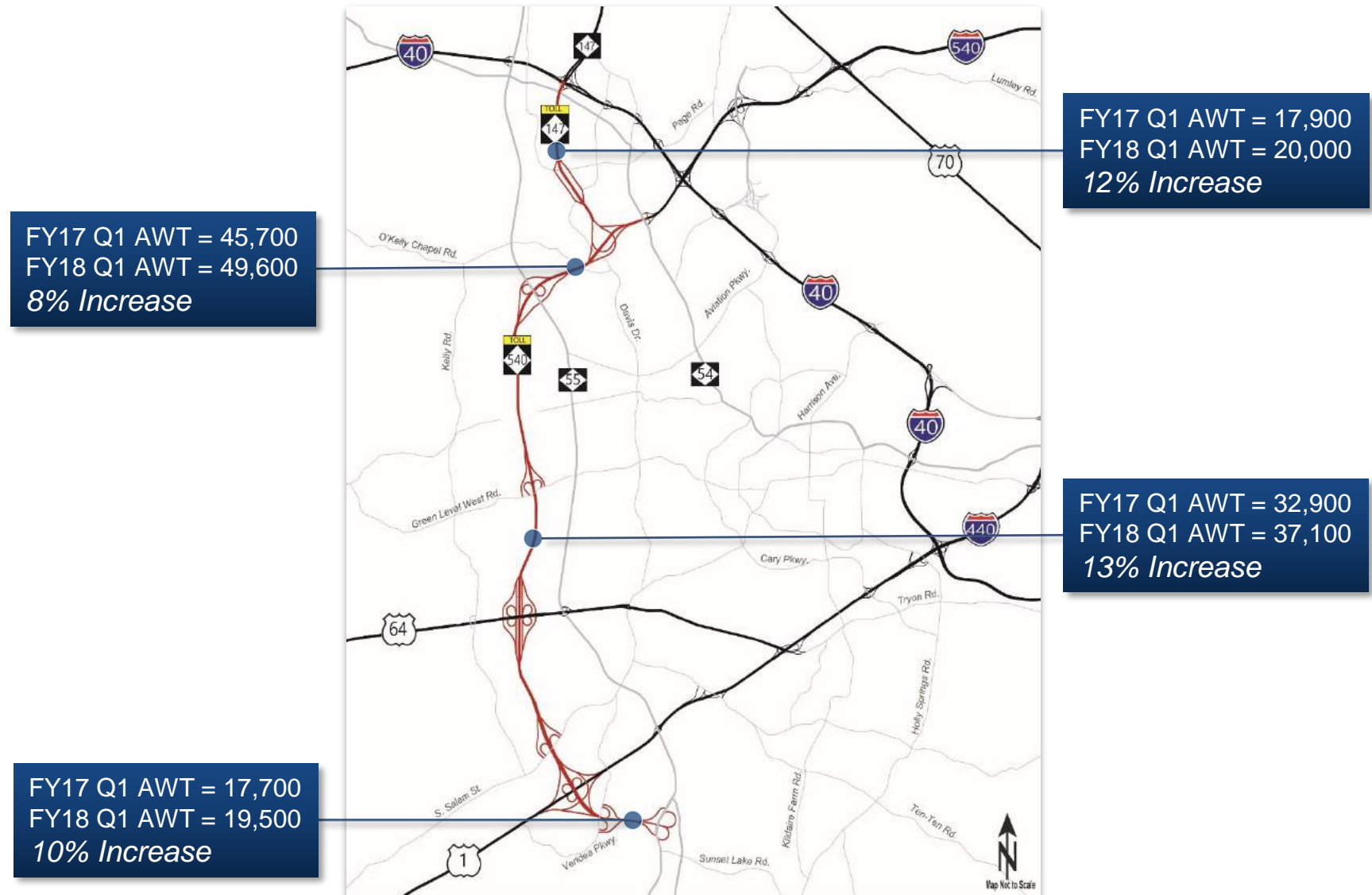


- Actual operating expenditures reported on a cash basis

# Triangle Expressway – 1<sup>st</sup> Quarter Maintenance Report

Dennis Jernigan, P.E.  
Director of Highway Operations

# Mainline Traffic Statistics



Q1: July – September

AWT: Average Weekday Traffic

# Roadway Maintenance Statistics

	Q1 FY 2017	Q2 FY 2017	Q3 FY 2017	Q4 FY 2017	Q1 FY 2018
Road Surface	99.1	97.7	97.8	100	98.1
Unpaved Shoulders and Ditches	100.0	100.0	95.6	95.5	100.0
Drainage Structures	87.9	93.8	86.7	92.3	83.2
Roadside	90	93.7	90.3	87.4	90.4
Traffic Control Devices	90.5	88.3	91.4	88.5	85.2
<b>Overall</b>	<b>93.4</b>	<b>93.9</b>	<b>92.7</b>	<b>92.7</b>	<b>90.9</b>















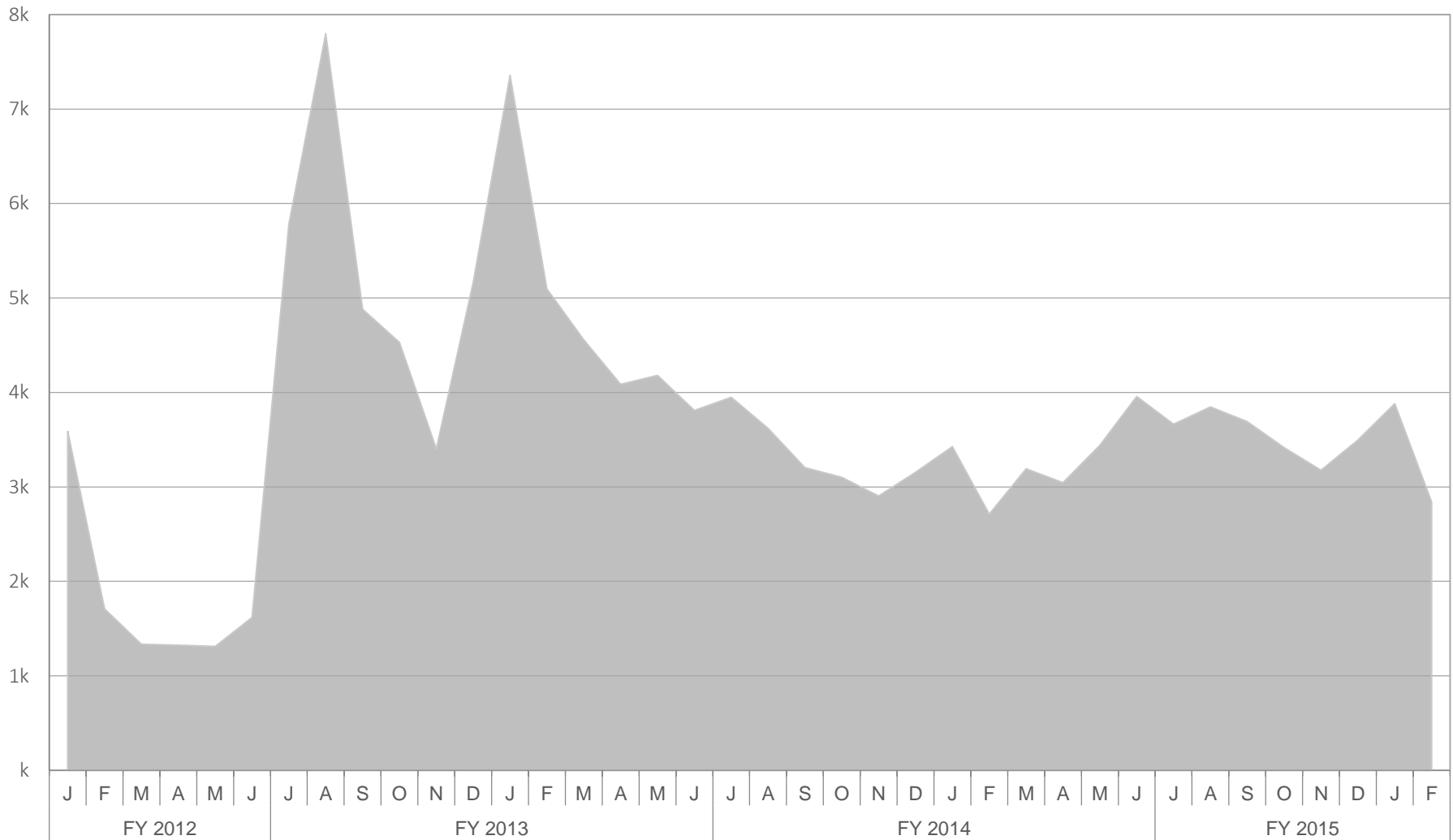


# New Transponders & Pricing

Andy Lelewski, P.E.

Director of Toll Operations

## MONTHLY TRANSPONDERS SOLD



# Leading up to March 2015...

- Reader Protocols: TDM (E-ZPass) & SeGo
- Customer Price vs. Cost to NCTA
  - Sticker Transponder: \$5.00 (Cost: \$9.37)
  - Hard Case Transponder: \$20.00 (Cost: \$23.67)
  - Exterior Transponder: \$25.00 (Cost: \$24.68)

# Increased Marketing Efforts

**Save money and time.**

SAVE up to 35% and pay for tolls effortlessly!  
Products are available for NC/FL/GA and all EZPass® states.

Start using a transponder  
BILL BY MAIL account  
You will need the following:  
• Credit Card Number  
• Any Invoice Number  
• License Plate Number—en

## SPECIAL Limited Time Offer\*

### SAVE 50% on your NC Quick Pass hard case purchase!

With an NC Quick Pass Transponder, you'll save up to 35% and pay for tolls effortlessly! Your NC Quick Pass hard case transponder can be used in Georgia, Florida, and all E-ZPass® states.

Converting your Bill By Mail account to an NC Quick Pass Account is as EASY AS 1-2-3  
1) Go to [ncquickpass.com](http://ncquickpass.com) and select the PAY YOUR BILL tab.  
2) Enter your invoice number and license plate to access your current Bill by Mail account.  
3) Make this month's payment, and on the payment confirmation page, select "CLICK HERE" CONVERT YOUR ACCOUNT.  
No balance due? No problem! Select "Get NC Quick Pass Transponder Account" from the menu bar on the left to start

(877) 769-7277



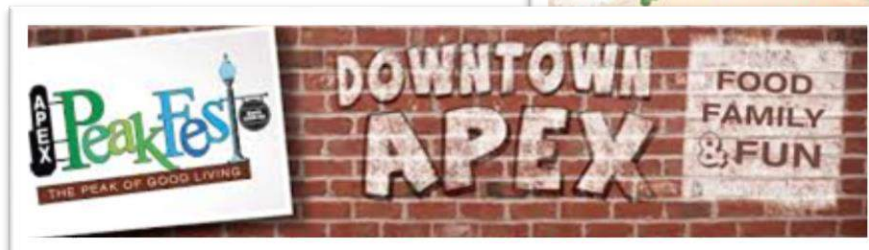
**NC QUICK PASS Limited Time Offer\***

## SAVE 50% on your NC Quick Pass E-ZPass transponder purchase!

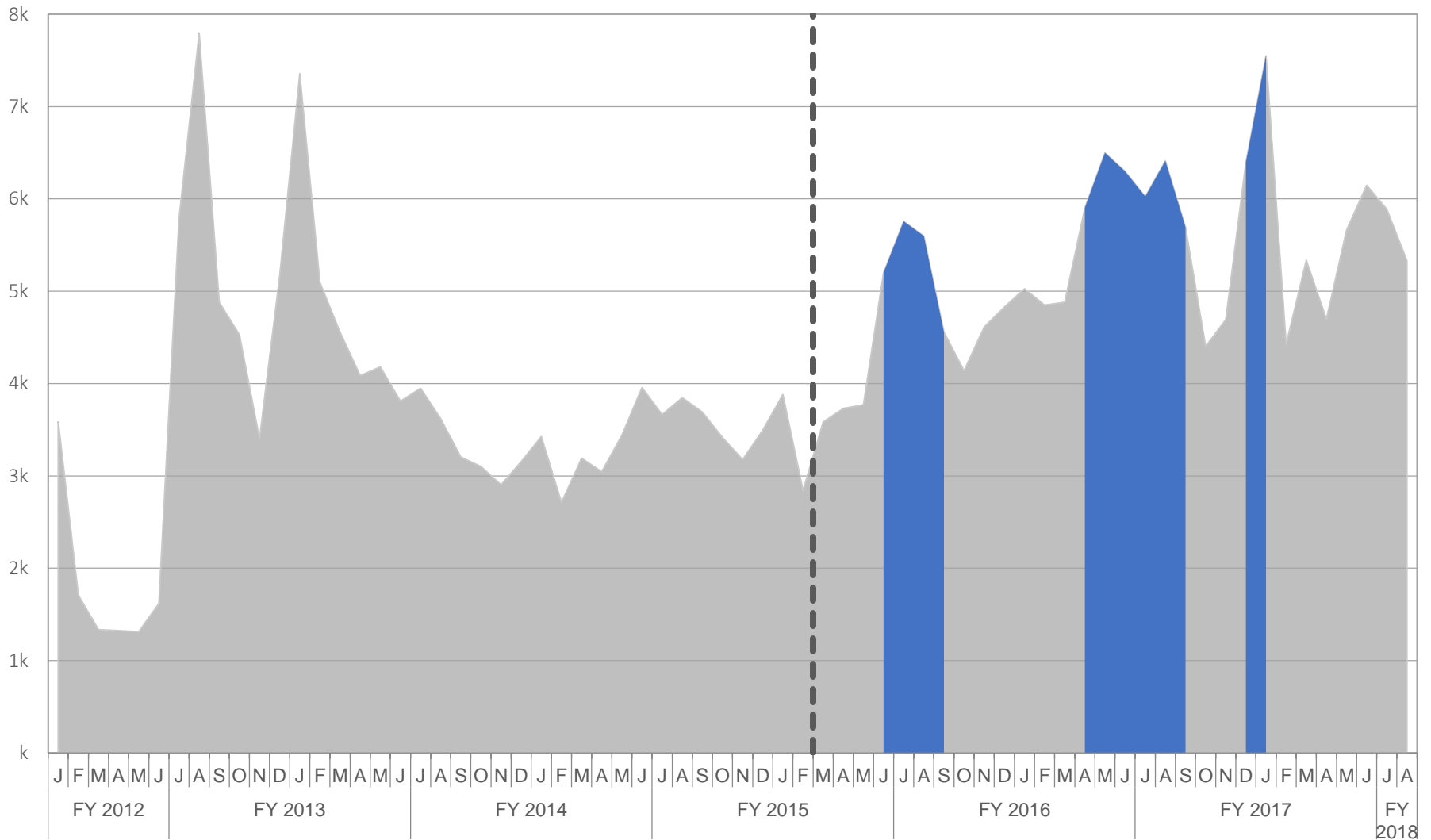
With a NC Quick Pass transponder, you'll save up to 35% on the Triangle Expressway and pay for tolls effortlessly! Your NC Quick Pass E-ZPass transponder can be used on the following toll facilities:

**E-ZPass** **SUNPASS** **PEACH PASS**

*\*Promotion is valid through January 31, 2017 and is not valid on Sticker and Exterior transponders. Questions? Call (877) 769-7277.*



## MONTHLY TRANSPONDERS SOLD





# Goals



Lower cost transponders



Implement ahead of Monroe Expressway and express lane projects



Maintain or expand interoperability



Increase transponder utilization

# Transponder & Roadside Reader Procurement

- Request for Information
  - October 2015
- Request for Proposals
  - RFP Structure (3 Categories)
    - A. Tri-Protocol Roadside Reader Equipment
    - B. E-ZPass / HOV Transponder
    - C. Low Cost Transponder
  - Procurement Process (August 2016 – February 2017)
  - Execution (March 2017)



## **AUTOMATIC VEHICLE IDENTIFICATION (AVI) READERS AND TRANSPONDERS REQUEST FOR PROPOSALS**

**Final Conformed Version**

**Proposal Due Date**  
October 14, 2016, 4:00 p.m. EDT

**Physical Delivery Address:**  
North Carolina Turnpike Authority  
Transportation Building  
1 South Wilmington Street  
Raleigh, NC 27601  
Attn: Christina Poucher

**Mailing Address:**  
North Carolina Turnpike Authority  
1578 Mail Service Center  
Raleigh, NC 27699-1578

**Issue Date:** August 30, 2016

# Category A

## Tri-Protocol Roadside Reader Equipment

- Awarded to Kapsch
- Provision of Tri-Protocol reader equipment to read all NCTA transponders and the new low-cost NCTA 6C transponders
  - SeGo, TDM (E-ZPass), 6C
- Support to NCTA for the Triangle Expressway retrofit

# Category B

## E-ZPass Transponders

- Awarded to Kapsch
- Lower Cost
  - Base: \$7.40 (previously \$23.67)
  - Exterior: \$13.49 (previously \$24.68)
  - Switchable/HOV: \$16.49 (previously \$26.17)\*

\* Not previously utilized

# Category C

## Low-Cost Transponder

- Awarded to Kapsch
- Lower Cost
  - Interior Transponder: \$0.90 (previously \$9.37)
  - Exterior Motorcycle Transponder: \$1.99 (previously \$15.88)\*

\* Not previously utilized

# Roadside Toll Collection System Modifications

- Fast-track (7 months) process, including:
  - Design
  - System Integration Testing (Crofton, MD)
  - Installation at 20 toll zones
  - Site testing and commissioning
- **Installation Completion: September 9<sup>th</sup>**

TODAY





# System Integration Test (Crofton, MD)



NCTA equipment configuration is installed at toll system integrator's test site.

Multiple test scenarios are performed using vehicles with all transponder types and verified by the NCTA.





# On-Site Installation



Retrofit of overhead gantry equipment on Triangle Expressway performed during off peak hours

- To avoid loss of transactions
- To avoid interruption of traffic flow
- Maintained close coordination with Traffic Management Center

# Back Office System Modifications

- Fast-track (7 months) process, including:
  - Modifications to Back Office System while continuing to maintain transponder sales
  - Update transponder types, along with price changes
  - Add new transponders into inventory
  - Website changes
  - Coordinate with Roadside Toll Collection System to ensure transponder readability and smooth transition
  
- **Go Live: August 30th**

# Customer Service Center & Communications Modifications

- Customer Service
  - Preparations and training with service center agents
  - Reconfiguration of Service Center storefront
  - **Go Live: August 30<sup>th</sup>**
- New Transponder Customer Pricing:

	Before	Now
Interior	\$5.00	\$0.00
Hard Case	\$20.00	\$7.40 <sup>+tax</sup>
Exterior	\$25.00	\$13.49 <sup>+tax</sup>

- Public Outreach
  - Cary Lazy Daze (August 2017)
- Social Media Push



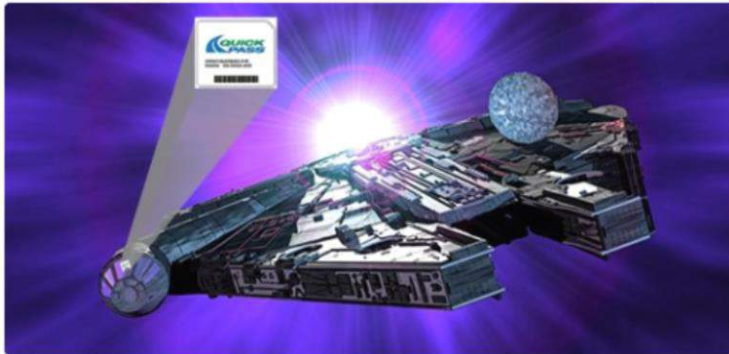


# Customer Service Center & Communications Modifications



NC Quick Pass @NC\_QuickPass · Sep 1

Save another parsec on the Kessel Run with your FREE #NCQuickPass transponder! [ncquickpass.com](http://ncquickpass.com) #ForceFriday



♥ 1



## Lower transponder prices!



~~\$5~~ **NOW FREE!**

WORKS IN 3 STATES

Open an account:  
[ncquickpass.com](http://ncquickpass.com)



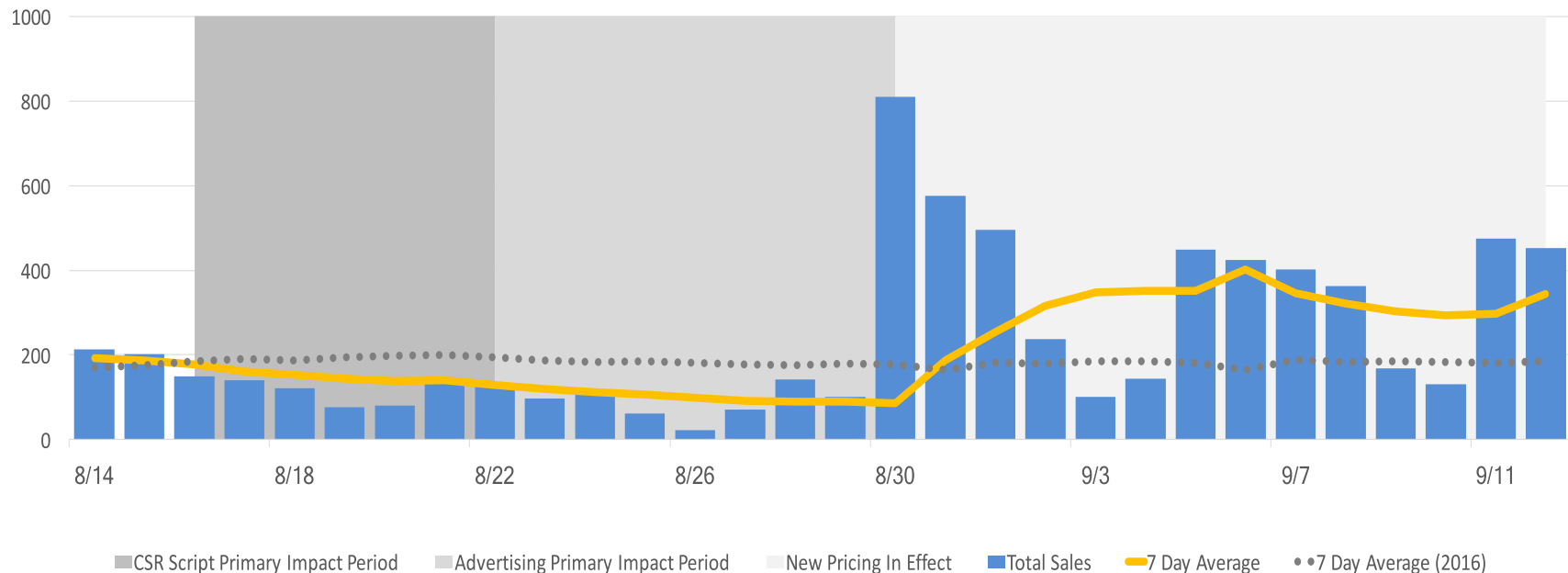
~~\$20~~ **NOW \$7.40 + tax**

WORKS IN 18 STATES



# Go-live and Results

## Total Transponder Sales



- Emphasis on conversion of Bill by Mail accounts to NC Quick Pass transponder accounts
- Prepares NCTA for future projects and openings
- Additional protocol (6C) will improve future interoperability with other tolling agencies

The chart displays two data series over a six-year period from FY 2013 to FY 2018. The left Y-axis measures Monthly Transponder Sales in thousands (k), ranging from 0 to 12. The right Y-axis measures Cumulative Transponder Sales in thousands (k), ranging from 0 to 360. Monthly sales are represented by a dark grey area chart, showing high volatility with major peaks in FY 2013 and FY 2017. Cumulative sales are represented by a blue line, showing a consistent upward trend throughout the period.

Fiscal Year	Month	Monthly Sales (k)	Cumulative Sales (k)
FY 2013	J	3.5	10
	F	1.5	25
	M	1.2	40
	A	1.2	55
	M	1.5	70
FY 2014	J	5.8	125
	J	7.8	155
	A	4.8	185
	S	4.5	210
	O	3.5	235
FY 2015	N	7.5	265
	D	5.2	290
	J	2.5	315
	F	3.2	340
	M	2.8	365
FY 2016	A	3.5	390
	M	4.0	420
	J	3.8	450
	J	5.5	480
	A	5.8	510
FY 2017	S	4.2	540
	O	4.5	570
	N	4.8	600
	D	6.5	630
	J	7.5	660
FY 2018	F	4.5	690
	M	5.2	720
	A	4.8	750
	M	5.8	780
	J	6.2	810

# Wrong-Way Driver Detection & Prevention

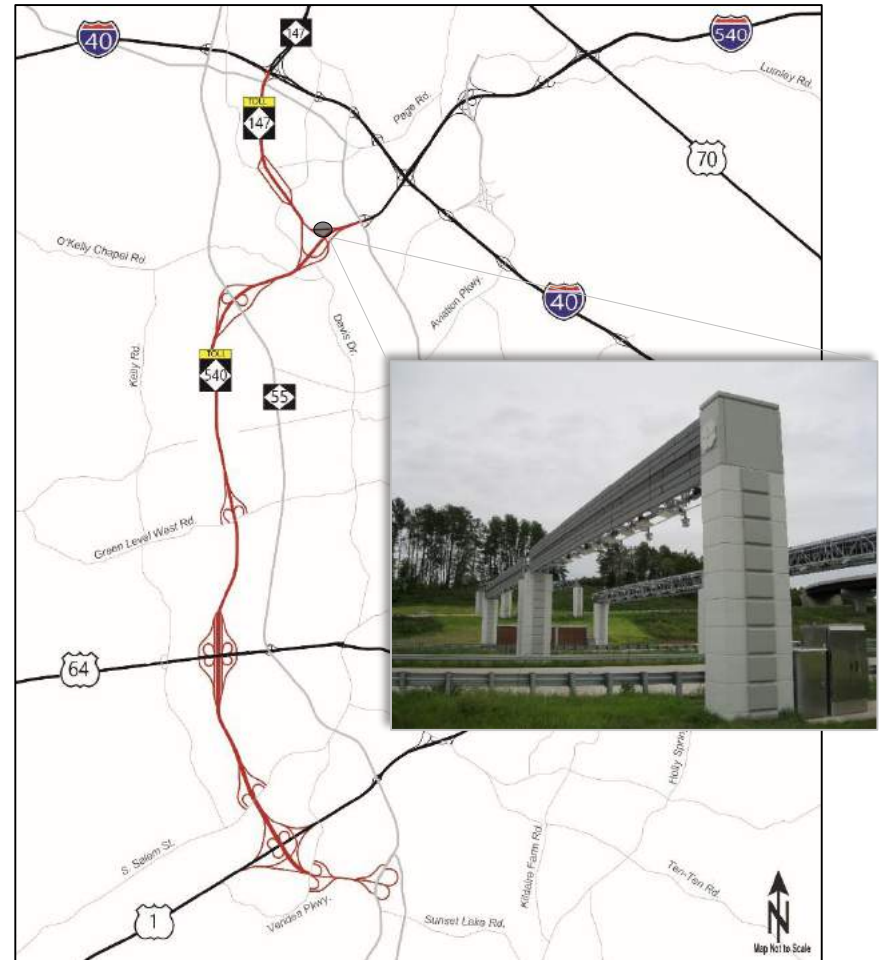
Andy Lelewski, P.E.

Director of Toll Operations

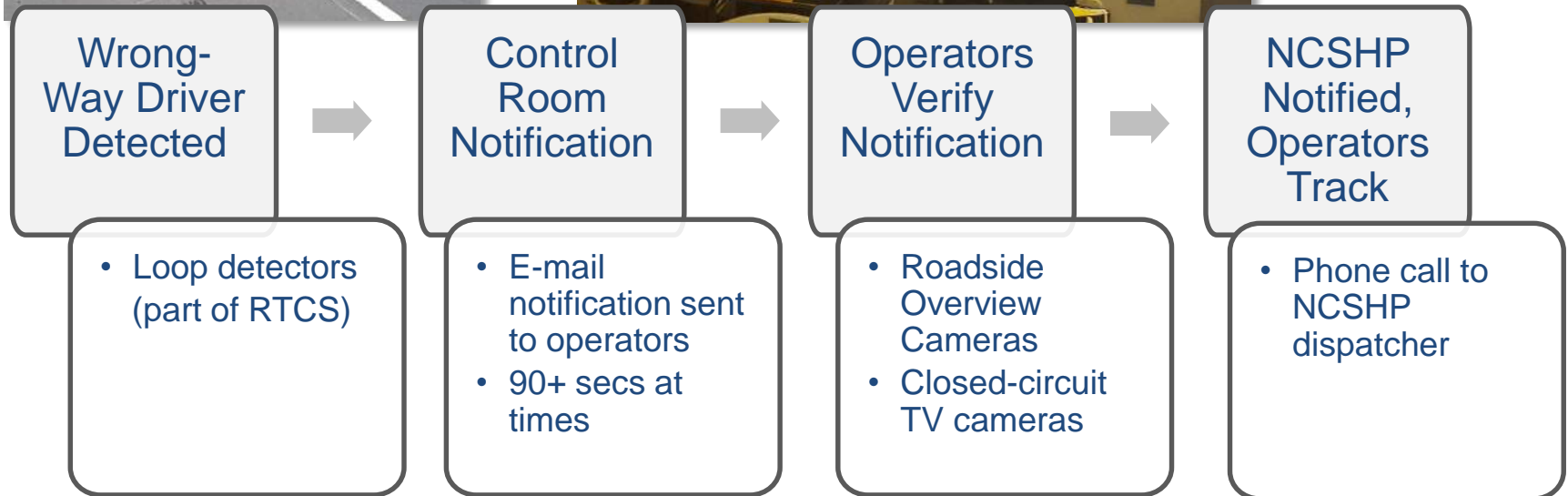
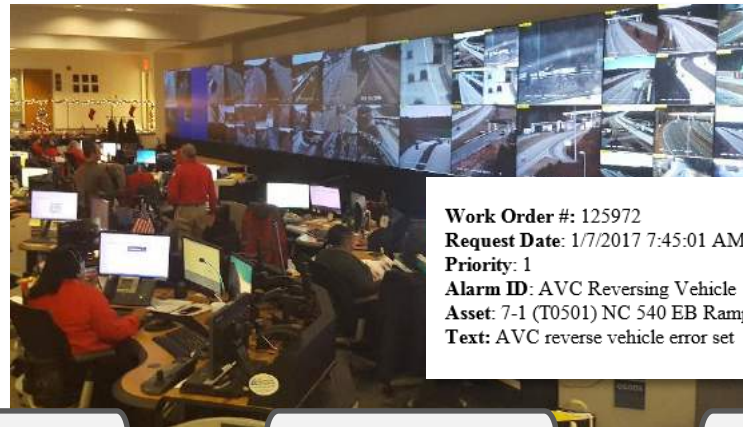
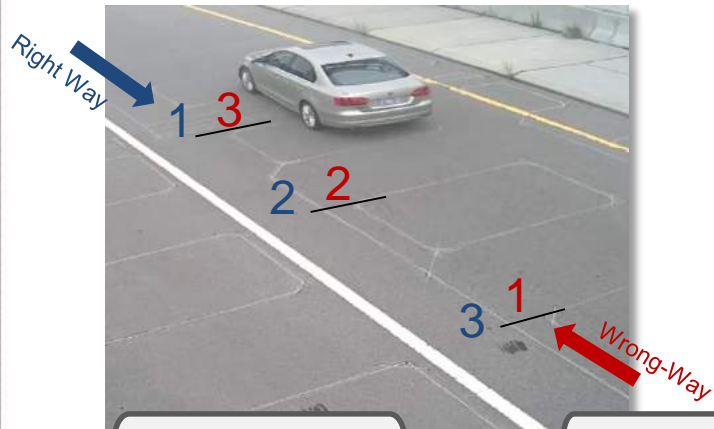


# Triangle Expressway Program

- All-electronic tolling facility
- Average Weekday Traffic = 49,800 at busiest section
- 18 Toll Zones
  - All equipped to detect wrong-way drivers
  - Uses roadside tolling system
- Average of 3 wrong-way drivers detected monthly
- No wrong-way driving crash since opening



# Overview of Triangle Expressway Program

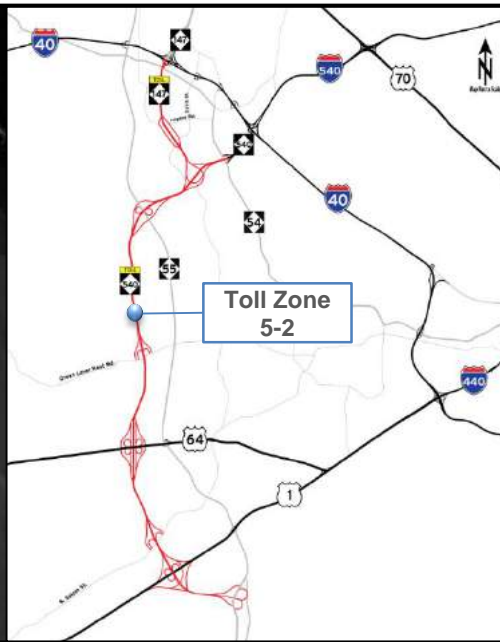


# Overview of Triangle Expressway Program

- Wrong-Way Driver Recorded on Triangle Expressway
- Detected at toll zone 5-2
  - Toll NC-540 Southbound
  - North of Green Level West interchange
- Point of origin Green Level West interchange

Right Way

T18 - 5.2 - 4 - 3 - 2 - 1 - 0  
Wednesday, January 04, 2017 05:33:07



Wrong-Way

T18 - 5.2 - 4 - 3 - 2 - 1 - 0  
Wednesday, January 04, 2017 05:35:11



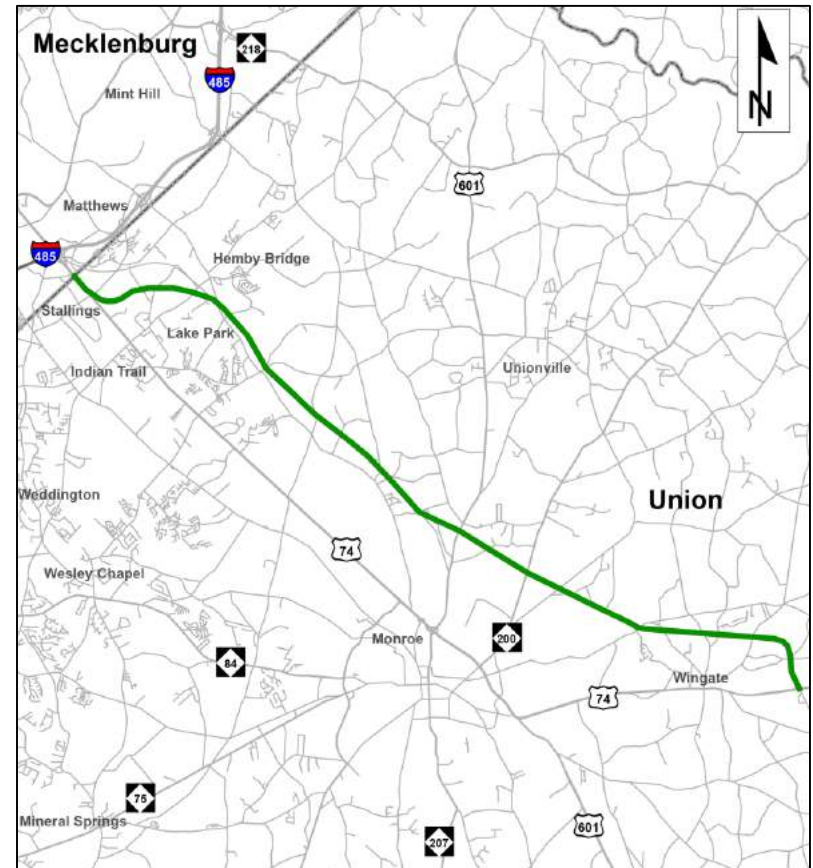
## Lessons Learned to Date

- Notification time
  - 90+ seconds for control room notification email to arrive
- Notification sources
  - Tolling and ITS networks are not integrated
  - Notification source is limited to e-mail only
- Manual verification required
  - No visual data in initial notification



# Potential Solutions for Monroe Expressway

- Similar greenfield project to Triangle Expressway
- All-Electronic Tolling Facility
- 19.8 miles long
- 14 mainline Toll Zones
  - Currently set up to detect wrong-way drivers with roadside toll system



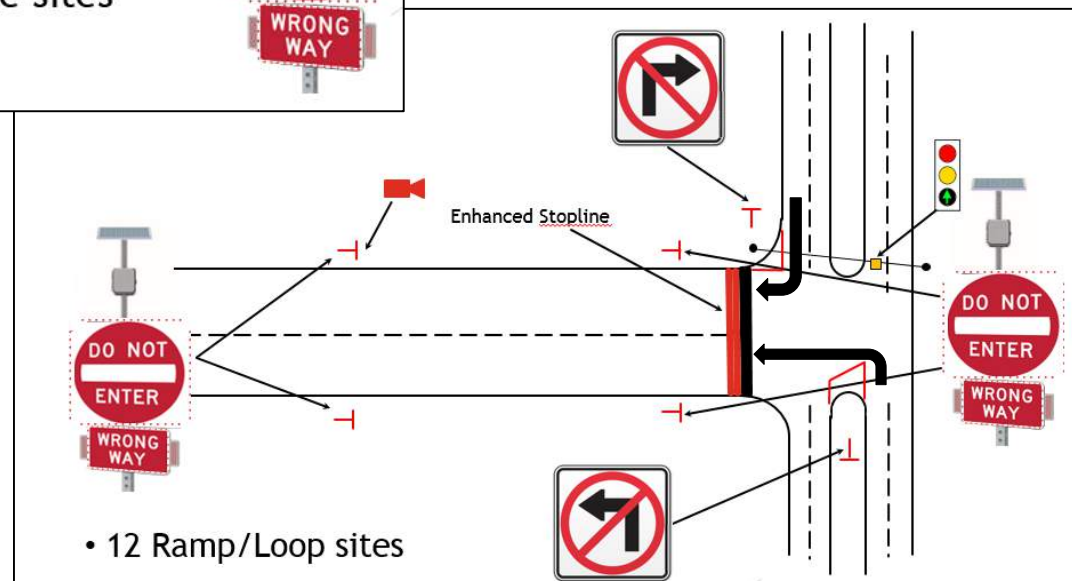
# Potential Solutions for Monroe Expressway



\*Monroe Expressway conceptual detection and notification system flowchart



## Mainline and Ramp Treatments



# Program Implementation

- COMPLETE – Selected proof of concept mainline and ramp test sites on Triangle Expressway based on wrong-way driving data
- UNDERWAY - Proceeding with design of program for Monroe Expressway in parallel
- UNDERWAY - Procure and deploy Triangle Expressway test sites in 2017
- Take lessons learned and revise Monroe Expressway and Triangle Expressway plans/program
- Deploy Monroe Expressway program in 2018
- Deploy Triangle Expressway (entire) and Complete 540 program in 2019-2021

# I-77 Project Update

David Hannon, P.E. & Jean Leier

I-77 Mobility Partners

# Monroe Expressway Project Update

Christopher D. Sweat, P.E.

Summit Engineers



# Monroe Expressway Overview

- 20-mile long expressway
- 4 to 6 lanes wide (expandable to median)
- 37 bridges
- 21 box culverts
- 8 interchanges
- Open Road Tolling

# Important Dates

- Phased ITS Integration  
May 2018 thru September 2018
- Substantial Completion  
November 27, 2018
- Final Completion  
May 28, 2019

# Monroe Bypass Constructors, LLC



Monroe Bypass Constructors is a Joint Venture comprised of three companies:



United Infrastructure Group, Inc.



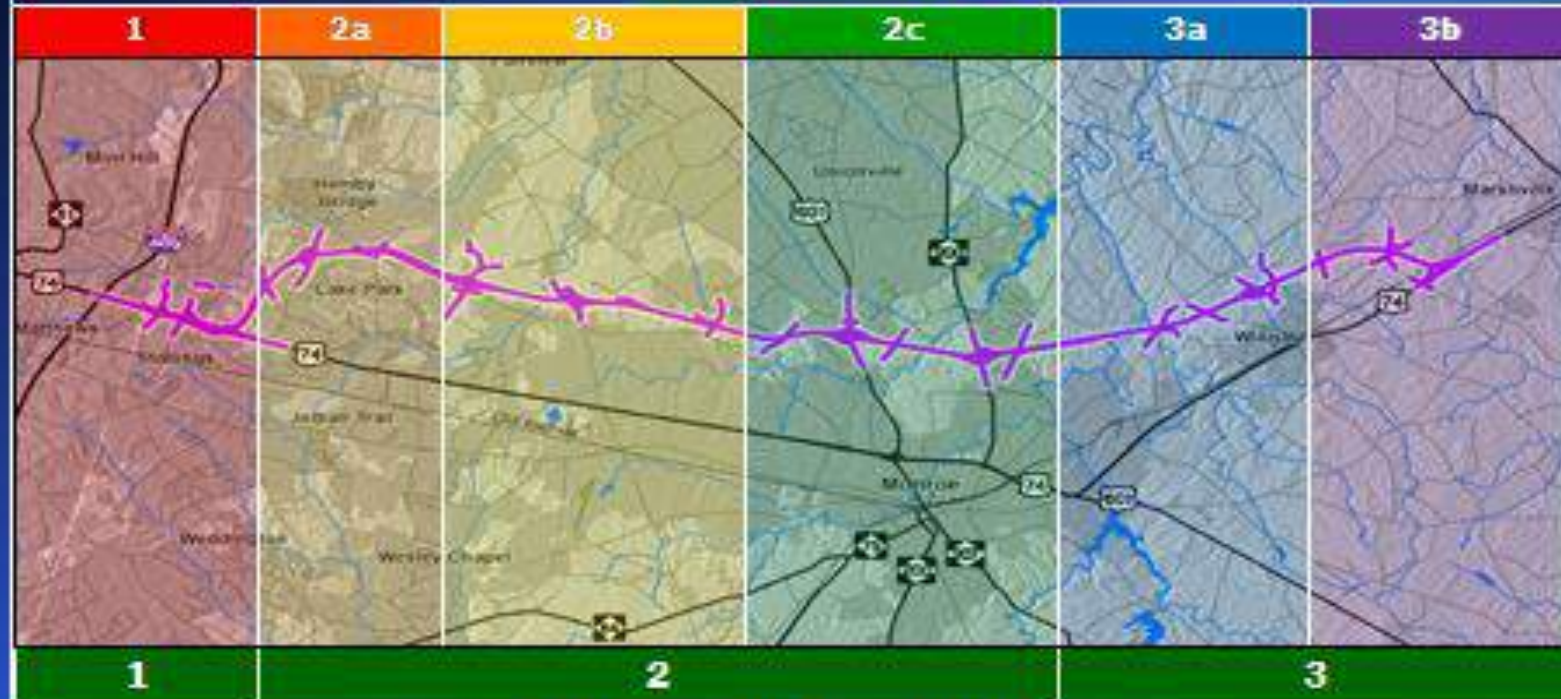
Anderson Columbia Company, Inc.



Boggs Paving, Inc.

# Project Segments & Sections

## DESIGN SECTIONS



## CONSTRUCTION SEGMENTS

**MONROE**  
BYPASS CONSTRUCTORS



# ORT Progress

- Paving has started at 8 and 7. Base stone 6, 5, and 4.
- Propane tanks have been installed at all sites.
- Power has been run to Sites 2-6. Wire will be pulled at Site 7 in the next few weeks.
- All gantry foundations and caps are set.
  - All gantries are on site.
  - Gantry uprights are set at Site 2.
- Toll site lighting foundations are complete at Sites 6, 7, and 8.
- Screen wall piles are nearly completed.
- Fiber will begin being pulled in the next 30 days.

# Expressway Bridge over CSX RR and US 74WB (3B)





# Forest Hills Sch. Rd. Overpass & Phifer Rd. (3B)





# Austin Chaney Rd. Interchange (3A)





## Monroe-Ansonville Rd. (3A)





## Toll Zone 7 (3A)





## Olive Branch Rd. (2C)





## NC 200 (2C)





## Toll Site between NC 200 & US 601 (2C)





## US 601 Interchange (2C)





## Sound Wall near Fowler Rd. (2C)





# Rocky River Road Interchange (2B)





# Faith Church Rd. & Secrest Shortcut Rd. (2A)





# Indian Trail-Fairview Road Interchange (2A)





# Stinson Hartis Rd. (2A)





# US 74 Interchange (1)





# Stallings Rd. (1)





# Elevated Section (1)





# Monroe Expressway Drone Footage

