THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

Web Summit: Innovative Capture and Dissemination of Data used for Traveler Information

April 1, 2021

Welcome to the TIS Web Summit!

- We are using Zoom Webinar for this web summit.
- **AUDIO (Computer):** Use your computer speakers and microphone by clicking the “Join Audio” button at the bottom left of the screen. You will be muted.
- **Alternate Audio (Phone):** Call into the meeting by dialing the phone number based on your location (provided in the confirmation email) and enter the Meeting ID at the prompt. You will be muted.
- **This web meeting is being recorded.**
- **Questions** with the audio or web? Please contact Esther directly via the chat box or email (ekleit@kmjinc.com)

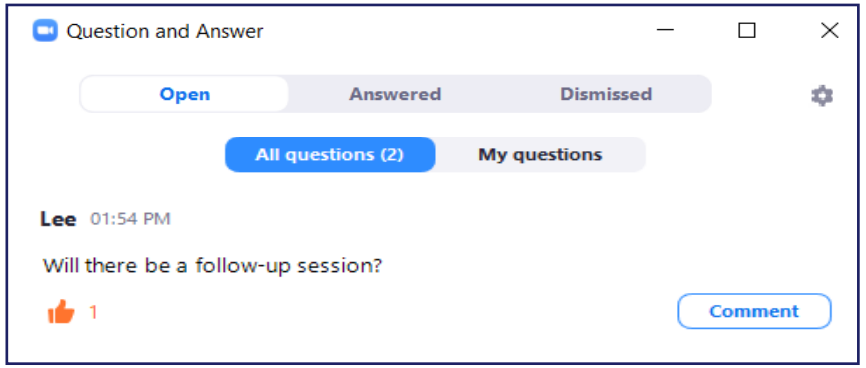
Using the Q&A box and Chatbox

- Use the **Q&A box** to ask presenters questions
- Ex. “How accurate is the captured data?

- Use the **chatbox** for technical issues or to contact Coalition staff
- Ex. “I can’t hear the presenter”

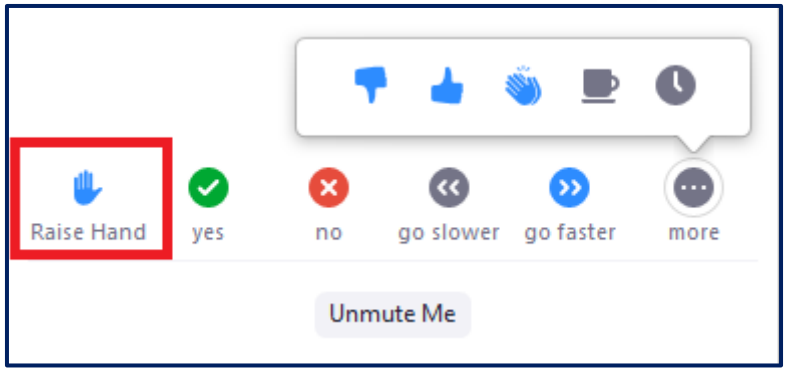
Asking Questions in the Q&A Box

- Click on the Q&A icon at the bottom of your screen
- The questions in the Q&A box will be monitored and answered either between presentations or at the end of the meeting
- Once a question is answered, it will be moved to the “Answered” tab. Participants will be able to view all questions throughout the meeting.



Asking Questions Verbally

- Please raise your hand *(click on the participants button at the bottom of the screen then scroll down to the bottom of the list of participants, and click on the "Raise Hand" button)*, and a host will unmute you.
- Please give your name and agency before asking your question
- **Please mute yourself when you are done asking a question**



Welcome

Denise Markow, TSMO Program Director
The Eastern Transportation Coalition

Coalition Update

RECENT

- ✓ **RITIS-PDA Suite User Group Web Meeting** - Feb 11, 2021
- ✓ **Waze Workshops** - February 24 & March 3, 2021
- ✓ **TVER Mobile App Vendor Forum** - March 11, 2021
- ✓ **CAV Workshop including Freight** - March 23, 2021

UPCOMING

- ✓ **TSMO Strategic Planning Session** - April 14, 2021
- ✓ **RITIS User Group/TDADS Steering Committee Web Meeting** - May 6, 2021

Welcome from our TIS Co-Chairs

Mary Ameen, PE

Executive Director

NJTPA

Kelly Wells, PE

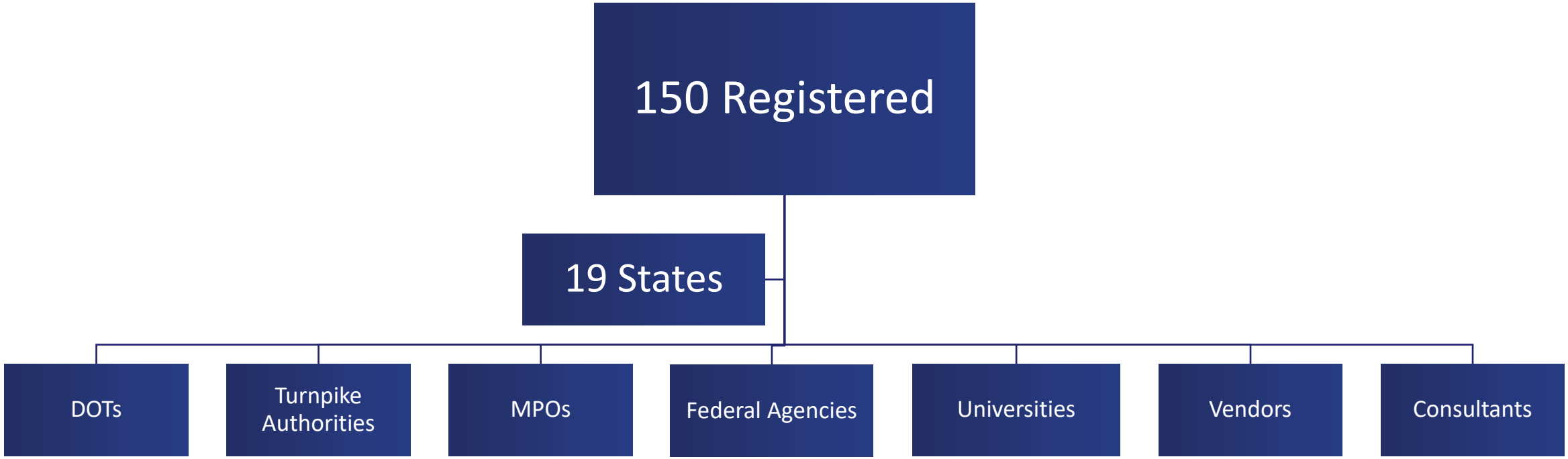
State Traveler Info Engineer

North Carolina DOT

Agenda

Topic	Speaker
Welcome & Introductions	Denise Markow, TSMO Program Director, The Eastern Transportation Coalition Mary Ameen, PE, Executive Director, NJTPA & TIS Co-chair
Automating Social Media Notifications in Maryland	Rick Dye, CHART Systems Administrator, Maryland DOT-SHA
Rhode Island's Wrong Way Driving Systems: Experiences to Date & A Promising Future	Russ Holt, PE, Principal Civil Engineer, Rhode Island DOT
High Performance and Reduced Cost Traffic Monitoring using Fiber Optic Sensing in Georgia	Paul Cooper, Business Development Director (Transport), OptaSense
What Else is Up Our Crowdsourcing Sleeve?	John Parker, Senior Traffic Operations Project Manager, Pennsylvania Turnpike Commission
Traffic Signal Situational Awareness Dashboard – After Hurricane Sally Landfall	Amy M. DiRusso, PE, TSM&O Program Engineer, Florida DOT
Wrap Up	Kelly Wells, PE, State Traveler Info Engineer, North Carolina DOT & TIS Co-chair

The Eastern Transportation Coalition Sponsored Event



Introductions

Rick Dye
CHART Systems Administrator
Maryland DOT-SHA

Paul Cooper
Business Development Director (Transport)
OptaSense

Amy M. DiRusso, PE
TSM&O Program Engineer
Florida DOT

Russ Holt, PE
Principal Civil Engineer
Rhode Island DOT

John Parker
Senior Traffic Operations Project Manager
Pennsylvania Turnpike Commission

Automating Social Media Notifications

Rick Dye, CHART Systems Administrator
Maryland DOT-SHA

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

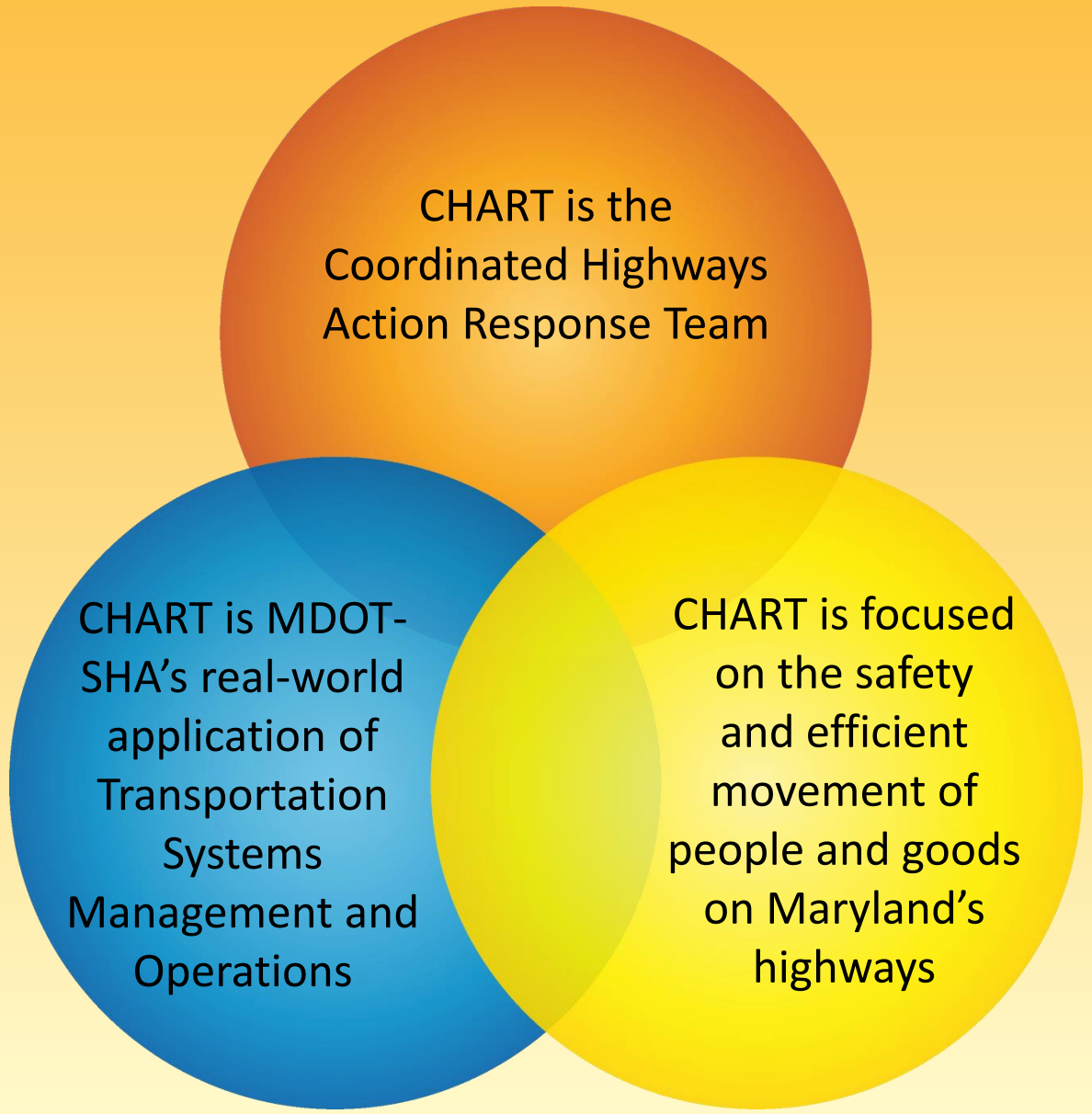
Coordinated Highways Action Response Team

Automating Social Media Notifications

The Eastern Transportation Coalition
April 1, 2021

Richard Dye
CHART Systems Administrator
Office of Transportation Mobility and Operations
E-mail: rdye@mdot.maryland.gov

What is CHART (OTMO)?



CHART's (OTMO) Mission

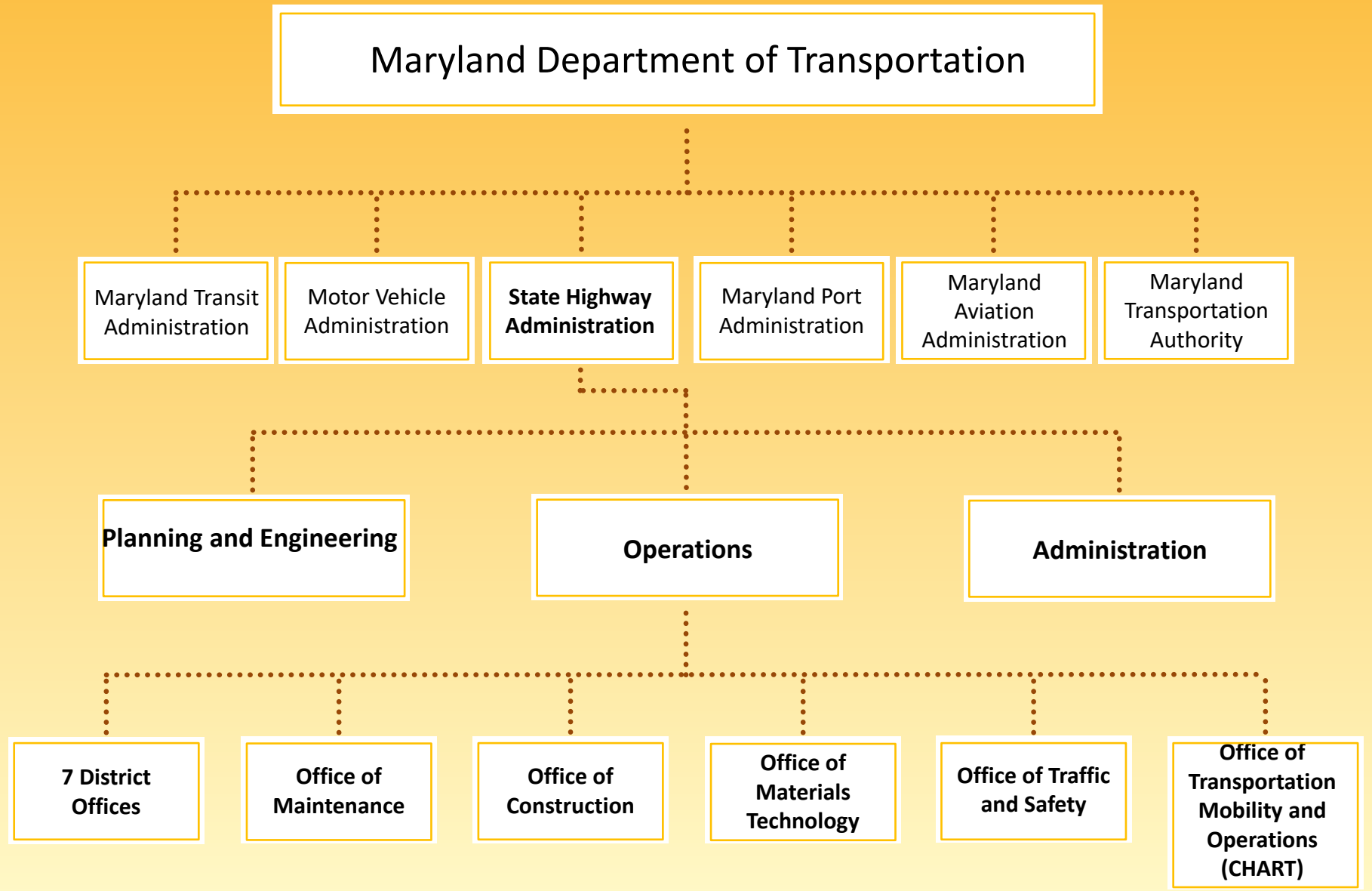
"Improve mobility and safety for the users of Maryland's highways through the application of ITS technology and interagency teamwork."

HOW?

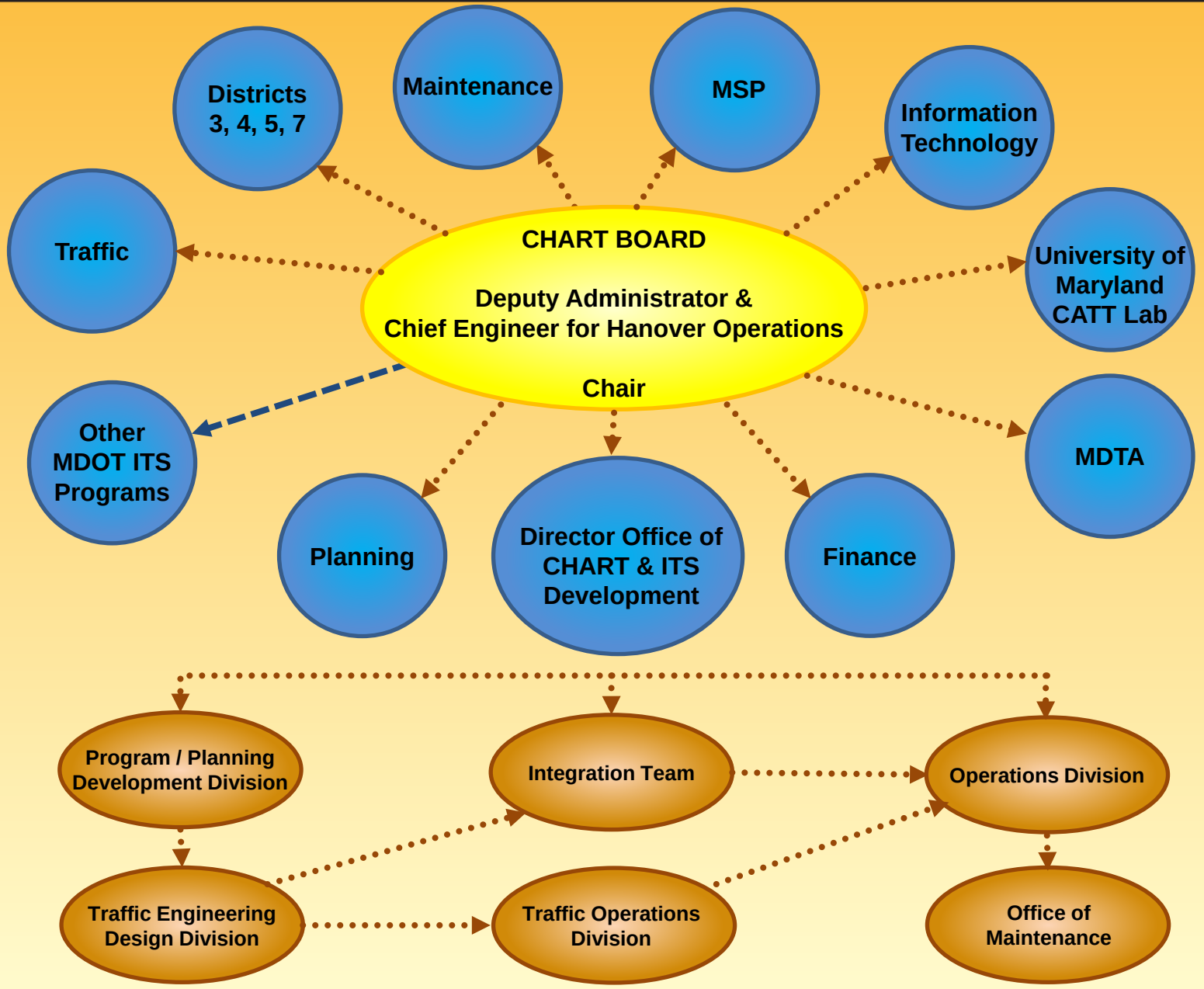
Improves mobility by reducing incident duration time

Promotes safety by lowering chances of secondary incidents

Organization



Organization



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CHART History

1978	Eastern Shore Traffic Operations (ETSO) Begins
1989	"Reach the Beach" Program Begins
1990	Regional Patrols Begin
1991	Traffic Operations Centers (TOCs) Open
1992	CHART "Pillars" or Focus Areas Developed
1995	SOC Opens
1996	First CHART Business Plan Completed
1997	Office of CHART & ITS Development Created
2000	New Operating System Developed
2001	SOC Remodeled

CHART History

2006	Frederick Region Opens
2010	Travel Time on DMS Display Begins
2011	511 Begins
2014	24x7 Patrol Begins
2014	Lane Closure Permit / Reporting
2017	CAV and Innovative Technology Strategic Action Plan
2018	New Deputy Director for TSMO created in CHART
2019	Name Change to: Office of Transportation Mobility and Operations
2020	Eastern Region Opens

OTMO (CHART) Organization

Teams

- Systems Integration
- Regional Operations
- Traffic Management Center Operations
- Programming, Planning & Development
- ITS
- TSMO – CAV/AV

Focus Areas

- Incident Management
- Traffic and Roadway Monitoring
- Traveler Information
- Severe Weather and Emergency Operations
- Traffic Management
- Statewide 700 MHz Radio Communications & ITS Devices




Operations Centers

The Statewide Operations Center (SOC)

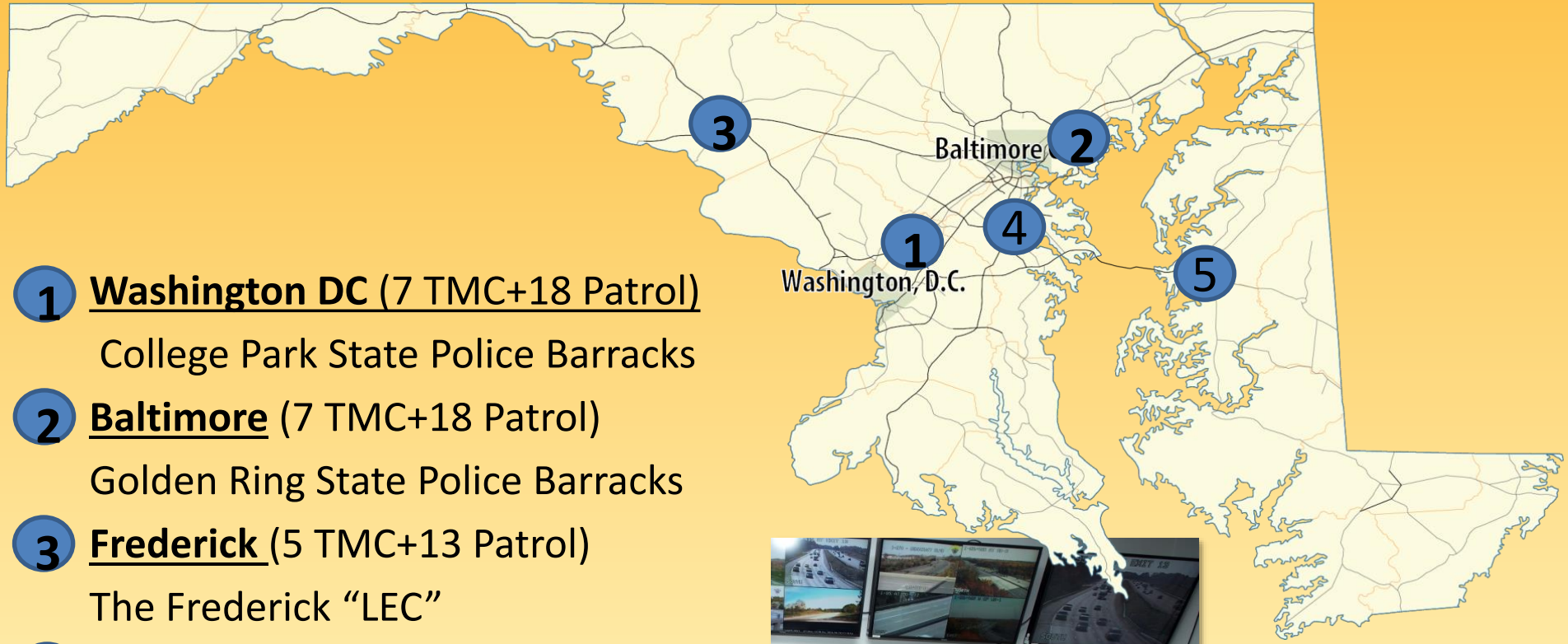
24 HOURS/DAY	**365** DAYS/YEAR
113 Overall CHART STAFF	
18 SOC STAFF	**5** Supervisory
1 MSP LIASION	**1** MSP OFFICER PEAK HOURS/ EMERGENCY ONLY

Opened August 30, 1995

- Communications
- Emergency Operations

Regional Operations Centers

Satellite Regional Operations Centers



1. **Washington DC** (7 TMC+18 Patrol)
   College Park State Police Barracks
2. **Baltimore** (7 TMC+18 Patrol)
   Golden Ring State Police Barracks
3. **Frederick** (5 TMC+13 Patrol)
   The Frederick "LEC"
4. **Statewide Operations Center (SOC)**
   Special Events and Inter-State Coord.
5. **Eastern Region** (6 Patrol)
   SOC

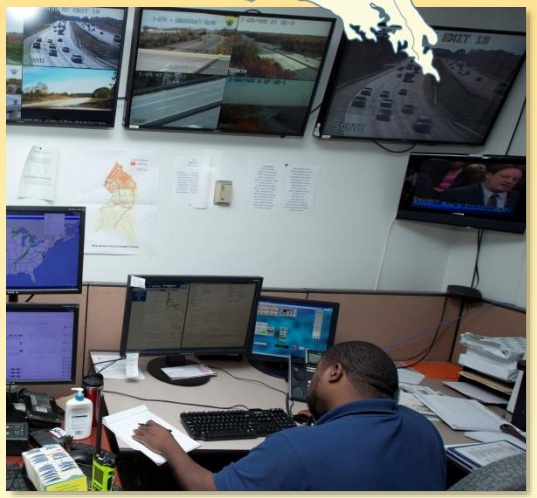


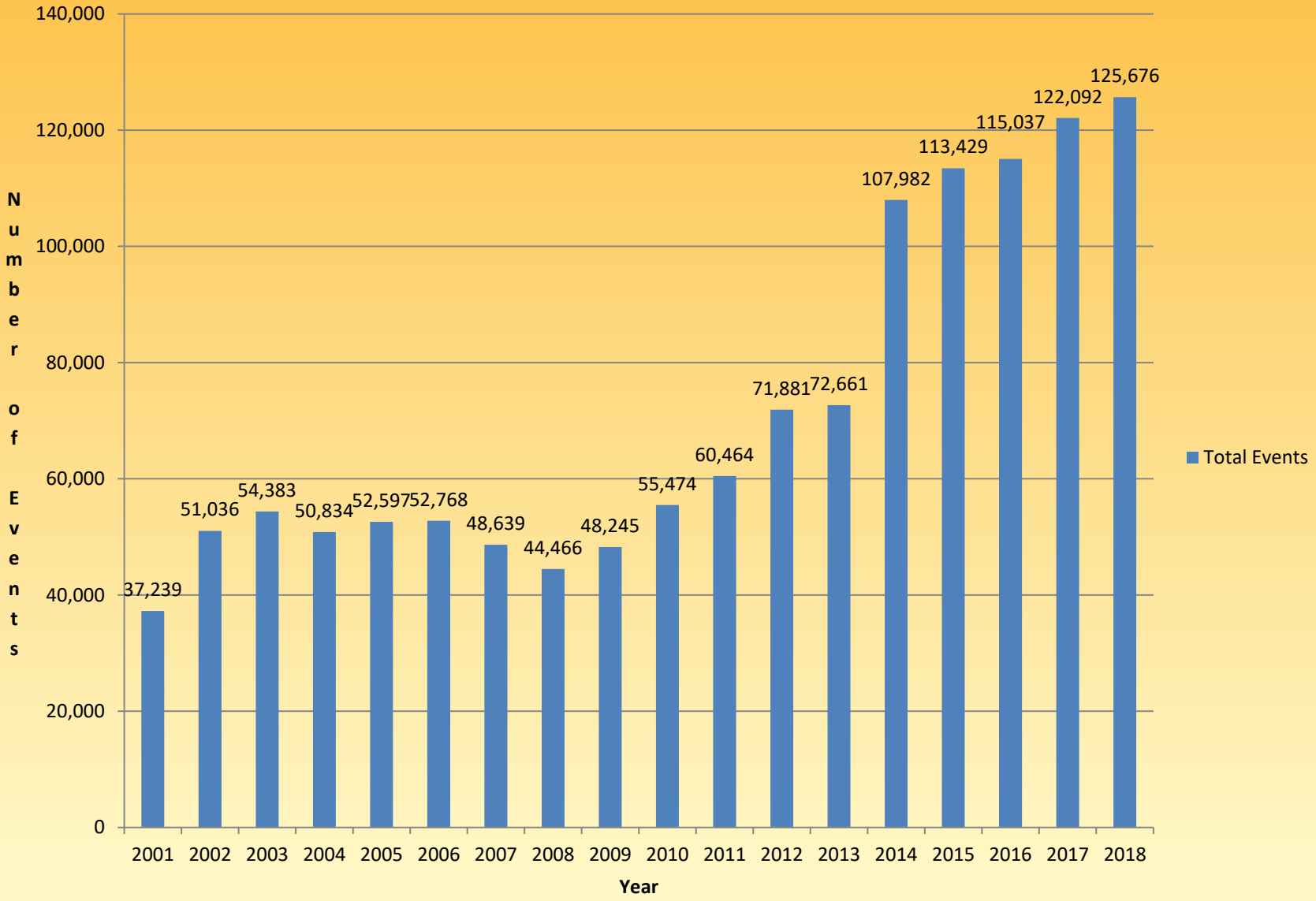
CHART Performance Evaluation

Since 1990, CHART has provided more than **690,000** assists

In the same period, CHART has responded to more than **415,000** incidents

In 2018, CHART handled over **155,000** events saving over **$1.3 Billion** in delay and fuel costs

Total Events (All Centers)



MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

CHART Systems Serving the Focus Areas

Advanced Traffic Management System (ATMS)

- Identify and track traffic flow disruptions using Closed Circuit TV (CCTV), Traffic Sensor Systems (TSSs - microwave traffic flow detectors), remote weather stations
- send responders to correct the disruption
- notify the public using Dynamic Message Signs (DMSs) and Highway Advisory Radio (HAR) devices
- send notifications to the media
- feeding data to a live traffic web site (http://www.traffic.maryland.gov) and Maryland 511.

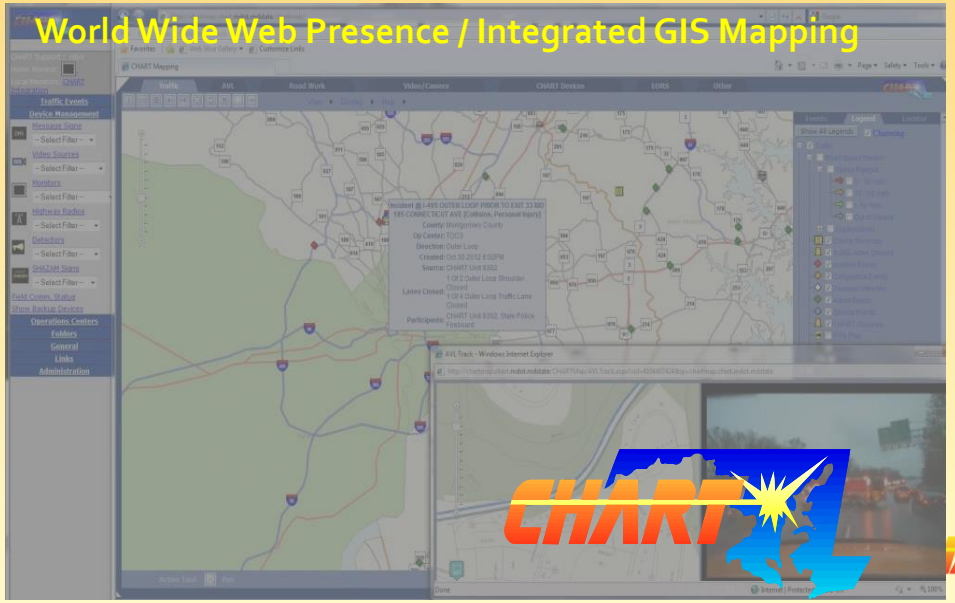
Lane Closure Permitting System (LCP)

- Permit Management –add, edit, update & delete lane closure permits.
- List Permits – list, activate and print permits
- Permit Workflow –manage workflow rules for permit states to determine permit approval types
- Permit Reports –generate PDF reports for active and approved permits
- Permit Mapping – geolocate a lane closure permit.
- LCP Data Exporter services – Provides an interface for external applications to get LCP permit data.

Emergency Operations Reporting System (EORS)

- Storm Event Reporting –utilization of personnel, equipment, materials and conditions for an event
- Snow Emergency Plans – Declared and managed for MD counties.
- Event Mapping – specify conditions of predefined roadway segments.
- Route Restrictions – manage vehicle restriction information.
- Post Storm Review & Archive
- Situational Awareness Reporting (SARS)/ Archive – add event data at the district, EOC, CHART and PIO level.

World Wide Web Presence / Integrated GIS Mapping



Social Media

- More users wanted to have traffic information sent to them rather than go to a web site and look for it
- Office of Communications in both MDOT HQ and MDOT SHA had formed multiple twitter feeds to provide information on:
  - Departmental initiatives
  - Major construction projects
  - Major planned and unplanned roadway events
- But the expectation of the twitter followers is the person who initiates the event will update and stay with it until the event clears

Social Media

- To automate this we created a special type of event called a Major Event

Social Media Posting Rules (1)

(Add)

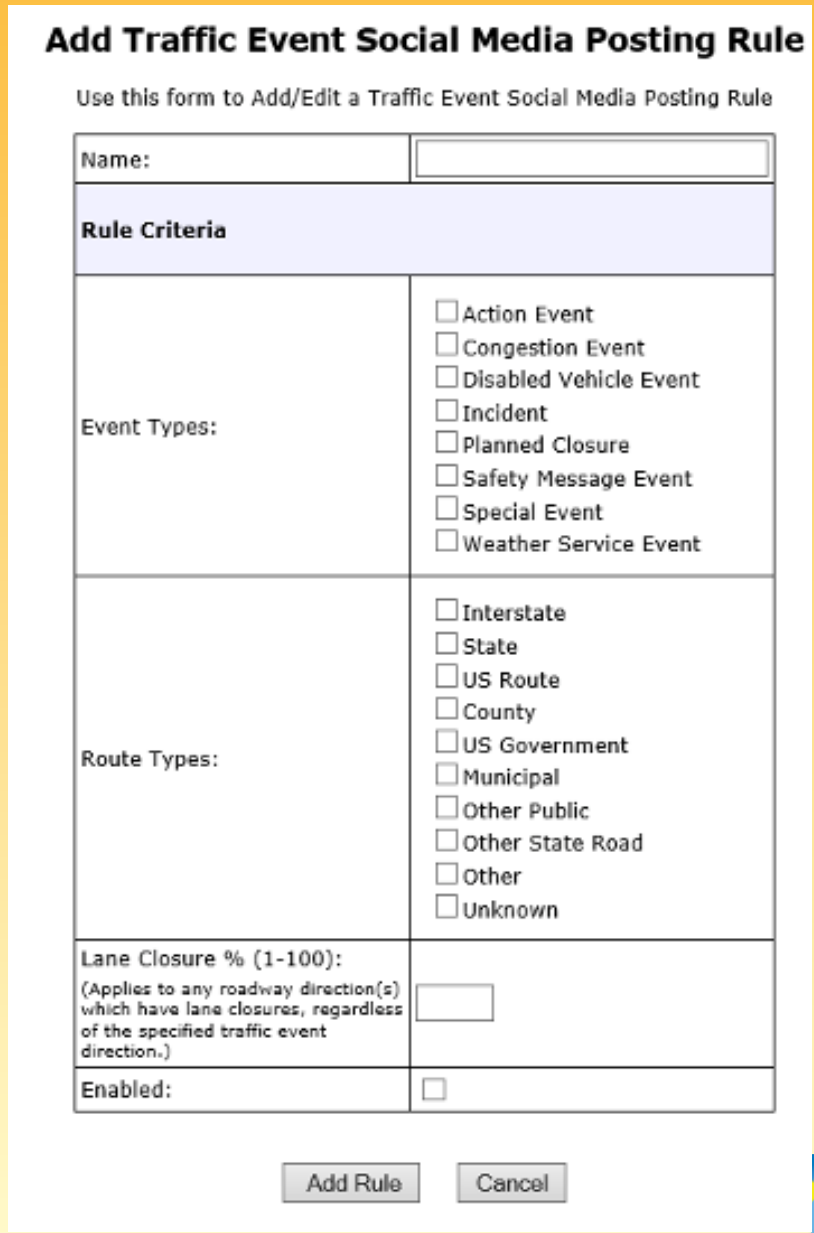
Name	Rule Criteria	Enabled	Actions

Major Incident	• Event Type(s):
	  ◦ Incident
	• RouteType(s):
	  ◦ Interstate
	  ◦ US Route
	• Lanes Closed: > = 50 %
		NO	Edit
			Remove

* Lane Closure % applies to any roadway direction(s) which have lane closures, regardless of the specified traffic event direction.

Social Media

- Privileged operators can create new social media rules as needed to include:
  - Other Event Types
  - Other Route Types
  - % of lanes closed



Add Traffic Event Social Media Posting Rule

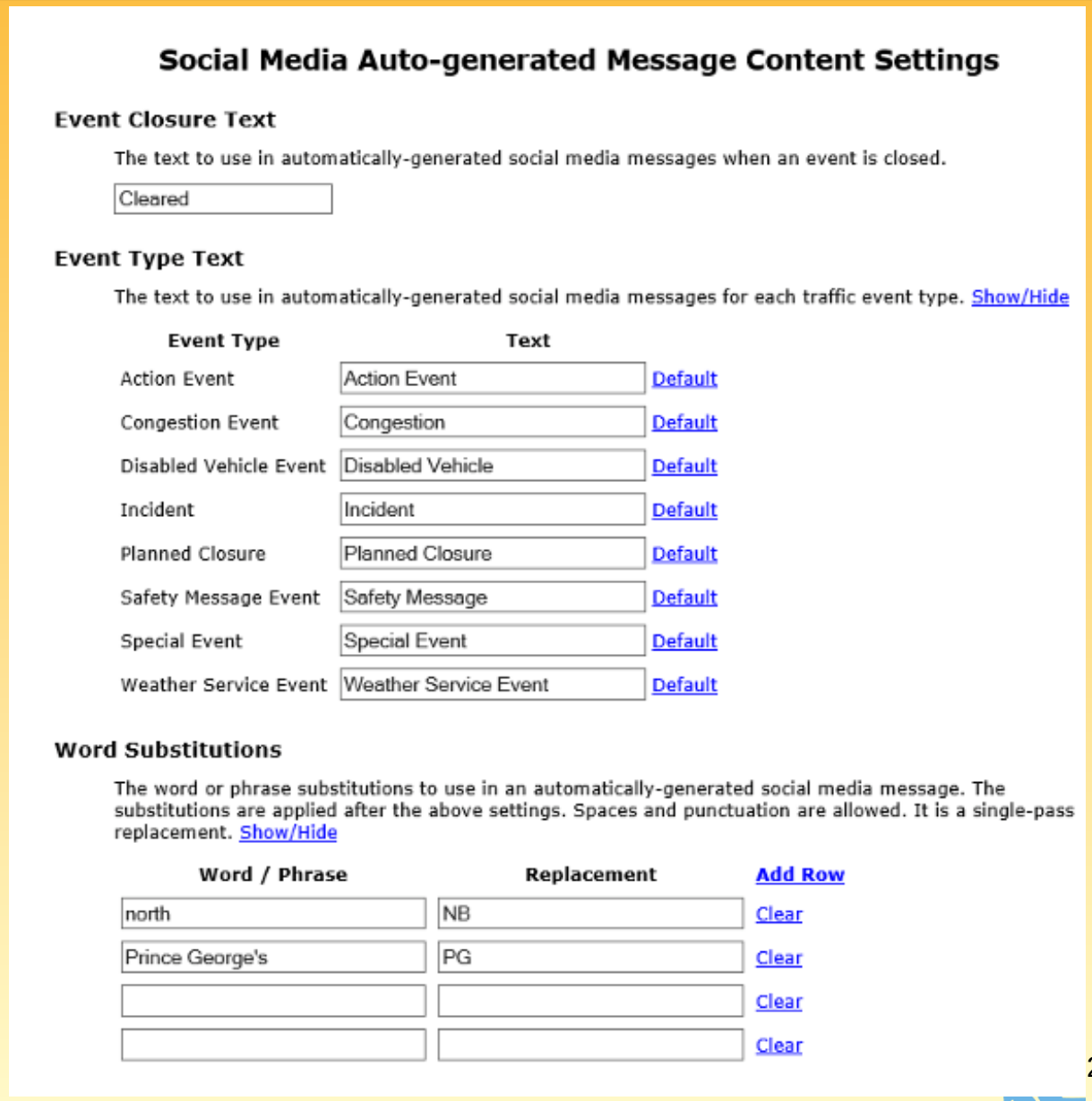
Use this form to Add/Edit a Traffic Event Social Media Posting Rule

Name:	
Rule Criteria	
Event Types:	☐ Action Event ☐ Congestion Event ☐ Disabled Vehicle Event ☐ Incident ☐ Planned Closure ☐ Safety Message Event ☐ Special Event ☐ Weather Service Event
Route Types:	☐ Interstate ☐ State ☐ US Route ☐ County ☐ US Government ☐ Municipal ☐ Other Public ☐ Other State Road ☐ Other ☐ Unknown
Lane Closure % (1-100): (Applies to any roadway direction(s) which have lane closures, regardless of the specified traffic event direction.)	
Enabled:	☐

Add Rule Cancel

Social Media

- The system will make it more user friendly by substituting “human” words to replace our engineer-speak!



Social Media Auto-generated Message Content Settings

Event Closure Text

The text to use in automatically-generated social media messages when an event is closed.

Cleared

Event Type Text

The text to use in automatically-generated social media messages for each traffic event type. Show/Hide

Event Type	Text	
Action Event	Action Event	Default
Congestion Event	Congestion	Default
Disabled Vehicle Event	Disabled Vehicle	Default
Incident	Incident	Default
Planned Closure	Planned Closure	Default
Safety Message Event	Safety Message	Default
Special Event	Special Event	Default
Weather Service Event	Weather Service Event	Default

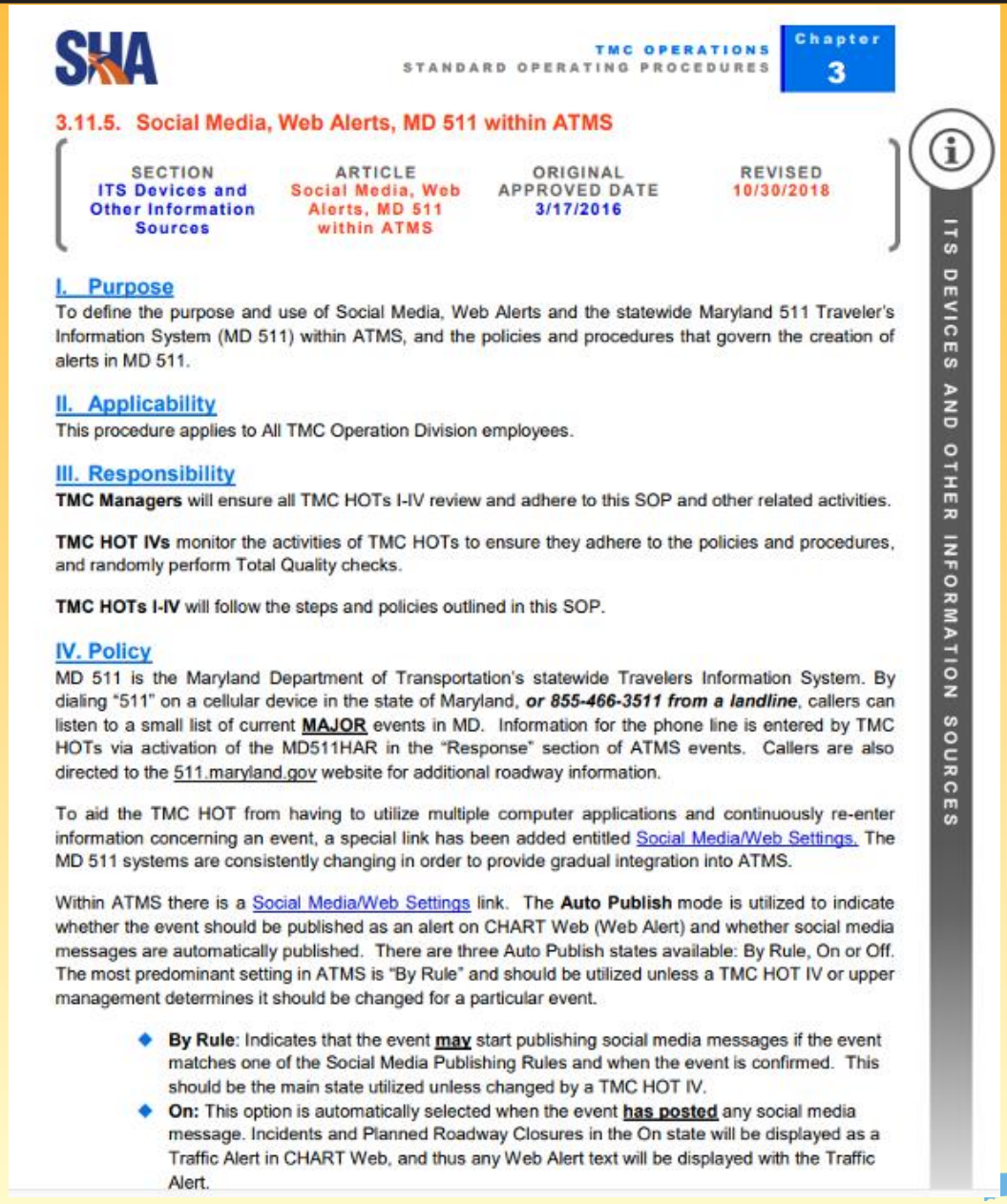
Word Substitutions

The word or phrase substitutions to use in an automatically-generated social media message. The substitutions are applied after the above settings. Spaces and punctuation are allowed. It is a single-pass replacement. Show/Hide

Word / Phrase	Replacement	Add Row
north	NB	Clear
Prince George's	PG	Clear
		Clear
		Clear

Social Media

- To ensure conformity of message, the ATMS system pops up Standard Operating Procedures to remind operators about all of the 511 aspects in the ATMS including Events to include on 511, special web alerts and to send out over social media



SHA

TMC OPERATIONS
STANDARD OPERATING PROCEDURES

Chapter 3

3.11.5. Social Media, Web Alerts, MD 511 within ATMS

SECTION	ARTICLE	ORIGINAL APPROVED DATE	REVISED
ITS Devices and Other Information Sources	Social Media, Web Alerts, MD 511 within ATMS	3/17/2016	10/30/2018

ITS DEVICES AND OTHER INFORMATION SOURCES

I. Purpose

To define the purpose and use of Social Media, Web Alerts and the statewide Maryland 511 Traveler's Information System (MD 511) within ATMS, and the policies and procedures that govern the creation of alerts in MD 511.

II. Applicability

This procedure applies to All TMC Operation Division employees.

III. Responsibility

TMC Managers will ensure all TMC HOTs I-IV review and adhere to this SOP and other related activities.

TMC HOT IVs monitor the activities of TMC HOTs to ensure they adhere to the policies and procedures, and randomly perform Total Quality checks.

TMC HOTs I-IV will follow the steps and policies outlined in this SOP.

IV. Policy

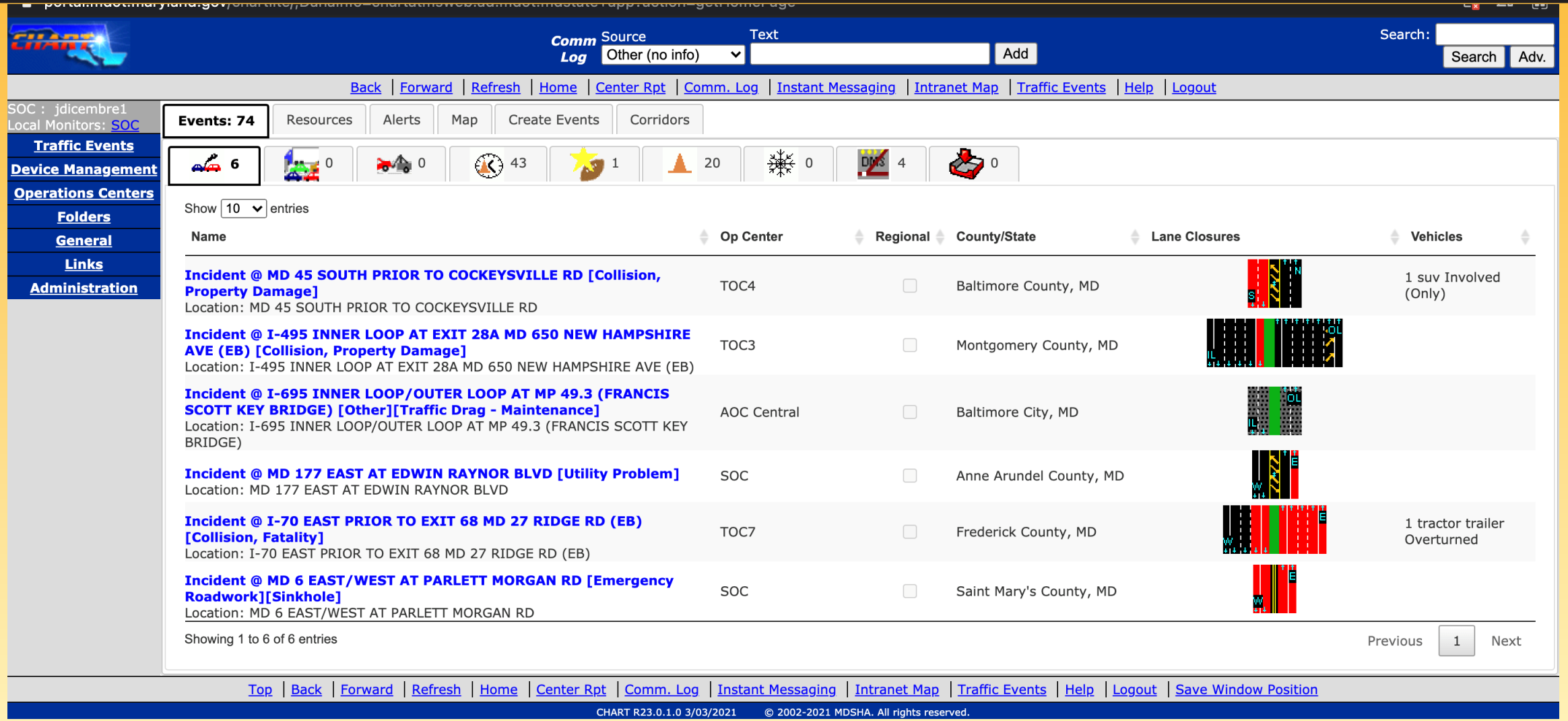
MD 511 is the Maryland Department of Transportation's statewide Travelers Information System. By dialing "511" on a cellular device in the state of Maryland, ***or 855-466-3511 from a landline***, callers can listen to a small list of current **MAJOR** events in MD. Information for the phone line is entered by TMC HOTs via activation of the MD511HAR in the "Response" section of ATMS events. Callers are also directed to the 511.maryland.gov website for additional roadway information.

To aid the TMC HOT from having to utilize multiple computer applications and continuously re-enter information concerning an event, a special link has been added entitled Social Media/Web Settings. The MD 511 systems are consistently changing in order to provide gradual integration into ATMS.

Within ATMS there is a Social Media/Web Settings link. The **Auto Publish** mode is utilized to indicate whether the event should be published as an alert on CHART Web (Web Alert) and whether social media messages are automatically published. There are three Auto Publish states available: By Rule, On or Off. The most predominant setting in ATMS is "By Rule" and should be utilized unless a TMC HOT IV or upper management determines it should be changed for a particular event.

- **By Rule**: Indicates that the event **may** start publishing social media messages if the event matches one of the Social Media Publishing Rules and when the event is confirmed. This should be the main state utilized unless changed by a TMC HOT IV.
- **On:** This option is automatically selected when the event **has posted** any social media message. Incidents and Planned Roadway Closures in the On state will be displayed as a Traffic Alert in CHART Web, and thus any Web Alert text will be displayed with the Traffic Alert.

How do these rules in the ATMS Software tell and Operator they have “Tweeted?”



When the Operator 1st logs in they see all incidents active in their area of responsibility

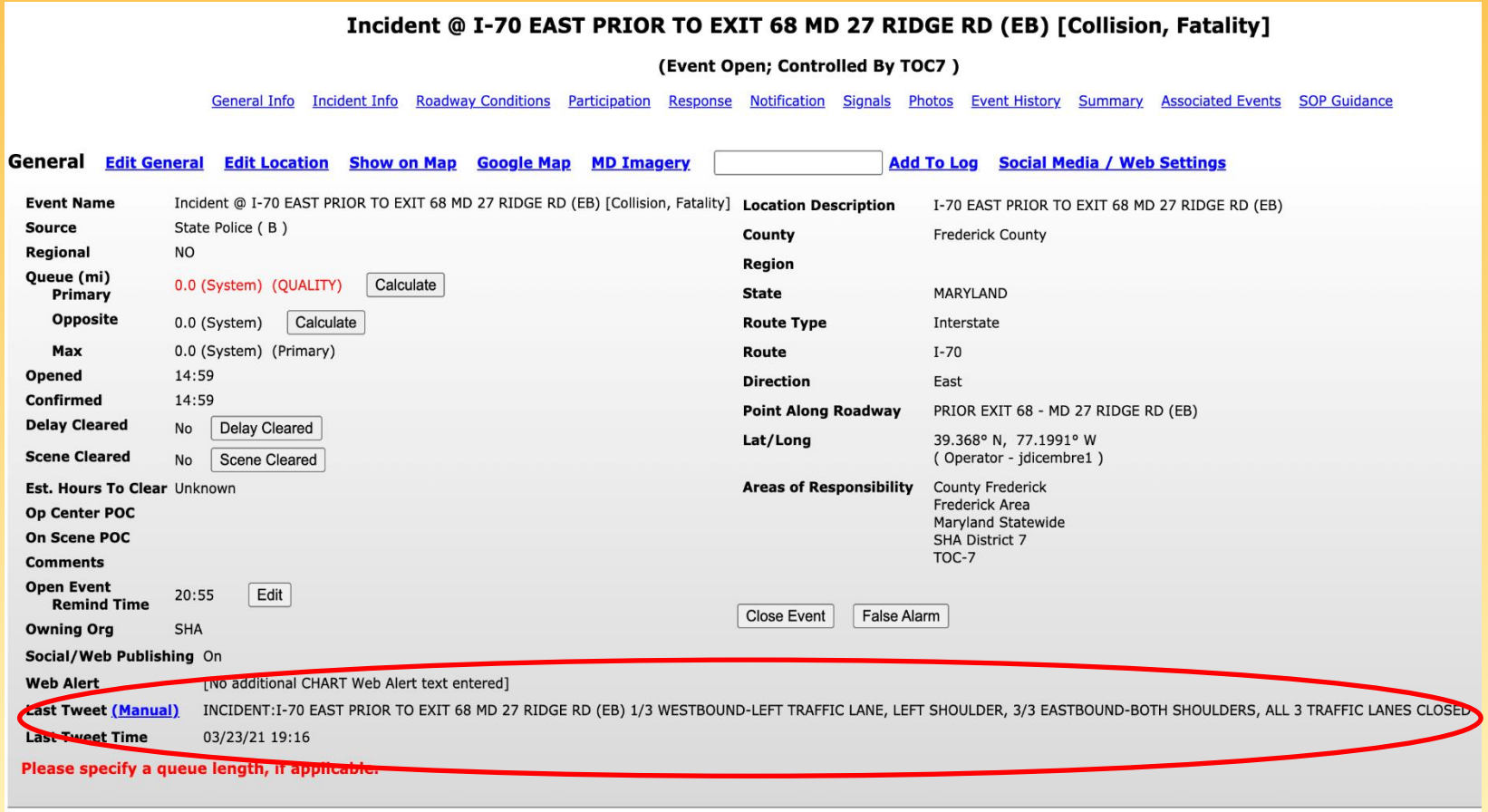
Clicking on an Incident brings up the details

What happened?

Where did this happen?

Who notified us?

How far is the queue?



Incident @ I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) [Collision, Fatality]

(Event Open; Controlled By TOC7)

General Info | Incident Info | Roadway Conditions | Participation | Response | Notification | Signals | Photos | Event History | Summary | Associated Events | SOP Guidance

General Edit General | Edit Location | Show on Map | Google Map | MD Imagery | Add To Log | Social Media / Web Settings

Event Name	Incident @ I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) [Collision, Fatality]	**Location Description**	I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB)
Source	State Police (B)	**County**	Frederick County
Regional	NO	**Region**	
Queue (mi) Primary	0.0 (System) (QUALITY) Calculate	**State**	MARYLAND
Opposite	0.0 (System) Calculate	**Route Type**	Interstate
Max	0.0 (System) (Primary)	**Route**	I-70
Opened	14:59	**Direction**	East
Confirmed	14:59	**Point Along Roadway**	PRIOR EXIT 68 - MD 27 RIDGE RD (EB)
Delay Cleared	No Delay Cleared	**Lat/Long**	39.368° N, 77.1991° W (Operator - jdicembre1)
Scene Cleared	No Scene Cleared	**Areas of Responsibility**	County Frederick Frederick Area Maryland Statewide SHA District 7 TOC-7
Est. Hours To Clear	Unknown		
Op Center POC			
On Scene POC			
Comments			
Open Event Remind Time	20:55 Edit		Close Event False Alarm
Owning Org	SHA		
Social/Web Publishing	On		
Web Alert	[No additional CHART Web Alert text entered]		
Last Tweet (Manual)	INCIDENT:I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) 1/3 WESTBOUND-LEFT TRAFFIC LANE, LEFT SHOULDER, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED		
Last Tweet Time	03/23/21 19:16		

Please specify a queue length, if applicable.

But look at the bottom. This event tells the operator that the incident met the rules and tweeted out at 3/23/21 at 19:16 hours

Clicking on an Incident brings up the details

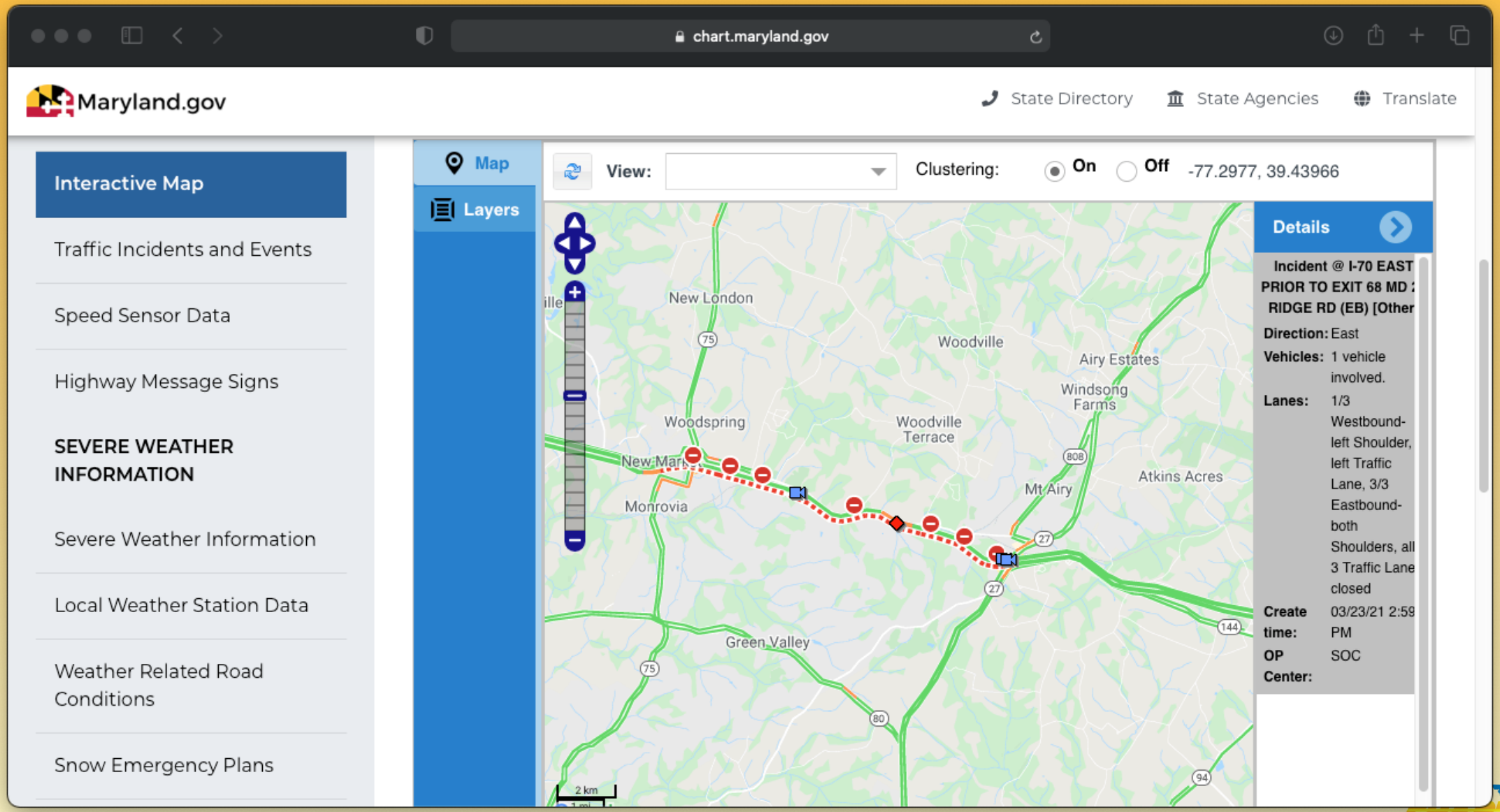
Event History Search Results

Search Criteria	
Message Types	User System Device
Search Text	social

Text	Author	Source	Operations Center	Time
Web/Social Media Publish Mode changed from By Rule to On.	asweeney2	Other	TOC7	15:02
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO BILL MOXLEY RD 3/3 WESTBOUND-ALL 3 TRAFFIC LANES, BOTH SHOULDERS, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	asweeney2	Other	TOC7	15:02
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) 3/3 WESTBOUND-ALL 3 TRAFFIC LANES, BOTH SHOULDERS, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	asweeney2	Other	TOC7	15:03
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO BILL MOXLEY RD 3/3 WESTBOUND-ALL 3 TRAFFIC LANES, BOTH SHOULDERS, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	asweeney2	Other	TOC7	15:04
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) 3/3 WESTBOUND-ALL 3 TRAFFIC LANES, BOTH SHOULDERS, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	lgreenwood	Other	TOC7	15:07
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) 3/3 WESTBOUND-ALL 3 TRAFFIC LANES, LEFT SHOULDER, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	asweeney2	Other	TOC7	18:15
Social Media Twitter message 'INCIDENT:I-70 EAST PRIOR TO EXIT 68 MD 27 RIDGE RD (EB) 1/3 WESTBOUND-LEFT TRAFFIC LANE, LEFT SHOULDER, 3/3 EASTBOUND-BOTH SHOULDERS, ALL 3 TRAFFIC LANES CLOSED' posted.	lgreenwood	Other	TOC7	19:16

If the operator needs to a quick history search will bring up all tweets that have gone out

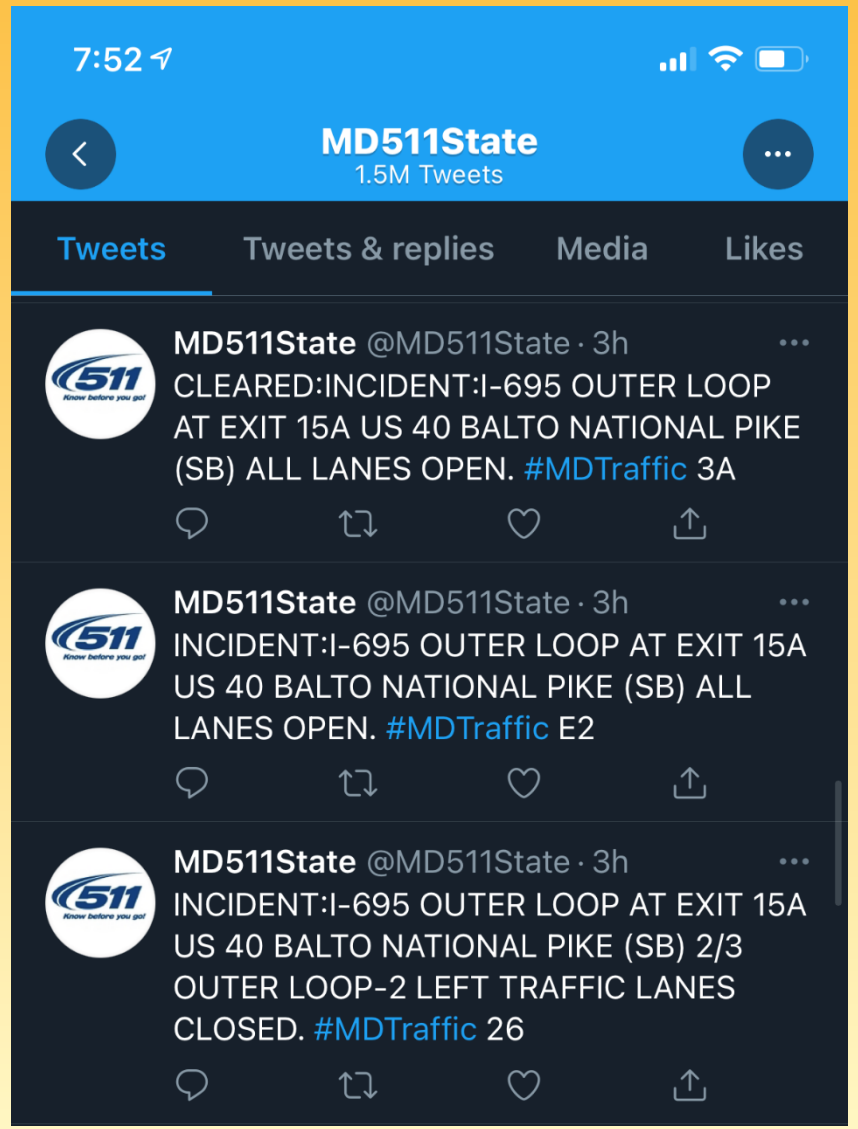
The public receive a “real - time” map showing the incidents and streaming video from nearby cameras



But now they get their Tweets Too!

Often, for major events, Office of Communications will log in to the MDOT SHA Twitter Account to expand on an ongoing event.

But now they get their Tweets Too!



But long after any humans go home, the MD511State automated Twitter account tweets until the event is cleared

- Now Event has Cleared

- Now all lanes Open

- Event Opens: 2 Left traffic Lanes Closed

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

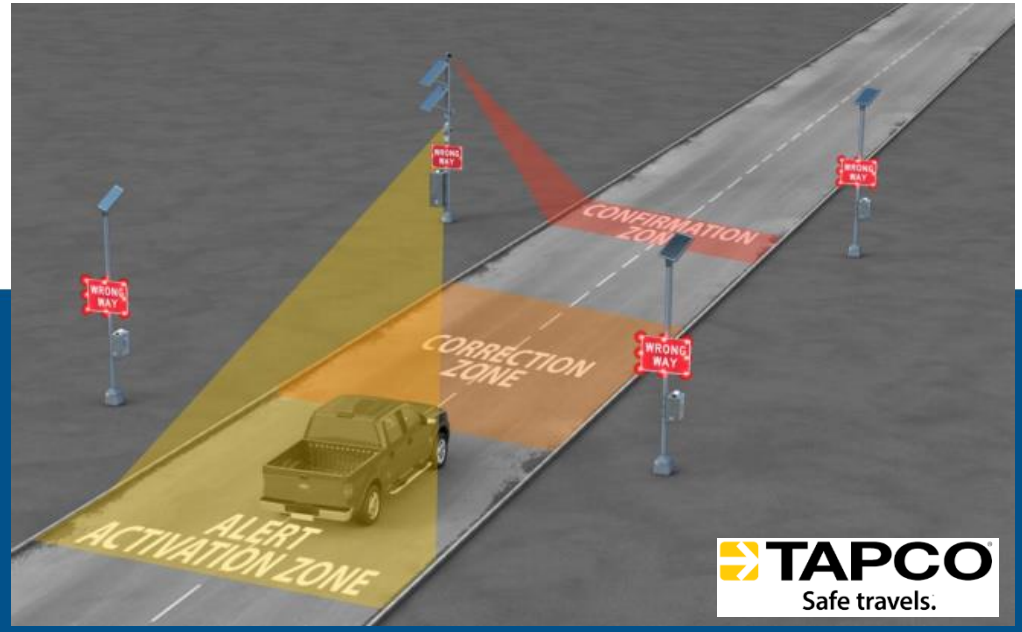
Questions?

Coordinated Highways Action Response Team

Rhode Island's Wrong Way Driving Systems: Experiences to Date & A Promising Future

Russ Holt, PE, Principal Civil Engineer
Rhode Island DOT

RIDOT's Wrong Way Driving Systems:
Experiences to Date & A Promising Future

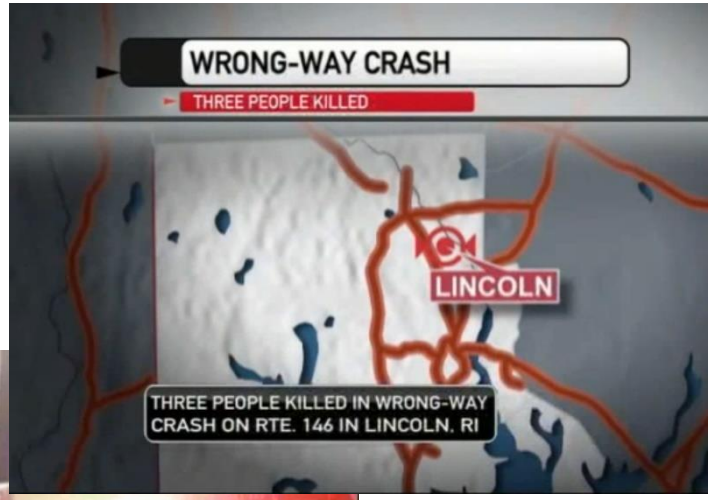


Eastern Transportation Coalition - Web Summit April 1, 2021

Russell B. Holt, P.E.

Why is RIDOT using intelligent WWD systems?

- "Toward Zero Deaths"
- High proportion of WWD crashes result in fatality or serious injury
- Distracted/older/impaired drivers

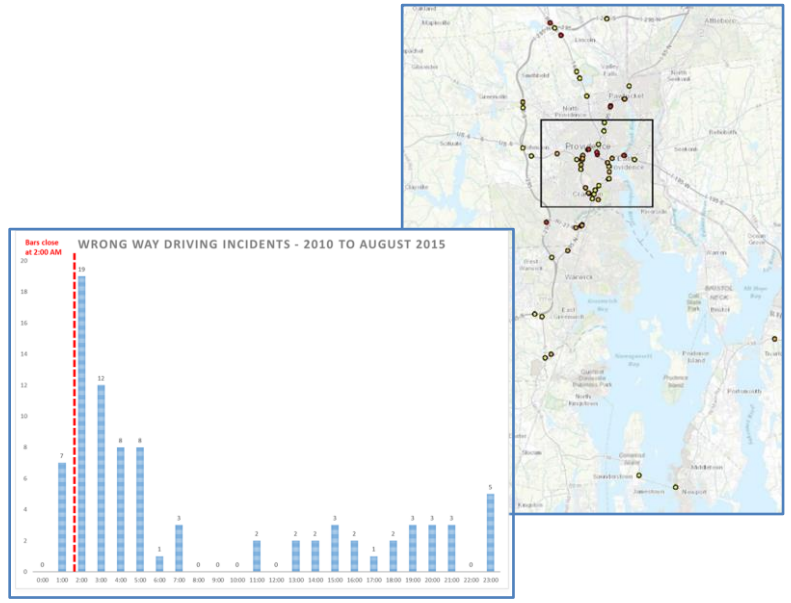


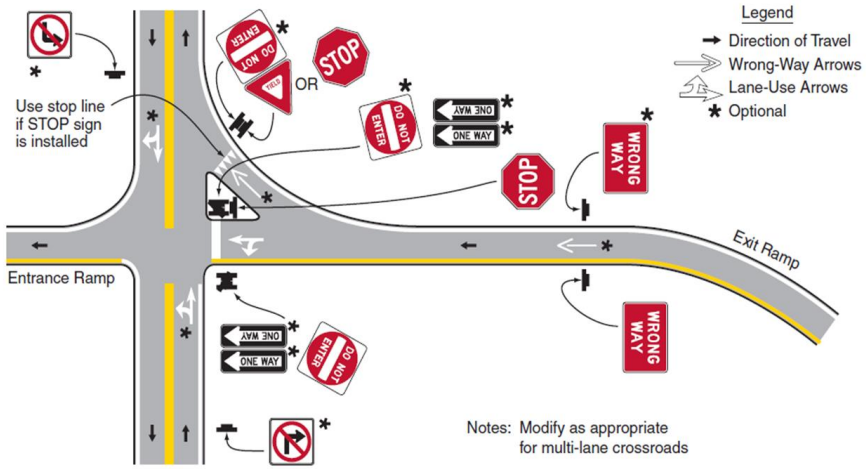
Source: New England Cable News Feb. 28, 2014 broadcast

RI dot Driven to get you there

Background / Planning

- 2014 study to determine WHERE, WHEN, & WHY WWD incidents occur in RI
  - Approx. 80% of WWD incidents occur in Prov. metro area
  - Approx. 2/3 of WWD incidents occur btw. 11p and 5a
- Analysis to determine highest-risk locations
  - Citations & recorded incidents considered
- Locations inventoried for traffic control device condition & improvement potential



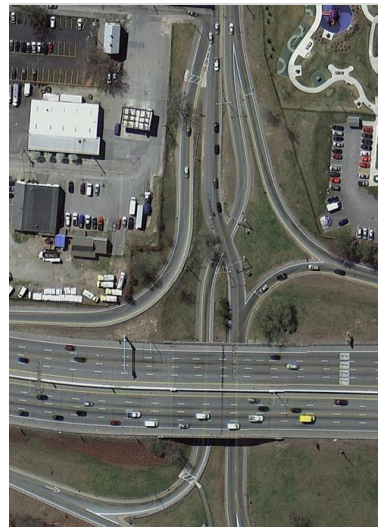


Background / Planning

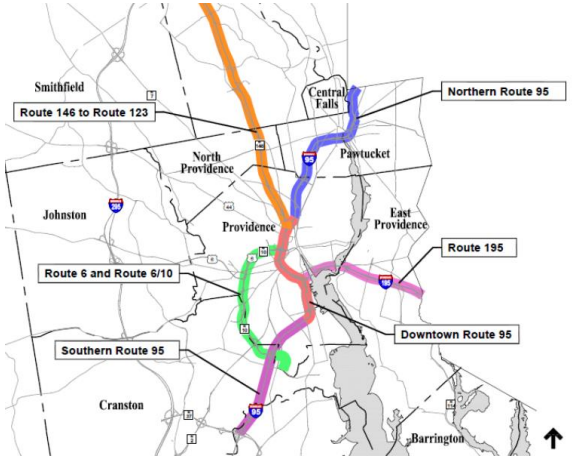
- Initial lowest-cost improvements (static signing and markings)

Source: Google

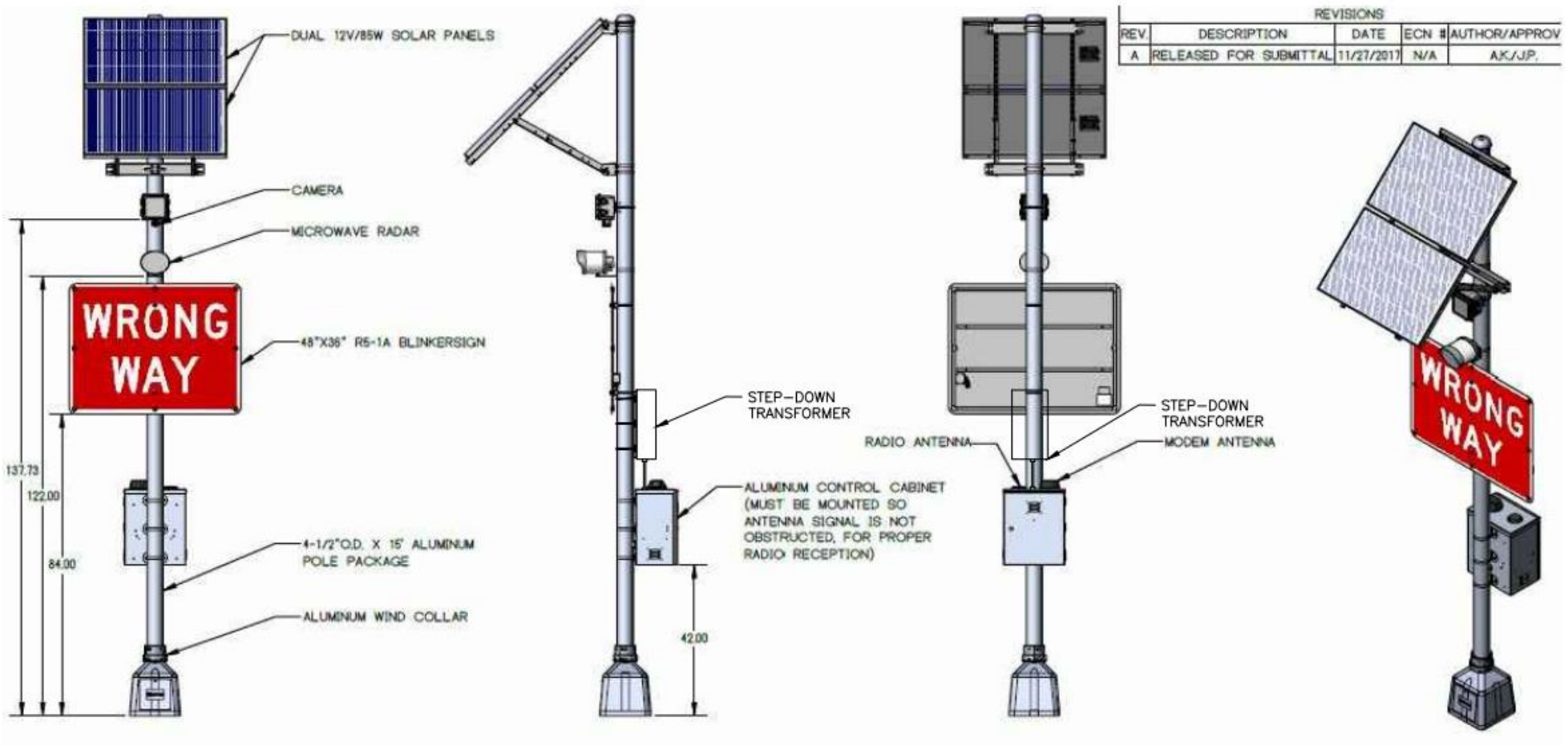
Background / Planning



- Decision to advance the first intelligent WWD systems in RI
  - RIDOT worked w/ State Police to ID 24 Pilot locations
  - All limited-access exit ramp locations, w/ varied geometry
- Key desired functionality – provide active WWD feedback/alerts via:
  - New (replacement & supplemental) Flashing Regulatory Signs (to wrong-way driver)
  - E-Mail/SMS/Web-Based App. (to RIDOT TMC & Police)
  - Existing Changeable Message Signs (to right-way drivers)



Pilot System Site Components

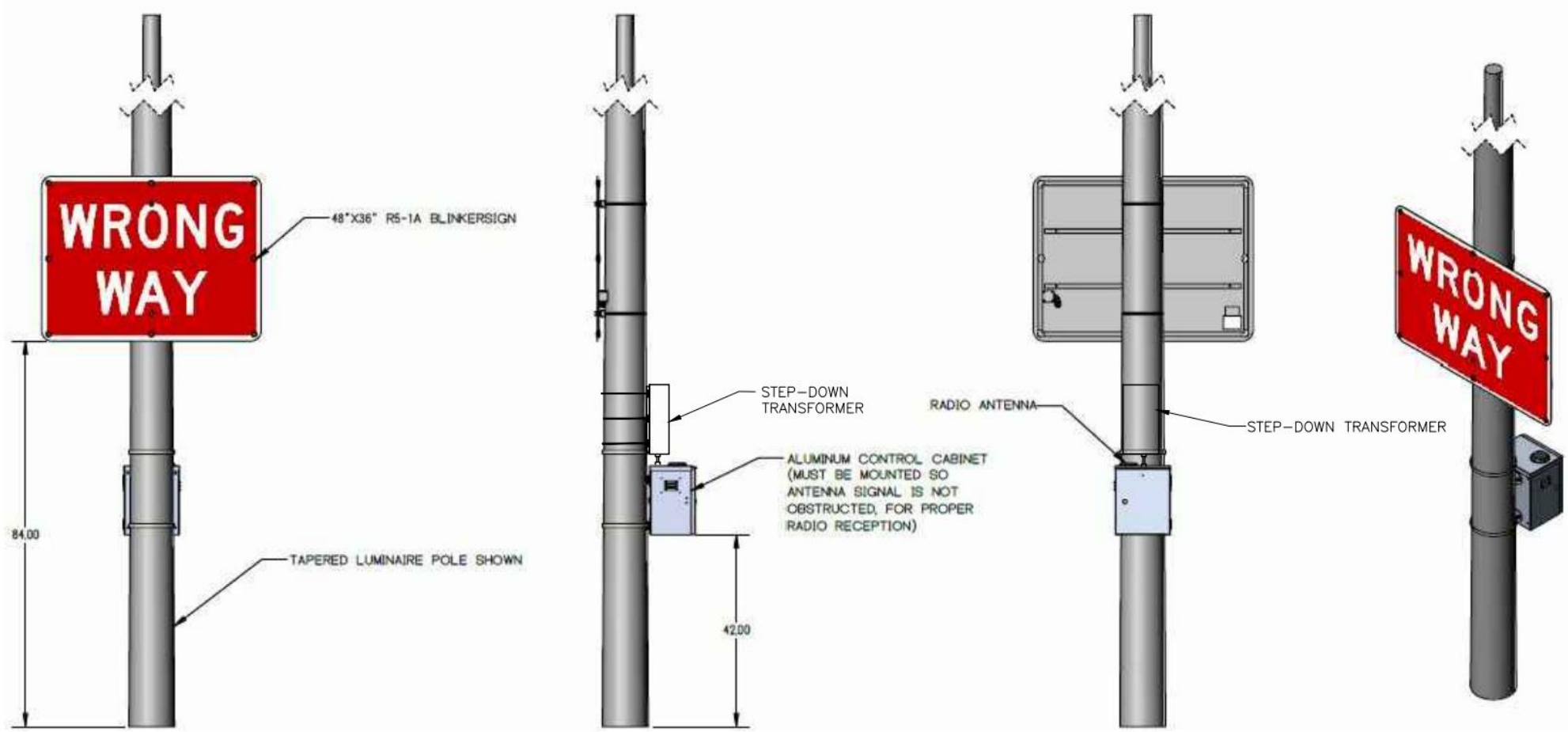


TYPICAL WRONG-WAY DETECTION DRIVING SYSTEM – DETECTOR POLE ARRANGEMENT (MASTER)

(DETAIL BY OTHERS REVISED FOR PROJECT APPLICATION)
NOT TO SCALE

Source: TAPCO / VHB

Pilot System Site Components



TYPICAL WRONG-WAY DETECTION DRIVING SYSTEM – BLINKERSIGN WARNING POLE ARRANGEMENT (SLAVE)

(DETAIL BY OTHERS REVISED FOR PROJECT APPLICATION)
NOT TO SCALE

Source: TAPCO / VHB

Latest System Site Components

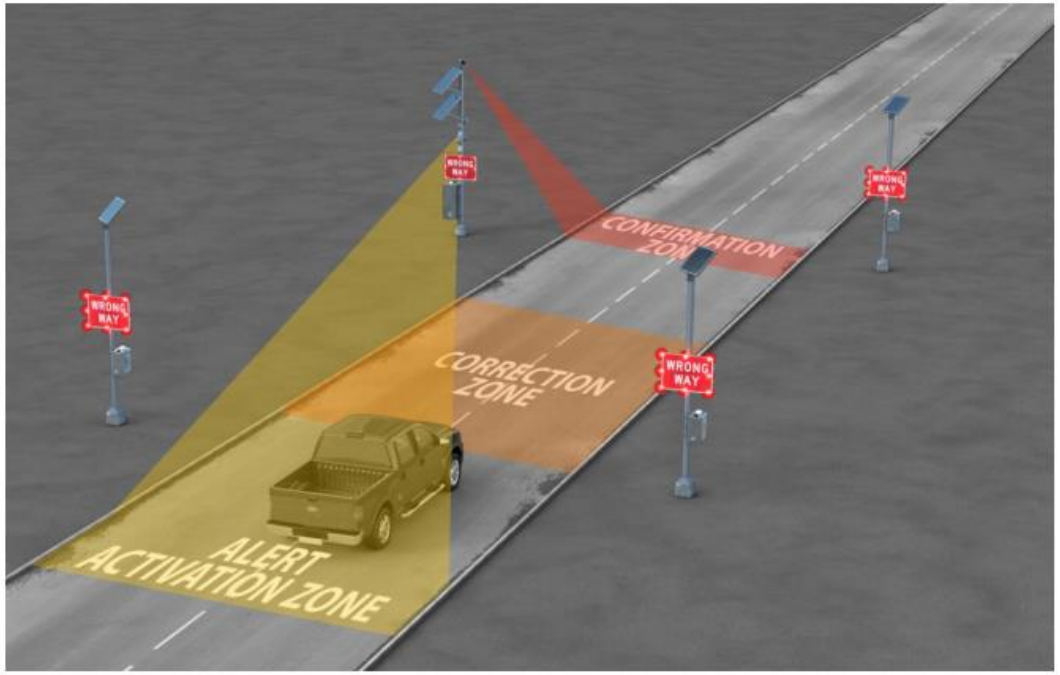
System Components

1. Sensor (Thermal or Radar)
2. Supporting White LED Illuminator
3. High Speed High Definition Camera
4. LED Enhanced Warning Device
5. Cellular Modem or Fiber Connection

Source: TAPCO

TAPCO Wrong-Way Alert System

(Typical 3 Zone Configuration)



1. **Alert Activation Zone:**
   Initial wrong way detection triggers alerts to flash
   Radar **OR** Thermal
2. **Correction Zone:**
   Opportunity for driver to self correct
3. **Confirmation Zone:**
   Confirming wrong way detection triggers camera and high priority alert sent to the TMC
   Thermal

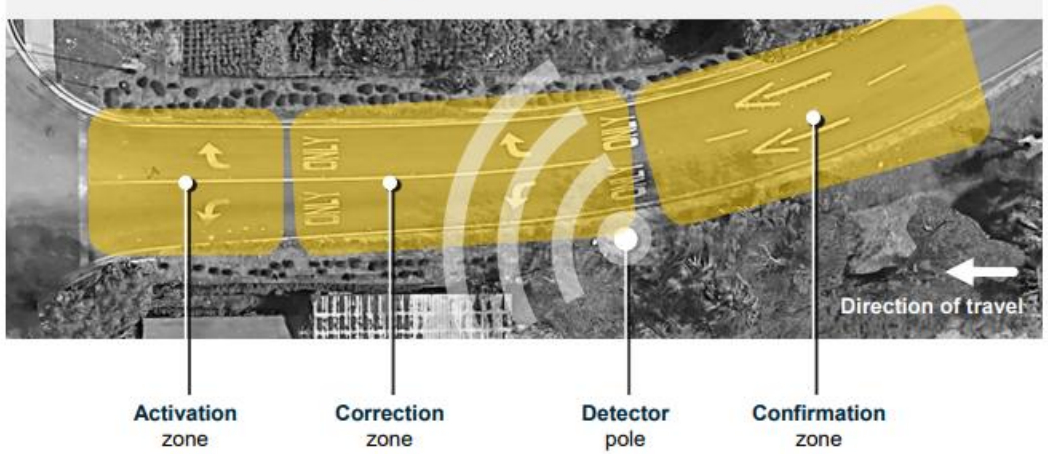
Source: TAPCO

Radar vs. Thermal Sensing

Wrong Way Use Cases

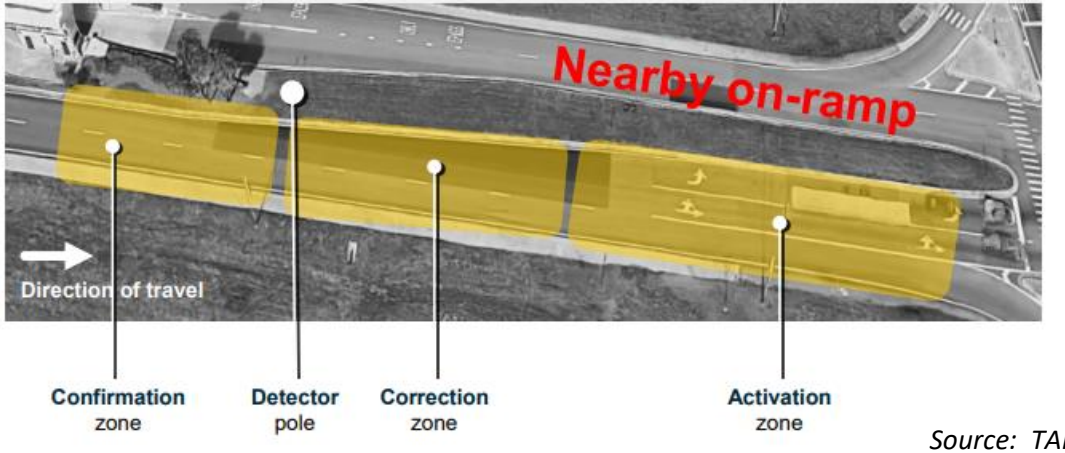
SIMPLE RAMP GEOMETRY

- Forward Facing Radar
- Rear Facing Thermal



COMPLEX RAMP GEOMETRY

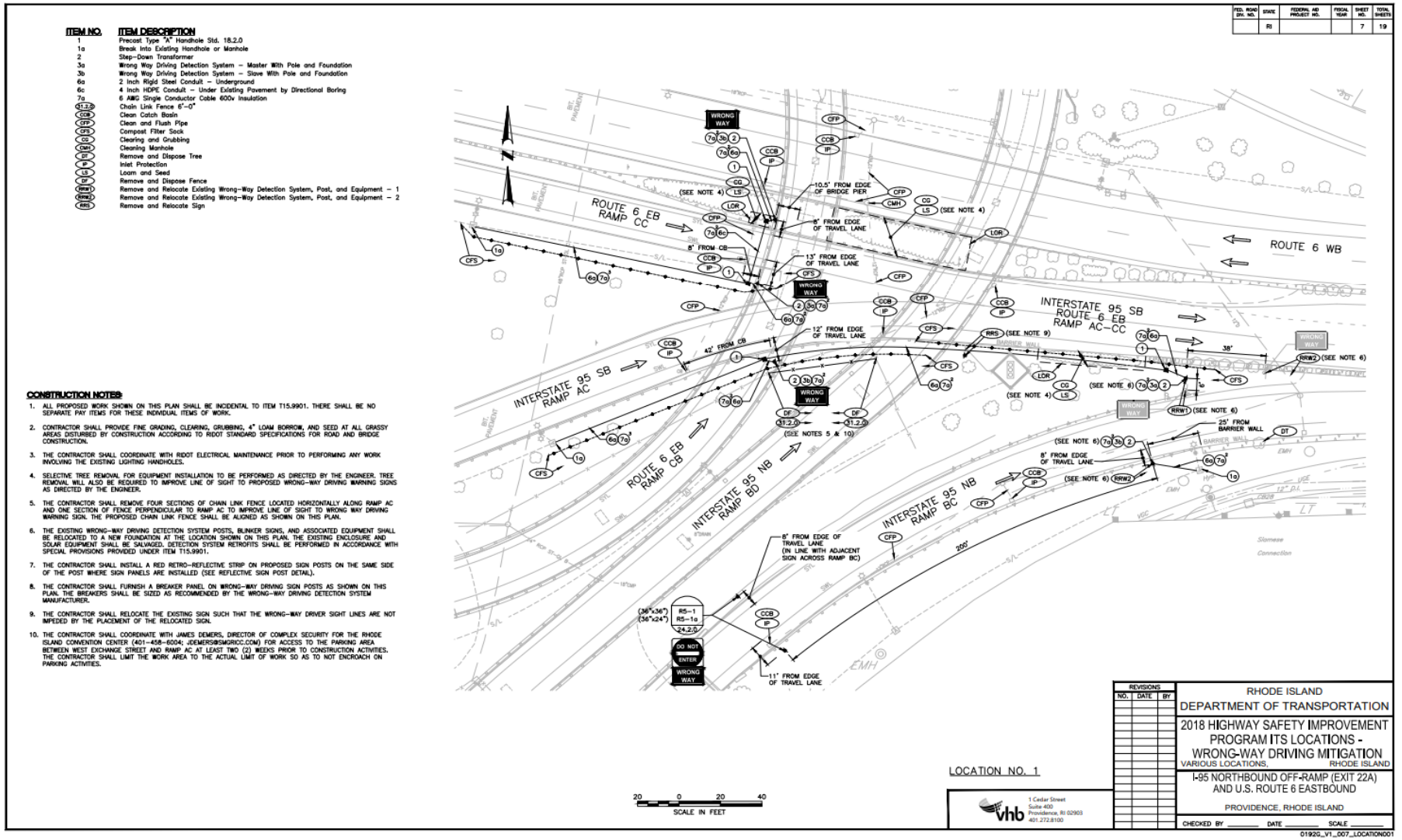
- Forward Facing Thermal
- Rear Facing Thermal



Source: TAPCO

Design Considerations

- Every site unique
- Power issues
- False positives



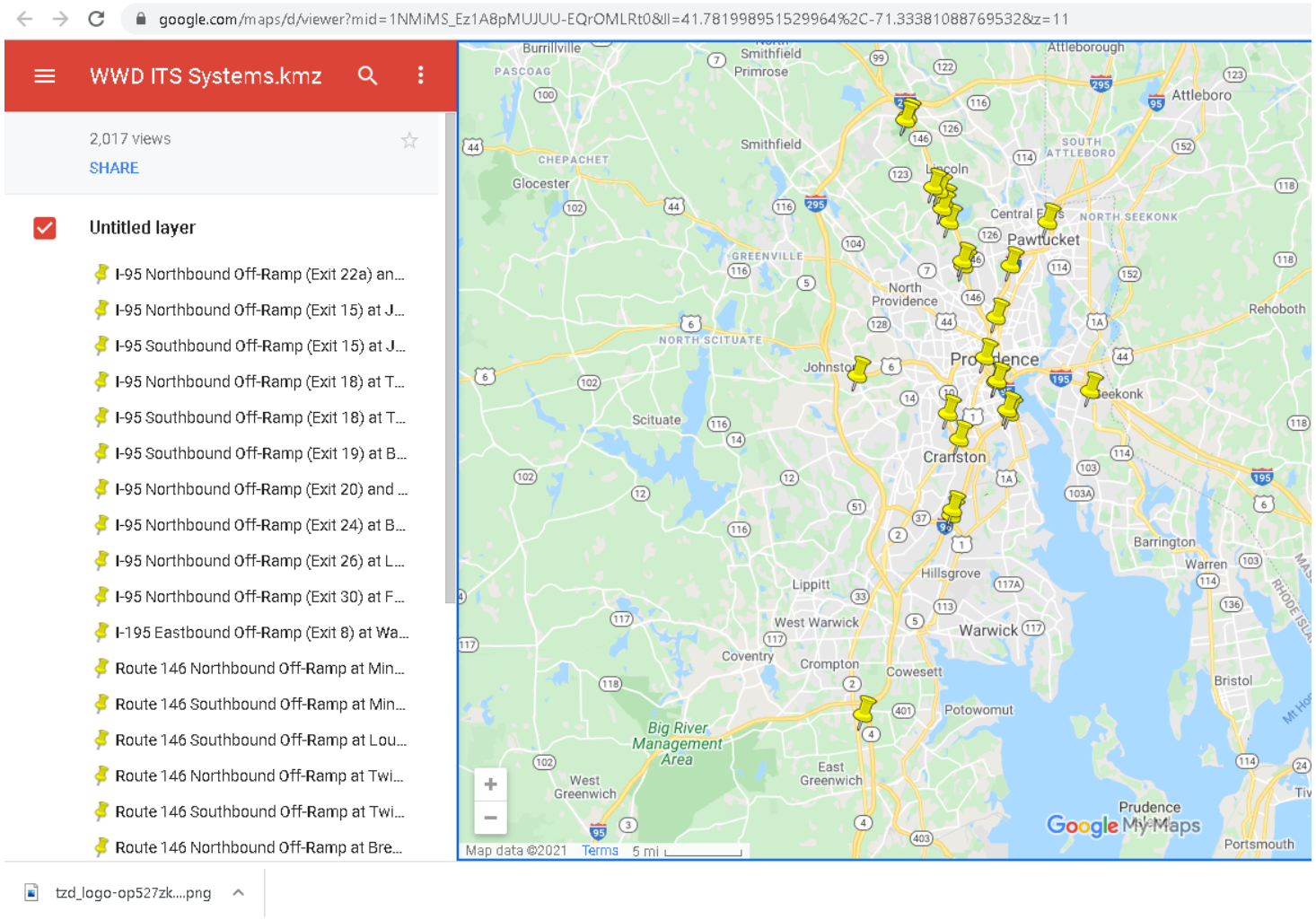
ITEM NO.	ITEM DESCRIPTION
1	Precast Type "A" Handhole Std. 18.2.0
1a	Break Into Existing Handhole or Manhole
2	Step-Down Transformer
3a	Wrong Way Driving Detection System – Master With Pole and Foundation
3b	Wrong Way Driving Detection System – Slave With Pole and Foundation
6a	2 Inch Rigid Steel Conduit – Underground
6c	4 Inch HDPE Conduit – Under Existing Pavement by Directional Boring
7a	6 AWG Single Conductor Cable 600v Insulation
31.2.0	Chain Link Fence 6'-0"
CCB	Clean Catch Basin
CFP	Clean and Flush Pipe
CFS	Compost Filter Sock
CG	Clearing and Grubbing
CMH	Cleaning Manhole
DT	Remove and Dispose Tree
IP	Inlet Protection
LS	Loam and Seed
DF	Remove and Dispose Fence
RRW1	Remove and Relocate Existing Wrong-Way Detection System, Post, and Equipment – 1
RRW2	Remove and Relocate Existing Wrong-Way Detection System, Post, and Equipment – 2
RRS	Remove and Relocate Sign

CONSTRUCTION NOTES:

1. ALL PROPOSED WORK SHOWN ON THIS PLAN SHALL BE INCIDENTAL TO ITEM T15.9901. THERE SHALL BE NO SEPARATE PAY ITEMS FOR THESE INDIVIDUAL ITEMS OF WORK.
2. CONTRACTOR SHALL PROVIDE FINE GRADING, CLEARING, GRUBBING, 4" LOAM BORROW, AND SEED AT ALL GRASSY AREAS DISTURBED BY CONSTRUCTION ACCORDING TO RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
3. THE CONTRACTOR SHALL COORDINATE WITH RIDOT ELECTRICAL MAINTENANCE PRIOR TO PERFORMING ANY WORK INVOLVING THE EXISTING LIGHTING HANDHOLES.
4. SELECTIVE TREE REMOVAL FOR EQUIPMENT INSTALLATION TO BE PERFORMED AS DIRECTED BY THE ENGINEER. TREE REMOVAL WILL ALSO BE REQUIRED TO IMPROVE LINE OF SIGHT TO PROPOSED WRONG-WAY DRIVING WARNING SIGNS AS DIRECTED BY THE ENGINEER.
5. THE CONTRACTOR SHALL REMOVE FOUR SECTIONS OF CHAIN LINK FENCE LOCATED HORIZONTALLY ALONG RAMP AC AND ONE SECTION OF FENCE PERPENDICULAR TO RAMP AC TO IMPROVE LINE OF SIGHT TO WRONG WAY DRIVING WARNING SIGN. THE PROPOSED CHAIN LINK FENCE SHALL BE ALIGNED AS SHOWN ON THIS PLAN.
6. THE EXISTING WRONG-WAY DRIVING DETECTION SYSTEM POSTS, BLINKER SIGNS, AND ASSOCIATED EQUIPMENT SHALL BE RELOCATED TO A NEW FOUNDATION AT THE LOCATION SHOWN ON THIS PLAN. THE EXISTING ENCLOSURE AND SOLAR EQUIPMENT SHALL BE SALVAGED. DETECTION SYSTEM RETROFITS SHALL BE PERFORMED IN ACCORDANCE WITH SPECIAL PROVISIONS PROVIDED UNDER ITEM T15.9901.
7. THE CONTRACTOR SHALL INSTALL A RED RETRO-REFLECTIVE STRIP ON PROPOSED SIGN POSTS ON THE SAME SIDE OF THE POST WHERE SIGN PANELS ARE INSTALLED (SEE REFLECTIVE SIGN POST DETAIL).
8. THE CONTRACTOR SHALL FURNISH A BREAKER PANEL ON WRONG-WAY DRIVING SIGN POSTS AS SHOWN ON THIS PLAN. THE BREAKERS SHALL BE SIZED AS RECOMMENDED BY THE WRONG-WAY DRIVING DETECTION SYSTEM MANUFACTURER.
9. THE CONTRACTOR SHALL RELOCATE THE EXISTING SIGN SUCH THAT THE WRONG-WAY DRIVER SIGHT LINES ARE NOT IMPEDED BY THE PLACEMENT OF THE RELOCATED SIGN.
10. THE CONTRACTOR SHALL COORDINATE WITH JAMES DEMERS, DIRECTOR OF COMPLEX SECURITY FOR THE RHODE ISLAND CONVENTION CENTER (401-458-6004; JDEMERS@SMGRICC.COM) FOR ACCESS TO THE PARKING AREA BETWEEN WEST EXCHANGE STREET AND RAMP AC AT LEAST TWO (2) WEEKS PRIOR TO CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL LIMIT THE WORK AREA TO THE ACTUAL LIMIT OF WORK SO AS TO NOT ENCROACH ON PARKING ACTIVITIES.

Current WWD System Deployment in RI

- 28 sites



Driven to get you there

Wrong Way System Communication Portfolio

Scenario 1

TAPCO Cellular Network

TAPCO Cell Modem

BlinkLink

- Cellular communication
- No fiber necessary
- 2 years of BlinkLink subscription included
- Reoccurring BlinkLink cost >2 years
- TAPCO access for service
- ~5 second event latency
- API to ATMS capable

RIDOT so far

Scenario 2

Agency Network

Fiber Network

Agency Cell Modem

OPENVPN

BlinkLink

- Utilizes Advanced Communication Controller for Open VPN connection
- High speed fiber network or agency provided modem
- Secure and reliable network communication
- TAPCO access for service
- API to ATMS capable

Scenario 3

Direct to ATMS

Fiber Network

- Utilizes Advanced Communication Controller for system Direct to ATMS connection
- High speed fiber network
- No reoccurring BlinkLink costs
- Limited TAPCO access for service
- Not API Compatible

Source: TAPCO

TAPCO's BlinkLink® Web-Based Device Manager

- Cloud-based device & event management software
- Remote access from any web-connected device
- Collects/archives system data, Reporting (exporting) functionality
- Send Alerts via e-mail/SMS to agency-provided contacts
- Ability to integrate with an Agency's ATMS or other applications
  - Optional Enhancements:
    - API for integration w/ DOT's CMS, PTZ Cameras, website, etc.
    - Hi-Res and/or streaming imagery from advanced cameras

RI dot
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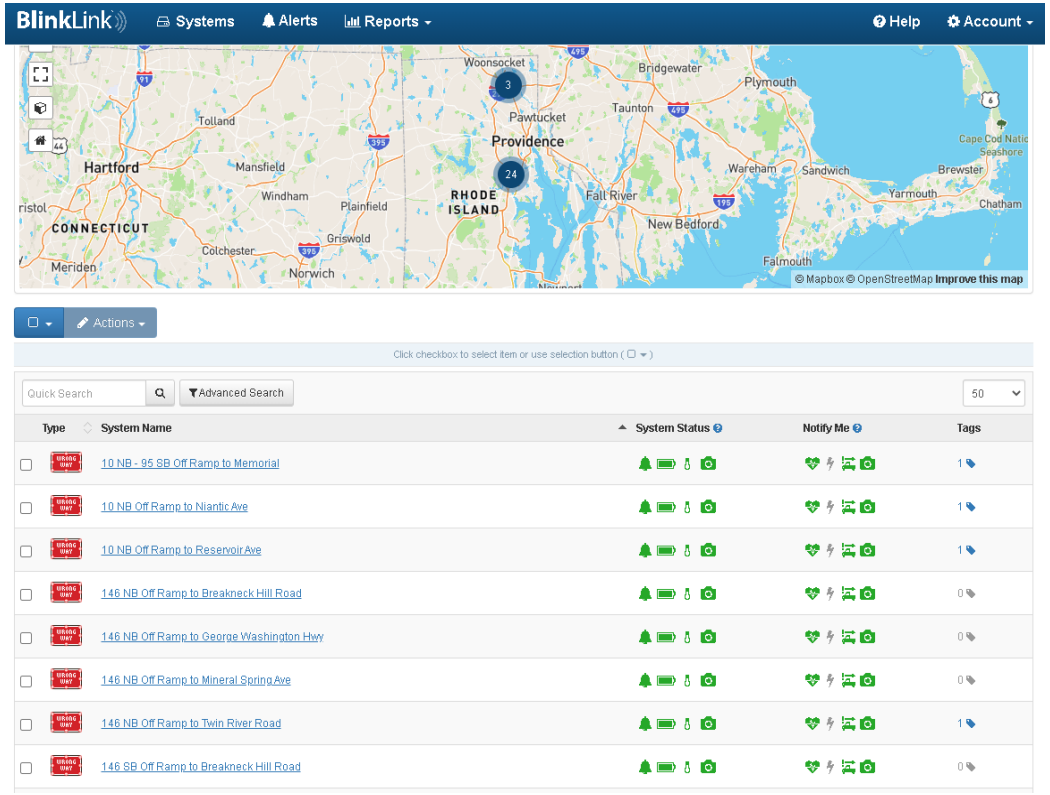
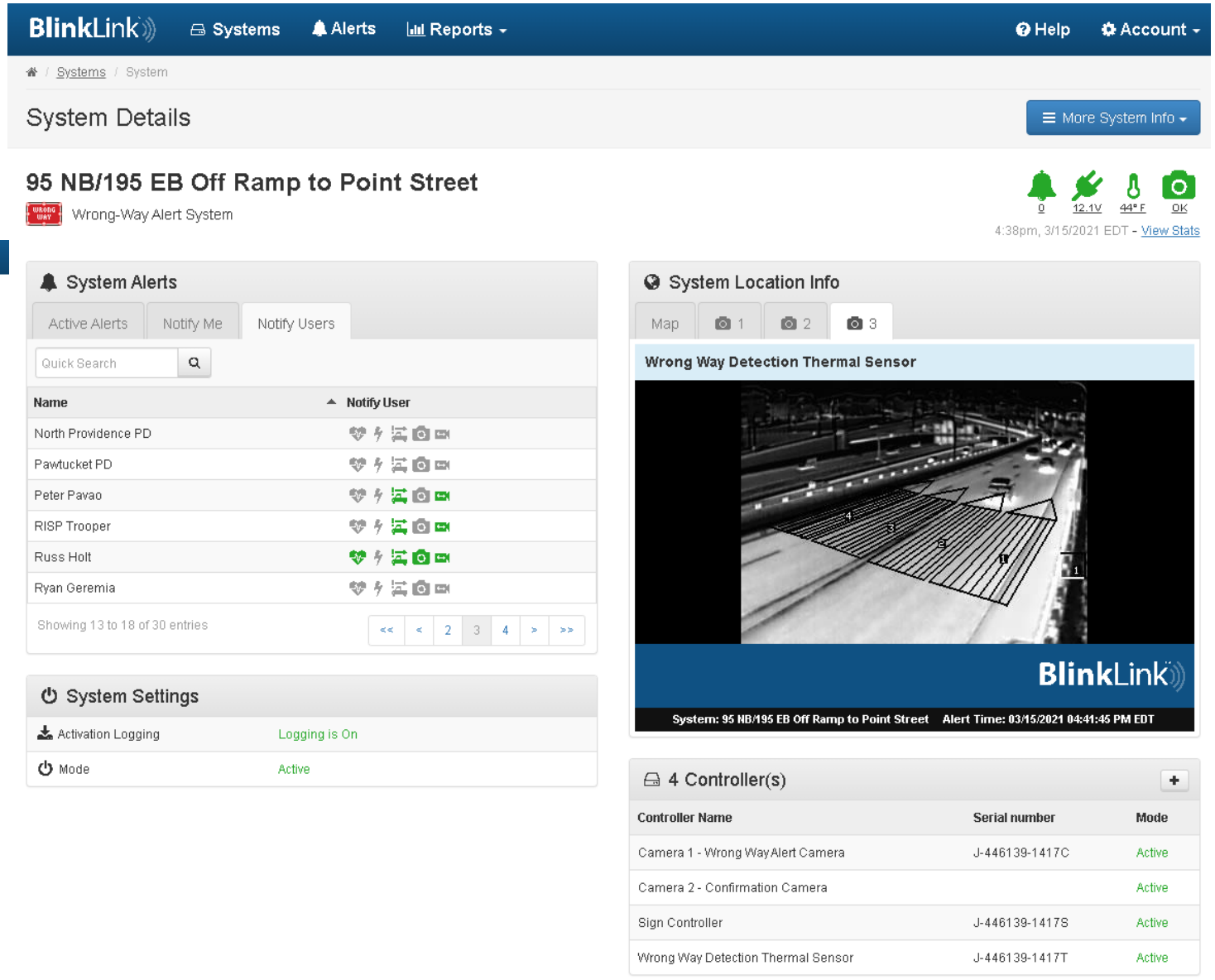
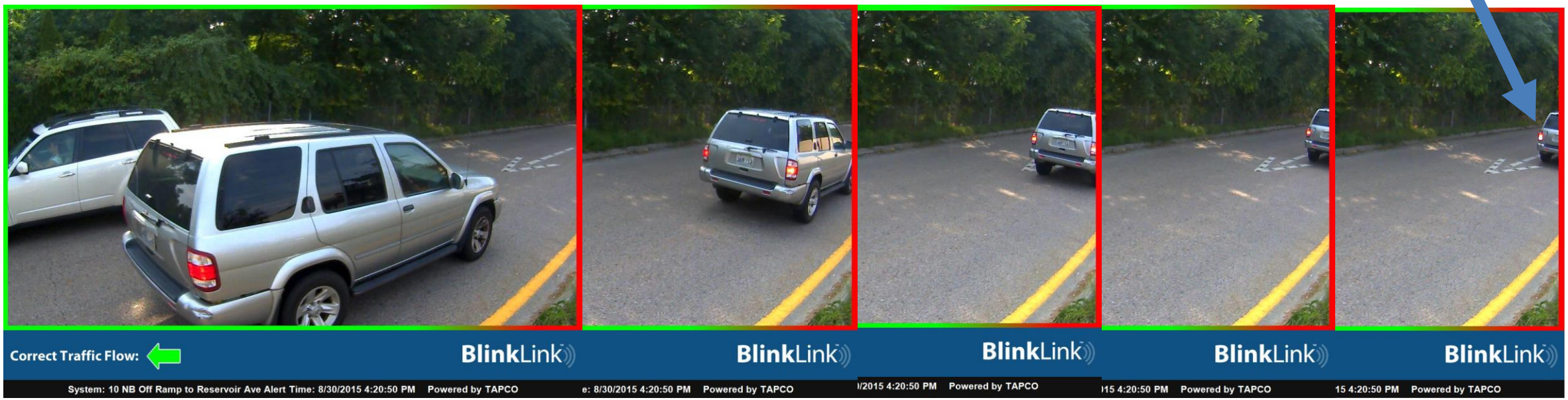
Example BlinkLink® Screen Grabs





Example BlinkLink® Screen Grabs



RI dot
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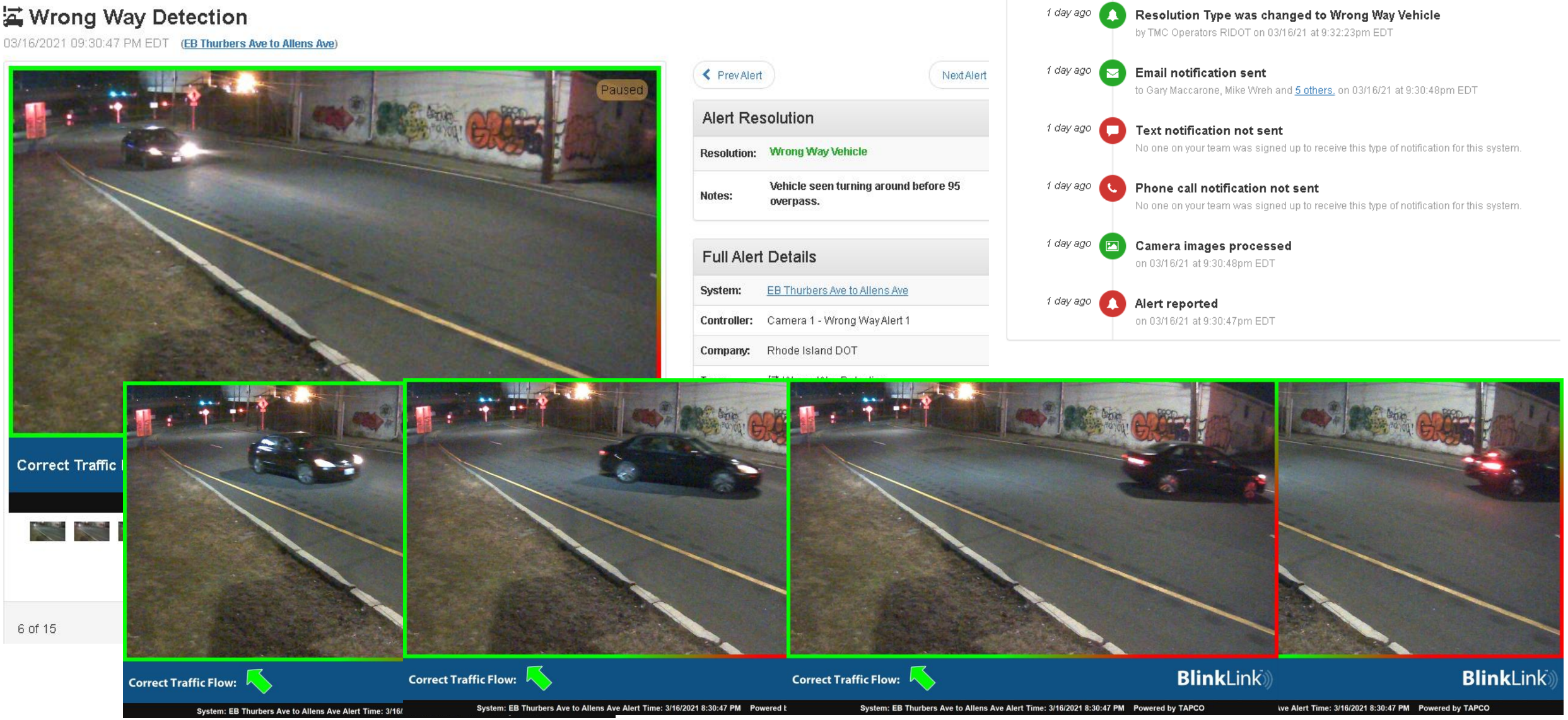
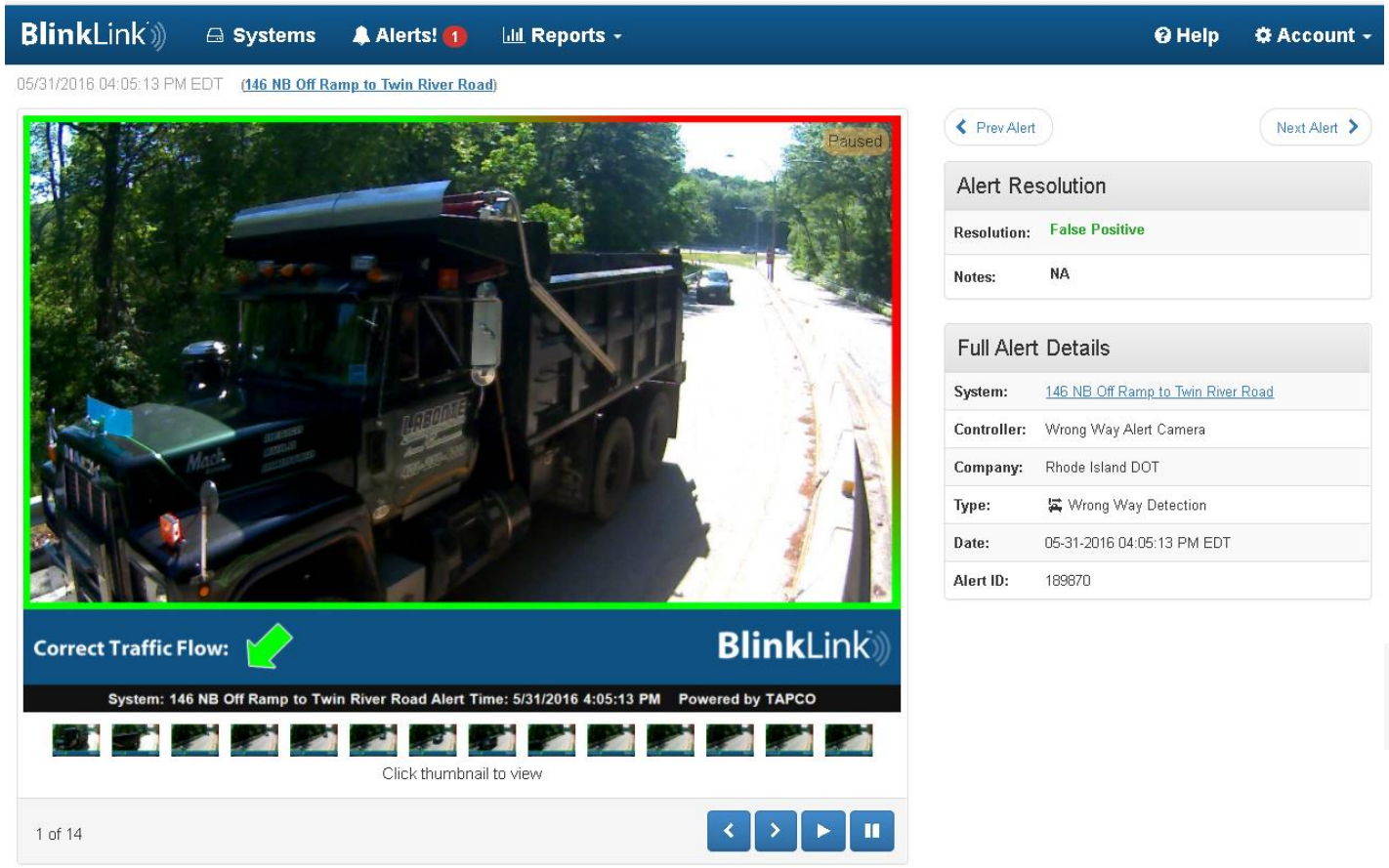
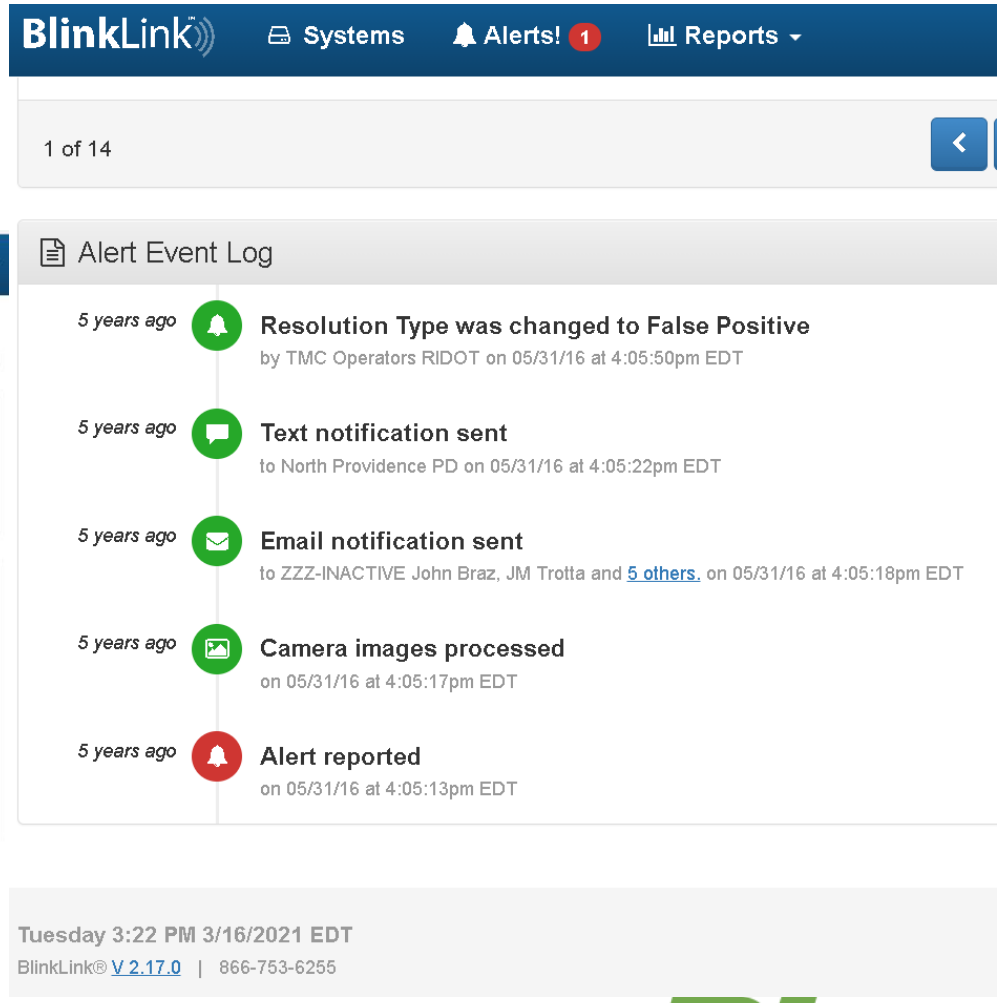
Example BlinkLink® Screen Grabs

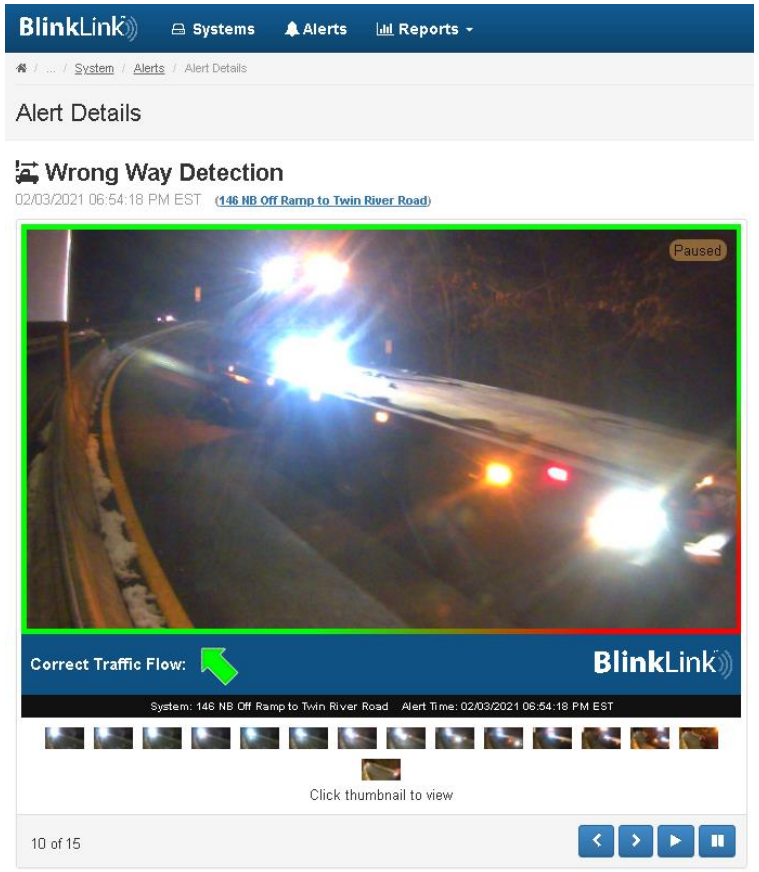


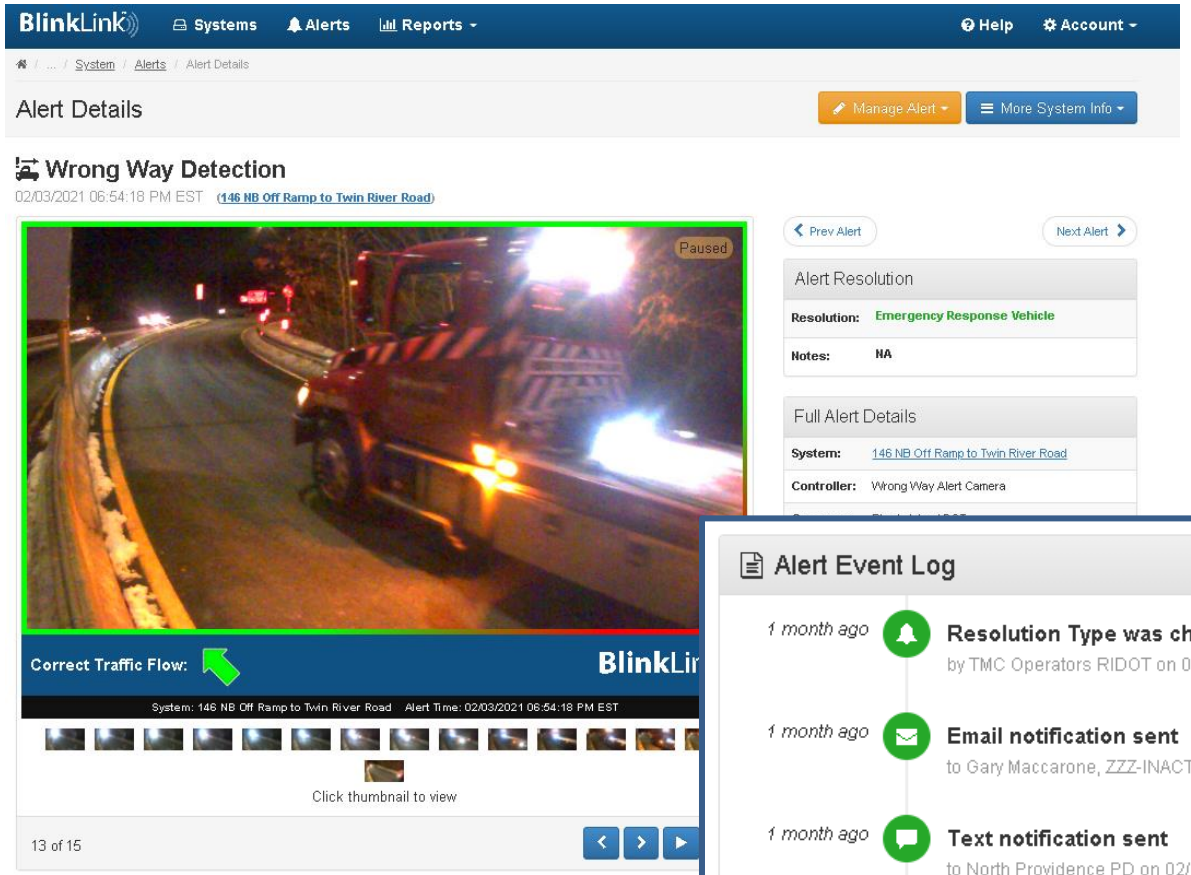
Example BlinkLink® Screen Grabs

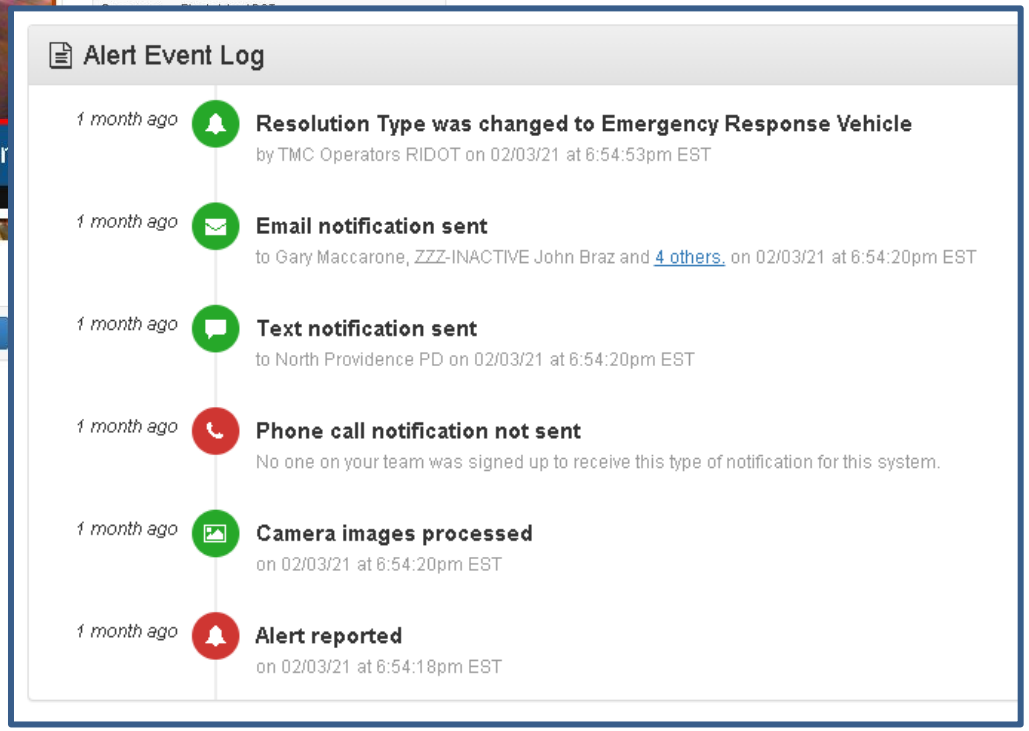




RI dot
Driven to get you there


BlinkLink
Systems
Alerts
Reports
System / Alerts / Alert Details
Alert Details
Wrong Way Detection
02/03/2021 06:54:18 PM EST (146 NB Off Ramp to Twin River Road)
Paused
Correct Traffic Flow:
BlinkLink
System: 146 NB Off Ramp to Twin River Road Alert Time: 02/03/2021 06:54:18 PM EST
Click thumbnail to view
10 of 15


BlinkLink
Systems
Alerts
Reports
Help
Account
System / Alerts / Alert Details
Alert Details
Manage Alert
More System Info
Wrong Way Detection
02/03/2021 06:54:18 PM EST (146 NB Off Ramp to Twin River Road)
Paused
Correct Traffic Flow:
System: 146 NB Off Ramp to Twin River Road Alert Time: 02/03/2021 06:54:18 PM EST
Click thumbnail to view
13 of 15
Prev Alert
Next Alert
Alert Resolution
Resolution: Emergency Response Vehicle
Notes: NA
Full Alert Details
System: 146 NB Off Ramp to Twin River Road
Controller: Wrong Way Alert Camera


Alert Event Log
1 month ago
Resolution Type was changed to Emergency Response Vehicle
by TMC Operators RIDOT on 02/03/21 at 6:54:53pm EST
1 month ago
Email notification sent
to Gary Maccarone, ZZZ-INACTIVE John Braz and 4 others. on 02/03/21 at 6:54:20pm EST
1 month ago
Text notification sent
to North Providence PD on 02/03/21 at 6:54:20pm EST
1 month ago
Phone call notification not sent
No one on your team was signed up to receive this type of notification for this system.
1 month ago
Camera images processed
on 02/03/21 at 6:54:20pm EST
1 month ago
Alert reported
on 02/03/21 at 6:54:18pm EST

Example BlinkLink® Alert E-mail

[EXTERNAL] : BLINKLINK ALERT - Wrong Way Detection - For System Labeled 95 NB Off Ramp to Lonsdale Ave

B BlinkLink@blinklink.net
To

Reply | Reply All | Forward | ...

Tue 3/16/2021 11:37 AM

141-2411728-WrongWayAlertCamera-0.jpg 158 KB	141-2411728-WrongWayAlertCamera-1.jpg 158 KB	141-2411728-WrongWayAlertCamera-2.jpg 156 KB	141-2411728-WrongWayAlertCamera-3.jpg 157 KB
141-2411728-WrongWayAlertCamera-4.jpg 157 KB	141-2411728-WrongWayAlertCamera-5.jpg 143 KB	141-2411728-WrongWayAlertCamera-6.jpg 97 KB	141-2411728-WrongWayAlertCamera-7.jpg 125 KB
141-2411728-WrongWayAlertCamera-8.jpg	141-2411728-WrongWayAlertCamera-9.jpg	141-2411728-WrongWayAlertCamera-10.jpg	141-2411728-WrongWayAlertCamera-11.jpg

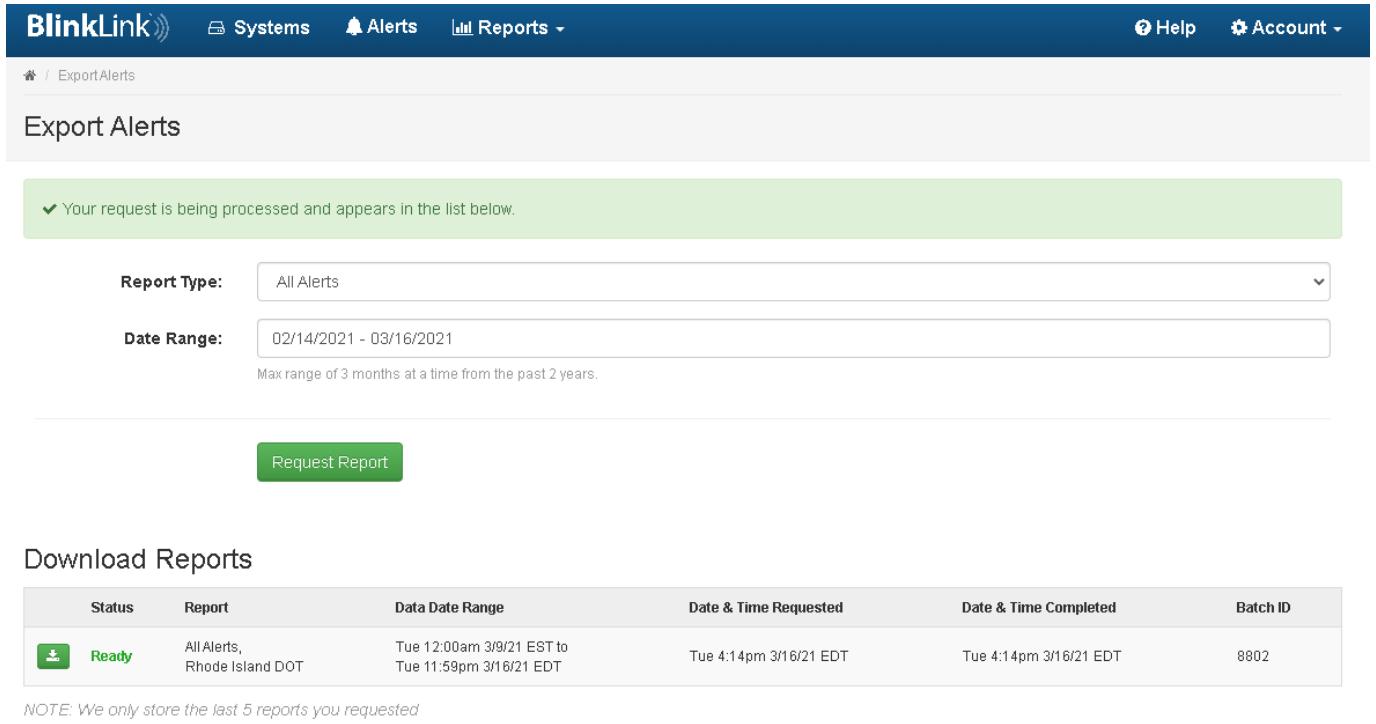
BlinkLink triggered a(n) Wrong Way Detection event for the following System.

Customer:	Rhode Island DOT
System Details:	95 NB Off Ramp to Lonsdale Ave
Asset Name:	Wrong Way Alert Camera
Alert Time:	2021-03-16T15:36:44Z

Go to https://urldefense.com/v3/__http://www.blinklink.net/admin/alert/view/2411728__;!!KKphUJtCzQ!eQQY8SCRbxCAZyj38FmG1iHFHeU3L4DVb8RoAKLIRnjlRnRMJb_jL94CYJt8uvSSQ8Q9EQ$ [blinklink[.]net] to view this notification in BlinkLink or https://urldefense.com/v3/__http://www.blinklink.net/admin/settings__;!!KKphUJtCzQ!eQQY8SCRbxCAZyj38FmG1iHFHeU3L4DVb8RoAKLIRnjlRnRMJb_jL94CYJt8uvRZddbPgw$ [blinklink[.]net] to change your notification preferences.

Contact BlinkLink Support at 866-753-6255 or email to blinkersupport@tapconet.com.

Example BlinkLink® Data Exporting

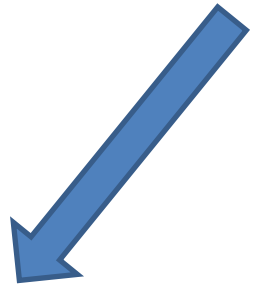


	A	B	C	D	E	F	G	H	I	J
1	ID	Controller Name	System Name	System Type	Alert Type	Resolution	Tags	Notes	Reported	Dismissed On
59	2401855	Wrong Way Alert Camera	146 SB Off Ramp to George Washington Hwy	Wrong-Way Alert System	Wrong Way Detection	Maintenance Vehicle			Friday 10:14:15 AM 3/12/2021 EST	Friday 10:14:33 AM 3/12/2021 EST
60	2377726	Wrong Way Alert Camera	95 NB Off Ramp to Jefferson Blvd	Wrong-Way Alert System	Wrong Way Detection	False Positive			Wednesday 11:57:50 AM 3/10/2021 EST	Wednesday 11:58:04 AM 3/10/2021 EST
61	2402228	Wrong Way Alert Camera	95 NB Off Ramp to Jefferson Blvd	Wrong-Way Alert System	Wrong Way Detection	False Positive			Friday 3:51:14 PM 3/12/2021 EST	Friday 3:51:33 PM 3/12/2021 EST
62	2402713	Wrong Way Alert Camera	4 SB Off Ramp to Division Road	Wrong-Way Alert System	Wrong Way Detection	False Positive			Saturday 8:55:06 AM 3/13/2021 EST	Saturday 8:55:25 AM 3/13/2021 EST
63	2403122	Camera 1 - Wrong Way Alert Car	RI-99 Exit to Mendon Rd	Wrong-Way Alert System	Wrong Way Detection	Wrong Way Vehicle		Vehicle app	Sunday 5:49:46 AM 3/14/2021 CDT	Sunday 5:51:51 AM 3/14/2021 CDT
64	2401359	Wrong Way Alert Camera	10 NB - 95 SB Off Ramp to Memorial	Wrong-Way Alert System	Wrong Way Detection	Wrong Way Vehicle			Thursday 11:23:50 PM 3/11/2021 CST	Friday 10:07:15 AM 3/12/2021 CST
65	2401138	Camera 1 - Wrong Way Alert 1	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Detection	Vehicle Made a Median Crossing			Thursday 7:56:58 PM 3/11/2021 CST	Thursday 7:57:15 PM 3/11/2021 CST
66	2402426	Camera 1 - Wrong Way Alert 1	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Detection	Vehicle Made a Median Crossing			Friday 7:14:10 PM 3/12/2021 CST	Friday 7:14:29 PM 3/12/2021 CST
67	2402899	Camera 1 - Wrong Way Alert 1	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Detection	Vehicle Made a Median Crossing			Saturday 5:42:39 PM 3/13/2021 CST	Saturday 5:43:09 PM 3/13/2021 CST
68	2402959	Camera 1 - Wrong Way Alert 1	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Detection	Vehicle Made a Median Crossing			Saturday 8:15:30 PM 3/13/2021 CST	Saturday 8:15:51 PM 3/13/2021 CST
69	2404097	Camera 1 - Wrong Way Alert 1	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Detection	Emergency Response Vehicle			Monday 3:47:23 PM 3/15/2021 CDT	Monday 3:47:42 PM 3/15/2021 CDT
70	2401139	Camera 2 - Wrong Way Alert 2	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Confirmation	Vehicle Made a Median Crossing			Thursday 7:56:58 PM 3/11/2021 CST	Thursday 7:57:23 PM 3/11/2021 CST
71	2402425	Camera 2 - Wrong Way Alert 2	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Confirmation	Vehicle Made a Median Crossing			Friday 7:14:08 PM 3/12/2021 CST	Friday 7:14:37 PM 3/12/2021 CST
72	2402898	Camera 2 - Wrong Way Alert 2	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Confirmation	Vehicle Made a Median Crossing			Saturday 5:42:38 PM 3/13/2021 CST	Saturday 5:43:33 PM 3/13/2021 CST
73	2402960	Camera 2 - Wrong Way Alert 2	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Confirmation	Vehicle Made a Median Crossing			Saturday 8:15:31 PM 3/13/2021 CST	Saturday 8:16:06 PM 3/13/2021 CST
74	2404096	Camera 2 - Wrong Way Alert 2	EB Thurbers Ave to Allens Ave	Wrong-Way Alert System	Wrong Way Confirmation	Emergency Response Vehicle			Monday 3:47:21 PM 3/15/2021 CDT	Monday 3:47:53 PM 3/15/2021 CDT

Envisioned Public Agency Response Protocol

- E-mail/SMS (and/or Audible, if BlinkLink® is open) Alert received by RIDOT TMC & Police (State and Local)
- TMC and/or Police attempt to verify WWD via:
  - Review of BlinkLink® photos
  - Review of CCTV camera streams, if available
- TMC and Police communicate & coordinate action(s) / resolution
- Once/if the following action(s) are verified as appropriate:
  - Police dispatched ASAP
  - TMC posts warning message to right-way drivers on applicable CMS(s), if available

As of April 1, 2021, RIDOT's TMC has NOT yet posted any such messages



RI dot
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A Traveler Information Challenge…

- What is the "best" or most appropriate message to disseminate to right-way drivers about a WWD hazard?
  - No national standards (to my knowledge)
  - How should DOT's minimize their risks while still providing a safety service?
  - Your state DOT likely has its own input on this

Drafted RIDOT CMS Message

Example MIDOT CMS Message

Source: Jan. 8, 2018 MIDOT Video
https://www.youtube.com/watch?v=K1v0b45c2ok

Excerpts from AZDOT Website

https://azdot.gov/about/transportation-safety/wrong-way-drivers
Accessed March 18, 2021

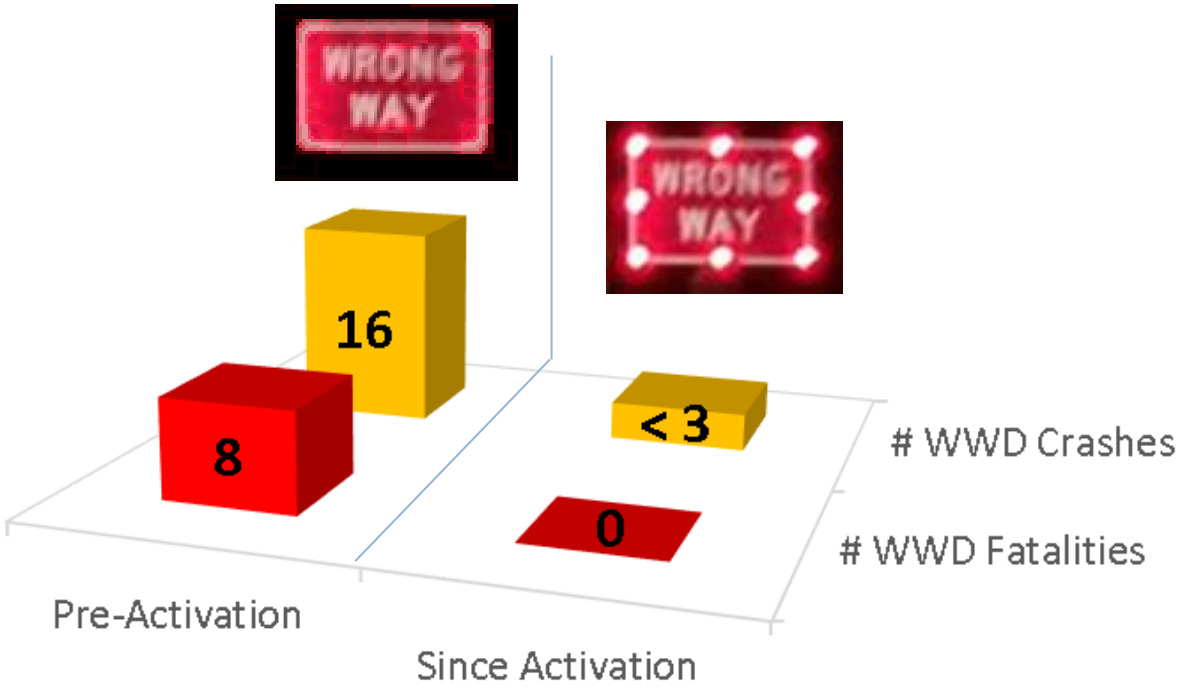
What should I do if I encounter a wrong-way driver?
If you're on a divided highway … and you see a vehicle coming toward you, slow down by easing your foot off the gas. Make sure there's no vehicle next to you and steer away from the wrong-way driver. Get to a safe place, call 911 and report the wrong-way driver.

What should I do if I see an overhead sign warning of a wrong-way driver ahead?
When ADOT is alerted to a possible wrong-way driver, overhead messages boards on that stretch of freeway will display a message that informs motorists a wrong-way vehicle has been reported. If you see that message, safely move toward the nearest highway exit as soon as possible.

What else should I know about how to be safer on the roads?
Because there's a good chance the wrong-way driver is impaired, they can also be unpredictable. This is why it is important to always drive defensively. That means being constantly aware of driving conditions, your surroundings and anticipating dangers so you can take evasive action if you encounter a hazard, such as a wrong-way driver. Don't tailgate. Leave enough space so if the vehicle in front of you makes a sudden lane change to avoid a wrong-way driver, you'll have time to react, too. Be aware of your surroundings. While wrong-way drivers are usually in the left or HOV lane, they enter highways from the right via off-ramps. And always wear a seat belt.

System Effectiveness / Evaluation

- Safety performance
  - Roughly 5½ years pre- and post-activation experience at sites
  - Given safety data challenges, # of crashes should be treated as estimates



- Pretty safe to say that RI's flashing WRONG WAY signs are having a positive safety impact
  - i.e., decreasing the time before many WWDs realize they are going the wrong way & take action to help avoid a crash
- Monitoring/evaluation continues

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Costs & System Maintenance

- Initial 24 Pilot WWD systems cost ~$25,000 / location (2015)
- Subsequent additional systems (4) and upgrades to thermal detection cost up to ~$100,000 / location (2018)
  - Costs above inc. F&I of all components, testing, training, min. 3-yr warranty, cell modem & web service for 2 years
- Subsequent Maintenance
  - RIDOT added money to existing ITS On-Call Maintenance contract for as-needed WWD system maintenance & testing
  - All detection systems tested annually, regardless of # of Alerts received
- Mostly HSIP funding

Source: VHB

RI dot
Driven to get you there

The Promising Future

- Improved WWD system integration into RIDOT TMC Operator processes and ATMS (when we have one)
- Longer Term:
  - WWD alerts direct to road users
    - CV integration via OBUs/RSUs (TAPCO currently offers, but RIDOT has not advanced yet)
    - SMS/alerts to mobile phones
  - Even better: in-vehicle tech. that can control WWD's vehicle
    - OnStar®, robust ignition interlocks, etc.
- As long as SAFETY is #1, it should be feasible to "make the case" for doing more to combat WWD

RI dot
Driven to get you there

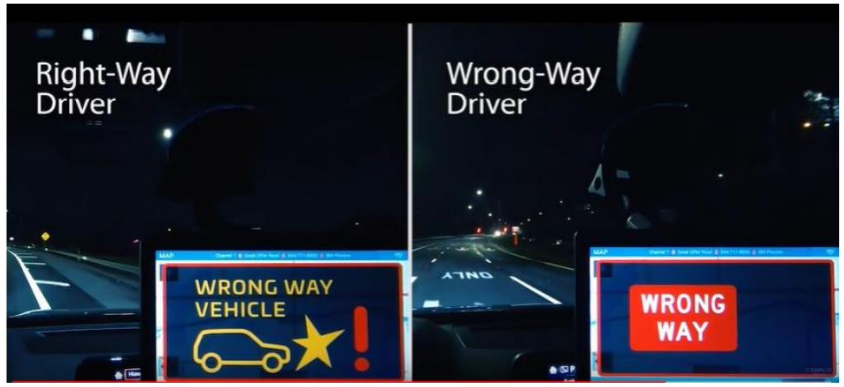
Examples of TAPCO system enhancements for CVs

Connected Vehicle Interface

TAPCO Safe travels. 28

- Compatible with Dedicated Short-Range Communication (DSRC), or Cellular RSUs.
- Power supply: 12V DC, average power draw 1.3 Watts
- Operating temperature range -40°C to +80°C
- RJ45 Ethernet port for 10/100 Mb Ethernet, for interfacing to ITS infrastructure
- Transmits CV application data to Road Side Units and over network using standard interfaces for Connected Vehicle Applications
- Onboard web interface and Application Programming Interface (API) to access and configure device.

TAPCO WW Connected Vehicle In Action



Right Way Driver Traveler Information Message

Wrong Way Driver Traveler Information Message

TAPCO Safe travels.

TAPCO Safe travels. 29

THANK YOU!

Russell B. Holt, P.E.
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For more info regarding
TAPCO's WWD products/services:

Alex Perry
National Wrong Way Driver Technical Specialist
Alex.Perry@tapconet.com
Cell: (262) 443-0822
TAPCO Safe travels.

RI dot Driven to get you there

High Performance and Reduced Cost Traffic Monitoring Using Fiber Optic Sensing

Paul Cooper, Business Development Director (Transport)
OptaSense

OptaSense®
A LUNA company

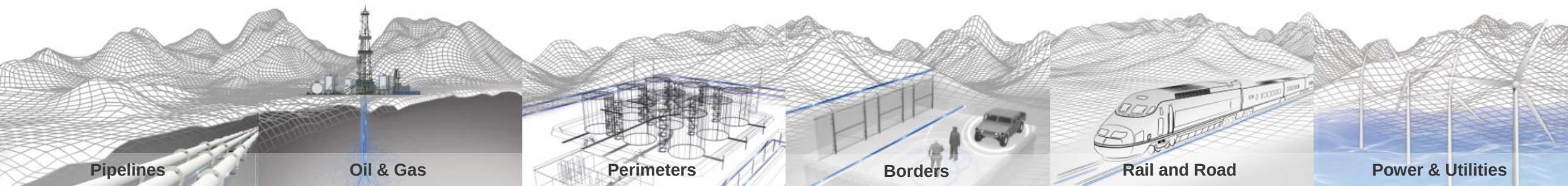
Traffic Monitoring Using Fiber Optic Sensing

High performance, economical traffic monitoring using existing roadside fiber optic networks

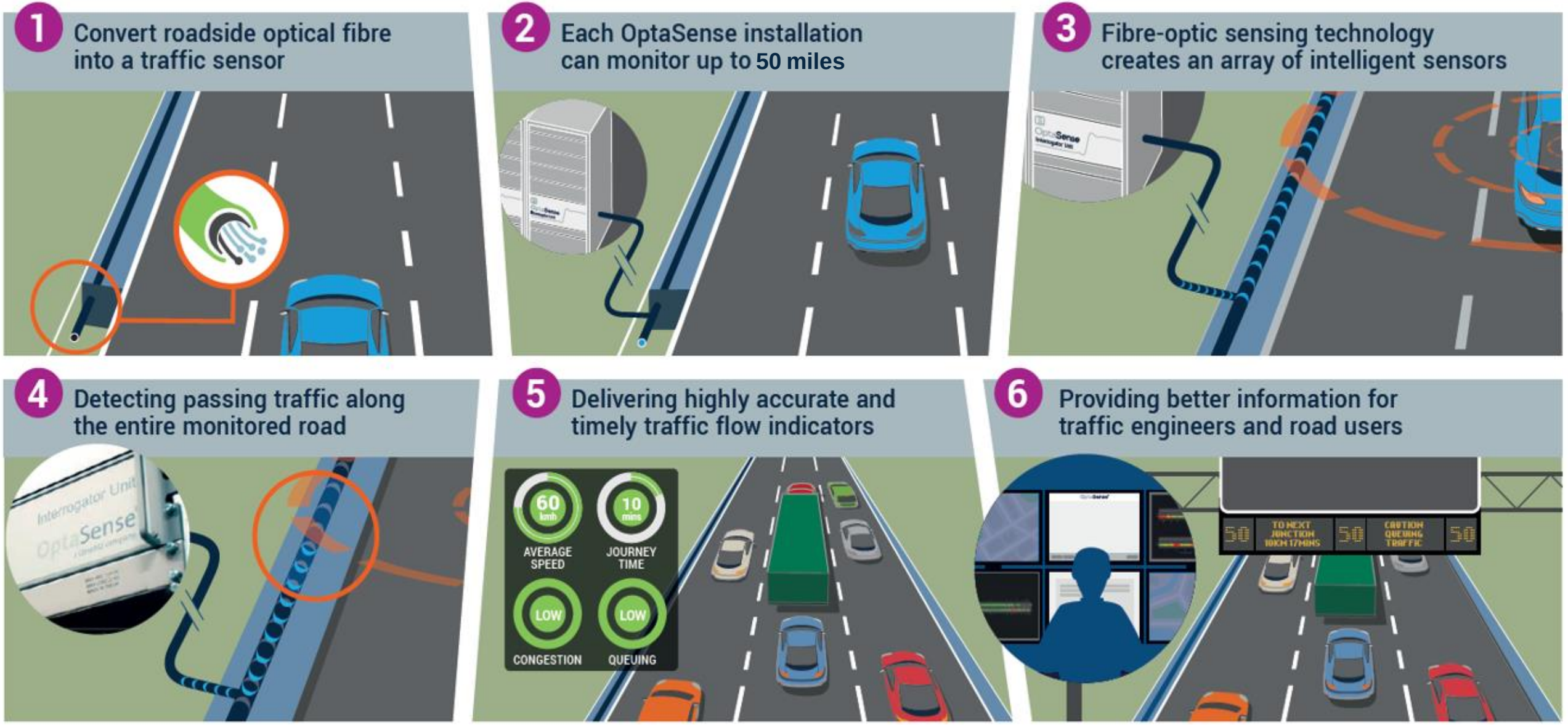
OptaSense® : Company Overview

A LUNA company

- Leaders in Fiber Optic Sensing solutions
  - Founded in 2007
  - Subsidiary of Luna Innovations Inc
  - Advanced Fiber Optic Measurement and Monitoring Systems
- Optimizing operations across multiple industries
  - Pipelines, Oilfields, Borders & Critical Sites, Railways and Roads
- Global experience
  - Over 25,000 miles of distributed asset under contract
  - Installed and commissioned in over 60 countries

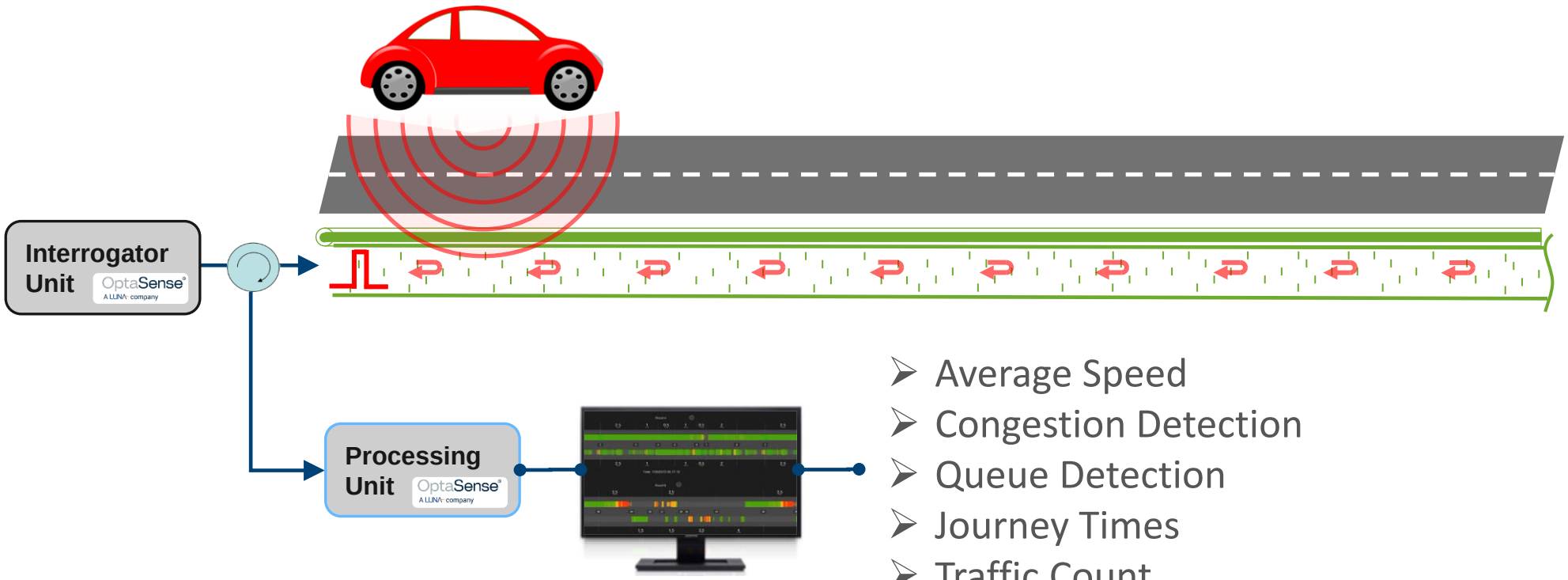


OptaSense TMS: Solution Overview



Distributed Fibre Optic Sensing

Converting roadside fiber optic cable into a distributed traffic sensor



- Average Speed
- Congestion Detection
- Queue Detection
- Journey Times
- Traffic Count
- Flow Rate

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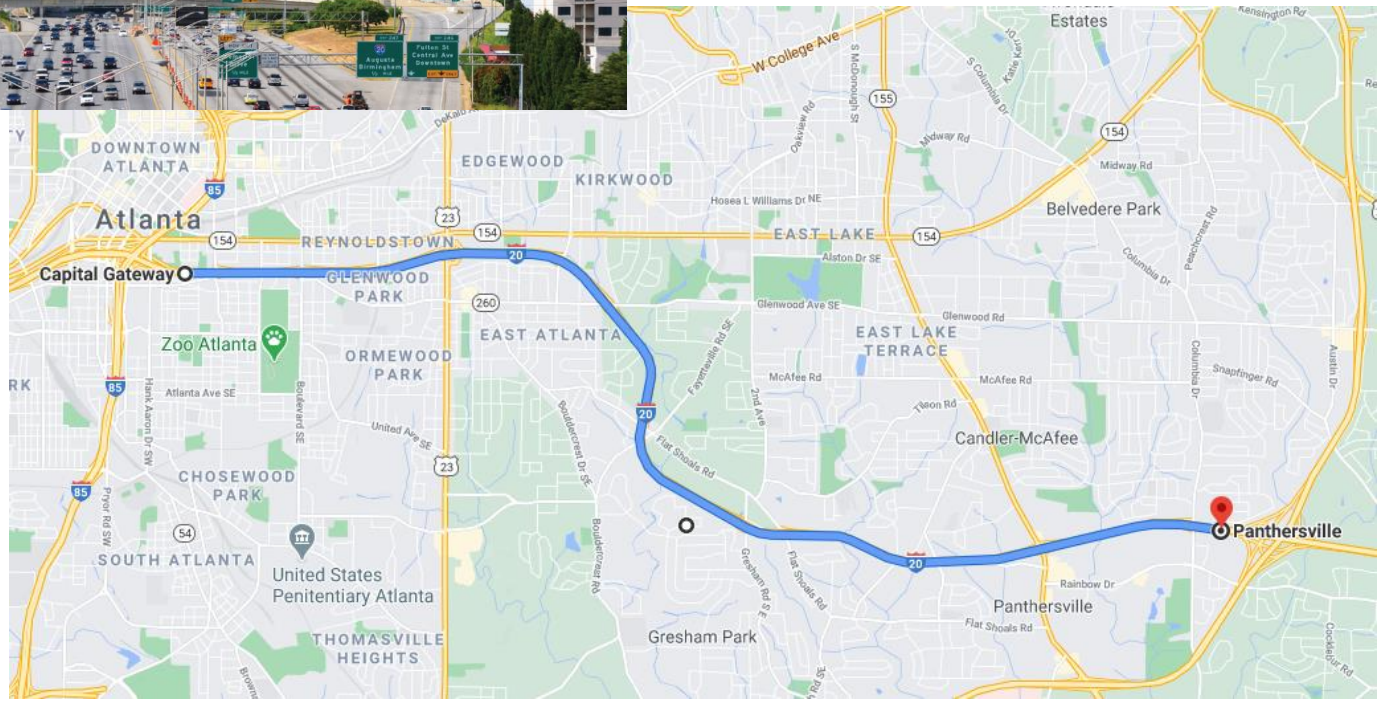
A LUNA company

Georgia DOT Project 2020



- Evaluation project conducted on section of I-20 in Atlanta, Georgia
- OptaSense Traffic Monitoring Solution delivering:
  - Average Speed
  - Journey Time(s)
  - Queue and Congestion Detection
  - Traffic Count
  - Near-side and far-side monitoring
- Objective(s) to assess performance on state roads
- Completed during H1 2020

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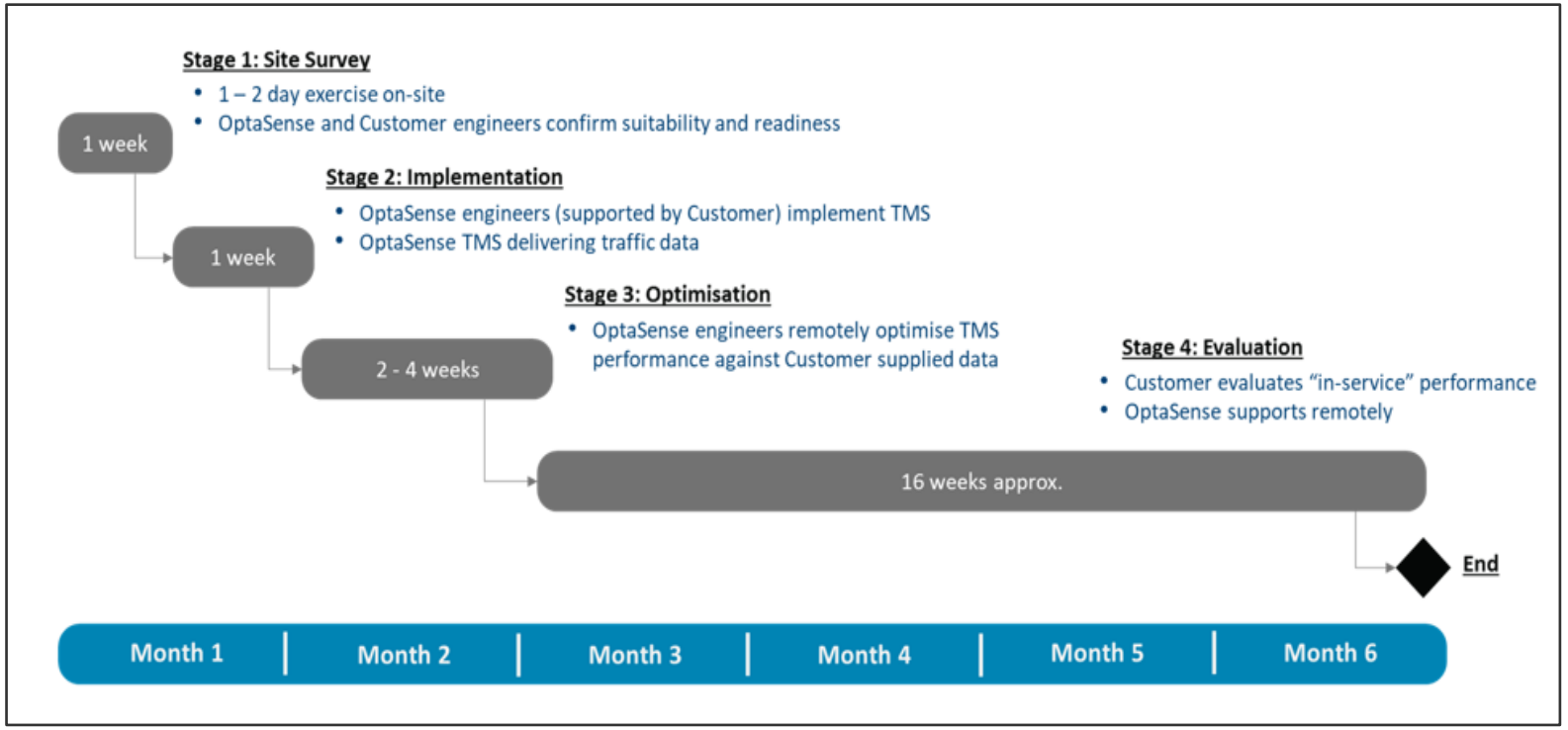
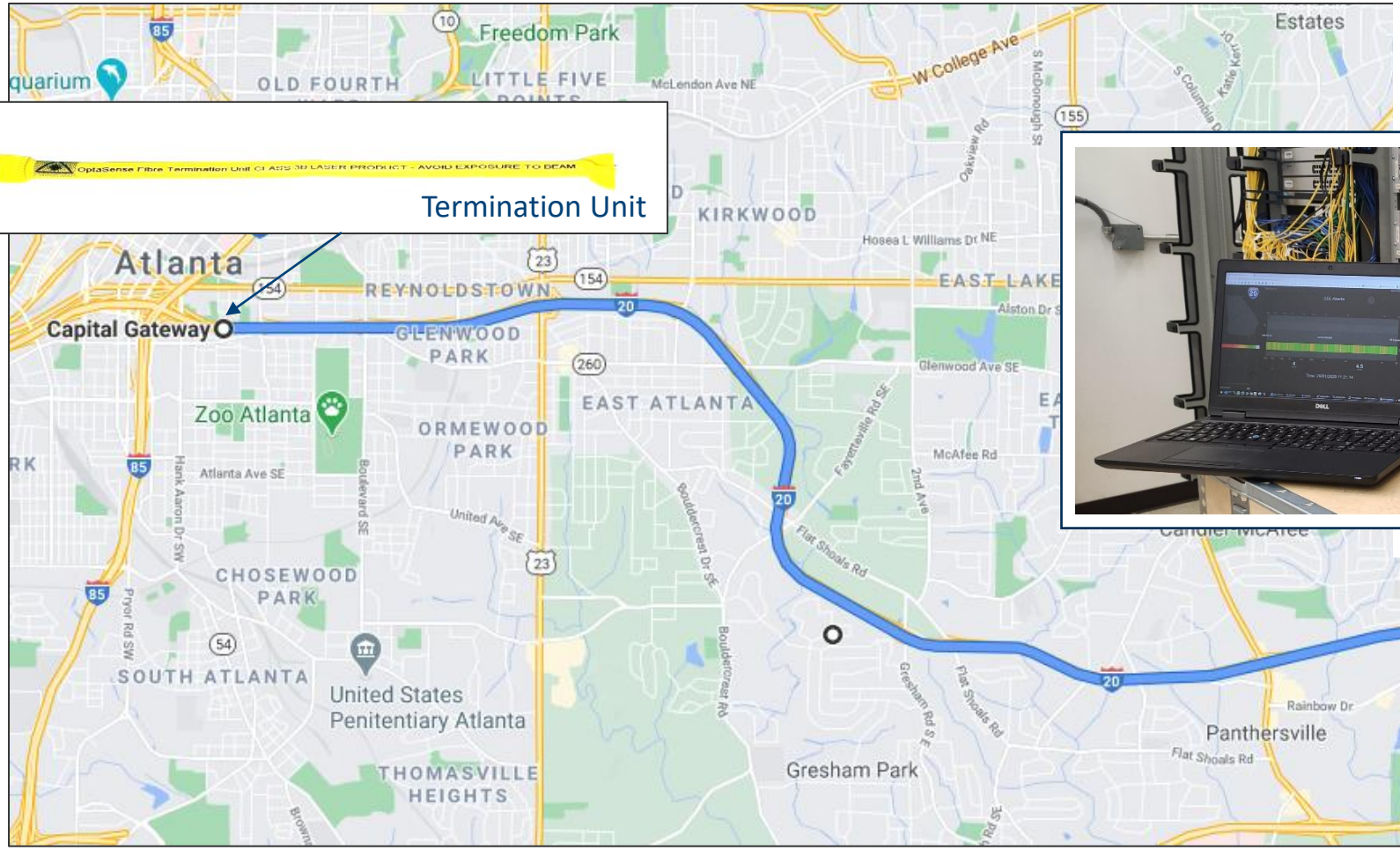
Evaluation Project Plan



- Six month duration
- Approx. 15 mile road section
- Initial site survey to confirm readiness for successful project
- Rapid TMS installation - no road closures or additional equipment
- Remote optimisation phase to ensure high performance
- Ample opportunity for "in-service" performance assessment

Georgia DOT Installation



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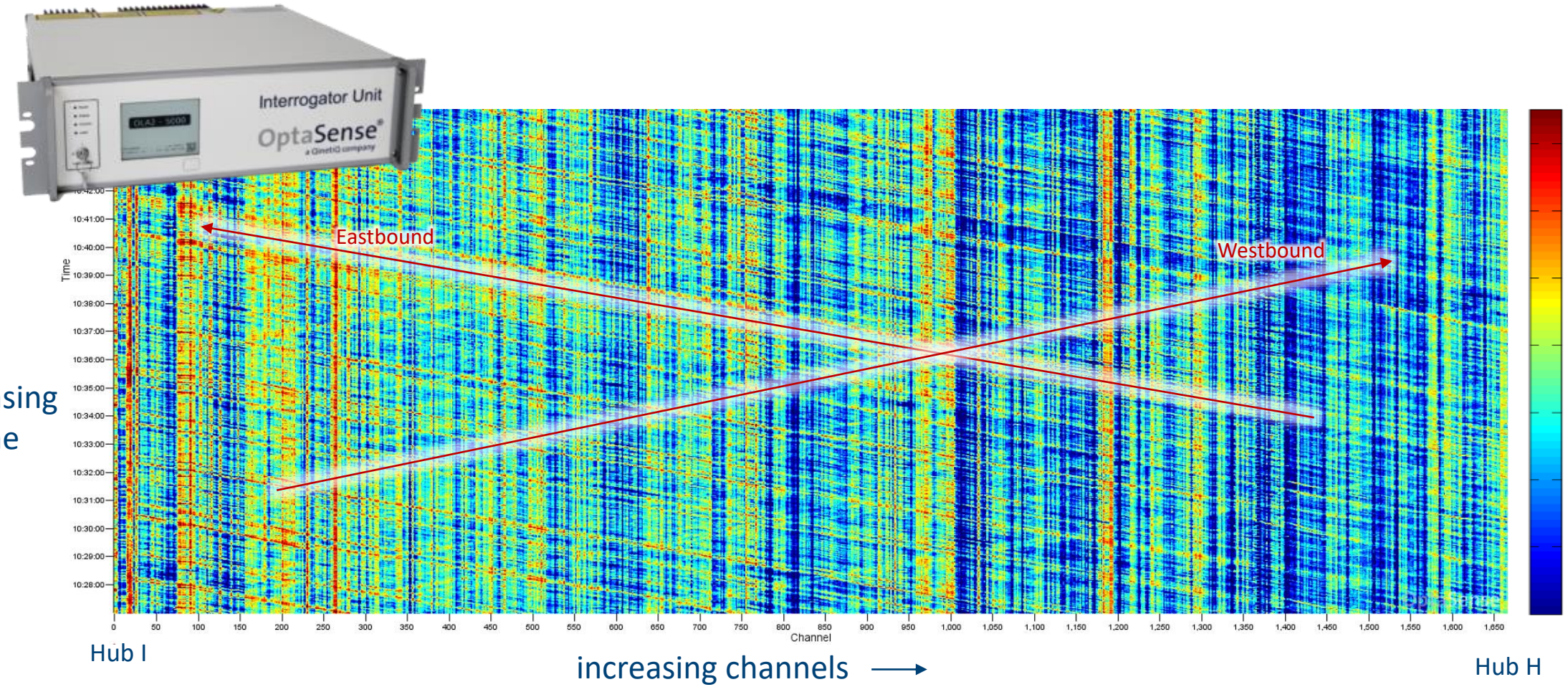
I-20 Real–Time Data Collection



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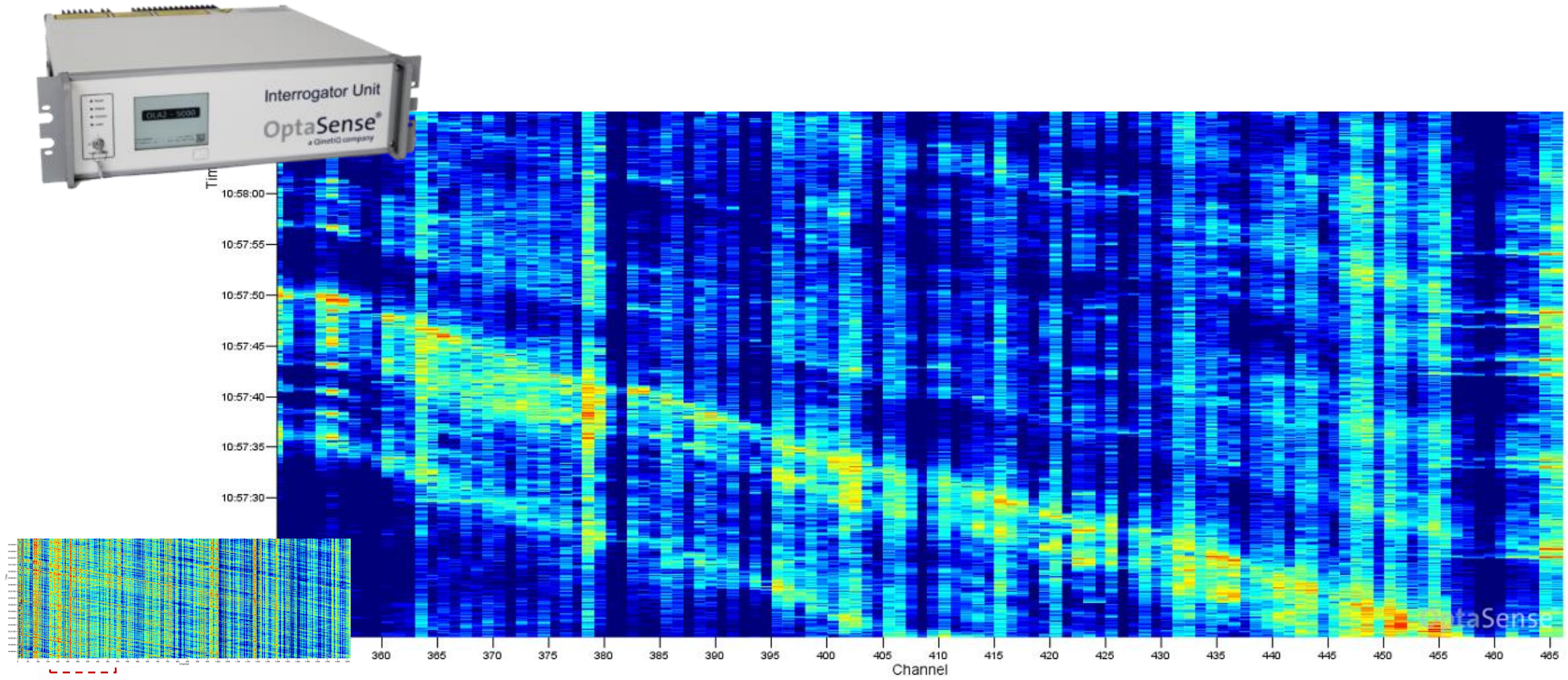
I-20 Real–Time Data Collection



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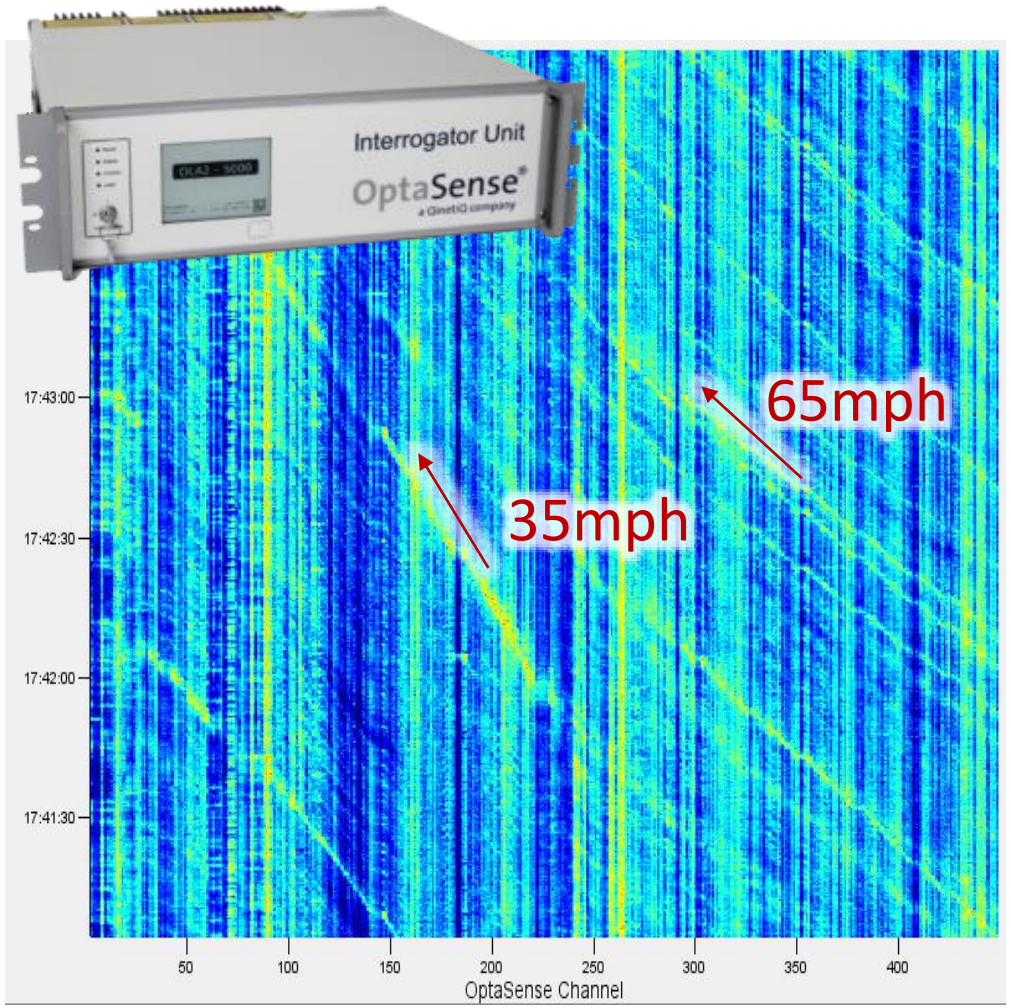
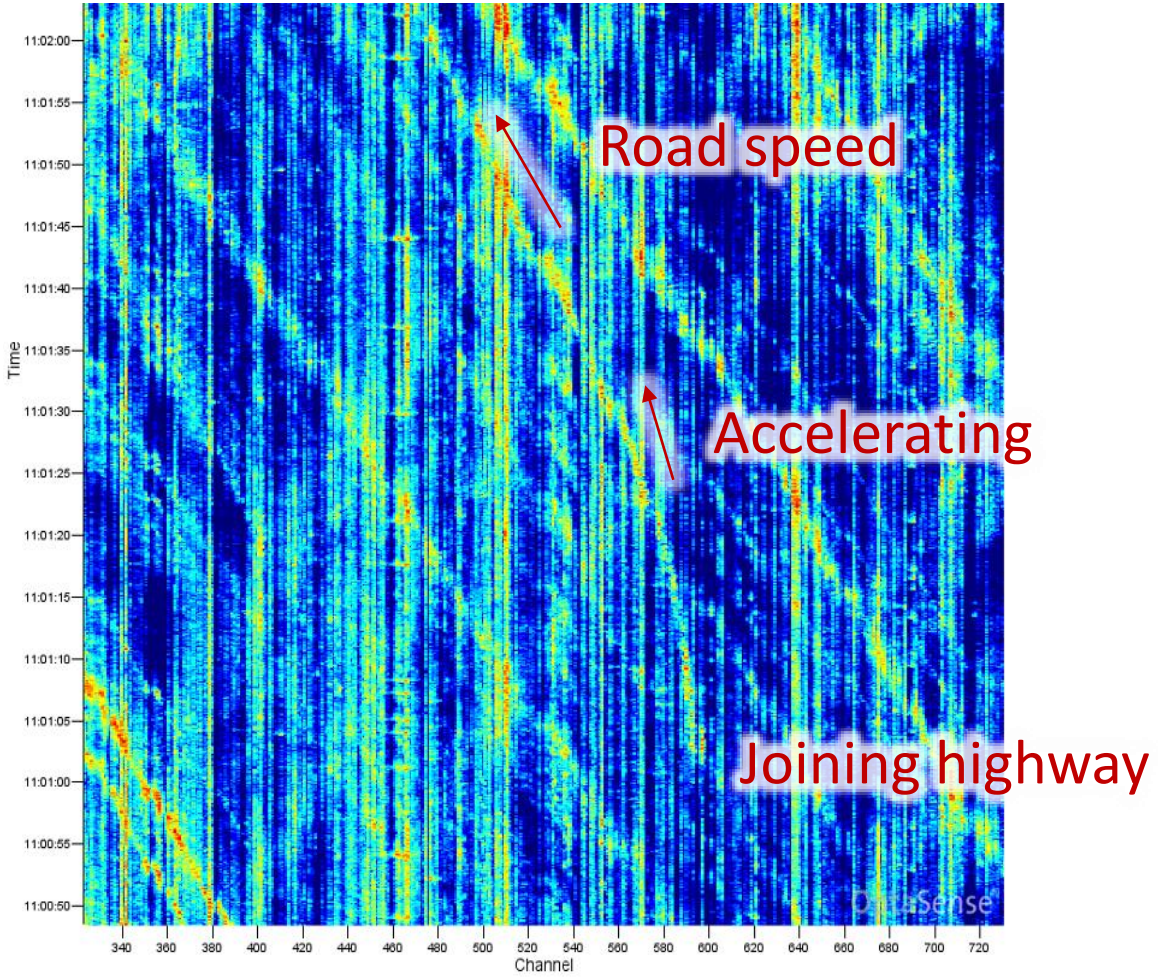
I-20 Real–Time Data Collection





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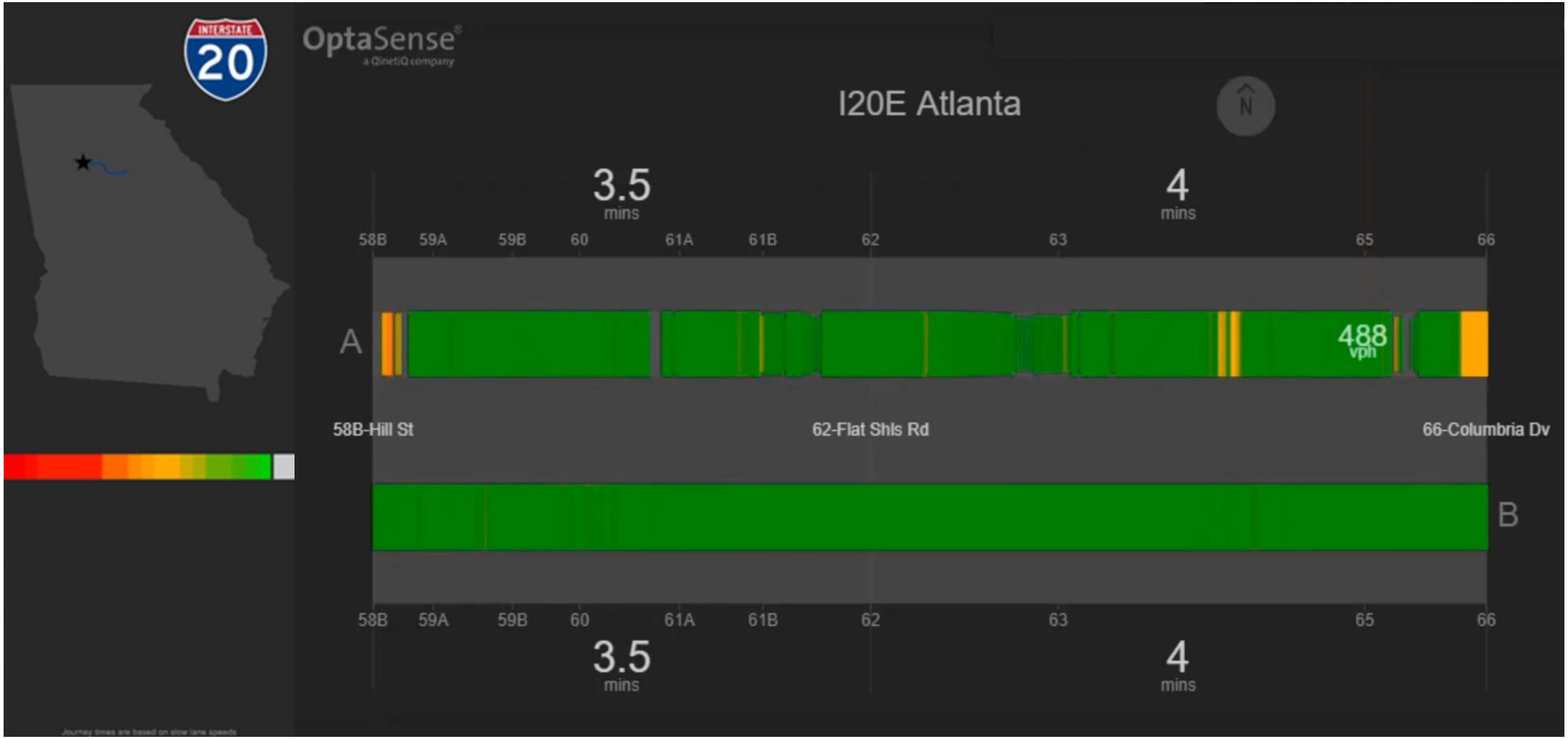
I-20 Real–Time Traffic Information



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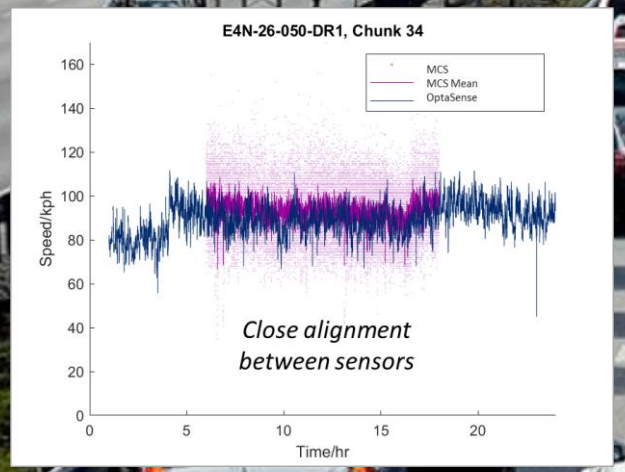
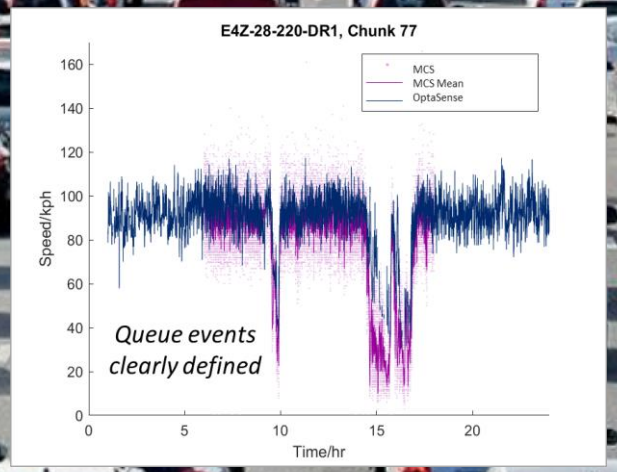
E20 Stockholm, Sweden

TRAFIKVERKET





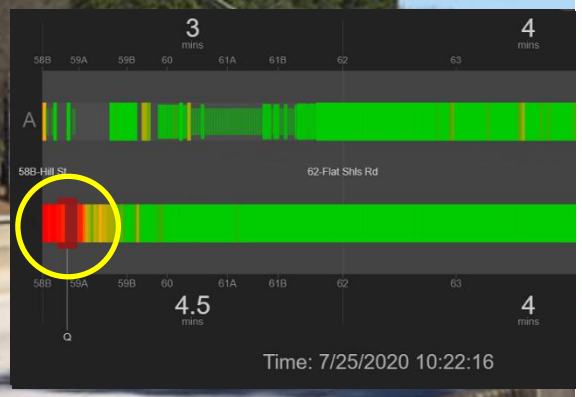
Southwick Tunnel, UK

highways england

Criteria	Requirement	OptaSense TMS Performance
Availability	> = 98%	100%
False Alarm Rate	< = 1 per km per day	0.00
Detection Rate	> = 75%	100.65%
Detection Time	< = 120 sec	3.12 sec

OptaSense Fibre Detection Weighted Final Evaluation Score for Performance

I-20, Atlanta, Georgia



AJC WSB Traffic
@ajcwsbtraffic

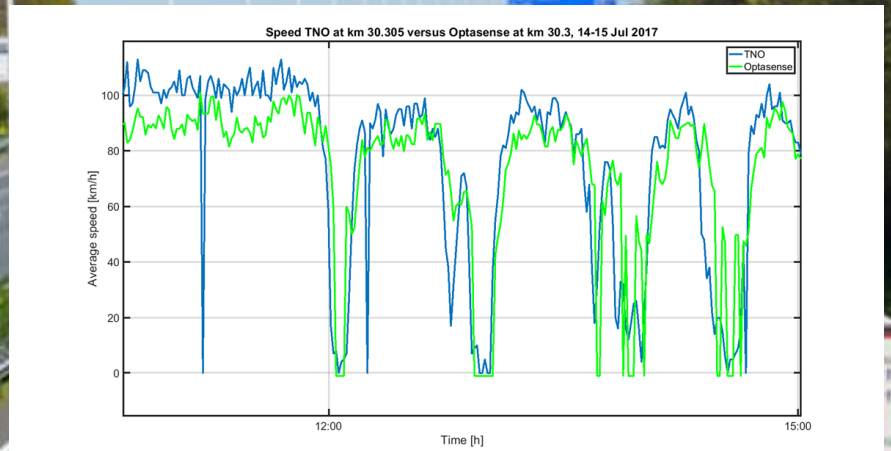
GDOT Georgia Department of Transportation

RED ALERT remains with this Police Activity on I-20/eb/wb at Boulevard (exit 59) all lanes are still shutdown, traffic is diverted onto Boulevard. Avoid and use Memorial Dr. as an alternate wsbradio.com/traffic/ #ATLtraffic

11:29 AM · Jul 25, 2020 · TweetDeck

A58, Amsterdam, Holland

Rijkswaterstaat



Georgia DOT Project Summary

- Project completed on schedule
- OptaSense TMS remains in service following equipment purchase
- Objectives achieved
  - Validated on state roads using existing fiber
  - Ease of installation, detection accuracy, reliability, performance on wide highway proven
  - Fiber optic sensing does enable the option to consider retiring existing, legacy detection devices
- Subsequent “Benefits Analysis and Business Justification” report forecasts **significant operational and cost advantages** over alternative point sensor technology

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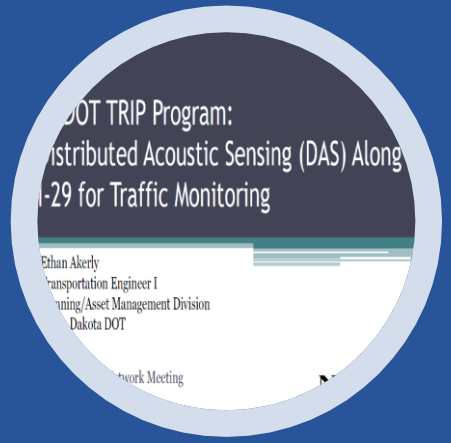
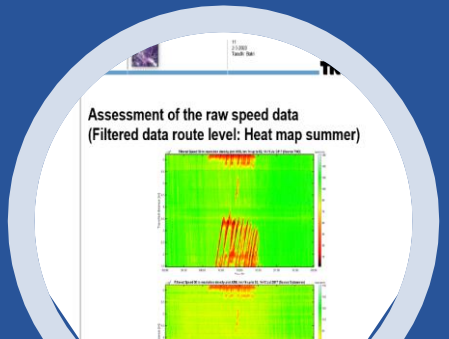
Additional Information

- Case Studies
- Customer Presentations
- Consultant Reports
- Youtube videos
- Business case / justifications
- OptaSense presentations, proposals etc.





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What Else is Up Our Crowdsourcing Sleeve?

John Parker, Senior Traffic Operations Project Manager
Pennsylvania Turnpike Commission

What else is up our Crowdsourcing sleeve?

Data Sharing

Crowd Sourcing

HAAS alerts

TEO Metrics and Dashboards

Data Sharing with 3rd parties

- INRIX
- Waze – Connected Partner
- Google maps – November 2020
- DriveWyze
- FreightWaves
- Coming soon…..Apple maps

PTC uses CrowdSourcing

- Waze Connected Partner
  - Share incident and work zone data
  - PTC receives Waze data for our roadway
  - PTC can close a road in Waze
  - PTC can set speed limits and provide other safety messages and planned detours for Waze users
  - PTC will soon start dispatching via Waze

WAZE inclusion

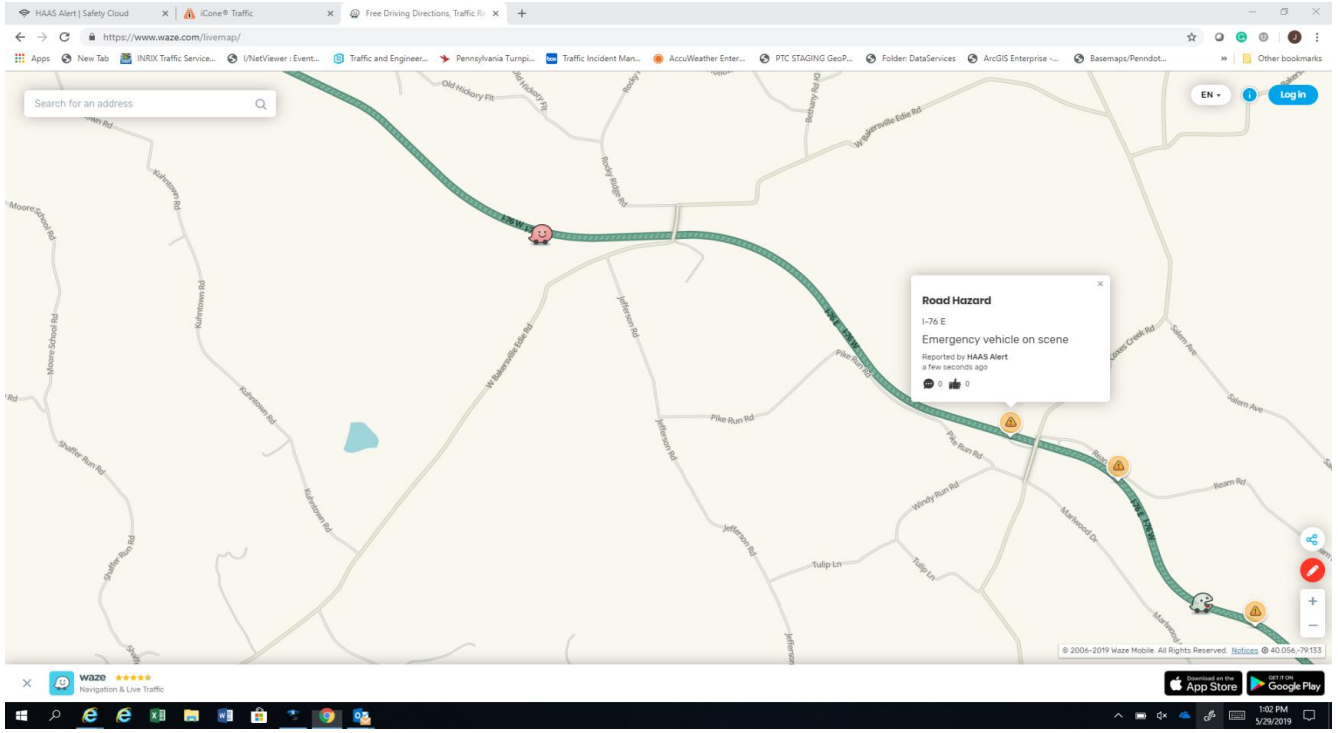
Dispatch via Waze

Waze speed Travel time file

Speed reduction at plazas

HAAS Alerts

Digital Alerts that go to Waze to tell drivers to Move Over for emergency vehicles that are on scene on the roadway



- Activated with light bar
- 144 vehicles
- ½ mile alert
- Over 1.8 Million driver alerts in the first year
- HAAS portal
  - https://safetycloud.haasalert.com/#/dashboard/things

Device and Costs

- 97 units hardwired
- 44 portable units for mobile work zones
- Approximately $700 a unit/1.95 a day
- 1.8 Waze driver alerts

Benefits of HAAS alerts

- 2018 – 30 Accidents
- 2019 – 19 Accidents
- 2020 – 0 Accidents

- HAAS alerts implemented in January 2020
- Purchased additional plug and play HAAS devices in November 2020 – For use in mobile maintenance patterns
- Another use this winter was use of the alerts in snowplow trains

TEO/Geo Analytics Program – Apps using Crowdsourcing

WAZE DASHBOARD

INCIDENT TIMELINE

EWD TOOL

DATACAPABLE

Links and Demos

- Waze Dashboard – Real Time - Waze
  - Developed in-house
  - ESRI
  - Monitors Waze alerts real time
- EWD - Early Warning Detection Tool – Real Time – Waze/Inrix/Accuweather
  - Developed in-house
  - Qlik app
  - Monitors ½ mile sections for speed, weather and Waze alerts updated every 2 minutes
- Incident Timeline Dashboard - Real Time – CADS/Inrix/Waze/PSP crash reporting
  - Developed in-house
  - Qlik app
  - Monitors TIM timeline for quick response and incident management
- DataCapable - Real Time – Twitter
  - Developed by Datacapable
  - Web app
  - Monitors keywords on Twitter for Operations. Live video call to monitor on scene incidents
- HAAS Alerts – Real time alerts to Waze
  - Developed by HAAS
  - Web app
  - Show vehicles and devices out in the field

List of dashboards and apps

- **Turnpike Interactive Mobility & Safety (TIMS) v6 -** https://gis.paturnpike.com/portal/apps/webappviewer/index.html?id=2e6c1286a2784492a9113243aeb39cfd
- **Traffic Impediments (Barco Wall) -** https://gis.paturnpike.com/portal/home/item.html?id=0be08d23bfef41b5833f1b0e95039943
- **Work Zone Dashboard -** https://gis.paturnpike.com/portal/apps/opsdashboard/index.html#/437c19c130ba45a08d60ea56f3894e38
- **Deer Encounters Live** - https://gis.paturnpike.com/portal/home/item.html?id=f4776844f85d46b49d3be9d251b60b86
- **Active Incident Summary Window (Barco Wall) -** https://gis.paturnpike.com/AISW/#
- **Incident Timeline -** https://analytics.paturnpike.com/sense/app/e140023d-ec39-473a-b2ab-5883781a93a0/sheet/837a9e51-afbc-4741-99bb-58ca47745f05/state/analysis
- **CADS Reporting -** https://analytics.paturnpike.com/sense/app/f9e6df48-913e-45ab-994c-f723cae0e1d8
- **TEO Mobility Dashboard -** https://analytics.paturnpike.com/sense/app/fc32ff03-2697-46dc-b5b9-0dc87d87fd8e/sheet/30e470fc-81a3-4d58-93e0-0e9f327c88ad/state/analysis?qlikTicket=7mBP8wQrvaVA29VY
- **Executive Mobility Dashboard -** https://gis.paturnpike.com/portal/home/item.html?id=d399157019f6432bb77030eca6bf0f6b
- **ASP Dashboard -** http://view.paturnpike.com/QvAJAXZfc/AccessPoint.aspx?open=&id=QVS%40cvqlikviewp1%7CAccessPoint-Restricted%2FAuthorized%20Service%20Provider%2FAuthorized%20Service%20Provider.qvw&client=Plugin
- **Weather Dashboard -** https://gis.paturnpike.com/portal/home/item.html?id=3c6f8e95ea084a1c9e322f7e74bb769a
- **Maintenance Shed Dashboards -** https://gis.paturnpike.com/portal/apps/MinimalGallery/index.html?appid=47c78a0dea34411fa8bafb2f87aaf670
- **Work Zone Crashes Dashboard -** https://analytics.paturnpike.com/sense/app/00aeb4af-3d24-4f98-8059-8f7e77486561/sheet/5cf070b8-2efa-4e09-8f64-025bfcc99a3a/state/analysis
- **Live Speed Dashboard –**
  - https://analytics.paturnpike.com/sense/app/e5d3a0df-732e-46ad-9ff1-bce2ca5fa102/sheet/224f2d6a-4611-42ee-8711-726fd11f8316/state/analysis

Thank You!

John Parker

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Traffic Signal Situational Awareness Dashboard – After Hurricane Sally Landfall

Amy M. DiRusso, PE, TSM&O Program Engineer
Florida DOT

The Eastern Transportation Coalition - Traveler Informational Summit

Innovative Capture and Dissemination of Traveler Information

Situational Awareness Dashboard During Hurricane Sally

Amy M. DiRusso, PE
TSM&O Program Engineer
April 1, 2021

Florida Department of Transportation

Hurricane Michael to Hurricane Sally

Saffir-Simpson Hurricane Scale: definition

SAFFIR-SIMPSON HURRICANE WIND SCALE

CAT	Wind Speed mph	Wind Speed kt	Old SS Scale mb	Old SS Scale surge
TD	0-38	0-33		
TS	39-73	34-64		
1	74-95	65-83	980-994	4-5'
2	96-110	84-95	965-979	6-8'
3	111-129	96-112	945-964	9-12'
4	130-156	113-136	920-944	13-18'
5	>157	>137	<920	>18'

Dashboard Creation

- Real-Time Damage Assessment and Situational Assessment
- Real-Time Repair and Restoring Support to Traffic Signals, ITS and Power

Preparedness

Vital Few

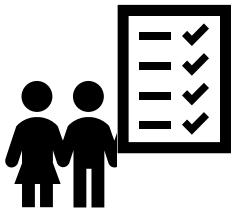
Improve Safety | Enhance Mobility | Inspire Innovation

- Advance Planning
- Resiliency Planning
- Proactive Team Management
- Real-time Data Analytics
- Real-time Situational Awareness Dashboard
- Signal Repair and Generator Deployment
- Active Traffic Management Strategies

Approach

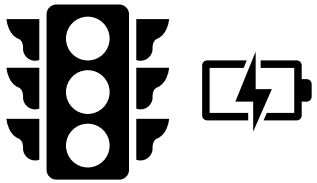
Vital Few

Improve Safety | Enhance Mobility | Inspire Innovation

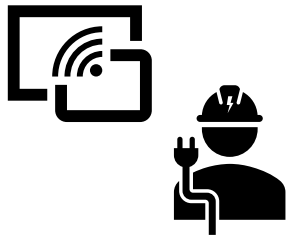


Prepared the Contractual Mechanisms for the Teams to Support in Advance and Developed GIS Tools

Trained and Prepared Damage Assessment Team (DAT) and Situational Awareness Team (SAT)

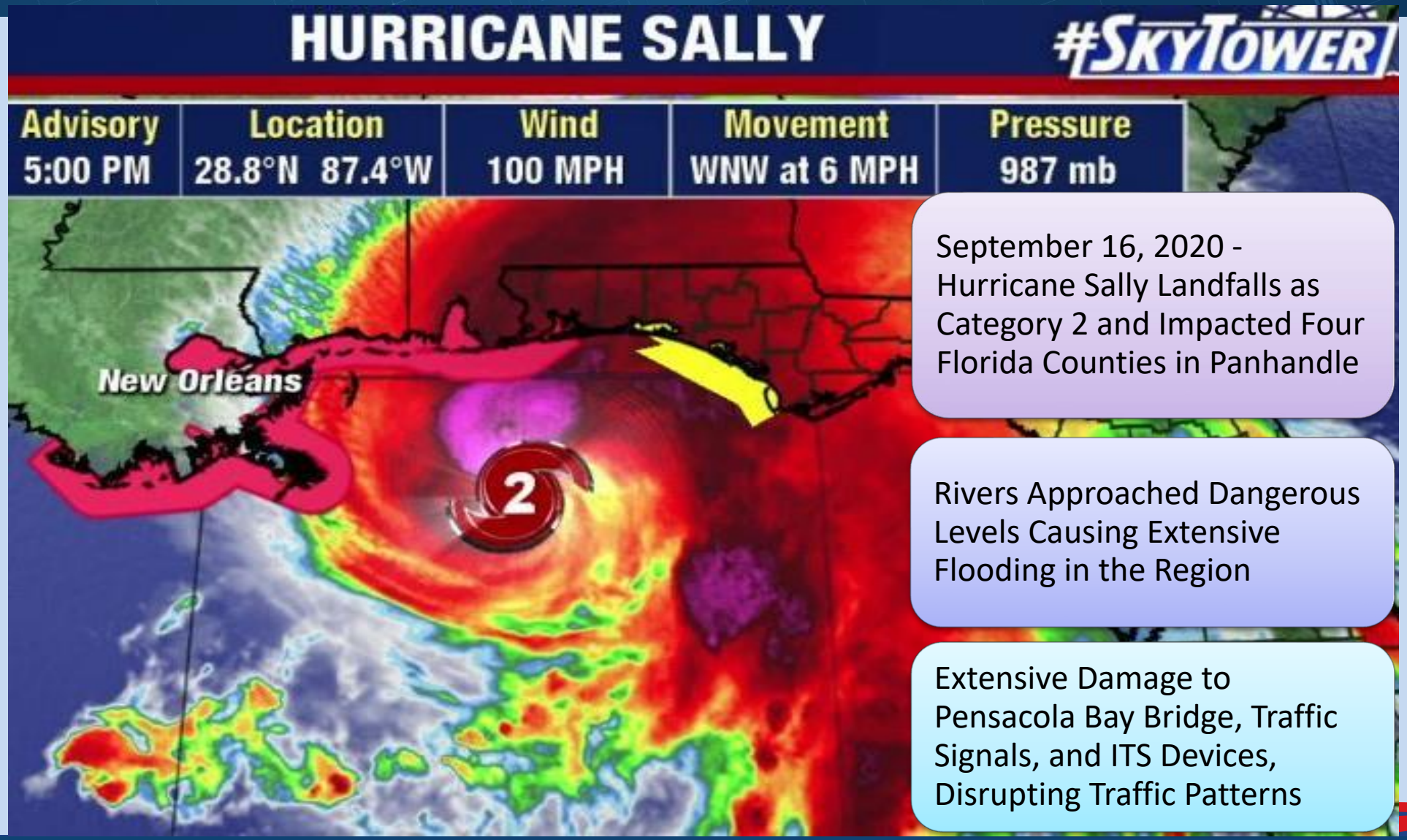


Real-time Traffic Signal and ITS Damage Repair and Power Restoration Support and Open Channels of Communications



Real-time Field Collector Application Updates for Traffic Signal Repair, Power, and Operational Status

Background

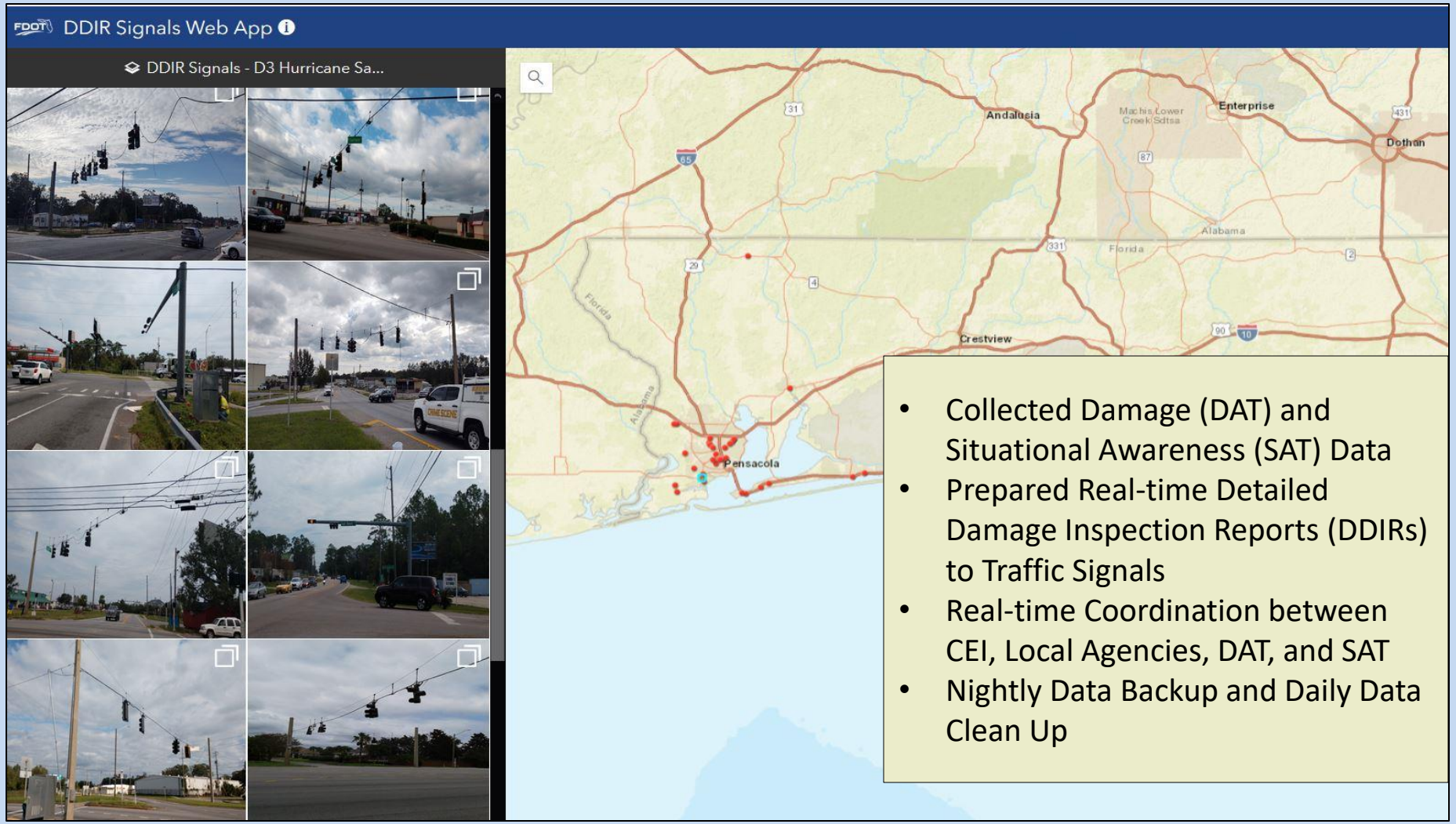


September 16, 2020 - Hurricane Sally Landfalls as Category 2 and Impacted Four Florida Counties in Panhandle

Rivers Approached Dangerous Levels Causing Extensive Flooding in the Region

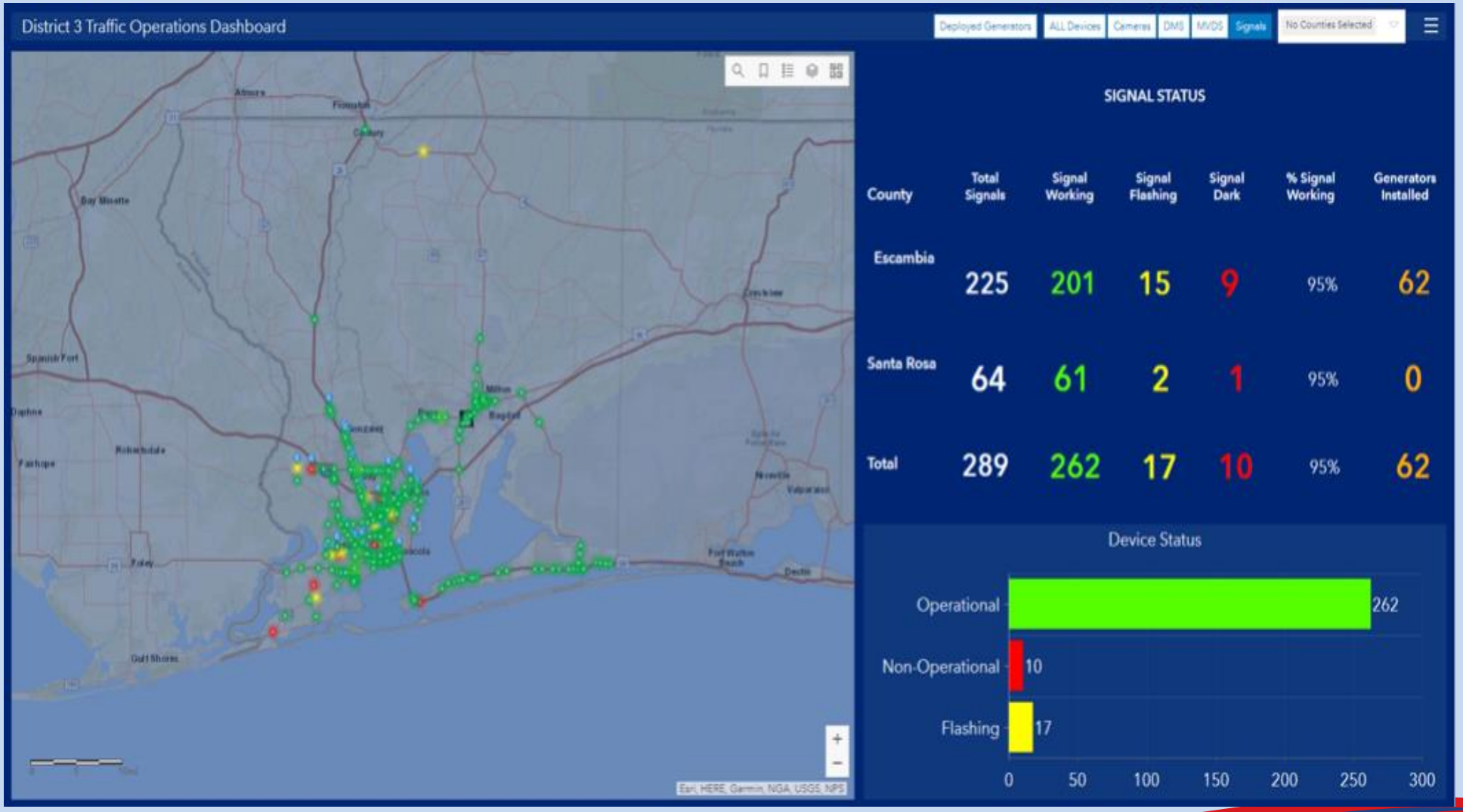
Extensive Damage to Pensacola Bay Bridge, Traffic Signals, and ITS Devices, Disrupting Traffic Patterns

Data Collection

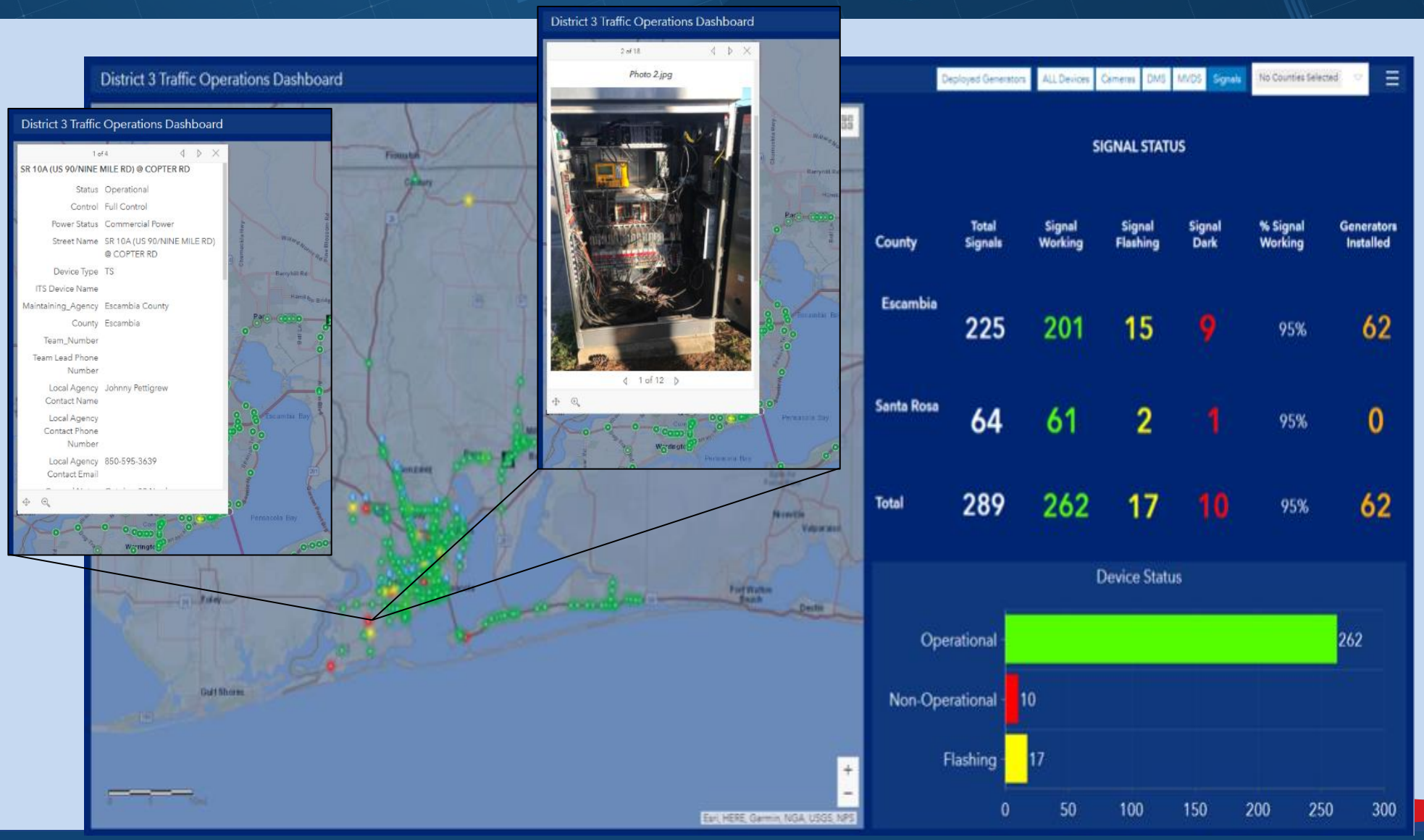


- Collected Damage (DAT) and Situational Awareness (SAT) Data
- Prepared Real-time Detailed Damage Inspection Reports (DDIRs) to Traffic Signals
- Real-time Coordination between CEI, Local Agencies, DAT, and SAT
- Nightly Data Backup and Daily Data Clean Up

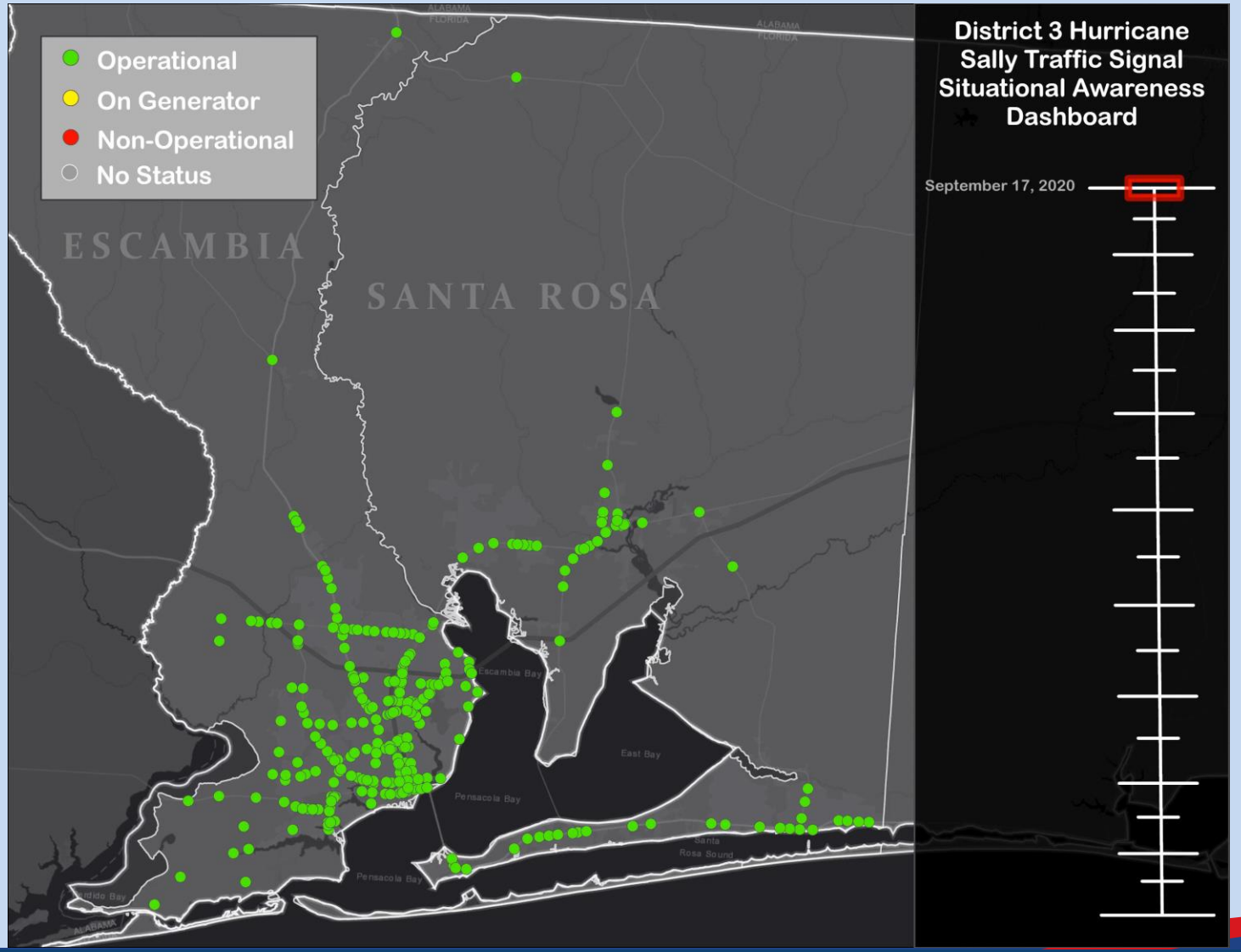
Real-Time Traffic Signal and ITS Device Operational Status Dashboard



Real-Time Operational Status Dashboard

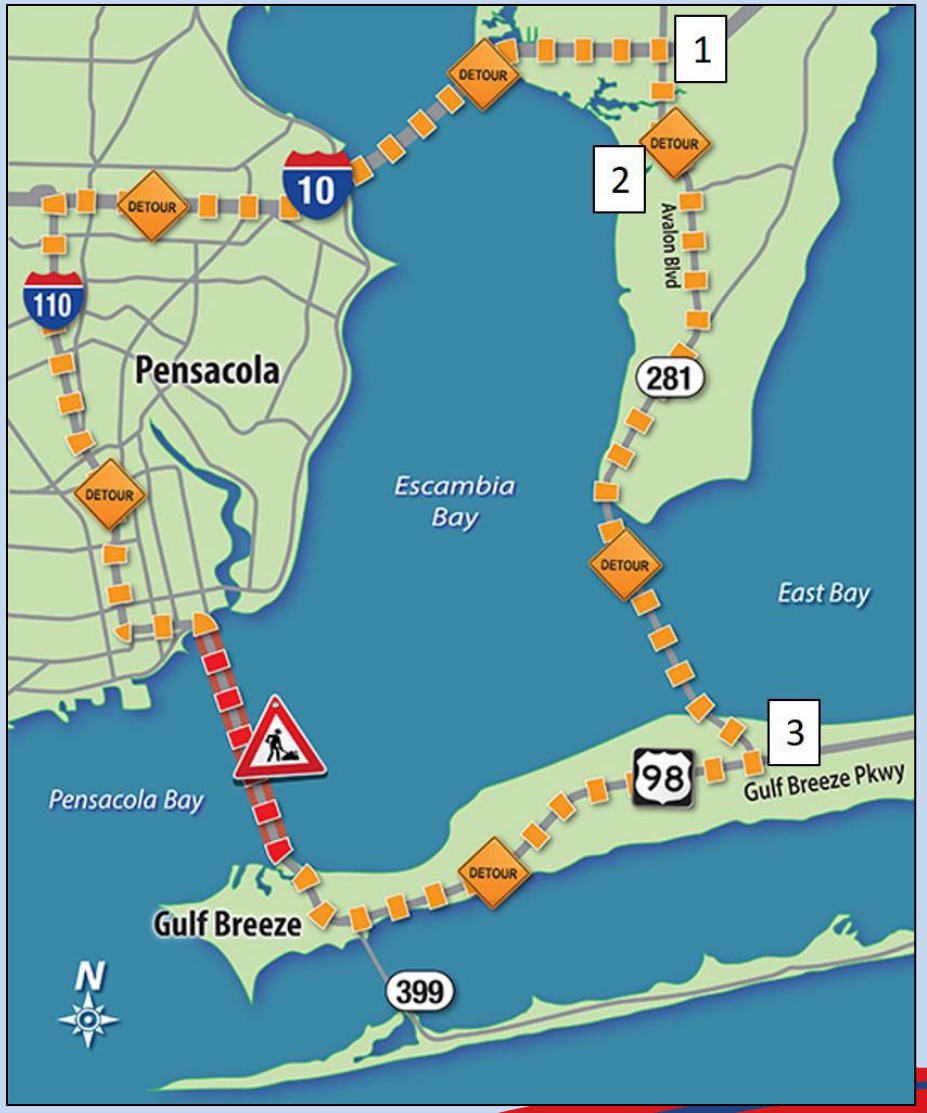


Video

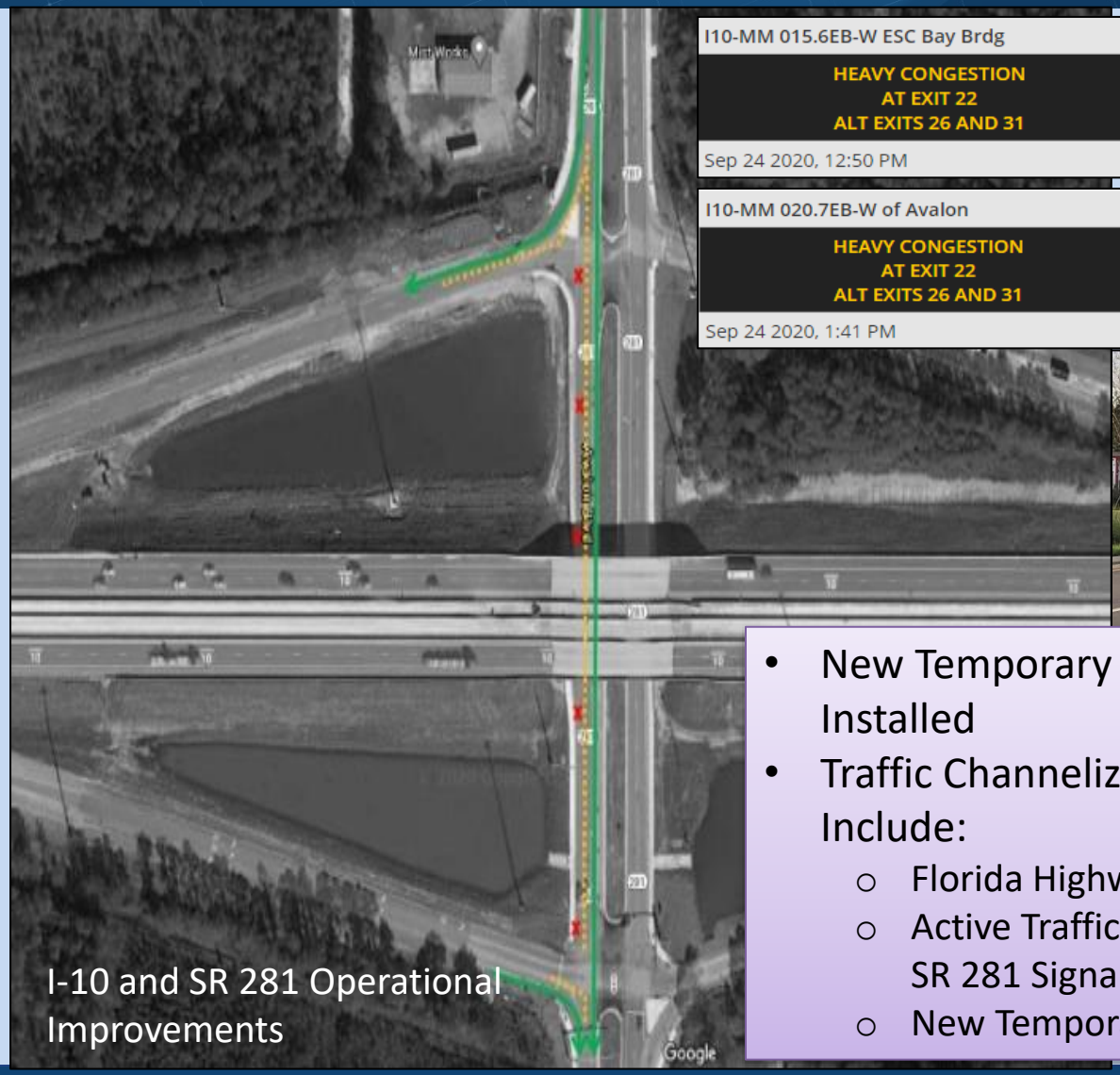

Operational
On Generator
Non-Operational
No Status
ESCAMBIA
SANTA ROSA
Escambia Bay
East Bay
Pensacola Bay
Santa Rosa Sound
Pensacola Bay
Perdido Bay
ALABAMA
FLORIDA
District 3 Hurricane Sally Traffic Signal Situational Awareness Dashboard
September 17, 2020

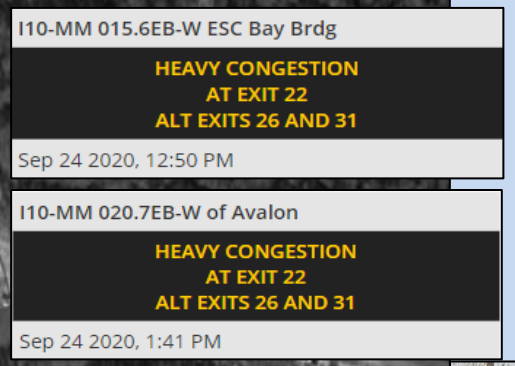
Planning and Implementation

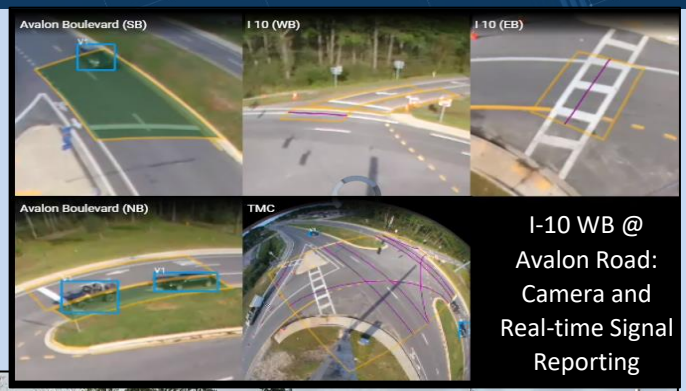
- Implemented Emergency Detour Route for the Pensacola Bay Bridge and Arterial Traffic Incident Management
- Recorded and Restored Travel Between Gulf Breeze and Pensacola
- Immediate Traffic Control Devices Restored on Roadways
- Real-time Travel Information to the Travelers in Detour



Active Traffic Management – Real Time Signal Adjustments





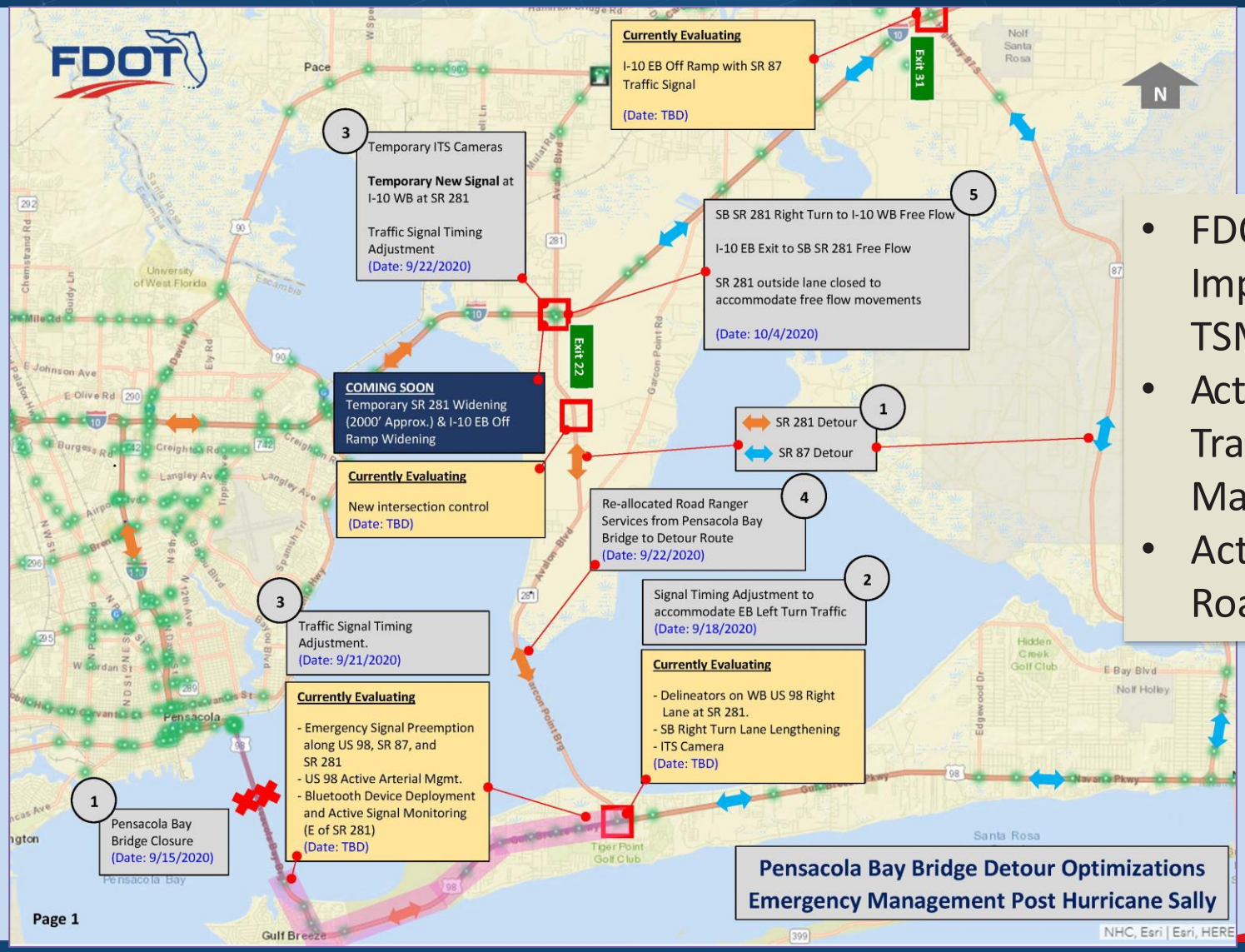


I-10 WB @ Avalon Road: Camera and Real-time Signal Reporting

New Signal @ I-10 WB and Avalon Road

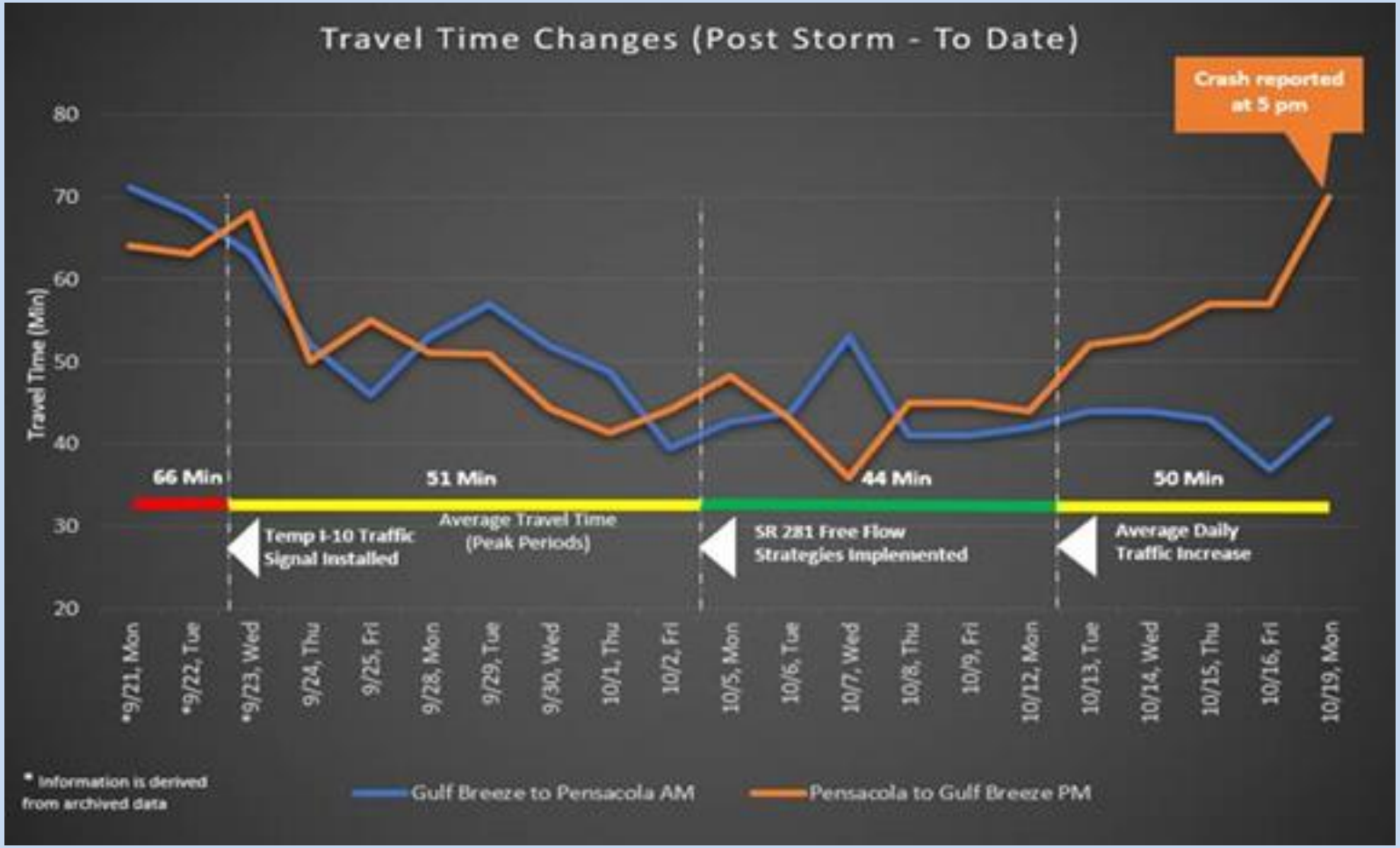
- New Temporary Traffic Signal at I-10 WB Ramps Installed
- Traffic Channelization at I-10 and SR 281 Interchange Include:
  - Florida Highway Patrol Deployed at the Interchange
  - Active Traffic Signal Timing Adjustments at I-10 and SR 281 Signals
  - New Temporary CCTVs at the Interchange

Detour and Incident Management



- FDOT Identified and Implemented Several TSM&O Strategies
- Activated Arterial Traffic Incident Management
- Activated Arterial Road Ranger Support

Communication, Execution and Outcomes



Questions?

Don't Text and Drive

Additional Questions?

Remaining Questions from the Q&A Box

Wrap Up

Meeting information & presentations will be posted to
The Eastern Transportation Coalition website.
Participants will receive a link to the presentations after they are posted.

THE EASTERN TRANSPORTATION COALITION

CONNECTING FOR SOLUTIONS

Thank You!

For additional information, please contact:

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