



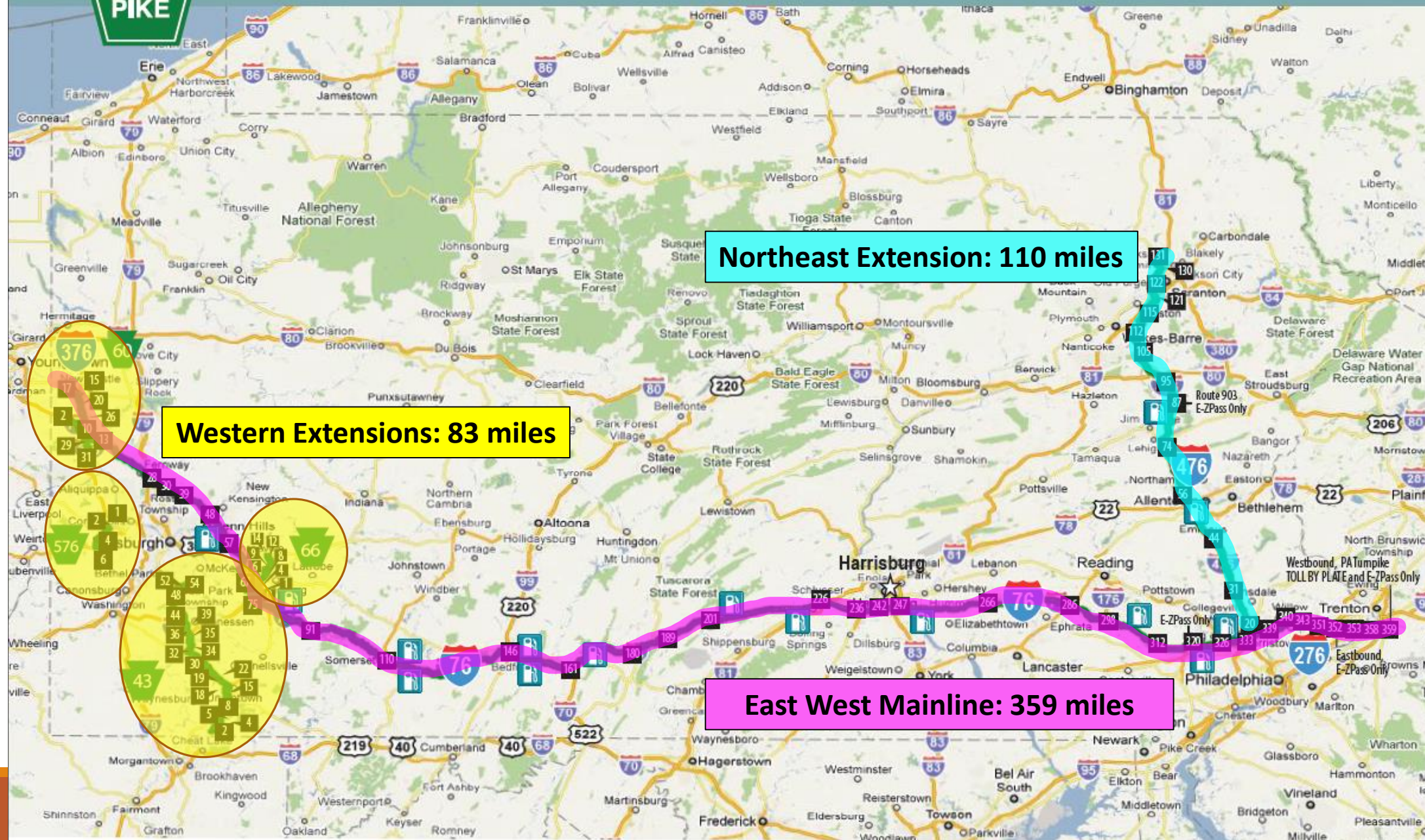
I-81 Corridor Coalition

Current & Upcoming Safety Innovations in Traffic Operations



The Pennsylvania Turnpike System Map

Website: www.paturnpike.com
Customer Service: 800.331.3414



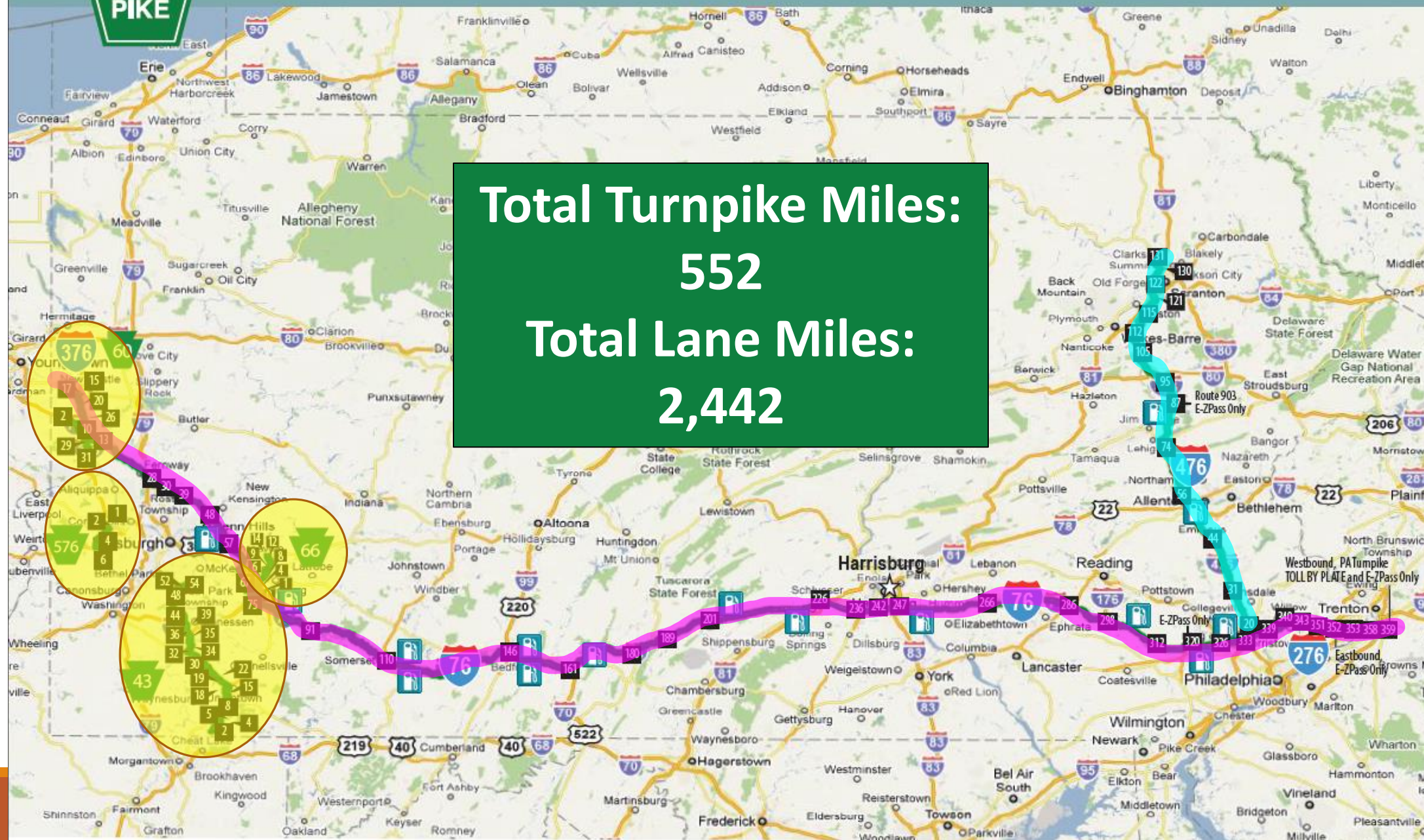


The Pennsylvania Turnpike System Map

Website: www.paturnpike.com

Customer Service: 800.331.3414

**Total Turnpike Miles:
552
Total Lane Miles:
2,442**



Our Work Force



552 miles
1/2 Million Customers/Day
24/7 operation
28 State Farm Safety Patrol
22 ASP providers
23 Maintenance Sheds
94,000 response calls a year

Our Traffic Incident Management Partners



Pennsylvania State Police - Troop T

- 9 State Police Barracks – 201 Uniformed Troopers

22 Contracted Towing Companies

- 5 Year Contract – Covers specific geographic area

110 Fire Companies

- \$225 per call - \$1000 per year stipend

67 Ambulance Companies

- \$100 per call - \$1000 per year stipend

Pennsylvania Crash Statistics

In 2017, there were 128,188 reportable traffic crashes in Pennsylvania resulting in 1,137 deaths and 80,612 injuries.

- 12th lowest total since 1950 when 113,748 crashes were reported. Last year, there were approximately 101.1 billion vehicle-miles* of travel on Pennsylvania's roads and highways.
- The 2017 fatality rate of 1.12 fatalities per hundred million vehicle-miles of travel* was the lowest ever recorded in Pennsylvania since the department started keeping records of this in 1935.

Pennsylvania Crash Statistics

On Average in Pennsylvania:

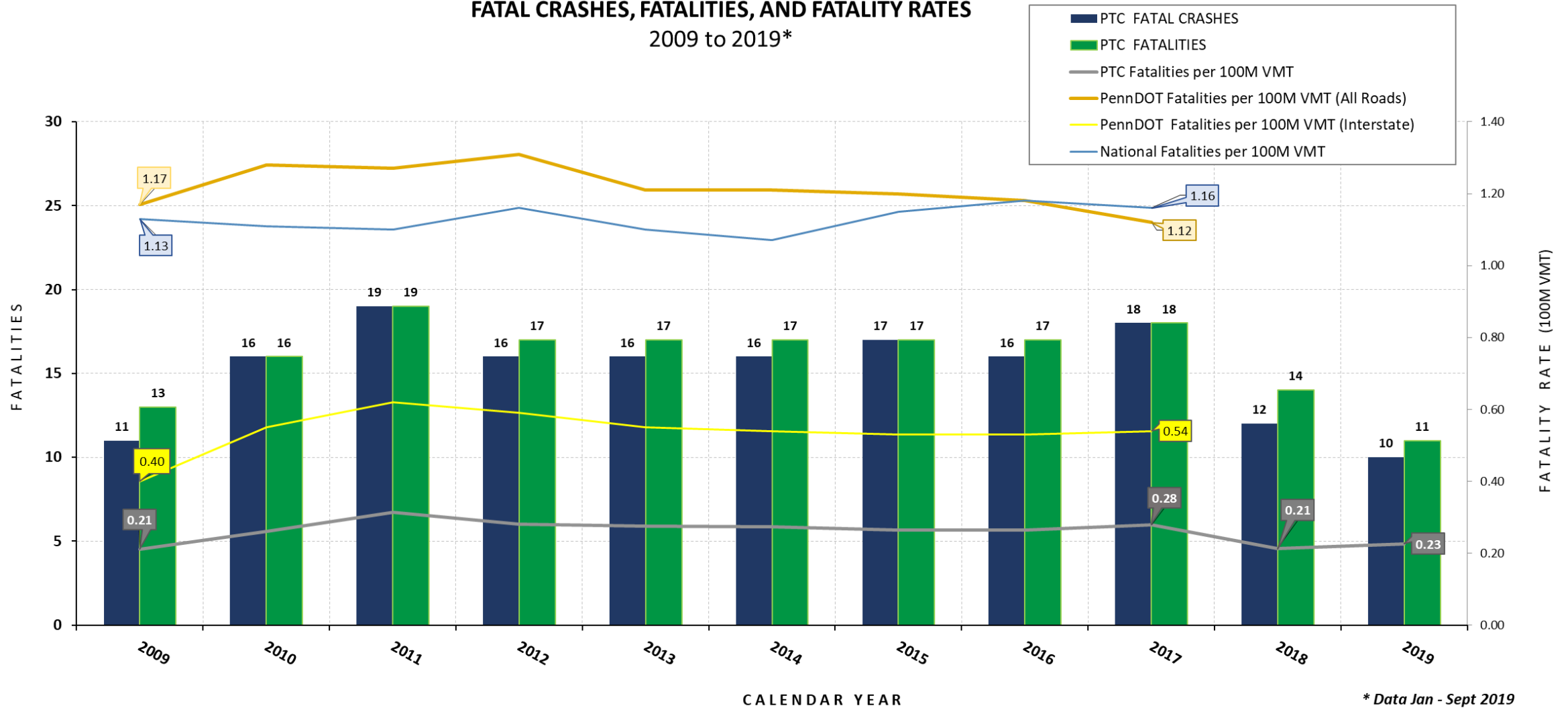
- Each day 351 reportable traffic crashes occurred (about 15 crashes every hour).
- Each day 3 persons were fatally injured in reportable traffic crashes (one fatality every 8 hours).
- Each day 221 persons were injured in reportable crashes (about 9 injuries every hour).

Based on Pennsylvania's 2017 population (12,805,537 people):

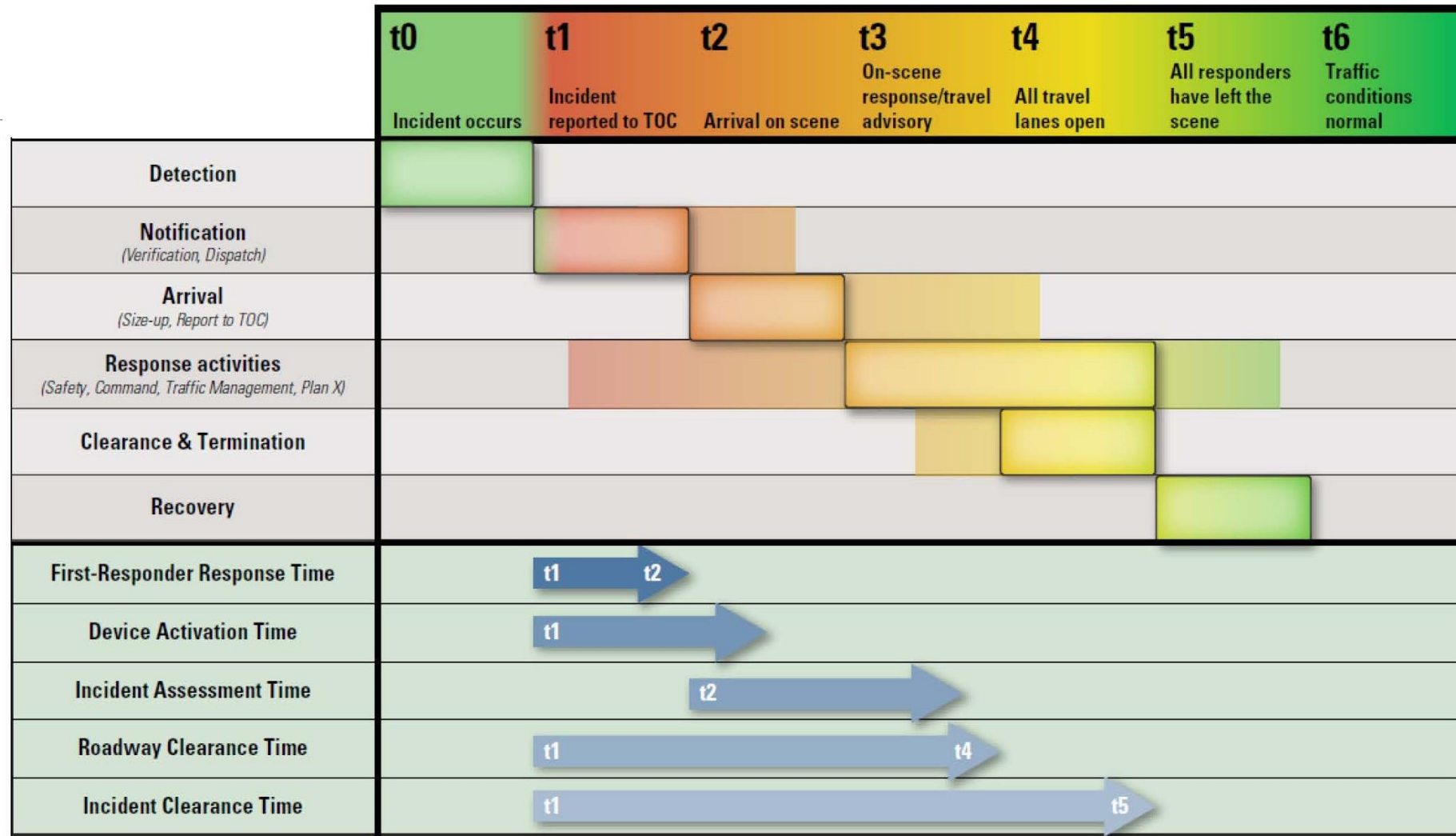
- 1 out of every 44 people was involved in a reportable traffic crash.
- 1 out of every 11,263 people was fatally injured in a reportable traffic crash.
- 1 out of every 159 people was injured in a reportable traffic crash.

Fatal Crashes, Fatalities, and Fatality Rates

FATAL CRASHES, FATALITIES, AND FATALITY RATES
2009 to 2019*



PTC Traffic Incident Management Timeline





Traffic Incident Timeline

Average Traffic Incident Duration (HH:MM) per FY

	INCIDENT DETECTED	DEVICE ACTIVATED	FIRST RESPONSE	ASSESSMENT TIME	ROADWAY CLEARANCE	INCIDENT CLEARANCE	TRAFFIC NORMAL	INCIDENT DURATION
Current FY:	INRIX: 00:18 WAZE: -00:03		00:16	00:13	00:50	00:47	00:26	01:16
Previous FY:	INRIX: 00:17 WAZE: -00:02		00:17	00:16	00:49	00:49	00:25	01:23

Filters

From / To Date

From : 1/1/2019
To : 6/18/2019

Select to View:

YTD
FYTD
All Dates

Day / Time

Day of Week
Hour of Day

Search #

Incident

Valid Record
Incident #
Incident Duration
Classification
Type
Subtype
Vehicle Type
Weather Cond
Responders
Fatality

Location

District
Roadway Route
Direction of Travel
Milepost
PSP Zone
Maintenance Shed

Incident Elapsed Time

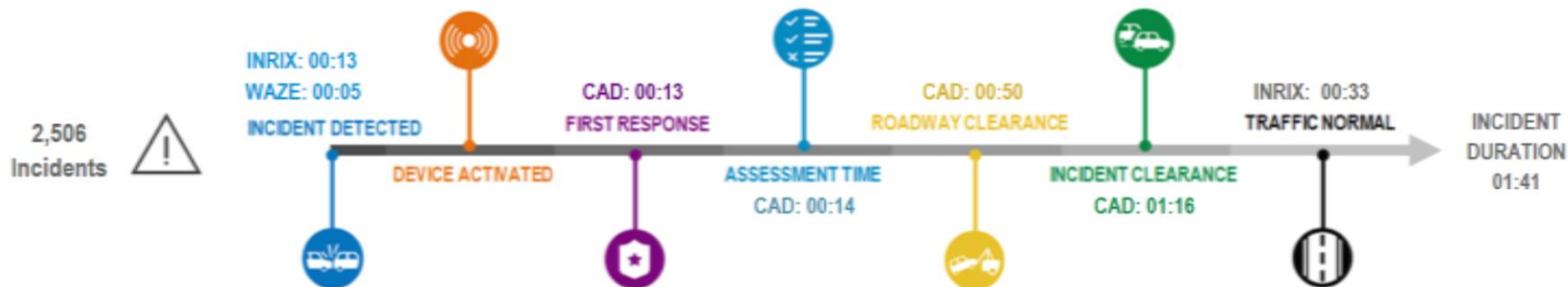
First Responder
Response Time

Roadway
Clearance Time

Incident
Clearance Time

Traffic
Conditions Normal

Traffic Incident Average Elapsed Time and Analysis



Incident Analysis (Times are in HH:MM:SS)

Incident Date	Incident Classification	Operator Name	Incident Number	Incident Type	Incident Time	Incident End Date	Incident End Time	Comments	First Response	Roadway Clearance	Incident Duration
5/24/2019	Major Incident	Gary Dressler	1905007132	ACC	4:57:02 PM	5/29/2019	1:41:35PM	*****DO NOT REMOVE***** VEHICLE PULLING A BOAT WENT OVER EMBANKMENT	-	01:02:29	9:01
2/20/2019	Major Incident	Felicia Ragland	1902004548	ACC	10:52:50 AM	2/22/2019	3:14:13PM	1 VEHICLES / OFF ROAD / 1 MALE PATIENT - HEAD INJURY	46:12:02	-	5:01
2/20/2019	Major Incident	Christopher Stroll	1902004601	ACC	1:08:14 PM	2/21/2019	12:38:58PM	T/T OFF ROAD INTO THE TREES / UNK INJURY	-	-	2:01



Traffic Incident Timeline

Average Traffic Incident Duration (HH:MM) per FY (?)

	INCIDENT DETECTED	DEVICE ACTIVATED	FIRST RESPONSE	ASSESSMENT TIME	ROADWAY CLEARANCE	INCIDENT CLEARANCE	TRAFFIC NORMAL	INCIDENT DURATION
Current FY:	INRIX: 00:18 WAZE: -00:03		00:16	00:13	00:49	00:47	00:26	01:15
Previous FY:	INRIX: 00:17 WAZE: -00:02		00:17	00:16	00:49	00:49	00:25	01:23

Filters

From / To Date

From : 1/1/2019
To : 6/19/2019

Select to View:

YTD
FYTD
All Dates

Day / Time

Day of Week
Hour of Day

Search # Incident

Valid Record
Incident #
Incident Duration
Classification
Type
Subtype
Vehicle Type
Weather Cond
Responders
Fatality

Location

District
Roadway Route
Direction of Travel
Milepost
PSP Zone
Maintenance Shed

Incident Elapsed Time

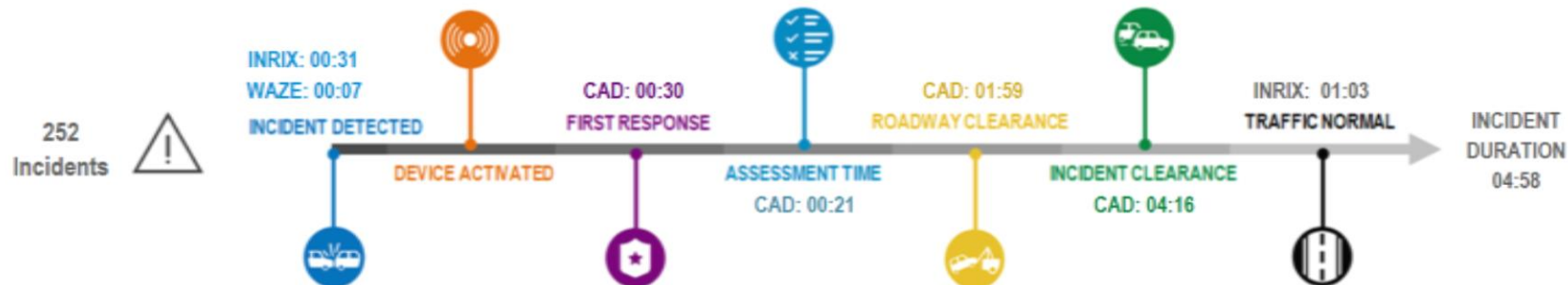
First Responder
Response Time

Roadway
Clearance Time

Incident
Clearance Time

Traffic
Conditions Normal

Traffic Incident Average Elapsed Time and Analysis (?)



Incident Analysis (Times are in HH:MM:SS)

Incident Date	Incident Classification	Operator Name	Incident Number	Incident Type	Incident Time	Incident End Date	Incident End Time	Comments	First Response	Roadway Clearance	Inc Clearance
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Secondary Crashes



Secondary Crashes





Pennsylvania Responder Struck-By Fatalities (All Time)

109 - Law Enforcement Officers

22 - Fire and Rescue Personnel

15 - Towing and Recovery Professionals

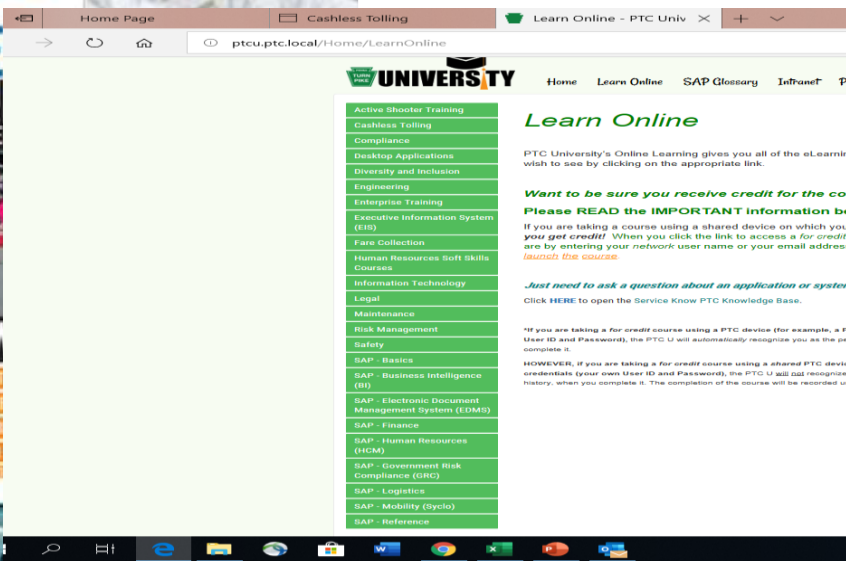
3 - EMS Workers

70 - PennDOT Workers

40 - PA Turnpike Workers



This map displays the distribution of 1000+ sampling locations for the Allegheny River Survey across Pennsylvania. The locations are marked with colored pins (blue, yellow, orange, red, green, purple) across the state, with a high concentration in the western and central regions. Major cities like Pittsburgh, Erie, and Harrisburg are visible, along with the Allegheny National Forest and Susquehannock State Forest.



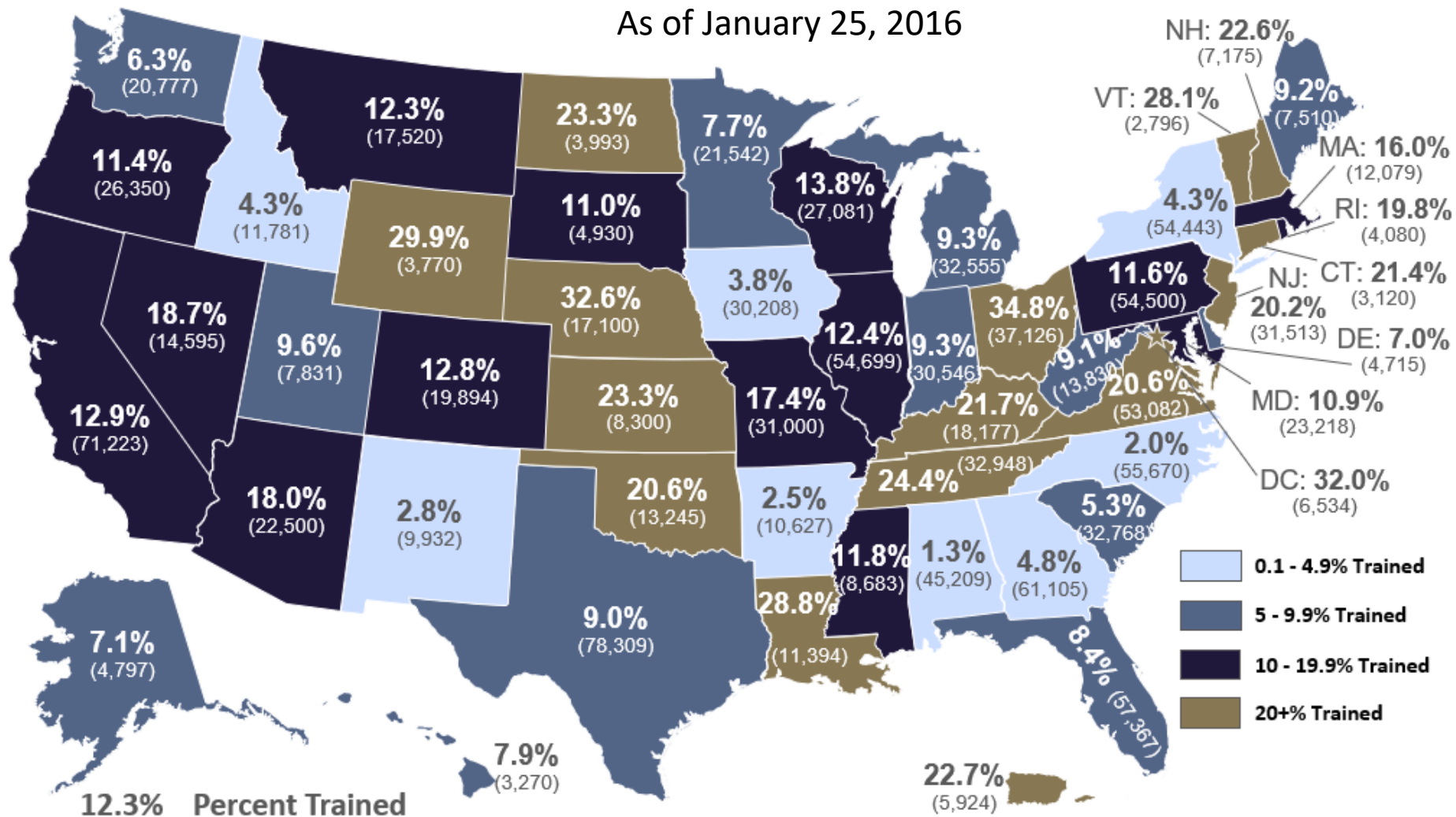
Computer Based – E-Learning

Over 3,000 Pennsylvania Emergency
Responders Trained online
since January 16, 2019



TIM Training Prior to PennTIME

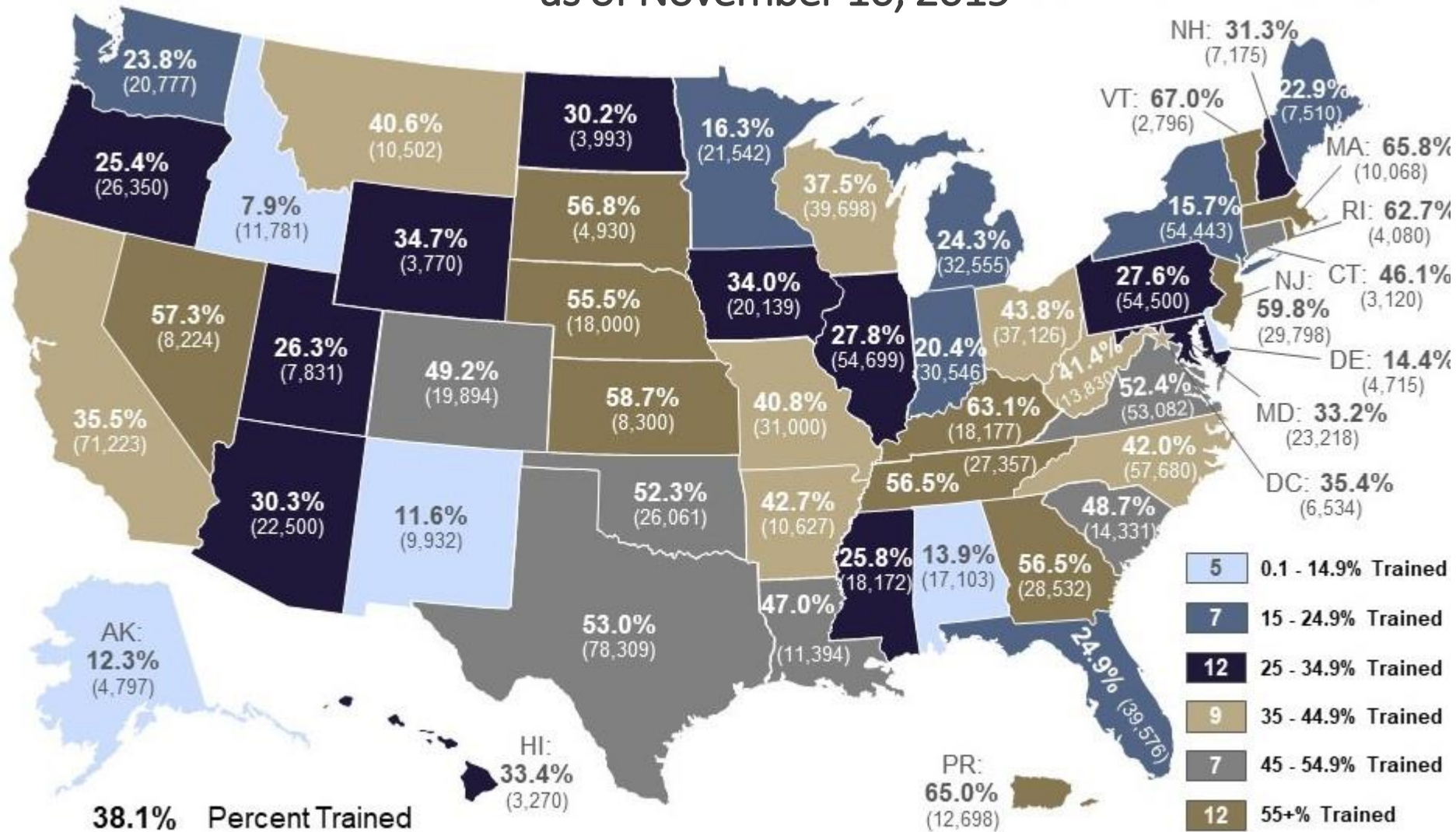
As of January 25, 2016



12.3% Percent Trained
(1,243,341) Total Responders To Be Trained

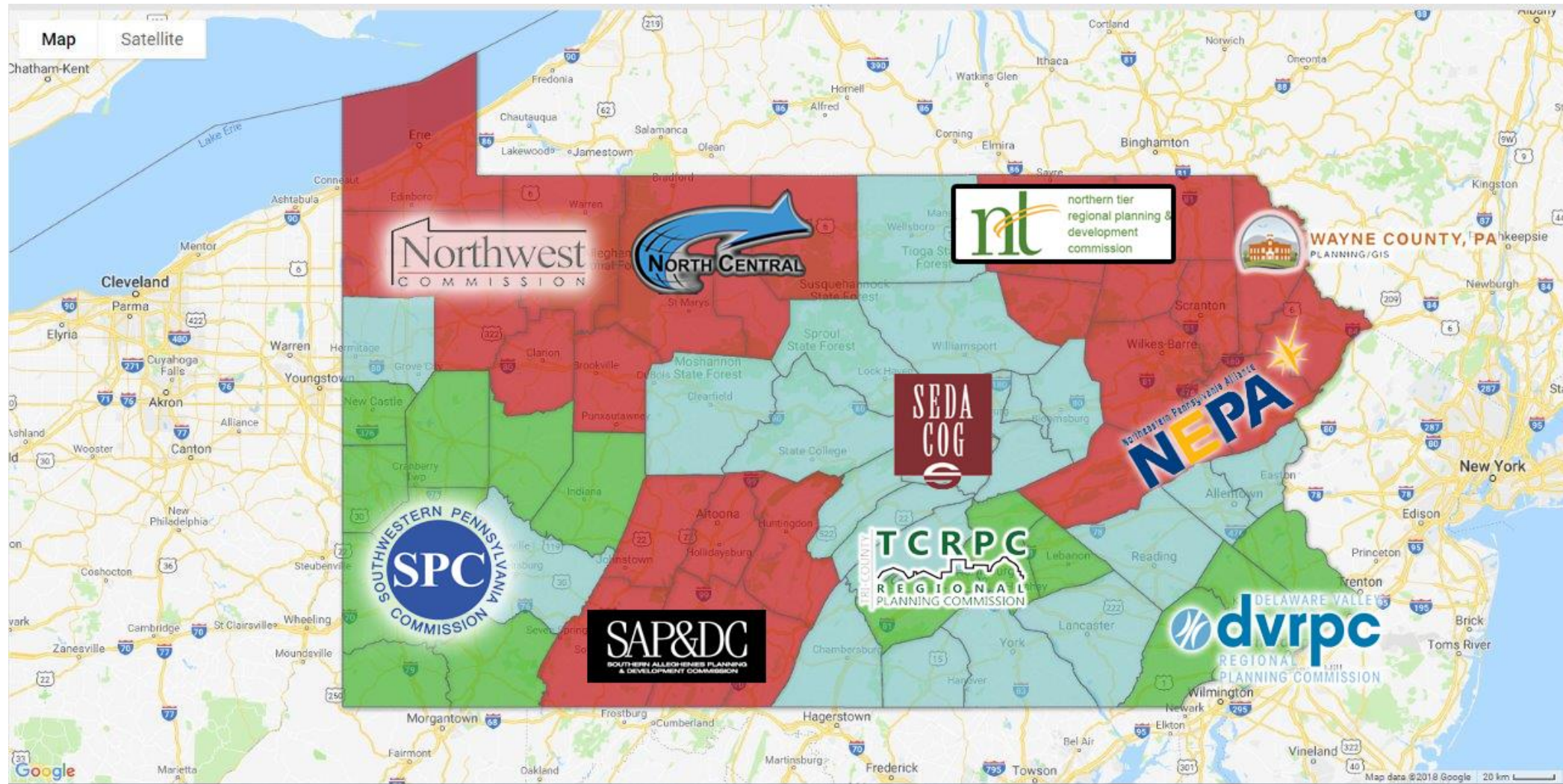
TIM Training

as of November 10, 2019



38.1% Percent Trained (3,270)
(1,158,265) Total Responders To Be Trained

TIM Teams/Task Forces/Committees



PennTIME

Pennsylvania **T**raffic **I**ncident **M**anagement **E**nhancement.

Priority effort identified in TAC Study.

Formed after 2016 TIM Summit.

Quarterly meetings.



Statewide TIM practitioner network through closed Facebook page.



Pennsylvania Safety Transportation and Research Track (PennSTART)



PennState



U.S. Department of Transportation
**Federal Highway
Administration**



Traffic Incident Management

- Law Enforcement / Fire / Rescue / EMS
- Towing & Recovery / Public Works / Utilities
- Unmanned Aerial Vehicles (Drones) Application Training



Connected and Automated Vehicles (CAV)

- Research Institutions
- Automotive and Equipment Manufacturers
- IT Data Solutions Management



ITS / Tolling Technologies

- Tolling Agencies
- EZPass Group
- Toll Technology Manufacturers and Integrators



Work Zone Safety

- Maintenance Workers
- Contractors
- OSHA and ANSI Work Zone Safety Training



Commercial Vehicles

- Motor Truck Carrier Associations
- Bus and Motor Coach Associations
- Manufacturers and Integrators



Transit Vehicles

- Federal Transit Administration
- State DOTs
- Transit Agencies
- Bus Technology Manufacturers

PennSTART – Conceptual Plan

4. Point Roundabout with Area for Green Space
5. Rural Intersections
6. Urban 4 Point Intersection (Leg 1 Simulates Multilane through with Left turn lane, Leg 2 Simulates Multilane through with Right turn only, Leg 3 Simulates Left turn and Right turn only with concrete island and signal, Leg 4 Simulates a Typical Intersection layout with left turn into a rural intersection)
7. Automation Test Loop (Will have sections to simulate Type 31-5 guide rail, Cable systems, and Concrete Jersey Barrier)
8. Typical Bridge Section with embankments
9. Truck Turnaround area
10. Academic Building with Classrooms and Labs and Garage
11. Parking Lot Currently Showing 160 spaces
12. High Speed Testing with Return Loop
13. Truck Parking and Staging Area with Smart Truck Parking capabilities
14. 6 Lane Highway Section with on ramp and off ramp simulations
15. Overhead Tolling Gantry
16. City Simulation with Small Radii
17. Helipad
18. Active Traffic Management System
19. Signalized Urban Corridor
20. Railroad at Grade Crossing
21. Signalized Rural/High Speed Intersection
22. Queue Preemption
23. Ramp Meters
24. Aircraft Rescue Fire Fighting and Training Simulator
25. Potential Roadway Flooding Area

This is an initial schematic conceptual plan and will be updated as the project progresses

PENNSYLVANIA SAFETY TRANSPORTATION AND RESEARCH TRACK (PennSTART)

DISTRICT	COUNTY	ROUTE	SECTION	GRID
K-1	XXXX	XXXX	X11	DF
XXXXXX				
SYSTEM NUMBER	SECTION			DATE

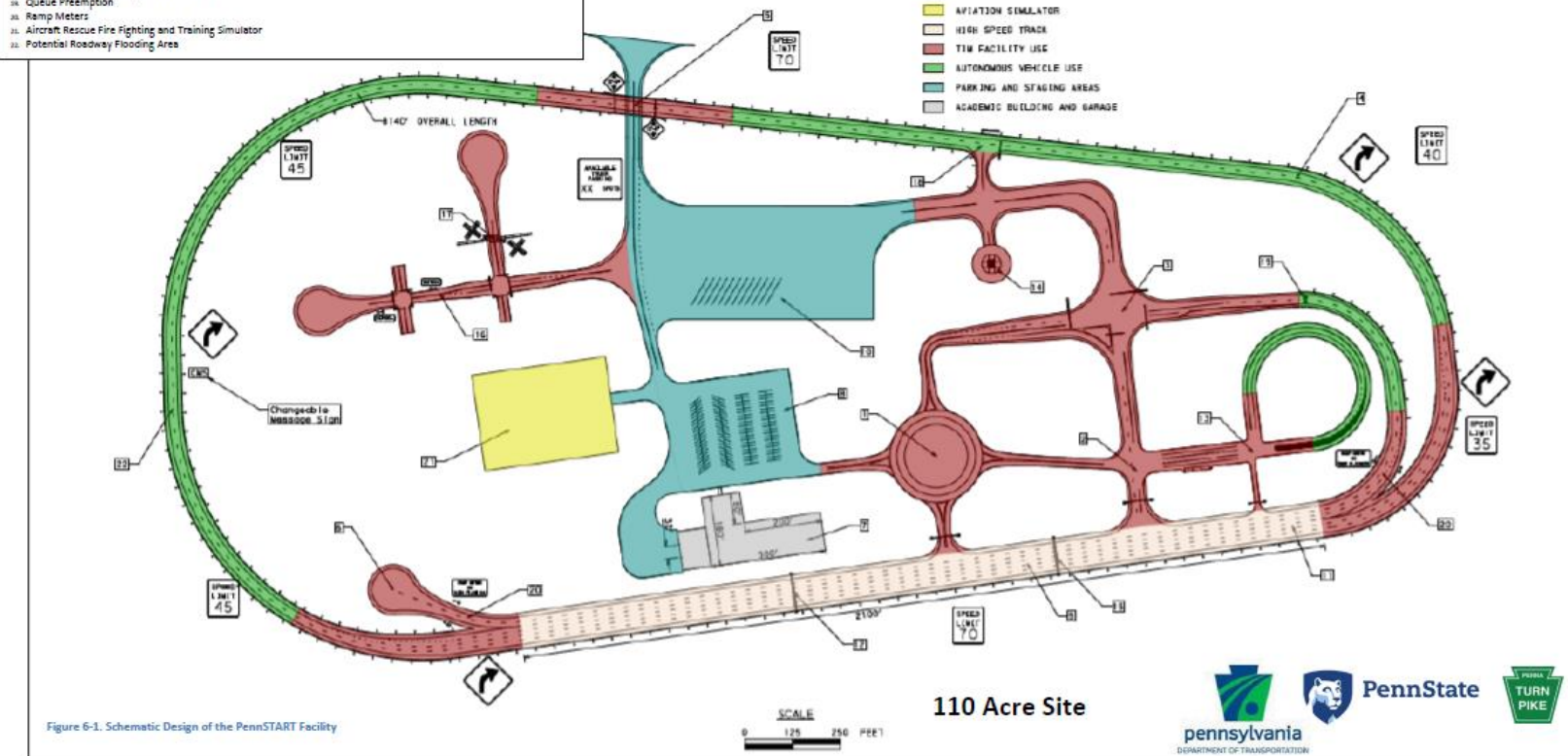


Figure 6-1. Schematic Design of the PennSTART Facility



Real Time Situational Awareness

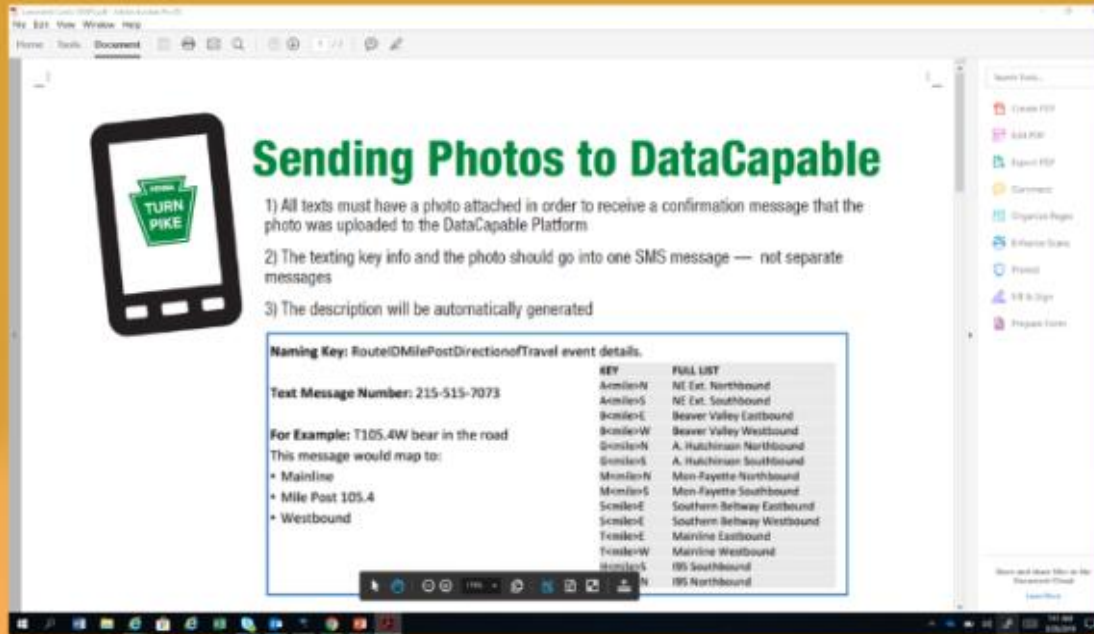
PA Turnpike



#GoOrangePA

Accident Photos

Taking
photos



Sending Photos to DataCapable

1) All texts must have a photo attached in order to receive a confirmation message that the photo was uploaded to the DataCapable Platform

2) The texting key info and the photo should go into one SMS message — not separate messages

3) The description will be automatically generated

Naming Key: RouteID|MilePost|Direction of Travel event details.

Text Message Number: 215-515-7073

For Example: T105.4W bear in the road
This message would map to:

- Mainline
- Mile Post 105.4
- Westbound

KEY	FULL LIST
Arcton-N	NE Ext. Northbound
Arcton-S	NE Ext. Southbound
Bowling-E	Beaver Valley Eastbound
Bowling-W	Beaver Valley Westbound
Gravel-N	A. Hutchinson Northbound
Gravel-S	A. Hutchinson Southbound
Monro-N	Mon. Fayette Northbound
Monro-S	Mon. Fayette Southbound
Scottd-E	Southern Beltway Eastbound
Scottd-W	Southern Beltway Westbound
Travis-E	Mainline Eastbound
Travis-W	Mainline Westbound
Travis-S	I95 Southbound
Travis-N	I95 Northbound



Live video
Streaming
from callers
Cellphone





Sending Photos to DataCapable

- 1) All texts must have a photo attached in order to receive a confirmation message that the photo was uploaded to the DataCapable Platform
- 2) The texting key info and the photo should go into one SMS message — not separate messages
- 3) The description will be automatically generated

Naming Key: RouteIDMilePostDirectionofTravel event details.

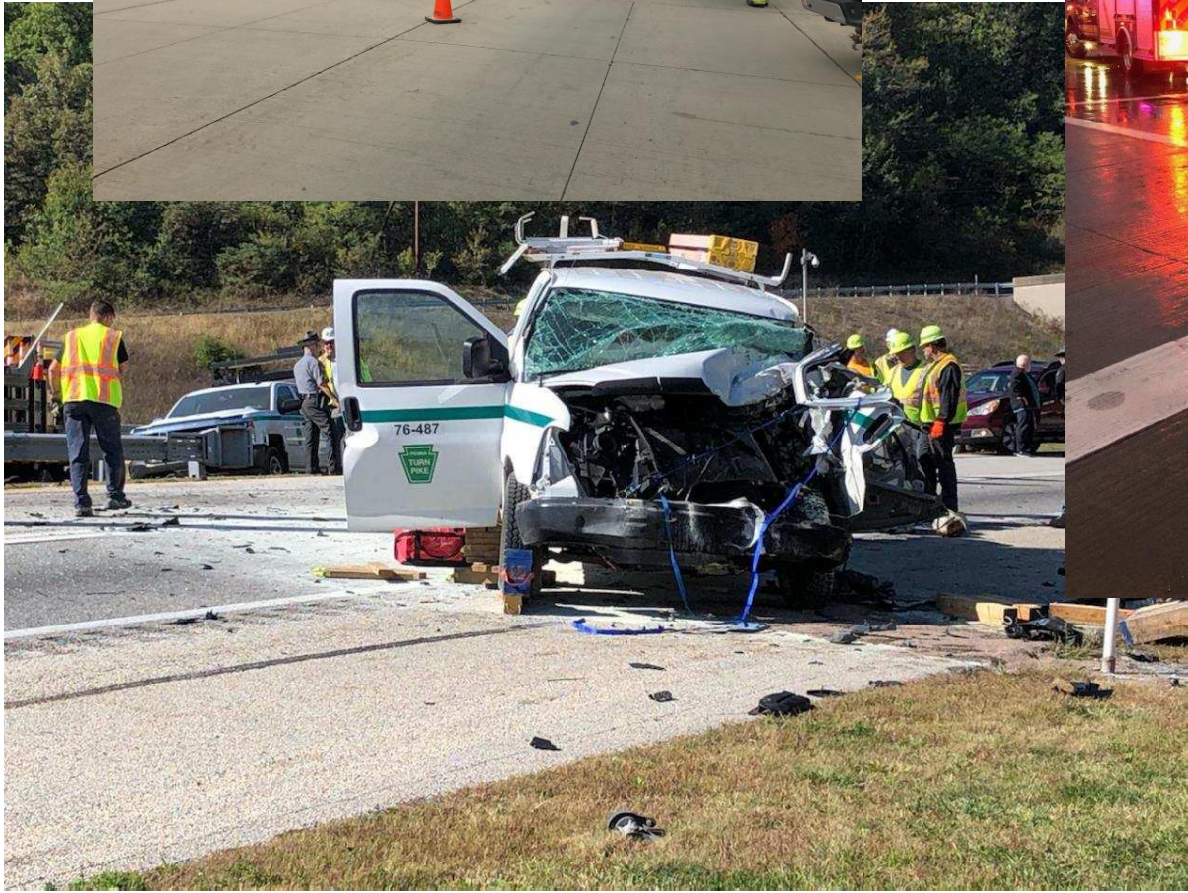
Text Message Number: 215-515-7073

For Example: T105.4W bear in the road

This message would map to:

- Mainline
- Mile Post 105.4
- Westbound

KEY	FULL LIST
A<mile>N	NE Ext. Northbound
A<mile>S	NE Ext. Southbound
B<mile>E	Beaver Valley Eastbound
B<mile>W	Beaver Valley Westbound
G<mile>N	A. Hutchinson Northbound
G<mile>S	A. Hutchinson Southbound
M<mile>N	Mon-Fayette Northbound
M<mile>S	Mon-Fayette Southbound
S<mile>E	Southern Beltway Eastbound
S<mile>W	Southern Beltway Westbound
T<mile>E	Mainline Eastbound
T<mile>W	Mainline Westbound
I<mile>S	I95 Southbound





DISABLE

1906000830

- WHT CHEVY MALIBU/FT
- OFF ROADWAY
- Lanes Blocked: Right Shou
- Weather: Sunny. Quite co

PTC: GB100, Unit has ar
PSP: None
EMS: None
FIRE: None
ASP: 8110, Unit is enrou
HAZ: None

** LOI search completed at 06/

Republic

83% 8:42



LTE



Tue, Jun 4



STAR • 1m

STAR Alert

Event: ACC - NOIB ** LOI search completed at 06/04/19 08:35:48 - 6/4/20..



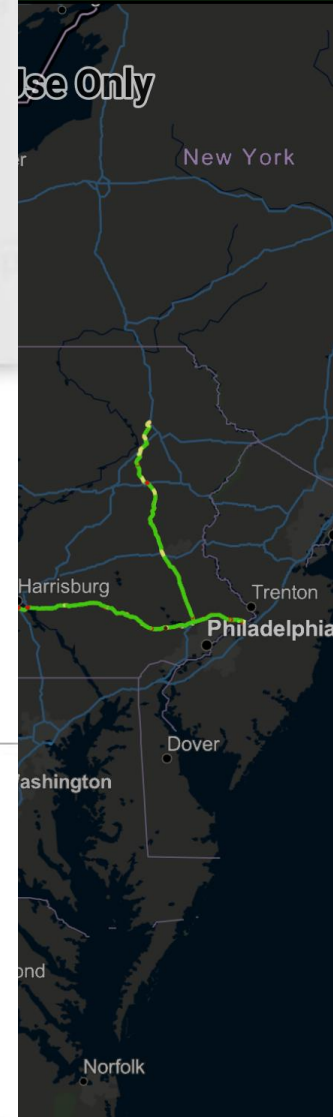
Republic Wireless • 1h

On Cell

Connected to the cellular network



MAP



A, U... Powered by Esri

Mobile Cameras

Installed on 24 vehicles

Full PTZ



Live camera view

24/7



On Road

Live on Road view

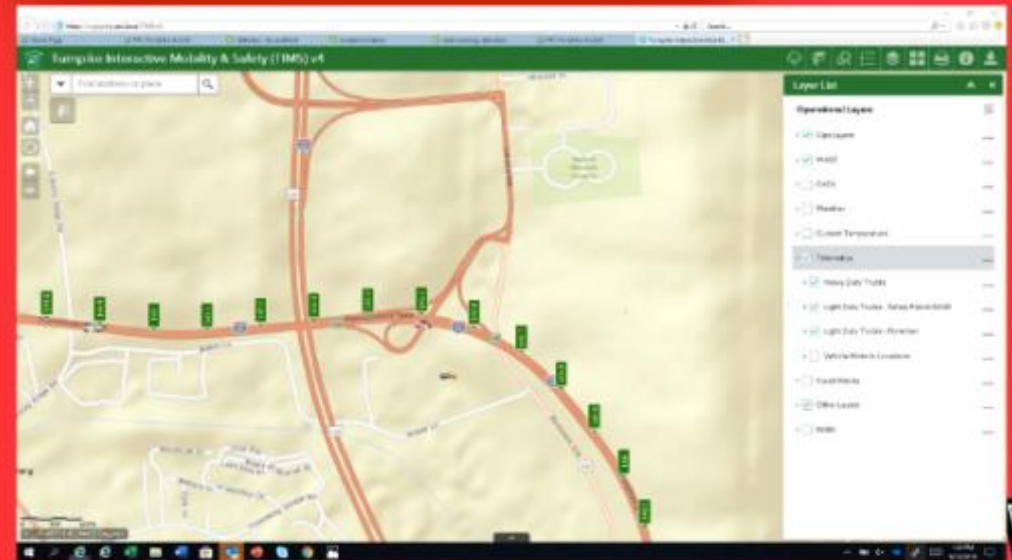
TOC view

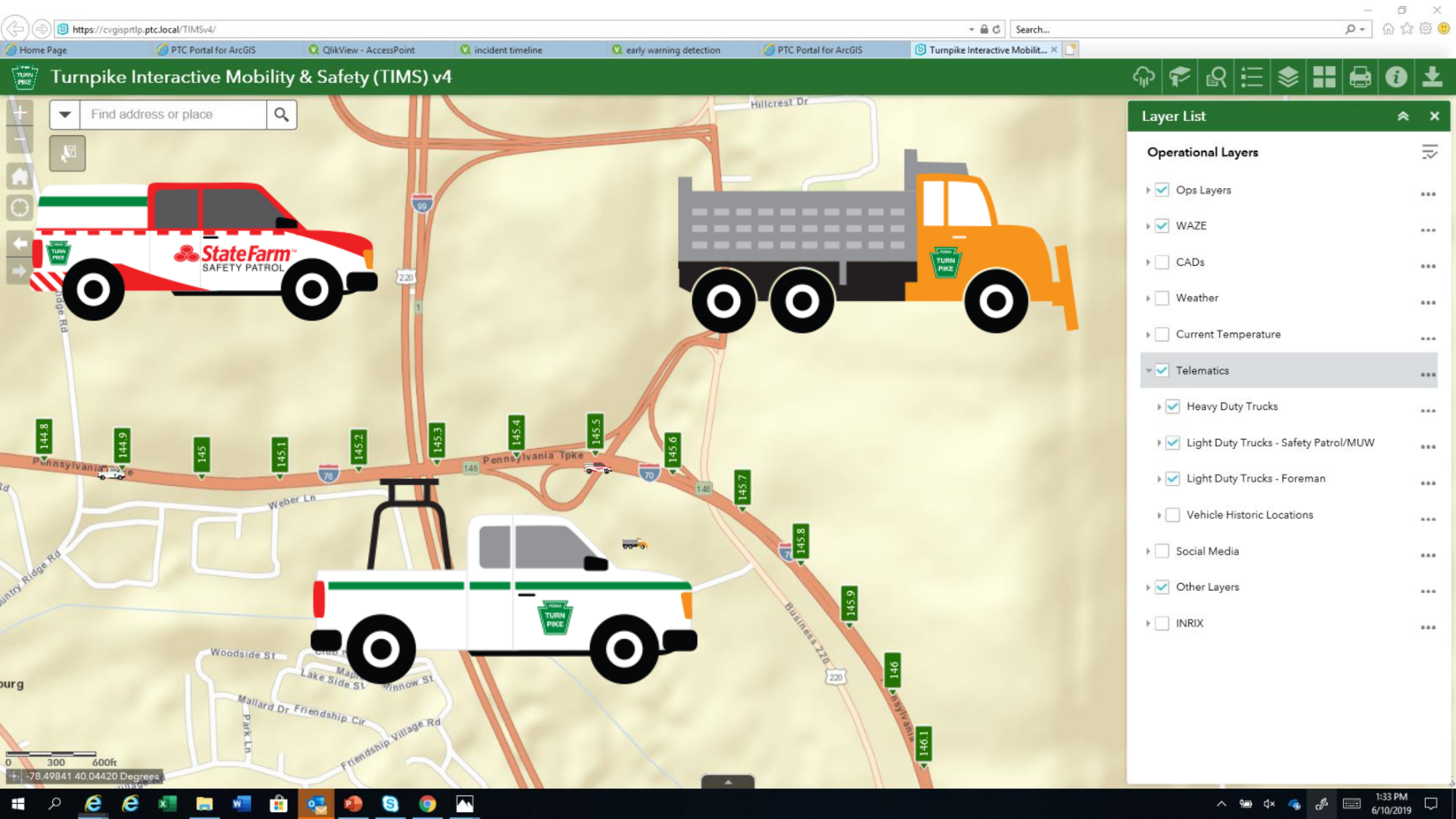
**TOC control and view
all cameras**

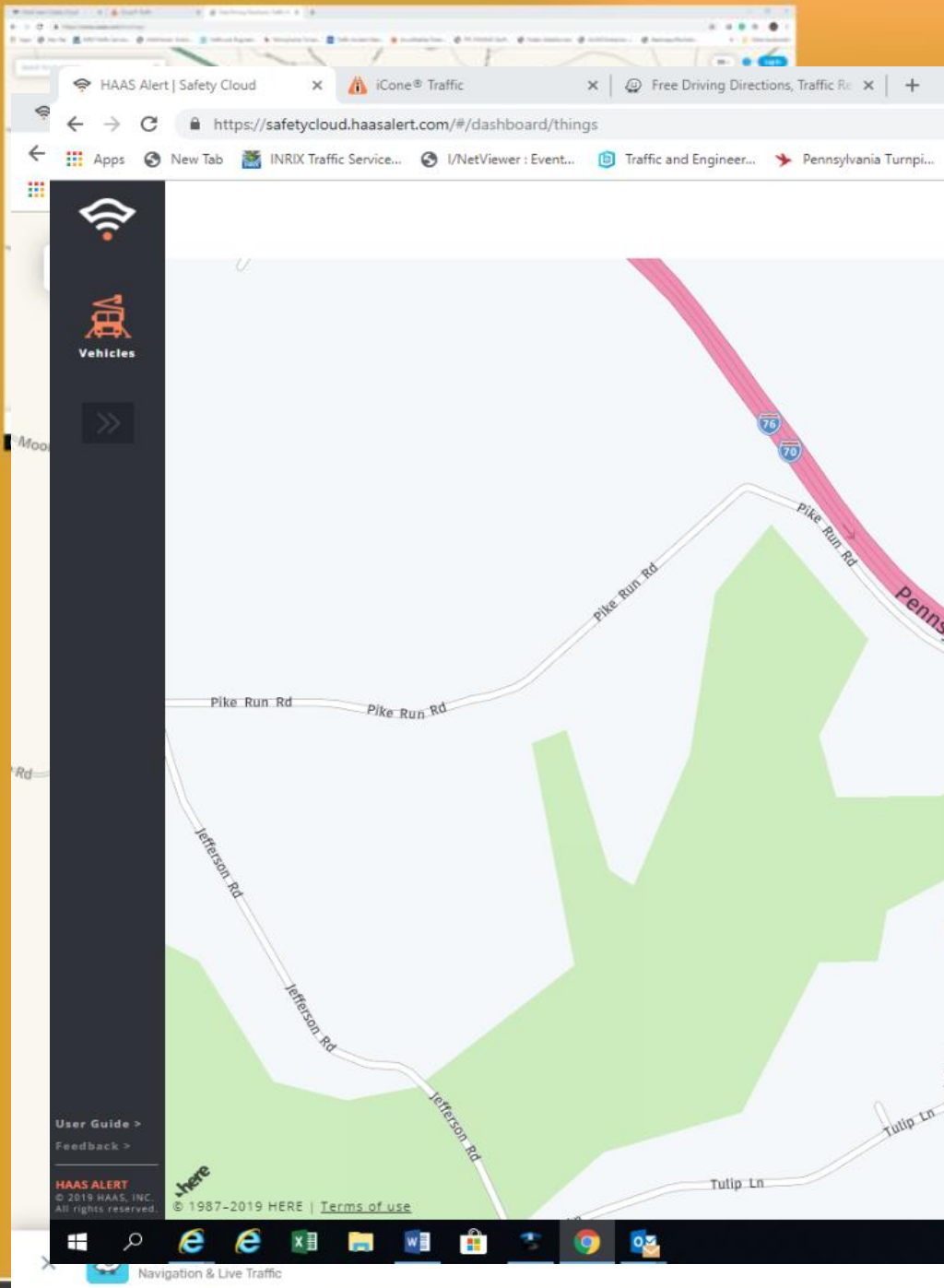


Telematics

- 523 maintenance vehicles are equipped
- Verizon Connect software
- Helps with situational awareness/dispatch
- Snow train location for winter
- Assists in monitoring backlog







May 1 - May 28, 2019
YTD May 1 - May 28

PA Turnpike
Safety Cloud™ Report
Attention: Todd Leiss, John Parker

Driver Totals
Drivers Alerted
2,633
YTD 2,633

Incident Totals
Total Incidents
171
YTD 171
Avg Time On-Scene
15.4 min
YTD 15.4 min

Run Totals
Total Runs
134
YTD 134
Total Responding Time
381 min
YTD 381 min
Avg Time-to-Scene
2.8 min
YTD 2.8 min

Drivers Alerted
Total drivers alerted when vehicle/apparatus is on-scene, based on HAAS Alert enabled applications

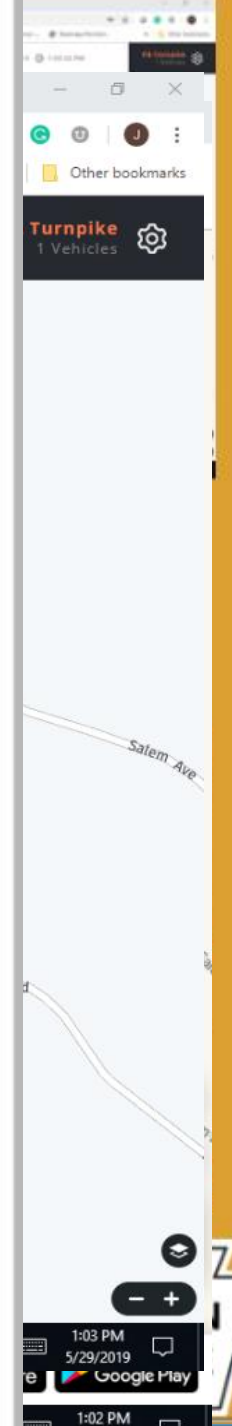
Total Incidents
Total number of times at least one vehicle/apparatus arrived on-scene with lights engaged for 2+ minutes

Avg Time On-Scene
Average time duration per incident

Total Runs
Total times a vehicle/apparatus was dispatched to an incident with lights engaged for at least 1+ minute

Total Responding Time
Total time vehicles/apparatus spent traveling to dispatched calls with lights engaged

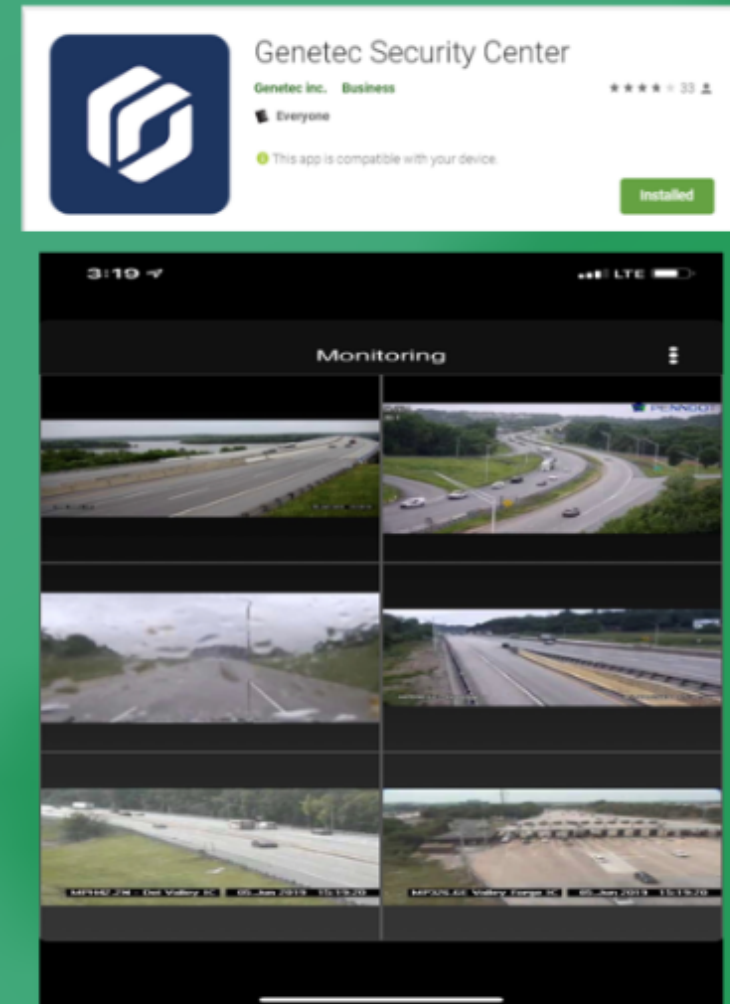
Avg Time-to-Scene
Average time it took for dispatched vehicle /apparatus to arrive on-scene



Staying Connected...

Genetec Mobile

- Android/Apple/Windows Devices
- Live Video Streaming
- PTZ ability
- Playback
- Real-time video streaming from device
- Save Snapshots of incidents
- Up to 6 video streams at once



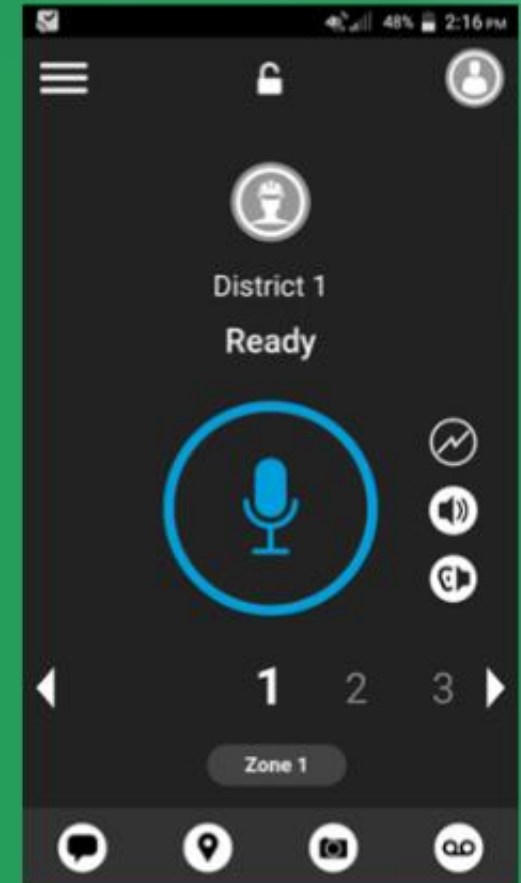
Instant Connect and Enhanced Push-to-Talk

Cisco Instant Connect - Converts Analog Land Mobile Radio Audio to digital data

AT&T Enhanced Push-to-Talk (EPTT)

Smart phone app

Connected to Instant Connect



Future Enhancements to Real Time

- Create an Active Incident Window
- Use of AVL for Backlog monitoring
- Video stream from cellphones - Send a video link directly to the scene
- Link Mobile cameras to mobile app and other apps
- Use of Inrix data for speed reduction during activation



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Senior Traffic Operations Manager

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