Minnesota Department of Transportation

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MNDOT Challenges

COVID Operations

- Department wide lock down until Spring 2021
- Daily symptom check in via phone/web
- Daily supervisor survey
- Curtains around TMC operators
- Wear masks when away from desk.

Challenges:

- Allied agencies
- Employee anxiety
- Lack of information, recommendations, resources

MNDOT Challenges

George Floyd / Civil disturbances

Unprecedented size of crowds and anger.

No law enforcement for freeway response

35W bridge incident

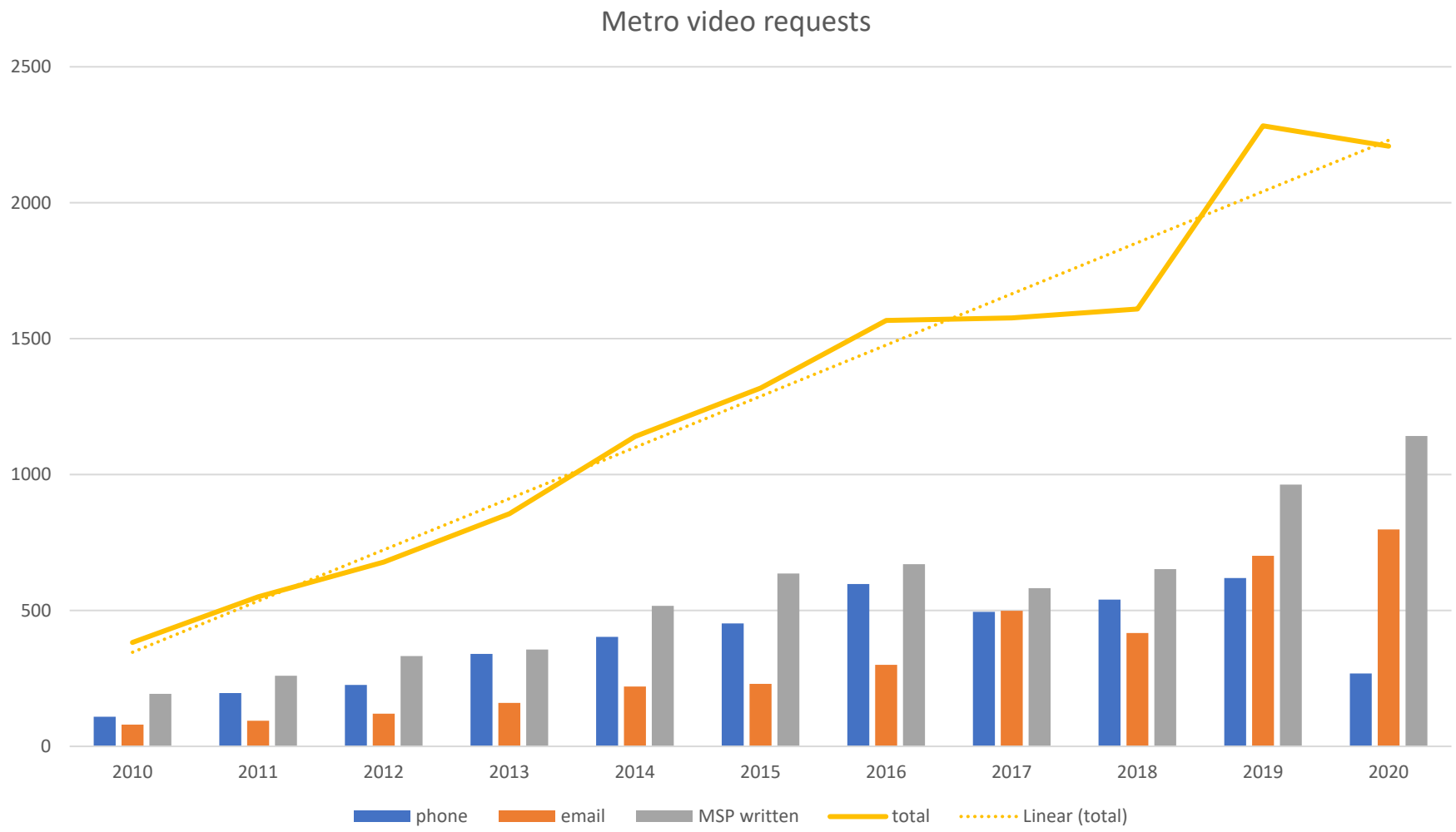
Future:
More proactive with closures (Maintenance)
FSP looking at barrels for unstaffed emergency closures.

Trial in March

MNDOT Challenges

Video requests

- 5% meet
- +Efficiencies
- Web form
- Automation?



MNDOT Successes

Implemented public streaming on 511

2018 Consultant reviewed options / surveyed other states, vendors.

Decided on in-house development.

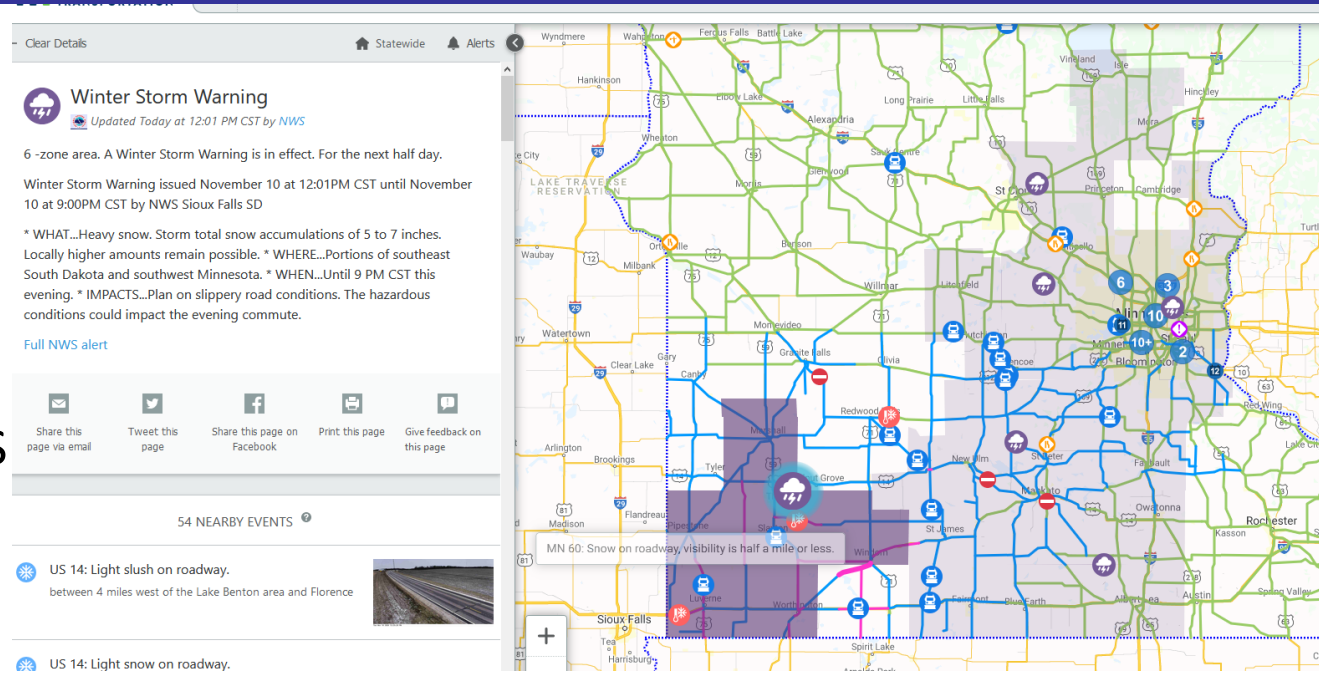
Purchased 20 Wowza licenses & off-the-shelf servers

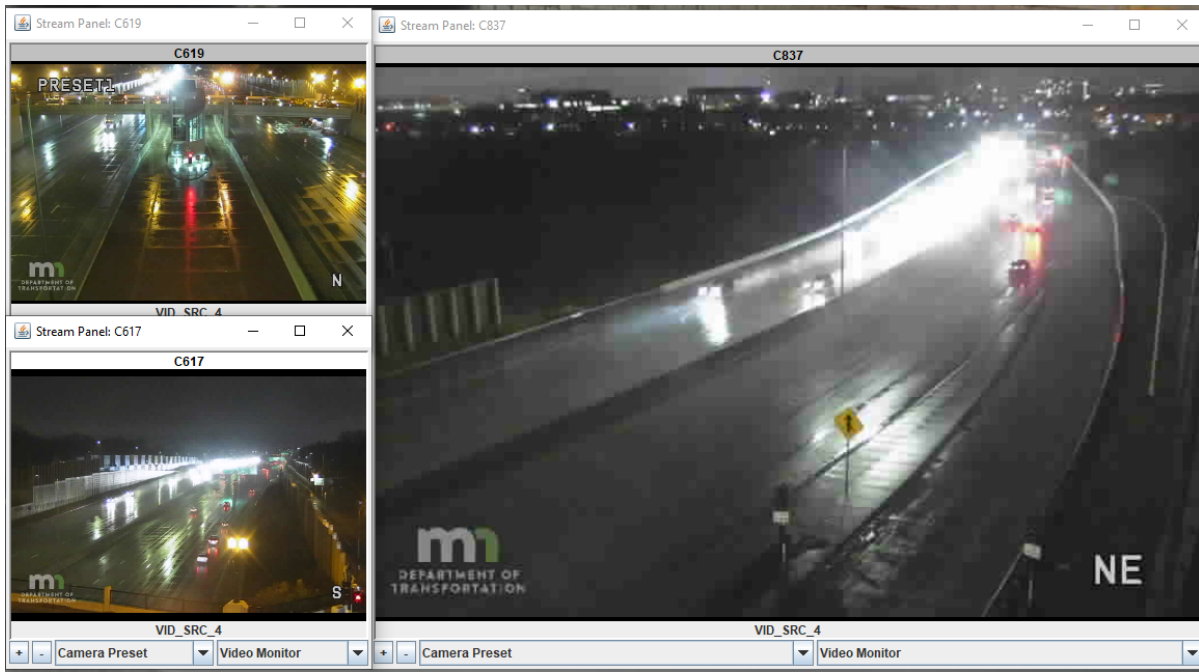
Cost – Approx $250,000 for start up. Ongoing $11,000.

2020 First year operational. Winter will be stress test!

MNDOT other things

- Video multicast issue – Cisco firmware bug
- New 511 website includes MDSS integration & NWS alerts
- IRIS updates –
  - Consulted project to improve in program video viewing
  - Working on web version
  - Weather alerts for messaging.
  - How do you deal with “it’s snowing” messages?





Questions?

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Missouri Department of Transportation

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MoDOT
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MoDOT: Key Issue #1

Title: Mainstreaming TSMO

- Challenge: Turn a TSMO Plan into lasting actions
- Issues addressed: Advancing TSMO, Work Zone Management, Traffic Incident Management
- Action pursued: Created teams in each field, established goals and timeframes, enlisted consultant support
- Results: WZ improvements implemented, grant proposal for WZDx submitted, CAV team created
- Lessons learned: Consultant support and recurring meetings keep progress moving forward. Monthly team meetings with weekly meetings between team leads, Central Office TSMO staff, and consultant.
- Additional information: See attachment

MoDOT: List of Key Accomplishments

- Real-time alerts: MakeWay Safety and HAAS
- DMS retrofit to refresh and convert to color
- Regional Integrated Data Sharing Initiative (RIDSI) in St. Louis metro region
- CCTV management software upgrade- Genetec Security Desk
- Probe data RFP – previous contract in place for 7 years
- ATMS procurement next summer

MoDOT:

Questions?

Contact to obtain additional information:

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North Carolina Department of Transportation

Dominic Ciaramitaro, P.E.
State Traffic Operations Engineer
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djciaramitaro@ncdot.gov

NC DOT: Key Issue #1

Title: Election support to high-profile visits

- ***Challenge:*** As a "battleground state", from July – November, managed 1-3 x visits across the state per week.
- ***Issues addressed:***
  - Secret Service coordination between Cyber team and Motorcade team
  - Safety Service Patrol, Law Enforcement, Regional DOT, and TMC synchronization and sharing of knowledge
  - Rolling roadblocks and lane closures, reverse lane travel, work zone closures
- ***Action pursued:***
  - Early and overcommunication between Incident Management Coordinator, Ops Manager, State Traffic Operations Engineer, and regional POCs
  - Developed consolidated message template
  - Dedicated staff to monitor message boards, camera management, and motorcade coordination
- ***Results:*** Coordinated 22 x visits from July – November 2020
- ***Lessons learned***:
  - Latter visits became more difficult to sync (greater # and less lead time)
    - Develop a solid SOP early with clear roles
  - Expect confusion and contradictory information
    - Strive for clarity, and over communicate
  - Coordinate immediately (upon notification)
    - Details will likely change, but will help when managing multiple visits
  - Different Protocols among VIPS
    - Level of effort ranged from significant to minimal depending on the VIP

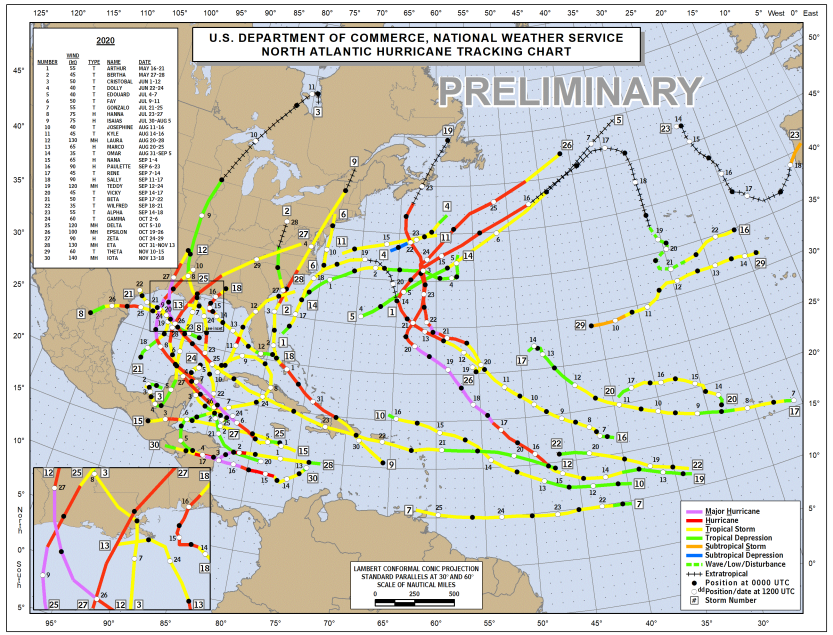
All,

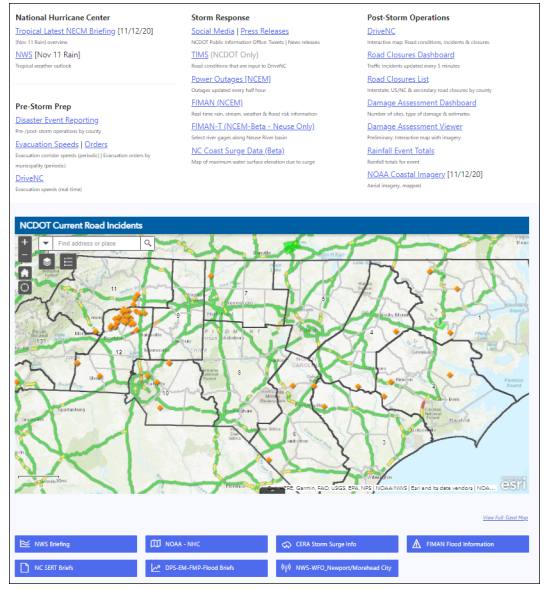
President Trump is visiting Charlotte and Gastonia on Wednesday 10/21. Some key details are currently unknown – if they become available, I will advise this group. Below are the known details related to the visit and MRTMC/STOC's response:

- **Date:** Wednesday 10/21
- **Timeline:**
  - Precise timeline is currently unknown
  - Between 3pm and 4pm, POTUS should land at Charlotte International Airport (CLT) and take motorcade to Gastonia Municipal Airport
  - Between 5pm and 6pm, POTUS should take motorcade back to CLT for take-off.
  - **NOTE:** Rally and motorcade activity may extend later into the evening – 10pm, potentially. Until all IMAP and motorcade activity is complete, MRTMC staff will remain on-duty and take point on response for this event.
- **Venue:** Gastonia Municipal Airport
  - 1126 Gaston Day School Rd, Gastonia NC 28056
- **Routes (expected):**
  - CLT to Gastonia Airport: Billy Graham Pkwy to I-85 South to S. Main St/Red Bud Dr (Exit 22) to East Hudson Blvd to Union Rd to Gaston Day School Rd to Venue
  - Gastonia Airport to CLT: Gaston Day School Rd to East Hudson Blvd to Red Bud Dr to I-85 North to Billy Graham Pkwy to CLT.
- **IMAP & Motorcade:**
  - 4 Metrolina IMAP units will support the motorcade to/from the Venue
  - VIPER Talkgroups:
    - It is currently unknown if IMAP will use a different event talkgroup while supporting the motorcade
    - The talkgroup used by motorcade personnel (SHP/LE, etc.) is currently unknown.
- **MRTMC/STOC Response:**
  - MRTMC will take point on this event – STOC will monitor activity and provide support as needed
  - Monitor motorcade progress via CCTV and VIPER Talkgroups
  - No TIMS or other Alerts will be issued.
  - DMS/CMS will not be used to advise of the motorcade.
  - DMS/CMS will be used to advise of "SLOW MOVING TRAFFIC" or "STOPPED TRAFFIC AHEAD"; these will be activated downstream from slow roll operations and after the motorcade passes each sign.
  - All DMS/CMS in area must be reviewed constantly to ensure "rogue messages" are not activated by hackers.
    - **PAY SPECIAL ATTENTION TO CMS – EVEN IF THEY'RE NOT ALONG THE MOTORCADE ROUTE**
  - Mini-Updates about the motorcade will NOT be sent until after the motorcade returns to CLT.
    - MRTMC will advise STOC when motorcade activity is complete. STOC will send the final Mini-Update.
- **Other Notes:**
  - SHP is not aware of any planned protest activities; some protest activity may occur at event venue but SS will keep route clear.
  - **Public-facing streams/images for all CCTV along motorcade route will be deactivated until event concludes.**
    - **STOC will still be able to view and control these cameras.**
    - Jim Chavis and Chris Revell will disable the public video streams.
    - Tyler Minnick will disable the cameras in TIMS.

NC DOT: List of Key Accomplishments

- Not just COVID response and Remote Operations
  - Civil unrest
  - 2020 Election VIP support
  - Highly active Hurricane / Tropical Storm season (first response in May w/ TS Arthur)
- NCDOT Cash Flow and COVID-19 Impacts Crisis Impacts
  - TMC Contract cuts
    - Moved NC DOT Customer Service Center to Women's Prison
  - TMC Contract and Regional TMCs cuts…again
  - DOT Furloughs
- Implemented State's first integrated corridor response to support a work zone
  - Deliberate response plans
  - Coordinated and pre-planned signal system timing
  - Supporting pre-planned message sets
  - 3 x additional corridors in next quarter
- NC DOT Secretary Dashboard for Severe Weather Events
  - DriveNC
  - Evacuation Speed Report
  - Road closure Report
  - Image management
- Awarded FHWA STIC funding for Waycare pilot (pilot planned to start early 2021)
- Preparing for state's first ATMS





North Carolina Department of Transportation

Questions?

Contact to obtain additional information:

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Ohio Department of Transportation

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SmartLANE

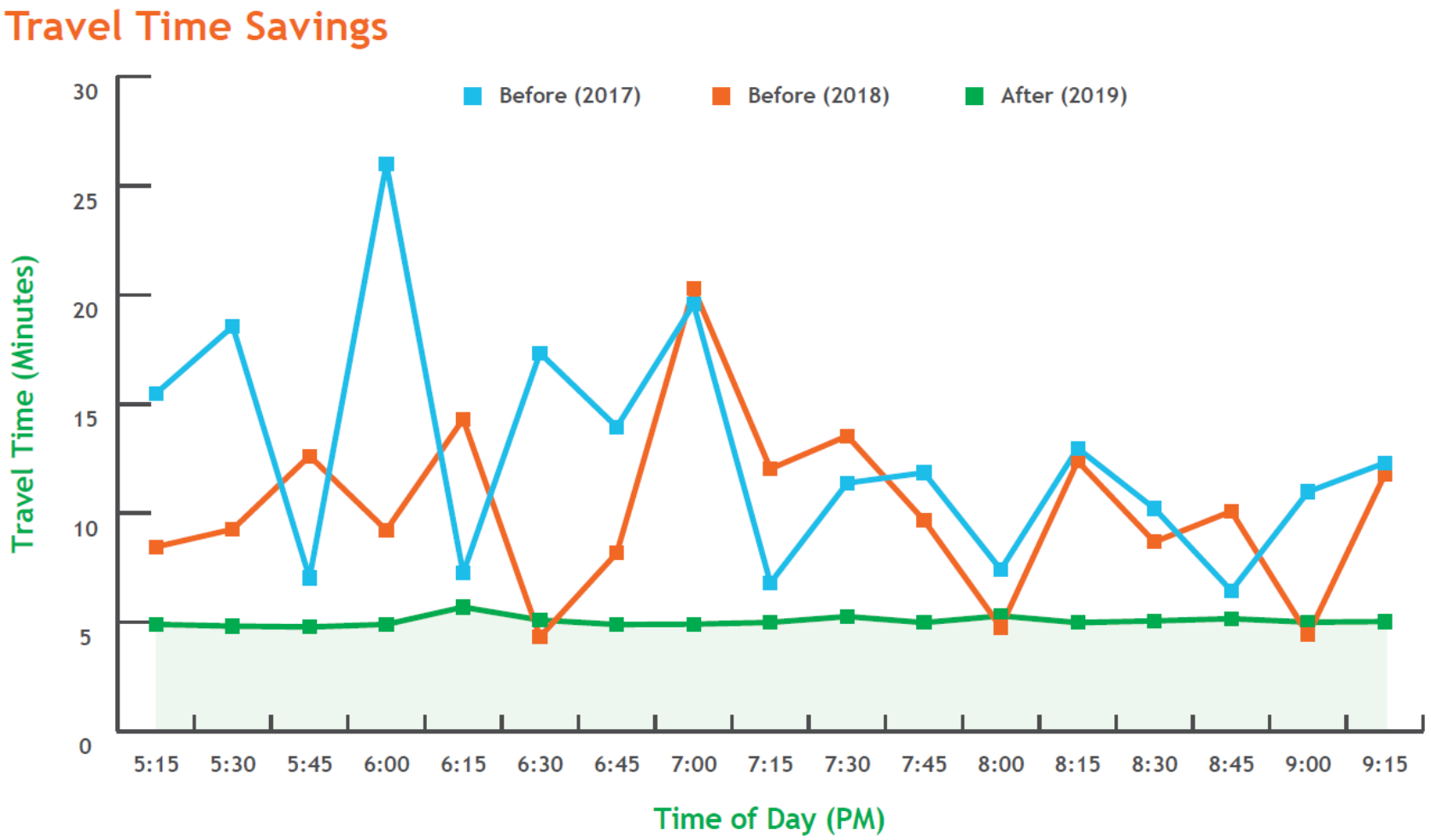
- Improve Travel Time Reliability on Eastbound I-670 between Downtown Columbus and I-270

SmartLANE

- Introduced Hard shoulder running on October 23rd, 2019

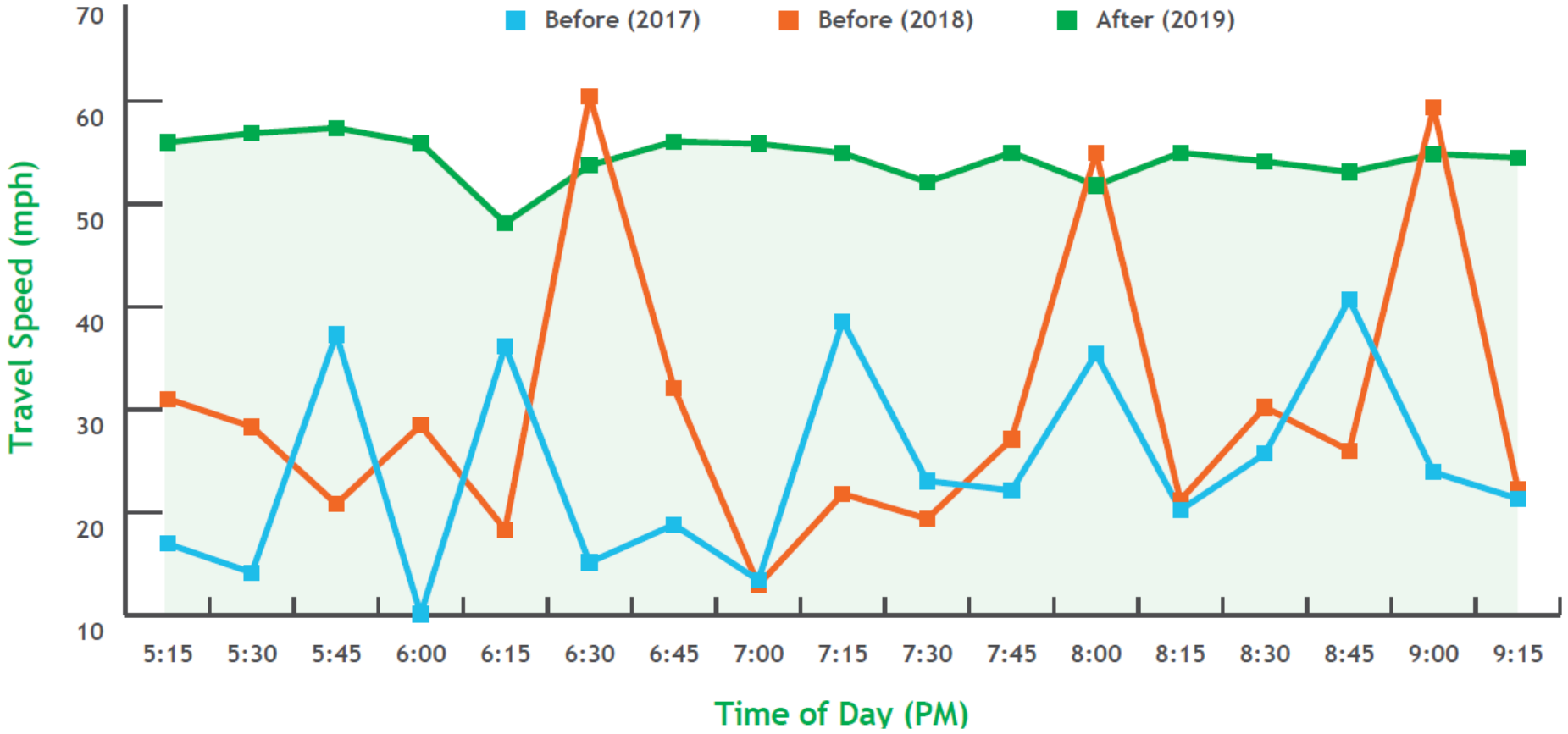
SmartLANE

- Much improved TTRI along smartLANE corridor



SmartLANE

More Predictability

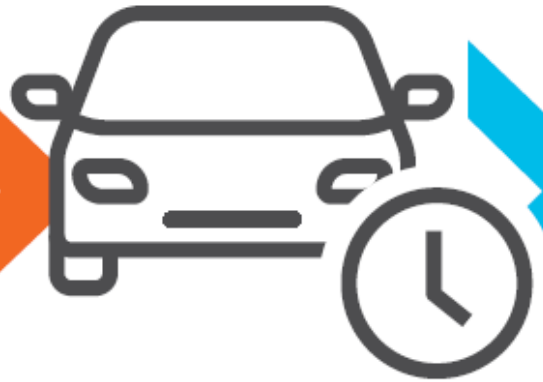


Results

TRAVEL TIME RELIABILITY

Before

A daily trip that varied between 10 and 20 minutes on average



After

A consistent 5-6-minute daily trip

Lessons Learned

- Traffic congestion in the corridor has probably as much to due with traffic coming from entrance ramps as it does volume (Volume is not the only cause for congestion)
- It is used for more than just congestion (crash response, roadwork, used as a VSL corridor for weather)
- Open the lane before you need to. Don't wait for the congestion. If you do, its too late.
- Don't rely on sensors / analytics. They are useful, but the eye doesn't lie!
- Debris not as big of an issue as originally thought. Daily use of an ODOT sweeper not needed. An FSP sweep typically suffices in conjunction with a camera sweep of the smartLANE.

https://www.transportation.ohio.gov/wps/portal/gov/odot/programs/tsmo/case-studies/tsmo-case-study-i-670

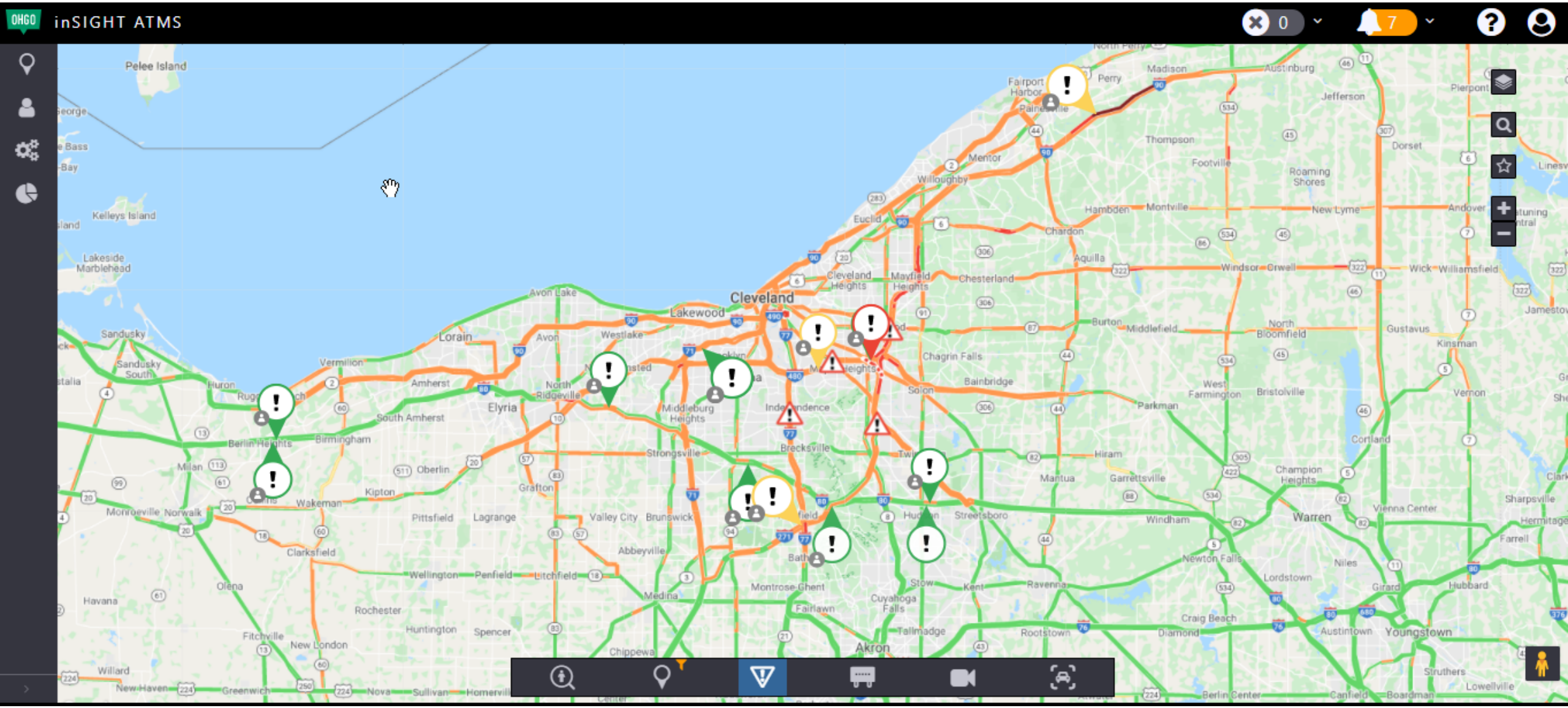
https://ohgo.com

Ohio Department of Transportation: List of Key Accomplishments

- New Traffic Management Center
- New position (TMC Specialist)
- Opening of smartLANE
- Transitioned to remote operations due to COVID-19
- Procured and implemented new ATMS

Procurement and Implementation of new ATMS

OHGOInsight



Questions?

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Pennsylvania Department of Transportation

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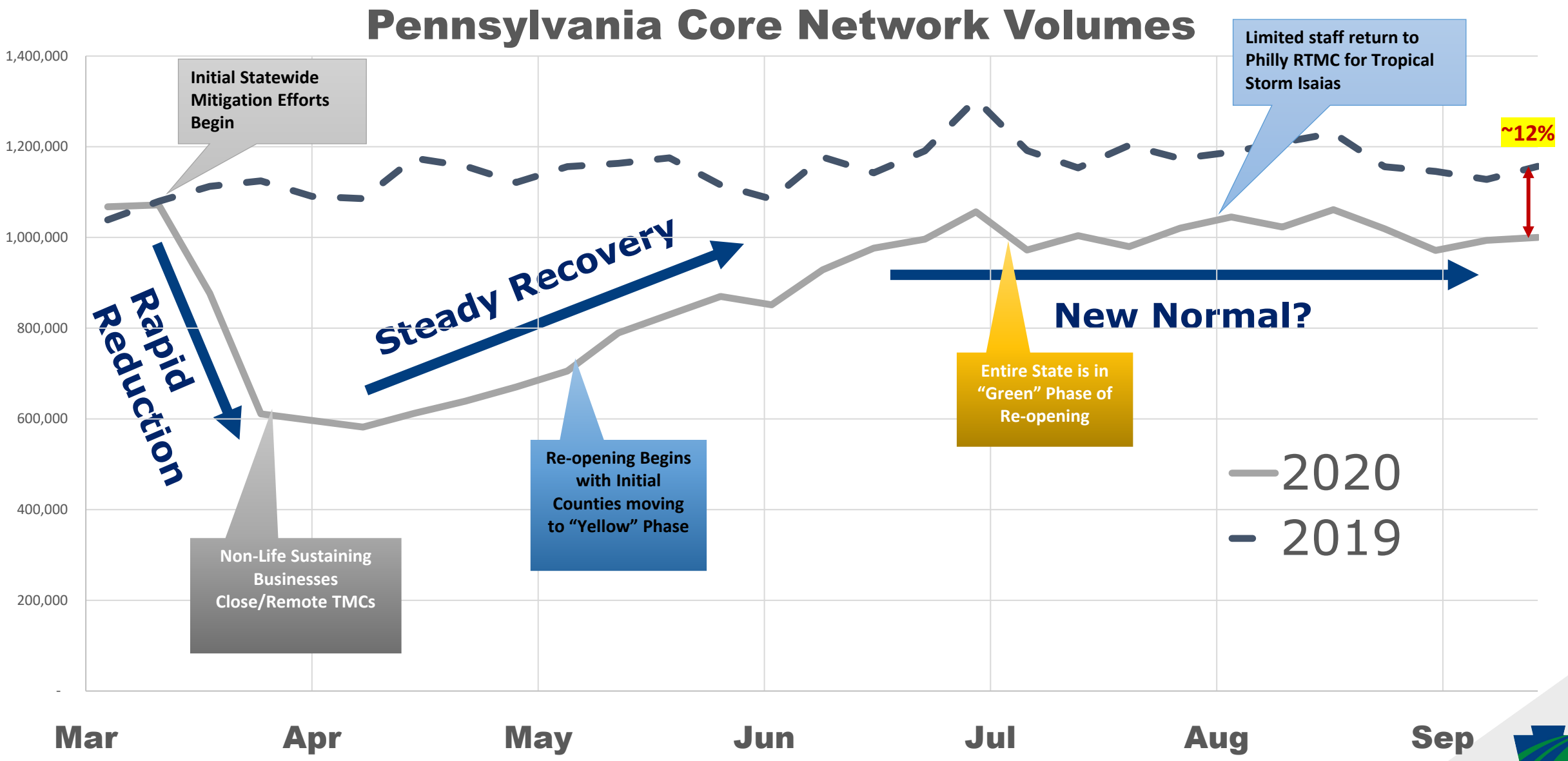
TSMO PERFORMANCE CHANGES TO BUSINESS

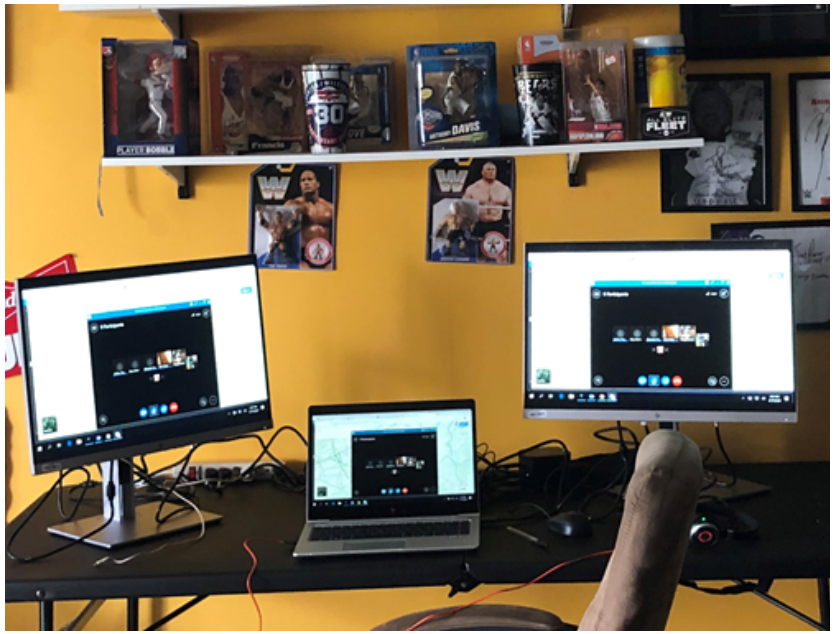
- COVID Impact – Remote TMC Operations
- COVID-19 Impact Study – TMC Operator Time
- Pennsylvania Congestion Pie Chart – ITS Planning
- Queue Protection Messaging/Smart Work Zones – Virtual HAR and Probe Based Queue Protection

LEARNING FROM COVID-19



KEYS TO SUCCESS

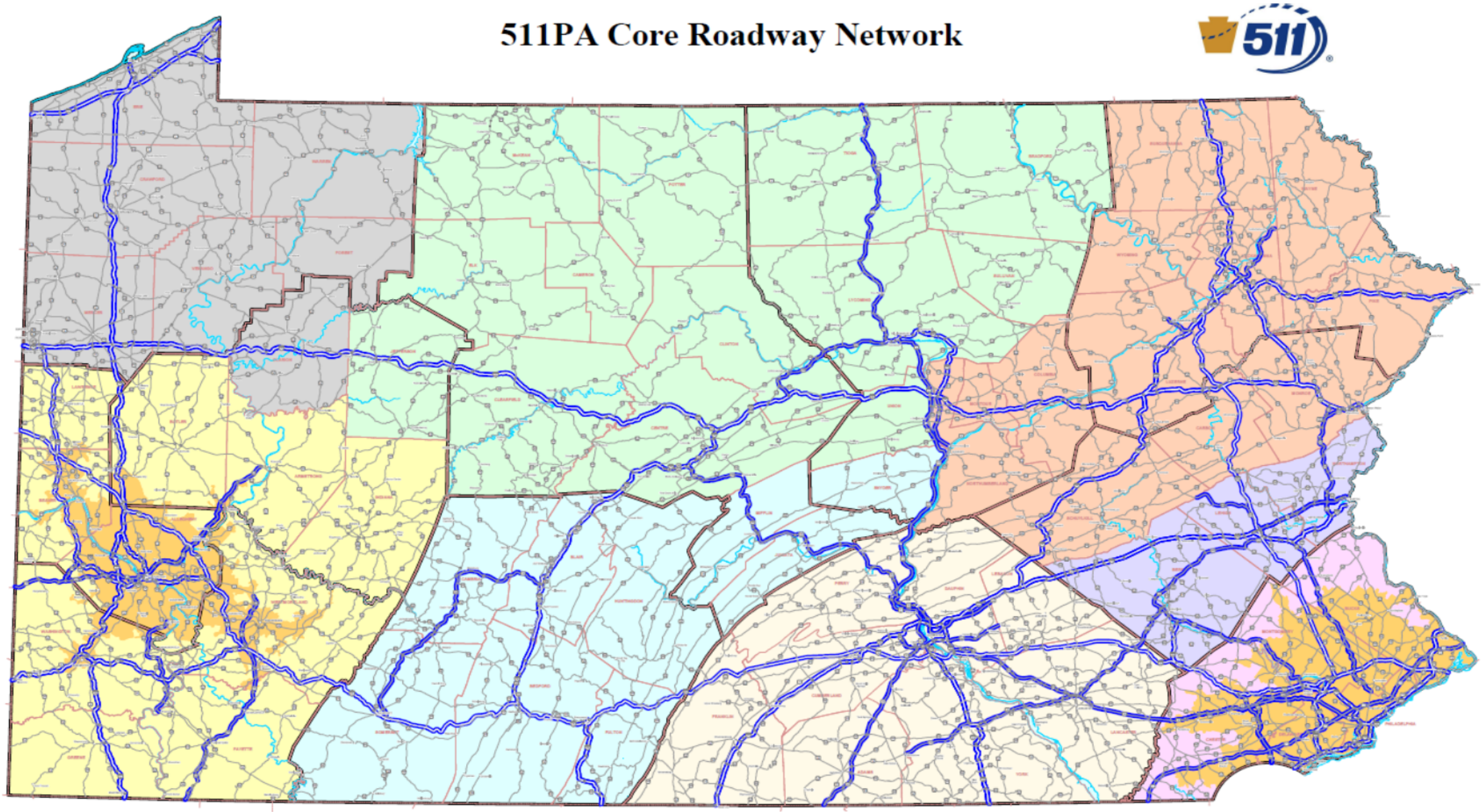
- IT support and coordination:
  - Virtual Ops Systems with Statewide Connectivity (ATMS, RCRS, Genetec, Incident ID)
  - TMC only VPN
  - Laptops, dual monitors and other equipment distributed (53 operators)
  - Skype TMC call centers created
- Skype and Teams 24-hour meetings for operators
  - Teams TMC team includes all TMCs
- TMC Operator survey
- Support and cooperation between all TMCs
- Weekly statewide check-ins
  - STMC, 4 RTMCs, 3 DTMCs



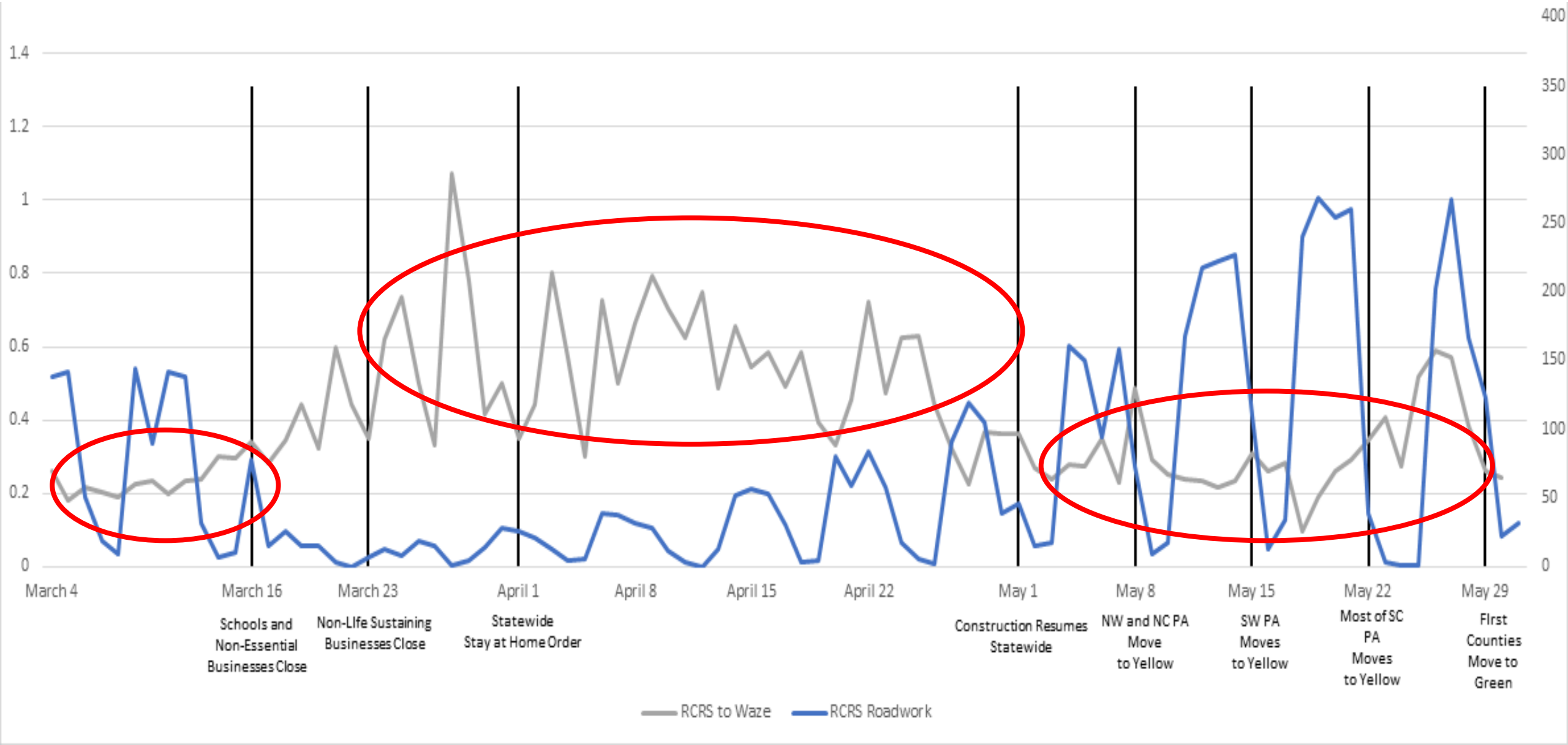
TSMO ANALYTICS DATA

- Crash Records
- Road Condition Reporting System
- Weather Stations
- Maintenance Database
- Traffic Counter/Weigh in Motion
- ATMS DMS Message History

ANALYSIS ON PENNSYLVANIA “CORE NETWORK”



LEARNING FROM COVID-19 - TMC TIME



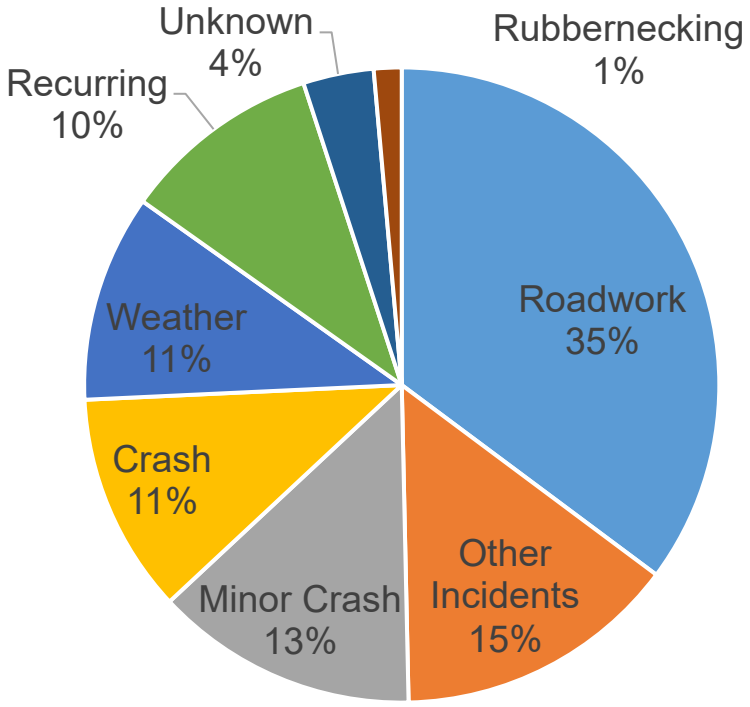
LEARNING FROM COVID-19 - TMC TIME

- Designing a **Mobile App** that allows In-Field Entry and **Activation of Roadwork**
  - “Workers On-Scene”
  - Internal and External Partners

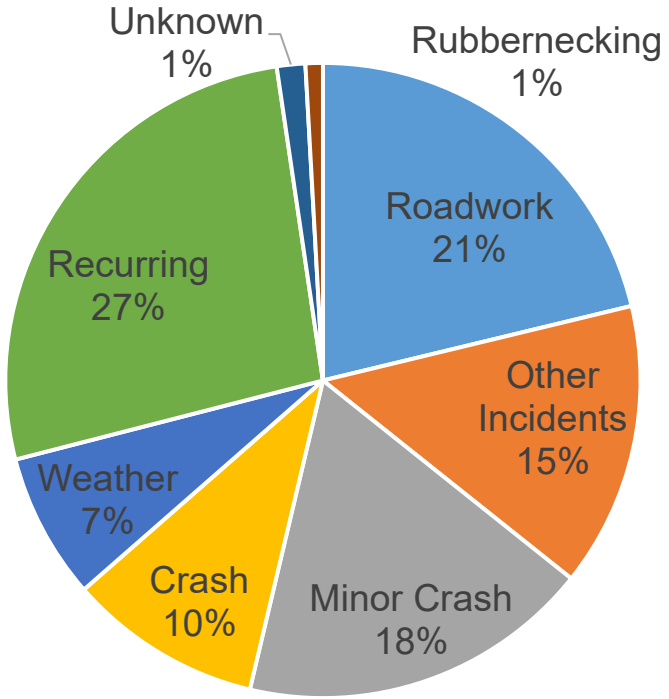
- **Proactive Traffic Management** in TMCs

2019 CONGESTION PIE CHART

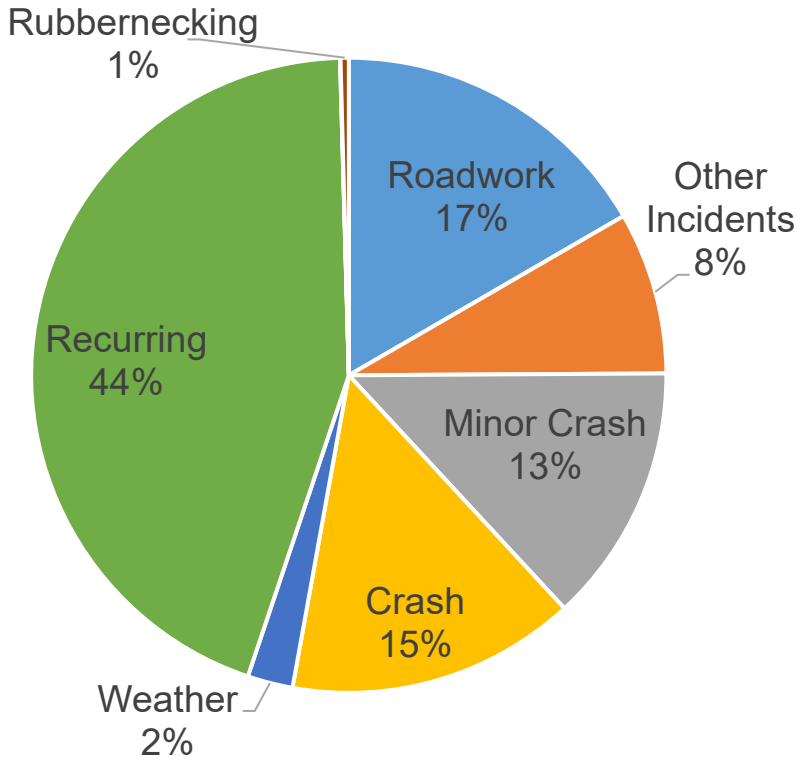
Pennsylvania



Philadelphia Metro



I-95 in Philadelphia



CONGESTION SOURCES DEFINED

Crash: Reportable crash from the Crash Record System (CRS)

Minor crash: Non-reportable crash from RCRS or Waze

Other incident: Non-crash traffic hazard from Waze (i.e. car stopped on shoulder, hazard on roadway)

Roadwork: RCRS roadwork, PennDOT Maintenance Database, or Waze Roadwork event

Weather: RWIS Heavy rain, any kind of snow, and/or snow covered, icy, or wet (with temperature below freezing) roads, or Waze weather event

Recurring: Congestion in which the speed drop is not more than 10% greater than the historical average speed drop for that day of week/time of day

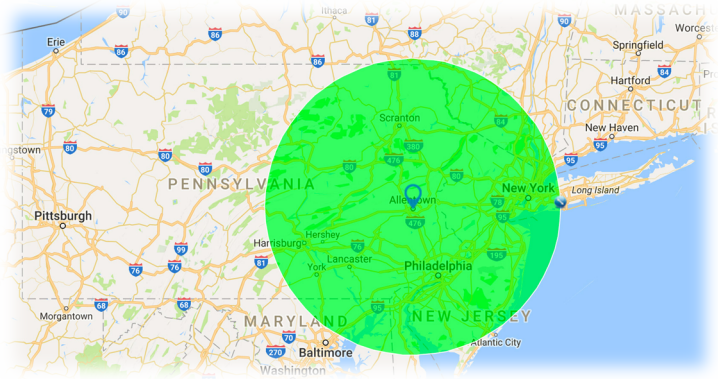
Rubbernecking: Any identified congestion pie chart incident is linked to one side of the road, and no incident is correlated to the other side of the road, and that opposite side still experiences a speed drop above historical norm (>10%)

Google – PennDOT TSMO

VIRTUAL HIGHWAY ADVISORY RADIO

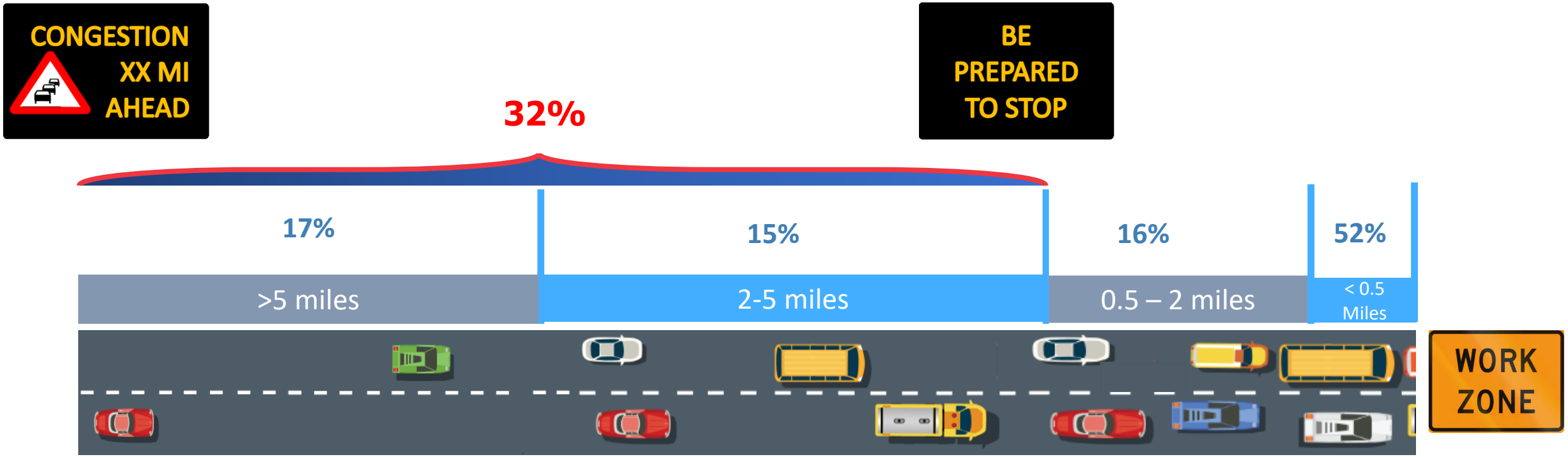
ATMS

- **511PA Website** with voice
- IVR – **Priority Floodgate**
- Geofenced **DriveMode Voice Alert**
- Geofenced **Push Notifications** with voice



SMART WORK ZONES WITH PROBE DATA

- **924 work zone** congestion crashes in 2019
  - 5 fatalities
  - 657 total injuries



Questions?

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Tennessee Department of Transportation

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Tennessee Department of Transportation
Key Issue #1

Title: Integration of Statewide ATMS – Active ITS (SwRI)

- Challenge:

  Implement a standard ATMS platform at four Regional TMCs, integrating multiple separate software systems to standardize and streamline operations

- Issues addressed:

  Several systems – LocateIM, CCTV control, a mixed bag of tools that required repeated data entry.

  Customization of software – Addressing Operational differences (mode 1 single point data entry versus mode 2 multi point data entry)

- Action pursued:

  Several Operational “Dry Runs”

  Regular meetings and input from Regional Operations

- Lessons learned:

  Dry Runs highlighted operational issues that didn’t come up in the initial scope

Tennessee Department of Transportation
List of Key Accomplishments

Integration of New Central Software In TMCs.

Predictive Analytics Research (Ongoing).

Cisco 829 Routers installed into all HELP vehicles (Service patrol)

I-24 Smart Corridor on track

- Pairs 28 miles of I-24 with TN SR 1 which runs parallel East of the Interstate and several connector routes
- Emergency Pull offs and Roadside DMS in place; Overhead Lane management, Ramp Metering and optimization of signal plans to come
- Operational and Technical TAC meetings are being held with Local municipalities and 1st responders)
- This is a change how TMCs will operate in Tennessee as we develop corridor management

Tennessee Department of Transportation

Questions?

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Utah Department of Transportation

Lisa Miller
Traveler Information Manager/Outreach and Growth Manager
UDOT
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Utah DOT: Key Issue #1

Title: Integrating new data types

- Challenge: Legacy software, cost, streamlining for operators
- Issues addressed: Ad hoc integration
- Action pursued: New control room software
- Results: In progress!
- Lessons learned: Software/system inventory with SME's is helpful

Utah DOT: List of Key Accomplishments

- Completed preliminary research and RFP documentation for new control room software
- Funding for new software in progress
- Switched from iPeMS to Clear Guide
- Completed Phase 1 of the Panasonic Data Ecosystem Project, starting Phase 2
- Remodeling UDOT Traffic website
- Remodeled 511 phone line

Utah DOT:

Questions?

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Washington Department of Transportation

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Washington Department of Transportation

- Key Issues
- Key Accomplishments

- Contact Information

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Wisconsin Department of Transportation

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Wisconsin TMC
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WisDOT: Key Issue #1

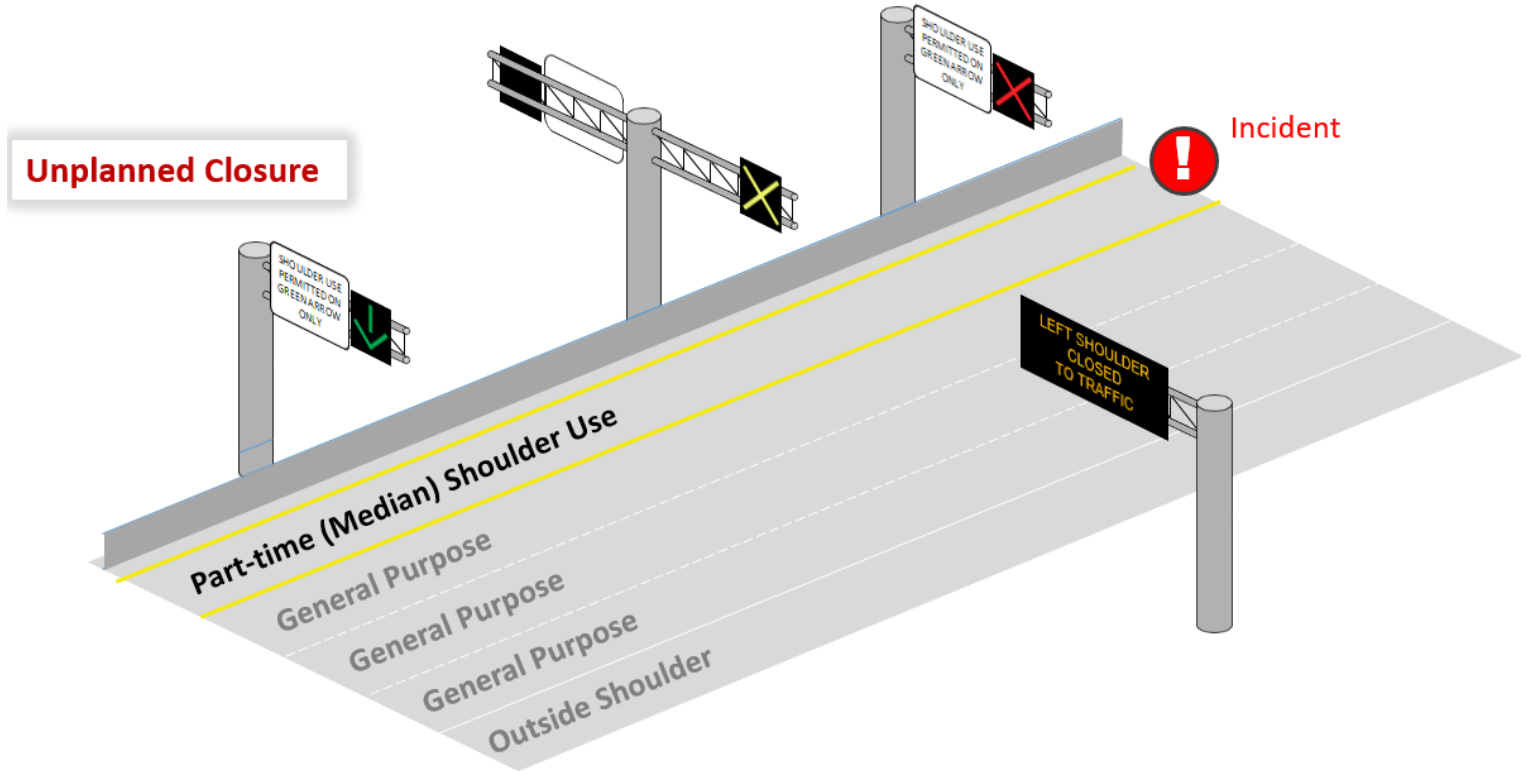
Title: Oversight of Wisconsin TMC Control Room Operators

- **Challenge:** Wisconsin State Patrol managed TMC control room operators since early 2018.
- **Issues addressed:** Desire to bring back traffic engineering principals into the control room and to maximize the utilization of the Wisconsin ITS infrastructure investment.
- **Action pursued:** A consultant report gathered feedback from region management and traffic and maintenance staff who interact with the control room and recommended the return to engineering oversight for control room operators. Used MN MOU as a guide to define roles and responsibilities.
- **Results:** WisDOT Bureau of Traffic Operations resumed management on Sept. 8, 2020 of control room operators.

  Lessons learned: Co-location of the WisDOT TMC has had many benefits in communication which will continue, but day-to-day traffic management is dynamic, complex and requires judgement and oversight beyond standard operating procedures.

WisDOT: List of Key Accomplishments

- Traveler Information Improvements – website, mobile app and phone system
- Dynamic Part Time Shoulder >> Madison Beltline US 12 in design
- Smart Work Zone Devices and waiting for SWZDI grant award announcements
- CV Pilot Project - Just finishing Phase 1
- TMC Facility – UPS upgrade and ongoing data migration
- COVID-19 unique operations and challenges



Questions?

Contain to obtain additional information:

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Indiana Department of Transportation

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Aging ATMS Software Platform: Key Issue #1

Title: Aging ATMS Software

- Challenge: Updating to a new software without losing key elements of existing system
- Issues addressed: Reviewed multiple existing packages
- Action pursued: Development of open source software with web-based interface and retain functionality of existing system
- Results: INDOT in the process of updating the MN open source code for IRIS
- Lessons learned: Regardless of package selected, integration and deployment still a challenge
- Additional information:
  - Currently deployed camera control
  - Finalizing updates to DMS control, Travel Times, Roadway Event Manager, CARS integration and Variable Speed Limits.

Indiana Department of Transportation: List of Key Accomplishments

- In process of deploying new ATMS software
- Deployed a new traffic signal central system, in process of establishing communications integrating operations into TMC operations
- Expansion of INDOT's device footprint statewide, in 2nd year of a 5-year deployment that will bring cameras to all interchanges and DMS to most.
- In process of integrating new web tools developed in research program into daily TMC operations (majority based on probe data)

Questions?

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