

Modernizing Lane Reservations in PA

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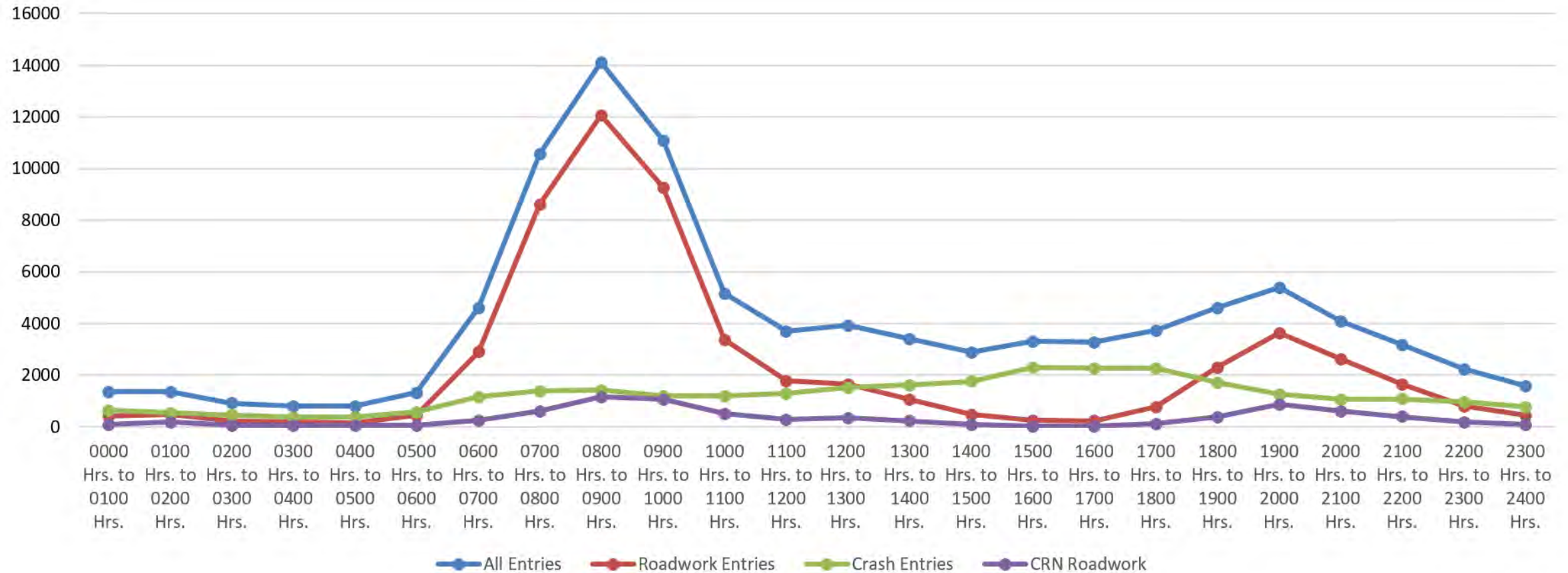


Yearly Work Zone Entries

CAUSE	ALL ROUTES	CORE NETWORK ONLY
ROADWORK	27,635	11,866
MOVING ROADWORK	6,239	4,325
UTILITY WORK	5,114	590
TOTAL	38,988	16,781



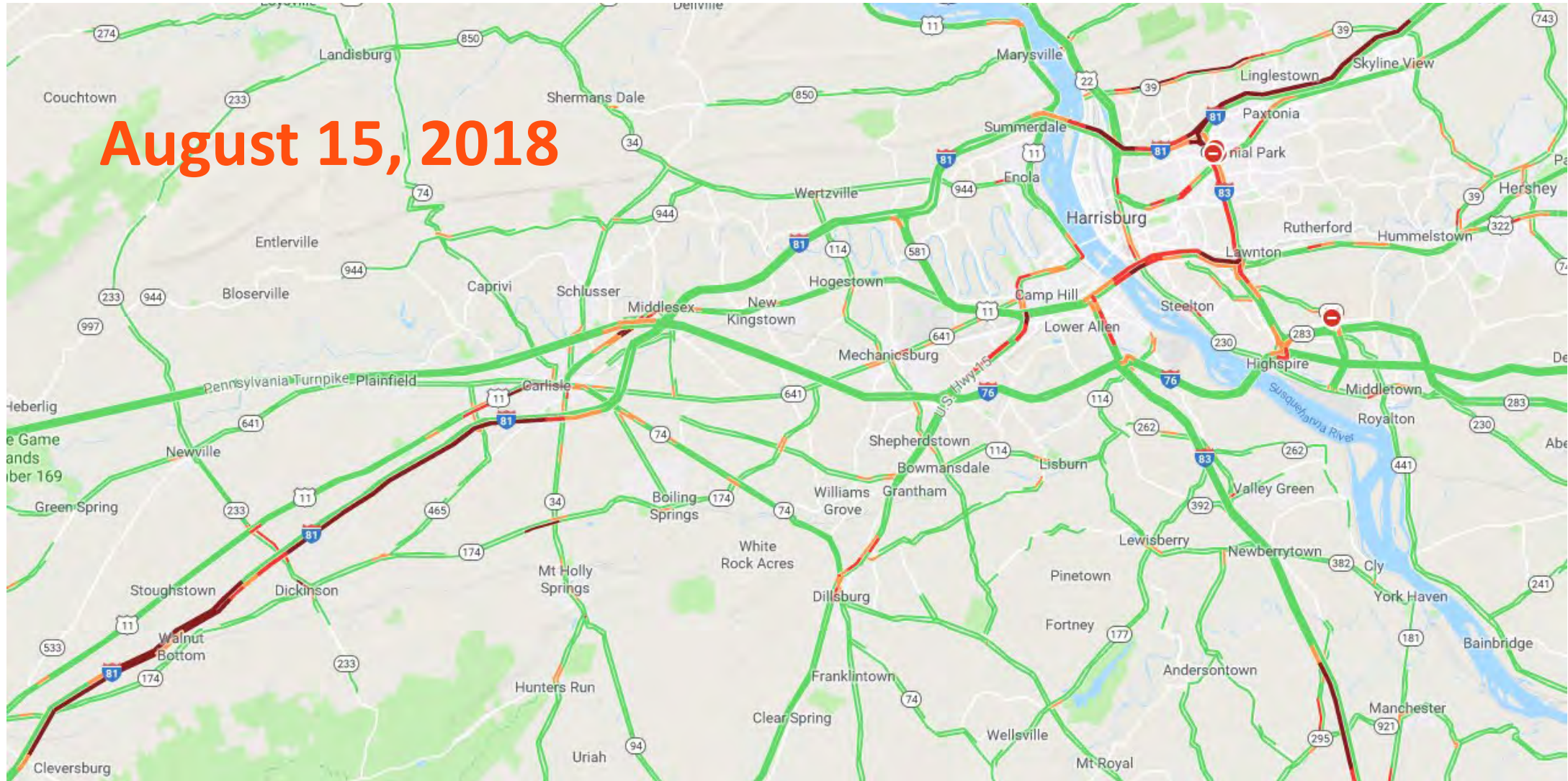
RCRS Entries by Hour





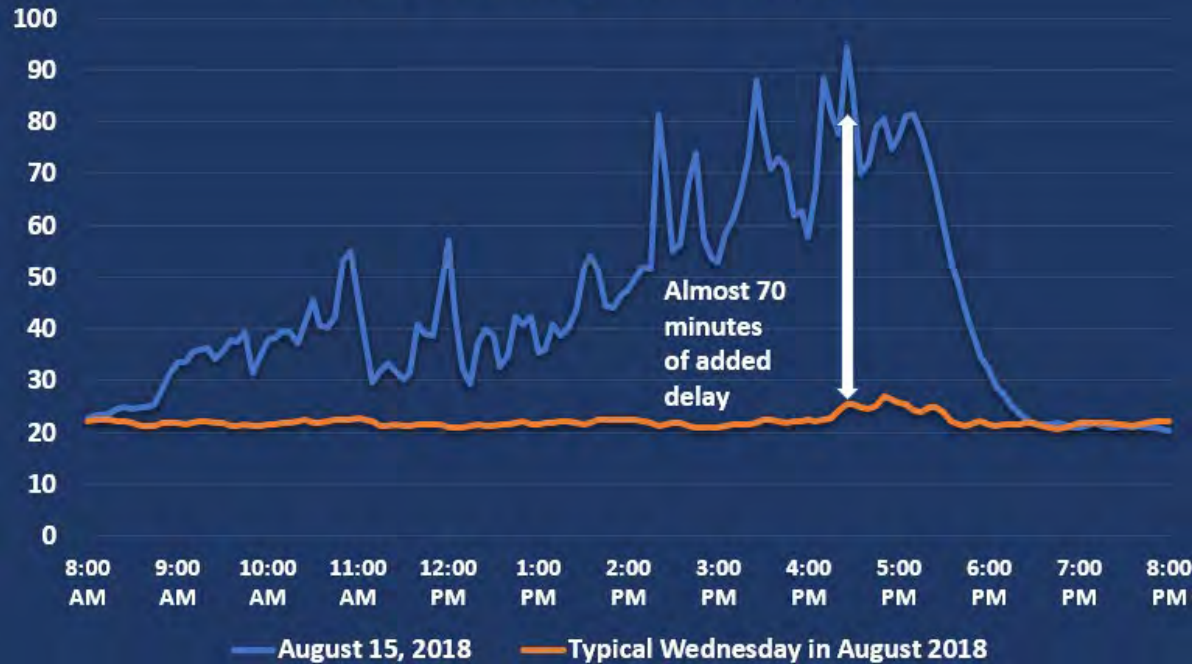
Conflict Monitoring Needs

August 15, 2018

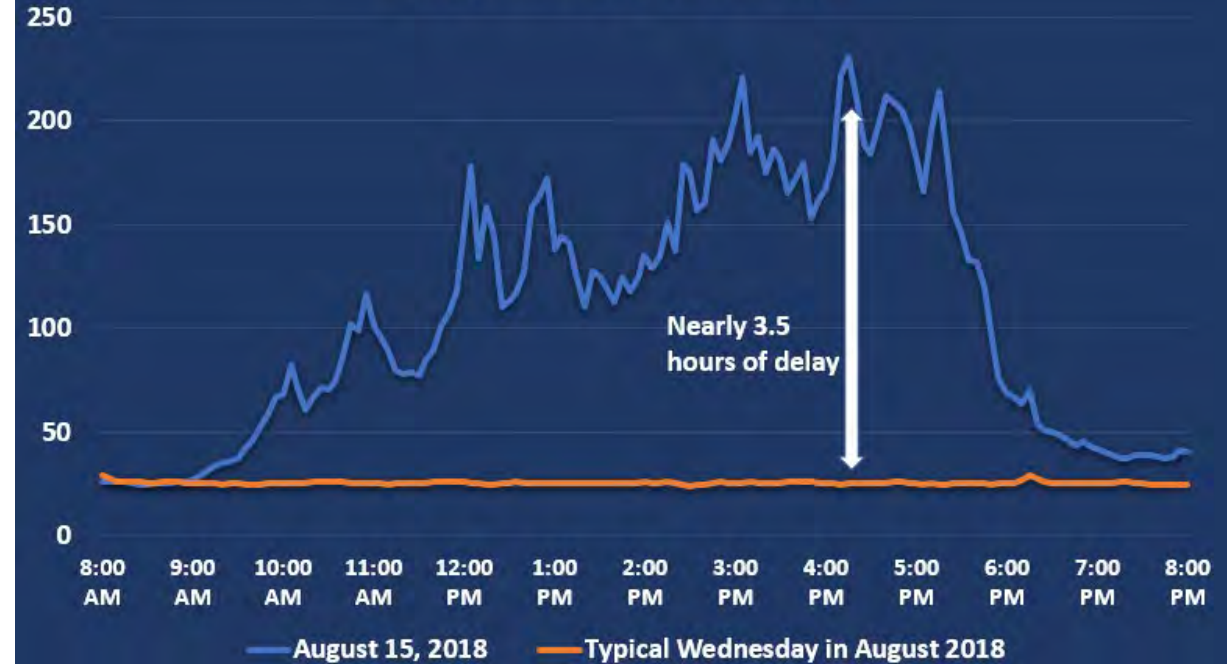


Need for a System

**I-81 SB Travel Time (Minutes)
I-78 to George Wade Bridge**



**I-81 NB Travel Time (Minutes)
Shippensburg to Carlisle**



Project Goals

- Reduce work zone conflicts
- Reduce work zone congestion
- Improve work zone/general traffic safety
- Share work zone/incident data effectively
- Improve navigation and traveler decisions



Flagger Safety

Crim

Pickup driver intentionally hit PennDOT worker in Cumberland County, then fled: police

Updated: Apr. 13, 2022, 6:28 p.m. | Published: Apr. 13, 2022, 1:40 p.m.



Advertisement

A PennDOT worker on Rich Valley Road was 'intentionally' hit by a pickup truck like this around 10:50 a.m. Wednesday, according to officials. Anyone in the area with surveillance cameras that may have captured the vehicle, or who has information on the pickup, should call police. Photo provided by Silver Spring Township Police.



1,868
shares

“Pennsylvania has seen an increase in work zone intrusions especially as the public transitions into a post-pandemic environment. Of greater concern lately to the Department is the safety of its flaggers providing positive guidance to road-users approaching and navigating active work zones”

“PennDOT flagger was intentionally struck by a motorist who was disgruntled by being inconvenienced because an active work zone.”

Source: PennLive



Flagging training

Bureau of Operations

FLAGGING HANDBOOK



Flagger's Duties



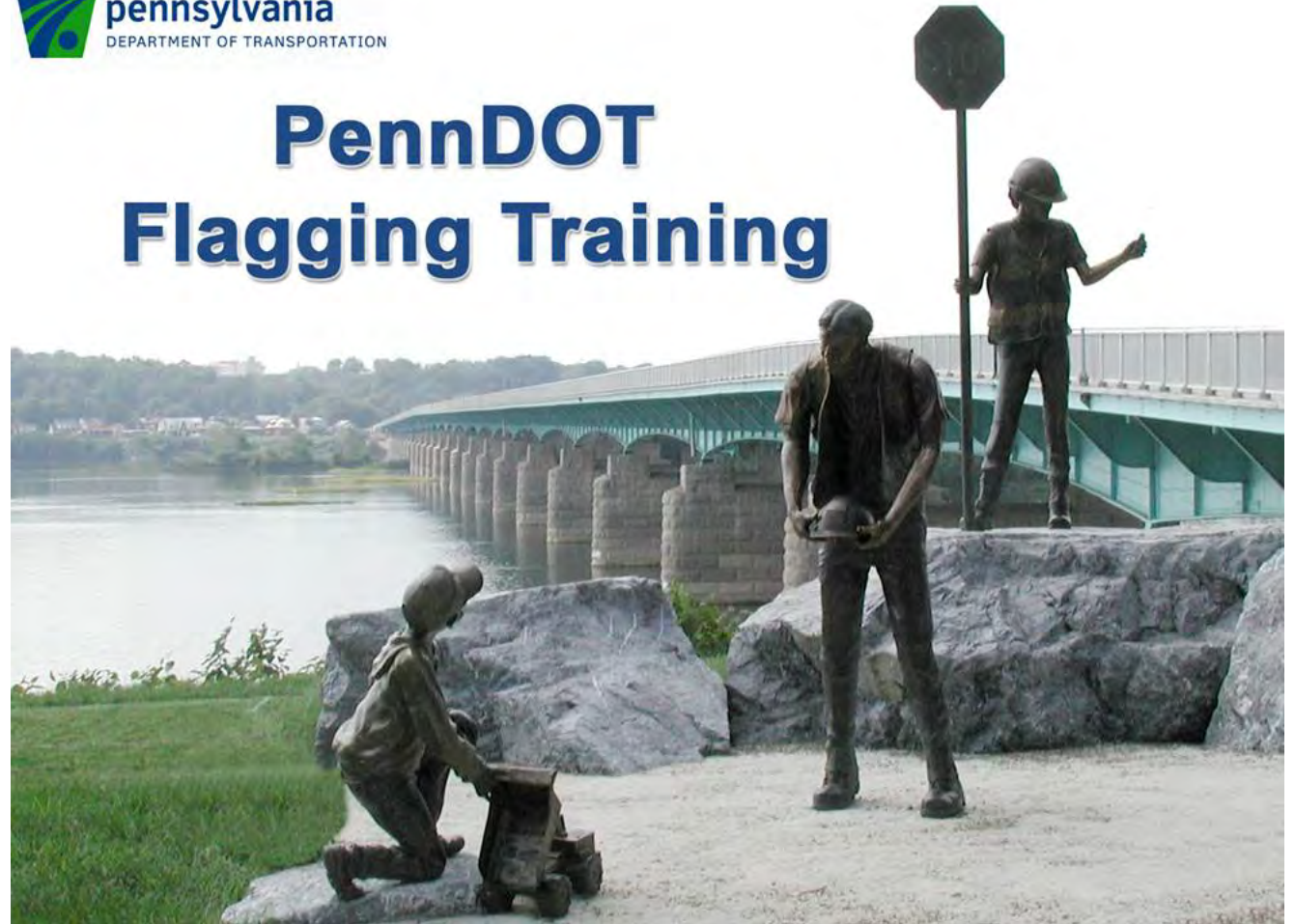
In Position

Ready to
Control Traffic

Attentive



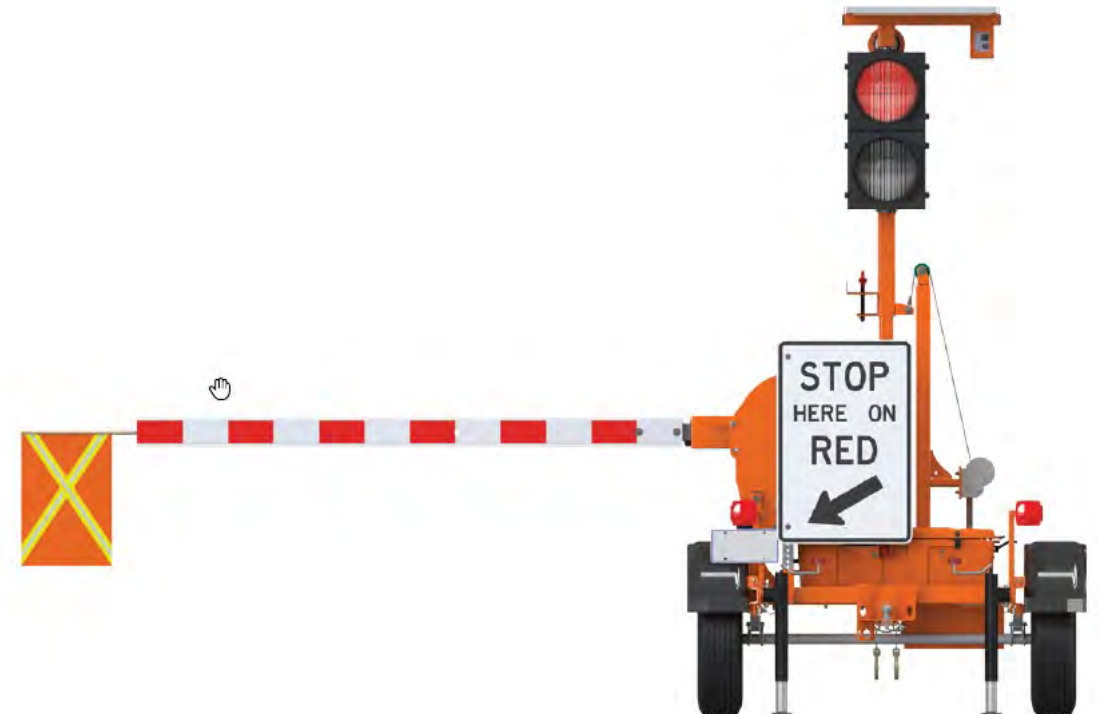
PennDOT Flagging Training



AFADS Demo and Training



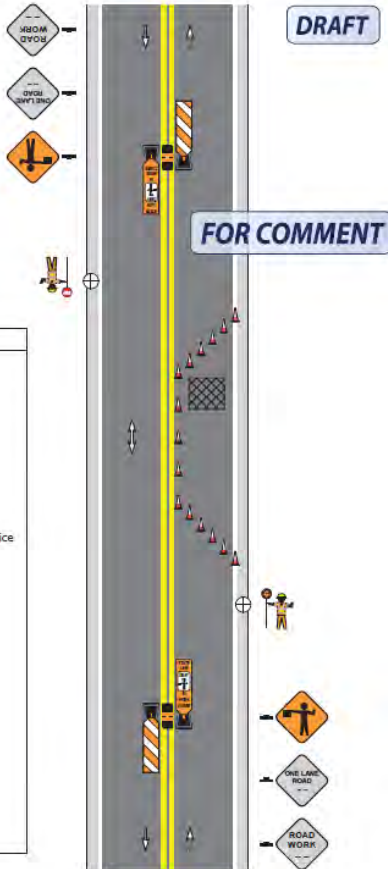
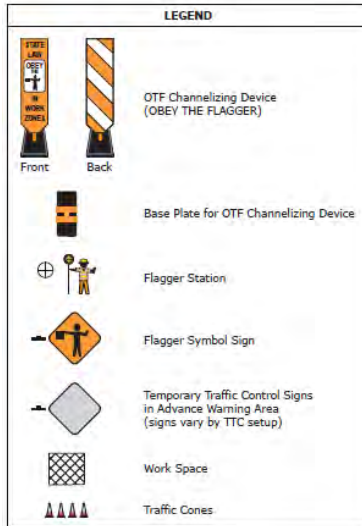
PennDOT's vision for work zones will continue to be "Safety and mobility". By using innovative technology including AFADS, this will ensure the Department's continued commitment to work zone safety



Placement Plan For OTF Channelizing Devices (OBEY THE FLAGGER)

NOTES:

1. OTF channelizing devices are two-sided vertical panels with a rubber base plate. Front and Back sides are displayed within the Legend.
2. Utilization of OTF channelizing devices is optional. If used, one device shall be installed per flagger station. Place each device on the roadway centerline pavement marking directly across from the Flagger Symbol sign with the front panel facing traffic approaching the TTC area.
3. OTF channelizing devices may only be displayed while Flaggers are actively controlling traffic. Remove devices from the roadway when flagger control is suspended.



Alicia Nolan, Division Administrator
Federal Highway Administration
228 Walnut Street, Room 558
Harrisburg, PA 17101-1720

Dear Mr. Nolan:

This correspondence is regarding the effort to improve the overall safety within Pennsylvania's work zone self sign. The Pennsylvania Department of Transportation (PennDOT) has developed a new temporary traffic control sign and typical application drawing to enhance safety when human flaggers are deployed during roadway operations.

The "Obey the Flagger" sign will use the approved post and base used by the existing, approved R1-4 "Yield to Pedestrian" sign as a template (see enclosed). The background changes to orange and the sign itself remains black letters on white since this sign will be considered regulatory and fines would be applicable.

Additionally, these signs will be optional when operations deploy human flaggers and will be setup and removed with the standard temporary traffic control signage. These signs can be used on PennDOT and municipal owned roadways, to maintain consistency when this new sign is deployed statewide.

The Pennsylvania Typical Application (PATA) drawing (also enclosed) outlines placement guidelines to provide direction on where the "Obey the Flagger" signs should be placed.

PennDOT requests concurrence from FHWA on both the "Obey the Flagger" sign schematic as well as the PATA drawing for sign placement.

Should you have any questions or require additional information, please contact Brian Crossley, Manager, Temporary Traffic Control Unit, at 717 265 7562.

Sincerely,

Daniel Farley, P.E.
Daniel Farley, P.E., Director
Bureau of Operations

Enclosure
William R. Houpt, P.E.
Approved: _____
Federal Highway Administration

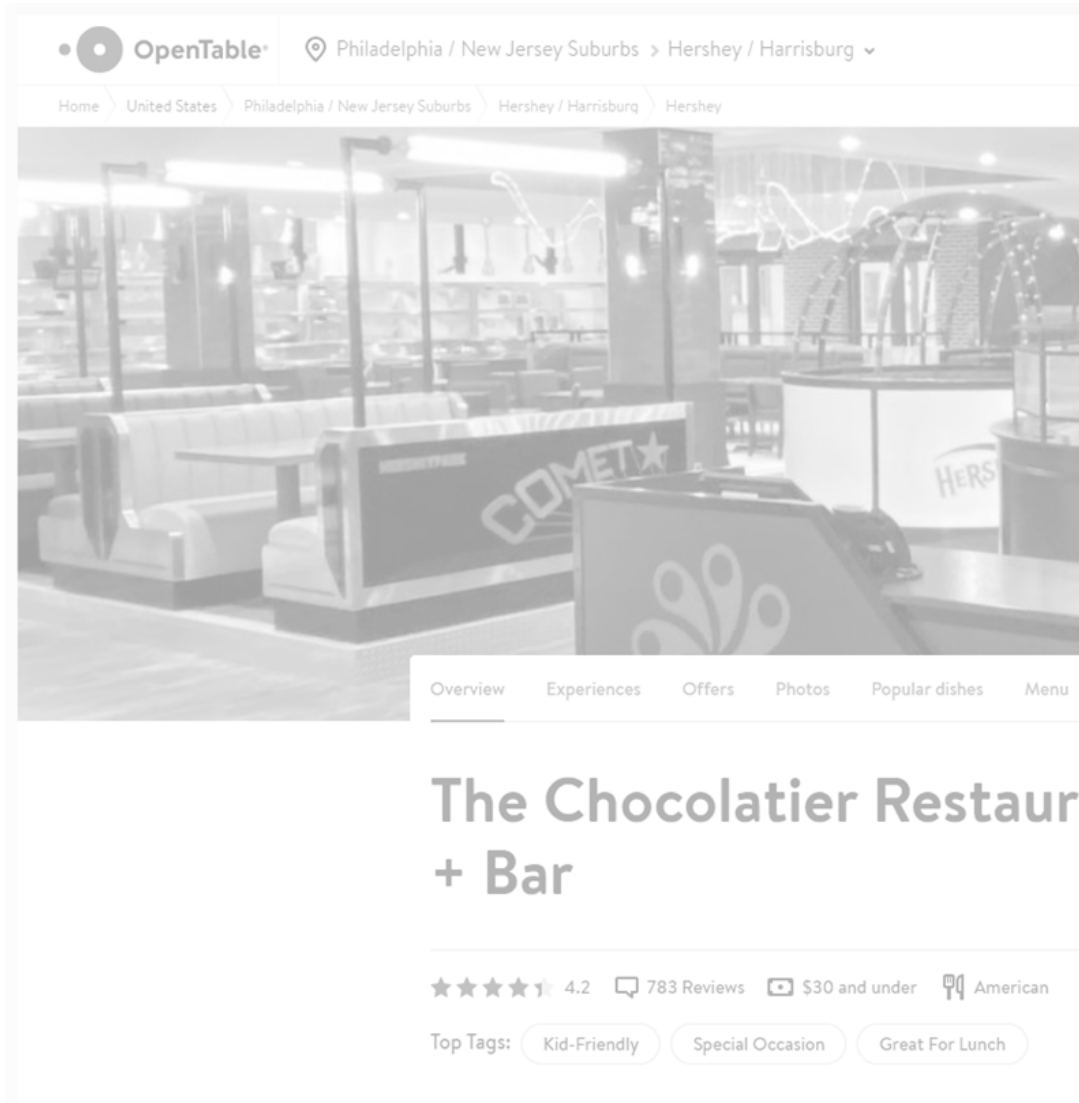
Printed Name: _____

Title: _____

Obey the flagger



Initial Lane Reservation Concept



Make a reservation

Party Size

4 people

Date

Mar 4, 2022

Time

5:00 PM

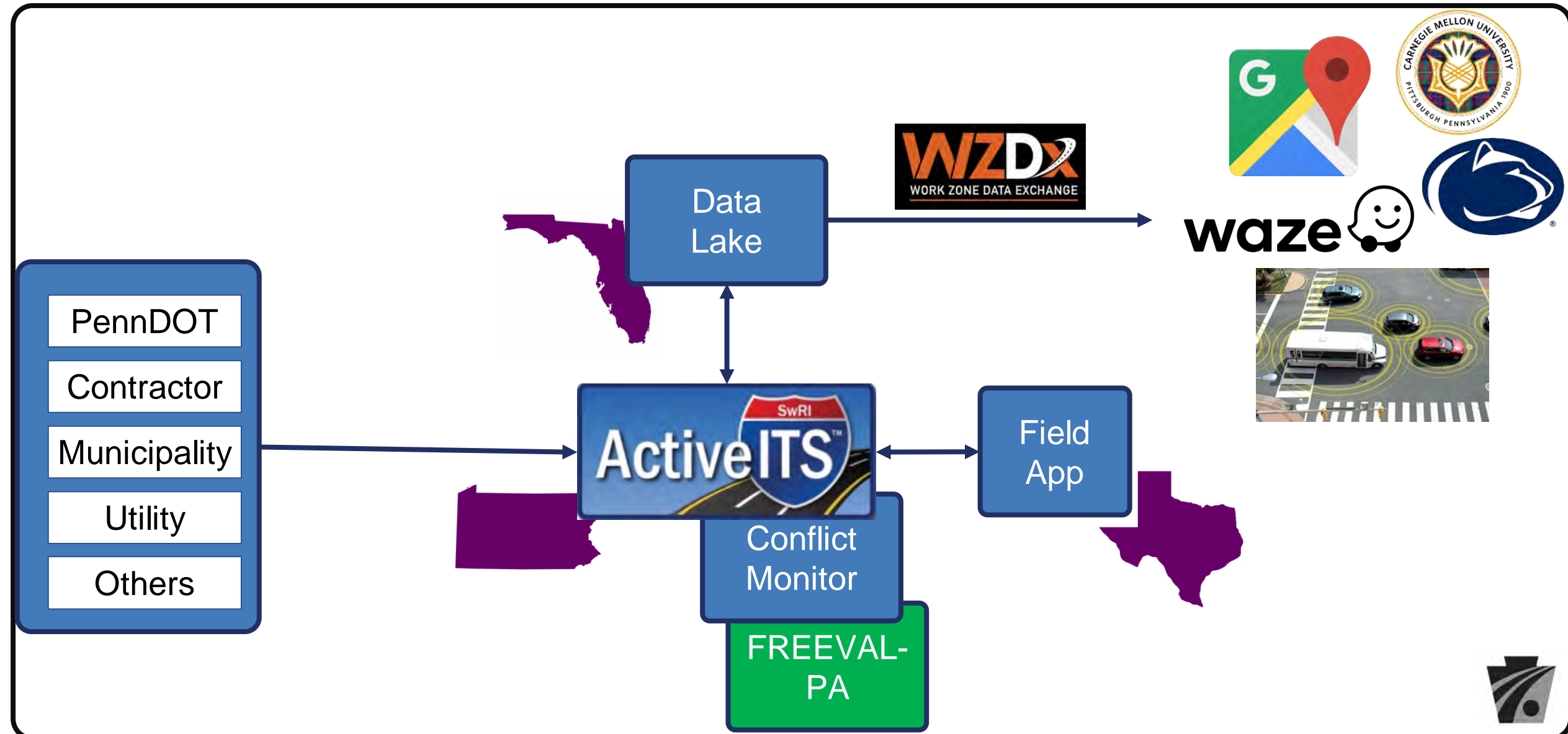
Find a time

Select a time

3:30 PM 3:45 PM



LRS and Data Exchange High Level Architecture



Business Rule Engine for Reviewing Reservations



FREEVAL-PA

Adding: Segment level Traffic Volume Profiles by hour of the day

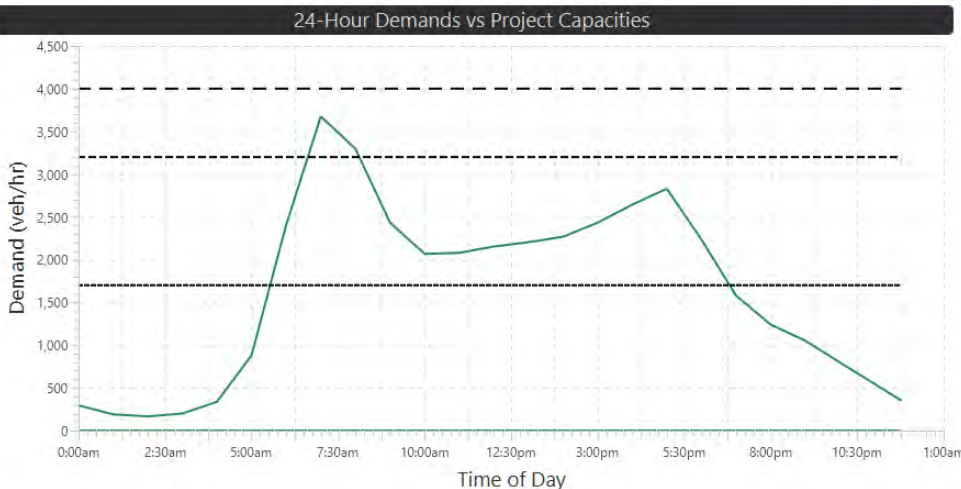
h-Planning > Work Zone Segment Staging Alternatives

2. Work Zone Configuration > 3. Diversion Scenarios

Work Zone Configuration Inputs

	Name	Type	WZ Capacity Adj.	Computed Capacity
#1	Work Zone #1	Shoulder/None	<input type="range" value="0.80"/>	3,200 veh/hr, 2 In open
#2	Work Zone #2	1-Lane	<input type="range" value="0.80"/>	1,700 veh/hr, 1 In open

Update Analysis



Viable Active Hours Assessment

Existing Conditions

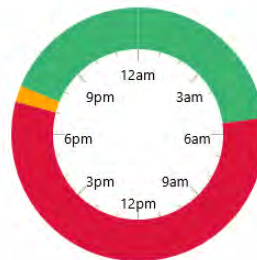
Existing Conditions



Work Zone #1



Work Zone #2



Hover over any slice of the chart for more details

Demand to Capacity (D/C) Thresholds

Under (D/C < 0.85)

Near (D/C < 0.95)

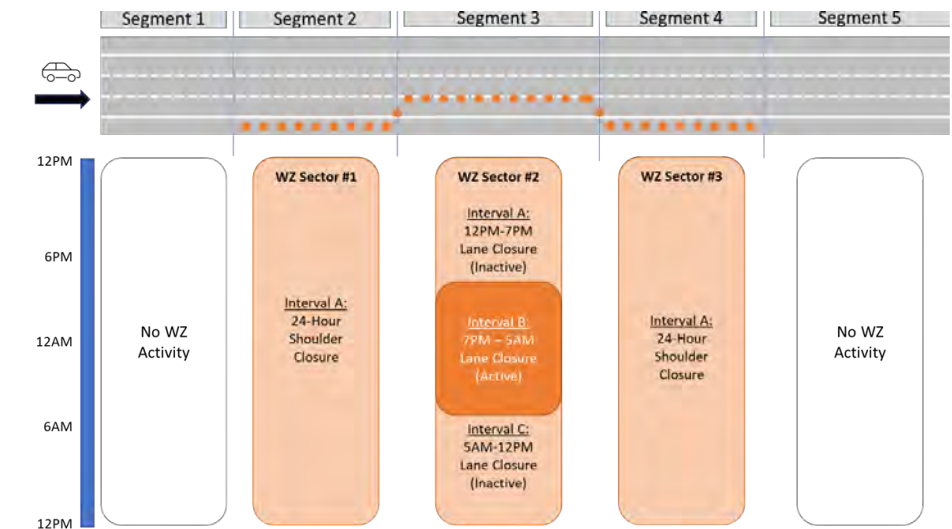
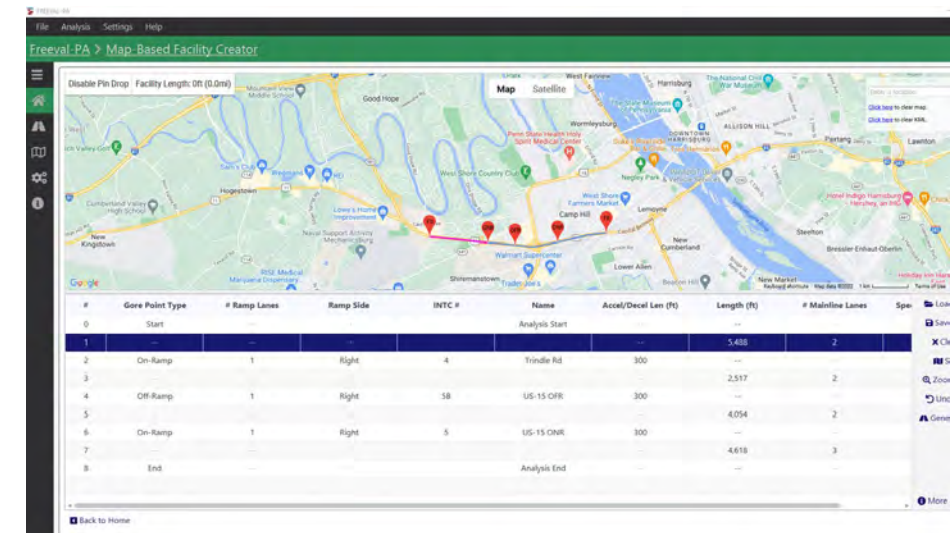
Over (D/C >= 0.95)



FREEVAL Enhancements

New Features Coming Soon

1. Planning-Level Analysis PDF Report
2. Map-Based Facility Creator
3. Automated Segment Customization
4. Work Zone Editor 2.0 – Compound Work Zone
5. Enhanced Contour Outputs



Lane Reservation Integration Notes

- System business rules should be intelligent enough to grant a majority pre-approval/approval without interaction
 - Escalation for emergency or edge case scenario will exist
- Adding individual-based assignment in the system
 - I.e., Reviewer, in-field ownership (workers on scene), communication between parties during review/adjustment process
- User-specific project calendar
- Mobile App/Website able to activate or deactivate work zones with a click of a button
 - Phone calls to the TMCs to eventually be phased out



LRS Working Groups to Date

Goal of Meetings

- Establish Concept of Operations and Functional Requirements by September
 - Completed, and had the first round of re-design per feedback

Internal Meetings

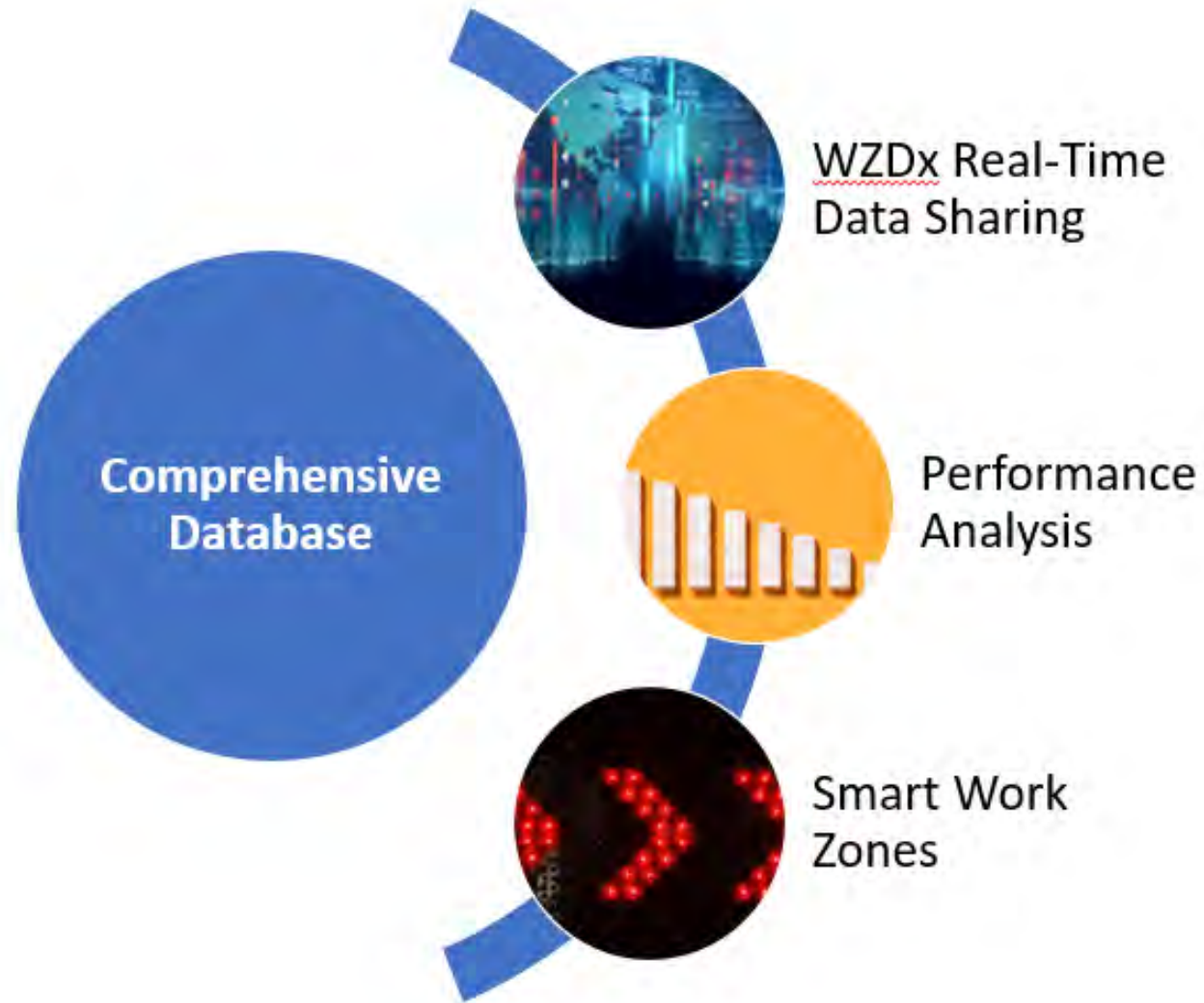
- 2 with TMC Management
- 3 with Design/Construction, Maintenance, and Traffic Reps
- **3 with Design's Digital Delivery Application Managers**
- 2 Statewide status update meetings with ADE-Designs and DTEs

External Meetings

- 2 with APC Partner Organizations
- 2 with FREEVAL Technical team



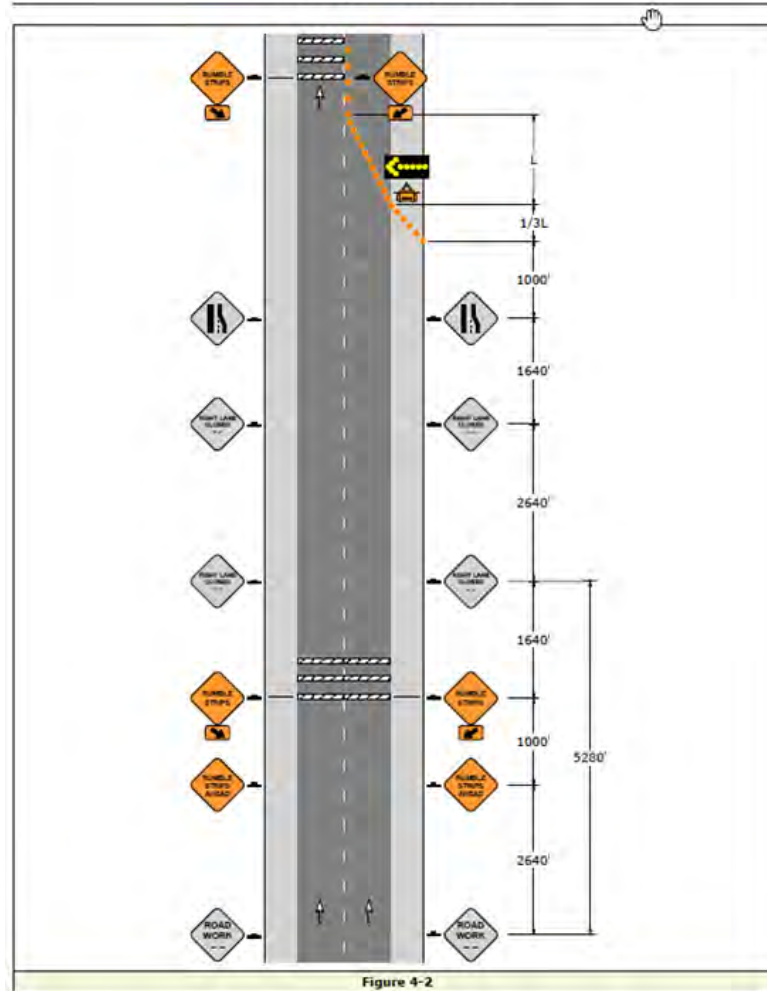
Digital Traffic Control Plans



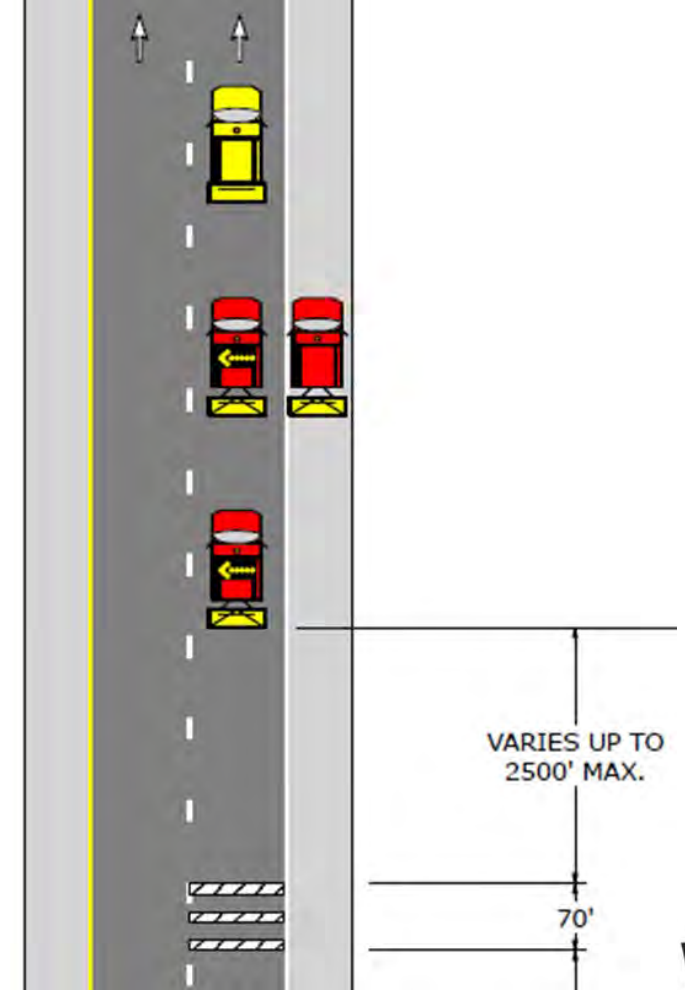
Raptor Rumble Strip Deployment Device



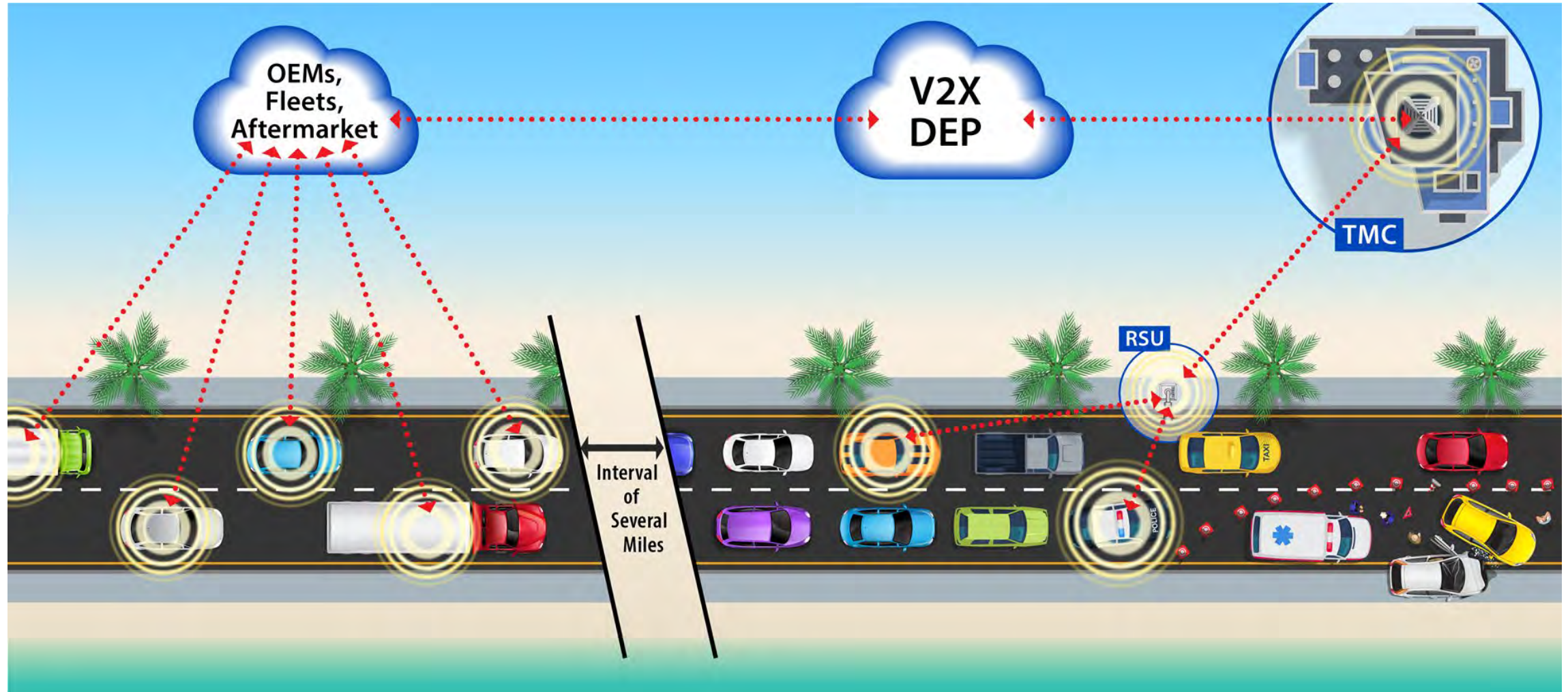
General Application 04-B
Temporary Portable Rumble Strips
Freeways and Expressways



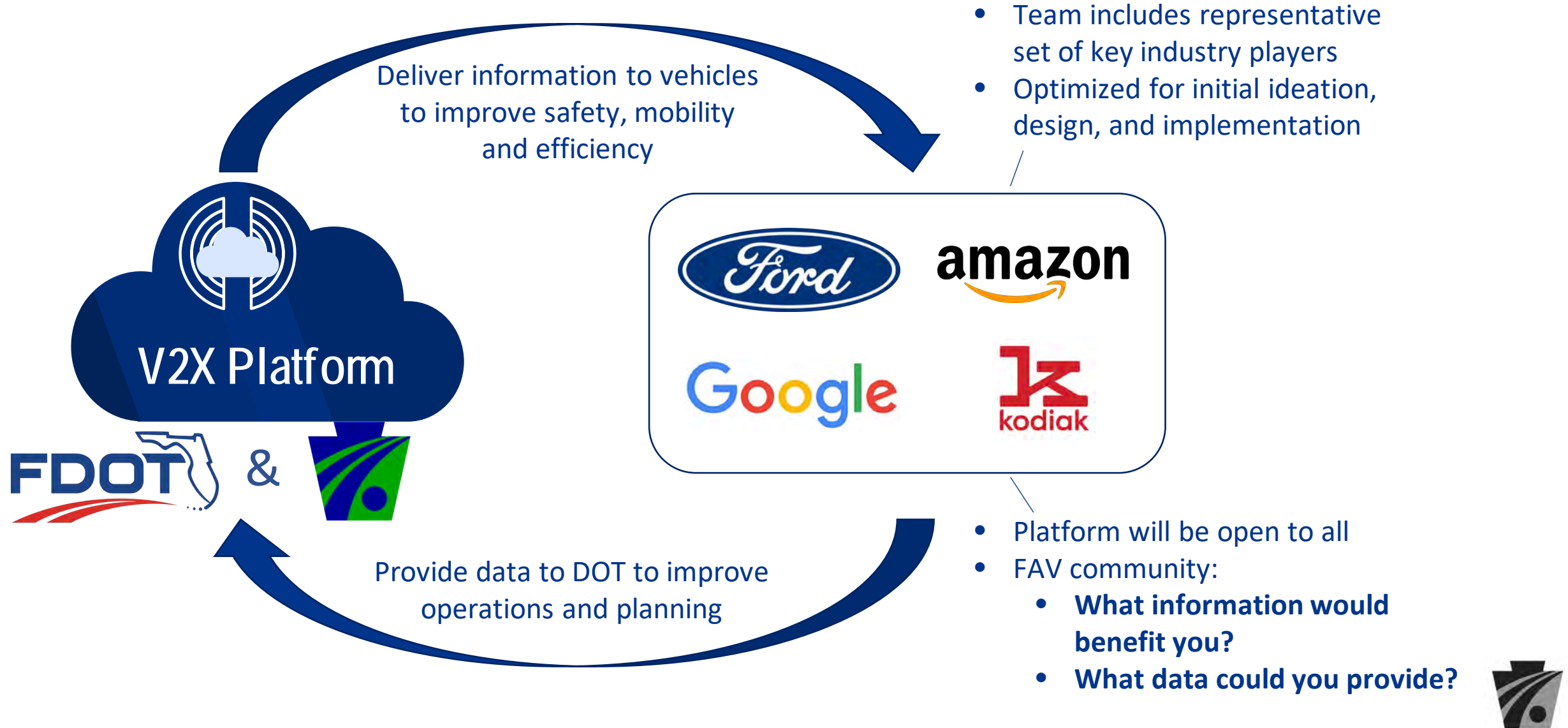
Mobile Operation



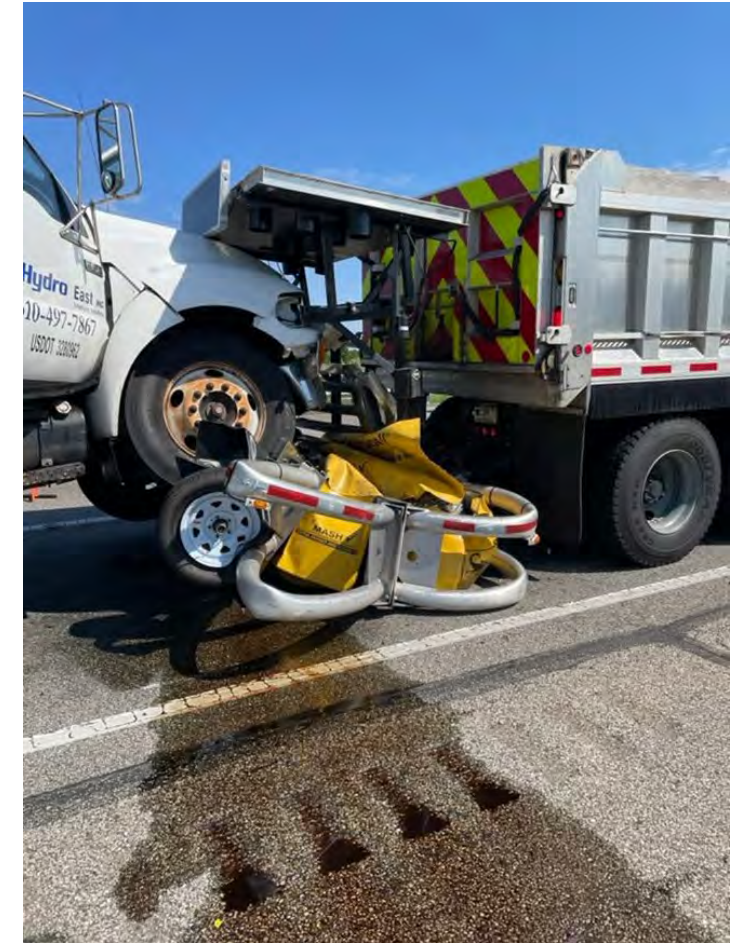
Example Use Case – Traffic Hazards



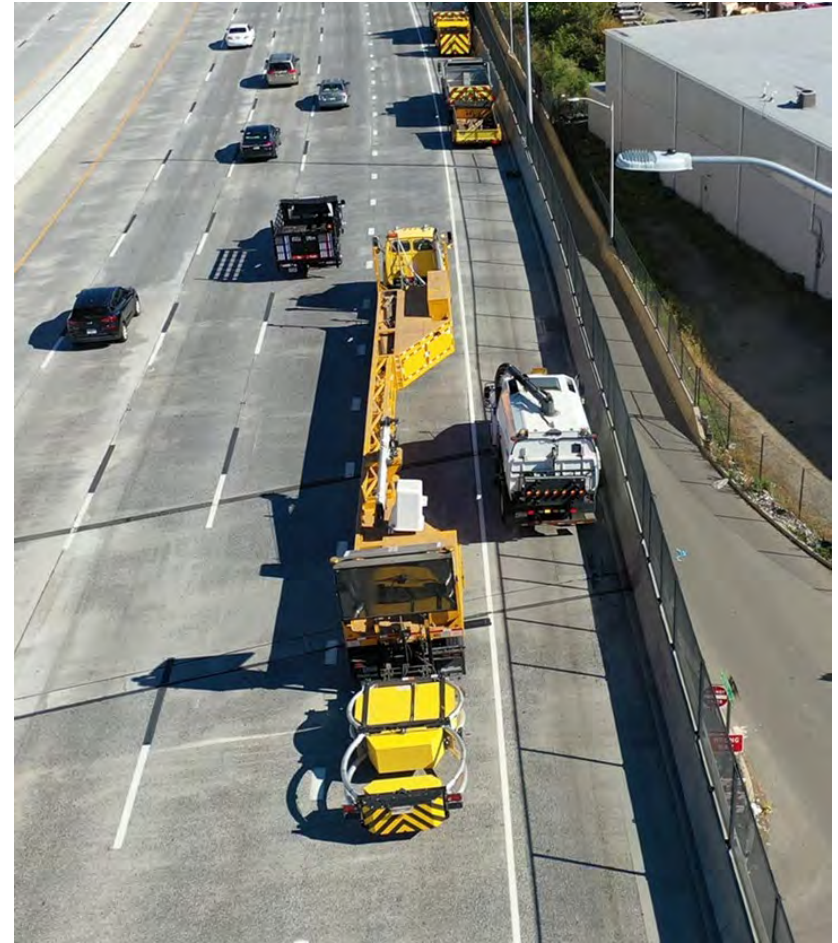
V2X System Design



TMA Crash Reduction



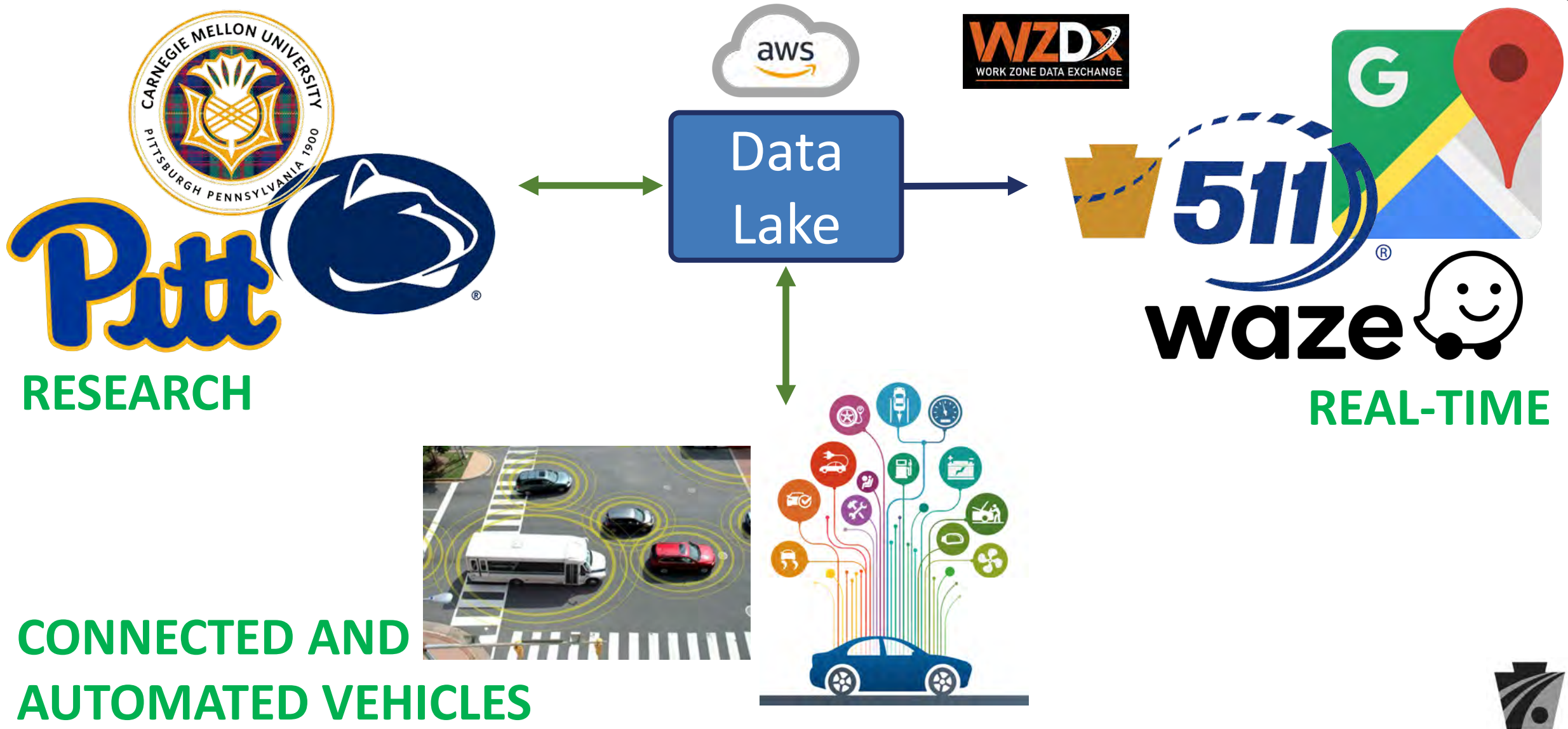
Mobile Barrier Device



Mobile Operation Convoy in Philadelphia



Project Data Lake/Fusion Engine



Deployment Timeline



Thank You

Ryan McNary

Chief, TSMO Operations and
Performance
Bureau of Operations

Brian Crossley

Manager, Temporary Traffic
Control
Bureau of Operations

