

ITS – NY TWENTY-SEVENTH ANNUAL  
MEETING: “THE SHOW MUST GO ON!”



**nittec**  
*Travel Smart.*

**BUFFALO – NIAGARA  
INTEGRATE CORRIDOR MANAGEMENT  
(BNICM)**



# NITTEC Coalition

- Established in 1995 with a Federal Mobility Grant
- Regional Collaboration and Leadership
  - Technology Deployment
  - Operations
  - Incident Management
  - Traveler & Traffic Information
- Multi-Agency Transportation Operations Coalition
  - 5 Policy Members, 9 General Members, 28 Affiliate Members
    - Transportation Agencies
    - Public Safety and Border Enforcement
    - Emergency Services and Recovery
  - Only Bi-national Coalition of its kind in U.S. / Canada

## NITTEC Mission

*To improve mobility, reliability and safety on the regional bi-national multimodal transportation network through information sharing and coordinated management of operations.*



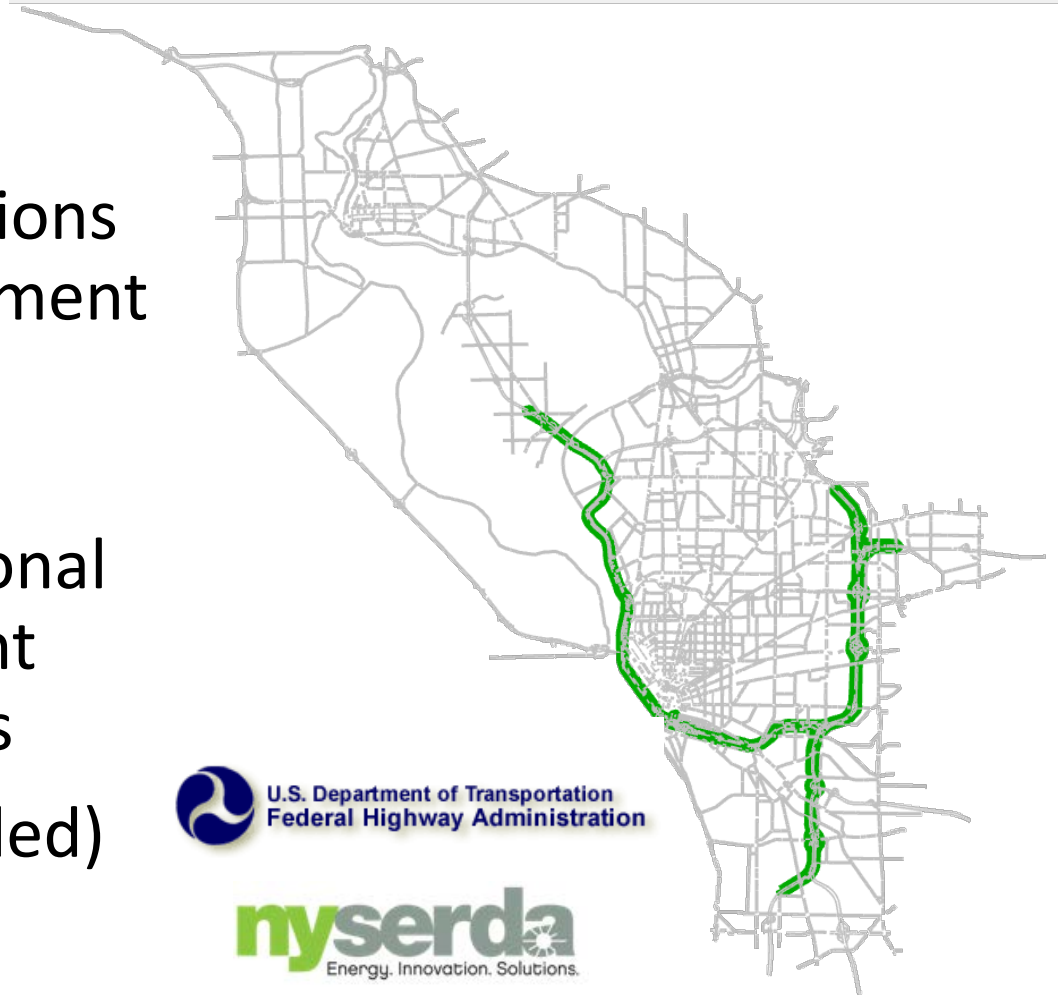
# NITTEC Operations Center

- Centralized 24/7 operations and traffic management services for bi-national region
- Information Clearinghouse
- Standardized Operations
- Multi-Agency Event Planning and Operations
- Multi-Agency ITS Deployment
- Regional Messaging Standards
- Traffic Management Plans



# Integrated Corridor Management (ICM) Project Overview

- ICM Objective: Optimize traffic operations by identifying effective traffic management strategies and incorporating new technologies
- Approach: Create a sophisticated regional model to test strategies under different conditions to determine best solutions
- **Green:** Microscopic Model (very detailed)
- **Grey:** Mesoscopic (less detailed)



Cambridge Systematics

Transpo Group

# Scenarios Tested in Model

- Typical Weekday AM/PM Peak Periods



- Crash Conditions

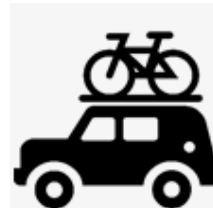
- Northbound
- Southbound



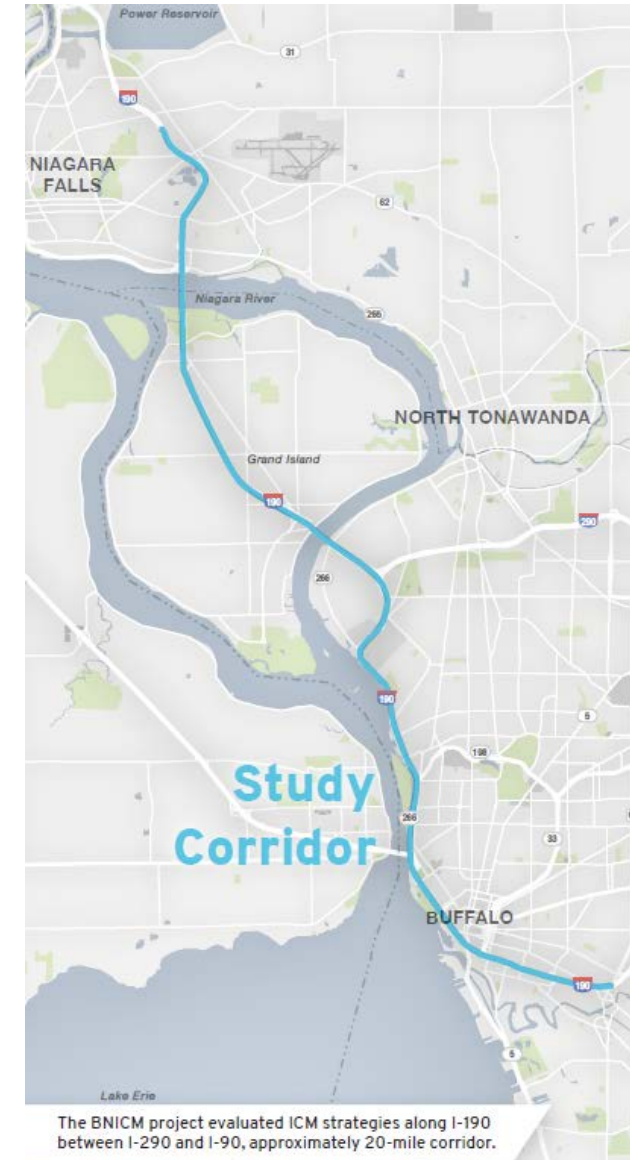
- Special Event / Game in PM peak



- Holiday Demand in PM peak



- Snow Event in AM peak



# Strategy 1: Improved Dynamic Traveler Information

- **What it is:** Provide travelers with better info on road conditions before and during trip, letting them make better decisions; uses DMS boards, NITTEC App, 511, Waze, etc.
- **Scenarios:** Commuting, Crash, Holiday, Snow, Special Event
- **Annual Cost: \$144,978**



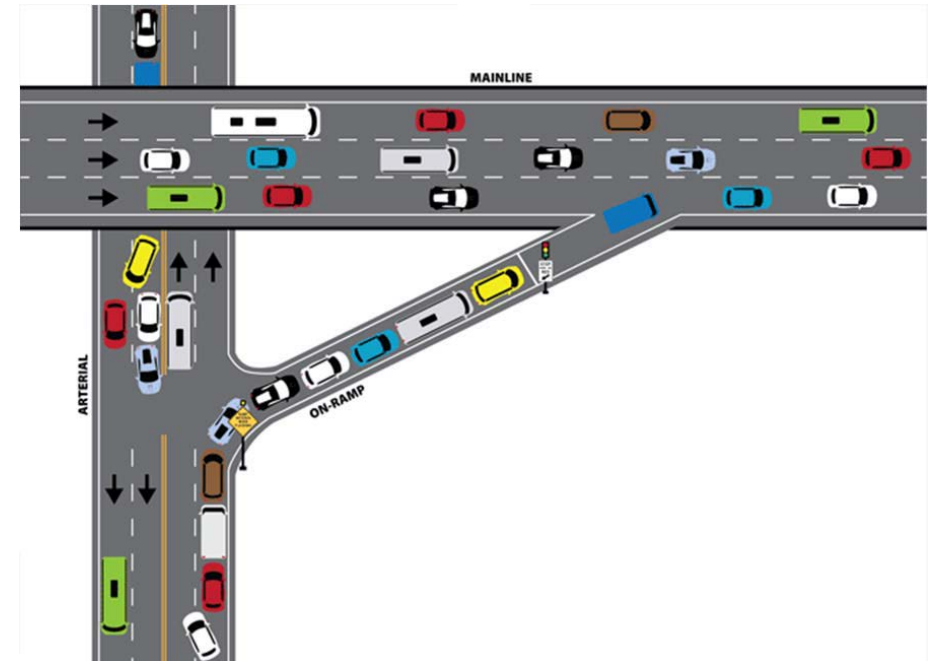
# Strategy 2: Freeway Incident Service Patrol

- **What it is:** Improve incident detection and clearance times using patrol vehicle teams (like current HELP trucks)
- **Scenarios:** Commuting, Crash
- **Annual Cost:** **\$296,998**



# Strategy 3: Ramp Metering

- **What it is:** Signals at I-190 on ramps to control traffic entering; improves flow and reduces crashes
- **Scenarios:** Commuting, Crash
- **Annual Cost:** **\$356,791**





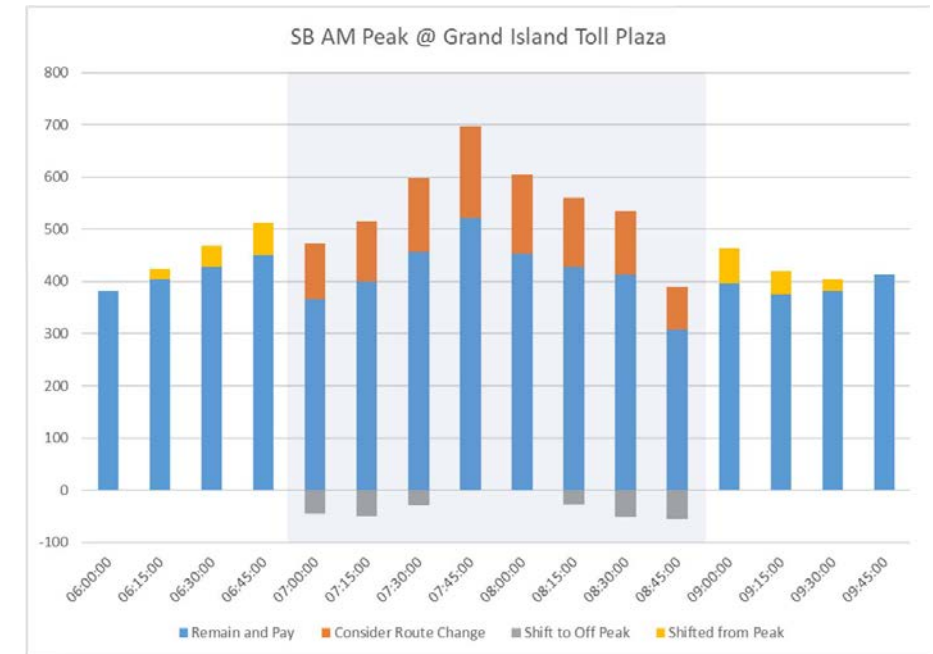
# Strategy 4: Variable Speed Limits/Queue Warnings

- **What it is:** Change speed limits based on congestion, crashes, weather, etc.
- **Scenarios:** Commuting, Crash, Snow
- **Annual Cost:** **\$4,137,343**



# Strategy 5: Variable Toll Pricing

- **What it is:** Increase/decrease tolls based on time of day to shift some travelers to non-peak times
- **Scenarios:** Commute, Holiday
- **Annual Cost:** N/A



# Strategy 6: Signal Coordination

- **What it is:** Improve flow on important arterials by coordinating signals, providing travelers with better alternative routes
- **Scenarios:** Commuting, Crash, Holiday, Special Event
- **Annual Cost: \$173,306**



# Proposed Solution Packages

- **IMPORTANT:** Strategies work together to improve congestion and benefits cannot be accurately understood when looking at them one at a time; in short, the final product is greater than the sum of its parts
- Two Packages Recommended:
  - **Package A:** Strategies 1-5 (All but Signal Coordination)
  - **Package B:** Strategies 1-6 (Including Signal Coordination)

# Benefits Considered

- Improved travel time/reduction of delay
  - Average Cost of 1 minute of Delay in NYS: **\$0.25/vehicle**
- Prevented Crashes
  - Cost of the crash
  - Cost of delays associated with the crash
  - Average cost of a non-fatal crash in NYS: **\$102,119**
  - Average cost of a fatal crash in NYS: **\$13.8 million**

# Results

## • Package A:

- Cost: **\$4,936,110**
- Benefits: **\$13,696,708**
- Benefit / Cost Ratio: **2.77**

## • Package B:

- Cost: **\$5,109,416**
- Benefits: **\$17,199,449**
- Benefit / Cost Ratio: **3.37**

# Lessons Learned

- Typical weekday AM and PM peak period conditions improved or benefited the most of the ICM deployment whereas other conditions had improvement but to a lesser degree
- Traveler information and freeway incident clearance were the two strategies that provided the most improvements in the system related to the ICM strategies deployed
- Emissions positively benefited from deployment of ICM but only by a small amount when monetized
- Arterial signal managed resulted in a large increase in the benefit-cost ratio

# Next Steps

- Identify potential funding
- Detailed Design for specific locations and equipment
- Explore staged or phased deployment
- Provide Performance Evaluation Program to evaluate effectiveness



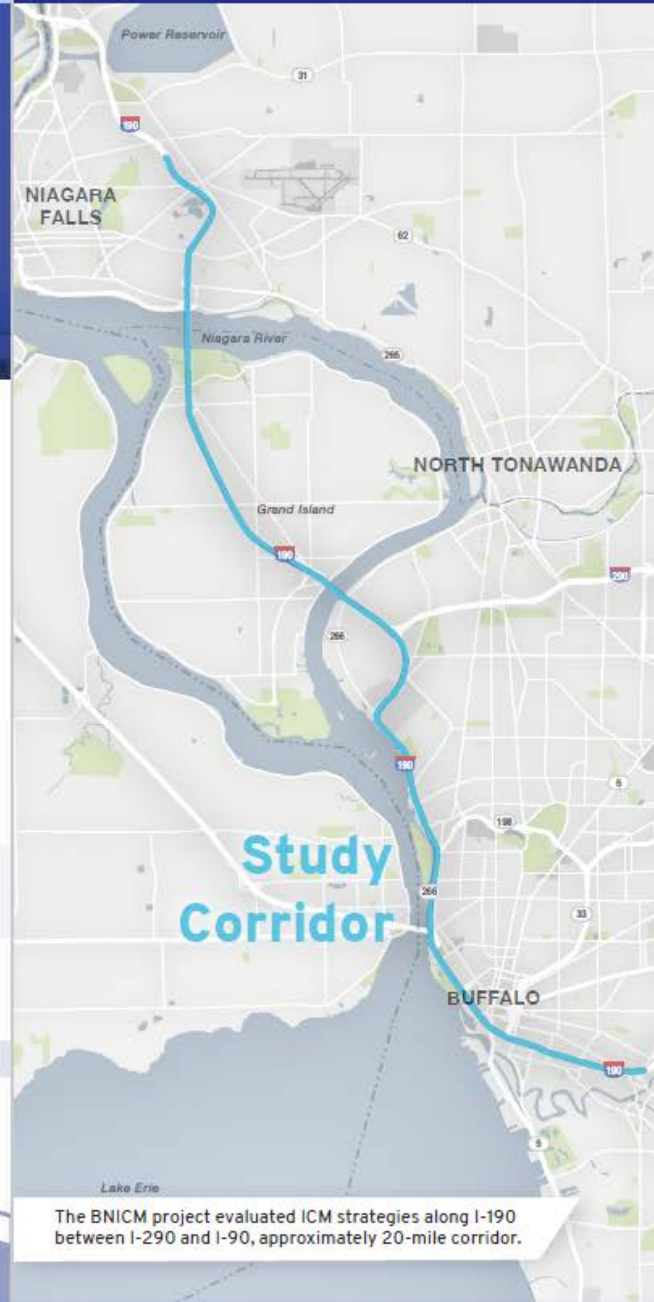
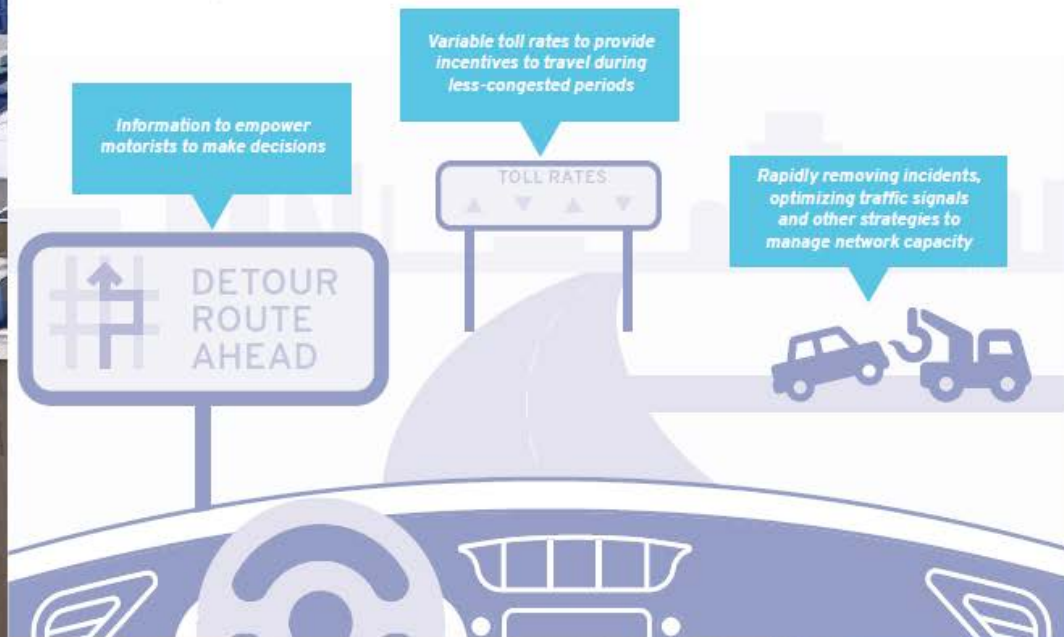
# BUFFALO-NIAGARA INTEGRATED CORRIDOR MANAGEMENT (BNICM)

## BRINGING ICM TO YOUR COMMUNITY

### What is Integrated Corridor Management (ICM)?

ICM uses technology-enabled transportation management and operations strategies and leverages existing assets to reduce congestion and enhance safety.

### Advantages of ICM:



The BNICM project evaluated ICM strategies along I-190 between I-290 and I-90, approximately 20-mile corridor.

### What are the key benefits of ICM?



Increased safety with a reduction and/or prevention of crashes



Reduction in vehicle hours traveled



Improved weekday AM and PM commute period travel conditions



Greatest travel improvements found with traveler information and freeway incident clearance strategies



Reduction in emissions



Arterial signal management increases the benefit-cost ratio

## What ICM Strategies were evaluated?



ICM strategies were evaluated for five different base conditions including weekday AM and PM peak commute periods, incident, holiday, snow and game day traffic conditions. Two packages of ICM strategies were evaluated that included Package A without arterial signal coordination and Package B with signal coordination.

### ICM Strategies



Dynamic Traveler Information



Variable Speed Limits and Queue Warning



Dynamic Lane Controls



Freeway Incident Detection & Patrols



Variable Toll Pricing



Parking ITS



Ramp Metering



Arterial Signal Coordination



Road Weather Information Systems and Plow Management System

## What are the costs of ICM?

The benefit cost of Packages A (without arterial management) and B (with arterial management).

	Without Arterial Management	With Arterial Management
Total Benefit	\$14 million	\$17 million
Total Cost	\$4.9 million	\$5.1 million
Approximate Cost per Mile	\$371,000	\$384,000
Benefit/Cost Ratio	2.8	3.4

## What are the next steps to deploy ICM Strategies?

Learn more @ [https://www.nittec.org/about\\_us/reports\\_resources/](https://www.nittec.org/about_us/reports_resources/)

1

Seek out funding opportunities such as grants for design and deployment

2

Detailed Design for specific locations and equipment

3

Explore Staged or Phased Deployment since it may be cost prohibitive to implement the whole system at one time

4

Provide a Performance Evaluation Program to evaluate effectiveness and make adjustments based on real-world conditions

Contact

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# Questions

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ARUP

# Improving Mobility Across New York

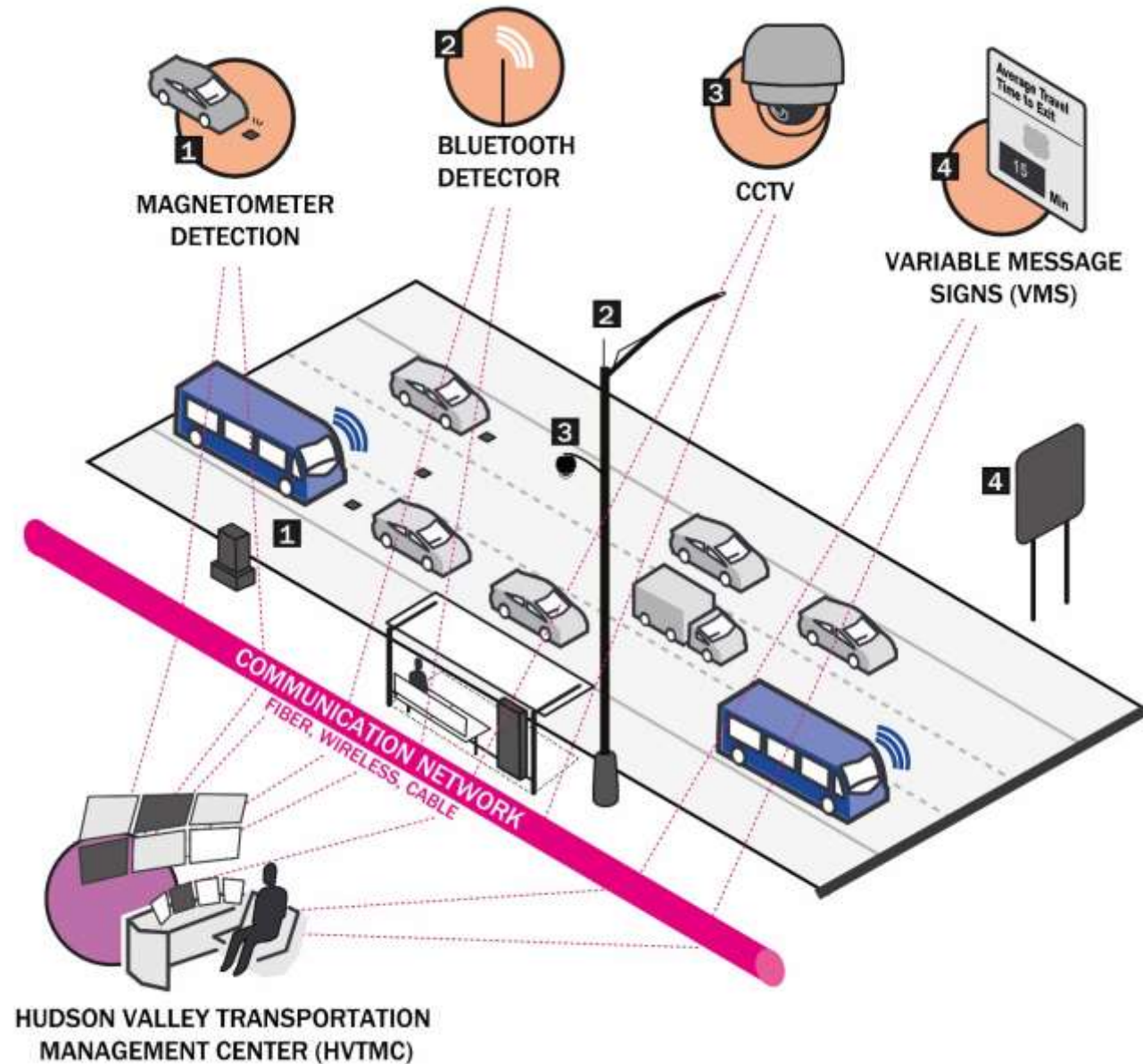
Paul Maye

December 9<sup>th</sup>, 2020

# Agenda

## NYS DOT Lower Hudson Transit Link

1. Project Overview
2. The ICM Framework
3. ICM Technology Sub-systems



# NYSDOT Lower Hudson Transit Link

## Project Overview



ARUP

## Lower Hudson Transit Link

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### *Project Overview:*

#### *Lower Hudson Transit Link/I-287 ICM*

- *Lead Agency: NYSDOT*
- *Key Partners: NYSTA, USDOT & Local Municipalities*

#### *I-287 ICM coordinated with two major projects*

- *Construction of the new Gov. Mario Cuomo Bridge*
- *Operation of the Lower Hudson Transit Link Rapid Bus Service*

*Unique multi-modal integration involving integration of new bus operations into ICM system*



# LHTL Components



New transit route and bus fleet



Integrated Corridor Management (ICM) System



# LHTL Project Boundaries



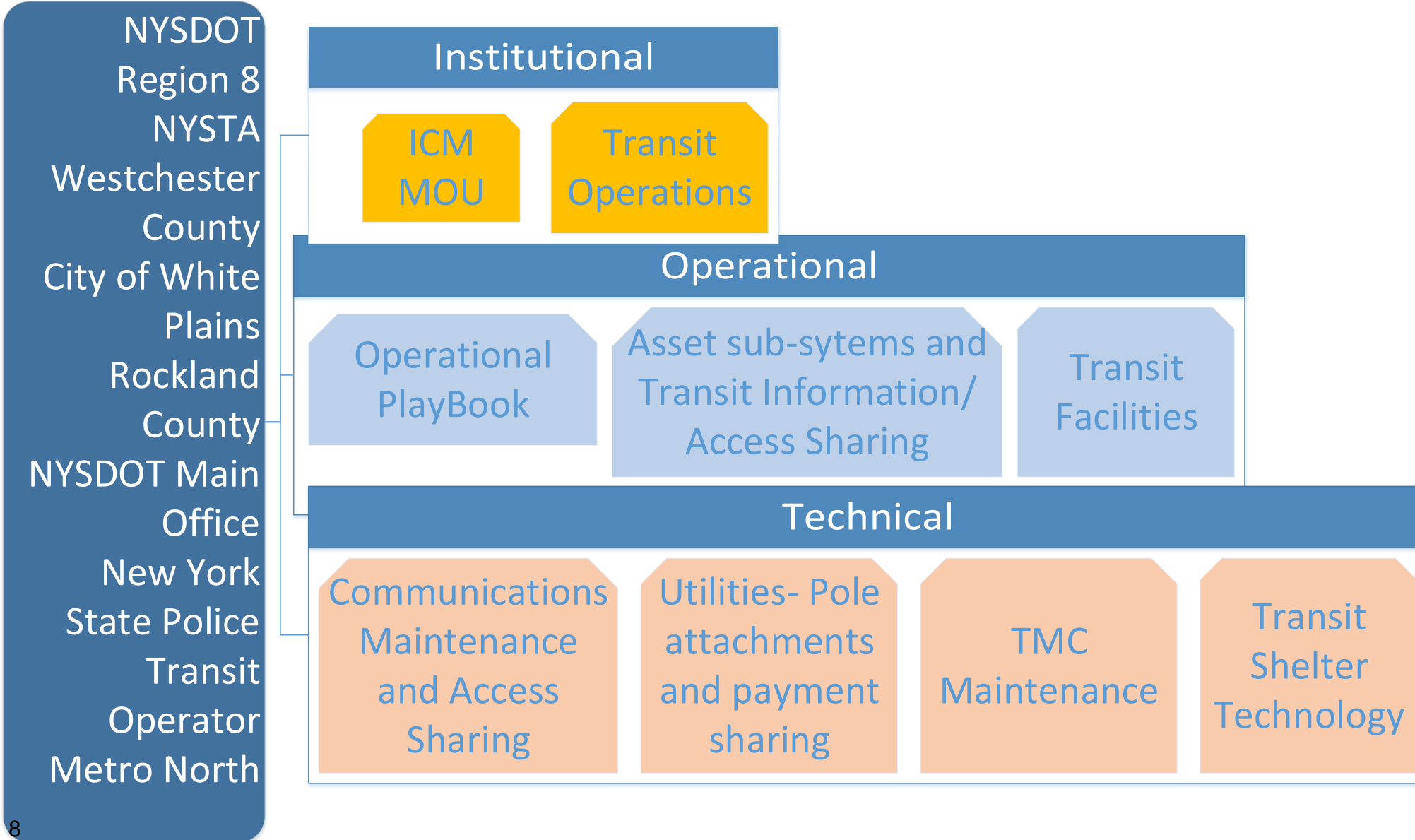
# NYSDOT Lower Hudson Transit Link

## The ICM Framework

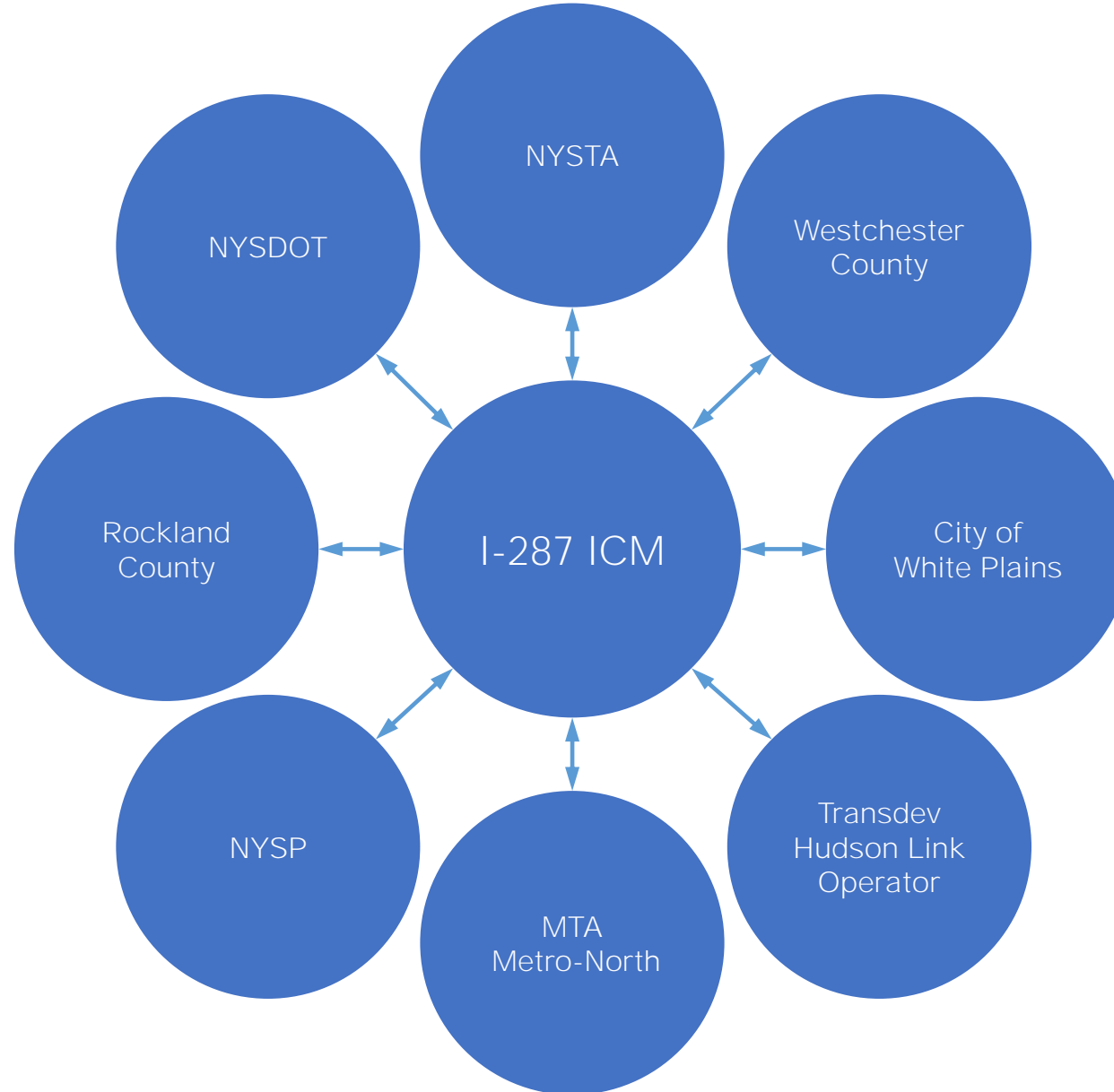


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# I-287 ICM Agreement Framework



# I-287 ICM Key Stakeholders



# NYSDOT Lower Hudson Transit Link

ICM Technology Sub-systems



ARUP

## LHTL Overall Project Assets

ICM Asset Summary		
Asset Type	Number of Assets in Project	
	New/Upgrades	Existing
Traffic Signals	120	15
Ramp Meters	13	0
CCTV	39	21
VMS	32	100
Detectors (including AIDs)	117	96
Hawks	2	0
Flashing Beacons	5	0

# ICM Technology Sub-systems



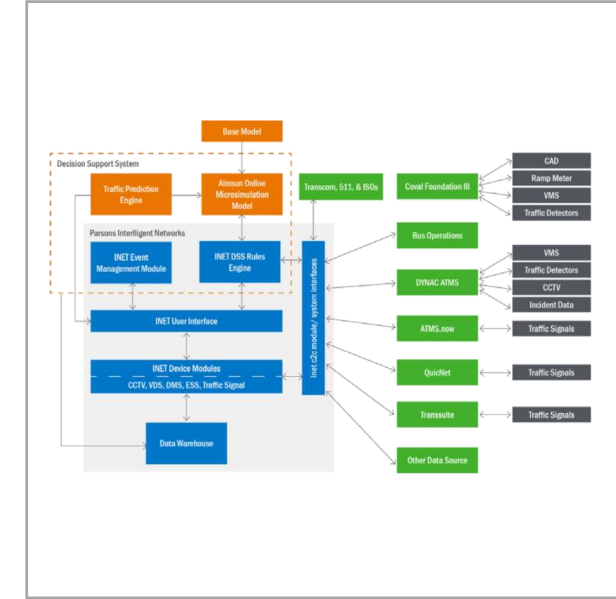
*Transit Technology*



*ICMS*



*Pedestrian Safety*



*DSS*

# Bus Technology

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## *Featured:*

- WiFi
- Real Time Bus Arrival Information
- Automatic Passenger Counts (APC)
- CCTV

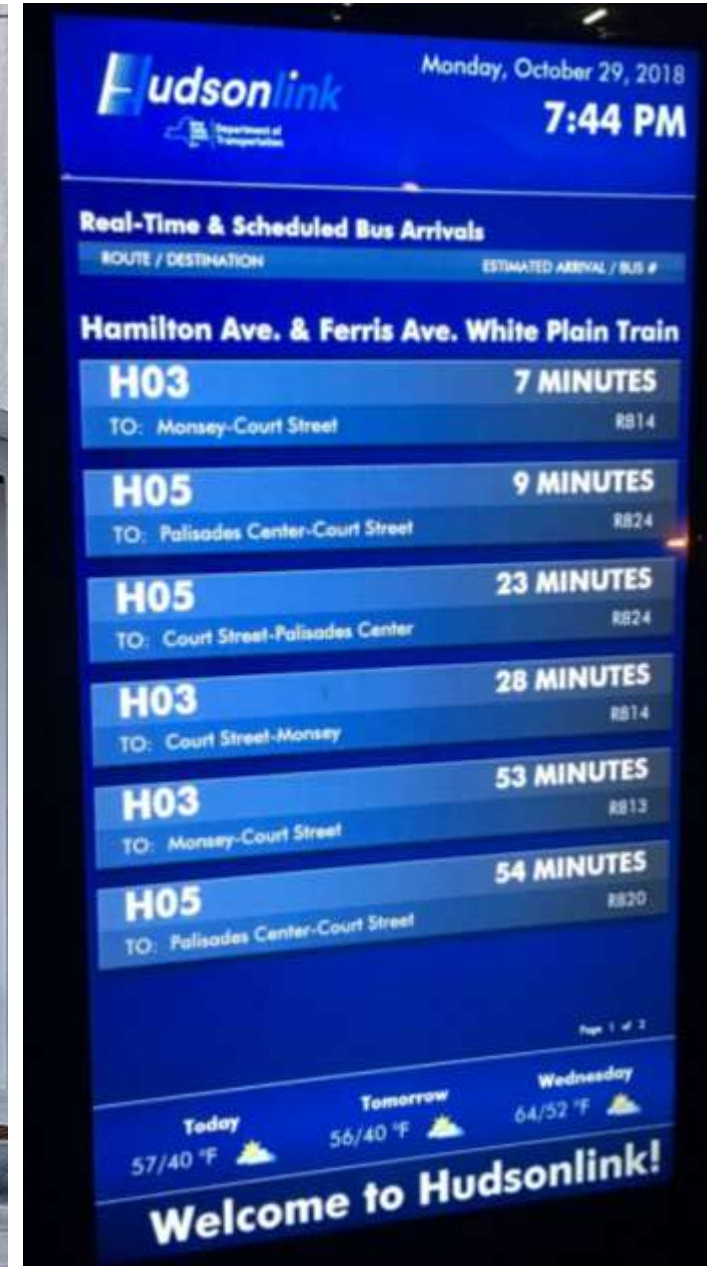




# Bus Shelter Technology

## Featured:

- WiFi
- Arrival Time Information



Real-Time & Scheduled Bus Arrivals	
ROUTE / DESTINATION	ESTIMATED ARRIVAL / BUS #
<b>Hamilton Ave. &amp; Ferris Ave. White Plain Train</b>	
<b>H03</b>	<b>7 MINUTES</b>
TO: Monsey-Court Street	RB14
<b>H05</b>	<b>9 MINUTES</b>
TO: Palisades Center-Court Street	RB24
<b>H05</b>	<b>23 MINUTES</b>
TO: Court Street-Palisades Center	RB24
<b>H03</b>	<b>28 MINUTES</b>
TO: Court Street-Monsey	RB14
<b>H03</b>	<b>53 MINUTES</b>
TO: Monsey-Court Street	RB13
<b>H05</b>	<b>54 MINUTES</b>
TO: Palisades Center-Court Street	RB20

Page 1 of 2

Today	Tomorrow	Wednesday
57/40 °F ☀️	56/40 °F ☀️	64/52 °F ☀️

Welcome to Hudsonlink!

# Ramp Metering

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*Featured:*

- Dual Ramp Metering



# Traffic Signal Technology

## *Featured:*

- Transit Signal Priority (TSP)
- Bus Queue Jumps
- Adaptive Signal Control (ASC)



## Traveler Information

### *Featured:*

- Travel Time System
- Variable Message Signs (VMS)



# Video Surveillance

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## *Featured:*

- CCTV
- Automated Incident Detection System



# Fiber Network

*Featured:*

- 30 Mile Redundant Fiber Network



# Communications Network

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*Featured:*

- Fiber Optics
- Wireless Comms



# Pedestrian Safety

## *Featured:*

- Accessible Pedestrian Signal (APS)
- HAWKS
- Flashing Beacons





# Pedestrian Improvements

## *Featured:*

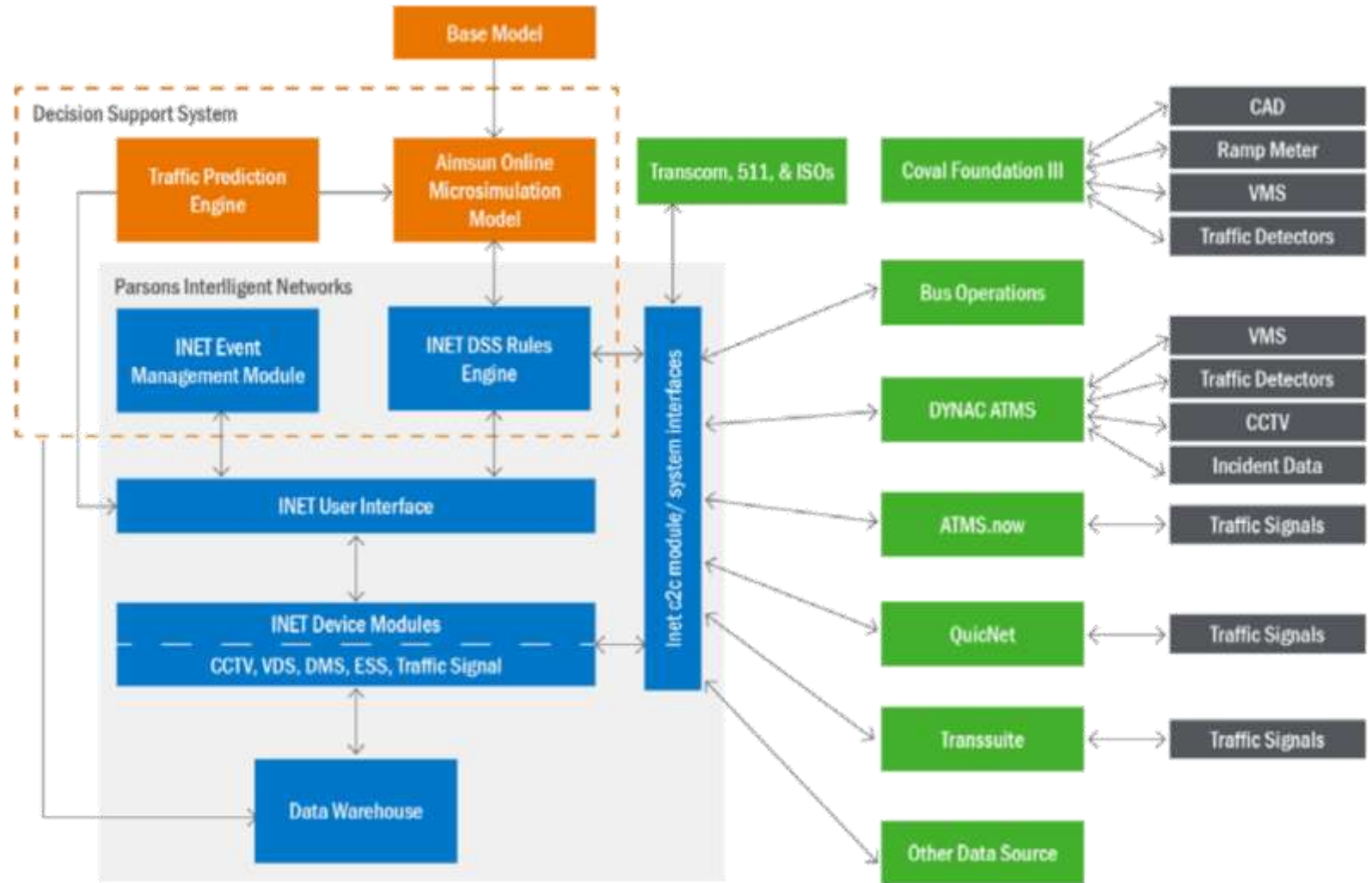
- Upgraded Pedestrian Crossings
- ADA Ramps
- Added Sidewalks



# Decision Support System (DSS)

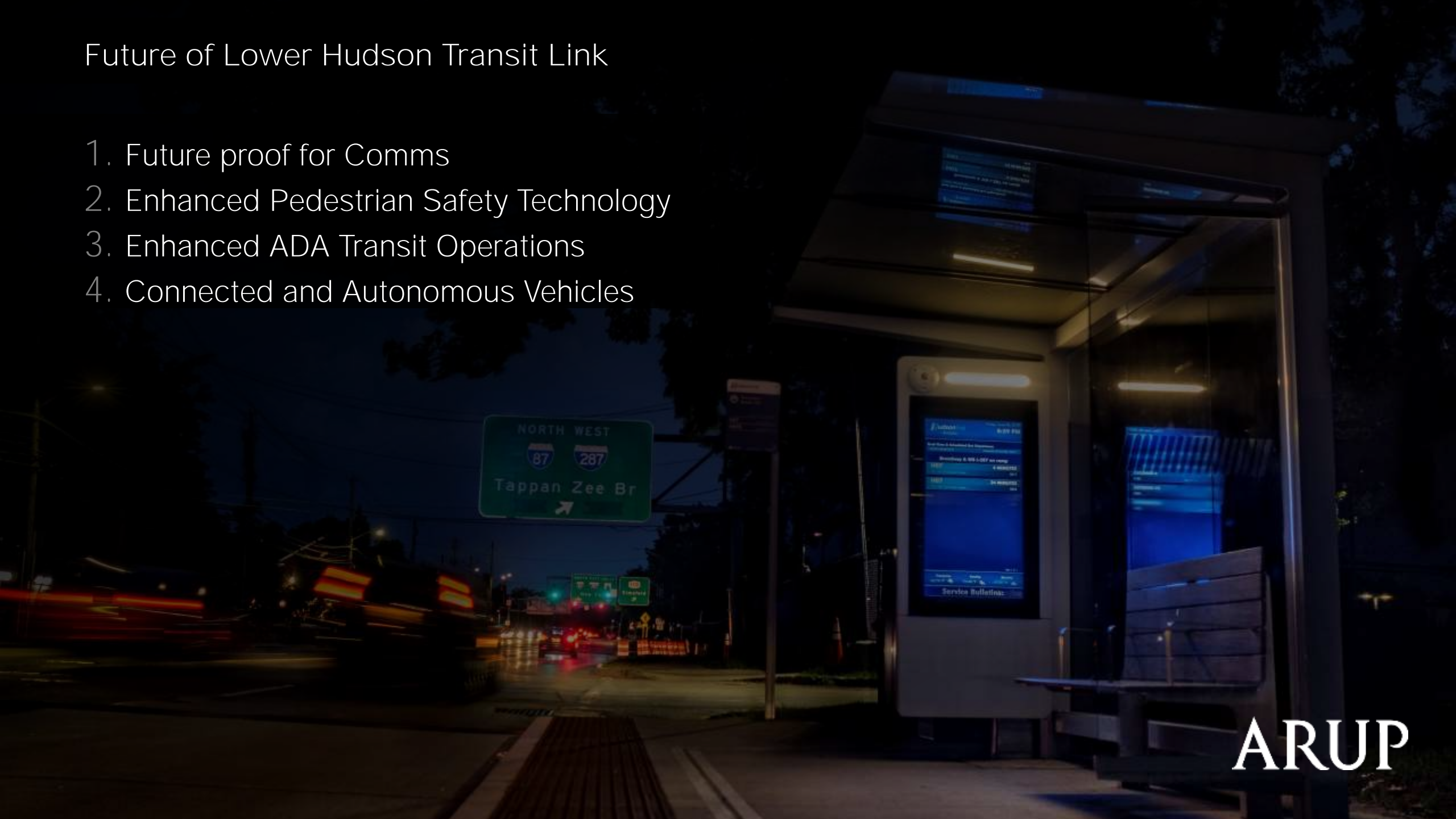
*Featured:*

- Core DSS Unified Incident Response Interface
- Offline Planning capabilities
- Online Real time traffic response evaluation



# Future of Lower Hudson Transit Link

1. Future proof for Comms
2. Enhanced Pedestrian Safety Technology
3. Enhanced ADA Transit Operations
4. Connected and Autonomous Vehicles



ARUP  
Thank You



Thruway  
Authority

# Cashless Tolling Project

December 9, 2020



**CASHLESS TOLLING**  
Premiering on the Thruway in November

Get **E-ZPass** TODAY

E-ZPASS PRODUCTION PRESENTS A NEW YORK STATE THRUWAY CONCEPTION  
SAVE TIME SAVE MONEY CASHLESS TOLLING FEATURING TOLLS BY MAIL AND E-ZPASS

**THE FOLLOWING PROMOTION HAS BEEN APPROVED FOR  
AUTOMOTIVE AUDIENCES  
BY THE NEW YORK STATE THRUWAY AUTHORITY**

**THE SAVINGS ADVERTISED HAVE BEEN RATED**

<b>FINANCIAL GUIDANCE SUGGESTED</b>	<b>FOR CASHLESS TOLLING AND SLASHED COMMUTE TIMES</b>
<b>EZ</b>	
<b>Some Material May Not Be Suitable for Toll Lovers</b>	

# Agenda

- Why Cashless Tolling
- Design-Build Project
- Mainline Toll System
- Ramp Toll System
- Toll Bill System
- Other Impacts
- Questions

# Why Cashless Tolling

Convenience

Mobility

270M Reasons

Safety

Environment



# Cashless Tolling Projects

2016

- Gov. Mario M. Cuomo Bridge

2018

- Barriers

2020

- Ticketed System

# Design-Build Project Schedule



# Gantries

- 21 Mainline Gantry Locations (Kapsch System)
  - 5 Terminus Tolling Points
  - 16 Gantry (11 Tolling Points)
- 34 Ramp Gantries (Thruway System)
- Newburgh – existing gantry (Thruway System)
- Harriman – existing gantry (Kapsch System)

# Mainline Toll System

- Commercially procured toll system (Kapsch TrafficCom)
- Highly redundant components
- Gantry accessible equipment
- Communications building
- Generator and UPS

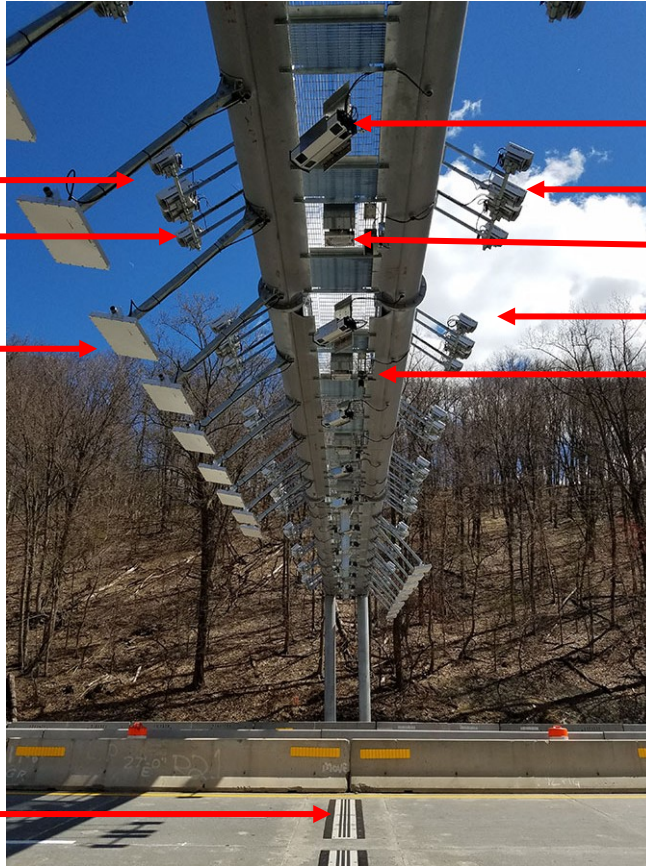
# Mainline Tolling Gantry

Two Front Cameras

Camera Illuminator

E-ZPass Antenna

Treadle



NVDC

Two Rear Camera

NVDC Illuminator

Camera Illuminator

Laser Scanner

# Mainline Toll System Stats

- Kapsch had 84 technicians, installers and support staff
- 44 Tolling Zones
- 148 Instrumented Lanes
- 760 Cameras
- 148 Treadles/Fiber Strips
- 186 Lasers
- 339 Antennas
- 112 miles of cable

# Ramp Gantry



# Ramp Gantry Toll System

- Thruway developed toll system
- No overhead access
- Limited redundancy
- Communications building
- Generator and UPS



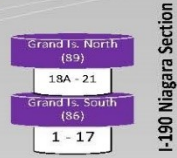
# Ramp Gantry Toll System Stats

- TBD

# Toll Bill System

- E-ZPass and Tolls by Mail
- Toll Structure (mileage based) Remains
- Billing Changes will Occur based on Gantry Locations
- Billing Segments
  - Six entry/exit segments
  - Eight fixed toll charge segments

# Cashless Tolling Segments

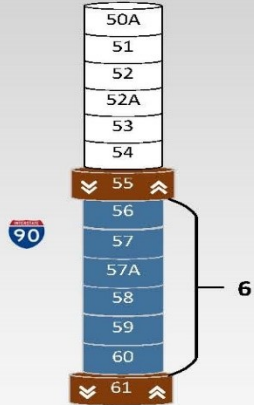
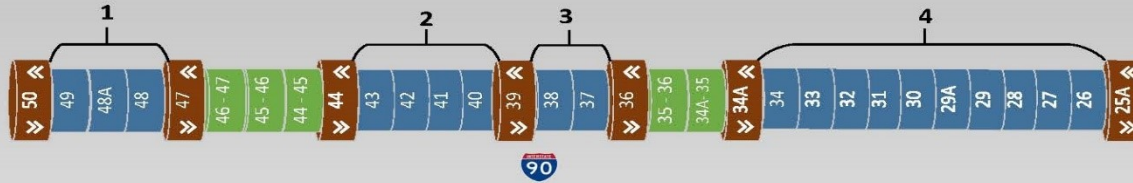


Buffalo

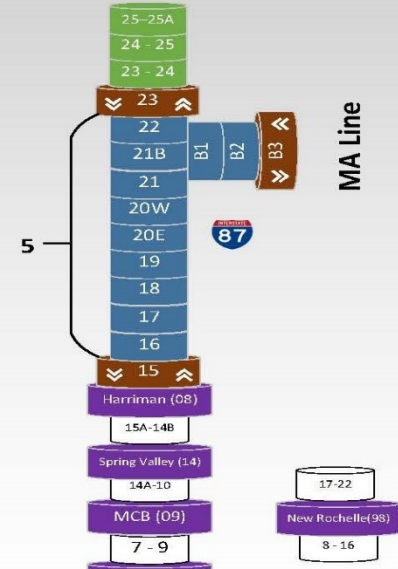
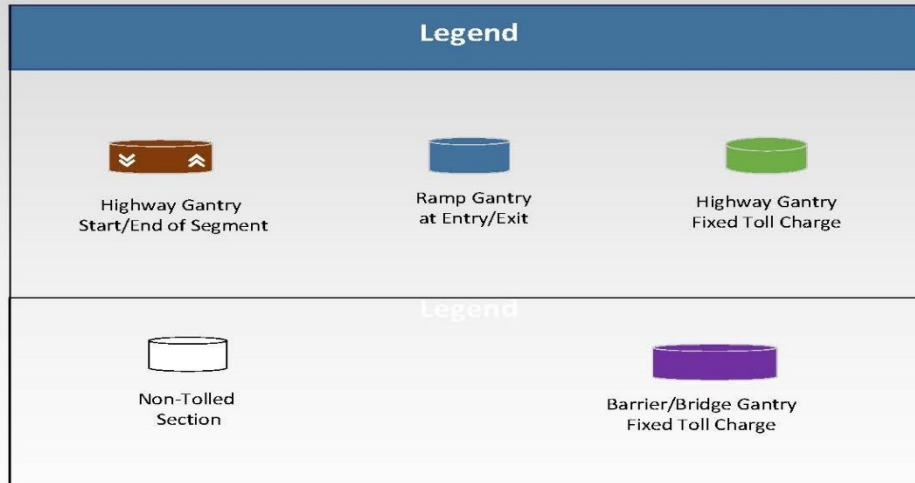
Rochester

Syracuse

Albany



PA Line



MA Line

# Other Impacts

- Access to commuter, maintenance and tandem lots
- Plowing operations
- Wide Load Restrictions

# Lessons Learned

- Plan for Everything
- Don't Expect the Plan to be Followed
- Adapt and Re-Adapt to Non-Conforming Conditions

# Taking a Ride on the Thruway



# Questions

Eric Christensen

Deputy Director of Operations

NYS Thruway Authority

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