

# OHIO DEPARTMENT OF TRANSPORTATION

JOHN R. KASICH, GOVERNOR

JERRY WRAY, DIRECTOR



## Active Traffic and Demand Management

Brenton Bogard, P.E.

Studies Engineer

Office of Roadway Engineering

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# Why ATDM?

## Dynamically manage recurrent and non-recurrent freeway congestion

- Maximize effectiveness / efficiency
- Increase throughput and safety
- Integrated systems with new technology
- Automated dynamic deployment



### Individual Lanes

- Dedicated Shoulder Lanes
- Dynamic Shoulder Lanes
  - All Traffic
  - HOV Dynamic Shoulder Lanes
  - Priced Dynamic Shoulder Lanes
- Junction Control

### All Lanes

- Speed Harmonization
- Queue Warning
- Dynamic Re-routing



# Project Goals

1. Improve travel time reliability
2. Preserve reliable capacity in the future
3. Improve freight travel
4. Improve transit travel
5. Reduce vehicle delays
6. Financial feasibility
7. Reduce overall travel times
8. Improve person/passenger throughput
9. Reduce passenger travel time
10. Reduce overall VMT
11. Public support
12. Improvement in driving safety



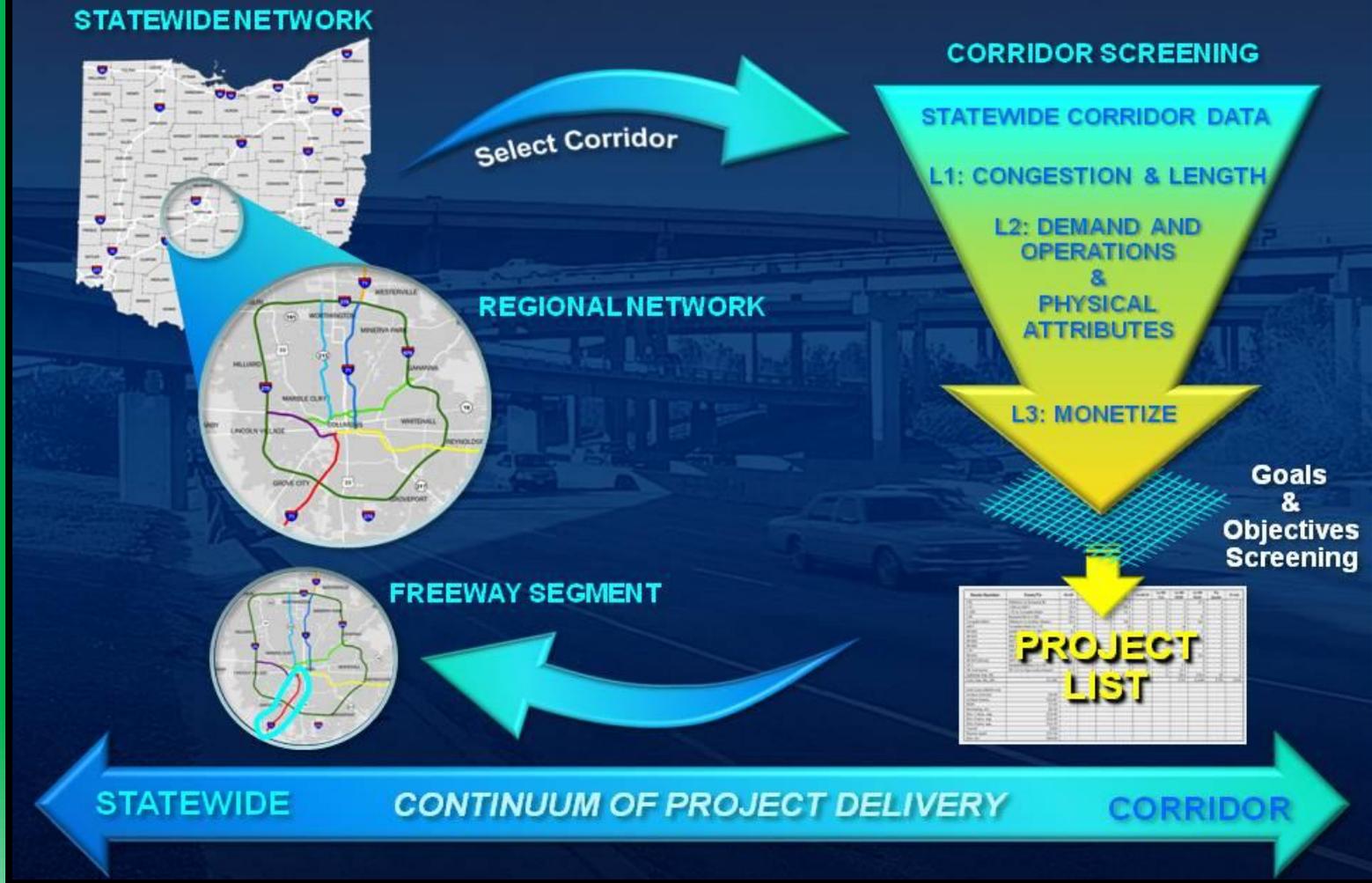
# Strategies Considered

## Corridor Specific:

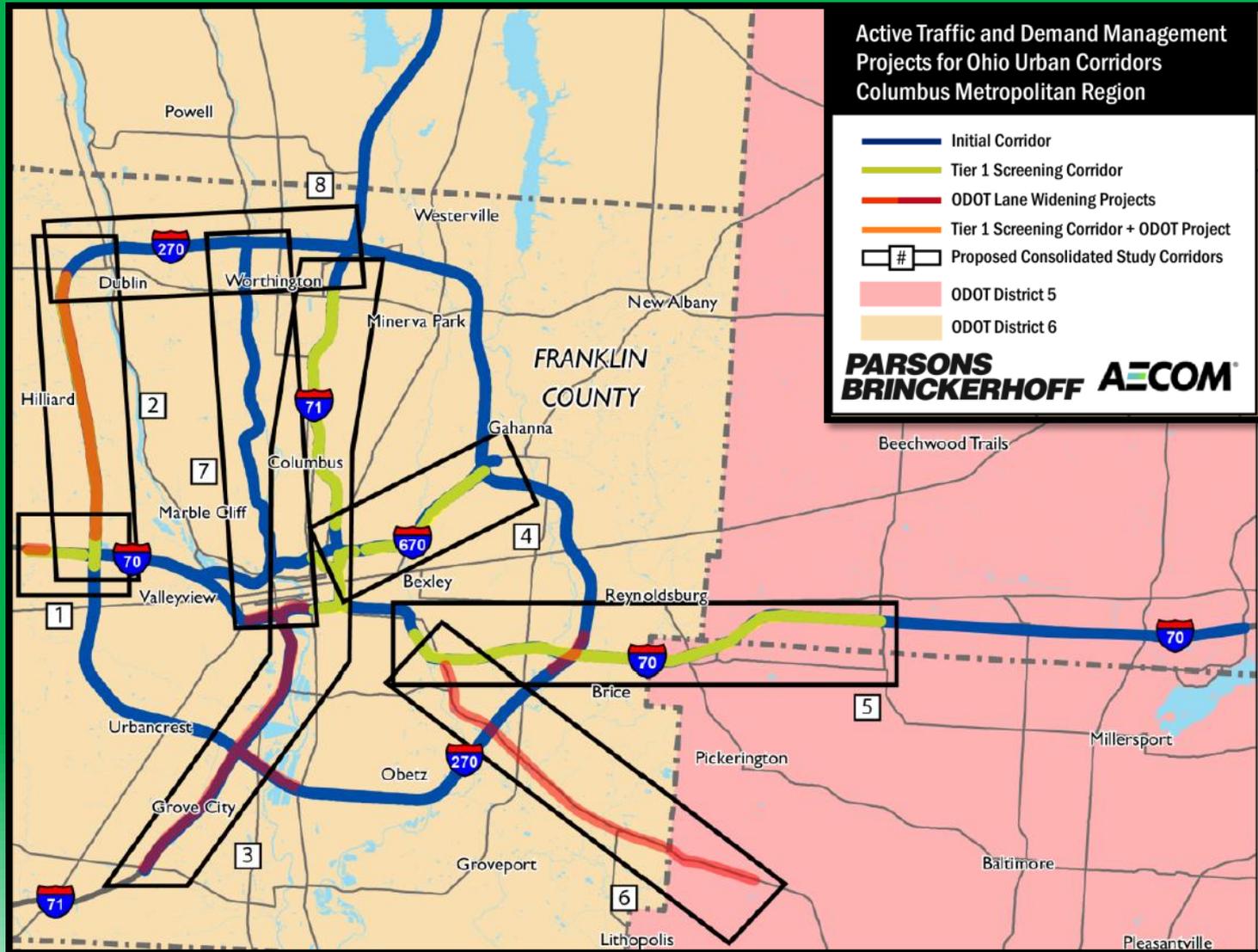
- Ramp Metering
- Hard Shoulder Running (HSR)– Busses Only
- Hard Shoulder Running (HSR) – Mixed Traffic
- Dynamic Merge Control
- Variable Speed Limits/Speed Harmonization
- Choice Lanes
  - HOV Lanes
  - HOT Lanes
- Dynamic Lane Assignment
- Contra-flow Lanes



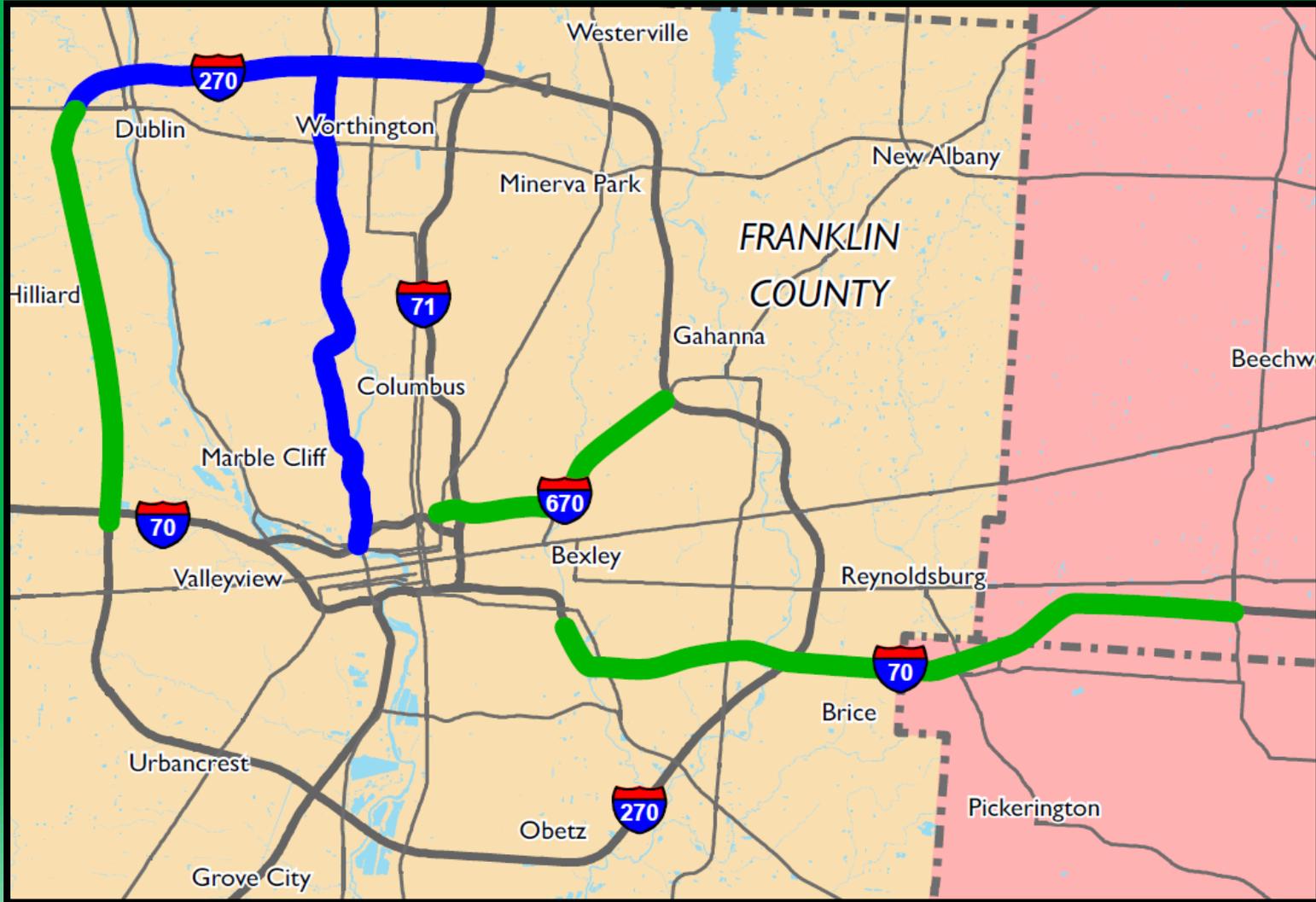
# Corridor Screening Process



# Screening Corridors: Columbus



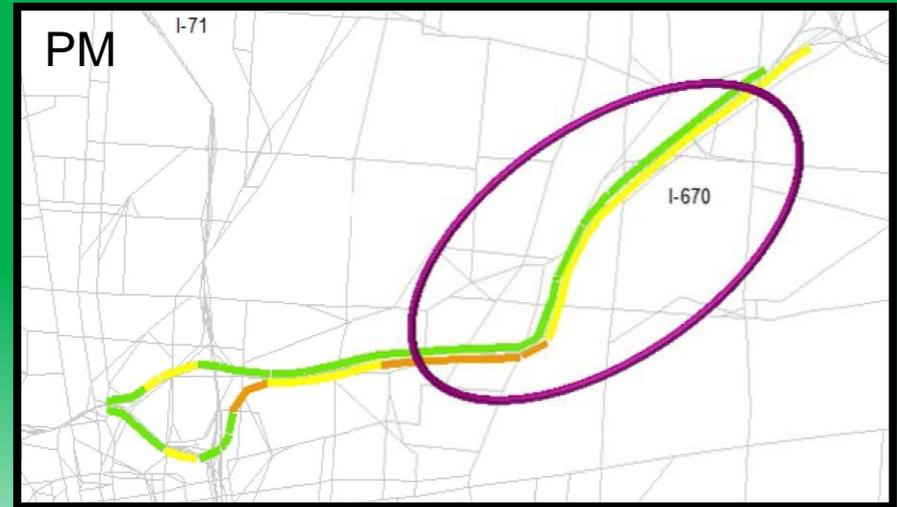
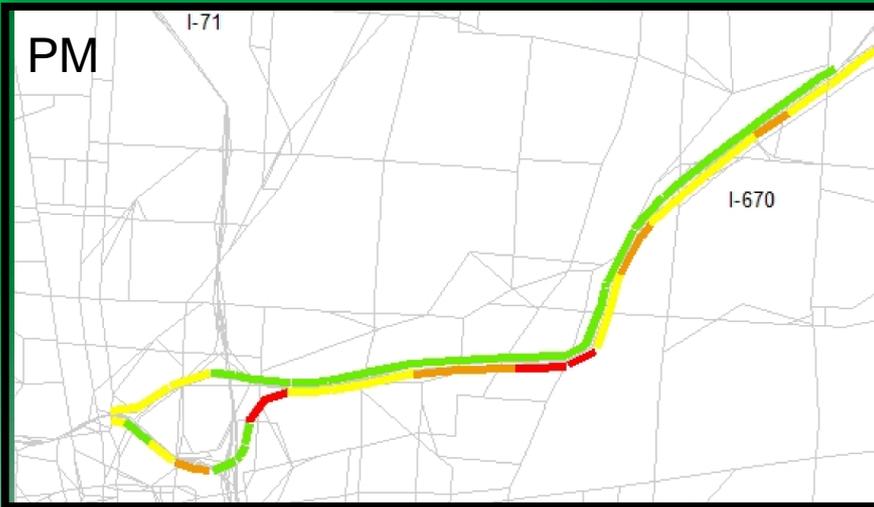
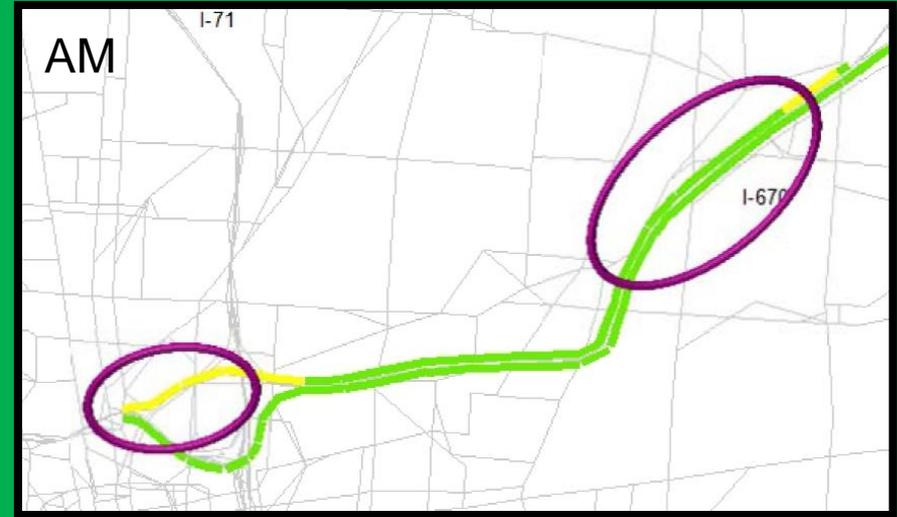
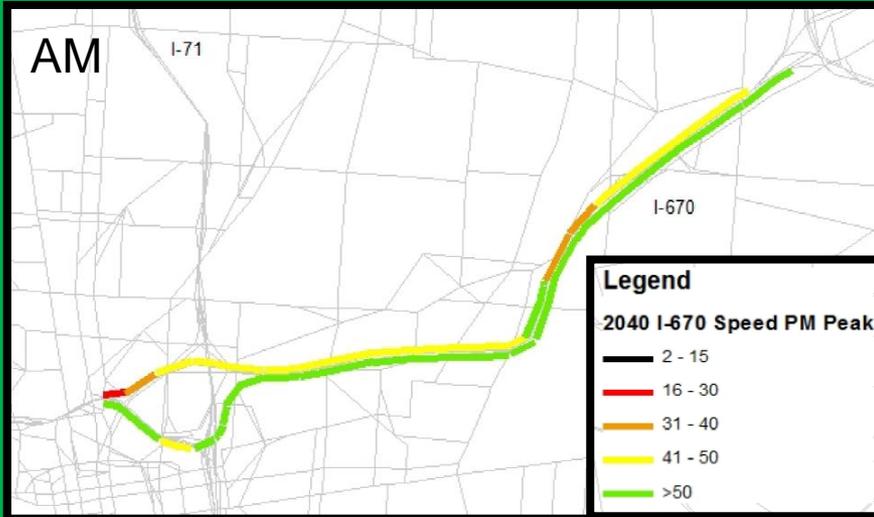
# Screening Level 2 Corridors: Columbus



# Columbus: AM & PM Peak Speeds

2040 No-Build

2040 Hard Shoulder on I-670



# Tertiary Screening/ Economic Analysis Overview

- Quantitative — Preliminary Benefit Cost Ratio (BCR)

- D— Preliminary screening process using traditional benefits

- Travel time savings (truck/auto)

- Travel time reliability (truck/auto)

- Emissions (reduced truck/auto VMT)

- Travel cost savings (reduced truck/auto VMT)

- Safety (reduced truck/auto VMT; crash reduction/increase with ATDM)

- Qualitative Rating—Potential for Wider Economic Benefits

- Productivity/agglomeration

- Economic competitiveness

- Investments avoided/delayed

- Overall Ranking



# Mobility Benefits for I-670 HSR - 2040

- Peak Reliability Travel Time Savings:  
5.1 to 5.7 minutes
- Decreased Peak Vehicle Hours of Delay:  
33% to 45% (180 to 260 Vehicle Hours)
- Annual Vehicle Hours of Delay Reduction:  
3,240
- Increased Peak Vehicle Miles Travelled:  
8% to 13%
- Decreased Peak Vehicle Hours Travelled:  
1% to 9%



ANNUAL RELIABILITY SAVINGS



PEAK SPEED IMPROVEMENT



# Benefits and Cost for I-670 HSR

## Benefit Cost Ratio

(>1)

3.5

Based on:

- \$41.4 Million Capital costs
- \$0.9 Million O&M costs
- \$159.0 Million Economic benefits
- Reliability savings – 81%
- Safety benefits from Speed Harmonization



# ATDM Policy Considerations

- Stakeholder Support
- Legal
- Financial
- Regional Consistency
- Inter-agency Alignment
- Phasing



# What's next?

## Develop Concept of Operations

**HOW:** will the system operate (TMC requirements),

**WHO:** will operate and maintain the system,

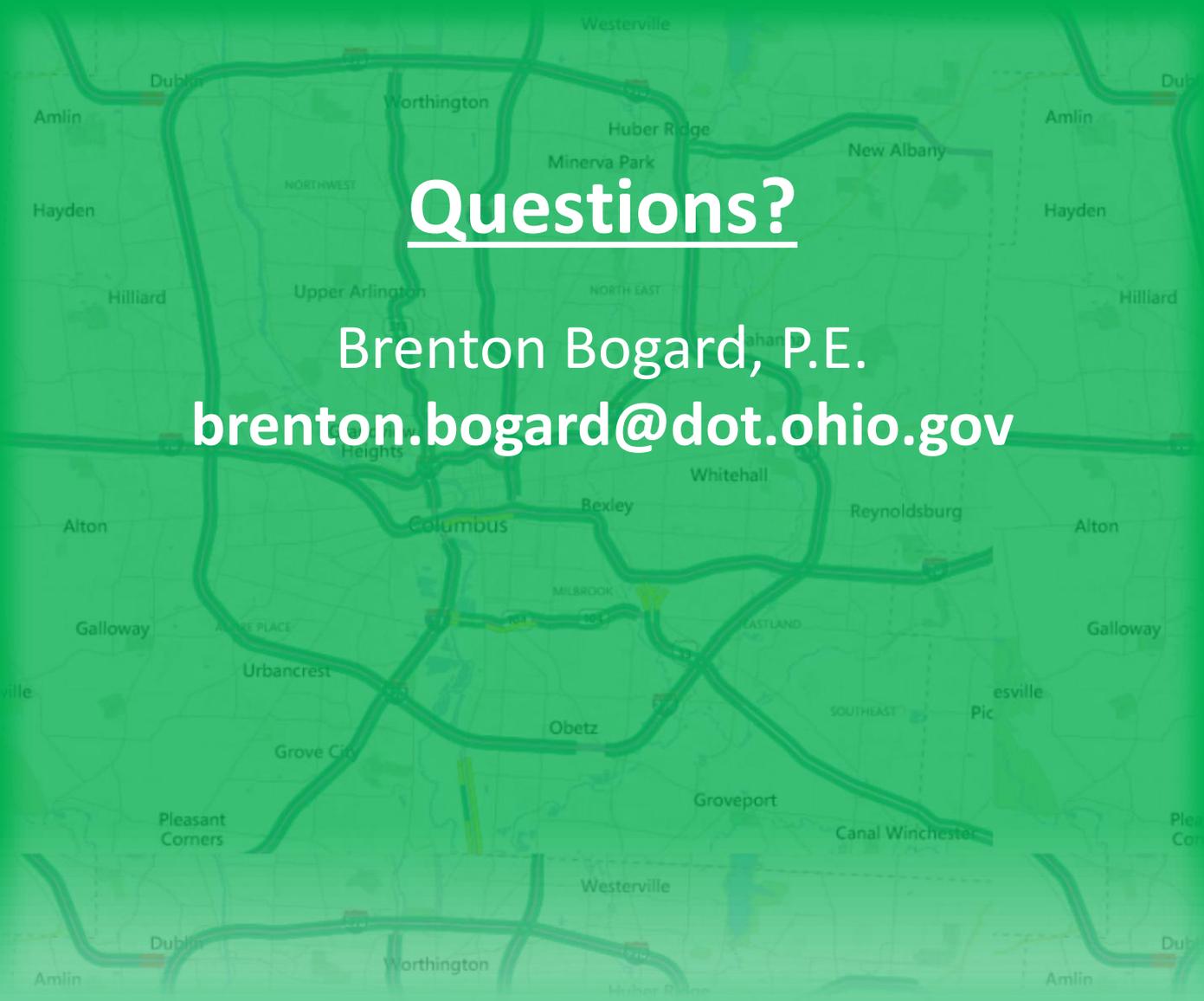
**WHAT:** elements will the system incorporate,

**WHEN:** will the system operate, and

**WHERE:** will the system be in operation

- Operational policies and constraints
- ITS Systems Functionalities
- TMC Operations
- Performance Measures and Monitoring  
(Travel Time Reliability, Optimizing Person Throughput)
- Operational Scenarios
- Enforcement





# Questions?

Brenton Bogard, P.E.

[brenton.bogard@dot.ohio.gov](mailto:brenton.bogard@dot.ohio.gov)

