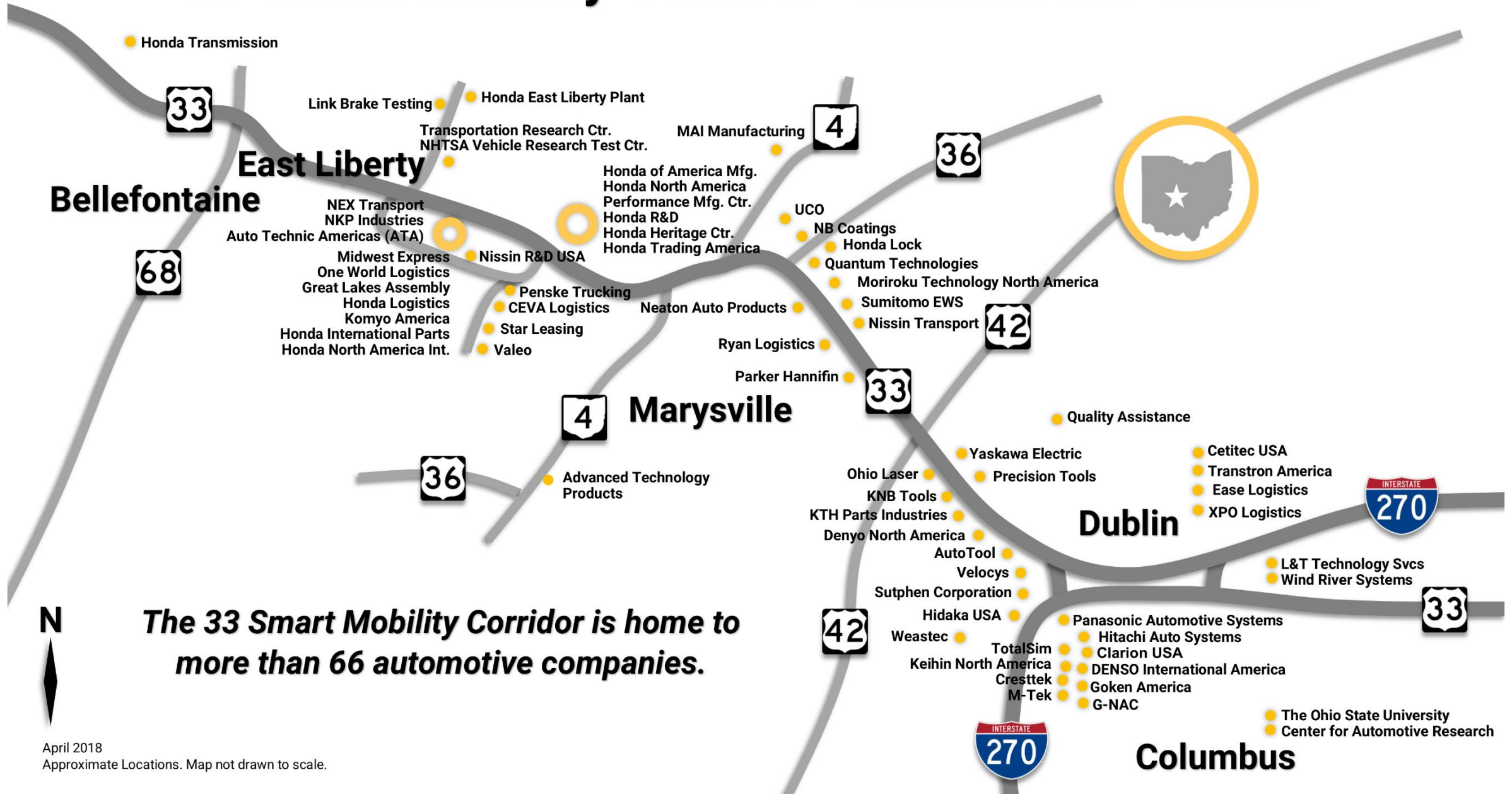


33 Smart Mobility Corridor - Automotive Cluster



April 2018
Approximate Locations. Map not drawn to scale.

CORRIDOR PROJECT EVOLUTION



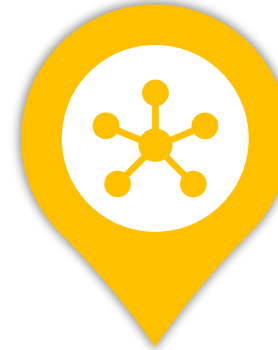
2014-15

- ▶ Collaborative Group Formed to Explore Development Issues along US-33
- ▶ Collaborative Group Prioritizes Fiber Connectivity along US-33



2016

- ▶ Fiber Strategy Consultant
- ▶ OSU Mobility Concept
- ▶ Smart Project Introduced
- ▶ ODOT Commits up to \$15 M for Fiber Construction
- ▶ NW 33 COG Formed
- ▶ USDOT Awards \$5.9 M Grant



2017

- ▶ Fiber Installation Completed along US-33 (ODOT)
- ▶ Ohio Announces \$45 M for TRC Expansion

PROJECT GOALS

Economic Development

Global Partnerships

AV/CV Testing

Smart Infrastructure

Public Safety

Data

- * Data Collection and Commercialization

- * Improve Congestion, Safety, and Employment Access

- * Installation of Smart Mobility Infrastructure and Systems Management

- * AV/CV Testing
- * Contained Testing at TRC
- * On-road Testing on US-33
- * Truck Platooning
- * Urban Testing

- * Research Similar Programs Across USA & World
- * Form and Foster Partnerships to Advance Smart Mobility Projects
- * Exchange Data and Best Practices with Partners

- * Investment in New/ Emerging Technologies
- * Smart Mobility Industry Grows up to +\$2 Trillion Annually by 2025
- * Expansion of TRC and Other Automotive Assets
- * Attraction of Businesses to Area Business Parks

33 SMART MOBILITY CORRIDOR INVESTMENTS

- ▶ Nearly \$100 MILLION has been pledged by public and private partners corridor.
- ▶ Over \$525 M of private automotive related investment has been made since 2015.
- ▶ Another ~\$125 M of private automotive related investment is planned in 2018-19.

400
THOUSAND

Local Fiber Network Public Funding

15
MILLION

ODOT Fiber Network Investment

3.4
MILLION

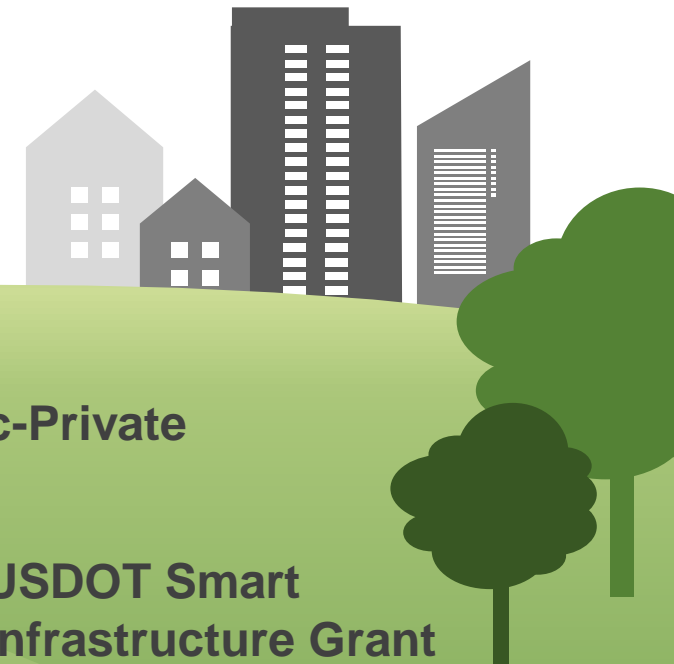
Local Public-Private Matches

5.9
MILLION

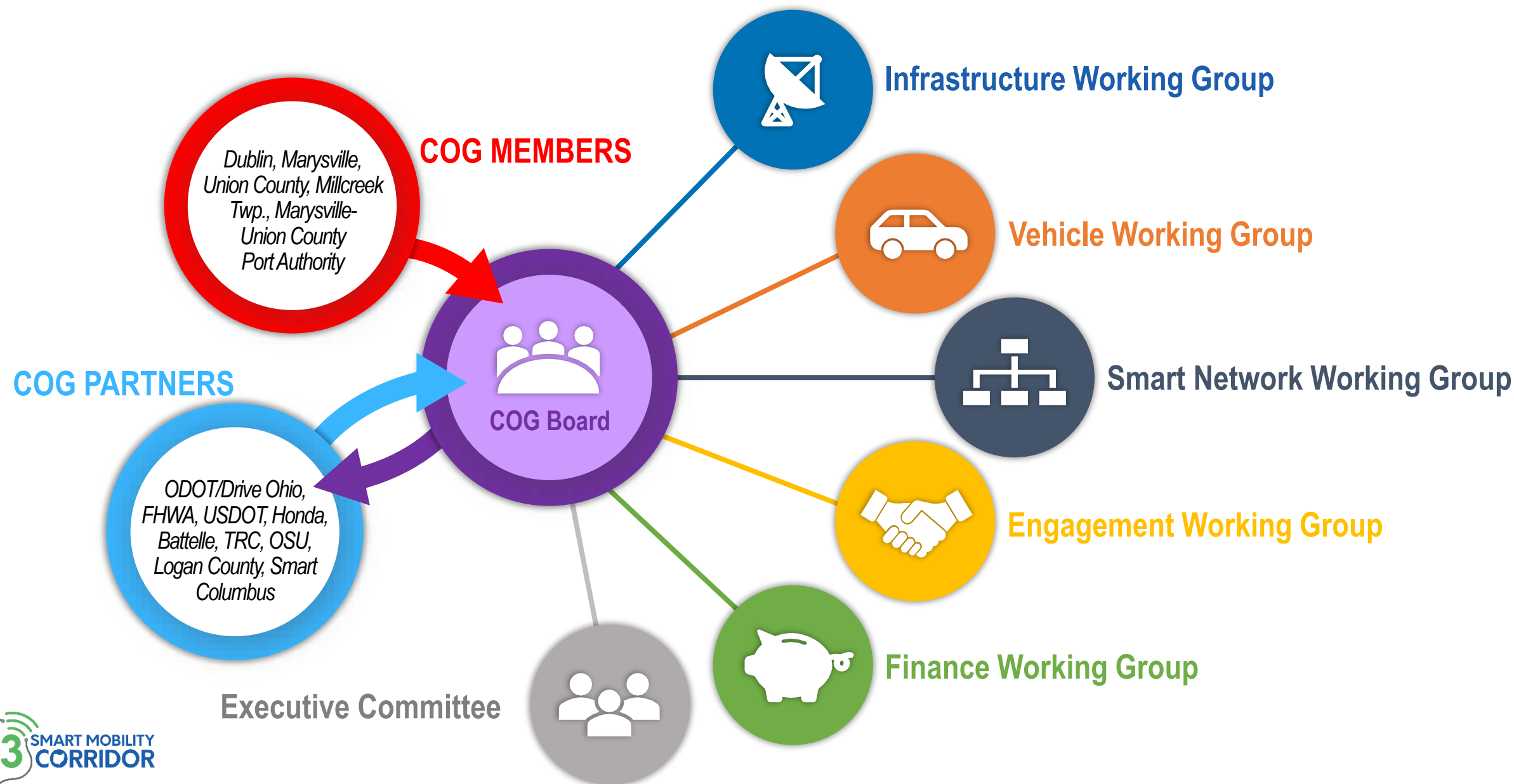
USDOT Smart Infrastructure Grant

45
MILLION

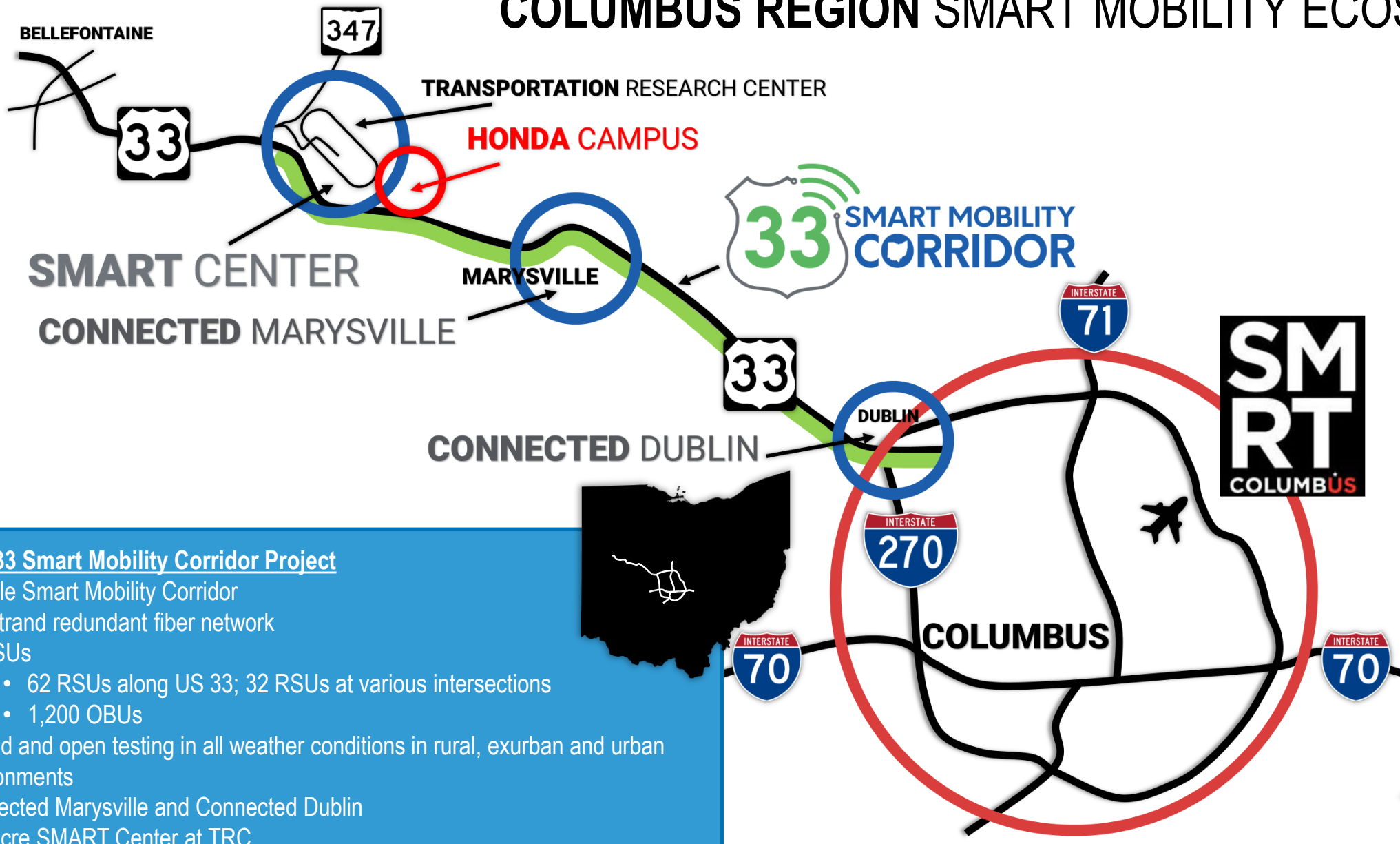
TRC SMART Center Phase I



NW 33 COG STRUCTURE



COLUMBUS REGION SMART MOBILITY ECOSYSTEM

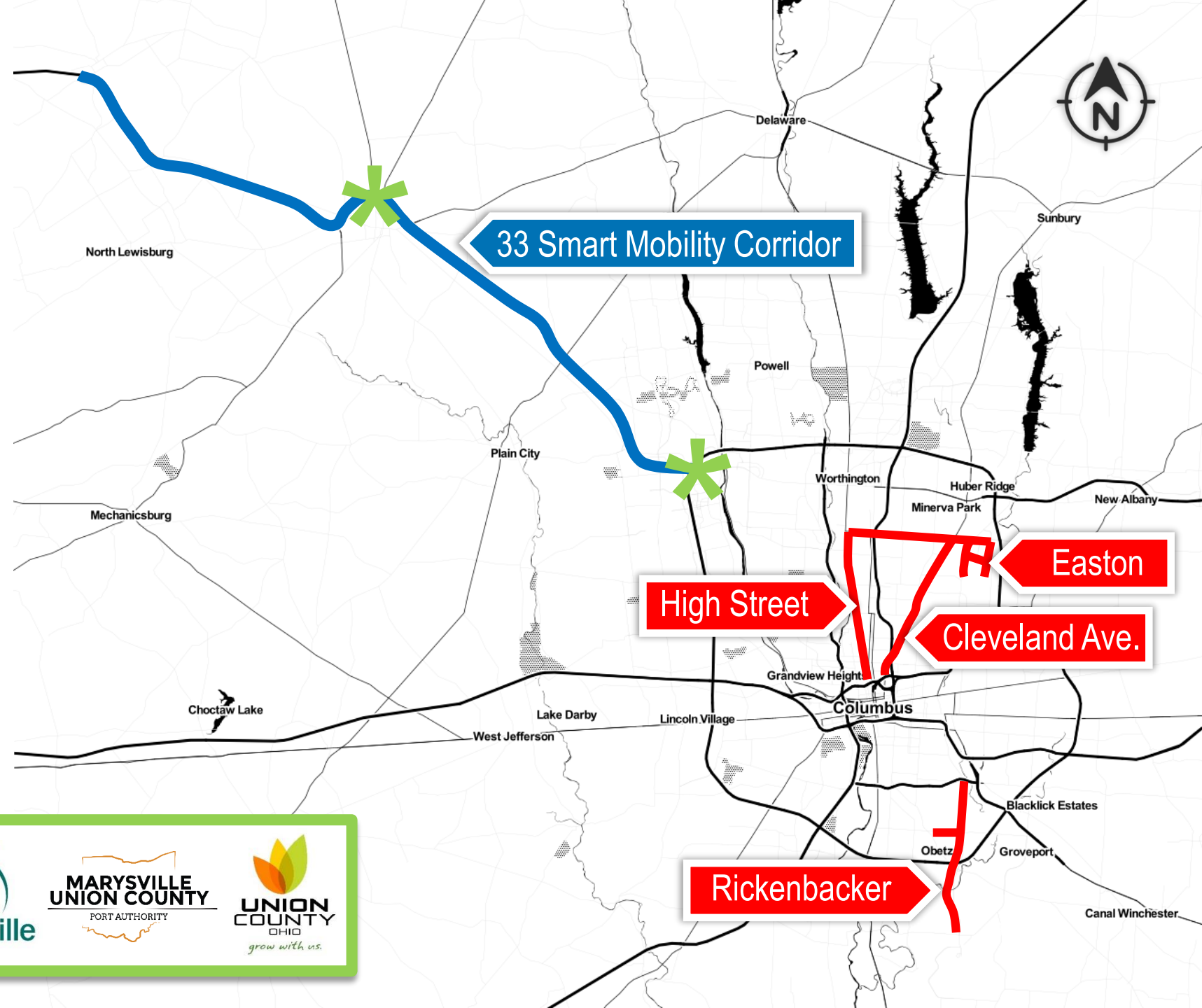


Ohio's 33 Smart Mobility Corridor Project

- 35-mile Smart Mobility Corridor
- 432 strand redundant fiber network
- 94 RSUs
 - 62 RSUs along US 33; 32 RSUs at various intersections
 - 1,200 OBU's
- Closed and open testing in all weather conditions in rural, exurban and urban environments
- Connected Marysville and Connected Dublin
- 540-acre SMART Center at TRC
- Smart Belt Coalition effort to connect OH, PA, and MI

REGIONAL CONNECTED VEHICLE ENVIRONMENT (CVE)

- **179 Intersections:**
 - 147 City of Columbus
 - 27 City of Marysville
 - 5 City of Dublin
- **3,000 cars, trucks, and buses** connected in the Columbus Region by 2020:
 - 1,800 City of Columbus
 - 1,200 Marysville/US-33



DriveOhio
The Future of Smart Mobility

SMRT
COLUMBUS


City of
Dublin
OHIO, USA


CITY OF
marysville


MARYSVILLE
UNION COUNTY
PORT AUTHORITY


UNION COUNTY
OHIO
grow with us.

CONNECTED MARYSVILLE

- 27 Traffic Signals outfitted with RSUs
- 1,200 vehicles outfitted with OBUs
- Online repository for collected data from vehicles
- Future investments:
 - Signage
 - Striping
 - Street Lighting

Smaller Town, Lower Traffic Volumes

- 10% Penetration Rate with 1,200 vehicles.
- Connected vehicles won't get lost in the crowd.

Home of Honda's largest manufacturing and R&D facilities in North America

- End user feedback allows for "right size" design



CONNECTED DUBLIN

Comprehensive “Smart City” Approach

- Smart Mobility is a priority
- Unique opportunities to innovate

Avery-Muirfield Corridor

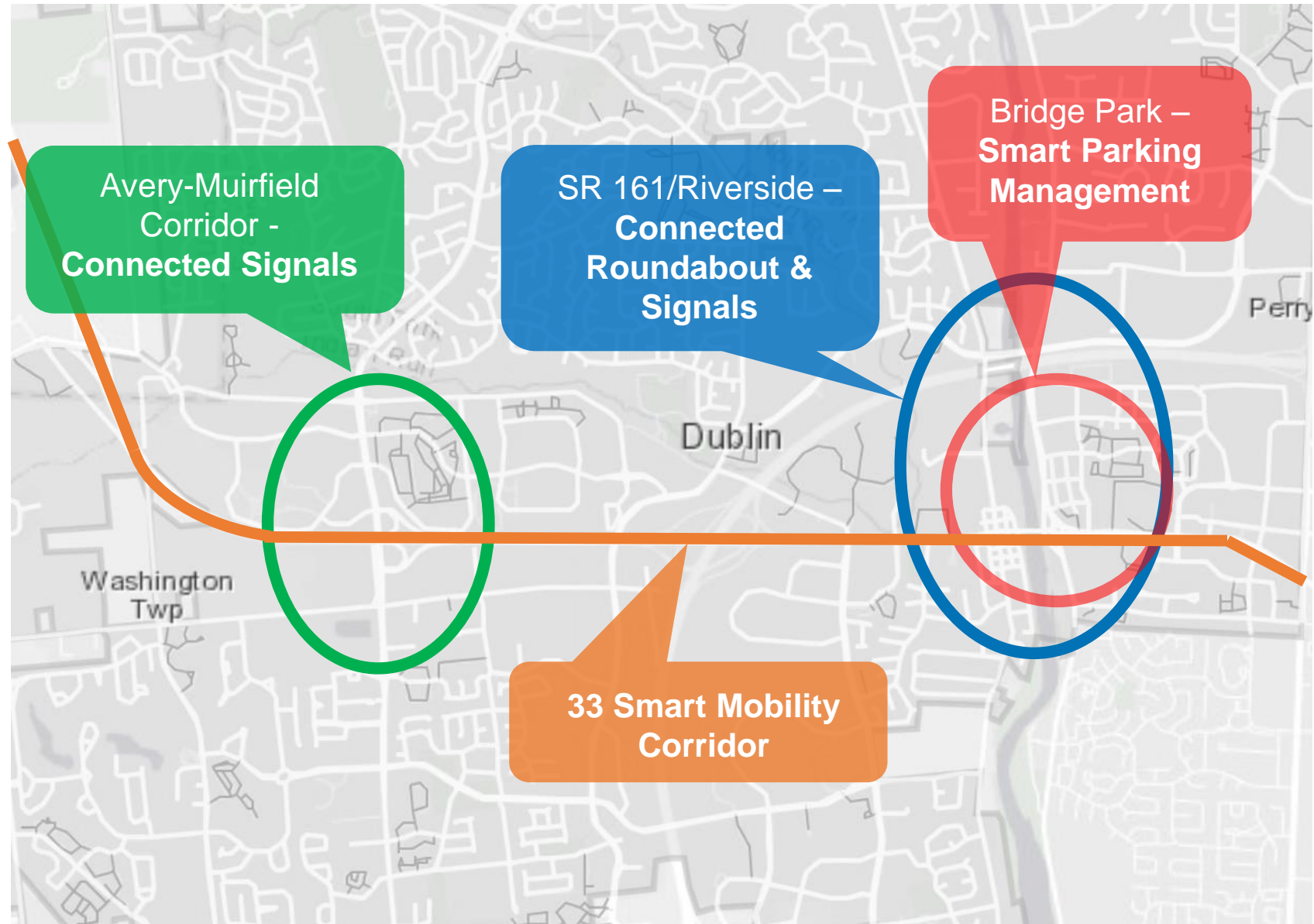
- ATCMTD Grant
- Traffic Signals outfitted with RSUs

SR 161/Riverside Drive Roundabout

- Multilane roundabout within 2 signalized corridors
- CV research and operations study
- Roundabout CV Application

Bridge Park East Smart Parking

- NO existing meter infrastructure
- Mobile Only Parking Management



WHY ARE WE DOING THIS?

Nationwide, total of **37,461** people died in motor vehicle crashes in 2016. These deaths occurred in **34,439** crashes involving **52,231** motor vehicles. This was a **6 percent increase in deaths** compared with 2015 and the highest number of traffic deaths since 2007.

94% of serious crashes are due to human error.

ERAS OF VEHICLE SAFETY IMPROVEMENT



1950 – 2000

- * Safety/Convenience Features
- * Cruise Control
- * Seat Belts
- * Antilock Brakes



2000 – 2010

- * Advanced Safety Features
- * Electronic Stability Control
- * Blind Spot Detection
- * Forward Collision Warning
- * Lane Departure Warning



2010 – 2016

- * Advanced Driver Assistance Features
- * Rearview Video Systems
- * Automatic Emergency Braking
- * Pedestrian Automatic Emerg. Braking
- * Rear Automatic Emerg. Braking
- * Rear Cross Traffic Alert
- * Lane Centering Assist

HOW DO WE MAKE MOBILITY SAFER?

- ✓ V2V and V2I vehicle technology could address **80%** of the crash scenarios.
- ✓ V2I technology alone could reduce **26%** of all target crashes annually.
- ✓ Left Turn Assist (LTA) and Intersection Movement Assist (IMA) could prevent 592,000 crashes and **save 1,083 lives** per year.



PLANNED CVE APPLICATIONS



Pedestrian Crosswalk Warning



Red Light Violation Warning



Road Weather Sensor System



Ramp Wrong Way Warning



Curve Speed Warning at Interchange Ramps



Signal Phasing & Timing



Reduce Speed Zone Warning/Lane Closure



Railroad (potential)

FUTURE PROJECT TIMELINE

2018

- * Phase II Fiber Installation along Industrial Parkway and Northwest Parkway for Redundant Loop
- * System Engineering Completed
- * TRC Begins Construction of SMART Center
- * Corridor Named as Proving Ground for UAT
- * DriveOhio Established by State of Ohio
- * NW 33 COG Hires Project Manager
- * Executive Order Establishes Statewide AV/CV Testing Protocol

2019

- * DSRCs with RSUs are Installed
- * OBUs Installed in Vehicles
- * Statewide Data Exchange Implemented

2020

- * 33 Smart Mobility Ecosystem Operational
- * CV Application Fully Operational

2021

- * DSRCs are Required in all New Vehicles

Drive^{OH}io

The Future of Smart Mobility



2018-2019 Statewide Projects



THANK YOU / QUESTIONS?



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NW 33 Innovation Corridor Council of Governments



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