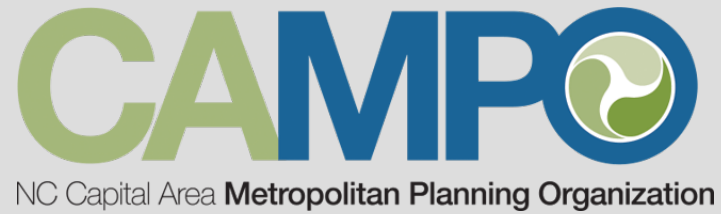# TRIANGLE REGION ITS DEPLOYMENT PLAN UPDATE

Durham-Chapel Hill-Carrboro TCC

September 23, 2020

# TEAM



VHB Engineering NC, P.C.

Iteris

ICF

# TRIANGLE REGION ITS STRATEGIC DEPLOYMENT PLAN UPDATE

- What is the purpose of the plan?

- What are the major components of the plan?

- How were study objectives achieved?

- What are the major findings?

# PLAN PURPOSE

- Provide a framework for the near-term, mid-term, and long-term (up to 10 years from present) deployment of ITS technologies to enhance efficiency and sustainability of the regional transportation system

- Geography includes the combined areas of the Durham-Chapel Hill-Carrboro MPO (DCHC MPO) and the Capital Area MPO (CAMPO)
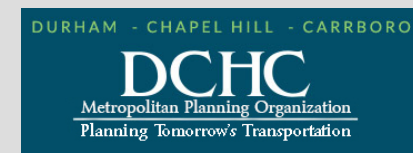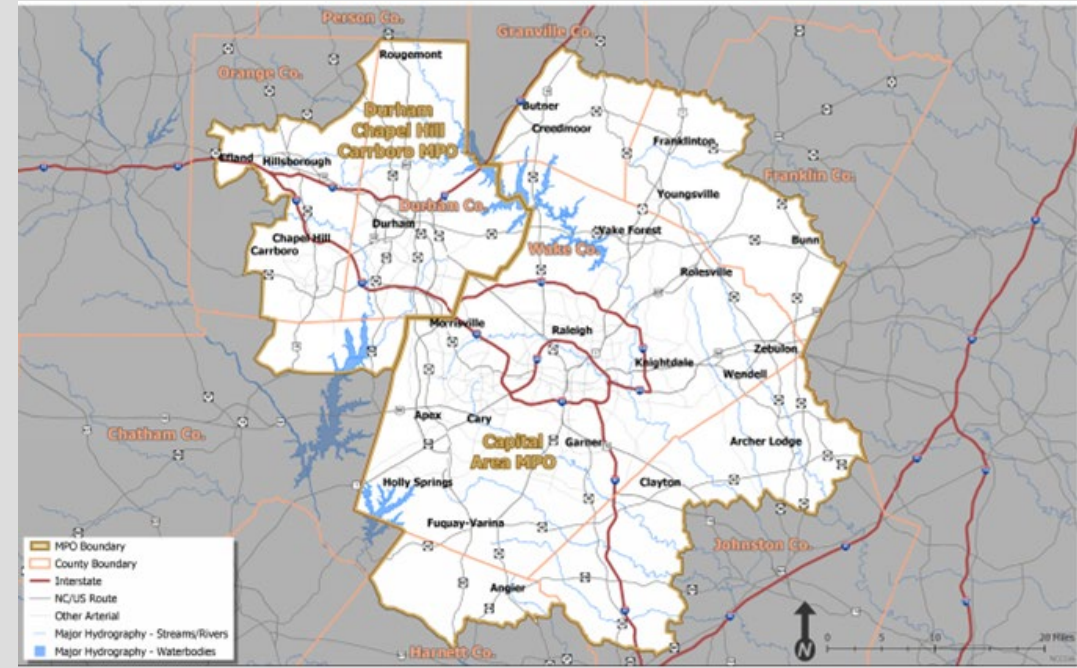
# OBJECTIVES OF THE STUDY

- Support Vision Zero

- Support reliability across an integrated transportation network

- Enhance network mobility

- Improve multimodal connectivity and equitable access

- Improve, monitor, and manage assets

- Support economic vitality

## HOW STRATEGIES

Establish and develop partnerships for operations, communication, and information dissemination

Improve incident management and response

Prioritize deployments to improve safety and provide accurate real time information

Expand Integrated Corridor Management (ICM) Program

Improve system communications for interconnectivity and data sharing

Implement an Asset Management Program

Evaluate and execute cost effective solutions

# MAJOR STUDY EFFORTS

- Updating the Regional ITS Architecture

- Assessing current ITS deployment and identifying gaps between current conditions and goals

- Assessing current state of the practice and emerging technologies

- Identifying deployment recommendations

# ARCHITECTURE UPDATE

- Architecture was updated to the latest version USDOT's Architecture Reference for Cooperative and Intelligent Transportation (ARC-IT)

- Web-based document that can be hosted locally.

- Includes all of the backbone requirements for developing the deployment plan

- Currently hosted by Iteris (https://local.iteris.com/ncarch/index.htm )

- Will be hosted by Triangle J Council of Governments (TJCOG)

# ARCHITECTURE UPDATE

RAD-IT

Home
Scope
Planning
Stakeholders
Inventory
    By Physical Object
    By Stakeholder

- Scope: the geographic scope, timeframe, and services included in the architecture

- Planning: this section links the Objectives for the region from the ITS Plan update to the services in the architecture

- Stakeholders: lists the agencies and private sector organizations that play a role in the implementation, management, or operation of ITS systems and contributing systems in the region

- Inventory: lists the things – the systems and devices that make up ITS in the region as well as non-ITS systems that have data needed by the ITS systems or that take data from ITS
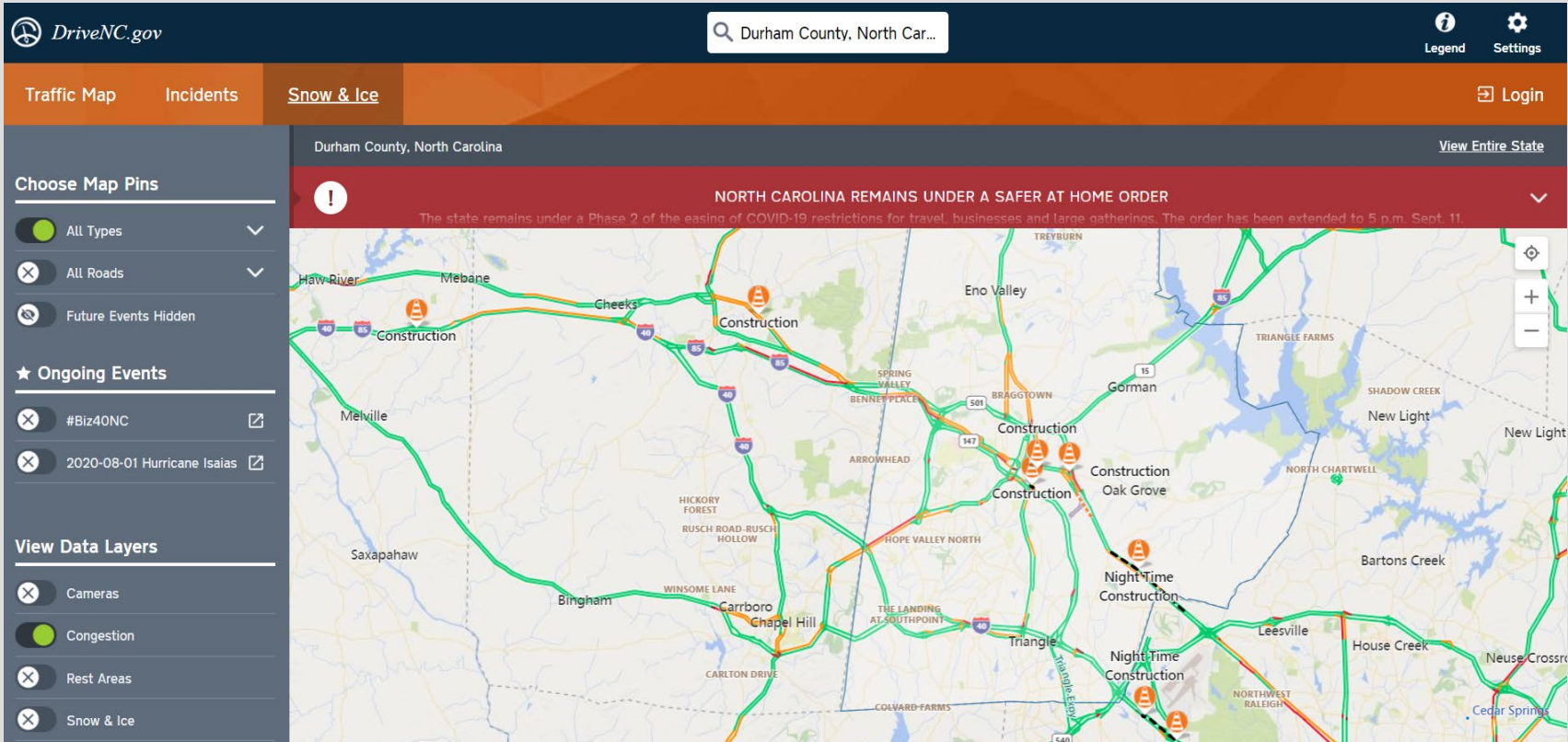
# CURRENT DEPLOYMENTS AND GAPS

- Utilized the 2010 ITS Deployment Plan
  - Identified what was planned vs what has been implemented
- Utilized feedback from stakeholders in the region
  - Transit operators
  - Municipal/MPO staff
  - NCDOT staff
- Large stakeholder group meetings and small group stakeholder interviews

# STAKEHOLDER ENGAGEMENT

- Three large stakeholder group meetings/workshops

  - All municipalities, transit operators, emergency services, NC Toll Authority, NCDOT, and both DCHC and CAMPO staff were invited attendees

- Ten Small group interviews included

  - Town of Cary, Town of Morrisville, and Town of Apex

  - City Durham

  - City Chapel Hill and Town of Carrboro

  - City Raleigh, Town of Garner, and Town of Wake Forest

  - NCDOT Central Office

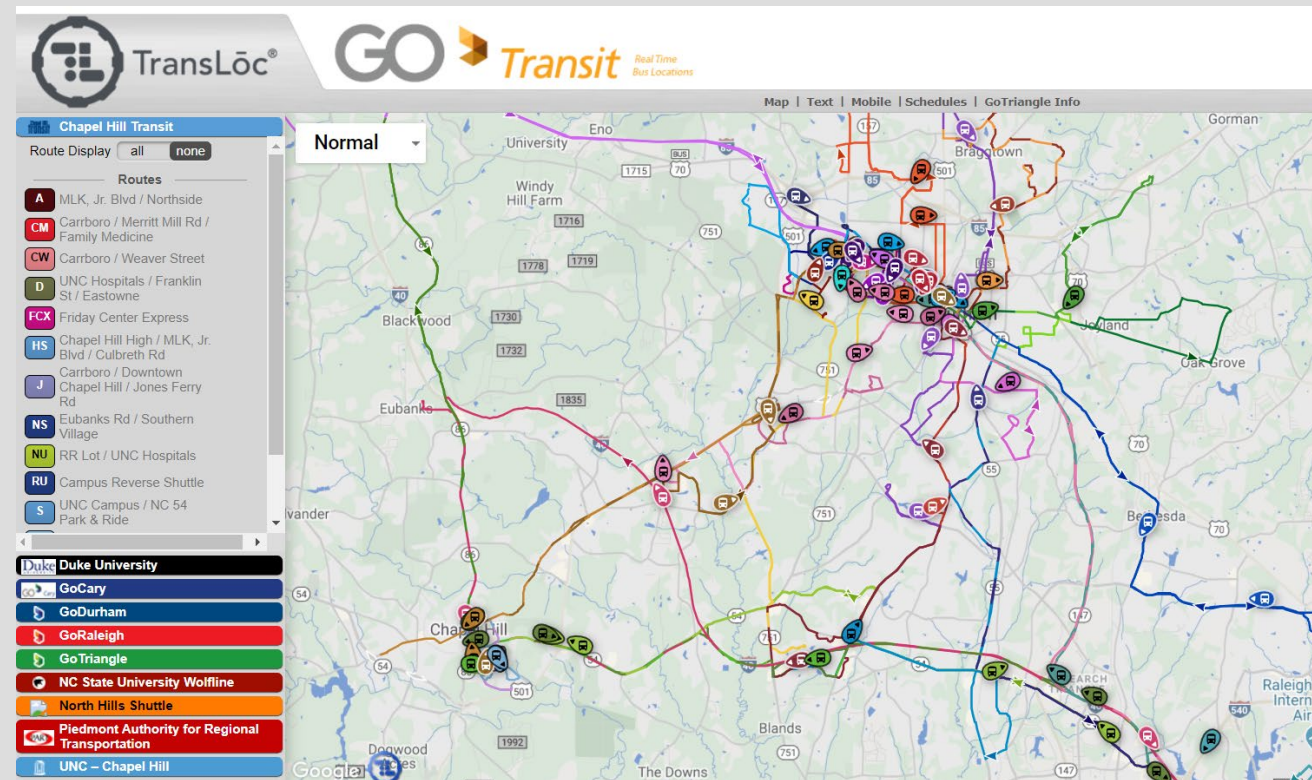  - NCDOT Divisions 4, 5, and 6

  - NC Turnpike Authority

  - GoTriangle

# EXAMPLES OF CURRENT DEPLOYMENTS

- https://drivenc.gov/

# EXAMPLES OF CURRENT DEPLOYMENTS

- https://triangle.transloc.com/

# EXAMPLES OF CURRENT DEPLOYMENTS

- Traffic management centers

- Dynamic message signs

- Traffic signal systems connected via communication systems

- Wide area fiberoptic cable communication networks with supplemental wireless

- Bicycle detection and lead-pedestrian-interval (LPI) signal phasing

- Emergency vehicle pre-emption

- Wrong-way driving detection on I-540 ramps

- CCTV cameras

- Signal Phase and Timing (SPaT) Challenge deployments for connected vehicles

- Integrated corridor management for large scale roadway construction projects

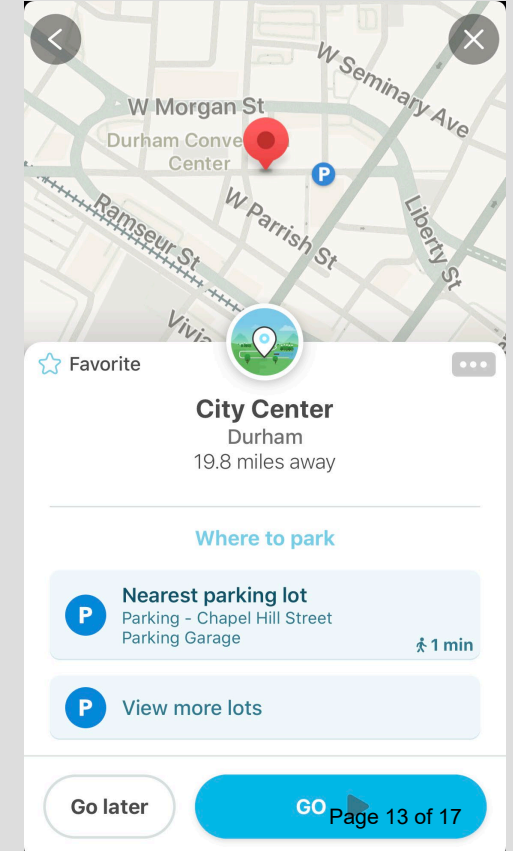- Waze and Google Maps navigation platforms

Typical CCTV Camera

Waze Navigation App

Underground Traffic Signal Fiber

# STATE OF THE PRACTICE AND EMERGING TECHNOLOGIES

- Literature research

- Utilized feedback from stakeholders in the region

  - Transit operators

  - Municipal/MPO staff

  - NCDOT staff

- Large stakeholder group meetings and small group stakeholder interviews

# EXAMPLES OF THINGS TO COME TO THE REGION

- Autonomous and connected vehicle technologies
  - Competing technologies – Dedicated Short Range Communications (DSRC) radio and 5GLTE wireless technology
- Transit vehicle preemption
  - BRT corridors under development
- Continued operation and deployment of past successes
  - Additional traffic management center
  - DMS
  - Coordinated traffic signal systems with improved compatibility across municipal boundaries
  - More widespread GPS-based EVP
  - More robust and fully connected fiber optic network
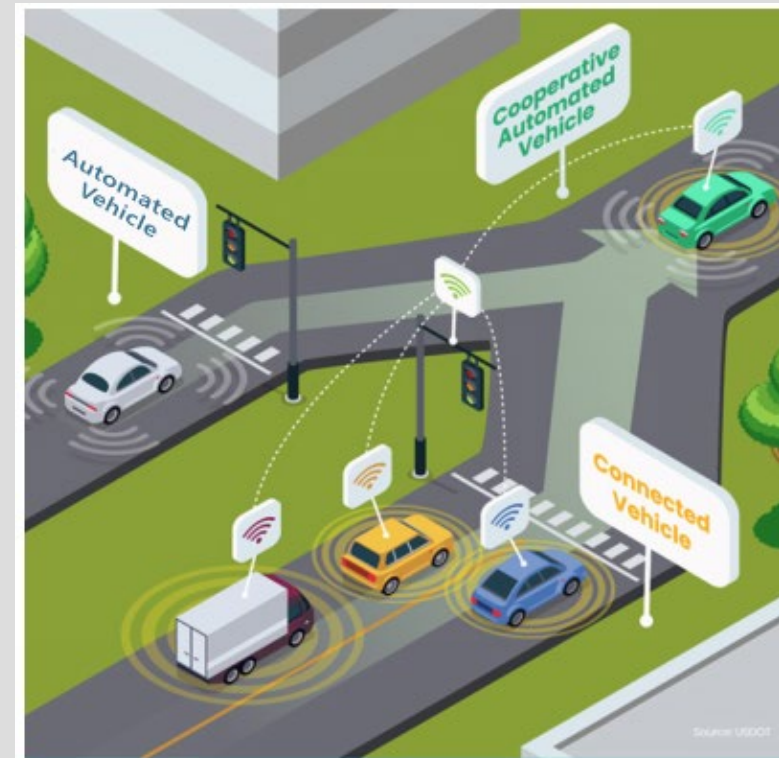


Connected and Automated Vehicles (CAVs) are expected to provide **increased safety** while also **supporting economic vitality**. CAVs are expected to be a significant component of future automotive industry.

# MAJOR DEPLOYMENT PLAY RECOMMENDATIONS

42 Action Items were identified

- Build and inventory a regional fiber optic cable network

- Establish a regionally compatible asset management system

- Continue constructing coordinated traffic signal systems

- Establish software and hardware platforms to support connected and automated vehicles seamlessly across the region

- Continue developing municipal agreements to consolidate municipal traffic signal systems

- Continue deployments to support transit – transit signal priority/bus rapid transit, unified farebox systems, and improved AVL systems

- Establish a regional task force/working group intent on ITS deployment

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