Autonomous & Connected Vehicles Task Force

The Freight-ITS-ACV Interrelationship

March 2, 2018
Greater Charlotte Regional Freight Mobility Plan

- Identifies key regional issues and transportation system constraints;
- Recommends projects, programs, and policies; and
- Establishes a regional collaborative approach for freight planning

**IN ORDER TO:**

*Provide an efficient, reliable, safe and sustainable freight transportation system.*
Regional Freight Mobility

Freight mobility is moving goods efficiently and affordably over the Greater Charlotte Region’s transportation system.
Regional Collaboration

- Multi-Jurisdictional
- 14 Counties across 2 States
- Public-Private Collaboration
Three Perspectives For Freight Planning
Charlotte Regional Freight by the #’s

- 77% of freight is moved by trucks (freight tonnage)
- Air moves the highest value commodities
- Freight tonnage is expected to nearly triple by 2045
Regional Freight Plan Recommendations

**INFRASTRUCTURE PROJECTS** to improve the freight truck, rail and air networks

**REGIONAL PROGRAMS** to improve how freight systems operate

**LOCAL POLICIES** to encourage location efficiencies and promote region’s assets
Freight Plan Program Recommendations

• ITS
  ▪ Expand the use of Intelligent Transportation Systems (ITS), technology, and innovation to improve the flow of freight such as:
    ▪ Surveillance systems
    ▪ Variable message signs
    ▪ Ramp control/metering

• TIM
  ▪ Identify opportunities to share information, best practices and training as well as coordination to improve TIM and Emergency Response Management
  ▪ Incident management should be prioritized for responding to increased congestion, safety issues during highway construction and impacts of vehicular crashes.

ITS and TIM:
  ▪ Develop a Freight Network resiliency plan.
Freight ITS & TIM Champion Group

“to assess the region’s current ITS and TIM systems, identifying peers, and recommend approaches to improve these two regional systems.”
# Overview: ITS & TIM

<table>
<thead>
<tr>
<th>System</th>
<th>Definition</th>
<th>Purpose</th>
<th>Users</th>
<th>Where/When</th>
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<tbody>
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<td>ITS</td>
<td>Integration of advanced communications-based information and electronic technologies into transportation infrastructure and vehicles.</td>
<td>Enhances efficiency of transportation system by allowing users to make informed and “smarter” use of the system.</td>
<td>Environmental and planning professionals, emergency responders/law enforcement, departments of transportation, transit agencies, traffic information media, commuters</td>
<td>Used Daily for road maintenance/issues diagnosis, fleets seeking route optimization, connected and autonomous vehicles networks, higher volumes approaching system capacity And in case of: disasters, homeland security threats, weather events</td>
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<td>TIM</td>
<td>Enhances productivity and safety of the transportation system through a planned and coordinated process to detect, respond to, and remove traffic incidents.</td>
<td>Restores capacity as safely and quickly as possible. Ensures safety of motorists, crash victims, and emergency responders.</td>
<td>Emergency responders/law enforcement, transportation planning agencies, towing/recovery providers, hazardous materials contractors, traffic information media, commuters</td>
<td>Accidents (medical assistance, traffic control, fire suppression, etc.), public safety communications, providing updated motorist information (e.g.- travel times, alternative routes), HAZMAT response/ containment. And in case of: disasters, homeland security threats, weather events</td>
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Region’s ITS – Challenges & Limitations

- System Integration among state, regional & local agencies
- Operations & Maintenance
- System Life-Cycle Planning=$
- Highway infrastructure inadequate to accommodate widespread ITS device deployment (e.g.-ramp metering)

- Political Support & Funding
- System upgrades to support current technology and communication needs
- Coordinate with & leverage existing process & plans

ITS Life-Cycle Diagram

- Planning
- Obsolescence & Technology Changes
- Invest/Install
- System Integration
- Maintenance & Operations
Freight ITS & TIM Champion Group
Outcomes & Recommendations

- **Intelligent Transportation System**
  - Develop Regional/Bi-state Shared Vision
  - Improve Interoperability and Communications
  - Address Transportation Technology Changes
  - Improve Communications with Freight Operators and Travelers

- **Traffic Incident Management System**
- All Above – Plus:
  - Coordinated Training – Especially for First Responders
  - Address Culture, Seek Champions Through Coordination Meetings
ITS & Connected Vehicles & Freight Mobility
Intelligent Transportation Systems (ITS)

- Is an operational system of various technologies that, when combined and managed, **improve the operating capabilities of the overall system**.
- Improves safety and mobility by integrating advanced communications-based information and electronic technologies into the transportation infrastructure and vehicles.
**Connected Vehicles**

CV technology and ITS can practically **eliminate crashes** and **manage traffic** more effectively.

CV technology could **reduce unimpaired vehicle accidents by 80%**.
CLT Freight Mobility

TRUCKS

- Move the greatest tonnage of freight
- 8 Bottlenecks in the CLT region
- In 2014, total cost of congestion for trucks was $131 million in Charlotte NC-SC region. Total congestion was $770 million
- CLT region doesn’t have an adequate supply of truck parking to meet demand. Creates a safety issue.
- The industry is changing. Drivers are aging out.
Freight AV Application in NC

Autonomous Vehicles

• NC HB 469
  • parameters for autonomous vehicle testing
  • establishes Fully Autonomous Vehicle Committee

• Triangle Expressway – Managed Mobility
  • 1 of 10 national sites for testing CAV
Freight CV Application in NC

Connected Vehicles
- Platooning
- HB 716

* allows truck platoon testing
Considerations for the ACV Task Force

- Freight Applications - Policies
- Region’s ITS needs & minimum requirements