Autonomous & Connected Vehicles Task Force

The Freight-ITS-ACV Interrelationship

March 2, 2018

Greater Charlotte Regional Freight Mobility Plan

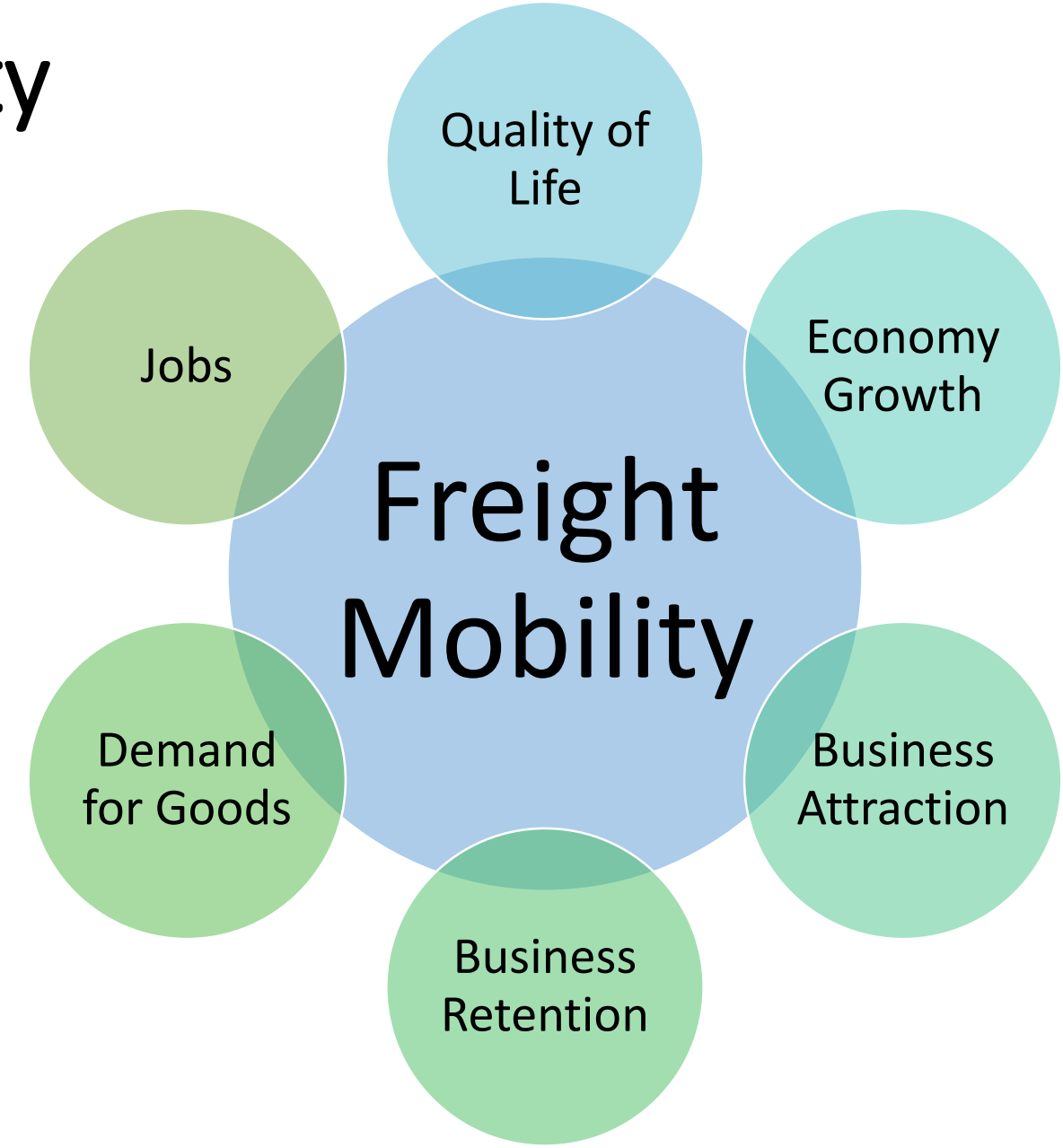
- Identifies key regional issues and transportation system constraints;
- Recommends projects, programs, and policies; and
- Establishes a regional collaborative approach for freight planning

IN ORDER TO:

Provide an efficient, reliable, safe and sustainable freight transportation system.

Regional Freight Mobility

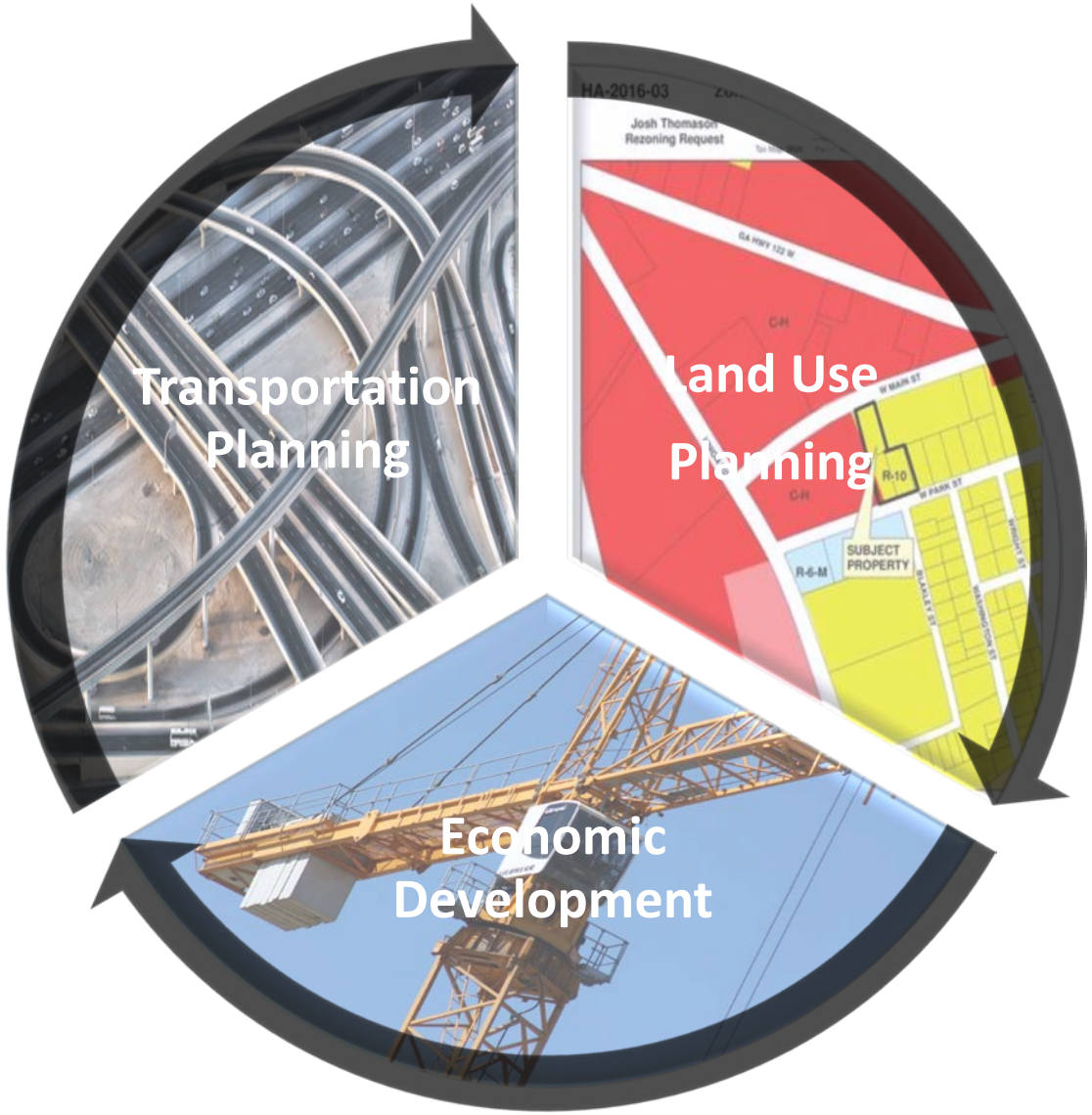
Freight mobility is moving goods efficiently and affordably over the Greater Charlotte Region's transportation system.



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

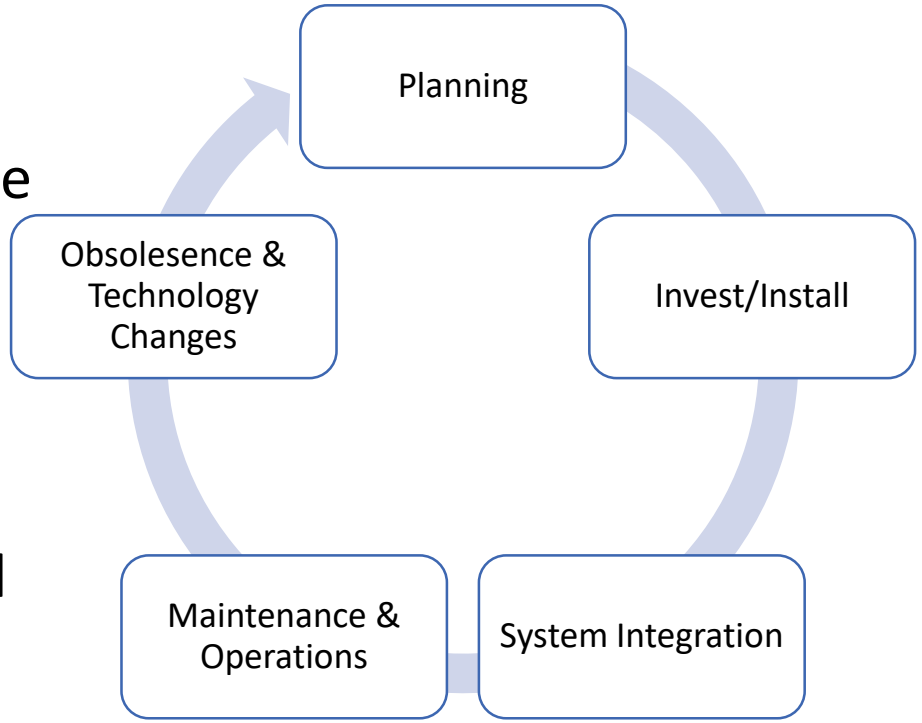
"to assess the region's current ITS and TIM systems, identifying peers, and recommend approaches to improve these two regional systems."

Overview: ITS & TIM

System	Definition	Purpose	Users	Where/When
ITS	Integration of advanced communications-based information and electronic technologies into transportation infrastructure and vehicles.	Enhances efficiency of transportation system by allowing users to make informed and "smarter" use of the system.	Environmental and planning professionals, emergency responders/law enforcement, departments of transportation, transit agencies, traffic information media, commuters	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
TIM	Enhances productivity and safety of the transportation system through a planned and coordinated process to detect, respond to, and remove traffic incidents.	Restores capacity as safely and quickly as possible. Ensures safety of motorists, crash victims, and emergency responders.	Emergency responders/law enforcement, transportation planning agencies, towing/ recovery providers, hazardous materials contractors, traffic information media, commuters	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

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)



ITS Life-Cycle Diagram

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

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

Systems Approach

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

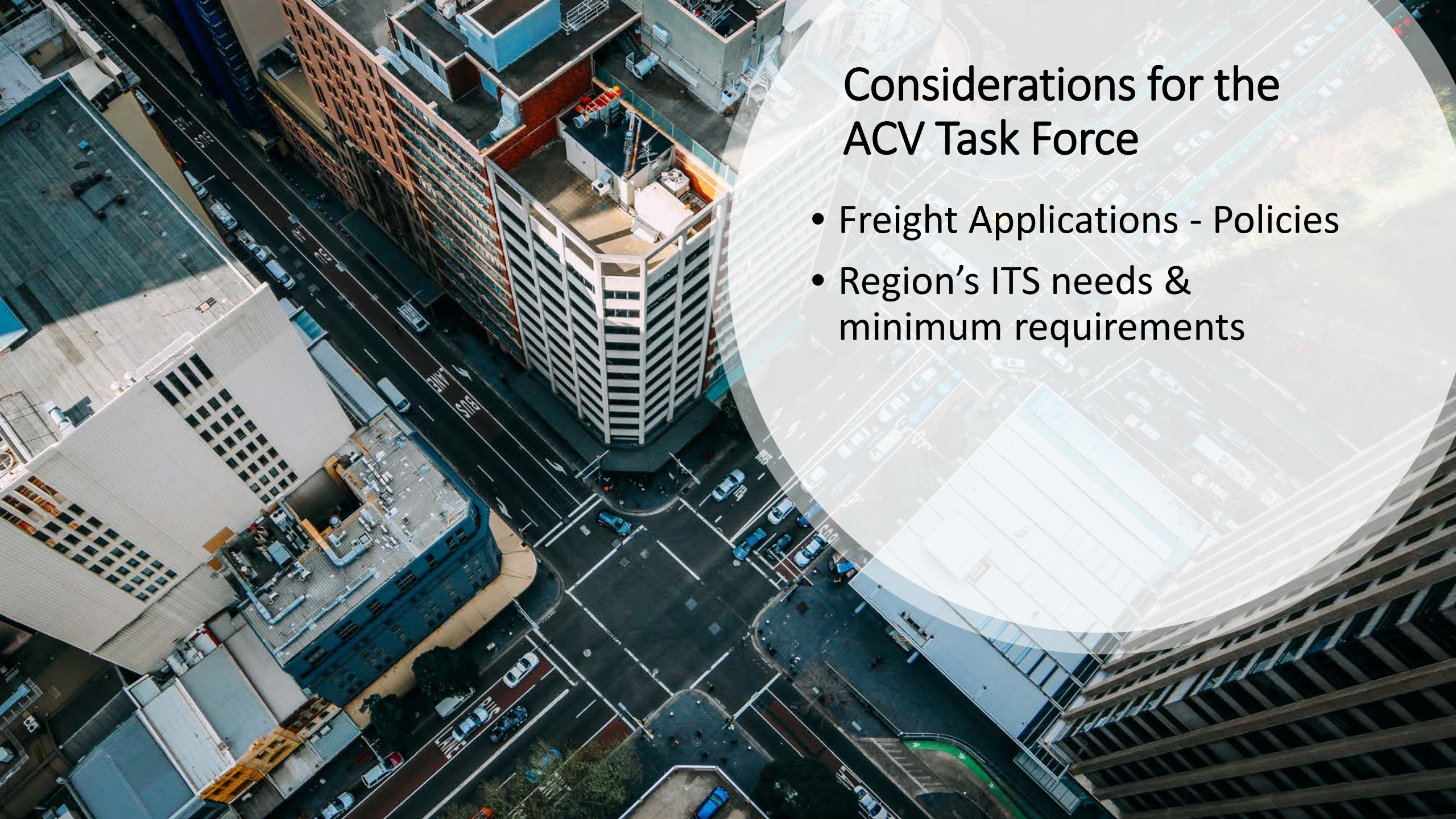
Autonomous Vehicles

- **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