City of Richmond: Smart Cities Initiatives

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Regional Transportation Forum

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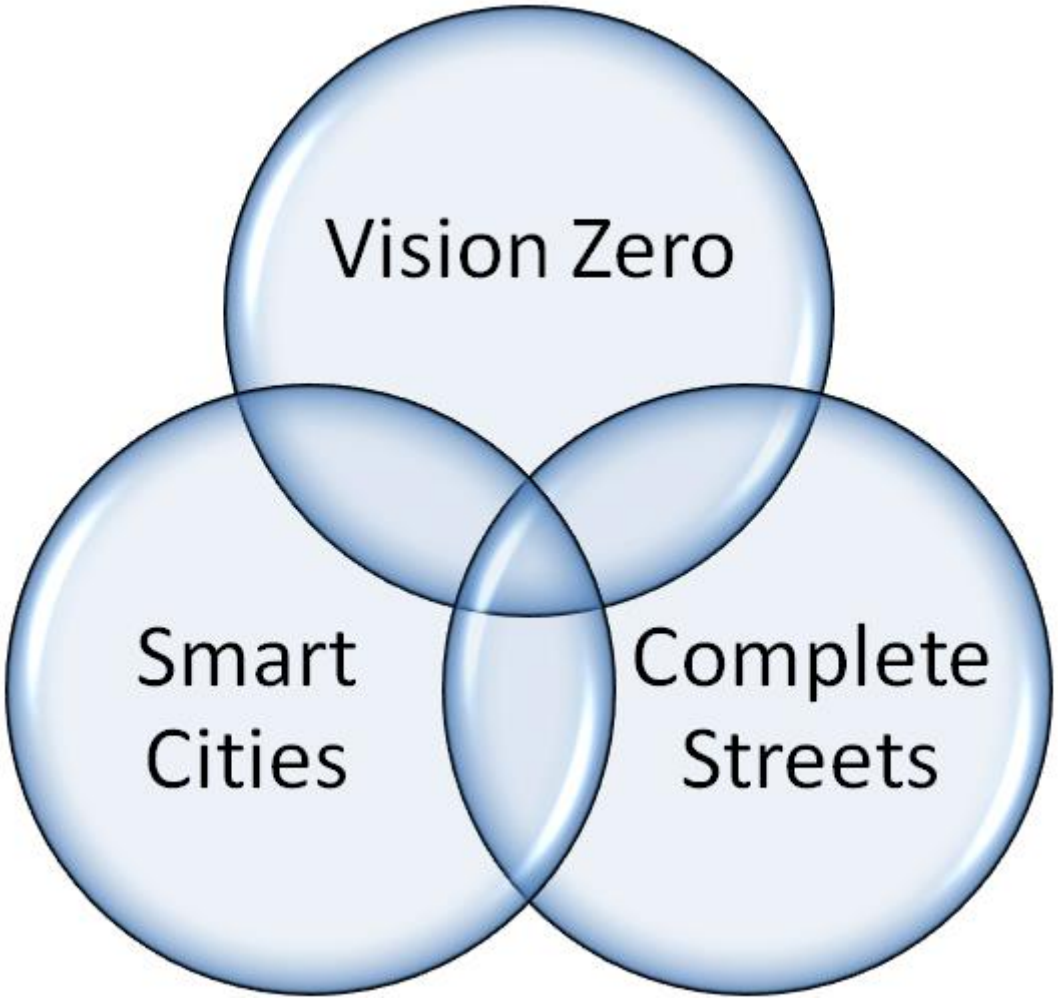
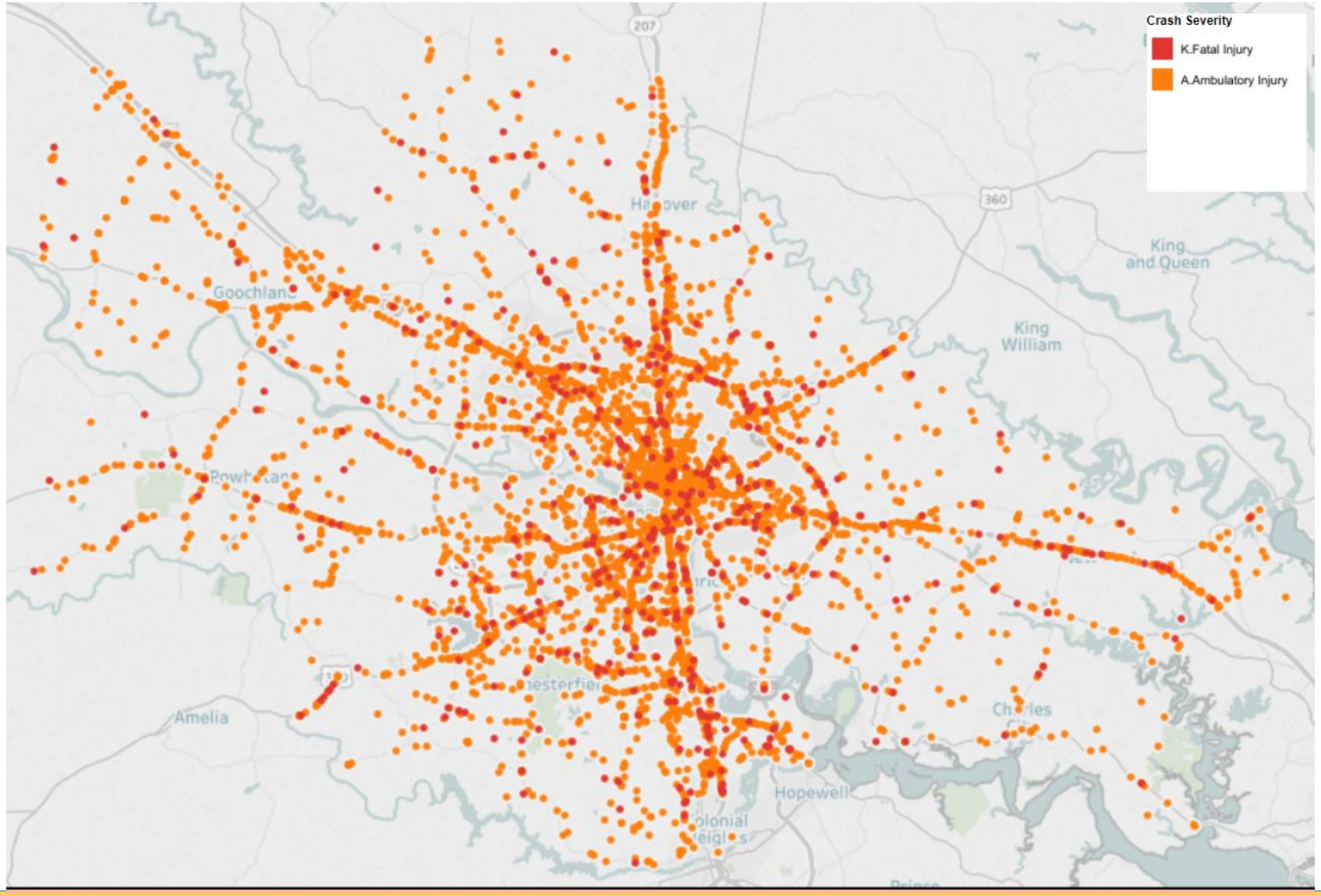
City's Transportation Emphasis



Why is Vision Zero important?

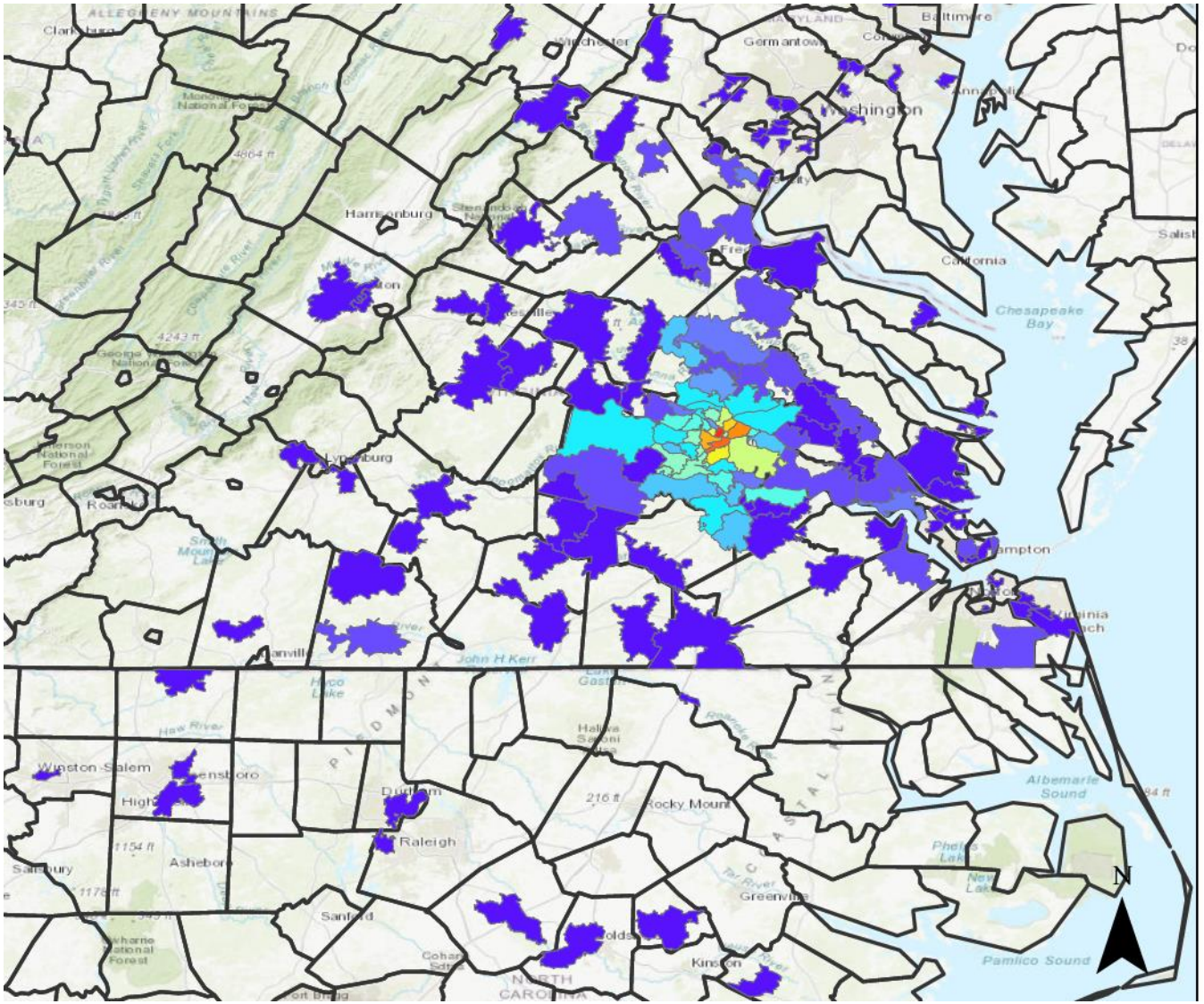


From 2013 to August 2018

- 5,010 Severe Crashes in the RRTPO (112,499 total)
  - 533 people killed in traffic related deaths
    - 97 people were walking
  - 5,534 people suffer incapacitating injuries
    - 412 people were walking

- Three Recommendations for RRTPO Members:
  1. Create a Regional Vision Zero Task Force
  2. Lead the shift in our transportation safety culture
  3. Fund the changes to our built environment to support the safety of all transportation users

Zip Codes with Severe Crashes in Richmond



Smart Cities Initiatives – City of Richmond

- Communication Backbone
  - Richmond Signal System Connections
  - City Partnership Connections
  - Regional Partnership Connections
- Technology
  - Transit Signal Priority
  - Emergency Vehicle Preemption
  - Connected / Autonomous Vehicles
- Vision Zero
  - Photo Red Enforcement
  - Photo Speed Enforcement
  - Handheld Use

Communication Backbone: Richmond Signal System

- Phase I and II are complete:
  - 400 out of 477 signalized intersections connected via:
    - 55 miles of fiber optic,
    - 54 wireless radios,
    - 55 BRT-related transit signal priority system.
    - 17 miles of twisted pair copper cable,
    - 1 leased router,
    - 34 CCTV cameras,
    - 178 vehicle detection systems, and
    - Integrated to the Advanced Traffic Management System software (Centracs from Econolite)
- Phase III will add 60 signalized intersections
- Phase IV will add 17 signalized intersections

Richmond Signal System Cost and Benefits

- CMAQ Federally Funded Improvements:
  - Phase I - $ 5.0M
  - Phase II - $10.8M
  - Phase III - $ 6.3M
  - Phase IV - $ 4.0M (Requested)
- Benefits
  - Real time monitoring of traffic control devices
  - 511 Traffic Cameras
  - Coordinated Traffic Control Plans that support multimodal transportation and surrounding land uses
  - Improved safety and operations
  - Leverage CMAQ to implement city and regional functions

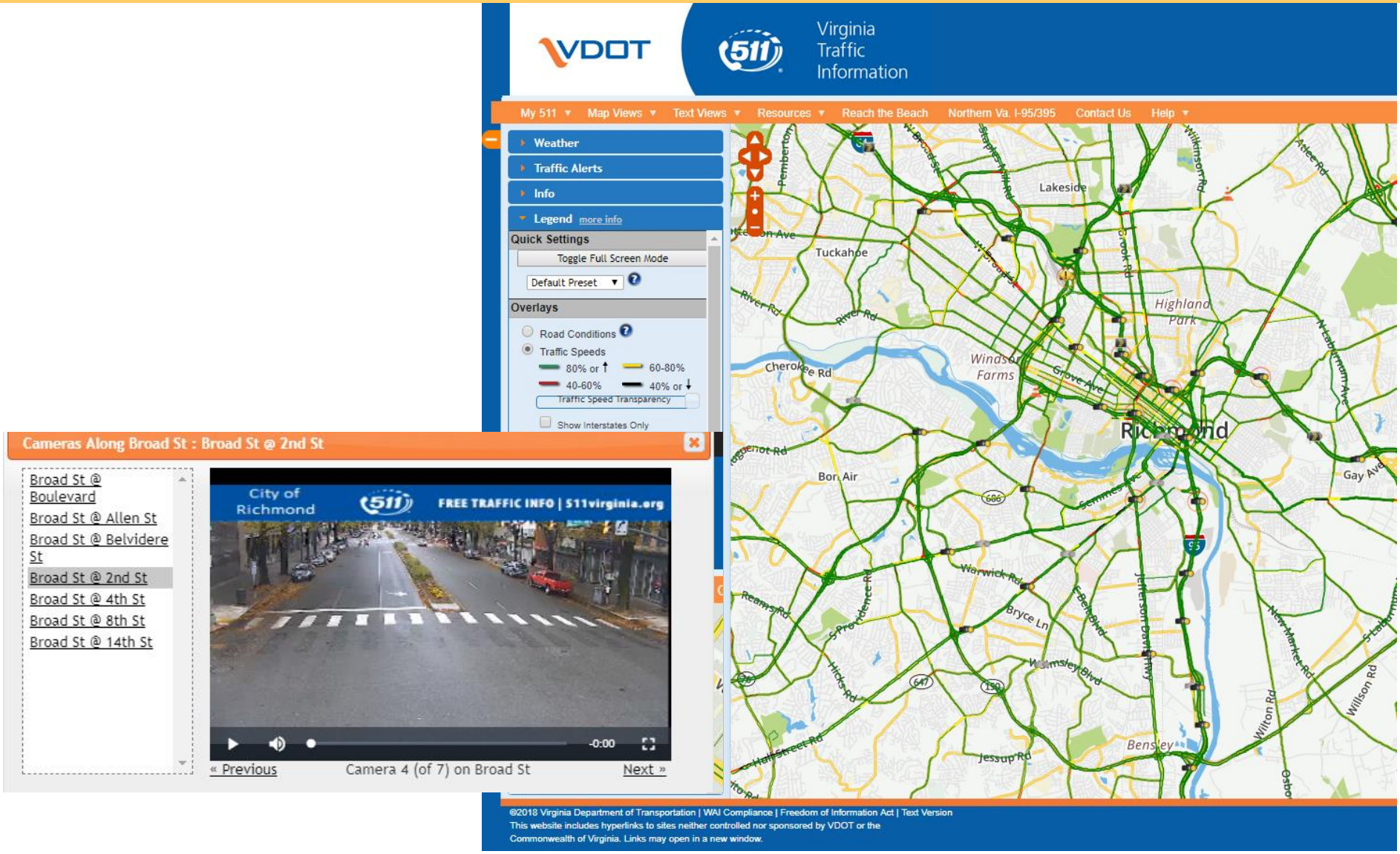
Communication Backbone: City Partnership Connections

- CMAQ construction was leveraged to install DIT Fiber Backbone for all other city departments
  - Used dedicated City CIP Project for fiber installation
    - City Hall
    - Greater Richmond Transit Company
    - Emergency Communications
    - Richmond Ambulance Authority
    - Main Library as Emergency Operations Center
    - Fire Department Headquarters
    - Police Department Headquarters
    - Police 4th Precinct
    - Department of Public Utilities
    - Transportation Engineering Maintenance Shop
- More locations can be hooked up

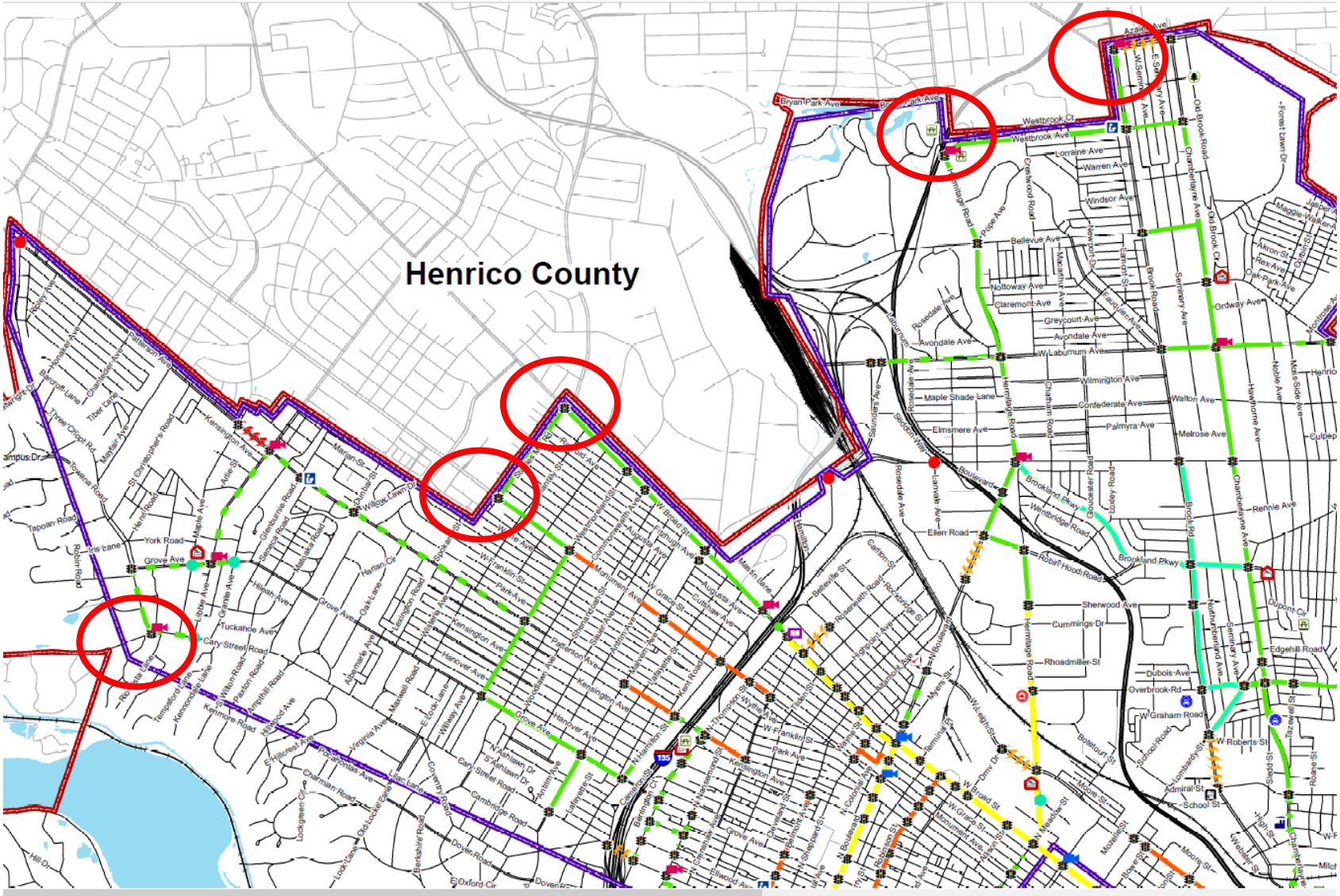
Communication Backbone: Regional Partnership Connections

- CMAQ construction was leveraged to install Fiber Backbone:
  - Phase II: Chesterfield County – City Limits
    - US Route 1 / State Route 10 / US Route 60 / State Route 150 / US Route 360
  - Phase III: Henrico County – City Limits
    - US Route 1 / US Route 250 / US Route 33 / State Route 147 / State Route 197
  - Phase IV: Henrico County – City Limits
    - US Route 33 / US Route 60 / US Route 360
  - Virginia Department of Transportation
    - Central Office / Regional Transportation Operations Center
    - Virginia 511 Traveler Information System
  - Emergency Communications

Virginia 511 Traffic Monitoring Cameras



Fiber to Cary, Monument, Broad, Hermitage, Brook



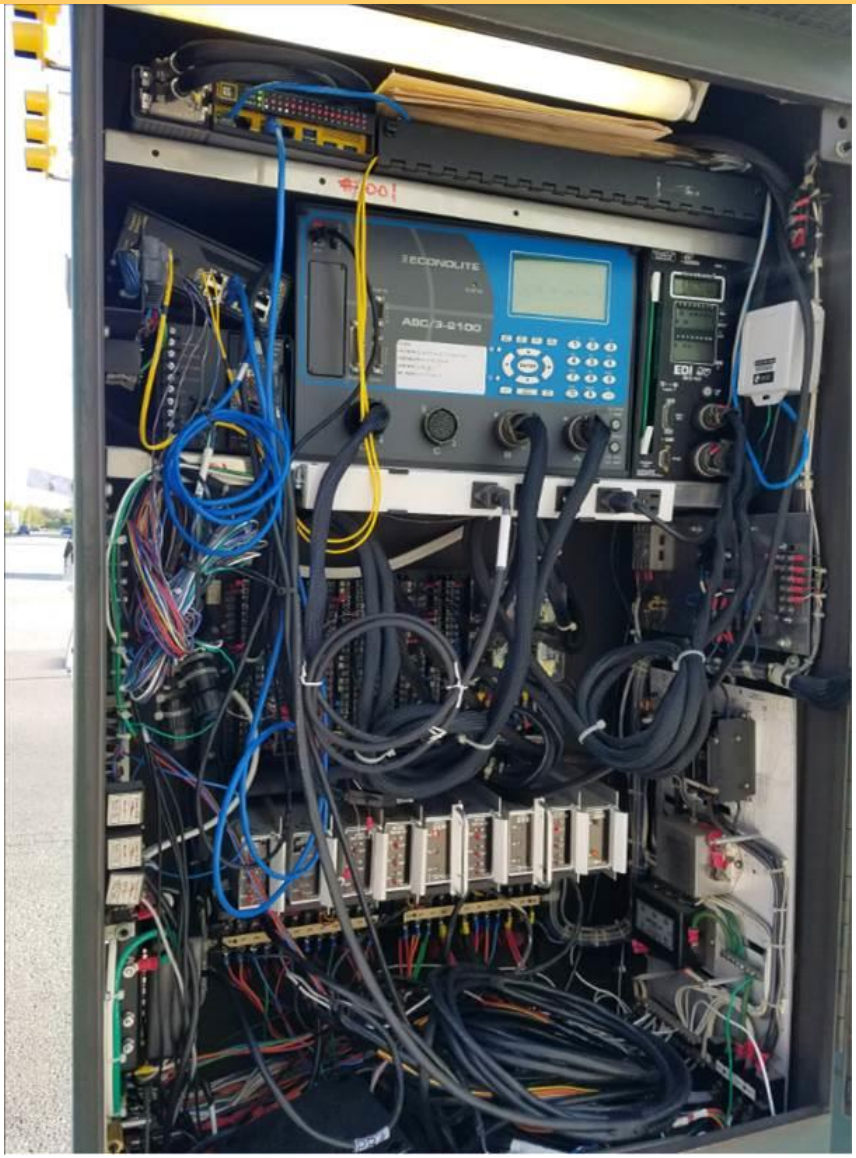
Technology: Transit Signal Priority

- 55 Signalized Intersections on BRT Corridor
- Connected to GRTC Transit Operations Center
- Maintains headways at 10 minutes
- Relies on decentralized model with AVLs and transponders in the field

- Smart Scale Funding received in FY22 to Centralize TSP for all 477 signalized intersections
  - Leverages direct connection to GRTC Operations Center
  - Need to upgrade traffic controllers

Technology: Emergency Vehicle Preemption

- Currently none in City
- Smart Scale Funding received in FY22 to Centralize EVP for all 477 signalized intersections
  - Leverages direct connection to E-911 Communications Center
  - Need to upgrade traffic controllers



Technology: Connected / Autonomous Vehicles

- Need to upgrade traffic controllers
  - Transit Signal Priority
  - Emergency Vehicle Preemption
  - Connected and Autonomous Vehicles

- Connected Vehicle Pilot of Mobotrex in the City of Richmond, VA
  - https://www.youtube.com/watch?v=GY1U6xcmygI

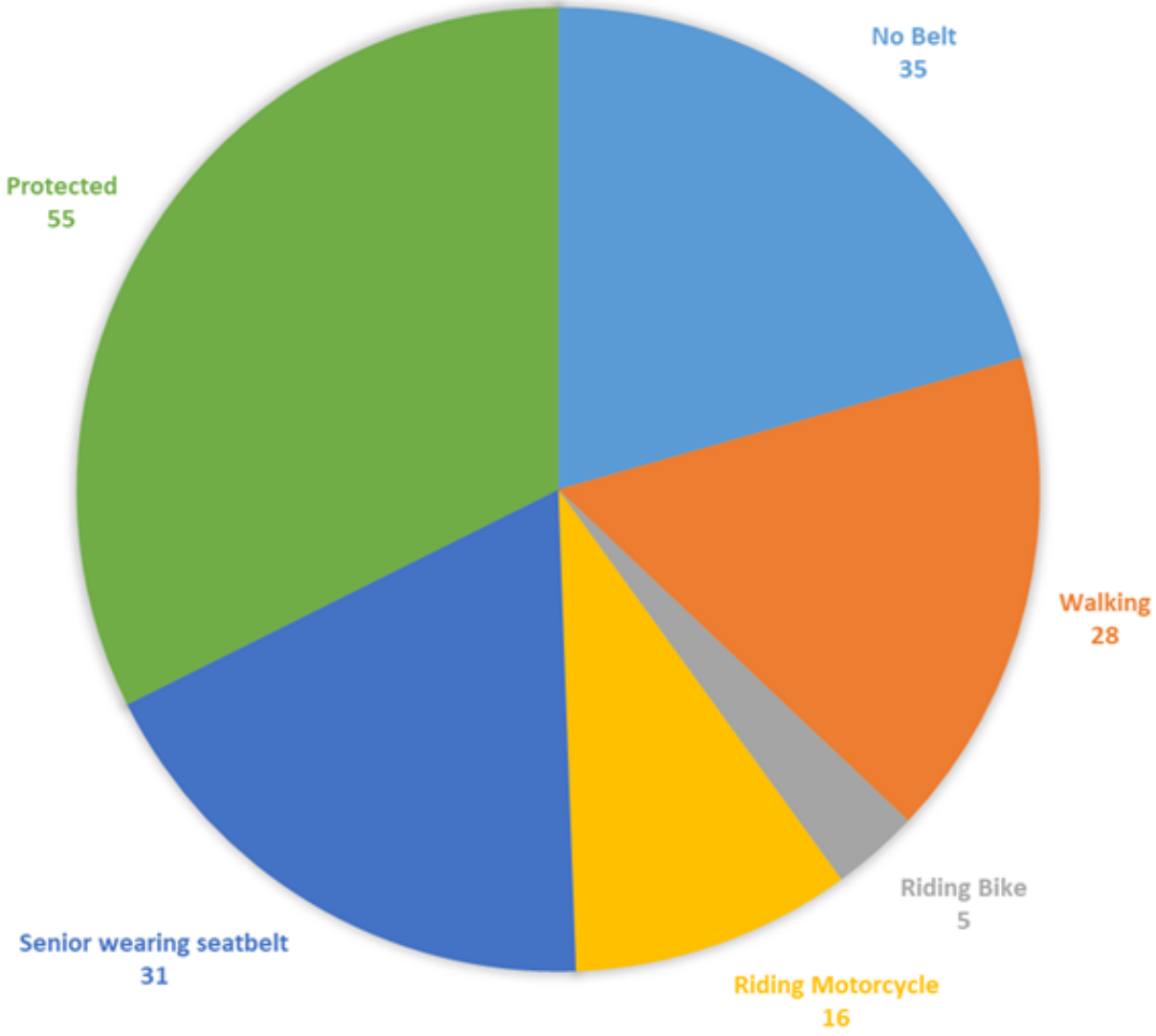
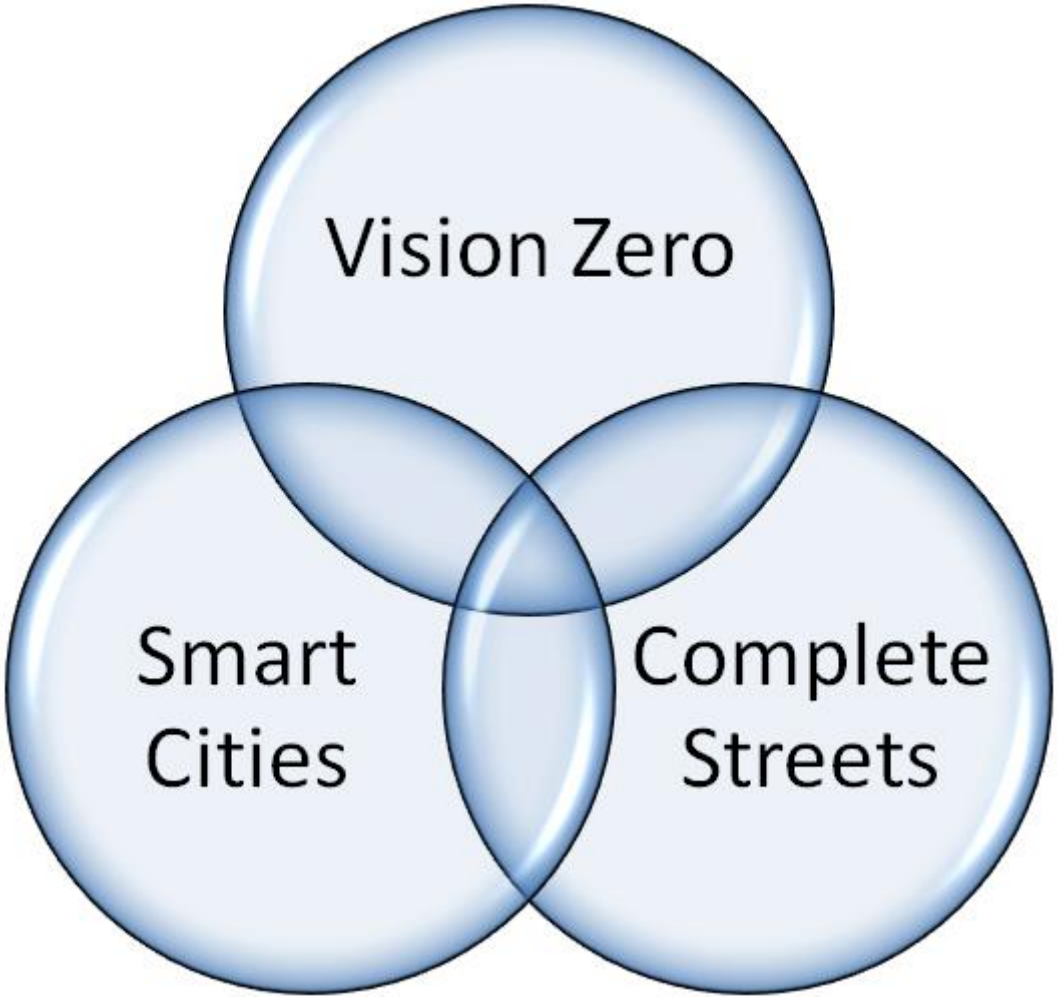
Vision Zero and Technology

- Photo Red Enforcement
  - Currently allowed
  - 1 intersection per 10,000 population
- Photo Speed Enforcement
  - Currently seeking permission from General Assembly
  - School zones, work zones, and parks
- Handheld Ban
  - Currently seeking enforceable law from General Assembly
  - Distracted driving crashes are underreported

What do these have in common?

- Unbelted daughter in a motor vehicle
- Son crossing street to go to school
- Mother riding motorcycle
- Dad riding bicycle
- Grandmother jogging
- Grandfather wearing his seatbelt traveling 50+ MPH
- Dog running out front door
- Deer crossing road to the park

2018 TRAFFIC RELATED DEATHS AND SERIOUS INJURIES
CITY OF RICHMOND, VA
THROUGH 8/31/2018



Keep your head up…