

Barriers to Successful Implementation of ITS

ITS Carolinas
March 2021

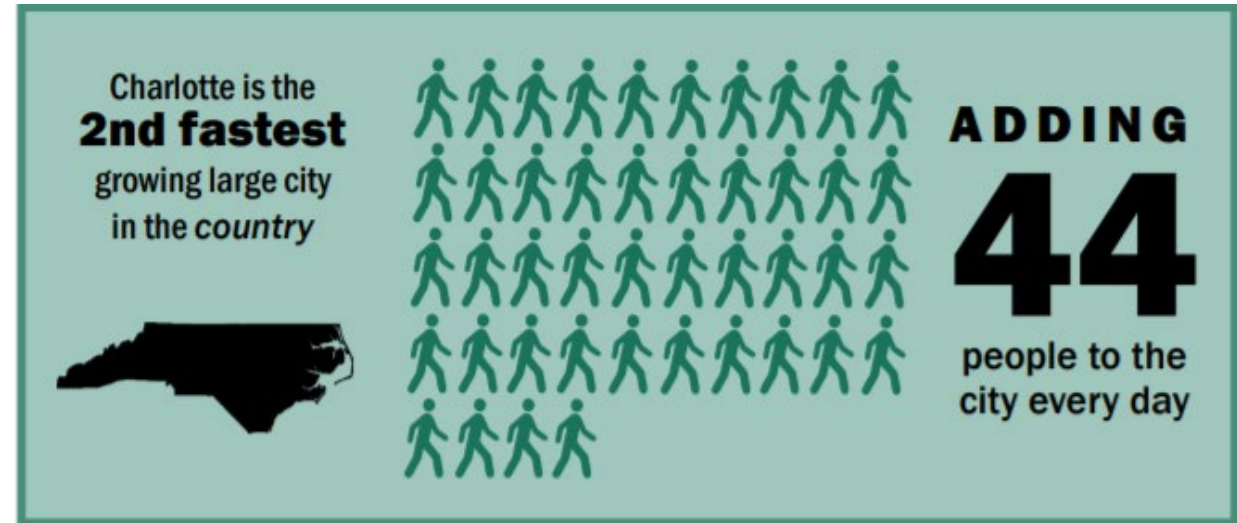


Overview

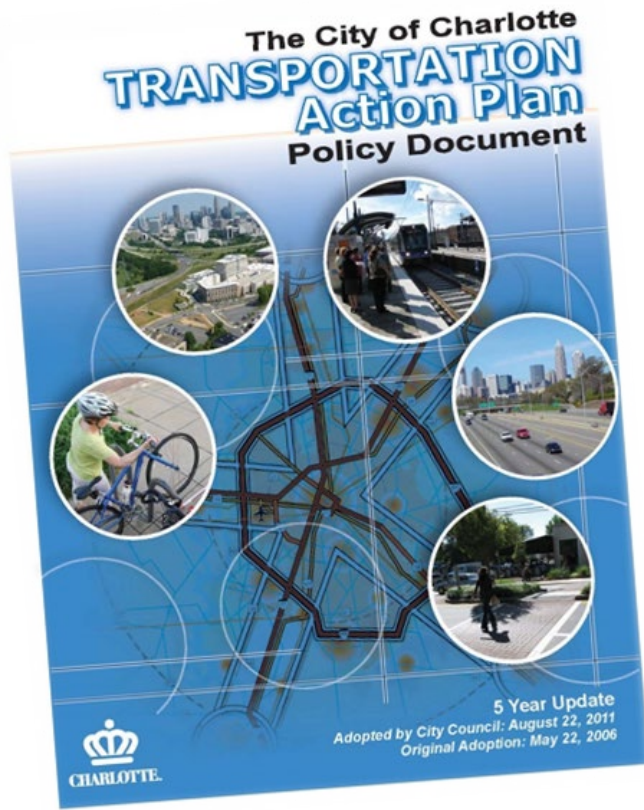
- Charlotte's Growth
- CDOT ITS Goals & Master Plan
- Funding Limitations
- Increased Development
- Staffing/Project Coordination
- Unexpected Challenges
- Maintenance of Existing Infrastructure

Charlotte's Growth

- City of Charlotte Facts
 - 15th largest US City
 - Largest NC City
 - 2nd fastest growth rate in US
 - Population of over 900,000
 - 2500 miles of City maintained streets



CDOT ITS Program Goals



- Transportation Action Plan
 - Maximize capacity of existing streets by investing in technology
 - All signals in a coordinate system by 2030
- ITS Master Plan was developed in 2004 and updated in 2008

2.5.5

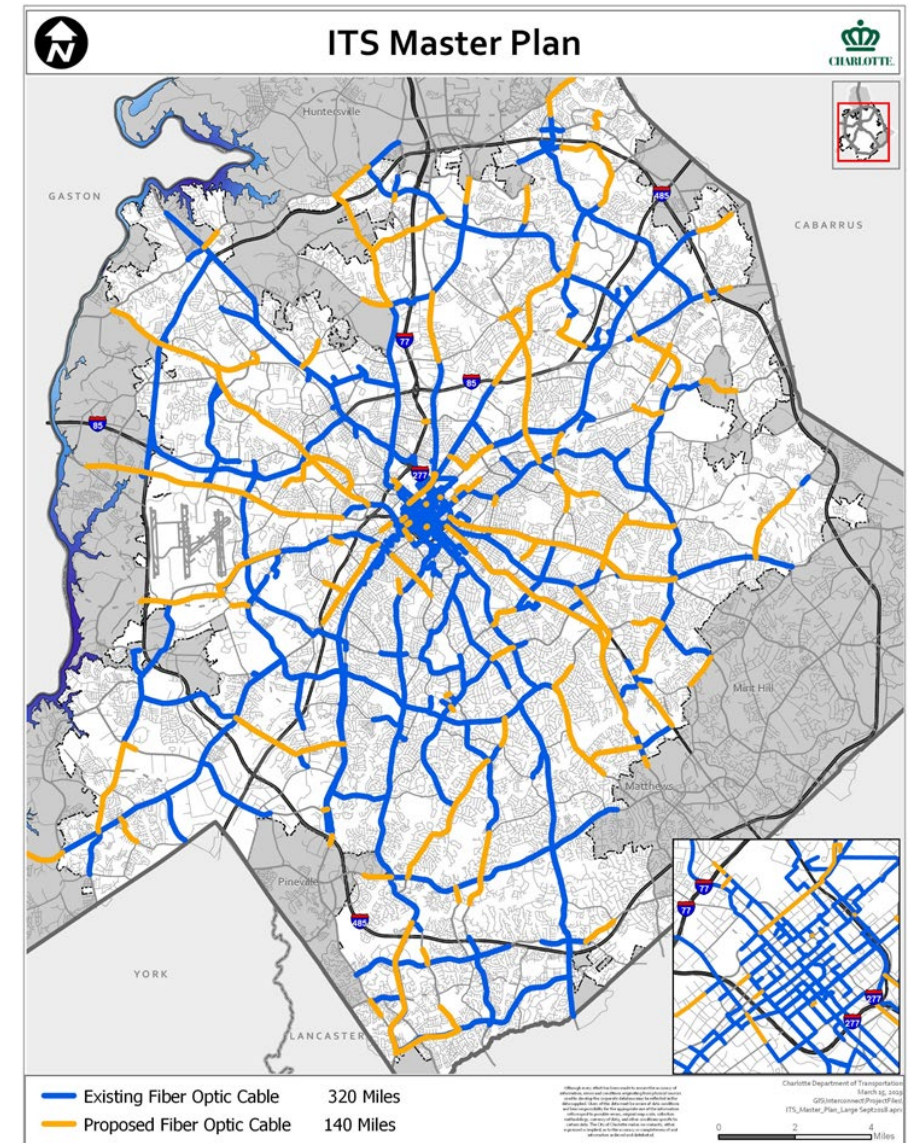
The City will seek to maximize capacity of existing streets by investing in technology such as improved controllers, expanding the coordinated signal system and implementing Intelligent Transportation Systems.

2.5.6

The City intends for all traffic signals to be part of a coordinated signal system by 2030.

Building Out CDOT's ITS Master Plan

- 825+ Traffic Signals
- 470+ Traffic Cameras
- 70% of fiber infrastructure built out
 - 330 miles of existing fiber
 - 140 miles of proposed fiber
 - 75+ signal comm groups
- Emergency Vehicle Preemption
- Bus Priority Preemption
- Leading Pedestrian Intervals
- Updated Video Management System
- Analog to digital camera upgrades



Funding Limitations

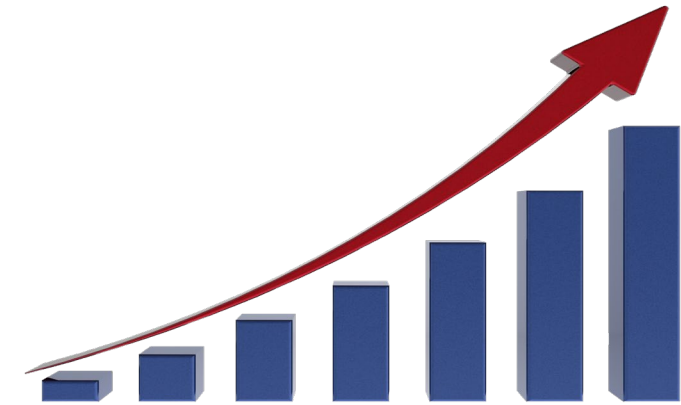
- Local Transportation Bonds
- NCDOT installs facilities on state roads
- Federal Grant Funds
- Other City funds partial through roadway projects
- Private Developers



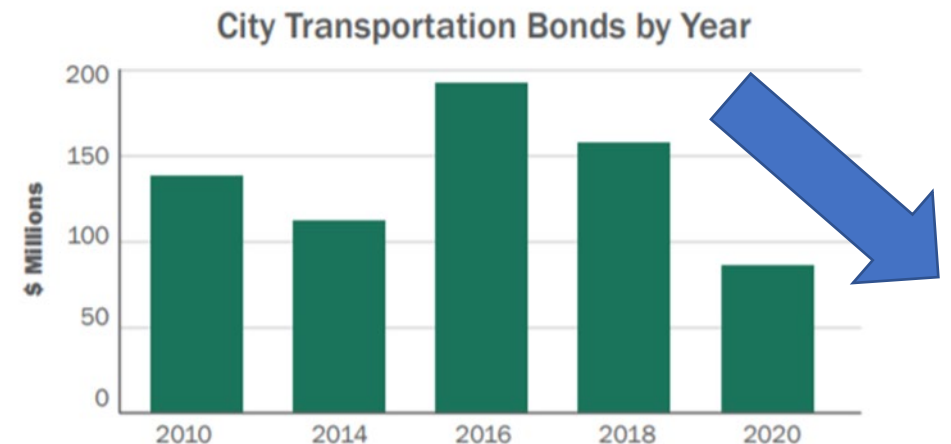
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Funding Limitations

- Continued growth but limited additional funds
 - Staffing
 - Infrastructure
 - Maintenance
- Must maintain fiber routes for Emergency Preemption
- New traffic signals installed in 2020
 - 10 new traffic signals
 - 8 new pedestrian hybrid beacons
 - 1 new emergency signal



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Increased Development

- Increase in new traffic signal installations from development
 - All new traffic signals must be on a coordinated system
- The TAP recommends a funding level of \$92.5 million over the 25-year planning period.



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Action Category	Outcome to be accomplished during 25-year TAP time frame	Expenditures
Intelligent Transportation Systems (ITS)	Improve traffic flow on arterials by using management and operations techniques including signal coordination, ITS deployment, and upgrading and replacing system components	\$92,500,000

Staffing Limitations

- Design and management staff
- Repairs and maintenance staff
- SAME folks!
- Maintenance and Repairs have increased substantially
 - Increases in telecom work and development
- Additional ITS relocations to manage
- Contract out work since limited staff

Coordination

- CDOT ITS, CDOT Electronics Lab, City I&T
- CDOT GIS
 - ITS Assets are in GIS
 - Fiber routes and utilization, Cameras
- Internal and external Design/Construction teams
 - Consultants
- Bidding Process
 - Takes time to solicit contractors
 - Must be vetted by City



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Unexpected Construction Challenges

- Concurrent construction activities
- Utility companies
- Increased utility issues



10th & Graham St



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Unexpected Construction Challenges

- Hitting rock while boring conduit
- Camera pole hit



Boring through rock.
(schedule and cost increases)

Unexpected Damages

- Damages occur frequently
 - Fiber cable
 - Traffic cameras
 - Traffic control boxes
- Repair costs



Park Rd & Woodlawn Rd

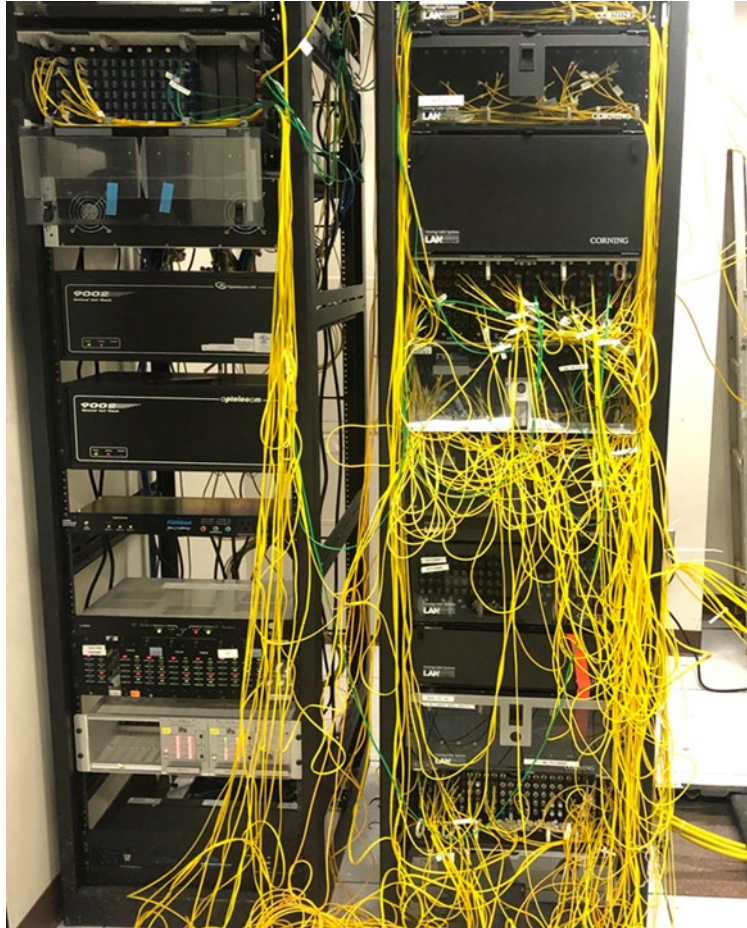
Maintenance of Existing Infrastructure

- Ethernet switch models are being discontinued
- Network core switch equipment are nearing end of life
- Equipment installed as early as 2000 are in need of replacements
 - Analog cameras to digital
 - Ongoing camera preventive maintenance
- Continued Equipment Upgrades
- Traffic camera models change every several months

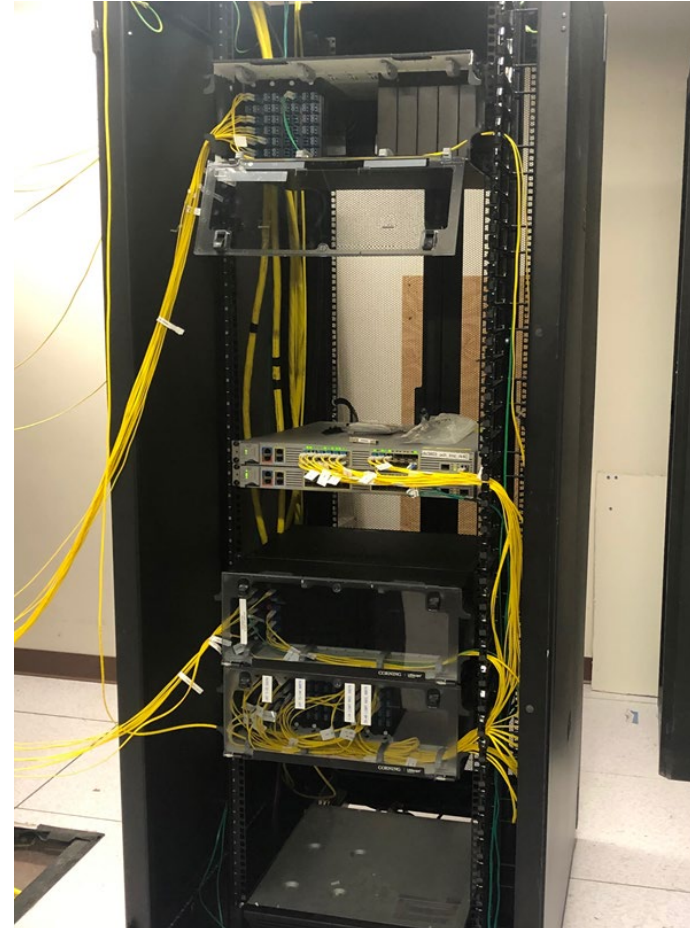
Maintenance of Existing Infrastructure

Maintenance performed to clean up equipment

Before



After



Questions

