I-40 Regional Partnership
12th Annual Meeting

Tuesday, August 11, 2020

Coordinated by the Regional Transportation Alliance business coalition
in cooperation with the NC Department of Transportation and area partners

Welcome and Introductions

Joe Milazzo II, RTA

Welcome and Introductions

Pete Marino, Smith Anderson
RTA freeways chair

Welcome and Introductions

Denny Edwards, Greater Raleigh CVB
RTA tourism and business travel chair

I-40 Partnership Overview

Meredith McDiarmid, NCDOT
I-40 Regional Partnership Executive

I-40 GOALS and FOCUS AREAS

- Improve the travel experience
- Identify projects and funding opportunities
- Strengthen relationships
- Implement Active Traffic Management techniques
- Transform into "multimodal freeway" to prioritize transit

letsgetmoving.org/I40plan

I-40 Partnership – past meetings

- **Oct. 17, 2019** SAS, Cary
- **Oct. 18, 2018** Research Triangle Park Headquarters, RTP
- **Oct. 25, 2017** Research Triangle Park Headquarters, RTP
- **Oct. 24, 2016** Research Triangle Park Headquarters, RTP
- **June 18, 2015** Joint Force Headquarters (JFHQ), Raleigh
- **June 12, 2014** Joint Force Headquarters (JFHQ), Raleigh
- **June 4, 2013** Joint Force Headquarters (JFHQ), Raleigh
- **Dec. 20, 2012** Research Triangle Park Headquarters, RTP
- **June 28, 2012** Research Triangle Park Headquarters, RTP
- **Dec 6, 2011** Fidelity Investments, Cary
- **Sep. 13, 2011** Cisco Systems, Research Triangle Park
- **April 26, 2011** NetApp, Research Triangle Park
- **Dec. 7, 2010** Research Triangle Park Headquarters, RTP
- **Sep. 24, 2010** Fidelity Investments, Durham
- **June 15, 2010** NetApp, Research Triangle Park
- **June 16, 2009** Research Triangle Park Headquarters, RTP

AGENDA

- Active projects
- Updates on traffic and funding
- Upcoming and future projects
- Final remarks

ACTIVE PROJECTS
I-40 and parallel / reliever routes

I-40 active project updates

Joey Hopkins
NCDOT Div. 5

NORTH CAROLINA
Department of Transportation

I-40 Partnership

Joey Hopkins, Division 5 Engineer

August 2020

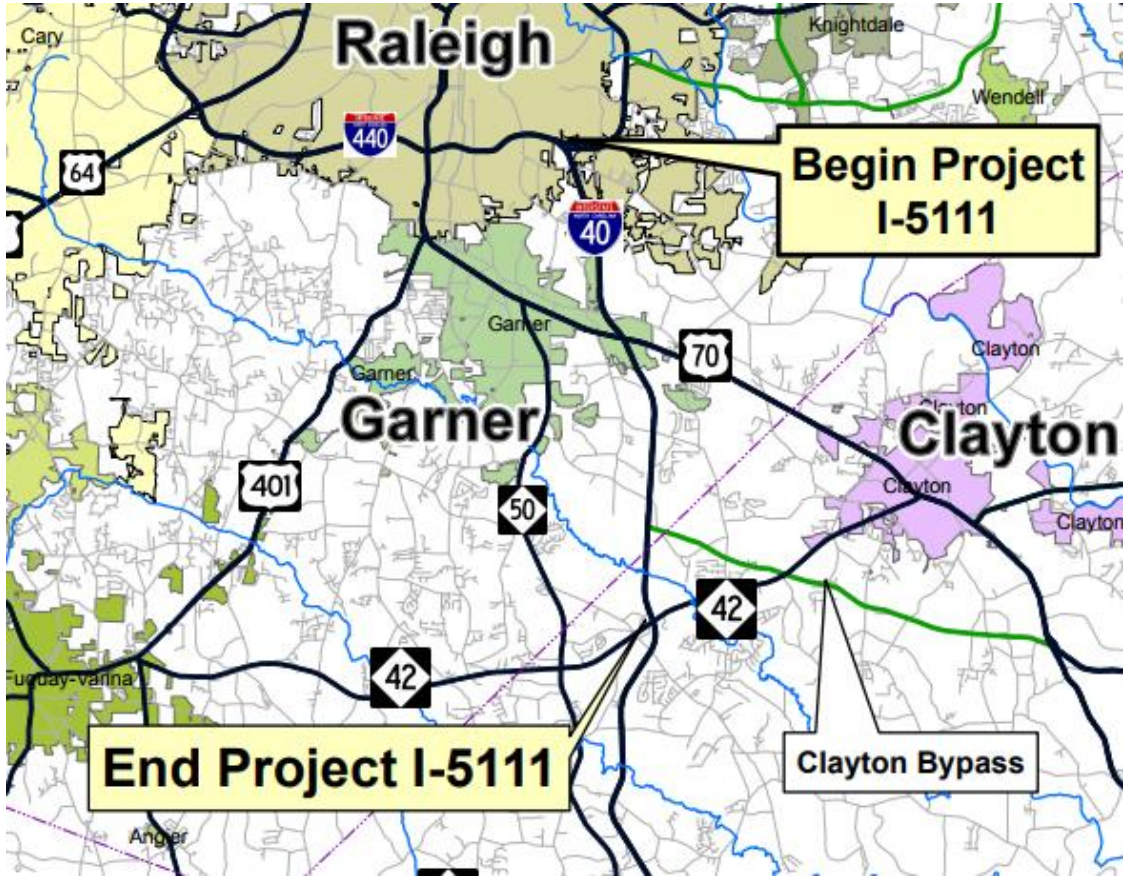
Division 5 Active Projects

- I-40 Widening
- I-40 at Aviation Pkwy
- I-40 at Airport Blvd
- I-885
- I-440 Improvements
- Beautify Fortify
- Complete 540

I-40 Widening, I-440 to NC 42/Cleveland Rd

Project Description

- 440 Beltline to Cornwallis Rd
- Contract July 2018 / STW w/ RK&K
- Contract - $360,175,000
- Modify Interchange at NC 42 / New Interchange at Cleveland Rd
- Collector Distributor Design at 42 and Cleveland Rd – reduces access points to I-40



I-40 Widening, I-440 to NC 42/Cleveland Rd

Open new flyover Fall 2020

Shift traffic to temporary pattern on NC 42 late Fall 2020

I-40 Widening, I-440 to NC 42/Cleveland Rd

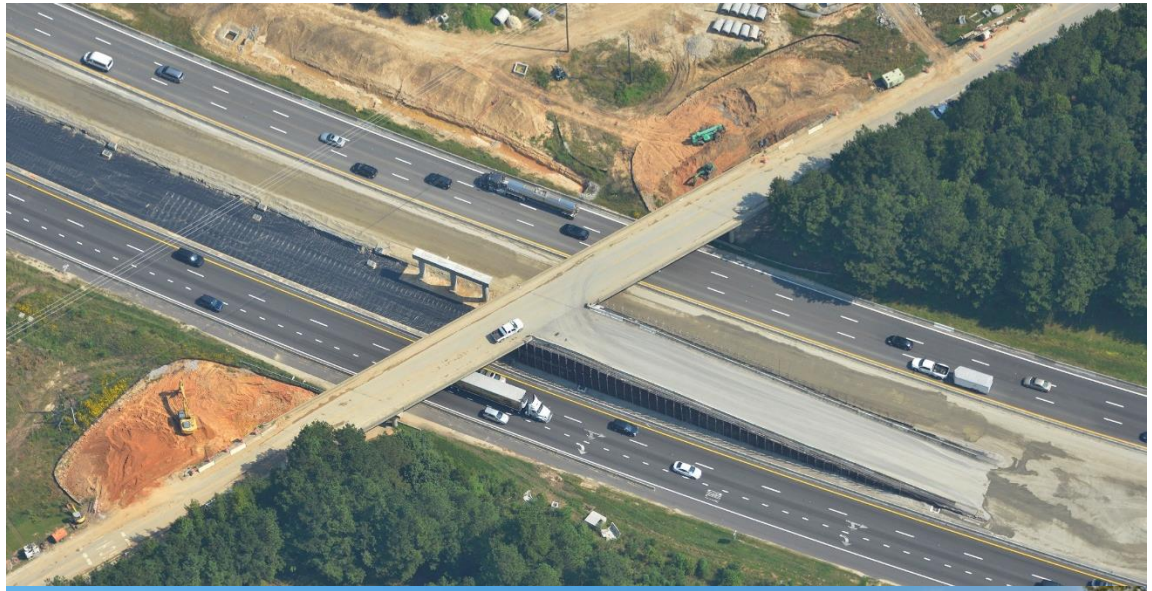
Shift traffic at Swift Creek Fall 2020

Phased traffic shift including loop Fall 2020

I-40 Widening, I-440 to NC 42/Cleveland Rd

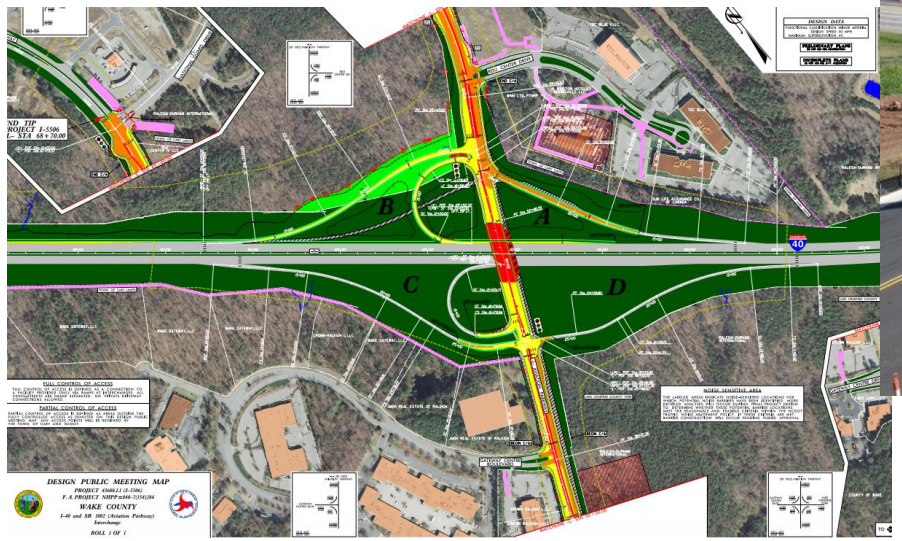
Innovations

- Median Access – I-40 to Swift Creek
- Ramp off existing East Garner Rd over I-40
- 21,375 loads of material delivered directly to median
- Conveyor installation Fall 2021



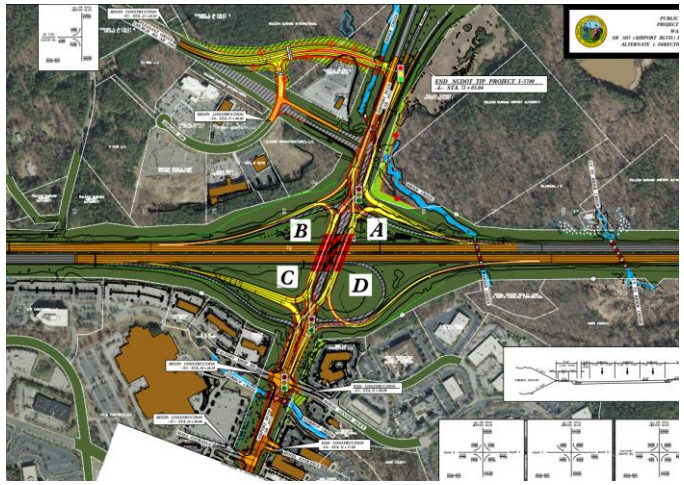
I-40 and Aviation Parkway Interchange

- Contract - $21.5 M w/Flatiron Construction
- Traffic Shift to Stage II Bridge Fall 2020
- 85% complete (Spring 2021)



I-40/Airport Blvd Interchange

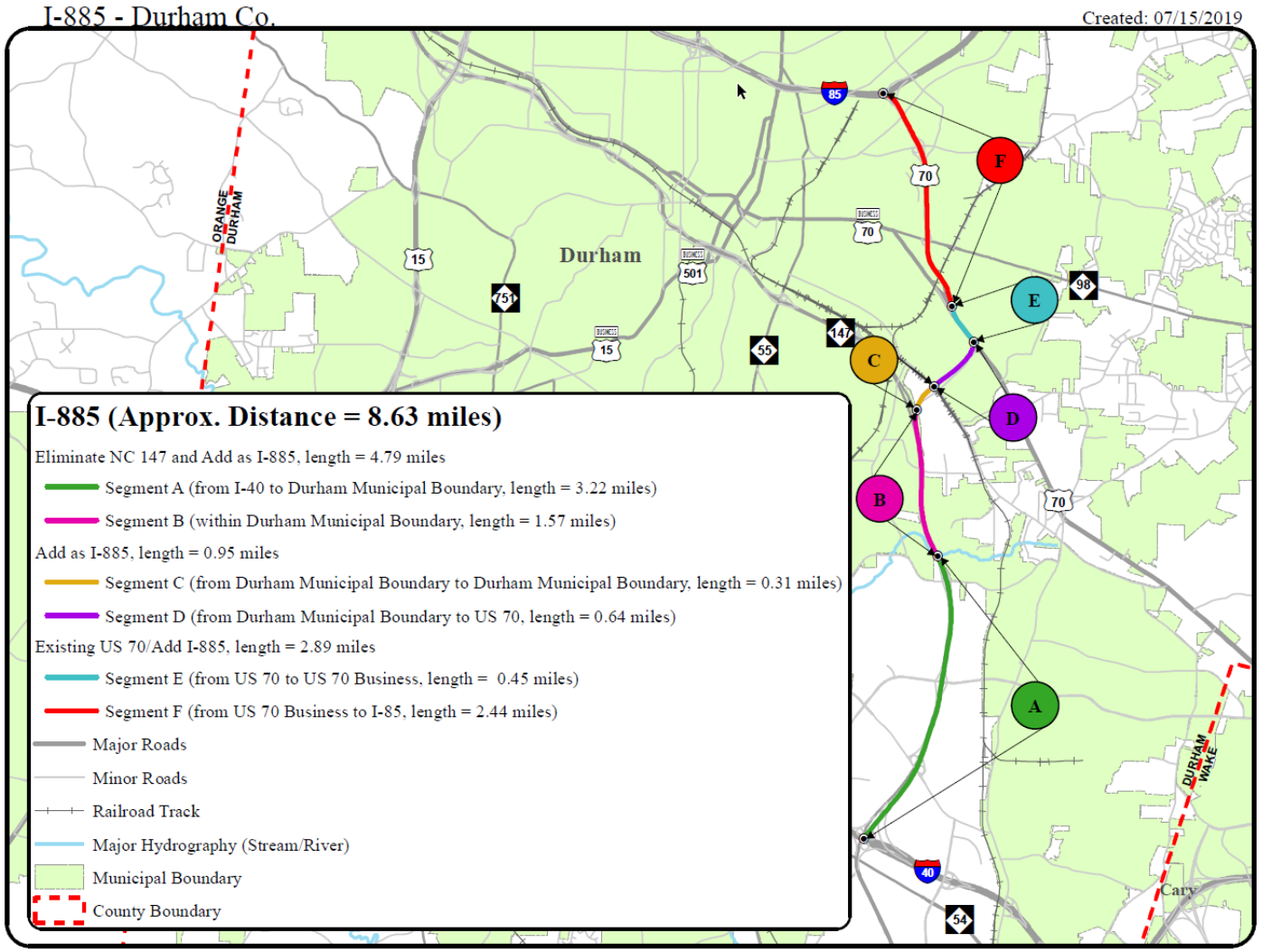
- Contract $34.9M w/Zachry
- Bridge Construction & I-40 Traffic Shift late 2020
- Complete Pleasant Grove Church Rd early 2021
- 23% Complete (Summer 2023)



I-885/Triangle Connector

- Contract $142M to Dragados USA
- US 70 Traffic Shift to Median Fall 2020
- Connector to Open Spring 2021
- 90% Complete (Spring 2021)

I-885/Triangle Connector



I-885/Triangle Connector

Potential Design Exceptions

- Substandard Bridge Rail
- Landscaping
- Interchange Spacing
  - I-40/Cornwallis/T.W. Alexander
  - I-85/Cheek Rd
- Additional Investigation Needed
  - Cheek Road Bridge
  - US 70 EB Exit onto Cheek
  - Other?

I-440 Improvements

- Awarded to Lane Construction/HDR Design Build Team in October 2018.
- Work Began July 2019
- Contract Value $346 MIL
- Completion Date July 2023
- Add Additional Lane in Each Direction
- Bring up to Current Interstate Standards
- Modify Existing Interchanges

I-440 Improvements

Active Construction

- Utility Relocation
- Wade, Western, Melbourne, Jones Franklin Bridges
- Grading
- Drainage

Upcoming Construction

- Hillsborough St. Bridge
- I-440 EB Traffic Shift
- Hillsborough/Blue Ridge

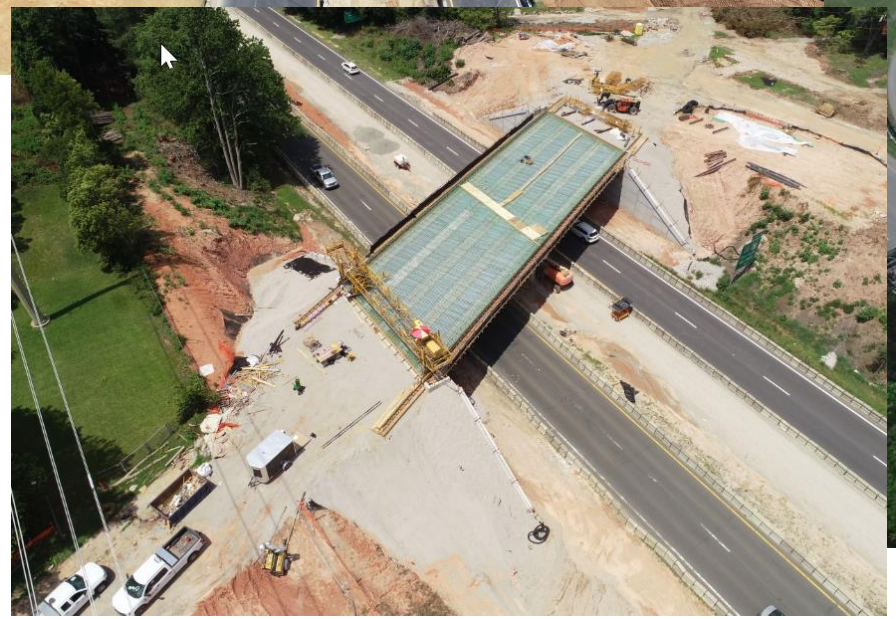
Blue Ridge Road Grade Separation

- Closure Begins After State Fair 2021
- Reopens Summer 2023
- Hillsborough Closed 6 months
- Beryl Closed 10 months

Blue Ridge Road

Hillsborough Road

Jones Franklin



Melbourne Rd

Wade Avenue

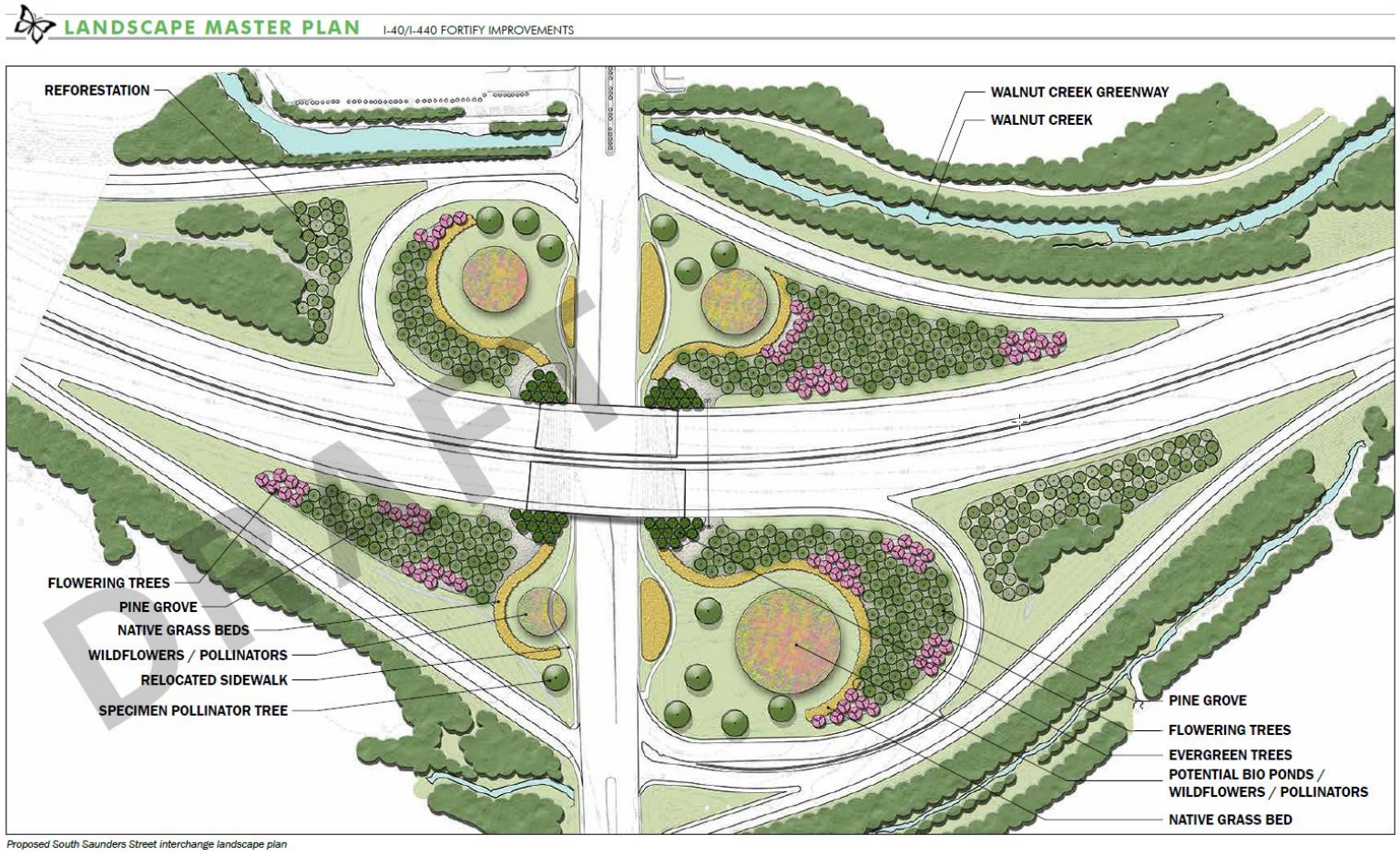
I-40 Landscaping

What is it?

- Over 1400 Plants/Trees
- 3000 CY of Mulch
- Over ½ Million SF of Pine Straw
- 1 Year Establishment

Where is it?

- Gorman
- Lake Wheeler
- South Saunders
- Hammond
- Rock Quarry
- Poole



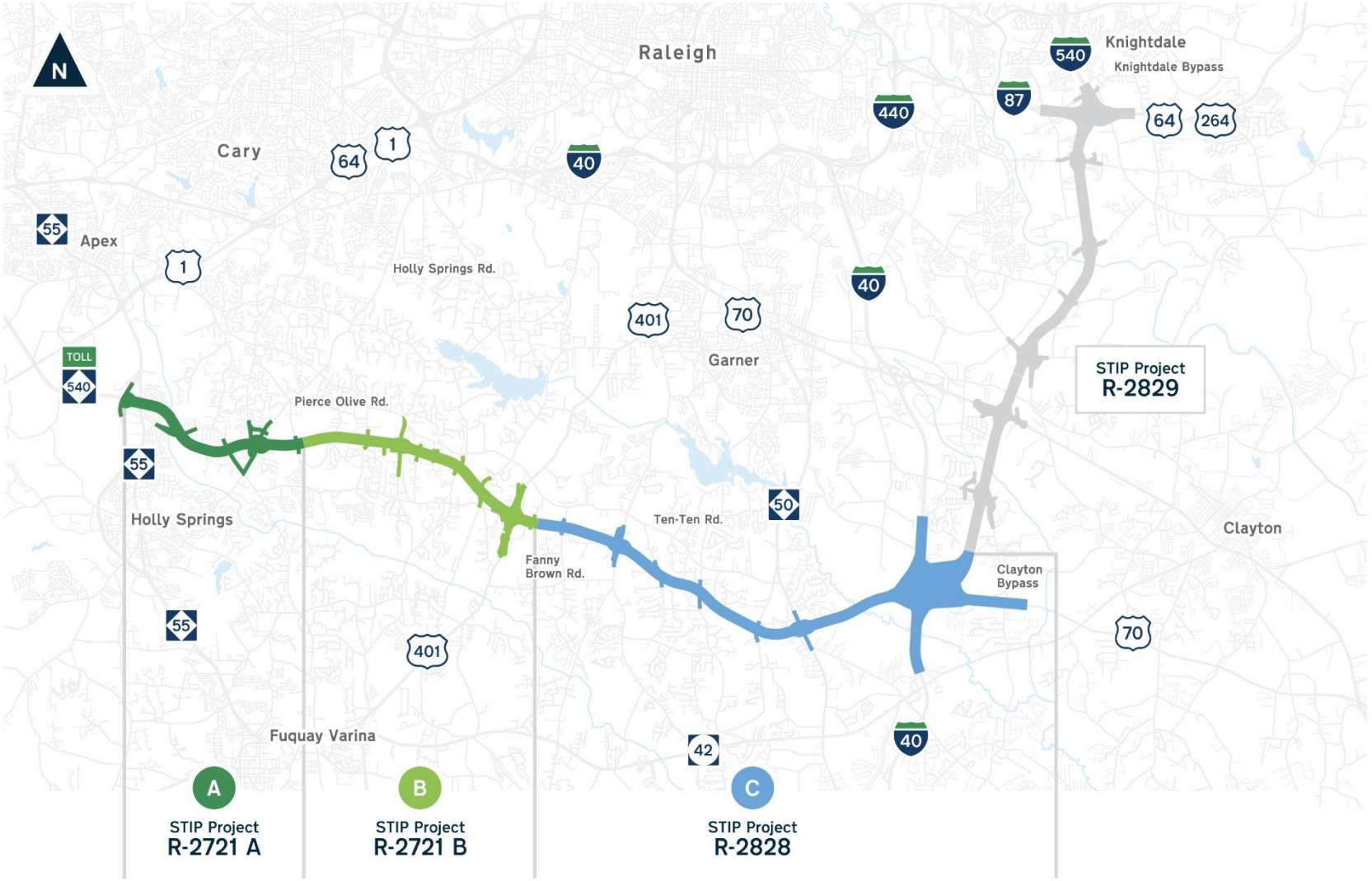
South Saunders St

I-40 Landscaping

South Saunders St

Complete 540 (Triangle Expressway)

Complete 540 (Triangle Expressway)



Design-Build Contracts

R-2721A (4.3 miles)

- Flatiron Constructors, Inc. / Branch Civil, Inc. JV
- Lead design firm - Gannett Fleming, Inc.
- $183.5M
- Plans 80% Complete / R/W 98% Settled

R-2721B (4.9 miles)

- Flatiron Constructors, Inc. / Branch Civil, Inc. JV
- Lead design firm - HDR Engineering, Inc. of the Carolinas
- $160M
- Plans 85% Complete / R/W 96% Settled

R-2828 (8.6 miles)

- The Lane Construction Corporation / Blythe Construction, Inc. JV
- Lead design firm – WSP USA Inc.
- $403.2M
- Plans 93% Complete / R/W 90% Settled

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THANK YOU!!

UPDATES ON TRAFFIC AND FUNDING

Coronavirus and recovery: traffic impacts

Jennifer Portanova
NCDOT Mobility and Safety

NORTH CAROLINA
Department of Transportation

COVID-19 Traffic Impacts

Jennifer Portanova, PE, NCDOT

I-40 Partnership Annual Meeting, August 11, 2020

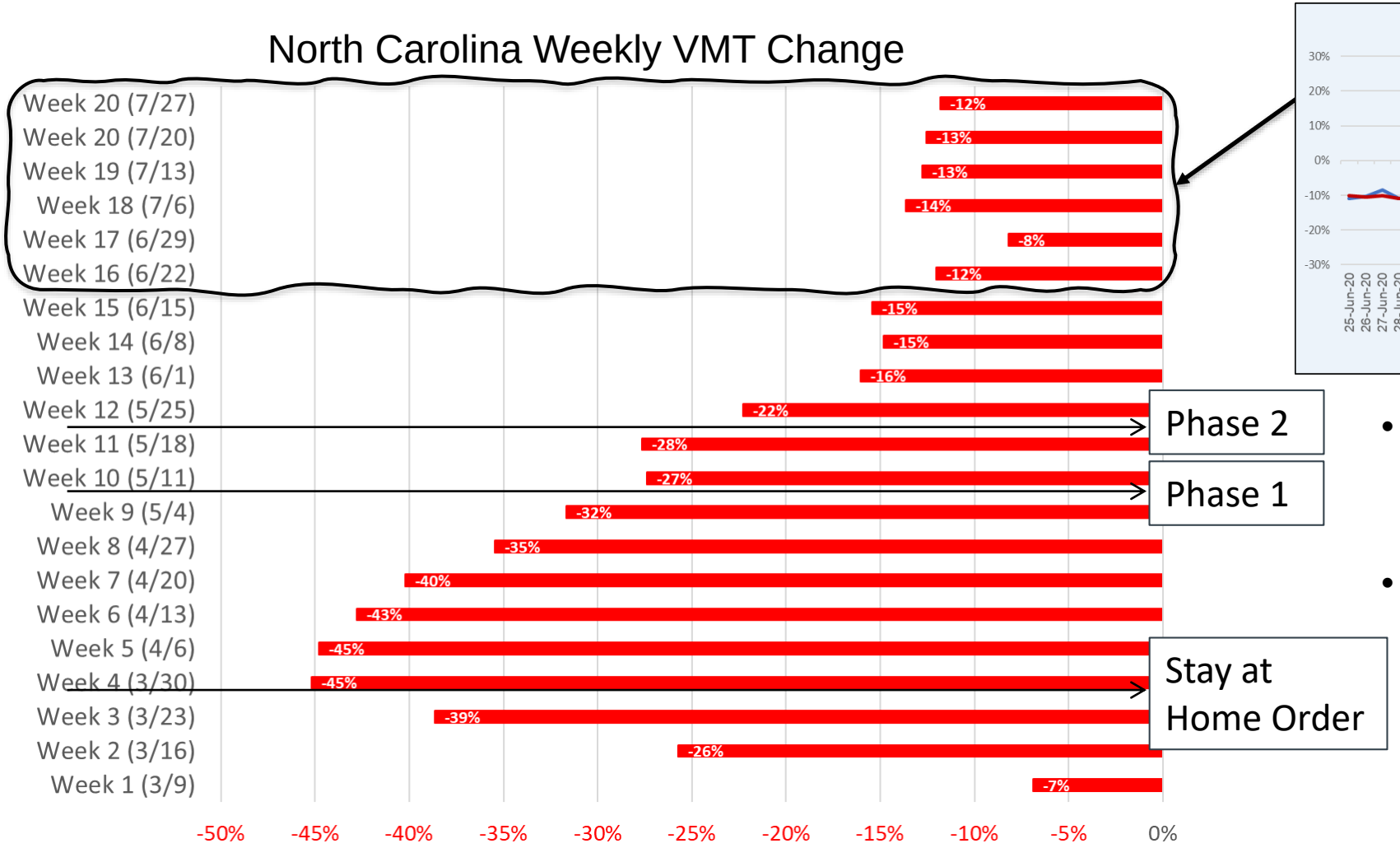
COVID-19 Traffic Impacts Overview

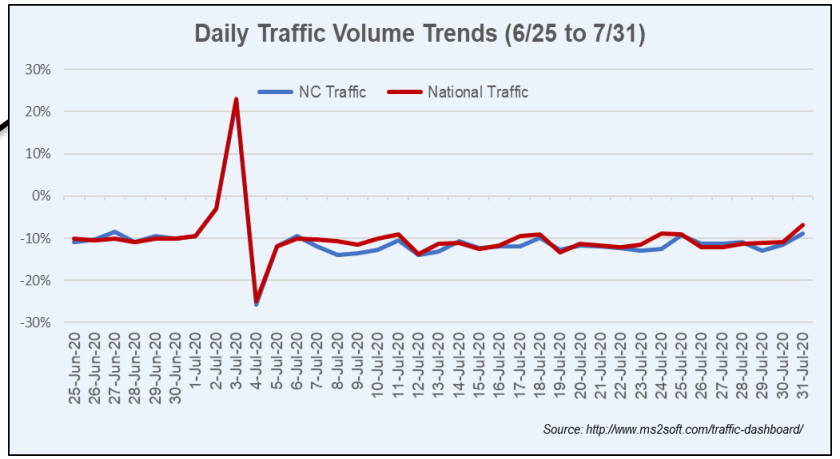
- Traffic Volumes decreased
- Interstate Speeds increased
- Interstate Congestion decreased
- Overall Crashes decreased
- Fatal crashes remained the same

North Carolina COVID-19 Phases

- March 30, 2020 – Stay at Home Order
- May 8, 2020 – Phase 1
- May 22, 2020 – Phase 2
- TBD – Phase 3

Source: Bing



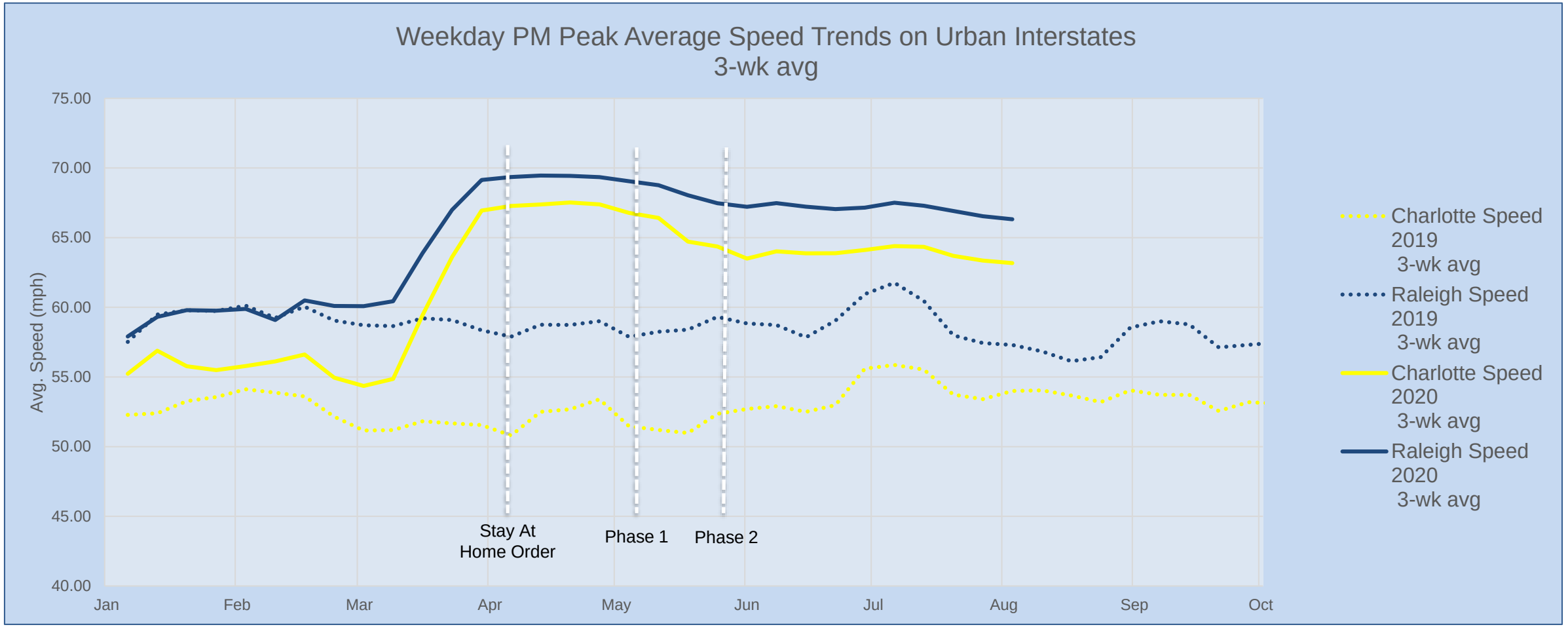


- Average 10% decrease in daily traffic volumes from the yearly average
- NC Traffic follows the National Traffic trends

- Greatest decrease in VMT at 45% after Stay at Home Order
- Latest Week 20 – 12% decrease in VMT

Source: NCDOT's Traffic Survey Group

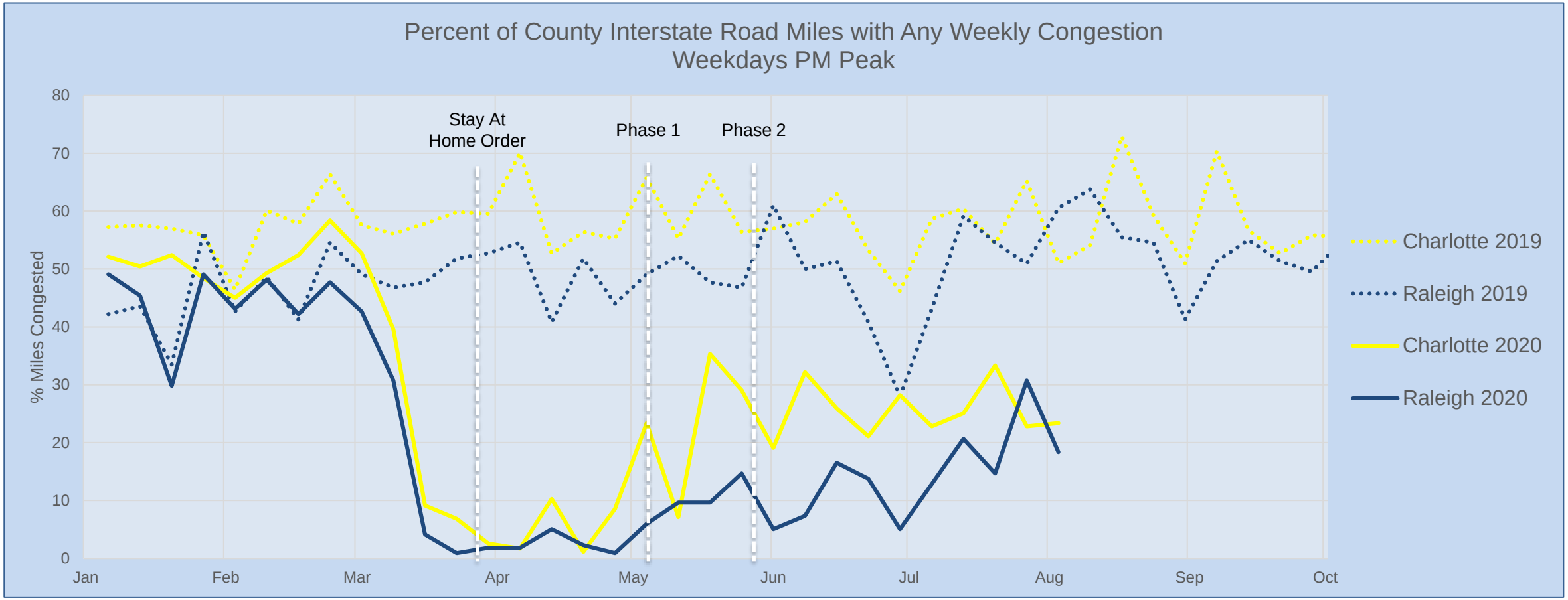
Source: MS2SOFT Dashboard



- Weekday PM peak speed begin increase in March above 2019 speeds
- Current speeds remain above 2019
- Average interstate speeds are about 10 mph faster than the 2019

Populations
- Raleigh (2.0 million)
- Charlotte (2.6 million)

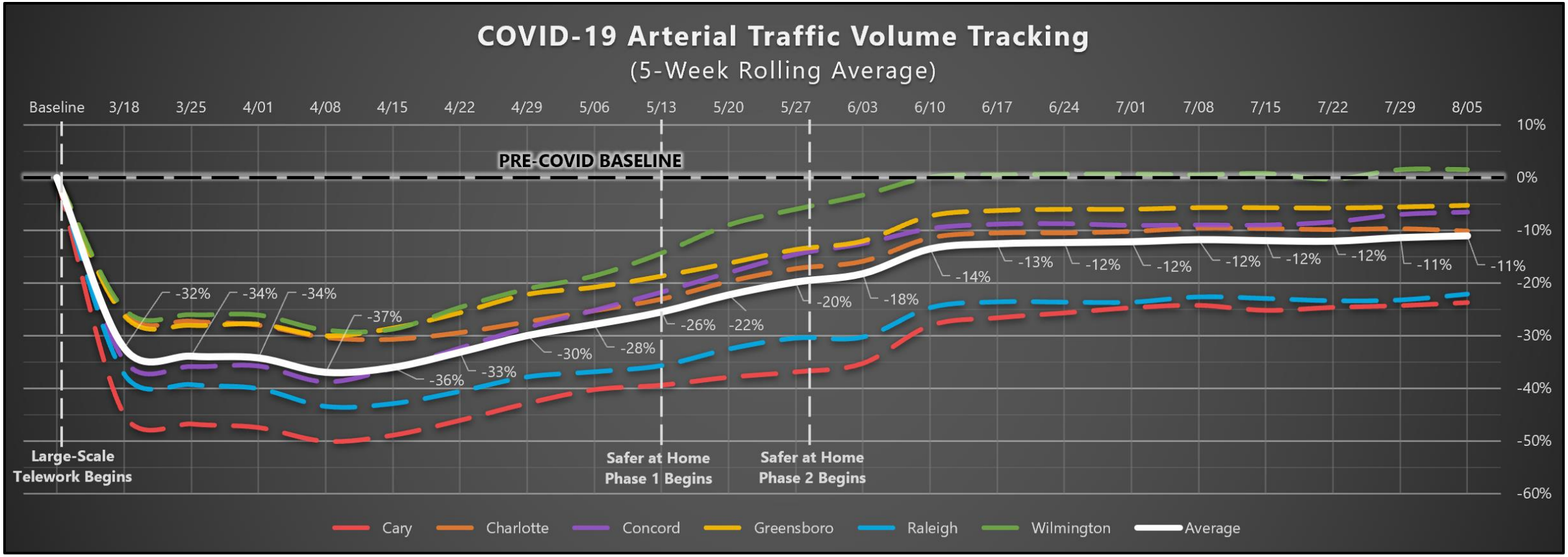
Source: The Eastern Transportation Coalition's RITIS Probe Speed Data Analytics Portal
https://pda.ritis.org/suite/



*For each TMC segment, any 15-min aggregated probe speed < 40mph is considered as congestion that week

- Congestion dropped to nearly zero (Ramp Meters turned off)
- May 2020 – Congestion about half of what it used to be for Charlotte
- July 2020 – Congestion increasing but not back to normal

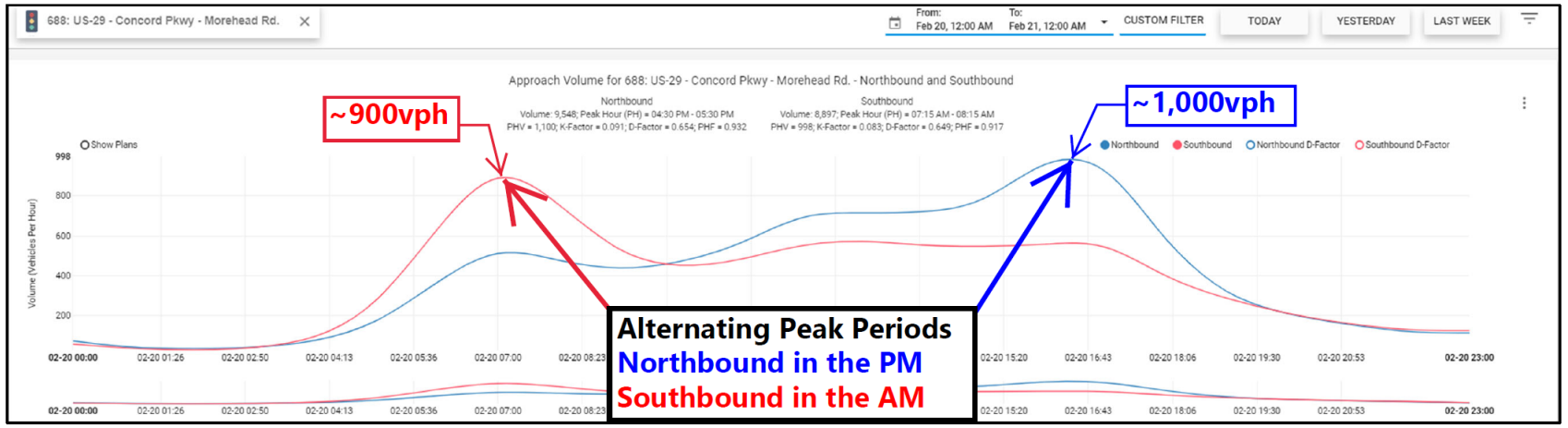
Source: The Eastern Transportation Coalition's RITIS Probe Speed Data Analytics Portal
https://pda.ritis.org/suite/



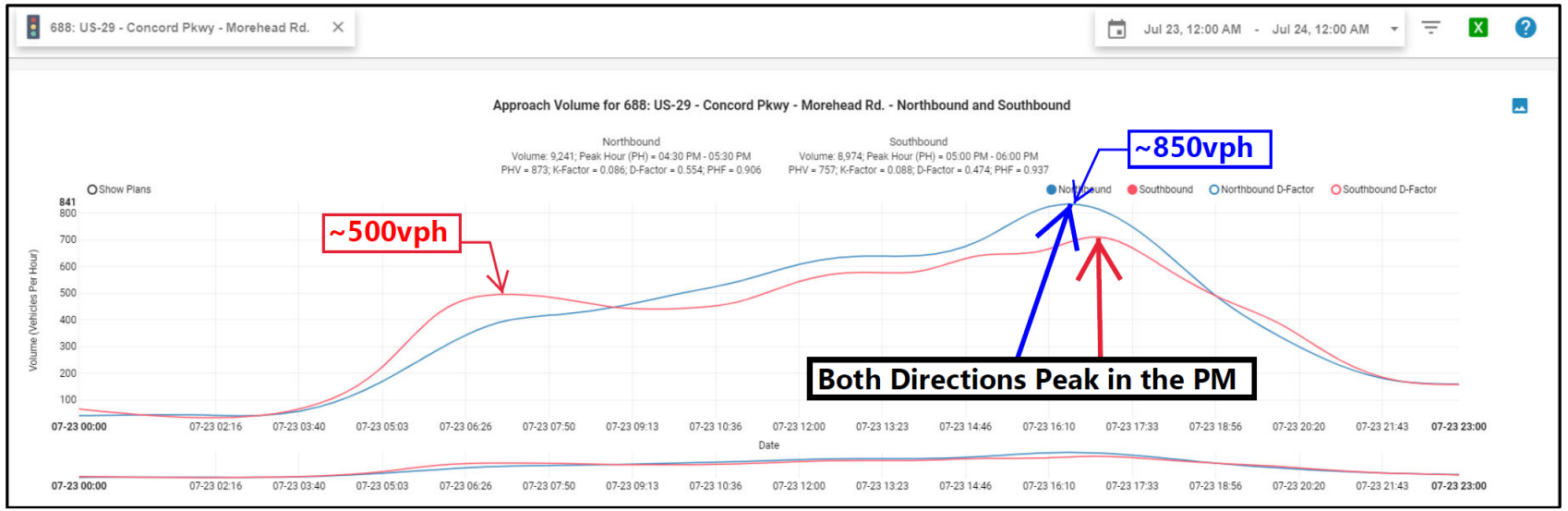
- Overall 5-week rolling average are currently 11% below the Pre-COVID baseline

Source: NCDOT's Signal System Timing and Operations Group
Data derived from traffic signal vehicle detection, typically 6'x6' in-pavement inductive loops

Before Covid-19 Thursday



After Covid-19 Thursday



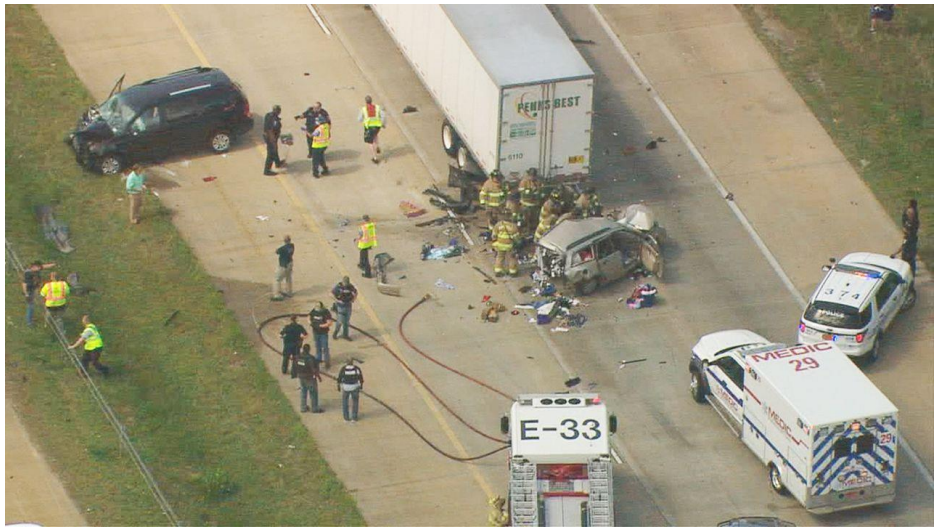
Concord Pkwy – Morehead Rd

COVID-19 Impacts on Arterials:

- Overall less traffic on the arterials
- More evenly distributed traffic throughout the day
- Significantly lower hourly volumes

- North Carolina Crashes:
  - Overall crashes are down
  - Count of fatal crashes have remained the same

- National Safety Council reported:
  - April 2019 fatalities per million vehicle miles = 1.08
  - April 2020 fatalities per million vehicle miles = 1.45



I-485 Fatal Crash in Charlotte
April 29, 2020

Week	Total Crashes by Week		Fatal Crashes by Week	
	2019	2020	2019	2020
March 30 – April 5	6600	2800	24	17
June 22 – June 28*	5100	4000	26	27

*Data from June 2020 is still preliminary and may be underestimated due to processing lag

Source: Data inferred from NCDOT Traffic Safety Unit COVID-19 Impact on Traffic Crashes Report

COVID-19 Traffic Impacts Summary

Increased	Decreased	Remained the Same
Interstate Speeds	Statewide Traffic Volumes	Number of Fatal Crashes
	Arterial AM & PM Peak Period Volumes	
	Interstate Congestion	
	Overall Crashes	

What's Next?

- Phase 3
- Schools
- New norms?

Questions?

NCDOT financial overview

Joey Hopkins
NCDOT Div. 5

NORTH CAROLINA
Department of Transportation

NCDOT Revenue Overview
I-40 Regional Partnership

Joey Hopkins, P.E.

August 11, 2020

Today's Discussion

Pre-COVID-19

Deferred Maintenance/Recent Storms

Current Situation

NCDOT Response

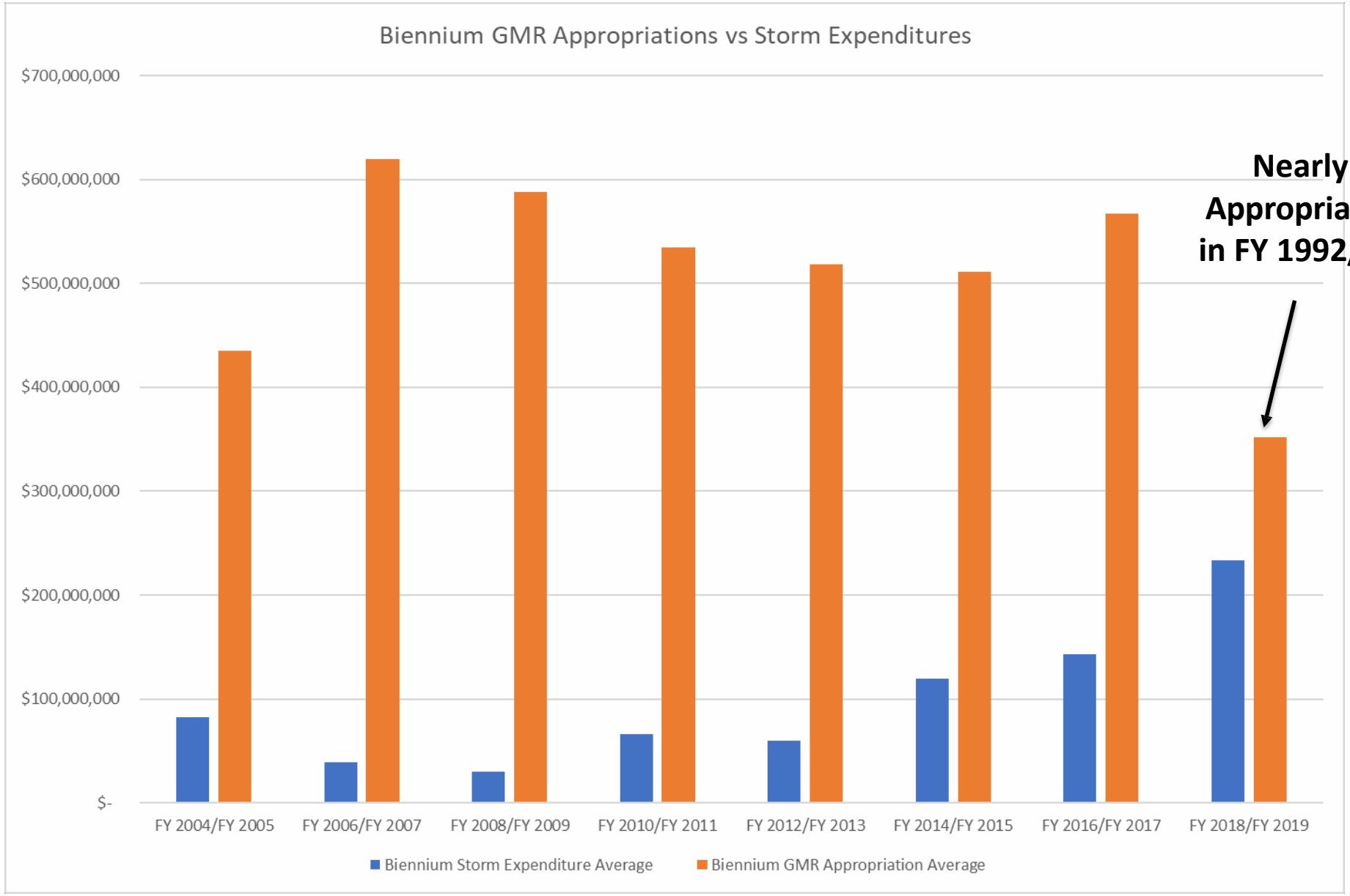
Pre-COVID-19

Storm response/recovery and legal settlements depleted cash balance, department enacted aggressive measures:

- Delayed project lettings, reduced capital program
- Decreased or suspended routine maintenance

NCDOT enacted a spend plan with targets below appropriated levels

- Appropriations for restricted accounts increased, decreased General Maintenance Reserves (GMR)
- NCDOT had to prepare for mandated move of funds into new disaster reserve



Nearly the same Appropriation received in FY 1992/93 Biennium

Storm Costs vs GM&R Appropriations

$529M average GMR Appropriation

$353M average GMR Appropriation

	FY 2004 - 2016 Cummulative Spend	FY 2004 -2016 Annual Spend	FY 2017 - 2019 Cummulative Spend	FY 2017 -2019 Annual Spend	Increase Annually
Declared	$ 300,861,306	$ 23,143,177	$ 398,272,125	$ 132,757,375	$ 109,614,198
Non-Declared	$ 566,943,620	$ 43,611,048	$ 268,424,883	$ 89,474,961	$ 45,863,913
Total	**$ 867,804,926**	**$ 66,754,225**	**$ 666,697,008**	**$ 222,232,336**	**$ 155,478,111**

- Average GM&R **appropriations declined by 33% since 2016**
- While annual **storm expenditures have increased by > 200%**
- Result is a “perfect storm” for maintenance funding issues

Comparison of NCDOT spending: GM&R stands out

Cumulative FY 2003-2019 amounts	Approp's	Expenditures	Unexpended Balance
Capital Program (STIP)	$34,305m	$33,273m	+ $1,031m
Ferry, Rail, Aviation	$ 2,896m	$ 2,832m	+ $ 64m
Programmatic Maintenance	$ 8,836m	$ 8,660m	+ $ 175m
General Maintenance and Reserves	$ 9,029m	$ 9,699m	**- $ 669m**
SUBTOTAL	$55,067m	$54,465m	+ % 602m
less GARVEE debt service reserve			- $ 132m
TOTAL UNEXPENDED or CASH BALANCE			**+ $ 470m**

Note: programmatic maintenance includes contract resurfacing, pavement preservation, bridge program, bridge preservation, roadside environmental

Note: the above table doesn't include the smaller accounts (Contingency, Spot Safety, Secondary Road, etc.)

- Storm costs were **$667M** from FY17 through FY19

Current Situation

Pre-COVID-19, NCDOT operating on thin margin

Because NCDOT is 100% receipt supported, COVID-19 impact to traffic volumes is devastating

- Volumes down by 40% - 50%
- Impacts revenue by nearly $300M in FY 2020
- Projected to impact revenue by more than $550M in FY 2021

Even with cuts already made, obligations not being kept, NCDOT hit cash floor

Comparison to Previous Event

The Great Recession (Dec/2007 to June/2009)

Comparison Time Interval	1st Quarter	Next 4 Quarters	Total Recession 12/07 to 6/2009
Fuel Consumption	-1.8%	-4.3%	-4.9%
Total Revenues	-3.1%	-7.3%	-6.5%
Recovery Time*			57 Months

COVID-19 Impact (Mar/2020 to ????)

Comparison Certified Budget	Quarter (Apr – June/2020)	SFY 2020	SFY 2021	COVID Impact ?? to ??
Fuel Consumption	-38% to -42%	-7% to -11%	-2% to -6%	???
Total Revenues	-32% to -36%	-6% to -10%	-7% to -11%	???
Recovery Time*				???

*Recovery Time to Pre-recession levels

State Revenues (Highway Fund and Highway Trust Fund)

Comparison Certified Budget	Quarter (Apr – June/2020)	SFY 2020	SFY 2021	COVID Impact 2020 to 20??
Fuel Consumption	-40% average	-9%	-4%	
Total Revenues		-$261M	-$513M	

Current Actions

Keep 620 active construction projects moving if possible

- Suspension of these projects could cost $1.5M per day in claims

Delay contract advertisements over next 12 months

- Delay approximately 250 projects estimated at $2.1B
- Remaining projects estimated at $675M (all supported by bonds or grants)

Personnel Changes

- Hiring Freeze
- 50% cost reduction in temporary and contract employees
- Planning for possible furloughs, Reduction In Force (RIF)

Actions Going Forward

Immediately suspend:

- Wildflower Program
- Litter Sweep
- Engineering Training Program
- HBCU and Summer Internship Program
- Economic development grants and projects
- Passenger ferry from Hatteras to Ocracoke
- State Park road maintenance
- Reimbursement to schools for road improvements

Significantly reduce:

- Mowing along roadways and rest areas
- Storm repairs
- Sign repairs
- Patching pavement
- Municipal support for traffic signal/signs/landscaping
- Traffic signal installation
- Spot safety projects
- Incident Management Assistant Program (IMAP)
- Ferry and rail operations

State Legislation

- SB 704 – Delays the transfer of $61M into the new Transportation Emergency Reserve for future storms
- HB 1043 – $300M from CARES Act to GMR subject to amending language to allow for continued operations
- HB 77 – Budget Appropriations for FY21

HB 77

- Increases maintenance funding
- Reduces funding to Modes
- Reduces funding to STI
- Reduces funding to Mobility/Modernization
- Reduces Powell Bill Allocation

HB 77

- Gas Tax Floor (36.1c) for 2021
- NC Build Bond Changes
  - $700M for 2021
  - Active Projects
  - Unexpended funds
- GARVEE Debt Service
- COVID-19 Funds

HB 77

- Changes to Tax Revenue Distribution
- Additional Reporting
- Board of Transportation
- Restructure
- Duties

Questions?

UPCOMING AND FUTURE PROJECTS

Upcoming and future projects

Richard Hancock
NCDOT Div. 5

NORTH CAROLINA
Department of Transportation

I-40 Partnership

Richard Hancock, Division 5 Planning Engineer

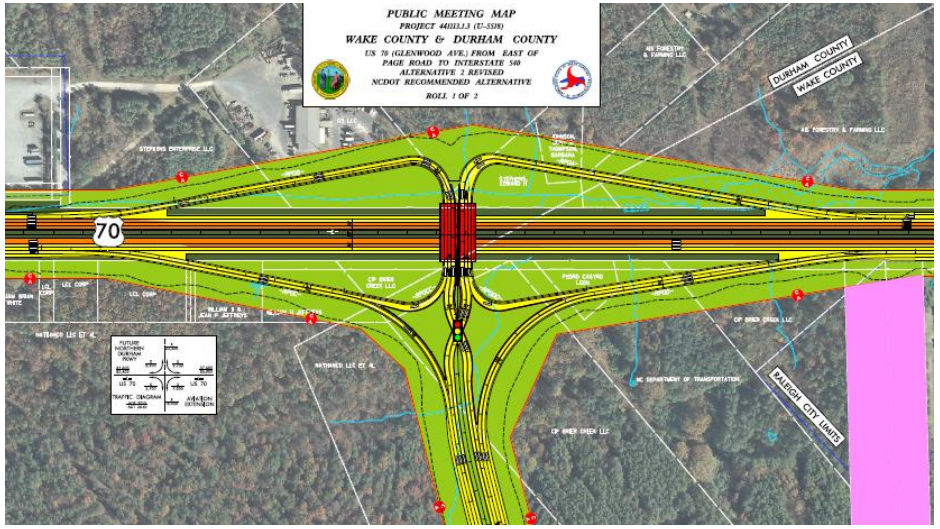
August 2020

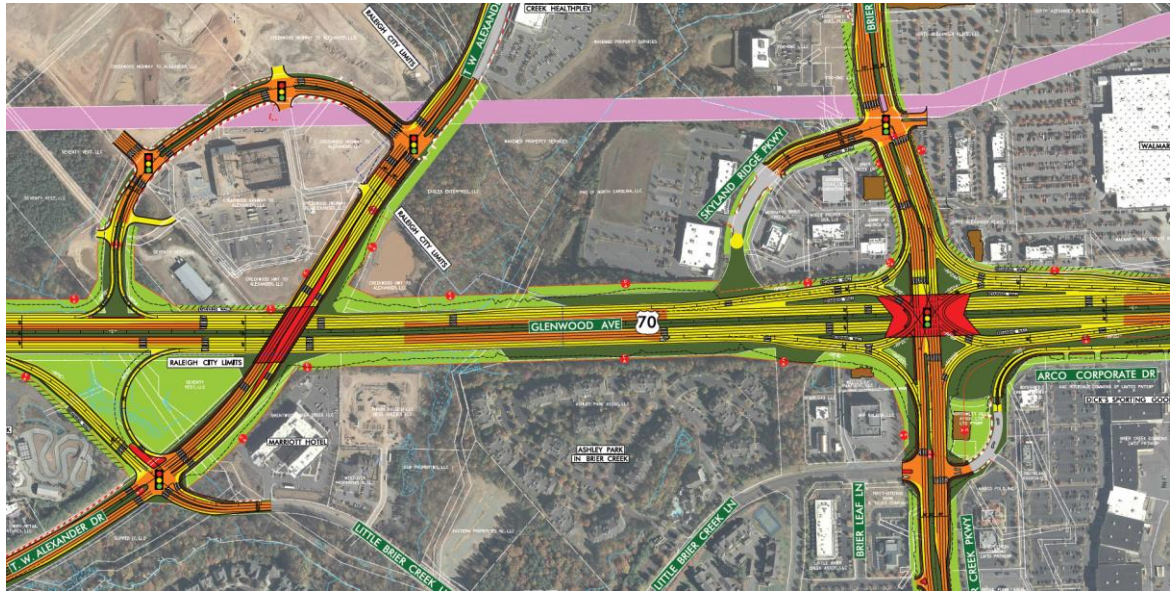
Division 5 Future Projects

- US 70
- US 1
- US 64

US 70 from I-540 to T.W. Alexander

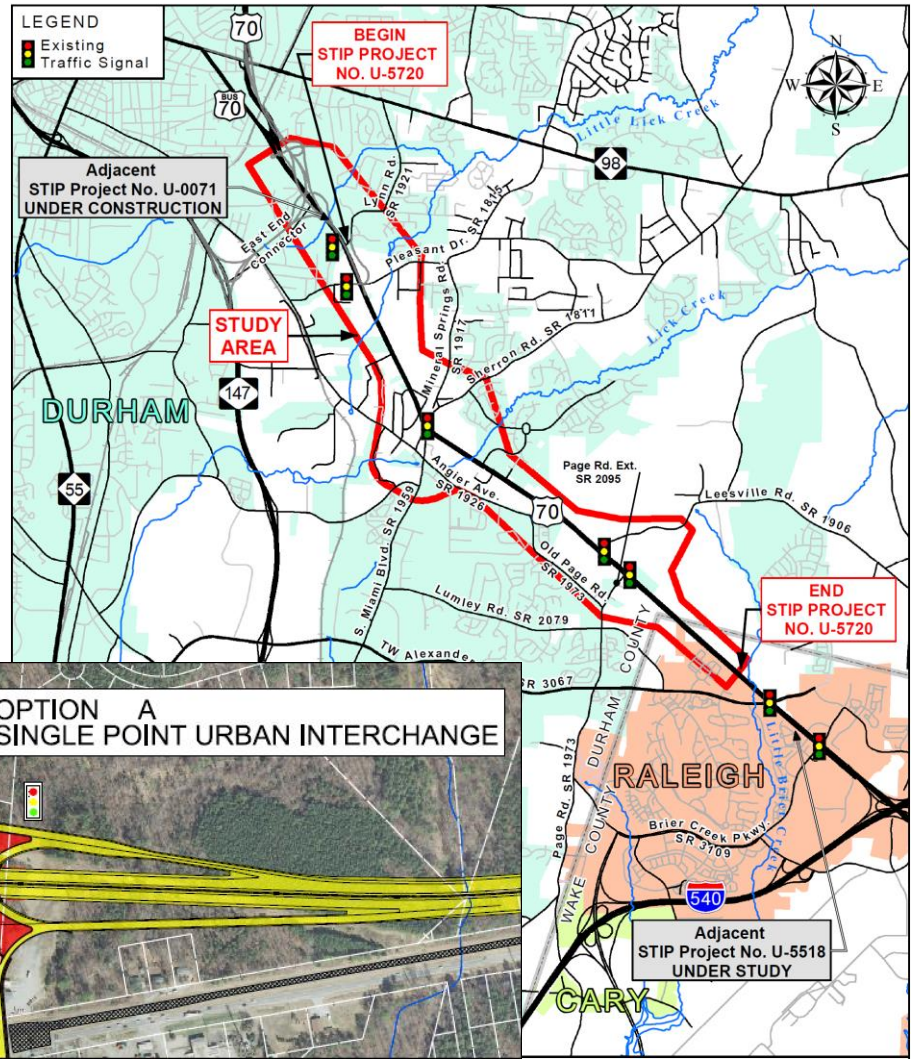
- Upgrade US 70 to a controlled-access facility from I-540 to west of TW Alexander Dr in Raleigh
- New Interchange at Brier Creek Pkwy
- Partial Interchange at T. W. Alexander
- New Interchange west of T. W. Alexander
- R/W & Construction January 2021 Design Build Project
- Estimated Cost - $325 M

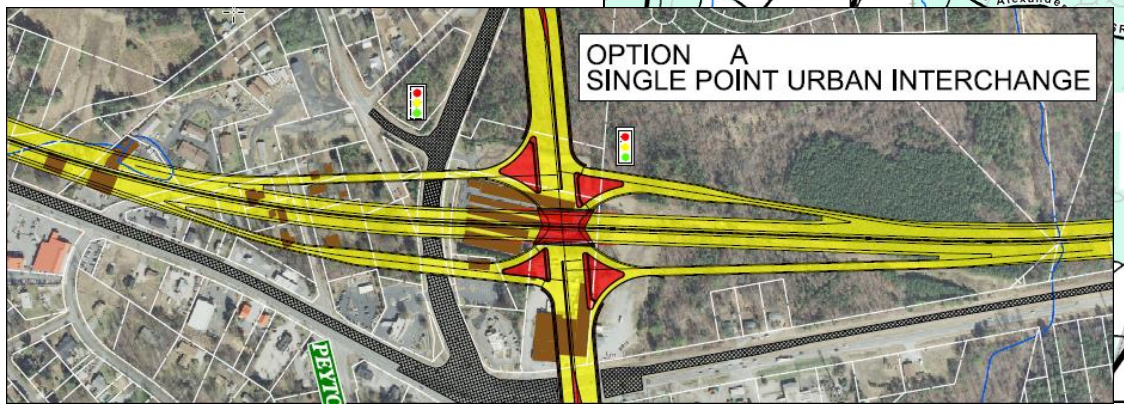




US 70 from Lynn Road to west of T.W. Alexander

- Upgrade US 70 to a controlled-access facility from Lynn Rd in Durham (East End Connector) to west of TW Alexander Dr in Raleigh
- Convert the at-grade intersection of US 70 with Mineral Springs Rd / Sherron Rd / South Miami Blvd to an interchange
- Access to US 70 will be provided at interchange locations
- R/W – 2024
- Construction – 2027
- Estimated Cost - $288 M





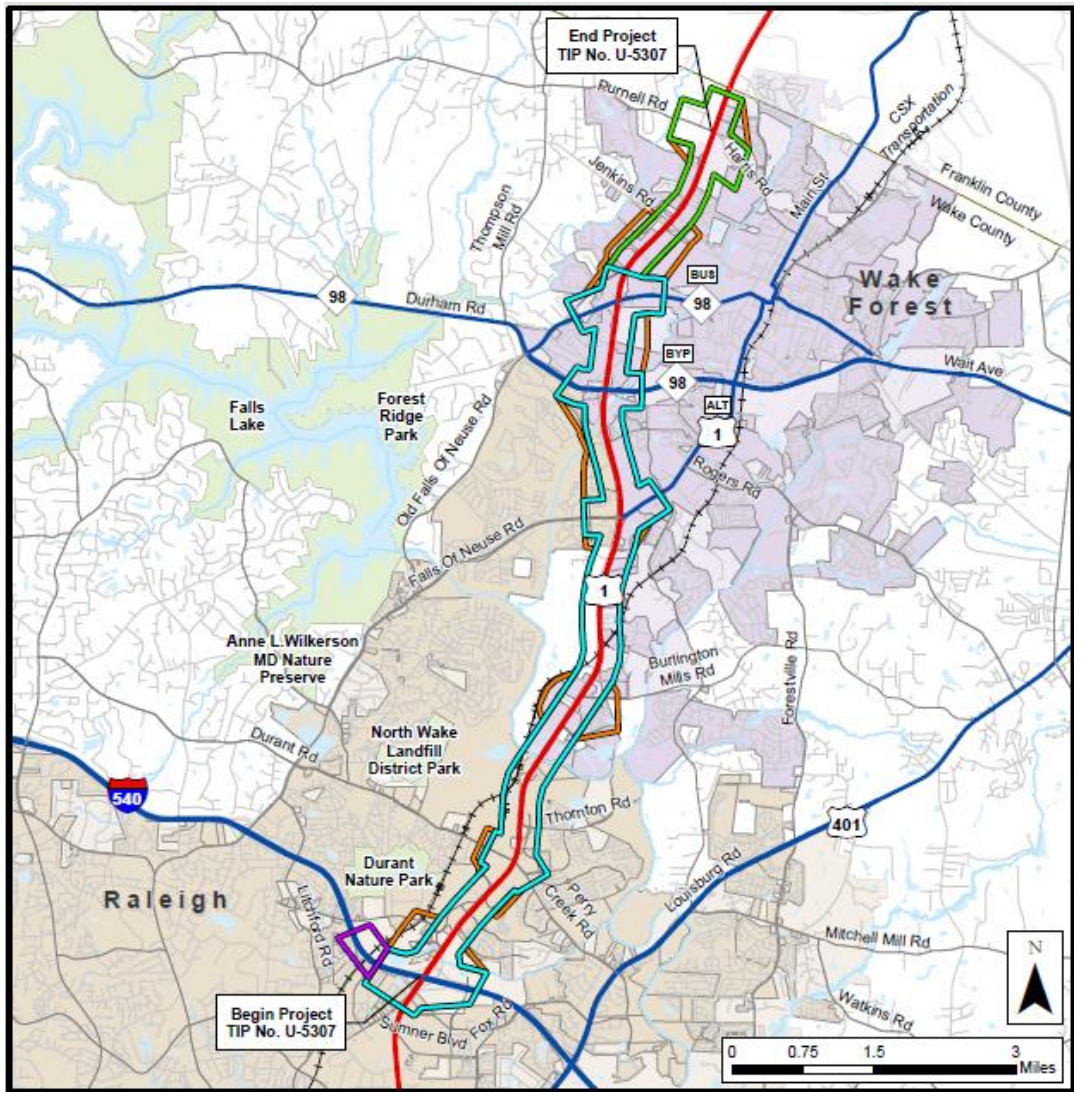
US 1 From I-540 to Harris/Purnell Roads

- General Project Needs:
  - Traffic Congestion
  - Trip Time Unreliability
  - Safety Concerns

US 1 From I-540 to Harris/Purnell Roads

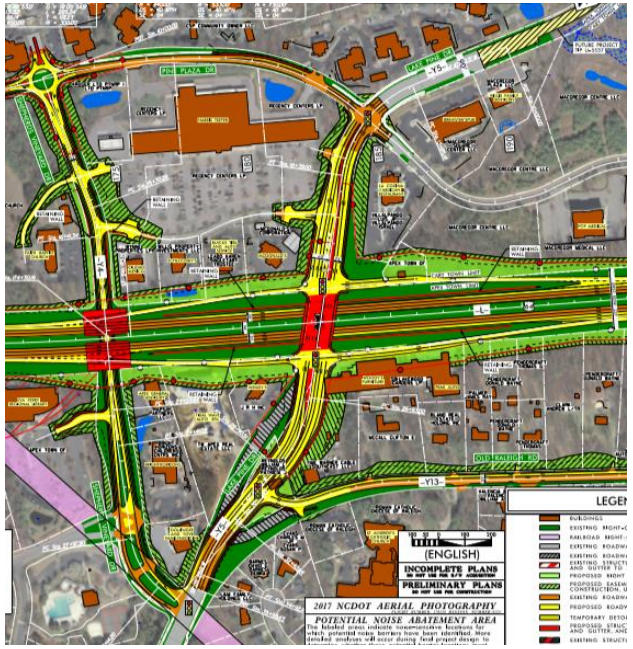
Project Description

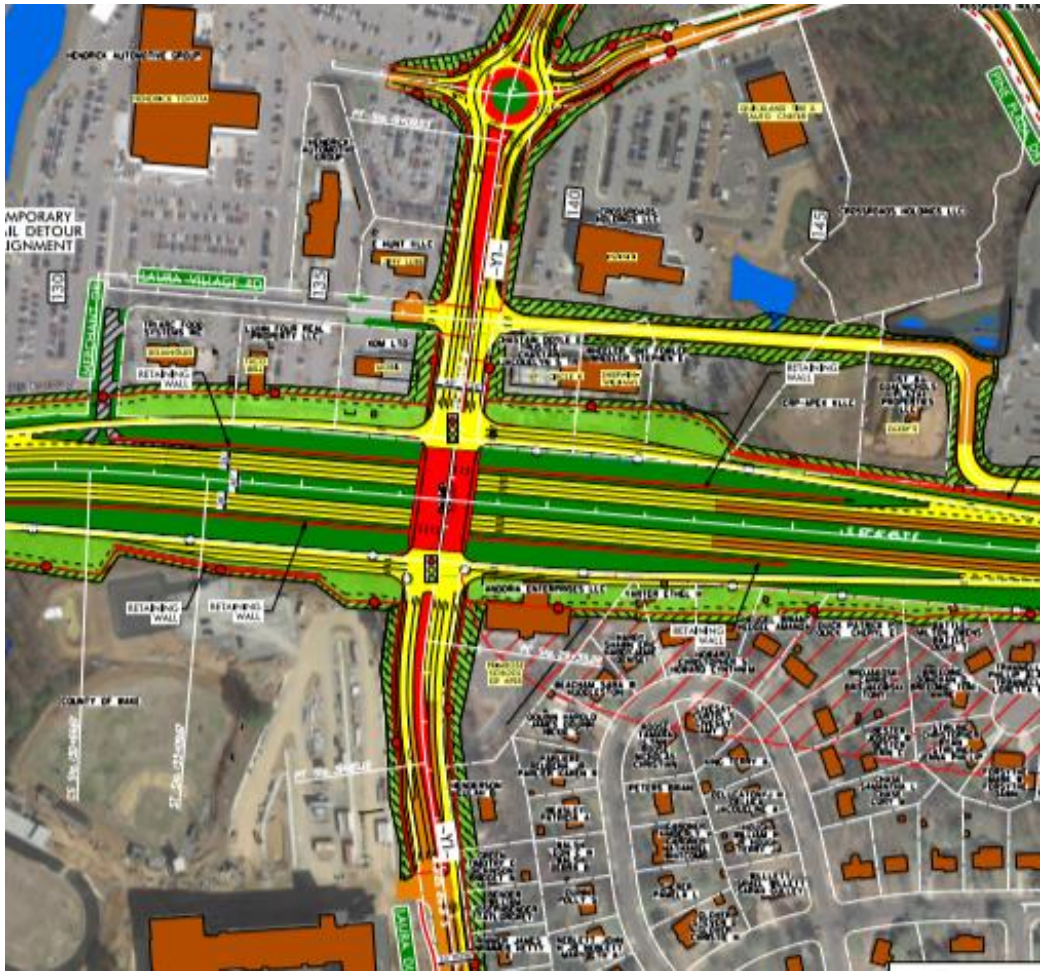
- Upgrade US 1 to a controlled-access facility
- Interchange locations – Perry Creek/Durant; Burlington Mills; US 1A/Falls of Neuse; Harris/Purnell Road
- Estimated Cost - ~$460 million
- Project Development on hold
- Construction
  - Durant/Perry Creek 2022
  - Burlington Mills & US 1A 2023
  - Harris/Purnell - 2027



US 64 Improvements in Apex & Cary

- Interchanges at Laura Duncan and Lake Pine
- Grade Separations at Edinburgh Dr, Shepherds Vineyard Dr
- Reduced Conflict Intersection Options Between Lake Pine and US 1
- R/W – 2021
- Construction – 2025
- Cost – Est. $177M





THANK YOU!!

I-40 widening in Orange County

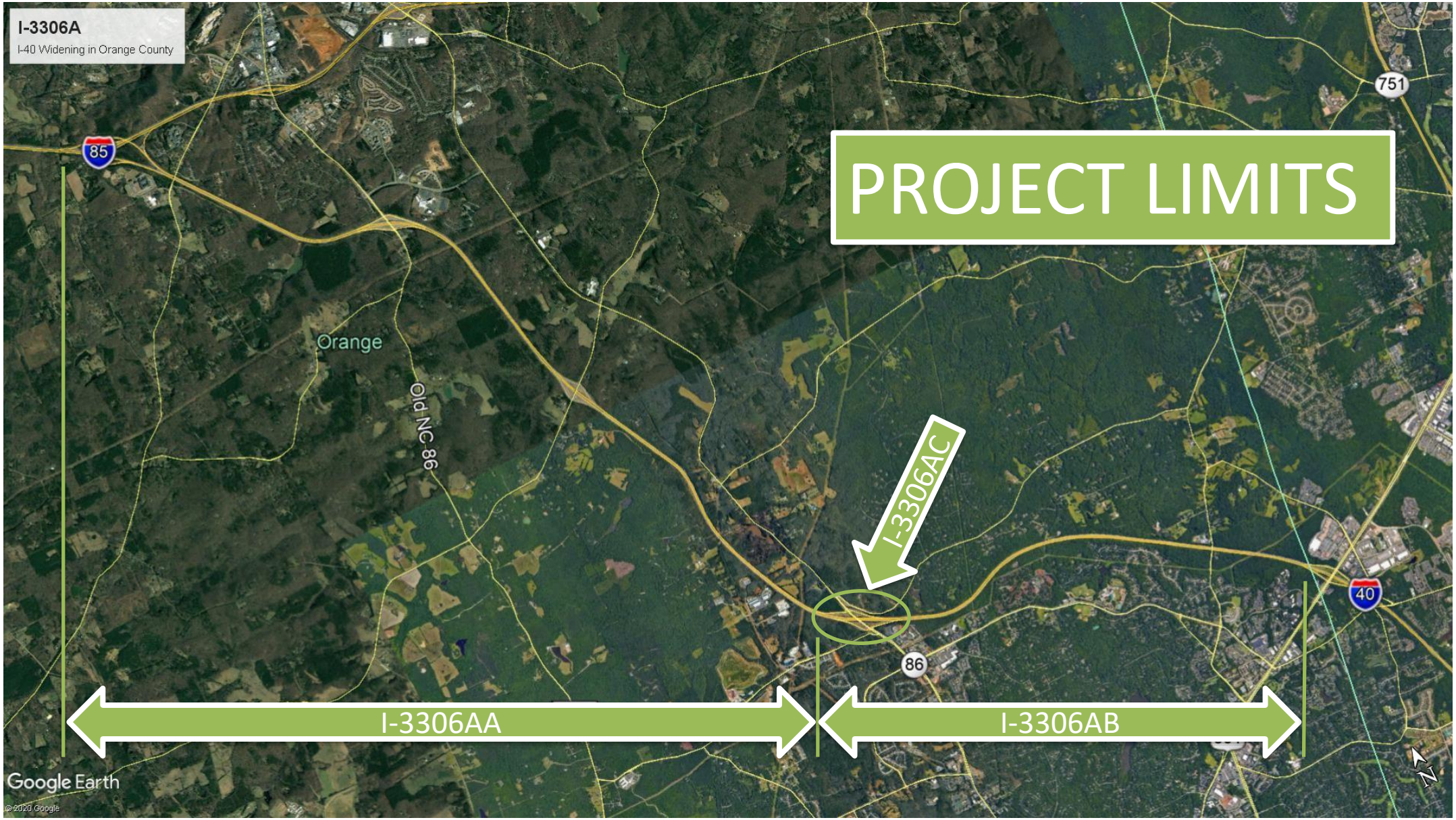
Laura Sutton
NCDOT Project Management Div. 7

NORTH CAROLINA
Department of Transportation

I-40 Widening in Orange County Update

Laura Sutton, CPM, P.E.
NCDOT Project Management Unit

August 11, 2020

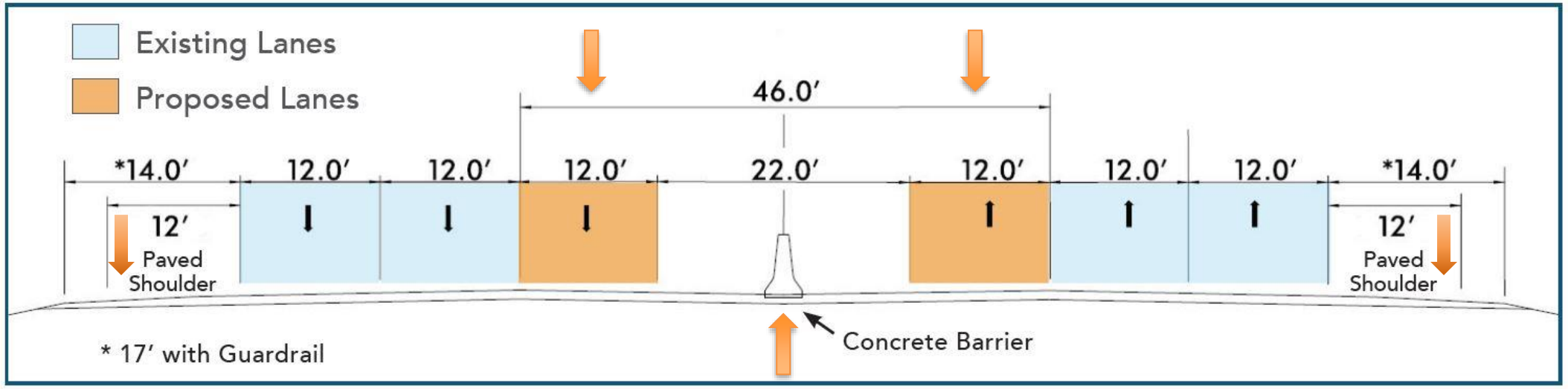

I-3306A
I-40 Widening in Orange County
PROJECT LIMITS
I-3306AC
I-3306AA
I-3306AB
Orange
Old NC-86
85
751
40
86
Google Earth
© 2020 Google

Purpose and Need

- Relieve peak hour congestion with level of service (LOS) D or better in 2040

- Improve traffic flow and continuity between the existing 8-lane section at the beginning of the project (I-85) and the existing 6-lane section at end of the project (Durham County Line).

I-40 Proposed Improvements



- Utilize the existing median width for 1 additional travel lane in each direction separated by a concrete median barrier, for a total of 6 travel lanes.
- Replace the existing 10-foot paved outside shoulders with 12-foot full depth paved shoulders, which will allow for operation of Bus on Shoulder System (BOSS).
- Outside widening is required due to vertical clearance issues and for maintenance of traffic to replace 2 bridges at I-40 WB over Old NC 86 and I-40 EB over Millhouse Road/Norfolk Southern Railroad.

NC 86 Interchange Improvements

- Modify existing diamond interchange by adding loop for I-40 WB to NC 86 SB and relocating on ramp for I-40 WB.
- Add storage capacity at existing ramps.

Completed Activities

March 2019:	Environmental planning document (CE) signed.
October 2019:	Firm contracted to begin work on I-3306AB/AC designs. The AB segment includes the widening of I-40. The AC segment includes the NC 86 interchange improvements. Proposed design improvements on NC 86 SB between the I-40 EB ramp termini and Perkins Drive has not been included at the request of the Town of Chapel Hill.
April 2020:	I-3306AB/AC preliminary plans approved.
May 2020:	Project placed on hold.

Upcoming Activities

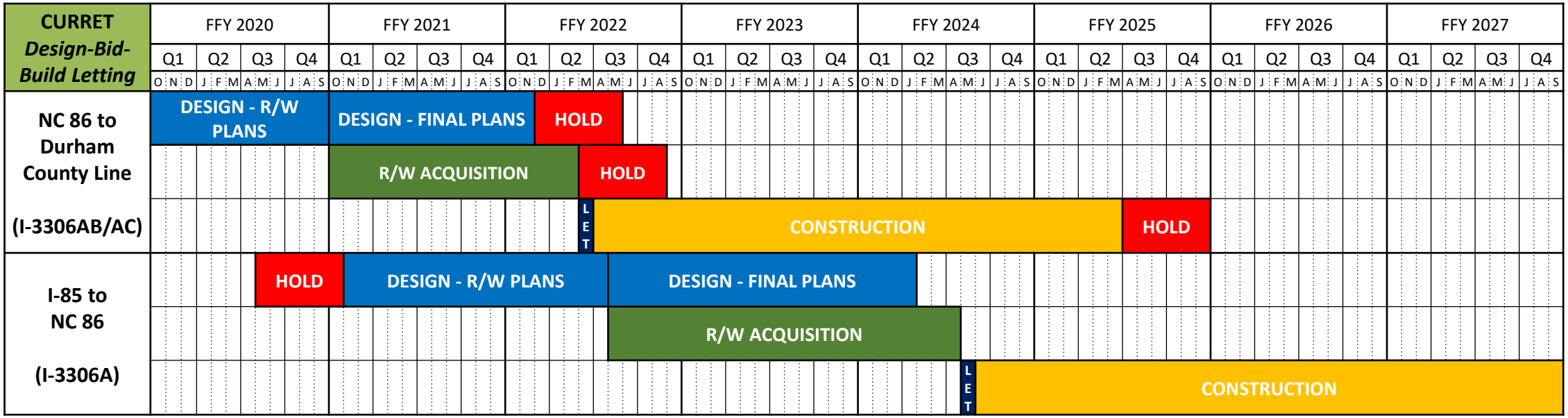
I-3306AB/AC:

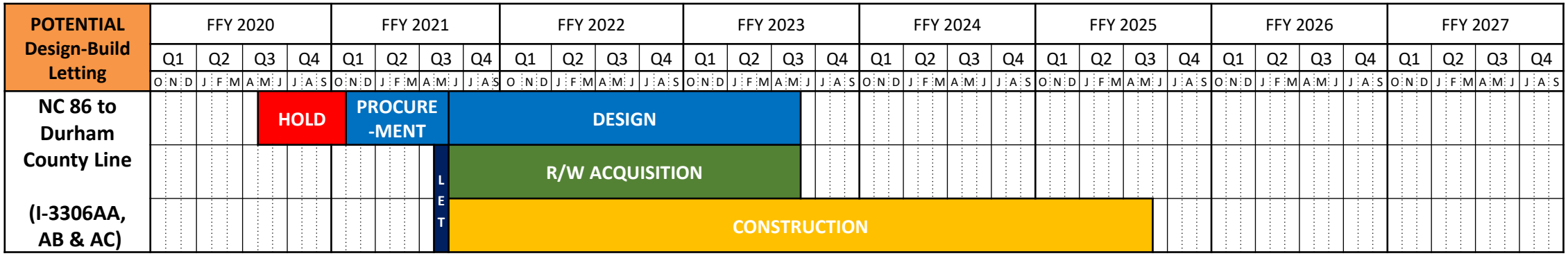
- Complete right-of-way plans
- Begin right-of-way acquisition
- Complete final plans

I-3306AA:

- Select design firm
- Complete design scoping and fee estimate
- Begin design work for preliminary plans

Schedules


CURRET
Design-Bid-Build Letting
FFY 2020
FFY 2021
FFY 2022
FFY 2023
FFY 2024
FFY 2025
FFY 2026
FFY 2027
Q1 Q2 Q3 Q4
O N D J F M A M J J A S
NC 86 to Durham County Line
(I-3306AB/AC)
DESIGN - R/W PLANS
DESIGN - FINAL PLANS
HOLD
R/W ACQUISITION
HOLD
L E T
CONSTRUCTION
HOLD
I-85 to NC 86
(I-3306A)
HOLD
DESIGN - R/W PLANS
DESIGN - FINAL PLANS
R/W ACQUISITION
L E T
CONSTRUCTION


POTENTIAL
Design-Build Letting
FFY 2020
FFY 2021
FFY 2022
FFY 2023
FFY 2024
FFY 2025
FFY 2026
FFY 2027
Q1 Q2 Q3 Q4
O N D J F M A M J J A S
NC 86 to Durham County Line
(I-3306AA, AB & AC)
HOLD
PROCURE -MENT
DESIGN
L E T
R/W ACQUISITION
CONSTRUCTION

I-40 managed freeway: on-ramp signal expansion

Derrick Lewis
NCDOT Feasibility Studies

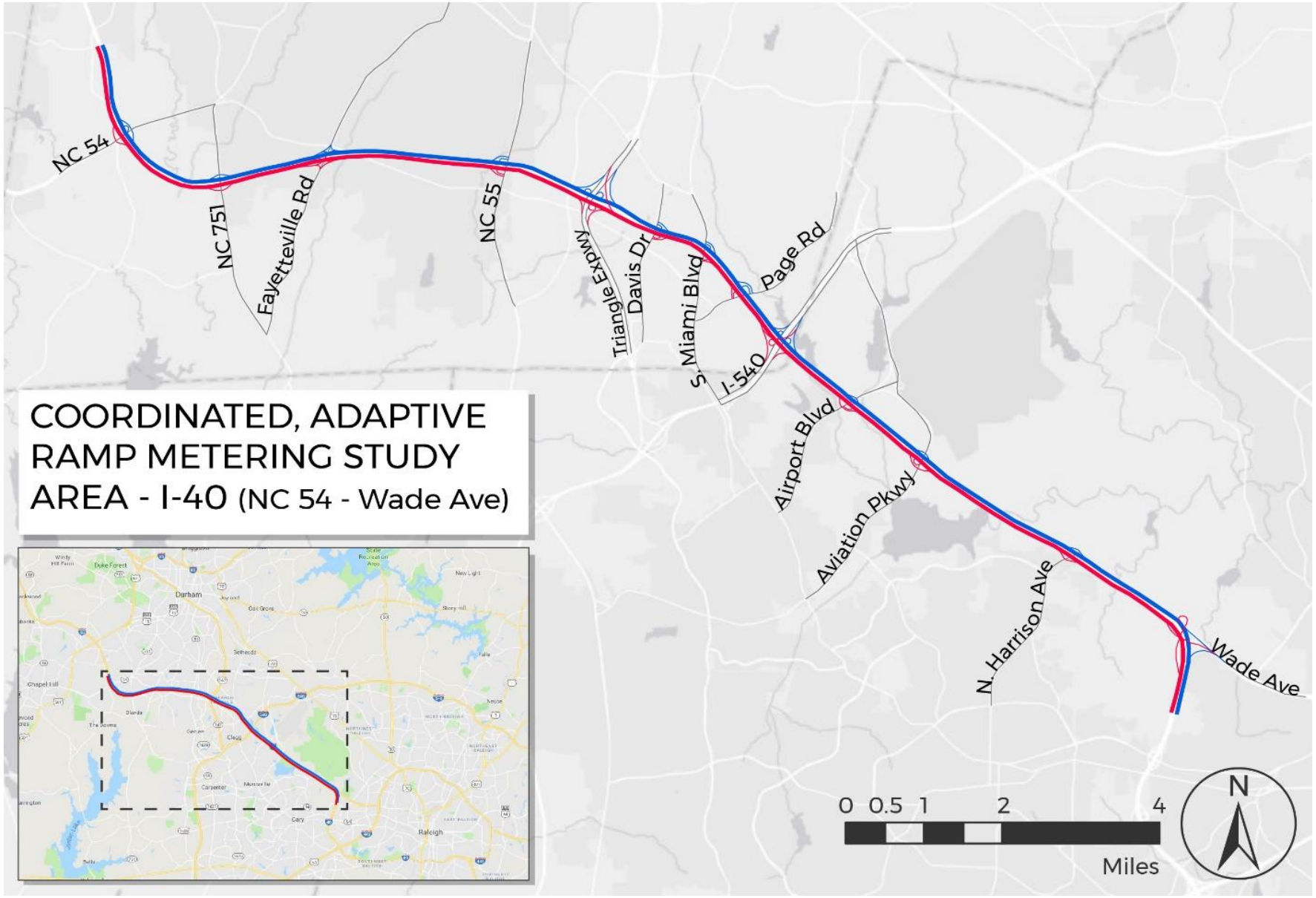
NORTH CAROLINA
Department of Transportation

I-40 Managed Motorways

: I-6006, I-40 from NC 54 to Wade Avenue

Derrick Lewis, PE

August 2020


NC 54
NC 751
Fayetteville Rd
NC 55
Triangle Expwy
Davis Dr
S. Miami Blvd
Page Rd
I-540
Airport Blvd
Aviation Pkwy
N. Harrison Ave
Wade Ave
COORDINATED, ADAPTIVE RAMP METERING STUDY AREA - I-40 (NC 54 - Wade Ave)
Durham
Raleigh
0 0.5 1 2 4
Miles
N

Study Components

- Coordinated Adaptive Ramp Metering **(CARM)** is a signalized ramp metering operational strategy that aims to maximize freeway throughput, reduce delay, improve travel time reliability, and reduce crashes.
- A series of gantries to enable Advanced Traffic Management Systems **(ATMS)** is also considered. This would allow implementation of systems such as Dynamic Speed Limits, Dynamic Lane Assignment and Queue Warning

	Total Costs		
	Low	Average	High
Ramp Meter	$41,400,000	$46,700,000	$51,900,000
ATMS	$30,800,000	$31,800,000	$32,800,000
Total	$72,200,000	$78,500,000	$84,700,000

Daily Changes

	Daily			
2045	With CARM	Without CARM	Difference	% Diff
Total Demand	290,469,591	288,656,767	1,812,825	0.63%
Total Delay (hours)	446,648	578,911	(132,263)	-22.85%
Total VMT (miles)	90,675,812	89,871,037	804,775	0.90%
Total VHT (hours)	2,535,616	2,682,544	(146,928)	-5.48%
Average Speed (mph)	35.76	33.50	2.26	6.74%
Delay per mile traveled (mins)	0.30	0.39	(0.09)	-23.53%

Peak Hour Changes

	AM				PM			
2045	With CARM	Without CARM	Difference	% Diff	With CARM	Without CARM	Difference	% Diff
Total Demand	71,749,790	70,994,646	755,143	1.06%	86,970,731	86,400,976	569,754	0.66%
Total Delay (hours)	139,987	178,105	(38,118)	-21.40%	209,025	265,513	(56,488)	-22.27%
Total VMT (miles)	22,957,100	22,670,954	286,146	1.26%	27,537,191	27,317,521	219,671	0.80%
Total VHT (hours)	39,903,576	42,399,014	(2,495,438)	-5.89%	50,818,670	54,634,956	(3,816,286)	-6.99%
Average Speed (mph)	34.52	32.08	2.44	7.59%	32.51	30.00	2.51	8.37%
Delay per mile traveled (mins)	0.37	0.47	(0.11)	-22.38%	0.46	0.58	(0.13)	-21.90%

Raleigh/Durham Opportunity Cost

- Average Value of Time (per hour) $14.22
- Total Daily Delay (hours) 132,263
- **Opportunity Cost for Lost Time (Daily)** **$1,880,778**

Questions?

Derrick Lewis, PE
Manager, Feasibility Studies Unit
dlewis@ncdot.gov

I-40 express lanes

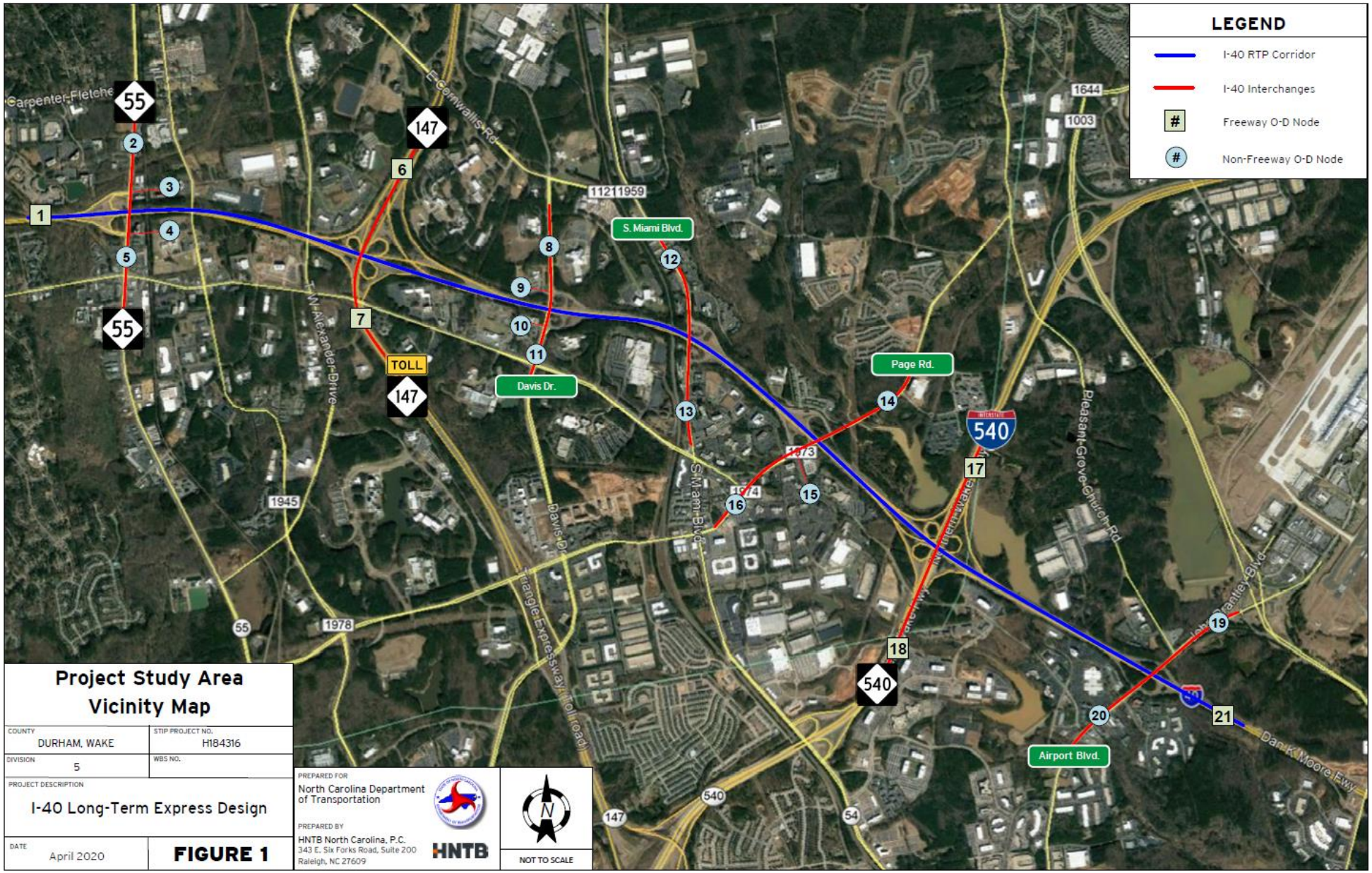
Andrew Bell, HNTB

HNTB

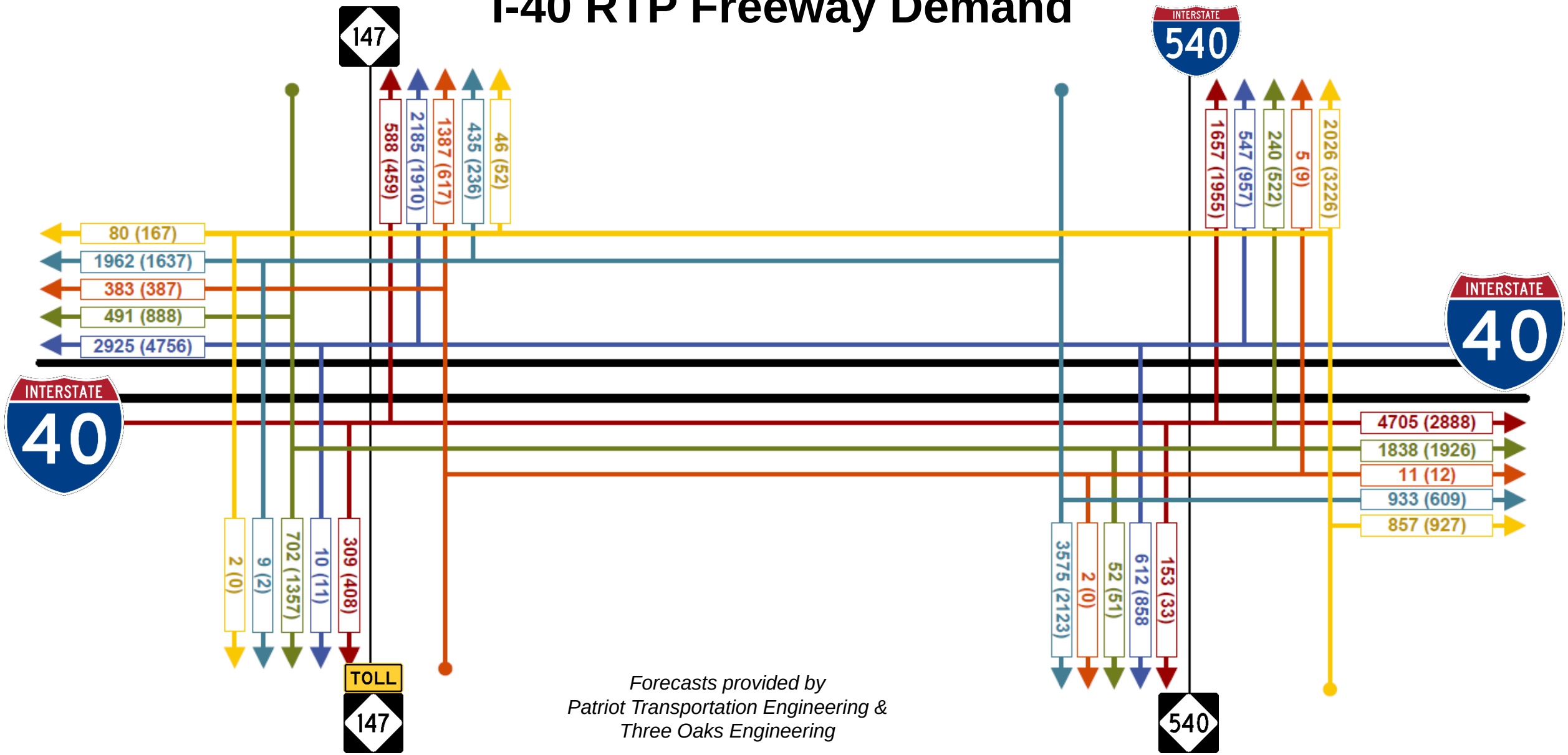
H184316 I-40 Express Design
NC 55 to Airport Blvd

August 11, 2020

Andrew Bell, PE, PTOE


LEGEND
I-40 RTP Corridor
I-40 Interchanges
Freeway O-D Node
Non-Freeway O-D Node
S. Miami Blvd.
Davis Dr.
TOLL
Page Rd.
Airport Blvd.
E Cornwallis Rd
T.W. Alexander Drive
Triangle Expressway Toll Road
S Miami Blvd
Pleasant Grove Church Rd
Dan K. Moore Fwy
Carpenter-Fletche
11211959
1644
1003
1945
1978
1973
1974
55
147
540
54
Project Study Area
Vicinity Map
COUNTY
DURHAM, WAKE
STIP PROJECT NO.
H184316
DIVISION
5
WBS NO.
PROJECT DESCRIPTION
I-40 Long-Term Express Design
DATE
April 2020
FIGURE 1
PREPARED FOR
North Carolina Department of Transportation
PREPARED BY
HNTB North Carolina, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, NC 27609
HNTB
N
NOT TO SCALE

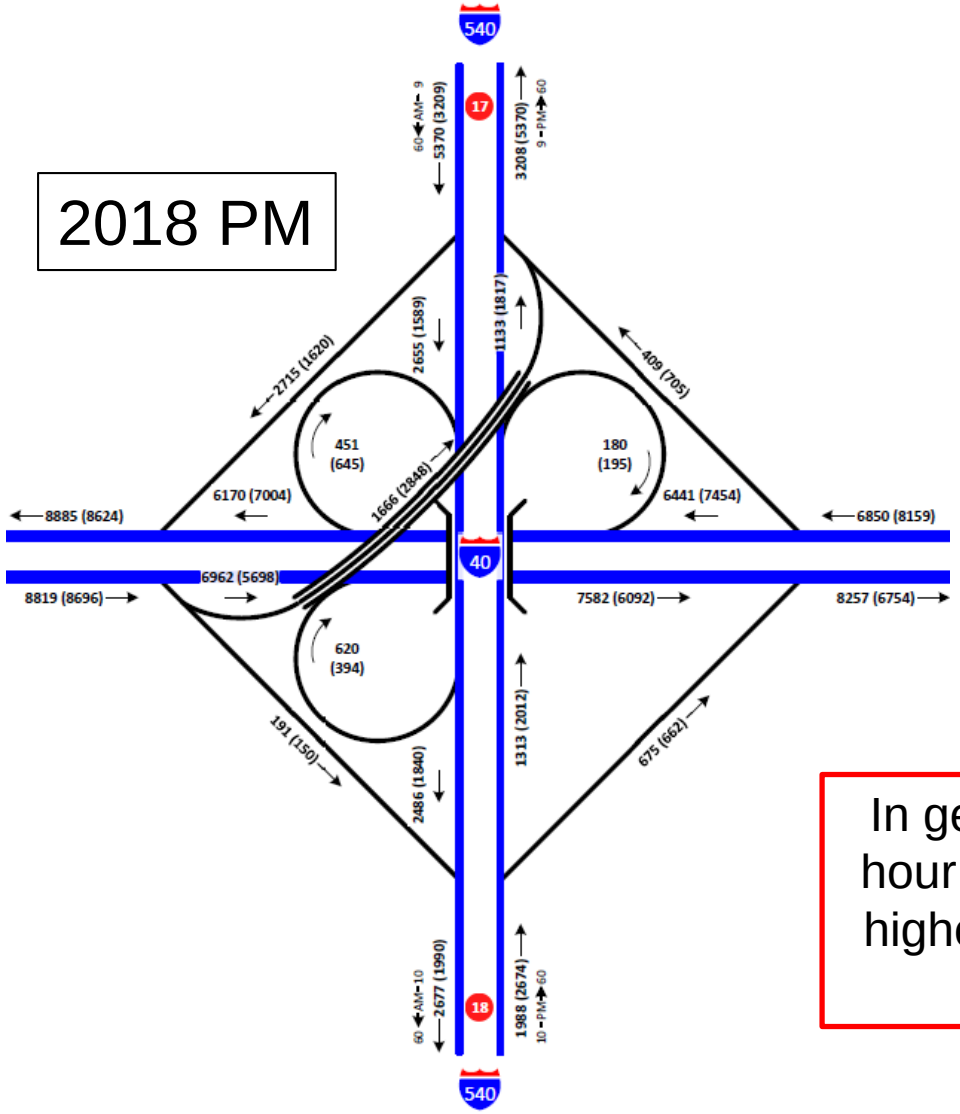
I-40 RTP Freeway Demand



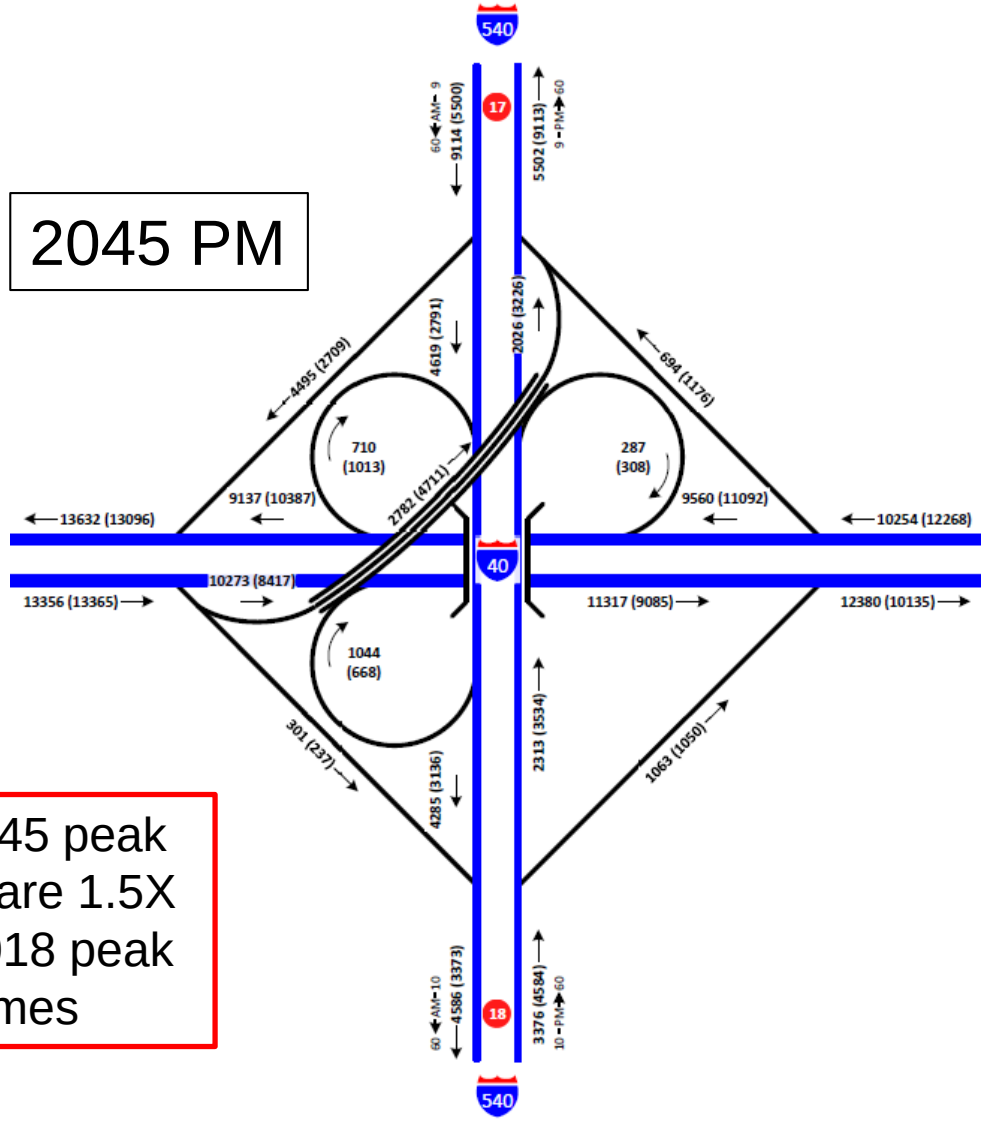
Forecasts provided by
Patriot Transportation Engineering &
Three Oaks Engineering

Peak Hour Volume Diagrams

2018 PM



2045 PM



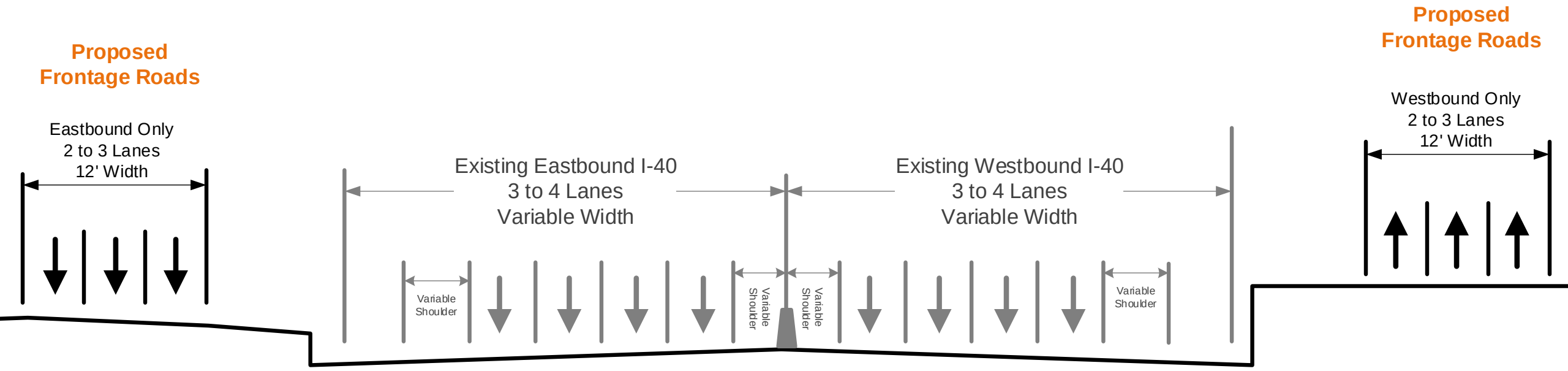
In general, 2045 peak hour volumes are 1.5X higher than 2018 peak hour volumes

Feasibility Study Considerations

- ✓ Peak-hour congestion
- ✓ Adjacent planned projects
- ✓ Freeway-to-freeway O-D pairs
- ✓ Elimination of weaving segments
- ✓ Transit connectivity
- ✓ Right-of-way costs/impacts
- ✓ Compatibility with Managed Motorways
- ✓ Compatibility with Managed Lanes
- ✓ Potential for expansion, if needed

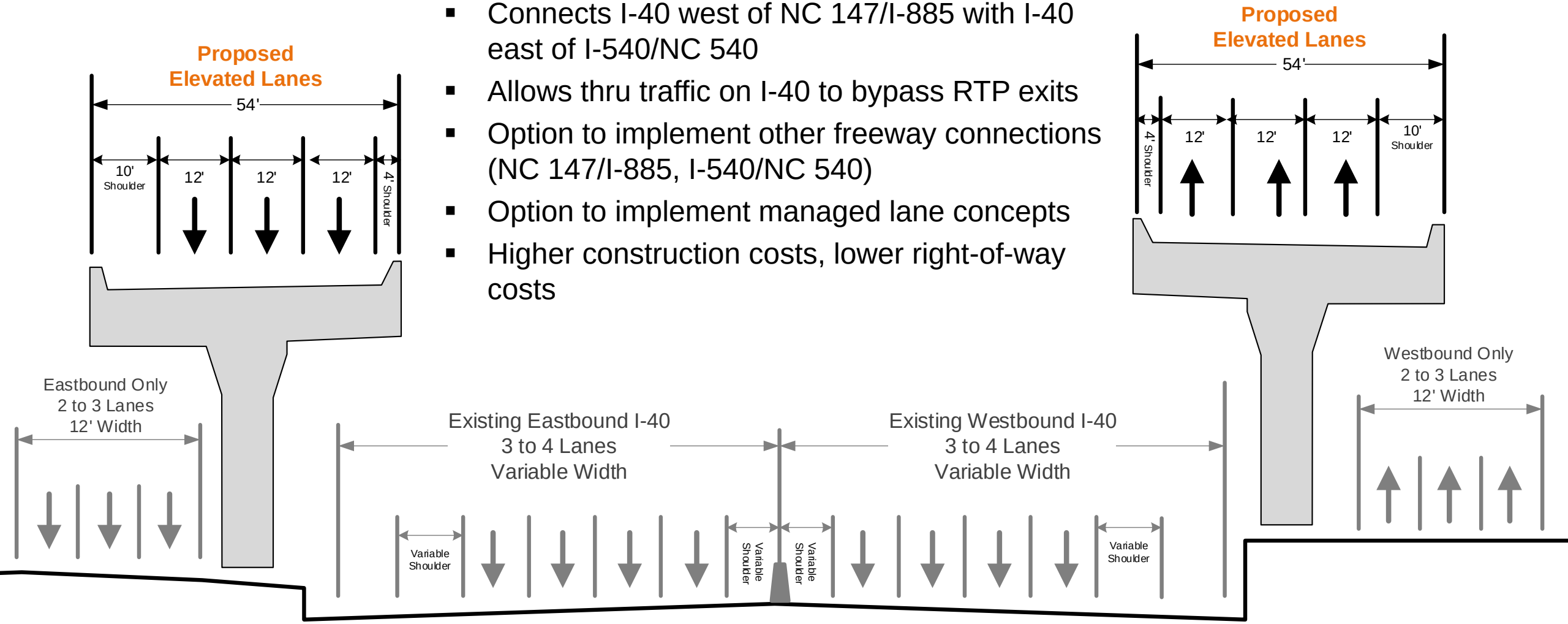
Short-Term: One-way Frontage Roads

- 2 to 3 lanes in each direction along frontage roads
- Connects ramps between NC 147/I-885 and I-540/NC 540
- Eliminates weaving segments along I-40
- Additional on-ramps for I-40 EB, off-ramps for I-40 WB based on demand
- Higher right-of-way costs, lower construction costs



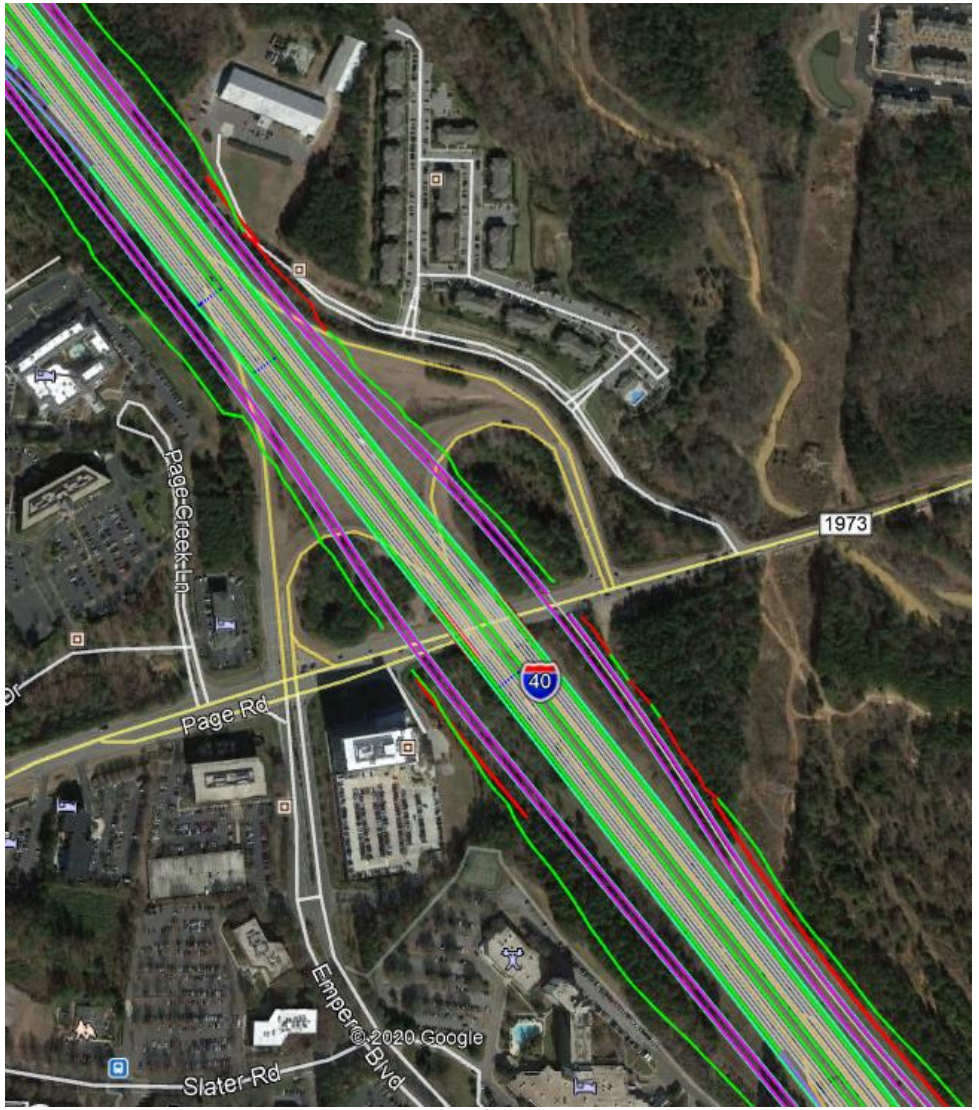
Long-term: One-way Frontage Roads + Elevated Lanes

- 3 elevated lanes in each direction
- Connects I-40 west of NC 147/I-885 with I-40 east of I-540/NC 540
- Allows thru traffic on I-40 to bypass RTP exits
- Option to implement other freeway connections (NC 147/I-885, I-540/NC 540)
- Option to implement managed lane concepts
- Higher construction costs, lower right-of-way costs



Agency Involvement

- ✓ NCDOT Feasibility Studies Unit
- ✓ NCDOT Division 5
- ✓ NCDOT Congestion Management
- ✓ CAMPO
- ✓ DCHCMPO
- ✓ City of Durham
- ✓ City of Raleigh



Questions?

Andrew Bell, PE, PTOE
Project Manager, HNTB
aabell@hntb.com

Bus On Shoulder System (BOSS): Regional study

Alex Rickard, CAMPO

Bus on Shoulder Study Update
August 11, 2020

The Triangle Bus on Shoulder Study has five purposes:

1. Evaluate peer BOS systems to identify updates to best practices

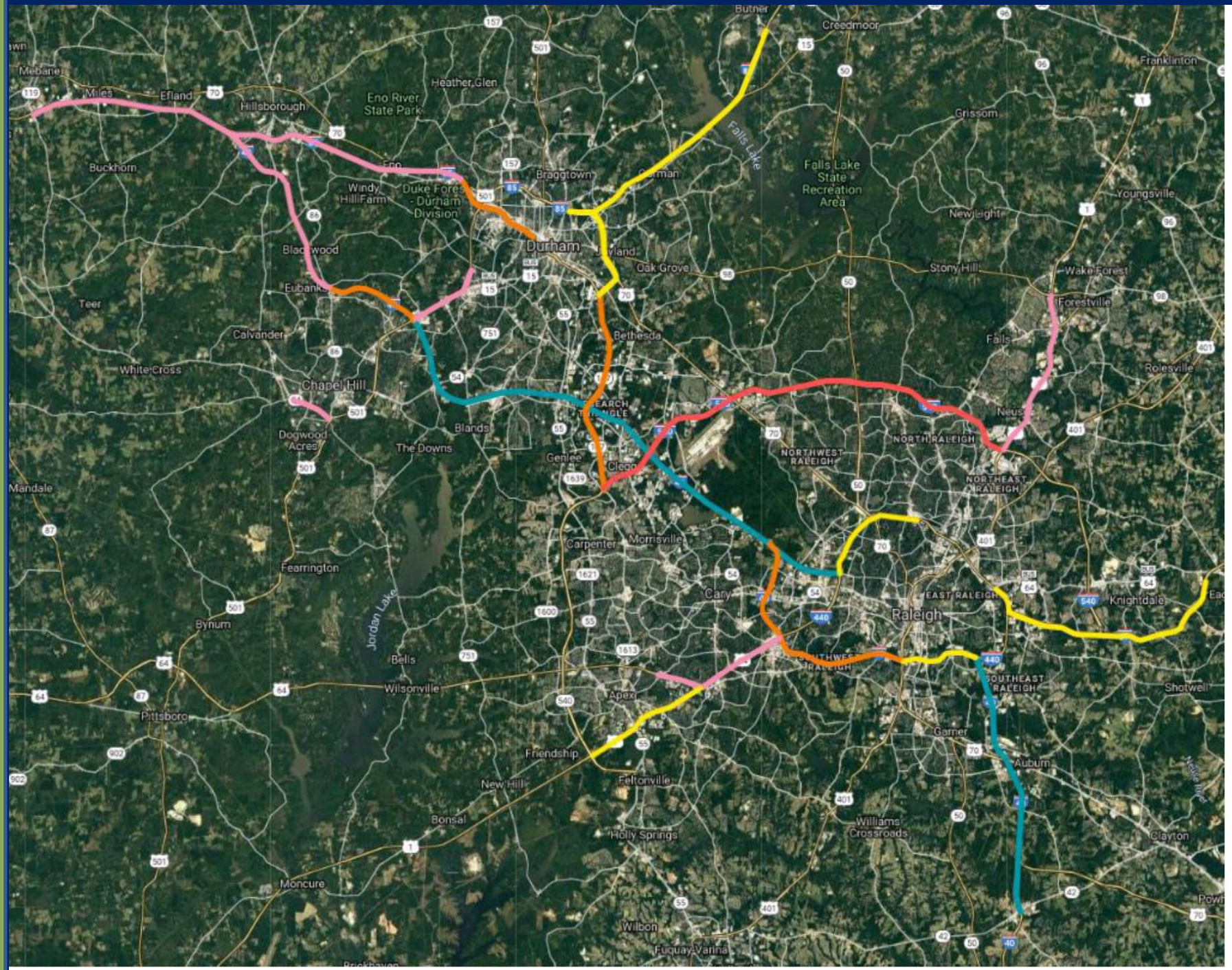
2. Evaluate whether conditions are appropriate for expanding BOS on the Triangle's roadway network

3. Prioritize implementation of BOS expansion, including where improvements could be leveraged through ongoing projects

4. Evaluate the North Carolina statewide BOS operations guidance to determine where changes could be made to enhance BOS implementation across the state

5. Develop updated messaging to improve public and driver awareness regarding BOS operations, particularly where new operations will begin

CAMPO
NC Capital Area Metropolitan Planning Organization



Potential Study Corridors

will be refined as study moves forward

CAMPO
NC Capital Area Metropolitan Planning Organization

Who is involved:

Consultant Team: HDR and Cambridge Systematics

Funding Partners: CAMPO and GoTriangle

Technical Steering Committee:

- CAMPO
- GoTriangle
- DCHC MPO
- NCDOT
- FHWA
- NC State Hwy Patrol
- RTA

CAMPO
NC Capital Area Metropolitan Planning Organization

Bus on Shoulder Study Timeline:

Study Start: July 2020

Expert Panel: August 27, 2020

Recommendations: May 2021

Presentations: June/July 2021

Contacts:

Shelby Powell, CAMPO
Shelby.Powell@campo-nc.us

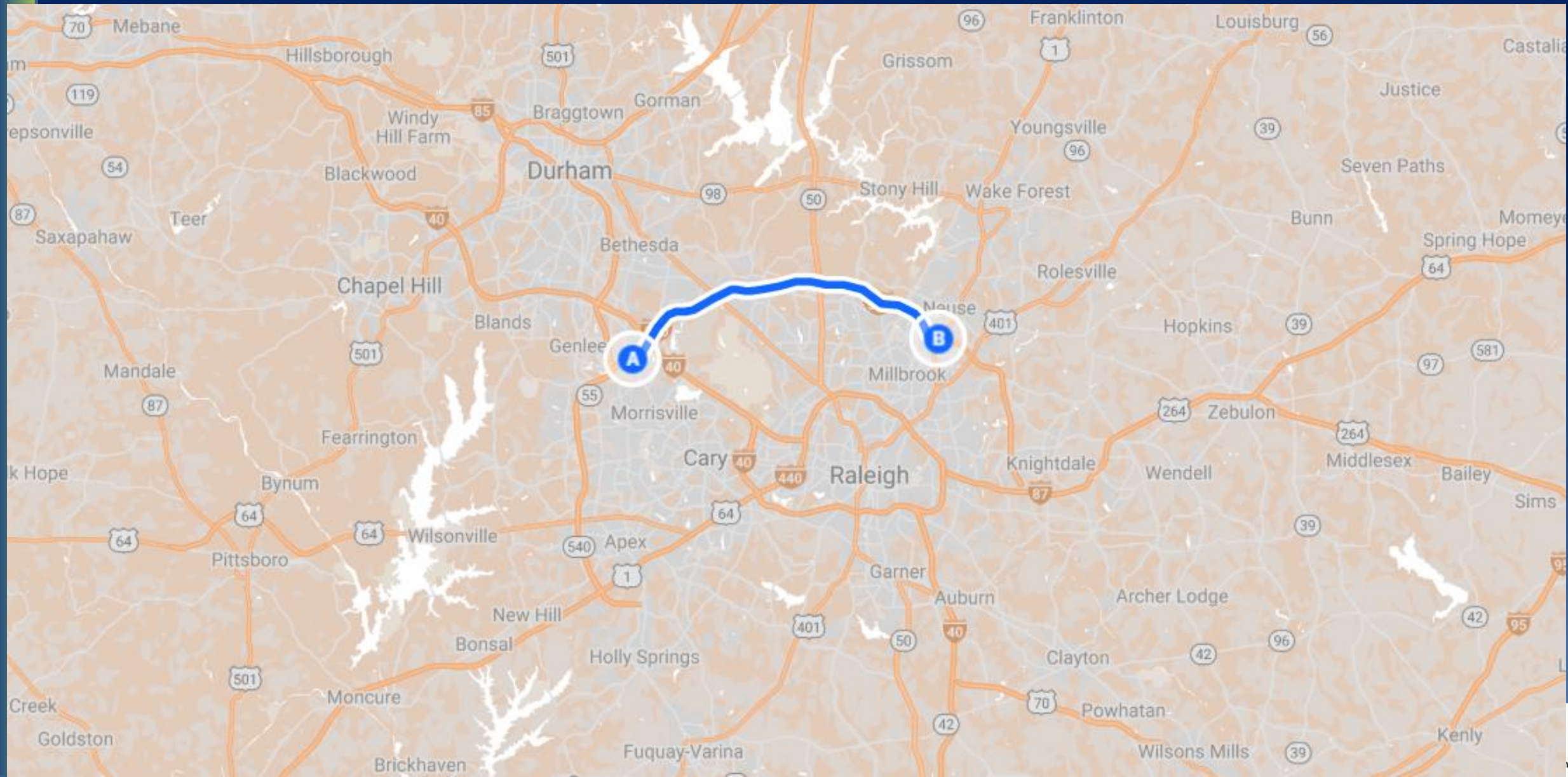
Patrick McDonough, HDR Project Manager
Patrick.mcdonough@hdrinc.com

CAMPO
NC Capital Area Metropolitan Planning Organization

Bus On Shoulder System (BOSS): I-540 expansion

Willie Noble, GoTriangle

I-540 Bus on Shoulder: NC 54 to US 1



FAST network study

Joe Furstenberg
NCDOT Integrated Mobility

FAST

Freeway And Street-based Transit network

Preliminary Study Findings

I-40 Regional Partnership, August 11, 2020

Freeway And Street-based Transit network study

- **Joint initiative funded by RTA business coalition, GoTriangle, and NCDOT**
  - Lead consultant VHB, with Stantec and Catalyst Design

Overall study objectives

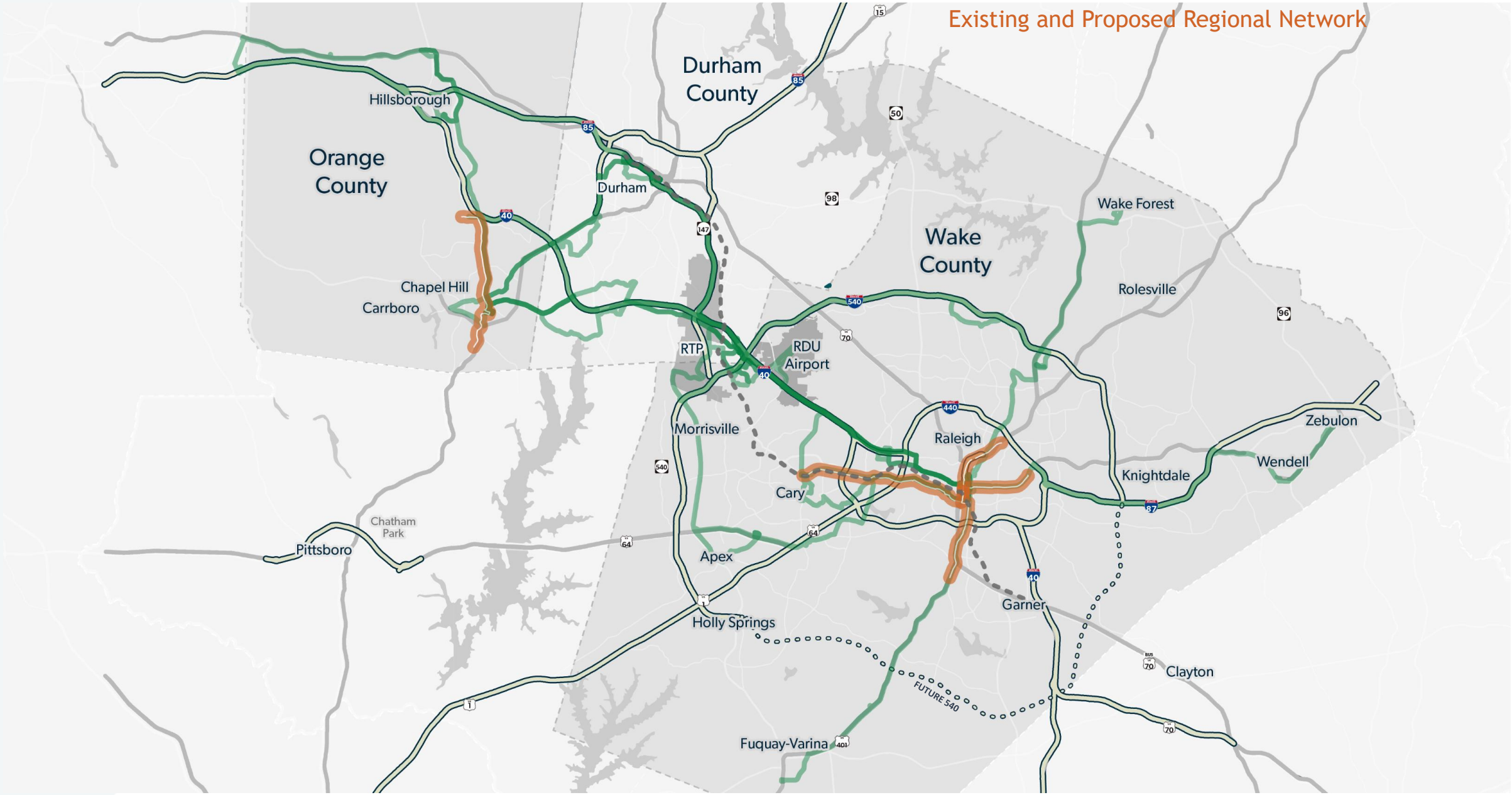
- **Advance ideas for improving and accelerating regional connectivity**
- Encourage a "FAST" mindset – identify low-cost transit advantages that can be implemented quickly, scale over time

Goals of a regional FAST network

- Leverage roadway system to create multimodal freeways and streets
- Incorporate and extend 5 approved BRT corridors, link to commuter rail
- Quickly create a viable, illustrative enhanced regional transit network
- Serve as template for other initiatives in North Carolina

Preliminary Findings

Existing and Proposed Regional Network



FAST

Freeway And Street-based Transit network

Study Methodology

Mobility Criteria

Travel Demand
- Traffic Volume
- Transit Ridership

Transit Performance
- Service Frequency
- Bus Speed

Traffic Performance
- Traffic Delay
- Volume/Capacity

Context
- Land Use Density
- Intersection Density

Accessibility Criteria

Access Equity
- Job Access

Planned Projects
- STIP Review

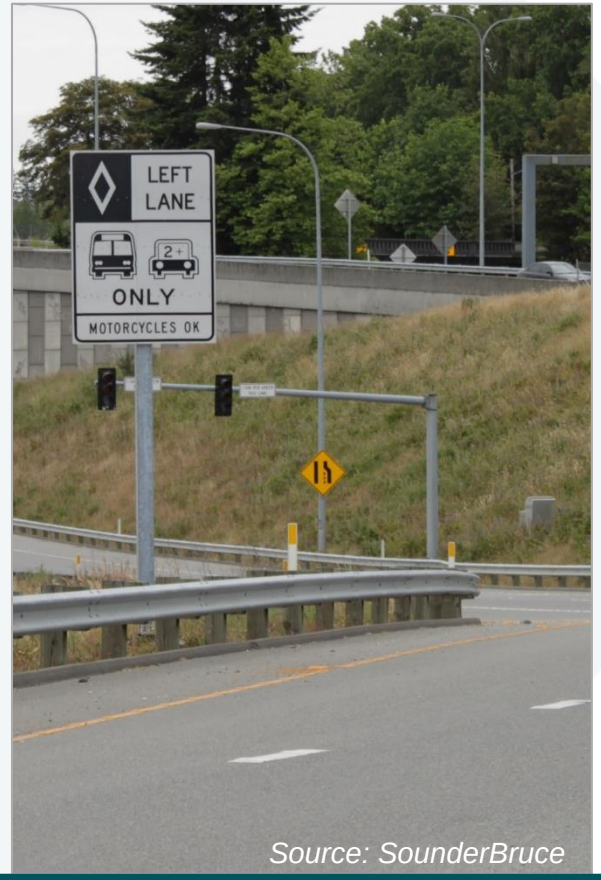
Missing Links
- Unserved Areas

FAST

Freeway And Street-based Transit network

Low-cost transit advantages

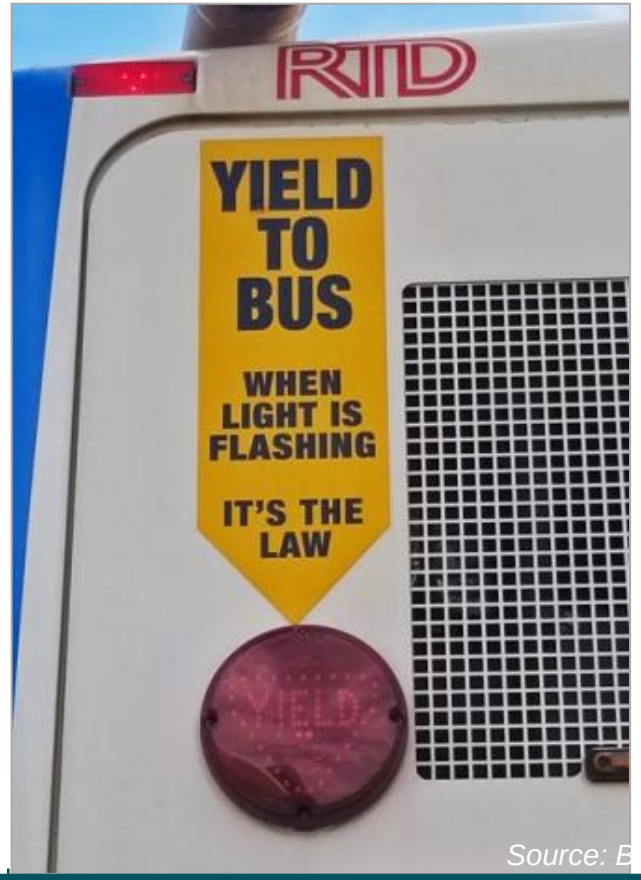
Low-cost transit advantages: **Freeways**



Source: SounderBruce

On-ramp signal bypass

Bus On Shoulder System (BOSS)



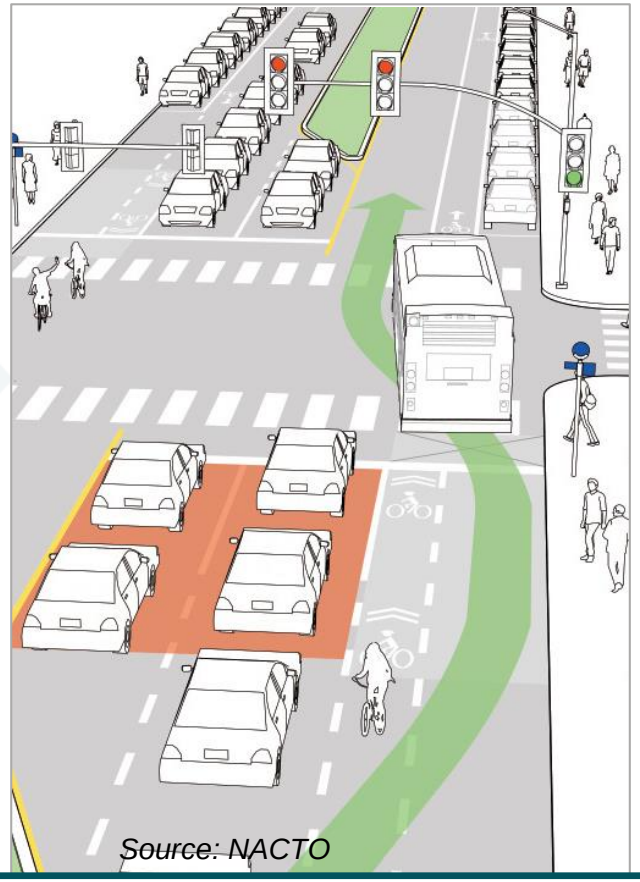
Source: B

Yield-to-Bus

Prioritize corridor features where they are anticipated to have the greatest impact.

Low-cost transit advantages: Streets

Transit Signal Priority



Source: NACTO

Queue Jump Lanes

RED Lanes

Prioritize corridor features where they are anticipated to have the greatest impact.

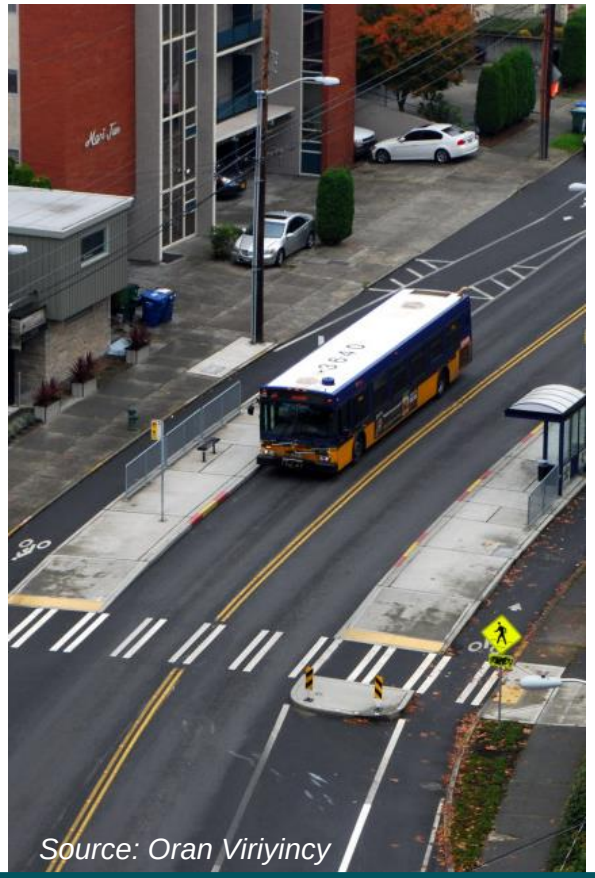
Low-cost transit advantages: **Stops**

Source: Metropolitan Council

Level Boarding

Source: KCATA

Enhanced Bus Stop



Source: Oran Viriyincy

“Floating” Bus Stop

FAST

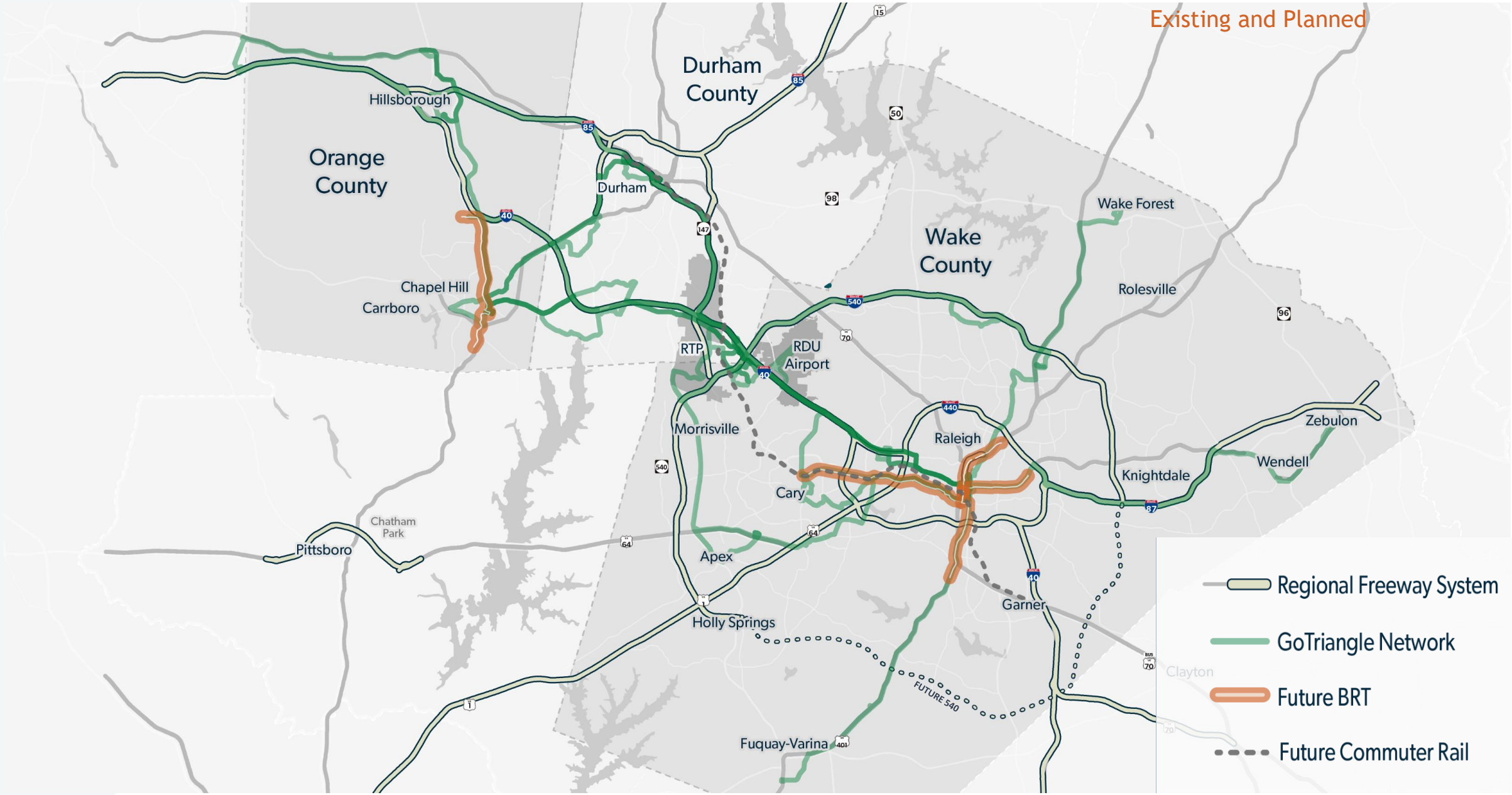
Freeway And Street-based Transit network

Proposed 2025 FAST network

Preliminary Findings

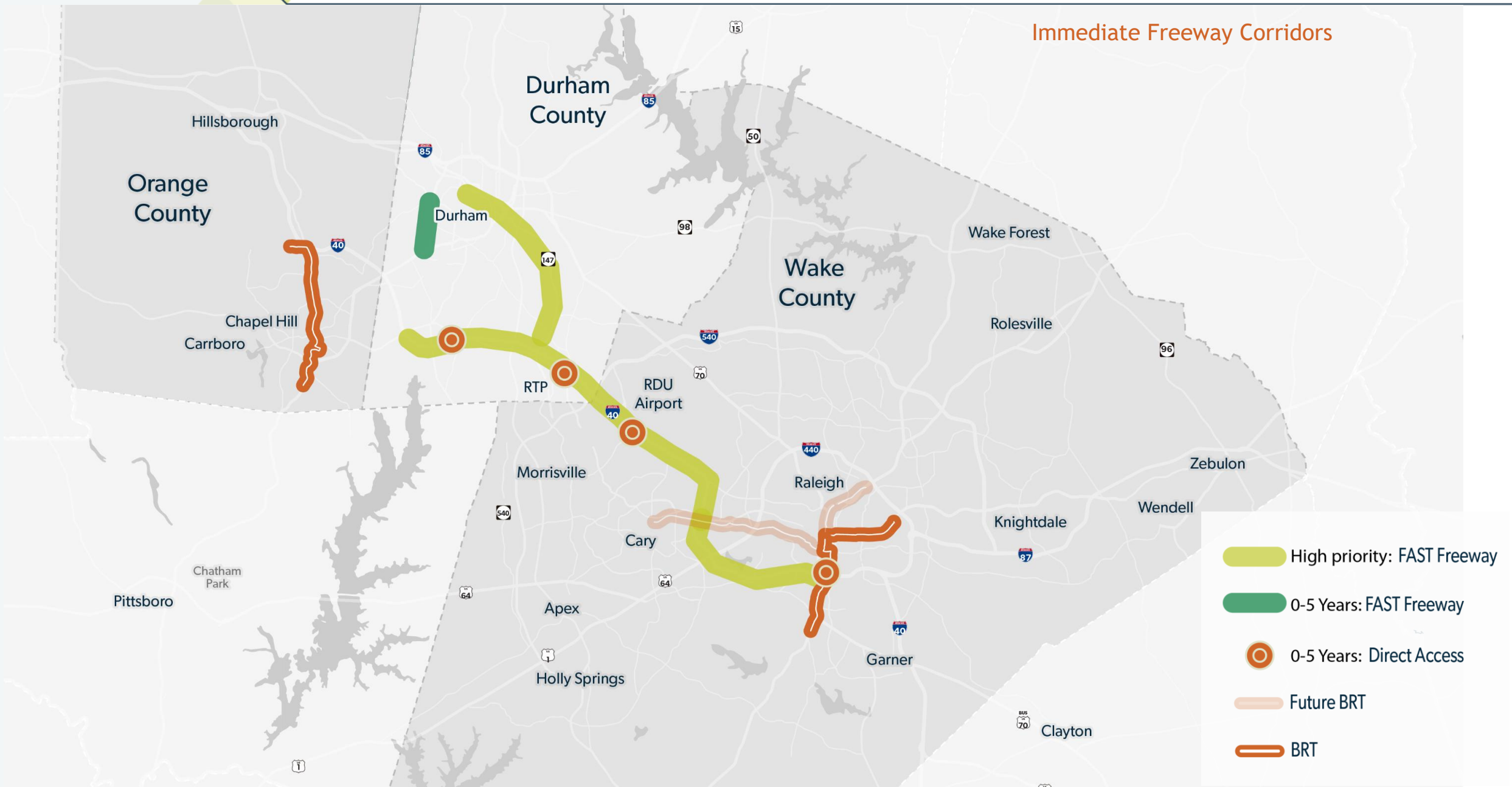
Transit Service

Existing and Planned



Preliminary Findings

Immediate Freeway Corridors



Preliminary Findings

Immediate Freeway Corridors

South Durham
Direct Pedestrian Access

US 15/501
Bus On Shoulder System

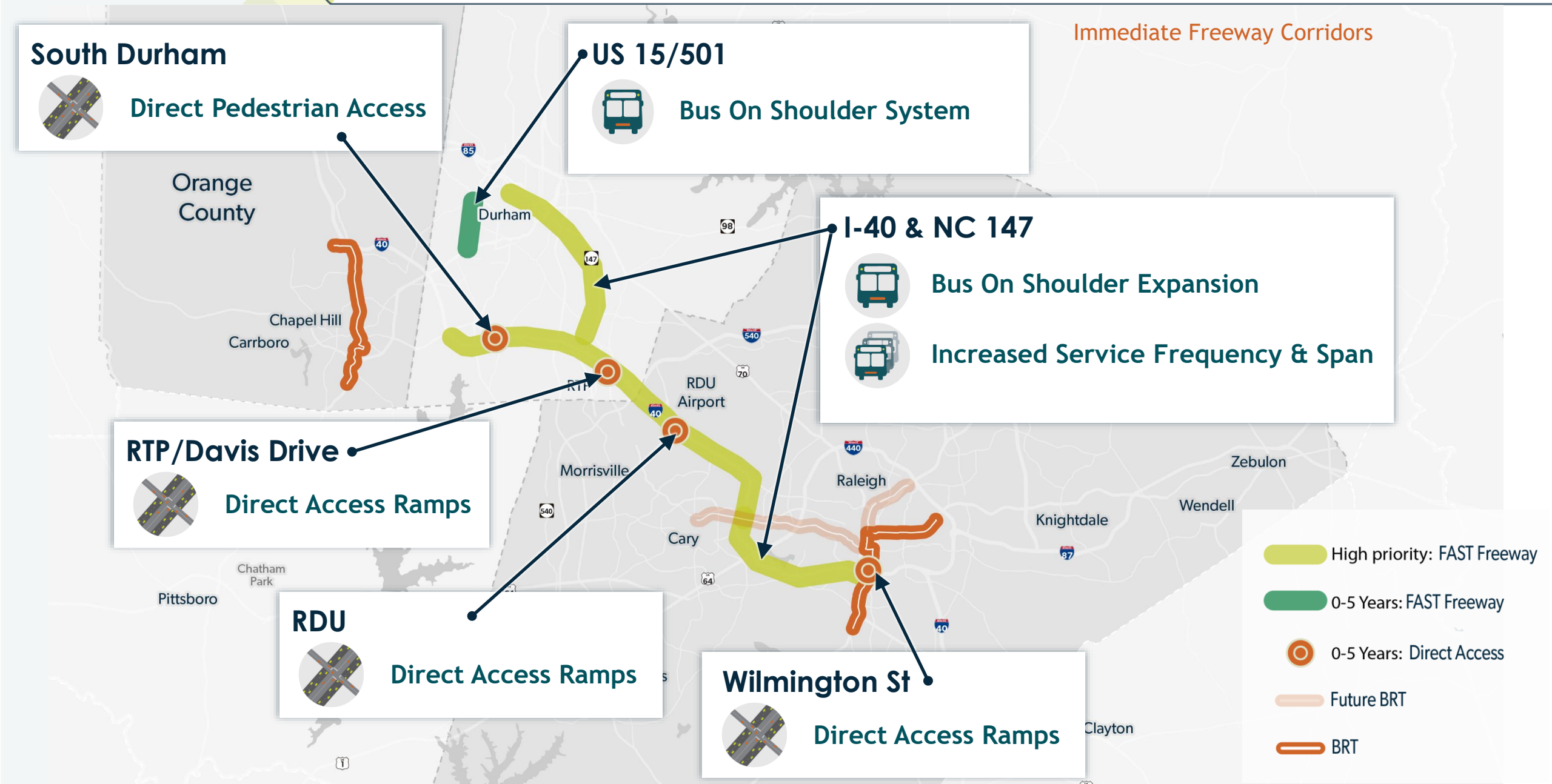
I-40 & NC 147
Bus On Shoulder Expansion

Increased Service Frequency & Span

RTP/Davis Drive
Direct Access Ramps

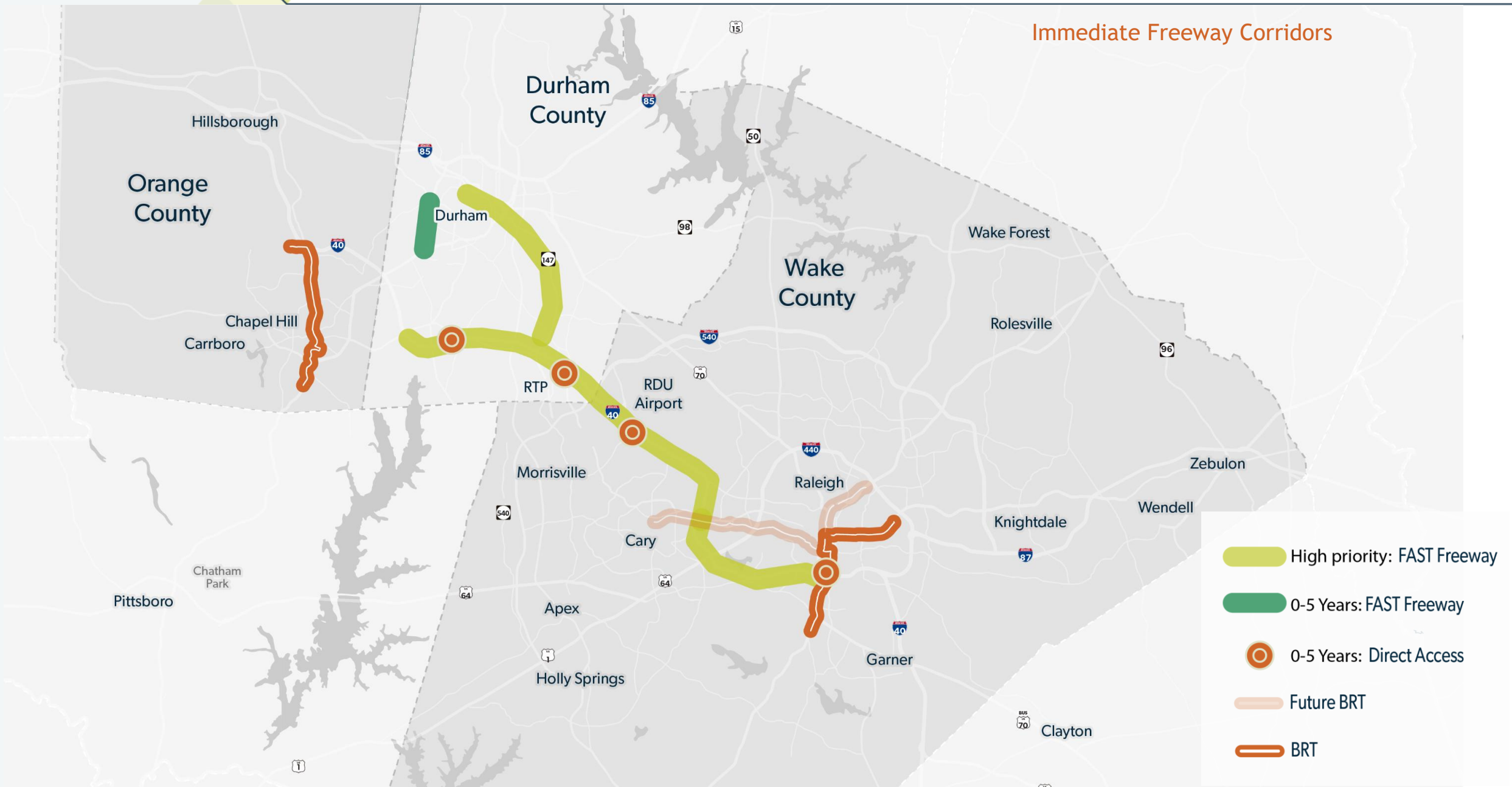
RDU
Direct Access Ramps

Wilmington St
Direct Access Ramps



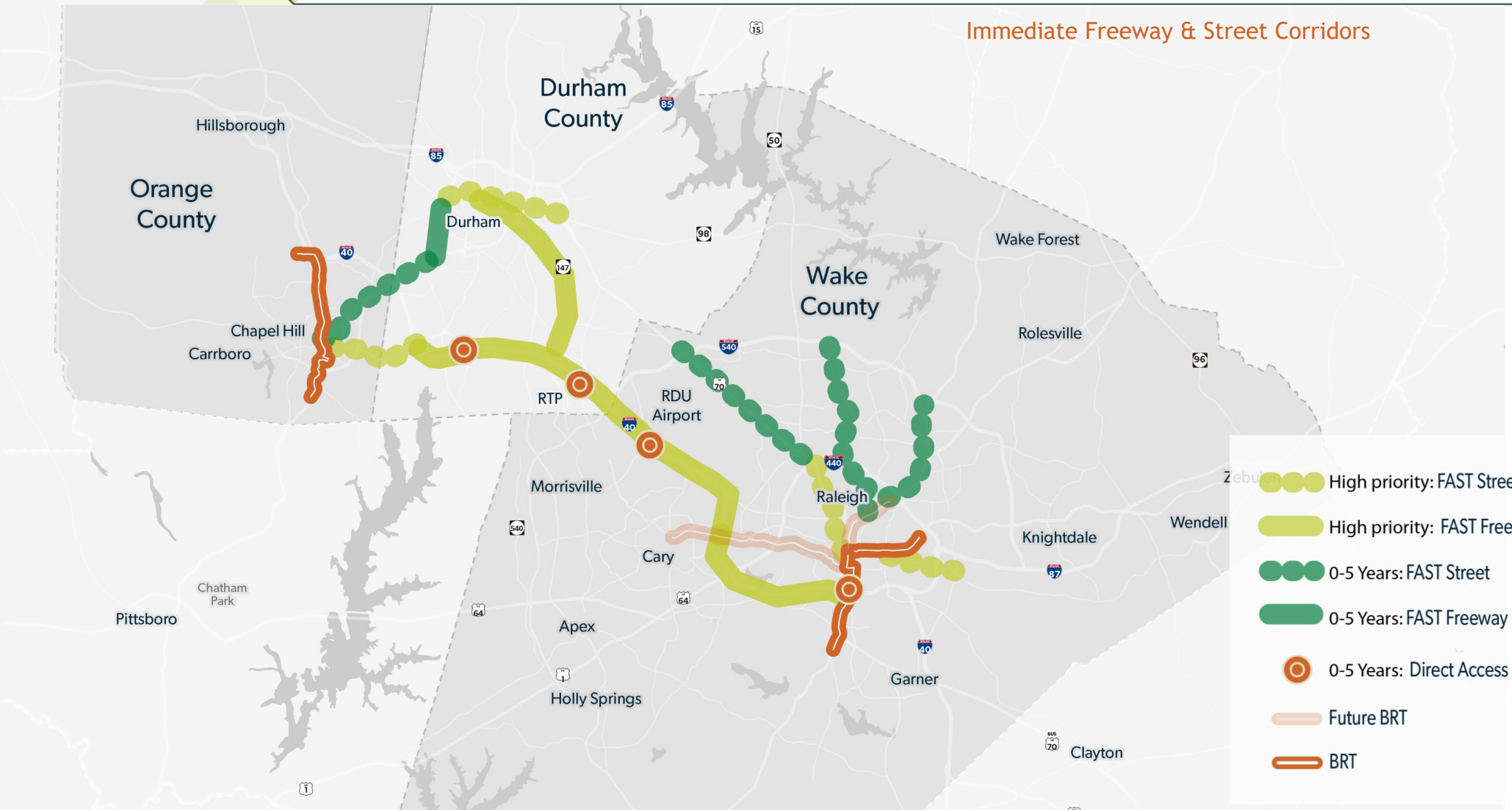
Preliminary Findings

Immediate Freeway Corridors



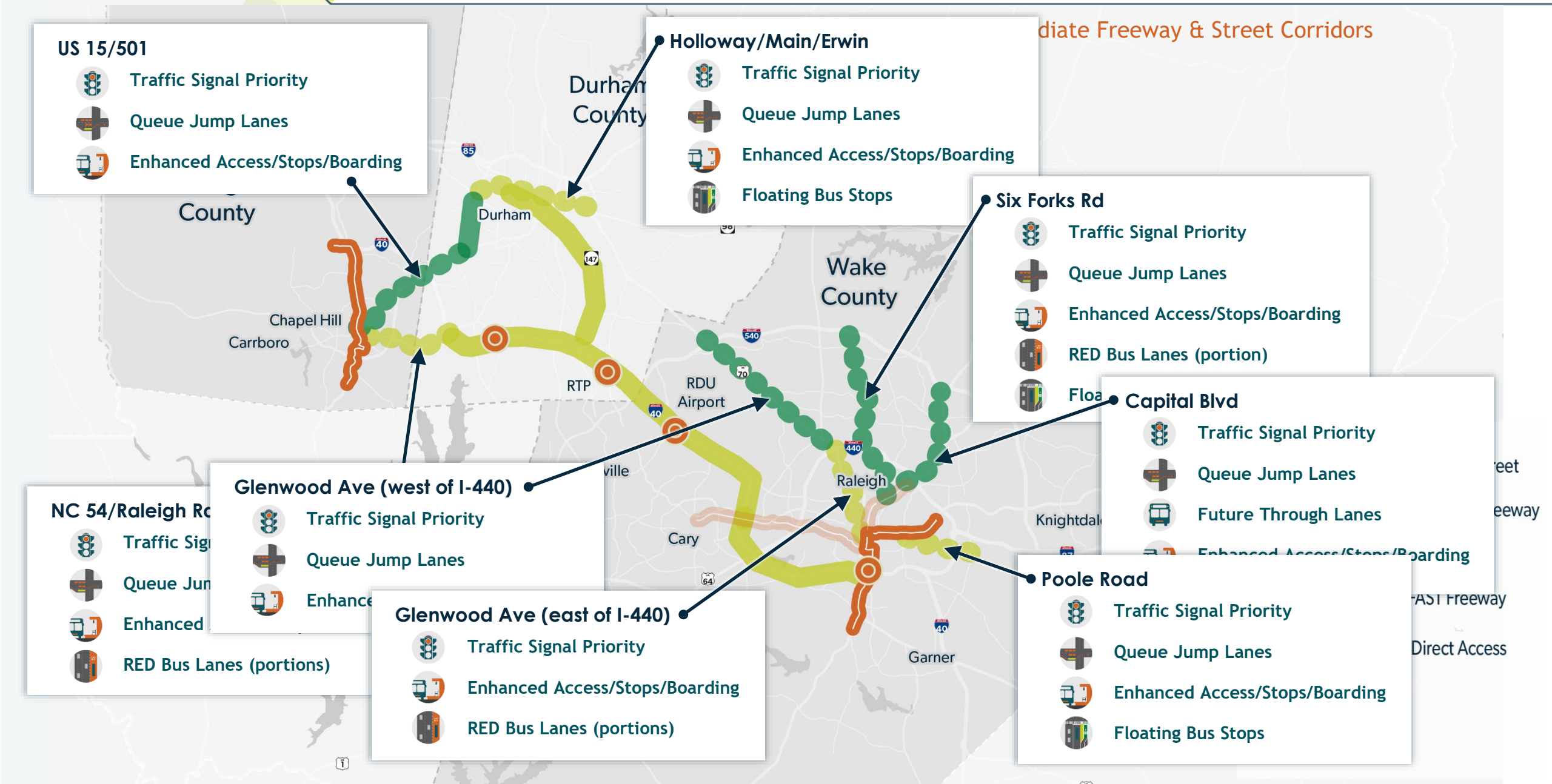
Preliminary Findings

Immediate Freeway & Street Corridors



Systemwide Increased Frequency | Off-Board Fare Collection

diate Freeway & Street Corridors



US 15/501
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding

Holloway/Main/Erwin
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- Floating Bus Stops

Six Forks Rd
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- RED Bus Lanes (portion)
- Floa

Capital Blvd
- Traffic Signal Priority
- Queue Jump Lanes
- Future Through Lanes
- Enhanced Access/Stops/Boarding

Glenwood Ave (west of I-440)
- Traffic Signal Priority
- Queue Jump Lanes
- Enhance

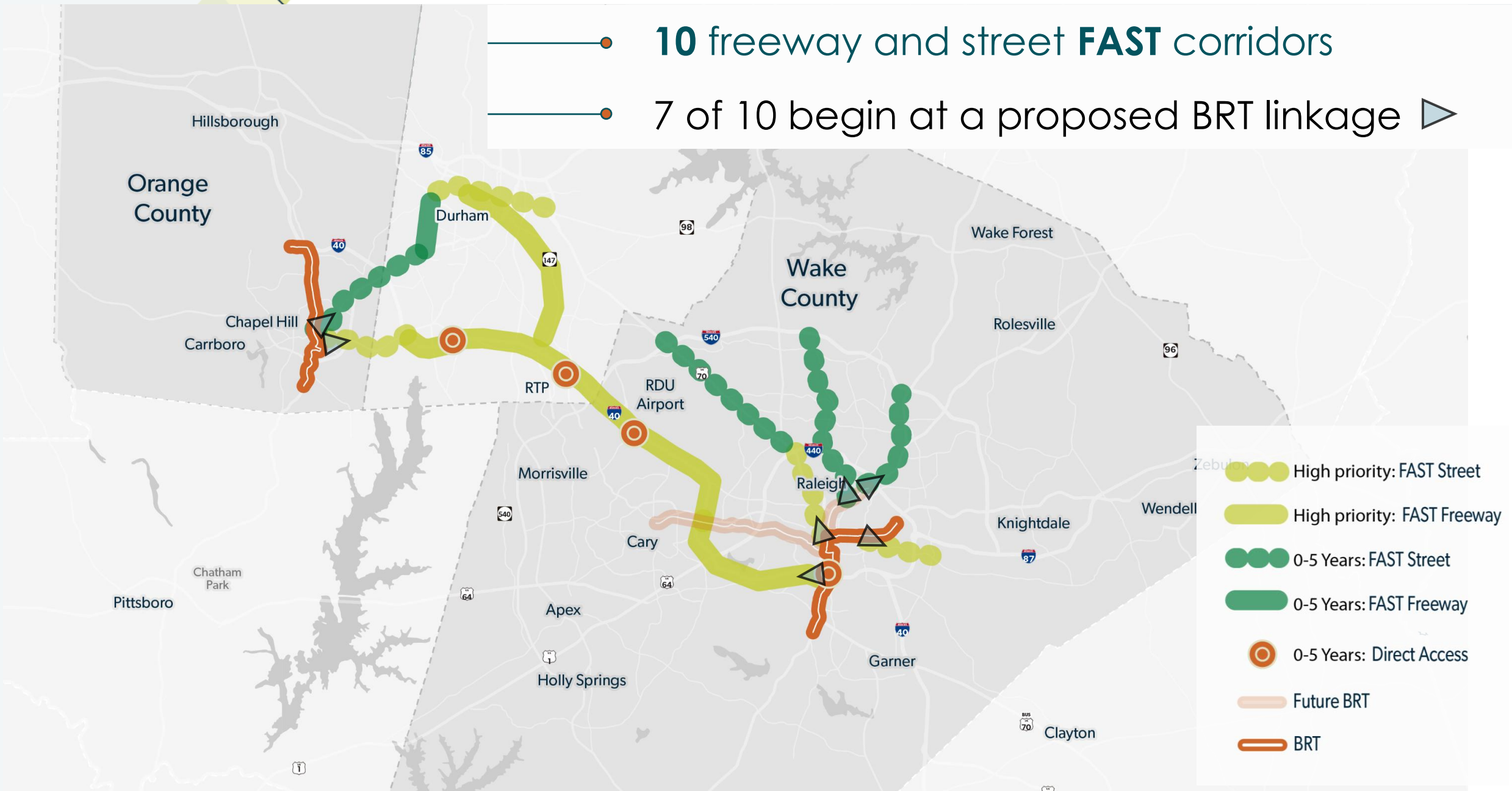
NC 54/Raleigh Rd
- Traffic Sig
- Queue Jun
- Enhanced
- RED Bus Lanes (portions)

Glenwood Ave (east of I-440)
- Traffic Signal Priority
- Enhanced Access/Stops/Boarding
- RED Bus Lanes (portions)

Poole Road
- Traffic Signal Priority
- Queue Jump Lanes
- Enhanced Access/Stops/Boarding
- Floating Bus Stops

FAST Network

- **10** freeway and street **FAST** corridors
- 7 of 10 begin at a proposed BRT linkage



FAST

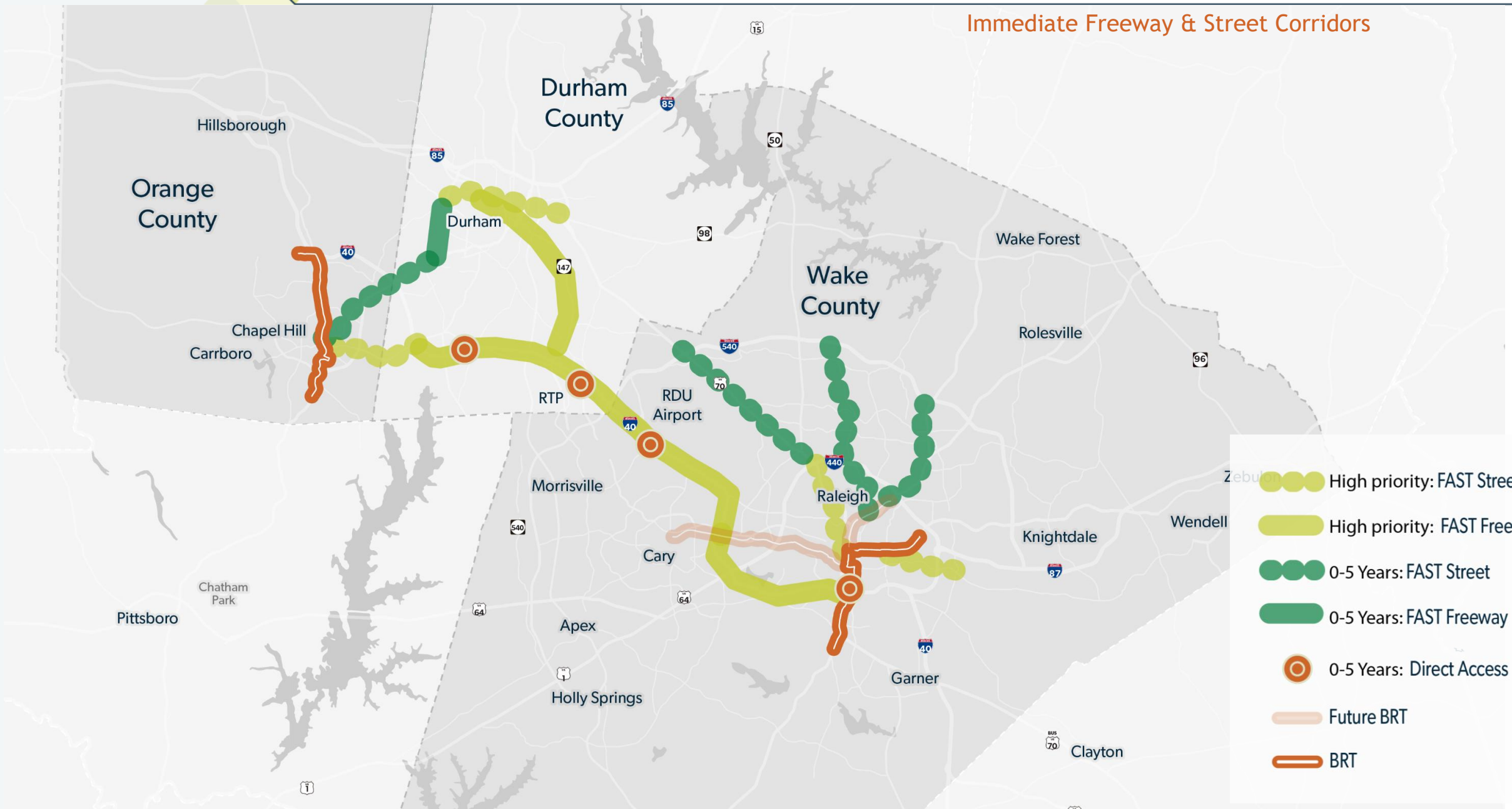
Freeway And Street-based Transit network

Example future FAST corridors

Preliminary Findings

FAST Network

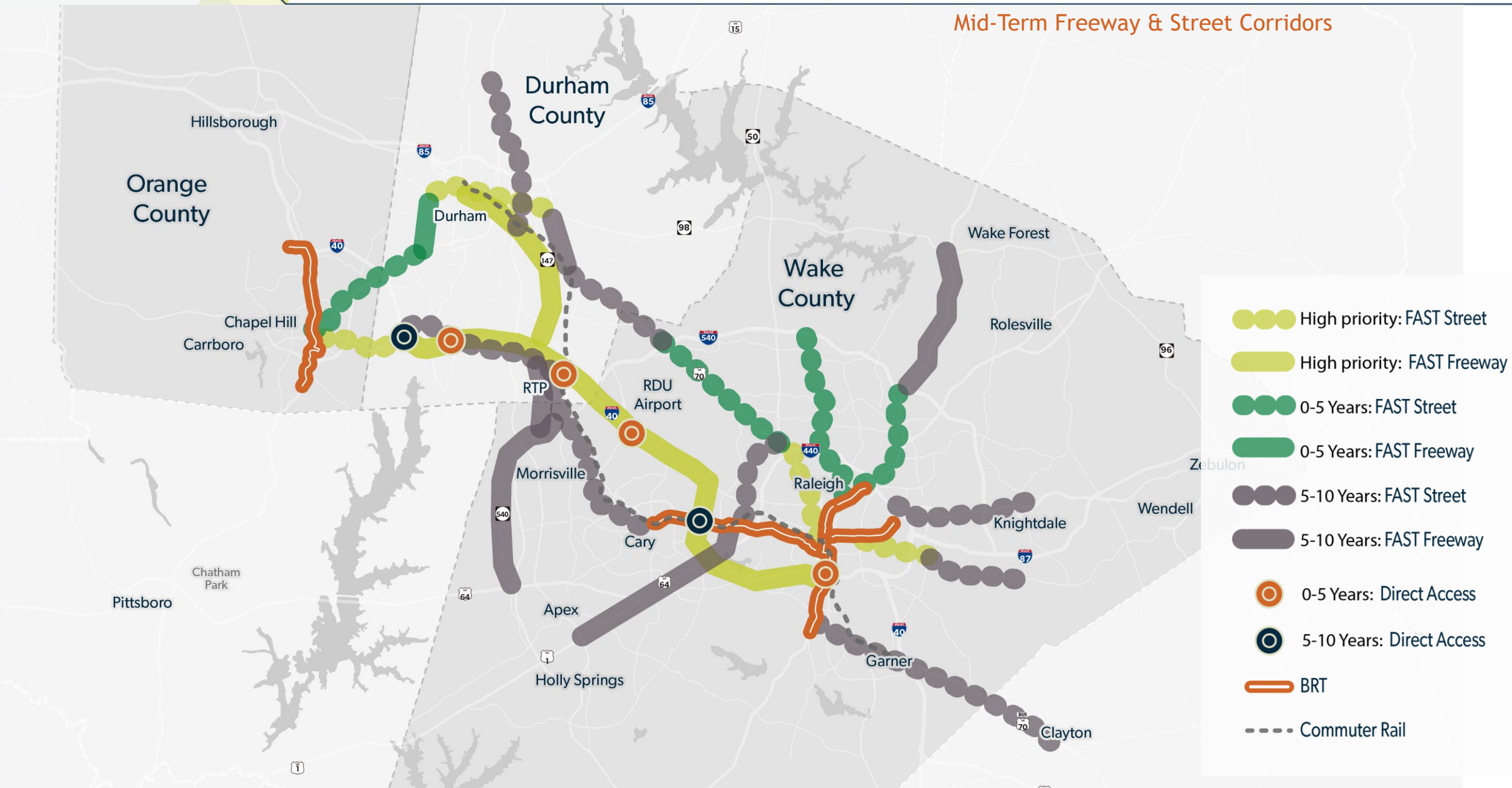
Immediate Freeway & Street Corridors



Preliminary Findings

FAST Network

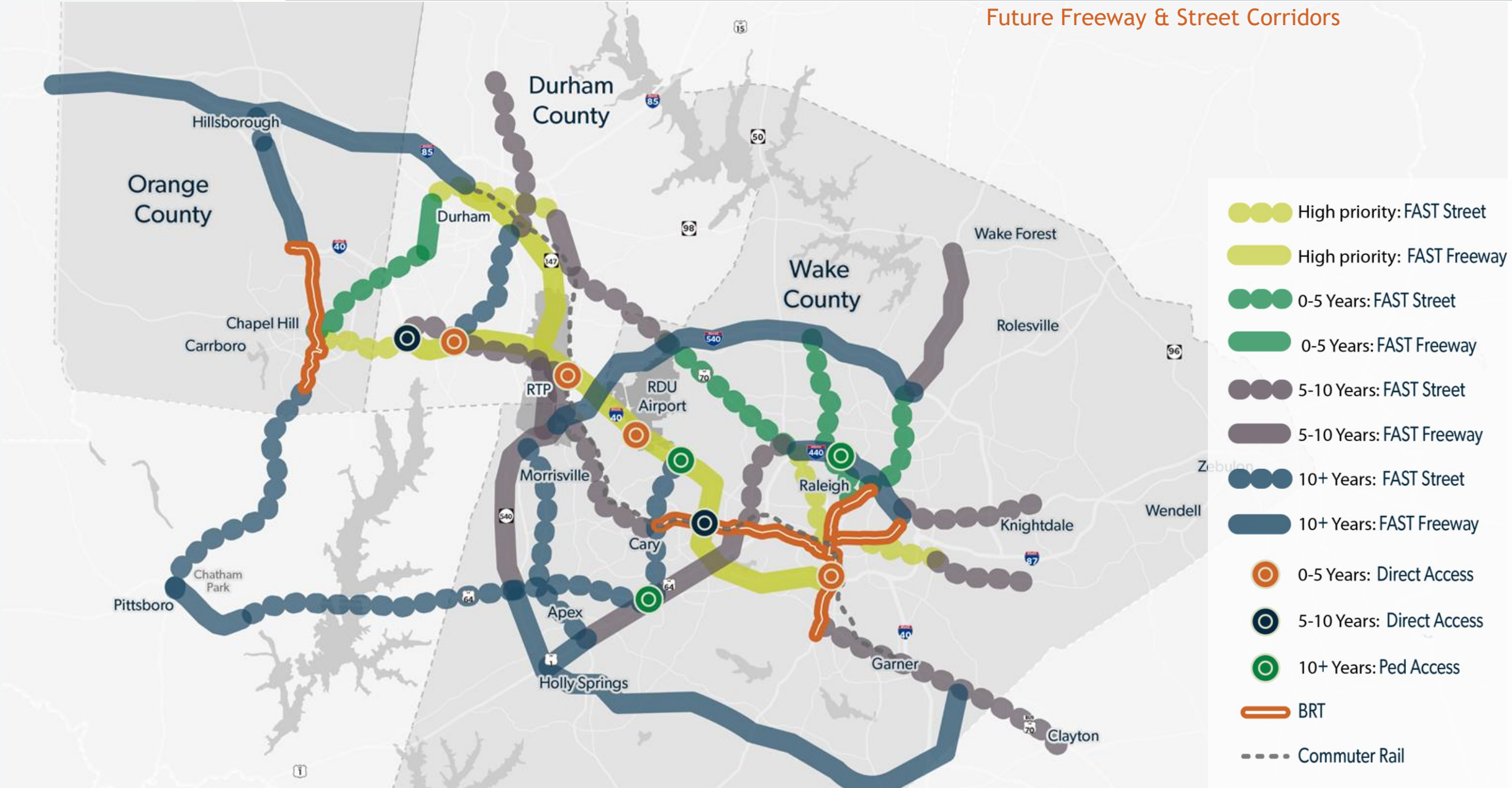
Mid-Term Freeway & Street Corridors



Preliminary Findings

FAST Network

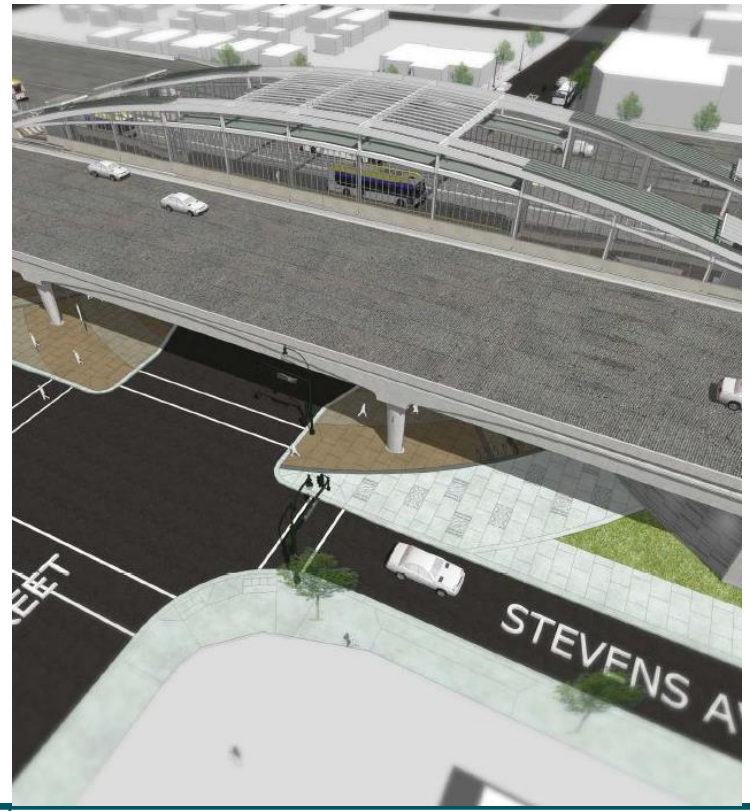
Future Freeway & Street Corridors



Enhanced freeway transit advantages

Direct access ramp

Transit priority shoulder



Freeway transit station

FAST

Freeway And Street-based Transit network

Next Steps

Public Comment Period

- Download a version of this presentation at letsgetmoving.org/FAST
- Email comments to FAST@letsgetmoving.org
- 45-Day Comment Period

  July 16-August 31

Next Steps

- Review ongoing/upcoming highway projects for potential transit advantage incorporation opportunities

- Develop implementation playbook for several illustrative examples
  - High priority projects
  - 0-5 year projects

FAST

Freeway And Street-based Transit network

Preliminary Study Findings

I-40 Regional Partnership, August 11, 2020

FINAL REMARKS

I-40 Regional Partnership
12th Annual Meeting

Tuesday, August 11, 2020

Coordinated by the Regional Transportation Alliance business coalition
in cooperation with the NC Department of Transportation and area partners