NCDOT's Integrated Mobility Division (IMD)

Multimodal Updates

July 25, 2024

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Agenda

- Introduction – New IMD Director – Brennon Fuqua (announced last week)

- Access in Appalachia Pilot Study – Ian Hamilton, VHB and Michael Stafford, IMD

- Integrated Mobility Division Updates

  o **Innovations/Technologies** - CASSI Program, RFI for New Ground and Aerial Vehicles, RFI for Automated Transit Vehicles

  o **Studies / Plans** – S-Line Mobility Hubs, Freeway, Arterial, Street and Tactical (FAST) transit study, Locally Coordinated Plan, Great Trails State Plan Network Update

  o **Grant Programs** – Discretionary Grants, Multimodal Planning Grant Program (*awards*), TDM Program (*awards*), Bicycle Helmet Initiative (*awards*), Paved Trails and Sidewalks Feasibility Study Program

  o **Other Initiatives / Resources** – Bike and Roll to School Day, PBIN Update, Intercity Bus, IMD Partner Survey

NORTH CAROLINA
Department of Transportation

Access in Appalachia Pilot Study

North Carolina Department of Transportation &

Appalachian Regional Commission

Integrated Mobility Division Webinar

July 2024

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Project Team Acknowledgements

- **Michael Stafford – NCDOT**
- Ryan Brumfield – NCDOT
- Sarah Searcy – NCDOT
- John Vine-Hodge – NCDOT
- Kai Monast – NCSU/ITRE
- **Ian Hamilton – VHB**
- **Connor Klassen – VHB**
- Lyuba Zuyeva – VHB
- Tal Cohen – VHB
- Peter Fortunato – VHB

- Natalie Luftman – VHB
- Duncan Richey – VHB
- Michael Spear – VHB
- **Naomi Stein – EBP**
- Dilara Sisman – EBP
- Cecilia Viggiano – EBP
- Amanda Borja – EBP

Poll Question

Maps & Data

Use PollEv.com/<u>safetyvhb</u>

The strength of our communities and overall economic potential relies on **reliable access for all**.

Using data to **move the needle** on strategic transportation investments.

Promote transportation accessibility benefits — whether traveling by private vehicle, public transit, or walking and biking — for all North Carolinians.

Project Overview

Project Goals

- Build upon the Appalachian Regional Commission's (ARC's) *Access in Appalachia: Concept and Methodologies.*

- Measure existing access in North Carolina across modes.

- Connect measures of access to indicators of relative need.

- Compare access statewide and across modes.

- Outline how access measures may support future planning efforts in North Carolina.

Framework Overview

Lack of Access
How well does current service or infrastructure connect people to opportunities?

Opportunity
Where are there opportunities for improvement, based on low access and high demand/need?

Community Need
For whom is access particularly important?

Opportunity Focusing on Low Access and High Need

Framework Overview

For People				For Business
Drive Access Score	**Total Fixed Route Transit Access Score**	**Demand Response Transit Access Score**	**Bicycle and Pedestrian Access Score**	**Drive Access Score**
Reflects travel time to: • Town Centers • Colleges & Universities • Jobs • Healthcare	Reflects travel time to: • Town Centers • Colleges & Universities • Jobs • Healthcare	Reflects: • Vehicle Hours • Operating Hours • Service Days • Scheduling Options • Trip Scheduling • Connectivity	Reflects: • Low Stress Network • Sidewalk Ratio • Intersection Density • Nearest Neighbor	Reflects travel time to: • Labor • Commercial Airport • Major Seaport • Other Intermodal

Access for People and Business in North Carolina

Data Analysis

Functional Forms

Distance Decay

- Counts destinations that people can reach within a certain travel time by driving or fixed-route transit.

- Closer destinations are given more weight than further ones.

- Applies to destinations where more opportunities means better access:
  - **People:** Townships, Colleges and Universities, Mental Health, Substance Abuse, Urgent Care, Jobs
  - **Business:** Workforce

Functional Forms

Nearest Destination

- Counts the closest destinations only.

- Applies to destinations where more is not necessarily better, but rather focuses on providing basic access.

- **People:** Hospitals reflect travel time to the closest one.

- **Business:** Multimodal Terminals reflect travel time to the closest two destinations of each kind:
    - Commercial Airport
    - Major Seaport
    - Inland Port
    - Truck-Rail Intermodal
    - Truck-Air Intermodal

Measurement Approach by Mode

Measurement Approach	For People				For Business
	Drive Access Score	Total Fixed Route Transit Access Score	Demand Response Transit Access Score	Bicycle and Pedestrian Access Score	Business Drive Access Score
Network Travel Time	☑	☑			☑
Service and Network Quality			☑	☑	
Distance Decay Function	☑ Town Centers, Colleges and Universities, Mental Health, Substance Abuse, Urgent Care, Jobs		N/A	N/A	☑ Workforce
Nearest Destination	☑ Hospitals (Nearest)		N/A	N/A	☑ Multimodal Terminals (Nearest 2 of Each Kind)

Measures of Opportunity

+

> **Access Deficits of:**
> **Drive**
> **Total Fixed Route Transit**
> **Demand Response Transit**
> **Bicycle and Pedestrian**

+

> **Access Deficits of:**
> **Drive**
> **Total Fixed Route Transit**
> **Demand Response Transit**
> **Bicycle and Pedestrian**

X **Transportation Disadvantage Index**

> **Access Deficits of:**
> **Total Fixed Route Transit**
> **Demand Response Transit**
> **Bicycle and Pedestrian**

X **Zero Vehicle Households**
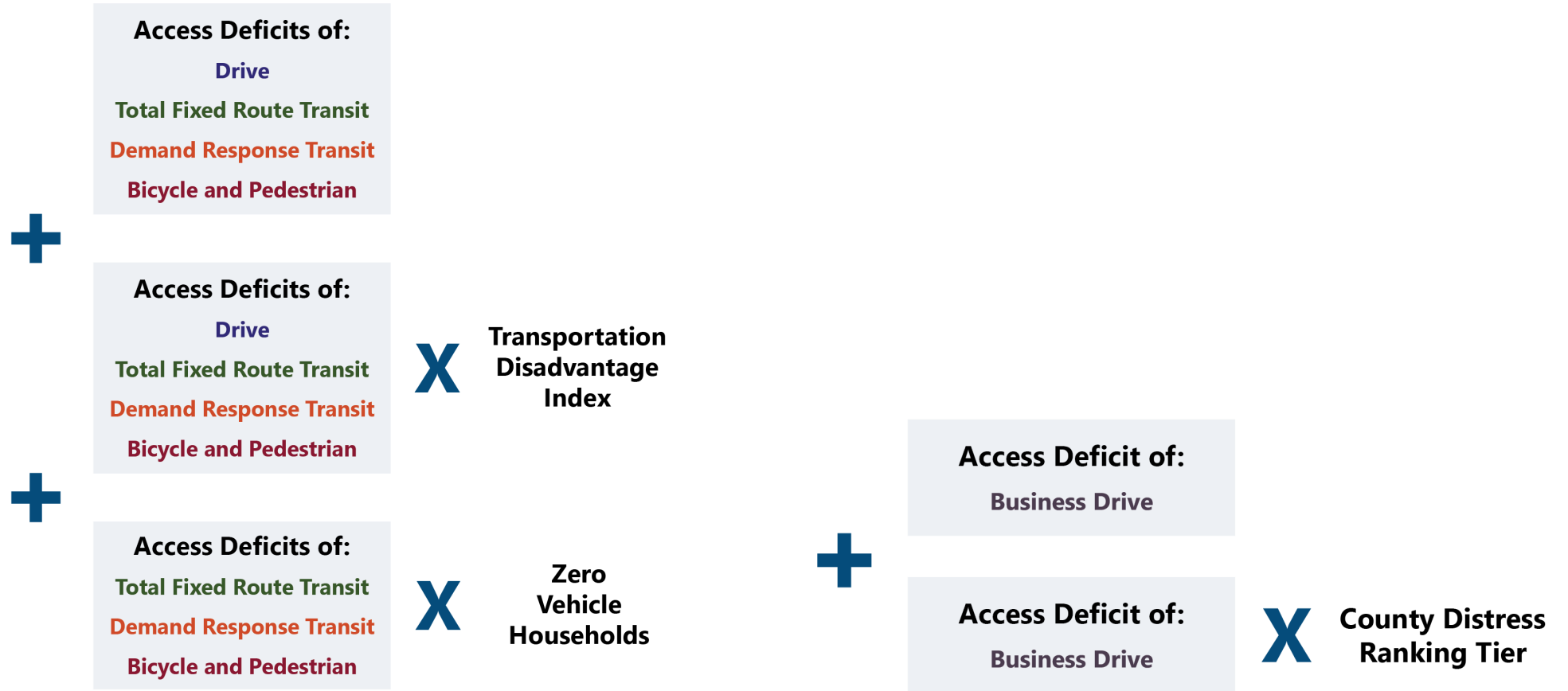
Opportunity Calculation for All Modes

+

> **Access Deficit of:**
> **Business Drive**

> **Access Deficit of:**
> **Business Drive**

X **County Distress Ranking Tier**

Opportunity Calculation for Business Access

Comparison Frameworks

Driving and Non-Driving Accessibility

Comparison Frameworks

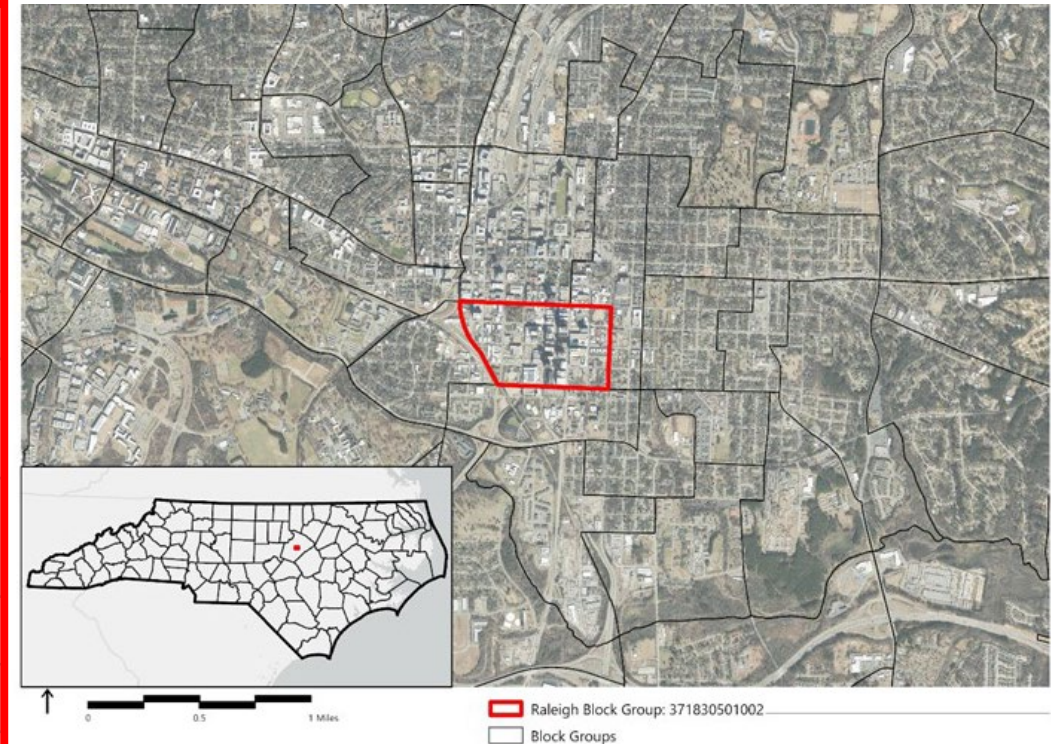| Direct Comparison		Relative Comparison	
Access by Destination Type	**Categorical Access for Key Destinations**	**Relative Access Quality Statewide**	**Relative Access for Communities**
Directly compare driving and fixed-route transit access by type of destination for a specific zone	Compare diversity of access to essential service using discrete categories	Relatively compare access by mode across the State via scorecard	Compare access by modes most applicable to the needs of each zone

Driving and Non-Driving Accessibility

Sample Direct Comparison (Downtown Raleigh)

Accessibility by Destination	Drive Score by Destination	Fixed Route Transit Score by Destination	Ratio of Drive Score to Fixed Route Transit Score	Difference between Fixed Route Transit Score and Drive Score
Town Centers	21.31	0.14	152.21	-21.17
Colleges and Universities	10.31	1.38	7.47	-8.93
Hospitals	0.13 (7.8 minutes)	0.03 (37.0 minutes)	4.7	-0.1
Urgent Care	21.16	1.26	16.79	-19.9
Mental Health	14.39	1.66	8.67	-12.73
Substance Abuse	31.49	1.50	20.99	-29.99
Jobs	496,989	44,908	11.07	-452,081

Downtown Raleigh – Block Group 501.02

Driving and Non-Driving Accessibility

Sample Relative Comparison Across Communities (normalized 0-100 scale)

Zone	Type	Drive Access	% HH with Cars	Non-Driving Access	% of HH without Cars	Composite Multimodal Access Score
Downtown Raleigh	State Capital	81.26	91.4%	75.82	8.6%	80.79
Downtown Wilmington	Major Natural Boundary	28.91	89.1%	49.30	10.9%	31.13
Downtown Boone	Rural University	15.12	86.9%	67.09	13.1%	21.93
Statesville	Suburban Residential	63.29	97.9%	53.55	2.1%	63.09
Greensboro	Suburban Commercial	76.53	79.5%	54.89	20.5%	72.10
Henderson County	Rural	25.75	96.8%	36.20	3.2%	26.08

What Next?

What Next?

- **What are the products of this research?** A series of maps and data that quantify destination—based access statewide.

- **Who should I reach out to for more information?** Michael Stafford at NCDOT (mrstafford1@ncdot.gov).

- **How will IMD use this research?** IMD is currently looking for potential partners interested in using the research findings.

  - How can the data help your planning process?

  - How would you like to use the data to score proposed projects?

Maps and Data

More to Come Soon & Thank You!

Michael Stafford | NCDOT | mrstafford1@ncdot.gov
Ian Hamilton | VHB | ihamilton@vhb.com
Connor Klassen | VHB | cklassen@vhb.com
Naomi Stein | EBP | naomi.stein@ebp-us.com

Innovations / Technologies

NCDOT's Innovation Process Evaluates Emerging Technologies

The goal is to rigorously assess emerging technology to determine if it **meets transportation needs** and **can be integrated and scaled** as an option in the existing transportation system.

Research, Testing, & Evaluation	Best Practices & Lessons Learned	Mainstream Adoption & Institutionalization
Studies, demonstrations, and pilots to investigate and test out new technologies through small-scale projects that evaluate their capabilities, limitations, and how well they work compared to existing solutions.	*Reports, presentations, and summaries that document, synthesize, and communicate findings.*	*Large-scale implementations based on the documented usefulness and benefits of proven technologies.*

Request for Information (RFI) on Automated Transit Vehicles

NCDOT documented the key features of each primary respondent, their partners, their offered vehicle(s), and their ADS from the written responses, virtual presentations, and site visits as applicable.

Automation Approaches

Automated Driving System (ADS)-Equipped Conventional Vehicle

- FMVSS-compliant base vehicle (e.g., bus, cargo van, minivan, SUV, or sedan).
- Factory- or retro-fitted with ADS hardware and software.

Purpose-Built Automated Vehicle

- Not FMVSS-compliant.
- Designed for high to full driving automation that assumes minimal to no intervention by human driver (e.g., no driver's cockpit).
- ADS hardware and software are integrated into the vehicle's systems from design through production.

Automated People Mover

- Defined by ASCE's Automated People Mover Standards (ANSI/ASCE/T&DI 21-21).
- Guided transit mode with fully automated operation.
- Operate on guideways with exclusive right-of-way.

CASSI is Evolving to Include Latest Technological Advancements

CASSI includes the **continued demonstration of novel-design, low-speed automated shuttles** and the **testing and integration of Automated Driving System (ADS)-equipped conventional vehicles** into high quality, on-demand transit services.

Novel-design, low-speed automated vehicles

easy MILe

(3) Completed Projects **2020-2021**

NPS Report   USDOT Report

beep™

(2) Completed Projects **2023**

NCDOT Webpage

Automated Driving System (ADS)-equipped conventional vehicles

Connected, Rural, Equitable, and Autonomous Transportation for Everyone (CREATE)

FY 2023 USDOT Advanced Transportation Technology and Innovation Program Grant Application

Grant Application Information

Connected Autonomous Vehicle (CAV) Testbed

NCDOT is supporting N.C. A&T State University to develop **shared autonomous vehicles, an innovative rural test track, and an automated shuttle pilot** between the university and downtown Greensboro.

Autonomy at A&T

Studies / Plans

S-Line Mobility Hub Plan Update

Project Overview
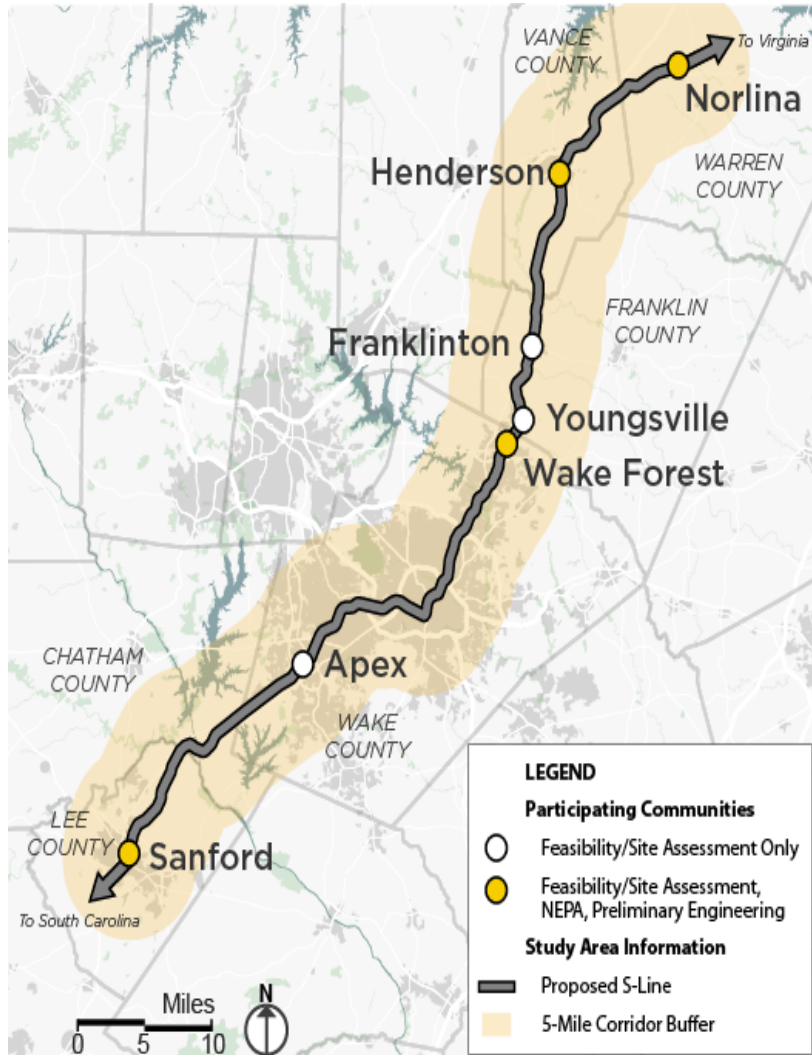
7 Mobility Hub Locations

- 4 Locations Feasibility Study/NEPA/30% Design
  o Sanford
  o Wake Forest
  o Henderson
  o Norlina
- 3 Locations Feasibility Only
  o Apex
  o Youngsville
  o Franklinton

S-Line Mobility Hub Plan Update

Public Engagement

Norlina Engagement

Warren County Youth Baseball Opening Day

Wake Forest Engagement

Open House – Renaissance Centre

S-Line Mobility Hub Plan Update

Next Steps

- S-Line Coalition Meeting August 23rd
  - Meeting with NCDOT and Community Leadership and Elected Officials

- Draft of Feasibility Studies for communities with NEPA and 30% design

- Additional Public Engagement and Design Workshops

Freeway, Arterial, Street, and Tactical (FAST) 2.0

Study Partners and Potential Focus Strategies
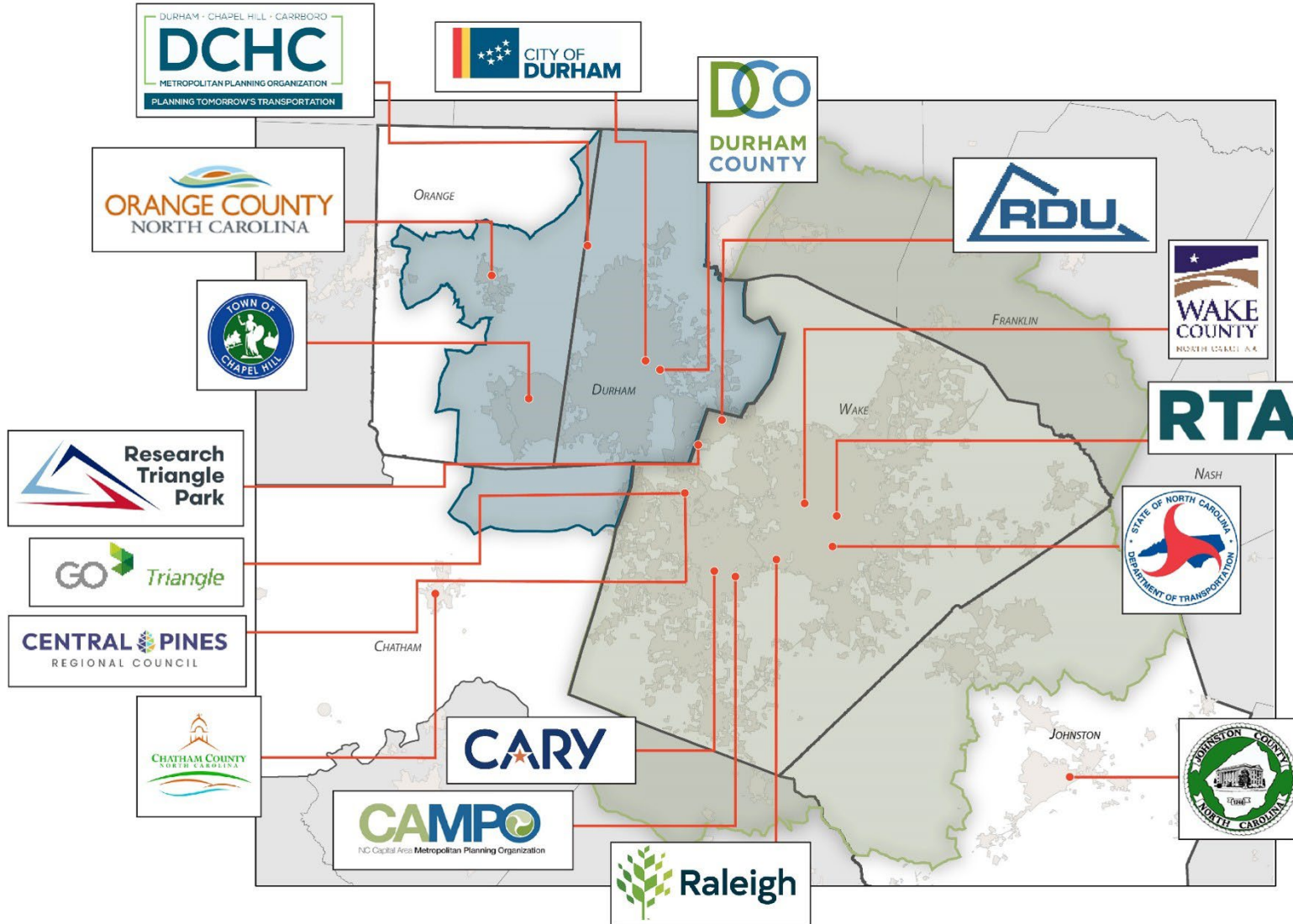
- Bus Station / Stop Design Layout
- Direct BRT linkages to RDU
- Transit Signal Prioritization Standardization
- Express Lanes, Expanded BOSS, Dynamic Shoulders
- Bicycle & Pedestrian Access Improvements
- Mobility Hubs, Complete Streets, & Micro-mobility Solutions

Freeway, Arterial, Street, and Tactical (FAST) 2.0

Schedule

Technical Committee Meeting

Technical Committee Meeting

1st Steering Committee Meeting

- Visioning

2nd Steering Committee Meeting

- Review network and corridor identification
- Select priority projects

3rd Steering Committee Meeting

- Feasibility of Treatments
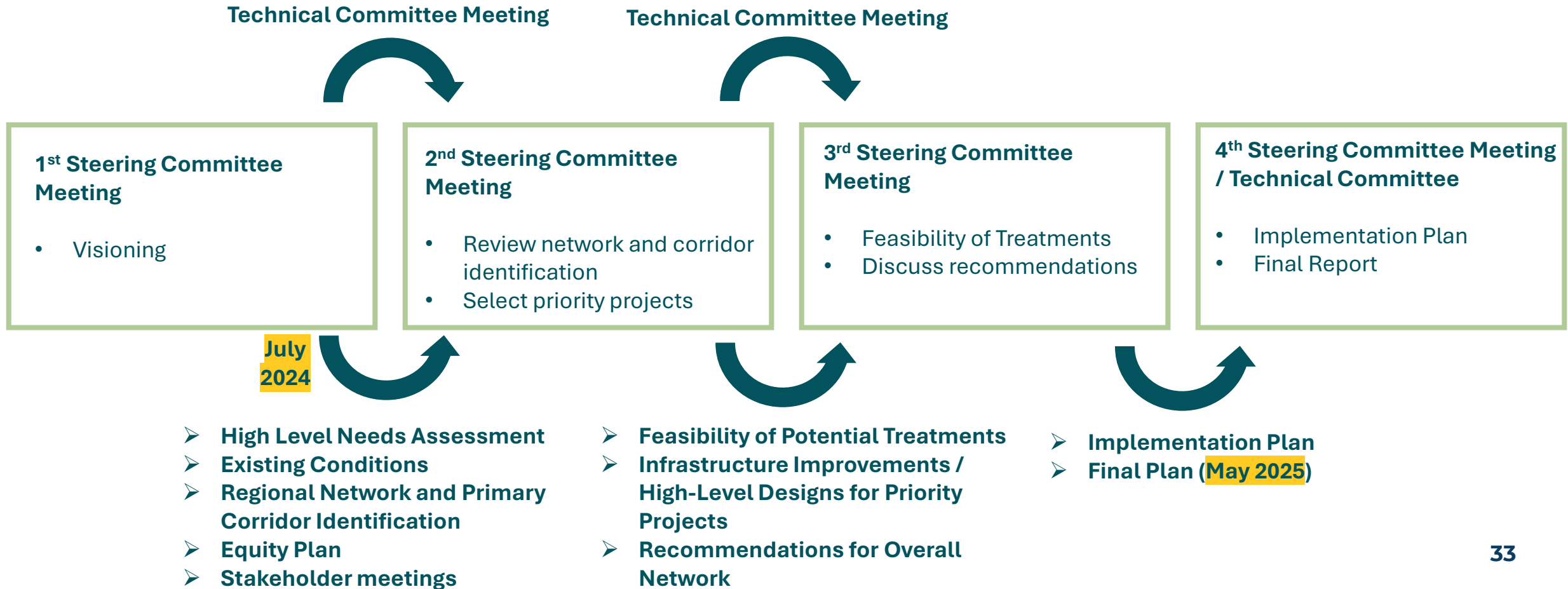- Discuss recommendations

4th Steering Committee Meeting / Technical Committee

- Implementation Plan
- Final Report

July 2024

- ➤ **High Level Needs Assessment**
- ➤ **Existing Conditions**
- ➤ **Regional Network and Primary Corridor Identification**
- ➤ **Equity Plan**
- ➤ **Stakeholder meetings**

- ➤ **Feasibility of Potential Treatments**
- ➤ **Infrastructure Improvements / High-Level Designs for Priority Projects**
- ➤ **Recommendations for Overall Network**

- ➤ **Implementation Plan**
- ➤ **Final Plan (May 2025)**

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Statewide Locally Coordinated Plan (LCP) Update
FTA 5310 - Enhanced Mobility of Seniors & Individuals with Disabilities

o   Plan covers all parts of the state except for urbanized areas with populations over 200,000

o   Plan will be published on NCDOT site in August

o   Executive Summary/StoryMap location

o   Recommendations for each district in NC and transit agency that is eligible to receive 5310 funds.

Great Trails State Plan Network Update

- Annual Update to ensure the GTSP Network remains relevant and up-to-date

- Looking for updates based on planning level documents, studies, public input, or other relevant documentation

- Updates to be submitted via SmartSheet – Great Trails State Plan Network Survey

- Short 5-question survey if you do have an update

- Review the Great Trails State Network @ NCDOT: Integrated Mobility Division - Great Trails State Plan

Email Hart Evans at jhevans1@ncdot.gov for any questions

Grant Programs

ncdot.gov

Discretionary Grants

RCP(Reconnecting Communities Pilot discretionary grant program)
- Email sent out from Blair Chambers July 18 - Submissions to IMD due July 31
- Requirements:
  - Capital Construction (50% local match required)
  - Community Planning (20% local match required)

Upcoming Grants
- PROTECT (Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program)
- RAISE (Rebuilding American Infrastructure with Sustainability and Equity)

Multimodal Planning Grants

FY25 grants approved for funding by BOT in June 2024

Lenoir County, $100,000
    Pedestrian Plan

Alexander County, $70,000
    Bicycle Plan

Town of Oak Island (Brunswick Co.), $60,000
    Bicycle Plan

Town of Southport (Brunswick Co.), $45,000
    Bike-Ped Acceleration Plan

Town of Erwin (Harnett Co.), $45,000
    Bike–Ped Acceleration Plan

Town of Mount Gilead (Montgomery Co.), $60,000
    Bicycle –Pedestrian Acceleration Plan

City of Salisbury (Rowan Co.), $70,000
    Mulitmodal Network Plan

Town of Pilot Mountain (Surry Co.), $60,000
    Bike-Ped Comprehensive Plan

Award amounts include federal, state, and local match

$510,000 Total for FY25

Link to Program Webpage

# Transportation Demand Management (TDM) Partners and Programs in NC

FY25 Grant Awards*

Land of Sky Regional Council	$121,855 Total
Piedmont Authority for Regional Transportation (PART)	$562,888 Total
City of Charlotte	$283,626 Total
Sustain Charlotte Inc.	$148,628 Total
Centralina Council of Governments (COG)	$40,000 Total

- **General purpose** – convenient travel options to reduce single occupancy vehicles/vehicle miles traveled (VMT) and to enhance accessibility

- **Strategies** – public transit, bike/walk, rideshare/vanpool, telework, mobility as a service (MaaS), education/marketing employer programs

- **Eligible Projects** – Staff salaries to administer regional TDM programs, marketing efforts/activities, and planning activities (including development of a TDM plan)

- **Eligible participants** – regional transit or planning agencies responsible for TDM-related activities

*Total funds awarded includes 50% local match as approved at the June 2024 Board of Transportation meeting.

2024 Bicycle Helmet Initiative
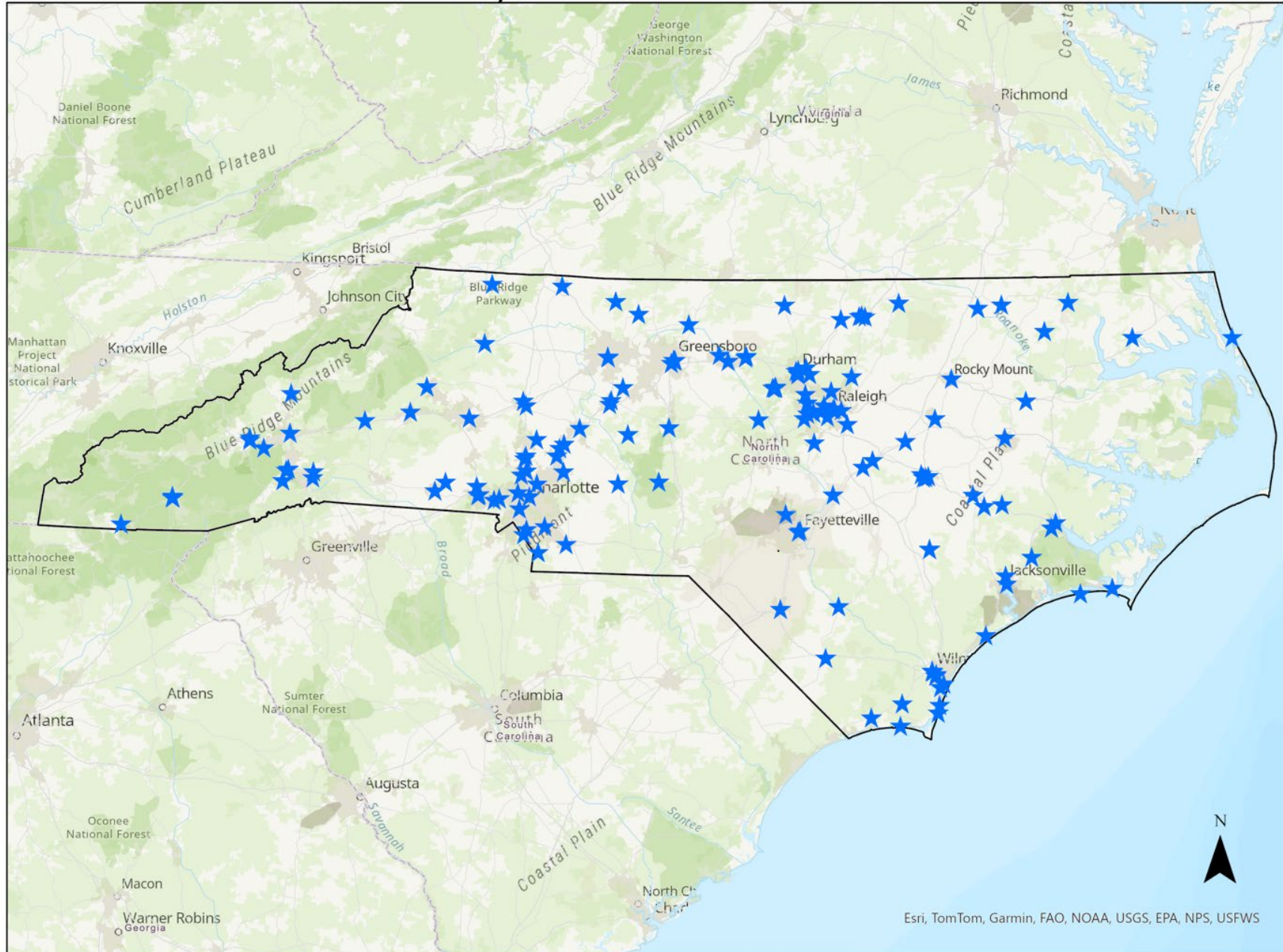
- 12,500 bicycle helmets
- 157 organizations

Paved Trails and Sidewalks Feasibility Study Program

- 25 studies (paved trail, sidewalk, sidepath) wrapping up over the next few months

- 2 new studies awarded in June 2024
  - o West Jefferson to Jefferson/Northern Peaks State Trail
  - o Fonta Flora State Trail- Black Mountain

- No funds secured for FY 25

- Working to identify long-term source of funding to sustain program and fund several studies each year

Link to Program Webpage

Other Initiatives and Resources

North Carolina Celebrates Bike and Roll to School Day

May 8, 2024

Alamance
Cabarrus
Carteret
Dare
Durham
Forsyth
Guilford
Halifax
Johnston
Macon
Mecklenburg
Moore
New Hanover
Orange
Pasquotank
Pitt
Stanly
Surry
Transylvania

- National Bike and Roll to School Day is an annual celebration that brings awareness to safe biking, walking, and driving practices near schools and encourages families to consider healthier alternatives to traveling in a vehicle.

- NCDOT's feature event was in Raleigh. Students, parents, teachers, state, and local officials started their trek at the Food Lion grocery store on Raleigh Blvd. and made their way about a half-mile to the Powell Center for Play and Ingenuity Magnet School on Marlborough Road

- This year's event was the 13th year of the nationwide celebration and there were **81 registered events** in NC covering **19 counties.**


Students of the Powell Center for Play and Ingenuity Magnet School check their bike decorations prior to biking to school for National Bike and Roll to School Day.

Pedestrian and Bicycle Infrastructure Network (PBIN)
Update

- New updates include
  - Digitization of 3,433 miles of existing sidewalk
  - Digitization of 13,682 existing marked crosswalks
  - Planned facility data from 45 plans conducted by IMD or LGA
- AGOL Data Layer reflects the new updates
- NCDOT Connect Site (https://connect.ncdot.gov/projects/BikePed/Pages/PBIN.aspx) has new downloadable geodatabase.

Intercity Bus in North Carolina
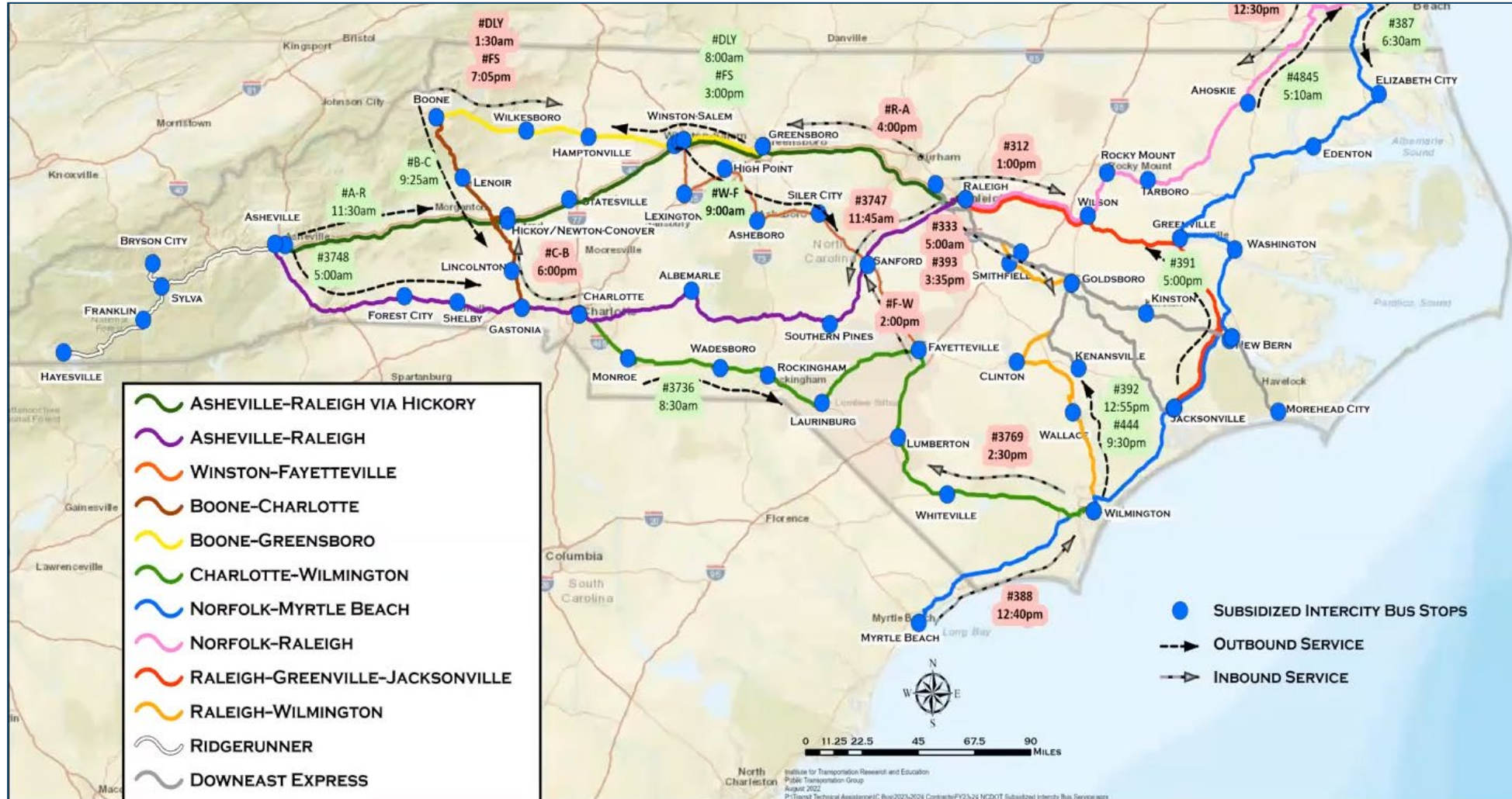
Please contact Hart Evans at jhevans1@ncdot.gov for any questions on services, routes or other info.

NCDOT IMD Partner Survey

- Survey directed toward transit agencies, internal NCDOT units, local governments, and other community organizations to determine overall satisfaction with IMD programs and staff- results to be published at conclusion

- IMD Survey will be open June 12th- July 31st

- Survey takes 8-10 minutes to complete

Take Survey: https://publicinput.com/imdpartnersurvey2024

Scan for survey

Thank you!

Next Multimodal Updates Webinar – October/November 2024

For slides and recordings – Multimodal Updates Webinars