

UNCC Study: Transportation Modeling Framework

TRANSPORTATION, PLANNING & DEVELOPMENT COMMITTEE

AUGUST 3, 2026



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Council Priority Alignment

- ◀ Mobility, Transportation and Planning

Purpose

- ◀ To discuss the purpose, scope and timeline of UNC Charlotte's study of the region's transportation modeling framework and associated tools.

Key Takeaways

- ◀ The study will build a shared understanding of the data, tools, and models in use by the City of Charlotte and the Metrolina region to inform transportation decisions.
- ◀ The study scope is organized into five phases over a period of 12 months. Deliverables from each phase will be shared with council. Final report and recommendations to be delivered July 2027.
- ◀ The regional modeling framework is a partnership and the city does not have sole authority to make changes to the regional model. Recommendations will be shared with NCDOT, MPTA, regional partners, and other stakeholder agencies.
- ◀ While this work may inform the city's transportation decisions in the future, due to the scope and timeline, the project is not applicable to the current discussions about the I-77 South Corridor project.

Transportation planning is regional by design

◀ City of Charlotte

- City Council adopts mobility policies, budgets and capital projects
- CDOT and other city staff develop recommendations, engage the public and implement approved city transportation and transit investments
- Coordination with NCDOT is essential and daily

◀ Regional governance model and coordination with the state

- Local governments coordinate through the elected CRTPO policy board which adopts regional plans and priorities
- NCDOT scores, funds, schedules and implements state projects
- CATS utilizes model input data such as land use, employment, and travel times to inform their federally funded model
- The regional modeling team is embedded in CDOT but funded by a regional governance model

◀ **This project is not an assessment of the modeling team's knowledge or capabilities. It is an opportunity to support an experienced team by evaluating the broader tools, data, governance, and resources available to them.**

Tools our region use to inform transportation decisions

- ◀ **Metrolina CommunityViz Model (MCM):** allocates projected population and employment growth based on land-use plans and development capacity, providing key inputs for regional transportation modeling
 - Future land-use patterns and development scenarios
 - Where projected population, households, and employment growth may occur
 - Development capacity and suitability based on adopted plans and zoning
- ◀ **Metrolina Regional Model (MRM):** forecasts travel demand using future population, jobs, schools, and transportation networks
 - Planning use: long-range planning, testing alternatives, and comparing how growth or major investments may affect mobility
 - Typical outputs: traffic volumes, travel times, accessibility measures, and scenario comparisons

Observed data show current travel conditions

◀ StreetLight and RITIS: provide observed travel patterns and roadway performance information

- Applications: origin-destination flows, bottleneck identification, corridor performance, and travel-time reliability
- Understand where trips begin and end, where congestion occurs, how corridors perform, and whether travel times are reliable

◀ Other inputs: traffic counts, transit AVL/APC, household travel surveys, parcel records, and federal datasets

- How they complement the model: describe current conditions, support validation, and supplement forecasts

UNC Charlotte will assess the framework through technical and policy lenses

- ◀ **Build a shared understanding of the data, tools, and models in use by the Metrolina region to inform transportation decisions**
 - Technical lens – model architecture, data, validation, and analytical methods
 - Policy lens – how information is used, how priorities are set, and how responsibilities are shared among regional partners
- ◀ **Provide an independent assessment of the overall modeling and decision-making framework**
 - Benchmark: compare our practices with peer and aspirant regions and current best practices
 - Near term (next 12 months): identify practical enhancements within the existing framework and software environment
 - Long term (5-10-year horizon): define realistic modernization options, benefits, risks, costs, and governance needs

The 12-month schedule delivers work in stages

Phase	Purpose	Deliverable	Schedule
1	Learn: literature review and peer/aspirant region comparison	Literature Review Memo, Peer Region/MPO Comparison Memo	End of October 2026
2	Diagnose: inventory and evaluate the regional modeling pipeline; identify short-term opportunities	Regional Modeling Evaluation Memo	End of January 2027
3	Specify: develop technical specifications and sample analyses for selected enhancements	Technical Memo per enhancement and working code	End of April 2027
4	Look ahead: benchmark methods and scope realistic long-term advancement options	Benchmarking Report, Model Advancement Framework and Scoping Document	End of June 2027
5	Synthesize: final report and knowledge-transfer session	Final Report	End of July 2027

Clear parameters keep the work focused

- ◀ **Regional partnership:** the city does not have sole authority to change the regional model
- ◀ **Implementation is not guaranteed:** recommendations will be shared with NCDOT, MPTA and regional partners
- ◀ **Practical first:** primary focus is on no-cost or low-cost enhancements to current tools and methods
- ◀ **Technical + policy:** recommendations must fit the region's governance and decision-making framework
- ◀ **Not applicable to I-77 South:** this project does not evaluate or inform the current I-77 South project or related decisions

Discussion