



NC MOVES 2050

CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE



NC MOVES 2050 PLAN
DRAFT PLAN | JUNE 2020

www.ncmoves.gov

DRAFT

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THE IMPACTS OF COVID-19 provide an unprecedented disruption to the nation's multimodal transportation system. Traffic volumes across North Carolina's highways are down 40-50 percent, ridership has declined sharply on transit, passenger rail, ferry systems and at airports. Less travel demand has reduced transportation revenue impacting the North Carolina Department of Transportation (NCDOT)'s construction program, maintenance and operational responsibilities. NCDOT is able to measure the short-term impacts of COVID-19; however, the longer-term implications associated with a possible economic downturn, changing travel patterns and new societal perspectives after a global pandemic are unknown and difficult to predict.

NC Moves 2050 was developed to equip NCDOT and its partners to prepare for a variety of uncertainties. Understanding of potential technological, economic, development and other disruptive conditions helped to inform and shape the plan's recommendations. NC Moves 2050 was not designed to foresee the changes created by a global pandemic. However, through the plan's consideration of uncertainty, it can act as a vehicle to explore policies, practices and partnerships which strengthen NCDOT's ability to respond to extreme events and make North Carolina's transportation system more resilient to future changes. The implementation of near-term strategies and actions presented in this plan are the first steps in that direction.

DRAFT

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Thank you to the members of the Working Group, Agency Coordination Group, Statewide Stakeholder Groups and the public for your contribution to the development of NC Moves 2050.



NC Moves 2050 is the first long-range transportation plan in North Carolina developed under guidelines and requirements introduced within federal legislation, specifically the Moving Ahead for Progress in the 21st Century Act (MAP-21) in 2012 and the Fixing America's Surface Transportation (FAST) Act in 2015. These guidelines include establishing targets to communicate progress toward national performance goals, and consideration of emerging issues, such as travel and tourism, and reliability and resiliency in statewide multimodal transportation planning.

EXECUTIVE SUMMARY

FINAL RECOMMENDED PLAN ACTIONS

NC Moves 2050 is a strategic, multimodal transportation plan aimed at planning for our future, connecting communities and supporting North Carolina's economy and quality of life. The plan is focused on creating a more responsive, diverse and inclusive transportation system to keep people and freight moving safely and efficiently.

As North Carolina grows and changes, so do the state's transportation needs. By 2050, North Carolina's population is anticipated to grow from 10 million to 14 million people.

Current trends make now a great time to produce a policy-based transportation plan to guide future investments and performance goals, making the state more reactive to change.

NC Moves 2050's planning process was done in four phases (below), each answering key questions about the state's transportation system.



ENGAGEMENT

A robust public engagement strategy was implemented to ensure that a wide range of participants across the state were able to help shape plan outcomes.

Over **3 million people** were engaged across North Carolina at tabling events, presentations, workshops and other activities.

Alternative Futures

Using research on emerging trends that could affect North Carolina's future, the NC Moves 2050 Plan explored four alternative future scenarios. These scenarios help us understand what could happen and provide us an understanding of future transportation needs to develop modern strategies.

INNOVATIVE
Technology in Transportation



RENEWED
Community Growth in Transportation



GLOBALY CONNECTED
Economic Growth in Transportation



UNSTABLE
Uncertainties in Transportation



Each of the eight strategies includes four actions that help carry out the plan objectives for a total of 32 actions. The actions propose specific planning, policy and partnership recommendations to prepare North Carolina's transportation system for future change.

While all 32 actions are equally important to implement, it is likely that full-scale implementation and the resulting benefits may not be realized until after the next 10 years. To identify the most likely time frame for implementation, the actions are arranged into three tiers covering the next 30 years.

TIER 1: NEXT 10+ YEARS

There are 16 Tier 1 actions representing those with the highest potential for implementation with measurable benefits over the next 10 years. Beyond then, both resources and needs are very difficult to predict.

Strategies

To prepare NCDOT for the potential opportunities and uncertainties in the alternative futures, the plan proposes eight strategies, each aligning with the five plan objectives, aimed to provide a responsive, diverse and inclusive transportation system.

 **Provide Transportation Access For All**

Improve quality of life and multimodal access to regional jobs and services

Connect communities to statewide opportunities

 **Improve Transportation Through Technology**

Enable smart and innovative statewide technology solutions

 **Ensure Safety & Security**

Promote more multimodal safety and behavioral-based programs, policies and tools

 **Support a Strong Economy**

Provide connections to new industry clusters and transportation terminals

Address air, sea and inland port capacity to handle freight demand

Identify future transportation workforce supply and demand

 **Maintain a High-Quality System**

Develop and mainstream risk/resiliency practices

TIER 2: NEXT 20+ YEARS

Tier 2 actions look toward 2040 and consider what NCDOT and its partners could reasonably plan to implement in the face of uncertainty and available resources.

TIER 3: NEXT 30 YEARS

Tier 3 actions look out even further, to 2050, to prepare for substantial and more complex changes to manage and deliver transportation services.

OVERVIEW

As North Carolina grows and changes, so do the state's transportation needs. By 2050, the State's population is anticipated to grow from 10 million to 14 million people. The economy, trade policies, technology and development patterns will also all play a critical role in shaping transportation needs.

NC Moves 2050 is a strategic, multimodal transportation plan aimed at preparing for our future, connecting communities and supporting North Carolina's economy and quality of life. The plan is focused on creating a more responsive, diverse and inclusive transportation system to keep people and freight moving safely and efficiently.

A fact sheet on the Overview can be found in Appendix A of this report.

The Planning Process

Phase 1: State of the System

What is the current state of our transportation system?

Phase 2: Drivers and Opportunities

What factors will impact the way people and goods travel and how we manage our transportation system in the future?

Phase 3: Alternative Futures

What could 2050 look like and how might the future impact transportation?

Phase 4: Priorities, Needs and Solutions

How do we meet the complex and dynamic transportation needs of an uncertain future?

Plan Rollout and Implementation

What is the course of action for the N.C. Department of Transportation and its partners to meet transportation goals and align future needs and opportunities with new policies and programs?



A POLICY-DRIVEN PLAN

NC Moves 2050 will reflect NCDOT's focus on policy-based solutions rather than on specific projects. This approach means instead of making decisions like building a bike lane on Main Street, the plan proposes recommendations such as providing funding support for local bicycle projects.



PHASE 1

VISIONING

The purpose of initial stakeholder and public engagement was to create a vision and establish objectives for the NC Moves 2050 Plan.

The Visioning Process

During the project kickoff meeting, a diverse group of stakeholders from across the state, including transit operators, trucking associations and bicycle/pedestrian advocates, participated in a visioning exercise. Over 3,500 residents participated in the first NC Moves 2050 survey to contribute their ideas about North Carolina's transportation future. Stakeholder and public input crafted the NC Moves 2050 vision and the supporting objectives.

Vision:

NC Moves 2050 will strengthen North Carolina's multimodal transportation system to prioritize safety, economic vitality, high quality of living and sustainability by integrating technological innovations and demographic shifts.

ENGAGEMENT

Public and stakeholder engagement was a cornerstone of the NC Moves 2050 planning process. A robust public engagement strategy was implemented to reach a wide range of voices across the state were able to shape plan outcomes.

Over 30,000 responses were received on surveys throughout the development of the NC Moves 2050 Plan.

3 million people were engaged during the NC Moves 2050 planning process.

Objectives:



PROVIDE TRANSPORTATION ACCESS FOR ALL



IMPROVE TRANSPORTATION THROUGH TECHNOLOGY



ENSURE SAFETY & SECURITY



SUPPORT A STRONG ECONOMY



MAINTAIN A HIGH-QUALITY SYSTEM

STATE OF THE SYSTEM



As the NC Moves 2050 vision and objectives unfolded, the “State of the System” analysis evaluated current transportation plans and practices throughout North Carolina to determine how they align with NCDOT’s mission and goals. This evaluation reviewed the transportation system’s role in the state, regional and local economies and the system’s contribution to the state’s quality of life.

Fact sheets on the State of the System can be found in Appendix B of this report.

Key findings include:

- ▶ Transportation is the primary platform on which the state’s 10 million residents access jobs, schools, healthcare, social events and commerce.
- ▶ Like many other transportation departments, NCDOT struggles with limited resources, increasing needs and competing priorities.
- ▶ While NCDOT is responsible for operating and maintaining many unique services and systems (like highways, transit, ports, ferries), each experience many of the same challenges, including rapidly developing technologies, extreme weather events and a growing and diverse population.
- ▶ Each service and system face internal challenges such as funding and serving growing urban areas and populations while still providing service to rural communities.



70%

of the state's population is within a 30-mile radius of a **passenger rail** station.



77%

(over 429 million tons) of goods were carried across North Carolina's **roads & highways** by truck in 2015.



94%

of North Carolina's residents live within a 30-minute drive of an **airport**.



1,000

miles of **Mountains-to-Sea Trail** and 400 miles of **East Coast greenway** continue to expand in North Carolina.



98

public transportation systems provided 78 million passenger trips in 2017.



21

ferries provide service to North Carolina residents and visitors on 7 regular routes.



557

million tons of **freight** valued at \$955 billion moved in North Carolina's transportation system in 2015.



ENGAGEMENT

The first survey focused on framing the discussion around key elements of North Carolina's future based on where people live, how people travel and challenges facing the future of transportation. Over 3,500 responses were received.

NCDOT attended community events across the state to promote NC Moves 2050 and provided the public with the opportunity to provide feedback through surveys.

Online engagement through the ncmoves.gov website and social media increased the reach of NC Moves 2050.

DRIVERS AND OPPORTUNITIES

Rapidly evolving technology, changing demographics, extreme weather events and shifting economic forces will have an impact on North Carolina's transportation system in coming decades. The "Drivers and Opportunities" phase of NC Moves 2050 explored emerging trends within eight different topics. Each topic presented possible changes and uncertainties that could affect North Carolina's future.

Fact sheets on Drivers and Opportunities can be found in Appendix C of this report.



DEMOGRAPHICS

Where people live and businesses choose to operate will shift, but trends suggest urban areas will grow larger while rural areas, and their aging populations, will grow incrementally.



CLIMATE CHANGE & RESILIENCY

NCDOT must prepare for more extreme weather events, coordinate closely with other agencies and ensure infrastructure such as bridges and roads will withstand harsher future conditions.



EMERGENCY MANAGEMENT & SECURITY

Maintaining and providing security at airports and seaports, pipelines and fuel terminals, railroad right of way, ferry and transit stations and along highways makes North Carolina's entire transportation system safer and more resilient to emergencies and natural disasters.



ECONOMY

Improving and expanding ports and gateways, strengthening business partnerships, supporting new industries and building long lasting roads and bridges are necessary to support North Carolina as the state's economy continues to grow.



TECHNOLOGY

New technologies, such as drones, self-driving vehicles and mobile applications like Uber and Lyft may transform how transportation services are provided and how people use them.



TRAVEL & TOURISM

Partnerships and programs such as convenient public transit, well-connected sidewalks and greenways, anti-litter campaigns, Adopt-A-Highway and the wildflower program support the tourism industry and improve visitors' experience, which helps drive our economy.



FUNDING

NCDOT may be required to find new ways to pay for future transportation improvements as fuel usage is declining and today's revenue sources may be less sustainable going forward.

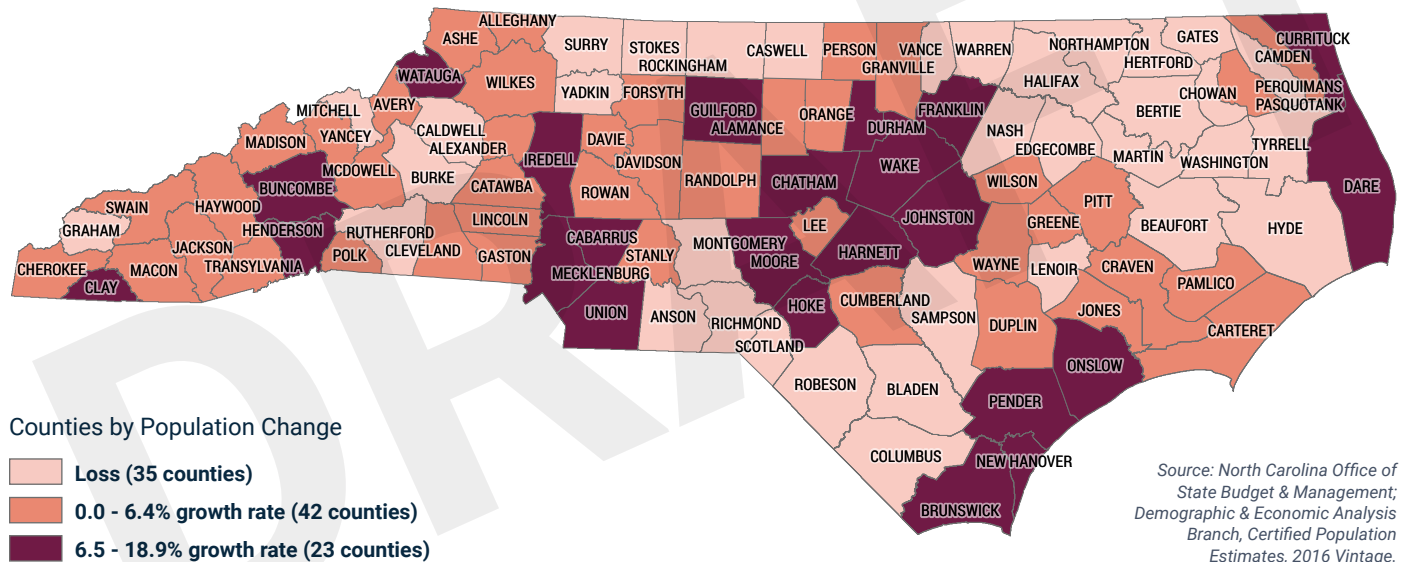


PARTNERSHIPS

As the process of delivering transportation becomes more complex, NCDOT will need to develop and strengthen partnerships with public agencies and private organizations to produce effective solutions.

Population Change in North Carolina Counties

April 1, 2010 - July 1, 2016



ENGAGEMENT

Training sessions engaged state planning organizations by providing an opportunity to learn about the Drivers and Opportunities and rank them by importance to their regions.

An interactive public comment map encouraged the public to add comments about the biggest challenges specific to their regions.

Resident-led gatherings, called "Table Topics," allowed resident groups to provide meaningful feedback about the needs of their communities through casual conversations at their convenience.



ALTERNATIVE FUTURES

The insights from the Drivers and Opportunities research framed the development and evaluation of “Alternative Futures.” Exploring different views of the future helps NCDOT better understand how to prepare resilient, long-range transportation plans that consider how people and goods may travel. The NC Moves 2050 Plan explored four different futures (below) compared to a trend. These scenarios help us understand what could happen, not predict what will happen. They help give us an understanding of future transportation needs and develop modern strategies.

A fact sheet on Alternative Futures can be found in Appendix D of this report.

A trend forecast was used to compare and contrast the four alternative futures for NC Moves 2050. The trend assumes transportation demand, driven by a steady increase in population and economic expansion, will continue for the long term. The trend also assumes current and historical factors – population growth, development patterns, freight movement and other economic forces will continue to largely influence where and how transportation activity occurs.

ENGAGEMENT

Workshops asked for input on which types of strategies NCDOT could begin preparing now to navigate future conditions.

The second survey gave the public an opportunity to learn about alternative futures and respond to questions centered around future needs and potential benefits and concerns. Over 10,100 responses were received.

Targeted outreach through regional events and direct communication ensured that NCDOT engaged diverse populations including those in rural areas, young adults and minority communities. Methods included reaching out to rural school districts, historically black colleges and universities, and counties with higher densities of minority populations to provide presentations and NC Moves 2050 Plan information.



INNOVATIVE

Technology in Transportation



A future where technology drives new development patterns and economic growth, resulting in a low-carbon, low-cost, shared and more accessible multimodal system.



RENEWED

Community Growth in Transportation



A future where small towns and rural communities grow and are more connected to each other and urban centers by a variety of transportation modes.

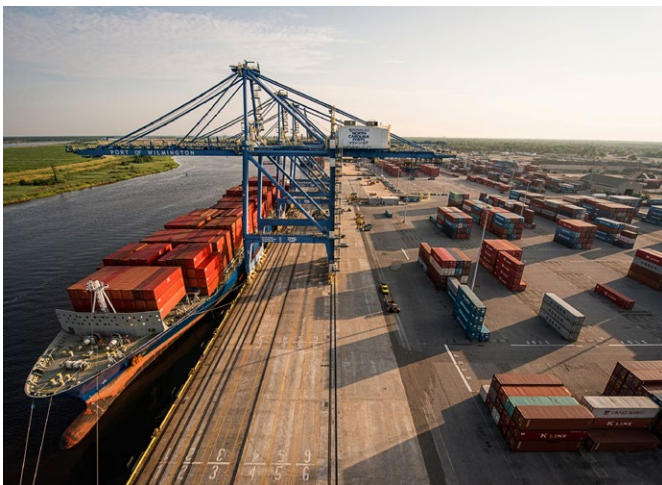


GLOBALY CONNECTED

Economic Growth in Transportation



A future where economic growth in manufacturing, technology, automation and services positions North Carolina as a leading market for a skilled workforce, connected to the world by international gateways and an efficient freight system.



UNSTABLE

Uncertainties in Transportation



A future where funding instability, political and social events, environmental threats and energy uncertainty stall tourism and stagnate the economy. This creates a transportation system where travel costs are high and mobility is unreliable.



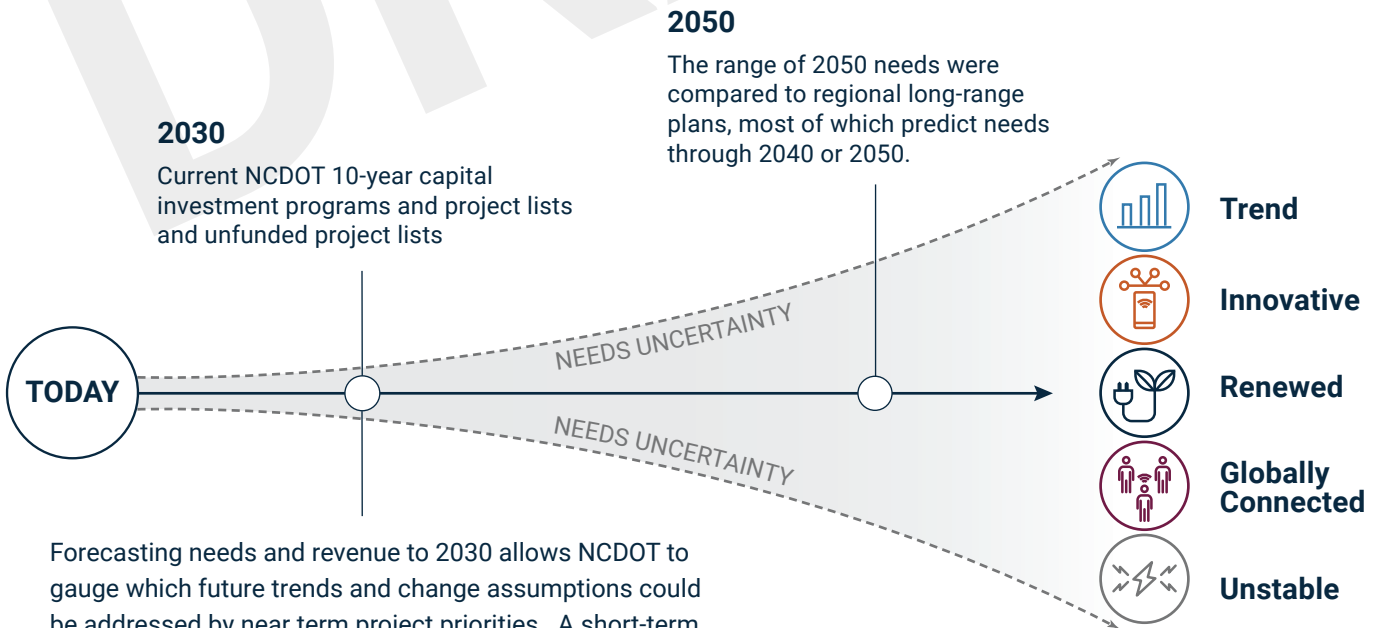
NEEDS ASSESSMENT

NC Moves 2050 established a new scenario-based approach to understand and communicate the extent of future multimodal transportation in North Carolina. Transportation needs were defined and estimated through public input, data, studies and interviews with experts. The result was a comprehensive, planning level approach showing the range of potential resources needed to meet future transportation needs through the lens of the four alternative futures.

A fact sheet on Needs Assessment can be found in Appendix E of this report.

Transportation needs were arranged within three categories:

- ▶ **Mobility and Modernization** – Includes projects such as adding lanes to a highway, providing new transit services, improving a rail station, buying a new bus or ferry, or extending a bike path.
- ▶ **Highway Assets** – Includes the maintenance and rehabilitation of North Carolina roads and bridges.
- ▶ **Other Programs** – Includes the cost to operate the transportation system, safety projects, and routine transportation services (such as storm recovery).



Forecasting needs and revenue to 2030 allows NCDOT to gauge which future trends and change assumptions could be addressed by near term project priorities. A short-term forecast, built with greater confidence in available traffic, economic, and population data, creates the capability to consider near term course corrections to policies, plans and programs, which make up for funding shortfalls or close gaps in predicted transportation service.

2030 Needs

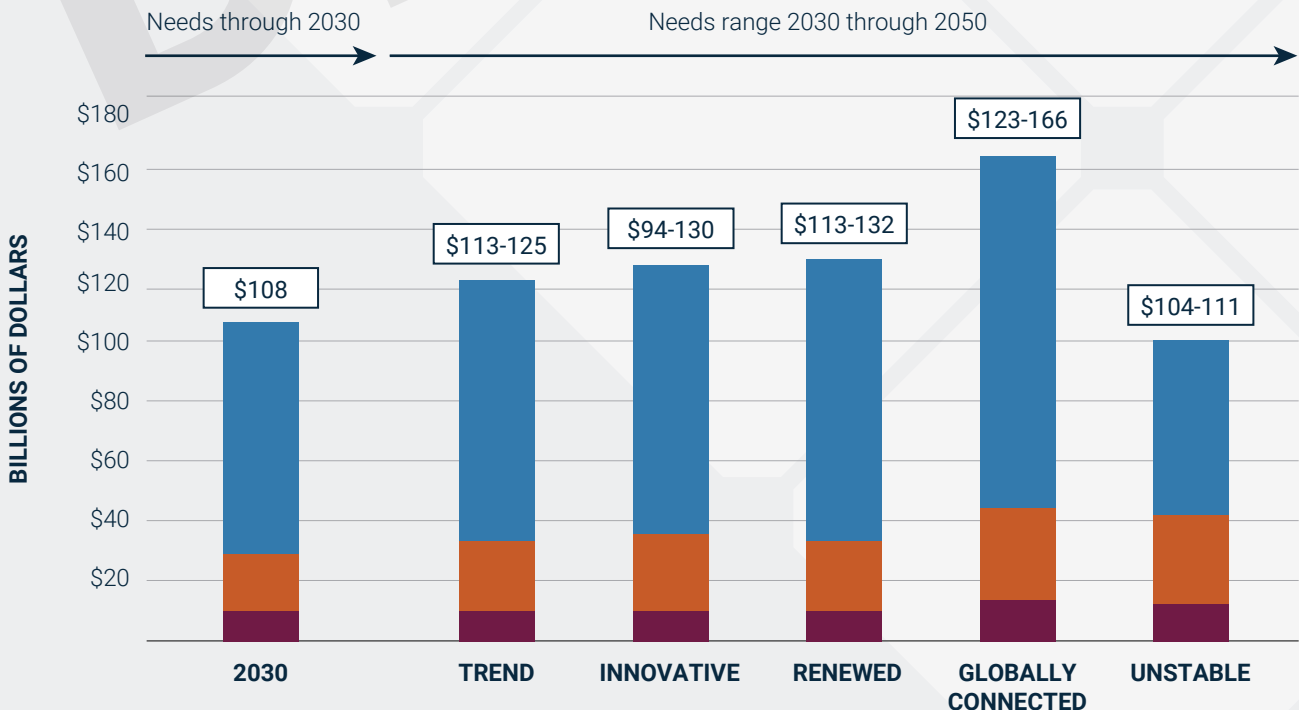
2030 needs represent the investment required to make North Carolina’s transportation infrastructure perform at a high standard, including funded and unfunded priorities. A backlog of unmet needs combined with expected growth in the state’s population and economy will mean more people and goods are traveling farther, resulting in longer periods of congestion and faster deterioration of assets. This represents a \$108 billion estimate for the next 10 years or through 2030.

2050 Needs

The estimate of 2050 needs are based on “what if” scenarios influenced by changes in technology, the economy or other forces. Relationships between and across these forces are assumed in each scenario and produce a high/low range of estimated needs.

- ▶ **2050 Trend** - assumes North Carolina’s economy and the demand for travel will grow at about the same pace it has in the past.
- ▶ **Innovative** – assumes a number of technology changes occur and disrupt how people and goods move across a highly interconnected, efficient system.
- ▶ **Renewed** – assumes more economic activity and development occur in smaller towns which in turn become more attractive to retirees and require more transportation services and options.
- ▶ **Globally Connected** – assumes the highest level of needs due to the sustained growth of a strong, diverse economy. This leads to more travel and goods flowing through air, sea and inland ports and more pressure on aging roads and bridges.
- ▶ **Unstable** – assumes the lowest level of needs due to economic instability, rising transportation and energy costs and slower population growth. This leads to less travel and a higher focus on keeping transportation assets in good working condition.

■ Mobility & Modernization
 ■ Highway Assets
 ■ Other Programs



REVENUE FORECAST

Currently, North Carolina relies on multiple state and federal sources to fund improvements to its transportation system. However, the same alternative futures that impact needs could also change how much revenue is available from these traditional sources and create or require new, more sustainable funding options.

NC Moves 2050 has informed the work of the NC F1RST Commission to “advise the Secretary of Transportation of the potential components of a sustainable long-range transportation investment strategy that will provide the critical and necessary resources to build and maintain North Carolina’s future transportation system to ensure the state’s economic vitality and competitiveness in the future.”

– NC F1RST Commission Mission

Mobility and Modernization

- ▶ NCDOT/Partner Near-term Priorities (demand driven)
- ▶ Highway and Non-Highway Capital Improvements
- ▶ Highway Modernization (safety, operational)

- ▶ USDOT
- ▶ NC State Transportation Investment (STI) law



Highway Use Tax



Fuel Tax



DMV Fees

Highway Assets

- ▶ Pavement/Bridge Deterioration
- ▶ Routine Maintenance (mowing, snow plowing, signs, rest areas)
- ▶ Storm Expenditures
- ▶ Asset Management Strategies, Goals and Targets

- ▶ USDOT



Fuel Tax



DMV Fees

Other Programs

- ▶ Financial or Operational Support to Non-Highway Modes
- ▶ Support of Local Needs (sidewalk construction)
- ▶ Small Construction / Spot Safety Program
- ▶ Traffic Management and Signal Systems

- ▶ Powell Bill
- ▶ Statewide Programs
- ▶ Appropriations



Fuel Tax

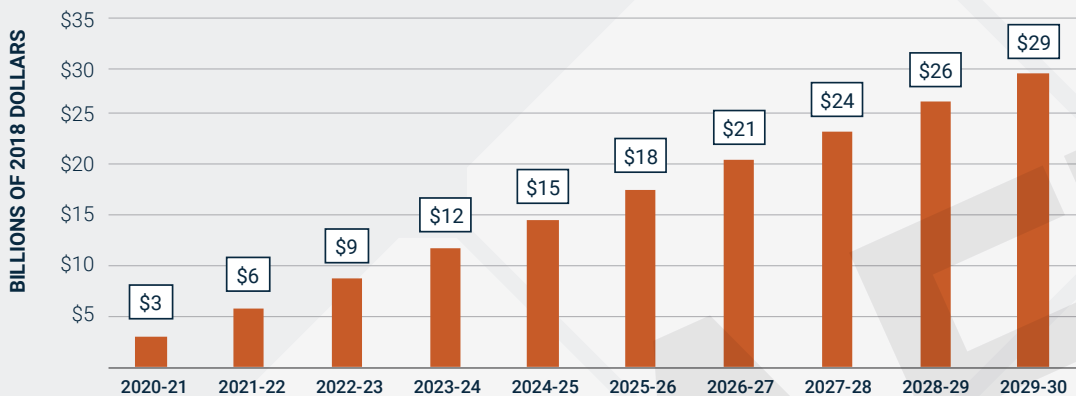


DMV Fees

2030 Revenue

The estimate of 2030 revenue closely matches the 10-year financial assumptions used by NCDOT in its budgetary process. These assumptions are sensitive to factors that indicate how far people drive, what vehicles they purchase, the size of commercial fleets and engine technology improvements. These estimates also assume minimal impact to 2030 revenue based on more production of electric vehicles since they will still represent a small percentage of the state's fleet.

Cumulative Constrained Revenues



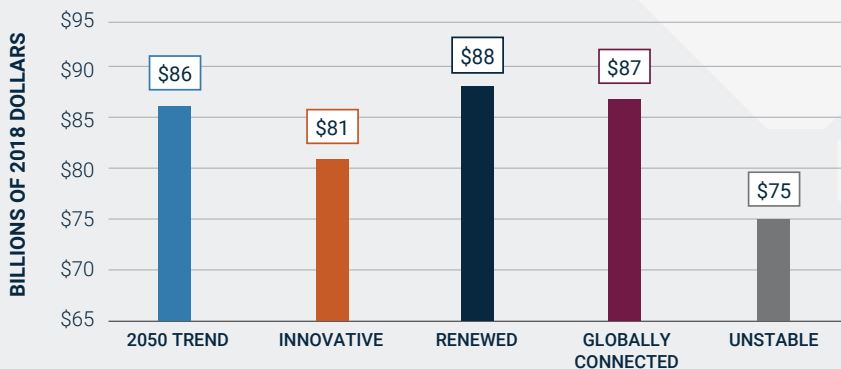
Conservative estimates indicate North Carolina's transportation revenue will continue to track with population growth, vehicle ownership and fees – however, NCDOT will need over 3.5 times more funding to keep pace with transportation needs.

2050 Revenue

Forecasting into the future is challenging in that it introduces more uncertainty. Transportation funds may be collected and used very differently from today and transportation industry impacts may not occur evenly across North Carolina. However, the following assumptions guided the development of a range of revenue possibilities, starting with a baseline or trend forecast. Range values are influenced by expected technology, economic and travel option changes for people and goods.

- ▶ The transition to electric and driverless vehicles as the standard will take longer than predicted.
- ▶ Revenue from fuel taxes remain at levels that correlate to vehicle purchases, driving behaviors, and the size of commercial truck fleets based on population and economic growth.
- ▶ Size of federal funding to North Carolina remains constant, shifting the burden to state and local governments to fund more of their transportation future.
- ▶ A mixed fleet of vehicles and technology, such as drones, will disperse more freight from highways to other high-speed, point-to-point systems.

Constrained Revenues



Uncertainty and the forces of technology, the economy, and population change will significantly determine the available level of North Carolina's transportation revenue by 2050.

STRATEGY DEVELOPMENT

Strategies in the NC Moves 2050 Plan are intended to optimize NCDOT’s response to the diverging path between needs and revenue. To prepare NCDOT for the opportunities and uncertainties possible in the Alternative Futures, these strategies aim to provide a responsive, diverse and inclusive transportation system.

Vision/Goals

- ▶ Growing, diverse and equitable economy
- ▶ Agile, resilient and quality infrastructure
- ▶ Efficient, accessible and connected system
- ▶ Sustainable and livable communities
- ▶ Safety and security for all users
- ▶ Innovative funding, program delivery and partnerships



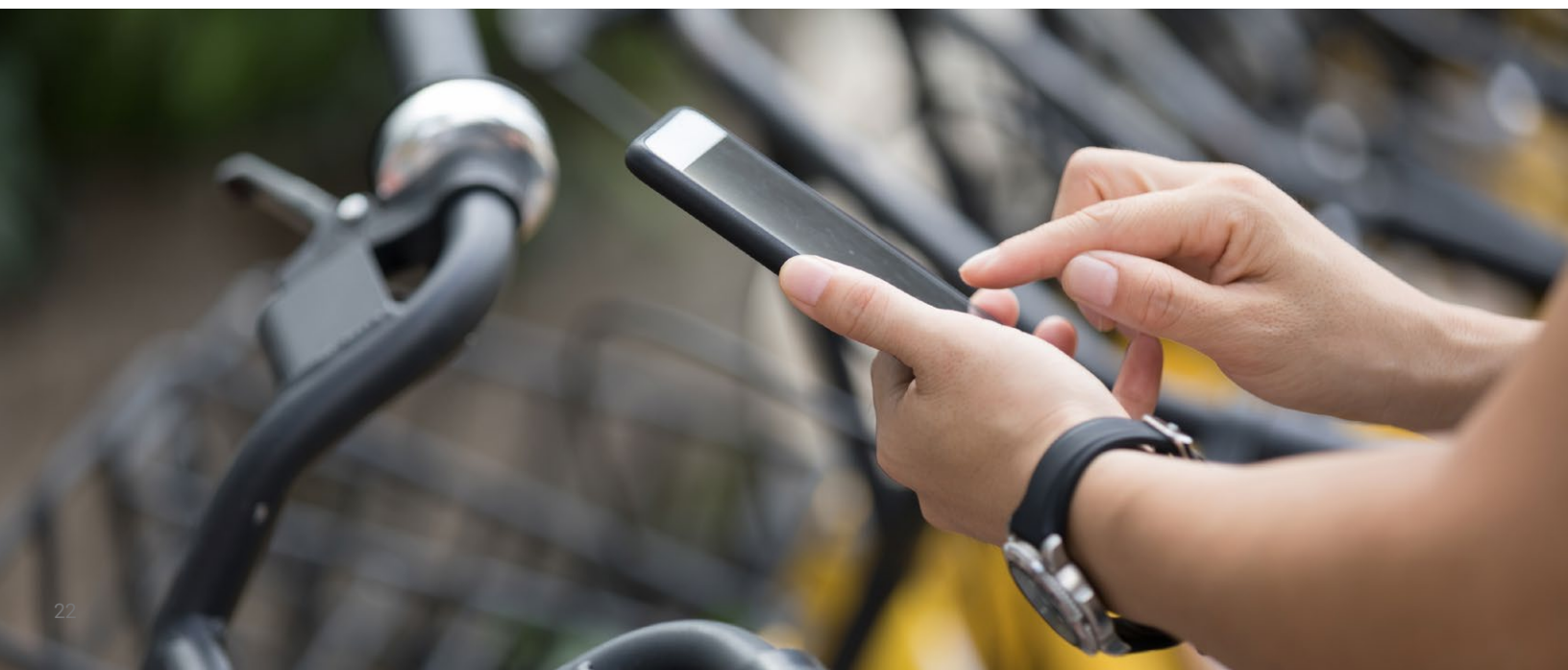
Multimodal Needs

- ▶ Through 2030 and 2050 based on the Trend and the Alternative Futures
- ▶ Consistent with insights from the “Family of Plans” within the State of the System Report
- ▶ Responds to needs and direction highlighted in Drivers and Opportunities



Stakeholder Input

- ▶ Insights from subject matter experts through NCDOT coordination
- ▶ Insights from stakeholders during May workshops
- ▶ Insights from the public collected through the surveys



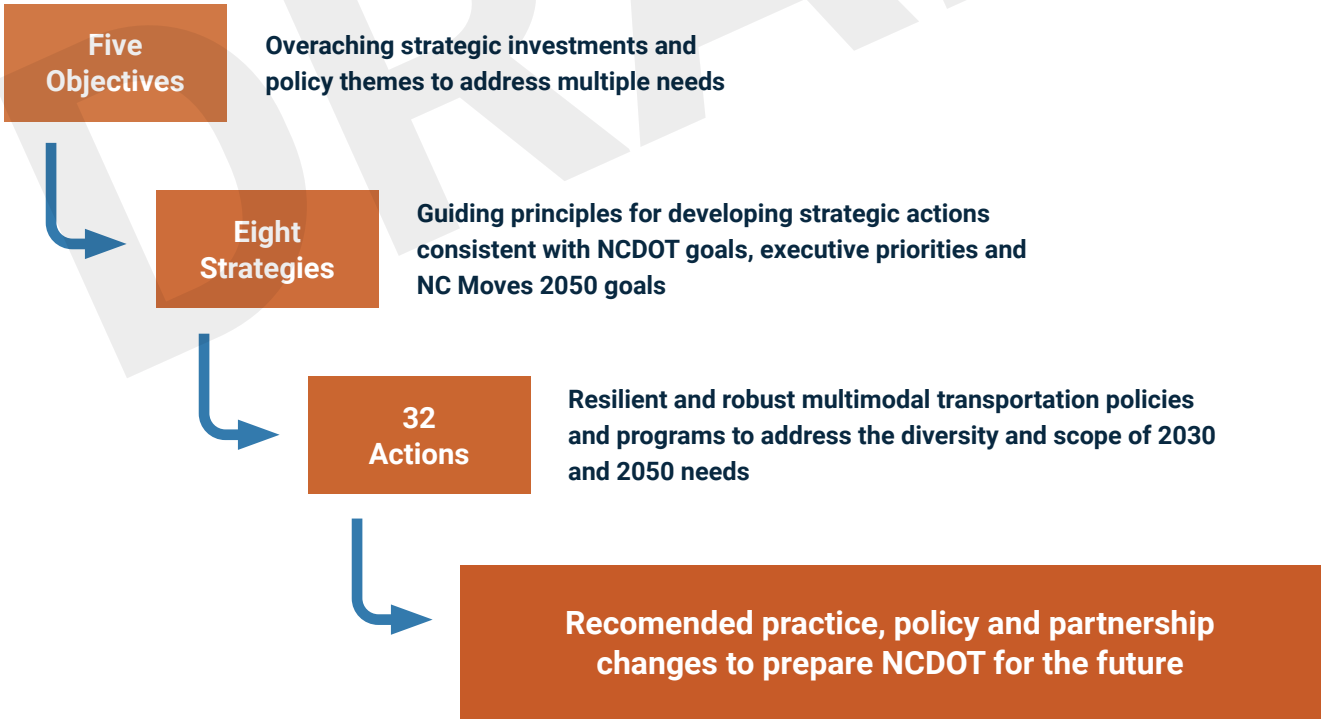


ENGAGEMENT

The third survey provided direct input into the strategies and actions. Over 15,000 North Carolinians took the survey.

Stakeholder workshops allowed the team to reach a wide range of NCDOT planning partners, stakeholders, advocacy groups and state/local agencies across four regions.

Plan Outcomes



STRATEGIES AND ACTIONS

A fact sheet on Strategies and Actions can be found in Appendix F of this report.



Provide Transportation Access For All

Improve quality of life and multimodal access to regional jobs and services

Connect communities to statewide opportunities



Improve Transportation Through Technology

Enable smart and innovative statewide technology solutions



Ensure Safety & Security

Promote more multimodal safety and behavioral-based programs, policies and tools



Support a Strong Economy

Provide connections to new industry clusters and transportation terminals

Address air, sea and inland port capacity to handle freight demand

Identify future transportation workforce supply and demand



Maintain a High-Quality System

Develop and mainstream risk/ resiliency practices

Putting the strategies into action

Each of the eight strategies includes four actions that help carry out the plan objectives. The actions, listed on pages 26-30, propose specific planning, policy and partnership recommendations to prepare North Carolina's transportation system for future change.

Each of the 32 actions brings unique opportunities and challenges when it comes to implementation. Four primary components of making implementation decisions were considered as part of the process to develop recommendations:

- ▶ **Readiness** – What is the extent of technological, engineering, or environmental challenges, or does the action require new laws or policies to enable successful implementation?
- ▶ **Risk** – How could the implementation process fail or benefits not be fully realized? For example, is the action heavily reliant on uncertain funding sources, do elected officials play a key role in building support, or are there high uncertainties in the technology required or the user reaction to implementation?
- ▶ **Resources** – What is the magnitude of total NCDOT investment required to implement? This includes capital expenses, labor resources and expertise.
- ▶ **Partners** – To what extent does NCDOT control implementation, and what traditional and non-traditional partners may need to be involved?

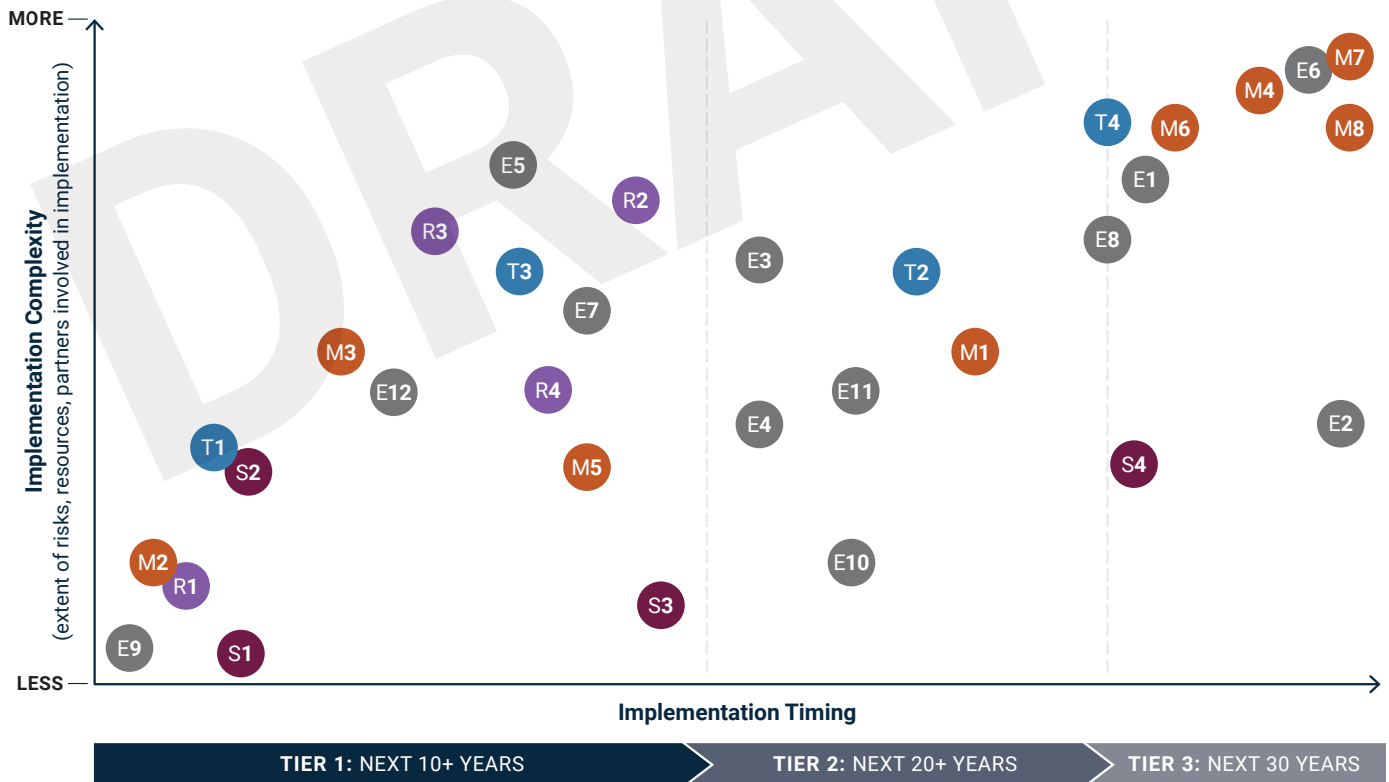


RECOMMENDATIONS

For each action, NCDOT subject matter experts worked through a process to rate the level of readiness, risk, resources and partnerships. The team followed a simple approach to organize each action into the following two-dimensional matrix that compares implementation timing to implementation complexity. Timing takes into account readiness and resources while complexity takes into account risk and partners.

Advancing Plan Strategies

The letter and number shown in each colored circle identify the actions as they are listed on the following pages.



What do the **Tier 1** actions have in common?

There are 16 Tier 1 actions which represent those most likely to be fully implemented and the measurable benefits to NCDOT and the transportation system over the next decade. Generally, these actions share the following characteristics:

- ▶ **Already being implemented** – A number of these actions extend and enhance current NCDOT programs and policies.
- ▶ **Planning or strategy development underway** – These actions are consistent with policy priorities for NCDOT and are in the initial planning steps.

- ▶ **Minor resources required** – These actions are low cost and have broad implementation support.
- ▶ **Commitment within recent plans** – The Statewide Multimodal Freight Plan and Public Transportation Strategic Plan identified key steps NCDOT and partners should take to enhance operations of the freight system and expand access to alternative modes.

What about the **Tier 2** and **Tier 3** actions?

These actions are of equal importance to NC Moves 2050 plan implementation. However, as a result of the review of readiness, risk, resources and partners, it is likely that full scale implementation and actual benefits may take longer than 10 years to materialize.

While Tier 1 actions focus on the next 10 years, beyond that point both resources and needs are very difficult to predict. Tier 2 actions look toward 2040 and consider what NCDOT could reasonably plan to implement in the face of uncertain resources and quickly changing needs. Tier 3 actions look even further, out to 2050, thinking about the most beneficial and often complex strategies that are resilient no matter what the future holds.

Typically, these actions are characterized by a mix of the following attributes:

- ▶ **High resource requirement** – Actions that require significant infrastructure investment.
- ▶ **Longer implementation timelines** – Actions that require complex project development processes to implement, including policy change and environmental clearances.
- ▶ **Uncertain technology deployment** – Actions that rely on emerging or future technologies for widespread implementation.
- ▶ **Less NCDOT control** – Actions that require multiple partners, and in some cases, the private sector to lead implementation.
- ▶ **Potential for public or political opposition** – Actions that historically have been politicized or experienced public opposition.

Recommendations – Tier 1 Actions (10 years)

Objective	ID*	Action
	M2	<p>Conduct a statewide vulnerability assessment of transportation users with mobility challenges.</p> <p>Collaborate with partners to define and identify vulnerable populations, and develop and institute new programming and performance measures that support multimodal investment in these communities.</p>
	M3	<p>Accelerate demand response and flexible multimodal strategies to meet the needs of an aging population and residents with disabilities.</p> <p>Revise design standards and policies to accommodate emergency vehicle access and expand coordination and funding partnerships with demand response and medical transportation services.</p>
	M5	<p>Implement multimodal solutions that improve connections to major transportation terminals, destinations and distribution centers.</p> <p>Expand safe and reliable multimodal connections to these locations and deploy emerging technologies (and new partnerships).</p>
	T1	<p>Promote internal and external innovation within NCDOT and build partnerships with academia and the private sector to research, pilot and implement emerging technology.</p> <p>Continue and expand partnerships to research, pilot and implement emerging transportation, communications and information technologies.</p>
	T3	<p>Utilize the existing Strategic Transportation Corridors (STCs) as priority “smart” corridors.</p> <p>The STCs will represent the backbone of emerging transportation management and operations technology, including electric vehicle charging locations, connected/autonomous vehicle infrastructure and broadband infrastructure.</p>
	S1	<p>Enhance collaboration and partnerships with agencies and stakeholders that foster safety awareness and law enforcement.</p> <p>Coordinate with partners and build regional safety coalitions to enhance campaigns and education, better tailor systemic and behavioral strategies for all system users to meet local and regional needs.</p>
	S2	<p>Develop and implement new multimodal safety policy and standards that focus on public safety.</p> <p>Advance safety solutions in all environments and for all modes, especially in multimodal locations and corridors.</p>
	S3	<p>Research and invest in technology that can be used to reduce crashes, enhance crash data, monitor risky driver behaviors and promote safety for all users.</p> <p>Develop programs and partnerships to deploy both vehicle and infrastructure safety technologies to identify and mitigate high-risk crash locations and improve transportation system user behavior.</p>

*Each color circle represents the objective they support and the number action they are as shown on the chart on page 26.

Recommendations – Tier 1 Actions (10 years) CONTINUED


Objective	ID	Action
	E5	Advance channel deepening and technology related operational improvements for the NC State Ports Authority. Coordinate with ports officials to identify short- and long-term strategic investments to plan for, streamline and enhance higher levels of cargo movement.
	E7	Invest in infrastructure capacity and connectivity to relieve freight bottlenecks and disperse freight demand, enhancing network efficiency. Implement and prioritize state and regional freight plan recommendations, that address gaps, improve travel time and complete first/last mile connections to and from ports facilities.
	E9	Establish partnerships and resources to prepare, equip and build a 21st century ready transportation workforce. Assess workforce competencies and needs to identify, develop and promote transportation career curriculum and skill-based programs, that evolve and adapt to industry change.
	E12	Support development and growth of dual enrollment programs to facilitate entry into specialized transportation skills and careers. Coordinate with the North Carolina high schools and technical colleges to establish, fund and promote transportation workforce centers of excellence.
		R1
R2		Identify and prioritize multimodal transportation improvements that enhance system performance and reliability. Conduct a vulnerability assessment of Strategic Transportation Corridors (STCs) to evaluate infrastructure, climate and other external stressors; develop resilience-based scoring criteria and methodology for the NCDOT Strategic Prioritization process.
R3		Standardize, measure and report asset management practices that advance transportation infrastructure resilience. Track activities and investments, that extend life-cycle operations and harden critical infrastructure assets.
R4		Support community-based resiliency approaches that inform NCDOT practices. Work with local partners to coordinate land use, comprehensive and environmental planning activities with transportation decisions.

Recommendations – Tier 2 Actions (20 years)

Objective	ID	Action
	M1	Consider accessibility and affordability when expanding multimodal options and connections. Expand focus on first/last mile connectivity for movement of people and goods, including more adaptable transit and micromobility options and transportation demand management programs, and new collaboration and planning partnerships with communities on land use and housing decisions.
	T2	Consider technology applications in all transportation decisions including enhanced techniques for state/local transportation management coordination. Form planning, programming and project delivery policies and guidelines to promote the use of technology in all aspects of a project/asset lifecycle.
	E3	Identify needed transportation linkages to support growth industries within regional economies and eight prosperity zones. Strengthen coordination with state agencies and local commerce, economic and community development organizations to plan and prepare for timely, tailored transportation solutions.
	E4	Determine last mile transportation connections and assets critical to supply chains within local economies and distribution ecosystems. Engage local businesses and trade associations to identify transportation solutions that leverage specialized business and manufacturing processes through transload, cross-dock or other value-add goods movement.
	E10	Support locally based solutions that enhance access to workforce training and knowledge development in transportation supportive industries. Collaborate with local partners and business chambers to identify and remove transportation barriers.
	E11	Deepen agency capability to manage transportation technology changes in system operations, fleet management and construction practice. Create professional and certification programs to facilitate a variety of on-site and distance learning opportunities coordinated through university transportation centers and state trade associations.

Recommendations – Tier 3 Actions (30 years)

Objective	ID	Action
	M4	<p>Improve multimodal access and service to regional activity centers and destinations.</p> <p>Expand local and regional transit services in growing, high-demand areas, focusing on connecting households to employment opportunities, medical and education locations, and existing and future statewide transportation systems.</p>
	M6	<p>Maintain the capacity and operations of Strategic Transportation Corridors (STCs) to enable statewide multimodal mobility for passenger and freight travel.</p> <p>Maintain and strategically expand roadway capacity and operations across STCs including new technology infrastructure to facilitate connected/autonomous vehicle adoption and statewide broadband access, passenger and freight rail and other intercity passenger services.</p>
	M7	<p>Establish interregional high-capacity passenger options and work with local partners to optimize transit-oriented development.</p> <p>Advance policies that provide opportunity to implement passenger rail service on existing and future corridors and expand cross-regional transit and commuter services between employment and education hubs.</p>
	M8	<p>Connect North Carolina to neighboring economies through more direct, efficient, competitive mobility.</p> <p>Partner with neighboring states and coalitions to improve intercity passenger mobility.</p>
	T4	<p>Engage the freight industry to leverage technology to enhance movement across public and private freight systems, such as intermodal ports.</p> <p>Partner with logistics firms to optimize supportive infrastructure, curb management, data, routing and the expansion of autonomous delivery.</p>
	S4	<p>Develop a network of statewide safety corridors to address over-represented crashes and deploy educational, enforcement and infrastructure treatments.</p> <p>Focus programmatic attention on high-risk corridors and locations.</p>
	E1	<p>Provide efficient transportation connectivity to emerging, large-scale intermodal, inland port and industrial/business park locations.</p> <p>Expand partnerships with public/private operators (air, truck, and/or rail) to plan, prioritize and develop multimodal transportation improvements supportive of site-specific area services and needs.</p>
	E2	<p>Enhance movement of services and products supplied to or shipped from local industries.</p> <p>Coordinate with local partners and stakeholders to advance transportation solutions integrated with comprehensive and land use plans, curb management policies and complete street guidelines.</p>

Objective	ID	Action
	E6	<p>Identify infrastructure redundancy to maintain long-distance reliability and performance on national and state freight networks.</p> <p>Determine effective, performance improving investments within transportation corridors and mode specific systems coordinated with resiliency and risk vulnerability analyses.</p>
	E8	<p>Improve and modernize existing freight infrastructure to enhance capacity.</p> <p>Partner with public and private operators to identify and strengthen aging freight assets critical to the operational efficiency of transportation networks that serve statewide ports.</p>

How will NCDOT implement the actions?

NCDOT will work closely with partners and stakeholders to identify resources and staff that make the actions real and effective. As with any planning endeavor, these changes will not occur overnight but require steady, disciplined progress and accountability to achieve and realize results. NCDOT can employ a number of options to advance the strategies and actions while maintaining plan momentum through a structured implementation approach.

Steps to support Tier 1 recommendations will be detailed in a separate implementation plan, including:

- ▶ Identification of implementation measures to track, report and communicate progress
- ▶ Commitment of key partners and resources to jointly tackle specific actions
- ▶ Periodic briefings and updates to the N.C. Board of Transportation, planning partners and statewide organizations with a vested interest in plan results
- ▶ Identification of recommendations, which flow or link to other system and modal plans (such as the upcoming State Rail Plan)

This implementation plan will be available on ncmoves.gov.



SYSTEM PERFORMANCE SUMMARY

NC Moves 2050 development considered system performance trends during multiple steps of the planning process. The plan's vision, goals, objectives, strategies and actions were shaped by long term performance aspirations (such as improving system resiliency) and form a comprehensive response to technological, economic and development implications and other external forces that could alter future transportation system management and decision making.

This focus on performance implications due to current and potential future conditions highlights the connection between NC Moves 2050 and recent NCDOT efforts to establish performance targets under new federal planning requirements. NCDOT conducted extensive coordination and collaboration within the department and with NCDOT's stakeholders over the course of several months, beginning in late 2017 and continuing through mid-2018, to set performance targets for safety, infrastructure assets (pavement and bridge conditions), travel time and freight reliability, Congestion Mitigation and Air Quality and transit assets. NCDOT coordinated with stakeholders through several activities to present performance information, describe the state's target setting approach, provide periodic updates, develop a range of possible targets for each measure and gain consensus on draft and final state targets. The trend analysis NCDOT used to establish statewide performance targets in 2018 is aligned with the needs, expected funding and population and growth trends identified in the 2050 Plan.

NCDOT reported the performance targets and supporting information to the Federal Highway Administration in October 2018, as required by new federal performance management regulations. Setting the targets is only one step in the process. Federal rules require state departments of transportation and MPOs to incorporate performance into their long range plans and include a System Performance Report that discusses baseline (2017) and recent performance for each measure and reports progress towards achieving the state's targets.





GLOSSARY

DMV – Department of Motor Vehicles.

First/last mile – The beginning or end of an individual trip made primarily by public transportation.

Freight – Goods that are moved in large amounts by truck, train, ship or plane.

Interconnected – The integration of transportation options which allows for seamless connection between each type of transportation.

Intermodal – Involves the transportation of freight in a shipping container that can be carried via rail, air, ship or truck.

NCDOT – North Carolina Department of Transportation.

Micromobility – Small, lightweight devices operating at speeds typically below 15 miles/hour that are ideal for trips up to 6 miles, including bicycles, E-bikes, electric scooters, electric skateboards, shared bicycles and electric pedal assisted bicycles.

Multimodal – Involves different “modes” or types of transportation, including aviation, ferries, ports, highways, trains, public transit, bicycles and pedestrians.

Modernization – Making something more up to date to meet current and future needs.

Rural – Area that has characteristics of agriculture and countryside.

Stakeholder – A person or organization who is involved in or affected by the development of NC Moves 2050.

STC – Strategic Transportation Corridors; [definition] form the state’s core network of multimodal transportation corridors. Combined, they move large volumes of people and freight across the regions of the state and to key markets outside of the state.

STI – State Transportation Investment; [definition] Investment that allows the N.C. Department of Transportation to use its funding more effectively to boost North Carolina’s infrastructure while supporting economic growth, job creation and a higher quality of life.

Transit-oriented development - Development that maximizes the amount of residential, business and leisure space within walking distance of public transport.

Urban – Area that has characteristics of a city.

USDOT – United States Department of Transportation.

APPENDIX A:
STUDY
OVERVIEW AND
PURPOSE

DRAFT



NC MOVES 2050

CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE

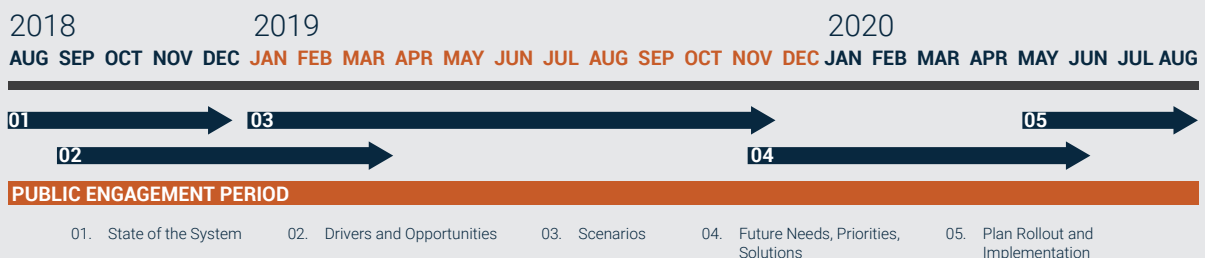
STUDY OVERVIEW & PURPOSE

NC MOVES 2050 WILL CONTINUE TO SUPPORT NORTH CAROLINA'S ECONOMY AND ENHANCE QUALITY OF LIFE

The N.C. Department of Transportation is conducting an update to its long-range transportation plan to help guide North Carolina's future transportation policies and investments. Called NC Moves 2050, the plan provides a 30-year transportation blueprint for the state.



STUDY TIMELINE

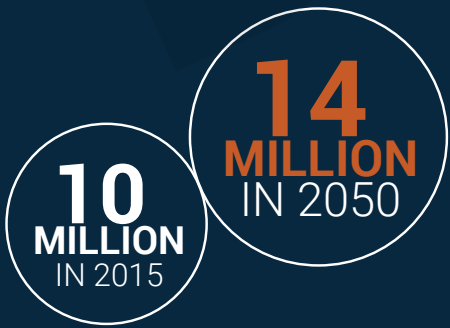




NORTH CAROLINA'S POPULATION GROWTH

The population of North Carolina has grown from 6.7 million people in 1990 to 10 million people in 2015, according to the North Carolina Office of State Budget and Management. This is a total growth rate of 51 percent. Over the same time period, the population of the U.S. has increased by 29 percent.

According to an analysis conducted by the study team, this trend is expected to continue, with North Carolina anticipated to add nearly 4 million more people by 2050. This would make North Carolina the 8th most populous state by 2050.



THE NEXT 50 YEARS

Life looked a lot different 50 years ago. Air travel was a luxury, families owned only one car, milk was delivered, kids walked to school and cellphones didn't even exist.

Fast-forward to today where air travel is fairly common, families own multiple vehicles, most anything can be delivered, and children ride the bus or are driven to school.

What might the world look like in the next 50 years? What role will transportation play in that future? What does North Carolina need to do to be ready to take on new challenges?

These are some of the questions that will be answered in the NC Moves 2050 transportation plan.

NORTH CAROLINA FACTS

- NCDOT MAINTAINS MORE THAN 80,000 MILES OF HIGHWAY. (TEXAS IS THE ONLY STATE THAT HAS MORE) 
- IN 2017, CHARLOTTE DOUGLAS INTERNATIONAL AIRPORT RANKED 10TH NATIONWIDE IN NUMBER OF PASSENGERS.** 
- NORTH CAROLINA HAS 3,258 MILES OF FREIGHT RAILROAD.* 
- 1.1% OF NORTH CAROLINIANS USE PUBLIC TRANSPORTATION TO GET TO WORK.* (COMPARED TO A USA AVERAGE OF 5.2 PERCENT) 
- ELECTRIC SCOOTERS HAVE TAKEN MANY NORTH CAROLINA CITIES BY SURPRISE AS A NEW WAY TO TRAVEL. 
- AUTONOMOUS AND CONNECTED VEHICLES ARE EXPECTED TO CHANGE HOW, WHEN AND WHERE WE TRAVEL. 

HOW TO GET INVOLVED

Thirty years sounds far away; however, the time to start planning is now. There will be several opportunities for public input throughout the two-year study process.

Announcements will occur for statewide outreach opportunities, web-based surveys and interactive maps of North Carolina where citizens can share their thoughts about North Carolina's transportation system's future by region.

BE A PART OF THE FUTURE!

#NCMOVES    

NCDOT.GOV/NCMOVES

*Information taken from the U.S. Department of Transportation Bureau of Transportation Statistics, 2016. **Information from CLTAirport.com

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APPENDIX B: STATE OF THE SYSTEM

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State of the System



Without transportation in North Carolina, the state's 10 million residents would not have access to jobs, school, healthcare, social events and commerce. Transportation allows for efficient and safe movement of people and goods into, out of and around the state. North Carolina's economy and quality of life rely upon it.



72 publicly owned airports

fly 56 million passengers to and from North Carolina per year.



98 public transportation systems

provided 78 million passenger trips in 2017.



6 intercity passenger rail routes

2 Class 1 railroads, CSX and Norfolk Southern, and 21 short lines and terminal railroads connect N.C. industries to domestic and international markets.



4,220 highway miles

with 1,011 in North Carolina on the National Freight Network.



1,000 miles of Mountains-to-Sea Trail

400 miles of East Coast greenway

and continuing to expand in North Carolina through planning, design and construction.



21 ferries on **7** regular routes

on the 2nd largest state-operated ferry system in the U.S.



557 million tons

of freight valued at \$955 billion moved in North Carolina's transportation system in 2015.

Sources: Airports- North Carolina Airport System Plan, North Carolina Division of Aviation, 2015 | Rail- 2015 Comprehensive State Rail Plan, NCDOT. | Bike- NCDOT Division of Bicycle & Pedestrian Transportation | Transit- <https://www.ncdot.gov/divisions/public-transit/Pages/transit-benefits.aspx7/10/18> | Highways- NCDOT 2017 North Carolina Statewide Multimodal Freight Plan. | Ferries- North Carolina Ferry Division. | Freight- NCDOT 2017 North Carolina Statewide Multimodal Freight Plan

Transportation offers many social benefits through connectivity, job creation and safety.



6.3%

of households in North Carolina do not have access to a vehicle.

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates



State and federal funds for public transportation operations support

11,000 transit-related jobs, resulting in \$556 million in wages.

Source: <https://www.ncdot.gov/divisions/public-transit/Pages/transit-benefits.aspx> 7/10/18



More Than

800 traffic cameras

across the state allow NCDOT to monitor conditions to quickly respond to incidents and alert motorists through more than 300 dynamic message signs.

As of January 2019



Average annual roadway crash deaths from 2011-2015:

176 + **22**
Pedestrians Bicyclists

Shared use paths provide a safer place for bicycle and pedestrian travel off roadways.

Sources: http://www.pedbikeinfo.org/pbcat_nc/pdf/summary_bike_facts11-15.pdf and http://www.pedbikeinfo.org/pbcat_nc/pdf/summary_ped_facts11-15.pdf

NCDOT

Planning for the Future

As North Carolina grows, the state needs to be responsive to change. A growing population will add more stress to the existing transportation system. Changes in technology may change how NCDOT provides services. Extreme weather events could make travel less reliable.

Understanding current needs and services will help NCDOT as it prepares for changes that will affect transportation needs and services in the future.



Learn more at
**ncdot.gov/
ncmoves**

For information about the NC Moves 2050 Plan:

Transportation Planning Division
(919)-707-0900
ncmoves@ncdot.gov
1554 Mail Service Center
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NC MOVES 2050
CONNECTING YOUR COMMUNITY,
YOUR VOICE, AND YOUR FUTURE



NC MOVES

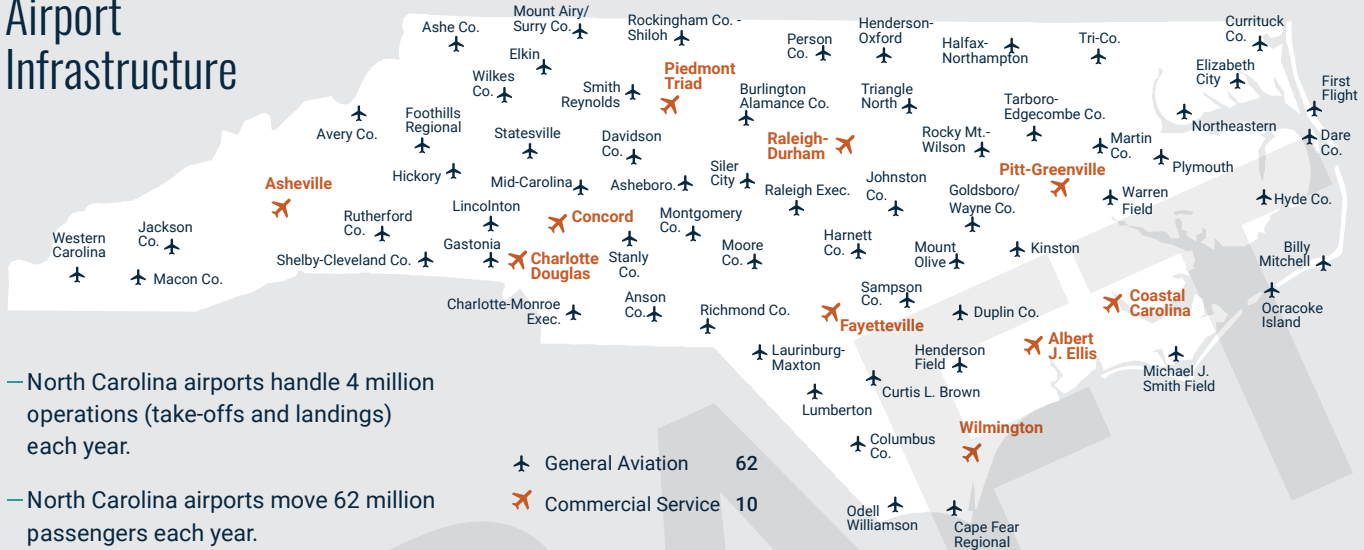
CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE

STATE OF THE SYSTEM

Aviation



Airport Infrastructure



— North Carolina airports handle 4 million operations (take-offs and landings) each year.

— North Carolina airports move 62 million passengers each year.

72

Publicly Owned

North Carolina's **airports** contribute more than \$52 billion in economic impact and 307,000 jobs to the state's economy every year.

More Than 3,300

based aircraft use fuel from the airports, supporting the local economy and contributing significant tax revenues.

94%

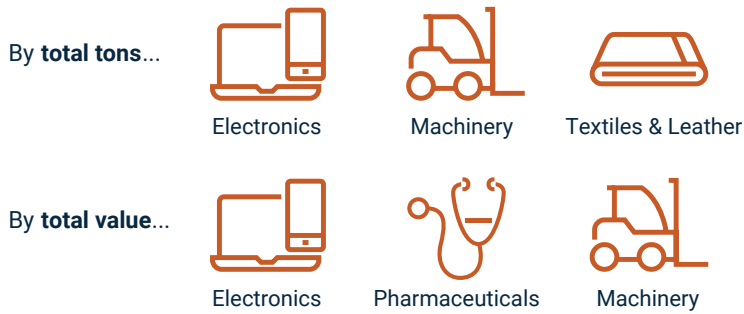
of North Carolina's residents live within a 30-minute drive of an airport.

Source: North Carolina Airport System Plan, North Carolina Division of Aviation, 2015



North Carolina is home to 18,000 licensed pilots and 15,000 aircraft mechanics.

Air Cargo's Top Three Commodities

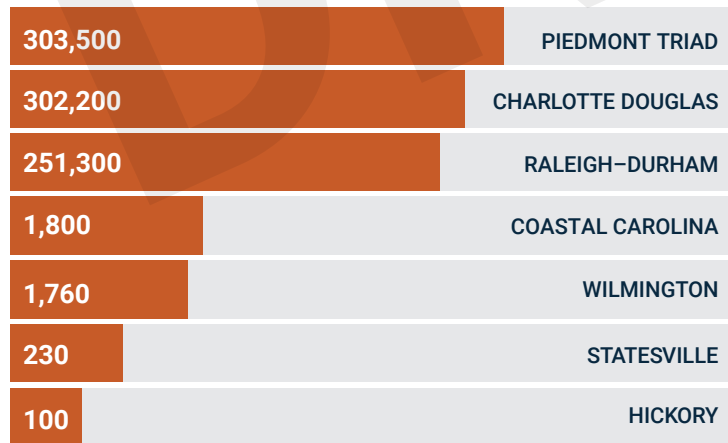


Air freight modes tend to transport the highest proportion of high-value, low-weight commodities due to the high cost of air transport when compared to surface modes. In 2015, the top transported commodity by air at North Carolina airports was electronics, comprising 21 percent of total tonnage (worth \$5.1 billion). Machinery was the second-most transported commodity, comprising 14 percent of total tonnage (worth \$3.5 billion).

The Value of Air Cargo

Compared to other modes, air cargo is a relatively small amount of North Carolina's overall freight activity. However, its per-ton value of more than \$117,800 is substantially greater than the values of cargo by highway (\$1,080 per ton), rail (\$380) and water (\$680).

ANNUAL CARGO IN TONS



Sources: NCDOT 2017 North Carolina Statewide Multimodal Freight Plan
Division of Aviation 2019 North Carolina The State of Aviation



AIRPORTS & CARGO: Did you know?

There are 20 airports with air cargo activity in North Carolina, including both dedicated all-cargo operations and cargo that travels in a passenger aircraft.

More Than **850,000**

tons of air cargo are moved by North Carolina airports each year. And, more than...

99%

of air cargo activity takes place at these three airports:

- Charlotte Douglas International Airport (CLT)
- Piedmont Triad International Airport (GSO)
- Raleigh-Durham International Airport (RDU)



Learn more at
ncdot.gov/ncmoves

For information about the content of this fact sheet:

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NC MOVES 2050
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N.C. Department of Transportation Ferry Division

Many residents depend on the state for passenger and vehicle transportation to access schools, jobs, county services and tourist attractions. Ferries also carry goods that are essential to water-locked communities and serve in critical community service and public safety roles.



Currituck - Knotts Island

Crosses Currituck Sound to connect Knotts Island to mainland Currituck County. Established in 1962 to shorten travel time for Knotts Island students to get to and from their schools in Currituck.

Bayview - Aurora

Connects N.C. 306 across the Pamlico River to provide workers at mining companies in Aurora a direct connection to their homes on the north side of the river.

Swan Quarter - Ocracoke

Crosses Pamlico Sound between Swan Quarter and Ocracoke to connect residents of Ocracoke Island with their county government services on the mainland. Also a gateway for Triad/Triangle residents to reach Ocracoke Island.

Hatteras - Ocracoke

Considered a part of N.C. Highway 12, this route connects Hatteras and Ocracoke Islands on the Outer Banks.

Cedar Island - Ocracoke

Links N.C. Highway 12 from the Outer Banks to the Carteret County mainland across Pamlico Sound. Provides a direct connection to the Outer Banks for visitors coming from the south and west.

Cherry Branch - Minnesott Beach

Connects workers at Cherry Point Marine Corps Air Station to their homes in Pamlico County. Also gives students access to several summer camps on the north side of the river.

Southport - Fort Fisher

Used by both commuters and visitors, this route crosses the Cape Fear River between the beaches of New Hanover County and the Brunswick County town of Southport.

Second largest

state-run ferry system in the United States, following Washington state.

21 ferries and seven regular routes

of everyday service across the Currituck and Pamlico sounds as well as the Cape Fear, Neuse, and Pamlico rivers.

Largest maintenance shipyard on the East Coast

between Norfolk, Va. and Charleston, S.C.



794,000

vehicles transported by ferry in 2017, including 253,000 vehicles from out-of-state.

Source: North Carolina Ferry Division, 2017



Key Challenges

- Declining ridership
- Changes in technology
- Extreme weather events
- Lack of sustainable funding sources

Nearly 2 million passengers cross the rivers and sounds of eastern North Carolina each year, making the state’s ferry system a way of life for those who live and work in the region and an economic necessity for businesses and the tourism industry.

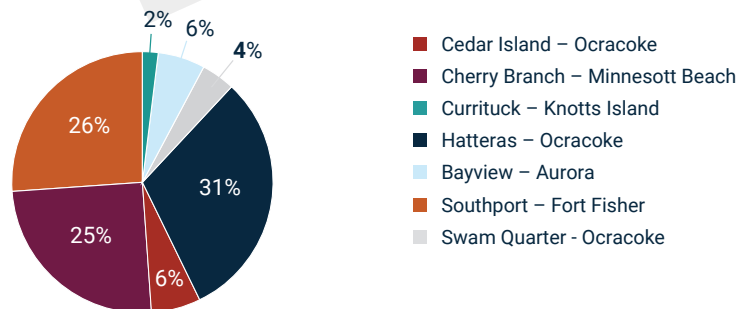
The ferry system also plays a crucial role during coastal emergencies, moving thousands of people out of harm’s way in advance of hurricanes. An emergency route also runs between Stumpy Point and Rodanthe, when N.C. 12 is damaged due to storms and other issues.

Fare Cost for Tolled Ferry Routes

Type	Swan Quarter-Ocracoke Cedar Island-Ocracoke	Southport-Fort Fisher
	One-Way Fare	
Pedestrian	\$1	\$1
Bicycle Rider	\$3	\$2
Motorcycle	\$10	\$3
Scooter, Golf Cart or ATV	\$10	\$3
3-Wheel Motorcycle	\$10	\$3
Motorcycle with Trailer or Side Car	\$15	\$7
Vehicle less than 20 feet	\$15	\$7
Vehicle 20 to 40 feet	\$30	\$14
Vehicle 40 to 65 feet	\$45	\$28

Source: North Carolina Ferry Division, 2019

Percentage of Ridership by Route



Source: North Carolina Ferry Division, fiscal year 2017

In 2017, North Carolina ferries transported over

1.8 M passengers

New Direct Service

In the **near future** the N.C. Ferry System expects to add direct passenger-only service from Hatteras Island to Ocracoke Island’s Silver Lake Harbor, giving tourists an opportunity to explore the island without having to worry about **traffic of parking**.



Illustration courtesy of Elliott Bay Design Group, Seattle

Learn more at
[ncdot.gov/
ncmoves](http://ncdot.gov/ncmoves)

For information about this content of this fact sheet:

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NC MOVES

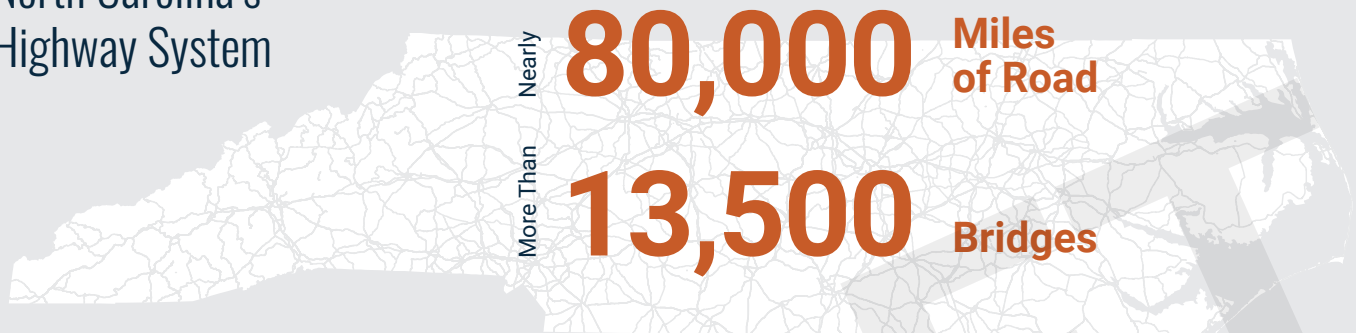
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STATE OF THE SYSTEM

Highways




North Carolina's Highway System



The Division of Highways supports the delivery of statewide transportation projects and is responsible for nearly 80,000 miles of road in North Carolina, making it the nation's second largest state-maintained highway system.

Traffic Safety

In 2016 **42%** 

of people killed on NC roads were **unbuckled** at the time of the crash.

In 2016 **20%** 

of crashes in NC involved a driver that was **distracted**.

More Than **800** **traffic cameras**

across the state allow NCDOT to **monitor conditions** to quickly respond to incidents and alert motorists through more than 300 dynamic message signs.*



Source: North Carolina 2016 Traffic Crash Facts, North Carolina Division of Motor Vehicles
* As of January 2019

The North Carolina Priority Freight Network

North Carolina's freight system plays a critical role every day for every resident and business – delivering goods to the state's businesses and residents, keeping manufacturing plants operating, the store shelves stocked, medicine flowing at area medical facilities, and food on the table.

Freight transportation supports jobs throughout the state's economy, including in all of North Carolina's key exporting industries.

The state's freight assets that are most critical to **highway freight** transportation include:

4,220

Highway miles

1,011

Miles in North Carolina on the National freight network

Truck Parking

The inventory of truck-parking facilities in North Carolina consists of 167 facilities that provide nearly 4,800 parking spaces throughout the state.

Approximately 59 percent of these facilities are private and 41 percent are public; however, about 85 percent of the truck parking spaces are private.

Challenges in Highway Freight

- Congestion
- Bridges and pavements
- Crash hotspots
- Truck parking
- Two-lane rural freight routes
- Technological Changes

77%

of goods (over 429 million tons) were carried across North Carolina's roads and highways by truck in 2015.

Source: NCDOT 2017 North Carolina Statewide Multimodal Freight Plan



PROTECT • ENHANCE • GROW

NextGen Truck Technology

North Carolina is a leader in the knowledge economy and a hub for research and development for all things technology, especially truck manufacturing. Combining this with the state's expansive highway system positions North Carolina to take advantage of this opportunity.



Learn more at

ncdot.gov/ncmoves

For information about the content of this fact sheet:

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NC MOVES 2050
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STATE OF THE SYSTEM

Ports



State of Ports

North Carolina Ports has committed \$200M in capital improvements to enhance and facilitate global business. This exciting initiative will enable North Carolina's ports to tailor their growth to customers' needs and better facilitate long-term plans and business projections. Improvements in development will improve access and increase port capacity.

N.C. Ports can offer the same service as other ports with bottom-line efficiencies that simply can't be matched. The planned improvements will dramatically increase the speed, efficiency and container capacity of the Port of Wilmington, offering customers the utmost in service, as well as abundant capacity for continued growth.

North Carolina's marine freight network comprises more than its marine terminals and extends well beyond the state's coastal counties. State infrastructure supporting maritime trade includes its ports, waterways, highways and rail network, as well as inland production, logistics and distribution centers that serve the ports and other means of transporting freight. Service between the Port of Wilmington, Charlotte and the CSX network is provided by the Queen City Express, which was initiated in 2017.

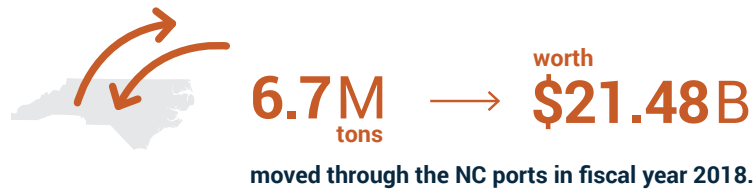


North Carolina's ports support

87,700 jobs

Imports and Exports

In fiscal year 2018, more than 6.7 million tons of cargo moved through the North Carolina ports, supporting more than \$15.4 billion in gross revenues for North Carolina businesses. The ports located at Wilmington and Morehead City, offer services for a variety of cargo types.



Sources: NCDOT 2017 North Carolina Statewide Multimodal Freight Plan
ITRE, "North Carolina Ports: 2018 Economic Impact Study," North Carolina State Ports Authority, 2019

Learn more at
ncdot.gov/ncmoves

For information about this content of this fact sheet:

North Carolina Ports
(800)-336-2405
customerservices@ncports.com
2202 Burnett Boulevard
Wilmington, NC 28401

For information about the NC Moves 2050 Plan:

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STATE OF THE SYSTEM

Public Transportation



Transit Network in North Carolina

Public transportation provides economic and health benefits to communities, as well as access to work, education, training, medical needs, transportation, and shopping. The transit network continues to shape communities because residents gravitate to mobility options that improve their quality of life and provide connections to opportunities.

98 transportation systems

In 2017, North Carolina's transit system provided more than 70 million trips to residents in all 100 counties in major urban centers, small towns and rural areas, from Manteo to Murphy.*



Benefits of Public Transportation for North Carolina



Every \$1 that North Carolina invests in transit generates approximately \$6 of total investment in the state from federal, state, and local sources.*



The capital and operational expenditures of North Carolina's transit systems provided \$1.28 billion in statewide business output, categorized as expenditure-related economic contribution.**



More than \$125 million in state and federal funds supported transit operations in all 100 counties. This funding supported more than 11,000 transit-related jobs, resulting in \$556 million in wages.*



There is an annual benefit of \$822 million to having a transit option in North Carolina communities.***

*Source: <https://www.ncdot.gov/divisions/public-transit/Pages/transit-benefits.aspx7/10/18>
**Source: Transportation Economic Development Impact System
***Source: Small Urban and Rural Transit Center / Center for Urban Transportation Research

VISION:

Connecting North Carolinians to Opportunities

A daily necessity for many, public transportation not only helps reduce congestion, it can also improve quality of life and help make communities more attractive places to live and work.

For many citizens, transit services mean the difference between being stuck in one place and getting to education, jobs, medical appointments and other needs. Today and even more so in coming years, North Carolina’s transit network provides vital connections to opportunities.

For those who cannot drive or just want a travel alternative, transit services mean more choices and flexibility, better access to work, school, training, medical appointments, and leisure activities.

With increased traffic and longer commute times, employers increasingly rely on quality transit for access to talented workers.

To help achieve the vision of a transit network that provides a vital connection to opportunities, the N.C. Department of Transportation’s Public Transportation Division sets forth a mission of improving the quality of life for all North Carolinians by following three specific strategies*:



Building thriving, healthy communities - Partner for a successful future.



Improving access to jobs and economic development - Support local transit systems.



Connecting communities to opportunities - Build the Connected Statewide Network.

*Source: NCDOT PTD 2018 Strategic Plan

MISSION:

Improve Quality of Life

Improve quality of life for North Carolinians by:

- Building healthy communities.
- Supporting job creation and economic development.
- Providing equal opportunities so all people can thrive.

Transit plays an integral role in strengthening communities, providing access to employment and to employees and enabling people to thrive in urban and rural places across the state.



Learn more at ncdot.gov/ncmoves

For information about the content of this fact sheet:

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For information about the NC Moves 2050 Plan:

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STATE OF THE SYSTEM

Rail

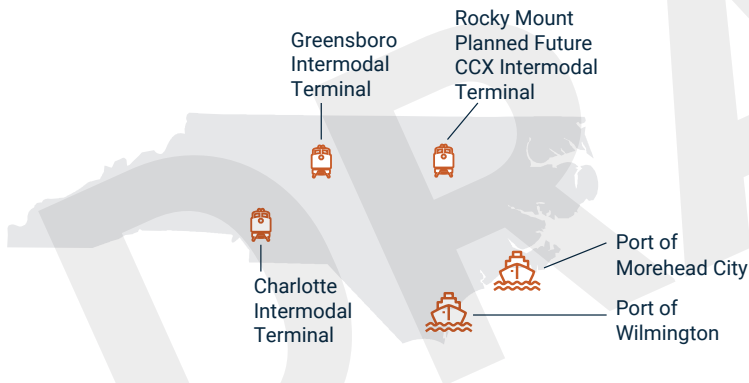


The North Carolina Priority Freight Network

The movement of goods is a major contributor to North Carolina's economy and quality of life. North Carolina's freight assets are the backbone of the state's economic vitality, moving millions of tons of freight each year to businesses and residents across the state.

The majority of industries and economic activities that consumers and producers depend upon, from grocery stores and restaurants to retail shops, office supplies, and construction, rely on the distribution of goods.

Rail moved the second highest volume of freight in 2015, carrying 16 percent of the state's freight volumes with 14 percent in full carloads and 2 percent by intermodal cars. Rail assets in North Carolina that are most critical to freight transportation include:



North Carolina is served by two Class 1 railroads, CSX and Norfolk Southern, and 21 short lines and terminal railroads that connect state industries to domestic and international markets.

The Value of Freight Cargo



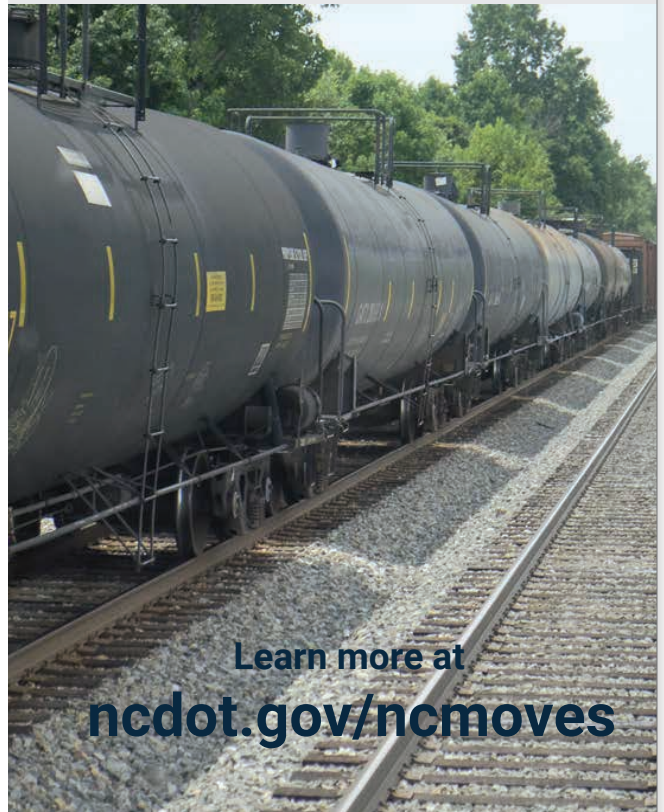
Source: NCDOT 2017 North Carolina Statewide Multimodal Freight Plan

PROTECT • ENHANCE • GROW

Expand Rail Freight Market Opportunities

North Carolina is positioned to significantly grow rail freight in the state through its investments, partnerships with railroads, and global shifts in trade patterns.

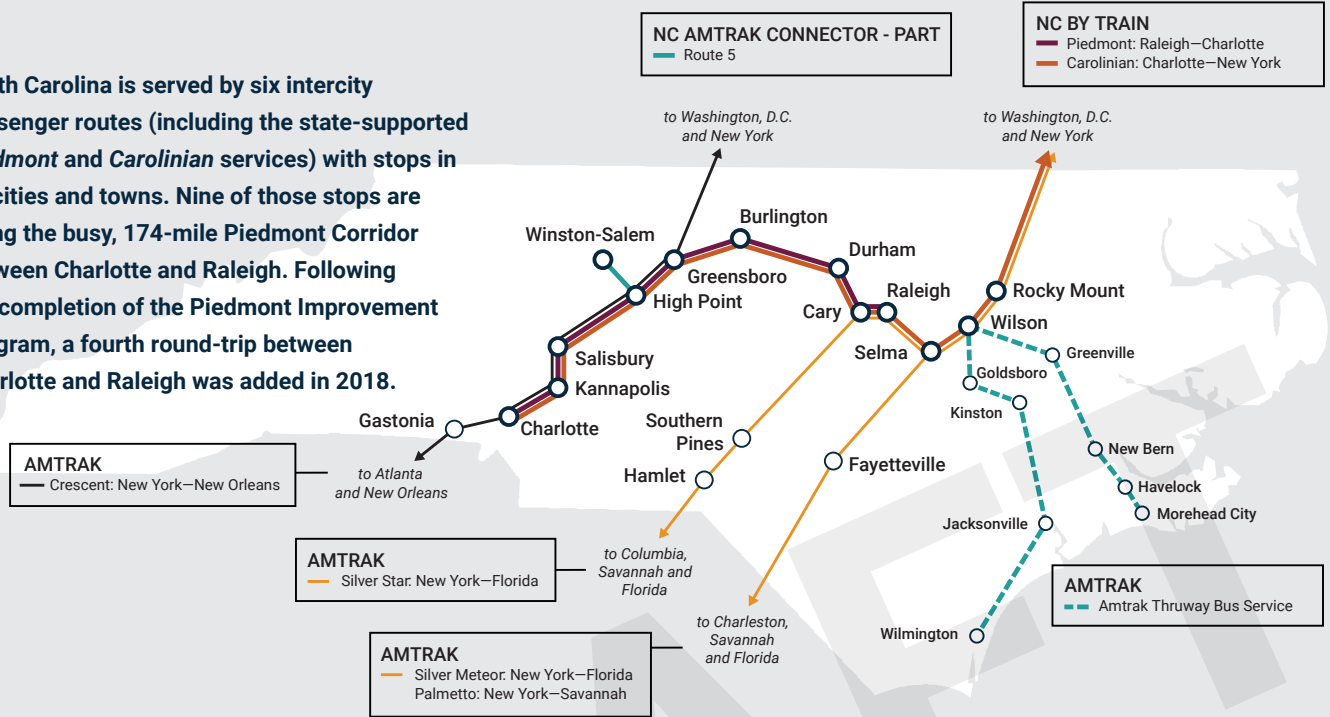
Through strategic actions, North Carolina can expand its rail freight market making it more competitive for shippers and easing the pressures on the highway system.



Learn more at
ncdot.gov/ncmoves

Passenger Rail in North Carolina

North Carolina is served by six intercity passenger routes (including the state-supported *Piedmont* and *Carolinian* services) with stops in 16 cities and towns. Nine of those stops are along the busy, 174-mile Piedmont Corridor between Charlotte and Raleigh. Following the completion of the Piedmont Improvement Program, a fourth round-trip between Charlotte and Raleigh was added in 2018.



More Than **70%** of the state's population lives within a 30-mile radius of a passenger station.

11% of North Carolina residents residing within a 30-mile radius of train stops are served by Amtrak's bus service.

More Than **72 million** people in 13 states live within 30 miles of a station served by train service running through North Carolina.

Source: 2015 Comprehensive State Rail Plan, NCDOT



All this means nearly **860,000 passengers** boarded trains in North Carolina in 2017.

For information about the content of this fact sheet:

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STATE OF THE SYSTEM

Pedestrian & Bicycle



Major trails such as the Mountains-to-Sea Trail (1,000 miles in NC) and the East Coast Greenway (400 miles in NC) **continue to expand** through planning, design, and construction.

North Carolina cities recognize that providing walking and bicycling facilities has a **positive impact on retaining residents, recruiting major employers, and improving health and quality of life.**

Why are walking and bicycling important in North Carolina?

- 1) The growing senior population who will be more dependent on walking and biking.
- 2) The trend of car share, bike share, and e-scooters becoming more prevalent.

6.3%

of households in North Carolina **do not have access to a vehicle.***



↓ 5%

The number of **teens getting their full provisional driver's license** dropped by 5 percent from 2008-2010 in North Carolina.**



31.8%

Approximately 2.52 million of North Carolina's 7.92 million adults are considered obese. This is the **16th highest obesity rate in the country.*****

* Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

** Source: 2010, North Carolina Division of Motor Vehicles

*** Source: Centers for Disease Control and Prevention's behavioral risk factor surveillance system for 2017



Evaluating the Economic Impacts of Shared Use Paths in North Carolina

Shared use paths, also known as greenways, provide a place for bicycle and pedestrian travel off the roadway. A study evaluating the economic impact of shared use paths in North Carolina found that a one-time \$26.7M capital investment in four greenway projects (Brevard Greenway, Little Sugar Creek, American Tobacco Trail, Duck Trail) supports:

\$19.4M Estimated annual **sales revenue** at local businesses along the four greenways.

\$684K Estimated annual **local and state sales tax** revenue from businesses along the greenways.

\$25.7M Estimated **annual savings** from the use of greenways due to more physical activity, less pollution and congestion, and fewer traffic injuries.

\$48.7M Estimated **business revenue** from greenway construction.

790 Jobs supported **annually** through greenway construction.



Return on investment: Every \$1 of trail construction supports \$1.72 annually from local business revenue, sales tax revenue, and benefits related to health and transportation.*

Key Challenges

- Many roadways lack sidewalks and bicycle facilities.
 - Retrofitting North Carolina communities and roadways to include biking and walking facilities can be challenging and costly.
 - Many North Carolina communities built between the 1940s and the 1990s, especially suburbs, were built without bicycle and pedestrian infrastructure, leaving large gaps in bicycle and pedestrian networks.
- Relative to the full NCDOT budget, bicycle and pedestrian transportation receives very little dedicated funding.
- Rural communities lack the resources and funding to improve their communities for walking and bicycling on their own.

* Source: Go.ncsu.edu/sharedusepaths

For information about the content of this fact sheet:

Bicycle and Pedestrian Division
 (919)-707-2600
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 Raleigh, NC 27699-1552

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PEDESTRIAN & BICYCLE:

Safety



Average annual roadway **crash deaths** from 2011-2015:



176

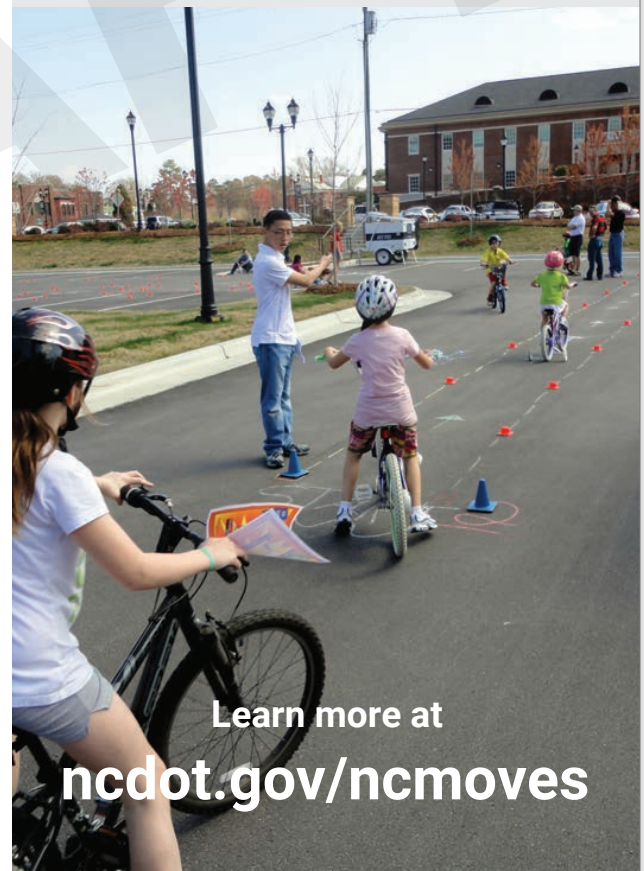
Pedestrians



22

Bicyclists

Sources: http://www.pedbikeinfo.org/pbcat_nc/pdf/summary_bike_facts11-15.pdf and http://www.pedbikeinfo.org/pbcat_nc/pdf/summary_ped_facts11-15.pdf



Learn more at
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FINANCIAL BENEFITS TO NORTH CAROLINA'S TRANSPORTATION SYSTEM

NC BENEFITS BY TRANSPORTATION MODE

North Carolina's transportation system provides financial benefits to residents and businesses in addition to providing connections to daily activities. The benefits of these transportation options funded through the N.C. Department of Transportation are based on available North Carolina studies. These estimated benefits are for the year(s) of each individual study and may change over time.



AVIATION IN NC



Public Benefits:

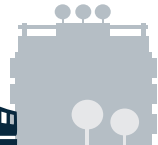
\$195.71
PER PASSENGER

SALARIES & WAGES
FROM JOBS SUPPORTED
BY AIRPORTS

Business Benefits:

\$796.83
PER PASSENGER

IN ECONOMIC
OUTPUT



PEDESTRIAN & BICYCLE FACILITIES IN NC



Public Benefits:

\$23.66
PER TRIP

COST SAVINGS
INCLUDING LESS POLLUTION &
CONGESTION, FEWER TRAFFIC
RELATED INJURIES

Business Benefits:

\$17.86
PER TRIP

SALES REVENUE
DUE TO USE OF PEDESTRIAN &
BICYCLE FACILITIES

TRANSIT SYSTEMS IN NC



Public Benefits:

\$10.10
PER PASSENGER

COST SAVINGS
BENEFITS FROM HAVING TRANSIT
SERVICES AVAILABLE & COST SAVINGS
RELATED TO TRANSIT SERVICE

Business Benefits:

\$12.60
PER PASSENGER

IN INCREASED
BUSINESS OUTPUT

PASSENGER RAIL IN NC



Public Benefits:

\$97.33
PER PASSENGER

COST SAVINGS
BENEFITS FROM HAVING PASSENGER
RAIL SERVICES AVAILABLE & COST SAVINGS
RELATED TO PASSENGER RAIL SERVICE

Business Benefits:

\$125.05
PER PASSENGER

IN INCREASED
BUSINESS OUTPUT

WHAT IS INCLUDED IN THE BENEFITS?

Most transportation types create two types of benefits through how they are used.

01. Public Benefits | Benefits travelers and communities receive by using that type of transportation.

Examples include:

- 'Affordable travel benefits' that happen when trips are made that would not be made because of a lack of other options or the cost of using another option is too expensive.
- 'Transportation cost savings benefits' resulting from lower personal and community-wide costs like travel time delay and crashes.

02. Business Benefits | The economic benefits described occur when each type of transportation is used. These benefits are calculated using tested methods and tools.

Note: Public and Business Benefit values should not be added together because they represent potentially overlapping benefits.

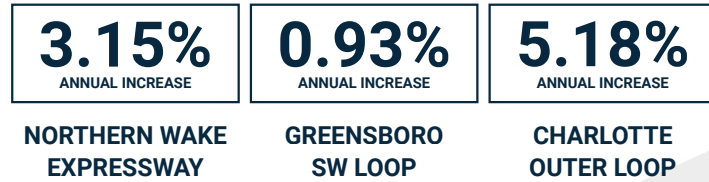
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HIGHWAYS IN NORTH CAROLINA

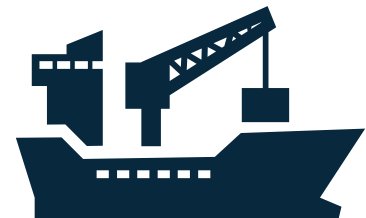
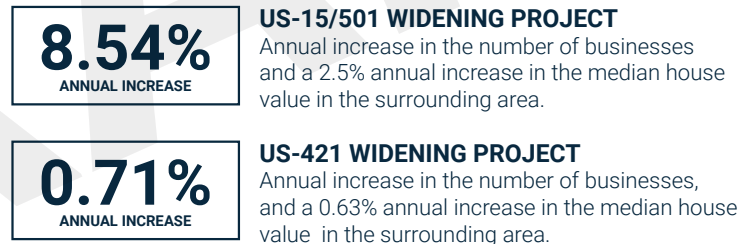
Beltways can have a greater impact on the business growth in the surrounding areas:




Bypasses can have a greater impact on residential development and property price:




Highway widening can have these types of impacts:



RAILROAD FREIGHT TRANSPORT IN NC 


Public Benefits:
\$12.37 PER TON
COST SAVINGS DUE TO DECREASED CONGESTION, TRAFFIC COLLISIONS & AIR POLLUTION

Business Benefits:
\$69.65 PER TON
IN FREIGHT COST SAVINGS FOR BUSINESSES

FERRY SYSTEM OF NC 

Public Benefits:
\$17.90 PER PASSENGER
COST SAVINGS INCLUDING VEHICLE, TRAVEL TIME & SAFETY COST SAVINGS

Business Benefits:
\$305.78 PER PASSENGER
IN ECONOMIC OUTPUT

PORTS OF NC 

Business Benefits:
\$2,298.51 PER TON
IN SALES REVENUE

SOURCES FOR THIS INFORMATION CAN BE FOUND ON THE PROJECT WEBSITE | NCDOT.GOV/NCMOVES

DRAFT

APPENDIX C: DRIVERS AND OPPORTUNITIES

DRAFT



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CONNECTING YOUR COMMUNITY,
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NORTH CAROLINA'S DRIVERS & OPPORTUNITIES

EXPLORING EMERGING TRENDS SHAPING NORTH CAROLINA'S TRANSPORTATION SYSTEM

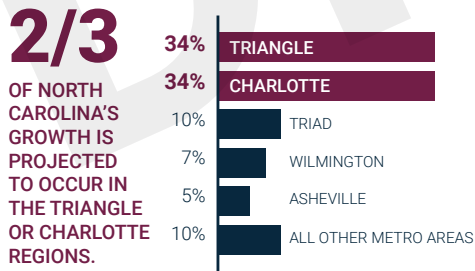


The Drivers and Opportunities phase of the NC Moves 2050 plan looks at possible changes and uncertainties that could affect North Carolina's future. Different drivers and opportunities, referred to as trends, will affect North Carolina's growth and development. Understanding the potential impacts of these trends helps inform what the future may look like which helps with developing strategies and recommendations.



DEMOGRAPHIC CHANGE

Demographic change shows the current and future workforce is closely tied to the state's future economy. As urban areas grow larger and become more diverse, the rural population is growing older.



76 COUNTIES

HAVE MORE PEOPLE OVER THE AGE OF 60 THAN UNDER 18.

SMALLER HOUSEHOLD SIZES & AFFORDABILITY

CONCERNS MAY CREATE DEMAND FOR SMALLER, MORE CLOSELY SPACED HOMES WHICH WOULD BE MORE EFFICIENT FOR TRANSIT, BIKE AND WALK TRIPS.



CREATE MORE JOBS

IN GROWING INDUSTRIES, TRADE AND KNOWLEDGE-BASED SERVICES. MANUFACTURING IS AN ESSENTIAL PART OF THE ECONOMY.



NEW TECHNOLOGIES

New technologies such as self-driving vehicles, electric vehicles and mobile apps like Uber and Lyft may transform how transportation providers like NCDOT perform. Making choices about when or where to use new technology can be overwhelming given the fast pace of change.

AUTOMATED VEHICLE | AV AND CONNECTED VEHICLE TECHNOLOGIES WILL LIKELY CHANGE HOW WE TRAVEL AND HOW GOODS MOVE.



SHORT DISTANCE TRAVEL | MORE TRAVELERS WILL RENT OR SHARE CARS, DRIVE ELECTRIC VEHICLES OR USE ELECTRIC SCOOTERS OR BICYCLES TO TRAVEL SHORT DISTANCES.



MOBILITY-AS-A-SERVICE (MAAS) | NEW TRANSPORTATION OPTIONS HAVE CHANGED THE CONVERSATION AWAY FROM A SINGLE WAY OF TRAVELING. MAAS MEANS YOU CAN USE DIFFERENT TRANSPORTATION OPTIONS FOR EACH TRIP BASED ON HOW MUCH IT COSTS, HOW LONG IT TAKES AND PERSONAL PREFERENCE.



The findings from research and interviews indicate that possible future trends will not occur evenly nor at the same rate across North Carolina. Changes (such as transportation technologies) may occur faster or slower in different areas, creating new opportunities and challenges in various regions of the state. For more information about the research conducted and the findings, visit ncmoves.gov to view the Drivers and Opportunities fact sheets.



ENVIRONMENTAL HAZARDS, EXTREME WEATHER & RESILIENCY

ENVIRONMENTAL HAZARDS | Some hazards are projected to occur with greater likelihood over the coming century.

- Examples include: hurricanes, floods, winter storms, heat events and tornadoes.
- These events will create risks to roads and bridges across the state.

RESILIENCY | Resiliency keeps North Carolina moving, even under these extreme events. This is key for economic recovery and growth.



FLOODS
Can cause landslides, mudslides, blocked roadways and damaged bridges.



WINTER STORMS
Can lead to dangerous conditions with high wind that affect visibility. Significant snowfall can bring travel to a standstill.



WILDFIRES
Rain after wildfires can produce a build up of sediment that impacts bridges and roads.



DAM FAILURES, EARTHQUAKES, TORNADOES
Cause catastrophic damage to bridges and roads and leave a lot of debris that can block travel.



COASTAL FLOODING*
Can block roadways, wear away road beds, and weaken and damage bridges. **Including storm surge and sea level rise.*



DEVELOPING STRONG PARTNERSHIPS

NCDOT partners with many organizations to inform policy and project-level decision making. As the process of delivering transportation becomes more complex, NCDOT will need to develop and strengthen partnerships to continue to produce effective solutions.

LOCAL AND REGIONAL PARTNERSHIPS FOR PROJECT INVESTMENTS ARE IMPORTANT AS TRADITIONAL FUNDING SOURCES DECLINE.



FUEL USAGE IN NC IS PROJECTED TO DECLINE IN 2020.
CAUSING A DECREASE IN GAS SALES TAX REVENUES.

THE NC TRAVEL & TOURISM BOARD PARTNERS WITH NCDOT TO SUPPORT TOURISM EFFORTS.

\$23 BILLION
ANNUAL VISITOR SPENDING

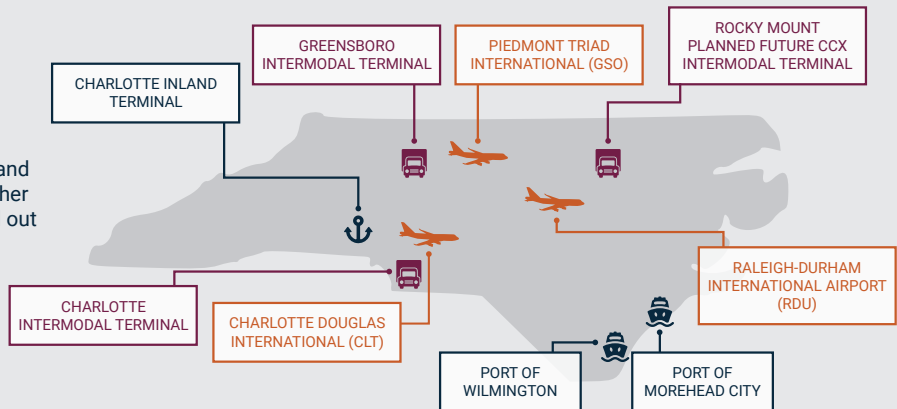
NORTH CAROLINA'S TOURISM INDUSTRY CONTRIBUTES OVER \$23 BILLION IN ANNUAL VISITOR SPENDING TO LOCAL ECONOMIES.



HELP THE ECONOMY GROW

Investments are needed to improve and expand the seaports, airports and other gateways where cargo comes in and out of the state.

- Seaports
- Airports
- Intermodal Yard



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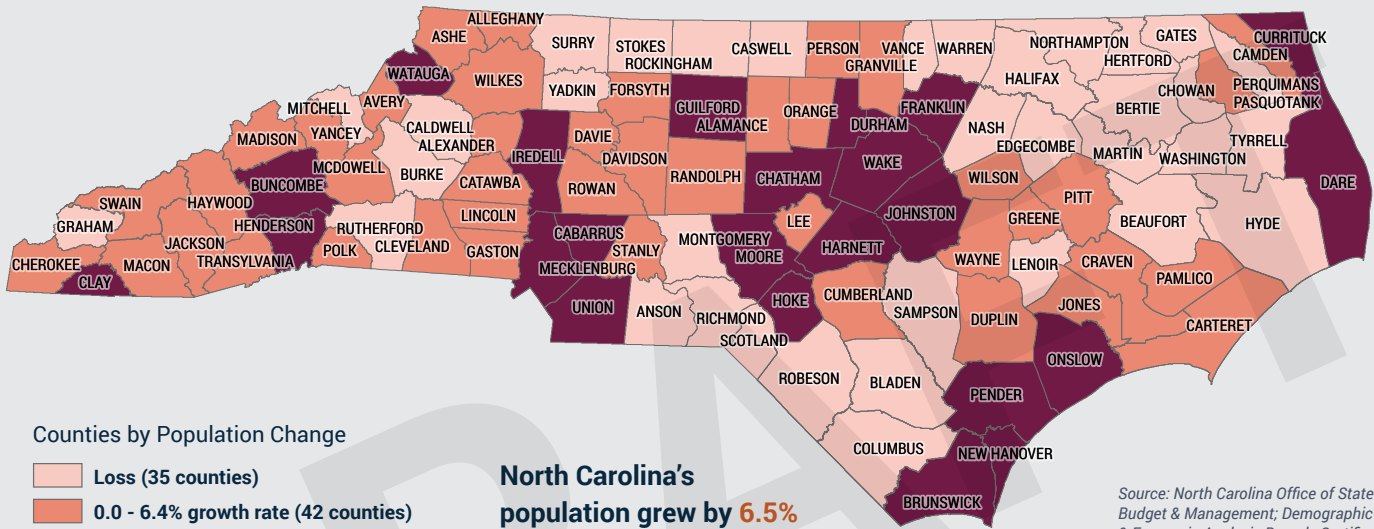
DRIVERS AND OPPORTUNITIES

Demographics



Population Change in North Carolina Counties

April 1, 2010 - July 1, 2016



Source: North Carolina Office of State Budget & Management, Demographic & Economic Analysis Branch, Certified Population Estimates, 2016 Vintage.

Of North Carolina's 100 Counties...

76

Have more people over 60 than under 18.

50

Are expected to show a decline in overall number of working age adults (35-64)

19

Are now "majority minority" (and by 2035, there will be 10 more, including Durham, Forsyth, Guilford, and Mecklenburg).

6

Are responsible for almost 60% of population growth in North Carolina (Wake, Durham, Forsyth, Guilford, Mecklenburg and New Hanover).



Future Direction:

RATE OF GROWTH

- Major changes to policy on immigration could greatly alter North Carolina’s current population growth and demographic trends.

WHERE PEOPLE LIVE

- Extreme weather events could impact where communities develop, forcing people to move inward from coastal areas.
- If natural increase in population no longer controls how the population grows, then jobs and quality of life will become more important in where people choose to live.
- Rural counties are losing their working-age adults who are moving to metro areas where there are more jobs.

PUBLIC FUNDING & RESOURCE NEEDS

- As the state’s residents gets older, more seniors will need transportation alternatives. However, the state will have fewer working age adults between the ages of 35-64 supporting the tax base needed for transportation services.

Opportunities:

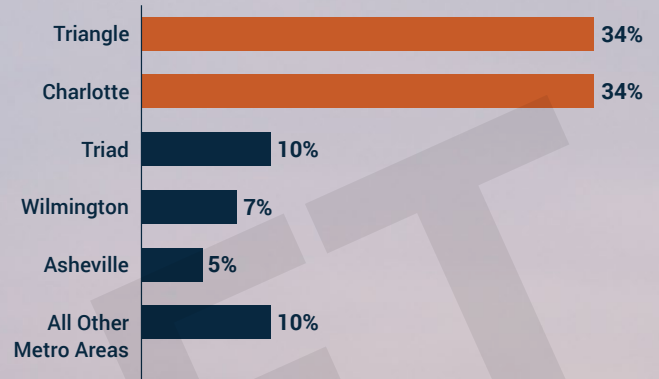
ALTERNATIVE TRANSPORTATION MODES

Social trends may increase the demand for transit in metro areas:

- Residents struggling with housing costs may be more interested in saving money on transportation;
- Large numbers of new residents have lived in other states and experienced public transit;
- Smaller household sizes and affordability concerns, may create demand for smaller, more closely spaced homes. This would be more efficient for transit as well as biking and walking.

Two-thirds of North Carolina growth projected to occur in the Triangle or Charlotte

Projected share of 2010-2035 state population growth for select North Carolina metropolitan areas



Source: North Carolina OSBM



For information about the NC Moves 2050 Plan:

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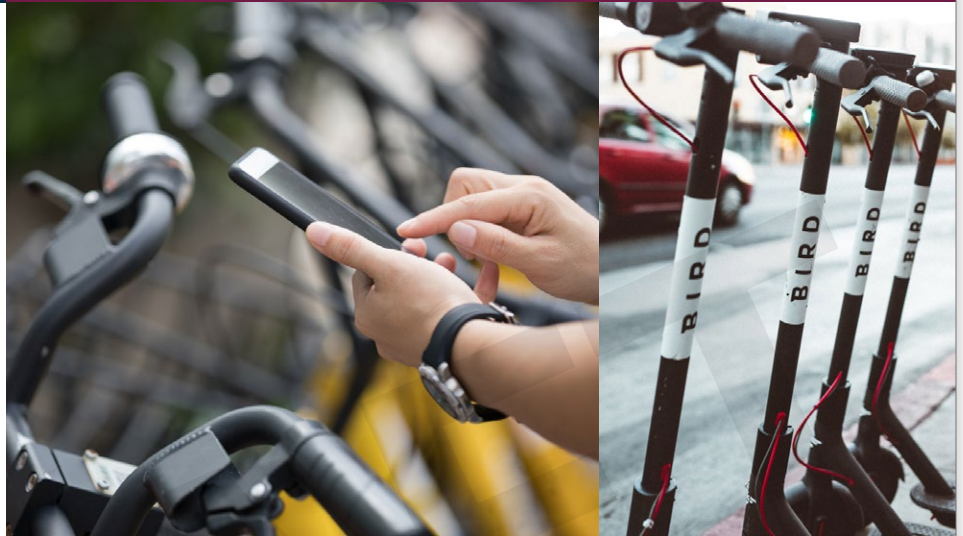
DRIVERS AND OPPORTUNITIES

Technology



Technology is a major force of disruption

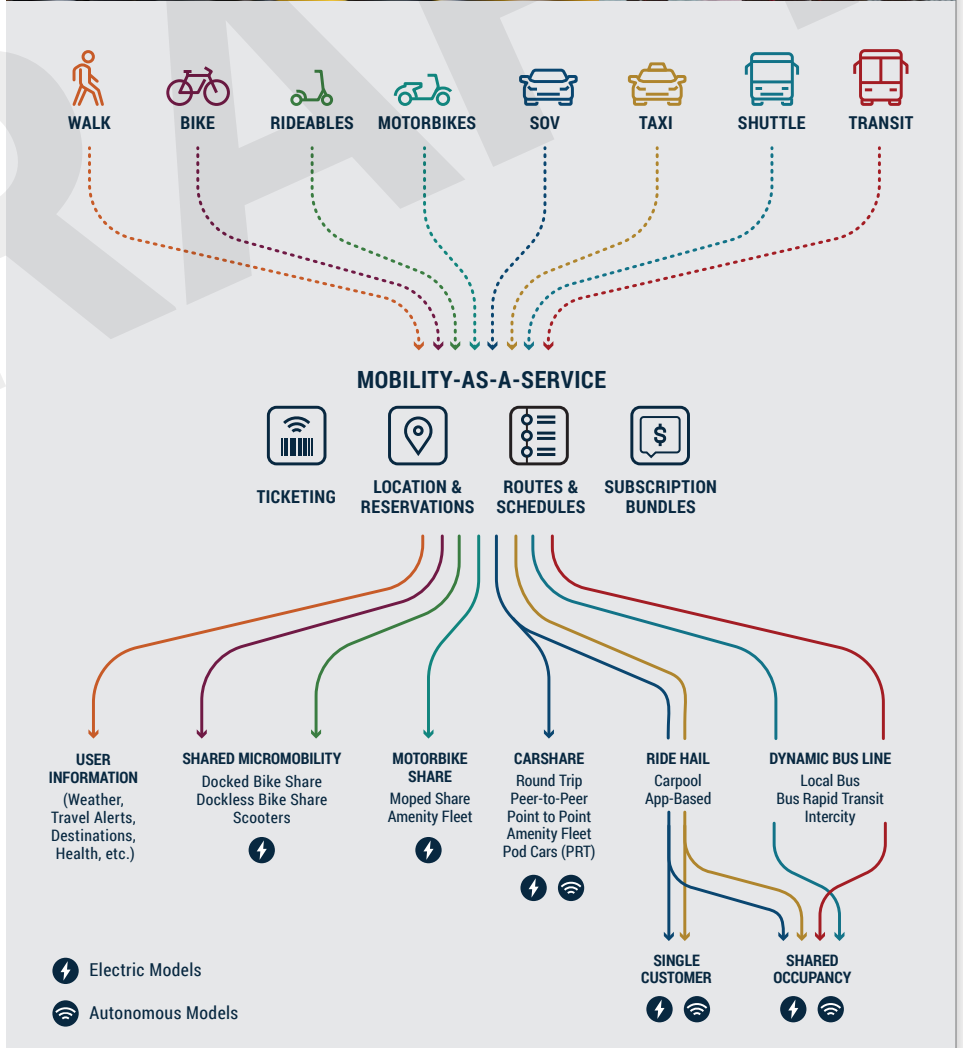
- Automated vehicle (AV) and connected vehicle (CV) technologies will likely change how we travel and how goods travel. AV and CV will make travel faster and more efficient. They will also affect how business is done, how land is used, and the quality of life.
- Ways to get from Point A to Point B have increased, especially in urban areas. New ways to travel include bike share to ride hailing (Uber and/or Lyft) to e-scooters.
- More travel options have changed the conversation from traveling one way everywhere (car, bus, bicycle) to "mobility-as-a-service" (MaaS). MaaS means you can use different types of travel for each trip based on how much it costs, how long it takes, and personal preference.



No one knows what the future of transportation looks like

- The universal need to get from Point A to Point B has created new ways of traveling. There are new ways to rent or share cars, new types of fuels, and other emerging modes, like e-scooters.
- These changes affect government agencies and what they do every day. Public agencies, like transit operators, must plan for future changes in technologies.

North Carolina is preparing for the future of transportation. The State has passed policies that support testing new technologies. AVs are now being tested on the Triangle Expressway.

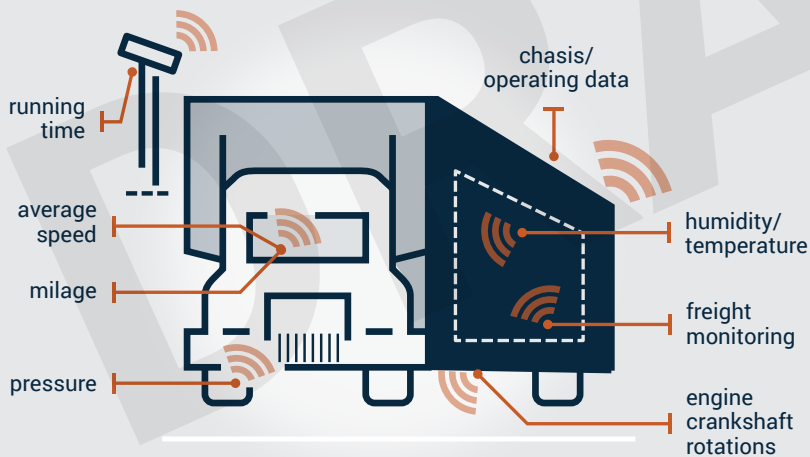


Source: Alta. "The Rise of Micromobility." By Jean Crowther. Alta Innovation Lab: 20 September 2018.

Changes and Uncertainties

- Mobile and web platforms are becoming a part of daily travel for many people. Platforms can create more efficient travel.
- AV technologies will affect trucking. For example, “platooning” technology is being tested now. “Platooning” is when trucks can drive very close to each other with little supervision. This can increase efficiency and lower costs.
- Drones could make services like package delivery easier and more efficient. Drones could also aid with moving people or taking aerial photos.
- Mobility options such as bike shares, ride sharing and e-scooters have grown in the past decade. These options help with short trips and completing first/last mile trips.
- More people want to travel between their city and another city. Many are traveling for work. Right now, there are several technologies that could help. High-speed trains or similar technologies could move people longer distances faster.
- Electric vehicle sales have increased in the last few years and are expected to continue growing.

Connected Vehicle Systems



Source: Adapted from Datastax Infographic <https://www.datastax.com/resources/infographic/ema-research-presents-the-future-of-internet-of-things-with-datastax>



Transportation Efficiency

Connected vehicles and “smart” roadways can reduce traffic and make roads more efficient. “Smart” roadways and connected vehicles use data to “talk” to each other.



Lower Operating Costs

Right now, there is a lot of data on transportation systems. Some of this information can help maintain existing infrastructure. Maintaining infrastructure quickly can decrease overall cost.



Improved Safety

When vehicles talk to each other, crashes can be avoided.

Learn more at ncmoves.gov

For information about the NC Moves 2050 Plan:

Transportation Planning Division
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Environmental hazards pose varying risks to roads and bridges across the state. These risks can impact system operations that have real consequences to transportation users.



Floods

can cause landslides, mudslides, blocked roadways and damaged bridges.



Winter Storms

can lead to dangerous conditions with high wind that affect visibility. Significant snowfall can bring travel to a standstill.



Wildfires

produce smoke which affects how far travelers can see. Rain after wildfires can create sedimentation issues that clog and impact bridges.



Heat Events

can impact the health of construction workers, cause pavement to buckle and weaken bridge joints.



Coastal Flooding*

can block roadways, wear away road beds, and weaken and damage bridges.

**including storm surge and sea level rise*



Dam Failures, Earthquakes, Tornadoes

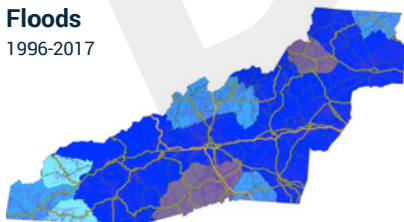
cause catastrophic damage to bridges and roads and leave a lot of debris that can block travel.

Some hazards are expected to happen more often or be stronger when they do happen over the next 100 years because of changes in the climate.

Mountain Region: Floods and winter storms can create challenging conditions, damage roads and bridges or limit travel. Heavy rains can trigger mudslides and landslides which close parts of the highway and isolate communities. There are several counties with high-risk dams that could impact roadways and communities if they fail and some counties have experienced earthquakes.

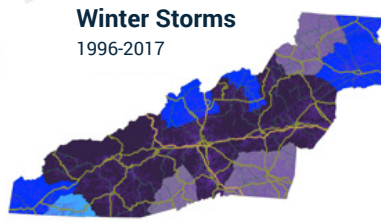
Floods

1996-2017



Winter Storms

1996-2017



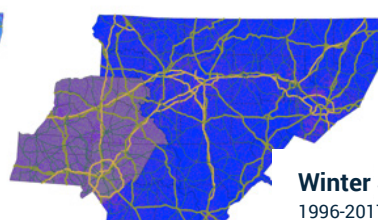
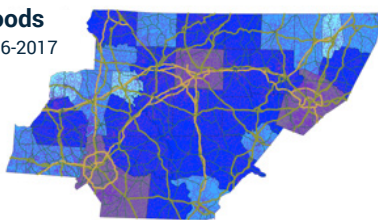
LEGEND (ALL MAPS)

Annual Occurrence	
Interstate	0
US Route	0.1 to 0.2
NC Route	0.2 to 0.5
Secondary Route	0.5 to 1
	1 to 3
	3 to 7
	7 to 20

Piedmont Region: Floods, winter storms and tornadoes can impact roadways and bridges. There are numerous counties with high-risk dams that could damage roadways and communities if they were to fail.

Floods

1996-2017

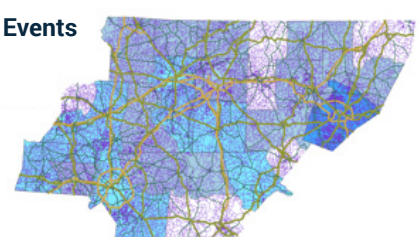


Winter Storms

1996-2017












Tornado Events

1950-2017



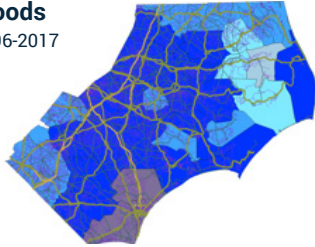
Coastal Region: Floods, winter storms, tornadoes, wildfires, hurricanes and sea level rise can damage roads and bridges and disrupt travelers. A few counties have high-risk dams that could impact roadways and communities if they were to fail.

LEGEND (ALL MAPS)

 Interstate	 0	 1 to 3
 US Route	 0.1 to 0.2	 3 to 7
 NC Route	 0.2 to 0.5	 7 to 20
 Secondary Route	 0.5 to 1	

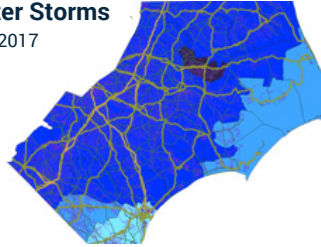
Floods

1996-2017



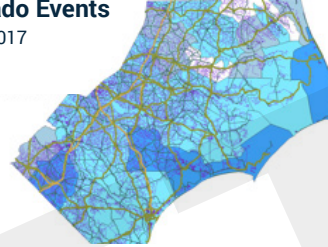
Winter Storms

1996-2017



Tornado Events

1950-2017



Future Conditions

- Heavy rainfall is expected to increase under a warming atmosphere and could lead to more flash flooding.
- There are increases in the projected risk for large wildfires for portions of the state.
- The projections suggest an increase in the frequency and intensity of severe thunderstorms. This could increase the possibility of tornadoes.
- It is likely there will be an increase in major hurricanes with higher amounts of rainfall.
- The number of extremely warm days is likely to increase at a faster rate.
- Sea level is projected to rise over the next 100 years. A moderate global sea level rise scenario suggests sea level along the North Carolina coast could increase by 4 to 5 feet.

Future Directions

- Information and data collected by North Carolina agencies can help evaluate risks. This information can support and inform funding decisions for future projects.
- NCDOT has a strong working relationship with North Carolina’s Emergency Management staff and continues to develop state-of-the-art technology for sharing information with the public as events happen.
- Risk-based analysis that supports solutions can help develop investment recommendations and decisions for a more resilient system. This will help North Carolina prepare for uncertainty in weather events happening today and in the future.

Learn more at ncmoves.gov

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Delivering transportation is going to become more complex in the future. The N.C. Department of Transportation will need to develop and strengthen partnerships to continue delivering effective solutions.

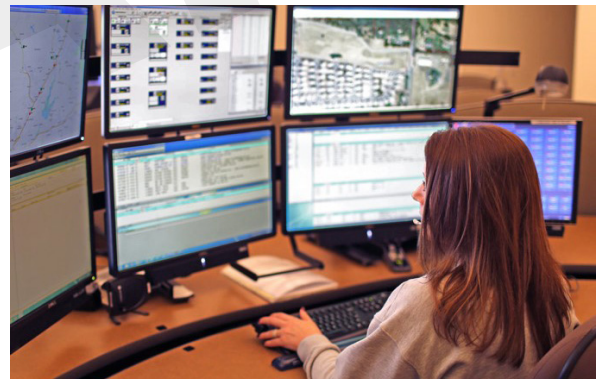
Teamwork and Conversation

- Changing state and federal requirements will require more **targeted and frequent teamwork** and conversation between NCDOT and its partners.
- Changing focus from **projects to programs** will require increased conversation to facilitate a seamless flow of information.



Resource and Data Sharing

- New forms of data create **new data sharing** opportunities.
- More complex planning practices addressing future challenges will **require more technical and staff resources**.
- Advanced transportation operations will **require more information sharing**.



Advocacy and Education

- New transportation technologies will require **more education and greater public awareness**.
- These technologies will allow us to **solve problems in ways we never thought of before**. This will require that all partners promote these technologies.



NCDOT Partners

The N.C. Department of Transportation (NCDOT) partners with a diverse number of public and private sector organizations to inform policy and project level decision-making. These partners vary across federal offices, multi-state commissions and coalitions and local advocacy non-profits.

Public Sector Partnerships



Private Sector and Non-Profit Partnerships



Learn more at ncmoves.gov

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Growing Industries

- Health Care
- Technology – Information Technology, Artificial Intelligence, Telecom, Electronics
- Clean Energy
- E-commerce
- Nondurable Manufacturing Pharmaceuticals
- Construction
- Tourism and Entertainment
- Lumber / Agricultural Products
- Management, Scientific and Technical Consulting Services

Declining Industries

- Store-based Retail
- Semiconductor and other Electronic Component Manufacturing
- Motor Vehicle Parts Manufacturing
- Printing and Related Support Activities
- Newspaper, Periodical, Book and Directory Publishers
- Pulp, Paper, and Paperboard Mills
- Textiles / Apparel Manufacturing
- Support Activities for Mining
- Wired Telecommunications



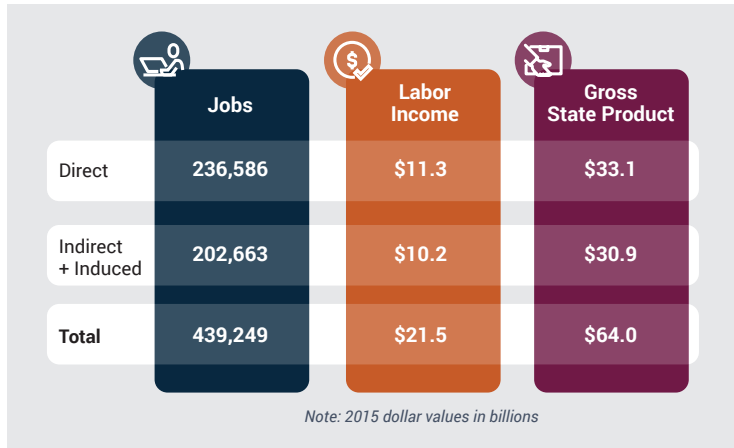
The North Carolina economy has grown in past decades in large part due to its pleasant weather, many interesting things to do, inexpensive living, low taxes and many skilled workers.

North Carolina's economy is expected to grow through 2050. Many service and retail jobs will be created, while manufacturing will continue to be important to the state.



The state's population is expected to grow. Working-age North Carolinians will tend to live in the urban areas, while the state's rapidly growing population of older or retired residents will tend to choose the more rural areas. The growing population of urban/rural, young/elderly people will require more choices in how to get around.

Trade as an Influencing Economic Force



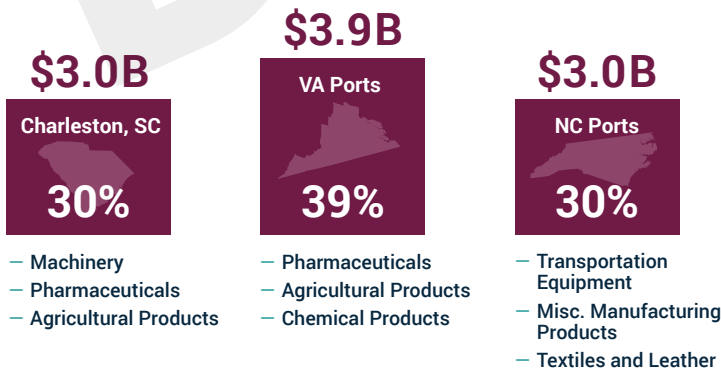
North Carolina’s multimodal infrastructure supports a strong trade based economy.

North Carolina Exports by AIR



North Carolina Exports by WATER

from NC-SC-VA ports and top exports



Source: North Carolina Statewide Multimodal Freight Plan

Findings and Future Direction

Trade with other states or countries is important to North Carolina industries. To help the economy grow, monies need to be spent to improve and expand the seaports, airports and other gateways where containers and cargo come in and out of the state.

Transportation improvements to meet future needs may require new, creative ways to pay for them, as today’s sources may be less available going forward.

North Carolina’s growing and changing population will impact how people want or need to get around. Providing increased transportation access and choices will have to be considered.

North Carolina will continue to be affected by factors outside the state’s control. Changes in trading patterns and severe weather events are a few of the things that can affect the state. North Carolina can take steps to protect against such events such as strengthening business partnerships, supporting new industries to grow in the state and building strong roads and bridges to be ready for future change.



Learn more at ncmoves.gov

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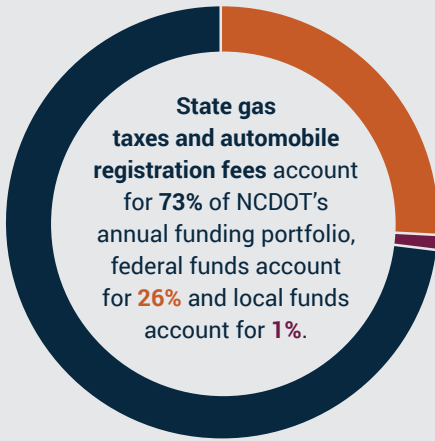
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DRIVERS AND OPPORTUNITIES

Funding



Facts & Figures



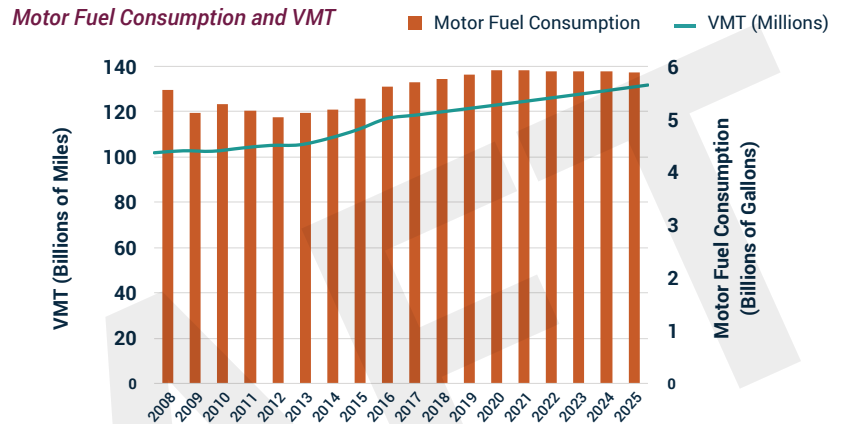
NCDOT's 2017 budget provides 48.5% for construction, 28.3% for maintenance of roads & bridges and 23.2% for debt service, administration and NCDOT departments.

Vehicles miles traveled (VMT) in North Carolina is projected to surpass the U.S. average and reach 130 billion by 2025 and 183 billion by 2050. VMT describes the measure of total annual miles traveled by the population in the state.

Fuel usage in North Carolina is projected to reach nearly 6 billion gallons by 2020. Then it will start to decline, consistent with national trends. This will decrease the revenue collected from gas sales tax.

Transportation Funding Sources and Expenses

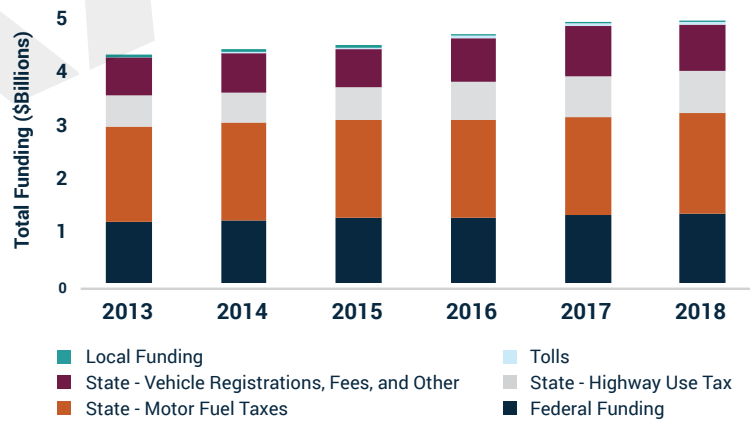
Despite rising vehicle miles traveled, fuel usage is expected to be flat...



Source: U.S. Energy Information Administration (EIA) 2017

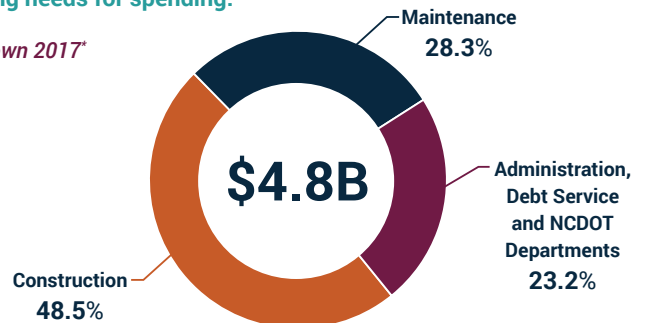
...leading to total funding growth slowing down...

Funding Sources Breakdown (2013-2018)*



...despite growing needs for spending.

Spending Breakdown 2017*



*Source: North Carolina DOT Annual Reports 2013-2017



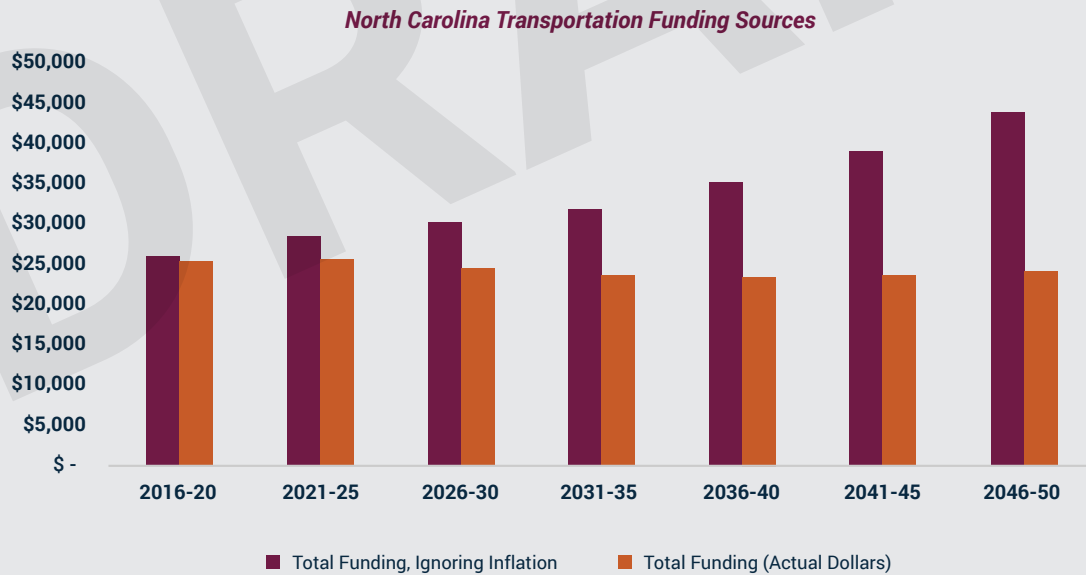
Key trends that influence current transportation funding landscape:

- Increased vehicle travel due to population and employment growth will increase maintenance spending needs.
- As newer vehicles are designed to use less fuel, fuel tax collections will decrease.
- Other risks to fuel taxes include shifts towards an economy where more people use shared transport options like Uber, Lyft and public transit because more people choose to live in urban areas.
- Potential economic downturns can change funding sources.

Potential opportunities for enhancements in transportation revenues:

- Adjusting state taxes and fees to make up for decreases in fuel taxes and shifts toward the shared economy.
- Using public-private partnerships and existing tolling facilities to offset declining revenues.
- Developing mileage-based user fees (fees users are charged based on number of miles driven) to better link travel demand with transportation funding.

From experience we know a number of factors—such as inflation—cause a gallon of gas to cost more today than it did 30 years ago. Similarly inflation plus other types of uncertainty—such as the number of electric and driverless cars—will affect how much funding is available to address NC’s future transportation needs. As this graph indicates inflation alone could reduce NCDOT’s buying power by over 40% by 2050. Left unchecked this would strain NCDOT’s ability to maintain or expand the transportation system. NC Moves 2050 will provide NCDOT a chance to explore funding opportunities which could help bridge this gap.



Learn more at ncmoves.gov

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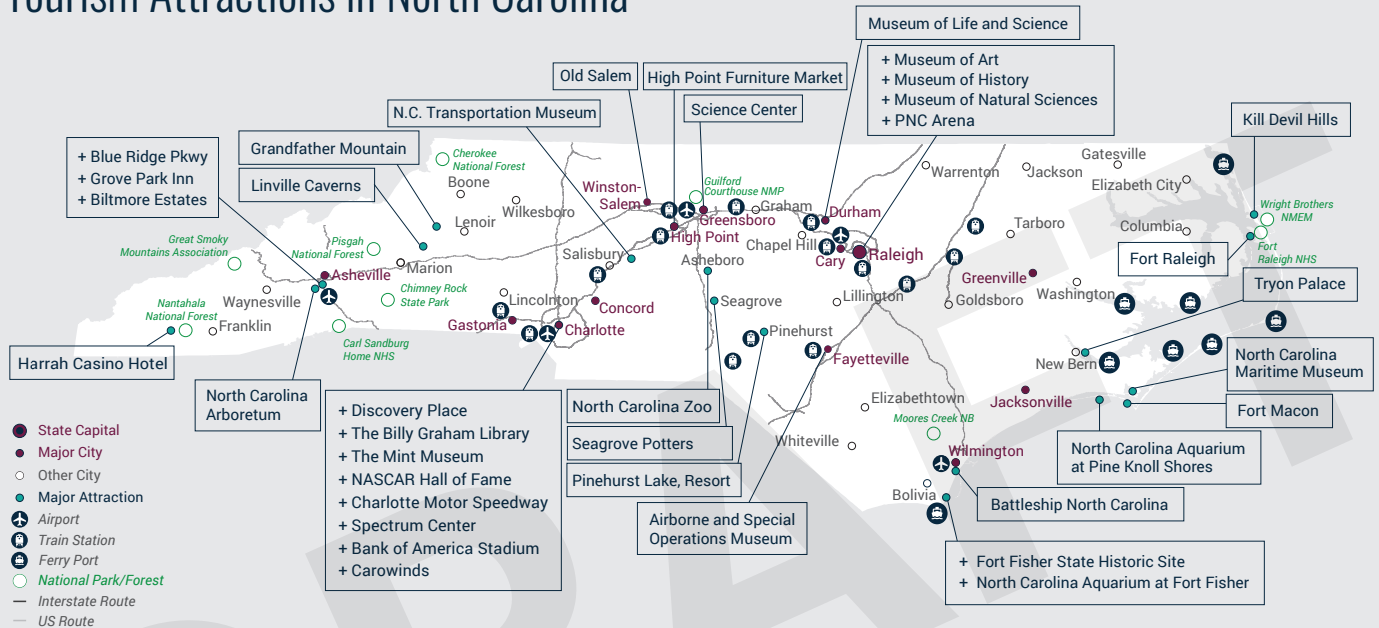
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DRIVERS AND OPPORTUNITIES

Tourism and Travel



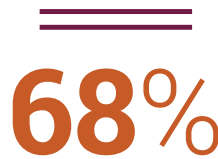
Tourism Attractions in North Carolina



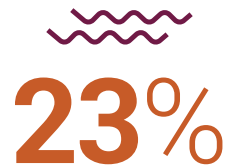
Where did North Carolina Visitors Go in 2017?*



of N.C. visitors go to the Mountain region.



of N.C. visitors go to the Piedmont region.



of N.C. visitors go to the Coastal region.

\$65M

In daily visitor spending, with annual visitor spending totaling nearly 24 billion in 2017.

North Carolina is the 6th most visited state in terms of domestic tourism.



90%
arrive by car



7%
arrive by plane

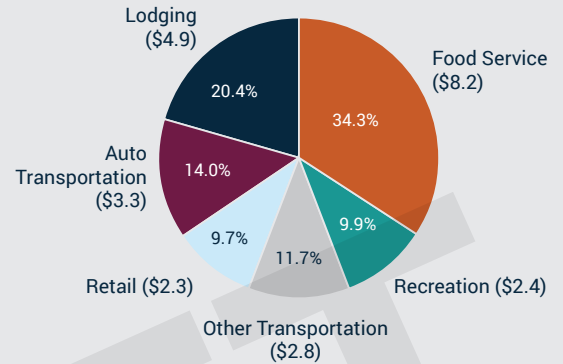
Source: VisitNC - 2017 NC Visitor Profile, NC Regional Travel Summary, NC Economic Impact Fast Facts
*Note that the regional volume totals do not sum to the statewide volume total, as some visitors travel to multiple geographic regions in one visit.

Findings and Future Direction

- Investments in North Carolina airports support the state’s economy and should be a focus to serve future business and personal trips.
- Being able to easily reach North Carolina’s destinations plays an important role in attracting visitors.
- Choices for travel (reliable public transit, convenient options and well-connected sidewalks and greenway paths) are important to both residents and visitors.
- Visitor/Welcome Centers and roadside management efforts, such as anti-litter campaigns, Adopt-A-Highway and the wildflower program, improve the North Carolina visitors’ experience.
- Tourism industry coordination with NCDOT, transportation providers and planning agencies is essential to supporting growth of tourism.
- Technology is quickly changing the way that visitors experience North Carolina as services like Airbnb and Uber offer convenient alternatives to hotels and travel.

North Carolina’s Wildflower Program

Impact of Tourism by Sector (in billions)



\$512

Annual household tax savings from tourism spending

1/50

North Carolina residents directly employed by tourism

Source: VisitNC 2017 Economic Impact Study



Learn more at
ncmoves.gov

For information about the NC Moves 2050 Plan:

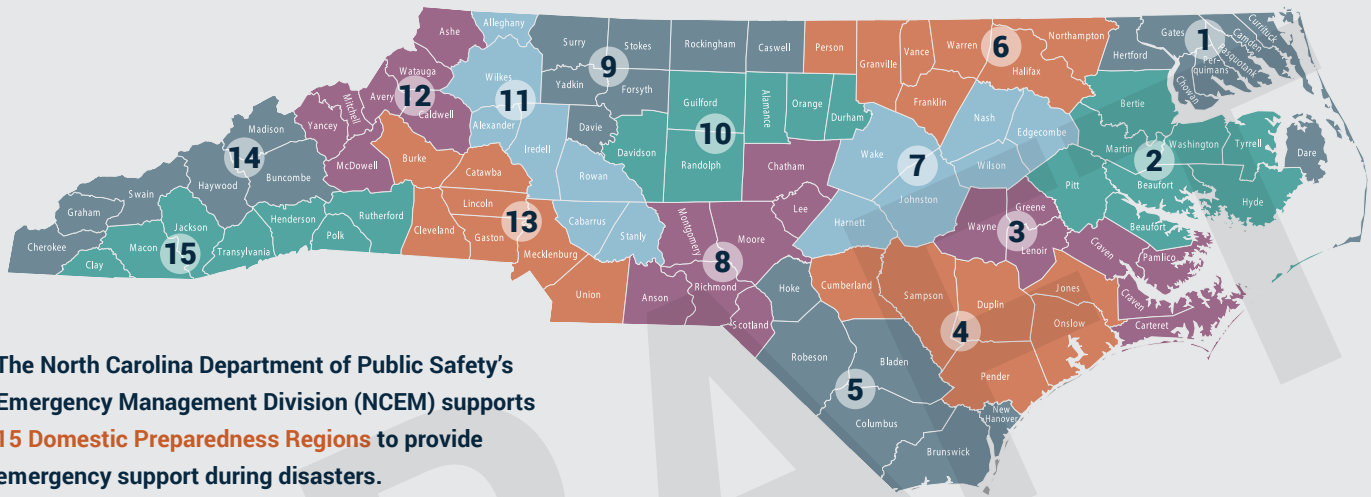
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Emergency Management in North Carolina



The North Carolina Department of Public Safety's Emergency Management Division (NCEM) supports **15 Domestic Preparedness Regions** to provide emergency support during disasters.

Facts & Figures

— Emergency collaboration occurs through the **N.C. State Emergency Response Commission (SERC)** throughout the year. Agencies involved include:

- › N.C. Homeland Security
- › N.C. National Guard
- › N.C. Dept. of Environment & Natural Resources
- › N.C. Dept. of Environmental Quality
- › N.C. Dept. of Health & Human Services
- › N.C. Dept. of Agriculture
- › N.C. State Bureau of Investigation
- › N.C. Office of Emergency Medical Services
- › N.C. Office of the Governor

— During emergencies, the **Department of Public Safety** manages emergency operations through these agencies.

— NCDOT operates the **Statewide Traffic Operations Center**.

Critical infrastructure is at risk:



80,000 miles of roadways



3,200 miles of railroads (70% private)



18,000 bridges and structures



2 seaports, **2** inland ports and multiple barge facilities



72 publicly owned, public-use and **35** privately owned, public-use airports



5,490 miles of pipeline and **38** fuel terminals



Findings and Future Direction

Transportation Security

Airports

Transportation Security Administration provides security for nine state airports.

Rail

CSX & Norfolk Southern keep railroad right of way safe. Amtrak Police also provides security.

Marine and Transit

N.C.'s State Ferry System is secured by local police and regulated by the U.S. Coast Guard.

Highway

N.C. State Highway Patrol and local officials patrol interstate highways.

Transportation Resilience

- Resiliency refers to the state's ability to anticipate, prepare for and respond to natural disasters that affect the transportation system.
- Increasingly, states are focused on resilience. NCDOT has always responded to hazards or disasters, but resilience is a more proactive approach.
- Redundancy is an important part of resiliency. Providing multiple ways to get from point A to point B allows people to keep moving. If their main travel route is blocked, travelers can use a second route to reach their destination during an emergency.

Multiple Modes - Emergencies could happen on roads or rails, in the air or on the seas. Working across all modes makes N.C.'s whole system safer.

Local Focus - Disasters always start at the local level. NCDOT Districts and NCEM Divisions support local emergency response with resources and staff. This may mean debris clearance or flood rescue.

Public-Private Approaches - Federal funding is limited. Public-private partnerships improve N.C.'s responsiveness.

Reliability and Growth - Resiliency keeps North Carolina moving, even after extreme events. This is key for economic recovery and growth.

Technology - A quick response relies on information sharing. State of the art technology will improve emergency management.

Federal Mandates - Major transportation plans must include resilience and security.



Learn more at ncmoves.gov

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APPENDIX D:
ALTERNATIVE
FUTURES

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CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE

HELPING PICTURE

THE FUTURE OF TRANSPORTATION

INNOVATIVE

Technology in Transportation



RENEWED

Community Growth in Transportation



GLOBALLY CONNECTED

Economic Growth in Transportation



UNSTABLE

Uncertainties in Transportation



4 DIFFERENT SCENARIOS BASED ON "WHAT IFS"

Scenario planning helps develop different views of the future, helping the N.C. Department of Transportation better understand how to prepare long-range transportation plans that consider how people and goods may one day travel.

The NC Moves 2050 Plan explores four different scenarios to help picture our transportation future. These scenarios help us understand what could happen, not predict what will happen.

NCDOT INNOVATIVE STRATEGIES

These scenarios will inform transportation needs and strategies, which are important to NCDOT and its partners. Exploring different scenarios is valuable in long-range planning, keeping options open as future decision makers pursue creative solutions to transportation issues. NCDOT is using feedback on these scenarios to advance the NC Moves 2050 Plan and prioritize modern strategies.

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INNOVATIVE

Technology in Transportation



A future where technology in transportation drives new development patterns and economic growth, resulting in a low-carbon, low-cost, shared, and more accessible multimodal system.

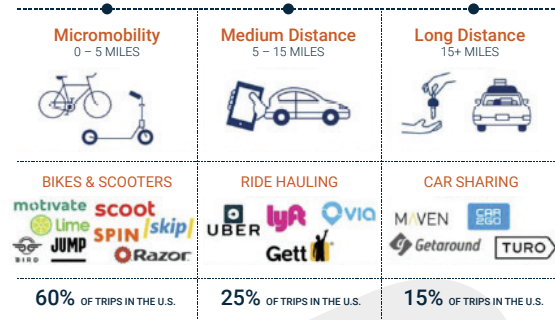
DRONES, DRIVERLESS & ELECTRIC VEHICLES



SHARED MOBILITY

DISRUPTING THE CAR

ALTERNATIVES TO CAR OWNERSHIP BY TRIP LENGTH



RENEWED

Community Growth in Transportation



A future where small towns and rural communities grow and are more connected to each other and urban centers by various forms of transportation.



BALANCED GROWTH

LOCAL ECONOMIES

CONNECTIONS



GLOBALLY CONNECTED

Economic Growth in Transportation



A future where economic growth in manufacturing, technology, automation and services positions North Carolina as a leading market for a skilled workforce, connected to the world by international gateways and an efficient freight system.

INDUSTRY AUTOMATION

DIVERSE WORKFORCE



INTERNATIONAL PARTNERS



UNSTABLE

Uncertainties in Transportation

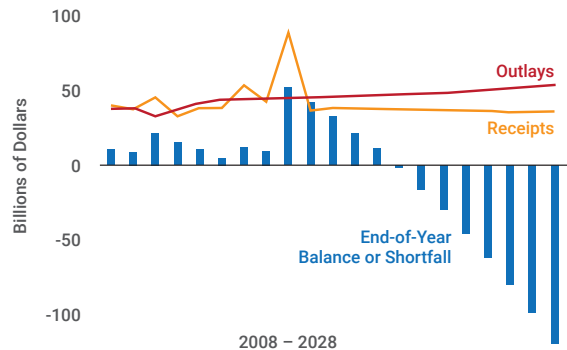


A future where funding instability, political and social events, environmental threats, and energy uncertainty stall tourism and stagnate the economy. This creates a transportation system where travel costs are high and mobility is more unreliable.

SEVERE WEATHER EVENTS



FUNDING CHALLENGES



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APPENDIX E:
NEEDS
ASSESSMENT

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NEEDS ASSESSMENT

FUTURE TRANSPORTATION NEEDS

The NC Moves 2050 project has developed transportation needs based on public input, data, studies, and interviews with experts. Transportation needs were projected for both 2030 and 2050 based on a continuing statewide economic growth **Trend** and Four **Alternative Futures**.

-  **TREND** - Economic Demand; Consistent Growth; Business as Usual
-  **INNOVATIVE** - Connected Hubs; Shared Mobility; Drones, Driverless and Electric Vehicles
-  **RENEWED** - Local Economies; Connections; Balanced Growth
-  **GLOBALLY CONNECTED** - International Partners; Diverse Workforce; Industry Automation
-  **UNSTABLE** - Severe Weather Events; Funding Challenges; Threatened and At-risk Communities

These Alternative Futures consider economic trends, population projections, and a growing number of transportation options. The Futures also consider opportunities such as new technologies and partnerships, which may make the North Carolina transportation system more efficient to use and for the N.C. Department of Transportation (NCDOT) to maintain.

The Needs Assessment helps show the level of investment needed to ensure N.C.'s transportation system performs efficiently, while also staying within budgetary constraints.

TRANSPORTATION NEEDS PROJECTION

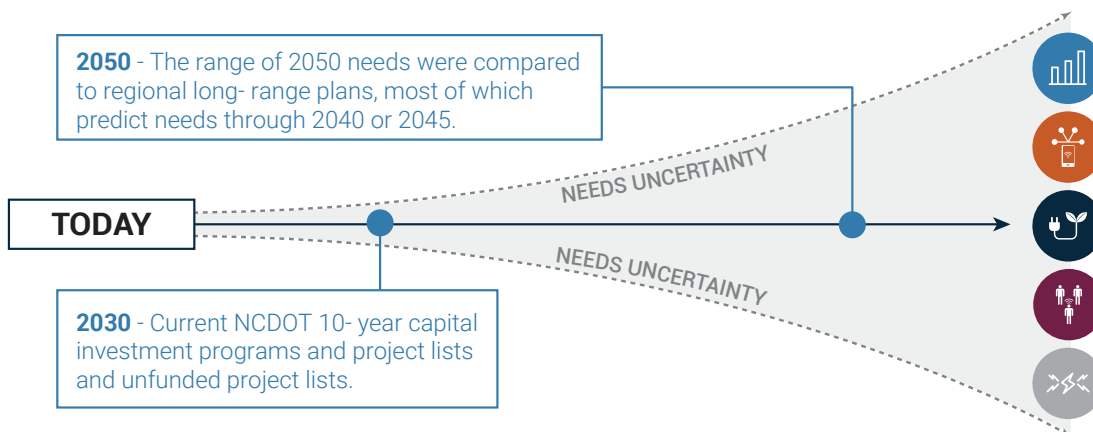
The future is unpredictable. Using high and low range to represent potential uncertainty communicates the range of resources needed to meet future transportation needs.

Transportation needs are grouped into 3 categories:

1. MOBILITY & MODERNIZATION - Includes projects such as adding lanes to a highway, providing new transit services, improving a rail station, buying a new bus or ferry, or extending a bike path.

2. HIGHWAY ASSETS - Includes the maintenance and rehabilitation of N.C. roads and bridges.

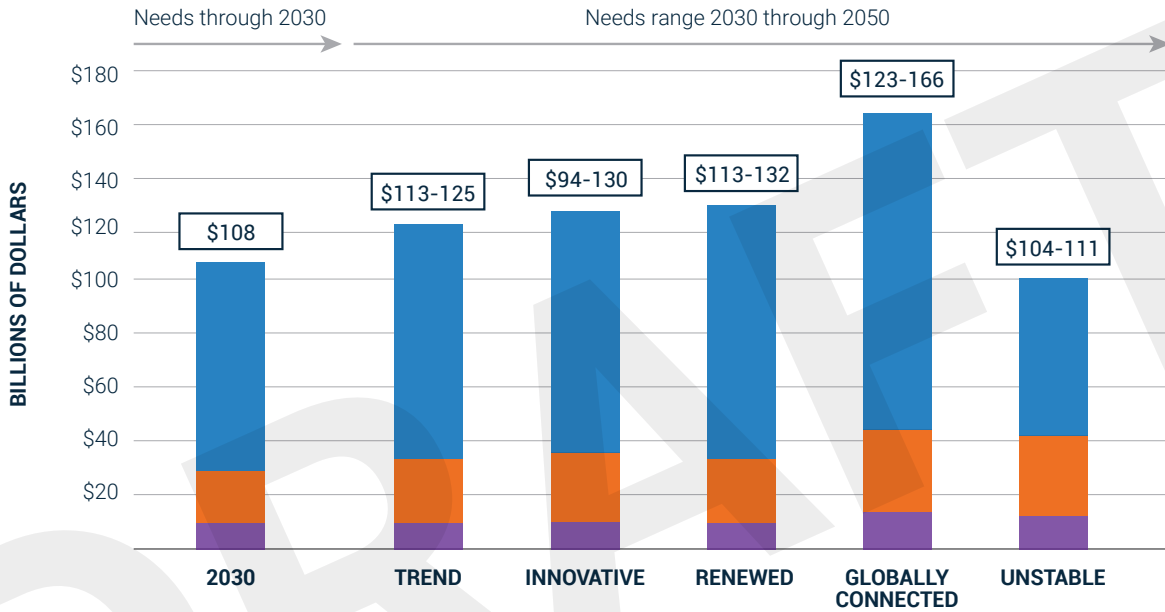
3. OTHER PROGRAMS - Includes the cost to operate the transportation system, safety projects, and routine transportation services (such as storm recovery).



RESULTS

The 2050 trend assumes North Carolina's economy and the demand for travel will grow at about the same pace that it will from 2010 to 2030. The four Alternative Futures assume something different will happen – for example, the Unstable future assumes less economic growth, which means less need, while the Globally Connected future assumes more growth and more need.

■ Mobility & Modernization ■ Highway Assets ■ Other Programs



WHAT HAPPENS NEXT?

IDENTIFYING STRATEGIES & ACTIONS that meet the N.C. Moves 2050 vision and goals and address the state's top priorities based on feedback from stakeholders and through a public survey.

ESTIMATE THE AMOUNT OF FUNDING available to meet the needs through 2030 and 2050. NCDOT and its partners will use this estimate to determine what strategies and actions are the best use of limited resources.

HOW DO WE USE THIS INFORMATION?

The needs analysis, along with input from NCDOT's leadership team, partners, and N.C. residents, will help us develop strategies and actions. For example:

STRATEGY - Address multimodal network gaps

ACTION - Expand bicycle and pedestrian networks to residential, commercial, and town center areas.

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f t v o **BE A PART OF THE FUTURE!**

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APPENDIX F: STRATEGIES AND ACTIONS

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STRATEGIES

TO PREPARE NORTH CAROLINA FOR 2050

STRATEGIES FOR TRANSPORTATION SUCCESS

Using feedback from the public, stakeholders, partners and N.C. Department of Transportation leaders, the NC Moves 2050 Plan team developed eight strategies:

- | | | | |
|---|------------------------------------------------------------------------------|---|----------------------------------------------------------------------------|
| 1 | IMPROVE QUALITY OF LIFE AND MULTIMODAL ACCESS TO REGIONAL JOBS AND SERVICES. | 5 | PROVIDE CONNECTIONS TO NEW INDUSTRY CLUSTERS AND TRANSPORTATION TERMINALS. |
| 2 | CONNECT COMMUNITIES TO STATEWIDE OPPORTUNITIES. | 6 | ADDRESS AIR, SEA AND INLAND PORT CAPACITIES TO HANDLE FREIGHT DEMAND. |
| 3 | ENABLE SMART AND INNOVATIVE STATEWIDE TECHNOLOGY SOLUTIONS. | 7 | IDENTIFY FUTURE TRANSPORTATION WORKFORCE SUPPLY AND DEMAND. |
| 4 | PROMOTE MULTIMODAL SAFETY AND BEHAVIORAL-BASED PROGRAMS, POLICIES AND TOOLS. | 8 | DEVELOP AND MAINSTREAM RISK AND RESILIENCY PRACTICES. |

OBJECTIVES FOR NC MOVES 2050

The eight strategies align with the five objectives identified in the NC Moves 2050 Plan:



PROVIDE TRANSPORTATION ACCESS FOR ALL



SUPPORT A STRONG ECONOMY



IMPROVE TRANSPORTATION THROUGH TECHNOLOGY



MAINTAIN A HIGH-QUALITY SYSTEM



ENSURE SAFETY AND SECURITY



15+
THOUSAND
PARTICIPANTS

**THE 3RD
NC MOVES
2050 PLAN
SURVEY**

PROVIDED DIRECT
INPUT INTO
THESE STRATEGIES
AND ACTIONS.

PUTTING THE STRATEGIES INTO ACTION

Each strategy includes actions that help carry out the plan objectives. The actions propose specific planning, policy and partnership recommendations to prepare North Carolina’s transportation system for future change. Some of the actions are already underway while others require additional evaluation to determine the best approach.

PROVIDE TRANSPORTATION ACCESS FOR ALL

- Improve **multimodal**¹ access and service to core regional activity centers and destinations.
- Connect North Carolina to neighboring economies through more direct, efficient and competitive mobility.

IMPROVE TRANSPORTATION THROUGH TECHNOLOGY

- Consider technology applications in all transportation decisions, including enhance techniques for state/local transportation management coordination.*
- Engage the freight industry to leverage technology to enhance movement across public and private freight systems, such as **intermodal**² ports.

ENSURE SAFETY AND SECURITY

- Develop and implement new multimodal safety policy and built environment/design standards that focus on public safety.
- Develop a network of statewide safety corridors to address over-represented crashes and deploy educational, enforcement and infrastructure treatments.*

MAINTAIN A HIGH-QUALITY SYSTEM

- Provide efficient transportation access and connectivity to emerging, large scale intermodal, inland port and industrial/business park locations.
- Build partnerships to assess capacity and competencies which prepare, equip and build a 21st century ready transportation workforce.

IMPROVE TRANSPORTATION THROUGH TECHNOLOGY

- Support community-based resiliency approaches which inform NCDOT practices.
- Identify multimodal transportation improvements which enhance system performance and reliability through natural, technological and man-made hazards.*

1 Multimodal: Involves different “modes” or types of transportation, including aviation, ferries, ports, highways, trains, public transit, bicycles and pedestrians.

2 Intermodal: Involves the transportation of freight in a shipping container that can be carried via rail, air, ship or truck.

* Indicates actions are already under way at NCDOT.

WHAT HAPPENS NEXT?

The strategies and their related actions will provide the framework for the final NC Moves 2050 Plan recommendations.

BE A PART OF THE FUTURE!

#NCMOVES    
NCMOVES.GOV



The Phase I Engagement efforts focused on developing a vision for the NC Moves 2050 Plan. The vision was informed by participants' thoughts on the future of North Carolina's transportation system. The objectives of Public Engagement Phase I activities included:

- Developing public awareness of the study
- Educating the public on key elements of the study
- Using public input to inform NC Moves 2050 goals and objectives

WHAT WE DID:

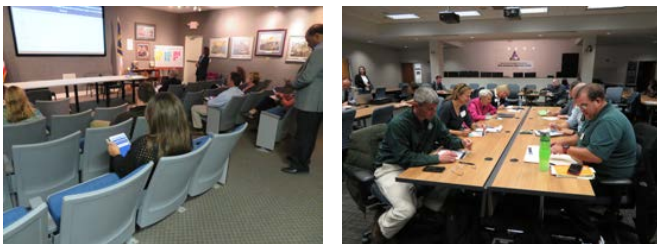
TABLING EVENTS



The Project Team attended three events to promote the project and to distribute surveys:

- North Carolina State Fair
- Lexington BBQ Fest
- Wilmington RiverFest

STAKEHOLDER MEETINGS



A series of stakeholder meetings for the Agency Coordination Group (ACG) and Statewide Stakeholder Group (SSG) took place to provide a forum to gather public input and answer questions.

- Eastern SSG (Kinston, NC) 7 attendees
- Central SSG (Raleigh, NC) 14 attendees
- Western SSG (Charlotte, NC) 10 attendees
- ACG (Raleigh, NC) 23 attendees

SOCIAL MEDIA AND WEBSITE

- 8 Tweets
40,800+ Impressions
- 8 Posts
4,900+ Impressions
- 8 Posts
11,900+ Reached

NCDOT developed and hosts ncdot.gov/ncmoves to provide project information, press releases, public participation information, project fact sheets and ways to contact the project team or sign-up for project updates.

PUBLIC SURVEY

The first survey focused on framing the discussion around key elements of North Carolina's future based on where people live, how people travel and challenges facing the future of transportation.

- How do you primarily get to work or school?
- What forms of transportation will be most important to you in the next 30 years?
- Where do you currently live?
- Where do you want to live in the next 10 - 30 years?
- What will be North Carolina's greatest transportation challenge by 2050?
- What do you think will impact the state's transportation system the most in the future?
- Do you think the impacts will be different for the region you live in?

The survey was promoted through the NC Moves 2050 webpage, social media and geo-tagging, e-blasts to organizations, engagement sessions and tabling events.

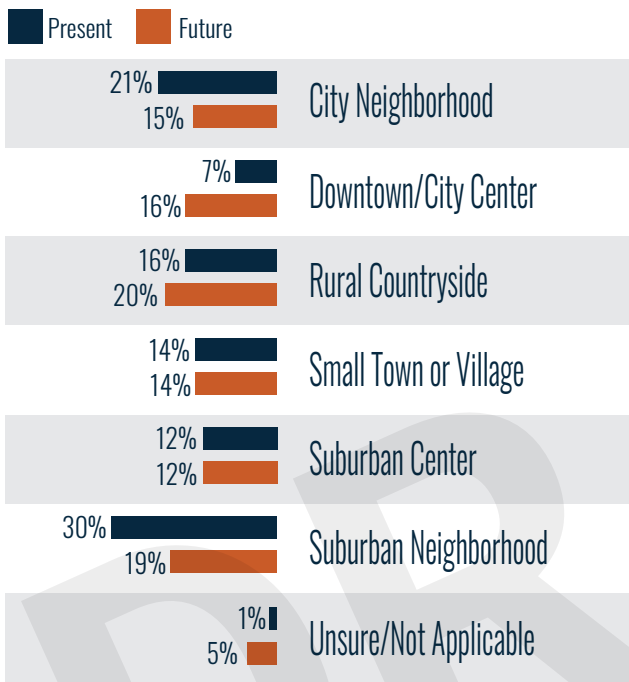
7,000 Views
3,500 Responses

WHAT WE HEARD:

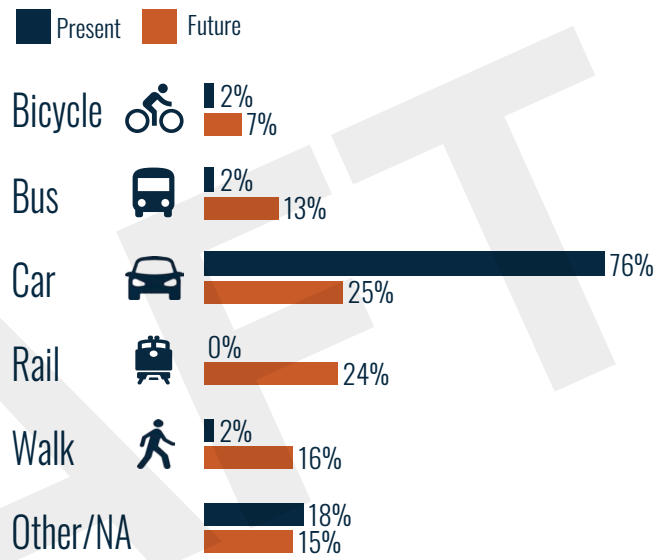
The responses from the first survey show that respondents want to see a different transportation future than what they have today. Some future challenges are viewed differently depending on whether respondents currently live in a rural or urban area.

- In the future, respondents prefer suburban neighborhoods less, while the demand for city centers and rural countryside living increases.
- Today most people travel by car, but in the future, there is a desire for more multimodal travel, with a greater number of people selecting modes other than car.
- For the most part, future challenges are viewed similarly for both rural and urban residents. However, commute time and transportation options tend to be of slightly greater concern for rural residents, and aging infrastructure seems to be a slightly greater concern for urban residents.

WHERE WE LIVE

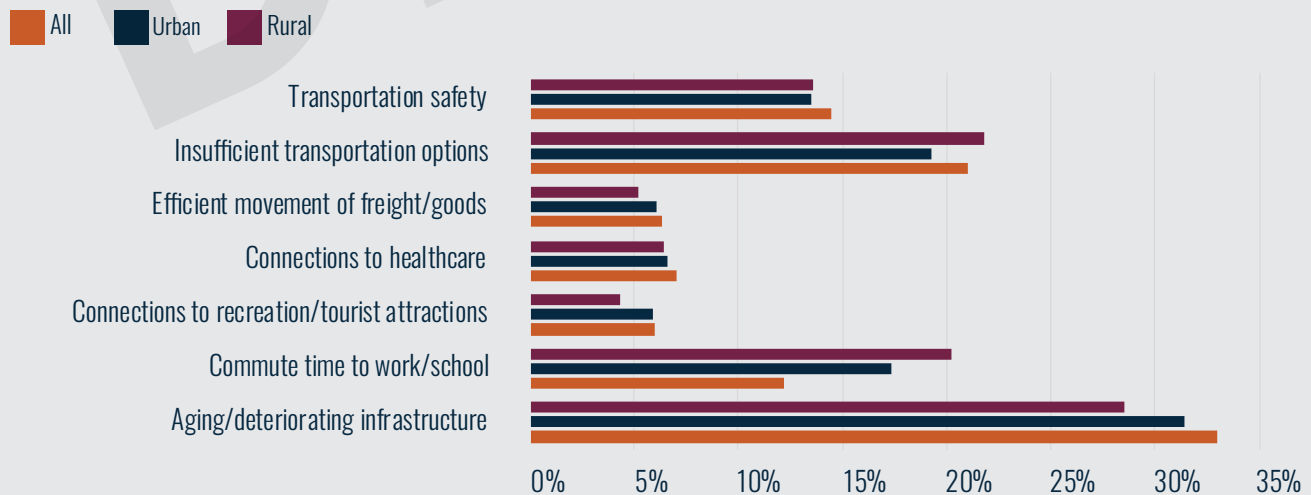


HOW WE MOVE



The importance of traveling by car in the future decreases by **51%↓**

CHALLENGES WE WILL FACE



For information about the NC Moves 2050 Plan:

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 (919)-707-0900
 ncmoves@ncdot.gov
 1554 Mail Service Center
 Raleigh, NC 27699-1554



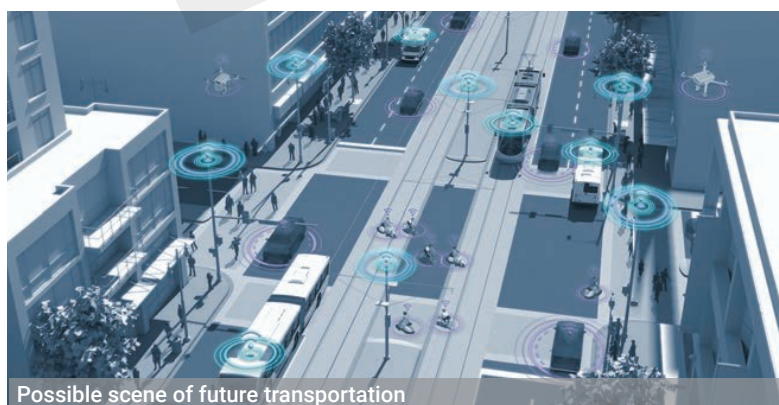


Public engagement is a key component of NC Moves 2050. It is important to understand the different needs of each region and community throughout the state to properly plan for transportation in the future. Multiple outreach and engagement methods were incorporated to engage diverse populations including those in rural areas, young adults and minority communities. Input collected in Phase II is used to inform ongoing technical research and the development of plan recommendations.

OVERVIEW OF ENGAGEMENT

Phase II engagement efforts built off the feedback from Phase I. A vision focusing on **better connections** and **improved options** for transportation was developed from feedback from the first survey and stakeholder meetings.




The NC Moves 2050 vision considers research done on different topics of potential change and uncertainty effecting North Carolina's future. These topics provided the background for Phase II engagement, allowing the project team to gather input through a series of activities. The feedback collected on the potential changes and uncertainties for N.C. transportation future, called Drivers and Opportunities, led to the development of four potential Alternative Futures. The second half of Phase II focused on sharing these futures with the public and asking for their feedback.



Possible scene of future transportation

MEASURES OF SUCCESS

Targeted social media posts allowed NC Moves 2050 content to reach audiences often not engaged in transportation planning.

-  34 Tweets
143,600+ Impressions
-  26 Posts
24,300+ Impressions
-  36 Posts
117,600+ Reached
-  3 Posts
353,900+ Reached



Over **10,100** participants took the Alternative Futures Survey

-  2,880 mobile surveys
-  4,205 online surveys
-  3,015 paper surveys



Over **1.1 million** people were exposed to the NC Moves 2050 video advertisements while waiting at NC DMV drivers license offices.



Drivers and Opportunities

The Drivers and Opportunities phase of the NC Moves 2050 Plan looked at possible changes and uncertainties, referred to as trends, that could affect North Carolina's future.

Understanding the potential impacts of these trends helps inform what the future may look like, which helps develop more resilient strategies and recommendations.

Each region has unique needs and challenges; therefore, the project team developed several tools to reach a broad audience. These tools were aimed at engaging the public and stakeholders to gain insight on which trends were important to them and their individual communities.

The activities included **Train the Trainer** presentations, an interactive **Public Comment Map**

and **Table Topics** conversation kits. Each of these activities aimed at reaching specific populations across North Carolina to ensure that the feedback collected was representative of all voices across the state.



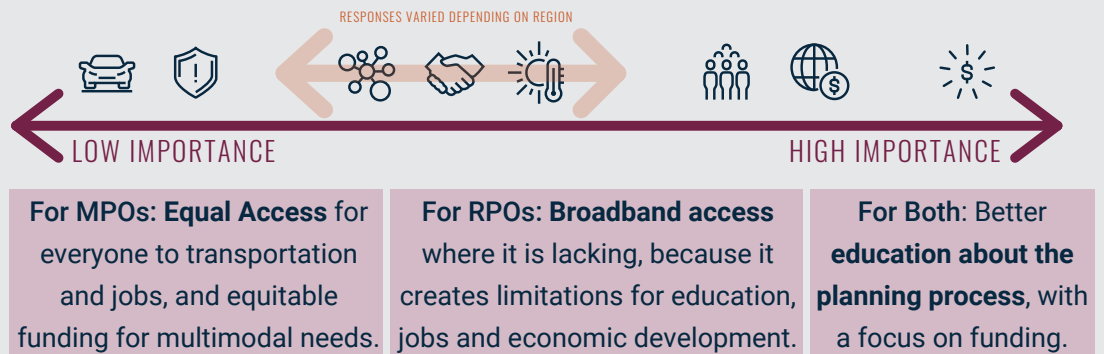
Train the Trainer

Train the Trainer sessions, facilitated by the NCDOT Transportation Planning Division were provided to engage the Metropolitan Planning Organizations (MPOs) and Rural Planning Organizations (RPOs) and to encourage their participation in the plan development process. Train the Trainer kits are a “meeting-in-a-box” concept with instructions, engagement activities, reporting forms, PowerPoint slides, briefing materials and NC Moves 2050 Plan content. These materials were used by MPOs and RPOs to engage their boards and members by further sharing information and collecting insight about future uncertainties from a regional perspective.

WHAT WE HEARD:

The eight Drivers and Opportunities topics were ranked by highest to lowest importance according to the MPOs and RPOs.

Other concerns include:

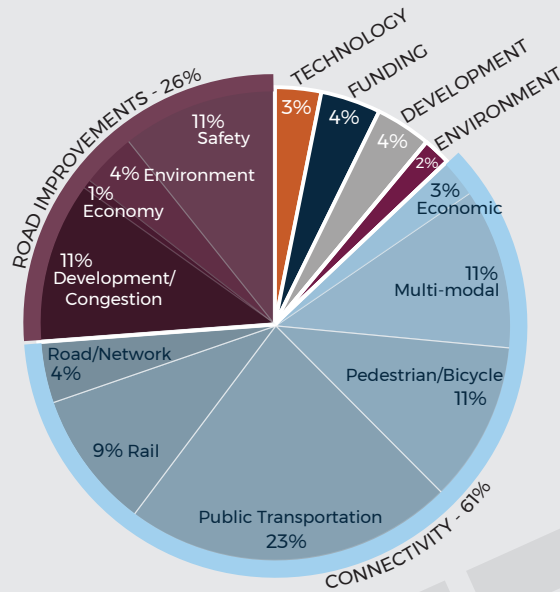


Public Comment Map

A comment map was created to gather input throughout the state and address needs at a regional level. The online map gave residents a chance to place comments on specific counties. During the seven-month period, 1089 comments were received with at least one comment from each of the 100 counties in the state. Participants were prompted with two questions:

- What do you think are the biggest challenges facing our state in the future?
- What should be the focus of transportation in your region for the future?

Of the comments received, 771 were related to specific transportation projects needing immediate attention, while 318 focused on the “bigger picture” of future transportation needs in North Carolina. Those 318 comments were placed into one of six categories, shown in the pie chart.



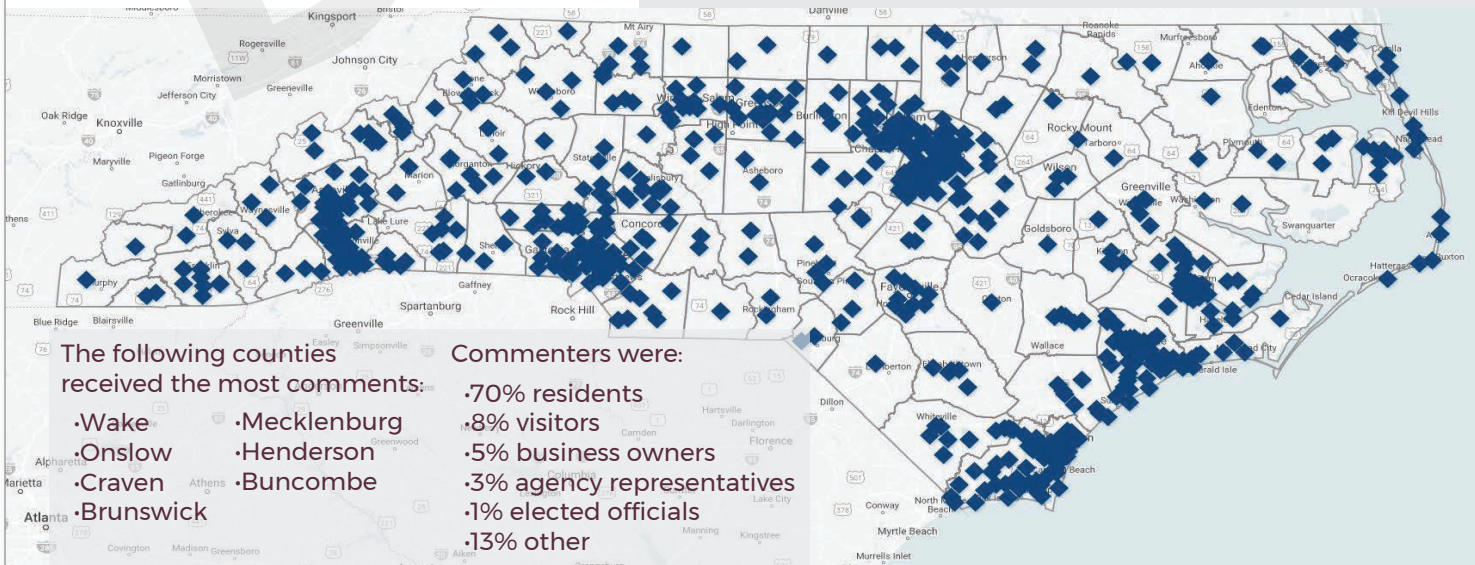
“We must develop policies, programs and goals to shift people out of [single occupancy vehicles] and onto alternative modes.” - Mecklenburg County

“An overarching goal for NC should be to ensure the economic viability of the vast number of small towns and rural areas that have shaped the State’s history.” - Surry County

WHAT WE HEARD

Most of the “bigger picture” comments stated the importance of improving **connectivity** from rural to urban areas, residential to commercial areas, and between the different regions of the state. How to best provide that connectivity varied between respondents, including better roads and routes, rail, public transportation, pedestrian/bicycle routes, multi-modal systems and economic connections to other states.

A fourth of the “bigger picture” comments related to **road improvements** to improve safety, protect the environment, support the economy and respond to congestion caused by development. Other responses also noted the need for strategic **funding**, smart **technology** and solutions to **environmental impacts** and rapid **development**.



Targeted Outreach

TABLING EVENTS

Face-to-face engagement is still an important communication tool for sharing and receiving information with the public. In an effort to connect with residents from all over the state, the project team attended 25 events and festivals. At these events the team promoted the project and distributed surveys. A total of 2,064 surveys were collected at the events and locations listed below.

- NC Central University
- Avent Ferry DMV
- Greensboro DMV
- Hendersonville DMV
- American Indian Affairs
- Divine 9 Legislative Day
- NC Black Summit
- Azalea Festival
- Got to be NC Festival
- Hmong Easter Festival
- Hyde County Health Fair
- Ritmo Latino Festival
- NCSU Electric Car Show
- Wilmington Latino Festival
- NC A&T Senior Civil Engineering Class
- Haliwa - Saponi Indian Tribe Annual Pow-wow
- Greensboro Electric Vehicle (EV) Odyssey
- Lexington Multicultural Festival
- NC A & T Transportation Summit
- Elizabeth City State University
- NC Procurement Conference
- NC Veteran Service Officers Conference
- NCDOT Transportation Fair
- NC Association of Metropolitan Planning Organizations (NCAMPO) Conference
- 2019 NCDOT Research & Innovation Summit



STAKEHOLDER AND PUBLIC OUTREACH

Stakeholders represent individuals and organizations (beyond the public) involved in or affected by the transportation planning process. Their support, as well as the public's, is vital to ensure the project meets its goals. Emails were sent to provide project information and survey links, and to solicit support for the project. A total of 7,829 individuals were emailed.

PUBLIC SCHOOL DISTRICT SURVEYS

To engage rural, low income households and minority communities, and households with limited English proficiency, targeted outreach was conducted with the public school system through the distribution of surveys. A total of 15 school districts participated. Families within these school districts received the survey via email or a paper copy was sent home with the student.

INTERCEPT SURVEYS

To reach rural, minority and low income communities in 14 counties, the project team developed kiosks that could be placed in county social service agencies

across the state (31 total), Welcome Centers and at Amtrak stations in Charlotte, Raleigh, Durham, Cary and Greensboro. Each kiosk included project information, paper surveys and a ballot box for returning surveys to reach those who do not have regular access to the internet.



Table Topics

Gathering authentic feedback from residents on how they live and move is critical to the mission of this project. The project team designed Table Topics to give residents the opportunity to provide meaningful feedback at their convenience. The project team was able to capture the needs of the community through casual conversations led by residents. This setting allows participants to comfortably discuss transportation priorities and concerns. Hosts received a materials kit by mail with instructions, topics and questions, a comment form and giveaways.



 **110 Participants**

Topic 1 - Move



To seek input on the different ways people will travel from place to place in the next 20-30 years, these questions asked participants to consider present travel compared to future travel needs.

What We Heard: Residents of North Carolina are ready to see where new technologies will lead. Several comments mention self-driving vehicles including cars, buses and planes. Participants also noted the need for communities to incorporate walkability and public transportation options.

Topic 2 - Shape



In an effort to get participants to think about futures, these questions asked about the big picture of where we live, work and visit.

What We Heard: Access for all was a common theme in this topic. High school and college students and disabled residents expressed wanting access to public transportation that takes them where they need to go. Developing rural areas without impacting the natural beauty of North Carolina was also mentioned.

Topic 3 - Prepare



Topic 3 had residents think about funding and how to pay for future investments. Questions asked for thoughts on how to fund the various improvements.

What We Heard: Most participants saw toll roads and taxes as a solution to funding. Some comments mention taxing larger companies a "transportation tax" for road usage. Partnerships between larger and smaller cities were suggested, as well as advertisements on public transportation.

Topic 4 - Protect



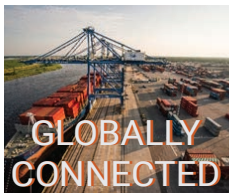
After recent weather events impacted North Carolina, these questions gathered feedback on how preparations and recovery were handled and ways the state can better prepare in the future.

What We Heard: Participants felt that North Carolina could improve on weather preparedness. Following weather events, residents were unable to resume their travel due to inaccessible roads and public transportation. Eco-friendly solutions for quicker cleanup in rural areas after events and needing road repairs across the state were also mentioned.

Alternative Futures

Using feedback from the Drivers and Opportunities, four alternative future scenarios were developed. These scenarios help us imagine North Carolina’s transportation future. The futures are titled Innovative, Globally Connected, Renewed and Unstable. Each scenario helps show what could happen in the future, not predict what will happen.

To gain a better understanding of how these futures may play out, the second half of the Phase II engagement focused on sharing these futures and gathering input about which elements seem most likely or desired. This engagement was through stakeholder workshops, an online survey and comprehensive targeted outreach that included attending events in communities across North Carolina.



A future where economic growth in manufacturing, technology, automation and services position NC as a leading market for a skilled workforce, connected to the world by international gateways and an efficient freight system.



A future where technology in transportation drives new development patterns and economic growth. This results in a low-carbon, shared, lower cost and more accessible multimodal system.



A future where small towns and rural communities grow and are more connected to each other and urban centers by various forms of transportation.



A future where funding instability, political and social events, environmental threats and energy uncertainty stalls tourism and stagnates the economy. This creates a system where travel costs are high and mobility is more unreliable.

STAKEHOLDER MEETINGS

Stakeholder meetings allowed the NC Moves 2050 team to bring together a variety of representatives from each region of the state to discuss the future of transportation. During the second round of regional workshops held in Hickory, Kinston and Raleigh, 62 attendees represented state advocacy groups, state agencies and organizations, federal agencies, planning organizations and local government and other various interest groups.



Western workshop at Lenior Community College, Kinston N.C.

SURVEY

The alternative futures survey gave the public an opportunity to learn about each future and answer questions through the convenience of an online application. In addition to the online survey, NC Moves 2050 project team members attended over 25 events to distribute paper surveys. The questions centered around future needs and the potential benefits or concerns of each future. More than 10,100 participants took the survey between April and June. NCDOT and its partners will use the results from this survey to develop strategies for the future.



SURVEY RESULTS

Participants ranked their five most important outcomes to North Carolina's future in 2050 from a choice of eight options.

TOTAL TIMES RANKED

High Speed Internet	6,066
Knowledge-Based Workforce	5,865
Weather Preparedness	5,735
Core Industry Access	5,576
Rural Development	5,447
Goods Delivery	4,498
Connecting Seniors	4,372
1,510 Self-Driving Cars	

Additional suggestions included more bike/pedestrian connectivity, increased public transportation options, improved infrastructure and new sustainable practices.

Participants then stated how strongly they agreed or disagreed with a series of statements about each of the futures regarding their potential benefits or concerns.

AVERAGE RANK ON 1-5 SCALE FOR BENEFITS STATEMENTS

New & growing companies will require more ways to move their products **4.1**



Technology will provide more travel options **4.0**



Local jobs will grow local economies and reduce travel costs **4.2**



Building on the coast will decrease and wetlands will return to a more natural state **3.1**



AVERAGE RANK ON 1-5 SCALE FOR CONCERN STATEMENTS

Traffic will increase within urban areas and on truck routes **4.1**



Access to technology will not be even across North Carolina **3.9**



It will be harder to travel because of more traffic **3.9**



Transportation costs will be more expensive **3.8**



STAKEHOLDER MEETING FEEDBACK

Stakeholders were asked for input on types of strategies which NCDOT could begin preparing now to navigate future conditions. Below are the key takeaways from the discussions on each future.

GLOBALLY CONNECTED

- Technology will lead to shorter, more frequent point-to-point trips and change local traffic patterns.
- Ongoing investments and increasing costs are needed to ensure safety and reliability of freight.
- Future creates higher carbon demand and does not assume Greenhouse Gas / climate adaptation policy.

INNOVATIVE

- Rate/level of technology change, adoption, and application will occur unevenly across the state.
- New, unknown technologies may leapfrog & alter trends.
- Access to the "connected" system not equitable, affordable or are available for all.
- There are long term uncertainties over of land use & transportation impacts.
- Overall system is more efficient, reliable and able to optimize existing capacity.

RENEWED

- Significant policy shift and investments to realize this future.
- More population and workers in rural areas will work from home.
- Increased level of affordable, accessible transportation support services and connections.

UNSTABLE

- More people and workers migrate away from at-risk areas, focusing resources on system maintenance vs. expansion.
- Current transportation prioritization and funding process would (over time) consider resilience, risk, and uncertainty.
- Slower and more limited technology deployments, resulting in more at-risk and vulnerable assets.

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NC MOVES 2050

CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE

PUBLIC ENGAGEMENT PHASE III

OCTOBER 2019 - FEBRUARY 2020

The Phase III engagement activities focused on sharing NC Moves 2050 Plan development, introducing the proposed plan objectives and strategies and collecting feedback on which potential actions the N. C. Department of Transportation should focus on. The project team conducted outreach to engage diverse populations across the state through public events, online strategies, and stakeholder meetings. Public feedback was sought using a survey asking North Carolinians what is most important to their community for the future of transportation. The input received will help develop the draft plan recommendations.

MEASURES OF SUCCESS

Targeted social media posts allowed NC Moves 2050 content to reach audiences often not engaged in transportation planning.

 7 Tweets
35,200+ Impressions

 3 Posts
1,300+ Impressions

 11 Posts
50,600+ Reached

 1 Post
194,300+ Reached



 **15,000+** Survey Responses

 **50+** Tabling Events

 **28** Public Transit System Advertisements



A survey participant at the NC Moves 2050 booth during the North Carolina State Fair

For information about the NC Moves 2050 Plan:

Transportation Planning Division
(919) 707-0900
ncmoves@ncdot.gov
1554 Mail Service Center
Raleigh, NC 27699-1554



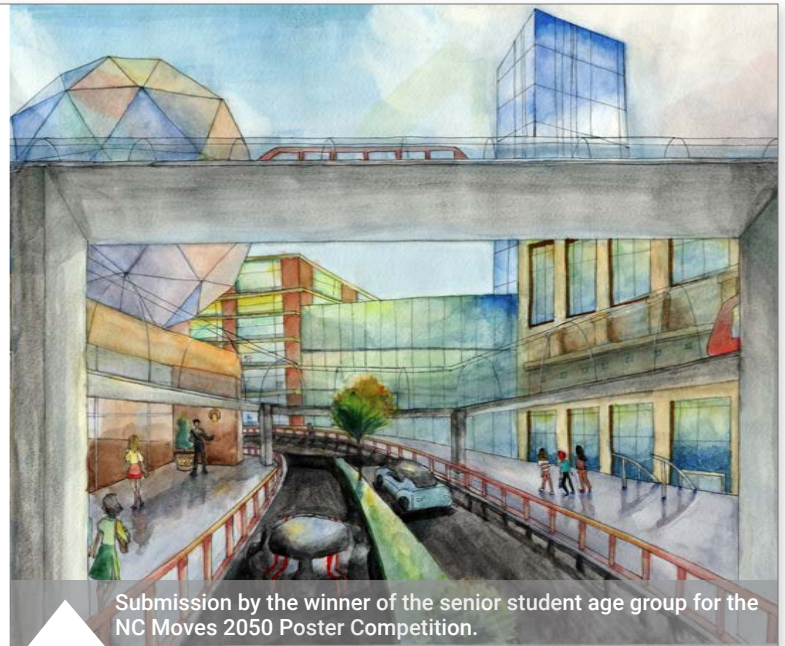
NC MOVES 2050

CONNECTING YOUR COMMUNITY,
YOUR VOICE AND YOUR FUTURE

Promotion

The NC Moves 2050 survey was promoted in a number of ways including:

- Advertisements on 28 public transit systems
- Video advertisements at all N.C. DMV locations
- Email blasts to all N.C. state employees
- Email blasts to a database of over 14,000 individuals including insurance companies, NCDOT contractors, college/ university organizations and the general public
- Distributed to rural school districts



Submission by the winner of the senior student age group for the NC Moves 2050 Poster Competition.



Project Manager, Nastasha Earle-Young, presenting at the Transportation Research Board Annual Conference in Washington, D.C.

POSTER COMPETITION

The 'Leap into the Future' poster competition encouraged North Carolina students in 1st through 12th grade to visualize what future transportation innovations could look like.

PRESENTATIONS

Project team members gave presentations to several organizations to share project updates and distribute paper copies of the survey to receive their input.

TABLING EVENTS

To connect with North Carolinians across the state, the project team attended over 50 events and festivals. At these events the team promoted the project, passed out giveaways and distributed surveys.

- 21 Professional Organization Events
- 18 Education Institutional Events
- 12 Community Events / Festivals

- The project team attended the N.C. State Fair for ten days and collected over 2,500 surveys. All participants were entered into a drawing for a drone.



NC Moves 2050 table set-up including surveys and giveaways at Shaw University.

Survey Results

The final NC Moves 2050 survey asked participants to select potential actions to guide future NCDOT decisions. These results helped revise and prioritize strategic actions that support the plan recommendations and vision of the department. Below are the results from participants ranking the five objectives and the top two actions for each.



#1 Ensure Safety and Security

- Develop safer road designs and technology.
- Make rural roads safer with more passing lanes and relocation of utility poles.

#2 Provide Transportation Access for All

- Ensure accessible, affordable and convenient transportation options for all communities.
- Expand regional public transit and commuter services.

#3 Maintain a High-Quality System

- Build roads and bridges to withstand and endure major weather events.
- Extend life of roads and bridges through the use of new maintenance technologies.

#4 Support a Strong Economy

- Improve the transportation system to move freight more efficiently on highways, railroads and ports.
- Prepare for transportation technology changes that could affect North Carolina industries.

#5 Improve Transportation through Technology

- Improve traffic flow by using improved roadway/ highway designs and signals.
- Dedicate NCDOT staff to researching and testing future technologies.



Over 15,000 surveys were completed in a 4-month period



The survey was translated into 8 different languages:

- Spanish
- Arabic
- Russian
- Ukrainian
- Haitian
- Vietnamese
- Chinese
- Korean



15 rural school districts participated in distributing the surveys to parents



Participants heard about the survey in a number of ways:

- 30% by email
- 22% on social media
- 14% at a tabling event
- 5% on the project website
- 24% in other ways

Stakeholder Outreach

Four regional workshops were held in October and November 2019 to share short- and long-term multimodal transportation needs and introduce the proposed plan strategies. These workshops allowed the NC Moves 2050 Plan team to reach a wide range of NCDOT planning partners, stakeholders, advocacy groups and state/local agencies.

- NC Conservation Network
- NC League of Municipalities
- NC Trucking Association
- Rural Planning Organizations
- Council of Governments
- City/County Officials
- NC Railroad Company
- US Fish & Wildlife Service
- Metropolitan Planning Organizations
- NC Department of Natural & Cultural Resources
- NC Department of Health & Human Services
- NC Department of Environmental Quality
- USDOT / Federal Highway Administration
- NC Public Transportation Association
- Aberdeen Carolina & Western Railway
- American Association of Retired Persons (AARP)



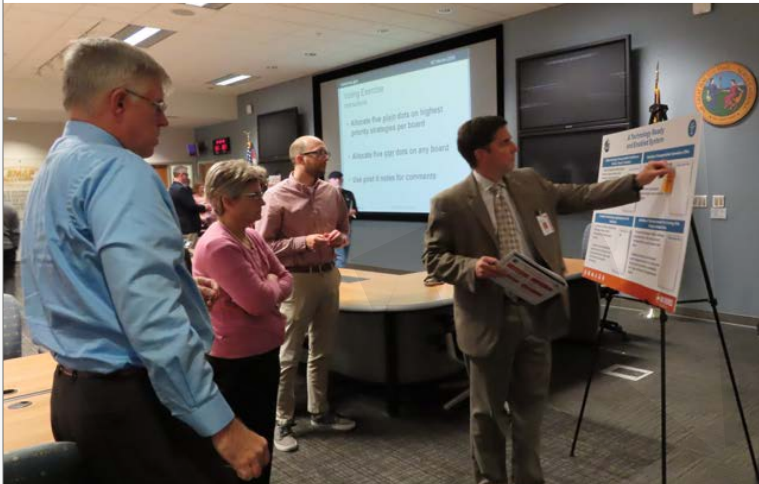
Eastern Stakeholders -
Kinston, N.C.



Western Stakeholders -
Hickory, N.C.



Central Stakeholders and
Agency Coordination Group - Raleigh, N.C.



Stakeholders vote for strategies on display boards during the Raleigh meeting.

ENGAGEMENT ACTIVITY

Each workshop featured a presentation about the plan's progress and activities to rank strategies to address the state's future transportation needs.

Each participant was given five plain dots and asked to allocate one dot to their highest priority strategy within each objective. Then each participant was given an additional five dots and asked to allocate them according to their highest priority strategies in any objective, regardless of where they placed their first five dots.

RESULTS FROM STAKEHOLDER VOTING



“Provide Transportation Access for All” received the most total votes. Feedback suggested a safe and efficient transportation system, that offers a variety of modes and provides all users with equitable system access. This is a leading priority and emphasis area for plan development.



“Support a Strong Economy” and **“Maintain a High-Quality System”** tied for second. Feedback stressed the importance of preparing existing and future transportation infrastructure for environmental effects and ensuring access to job centers/workforce training opportunities.



“Ensure Safety & Security” was fourth. Feedback suggested that safety may be better addressed through statewide system programs and planning versus implementing community-based solutions. Feedback also noted safety can be threaded through all of the objectives.



“Improve Transportation through Technology” received the least number of votes. Feedback suggested the best way to advance technology initiatives may be through cross-agency/cross-departmental cooperation versus forming a technology innovation office solely housed at NCDOT.

DRAFT



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