2022 Climate Strategy Report

October 15, 2022

Introduction

About the North Carolina Department of Transportation (NCDOT)

NCDOT's multi-faceted mission is to *"connect people, products, and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina*." Transportation is the backbone of North Carolina's economy, connecting manufacturers with supply chains, consumers with products and tourism, and people with their workplaces, homes, and communities across urban, suburban, and rural landscapes. NCDOT is responsible for the second highest number of state-owned highway miles in the country. The state contributes financial support to elements of non-highway improvements which can integrate resilience into transportation planning and measure resilience related outcomes across multiple modes.

NCDOT's Vulnerabilities to Climate Change

High impact weather events and natural hazards disrupt the safety and reliability of North Carolina's multimodal transportation network. These weather events also stress resources needed to keep pace with the costs of infrastructure damage inflicted by intense and frequent storm and flood events. The main hazard types found in North Carolina include meteorological (temperature, fog, precipitation, storms, hurricane, tornado, severe wind), climatological (drought, wildfire, sea level rise), hydrological (coastal storm/flood, inland flood, storm surge, saltwater intrusion, riverine flood) and geophysical (landslide, rockslides/mudslides, sinkholes).

NCDOT's Approach to Fulfilling the Strategies in the Climate Risk Assessment and Resilience Plan

NCDOT is constantly implementing the strategies identified in the Climate Risk Assessment and Resilience Plan. Following adoption of its resilience policy in September 2021, the agency worked to enhance resilience in all day-to-day organizational activities and deployed a coordinated approach to manage risk to business operations. The enactment of this policy helped NCDOT manage risks from natural and man-made hazards and strengthen the transportation system's overall resilience and ability to maintain a safe, reliable, and efficient transportation infrastructure. This policy supports the agency's alignment with the U.S. Department of Transportation (USDOT) Climate Action Plan. In addition, NCDOT is looking at opportunities available through the Infrastructure Investment and Jobs Act (IIJA), also known as Bipartisan Infrastructure Law (BIL), to pursue resilience efforts to reduce system vulnerabilities from climate change. The department's resilience policy and IIJA opportunities have helped NCDOT to incorporate and achieve new actions and strategies related to climate change resilience. In addition, the agency is constantly evaluating and testing our tools (Flood Inundation Mapping and Alert Network (FIMAN), FIMAN for Transportation (FIMAN-T), FIMAN-T-surge and Bridge Watch) in preparation for extreme weather events and providing training.

Reducing Energy Use

NCDOT and the North Carolina State Port Authority (NCSPA) occupy 2,164 buildings totaling 9,500,271 gross square feet. Fiscal Year (FY) 2022 utility costs for those buildings totaled $11,411,289, and energy consumption per square foot is 29% less than during the baseline FY 2004 and a 5% improvement from FY 21. At the conclusion of FY 2022, energy savings programs have resulted in a total energy cost avoidance of $34,681,106 and a water cost avoidance of $14,029,206 - totaling $48,710,312 over the last 18 years. By the end of FY 22, cost savings measures have reduced energy and water usage per square foot in NCDOT facilities by 34% and 6% respectively, as measured from the baseline fiscal year of 2004.

Addressing Environmental Injustices and Inequities

In 2022, Deputy Secretary Ebony Pittman was named as the environmental justice (EJ) lead for NCDOT. An environmental justice policy advisor role was created and filled, by recommendation of the Andrea Harris Equity Task Force in response to the USDOT Justice40 initiative and the USDOT Equity Action Plan, to develop and implement an environmental justice strategy within the agency. The Integrated Mobility Division (IMD) also developed and released an Environmental Justice and Transportation Disadvantage tool and training session.

Public Participation Plan

As a part of Executive Order 246 (EO 246), Section 8, each Cabinet agency "shall develop an agency public participation plan informed by stakeholder input. The plan shall include best practices for community engagement, meaningful dialogue, and efficient mechanisms to receive and incorporate public input into agency decision-making."

NCDOT released its agency plan, known as the Statewide Public Involvement Plan, back in 2020. As a result of EO 246, the department updated the plan to strengthen language around environmental justice and Limited English Proficiency (LEP) engagement and updates were released for public review in early June 2022. The plan and link to the survey were posted on the department's website under the following link: Statewide Public Involvement Plan Survey (ncdot.gov).

It has been standard practice for over 20 years for NCDOT to provide fair, accessible and meaningful opportunities for all to engage in its outreach efforts. In order to increase this outreach, the Statewide Public Improvement Plan recommends that individual Public Improvement Plans be developed for every project.

As part of the process for developing a Public Involvement Plan for projects, once a study area has been proposed, whether project-specific or a plan area, the NCDOT's Community Studies team develops a Demographic Study Area (DSA) that encompasses all residential areas near the project. The Demographic Snapshot Tool is then used to pull Block Group level data on minorities, race, ethnicity, low income, zero car households, under 18 and over 65, and adults with limited spoken English. If

needed, Block Group level data can also be pulled by race and disability status. Language is determined using Tract level data. These DSA Block Groups are then compared with the county average for EJ and Title VI populations. Language groups are noted for each Block Group where a population exceeds 50 speakers, with LEP thresholds determined by the DSA total.

In addition to Census data, EJ and LEP populations are further assessed through site visits, satellite image review and consultations with the Local Area Resource Contacts (LARCs). These practices can identify concentrations too small to stand out at the Block Group level – affordable housing complexes, independent living facilities, disabled group homes, ethnic enclaves – and also help locate important resources, such as religious facilities, cultural centers, ethnic goods and services, etc.

This data is provided to the Public Involvement team and project managers to help develop public involvement plans. A Public Involvement Practitioners Guide was published as a resource to project teams to provide better community and public engagement in project decisions When working with underserved communities, a best practice is to identify and reach out to a LARC. This is a local/community leader (i.e., Reverend/pastor, business owner, community activist, city/county commissioner, etc.). They can help organize small group meetings, door-to-door community outreach efforts, disseminate information, and help gather input. This helps to bring trust into the process because of that LARC's relationship with the community.

1.0. Reduce greenhouse gas emissions

1.1 Reduce energy consumption per square foot in state-owned buildings by at least 40% from fiscal year 2002-2003 levels

1.1.1 Establish energy savings programs	**Ongoing**
Expected Completion Date: N/A NCDOT has established energy savings programs to reduce the energy consumption in NCDOT and NCSPA occupied buildings. By the end of FY 22, these programs have accomplished a reduction in energy usage per square foot in NCDOT facilities by 36% and 9% respectively, as measured from the baseline fiscal year of 2003-04. Some of these initiatives include monitoring and support of two guaranteed energy saving performance contracts projects in Raleigh (five of NCDOT's largest buildings) and across the state (roadway lighting and building lighting upgrades). Within the next 12 months, the agency will continue to implement these programs to continue reducing energy consumption and costs in their buildings.	
1.1.2 Implement Energy Conservation Measures (ECMs) in all new building and repair and renovation projects	**Ongoing**
Expected Completion Date: N/A NCDOT is implementing ECM in all new buildings and repair and renovation projects as per the 2018 NC State Building Code: Energy Conservation Code and other additional measures specified by NCDOT Facilities Management in contract general conditions and bid alternates. The agency will continue to implement these efforts within the next 12 months.	
1.1.3 Improve the electrical infrastructure across NC supporting the Roadway Lighting Project	**Ongoing**
Expected Completion Date: N/A A roadway lighting policy was developed by the end of 2020. In response to this policy, NCDOT is planning multiple projects to improve the electrical infrastructure across NC to support energy efficient roadway lighting for interchanges and along roadways.	
1.1.4 Upgrade, replace, and repair existing HVAC equipment to improve energy savings	**Ongoing**
Expected Completion Date: N/A NCDOT is planning multiple projects to improve existing HVAC equipment to increase energy savings. Some of these efforts include: • Replacing chillers and split systems.	

- Installing more energy efficient roofs as they are repaired or replaced (many NCDOT buildings are over 40 years old).
- Replacing /upgrading existing windows with more energy efficient models.
- Programmable thermostats, building automation and monitoring systems as appropriate and affordable.
- Lighting upgrades.

Within the next 12 months, the agency will continue to implement these efforts.

1.1.5 Performing energy audits to identify Energy Conservation Measures (ECMs)	**Ongoing**

Expected Completion Date: N/A

NCDOT has been performing energy audits to identify ECMs that can generate enough cost savings that can pay for the cost of work within 2 to 3 years – sometimes in less than one year.

Within the next 12 months, the agency will continue to implement these efforts.

1.1.6 Use energy rebates funded by utility companies	**Planned**

Expected Completion Date: June 2023

NCDOT is planning to use energy rebates funded by utility companies to offset the cost of new construction and repair and renovation work. Note that NCDOT has used utility rebates in the past to reduce project costs.

Within the next 12 months, the agency will begin to implement these efforts.

1.1.7 Identify and support efforts to obtain funding for energy conservation measures	**Ongoing**

Expected Completion Date: N/A

NCDOT is continuously working on identifying funding to support energy conservation measures.

Within the next 12, months the agency will continue to implement these efforts.

1.1.8 Complete programming changes in System Application Programs (SAP) to the invoice payment system	**Underway**

Expected Completion Date: November 2022

NCDOT is working to complete programming changes in SAP to the invoice payment system to make better use of existing utility bill payment data to generate reports to track energy usage across the state, county, highway division, and down to individual buildings.

This work is nearly complete and will greatly help identify energy reduction opportunities and monitor the effectiveness and savings of installed ECMs.

Within the next 12 months, the agency will finalize this effort.

1.2 Support the use and expansion of energy efficient and clean energy resources

This section is not applicable.

1.3 Increase the number of registered Zero Emission Vehicles (ZEV) to at least 1,250,000 by 2030 so that 50% of in-state sales of new vehicles are zero-emission by 2030

1.3.1 Publish a progress update to the 2019 ZEV Plan	**Completed**
Completion Date: August 2022 As part of Executive Order 80 (EO80), NCDOT published the NC ZEV Plan Version 1.0 in 2019 and identified 20 recommendations to support ZEV adoption in the state. This plan was updated in August 2022 to provide a summary of the status of the 20 recommendations and set the stage for the next phase of work in the North Carolina Clean Transportation Plan. Within the next 12 months, the recommendations and progress updates from the 2019 ZEV Plan will be used to inform the NC Clean Transportation Plan, which is due to the Governor's Office by April 7, 2023.	
1.3.2 Develop and implement the North Carolina Electric Vehicle (EV) Infrastructure Deployment Plan	**Underway**
Completion Date: August 2026 As part of the federal National EV Infrastructure (NEVI) program, NCDOT was required to submit an EV Infrastructure Deployment Plan to provide a framework for the deployment of charging infrastructure along the state's Alternative Fuel Corridors (AFCs). NCDOT developed the plan in partnership with other agencies and external partners and submitted the plan to the Federal Highway Administration on August 1, 2022. The plan outlines the deployment of infrastructure in two phases. Phase 1 is focused on the build out of NEVI-compliant stations along the designated AFCs, and Phase 2 will be focused on community-based public EV charging and other critical infrastructure needs to support EO246 ZEV goals and other clean transportation priorities. During the next 12 months, once the plan is approved by the Federal Highway Administration (FHWA), NCDOT will do extensive public engagement to ensure the EV infrastructure deployment is done in an equitable way to expand public access to reliable EV charging. This will give NCDOT access to funding for installation of Level III infrastructure along the state's alternative fuel corridors. Additionally, NCDOT nominated two additions to the AFC program during round six.	
1.3.3 Conduct Wave Transit Zero Emissions Vehicles Transition Study	**Underway**
Expected Completion Date: April 2023	

This study is expected to be initiated in September 2022 and will assist the Cape Fear Public Transportation Authority with the creation of a Zero-Emission Fleet Transition Plan and the engineering and design of infrastructure for charging stations.

Within the next eight months, NCDOT plans to refine the scope of work, set up a core team to guide the study process and prepare the study. The study is expected to be completed in time to submit grant applications for Low or No Emission programs in spring 2023.

1.3.4 Develop the Light-Duty ZEV Action Plan as part of the North Carolina Clean Transportation Plan (NCCTP) stakeholder process	**Underway**

Expected Completion Date: April 2023

As part of EO246, NCDOT was directed to develop North Carolina's Clean Transportation Plan (NCCTP), a broad stakeholder process focused on the development of near-term strategies to decarbonize the transportation sector. Five work groups, including a group focused on the transition to Light-Duty Zero Emission Vehicles (ZEVs), have been meeting monthly since May 2022 to develop action plans to be used in the final NCCTP report. The Light-Duty ZEV work group will outline strategies to help the state achieve the EO246 ZEV goals by 2030.

Within the next 12 months, the Light-Duty ZEV action plan will be completed (anticipated December 2022) and will be used to inform the final NCCTP report which will be delivered to Governor's Office by April 7, 2023. The recommendations in the NCCTP will form the basis for ongoing coordination with other agencies and external stakeholders to achieve the EO246 goals.

1.3.5 Helping Obtain Prosperity for Everyone (HOPE) Project – "Mountains to Sea: Electrifying North Carolina's Transit Fleets"	**Underway**

Completion Date: October 2022

The Center for Transportation and the Environment (CTE) is assisting NCDOT's Integrated Mobility Division with a project funded through the Federal Transit Administration's (FTA) HOPE program to develop zero-emission transit vehicle (ZETV) deployment plans for two transit systems located in high poverty counties in the western and eastern parts of the state – AppalCART in Watauga County and the Hoke Area Transit Service in Hoke County. CTE will also deliver at least two workshops regarding ZETV deployment in the state. Workshops will be held statewide and may include presentation at a conference.

Within the next 12 months, CTE will coordinate with the two transit systems to complete service, fleet, fuel, maintenance, facility and total cost of ownership assessments as the basis for their transition plans for project completion.

1.3.6 Statewide Zero-Emission Transit Fleet Transition Plan (FTA Requirement under IIJA)	**Underway**

Expected Completion Date: October 2023

The first version of this plan was completed in May 2022 to meet the minimum requirements for grant submittals. The IIJA requires that any application for projects related to zero-emission

vehicles under the FTA's Grants for Buses and Bus Facilities Competitive Program (49 U.S.C. § 5339(b)) and the Low or No Emission Program (49 U.S.C. § 5339(c)) include a Zero-Emission Transition Plan. NCDOT IMD worked closely with the Institute for Transportation Research and Education to create a plan that meets the minimum requirements.

Work on an updated version that incorporates findings from the NC Clean Transportation Plan and its work groups is expected to begin in October 2022.

Within the next 12 months, NCDOT expects to select a consultant for the work and complete the updated plan.

1.3.7 Support the installation of electric vehicle charging stations for Zero Emission Vehicles (ZEV) at NCDOT buildings	**Underway**

Expected Completion Date: Spring 2023

NCDOT is currently working on increasing the number of EV charging stations in the state for plug-in hybrid and battery electric vehicles. Through the solicitation for projects from the Volkswagen Settlement, NCDOT applied for EV charging stations at four NCDOT owned buildings- Highway Building, Century Center, the Hatteras ferry facility and the Division 14 office. Applications included one portable solar charger and three permanent installations of level II charging that would be open to the public.

Within the next 12 months NCDOT expects to receive notification of the award for this project. Once notified of award, installation of electric vehicle supply equipment (EVSE) will commence. This will allow NCDOT to request and use electric fleet vehicles in our daily operations.

1.3.8 Improve ZEV registration data	**Ongoing**

Expected Completion Date: N/A

The ZEV registration data is now updated and posted monthly rather than quarterly. This data is available to external stakeholders and can be used to track progress on the EO80 and EO246 ZEV goals as well as determine density of EV ownership to aid in the siting of EV charging stations.

No expected changes in next 12 months.

1.3.9 Host Ride and Drive events/ educational outreach	**Ongoing**

Expected Completion Date: N/A

The NCDOT Partners (NC CETC, Plug-in NC, Clean Cities, etc.) are hosting several ride and drive events and vehicle expos.

More recently, NCDOT sponsored the Sustainable Fleets Conference held August 30-September 1, 2022, and the National Drive Electric Week held September 23 – October 2, 2022. Many Ride and Drive events are planned throughout the state.

1.4 Prioritize Zero Emission Vehicles (ZEVs) in the purchase or lease of new vehicles and for agency business travel

1.4.1 Identify NCDOT motor fleet vehicles for conversion to ZEV	**Ongoing**
Expected Completion Date: N/A Each year, the NC Department of Administration (NCDOA) identifies agency motor fleet vehicles that are candidates for replacement by zero emission or reduced emission vehicles. In July 2022, NCDOA recommended four of NCDOT's fleet vehicles as suitable for replacement with a ZEV and 93 vehicles as candidates for a replacement with a hybrid vehicle. The availability of charging infrastructure at NCDOT facilities remains a barrier in the conversion of replacement vehicles to ZEV or hybrid alternatives. The agency is working to use grant funding from the VW settlement and is considering other funding options.	
1.4.2 Install electric transit buses	**Underway**
Expected Completion Date: Winter 2023 NCDOT committed $6.3M in Congestion Mitigation and Air Quality (CMAQ) funds to help leverage VW settlement funds for transit electrification. This will result in 19 additional all electric transit buses added to transit agencies across NC. The next 12 months will involve contracting and procurement of buses.	

1.5 Initiate other initiatives to decarbonize the transportation sector

1.5.1 Develop Vehicle Miles Traveled (VMT) Toolkit	**Completed**
Completion Date: Spring 2022 The VMT toolkit was completed and shared with stakeholders throughout the summer in 2022. This toolkit contains funding information and one training was performed. Continued promotion of use of tool as well as training as requested will be the priorities in next 12 months. Recommendations from the toolkit will be considered in the NC Clean Transportation Plan (see 1.5.2). Additionally, an update schedule for funding information needs to be developed and finalized.	
1.5.2 Facilitate the North Carolina Clean Transportation Plan (NCCTP) stakeholder process	**Underway**
Expected Completion Date: April 2023 As part of EO246, NCDOT was directed to develop North Carolina's Clean Transportation Plan, a broad stakeholder process focused on the development of near-term strategies to decarbonize the transportation sector. NCDOT brought together a broad and diverse set of stakeholders to help identify and assess the opportunities, challenges and considerations with	

creating a more equitable clean transportation system. Five work groups – Light-Duty Zero Emission Vehicles (ZEVs), Medium- and Heavy-Duty ZEVs, Fleet Transition, Vehicle Miles Traveled Reduction, and Clean Transportation Infrastructure - have been meeting monthly since May 2022 to develop Action Plans that will be used in the final NCCTP report.

Within the next 12 months, the NCCTP will be submitted to the Governor's Office in April 2023. Following its release, NCDOT will continue to work with state partners and external stakeholders to implement the strategies outlined in the plan.

1.5.3 Investigate vessel electrification for the NCDOT Ferry Division fleet	**Underway**

Expected Completion Date: June 2023

Beginning July 2021, this research study focused its ferry vessel and infrastructure investigation on the Ferry Division's short haul routes which include Bayview/Aurora, Southport/Fort Fisher, Cherry Branch/Minnesott Beach, and Currituck/Knotts Island although findings can be applied throughout the system.

Within the next 12 months, a formal report will be created to assist the Ferry Division in considering and planning for an electric fleet. The report will include assessments of vessels, shoreside infrastructure needs, workforce requirements, emissions reduction information and other funding opportunities.

1.6 Initiate other projects aimed at reducing statewide greenhouse emissions

1.6.1 Develop a decarbonization survey for NCDOT activities	**Underway**

Expected Completion Date: November 2022

As part of the NC Clean Transportation Plan, NCDOT is preparing an internal survey to document a preliminary inventory of known decarbonization efforts that have been achieved by the agency. This could include reduced emissions from transportation-related activities, as well as building related activities, such as energy efficiency or deployment of renewable energy. The results from the survey will help summarize NCDOT's decarbonization efforts across all its divisions and units.

Progress on NCDOT's decarbonization efforts will be tracked annually.

1.6.2 Develop a NCDOT Carbon Reduction Program project selection guidance document	**Underway**

Expected Completion Date: December 2022

NCDOT is currently developing a carbon reduction guidance document and training for rural planning organizations (RPOs) and metropolitan planning organizations (MPOs). The project is expected to be completed in December 2022.

FHWA has assigned funds to the different distributions, and within the next 12 months, NCDOT we will begin awarding projects. In addition, the agency is planning to redistribute funds based on the new planning area boundary lines released by FHWA.

1.6.3 Develop Carbon Reduction Program (CRP) strategy report (FHWA program)	**Planned**

Expected Completion Date: August 2023

IIJA establishes the Carbon Reduction Program (CRP), "which provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide emissions from on-road highway sources." The CRP requires each state to develop a carbon reduction strategy with updates at least every four years. NCDOT has funding available for the next five years to complete projects under this plan.

Within the next 12 months, NCDOT will finalize the development of the CRP strategy report, using strategies recommended in the NCCTP, to incorporate the efforts and strategies to reduce carbon consumption.

1.6.4 Apply for Grant for Construction Funding for the Raleigh to Richmond segment of the Southeast Corridor along the S-Line	**Underway**

Expected Completion Date: January 2023

In concert with Amtrak and the Virginia Passenger Rail Authority, NCDOT's Rail Division will prepare a grant application to the Federal – State Partnership for Intercity Passenger Rail Program to pursue funding to purchase right of way and construct the Raleigh to Richmond segment of the Southeast Corridor, which generally follows the CSX S-Line in North Carolina.

The application will build on previous federal awards to purchase the active portion of the CSX S-Line, prepare preliminary designs and plan mobility hubs along the corridor. Currently, construction cannot be completed without the requested federal funds. However, if funds are provided, NCDOT anticipates constructing the corridor in increments, delivering the new service by 2030.

The Raleigh to Richmond segment of the Southeast Corridor will provide high performance intercity passenger rail between Charlotte and Washington, DC. Five roundtrips per day with speeds up to 110 mph are planned. The project will help divert highway trips to rail, reducing greenhouse gas emissions.

Within the next 12 months, NCDOT plans to finalize this project.

1.6.5 Develop a Transportation Demand Management Plan for The Greater Charlotte Region	**Planned**

Expected Completion Date: March 2024

The project is expected to be initiated in November 2022. This initiative will involve partnering with the Centralina Regional Council to develop a regional TDM plan and outline immediate steps for starting up a regional program for the greater Charlotte region.

Within the next 12 months, NCDOT plans to select a consultant for this work, refine the scope of work, set up a steering committee and begin the process of developing the plan.

2.0. Increase statewide resilience to the impacts of climate change

2.1 Evaluate the impacts of climate change on cabinet agencies' programs and operations

2.1.1 Conduct multimodal vulnerability assessment on Strategic Transportation Corridor (STC) - Resilience Improvement Plan	**Underway**

Expected Completion Date: December 2022

In Fall 2021, NCDOT initiated vulnerability assessments on two strategic transportation corridors, U.S. 70 and U.S. 74. The objectives of the U.S. 74 pilot study were to determine goals and objectives for future U.S. 74 resiliency; identify and define any vulnerabilities of the U.S. 74 corridor to future extreme weather events, including large storms, hurricanes, and heat waves; develop and stress-test potential mitigation and adaptation scenarios against future conditions; and quantify benefits relative to goals and objectives. The U.S. 74 pilot used the City Simulator model developed by NCDOT consultant, Atkins. For the U.S. 70 pilot, the study assessed the vulnerability of routes to airports, ports, and The North Carolina Railroad Company rail line adjacent to the corridor using FHWA's Vulnerability Assessment Scoring Tool, stakeholder engagement, and other agency expertise/resources.

Within the next 12 months, and as a continuation of these assessments and as part of the agency's Resilience Improvement Plan, NCDOT is studying the possibility to conduct of conducting vulnerability assessments on the I-87, I-26, and I-40 (west) corridors.

2.1.2 Develop a web-based geospatial analytics tool for quantifying freight risk and resilience in transportation	**Underway**

Expected Completion Date: June 2023

In June 2021, NCDOT embarked on a comprehensive study of the risk and resiliency profiles of North Carolina public roads, specifically primary and secondary freight routes. The objective of the study was to establish a geospatial analytics platform for transportation data integration and modeling. This platform, Geo-FRIT, provides a web-based geospatial analytics tool for quantifying freight risk and resilience in transportation. Geo-FRIT will allow for data collection and sharing among NCDOT divisions and allow for routing analytics and advanced modeling of disaster data for risk-based freight routing through spatial simulation-driven scenario analysis. This project will enhance freight management and safety via web-based data access,

integration and automation, which also promotes transportation resiliency. The Geo-FRIT tool will provide solid support for risk-based freight routing analysis that can lead to significant labor and operational cost savings for NCDOT and enhance highway safety, emergency management, community transportation planning and public health.

Within the next 12 months, the research team will develop the spatial simulation of alternative extreme events for scenario analysis. The research team will also develop a risk cost framework to support the analysis of freight routing to optimize the risks and costs caused by disruptive event road closures. The research team will then develop a web GIS-based dashboard to support the data management, geo-visual analytics and mapping of spatial data for this project (link).

2.1.3 Assess the vulnerability of the Ferry Division's infrastructure assets, including waterway channels, with respect to natural hazards

Underway

Expected Completion Date: July 2024

Funded through the Research and Development Unit, the "Natural Hazards Vulnerability assessment of North Carolina Ferry Division Assets" was awarded to North Carolina State University to be conducted over a two-year span beginning August 1, 2022 and ending July 31, 2024.

In August 2022, the agency began a project to address this specific short-term strategy. The scope of the study will (a) assess the vulnerability of the Ferry Division's infrastructure assets with respect to natural hazards (from the present and forecasting to the 2040 and 2060 planning horizons); (b) assess the condition of ferry channels at present, as well as potential climate impacts; (c) prioritize assets for adaptation measures where needed; and (d) provide recommendations on potential adaptation options as well as timeframes for implementation and ballpark cost estimates.

Within the next 12 months, the project will focus on data gathering, synthetizing and sharing access to the vast pools of data that NCDOT has collected during the past years (link).

2.1.4 Predict roadway washouts during extreme rainfall events

Underway

Expected Completion Date: December 2022

In January 2021, NCDOT partnered with NC State University to conduct a research project utilizing available high quality statewide elevation data, historical rainfall records and advances in computer processing to modify and develop programs to predict where washouts are likely to occur during extreme rainfall events. The purpose of this project is to develop models and test several approaches for predicting crossing washouts based on forecasted rainfall. The results will help determine if existing hydrologic models can be leveraged to accurately predict potential washout locations and to evaluate if machine learning technology can be employed for accurate flood prediction.

This project has the potential to substantially enhance NCDOT's ability to respond to storm events and position resources appropriately. The project is expected to be finished by the end

of the year. Results will be disseminated in NCDOT meetings, a training workshop for NCDOT personnel, and through extension factsheets and academic publications (link).

2.1.5 Evaluate Road Network Resilience to Natural Hazards using Network Analysis	**Underway**

Expected Completion Date: December 2024

The objective of this project is to improve predictions of roadway vulnerability by using network science and network analysis to understand the connectivity of road networks during extreme events. By treating road intersections as 'nodes' and road segments as 'edges', it is possible to successively remove nodes based on some criteria (such as increasing elevations, akin to flooding or another extreme event) to identify the threshold where the entire network begins to fail. The network analysis proposed in this project is focused on coastal settings, and specifically flood hazards, but the methodology is broadly applicable to other regions of North Carolina and additional natural hazards (e.g., landslides). More broadly, this project will lead to a more holistic framework for identifying roadway and network vulnerability to a range of hazards and inform resilient management of roadway networks in a changing climate.

Within the next 12 months, the research team will perform a literature search to determine previous work done on the subject area. Researchers will obtain access to NCDOT flood data and extract road network and topographic information. The research team will then compare mathematical models of network failure to real-world examples and perform a data-model comparison to present to NCDOT (link).

2.1.6 Investigate incorporating resilience into design guidance	**Ongoing**

Expected Completion Date: N/A

NCDOT is currently implementing resilience design considerations into projects. Examples include State Transportation Improvement Plan project number I-6064, the widening of I-95 in Robeson County, which also includes road elevation, improved hydraulic conveyance through bridge elevation and lengthening, as well as drilled holes in a concrete median to facilitate faster roadway water runoff. In addition, the HB-0001 Alligator River Bridge replacement is considering resilient construction materials with a design life through 2100 that also requires projected sea level rise (SLR) and storm activity to be considered in the design year. Similarly, the SLR analysis for Wilmington, Beaufort and Manteo areas are for future design and planning support.

2.2 Integrate climate change adaptation practices and resiliency planning into cabinet agencies' policies and operations

2.2.1 Incorporate resilience in long-range plans	**Ongoing**

Expected Completion Date: N/A

Following the Fixing America's Surface Transportation Act in 2015, and FHWA and FTA metropolitan and statewide transportation planning regulations requiring agencies to take resiliency into consideration during the transportation planning process, NCDOT has been working on multiple efforts to incorporate resilience into long-range plans.

Within the next 12 months, NCDOT is planning to increase collaboration with local and regional agencies by sharing the flood inundation tools it has developed in the past years to help the MPOs and Regional Planning Organizations with this process. NCDOT is currently participating in NCHRP Synthesis for incorporating greenhouse gases and climate resilience into long range planning and statewide transportation improvement program. As a part of the synthesis all state DOTs will be surveyed to understand how they are already doing this.

2.2.2 Incorporate resilience within Integrated Project Delivery (IPD) — **Ongoing**

Expected Completion Date: N/A

The current objective for incorporating resilience within IPD will require an inventory of products and map resiliency outputs for NCDOT system-wide planning, project prioritization and programming, and individual project planning and development. To facilitate this objective there will be a survey conducted to better understand how our business units and partners are using NCDOT products and information and how they could better use them in the future. The overall goal of IPD is to streamline how projects move from planning to construction, a crucial part of which is, having appropriate resiliency information readily available where relevant in the process.

Risk assessment criteria and benefit-cost-analysis (BCA) are some of the factors that are being considered in the U.S. 74 and U.S. 70 pilot vulnerability studies. The results of these studies will help determine how these factors can be utilized by specific Project Development Networks within the IPD.

Current resilience projects in planning and design phases (I-6064 and HB-0001) are also providing examples of how and when resilience may be considered within IPD.

2.2.3 Expansion of Flood Warning Tools — **Ongoing**

Expected Completion Date: N/A

NCDOT, in collaboration with NC emergency management, has developed multiple flood monitoring tools including FIMAN-T, FIMAN-T Surge and Bridge Watch. These tools help detect, prepare for, alert, and record potentially destructive flooding events that affect structures. They also allow NCDOT to proactively monitor, in real time, bridge and roadway infrastructure to better react to against hazardous, costly, and potentially catastrophic events. The agency is constantly evaluating, testing and improving these tools in preparation for extreme weather events. In addition, training on these tools is continuously provided.

2.2.4 Expand the Geotechnical Asset Manage (GAM) database — **Planned**

Expected Completion Date: N/A

NCDOT Geotechnical Engineering Unit has been rating slopes of known concern for several years, while also performing geotechnical subsurface investigations and design of

Transportation Improvement Plan (TIP) projects. The GAM database includes a rating system for embankments, rockfalls, rockslides, and landslides in NCDOT right-of-way. The expansion of the GAM database would allow for more sites to be analyze, slopes to be rated, and preliminary investigations and designs to be made to mitigate potential disruptions .

NCDOT expects to initiate this project within the next 12 months.

2.2.5 Continue development of flood inundation tools	**Planned**

Expected Completion Date: N/A

NCDOT, in collaboration with other agencies, has developed multiple flood inundation tools. Some of the inundation tools already developed include the Coastal Roadway Inundation Simulator (CRIS), the Roadway Inundation Tool (RIT), and Wave Analysis Tool. These tools allow planners and emergency managers to simulate predicted roadway inundation from coastal and inland flooding, quantify potential effects of inundation, and see potential overtopping depths on the roadway system.

The roadway inundation tool represents the entire state. However, there are gaps in the tool that need to be addressed due to the limited amount of available data in Western NC. Within the next 12 month, NCDOT will continue to develop the data that is needed to continue the development of the tool.

2.3 Assist the communities served by each cabinet agency to implement climate change adaptation practices and resiliency planning

2.3.1 Implement N.C. Highway 12 (N.C. 12) Task Force plan	**Ongoing**

Expected Completion Date: N/A

The primary mission of the N.C. 12 Task Force is to collaboratively develop a long-term, prioritized transportation plan for N.C. 12 that identifies vulnerable highway locations (a.k.a. “hotspots”), projects future challenges related to erosion, storms, and sea level rise, refines and recommends location-specific solutions, and identifies funding strategies and a timeline for implementation. The N.C. 12 Task Force stakeholders developed a plan designed to accomplish the following:

- Recognize the need for safe, reliable routine and emergency transportation for the thousands of residents in communities in Dare and Hyde counties and the millions of visitors that travel to the area from around the world.
- Incorporate information on climate change and sea level rise which may exacerbate existing transportation challenges and present new ones.
- Recognize the missions of the Refuge, Seashore, and other public lands within the project area and balance ecological values and the restoration of barrier island processes while maintaining public access.
- Be collaborative and include substantial opportunities for input from stakeholder agencies, organizations, and the public.

- Utilize existing NCDOT transportation feasibility studies and other information as important, foundational information that contributes to a regional plan.
- Evaluate the economic impacts associated with the status quo and other transportation options.
- Develop a strategic financial plan that leverages existing funding and identifies new funding sources.
- Be designed to help overcome barriers to coastal resilience and adaptation planning and support a proactive and sustainable approach to resilient transportation planning and project implementation.

2.3.2 Assist Pender County with N.C. Highway 210 Hurricane Evacuation Route Resiliency Analysis	**Underway**

Expected Completion Date: Fall 2023

NCDOT is assisting Pender County with conducting a resilience analysis of the N.C 210 Hurricane Evacuation Route corridor that has historically experienced significant flooding in multiple locations after hurricanes or large storms events. The deficiencies of N.C. 210 affect the most densely populated areas in the County and about 29% of all Pender County residents.

The grant has been approved and the project is estimated to begin in November 2022. The project will be completed in a year.

2.3.3 Assist Town of Leland with transportation infrastructure resilient routes project	**Underway**

Expected Completion Date: December 2023

NCDOT is assisting the Town of Leland with the Leland Resilient Routes Project which will identify critical routes within and surrounding Town limits. These routes could include evacuation routes, NCDOT-owned roadways, Town-owned roadways, and privately owned roadways. The routes will be analyzed to determine how resilient each route is to coastal hazards such as flooding and storm surge. For routes that exhibit vulnerabilities to coastal hazards, potential solutions to mitigate the vulnerability will be identified.

The project is estimated to begin in Fall 2022 and finalize in December 2023.

2.4 Initiate other projects aimed at increasing statewide resilience to the impacts of climate change

2.4.1 Quantify future precipitation extremes within NC for resilient design	**Underway**

Expected Completion Date: December 2022

In June 2020, NCDOT partnered with NC State University to conduct a study to improve confidence in climate change projections by quantifying future precipitation extremes within North Carolina for resilient design (e.g., precipitation intensity, duration, frequency curves).

This project incorporates guidance developed for the National Cooperative Highway Transportation Research Board, NCHRP 15-61, with additional methods and numerical model experiments to improve confidence in future precipitation extremes, and to inform design concepts for potential future events.

Within the next 12 months, the project will be completed. In addition, NCDOT is looking to incorporate climate change adaptation into the decision-making process (link).

2.4.2 Improve the resilience of transportation infrastructure to hurricane damage	**Underway**

Expected Completion Date: December 2022

In January 2021, NCDOT partnered with NC State University to conduct a research project to study the effectiveness of repairs and design strategies after damage from hurricanes. This project has four objectives: 1) evaluate the design process for roadway infrastructure that was repaired following Hurricanes Matthew and Florence; 2) identify the specific elements of the new infrastructure that positively contributed to improved performance during Hurricane Florence; and 3) develop recommendations on design elements that improve the resilience of NCDOT roadways.

The guidelines that result from this research will allow NCDOT engineers to deploy design strategies that are proven to be more resilient and cost effective in the long run.

Within the next 12 months, NCDOT expects to complete this project (link).

2.4.3 Develop a geospatial map for consolidating resilience initiatives	**Planned**

Expected Completion Date: Spring 2023

During the past five years NCDOT has invested in numerous resilience, vulnerability and climate change initiatives.

Within the next 12 months, the department will coordinate with a consultant to develop a geospatial map to consolidate past, current and planned resilience initiatives. This map will help the agency to showcase its resilience efforts in a more visual way and will help with the development of the agency's Resilience Business Case to help justifying future resilience investments.

2.4.4 Increase consideration of resilience in freight rail programs	**Underway**

Expected Completion Date: July 2023

NCDOT's Rail Division will revise its Freight Rail and Rail Crossing Safety Improvement (FRRCSI) program criteria to reflect resilience when evaluating proposed projects. Under the Short line Infrastructure Assistance (SIAP) arm of FRRCSI, the Rail Divisions is working to include a new Risk & Resiliency scoring metric in time for the SFY2024 SIAP Call for Projects. Under the new Freight Rail Diversion arm of FRRCSI, projects that connect and/or divert freight from highways

to rail provide resiliency in the event one mode is blocked by a climate or human-induced event.

Within the next 12 months, NCDOT expects to complete this project.

2.4.5 Predict resilience and reduce failure of Stormwater Control Measures (SCMs) to extreme storm events	**Underway**

Expected Completion Date: December 2024

Due to multiple failures of stormwater infrastructure (including but not limited to Stormwater Control Measures (SCMs)) during the past few years from several extreme rainfall events. NCDOT is conducting a project to better understand at what storm size do typically designed SCMs no longer provided hydrologic mitigation and are thus likely to fail with significant structural degradation that would lead to costly reconstructive repair. Moreover, the study will identify if there are simple retrofits to existing SCMs (or design features for to-be-built SCMs) that can enhance or extend hydrologic mitigation and reduce the chances of failure.

Within the next 12 months, a literature search will be conducted to determine how other states are managing the failure of SCMs. The team will select four SCMs and model them using the Environmental Protection Agency's Storm Water Management Model to determine how design adjustments can be made and study how modifications may improve (or hinder) stormwater runoff mitigation. The modeling will be run against extreme events to determine where hydrologic mitigation no longer occurs (link).

2.4.6 Explore retrofit and ongoing treatments to withstand future high impact events	**Planned**

Expected Completion Date: Winter 2024

NCDOT is exploring resilience alternatives to adapt and recover quickly from storm disruptions other than raising infrastructure. Geogrid embankment reinforcement designed to protect roadway embankment in the event of overtopping is being incorporated into the B-4636 project in Sampson County. The M-0540A project is addressing the protection of the N.C. 24 causeway near Swansboro using living shorelines, which offer an alternative to embankment hardening with rock providing a solution that will adapt to rising sea levels. In addition, the HB-0001 Alligator River Bridge replacement is an investigation into the use of carbon fiber reinforced concrete for bridge construction.

Within the next 12 months, NCDOT expects to start construction efforts.

2.4.7 Explore Resilience Funding Opportunities	**Ongoing**

Expected Completion Date: N/A

During 2021, NCDOT cooperated with and supported state and local government partners on multiple Building Resilient Infrastructure and Communities (BRIC) and Resilient Coastal Communities grant applications. While NCDOT did not have any specific resilience allocations in the 2021 state budget, several cabinet agencies (The North Carolina Department of Environmental Quality (NCDEQ), North Carolina Emergency Management (NCEM), The North

Carolina Division of Mitigation Services (NCDMS), and others received funding mandates that will require NCDOT collaboration and will benefit from NCDOT data and technical input.

NCDOT is actively exploring funding opportunities from IIJA, in particular under the PROTECT program, focusing on resilience planning and making improvements to existing transportation infrastructure and evacuation routes. In addition, NCDOT is working with local entities to prioritize transportation and emergency response improvements and address vulnerabilities.

3.0. Address the public health impacts of climate change

3.1 Increase understanding and awareness of the health impacts of climate change

This section is not applicable.

3.2 Advance health equity

3.2.1 Strengthen access to N.C. ferries to support coastal communities' resiliency, health and mobility	**Underway**

Expected Completion Date: July 2023

The N.C. Ferry System faces challenges such as declining ridership, keeping pace with evolving technology, operations affected by extreme weather events, and a lack of sustainable funding sources. Prior studies have examined N.C. ferry operations and made recommendations regarding ways in which future passenger ferries can enhance ridership and improve operations, including such things as building connections to existing shuttle terminals and extending transit services. These studies have been oriented to tourism and existing business owner interests and do not fully account for the broader community goals related to economic opportunities, health and transportation access, nor do they account for the unique needs of marginalized populations. In this project, NCDOT's transdisciplinary team is investigating ways in which innovations related to walking, bicycling, micro mobility, transit operations, and mobility on demand (MOD) services may be employed to support NCDOT's work to ensure that transportation projects provide far-reaching and equitable benefits to communities, the economy, and the quality of life and health of North Carolinians.

Within the next 12 months, the research team will continue to perform additional targeted literature searches to stay up to date on current work being performed on the subject matter. Researchers will plan for and implement listening sessions with stakeholder groups and

develop refinements to data collection and analysis plan. The research team will also develop an outline for short- and long-range planning documents (link).

3.3 Initiate other projects aimed at addressing the public health impacts of climate change

This section is not applicable.

4.0. Invest in historically underserved communities

4.1 Increase affordability for low- and moderate-income households

This section is not applicable.

4.2 Create jobs and economic growth

4.2.1 Increase On-the-Job Training program capacity for the clean energy sector	**Ongoing**
Expected Completion Date: N/A The NCDOT Office of Civil Rights (OCR) is developing a policy and program to provide opportunities for North Carolina's workforce and businesses. The On-the-Job Training (OJT) program will work with various non-profit organizations, community colleges and local governments to include trainings that are focused on clean energy.	
4.2.2 Increase Disadvantaged Business Enterprise (DBE) Certified Businesses in the Clean Energy Program	**Ongoing**
Expected Completion Date: N/A The NCDOT OCR is developing a policy and program to increase the number of Disadvantaged Business Enterprise (DBE) Certified Businesses in the Clean Energy Program. DBE Companies that are using innovative research to develop energy efficient and clean energy technologies will receive support from OCR's Business Opportunity Workforce Development (BOWD) program. Trainings, webinars and research will be provided to those DBEs firms to increase their opportunities to compete and/or be part of larger prime companies as a sub-contractor. The BOWD program will partner with the OJT program to facilitate connections among training providers and organizations that are interested in collaborating with NCDOT's workforce development and training programs. This effort will be in accordance with the Clean Energy & Clean Transportation in NC: A Workforce Assessment report.	

4.2.3 Incorporate clean energy components into the STEM program	**Planned**
Expected Completion Date: N/A NCDOT's Office of Historically Black Colleges and Universities (HBCU) Outreach, manages the Summer STEM program for K-12 educators and the National Summer Transportation Institute for middle and high school students. These programs provide students and educators with hands-on experience in transportation. Beginning in summer 2023, HBCU Outreach will incorporate clean energy components in the curriculum for these programs to encourage students to consider clean energy programs of study in college.	
4.2.4 Collaborate with agency partners to offer internships and fellowships focused on clean energy	**Planned**
Expected Completion Date: N/A NCDOT's Office of HBCU Outreach manages the NCDOT HBCU/Minority Serving Institution (MSI) internship program for undergraduate students and fellowship program for graduates/graduate students. These programs provide opportunities for students attending a historically black college or university or a minority serving institution to explore career opportunities in transportation to diversify the department's workforce and enhance workforce development efforts. Beginning in summer 2023, HBCU Outreach will collaborate with agency partners to offer internships and fellowships specifically focused on clean energy and add educational experiences for all interns and fellows on clean energy.	

4.3 Alert residents and businesses, particularly those in underserved communities, of state and federal grant opportunities

4.3.1 Host several webinars to bring together a wide and varied group of people and business, albeit over the internet	**Ongoing**
Expected Completion Date: N/A The webinars consist of participation from subject matter experts to increase the content available for interested parties. Webinars address common questions and concerns harbored by the residents and businesses. Webinars recordings can be converted to blog post or Q & A articles and videos can be viewed later. Collection of Q & A, as well as poll data information is used to build a profile for future grant topics. This effort can also provide a demographic of the audience for future marketing strategies.	

4.3.2 Develop a stakeholder list for awareness of state and federal grant opportunities	**Planned**
Expected Completion Date: June 2023 NCDOT plans develop a list containing stakeholders from all municipalities, counties, MPOs, RPOs, the NC Rural Center, the NC Metro Mayors, and transit providers to make them aware of state and federal grant opportunities. Within the next 12 months, NCDOT will finalize the development of the list.	

4.4 Initiate other projects aimed at investing in underserved communities

4.4.1 Enhance the strategic prioritization process with socioeconomic geospatial analysis	**Underway**
Expected Completion Date: December 2022 In 2021, NCDOT partnered with NC State University to conduct a research project to enable the agency to incorporate data into the Prioritization Process that has been historically challenging to integrate, including geo-located socio-economic (social, health, economic, etc.) datasets. The results of this approach will provide NCDOT with a simplified method for assessing the potential socio-economic impacts associated with a given transportation process and will normalize these impacts to enable the comparison of impacts between projects. To help ensure appropriate application and implementation, the research team will coordinate with NCDOT to gather expert input from NCDOT staff, the Prioritization Workgroup and other key stakeholders to inform the research process and the development of socio-economic impact factors. Within the next 12 months, NCDOT expects to complete this project (link).	

4.4.2 Create Environmental Justice / Transportation Disadvantage Index Tools	**Underway**
Expected Completion Date: March 2023 Interactive mapping and data tools have been created to help NCDOT staff and external partners understand and visualize potential transportation disadvantage and the disproportionate impact of transportation barriers on certain populations. These tools also help inform policies, planning and project development decision making. Within the next 8 months, NCDOT will be conducting training on these tools, and a feedback form will be used to gather input on the tools. Feedback gained will inform the further refinement of the tools. NCDOT is also initiating a supporting project to create a statewide equity dashboard that provides an interactive data and visualization portal to inform decision-making around equity in the state. This effort will involve early discussion of data metrics to include in the dashboard.	

4.4.3 Include equity in benefit-cost analysis (BCA)	**Underway**

Expected Completion Date: July 2023

In 2021, NCDOT started a project to establish user-friendly approaches to integrate equity into NCDOT's BCA processes. This involves the development of two cross-modal measures, air quality and physical health, that can be included in NCDOT's strategic planning and prioritization processes. As a key component of this project, cross-modal measures will be validated through three hypothetical project prioritization scenarios. These scenarios will discuss the potential changes in transportation project scoring outcomes based on the benefits and costs selected for analysis.

Within the next 12 months, the researchers will respond to feedback from the Steering & Implementation Committee (SIC) regarding the definition of equity. In addition, the research team will investigate equity related best practices on air quality measures and methodologies, community goals and objectives, evaluation tools, as well as implementation of complete streets in development proposals. The research team will then use the content from the literature review and methodologies to develop an implementation methodology for two cross-modal measures (air quality and physical health) to potentially be included in the prioritization process. This information will be applied to several hypothetical scenarios on the NC project prioritization process (link).

4.4.4 Analyze incorporation of equity for Long-Range Transportation Planning (LRTP)	**Underway**

Expected Completion Date: May 2024

The gaps in transportation planning, implementation of projects, and resulting differences in service opportunities for certain population groups and for people living in certain areas with access limitations for quicker delivery has become even more evident during the COVID-19 pandemic. The objectives of this research are: 1) to review the recent developments in transportation equity related research, the ongoing research initiative “RP 2022-17: Including Equity in Benefit-Cost Analysis" and identify the best practices, existing gaps, limitations and challenges; 2) to survey the staff of MPOs, RPOs, and other state departments of transportation (DOTs) as well as conduct focus group meetings and gather information on how equity can best be addressed in the early stages of long-range transportation planning as well as for timely delivery of perishable necessary goods to all; 3) to identify data, data sources, specific performance measures and evaluation tools for equity analysis in long range transportation planning; and 4) to develop guidelines and propose a complementary methodology that can be applied to ensure equity is appropriately addressed during project proposal development/ alternatives analysis for long range transportation planning in North Carolina.

Within the next 12 months, the researchers will conduct a literature review and review the preliminary contents from “RP 2022-17: Include Equity in Benefit-Cost Analysis.” Following this deliverable, NCDOT will survey MPOs, RPOs, other NC agencies and other state DOTs on how they address equity during the implementation of long-range transportation planning. The researchers will then conduct a focus group meeting with NCDOT and other state partners to discuss state-required Comprehensive Transportation Plan (CTP), Metropolitan Transportation

Plan (MTP), corridor plans, statewide plans, subarea plans, and the State Implementation Plan (SIP). Based on the information that is gathered, the researchers will then begin developing guidance on methods NCDOT can use to address equity analysis in long range transportation planning (link).

4.4.5 Develop Statewide Local Area Resource Contacts (LARC) stakeholder database within PublicInput CRM

Underway

Expected Completion Date: June 2023

NCDOT teamed with a consultant to source contact information for development of a Local Area Resource Contact (LARC) database for local stakeholders and community organizations throughout the state. Proposed contacts that PublicInput (contracted firm) will source and maintain include:

- Ethnic and Minority Organizations
- Local news outlets
- Apartment complexes
- Churches, synagogues and other faith communities
- Homeowner Associations (HOAs)
- Senior communities
- Community colleges
- Universities
- Deaf and blind advocacy groups
- Civic Associations (Rotary, Shriners, Lions etc.)

Within the next 12 months, this information will be imported into the PublicInput.com CRM application to allow planners and consultants reference to contacts in their project's area and documentation of this step as part of their public involvement process.

4.4.6 Work with stakeholders on strategic NCDOT projects within the state to create opportunities in underserved communities

Ongoing

Expected Completion Date: N/A

The OCR through its BOWD and OJT is coordinating with NCDOT's projects and programs to connect communities to opportunities. Current projects in collaboration with OCR include:

- Rail Division, Virginia DOT S-Line Corridor-Eastern Region development,
- Toyota Battery Plant
- Central Region I-26 in Ashville, NC
- Western NC, and NC Clean Transportation and
- NEVI Plan development and implementation.

In service to these projects and programs OCR has developed public information sessions and partnerships to provide trainings that should allow for participation in Department activities. OCR has initiated a research project that will enable OCR to understand qualitatively and

quantitatively the best ways to measure the impacts of NCDOT projects on communities of color that can inform policy and project decisions.	
4.4.7 Assess metrics and indicators for the Office of Civil Rights	**Underway**
Expected Completion Date: March 2023 The NCDOT OCR is sponsoring a research project to conduct an extensive state of the practice review and document its applicable findings to assess metrics and indicators for the Office of Civil Rights. As the information in collected, the data sources and information are reviewed and organized considering key takeaways and conducting analysis using spreadsheet-based tools. The researchers completed a meeting on September 8, 2022, with the Office of Civil Rights to discuss project updates, data access, and information that will be relevant for developing Key Performance Indicators for the Office of Civil Rights. Within the next 12 months, the project is expected to be completed.	

Additional Information

The North Carolina 2021 Appropriations Act S.L. 2021-180, Section 5.9 titled Disaster Relief and Recovery/Mitigation/Resiliency, established or expanded several programs in which the Department of Transportation was a participant. Those sections are listed below.

- Intergovernmental Coordination on stream management and flooding reduction. Section 5.9.(p)
- Interagency Coordination on stream management and flooding reduction. Section 5.9.(p)
- Flood Resiliency Blueprint. Section 5.9.(c)
- Transportation Infrastructure Resiliency Fund Grant Program. Section 5.9.(h)