

DEQ
NORTH CAROLINA
Department of Environmental Quality

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North Carolina Comprehensive Climate Action Plan

NC DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ)

Prepared as a deliverable through the Climate Pollution Reduction Grants (CPRG) Program, Section 60114(a) of the Inflation Reduction Act

NORTH CAROLINA
Climate Pollution
REDUCTION GRANT

Executive Summary

North Carolina has made steady progress in reducing greenhouse gas (GHG) emissions since 2005, particularly through cleaner electricity generation, early adoption of energy efficiency programs, and leadership in zero-emission vehicle policies. These steps have expanded resiliency, supported economic and workforce development, reduced energy costs, and lowered emissions across the state.

The Comprehensive Climate Action Plan (CCAP), developed by the NC Department of Environmental Quality (NCDEQ) under the Climate Pollution Reduction Grants (CPRG) Program, builds on this progress. With implementation of the funded measures included here the state is on track to meet its goal of reducing GHG emissions by 50 percent below 2005 levels by 2030. This outcome is driven by sector-specific strategies such as increasing options for renewable electricity, improving energy efficiency in buildings, expanding the use of electric vehicles, and expanding land-based carbon sequestration.

Reaching net-zero by 2050, however, will require additional steps beyond current projects and funding.

The NC pathway to success includes:

- Strengthening resiliency through the expansion of microgrids and modernizing grid infrastructure to protect communities from outages and build long-term reliability.
- Accelerating transportation transformation through greater efficiency improvements in freight and transit while increasing the deployment of zero-emission vehicles.
- Increasing upgrades of more efficient heating and cooling systems and deepening building decarbonization by electrifying those systems.
- Reducing waste-sector emissions through food waste diversion, and broader methane control.
- Preserving and expanding solar generation, while advancing offshore wind, long-duration storage, and other zero-carbon technologies.
- Enhancing natural and working lands with expanded restoration, reforestation, and climate-smart practices.
- Advancing industrial solutions by focusing on efficiency and decarbonization measures that align with profitability, while expanding workforce training and technical capacity to support deployment of new technologies.

The CCAP provides a clear near-term roadmap to 2030, while recognizing that long-term success will depend on increasing investments that continue to expand resiliency, support economic and workforce development, continue to reduce energy costs, and lower emissions across the state. The measures in this plan are funded by existing or anticipated funding unless otherwise noted.

Key Objectives

1. **Strengthen Resiliency and Reduce Climate Pollution:** Support resiliency by modernizing energy infrastructure and investing in more reliable energy systems, including microgrids. Lower household and business energy costs through efficiency upgrades such as weatherization, appliance replacements, and building improvements.

2. **Support Economic Development and Workforce Readiness:** Ensure that communities and industries benefit from the transition by creating opportunities for local jobs, technical training, and workforce development tied to clean energy and decarbonization.
3. **Deliver Cleaner Air and Healthier Communities:** Reduce harmful co-emitted air co-pollutants (e.g., NOx, SO_2, and PM2.5) in residential, work, and recreational areas, improving quality of life while supporting long-term climate and health goals.

Approach

The CCAP builds on the Priority Climate Action Plan (PCAP) by updating and expanding GHG reduction strategies using new data, modeling, stakeholder input, and implementation considerations. While the PCAP set the foundation, the CCAP identifies strategies that are implementable, feasible, and measurable.

The plan addresses six core sectors: electricity generation, industry, transportation, buildings, waste management, and natural and working lands. It also meets the economy-wide requirement of the CPRG Program by ensuring that cross-cutting strategies such as workforce development, community engagement, and infrastructure investments are integrated across all sectors to maximize impact.

This approach provides a clear path toward achieving the state's 2030 emission reduction target while revealing options for deeper reductions needed to reach net-zero by 2050.

GHG Inventory, Projections and Targets

North Carolina's GHG inventory and business-as-usual (BAU) projections form the analytical foundation for the CCAP for key sectors (e.g., transportation, electricity, natural and working lands). These analyses establish a statewide baseline for past emissions and future emissions projections and allow the state to evaluate the potential impact of future GHG reduction measures. The plan includes the most recent state GHG inventory published in 2024. The inventory is a retrospective analysis, capturing a snapshot in time of the state's emissions profile and does not reflect real-time data.

North Carolina has formal climate goals that collectively define the state's near- and long-term GHG reduction targets, which strongly align with those in the CPRG Program. These goals were established through executive orders, legislation, and sector-specific planning efforts since 2018.

- **Baseline**: The most recent GHG inventory covers emissions from 1990 to 2020, projecting future emissions through 2050 under a business-as-usual (BAU) scenario.
- **GHG Targets**: Reduce economy-wide GHG emissions to 50% below 2005 levels by 2030 and achieve net-zero emissions by 2050.

Key Measures and Implementation

The CCAP includes 14 measures across the six core sectors.

Table ES-1. List of Sectors and Measures

Sector	Measure	Description
Transportation	Measure 1	Increase the number of medium- and heavy-duty (MHD) zero emission and electric vehicles through programs to replace diesel emission vehicles.
	Measure 2	Identify, install, and maintain a public electric vehicle charging network to support increased EV adoption statewide.
	Measure 3	Implement programs to increase efficiency and reduce GHG emissions at deep water and inland ports.
	Measure 4	Support regional strategies to reduce vehicle miles traveled (VMT).
Electricity	Measure 5	Increase the amount of electricity generated by renewable resources in North Carolina.
	Measure 6	Implement measures to increase energy resiliency in North Carolina communities: Microgrids for North Carolina Resilience.
Commercial & Residential Buildings	Measure 7	Reduce per square foot energy usage in residential buildings in North Carolina.
	Measure 8	Decarbonize buildings in North Carolina through replacement of fossil fuel combustion sources and other greenhouse gas emissions.
Industry	Measure 9	Industrial Decarbonization Planning and Opportunity Analysis.
Waste	Measure 10	Reduce food waste entering the waste management system to reduce the methane emissions from food waste landfilling, direct food to communities in need, and create organic resources through composting or digestion.
	Measure 11	Decarbonize waste collection to reduce GHG emissions during the collection and transport of wastes through electrification of fleets or through engine conversion from diesel to electric motors.
	Measure 12	Reduce landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life.
Natural and Working Lands	Measure 13	Coastal Habitat Enhancement and Peatlands Restoration
	Measure 14	Protect, use, and develop agricultural and forest land.

Intersection with Other Funding

Measures in this plan are funded by existing or anticipated funding (unless noted otherwise). The table below identifies funding sources by sector / measure.

Table ES-2. List of Funding Sources by Measure

Sector	Measure	Funding Source
Transportation	Measure 1	VW Settlement, DERA, and the Clean Fuels Advanced Technology (CFAT)
	Measure 2	VW Settlement, CFAT
	Measure 3	Rebuilding American Infrastructure with Sustainability and Equity (RAISE), Better Utilizing Investments to Leverage Development (BUILD), CMAQ, DERA, Private Infrastructure Development Group (PIDG)
	Measure 4	Unfunded
Electricity	Measure 5	EPA, DOE, State funding
	Measure 6	DOE, State funding
Commercial & Residential Buildings	Measure 7	DOE, Low Income Home Energy Assistance Program (LIHEAP), Heating and Air Repair and Replacement Program (HARRP)
	Measure 8	State funding
Industry	Measure 9	Unfunded
Waste	Measure 10	Unfunded
	Measure 11	VW Settlement
	Measure 12	Unfunded
Natural and Working Lands	Measure 13	EPA CPRG Implementation Grant
	Measure 14	EPA CPRG Implementation Grant

Key Takeaways

Transportation

- Investing approximately $83 million to increase the number of low-carbon emitting and electric vehicles like school buses, transit buses, garbage trucks, and emergency vehicles by replacing diesel emission vehicles and resulting in cumulative GHG reductions of 37,024.89 $MTCO_2e$ by 2030 and 687,997.85 $MTCO_2e$ by 2050.
- Investing $14 million to expand the public electric vehicle charging network to support increased EV adoption statewide which cumulatively results in 16,524.31 $MTCO_2e$ by 2030 and 330,486.30 $MTCO_2e$ by 2050.
- Investing $117 million to improve energy efficiency associated with freight shipping at NC ports by upgrading technology at freight terminals and ports, expanding more efficient freight corridors across the state, and coordinating with private industry to increase electrification of equipment. These actions result in 11,448 $MTCO_2e$ by 2030 and 146,282.60 $MTCO_2e$ by 2050.

Electricity

- Investing nearly $384 million to increase the amount of electricity generated by distributed and renewable resources in North Carolina through promotion and adoption of solar, geothermal, and onshore wind resulting in cumulative GHG reductions of 1,460,679.83 $MTCO_2e$ by 2030 and 7,303,399.14 $MTCO_2e$ by 2050.
- Investing nearly $5.8 million to improve energy resiliency in North Carolina communities by implementing temporary microgrid solutions designed to bring power, water purification, and communications. These actions result in 13,156.86 $MTCO_2e$ by 2030 and 65,784.29 $MTCO_2e$ by 2050.

Buildings

- Investing nearly $217 million to reduce the energy burden for low-income rural households by providing services that install insulation, air sealing, and HVAC upgrades as well as funding performance-based and whole-home retrofit strategies to achieve deeper energy savings. These actions result in 90,876 $MTCO_2e$ by 2030 and 736,196 $MTCO_2e$ by 2050.
- Investing nearly $25 million to increase energy efficiency in state-owned buildings, including government, commercial, industrial, institutional and residential, by conducting energy audits, installing equipment upgrades, improving energy management systems, weatherization, training, materials management, recycling, and other measures, for new and existing buildings. These actions aim to achieve an Energy

Use Intensity (EUI) reduction goal of 40% per square foot by 2025 and result in 577,632 $MTCO_2e$ by 2030 and 4,465,162 $MTCO_2e$ by 2050.

Industry

- NCDEQ identifies this sector as a gap reflecting the need for future attention and analysis to support workforce development and cost savings for companies.
- Industrial stakeholders in NC have emphasized that capital investments in electrification, low-carbon fuels, and process improvements are unlikely to occur unless they result in near-term cost savings or are offset by financial incentives. Additionally, lack of skilled personnel to maintain new systems is a challenge.

Waste

- NCDEQ identifies this sector as a gap reflecting the need for future attention and analysis to support local jurisdictions in planning and implementation.
- Divert food from the waste system to reduce methane emissions by installing food donation refrigerators in schools, transferring excess food to food banks, expanding compost facility capacity and improving education. These activities have the potential to reduce GHG emissions by 1,234,674 $MTCO_2e$ by 2030.
- Reduce landfill gas emissions through gas collection systems and landfill covers. These actions may result in 36,453 $MTCO_2e$ by 2030 and 781,359 $MTCO_2e$ by 2050.

Benefits Analysis

- **Co-pollutant Reductions**: Significant reductions in pollutants like NO_X, SO_2, and $PM_{2.5}$, will improve air quality and public health.
- **Economic and Workforce Benefits**: Job creation in clean energy sectors, cost savings from energy efficiency, and support for rural and low-income communities can boost the local economy.
- **Resilience**: Enhanced resilience to extreme weather events through infrastructure improvements and natural habitat restoration will improve energy affordability and reliability.

Community Engagement

The CCAP development process included engaging with a variety of stakeholders, including virtual and in-person sessions, surveys, and interviews. This process ensured that the plan reflects community priorities and addresses local climate risks and opportunities.

Workforce Planning

The plan identifies key workforce needs and opportunities in clean energy sectors, emphasizing the importance of training and job creation to support the transition to a low-carbon economy. The analysis provides valuable insights into the current state of North Carolina's climate-related workforce and highlights opportunities for possible future growth across key sectors.

Moving Forward

In 2027, NCDEQ will provide a CPRG Status Report detailing the implementation status of quantified GHG reduction measures from the CCAP, updated analyses or projections supporting CCAP implementation, and future steps and resource needs for continued implementation. This report will also include any updates to the GHG inventory and BAU projections that have occurred due to regulatory changes at the federal and state levels.

North Carolina's CCAP has been developed during a period of rapid change in federal and state policy and funding landscapes. The analysis and measures presented reflect the most current information available on GHG reduction programs, incentives, and regulatory frameworks at the time of drafting. However, evolving federal legislation, shifting agency priorities, and pending state budget decisions create inherent uncertainty about the long-term availability and scope of funding streams that underpin several measures in this plan.

Importantly, North Carolina did not receive a direct Climate Pollution Reduction Grant Implementation Grant. The state is participating in a multi-state coalition that secured an implementation award focused on supporting conservation and restoration of natural lands, and North Carolina will benefit from that regional effort. However, for many measures outlined in this plan, primary reliance remains on existing or anticipated funding from other state and federal programs, many of which are subject to change or in danger of being eliminated altogether. Without direct implementation funding from the CPRG program, the overall pace of action in North Carolina will necessarily be slower, and progress toward near- and long-term climate goals may take longer to achieve. While the CCAP outlines a clear and actionable path forward, its successful execution will depend on sustained policy support, timely funding allocations, and continued collaboration among state, local, and federal partners.