EPA KEY CONTACTS FORM

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Authorized Representative: *Original awards and amendments will be sent to this individual for review and acceptance, unless otherwise indicated.*

Name: Prefix: Ms. First Name: Elizabeth Middle Name: S.
Last Name: Biser Suffix:

Title: Secretary of Environmental Quality

Complete Address:

Street1: NC Department of Environmental Quality
Street2: 1601 Mail Service Center
City: Raleigh State: NC: North Carolina
Zip / Postal Code: 27699-1601 Country: USA: UNITED STATES

Phone Number: 919-707-8622 **Fax Number:**

E-mail Address: elizabeth.biser@deq.nc.gov

Payee: *Individual authorized to accept payments.*

Name: Prefix: Mr. First Name: Jon Middle Name:
Last Name: Griffin Suffix:

Title: Interim Chief Financial Officer

Complete Address:

Street1: NC Department of Environmental Quality
Street2: 1601 Mail Service Center
City: Raleigh State: NC: North Carolina
Zip / Postal Code: 27699-1601 Country: USA: UNITED STATES

Phone Number: 919-707-8561 **Fax Number:**

E-mail Address: jon.griffin@deq.nc.gov

Administrative Contact: *Individual from Sponsored Programs Office to contact concerning administrative matters (i.e., indirect cost rate computation, rebudgeting requests etc).*

Name: Prefix: Ms. First Name: Julie Middle Name:
Last Name: Woosley Suffix:

Title: State Energy Office Director

Complete Address:

Street1: NC Department of Environmental Quality
Street2: 1601 Mail Service Center
City: Raleigh State: NC: North Carolina
Zip / Postal Code: 27699-1601 Country: USA: UNITED STATES

Phone Number: 919-707-8374 **Fax Number:**

E-mail Address: Julie.Woosley@deq.nc.gov

EPA KEY CONTACTS FORM

Project Manager: *Individual responsible for the technical completion of the proposed work.*

Name: **Prefix:** Ms. **First Name:** Julie **Middle Name:**

Last Name: Woosley **Suffix:**

Title: State Energy Office Director

Complete Address:

Street1: NC Department of Environmental Quality

Street2: 1601 Mail Service Center

City: Raleigh **State:** NC: North Carolina

Zip / Postal Code: 27699-1601 **Country:** USA: UNITED STATES

Phone Number: 919-707-8374 **Fax Number:**

E-mail Address: Julie.Woosley@deq.nc.gov

Tracking Number:GRANT14107031 Funding Opportunity Number:EPA-R-OAR-CPRGI-23-07 Received Date:Mar 29, 2024 11:01:42 AM EDT

OMB Number: 2030-0020
Expiration Date: 06/30/2024

Preaward Compliance Review Report for All Applicants and Recipients Requesting EPA Financial Assistance

Note: Read Instructions before completing form.

I. A. Applicant/Recipient (Name, Address, City, State, Zip Code)

Name: Elizabeth S Biser

Address: NC Department of Environmental Quality
1601 Mail Service Center

City: Raleigh

State: NC: North Carolina Zip Code: 27699-1601

B. Unique Entity Identifier (UEI): TFQVKH1E8Y41

C. Applicant/Recipient Point of Contact

Name: Julie Woosley

Phone: 919-707-8374

Email: Julie.woosley@deq.nc.gov

Title: State Energy Office Director

II. Is the applicant currently receiving EPA Assistance? ☒ Yes ☐ No

III. List all pending civil rights lawsuits and administrative complaints filed under federal law against the applicant/recipient that allege discrimination based on race, color, national origin, sex, age, or disability. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

EPA Complaint No. 04RD-22-R4; 05RNO-21-R4; 06RNO-23-R4;

IV. List all civil rights lawsuits and administrative complaints decided against the applicant/recipient within the last year that alleged discrimination based on race, color, national origin, sex, age, or disability and enclose a copy of all decisions. Please describe all corrective actions taken. (Do not include employment complaints not covered by 40 C.F.R. Parts 5 and 7.)

N/A

V. List all civil rights compliance reviews of the applicant/recipient conducted under federal nondiscrimination laws by any federal agency within the last two years and enclose a copy of the review and any decisions, orders, or agreements based on the review. Please describe any corrective action taken. (40 C.F.R. § 7.80(c)(3))

N/A

VI. Is the applicant requesting EPA assistance for new construction? If no, proceed to VII; if yes, answer (a) and/or (b) below.

☐ Yes ☒ No

a. If the grant is for new construction, will all new facilities or alterations to existing facilities be designed and constructed to be readily accessible to and usable by persons with disabilities? If yes, proceed to VII; if no, proceed to VI(b).

☐ Yes ☒ No

b. If the grant is for new construction and the new facilities or alterations to existing facilities will not be readily accessible to and usable by persons with disabilities, explain how a regulatory exception (40 C.F.R. 7.70) applies.

VII. **Does the applicant/recipient provide initial and continuing notice that it does not discriminate on the basis of race, color, national origin, sex, age, or disability in its program or activities? (40 C.F.R 5.140 and 7.95)** ☒ Yes ☐ No

a. **Do the methods of notice accommodate those with impaired vision or hearing?** ☒ Yes ☐ No

b. **Is the notice posted in a prominent place in the applicant's/recipient's website, in the offices or facilities or, for education programs and activities, in appropriate periodicals and other written communications?** ☒ Yes ☐ No

c. **Does the notice identify a designated civil rights coordinator?** ☒ Yes ☐ No

VIII. **Does the applicant/recipient maintain demographic data on the race, color, national origin, sex, age, or disability status of the population it serves? (40 C.F.R. 7.85(a))** ☒ Yes ☐ No

IX. **Does the applicant/recipient have a policy/procedure for providing meaningful access to services for persons with limited English proficiency? (Title VI, 40 C.F.R. Part 7, *Lau v Nichols* 414 U.S. (1974))** ☒ Yes ☐ No

X. **If the applicant is an education program or activity, or has 15 or more employees, has it designated an employee to coordinate its compliance with 40 C.F.R. Parts 5 and 7? Provide the name, title, position, mailing address, e-mail address, fax number, and telephone number of the designated coordinator.**

Maya Hoon, NCDEQ Title VI and EJ Coordinator, 217 W Jones St Raleigh, NC 27603, maya.hoon@deq.nc.gov, (919) 707-8496

XI. **If the applicant is an education program or activity, or has 15 or more employees, has it adopted grievance procedures that assure the prompt and fair resolution of complaints that allege a violation of 40 C.F.R. Parts 5 and 7? Provide a legal citation or applicant's/ recipient's website address for, or a copy of, the procedures.**

https://deq.nc.gov/permits-rules/title-vi-compliance

For the Applicant/Recipient

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law. I assure that I will fully comply with all applicable civil rights statutes and EPA regulations.

A. Signature of Authorized Official	B. Title of Authorized Official	C. Date
Helen Hossley	Secretary of Environmental Quality	03/29/2024

For the U.S. Environmental Protection Agency

I have reviewed the information provided by the applicant/recipient and hereby certify that the applicant/recipient has submitted all preaward compliance information required by 40 C.F.R. Parts 5 and 7; that based on the information submitted, this application satisfies the preaward provisions of 40 C.F.R. Parts 5 and 7; and that the applicant has given assurance that it will fully comply with all applicable civil rights statures and EPA regulations.

A. *Signature of Authorized EPA Official	B. Title of Authorized Official	C. Date

Instructions for EPA FORM 4700-4 (Rev. 04/2021)

General. Recipients of Federal financial assistance from the U.S. Environmental Protection Agency must comply with the following statutes and regulations.
Title VI of the Civil Rights Acts of 1964 provides that no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. The Act goes on to explain that the statute shall not be construed to authorize action with respect to any employment practice of any employer, employment agency, or labor organization (except where the primary objective of the Federal financial assistance is to provide employment). Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act provides that no person in the United States shall on the ground of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under the Federal Water Pollution Control Act, as amended. Employment discrimination on the basis of sex is prohibited in all such programs or activities. Section 504 of the Rehabilitation Act of 1973 provides that no otherwise qualified individual with a disability in the United States shall solely by reason of disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance. Employment discrimination on the basis of disability is prohibited in all such programs or activities. The Age Discrimination Act of 1975 provides that no person on the basis of age shall be excluded from participation under any program or activity receiving Federal financial assistance. Employment discrimination is not covered. Age discrimination in employment is prohibited by the Age Discrimination in Employment Act administered by the Equal Employment Opportunity Commission. Title IX of the Education Amendments of 1972 provides that no person in the United States on the basis of sex shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance. Employment discrimination on the basis of sex is prohibited in all such education programs or activities. Note: an education program or activity is not limited to only those conducted by a formal institution. 40 C.F.R. Part 5 implements Title IX of the Education Amendments of 1972. 40 C.F.R. Part 7 implements Title VI of the Civil Rights Act of 1964, Section 13 of the 1972 Amendments to the Federal Water Pollution Control Act, and Section 504 of The Rehabilitation Act of 1973.

Items "Applicant" means any entity that files an application or unsolicited proposal or otherwise requests EPA assistance. 40 C.F.R. §§ 5.105, 7.25. "Recipient" means any State or its political subdivision, any instrumentality of a State or its political subdivision, any public or private agency, institution, organizations, or other entity, or any person to which Federal financial assistance is extended directly or through another recipient, including any successor, assignee, or transferee of a recipient, but excluding the ultimate beneficiary of the assistance. 40 C.F.R. §§ 5.105, 7.25. "Civil rights lawsuits and administrative complaints" means any lawsuit or administrative complaint alleging discrimination on the basis of race, color, national origin, sex, age, or disability pending or decided against the applicant and/or entity which actually benefits from the grant, but excluding employment complaints not covered by 40 C.F.R. Parts 5 and 7. For example, if a city is the named applicant but the grant will actually benefit the Department of Sewage, civil rights lawsuits involving both the city and the Department of Sewage should be listed. "Civil rights compliance review" means: any federal agency-initiated investigation of a particular aspect of the applicant's and/or recipient's programs or activities to determine compliance with the federal non-discrimination laws. Submit this form with the original and required copies of applications, requests for extensions, requests for increase of funds, etc. Updates of information are all that are required after the initial application submission. If any item is not relevant to the project for which assistance is requested, write "NA" for "Not Applicable." In the event applicant is uncertain about how to answer any questions, EPA program officials should be contacted for clarification.

CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

* APPLICANT'S ORGANIZATION

North Carolina Department of Environmental Quality

* PRINTED NAME AND TITLE OF AUTHORIZED REPRESENTATIVE

Prefix: | * First Name: Elizabeth | Middle Name:

* Last Name: Biser | Suffix:

* Title: Secretary of Environmental Quality

* SIGNATURE: Helen Hossley | * DATE: 03/29/2024

Other Attachment File(s)

*** Mandatory Other Attachment Filename:** 1234-North Carolina Priority Climate Action Plan_N

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

Project Narrative File(s)

*** Mandatory Project Narrative File Filename:** 1252-Workplan_NCDEQ.pdf

Add Mandatory Project Narrative File | Delete Mandatory Project Narrative File | View Mandatory Project Narrative File

To add more Project Narrative File attachments, please use the attachment buttons below.

Add Optional Project Narrative File | Delete Optional Project Narrative File | View Optional Project Narrative File

OMB Number: 4040-0004
Expiration Date: 11/30/2025

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 03/29/2024

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: North Carolina Department of Environmental Quality

* b. Employer/Taxpayer Identification Number (EIN/TIN): 56-6000372

* c. UEI: TFQVKH1E8Y41

d. Address:

* Street1: 217 West Jones Street

Street2:

* City: Raleigh

County/Parish:

* State: NC: North Carolina

Province:

* Country: USA: UNITED STATES

* Zip / Postal Code: 27603-2396

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

* First Name: Julie

Middle Name:

* Last Name: Woosley

Suffix:

Title:

Organizational Affiliation:

* Telephone Number: 919-707-8203

Fax Number:

* Email: julie.woosley@deq.nc.gov

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

A: State Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.046

CFDA Title:

Climate Pollution Reduction Grants

*** 12. Funding Opportunity Number:**

EPA-R-OAR-CPRGI-23-07

* Title:

Climate Pollution Reduction Grants Program: Implementation Grants (General Competition)

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

North Carolina Implementation Grant
Bridging Science, Communities, and Innovation for a Clean Energy Future

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: NC 004 * b. Program/Project: NC ALL

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 04/01/2024 * b. End Date: 06/30/2030

18. Estimated Funding ($):

* a. Federal	199,999,999.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	199,999,999.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .

☒ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☐ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: * First Name: Elizabeth

Middle Name:

* Last Name: Biser

Suffix:

* Title: Secretary of Environmental Quality

* Telephone Number: 919-7078622 Fax Number:

* Email: elizabeth.biser@deq.nc.gov

* Signature of Authorized Representative: Helen Hossley * Date Signed: 03/29/2024

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2025

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. North Carolina CPRG Implementation Grant	66.046	$	$	$ 199,999,999.00	$	$ 199,999,999.00
2.						
3.						
4.						
5. Totals		$	$	$ 199,999,999.00	$	$ 199,999,999.00

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1)	(2)	(3)	(4)	Total (5)
	North Carolina CPRG Implementation Grant				
a. Personnel	$ 13,154,867.00	$	$	$	$ 13,154,867.00
b. Fringe Benefits	5,286,035.00				5,286,035.00
c. Travel	918,132.00				918,132.00
d. Equipment	0.00				0.00
e. Supplies	312,553.00				312,553.00
f. Contractual	45,708,955.00				45,708,955.00
g. Construction	0.00				0.00
h. Other	130,703,531.00				130,703,531.00
i. Total Direct Charges (sum of 6a-6h)	196,084,073.00				$ 196,084,073.00
j. Indirect Charges	3,915,926.00				$ 3,915,926.00
k. TOTALS (sum of 6i and 6j)	$ 199,999,999.00	$	$	$	$ 199,999,999.00
7. Program Income	$ 0.00	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. North Carolina CPRG Implementation Grant	$	$	$	$
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	$	$	$	$

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$	$	$	$	$
14. Non-Federal	$				
15. TOTAL (sum of lines 13 and 14)	$	$	$	$	$

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

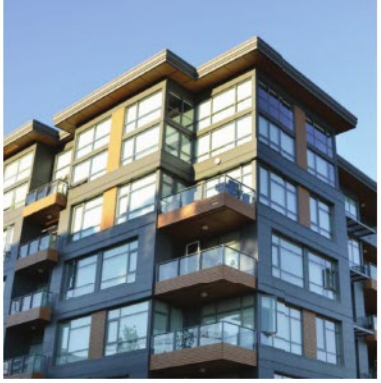
(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. North Carolina CPRG Implementation Grant	$ 95,202,310.00	$ 38,084,698.00	$ 31,659,221.00	$ 23,974,525.00
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$ 95,202,310.00	$ 38,084,698.00	$ 31,659,221.00	$ 23,974,525.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges: NCDEQ rate 13.8%

23. Remarks: 5th Year Funding = $11,079,245



NORTH CAROLINA Department of Environmental Quality

March 1, 2024

North Carolina Priority 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

Disclaimer and Acknowledgments

This Priority Climate Action Plan (PCAP) was prepared by the NC Department of Environmental Quality (NCDEQ) as the lead organization for phase 1 of the United States Environmental Protection Agency's (EPA) Climate Pollution Reduction Grants (CPRG) program, Inflation Reduction Act Section 60114(a). The CPRG program comprises two program phases: planning and implementation. The planning phase provides $250 million in noncompetitive planning grants for state and local agencies, tribes, and territories to develop a PCAP, a Comprehensive Climate Action Plan (CCAP) and a Status Report. The second phase provides $4.6 billion for competitive grants to eligible applicants to implement greenhouse gas (GHG) reduction measures identified in a PCAP.

The NC PCAP does not exhaustively list all of NC's priorities to address climate pollution. Instead, the selected priority GHG reduction measures included in the PCAP meet the following criteria:

- The measure is considered implementation ready, meaning that the design work or technology for the policy, program, or project is complete enough that it can be included in a CPRG implementation grant application under the second phase of the program.
- The measure can be completed in the near term, meaning that all funds will be expended, and the project completed, within the five-year performance period for the CPRG implementation grants.

This project has been funded wholly or in part by the EPA under assistance agreement 02D53423 to the NCDEQ. The contents of this document do not necessarily reflect the views and policies of the EPA, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

North Carolina's PCAP was coordinated by staff from the NCDEQ, the Office of the Governor, the Office of State Budget and Management (OSBM), the North Carolina Department of Transportation (NCDOT) and the North Carolina Department of Commerce and informed by stakeholders across the state. The NCDEQ team would like to thank the technical experts, state agency staff, local government staff, and the many other stakeholders who provided their ideas and time in supporting NC's PCAP. NCDEQ would also like to acknowledge the contributions of ICF.

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Acronyms

AFC	Alternative fuel corridors
AFLEET	Alternative Fuel Life-Cycle Environmental and Economic Transportation
AIM	American Innovation and Manufacturing Act
ARTF	Agrivoltaics Research and Training Facility
BAU	Business-as-usual
BEV	Battery electric vehicles
BIPOC	Black, Indigenous, and People of Color
CCAP	Comprehensive Climate Action Plan
CEJST	Climate and Economic Justice Screening Tool
CFI	Charging and Fueling Infrastructure
CHPP	Coastal Habitat Protection Plan
CMAQ	Congestion Mitigation Air Quality
CO_2e	Carbon dioxide equivalent
COG	Councils of Government
CRPG	Climate Pollution Reduction Grant
CRP	Carbon Reduction Program
DAQ	Division of Air Quality
DCFC	Direct Current Fast Chargers
DOE	U.S. Department of Energy
EECBG	Energy Efficiency Community Block Grants
EnMS	Energy management systems
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EV	Electric vehicle
EVSE	Electric Vehicle Supply Equipment
FCS	Forest Land Converted to Settlements
FDP	Forest Development Program (NCFS)
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLW	Food loss and waste
GESPC	Guaranteed Energy Savings Performance Contract
GHG	Greenhouse Gas

GHGI	Greenhouse Gas Inventory by State
GSP	Gross State Product
GWP	Global warming potential
HAP	Hazardous air pollution
HEAR	Home Electrification and Appliance Rebates
HER	Home Energy Rebates
HFC	Hydrofluorocarbons
HPMS	Highway Performance Monitoring System
HVAC	Heating, Ventilation and Air Conditioning
HWP	Harvested Wood Products
IAC	Industrial Assessment Center
ICE	Internal combustion engines
IIJA	Infrastructure Investment and Jobs Act
IMD	Integrated Mobility Division
IRA	Inflation Reduction Act
LCS	Land Converted to Settlement
LDV	Light-duty vehicle
LEA	Local education agency
LFG	Landfill gas
LFGTE	Landfill gas to energy
LIDAC	Low-income and disadvantaged community
LiDAR	Light Detection and Ranging
LMOP	Landfill Methane Outreach Project
LULUCF	Land Use Change and Forestry
MHD	Medium/heavy-duty
MOVES	Motor Vehicle Emissions Simulator Model
MSA	Metropolitan Statistical Area
MSW	Municipal solid waste
MT	Metric ton
NASS	National Agricultural Statistics Service
NBS	Nature-based solution
NC	North Carolina
NCCF	NC Coastal Federation
NCDDPA	NC Deep Decarbonization Pathways Analysis
NCDEQ	NC Department of Environmental Quality

NCDOT	NC Department of Transportation
NCFS	NC Forest Service
NCORR	NC Office of Recovery and Resiliency
NCUC	NC Utilities Commission
NEVI	National Electric Vehicle Infrastructure
NGO	Non-governmental organization
NOAA	National Oceanic and Atmospheric Administration
NWL	Natural and Working Land
ODS	Ozone-Depleting Substance
OSBM	Office of State Budget and Management
PFC	Perfluorochemical
PHMSA	Pipeline and Hazardous Materials Safety Administration
RFP	Request for funding proposal
SEDS	State Energy Data System
SEM	Strategic Energy Management
SFLR	Southeastern Forestry and Land Retention
SIT	State Inventory and Projection Tool
SRS	Settlements Remaining Settlement
STI	Strategic Transportation Investment
TDM	Transportation demand management
TNC	The Nature Conservancy
TRAP	Traffic-related air pollution
TREC	Training for Residential Energy Contractor
UNC	University of North Carolina
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VMT	Vehicle miles traveled
VW	Volkswagen
WAP	Weatherization Assistance Program
VOC	Volatile organic compound
ZE	Zero Emission
ZEV	Zero-emission vehicle

Executive Summary

The NC Department of Environmental Quality (NCDEQ) developed this Priority Climate Action Plan (PCAP) in response to the requirements of EPA's Climate Pollution Reduction Grant (CPRG) program. This program offers funding to states, local governments, tribes, and territories to develop and implement plans aimed at reducing greenhouse gas (GHG) emissions and other harmful air pollutants. The PCAP serves to identify high-priority GHGs in NC.

Throughout the development process, NCDEQ focused on transparency and engagement, with ongoing efforts to involve stakeholders in the implementation and refinement of the PCAP. The finalized PCAP reflects a comprehensive strategy to address climate change and reduce GHG emissions in NC.

North Carolina's Climate Context

North Carolina's GHG inventory is a comprehensive assessment of the state's emissions sources and sinks that covers historical data from 1990 to 2020 and projections up to 2050. The most recent inventory was completed in January 2024 and is crucial for understanding the state's contribution to climate change and guiding reduction strategies. The methods used to prepare the state's GHG inventory are based on those used by EPA to prepare the national inventory.

In 2020, combustion activities accounted for 80% of total gross GHG emissions statewide, with transportation being the largest emissions sector (36%), followed by electricity generation and use (30%) and residential, commercial, and industrial combustion (14%). The COVID-related decrease in 2019–2020 onroad vehicle emissions is noted, with modest increases projected until 2026, followed by significant reductions. By 2030, gross and net emissions are forecasted to be 35% and 47% below 2005 levels, respectively, reaching a 64% reduction in net emissions by 2050.

Key findings include a 28% reduction in gross GHG emissions and a 38% reduction in net emissions from 2005 to 2020, despite a 20% population growth and 23% real Gross State Product (GSP) increase. Carbon dioxide comprises 79% of 2020 GHG emissions, primarily from fossil fuel combustion, which decreased by 33% from 2005 to 2020. Methane emissions (12% of total emissions) are mainly from waste management and agriculture, which have remained stable since 2005. Electricity generation emissions decreased by 49% from 2005 to 2020, with a 68% projected reduction by 2030.

North Carolina has five existing state goals regarding climate action and GHG reduction targets, including a 50% reduction from 2005 levels by 2030 and net-zero emissions as soon as possible but no later than 2050. Other goals include electric power sector emission reductions, an increased number of registered zero-emission vehicles, energy consumption reduction in state-owned buildings, and offshore wind energy development.

The PCAP highlights challenges such as structural impediments in transportation investments, limitations in energy-efficient building codes, and threats to non-jurisdictional wetlands. Positive developments include the 2021 energy legislation mandating 70% GHG reduction in the power sector by 2030. Existing policies and programs address climate change, with ongoing efforts to enhance GHG reduction strategies. The NC PCAP builds on existing initiatives and identifies priority areas where opportunities remain.

Low-Income and Disadvantaged Communities

The PCAP outlines NC's approach to engaging with Low-Income and Disadvantaged Communities (LIDACs) in the context of climate action as part of the CPRG program. The state used the Climate and Economic Justice Screening Tool (CEJST) and the NCDEQ North Carolina Community Mapping System to identify LIDACs based on criteria including transportation, health, energy, and climate change burdens. These criteria are determined at or above the 90th percentile for census tracts. Additionally, block group data from NCDEQ's analysis of Potentially Underserved Communities (PUC) is considered, defining underserved communities by racial/ethnic and poverty composition.

The combination of CEJST and PUC data identifies 1,661 Census tracts as LIDACs, constituting 75.7% of all NC 2010 Census tracts. The identified climate risks for these communities in NC include extreme heat, heavy precipitation, sea level rise, inland and coastal flooding, and hurricanes. Vulnerability to these risks is exacerbated among Black, Indigenous, and People of Color (BIPOC) individuals and communities, low-income households, unhoused individuals, rural communities, and agricultural workers. These communities not only feel the most severe impacts of climate change but are also the least able to prepare for and respond to these impacts due to a lack of resources and socio-political power.

North Carolina has experienced escalating economic and societal losses due to weather and climate-related disasters, now ranking second in the nation for these losses. Tropical cyclones account for most of these losses. The NC Office of Recovery and Resiliency (NCORR) mapped impacts from hurricanes Florence and Matthew, showing that the most impacted communities from these events overlapped with some of the state's most economically distressed counties.

Priority GHG Reduction Measures

Priority GHG reduction measures in the state's Climate Action Plan (PCAP) are identified as such for the purposes of pursuing funding through CPRG implementation grants. The measures are considered implementation ready, meaning that the design work or technology for the policy, program, or project is complete enough that it can be included in a CPRG implementation grant application under the second phase of the program. Additionally, they must be achievable within the near term, with all funds expended and projects completed within the five-year performance period for CPRG implementation grants.

While the list of priority measures is not exhaustive of NC's climate priorities, it meets the outlined criteria. To ensure cohesive consideration of priorities within each sector, NCDEQ has developed visions for climate action. These sector-specific visions will guide the implementation of measures and will be further developed and expanded upon in the Comprehensive Climate Action Plan (CCAP).

The following priority measures are detailed in the NC PCAP:

1. Increase the number of zero-emission and electric vehicles on the road through partnerships, technical assistance, financial incentives, and other mechanisms.
2. Identify, install, and maintain a public electric vehicle charging network accessible to all North Carolinians.
3. Increase the number of zero emission and electric vehicles in state and local government fleets.
4. Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.
5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians by increasing pedestrian accessibility and providing more options for multi-modal transportation.
6. Increase the amount of electricity generated by low- and no-carbon energy resources in NC.
7. Implement measures to increase energy resiliency in NC communities.
8. Reduce per square foot energy usage in buildings in NC.
9. Decarbonize buildings in NC through replacement of fossil fuel combustion sources and reduction of other GHG emissions.
10. Develop programs to support or incentivize implementation of energy efficiency and emission reduction measures in NC industry.
11. 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.
12. 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.
13. Reduce landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life and utilize the emissions as a renewable energy source.
14. Protect and restore high-carbon coastal habitats and peatlands.
15. Protect, use, and develop agricultural and forest land.

Moving Forward

State, regional, municipal, and tribal agencies, as well as consortia, are eligible to apply for implementation funding immediately after the finalization of the PCAP. State applications for implementation funding are due April 1, 2024, with awards expected later in the same year.

Recipients of PCAP planning grants are required to submit a CCAP two years after receiving the PCAP award. The CCAP will provide an expanded GHG analysis, including both short-term and long-term GHG emission reductions targets, and will articulate a comprehensive set of measures to achieve these targets. The state will begin the CCAP development process in early 2024.

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.

1 Introduction

NCDEQ developed a PCAP to meet the requirements of EPA's CPRG program. The CPRG program provides funding to states, local governments, tribes, and territories to develop and implement plans for reducing GHG emissions and other harmful air pollution.

1.1 CPRG Program Overview

The Inflation Reduction Act (IRA), signed into law on August 16, 2022, directs federal funding to reduce carbon emissions, lower healthcare costs, and improve taxpayer compliance. The IRA contains provisions that directly or indirectly address climate change, by reducing U.S. GHG emissions and investing in adaptation and resilience to climate change impacts.[1]

The CPRG program, authorized under Section 60114 of IRA, provides $5 billion in grants for two program phases: planning and implementation. The planning phase provides $250 million in noncompetitive planning grants for state and local agencies, tribes, and territories to develop a PCAP, a CCAP and a Status Report. The second phase provides $4.6 billion for competitive grants to eligible applicants to implement GHG reduction measures identified in a PCAP.

1.2 PCAP Purpose, Scope, and Overview

NC's PCAP identifies high priority, ready-to-implement GHG reduction measures that will provide significant climate, air quality, and other co-benefits to North Carolina and the communities

Definitions

- **Greenhouse Gas (GHG):** The air pollutants carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorocarbons, and sulfur hexafluoride.
- **GHG Inventory:** A list of emission sources and sinks, and the associated emissions quantified using standard methods.
- **GHG Reduction Measure:** Policies, programs, actions, or projects that reduce GHG emissions or enhance carbon removal. Measures that enhance carbon removal are those that increase the removal of carbon dioxide from the atmosphere through, for example, the uptake and storage of carbon in soils, vegetation, and forests.
- **Co-benefits:** Positive effects beyond the stated goal of a GHG reduction measure e.g., improved public health outcomes, economic benefits, increased climate resilience).
- **Low Income and Disadvantaged Community (LIDACs):** Communities with residents that have low incomes, limited access to resources, and disproportionate exposure to environmental or climate burdens.
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[1] Congressional Research Service. "Inflation Reduction Act of 2022 (IRA): Provisions Related to Climate Change." October 3, 2022. https://crsreports.congress.gov/product/pdf/R/R47262.

within it. A measure being included within a PCAP is a prerequisite for agencies and organizations to compete for implementation grant funding in the second phase of the CPRG program. Accordingly, the measures identified in this PCAP are designed to be broad enough to encompass state, regional and local priorities for addressing climate pollution. Further, the GHG reduction measures in this PCAP have been identified as "priority measures" for the purposes of pursuing funding through CPRG implementation grants under phase two of the CPRG program. This PCAP does not exhaustively list all of NC's priorities for addressing climate pollution. Instead, the selected priority GHG reduction measures included in this PCAP meet the following criteria:

- The measure is considered implementation ready, meaning that the design work or technology for the policy, program, or project is complete enough that it can be included in a CPRG implementation grant application under the second phase of the program.
- The measure can be completed in the near term, meaning that all funds will be expended, and the project completed within the five-year performance period for the CPRG implementation grants.

The PCAP also serves as a starting point for a larger, more comprehensive region-wide climate planning effort to be conducted across North Carolina through 2024 and 2025 (CCAP).

Along with NCDEQ, two metropolitan areas and one federally recognized tribe within the state received CPRG planning grants: Charlotte-Concord-Gastonia, NC-SC Metropolitan Statistical Area (MSA); Raleigh-Cary-Durham-Chapel Hill, NC MSA; and the Eastern Band of Cherokee Indians. NCDEQ coordinated with these entities throughout the development of this PCAP to align priorities for climate action and engage with stakeholders.

Table 1 outlines the information included in the state's PCAP, in line with the required and encouraged information outlined in EPA's CPRG planning guidance, and where the relevant information may be found within the document.

Table 1. Crosswalk of CPRG PCAP requirements to NC PCAP Section 2.2

PCAP Required Elements	**NC PCAP Section**
GHG Inventory	Section 2.1 State Greenhouse Gas Inventory and Business-As-Usual Projections
Quantified GHG Reduction Measures	Section 4
Low-Income and Disadvantaged Community (LIDAC) Benefits Analysis	Sections 1.3.2 (LIDAC engagement), 3 (LIDAC identification and climate risks) and Section 4 within each measure (LIDAC benefits and impacts from priority measures)
Review of Authority to Implement	Section 4 within each measure
PCAP Encouraged Elements	
GHG Emissions Projections	Section 2.1
GHG Reduction Targets	Section 2.2
Benefits Analysis for Full Geographic Scope and Population	Section 4 within each measure, as available
Intersection with Other Funding Availability	Section 4 within each measure
Workforce Planning Analysis	Section 4 within each measure

1.3 Approach to PCAP Development

1.3.1 Developing the GHG Inventory, Business-As-Usual Projections, and GHG Reduction Targets

NCDEQ produced a statewide inventory of GHG emissions that represents the state's "carbon footprint." The inventory provides a high-level perspective of GHG emissions resulting from human activity and contains a detailed accounting of GHGs emitted or removed by key source categories. Along with the inventory, NCDEQ projected the business-as-usual (BAU) GHG emissions based on forecasted changes in fuel use, population, historical trends, and other factors. Both analyses, the GHG inventory and the BAU projections, were developed using EPA tools and models, including the Motor Vehicle Emissions Simulator Model (MOVES4) and the State Inventory and Projection Tool (SIT), a spreadsheet-based tool developed by EPA to assist state agencies in preparing state-level GHG inventories and projections. Further information on the GHG inventory and method used may be found in Section 2.1 and Appendix A.

Executive Order 80: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy established statewide GHG reduction and related targets for NC. Additional goals are established in state plans, such as the Clean Energy Plan. These targets are reflected in Section 2.2.

1.3.2 Engaging with Stakeholders

NCDEQ used multiple forms of outreach to engage with diverse groups of stakeholders throughout the PCAP development, including state and local governments, regional planning agencies and councils of government, tribes, LIDAC representatives, industry, non-governmental organizations (NGOs), and the public.

Website, Email, and Online Forms

NCDEQ created and continually provides updated information on a public webpage dedicated to its CPRG program: https://www.deq.nc.gov/energy-climate/state-energy-office/inflation-reduction-act/climate-pollution-reduction-grant.

Along with this website, NCDEQ provided several communication channels to solicit comments, questions, and project ideas. These included a dedicated email inbox (CPRG@deq.nc.gov), online forms, a phone number for voicemail messages, and an email distribution list for ongoing program updates. Throughout the public engagement process, NCDEQ and partner agencies emphasized the importance of obtaining feedback from diverse sectors and communities to develop a more comprehensive and inclusive list of priority GHG reduction measures.

Through the website, NCDEQ posted an online form to collect CPRG project ideas. These project ideas were used to help develop priority GHG reduction measures and strategies around priorities and partners for climate action implementation. Appendix C lists the project ideas submitted to NCDEQ through the online survey.

NC State and Local Government Agencies

Outreach efforts included sharing program information with contacts representing all of NC's 16 Councils of Government (COGs) and Councils on Aging within the COGs. NCDEQ also engaged with many municipalities and counties throughout the state. Many contacts in local governments were already represented in existing outreach lists, and NCDEQ added additional contacts throughout the engagement process. NCDEQ also shared information on CPRG through the North Carolina City and County Management Association (NCCCMA). As part of this information sharing, NCDEQ encouraged submissions of potential CPRG project ideas through its online form.

NCDEQ continues to engage with the two MSAs in NC (Centralina Regional Council and Central Pines Regional Council) to explore partnership and build coalitions across the state.

NCDEQ also engages in biweekly meetings with the NC Office of Budget and Management, NC Department of Transportation, the NC Department of Commerce, and the Office of the Governor to discuss CPRG priorities, strategies, projects, and funding initiatives.

NC Tribes

NCDEQ shared information and feedback opportunities with the NC Commission of Indian Affairs for amplification to their networks and to offer a one-on-one meeting to discuss opportunities for involvement. Following this outreach effort, representatives of state-recognized tribes and tribal organizations attended LIDAC-focused CPRG engagement sessions. As with all other stakeholders, NCDEQ encouraged tribal organizations to share potential CPRG project ideas through its online form.

Public and Stakeholder Engagement

To enhance NC's PCAP, NCDEQ conducted a stakeholder and public engagement process in line with the NCDEQ Public Participation Plan and Language Access Plan.[2] The goal of this plan is to conduct North Carolinians' business in an open, clear, and transparent way and to create opportunities for fair and meaningful involvement. The plan guided the implementation of the state's CPRG engagement process, which aims to consider the diversity of the state's

[2] NCDEQ. Public Participation Plan and Language Access Plan. https://www.deq.nc.gov/outreach-education/environmental-justice/public-participation-plan-and-language-access-plan

population and culture, as well as the needs of communities across the state when conducting outreach.

NCDEQ held a series of public and stakeholder engagement events to share information about CPRG and gain input from communities and industries on how they would like to see the state prioritize climate action and funding. Experts from NCDEQ, the Office of the Governor, the NC Department of Commerce, and other partner agencies delivered an overview of the program, NC's GHG reduction goals, and priorities for the CPRG planning and implementation grants. They also introduced the online project ideas form to solicit input on project ideas for CPRG. During each session, members of the public and organization representatives engaged with presenters by asking questions about the process, expressing concerns that they would like addressed, and proposing possible projects that they felt would be beneficial for their communities. Breakout sessions focused on specific sectors (transportation, residential and commercial buildings, industry, waste and materials management, natural and working lands, and electric power) were offered to allow participants the chance to discuss topics in more depth.

Table 2 outlines the engagement sessions held between November 2023 and January 2024. All events except the special industry session were open to the public, and online sessions were posted to the NCDEQ CPRG website and announced in press releases, on social media and shared with NCDEQ contact lists to increase access and participation. Meeting materials and recordings of the online sessions were uploaded to the website and emailed directly to those who registered. Session attendance included members of the public and representatives from state and local government, business and industry, community groups, local/state and national non-profits, tribal groups, and universities. Examples of groups who attended and provided input include: the Southern Environmental Law Center, the Town of Boone, the Clean Air Task Force, Construction Partners Inc., NC League of Conservation Voters, Advanced Energy, Fayetteville State University, and the Lumbee Tribe of North Carolina.

Table 2. CPRG Events Held by NCDEQ

Date	Description	Stakeholder(s)	Attendance
November 28, 2023	In-person community event (Fayetteville)	Multiple/public	20
November 29, 2023	Special in-person event on industry decarbonization (Raleigh)	Industry	~45
December 5, 2023	In-person community event (Morganton)	Multiple/public	9
December 7, 2023	Statewide webinar event	Multiple/public	116
January 4, 2024	Statewide webinar specifically targeted for LIDACs	Public/LIDACs	71
January 9, 2024	Statewide webinar specifically targeted for LIDACs	Public/LIDACs	67

NC Low-Income and Disadvantaged Communities

NCDEQ conducted an analysis to identify areas of the state where LIDACs would benefit from targeted outreach during the planning phase. This analysis is based on NCDEQ's Community Mapping System,[3] which incorporates several datasets to provide a representation of the sociodemographic and health characteristics of communities across NC, and EPA's EJScreen[4] and the CEJST.[5]

NCDEQ integrated this analysis in its outreach efforts for in-person public events to target local LIDAC participation, and additional online sessions were scheduled and promoted to encourage further participation from groups or individuals associated with or serving LIDACs. The December and January public sessions were promoted in both English and Spanish, with the option to request live interpretation services to increase accessibility.

All public and LIDAC-focused sessions were promoted through a variety of channels, government and community networks and shared with NCDEQ's existing environmental justice contact lists. Prior to the in-person events in Fayetteville and Morganton, the NCDEQ Environmental Justice team conducted a search for contacts representing LIDACs in the surrounding 13-county areas for targeted outreach to increase participation. The DEQ Environmental Justice team also used EPA's EJScreen to scan for potential sensitive receptors to conduct further outreach. Overall, these included churches (some primarily Spanish-speaking), community centers (e.g., libraries), community/environmental organizations, environmental networks, local governments, local tribal organizations, and public engagement centers at local universities.

Throughout the public engagement process, new contacts were added to capture as many communities as possible. Examples of networks leveraged to boost LIDAC engagement include NCDEQ Secretary's Environmental Justice and Equity Advisory Board, the NC Commission of Indian Affairs, statewide Area Agencies on Aging, and the NC City and County Management Association. In addition to sharing information about the program and engagement opportunities, NCDEQ developed a flyer to provide information in an easy-to-share format.

PCAP Engagement Metrics

Table 3 provides a summary of metrics from NCDEQ's PCAP engagement efforts.

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[3] NC DEQ. "NC Community Mapping System." https://www.deq.nc.gov/outreach-education/environmental-justice/deq-north-carolina-community-mapping-system

[4] EPA. "EJScreen: EPA's Environmental Justice Screening and Mapping Tool (Version 2.2)." https://ejscreen.epa.gov/mapper/

[5] Council on Environmental Quality. "Climate and Economic Justice Screening Tool." thttps://screeningtool.geoplatform.gov/en/#3/33.47/-97.5

Table 3. Impact of Public Engagement Efforts

Engagement Metric	Count
Individuals registered for a public session	429
Groups represented at a public session	218
Feedback received (total number of comments, questions, and project ideas)	358
Unique visitors to the Climate Pollution Reduction Grant page (Nov. 2023-Jan. 2024) **Climate Pollution Reduction Grant web page:** **https://www.deq.nc.gov/energy-climate/state-energy-office/inflation-reduction-act/climate-pollution-reduction-grant**	3,987

Ongoing and Upcoming Engagement

As the climate action planning and implementation process progresses, NCDEQ and its partners will continue to engage the public and stakeholders, with emphasis on LIDACs, through updates and invitations to provide comment and feedback on CPRG implementation partnership opportunities, future projects, and comprehensive planning efforts. NCDEQ will continue to engage the communities identified in the initial round of public and LIDAC engagement sessions as part of targeted outreach. Discussions also continue with the MSAs in NC and other local governments outside the MSAs to further engage additional identified LIDAC communities that will benefit from GHG reduction programs and projects.

1.3.3 Prioritizing GHG Reduction Measures and Developing the PCAP

North Carolina has already been planning for and taking action to reduce climate pollution. Planning efforts such as NC's Clean Transportation Plan, Zero Emission Vehicle Plan, and Clean Energy Plan were foundational to this PCAP and formed the groundwork for NCDEQ's efforts. Specific steps NCDEQ took to develop and prioritize GHG reduction measures and develop the state's PCAP are outlined in Figure 1.

Figure 1. Approach to Developing the NC PCAP

Step 1. NCDEQ reviewed existing state documents to develop an initial list of GHG reduction measures. NCDEQ reviewed 48 state documents; identified and collated goals, existing actions, and proposed actions; and categorized them by sector in line with the sectors within NC's GHG inventory.

Step 2. Once all actions and goals were collated, NCDEQ consolidated them into an initial measure list by grouping similar actions and goals and removing duplicates.

Step 3. NCDEQ then reviewed the measures list against the state GHG inventory to determine if there were any major gaps in potential reduction measures to address emissions across the state. These gaps were filled through discussions with input from the public and other stakeholders and in reviewing ideas from NCDEQ's CPRG project survey. The draft measures list was also cross-checked against the feedback received through the project survey and other stakeholder input to ensure all potential priorities were captured.

Step 4. NCDEQ developed and employed a prioritization framework for PCAP measures. The intent of the framework was to align with CPRG program outcomes and requirements. NCDEQ screened the initial list of PCAP measures based on potential magnitude of GHG reductions, community benefits (e.g., air pollution reduction), authority to implement, and benefits or impacts to LIDACs. NCDEQ also screened draft measures on potential implementation readiness, considering whether:

- The measure is considered implementation ready, meaning that the design work or technology for the policy, program, or project is complete enough that it can be included in a CPRG implementation grant application under the second phase of the program.
- The measure can be completed in the near term, meaning that all funds will be expended, and the project completed, within the five-year performance period for the CPRG implementation grants.

NCDEQ posted the draft GHG reduction measures list on its CPRG website for public review in January 2024.[6] Measures that were eliminated during screening are being maintained by NCDEQ to consider for the CCAP, to be completed in 2025.

Step 5. Concurrent with the above steps, NCDEQ developed implementation information for each priority GHG reduction measure and conducted analyses to estimate GHG reductions, benefits to LIDACs, and other benefits and co-benefits. This information, along with other PCAP requirements were documented in the draft PCAP. Following additional internal reviews, NCDEQ has refined and finalized the PCAP for submission to the EPA.

1.3.4 Approach for Natural and Working Lands (NWL) Priority Measures

Most sectors are sources of GHG emissions, including transportation, electric power generation, industry, buildings, and waste management. By contrast, the NWL sector is a net sink of GHGs in North Carolina. As such, NCDEQ took a different approach to develop priority NWL

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[6] NCDEQ. "DEQ Accepting Public Comment on Greenhouse Gas Reduction Priorities for the Climate Pollution Reduction Grant Program." January 12, 2024. https://www.deq.nc.gov/news/press-releases/2024/01/12/deq-accepting-public-comment-greenhouse-gas-reduction-priorities-climate-pollution-reduction-grant

measures, performed separately but in parallel to the development and prioritization of measures to reduce GHG emissions in other sectors.

To identify NWL priority actions, NCDEQ first considered an aggregate list that comprised all recommendations described in the NWL Action Plan,[7] Coastal Habitat Protection Plan (CHPP),[8] and Flood Resiliency Blueprint.[9] Similar to the review of other state plans, a high degree of redundancy among recommendations made across NWL-related plans exists. To reduce duplicative considerations and simplify the prioritization process, NCDEQ chose to focus prioritization efforts on only the recommendations from the NWL Action Plan because this list represents the most general and comprehensive set of actions. NCDEQ planned to then sub-align corresponding CHPP and NC Division of Mitigation recommendations under the prioritized NWL measures in the PCAP later in the process. Intra-agency and academic subject matter experts performed an initial screen of the list of priority actions to identify the subset of NWL actions that:

- Require funding to implement.
- Do not require state legislation (indicating a faster potential implementation timeframe).
- Support on-the-ground practices that lead to reduced carbon emissions or increased carbon sequestration of reasonable magnitude (i.e., high confidence that actions will result in non-negligible GHG impacts).
- Were marked as a high priority by the NC NWL executive committee during an evaluation performed during summer 2023.

A subset of 13 NWL actions met all the above criteria and were retained for subsequent evaluation and prioritization for the PCAP. After this initial screening, a set of criteria, like those used for other sectors, was used to prioritize the NWL actions that formed the basis for the NWL PCAP measures. These criteria reflected CPRG implementation outcomes and accounted for current implementation capacities and availability of scientific data. These criteria included:

- **GHG benefit in high-carbon habitat** - Action is expected to create GHG benefits in one of the three high-carbon habitats (forest including floodplain forest, peatlands including pocosins, and coastal habitats).

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[7] NCDEQ. “NC Natural and Working Lands Action Plan.” June 2020. https://www.deq.nc.gov/energy-climate/climate-change/adaptation-and-resiliency/natural-working-lands

[8] NCDEQ. “NC Coastal Habitat Protection Plan.” 2016 and 2021. https://www.deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan

[9] NCDEQ. “North Carolina Flood Resiliency Blueprint.” https://ncfloodblueprint.com/

- **Resilience benefits** - Action is likely to provide at least one significant resilience benefit to (a) low-income and disadvantaged communities and (b) ecosystem health within the expected scope and scale of implementation.
- **Implementation readiness** - Action has been conducted before in NC, and programs/partnerships needed to implement this measure exist or could be in place within one year.
- **Feasibility** - Action is feasible to complete in the 5-year implementation grant performance period.
- **Ability to measure impacts** - Methods exist to measure GHG impacts of this action given sufficient funding for monitoring.

Five interagency and academic subject matter experts performed independent evaluations to allow for either a consensus or majority opinion on each action and criteria. In almost all cases, the results were unanimous. Nine actions meeting all the evaluation criteria were deemed as high priority for the NWL sector. These priority actions were then grouped into four focus areas identified in the NWL Action Plan and form the basis of the NWL PCAP measures.

2 NC's Climate Context

2.1 State Greenhouse Gas Inventory and Business-As-Usual Projections

North Carolina's greenhouse gas (GHG) inventory[10] is a comprehensive assessment of the state's emissions sources and sinks, including historical data and projections through 2050. The most recent GHG inventory, completed in January 2024, details historical activities and associated GHGs emitted or stored by key source categories from 1990 to 2020. In addition, the NCDEQ projects the state's GHG emissions from 2021 to 2050 in a BAU scenario, based on forecasted changes in fuel use, population, historical trends, and other factors. North Carolina uses the inventory to benchmark progress on GHG reductions against state goals and policies to determine which sectors offer opportunities for future reductions. The inventory is crucial for understanding the state's contribution to climate change and serves as a foundation for planning reduction strategies.

The methods and tools used to prepare the NC GHG inventory are based on those used to prepare the national GHG inventory prepared by EPA annually, which is consistent with the 2006 Intergovernmental Panel on Climate Change Guidelines for National GHG Inventories. These methods are reflected in the U.S. EPA SIT. The SIT includes default data supplied by EPA for North Carolina and other states. The default data are generally publicly available information from various federal agencies such as the U.S. Department of Energy (DOE), U.S. Department of Agriculture (USDA), Federal Highway Administration (FHWA), U.S. Geological Survey (USGS), U.S. Census Bureau, and EPA. These data are frequently used by state and local agencies to develop air pollutant emissions inventories. A limited number of source categories contained in the SIT utilize data obtained from third party vendors (e.g., fertilizer application). Where default data were unavailable or considered inferior relative to other information sources, data obtained from state agencies are used in the SIT to provide more accurate emissions estimates for NC.

For the Transportation sector, the latest version of EPA's MOVES was used to calculate historical and projected GHG emissions. A third major resource for estimating NC emissions is EPA's Greenhouse Gas Inventory by State (GHGI).[11] The GHGI includes updates to some data sources and/or methodologies which EPA has not yet integrated into the SIT. The NCDEQ coordinated with EPA staff to identify where the GHGI is the preferred resource, which resulted in use of GHGI data for multiple Land Use, Land Use Change and Forestry (LULUCF) subsectors.

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[10] NCDEQ. "NC Greenhouse Gas Inventory (1990-2050)." January 2024. https://www.deq.nc.gov/energy-climate/climate-change/greenhouse-gas-inventory

[11] EPA. "State GHG Emissions and Removals." https://www.epa.gov/ghgemissions/state-ghg-emissions-and-removals

Figure 2 shows the gross GHG emissions contributed by each sector in 2020 in million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Transportation is the largest source sector at 36% followed by Electricity Generation and Use at 30%, and Residential, Commercial, and Industrial Combustion at 14%. Together, combustion activities contribute to 80% of the total statewide gross GHG emissions.

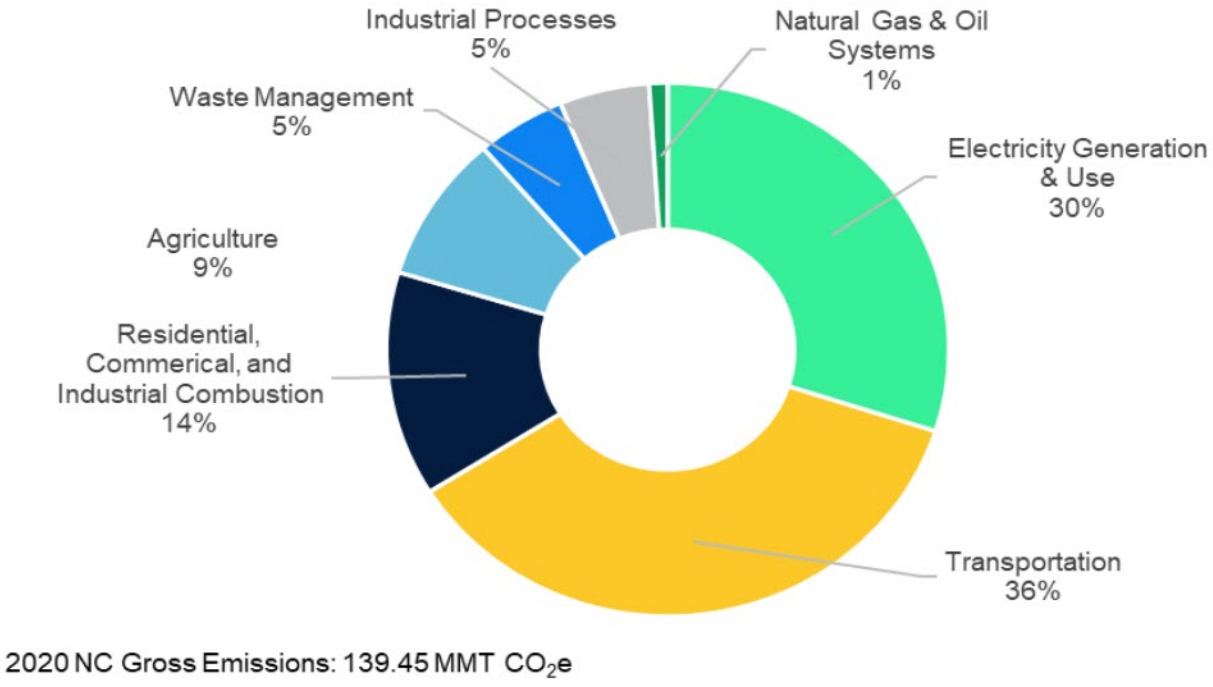

Figure 2. Percentage of NC 2020 GHG Emissions by Source Sector

Table 4. Summary of NC's GHG Inventory and Projections (million metric tons carbon dioxide equivalent [MMTCO$_2$e])

	Historical					Projected			
	1990	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2040**	**2050**
Electricity Generation and Use	**55.39**	**82.66**	**82.98**	**58.58**	**41.77**	**43.08**	**26.71**	**14.08**	**8.50**
Electricity Generation	47.12	75.78	73.32	52.31	37.24	39.05	24.00	12.34	7.12
Imported Electricity [a]	*8.26*	6.88	9.66	*6.27*	*4.54*	*4.04*	*2.70*	*1.74*	*1.38*
Residential/Commercial/Industrial Combustion[b]	**25.93**	**24.97**	**21.45**	**20.17**	**19.01**	**20.61**	**21.14**	**21.99**	**22.69**
Industrial	16.72	13.09	9.73	9.39	9.23	9.97	10.43	11.07	11.51
Commercial	3.80	5.08	5.13	5.31	4.88	5.44	5.59	5.90	6.20
Residential	5.41	6.79	6.59	5.47	4.90	5.20	5.13	5.02	4.98
Transportation	**42.68**	**58.56**	**58.45**	**58.47**	**50.35**	**54.10**	**52.07**	**43.55**	**35.84**
Gasoline & Diesel Highway	36.66	53.78	53.39	52.74	45.45	47.53	44.95	35.49	26.84
Non-Highway	6.01	4.72	4.95	5.58	4.71	6.31	6.79	7.74	8.70
Alternative Fuel Vehicles	0.00	0.06	0.10	0.15	0.18	0.27	0.34	0.31	0.29
Agriculture	**9.06**	**12.63**	**12.21**	**12.54**	**12.46**	**12.31**	**12.46**	**12.87**	**13.28**
Manure Management	2.69	6.58	6.27	6.08	6.49	6.39	6.58	7.10	7.61
Agricultural Soil Management	4.58	3.95	4.01	4.54	4.12	4.20	4.16	4.09	4.01
Enteric Fermentation	1.78	2.10	1.93	1.91	1.85	1.72	1.71	1.68	1.66
Burning of Agricultural Crop Waste	0.002	0.003	0.001	0.003	0.002	0.003	0.003	0.003	0.003
Waste Management	**5.56**	**7.21**	**7.98**	**5.99**	**7.17**	**7.35**	**7.48**	**7.74**	**7.99**
Municipal Solid Waste	4.67	5.90	6.48	4.42	5.49	5.50	5.50	5.49	5.48
Wastewater	0.89	1.31	1.49	1.57	1.69	1.85	1.98	2.25	2.52
Industrial Processes	**1.25**	**4.87**	**4.98**	**6.56**	**7.22**	**8.54**	**9.00**	**9.53**	**10.12**
Natural Gas and Oil Systems	**1.18**	**1.53**	**1.62**	**1.39**	**1.48**	**1.65**	**1.65**	**1.65**	**1.65**
Gross Emissions	**141.04**	**192.42**	**189.67**	**163.71**	**139.45**	**147.65**	**130.51**	**111.41**	**100.07**
Gross Emissions Reduction from 2005					**28%**	**23%**	**32%**	**42%**	**48%**
Net Carbon Sinks - LULUCF[c]	**-48.99**	**-45.08**	**-47.26**	**-48.29**	**-47.68**	**-47.23**	**-47.23**	**-47.23**	**-47.23**
Net Emissions	**92.05**	**147.34**	**142.40**	**115.42**	**91.77**	**100.41**	**83.28**	**64.18**	**52.83**
Net Emissions Reduction from 2005					**38%**	**32%**	**43%**	**56%**	**64%**

Note: Totals may not equal exact sum of subtotals shown in this table due to independent rounding.

[a] Includes estimates of emissions from Imported Electricity that are generated outside NC.

[b] Represents emissions associated with onsite fuel combustion activities in the Residential, Commercial, and Industrial sectors.

[c] Land Use, Land Use Change, and Forestry.

North Carolina experienced a large decrease between 2019 and 2020, which is mostly attributable to a reduction in on-road vehicle emissions due to the COVID pandemic-related reductions in vehicle miles traveled (VMT). Although emission increases are projected through 2026, they are modest. As indicated by Table 4, a continuation of the state's downward trend in historical GHG emissions is projected to continue after 2025. Given these projected reductions, year 2030 gross and net emissions are forecast to be about 35% and 47%, respectively, below those of the 2005 baseline year. Post-2030 forecasts inherently have greater uncertainty, but reflect continued reductions given the projected impacts of the state's Carbon Plan and federal vehicle fuel efficiency standards. By 2050, gross GHG emissions are projected to be 48% below 2005 baseline levels, and net GHG emissions 64% lower than 2005 emissions.

Based on the estimated emissions in Table 4, NC's gross GHG emissions in 2020 are estimated at about 139 $MMTCO_2e$ and are projected to decrease by 6% to about 131 $MMTCO_2e$ by 2030 and decrease by 28% to about 100 $MMTCO_2e$ by 2050.[12] Accounting for carbon sinks, NC's net GHG emissions in 2020 are estimated at about 92 $MMTCO_2e$ and are projected to decrease by 9% to about 83 $MMTCO_2e$ by 2030 and decrease by 42% to about 53 $MMTCO_2e$ by 2050.

Below are key findings from both the GHG emissions inventory and from the analysis of the data used to develop the emissions for each source sector. Unless otherwise stated, emission reductions are generally expressed as the percent change in gross GHG emissions from the baseline year of 2005.

2.1.1 NC's Gross and Net Emissions

- Between 2005 and 2020, NC reduced gross GHG emissions by 28% and net GHG emissions by 38%.
- During this same time, NC's population and real GSP grew by 20% and 23%, respectively.
- By 2030, net GHG emissions are forecast to decrease by 43% relative to the 2005 baseline.
- By 2050, net GHG emissions are forecast to decrease by 64% relative to the 2005 baseline.
- Although the COVID pandemic in 2020 caused a decrease in emissions on a short-term basis, projections show a rebound in GHG emissions in 2021, although lower than 2019 emissions.
- The 2025 through 2050 projections do not include reductions expected because of all policies due to the lack of methods/data for modeling impacts of the most recent policies.[13]

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[12] NCDEQ. "NC Greenhouse Gas Inventory (1990-2050)."

[13] One example is EPA's "Phasedown of Hydrofluorocarbons: Restrictions on the Use of Certain Hydrofluorocarbons Under the American Innovation and Manufacturing Act of 2020," 88 FR 73098, October 24, 2023. This effort will eventually reduce ozone-depleting substance (ODS) substitute emissions in the Industrial Processes category.

2.1.2 GHG Compounds

- Carbon dioxide emissions currently account for approximately 79% of total GHG emissions in 2020.
- The primary source of CO_2 emissions is fossil fuel combustion.
- GHG emissions from fossil fuel combustion have decreased by 33% between 2005 and 2020. This is due to both a shift in fuel use, from coal to natural gas and renewable generation resources, and increased energy efficiency.
- Methane emissions currently account for approximately 12% of total GHG emissions.
- The primary sources of methane are Waste Management and Agriculture.
- Emissions from Waste Management and Agriculture have not changed significantly since 2005, even with a growing population and economy.

2.1.3 Electricity Generation and Use

- Electricity Generation and Use is the second largest emissions sector and represents 30% of all gross GHG emissions in 2020.
- GHG emissions from the Electricity Generation and Use sector in 2020 decreased by 49% since 2005.
- NC's electricity generation has undergone a transformation, including:
    - Increased use of natural gas combined cycle plants and renewable energy.
    - State legislation to promote renewable energy and reduce CO_2 emissions from Duke Energy facilities in NC.
- Solar, hydroelectric and wind energy represented 14% of NC's electricity generation in 2020.
- Avoided GHG emissions due to renewable energy generation are estimated at 5.24 $MMTCO_2e$ for 2020.
- Emissions from imported electricity in 2020 have decreased by 34% since 2005.
- GHG emissions in the Electricity Generation and Use sector are projected to decline by 68% in 2030 relative to 2005. This projection reflects generation from all facilities in NC. For Duke Energy facilities, the forecast reflects fossil fuel consumption projections for Pathway 1/Core Portfolio 1 that Duke Energy included in its proposed Carbon Plan and Integrated

Resource Plan submitted to the NC Utilities Commissions (NCUC) on August 17, 2023, to achieve the objectives of State Law 2021-165.[14, 15]

2.1.4 Transportation

- The Transportation sector is the largest emissions sector and represents about 36% of all GHG emissions.
- Emissions from the Transportation sector increased 1.14% from 2005 to 2019 emphasizing the need for further investments and reduction measures in this source category. 2020 Transportation sector emissions dropped; however, those emissions were atypically low because of the COVID pandemic. Emissions from the Transportation sector decreased by an estimated 14% from 2005 to 2020. However, 2020 was a year of atypically low emissions for many Transportation-emitting activities because of the COVID pandemic impact on personal travel.
- Onroad light-duty gasoline vehicles (LDV) represented 72% of total Transportation sector GHG emissions in 2019, while onroad medium/heavy-duty (MHD) diesel vehicles were the next largest contributor (16%).
- Following a recovery from the COVID pandemic and resumption of typical travel activities after 2020, the Transportation sector emissions projections showed an increase in 2021, but decreased thereafter reflecting the impact of onroad vehicle federal fuel efficiency and engine standards.

2.1.5 Residential, Commercial, and Industrial Combustion

- These combustion emissions represent 14% of all GHG gross emissions.
- Residential sector emissions from fuel combustion have decreased by 28% between 2005 and 2020, while NC's population grew by 20% over that time.
- Commercial sector emissions from fuel combustion in the Commercial sector decreased by 4% between 2005 and 2020.
- Industrial sector fuel combustion emissions decreased by 30% from 2005 to 2020.

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[14] NC Utilities Commission, Docket No. E-100, Sub 190, Verified Petition For Approval of 2023-2024 Carbon Plan and Integrated Resource Plans of Duke Energy Carolinas LLC and Duke Energy Progress LLC, August 17, 2023, Appendix C (Quantitative Analysis), page 49, https://starw1.ncuc.gov/NCUC/PSC/PSCDocumentDetailsPageNCUC.aspx?DocumentId=70c6dc5c-502d-4a62-9743- 2e3bcec044cc&Class=Filing.

[15] These objectives include reducing CO_2 emission in 2005 by 70% by 2030 and achieving net zero CO_2 emissions by 2050. Section 3.2 provides additional detail on the development of the Electricity Generation and Use sector projections.

- GHG emissions from Industrial Processes increased by nearly 50% from 2005 to 2020, mainly due to increased emissions of HFCs and Perfluorochemicals (PFCs) resulting from their use as substitutes for ozone-depleting substances.

2.1.6 Land Use, Land Use Change, and Forestry

- LULUCF sector carbon sequestration is greater than estimated in the previous inventory, which reflects larger estimates of carbon stored in NC forests and Urban Trees (as estimated by the U.S. Forest Service (USFS)).
- Forests, natural lands, settlements, and agricultural lands sequestered an estimated 47.68 MMT of CO_2 or 34% of total gross GHG emissions in 2020.
- Forests and settlement lands in NC are net sinks, and agricultural lands are a net source of emissions.

Further information on the methods and data used to prepare the GHG inventory are provided in Appendix A and NCDEQ's most recent GHG inventory report: https://www.deq.nc.gov/energy-climate/climate-change/greenhouse-gas-inventory.

2.2 GHG Reduction Targets

North Carolina has five existing state goals regarding climate action and GHG emission reductions, all developed since 2018:

- Reduce statewide GHG emissions to at least 50% below 2005 levels by 2030 and achieve net-zero emissions as soon as possible but no later than 2050. *Established by Executive Order (EO) 246 in 2022. Supersedes previous goal developed by EO 80 in 2018: Reduce statewide GHG emissions to 40% below 2005 levels.*
- Reduce electric power sector GHG emissions by 70% below 2005 levels by 2030 and attain carbon neutrality by 2050. *Established by NC's 2019 Clean Energy Plan and enacted by HB951 in 2021.*
- Increase the total number of registered zero-emission vehicles (ZEVs) to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50% of in-state sales of new passenger vehicles are zero-emission by 2030. *Established by EO 246 in 2022. Supersedes previous goal developed by EO 80 in 2018: Increase the number of registered ZEVs to at least 80,000 by 2025.*
- Reduce energy consumption per square foot in state-owned buildings by at least 40% from fiscal year 2002–2003 levels by 2025. *Established by EO 80 in 2018.*
- Develop 2.8 gigawatts (GW) of offshore wind energy resources off the NC coast by 2030 and 8.0 GW by 2040. *Established by EO 218 in 2021.*

2.3 Existing State Climate Policy, Plans, Programs and Actions

North Carolina has made substantial strides in implementing climate policies, but the state is also encumbered by several restrictions on potential additional climate action and needs increased investment across several sectors. Beginning with the transportation sector, in 2013, the NC General Assembly passed the Strategic Transportation Investments (STI) Law.[16] The STI Law mandates a formula-based allocation of state transportation funding on a statewide and regional basis. The overwhelming majority of state funding is allocated to highway investments with limited flexibility in state support for projects that increase multi-modal transportation options. Independent bicycle and pedestrian projects, among other investments, are prohibited outside of federal investments designed for that purpose. This structural impediment, combined with predominantly local land use policies that have encouraged suburban sprawl, has historically limited the state's ability to invest in active transportation strategies, street connectivity, and other strategies to reduce VMT. Additionally, the 2023 state budget prohibited the state from enacting any new sales requirements for Medium and Heavy Duty Zero Emission Vehicles, raised registration fees for electric vehicles, and introduced a new fee for plug-in hybrid vehicles.

Looking to the building sector, in 2023 the NC General Assembly overrode Governor Cooper's veto to pass HB 488, substantially limiting the state's ability to implement more energy efficient building codes. HB 488 splits the NC Building Code Council into a Residential and Commercial Code Council, strips the Governor's power of appointment, and prohibits any new code updates before 2031.[17]

Regarding natural lands, in 2023, NC legislation removed state protection for wetlands existing outside of federal jurisdiction, creating potential lack of protection for isolated areas with carbon sequestration potential in North Carolina's natural lands. This action, in concert with the *Sackett vs. EPA* Supreme Court decision,[18] may put roughly 2.5 million acres of wetlands at high risk to development and alteration according to preliminary estimates by NCDEQ. Wetlands make up a significant portion of the state's land cover. According to preliminary estimates, 7% of NC's total land cover is under threat of unmitigated conversion as NC's population continues to rapidly grow. Funding for voluntary programs like the measures outlined in this PCAP to preserve and restore wetlands in the state are needed to supplement policy and regulatory limitations.

In the power sector, there have been some recent positive developments. In 2021, Governor Cooper signed HB 951,[19] a landmark bipartisan bill mandating 70% reductions in GHG

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[16] NC G.S. 136-14(b) https://www.ncleg.net/EnactedLegislation/Statutes/PDF/ByArticle/Chapter_136/Article_14B.pdf

[17] NC G.S. 143-9. https://www.ncleg.gov/Sessions/2023/Bills/House/PDF/H488v7.pdf

[18] https://www.supremecourt.gov/opinions/22pdf/21-454_4g15.pdf

[19] https://www.ncleg.gov/BillLookup/2021/H951

emissions from NC's power sector by 2030 and net-zero emissions by 2050. To enact this mandate, the Utilities Commission is instructed to retain discretion in determining the least cost path to compliance with these targets. This legislation builds on NC's historic progress in developing its renewable energy market, spurred by the 2007 adoption of the southeast's first Renewable Energy and Energy Efficiency Portfolio Standard (REPS) -- now a Clean Energy and Energy Efficiency Portfolio Standard following recent changes to the law.

The strategies outlined in this PCAP and increased federal investments in renewable energy sources serve to strengthen the case for an accelerated pathway to reaching NC's mandated power sector targets.

North Carolina has made significant efforts to reduce its impact on the climate and reduce statewide GHG emissions. Between 2018 and 2023, NC released more than 40 plans and reports that address climate change within the state. Some examples of these documents include a GHG inventory, a clean energy plan, a clean transportation plan, a zero-emission vehicle plan, climate strategy reports, and a NWL action plan.

The state also has existing policies established by executive orders and legislation that address climate and clean energy, including:

- **EO 80:** Establishes goals for addressing climate change and transitioning to a clean energy economy.
- **EO 218:** Establishes goals for investing in NC's burgeoning offshore wind industry.
- **EO 246:** Establishes climate and GHG reduction goals for the state as well as requirements to create a clean transportation plan and conduct a deep decarbonization pathways analysis.
- **EO 271:** Instructs state agencies to prioritize ZEVs in the purchase or lease of medium/heavy-duty vehicles (MDHVs) for the state's vehicle fleet, conduct a MHD needs assessment for the state's ZEV transition, and other complementary strategies to expand the MHD ZEV market in NC.
- **HB 951:** Enables several key recommendations in the Clean Energy Plan including significant carbon reductions in the power sector, coal retirements, and promoting growth of solar power plants.
- **EO 305**: Sets statewide goals for North Carolina public and private partners to collectively conserve 1 million new acres of forests and wetlands, restore 1 million new acres of forest and wetlands, plant 1 million new trees in urban areas, and other directives to protect natural and working lands and sequester carbon.

Additionally, NC has existing programs that are already reducing GHG emissions in the state. Some examples of these programs include:

- Low-income home energy assistance program (LIHEAP).
- Clean energy workforce development program and youth apprenticeship program.

- Electric school bus, electric transit bus, and light duty electric charging station program.
- State fleet electrification program.
- State agency building utility consumption reduction program.

NC's PCAP builds upon this previous work and these existing plans, policies, and programs while also identifying priority areas where gaps in action remain.

3 Low-Income and Disadvantaged Communities in NC

The CPRG program emphasizes engaging with, understanding, and providing benefits to LIDACs. A summary of how NCDEQ has and is planning to engage with LIDACs for climate action is presented above in Section 1.3.2. This section presents the identified LIDACs in NC and climate change risks to these communities. The benefits of NC's priority GHG reduction measures for LIDACs are presented for each measure in Section 4 (Identified Low-Income and Disadvantaged Communities).

Using CEJST[20], NCDEQ identified LIDACs as communities in census tracts that are at or above the 90th percentile for 5 categories including 17 associated burdens (Table 1). Based on CEJST, 815 census tracts were identified as LIDACs, which makes up 37.13% of all NC census tracts.[21] The LIDAC population is 3,436,399, which makes up 33.48% of the NC population. The population of people of color (non-white) is 1,668,943, which makes up 48.57% of the LIDAC population.

Table 5. Summary of CEJSTs categories and burdens

CEJST Categories	Burdens
Transportation	Transportation Barriers
	Traffic Proximity and Volume
	$PM_{2.5}$ in the Air
	Diesel Particulate Matter Exposure
Health	Asthma
	Diabetes
	Heart Disease
	Low Life Expectancy
Energy	Energy Cost
Climate Resilience	Expected Agricultural Loss Rate
	Expected Population Loss Rate
	Expected Building Loss Rate
	Projected Flood Risk
	Projected Wildfire Risk
Workforce Development	Unemployment
	Low Median Income
	Below 200% Poverty Line

[20] Council on Environmental Quality. "Climate and Economic Justice Screening Tool."

[21] Any repeated census tract IDs identified under more than one category evaluated within CEJST were counted only once when calculating the total LIDAC census tracts and percentage for the PCAP report. The same applied to any repeated census tract IDs identified by NCDEQ potentially underserved block group data set.

To supplement the CEJST data and to build on the work NCDEQ has already done to understand LIDACs in the state, NCDEQ also reviewed block group data from its analysis of Potentially Underserved Communities.[22] NCDEQ designates Potentially Underserved Communities by examining the racial/ethnic and poverty composition for each block group within the state (based on 2019 data).

To identify a Potentially Underserved Community, a specific block group is compared to both the county and the state composition and is classified as a potentially underserved community if it meets the following criteria for both racial/ethnic composition and poverty composition:

- Racial/Ethnic Composition:
  - The share of nonwhites and Hispanic or Latino (of any race) is ≥50%; OR
  - The share of nonwhites and Hispanic or Latino (of any race) is ≥10% higher than the County or State share; AND
- Poverty Composition:
  - The share of population experiencing poverty is ≥20%; AND
  - The share of households in poverty is ≥5% higher when compared to the County or State share.

Examples:

- If a block group has a share of nonwhites and Hispanic or Latino (of any race) ≥50% AND a share of population experiencing poverty ≥20% AND a share of households is ≥5% higher when compared to the County or State share, then the block group is considered a potentially underserved community.
- If a block group has a share of nonwhites and Hispanic or Latino (of any race) ≥50% AND a share of the population experiencing poverty ≥20%, but the share of households in poverty is NOT ≥5% higher when compared to the County or State share, then the block group is NOT considered a potentially underserved community.

Figure 3 displays the location of LIDACs across NC as identified using both data sets. The figure shows a significant overlap between the CEJST-identified LIDACs and the NCDEQ potentially underserved block groups. By using both data sources, NCDEQ evaluated an expanded number of LIDACs for the PCAP when compared to CEJST alone.

[22] NCDEQ. “NCDEQ’s Potentially Underserved Block Groups 2019.” https://data-ncdenr.opendata.arcgis.com/maps/13a1aace03134969b8181c1f9f026960

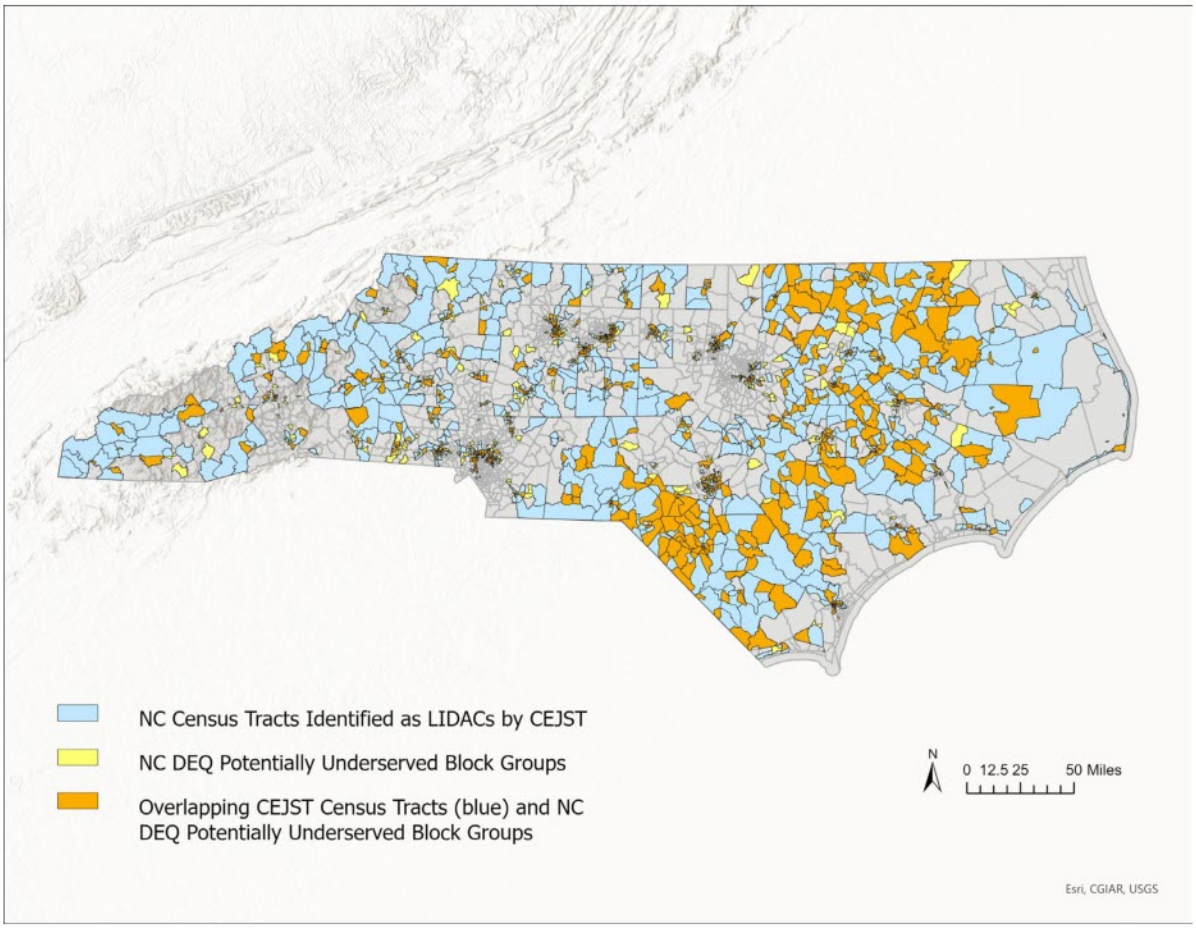

Figure 3. LIDAC Census Tracks (as identified by CEJST) and NCDEQ Potentially Underserved Block Groups in North Carolina.

An additional 512 census tracts identified by the NCDEQ's potentially underserved block groups data were added to the LIDAC census tracts identified by CEJST. In total, 1327 census tracts were identified as LIDACs, which makes up 60.46% of all NC census tracts. The overall LIDAC population is 5,927,863, or 57.75% of the NC population. The overall population of people of color (non-white) is 2,613,193, which makes up 44.08% of the LIDAC population. Table 6 summarizes the two data sets. Appendix B includes the LIDAC census tract IDs identified by both CEJST and NCDEQ's potential underserved block groups.

Table 6. Summary of LIDACs identified by CEJST data set alone and by both CEJST and NCDEQ Potentially Underserved Community data sets.

	Total Census Tracts	Percentage of NC Census Tracts (n=2195)	Total LIDAC Population	Percentage of NC Population (n=10,264, 876)	Total Population of People of Color in LIDACs	Percentage of LIDAC population who are People of Color
LIDACs identified by CEJST	815	37.13	3,436,399	33.48	1,668,943	48.57
Additional LIDACs identified by NCDEQ Potentially Underserved Block Groups	512	23.33	2,491,464	24.27	944,250	37.9
LIDACs identified by both CEJST and NCDEQ Potentially Underserved Block Groups	1,327	60.46	5,927,863	57.75	2,613,193	44.08

3.1 Climate Impacts or Risks to NC's LIDACs

The climate risks most prevalent in the United States include extreme weather events (e.g., hurricanes, extreme rainfall), extreme heat and urban heat island effects, flooding, sea level rise, drought, and wildfires. Social systems inequitably distribute negative impacts from these climate risks on BIPOC individuals and communities, low-income households, unhoused individuals, rural communities, and agricultural workers.[23] Not only do these communities feel the most severe impacts of climate change, but they are also the least able to prepare for and respond to said impacts due to a lack of resources and socio-political power. According to a 2021 EPA analysis, racial and ethnic minorities are more likely to live in areas with the highest projected levels of climate change impacts.[24]

Within North Carolina, the most prevalent climate risks are extreme heat, heavy precipitation, sea level rise, inland and coastal flooding, and hurricanes. In 2020, climate experts in NC assessed historical trends and potential future changes for the NC Climate Science Report.[25] This report helped inform the state's 2020 Climate Risk Assessment and Resilience Plan.[26] Key information on climate risks in NC includes:

- Average temperature has risen about 1.0˚F in NC since 1895. Under a high emissions scenario (Representative Concentration Pathway [RCP] 8.5), average temperatures are expected to rise another 6˚-10˚F compared to the baseline. Although NC has not experienced an increase in days over 90˚F or 95˚F, the number of warm and very warm nights – defined as having nighttime temperatures above 70˚F and 75˚F, respectively – has increased and is projected to continue increasing. Higher temperatures will also increase potential evapotranspiration, leading to a higher frequency and intensity of droughts in the

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[23] Marino, E.K., K. Maxwell, E. Eisenhauer, A. Zycherman, C. Callison, E. Fussell, M.D. Hendricks, F.H. Jacobs, A. Jerolleman, A.K. Jorgenson, E.M. Markowitz, S.T. Marquart-Pyatt, M. Schutten, R.L. Shwom, and K. Whyte, 2023: Ch. 20. Social systems and justice. In: Fifth National Climate Assessment. Crimmins, A.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, B.C. Stewart, and T.K. Maycock, Eds. U.S. Global Change Research Program, Washington, DC, USA. https://doi.org/10.7930/NCA5.2023.CH20

[24] EPA. "Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. U.S. Environmental Protection Agency, EPA 430-R-21-003." 2021. www.epa.gov/cira/social-vulnerability-report

[25] Kunkel, K.E., D.R. Easterling, A. Ballinger, S. Bililign, S.M. Champion, D.R. Corbett, K.D. Dello, J. Dissen, G.M. Lackmann, R.A. Luettich, Jr., L.B. Perry, W.A. Robinson, L.E. Stevens, B.C. Stewart, and A.J. Terando, 2020: NC Climate Science Report. NC Institute for Climate Studies, 233 pp. https://ncics.org/nccsr

[26] "NC Climate Risk Assessment and Resilience Plan." 2020. https://www.deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council/climate-change-clean-energy-plans-and-progress/nc-climate-risk-assessment-and-resilience-plan

future. Furthermore, higher evapotranspiration will create better conditions for wildfire; it is likely that the frequency of wildfire danger days will increase in NC.

- The number of extreme precipitation events – defined as having three or more inches of precipitation in a day – is also expected to rise. The 2015-2018 period saw the greatest number of extreme precipitation events in NC since 1900. Although there is no long-term trend in annual total precipitation averaged across the state, it is likely that annual precipitation will increase throughout the century due to increases in atmospheric water vapor content.
- Sea levels have risen drastically along the coasts of North Carolina; along the northeastern coast, levels have risen about 1.8 inches per decade since 1978, and 0.9 inches per decade since 1935 along the southeastern coast. Sea levels will continue to rise in the future. Under RCP 8.5, storm-driven water levels that have a 1% chance of occurring each year in the beginning of the 21st century could have a 30%-100% chance of occurring by late-century. This, along with extreme precipitation events, will cause more flooding (both inland and coastal) throughout the state.
- Hurricanes will also contribute to flooding. The intensity of the strongest hurricanes is projected to increase on a global scale due to warming temperatures. While it is difficult to obtain accurate hurricane projections for NC specifically, it is very likely that the state will be affected by this global increase in the strength of hurricanes.

The 2020 NC Climate Risk Assessment and Resilience Plan used NCDEQ's mapping of Potentially Underserved Communities to illustrate inequities in climate exposure for wildfires, inland flooding, extreme heat, storm surges, and landslides.[27]

Maps of these exposures and risks overlaid with the Potentially Underserved Communities along with details on specific impacts (e.g., health, air quality) may be found in the 2020 NC Climate Risk Assessment and Resilience Plan (see example map for extreme heat in Figure 4).

[27] For the 2020 Climate Risk Assessment and Resilience Plan, NCDEQ relied on data derived from the American Community Survey (U.S. Census Bureau) 2017. The map in Figure 4 relies on an updated assessment of Potentially Underserved Communities using data from 2019.

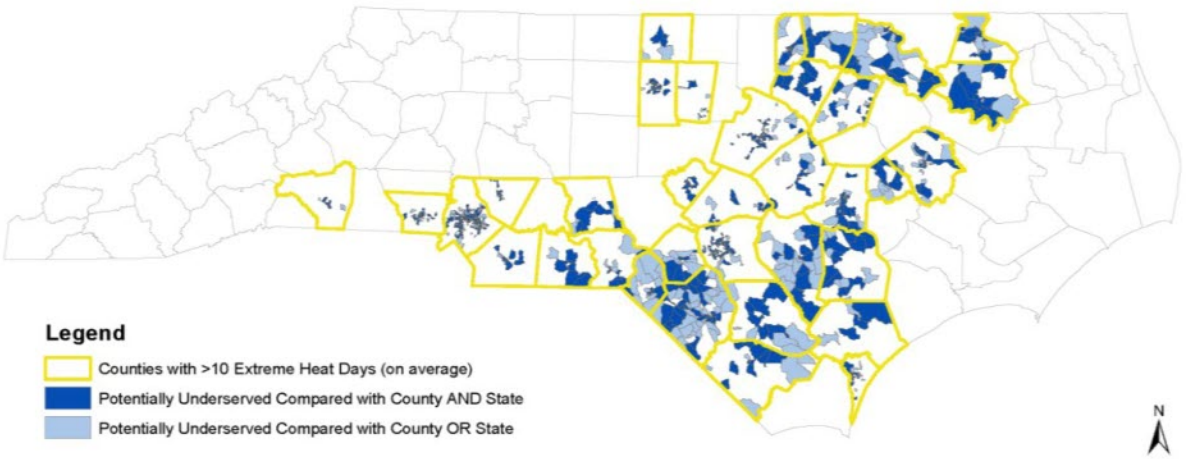

Figure 4. Potentially Underserved Populations in Counties with > 10 Average Extreme Heat Days Annually

Climate risks for NC's Potentially Underserved Communities include:

- **Extreme Heat -** Areas with elevated extreme heat days are largely concentrated in the Eastern part of the state, creating a band from Northampton and Hertford counties south to Robeson, Columbus, and Brunswick counties. Several counties, including Robeson, Sampson, Duplin, Wayne, Bertie, and Halifax have both high percentages of potentially underserved populations and elevated extreme heat days. High heat in urban areas is magnified by the urban heat island effect. The heat island effect also triggers an increase in energy consumption for air conditioning, which increases adverse public health impacts due to emissions from energy production and consumption. Many households in potentially underserved communities are in urban areas, including the cities of Charlotte, Raleigh, Durham, Fayetteville, Greenville, and Wilmington, which already experience an elevated number of extreme heat days.
- **Wildfires -** Wildfire risk is greatest among potentially underserved communities in the southern and western regions of the state. Some of the most affected counties include Robeson, Hoke, Brunswick, and Bladen in the southern region of the state, and Henderson, Buncombe, Cleveland, Burke, Catawba, and Iredell counties in the western region of the state.
- **Inland Flooding -** Inland flooding is one of the most widespread risks in the state, even as acute impacts are very localized. Inland flooding affects people of all socioeconomic backgrounds, but NCDEQ's analysis demonstrates that exposure is often concentrated in areas of social vulnerability. An example of this is Robeson County, which has a high risk of inland flooding on potentially underserved communities in the county.
- **Sea-level Rise and Coastal Storms -** Sea-level rise and increasing intensity of coastal storms will certainly impact high-value and ocean-facing properties. Communities on the Inner Banks, or otherwise near coastal waters, also face significant risk, e.g., New Bern or the Down East villages of Carteret County. Many of these communities have unique historic

cultures and heritage which is threatened by climate change. Clusters of potentially underserved communities exposed to storm surge exist along the entire NC coastline and throughout the sounds, including Shallotte, Wilmington, South Jacksonville, New Bern, East Greenville, Edenton, and Elizabeth City. Differential impacts of storm surge are like those of inland flooding. Homes in higher poverty areas are unlikely to be elevated, poor households and people with disabilities face a greater burden for evacuating, and navigating insurance and government recovery programs favors people with more education.

3.1.1 Value of Resilience

North Carolina has experienced escalating economic and societal losses due to weather and climate-related natural disasters. The state consistently ranks as one of the highest in the nation for these losses each year. Figure 5 gives the losses due to drought, wildfires, floods, and tropical cyclones from 1980 to 2019. This figure shows that tropical cyclones account for most of these losses.

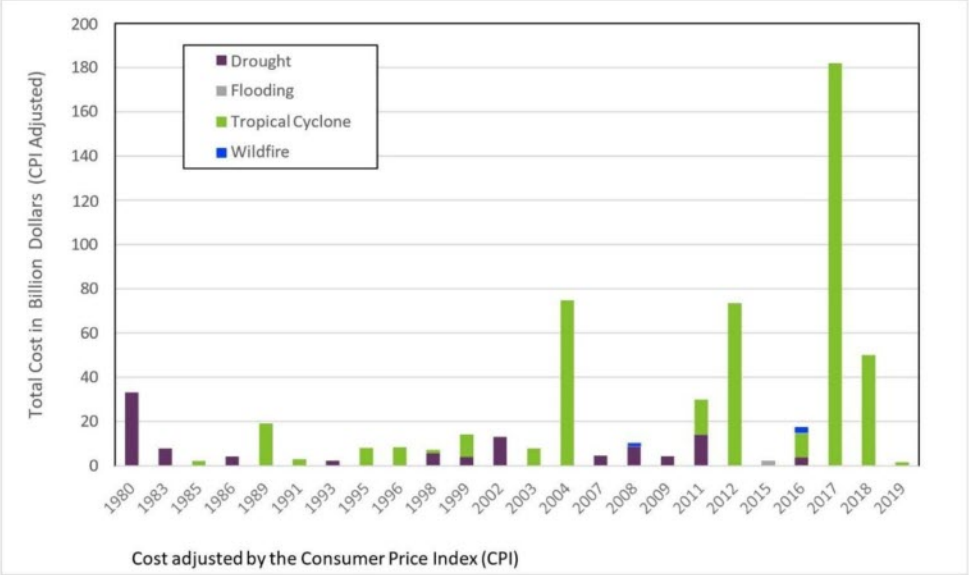

Figure 5. Cost of Weather and Climate-Related Natural Disasters ($ billion)

In four years (2016-2019), these natural disasters have cost North Carolina $251 billion. This is roughly equivalent to the expense of natural disasters over the previous 20 years ($257 billion, 1995-2015).

The National Oceanic and Atmospheric Administration's National Centers for Environmental Information reports that of the events that caused impacts to the state of greater than $1 billion from 1980-2023, hurricanes and tropical storms were only 26% of occurrences but caused 76% of costs. The NC Office of Recovery and Resiliency (NCORR) mapped impacts from hurricanes

Florence and Matthew, showing the most impacted communities from these events, which overlap some of the state's most distressed counties.[28]

[28] CoastalReivew.org. "State has $47M for hurricane-impacted residents." May 17, 2023. https://coastalreview.org/2023/05/state-has-47m-for-hurricane-impacted-residents/

4 Priority Climate Action Plan Measures

The measures in this section have been identified as “priority measures” for the purpose of working towards the state’s climate goals as well as leveraging federal funding opportunities (e.g., EPA’s CPRG implementation grants). This list is not exhaustive of NC’s priorities but represents selected priority measures that meet the following criteria:

- The measure was identified as a near-term approach that aligns with NC’s climate goals and was deemed a priority based on an internal benefits analysis and broader stakeholder feedback.
- The measure is considered implementation ready, meaning that the design work or technology for the policy, program, or project is complete enough that it can be included in a CPRG implementation grant application under the second phase of the program.

Each measure was grouped within a sector and combined to develop an overarching vision for climate action. These visions will be carried through the PCAP report and expanded upon in the CCAP.

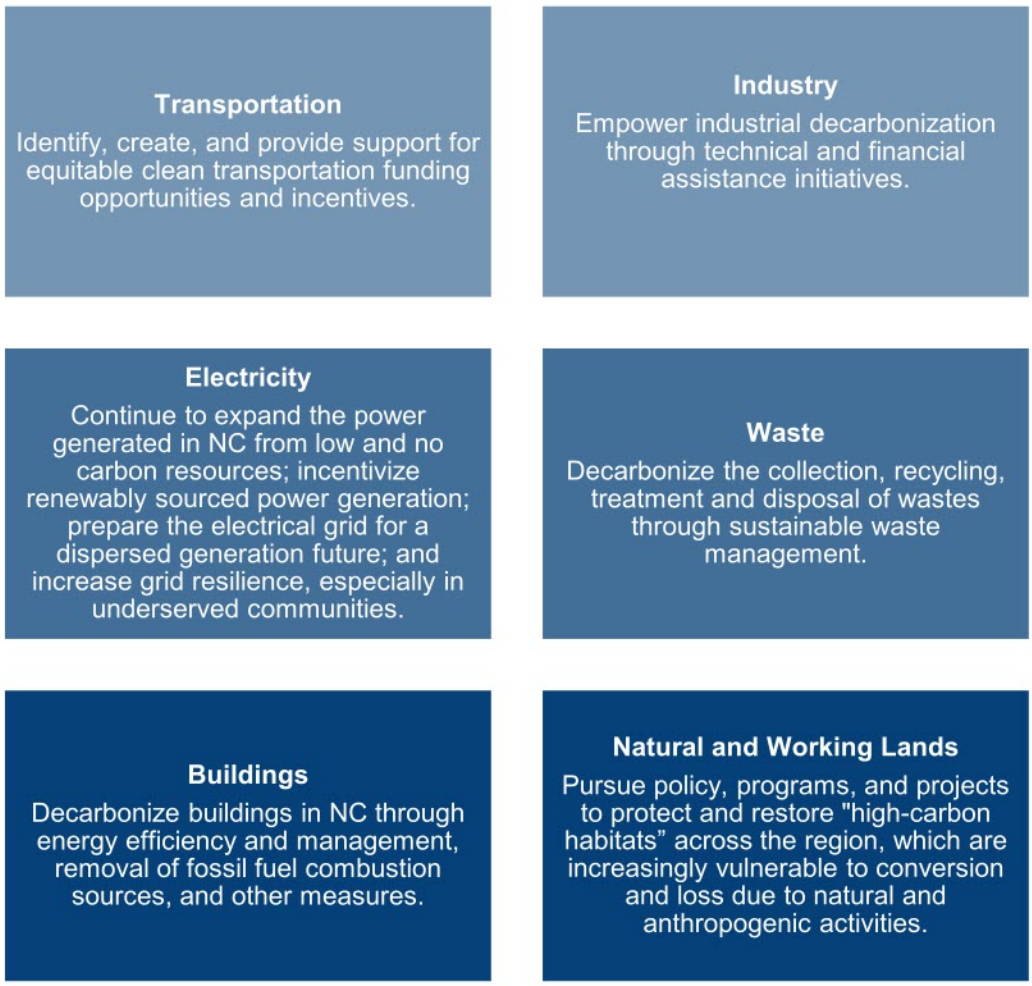

Figure 6. NCDEQ’s Priority Climate Action Visions for Sectors

Table 7. Summary of NC's PCAP priority GHG reduction measures, by sector

Sector	PCAP Measure	Description
Transportation	1. Increase the number of zero-emission and electric vehicles on the road through partnerships, technical assistance, financial incentives, and other mechanisms.	Drive electric vehicle adoption by implementing a practical framework of incentives and assistance programs, making ownership more accessible and appealing to consumers.
Transportation	2. Identify, install, and maintain a publicly accessible electric vehicle charging network accessible to all North Carolinians.	Develop a charging infrastructure, making EV ownership more accessible to North Carolinians.
Transportation	3. Increase the number of zero-emission and electric vehicles in the state fleet, school buses, and transit buses.	Lead by example through electrifying NC's state fleets.
Transportation	4. Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.	Advance efficiency at port and freight terminals by maximizing utilization of new intermodal rail service for container transport and systematically transitioning from diesel to electric or low-emission equipment.
Transportation	5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.	Pursue VMT reduction strategies, including increasing support for bike/pedestrian projects, improvements to public transportation, ride-share programs, and other unique strategies that best fit communities across the state.
Electricity	6. Increase the amount of electricity generated by low and no carbon energy resources in NC.	Continue to reduce carbon emissions from the electricity sector by continuing to increase the utilization of renewable energy sources.
Electricity	7. Implement measures to increase energy resiliency in NC communities.	Pursue policy, programs, and projects that will increase resiliency, especially in communities with higher climate impacts.

Sector	PCAP Measure	Description
Buildings	8. Reduce per square foot energy usage in buildings in NC.	Explore policy, funding/incentives, and program solutions to bolster energy efficiency initiatives for all buildings, including direct funds for state agencies, universities, industries, public buildings, and the residential sector to maximize energy efficiency.
Buildings	9. Decarbonize buildings in NC, through replacement of fossil fuel combustion sources and other greenhouse gas emissions.	Explore policy, funding/incentives, and program solutions to electrify buildings, including direct funds toward electrification initiatives in county schools and public buildings, while also promoting the phase-out of high-global warming potential substances in existing appliances and cooling systems.
Industry	10. Develop programs to support or incentivize implementation of energy efficiency and emissions reduction measures in NC industry	Establish initiatives to increase energy efficiency in the industrial sector, including energy audits, strategic energy management, equipment upgrades, and waste heat utilization.
Waste	11. Reduce food waste to avoid improper management, reduce GHG emissions, and reduce food insecurity.	Reduce food waste entering the waste management system through school refrigerators for uneaten food, logistics to move excess food to food banks, and co-digestion with other feedstocks.
Waste	12. Decarbonize waste collection to reduce GHG emissions associated with inefficient diesel fueled collection vehicles.	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.
Waste	13. Reduce landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life and.	Reduce landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life and utilize the emissions as a renewable energy source.
Natural and Working Lands	14. Protect and restore high-carbon coastal habitats and peatlands.	Pursue policy, programs, and projects to conserve and restore high-carbon habitats in NC's coastal plain, including pocosin wetlands and other peatlands, brackish and saline coastal marsh, and high-salinity seagrass, to avoid carbon emissions resulting from projected conversion, wildfire, and soil emissions

Sector	PCAP Measure	Description
		from unhealthy habitats, and to enhance carbon sequestration.
Natural and Working Lands	**15. Protect, use, and develop agricultural and forest land.**	Pursue policy, programs, and projects for agricultural and forest land protection and best use, supporting expanded land stewardship programs, and promoting reforestation and restoration initiatives in rural and urban areas that increase resilience, ecosystem services, and wildlife habitat.

4.1 Transportation

PCAP Measures 1 and 2. Increase the number of zero-emission and electric vehicles on the road through partnerships, technical assistance, financial incentives, and other mechanisms. Identify, install, and maintain a public electric vehicle charging network accessible to all North Carolinians.

Accelerating the widespread adoption of zero emission (ZEVs) and electric vehicles (EVs) that replace higher carbon emitting vehicles will translate into emission reductions from everyday use of onroad vehicles. This measure includes activities that support a multifaceted approach to achieving the state's vehicle electrification priorities, like facilitating equitable access to low-carbon vehicles, incentivizing North Carolinians to purchase ZEVs and EVs, and transforming the state fleet to decrease GHG emissions. Complementary to the ZEVs and EVs will be investments in EV charging infrastructure. This measure aims to advance the expansion of an EV charging network across NC to support the widespread adoption of EVs. This measure could involve conducting gap assessments to understand current and future charging needs. State and local government could also promote the installation of EV charging infrastructure with a focus on equitable access to EV charging. Additionally, workforce development and infrastructure maintenance plans and activities will ensure the long-term viability of EV charging infrastructure.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Increase the number of zero emission and electric vehicles on the road through partnerships, technical assistance, financial incentives, and other mechanisms.	2.69 - 3.54	63.1 - 143.5

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- **NC Department of Transportation (NCDOT):** Implements the NC Clean Transportation Plan and coordinates the National Electric Vehicle Infrastructure (NEVI) Program in the state.
- **NCDEQ:** Coordinates the implementation of the Volkswagen Mitigation Plan to support the adoption of low-emission vehicles and charging infrastructure.

Regional Coordination and Implementation Support:

- **Centralina Regional Transit Council:** Works with vehicle fleets, fuel providers, community leaders and other stakeholders to save energy and promote the use of domestic fuels and advanced vehicle technologies in transportation, including investments in ZEVs or EV and associated charging infrastructure.
- **Land of Sky Clean Vehicles Coalition** (Asheville/Western NC): Works with vehicle fleets, fuel providers, community leaders and other stakeholders to save energy and promote the use of domestic fuels and advanced vehicle technologies in transportation, including investments in ZEVs or EV and associated charging infrastructure.
- **Triangle Clean Cities Coalition** (Raleigh/Durham Area): Works to reduce regional dependence on petroleum-based fuel, including supporting the Southeast Alternative Fuel Corridor Initiative and DRIVE Electric USA through Plug-in NC.
- **COGs/MPOs/Local Governments:** Support local implementation and coordination of EV adoption mechanisms, EV charging infrastructure expansion and workforce development.
- **Local Air Quality Programs:** Support implementation of air quality requirements including efforts to lower emissions through adoption of EVs and ZEVs and associated charging infrastructure. These include but are not limited to:
    - Mecklenburg County Land Use and Environmental Services – Air Quality
    - Asheville-Buncombe Air Quality Agency
    - Forsyth County Office of Environmental Assistance and Protection

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Support State and Local Initiative to Accelerate ZEV Adoption:** Through state and local government action, promote electric vehicle adoption and support the removal of barriers that inhibit adoption to achieve the ZEV and EV targets set out in EOs 80 and 246. State alliances and coalitions may also encourage continued investment.
- **Provide Financial Incentives and Assistance:** Offer rebates on ZEVs to incentivize the purchase or lease of these types of vehicles to achieve the State's goal of 1,250,000 new registered ZEVs by 2030 as set forth in EO 246. Modify rebate offers overtime to respond to shifts in the market and target LIDAC communities. Establish a competitive vehicle replacement program specifically focused on underserved communities to encourage

equitable deployment of ZEVs statewide. Additionally, implement financial policies supporting the removal of high-emitting older vehicles from the road.

- **Expand EV-Trained Workforce:** Conduct state and local workforce assessments to understand gaps in the labor market needed to support widespread EV adoption. Partner with technical and community colleges to provide workforce development programs to support the deployment of EVs and the installation and maintenance of EV infrastructure throughout the state.
- **Inform North Carolinians about EV Benefits and Opportunities:** Create and manage a resource hub to inform consumers about the benefits and opportunities to purchase or lease a ZEV along with financial resources to increase accessibility to these vehicles. Partner with dealerships, insurance companies and other private entities to distribute these resources directly to consumers and maximize public information exposure.
- **Expand DC Fast Charging Infrastructure:** Continue to explore the most efficient ways to provide infrastructure upgrades needed to enable broad-scale EV charging at home and on highway corridors. Identify needs and level of investment required, and ensure cost-effective deployment of new infrastructure, including life cycle cost-benefit analysis. Increase funding to expand charging infrastructure. NC received applications for 20 DC fast chargers under Phase 1 of the DC Fast Charging Infrastructure Program under the VW Settlement and 168 DC fast chargers under Phase 2. In Phase 2, $26,040,288 was requested and $4.9 million was allocated illustrating the significant interest in investing in this infrastructure.
- **Expand Level 2 Charging Infrastructure:** Increase funding for Level 2 charging infrastructure. Through the VW Settlement program, NC has 119 unfunded Level 2 rebates requesting $196,597 and 29 unfunded Level 2 State Agency Projects requesting $2,629,352 for a total of $4,225,949.
- **Revise Building Codes:** Investigate the feasibility of revising residential building codes to require or recommend pre-wiring for Level 2 EV charging.
- **Develop Permitting Best Practices:** Develop a clearinghouse of best practices and other resources for local governments to expedite charging infrastructure permitting and review, including coordination with electric utilities.

Authority to Implement

Aspects of this measure will focus on providing incentives and funding for low- or zero-emission vehicles and charging infrastructure that could be implemented with existing authority. NCDEQ has administered Transportation sector emission reduction grant programs for over two decades and are well positioned do the same with this CPRG opportunity. Several existing EOs further support this measure, including:

- **EO 271:** Instructs cabinet agencies to pursue and invest eligible federal funds, in a manner consistent with applicable law, toward growing the MHD ZEV market in NC, including but not limited to investing in charging infrastructure and vehicle purchase incentives. Cabinet

agencies are instructed to support an affordable and reliable transition to ZEVs in the MHD sector, including but not limited to increasing affordability and access to MHD ZEVs in underserved communities.

- **EO 246**: NC will strive to accomplish the following goals related to transportation sector emissions: increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50 percent of in-state sales of new vehicles are zero-emission by 2030.

  Additionally, EO 246 instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80**: NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs. NC is already promoting the adoption of EVs within the state.

Relevant Funding Sources

Along with state funding opportunities, federal tax credits to support EVs and ZEVs are available, such as the IRA – Clean Vehicle Tax Credit, Previously Owned Vehicle Tax Credit, Clean Commercial Vehicle Tax Credit, and the Alternative Fuel Vehicle Refueling Property Tax Credit. Additional charging infrastructure examples include the FHWA National Electric Vehicle Infrastructure (NEVI) program and FHWA Charging and Fueling Infrastructure (CFI) grants.

LIDAC Benefits

The actions in this measure will not only reduce GHGs in and around LIDAC communities but will also reduce other air pollutants such as fine particulate matter ($PM_{2.5}$) and ozone. The state of North Carolina is in attainment for both $PM_{2.5}$ and ozone, and further reducing these criteria pollutants will help ensure the state remains in attainment given any future regulatory actions by the EPA.

LIDAC areas are commonly found where the main highway corridors intersect with large cities, especially seen in Raleigh/Durham, Greensboro/Winston-Salem, Charlotte, and Fayetteville. Reducing emissions from the transportation sector has the greatest health benefits to LIDAC

communities, especially for mitigating respiratory illnesses. Additional benefits of reduced noise pollution can be realized with the adoption of EVs over internal combustion engines (ICEs).

Metrics for Tracking Progress

Examples include:

- Number of EVs or ZEVs registered and/or purchased.
- Number of publicly accessible installed charging stations by type (e.g., Level 2 or DC Fast Chargers).
- Uptime hours (for chargers).
- Number of maintenance/repair workers trained.

PCAP Measure 3. Increase the number of zero emission and electric vehicles in state and local government fleets.

Promote the adoption of ZEVs and EVs in state and local fleets such as school buses, transit buses, garbage trucks, emergency vehicles and off- and onroad construction vehicles. As state and local governments adopt these new low-emission vehicles, this measure will also focus on the decommissioning of high-emission vehicles as they are replaced in public fleets.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Increase the number of zero emission and electric vehicles in state and local government fleets.	0.05 - 0.07	1.3 - 2.9

Appendix E provides information on how these GHG emission reductions were quantified. The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- **NCDOT:** Implements the NC Clean Transportation Plan and coordinates the NEVI Program in the State.

- **NCDEQ:** Coordinates the implementation of the Volkswagen Mitigation Plan to support the adoption of EV charging infrastructure.

Regional Coordination and Implementation Support:

- **NC Public School Districts:** Manages and maintains fleets of over 14,000 school buses serving over 800,000 students across the state.
- **NC Department of Public Instruction:** Oversees and provides guidance for NC Public Schools Districts including coordinating communications and programming for school buses fleet transformation.
- **NC Department of Administration:** Manages and maintains a fleet of over 7,500 personal vehicles for state officials requiring personal transportation for their job.
- **Regional Transit Authorities:** Manages and maintains bus fleets for 16 major regions of NC.
- **COGs/MPOs/Local Governments:** Supports local implementation and coordination of EV adoption mechanisms, EV charging infrastructure expansion, and workforce development.
- **Local Air Quality Programs:** Supports implementation of air quality requirements including transitioning to lower emission EVs and ZEVs. These programs include but are not limited to:
  - Mecklenburg County Land Use and Environmental Services – Air Quality
  - Asheville-Buncombe Air Quality Agency
  - Forsyth County Office of Environmental Assistance and Protection

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Transition Public Fleets to EVs or ZEVs:** Increase funding to cover the 37 proposed or unfunded projects across NC to transition public fleets to EVs or ZEVs which currently total about $2.7 billion in funding requested. These requests include school buses, public transit buses and vans, garbage trucks, emergency vehicles (ambulances, firetrucks, police vehicles, other on and off-road vehicles), and off-road maintenance vehicles, all of which would provide significant GHG reductions and air quality benefits to align with existing state priorities.
- **Transition Public Fleets to Lower Emission Diesel or Hybrid Alternatives (Non-EV):** For some vehicles, EV or ZEV alternatives may not exist or may be too expensive when comparing the costs to the GHG reductions and other benefit values. Transitioning to vehicles with lower emission fuel options and more efficient engines provides an alternative to EVs and ZEVs, where appropriate. The aim of this activity would be to increase the

funding available to cover the 67 proposed or unfunded projects across NC to transition public fleets to EVs or ZEVs which currently total about $56 million in requested funding. These requests include school buses, public transit buses and vans, garbage trucks, emergency vehicles (ambulances, firetrucks, police vehicles, other on and off-road vehicles), and off-road maintenance vehicles, all of which would provide significant GHG reductions and air quality benefits to align with existing state priorities.

- **Establish Decommissioning and Repurposing Programs for Replaced Higher Emission Fleet Vehicles:** Support policy and programming to systematically remove high-emission fleet vehicles as new low-emission alternatives take their place. Partner with local governments operating such fleets and private partners to establish best practices for vehicle decommissioning to maintain necessary fleet coverage and minimize the waste produced in the transition to low-emission vehicles.
- **Expand EV-Trained Workforce:** Conduct state and local workforce assessments to understand gaps in the labor market needed to support widespread EV adoption. Partner with technical and community colleges to provide workforce development programs to support the deployment of EVs and the installation and maintenance of EV infrastructure throughout the state.

Authority to Implement

Aspects of this measure focus on providing incentives and funding for low- or ZEVs that could be implemented with existing authority. NCDEQ has administered Transportation sector emission reduction grant programs for over two decades and is well positioned do the same with this CPRG opportunity. Cabinet agencies are also instructed to prioritize ZEVs in the purchase of new MHD vehicles. The NC Department of Administration has been instructed to add MHD ZEVs to state term contracts for its replacement vehicle program. Several existing EOs further support this measure, including:

- **EO 271:** Instructs cabinet agencies to pursue and invest eligible federal funds, in a manner consistent with applicable law, toward growing the MHD ZEV market in NC, including but not limited to investing in charging infrastructure and vehicle purchase incentives. Cabinet agencies are instructed to support an affordable and reliable transition to ZEVs in the MHD sector, including but not limited to increasing affordability and access to MHD ZEVs in underserved communities.
- **EO 246**: NC will strive to accomplish the following goals related to transportation sector emissions: Increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50 percent of in-state sales of new vehicles are zero-emission by 2030.

  Additionally, EO 246 instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air

pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.

- **EO 80**: NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged the Department of Environmental Quality, NCDEQ, with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs.

Relevant Funding Sources

North Carolina has identified a total of $64.3 million in existing funding awards from a variety of awards for school bus fleet electrification. For example, the state will receive 26.7 million in federal funding earmarked for purchasing 114 electric school buses through the EPA's Clean School Bus Grant Program.

LIDAC Benefits

The actions in the measure will not only reduce GHGs in and around LIDAC communities, but the actions will also reduce other air pollutants, such as fine particulate matter ($PM_{2.5}$) and ozone. The state of North Carolina is in attainment for both $PM_{2.5}$ and ozone and further reducing these criteria pollutants will help ensure the state remains in attainment given any future regulatory actions by the EPA.

LIDAC areas are commonly found where the main highway corridors intersect with large cities, especially seen in Raleigh/Durham, Greensboro/Winston-Salem, Charlotte, and Fayetteville. Reducing emissions from the transportation sector has the greatest health benefits to LIDAC communities especially for respiratory illnesses. Additional benefits of reduced noise pollution can be realized with the use of EVs over ICEs.

Metrics for Tracking Progress

Examples include:

- Number of electric or ZEV buses/vehicles procured.
- Number of public fleets or school districts with EV or ZEVs.

PCAP Measure 4. Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.

This measure aims to pursue programs that aim to improve energy efficiency associated with freight shipping across the State and lower emissions along the State's critical freight corridors, including railway terminals and sea and inland ports. These programs may include 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.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.	0.01 – 0.05	0.11 – 0.55

Appendix E provides information on how these GHG emission reductions were quantified. The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- **NCDOT:** Oversees the NC Port Authority, the Rail Division, and is responsible for the implementation of the 2017 Statewide Multimodal Freight Plan which includes GHG emissions reductions goals.

Regional Coordination and Implementation Support:

- **NC Port Authority:** Operates and oversees all ports in NC as an enterprising agency under NCDOT; this includes the two primary ports in Wilmington and Morehead City as well as the inland terminals in Greensboro and Charlotte.
- **NC Rail Division (NCDOT):** Operates and oversees the State's rail corridors and terminals and is responsible for the implementation of the 2015 Comprehensive State Rail Plan.
- **Freight Companies with In-State Operations**: Supporting the transition to lower-emission, high efficiency equipment and mechanisms.
- **Local Air Quality Programs**: Supports implementation of air quality requirements including promoting lower emission transportation solutions. These programs include but are not limited to:

- Mecklenburg County Land Use and Environmental Services – Air Quality
- Asheville-Buncombe Air Quality Agency
- Forsyth County Office of Environmental Assistance and Protection

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Significantly increase efficiency of freight container shipment system to reduce GHG emissions and foster many other benefits.** Currently, North Carolina's intermodal container rail service moves freight from the Port of Wilmington to Charlotte on the Queen City Express and Rocky Mount on the new Wilmington Midwest Express. In fiscal year 2023 (July 1, 2022 – June 30, 2023) the intermodal rail volume was 15,186 containers. At present, the service is capped at about 16,000 containers per year due to the positioning and length of rail tracks for loading intermodal flat cars and lack of storage for cars awaiting loads at the Port of Wilmington. Using funding provided by a RAISE grant from U.S. Department of Transportation (USDOT), NC Ports will complete a project by the end of 2024 to build a dedicated Intermodal Rail Yard at the Port of Wilmington that will expand rail capacity to more than 50,000 container rail movements annually. This level of activity has the potential to divert nearly 250,000 container boxes from trucks to rail at the Port of Wilmington over the next decade. North Carolina's goal is to secure operating funds to maximize utilization of this new intermodal container shipping capacity as quickly as possible over the next three years (2025-2028) to reduce GHG and other pollutant emissions as quickly as possible.
- **Support Equipment Electrification at Ports:** Supporting equipment electrification at both deepwater ports, such as forklifts and small on-site vehicles, will reduce GHG emissions locally and provides immediate reductions. This activity may involve replacing outdated equipment initially and scaling up electric equipment in the future to meet demand at the ports.
- **Deploy Shore Power:** Assess the electricity needs at ports to allow for the deployment of shore power, enabling ships to stop idling while docked. Install the necessary electricity infrastructure at ports to provide and maintain shore power on site and consider using low-emission electricity sources such as solar or wind power.

Authority to Implement

Aspects of this measure focus on providing incentives and gap funding for intermodal rail which promotes diversion of MHD trips and reductions in VMT. This measure could be implemented with existing NCDOT NC Ports authority. However, several existing EOs further support this measure, including:

- **EO 271:** Instructs cabinet agencies to pursue and invest eligible federal funds, in a manner consistent with applicable law, toward growing the MHD ZEV market in North Carolina, including but not limited to investing in charging infrastructure and vehicle purchase incentives. Cabinet agencies are instructed to support an affordable and reliable transition to ZEVs in the MHD sector, including but not limited to increasing affordability and access to MHD ZEVs in underserved communities.
- **EO 246**: North Carolina will strive to accomplish the following goals related to transportation sector emissions: Increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50 percent of in-state sales of new vehicles are zero-emission by 2030.

  Additionally, EO 246 instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean North Carolina economy.
- **EO 80**: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ with collaborating with businesses, industries, power providers, technology developers, North Carolina residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the transportation routes for the movement of freight between the Wilmington port and inland areas such as Charlotte and Rocky Mount.

Relevant Funding Sources

Funds from the EPA Clean Ports Program may serve as an additional source of funding for the electrification of equipment at the port, but CPRG may serve as the best (only) source of funding for maximizing the utilization of the new intermodal container shipping capacity at the port.

LIDAC Benefits

The actions in the measure will not only reduce GHGs in and around LIDAC communities, but the actions will also reduce other air pollutants, such as fine particulate matter ($PM_{2.5}$) and ozone. The state of North Carolina is in attainment for both $PM_{2.5}$ and ozone and further

reducing these criteria pollutants will help ensure the state remains in attainment given any future regulatory actions by the EPA.

LIDAC areas are commonly found where the main highway corridors intersect with large cities. Therefore, maintaining and expanding the intermodal rail connections between the port and cities will divert MHD truck trips and emissions providing health benefits to LIDAC communities along those routes and at each of the route endpoints.

Metrics for Tracking Progress

Examples include:

- Distance of new rail added.
- Equipment in Ports inventory electrified.

PCAP Measure 5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.

The purpose of this measure is to leverage and adopt innovative methods, technologies, and programs to reduce VMT, increase access to multimodal transportation, increase support for bike and pedestrian-friendly infrastructure, and create equitable access to healthier living and working environments across the state.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians. *	0.004	0.02

Appendix E provides information on how these GHG emission reductions were quantified.
*It should be noted that potential emission reductions shown here are for a subset (sidewalk projects) of the potential projects that could take place under this measure. Additional work is underway to estimate the more substantial GHG reductions associated with other potential projects (increased access to multi-model transit, zoning reforms, innovative technologies, etc.).

Key Implementing Agencies

Lead Activity Implementer:

- **NCDOT:** Oversees the Integrated Mobility Division that is responsible for developing bicycle and pedestrian plans and providing oversight of NC's transit systems. The Department oversees and promotes transportation demand management (TDM) and has developed a VMT reduction toolkit that outlines TDM strategies. The Department is responsible for coordinating the implementation of the NC Clean Transportation Plan which seeks to reduce emissions from the transportation sector.

Regional Coordination and Implementation Support:

- **COGs/MPOs/RPOs/Local Governments:** Supports local implementation and coordination of programs supporting decreasing VMTs.
- **Local Air Quality Programs:** Supports implementation of air quality requirements including solutions for reducing overall transit related GHG emissions. These programs include but are not limited to:
    - Mecklenburg County Land Use and Environmental Services – Air Quality
    - Asheville-Buncombe Air Quality Agency
    - Forsyth County Office of Environmental Assistance and Protection
- **Local Businesses and Businesses with in-State Operations:** Supports programs to encourage low-emission commuting options such as telecommuting, carpooling, and non-vehicular transportation, like biking.

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Promote Bike/Pedestrian-Friendly Infrastructure and Programming:** Create living spaces that encourage biking and walking as an accessible and safe mode of transportation both decreases GHG emissions and increases the quality of life for North Carolinians benefiting from more exercise and less air pollution. Encouraging public information campaigns around the benefits of biking and walking, in addition to safety campaigns, could improve public opinion around finding alternatives to single-passenger vehicle travel. Additionally, supporting programs to incorporate bike lanes and pedestrian zones in more urban areas in particular is necessary to ensure biker and pedestrian safety. Further efforts such as financial incentives for e-bikes also have potential to decrease VMT, improve quality of life, and achieve more equitable outcomes in this arena. Local governments also can improve pedestrian accessibility and safety by implementing the Complete Streets principles including leveraging maintenance activities to add complete street improvements (e.g., sidewalk maintenance).
- **Collaborate with Businesses to Reduce VMT:** Businesses in NC have the authority to make smart choices to encourage low-carbon commuting options that work for their company, improve the lives of NC workers, and reduce VMT. Government entities and other organizations can engage with the private sector to encourage commuting solutions such as

telecommuting schedules (i.e., hybrid or remote work), implementing incentives like employee cash out programs and guaranteed ride home programs to promote carpooling, walking, biking, or commuting on public transit. Additionally, implementing infrastructure improvements, like expanding broadband access, and investing in transit stop upgrades will make these options more accessible and attractive for NC workers.

- **Support Land Development and Zoning Efforts Aimed at Reducing VMT:** Support local efforts to allow for greater ease of compact development, bike lanes, car-free zones, and other strategies in new and existing developments to make micro-modal transportation accessible and safe. Focus on climate-smart development using mixed use land zoning, compact development strategies, transit-oriented planning, and enforcing Development Impact Mitigation programs.
- **Support Investments in Public Transit and Multi-Modal Infrastructure:** Invest in public transportation such as, but not limited to, bus lanes, passenger and light rail infrastructure, transportation hubs, transportation demand strategies, and "last mile" transportation solutions. Utilize state funding within existing authority, federal funding, and finance strategies to support these investments, and coordinate with local governments to provide technical assistance and planning support for projects within their jurisdiction.

Authority to Implement

Aspects of this measure focus on providing incentives and gap funding for the adoption of innovative methods, technologies, and programs to reduce VMT, increase access to multimodal transportation, increase support for bike and pedestrian-friendly infrastructure, and create equitable access to healthier living and working environments across the state. This measure could be implemented with existing NCDOT authority to manage such projects through FHWA and FTA, but as outlined, state restrictions on spending levels by project type and prohibitions on direct state funding for stand-alone bicycle and pedestrian projects hamper the state's ability to fully invest in strategies outlined here. However, several existing EOs further support this measure, including:

- **EO 246**: Required the development of the North Carolina Clean Transportation Plan. North Carolina will strive to accomplish the following goals related to reducing transportation sector emissions: Increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs (i.e., 50 percent of in-state sales of new vehicles are zero-emission by 2030).

  Additionally, EO 246 instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean North Carolina economy.

- **EO 80**: North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ with collaborating with businesses, industries, power providers, technology developers, North Carolina residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs. NC is already working on developing bicycle and pedestrian plans as well as promoting VMT reduction programs such as Travel Demand Management and investment in transit in all 100 counties.

Relevant Funding Sources

FHWA provides funding to reduce transportation measures through both the Congestion Mitigation Air Quality (CMAQ) Program and the Carbon Reduction Program (CRP). While the purpose of the CMAQ Program is to reduce criteria pollutants, projects selected for funding also result in carbon emission reductions, which are calculated and reported on CMAQ applications. The purpose of CRP is GHG reductions through reducing carbon in transportation projects. NC's apportionment for the CRP is $170,984,555.

LIDAC Benefits

The actions in the measure will not only reduce GHGs in and around LIDAC communities, but the actions will also reduce other air pollutants such as fine particulate matter ($PM_{2.5}$) and ozone. The state is in attainment for both $PM_{2.5}$ and ozone and further reducing these criteria pollutants will help ensure the state remains in attainment given any future regulatory actions by the EPA.

LIDAC areas in NC are commonly found where the main highway corridors intersect with large cities, especially seen in Raleigh/Durham, Greensboro/Winston-Salem, Charlotte, and Fayetteville. Reducing emissions from the transportation sector has the greatest health benefits to LIDAC communities especially for respiratory illnesses.

Additional economic and environmental benefits stem from land-use planning reforms in support of VMT reduction strategies. These benefits can include lowered housing costs in high demand areas, decreased transportation costs and financial risk through decreased dependency on private vehicle ownership, decreased or eliminated work commutes, greater access to employment opportunities, increased foot traffic to local businesses, economic resilience through self-sustaining neighborhoods, and decreased energy consumption through compact development.

Metrics for Tracking Progress

Examples include:

- Miles of new bike lanes or trails.
- Frequency and coverage of public transit services.
- Miles of safe pedestrian infrastructure.
- Average distance to crucial amenities for local residents.
- Changes in population density in urban cores.
- Annual transit ridership.
- Changes in VMT.

4.2 Electricity

PCAP Measure 6. Increase the amount of electricity generated by low and no carbon energy resources in NC.

For this measure, NC's CPRG work will focus on creating programs and incentives to increase low and no carbon distributed energy resources, focused on but not limited to residential, commercial, government, institutional, and other small scale solar, with an emphasis on adding solar in underrepresented communities (LIDAC) and for low- and moderate-income residents.

As other sectors seek to electrify to reduce emissions, being able to source that electricity from renewable resources is what drives those reductions. Increasing the amount of electricity generated from renewable resources will help offset generation from carbon-emitting sources.

Utility scale power generation over the last 15 years has shifted away from coal and toward natural gas, accompanied by a dramatic rise in large scale utility solar generation, which now supplies more than 9% of the state's power generation. This shift continues toward goals defined in EO 246 and House Bill 951 Energy Solutions for North Carolina (HB 951), which outlines a 70% reduction in carbon emissions by 2030 and carbon neutrality by the year 2050. The North Carolina Utilities Commission is charged with developing a Carbon Plan to achieve these reductions. For residential and other small scale distributed solar, NC lags other states, ranking just 17th in residential net-metered solar capacity and 28th in projected solar growth over the next 5 years.

Quantified GHG Reductions

PCAP Measure Actions	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Implement residential and community solar through EnergizeNC.	0.015 - 0.15	0.74 -1.2
Develop programs and incentives to facilitate small scale solar installments by local governments, commercial entities, institutions, and others. (Per $10,000,000)	0.008	0.04

Appendix E provides information on how these GHG emission reductions were quantified. The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- EnergizeNC Partners:
    - NCDEQ
    - NC Clean Energy Fund
    - NC Clean Energy Technology Center
    - Advanced Energy

Regional Coordination and Implementation Support:

- NC Utilities Commission – Public Staff
- Other state agencies and state educational facilities
- Local governments, including educational and institutional entities

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Install solar at low- and moderate-income residences, multifamily residences, and other locations in NC through the EnergizeNC program, with storage added at select critical locations as appropriate.
- Identify and/or develop programmatic pathways and incentives to encourage installation of solar at local government, educational, commercial, and other sites, especially in underserved locations in the state, possibly including storage at critical facilities in vulnerable communities, where appropriate.
- Explore partnerships to provide solar information, technical assistance, and funding to public school systems in selected underserved communities to implement energy efficiency measures, install solar panels, install small scale solar with optional battery backup and provide energy education, and other measures in K-12 schools.
- Provide information sharing and technical support opportunities to communities on incorporating energy and infrastructure needs, goals, and strategies in master plans, comprehensive plans, and small area plans.

Many of these activities are ongoing and will continue to be implemented throughout the state but need to be scaled up. Other activities, such as developing new policies to overcome community choice aggregation adoption barriers, still need to be implemented and depend on existing authorities. Some of these planned activities can commence in a shorter timeframe, contingent upon available resources (e.g., regional solar opportunity mapping), whereas others may take more time (e.g., adopting solar-ready ordinances) and may be location-dependent.

Authority to Implement

NC DEQ and/or the key implementing agencies listed have the authority to implement the planned programs and projects under this sector. Additionally, these programs and projects will support executive orders and legislation in NC, including:

- **EO 246**: Instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80**: NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged the NCDEQ with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs.

Relevant Funding Sources

NC anticipates receiving funding for state, local, and private efforts to support the transition to lower-emission energy sources for electricity. These sources include, but are not limited to:

- Federal tax incentives.
- The Greenhouse Gas Reduction Fund Solar for All Grant Program was created to expand the number of LIDACs that receive residential and community solar. NC has applied for $250M in funding for EnergizeNC. Additional funding from the Greenhouse Gas Reduction Fund National Clean Investment Fund and Clean Communities Accelerator Fund could also fund similar projects.
- The Department of Agriculture's Rural Energy for America Program Grant provides funding to farmers and small businesses in rural areas who want to permanently reduce operating expenses by installing a solar energy system.
- Other federal funding for solar research, manufacturing incentives, and technological development to improve the reliability and affordability of wind energy and address barriers to wind energy deployment.

LIDAC Benefits

Through increased clean and renewable electricity generation, air quality improvements will be realized for communities in and around fossil fuel generating units. As the clean energy transition moves forward, the potential for new jobs, with a focus on training and developing a workforce in LIDACs presents an opportunity to bring additional benefits. Where distributed energy is used, opportunities also exist for cost savings and increased resilience.

Metrics for Tracking Progress

Examples include:

- Solar installations completed.
- Capacity of solar installations.
- Number of low-and moderate-income residents receiving solar.
- Number of LIDAC communities where installations are completed.
- Energy cost savings.

PCAP Measure 7. Implement measures to increase energy resiliency in NC communities.

Resilience Hubs support communities and the residents by providing a centralized location for distribution and services before, during, or after a natural hazard event. They can equitably enhance community resilience while simultaneously reducing GHG emissions. Within this measure NCDEQ could look to create a pilot program to install a Resiliency Hub and measure community impacts at K-12 public school systems (or any other appropriate community buildings) in potentially underserved communities (LIDACs) across the state, focused on the most overburdened/underserved communities first and those that are high risk for climate threats.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Implement measures to increase energy resilience in NC communities.	0.02	2.08

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Implementing Agencies:

- NC Emergency Management
- NC State Energy Office
- NC Office of Recovery and Resiliency

Regional Coordination and Implementation Support:

- Local governments, including educational and institutional entities

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Implement Grid Resilience Projects in NC Communities:** Develop grid resilience projects with a focus on decreasing outage times for vulnerable and disadvantaged communities. This activity could include a variety of ways to mitigate, and recover from, disruptions to the electric power grid from increased storm intensity by securing a diverse source of utility scale and distributed generation assets. Examples include hardening the grid/transmission infrastructure, reducing demand for power, and modernizing existing grid assets with smart meters, controllers, automation, and analytics to manage a diverse source of power supply, transmission, and distribution system components, with an emphasis on vulnerable communities and critical infrastructure locations.
- **Develop an NC Resiliency Hub Advisory Council:** Work with a diverse group of stakeholders to develop a program to select and implement a Resiliency Hub(s) in disadvantaged and/or vulnerable communities to provide emergency services to the community and residents. The Hub locations will be evaluated for additional energy saving and resilience measures, such as energy efficiency projects, electrification projects, solar installation, energy storage, EV bus charging, emergency shelter facilities, and related projects that can be used to measure savings and demonstrate resilience and emergency response benefits.

To advance this measure, NCDEQ envisions a program that would follow the timetable laid out below.

- **Year 1:** Work with the NC Resiliency Hub Advisory Council to evaluate potential locations.
- **Year 2:** Select locations and evaluate to determine potential project scope and estimated savings.

- **Year 2-3:** Implement hub(s).
- **Year 3-5:** Measure and communicate savings and resiliency benefits.

Authority to Implement

NC DEQ and/or the key implementing agencies listed have the authority to implement the planned programs and projects under this sector and can work with existing entities such as the State Disaster Recovery Task Force and others on the implementation of these programs and projects. Additionally, these programs and projects will support executive orders and legislation in NC, including:

- **EO 246:** NC's Transformation to a Clean, Equitable Economy instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs. 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80:** NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ, with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.
- **NC Clean Energy Plan:** This plan presents goals to reduce electric power sector GHG emissions by 70% below 2005 levels by 2030 and attain carbon neutrality by 2050; foster long-term energy affordability and price stability for NC's residents and businesses; and accelerate clean energy innovation, development, and deployment to create economic opportunities for both rural and urban areas of the state. A key recommendation identified in the plan is modernizing the grid to support clean energy resource adoption, resilience, and other public interest outcomes.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on underserved and vulnerable communities.

Relevant Funding Sources

- DOE Grid Resilience Program, BIL Section 40101(d). NC has received $18.2M in funding for the first two years and will receive $8.6M for year three. The state is providing the required 15% match.

- DOE Grid Innovation Fund, GRIP Program. NC submitted three projects in funding round one but did not receive funds; NC has submitted two projects in round two.
- Other DOE funding is available, including Grid Resilience Utility and Industry Grants, the Energy Improvements in Rural or Remote Areas Program, Transmission Siting and Economic Development (TSED) Grant Program, and other opportunities as shown at: https://www.energy.gov/gdo/grid-and-transmission-program-conductor.

LIDAC Benefits

Community resilience hubs can provide highly localized benefits across North Carolina. With a focus on installing hubs in LIDACs, the benefits this measure can bring to these communities include additional public safety and health benefits (e.g., if hubs can be offered as cooling centers for extreme heat days), reduced energy costs for residents and local schools or other institutions, improved local air quality through transitions to EVs and ZEVs and onsite renewable electricity, increased resilience in highly vulnerable areas, and potential new jobs and training opportunities while also lessening financial disruptions and burdens due to extreme weather (e.g., from blackouts or flooding events). From a societal perspective, Resilience Hubs can also serve to bring more cohesion and a sense of place for residents.

Metrics for Tracking Progress

- Number of Resiliency Hubs installed.
- Number of LIDAC communities directly impacted.
- Number of additional energy measures installed.
- Amount of energy savings.

4.3 Buildings

PCAP Measure 8. Reduce per square foot energy usage in buildings in NC.

Establish programs and initiatives to increase energy efficiency in 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 buildings and existing buildings.
For the purposes of this program, energy efficiency and decarbonization projects for publicly owned water and wastewater systems that service buildings will be allowed and counted under this priority measure.

Quantified GHG Reductions (MTCO2e)

Reductions from this measure will be attributed to increasing energy efficiency and reducing energy usage with a long-term goal of 25% reduction across both residential and commercial sectors.

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Reduce per square foot energy usage in buildings in NC	95.3	476.7

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- NCDEQ: Coordinates the implementation of funding mechanisms to the MSAs below and to other local governments. Waste Reduction Partners provide technical assistance and energy audits.

Regional Coordination and Implementation Support:

- Centralina Council of Government
- Central Pines Council of Government
- Other N.C. Councils of Government and local governments
- NC Weatherization Assistance Program (NC WAP)**:** NC WAP has helped weatherize more than 1,250 homes and repair 800 Heating, Ventilation and Air Conditioning (HVAC)

units. Through the Low-Income Home Energy Assistance Program, the State Energy Office's energy projects were estimated to reduce NC's annual electricity sector emissions of carbon dioxide, sulfur dioxide, and oxides of nitrogen by 1,461 tons/year, 0.6 tons/year, and 0.9 tons/year, respectively.

- Local NC Air Quality Programs
    - Mecklenburg County Land Use and Environmental Services – Air Quality
    - Asheville-Buncombe Air Quality Agency
    - Forsyth County Office of Environmental Assistance and Protection

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Explore pathways to offer building energy audits and site assessments to identify potential energy efficiency projects, to identify and develop funding sources, and to offer incentives for implementation across all sectors.
- Provide support for energy efficiency and electrification projects on the waiting lists for state agencies, state universities, and community colleges in the NC Utility Savings Initiative program. Prioritize and manage these wait lists based on the entity's needs and energy savings potential.
- Support local governments in reaching their energy efficiency and electrification goals. This includes improving building efficiency, electrification retrofits, street and stadium lighting retrofits, microgrids, and more.
- Work with local utility providers to better understand their energy efficiency programs and offerings across all sectors.
- Reduce deferrals on the Weatherization Assistance Program (WAP) deferral lists of single-family homes to allow those homes to be eligible for weatherization; provide multifamily deep retrofits and focus on preservation of Naturally Occurring Affordable Housing (NOAH).
- Develop a revolving loan fund for energy efficiency and electrification projects to reduce energy usage at public, private, institutional, and/or industrial entities.
- Work with stakeholders to create low or no cost bridge loan options for energy efficiency projects in buildings.
- Encourage the utilization of Guaranteed Energy Savings Performance Contracts (GESPC) to implement and finance major facility upgrades that reduce utility consumption and costs in government-owned buildings.
- Utilize BIL and IRA funding to expand workforce training opportunities in clean energy and create long-term jobs with family-sustaining wages and benefits for low-income communities and displaced workers.

- Implementation of the NC's Home Energy Rebates (HER, also known as HOMES, Homeowner Managing Energy Savings) and NC's Home Electrification and Appliance Rebates (HEAR, also known as HEEHRA, the High Efficiency Home Energy Rebate Act), IRA residential rebate programs in NC.

Authority to Implement

In 2002, North Carolina G.S. §143-64.12 set a goal for all state agencies and state institutions of higher learning to reduce energy consumption by 30% from their 2002/2003 baseline levels by 2015.[29]

To assist with this goal, the statute also established the Utility Savings Initiative (USI) in DEQ, which is charged with the management of energy, water, and other utility usage. Further building on this effort in 2018, Executive Order 80 (EO80) increased the energy reduction goal to 40% per square foot by 2025 for Cabinet Agencies.[30]

Higher education institutions, K-12 schools, and governmental units are encouraged to adopt the same 40% energy reduction goal. USI supports all state-owned buildings in achieving these efficiency targets. In fact, the USI program, since inception, has avoided the state over $1.3 billion dollars in utility costs since 2002/2003.

Additionally, these programs and projects will support executive orders and legislation in NC, including:

- **EO 246:** NC's Transformation to a Clean, Equitable Economy instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs. 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80:** NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ, with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

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[29] North Carolina G.S. §143-64.12. 2002. https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_143/GS_143-64.12.pdf

[30] North Carolina E.O. 80. 2018. https://www.deq.nc.gov/environmental-assistance-and-customer-service/climate-change/eo80-nc-s-commitment-address-climate-change-transition/download

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDAC and underserved communities. NC has been charged to develop specific actions to increase energy efficiency assistance within the state.

Relevant Funding Sources

Identification of other funding sources to support the measure (existing or planned):

- Federal tax incentives
- Federal IRA rebate programs:
    - Home Energy Rebates (HER)
    - Home Electrification and Appliance Rebates (HEAR)
- Utility Rebate Programs
- NC Weatherization Assistance Program and WAP Infrastructure Investment and Jobs Act (IIJA) funding
- GHG Reduction Fund Solar for All Program – NC has applied for $250M in funding for Energize NC
- NC Repair and Renovation funding in the state of North Carolina biennial budget
- Training for Residential Energy Contractor (TREC) grant
- Energy Auditor Training grant
- Energy Efficiency Community Block Grants for energy efficiency
- Energy Efficiency Revolving Loan Fund Program
- Using GESPC as a financing mechanism
- Other funding, including private or local government funding.

LIDAC Benefits

Improving energy efficiency will bring benefits to LIDACs and underserved communities including reduced energy costs for residents and local schools or other institutions, improved local air quality, increased resilience in highly vulnerable areas, and potential new jobs and training opportunities while also lessening financial disruptions and burdens due to rising energy costs.

Metrics for Tracking Progress

Expected outputs and outcomes from the measure in the form of key performance metrics:

- Number of energy audits or site assessments conducted.
- Number of energy efficiency projects successfully installed across all sectors.
- Amount of funding secured for energy efficiency projects across all sectors.
- Number of GESPCs entered into by governmental units.
- Energy reductions (kWh, therms, etc.) achieved and dollars saved from implementation of energy efficiency measures.
- Number of LIDAC communities directly impacted.

PCAP Measure 9. Decarbonize buildings in NC through replacement of fossil fuel combustion sources and reduction of other greenhouse gas emissions.

Establish programs and initiatives to remove fossil fuel combustion and other carbon emissions sources (e.g., refrigerants) in government, commercial, industrial, institutional and residential buildings through energy audits and assessments, identification of refrigerant use and leaks, and incentives programs for electrification technologies.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Decarbonization through building electrification and removal of GHG emissions sources, including refrigerants	35.9	179.5

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Implementing Agency:

- NCDEQ

Regional Coordination and Implementation Support:

- NC regional COGs
- NC State Energy Office
- Local Air Quality Agencies (e.g., Mecklenburg County Land Use and Environmental Services – Air Quality, Asheville-Buncombe Air Quality Agency, Forsyth County Office of Environmental Assistance and Protection)

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Implement the HEAR IRA residential rebate programs in NC.
- Provide education and assistance on heat pump bulk purchase agreements.
- Provide education and assistance to identify, recover and properly dispose of high-global warming potential (GWP) hydrofluorocarbons (HFCs) used in existing appliances, air conditioning systems, and commercial chillers.
- Investigate opportunities that would expand combined heat and power (CHP) deployment for industrial, large commercial and public buildings.
- Provide education and assistance to encourage HVAC and water heating systems to be regularly commissioned or retro-commissioned in leased public buildings.
- Partner with external stakeholders to educate multiple sectors on the benefits of fuel-switching in the context of decarbonization, energy cost reductions, and facility management.
- Provide programs to incentivize the installation of electric residential appliances, such as the HEAR rebate program.

Authority to Implement

In 2002, North Carolina G.S. §143-64.12 set a goal for all state agencies and state institutions of higher learning to reduce energy consumption by 30% from their 2002/2003 baseline levels by 2015.[31]

To assist with this goal, the statute also established the Utility Savings Initiative (USI) in DEQ, which is charged with the management of energy, water, and other utility usage. Further building on this effort in 2018, Executive Order 80 (EO80) increased the energy reduction goal

[31] North Carolina G.S. §143-64.12. 2002. https://www.ncleg.gov/EnactedLegislation/Statutes/PDF/BySection/Chapter_143/GS_143-64.12.pdf

to 40% per square foot by 2025 for Cabinet Agencies.[32] Higher education institutions, K-12 schools, and governmental units are encouraged to adopt the same 40% energy reduction goal. USI supports all state-owned buildings in achieving these efficiency targets. In fact, the USI program, since inception, has avoided the state over $1.3 billion dollars in utility costs since 2002/2003.

Additionally, these programs and projects will support executive orders and legislation in NC, including:

- **EO 246:** NC's Transformation to a Clean, Equitable Economy instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs. 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80:** NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ, with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs and underserved communities.

Relevant Funding Sources

- Federal tax incentives
- Federal IRA Rebate programs:
    - Home Energy Rebates (HER)
    - Home Electrification and Appliance Rebates (HEAR)
- Utility Rebate Programs
- NC Weatherization Assistance Program (WAP) and WAP IIJA Funding

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[32] North Carolina E.O. 80. 2018. https://www.deq.nc.gov/environmental-assistance-and-customer-service/climate-change/eo80-nc-s-commitment-address-climate-change-transition/download

- GHG Reduction Fund Solar for All Program: NC has applied for $250M in funding for EnergizeNC.
- NC Repair and Renovation funding in the state of North Carolina biennial budget
- Training for Residential Energy Contractor (TREC) grant
- Energy Auditor Training grant
- Energy Efficiency Community Block Grants for energy efficiency
- Energy Efficiency Revolving Loan Fund Program

LIDAC Benefits

Reduced use of fossil fuels will result in improved indoor and local air quality, reduced energy burden, and bring potential new jobs and training opportunities for LIDACs. In implementing fuel switching measures and programs, particular attention should be paid to renter/owner dynamics and responsibilities for various energy utility bills to ensure additional costs/increased cost burdens are not being transferred to low-income households/renters.

Metrics for Tracking Progress

Examples include:

- Number of fossil fuel appliances and systems replaced with electric alternatives.
- Number of repaired or replaced refrigerant leaks.
- Amount of energy cost savings.
- Amount of fuel saved.
- Air pollution reductions.
- Number of LIDAC communities directly impacted.

4.4 Industry

PCAP Measure 10. Develop programs to support or incentivize implementation of energy efficiency and emissions reduction measures in NC industry.

Establish initiatives to increase energy efficiency in the industrial sector, including but not limited to energy assessments, strategic energy management, equipment upgrades, low carbon building/transportation materials, and waste heat reduction and utilization. Reduce GHG emissions with the transition toward less carbon-intensive production methods and materials, including use of low-carbon fuels and feedstocks, process equipment electrification, process improvements, and more appropriate material selections. This also includes the transition to onsite clean energy generation. Industry stakeholders have expressed the lack of trained workforce available to implement and maintain basic industry-related energy efficiency and equipment upgrades. To achieve the GHG reductions that come from industrial decarbonization, the current NC workforce will require additional trained workforce, which will be a focus for this measure.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Develop programs to support or incentivize implementation of energy efficiency, thermal strategies, and emissions reduction measures in NC industry	2.1-3.9	10.5-19.4

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agencies

Lead Activity Implementer:

- NCDEQ
- NC Department of Commerce
- Other NC State Departments

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Establish an Industry Working Group**: Work directly with businesses and other industry stakeholders to form a working group dedicated to determining the needs and gaps for implementing these priority measures. Conduct outreach and education to businesses across the state, particularly in LIDAC communities.
- **Prepare a Trained Workforce**: Conduct state and local workforce assessments to understand gaps in the labor market needed to support widespread expansion of industrial energy efficiency installations, low- and zero-carbon fuels and feedstocks, and other newly deployed technologies. Engage and partner with technical and community colleges, established workforce development organizations, and industry and manufacturing alliances to provide workforce development programs in these focus areas.
- **Expand on Current Technical Assistance Programs**: Partner with existing technical assistance programs including Waste Reduction Partners and DEQ's ESI program, to expand the reach of these programs and identify potential energy savings projects. Provide resources and roadmaps for businesses to make informed decisions.
- **Provide Financial Incentives and Assistance:** Establish financial incentives and assistance programs that may support:
    - Technical assistance programs
    - Pilots that deploy innovative emission reduction technologies
    - Gap funding loans for IRA tax credits
    - Workforce development initiatives
    - Small businesses in LIDAC communities
    - Revolving loan funds for Environmental Stewardship Initiative (ESI) partners

Authority to Implement

DEQ receives state and federal funding to distribute in the form of grants and loans for a variety of environmental projects. DEQ awards millions in grant funding and other assistance each year to a variety of recipients, from local governments to businesses and non-profit organizations. Recurring and one-time funding sources provide opportunities for communities and governments across North Carolina to achieve their environmental stewardship goals. The Environmental Stewardship Initiative, housed in DEQ, recognizes and supports companies and facilities that go above and beyond to reduce their impact on the environment. Additionally, the programs and projects in the industrial sector will support executive orders and legislation in NC, including:

- **EO 246:** NC's Transformation to a Clean, Equitable Economy instructs cabinet agencies to invest applicable federal and state funding, consistent with applicable law, with an emphasis on achieving directives in this EO and EOs 80 and 218, including but not limited to actions that reduce GHG emissions and air pollution, promote resiliency, invest in historically underserved communities, increase affordability for low- and moderate-income households, advance health equity, and create jobs and economic growth through a clean NC economy.
- **EO 80:** NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, NCDEQ, with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies, energy efficiency measures, and clean transportation solutions. EO80 creates the Climate Change Interagency Council[33] to help the cabinet agencies work together to achieve those goals.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs and underserved communities.

Relevant Funding Sources

The IRA has many tax credits available to incentivize the industrial sector to implement clean energy technologies. However, small companies lack the capital to bridge the cost gap until the tax credit is received. Financial assistance paired with the IRA tax credits can make these technologies feasible for smaller entities with less fluid capital.

There are currently two grant funded programs available in NC that offer industrial technical assessment (or energy audits):

- **Waste Reduction Partners:** NC-based no-cost energy efficiency assessment program administered by Land of Sky Regional Council in partnership with the NCDEQ Division of Environmental Assistance and Customer Service, helping to prevent pollution statewide. This program is funded in part by NC State Energy Program funds.[34]
- **Industrial Assessment Center (IAC), University of North Carolina Charlotte (UNCC)**: Nationwide technical assessment program based in Charlotte, NC sponsored and funded by DOE to strengthen small and medium-sized manufacturing firms.[35]

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[33] NCDEQ. "NC Climate Change Interagency Council." https://www.deq.nc.gov/energy-climate/climate-change/nc-climate-change-interagency-council

[34] Waste Reduction Partners. "Energy Efficiency and Energy Management Services." https://wastereductionpartners.org/services/energy-efficiency-assesment

[35] UNC Charlotte. "Industrial Assessment Center." https://iac.university/center/CC

LIDAC Benefits

Based on a review of large point sources of industrial GHG emissions in NC using the EPA Facility-Level Information on Greenhouse Gases Tool and the CEJST data, there is overlap in these points sources and LIDAC areas in NC (e.g., for a phosphoric acid production facility in Eastern NC).[36] Industrial energy efficiency improvements and decarbonization will result in localized air quality benefits translating to improved health benefits (e.g., $PM_{2.5}$ may lead to children living near industrial sites having a higher likelihood of asthma and overall population risk for heart disease).[37]

Metrics for Tracking Progress

Examples include:

- Number of LIDAC communities directly impacted.
- Number of industry partners reached with technical assistance.
- Number of innovative emission-reduction technology pilots deployed.
- MMBTU energy saved per year.
- Number of people trained within the workforce.
- Number of trainees who secured jobs.
- Number of workforce training programs developed or expanded.

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[36] EPA. "Facility Level Information on GreenHouse gases Tool (FLIGHT)." https://ghgdata.epa.gov/ghgp/main.do?site_preference=normal

[37] American Council on Energy Efficiency. "Funded Strategically, Industrial Decarbonization Can Cut Pollution in Disadvantaged Communities." December 2023. Funded Strategically, Industrial Decarbonization Can Cut Pollution in Disadvantaged Communities | ACEEE

4.5 Waste

PCAP Measure 11. 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.

Across the country more than one-third of food goes uneaten each year. When individuals, businesses, non-profit organizations, and local governments reduce food waste, they lower their environmental impact, save money, and feed their community. In 2021, NC generated about 2.7 million tons of food waste. As food breaks down in landfills, it gives off methane, a powerful GHG that contributes to climate change. According to the EPA, each year wasted food in the United States produces the same GHG emissions as 42 coal-fired power plants and uses enough water and energy to supply 50 million homes. Nationwide, consumers, and the food industry lose $285 billion annually in food waste. Despite the amount of food available, there are many North Carolinians who are food insecure, meaning they do not have reliable, consistent access to food. This measure aims to reduce food waste before it enters the waste management system as well as divert food waste from landfills.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Diversion of organics from landfills	0.89	4.45

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agency

Lead Activity Implementer:

- NCDEQ

Regional Coordination and Implementation Support:

- Public and private landfill management entities
- Local schools

- Local food banks
- Local municipalities

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- **Install refrigerators in schools:** Evaluate the logistics needed to install refrigerators to store unused food that can be redistributed to children in need. Additionally, solicit proposals from individual schools or districts to install refrigerators at schools.
- **Transfer excess food to food banks:** Evaluate the logistics and policies needed to get excess food to food banks. Solicit proposals for pilot programs across NC.
- **Deploy food waste collection, digestion, and composting:** Residential organics collection, digestion, and composting pilot programs would support multiple projects as a proof-of-concept for greater investment in permanent city and county-level programming.

Authority to Implement

Four NC General Statutes govern the authority of the implementing agencies to carry out this measure:

- § 130A-309.04: Establishes the state's solid waste management policy and goals. This includes the directive to avoid waste disposal at landfill, with a preference for other methods in the following order: 1) Waste reduction at the source; 2) Recycling and reuse; 3) Composting; 4) Incineration with energy recovery; 5) Incineration without energy recovery. Additionally, this order requires state agencies to develop a waste recovery plan and encourages public-private partnerships to improve waste management outcomes.
- § 130A-309.09B: Governs local government bodies in their management of waste reduction programs and encourages the implementation of recycling, composting, and other sustainable waste management programs.
- § 130A-309.10: Prohibits acts relating to packaging to support recycling efforts and other sustainable waste management practices. Governs the disposal of coded plastics and other materials prohibited to landfill or incinerate.
- § 130A-309.11: Governs compost standards and applications to protect the state's natural lands and water sources from improper waste disposal.

Geographic Coverage

The actions within this measure are focused on the state of North Carolina with a specific emphasis on LIDACs.

LIDAC Benefits

Recovery of food waste that would otherwise be landfilled can bring multiple benefits to LIDACs. The discarded food can be diverted to individuals and families facing food insecurity. It can impact the agricultural sector by increasing the efficiency of food production and use. Avoiding landfilling of food waste reduces the amount of methane generated and emitted, thus improving local air quality in nearby communities which are frequently LIDACs. The recovery and reuse of food waste creates potential new jobs and training opportunities for LIDACs. The measure will focus on schools in LIDAC areas where recovered food can be provided to children in need.

Metrics for Tracking Progress

Examples include:

- Amount of food waste diverted from landfills.
- Number of students receiving diverted food.
- Policies and procedures adopted by communities.
- Avoided GHG emissions.
- Amount of digestate or compost available for agricultural purposes.

PCAP Measure 12. 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.

This measure proposes the conversion of an existing municipal solid waste collection contract currently serviced with conventional diesel fueled trucks to an EV fleet or other low-carbon fuels (e.g., compressed natural gas or renewable natural gas). The project would include the option to receive funding for the installation of charging infrastructure at both the hauling company (for overnight charging) and the transfer station (for additional charging to complete collection routes). The benefits of this measure include reduced GHG emissions and co-pollutants.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Decarbonize waste collection system	0.04	0.140

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agency

Lead Implementing Agency:

- NC DEQ

Regional Coordination and Implementation Support:

- Public and private landfill management entities

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Issue request for proposals to pilot the replacement of diesel vehicles with electric motors and conversion of diesel to natural gas.

Authority to Implement

Four NC General Statutes govern the authority of the implementing agencies to carry out this measure:

- § 130A-309.04: Establishes the state's solid waste management policy and goals. This includes the directive to avoid waste disposal at landfill, with a preference for other methods in the following order: 1) Waste reduction at the source; 2) Recycling and reuse; 3) Composting; 4) Incineration with energy recovery; 5) Incineration without energy recovery. Additionally, this order requires state agencies to develop a waste recovery plan and encourages public-private partnerships to improve waste management outcomes.
- § 130A-309.09B: Governs local government bodies in their management of waste reduction programs and encourages the implementation of recycling, composting, and other sustainable waste management programs.
- § 130A-309.10: Prohibits acts relating to packaging to support recycling efforts and other sustainable waste management practices. Governs the disposal of coded plastics and other materials prohibited to landfill or incinerate.
- § 130A-309.11: Governs compost standards and applications to protect the state's natural lands and water sources from improper waste disposal.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs.

LIDAC Benefits

The actions in this measure will not only reduce GHGs in and around LIDAC communities but will also reduce other air pollution such as fine particulate matter ($PM_{2.5}$) and ozone. The state of North Carolina is in attainment for both $PM_{2.5}$ and ozone and further reducing these criteria pollutants will help ensure the state remains in attainment given any future regulatory actions by the EPA.

LIDAC areas are commonly found where the main highway corridors intersect with large cities, especially seen in Raleigh/Durham, Greensboro/Winston-Salem, Charlotte, and Fayetteville where waste disposal facilities are most frequently located. Reducing emissions from the waste sector has the greatest health benefits to LIDAC communities especially for respiratory illnesses. Additional benefits of reduced noise pollution can be realized with the adoption of EV over internal combustion engines (ICEs).

Metrics for Tracking Progress

Examples include:

- Number of vehicles and charging stations
- Volume of offset diesel
- Number of road miles driven by vehicles
- GHG emissions reduction

PCAP Measure 13. Reduce landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life.

The breakdown of municipal solid waste (MSW) produces GHGs (methane and carbon dioxide) which are captured through landfill gas collection systems. Methane may be oxidized to carbon dioxide (lower GWP) as landfill gas moves through soil covers. Although landfill gas collection systems are complex because of the heterogeneity of MSW, infiltration of moisture, and atmospheric conditions, the industry has evaluated ways to reduce fugitive emissions and improve collection efficiency. The latter allows gas to be captured and used as a renewable energy source either onsite or added to the electricity grid. Gas collection efficiency is affected by the following: active gas collection system operation, cover type across the landfill (daily, interim, final as well as soil, clay, geomembrane), and other site-specific conditions. An example of ways that gas collection efficiency can be increased, and fugitive emissions reduced is

through installation of a transitional cover system on exterior slopes of landfills prior to final cover installation. A transitional cover is often composed of an exposed geomembrane or an enhanced soil interim cover.

Quantified GHG Reductions

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Measures to reduce fugitive emissions at landfills and improve collection efficiency and utilize as a renewable energy source	0.1125	0.90

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agency

Lead Implementing Agency:

- NCDEQ

Regional Coordination and Implementation Support:

- Public and private landfill management entities

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Conduct aerial survey, LandGEM studies to identify highest landfill emitters.
    - Milestone 1: Complete survey prior to implementation grant award
- Request proposals for pilot programs to reduce uncontrolled methane emissions from landfills: Pilot programs could include early installation of landfill gas collection systems, landfill gas wellhead flowmeters, cover improvements, or gas pipeline maintenance. Milestones could include:
    - Milestone 1: Request for funding proposal (RFP) out within 3 months of grant award.
    - Milestone 2: Proposals received and evaluated; awards made within 9 months.
    - Milestone 3: Completion of design and installation of interventions within 18 months.
    - Milestone 4: Test completed for impact on GHG emissions within 36 months.

Authority to Implement

Four NC General Statutes govern the authority of the implementing agencies to carry out this measure:

- § 130A-309.04: Establishes the state's solid waste management policy and goals. This includes the directive to avoid waste disposal at landfill, with a preference for other methods in the following order: 1) Waste reduction at the source; 2) Recycling and reuse; 3) Composting; 4) Incineration with energy recovery; 5) Incineration without energy recovery. Additionally, this order requires state agencies to develop a waste recovery plan and encourages public-private partnerships to improve waste management outcomes.
- § 130A-309.09B: Governs local government bodies in their management of waste reduction programs and encourages the implementation of recycling, composting, and other sustainable waste management programs.
- § 130A-309.10: Prohibits acts relating to packaging to support recycling efforts and other sustainable waste management practices. Governs the disposal of coded plastics and other materials prohibited to landfill or incinerate.
- § 130A-309.11: Governs compost standards and applications to protect the state's natural lands and water sources from improper waste disposal.

Geographic Coverage

The geographical coverage of this measure will include the state of North Carolina with a specific emphasis on LIDACs.

LIDAC Benefits

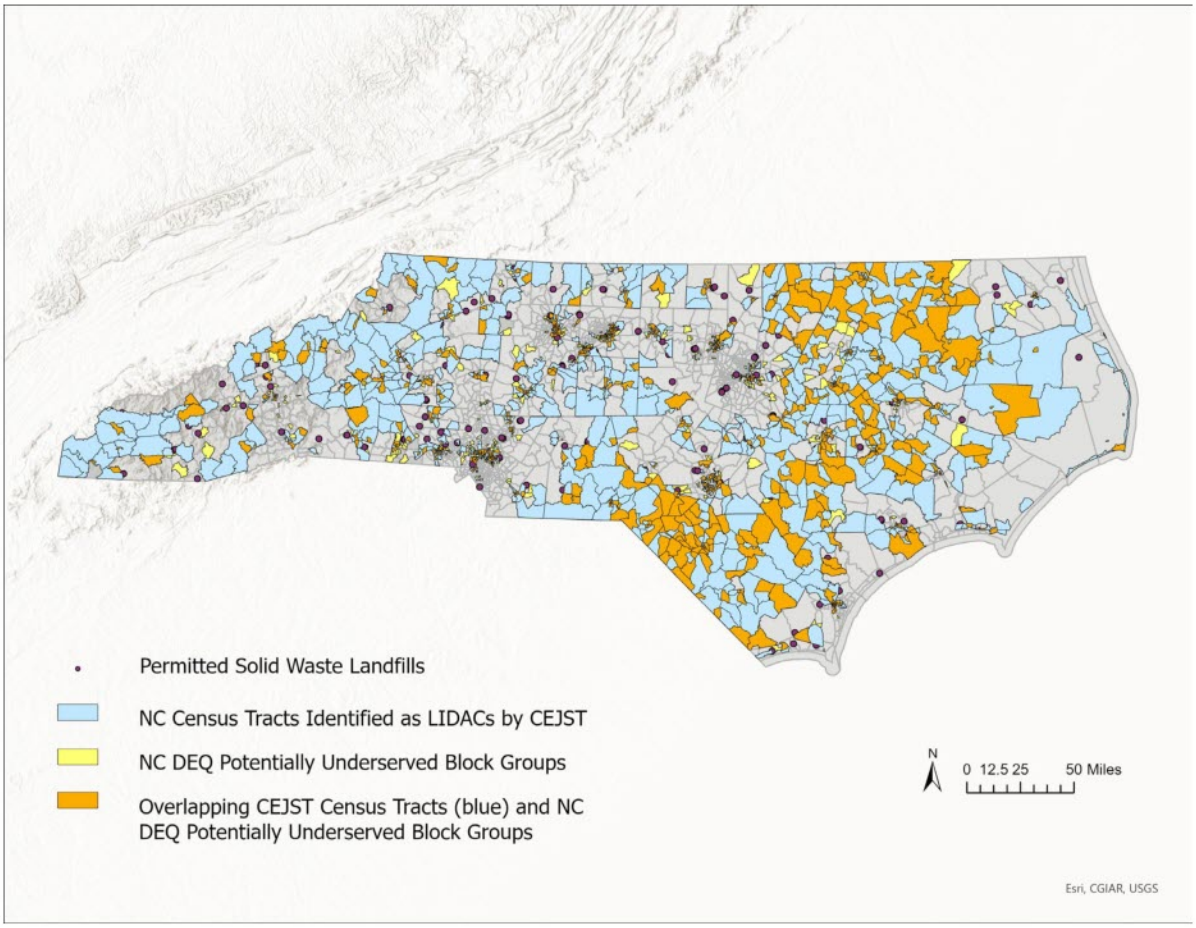

Figure 7. Summary of Permitted Solid Waste Landfills Across NC

As can be seen in Figure 7, landfill sites are uniformly distributed around the state. Historically most waste disposal facilities nationwide are in LIDACs. Therefore, reduced fugitive emissions in these communities will have beneficial health and aesthetic effects related to air quality including particulates, odors, and volatile organic matter content. The enhanced collection of methane can reduce dependency on fossil fuels which in turn brings benefits to all communities in terms of air quality and energy security. The reduction of the potent GHG is beneficial to LIDACs which are disproportionately affected by climate change.

Metrics for Tracking Progress

Examples include:

- Number of projects funded.
- Estimated LFG emissions avoided.
- RE production.

4.6 Natural and Working Lands

Whereas most conventional sectors are net sources of GHGs, there is compelling potential for NWL to substantially offset GHG emissions by permanently storing atmospheric carbon in the ground and plants. In 2020, activity on forestland and agricultural lands resulted in a net sequestration of approximately 48 $MMTCO_2e$ in NC. The NWL sector "netted out" 34% of the state's gross GHG emissions in 2020. In addition to the climate benefits, the priority measures for the NWL sector notably have the high potential to achieve numerous co-benefits and transformative impacts through a combination of:

- Resilience benefits, including flood mitigation, nature-based solutions, and enhanced climate readiness.
- Synergistic benefits to ecosystem health, including water quality improvements, wetland migration corridors, and enhanced biodiversity habitat.
- Community benefits, including reduced disaster costs, green space, quality of life, and carbon credit economies, particularly in rural LIDACs.

NC's NWLs contribute to the state's economy primarily through agricultural food and fiber products, harvested wood products, commercial and recreational fisheries, tourism, and recreation. In addition to the direct contributions to the state's economy, these NWLs provide numerous benefits that improve communities and lifestyles in NC but are more difficult to quantify. There are several data gaps that, if filled, would enable more effective targeting of NWL projects to enhance carbon benefits and support community resilience as well as more accurate quantification of action outcomes. For example, many peatlands in NC were drained many decades ago for forestry or agriculture. Drained peatlands slowly emit carbon and are vulnerable to fires that rapidly release large amounts of carbon. Rewetting peatlands returns these wetlands to a carbon sink and reduces their vulnerability to fires. Information about where drainage ditches exist is necessary for effective restoration planning in NC's peatlands. Currently, the only ditch maps that cover the entire coastal plain are from a national dataset that is outdated and omits many smaller ditches. An updated, high-resolution map of ditches in the coastal plain would facilitate restoration planning and improved estimates of carbon fluxes from degraded peatlands in NC. Existing Light Detection and Ranging (LiDAR) data collected by USGS in 2020 could be used to create updated ditch maps, and new drone-based LiDAR could be used for ground-truthing and collecting more detailed information on ditch geometry and obstructions within ditch networks, which would be useful for site-level restoration planning.

The measures outlined below include addressing this and other challenges and will enable the continued and enhanced sequestration of carbon through NC's NWLs.

PCAP Measure 14. Protect and restore high-carbon coastal habitats and peatlands.

Pursue policy, programs, and projects to conserve and restore high-carbon habitats in NC's coastal plain, including pocosin wetlands and other peatlands, brackish and saline coastal marsh, and high-salinity seagrass, to avoid carbon emissions resulting from projected conversion, wildfire, and soil emissions from unhealthy habitats, and to enhance carbon sequestration.

NC's coastal plain contains the vast majority of the state's wetlands, including pocosin wetlands (evergreen shrub wetlands with deep peat soils), other peatlands including Carolina bays and Atlantic White Cedar forests, and brackish and saline coastal marshes. These coastal plain wetlands accumulate and store large amounts of carbon, acting as carbon sinks. However, many of these wetlands have already been degraded or are vulnerable to degradation and conversion to other land uses. Carbon emissions are already occurring or expected to occur over the coming decades if action is not taken to restore and preserve NC's high-carbon coastal plain wetlands.

Examples of activities to achieve this measure would include developing a program to conserve and restore high-carbon habitats in NC's coastal plain (including pocosins wetlands and other peatlands, brackish and saline coastal marsh, and high-salinity seagrass), to avoid carbon emissions resulting from projected conversion, wildfire, and soil emissions from unhealthy habitats, and to enhance carbon sequestration. Avoided emissions and enhanced sequestration will be monitored and evaluated to ensure projects provide long-term carbon benefits under sea level rise. Projects that will benefit LIDACs will be prioritized.

Quantified GHG Reductions, Costs, and Geographic Coverage

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Coastal Protection and Restoration	4.4 - 4.8	23.5 - 25.9

Appendix E provides information on how these GHG emission reductions were quantified.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Key Implementing Agency

Lead Implementing Agency:

- NCDNCR

Regional Coordination and Implementation Support:

- Multiple NCDEQ divisions
- NC Coastal Federation (NCCF)
- The Nature Conservancy (TNC)
- NC Department of Natural and Cultural Resources (DNCR)
- NC Land and Water Fund (NCLWF)
- NC Department of Public Safety
- NC Department of Agriculture & Consumer Services
- NC Forest Service
- NC Wildlife Resources Commission
- U.S. Fish and Wildlife Service (USFWS)
- United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS)
- U.S. Department of Agriculture Forest Service
- United States Geological Survey
- National Oceanic and Atmospheric Administration (NOAA)
- National Park Service
- Department of Defense
- Eastern NC Sentinel Landscape
- Local land trusts
- Chesapeake Bay Program
- Universities
- Local governments
- Private landowners
- Engineering consultants and contractors

Implementation Activities and Milestones

Anticipated projects for peatlands include acquiring essential property interests in fee or through easements, restoring hydrology to rewet peat soils (frequently using water control structures), and ongoing maintenance and management to ensure hydrologic conditions and ecological uplift are retained. Anticipated projects for coastal marshes and seagrass include easements

and acquisitions of development-pressured marsh migration corridors, salt marsh enhancement and drowning-prevention through sediment application or the installation of shellfish beds and living shorelines to help stabilize marshes, restoration of lost seagrass beds, and nature-based solutions (NBS) pilot projects that will achieve GHG reductions, avoid projected carbon emissions from marsh conversion, and increase the resilience of coastal ecosystems and communities in NC to SLR.

To carry out these projects, funds will be transferred to two implementing organizations and potentially one other conservation trust organization: both the TNC and the NCCF will engage in peatland restoration and conservation with TNC focusing primarily on properties already under public ownership and the NCCF will focus on lands that are currently in private ownership. The NCCF will also advance projects that facilitate salt marsh migration, restoration, and conservation, as well as seagrass restoration and conservation. Both organizations have extensive experience planning and implementing similar projects in NC. TNC has restored drained peatlands on Pocosin Lakes and Great Dismal Swamp National Wildlife Refuges (in partnership with USFWS) and on the Angola Bay Game Land (in partnership with the NC Wildlife Resources Commission) and facilitated acquisition of intact pocosin wetlands for the State of North Carolina at the Buckridge Coastal Reserve, Holly Shelter Game Land, Boiling Spring Lakes Plant Conservation Preserve, and other sites. The NCCF has restored more than 15,000 acres of privately owned freshwater (including pocosin) wetlands as well as worked to protect and restore NC's coastal habitats and water quality since 1982.

Implementing organizations would submit a detailed project narrative describing planned project activities, how projects will be sited (including prioritization for LIDAC and resilience benefits as well as carbon benefits), expected achievements, timeline, and budget.

Authority to Implement

For NWL, the authority to implement was a criterion included in the prioritization process. Actions for which NCDEQ does not have the authority to implement were thus not prioritized. NCDEQ is authorized under statutory or regulatory authority to create programs and make subawards using federal funding to implement this priority measure. This program supports priority actions identified in the NC NWL Action Plan (5.a, 5.b, 7.a, 8.a, 9.b, 12.a, 12.d, 16.a, 16.b, 16.e) and the CHPP (5.1, 5.11, 5.5, 5.7).

These actions are complemented by 2024's EO 305: An Order to Protect and Restore North Carolina's Critical Natural and Working Lands, which sets the following goals by 2040: permanently conserve one million new acres of natural lands (with a focus on wetlands), restore or reforest one million new acres of forests and wetlands, and plant one million trees in urban areas. EO 305 also directed state agencies to pursue federal funding to meet the goals and objectives outlined in the order.

Relevant Funding Sources

Funds for acquisition and restoration would continue to be leveraged from local, state, federal, and private sources. For example, four different grants from multiple sources were utilized to complete the Angola Bay restoration project. Existing funding from NRCS, USFWS, NOAA and other sources for coastal fisheries, water quality, flood reduction and resiliency, will all be leveraged to help advance this work. A mix of federal and state funding is currently being used for NOAA Coastal Change Analysis Program 1-meter resolution land cover mapping that will support prioritization of all coastal plain restoration actions. In addition, funds of $723,000 (over four years) from NCDEQ will support a Coastal Habitat Assessment Program to map and monitor coastal habitats, with a focus on seagrass.

Carbon credits may also be able to cover some project costs. An American Carbon Registry protocol[38] has been developed and a pocosin restoration project underway in North Carolina[39] plans to use the protocol to generate carbon credits. A seagrass restoration project in Virginia is currently in the process of verifying carbon credits, which will make it the first verified seagrass-based carbon credit program and a potential model for additional projects.

LIDAC Benefits

Restoring and conserving NC's coastal plain wetlands creates additional benefits beyond avoided carbon emissions and enhanced carbon sequestration. Fires in drained peatlands expose nearby communities to unhealthy smoke; restoring peatlands reduces smoke-related health impacts as well as disruptions and economic losses from active fires. Healthy peatlands are also valued for hunting and wildlife watching, and therefore can attract visitors who spend money in local communities. Coastal marshes and seagrasses buffer coastal communities from waves and storm surge, provide nursery habitat for commercially and recreationally harvested fish species, and attract tourists and residents for recreational opportunities including boating, fishing, and birdwatching. 39% of census tracts in the NC Coastal Area Management Act counties are identified as LIDACs by CEJST, and several are also designated as FEMA Community Disaster Resilience Zones (Figure 8). Many of the opportunity areas for peatland, coastal marsh, and seagrass restoration, as well as preservation of marsh migration corridors, occur within these LIDACs who would therefore receive benefits from these activities.

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[38] American Carbon Registry. "Restoration of Pocosin Wetlands." October 2017. Restoration of Pocosin Wetlands - ACR (acrcarbon.org)

[39] Hyde County, NC | Carolina Ranch (carolinaranchhydenc.com)

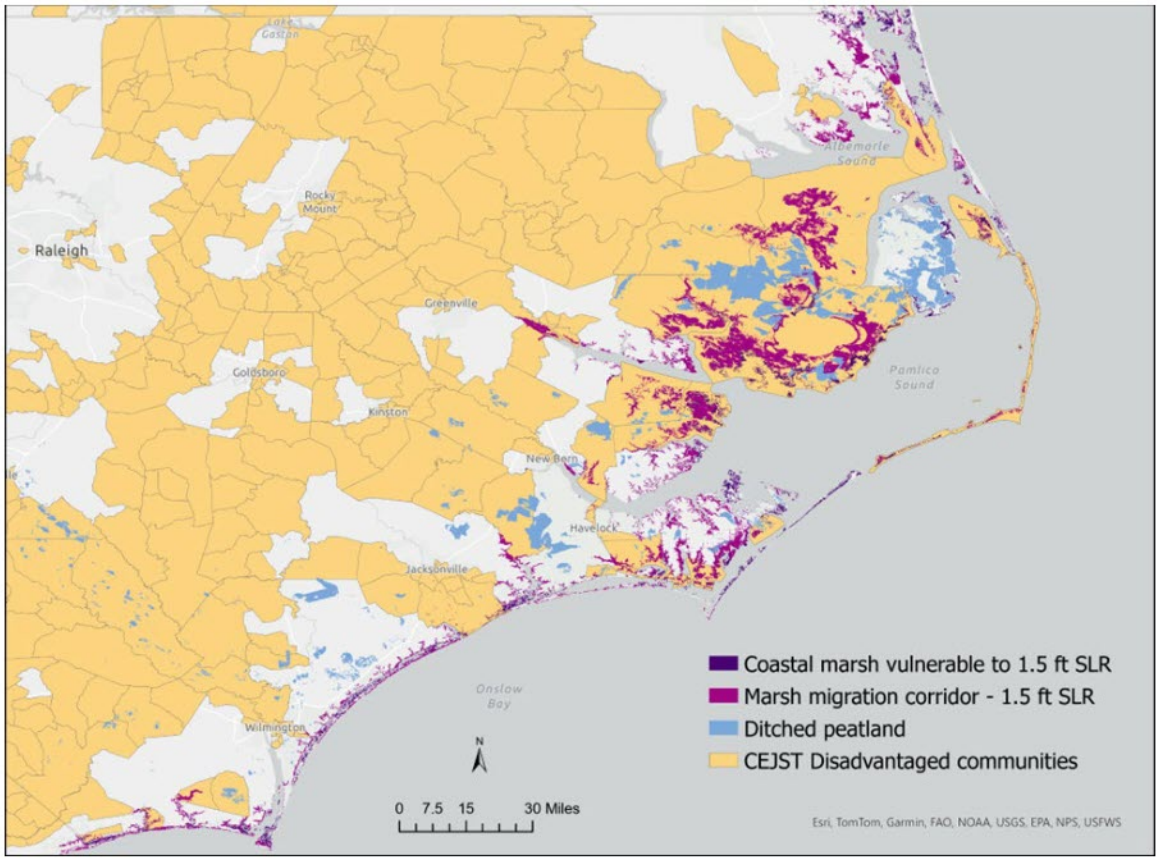

Figure 8. Coastal Protection and Restoration Opportunities with Additional LIDAC Benefits

Proactively conserving and restoring coastal habitats will result in decreased risk from hazard damage and will result in lower costs required to restore coastal habitats and repair assets and property after major storm events: coastal wetlands prevented an estimated $625 million in property damages from Maine to North Carolina during Hurricane Sandy. In addition to providing protection from storm damage, protected coastal habitats provide valuable ecosystem services that have measurable economic value. For example, seagrass was valued at $3,000/acre/year for water quality improvements and $7,000/acre/year when considering all ecosystem services provided. Public health benefits of coastal habitat conservation and restoration include improved local food access through improved fishery production, improved public safety through reduced flooding and erosion, and improved recreational water quality through the filtering services of coastal habitats. For every $1 invested in land conservation in NC, there is estimated to be a $4 return in economic value from natural resource goods and services alone without considering numerous other economic benefits.

Metrics for Tracking Progress

Examples include:

- Acres of coastal plain habitats restored or conserved.

- Avoided GHG emissions.
- Increased carbon sequestration.
- Reduction in peatland areas vulnerable to fire due to drainage.
- Area of wildfires in peatlands and associated GHG emissions.
- Area of peatland burned intentionally to reduce wildfire hazard and maintain ecological integrity.
- Number of hazardous air quality days caused by peatland fire.
- Number of people exposed to hazardous air quality due to peatland fires.
- Number of visitors to restored coastal plain wetlands.
- Number of properties protected (from waves/storm surge/erosion) due to coastal habitat restoration/NBS implementation.
- Length of roads protected (from waves/storm surge/erosion) due to coastal habitat restoration/NBS implementation.
- Fish population in restored coastal habitats.
- Area of "impaired" coastal waters listed on the 303(d) list submitted to EPA every two years.
- Annual change in fisheries value.
- Water quality improvements (measured via traditional parameters including turbidity, dissolved oxygen and nutrient load).
- Reduction in statewide swimming health advisories and shellfish closures.

PCAP Measure 15. Protect, use, and develop agricultural and forest land.

Pursue policy, programs, and projects for agricultural and forest land protection and best use, supporting expanded land stewardship programs, and promoting reforestation and restoration initiatives in rural and urban areas that increase resilience, ecosystem services, and wildlife habitat.

Conservation and restoration of forests represent NC's largest opportunity to sequester carbon and supports a suite of co-benefits. The state is uniquely positioned to sequester large amounts of carbon in its forests due to its climate and ecosystems. The USDA Forest Inventory Analysis estimated NC's total forest carbon in 2017 at 5.29 billion $mtCO_2e$, which is 3% of the total carbon stored in US forests. Forests cover more than 60% of NC and sequestered 47.52 $MMTCO_2e$ in 2020 per the most recent state GHG inventory. Urban forests not only sequester carbon, but also reduce emissions through energy savings. Floodplain forests and swamps also provide significant climate resilience, ecosystem health, and biodiversity benefits, and provide filtration that improves water quality.

The following is an example of an activity toward achieving this measure: Expand cost-share program(s) for forest development and sustainable management on private lands; develop a program to acquire, protect, and restore floodplain and wetland forests on public and private lands; and create initiatives to expand the scale and magnitude of "carbon farming" and urban forestry to enhance carbon sequestration by agricultural and forest land and avoid emissions from forest conversion to other land uses.

Most (~85%) of NC's forests are privately owned and therefore potentially vulnerable to conversion to other land uses; between 2001 and 2019, more than 300,000 acres of forestland in NC was lost to land conversion.[40] Private forest owners also frequently need support to implement sustainable forest management practices; demand for the NC Forest Service (NCFS) Forest Development Program (FDP) exceeded available funding by more than 50% in FY 2020-2021.[41] In addition, there are roughly 5.1 million acres of land in the state that are not currently forested or developed that could support forests.[42] Restoring forest lands (including reforestation and afforestation) offers one of the largest land sector pathways to carbon sequestration by storing carbon aboveground in standing biomass as well as by increasing soil carbon. Forest management and restoration generally involves site preparation, tree planting, prescribed burning, and forest stand improvement treatments. Many forest restoration opportunities are on agricultural lands that are in transition.[43] Additional protection and restoration opportunities, particularly near urban cores, are under intense development pressure. If they are not protected now, these opportunities are likely to be lost forever.

Quantified GHG Reductions and Geographic Coverage

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Forest Protection and Development	15.4	77.0

Appendix E provides information on how these GHG emission reductions were quantified.

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[40] Duke Nicholas Institute. "NC Natural & Working Lands Overview Dashboard." NC NWL Overview Dashboard (arcgis.com)

[41] NC Department of Agriculture and Consumer Services. "Forest Development Program 2023 Legislative Report." January 15, 2023. N.C. Forest Service: Forest Development Program 2023 Legislative Report (ncforestservice.gov)

[42] NCDEQ. "NC Natural and Working Lands Action Plan." June 2020. https://www.deq.nc.gov/energy-climate/climate-change/adaptation-and-resiliency/natural-working-lands.

[43] The Nature Conservancy and American Forests. "Reforestation Hub - Reforestation Opportunities for Climate Change Mitigation." March 2023. https://www.reforestationhub.org/.

The projects listed within this sector are illustrative examples of what could be funded. This is not the comprehensive list of projects that will be funded in this sector.

Both forest conservation and reforestation/afforestation opportunities occur statewide; Figure 9 presents forest conservation and reforestation opportunities that would contribute to community resilience in a variety of ways. Yet, forests contributing to flood risk reduction and the removal of pollutants from floodwaters tend to be located in the coastal plain, where there are wide, populated floodplains and a high concentration of water quality hazards. Approximately 98% of the land identified in this map is privately owned land. Figure 9 shows conservation opportunities in the Piedmont and mountains.

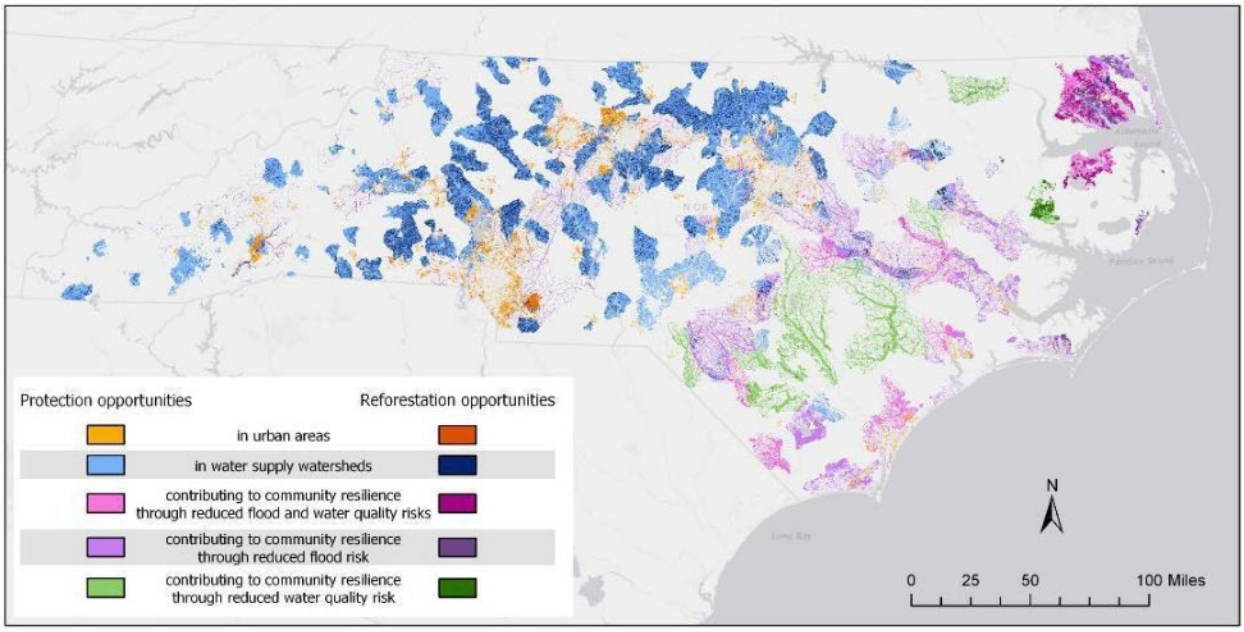

Figure 9. Protection and Reforestation Opportunities with Community Resilience Benefits (NWL Action Plan)

Key Implementing Agency

Lead Implementing Agency:

- NCDNCR

Regional Coordination and Implementation Support:

- NCFS
- Southeastern Forestry and Land Retention (SFLR) Network
- Multiple DEQ divisions
- NC Soil & Water Conservation Division
- NC Plant Conservation Program

- Department of Public Safety
- NCORR
- NCWRC
- Roanoke Sustainable Forestry
- TNC
- NC Coastal Federation
- Eastern NC Sentinel Landscapes
- Local land trusts
- Universities (e.g., NC State)
- USDA – NRCS
- Forest Legacy Program
- USFWS
- NPS

Implementation Activities and Milestones

Activities that may be used to implement this measure include, but are not limited to:

- Expand funding for the FDP under NCFS with a primary focus on restoration and afforestation projects.
- Expand capacity through subawards to regional organizations such as the Southeastern Forestry and Land Retention (SFLR) and TNC.
- Develop a grant program that issues requests for proposal for land acquisition and forest restoration projects that are prioritized by resilience and economic benefits[44] to LIDACs, and ecosystem health; and by geographic area, with a focus on floodplains, habitats that are naturally rich in carbon, and the protection status of land within the state (in conjunction with the NCFS Forest Legacy Program Assessment of Need, NC Forest Action Plan priority areas).
- Require long-term stewardship funding to monitor, maintain and repair projects for all investments in infrastructure, including natural infrastructure. The largest stewardship component for natural infrastructure is monitoring and enforcement easements. NC will set

[44] Duke Nicholas Institute for Energy, Environment & Sustainability and Conservation Trust for North Carolina. “NC Conservation Benefits Calculator.” 2023. https://prioritizationcobenefitstool.users.earthengine.app/view/cobenefitscalculator

aside a percentage of the funding for long-term stewardship. NC has several entities that steward natural infrastructure including the NC Stewardship Program, NCFS, NC Parks, NC Agriculture Commission, NC Wildlife Resources Commission, local governments, and non-profit conservation organizations. NC will align stewardship requirements with the entity that is best suited for that project. For example, the NC Division of Mitigation Services worked with land conservancy NGOs across the state to invest heavily in High-Quality Preservation. Several of those projects have become state parks stewarded by the NC Division of Parks and Recreation and game lands that are stewarded by the NC Wildlife Resources Commission. Budgets will include funds to cover programmatic costs, new positions needed to administer the programs, and long-term stewardship costs.

- Quantify measurements of sequestered carbon and resilience benefits from cost-share and restoration projects using existing tools such as the terraPulse Monitoring, Reporting, and Verification platform.[45] Similar carbon quantification methodologies have been successfully implemented in other states.[46]

Authority to Implement

For NWL, the authority to implement was a criterion included in the prioritization process. Actions for which NCDEQ does not have the authority to implement were thus not prioritized. NCDEQ is authorized under statutory or regulatory authority to create programs and make subawards using CPRG funding to implement this priority measure. This program would target the following priority actions and habitats: NWL Action Plan: 5.a, 5.b, 7.a., 8.a., 9.b.; CHPP: 5.16; Forests and Floodplain Forests.[47, 48] These actions are complemented by 2024's EO 305: An Order to Protect and Restore North Carolina's Critical Natural and Working Lands, which sets the following goals by 2040: permanently conserve one million new acres of natural lands (with a focus on wetlands), restore or reforest one million new acres of forests and wetlands, and plant one million trees in urban areas.

Estimated Costs and Intersection with Other Funding

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[45] terraPulse. https://apps.terrapulse.com/

[46] For example, in Massachusetts. See: "Forests as Climate Solutions." https://www.mass.gov/info-details/forests-as-climate-solutions-:~:text=Forests%20as%20Climate%20Solutions%20will,greenhouse%20gas%20emissions%20by%202050

[47] NCDEQ. "NC Natural and Working Lands Action Plan." June 2020. https://www.deq.nc.gov/energy-climate/climate-change/adaptation-and-resiliency/natural-working-lands

[48] NCDEQ. "NC Coastal Habitat Protection Plan." 2016 and 2021. https://www.deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan

The NC FDP prevailing rates for tree planting for Hurricane Florence restoration are $65-160 per acre (depending on planting method and forest type). At these rates, the average cost to the state for reforestation of one million acres was estimated at $113 million using the Conservation Reserve Enhancement rate for planting hardwoods, longleaf, loblolly, and shortleaf, not accounting for inflation. While this represents a very significant increase in the state budget for conservation, the cost of flooding due to tropical cyclones has cost the state much more (~$180 billion in 2018). Conservation and restoration of forest lands would lower the economic losses and recovery costs associated with the next storm.[49] In addition, if carbon offsets could be obtained for these restoration projects, the costs could be recovered in approximately two years.[50]

Legislative appropriations and forest product assessment revenues are insufficient to meet current and historical demands for the FDP cost-share program. An additional $3 million could be spent annually to support the cost-share program. The long-term average cost to the NCLWF for land acquisition is $1,200-$1,300 per acre in rural areas but can range as high as $10,000-$50,000 per acre in urbanized areas. RFP program cost for forest restoration and afforestation can be calculated using the current FDP rates[51] as a model. Implementation cost estimates will account for easement purchases and long-term stewardship and account for inflation along with increasing land cost in rapidly urbanizing areas.

The cost to enhance urban forest management was estimated at $500,000 in 2020. This cost is what it would take to support four full-time positions within the Urban & Community Forestry program, which would allow for three regional urban foresters across the state and more hands-on assistance for municipalities managing their urban forests.

LIDAC Benefits

Forest restoration can dramatically increase the value of ecosystem services provided by open fields. Strategically placed shoreline parks and natural lands buffer cities from rising seas, coastal storms, and flooding, a benefit that was seen in coastal cities during Hurricane Florence. Restoring forest lands can increase biodiversity by providing food and habitat for native species. There are 441,000 acres of reforestable land in North Carolina that are highly rated (> 5) on the Natural Heritage Program Biodiversity and Wildlife Habitat Assessment (Figure 9). Expanding the SFLR Network has uniquely transformational impacts for racial and environmental justice in LIDAC communities. This network promotes retention of black-owned forests following property transition to heirs through legal assistance and provides resources and guidance on sustainable forestry practices.

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[49] NCDEQ. “NC Natural and Working Lands Action Plan.”

[50] NCDEQ. “NC Natural and Working Lands Action Plan.”

[51] NC Forest Service. “Prevailing Rates for Sub-Practices.” February 23, 2023. FDP Prevailing Rates FY 2023-24 Spreadsheet DRAFT jlc.xlsx (ncforestservice.gov)

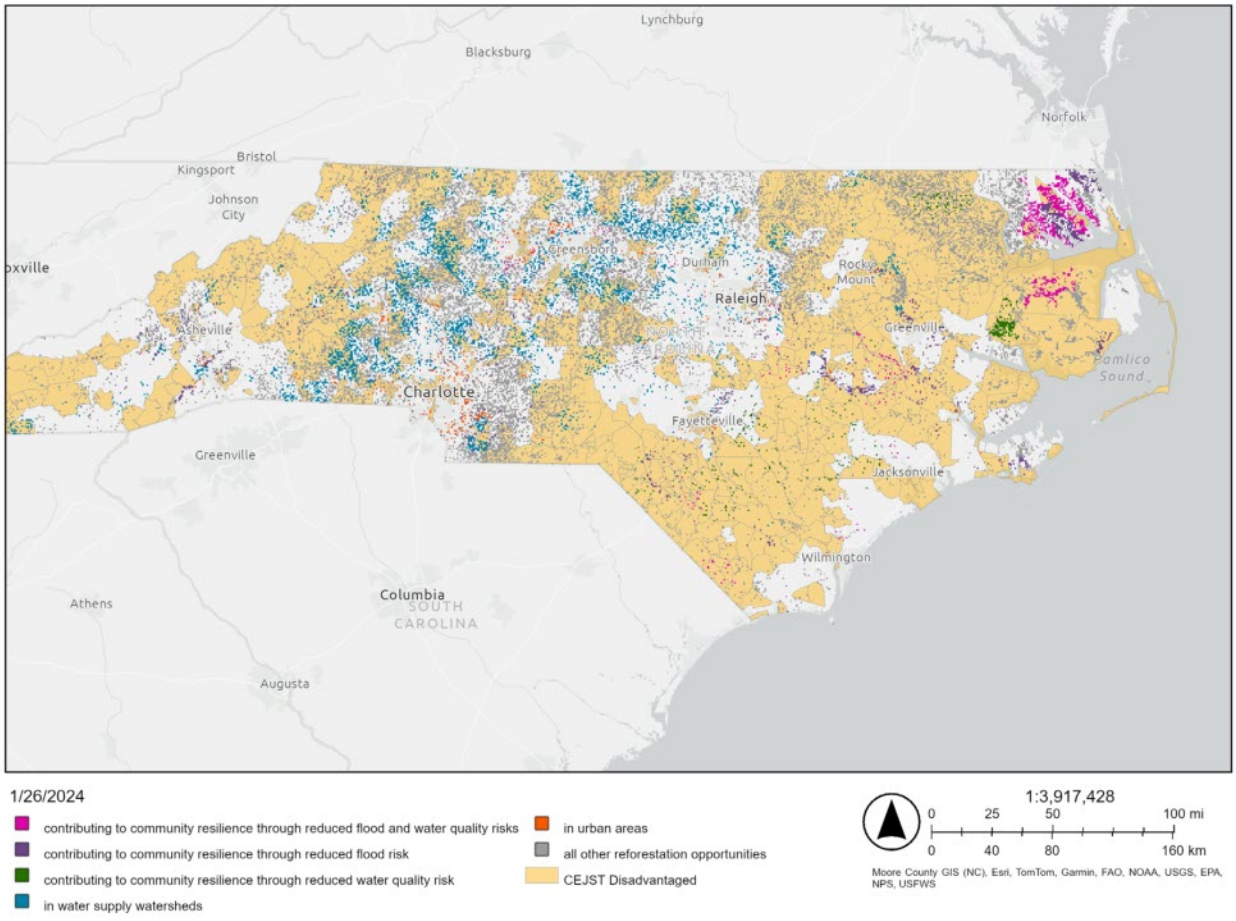

Figure 10. Reforestation Opportunities with LIDAC Resilience Benefits

Developed and managed urban forests reduce stormwater runoff, increase air and water quality, provide shade, increase wildlife habitat and diversity, and increase resilience to pest/disease outbreaks. There are over six million people in North Carolina living in communities with urban forest programs. Developed and managed urban forests increase community resilience for droughts and stormwater impacts, and provide shade, aesthetics, and recreational opportunities. Though carbon sequestration may not vary much based on location, the value of flood resiliency is much greater in urbanizing areas. Forests in urban areas also reduce air pollution, help to mitigate urban heat effects, (which also reduces energy use for cooling), and enhance human well-being through access to parks and green spaces. Climate change affects everyone, but in cities, low-income communities often face the greatest threats. According to the Trust for Public Land, on average, low-income neighborhoods have fewer parks and green spaces to absorb stormwater, provide cooling shade, and protect homes and businesses from flooding. Natural areas and green spaces can also positively influence real estate values and local tax revenue.

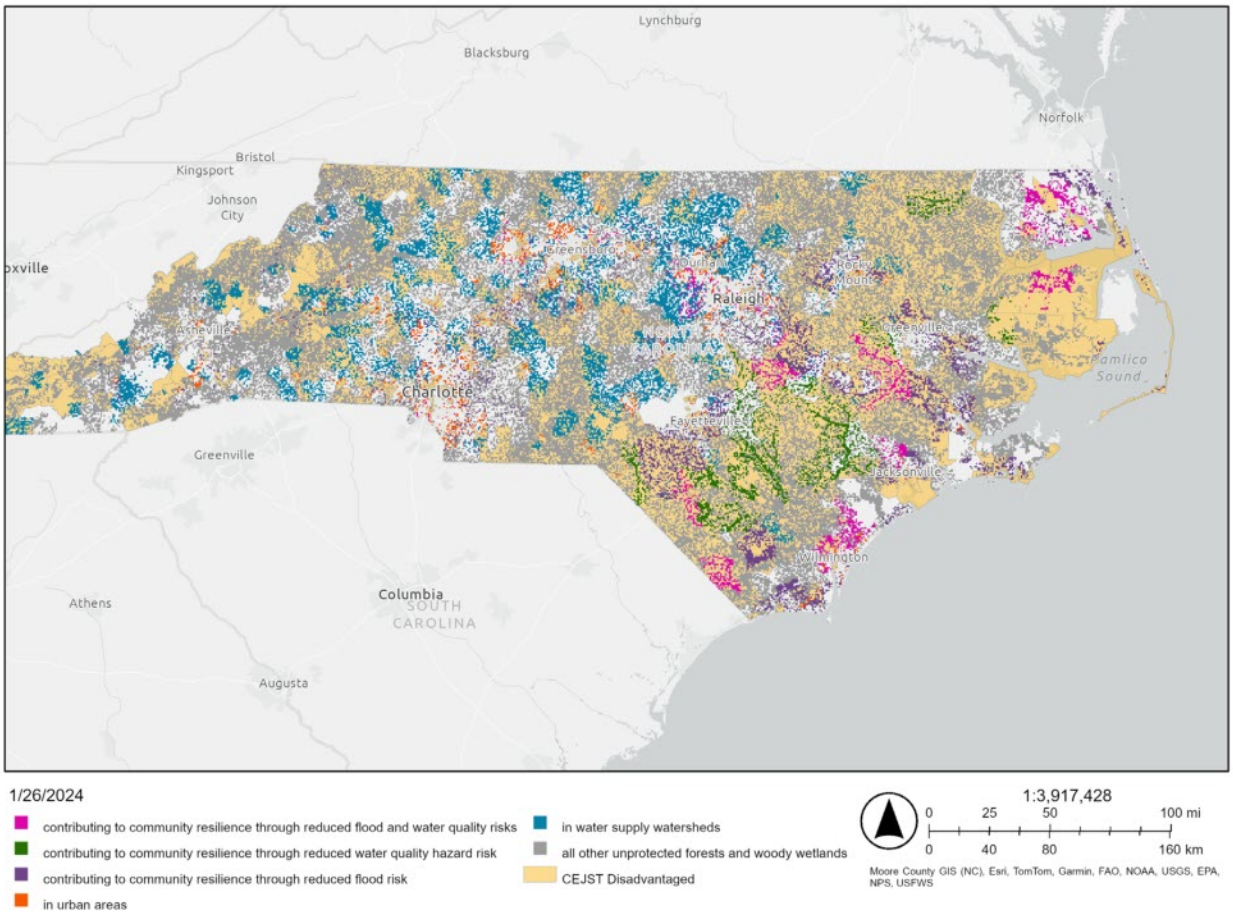

Figure 11. Forest Protection Opportunities with LIDAC Resilience Benefits

Forest conservation, enhanced management, and reforestation/afforestation opportunities are located throughout NC, allowing for prioritization of projects that occur within and provide benefits to LIDACs (Figure 10).

Metrics for Tracking Progress

Examples include:

- Acres of forests restored or conserved.
- Reductions in the rate of land conversion from forests to cropland, pasture, and development.
- Acres of cropland and pasture converted to forests.
- Avoided GHG emissions.
- Increased carbon sequestration.
- Changes in annual value of statewide timber production.
- Reductions in energy usage and cost in urban areas.

- Acres of green spaces created.
- Reduction in wildfire incidence.
- Area of wildfires in forests and associated GHG emissions.
- Area of controlled burns to reduce wildfire hazard and maintain ecological integrity.
- Number of hazardous air quality days caused by wildfires.
- Number of people exposed to hazardous air quality due to wildfire.
- Number of properties protected from flooding after storm events.
- Area of “impaired” waters listed on the 303(d) list submitted to EPA every two years.
- Improvements in stream and river water quality as measured through biological assessments.
- Water quality improvements as measured via traditional parameters including turbidity, dissolved oxygen, and nutrient load.
- Reduction in statewide swimming health advisories and shellfish closures.

5 Moving Forward

5.1 CPRG Implementation Grants

Immediately following the finalization of this PCAP, state, regional, municipal, and tribal agencies and consortia are eligible to apply for CPRG competitive funding to implement the targeted measures presented within this plan. The September 20, 2023, CPRG Implementation Notice of Funding Opportunity sets the stage for $4.3 billion of funds that are available through a general competition, and potentially resulting in individual grants ranging from $2 million to $500 million each.[52] An additional $300 million will be available for tribes and territories for implementation. Implementation funding applications are due April 1 and May 1, 2024, for tribes and territories, with anticipated awards of funding later in 2024.

5.2 Other CPRG Planning Grant Deliverables

Recipients of a PCAP planning grant must submit a CCAP two years after the date of the PCAP award (June 29, 2025). NCDEQ continues to develop a CCAP that builds off the PCAP by providing an expanded GHG analysis covering all significant sources and sinks, creating both short-term and long-term GHG emissions reduction targets, and articulating a comprehensive set of measures to achieve the targets.[53] The CCAP will include the following:

- An updated GHG inventory for the state
- BAU GHG emissions projections and an economy wide GHG emissions reduction scenario
- GHG reduction targets for NC (short- and long-term)
- A comprehensive list of GHG reduction measures that address economy-wide emissions. Building on the PCAP, this will include the following for each measure:
    - Quantified estimates of GHG reduction and costs
    - Key implementing agency or agencies
    - Implementation schedule and milestones
    - Expected geographic location, if applicable

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[52] US EPA. “CPRG Implementation Grants.” October 23, 2023. https://www.epa.gov/inflation-reduction-act/cprg-implementation-grants.

[53] US EPA. “Climate Pollution Reduction Grant Program Planning Grant Question and Answer Document,” June 22, 2023. https://www.epa.gov/system/files/documents/2023-04/QA%20for%20web%204-21-2023.pdf.

    - Quantified estimates of co-pollutant reductions (e.g., $PM_{2.5}$, NO_x, SO_2, volatile organic compounds (VOCs), and air toxics)
    - A more robust or quantified analysis of benefits for LIDACs
    - A review of the statutory or regulatory authority to implement the measure (and a schedule and milestones for key entities to obtain it if not existing).
    - Identification of funding sources that have been secured for implementation.
    - Metrics for tracking progress.
- A workforce planning analysis

In 2027, NCDEQ will develop and share a CPRG Status Report that will include:

- The implementation status of the quantified GHG reduction measures from the CCAP.
- Relevant updated analyses or projections supporting CCAP implementation.
- Next steps and future budget or staffing needs to continue CCAP implementation.

Appendix A. NCGHG Inventory and BAU Projections Methodology

Additional information about the state's GHG inventory may be found at: https://www.deq.nc.gov/energy-climate/climate-change/greenhouse-gas-inventory

The historical GHG emissions are calculated to show how emissions in NC have changed from 1990 through 2020, the last year of available historical data in the U.S. Environmental Protection Agency State Inventory Tool (SIT), a spreadsheet-based tool developed by EPA and designed to assist state agencies in preparing state-level GHG inventories and projections.[54] For this inventory, the NCDEQ Division of Air Quality (DAQ) developed updated 1990-2020 emissions estimates for all sectors.

The historical GHG emissions were primarily prepared using the SIT. The SIT simplifies the effort for preparing state-level GHG inventories that is generally consistent with EPA's national inventory. The SIT applies a "top-down" approach to calculate GHG emissions from all relevant anthropogenic source sectors and uses methodologies consistent with those recommended in the 2006 IPCC Guidelines.[55] The use of consistent methodologies ensures that GHG inventories prepared by various entities are comparable.

The SIT is organized into 12 modules for calculating historical emissions and one module for projecting emissions.[56] However, these modules do not correspond to the layout of the sector and source emissions tables presented in Sections 2.0 and 3.0. Instead, they are organized to facilitate the emissions estimation process. Each module has a User's Guide that outlines the methodology, and documents the default data sources, emission factors, references, and other pertinent information utilized by the module. There is also a synthesis module which pulls the historical emissions data from each module into a single spreadsheet tool to assist in generating reports and graphics.

The SIT includes default data supplied by EPA. The default data are generally publicly available from various federal agencies. A limited number of source categories utilize data obtained from third-party vendors. The default data in the SIT are also frequently used by state and local agencies to develop emission inventories for other air pollutants. For a select number of source categories, the DAQ has replaced the SIT default data with data obtained from NC's state agencies. These data support the development of more accurate emissions estimates for the

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[54] EPA. "State Inventory and Projection Tool." https://www.epa.gov/statelocalenergy/state-inventory-and-projection-tool, accessed June 2023.

[55] 2006 IPCC Guidelines for National Greenhouse Gas Inventories, The National Greenhouse Gas Inventories Programme, The Intergovernmental Panel on Climate Change. Hayama, Kanagawa, Japan, 2006.

[56] NC only utilizes 12 of these 13 modules because one module estimates emissions from coal production which does not occur in NC.

state. The historical emissions estimation methodologies, and default and substituted data sources used in each module, are presented below.

A detailed discussion of the uncertainty associated with the SIT default data used for the historical GHG emission inventory is outlined in each of the SIT modules, which are available for download from the EPA SIT webpage.[57]

CO_2 Emissions from Fossil Fuel Combustion

Description

The SIT Fossil Fuel Combustion Module calculates CO_2 emissions from combustion of fossil fuels including coal, natural gas, and petroleum products. The sectors included in the module are listed below.[58]

Residential	Industrial	Transportation
Commercial	Electric Power	

It also calculates CO_2 that is stored or released using fossil fuels in the production of solvents, asphalt, synthetic rubber, naphtha, lubricants, and other products.

CH_4 and N_2O emissions from fossil fuel combustion are calculated in two separate modules, the Mobile Combustion Module and the CH_4 and N_2O Stationary Combustion Module.

Background and Default Data

The methodology for estimating CO_2 emissions from fossil fuel combustion is provided in the User's Guide for this module as well as instructions and information provided in the spreadsheets for each module.[59]

The default historical fuel consumption data provided in the SIT module for NC are used without any adjustments. These default data, which consist of the estimated amount of each type of fuel consumed by each sector in each state, are from the Energy Information Administration's (EIA) State Energy Data System (SEDS).[60]

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[57] EPA. "State Inventory and Projection Tool." https://www.epa.gov/statelocalenergy/download-state-inventory-and-projection-tool, accessed June 2023.

[58] The Fossil Fuel Combustion Module estimates emissions from international bunker fuel use. These emissions are from international transportation; therefore, they are not included in state inventories.

[59] EPA. "User's Guide for Estimating Direct Carbon Dioxide Emissions from Fossil Fuel Combustion Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

[60] EIA. "State Energy Data System (SEDS): 1960-2021 (complete)." June 2023.

Note that the SIT estimates non-combustion consumption of Industrial sector fuel for each fossil fuel type.

Deviations from Defaults

Wood, ethanol, and biodiesel are biomass fuels for which CO_2 emissions are excluded from gross GHG emissions. To provide additional transparency, however, the DAQ developed CO_2 emissions estimates for the consumption of these biomass fuels in NC.

Future Refinements

Future refinements for biomass emissions estimates could investigate the availability of data for estimating CO_2 emissions from the combustion of landfill and manure gas.

CO_2 Emissions from Transportation

For the onroad mobile source sector, the DAQ applied the 4.0.0 version of EPA's MOVES4 model to estimate emissions for the key years of 2005 and 2021.[61] The MOVES4 model is used in place of the SIT because it is EPA's official onroad mobile source emissions estimation model, it facilitates consistency with all other DAQ onroad mobile source emissions estimation efforts, and it provides emissions forecasting and policy analysis capabilities that are not available from the SIT. Because of the time and resources necessary for performing a MOVES4 run for a given year, it was necessary for the DAQ to limit use of MOVES4 to two historical years: 2005 and 2021. The year 2005 was chosen because it is the baseline year specified by various federal, multi-state, and NC-specific GHG mitigation policies, and 2021 because it was the latest year for which we had a complete set of historical data.

Because ethanol is a biomass fuel, it was necessary to adjust the CO_2 emissions output from MOVES4 to subtract ethanol-related emissions. The DAQ developed adjustment values for 2005 and 2021 from EIA SEDS transportation sector fuel heat input data to back out estimated ethanol-related CO_2 emissions. In 2005, ethanol contributed 0.39% of heat input to transportation sector motor gasoline in NC, and this contribution rose to 6.88% in 2021. The DAQ reduced the CO_2 emission estimates from MOVES4 for these two years using these heat input percentages.

To estimate pre-2005 onroad mobile source emissions, the DAQ relied on emission trends generated by the SIT's Mobile Combustion Module (see discussion in the following section). Specifically, the DAQ calculated pre-2005 adjustment factors reflecting the SIT's 1990-2005 emission trends, and then multiplied these factors by the 2005 MOVES4-based emission values. The MOVES4 model was run with output options allowing reporting of results by vehicle regulatory class categories as well as by the default MOVES4 vehicle use categories. The MOVES4 output

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[61] EPA. "MOVES4: Latest Version of Motor Vehicle Emission Simulator." https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves. Accessed September 2023.

was also broken down by fuel type. This allowed better alignment of MOVES4 output data with the vehicle and fuel categorizations used in the SIT.

Because a review of the SIT default VMT data, which had originally been compiled by FHWA and EPA, indicated anomalous values for certain years, the DAQ coordinated with the NC Department of Transportation (NCDOT) to develop VMT data that revised the SIT default values. The DAQ's review of the 2005 VMT data identified substantial differences when compared to the 2005 Highway Performance Monitoring System (HPMS) VMT data published by FHWA. Consultation with NCDOT revealed that for years 2008 and earlier, NCDOT used a methodology that tracked VMT on state-maintained roads and locally maintained roads separately, with fewer traffic counts conducted for roadways with lower traffic volume. The NCDOT VMT data for these years was consistently lower than the corresponding FHWA HPMS data. To improve HPMS VMT data quality, the FHWA changed the state VMT reporting requirements in 2009. To meet these new requirements, NCDOT added traffic count stations to cover lower-functional class roadways and implemented geographic information system-based processes for tracking VMT. This has led to consistency between the VMT data reported by NCDOT and the HPMS VMT data published by FHWA for 2009 and subsequent years. Based on methods recommended by NCDOT, the 1990-2008 VMT data were adjusted by the DAQ to be consistent with the 2009 and later HPMS data. The 2005 VMT data disaggregated at the county-level were used for GHG emissions modeling with MOVES4. For the 2021 GHG emissions modeling, the DAQ used the county-level VMT data directly as provided by NCDOT. No revisions were warranted because NCDOT VMT tracking and reporting procedures were aligned with FHWA HPMS requirements beginning in 2009.

The DAQ developed 2006-2020 onroad CO_2 emission estimates in three steps. The first step was to develop 2006-2020 VMT estimates for the vehicle/fuel type output by MOVES4. These estimates were calculated from state-level VMT for 2006-2020 and interpolated ratios of each vehicle/fuel type's VMT in that year to the state total VMT. The second step was to develop 2006-2020 CO_2 emission factors for the vehicle/fuel type output by MOVES4. These factors were developed by interpolating between the years 2005 and 2021 emission factors that were computed from MOVES4 output for those two years. The final step was to multiply the vehicle/fuel type VMT in each year by the CO_2 emission factors for the vehicle/fuel type in that year.

For the remainder of the Transportation sector, which covers non-highway sources including aircraft, locomotives, and boats, the DAQ generally used the CO_2 emissions estimation methods/data incorporated into the SIT's CH_4 and N_2O Emissions from Mobile Combustion Module. The DAQ replaced SIT default jet fuel consumption data for aircraft for select years after identifying suspect trends in the SEDS transportation sector jet fuel consumption data that are used to estimate aviation emissions. A review of these SEDS data indicates that, beginning with year 2010, the EIA adopted a substantially different methodology for estimating jet fuel sales. To develop a more consistent series of jet fuel consumption, the DAQ applied the 1990-

2010 trend in total NC landing and take-off operations for commercial and military aircraft to backcast NC jet fuel consumption for the years 1990-2009.[62]

In addition, estimates were developed to adjust the SIT's fuel consumption estimates for aircraft and boats to remove international bunker fuels (i.e., fuels consumed outside of the U.S.). Because NC-specific data were not available to perform this adjustment, the DAQ used emissions data from EPA's national GHG inventory to develop these adjustment factors.[63]

Future Refinements

Future refinements could include additional research into ways to better perform the international bunker fuel adjustments to reflect NC activity.

CH_4 and N_2O Emissions from Mobile Combustion

Description

The SIT Mobile Combustion Module calculates CH_4 and N_2O emissions from the following mobile sources:

Gasoline Highway	Non-Highway
Diesel Highway	Alternative Fuel Vehicles

CO_2 emissions from the Transportation sector are calculated as discussed below. The Mobile Combustion Module provides an alternate method for calculating CO_2 emissions for highway vehicles that the DAQ used to extrapolate trends in vehicle CO_2 emissions for historical years not modeled via MOVES4.

Background and Default Data

The methodology for estimating CH_4 and N_2O emissions from mobile combustion is provided in the User's Guide for the SIT module as well as instructions and information provided in the spreadsheets for each module.[64]

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[62] Federal Aviation Administration. "The Operations Network (OPSNET) > Airport Operations." https://aspm.faa.gov/opsnet/sys/Airport.asp. Accessed December 2023.

[63] EPA. Table 3-13, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021." EPA 430-R-23-002. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021. Accessed December 2023.

[64] EPA. "User's Guide for Estimating Methane and Nitrous Oxide Emissions from Mobile Combustion Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, September 2020.

For highway/alternative fuel vehicles, CH_4 and N_2O emissions can be calculated in the SIT based on several factors including VMT, fuel type, engine type, and control technology type for the population of vehicles on roads in NC. However, as noted below, the DAQ used the MOVES4 model to calculate highway vehicle emissions.

CH_4 and N_2O emissions from non-highway mobile sources (e.g., aviation, marine, locomotives, construction equipment) and other non-highway equipment are derived from fuel consumption estimates. The default historical non-highway mobile source fuel consumption estimates provided in the SIT module for NC were used, except where noted above (CO_2 Emissions from Transportation).

Deviations from Defaults

For consistency with the development of highway vehicle CO_2 emission, the DAQ compiled CH_4 and N_2O estimates from the same 2005 and 2021 MOVES4 runs and extrapolation/interpolation procedures that were used to develop onroad vehicle CO_2 estimates. The VMT data that were used to calculate CH_4 and N_2O emissions were the same data that were used to estimate CO_2 emissions.

Future Refinements

No future refinements have been identified at this time.

CH4 and N2O Emissions from Stationary Combustion

Description

The SIT Stationary Combustion Module calculates CH_4 and N_2O emissions at stationary sources combusting (1) fossil fuels including coal, natural gas, and petroleum products, and (2) biofuels. The source sectors included in the module are listed below.

Residential	Industrial
Commercial	Electric Power

It also calculates CH_4 and N_2O that are stored or released using fossil fuels in the production of solvents, asphalt, synthetic rubber, naphtha, lubricants, and other products. Stationary Combustion CO_2 emissions are calculated in the Fossil Fuel Combustion Module as discussed above.

Background and Default Data

The methodology for estimating CH_4 and N_2O emissions from fossil fuel and biofuel stationary sources is provided in the User's Guide for this module as well as instructions and information provided in the spreadsheets for each module.[65]
The default historical fuel consumption data provided in the SIT module for NC are used without any adjustments. These default data are from the EIA's SEDS.[66] It consists of the estimated amount of each type of fuel consumed by each sector.

Note that for the Industrial sector, the SIT also estimates consumption of fuel for non-combustion use for each fossil fuel type.

Deviations from Defaults

No data or estimation methods outside of those provided by the SIT are utilized in calculations.

Future Refinements

No future refinements have been identified at this time.

Natural Gas and Oil

Description

The SIT Natural Gas and Oil Module calculates CH_4 (and its CO_2e) emissions from Natural Gas and Oil systems. The subsectors included in the module are listed below.

Natural Gas Production	Natural Gas Distribution
Natural Gas Transmission	Petroleum Production, Refining, and Transportation

GHG emissions from the combustion of natural gas and oil are calculated in the Fossil Fuel Combustion Module as discussed below.

Background and Defaults

The methodology for estimating GHG emissions from Natural Gas and Oil systems is summarized in the User's Guide for the module, as well as information provided in the module's

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[65] EPA. "User's Guide for Estimating Methane and Nitrous Oxide Emissions from Stationary Combustion Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

[66] EIA. "State Energy Data System (SEDS): 1960-2021." https://www.eia.gov/state/seds/seds-data-complete.php?sid=NC#Consumption. Accessed September 2023.

spreadsheets.[67] Default activity data are generally not provided in the Natural Gas and Oil Module of the SIT. The focus for NC was the Natural Gas Transmission and Distribution sectors because the State does not produce or refine any oil or natural gas. CH_4 emission factors in the module for Natural Gas Transmission and Distribution are taken from a study conducted by the Gas Research Institute and EPA.[68] The CH_4 emission factor for natural gas transmission compressor stations used the module's default value of 983.66 metric tons (MT) per compressor station from 1990-2012 because these are years before data were available for estimating NC-specific compressor station emission factors from EPA's GHG Reporting Program.

Deviations from Defaults

A review of the NC emissions data reported to EPA's GHG Reporting Program suggested two periods with significantly different natural gas transmission compressor CH_4 emission rates. The CH_4 emissions factor for natural gas transmission compressor stations was calculated to be 500 metric tons/station from 2013-2014 and 300 metric tons/station from 2015-2020. These updated values reflect the approximate median values calculated from CH_4 emissions reported by NC compressor stations to EPA's GHG reporting program for each timeframe.[69] The 2010-2020 natural gas transmission pipeline miles data are input into the module were obtained from a NC query performed on the webpage of the U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA).[70] Natural gas distribution pipeline miles in NC by material and natural gas service data for select years (1990-1997, 2000, 2002, 2004-2005, 2007, 2009-2020) were compiled from PHMSA files.[71] Values for other years were estimated via interpolation.

According to the PHMSA there were five liquefied natural gas liquefaction and storage facilities and 13 natural gas compressor stations operating in NC in 2020.[72] Due to a lack of historical

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[67] EPA. "User's Guide for Estimating Carbon Dioxide and Methane Emissions from Natural Gas and Oil Systems Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

[68] Gas Research Institute and EPA. "Methane Emissions from the Natural Gas Industry, EPA-600/R96-080a and GRI-94/0257." June 1996. https://www.epa.gov/sites/production/files/2016-08/documents/1_executiveummary.pdf.

[69] EPA Greenhouse Gas Reporting Program. "Find and Use GHGRP Data." https://www.epa.gov/ghgreporting/find-and-use-ghgrp-data. Accessed December 2023.

[70] PHMSA. "2010+ Pipeline Miles and Facilities." https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-mileage-and-facilities. Accessed October 2023.

[71] PHMSA. "Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas (LNG), and Underground Natural Gas Storage (UNGS) Annual Report Data." https://www.phmsa.dot.gov/data-and-statistics/pipeline/distribution-transmission-gathering-lng-and-liquid-annual-data. Accessed October 2023.

[72] PHMSA. "2010+ Pipeline Miles and Facilities." https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-mileage-and-facilities. Accessed October 2023.

data, the NCUC facility/station counts are used for all pre-2020 years. There were no natural gas venting and flaring operations associated with natural gas production in NC from 1990-2020 based on EIA information.[73]

Future Refinements

The EPA's GHGI incorporates a major change to the methodology for this sector. In future revisions to the inventory for this sector, the DAQ will evaluate the merits of this alternative approach relative to the SIT methodology.

Imported Electricity

Description

Imported electricity is the amount of electricity that NC imports from power plants that are located outside the State via the regional electricity grid system. Note that emissions associated with generating imported electricity do not occur in NC. However, the emissions are generated due to the demand for electricity in NC, therefore, these emissions can be considered part of NC's carbon footprint. Since this electricity is coming from the regional electricity grid, the average emission factors developed by EPA for the regional grid that contains NC were used to estimate GHG emissions from imported electricity.

Background and Defaults

Because the SIT does not specifically estimate emissions associated with imported electricity, the DAQ developed an approach. In keeping with the use of fuel consumption estimates used elsewhere in the SIT, the DAQ used EIA SEDS data to reflect the amount of electricity imported into NC. The DAQ specifically used NC "net interstate flow" of electricity data from SEDS.[74] The SEDS "net interstate flow" of electricity represents the difference between the sum of electricity sales and transmission losses within a state and the total amount of electricity generated within that state.

The average GHG emission factors developed by EPA for NC's regional electrical grid (Southeastern Electric Reliability Council - Virginia/Carolina Subregion or SRVC) as part of the EPA's Emissions & Generation Resource Integrated Database (eGRID) are used to calculate

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[73] EIA. "Natural Gas Gross Withdrawals and Production." https://www.eia.gov/dnav/ng/ng_prod_sum_a_EPG0_VGV_mmcf_a.htm. Accessed October 2023.

[74] EIA. "State Energy Data System (SEDS): 1960-2021 (complete)." https://www.eia.gov/state/seds/seds-data-complete.php?sid=US#Consumption. Accessed October 2023.

emissions from imported electricity.[75] These emission factors are available on a per-kilowatt-hour-of-electricity basis. The EPA does not estimate emission factors for every year. If an emission factor is not available for a given year, the value for the first available year was used (e.g., 2004 CO_2 emission factor is used for all pre-2004 years), or an interpolated value was used. The GHG emissions from imported electricity are reported in the inventory under the "Electricity Generation and Use" sector.

Future Refinements

No future refinements have been identified at this time.

Agriculture

Description

The SIT Agriculture Module calculates CH_4 and N_2O emissions from agricultural operations. The subsectors included in the module are listed below.

Enteric Fermentation	Rice Cultivation	Agricultural Soils
Manure Management	Burning of Agricultural Crop Waste	

Background and Defaults

The methodology for estimating CH_4 and N_2O emissions from the Agriculture Sector is described within the SIT User's Guide for this module as well as instructions and information provided in the spreadsheets for each subsector of the module.[76] The default historical activity data provided in the SIT module for NC were used without adjustments for the burning of agricultural crop waste; agricultural soils – plant residues and legumes; and agricultural soils – plant fertilizer subsectors. Default animal population and crop production data in the module are from the USDA's National Agricultural Statistics Service (NASS). Because there is no rice production in NC, it is not necessary to perform calculations for the rice cultivation subsector. Default fertilizer use data are from the Association of American Plant Food Control Officials and The Fertilizer Institute. It should be noted that the module applies a national adjustment factor to reconcile differences between methodologies for estimating N_2O from agricultural soils between the SIT and EPA's national inventory.

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[75] EPA Clean Air Markets Division. "Download Data, eGRID with 2021 data." https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid. Accessed September 2023.

[76] EPA. "User's Guide for Estimating Methane and Nitrous Oxide Emissions from Agriculture Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

Deviations from Defaults

The default USDA data in the module were revised for the following livestock categories to reflect the most recent set of available livestock inventory estimates: beef cows; milk cows; goats; turkeys; and hogs. These data are from online queries of USDA datasets (note that USDA compiles these data sets in cooperation with the NC Department of Agriculture and Consumer Services).[77] These livestock data were used to calculate emissions for the following subsectors: enteric fermentation, manure management, and agricultural soils, animals and runoff.

Future Refinements

The agricultural soils – plant residues and legumes subsector does not include default production data for the following crop types: red clover, white clover, birdsfoot trefoil, arrowleaf clover, and crimson clover. Also, the agricultural soils – plant fertilizer subsector does not provide default data for the following organic types of fertilizers: compost, dried blood, dried manure, other sewage sludge, and tankage. Further research can be conducted to determine if it may be possible to supplement the default crop production and fertilizer use data with data for additional types of crops and fertilizers.

Municipal Solid Waste

Description

The SIT MSW module of the SIT calculates CH_4 emissions from landfilling MSW and CO_2 and N_2O from the combustion of MSW. Some landfills have added gas collection systems to collect and burn landfill gas (LFG) for electricity production and other energy uses (landfill-gas-to-energy projects or LFGTE). Other landfills flare LFG which converts the CH_4 portion to CO_2.

CO_2 emitted directly from landfills as biogas and CO_2 emitted from CH_4 combustion at the flares are not counted as anthropogenic GHG emissions in this inventory.

Background and Defaults

There are two subsectors in this module, landfills and combustion, and the emissions calculation methodology is different for each. The methodology for estimating GHG emissions

[77] USDA. “National Agricultural Statistics Service, Quick Stats.” NC data obtained October 2023 via online query of data from https://quickstats.nass.usda.gov/.

from MSW is provided in the User's Guide for this module as well as instructions and information provided in the spreadsheets for the module.[78]

The default SIT values were used for landfill flaring which comes from EPA's Landfill Methane Outreach Project (LMOP) database.[79] Default population data from the US Census were included for the LFG emissions calculation.

The CH_4 emissions from industrial landfills in the SIT were assumed to be 7% of the MSW landfill emissions. No additional information has been found so the default value was used. Default fractions for plastics, synthetic rubber, and synthetic fiber combustion were also used.

Deviations from Defaults

For the landfill sector, total landfill disposal data from 1990 to 2022 were obtained from the NC Division of Waste Management.[80] These data are published in an annual report based on fiscal year, (July 1 through June 30 of the following year) and contain construction and demolition (C&D) debris. Since the SIT is based on calendar year rather than fiscal year, the disposal value was apportioned to the two partial calendar years represented by the fiscal year (half of the value is assigned to each year), then the two values from different fiscal years are summed to get the total for a calendar year. The C&D debris was apportioned in the same manner and subtracted from the disposal value. Each annual report encompassed a range of years so the report with the latest values for each year was used.

Information regarding LFGTE projects was extracted from EPA's LMOP database to estimate LFG annual flow and years of use.[81]

To maintain consistency with other modules, NC Office of State Budget and Management (OSBM) population data were used instead of the default population values.

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[78] EPA. "User's Guide for Estimating Emissions from Municipal Solid Waste Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

[79] EPA. "Landfill Technical Data, Landfill and Landfill Gas Energy Project Database, Landfill Methane Outreach Program (LMOP)." https://www.epa.gov/lmop/landfill-technical-data. Accessed September 2023.

[80] NCDEQ. "Solid Waste Management Annual Reports." https://deq.nc.gov/about/divisions/waste-management/sw/data/annual-reports. Accessed September 2023.

[81] EPA. "Landfill Gas Energy Project Data, Landfill and Landfill Gas Energy Project Database, Landfill Methane Outreach Program (LMOP)." https://www.epa.gov/lmop/landfill-technical-data. Accessed September 2023.

Future Refinements

Further research into landfill flaring, CH_4 emissions from industrial landfills, and factors for the combustion of plastics, synthetic rubber and synthetic fibers would enhance the accuracy of the emission estimations.

Wastewater

Description

The Wastewater module of the SIT calculates CH_4 and N_2O emissions from the treatment of Industrial and Municipal Wastewater. The tool is separated into Municipal Wastewater and Industrial Wastewater sections. The Municipal Wastewater section calculates direct N_2O from biosolids, and CH_4 emissions. The Industrial section calculates CH_4 emissions from the fruit and vegetable, red meat, poultry, and pulp and paper industries.

Background and Defaults

The calculation methodology in the Wastewater module is complex and varies within the two sections. The methodology for estimating GHG emissions from Wastewater is provided by the User's Guide for this module as well as instructions and information provided on the spreadsheets for each module.[82]

The source for Municipal Wastewater default values for CH_4 emissions is reported as state and local public works agencies. The default data were used for the Municipal Wastewater section of this tool.

The Industrial section of this module provides default data for the red meat industry but not for the poultry, pulp and paper, or fruit and vegetable industries. The default red meat data were obtained from the USDA's NASS.[83]

Deviations from Defaults

No source of wastewater activity data for the fruits and vegetables industry was located. Wastewater emissions for the pulp and paper industry are reported for 2003 and later years because these are the only years with emission source specific emissions covered by the DAQ's Internet-Based Enterprise Application Management – Emissions Data (IBEAM-

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[82] EPA. "User's Guide for Estimating Emissions from Wastewater Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

[83] USDA. "National Agricultural Statistics Service, Quick Stats." https://quickstats.nass.usda.gov/.

ED). Other sources of pulp and paper industry wastewater emissions would need to be identified to estimate pre-2003 emissions.

Production data for calculating wastewater emissions for the poultry sector were compiled for broiler chickens and turkeys from the USDA's NASS. These data were cross-referenced with production data for commercial broilers and turkeys from the 2022 NC Agricultural Statistics.[84]

Future Refinements

NC-specific red meat production data and fruit and vegetable production data would enhance the emission estimates for this module if such data could be identified.

For consistency with other modules, NC OSBM population data could be used instead of the default population values if the SIT would allow replacement of the Wastewater module's default population data.

Industrial Processes

Description

The Industrial Processes module of the SIT calculates GHG emissions as follows:

- CO_2 emissions from cement production, lime manufacture, limestone and dolomite use, soda ash manufacture and consumption, iron and steel production, and ammonia manufacture.
- CO_2 and PFC emissions from aluminum production.
- N_2O emissions from nitric acid production and adipic acid production; and
- HFC, PFC, nitrogen trifluoride (NF_3), and SF_6 from HCFC-22 production, consumption of substitutes for Ozone-Depleting Substances (ODS), semiconductor manufacture, electricity transmission and distribution, and magnesium production and processing.

Background and Defaults

The methodology for estimating GHG emissions from Industrial Processes is provided in the User's Guide for this module as well as instructions and information provided in the spreadsheets for each module.[85] The methodology in the Industrial Processes module varies by sector so each sector is discussed separately with specific examples in the SIT's User Guide.

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[84] USDA. "2022 NC Agricultural Statistics." https://www.nass.usda.gov/Statistics_by_State/North_Carolina/Publications/Annual_Statistical_Bulletin/index.php. Accessed December 2023.

[85] EPA. "User's Guide for Estimating Emissions from Industrial Processes Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

NC does not have the following Industrial Processes operating in the State: cement production; lime manufacture; ammonia manufacture; nitric acid production; adipic acid production; magnesium production; and HCFC-22 production.

Consumption of ODS substitutes reflects national emissions allocated to each state. National emissions are apportioned to each state using a hybrid approach, based on both population and regional emission estimates from specific HFCs. Regional HFC emission estimates were provided by Hu, L., et al. (2017).[86]

Deviations from Defaults

Iron and steel production and semiconductor manufacture are the only sectors in the Industrial Processes module where estimates deviated from SIT defaults. The default values for the Iron and Steel Production sector are based on national averages and appeared to overestimate emissions in NC. There is only one permitted facility in NC that operates using a production method listed in the SIT. Therefore, production/activity data from the DAQ's IBEAM-ED module for that permitted facility were converted to MT. These values were entered into the SIT for calendar years 2001 to 2020.

Semiconductor manufacture GHG estimates for calendar years 1990 through 2015 were calculated using SIT defaults. In the SIT, default estimates of national emissions from the semiconductor manufacturing sector are distributed to NC based on the ratio of the monetary value of NC semiconductor shipments to the value of national semiconductor shipments. For the years available (2016 through 2020), NC semiconductor manufacturer emissions of SF_6, HFC, NF_3, and PFC were obtained directly from the GHG Reporting Program. All three NC permitted facilities in the semiconductor manufacturer sector reported emissions to the GHG Reporting Program, so these emissions were summed and entered into the SIT for each calendar year.

Phosphoric acid production is not included in the SIT Industrial Processes module; however, NC emissions data are reported for this process to EPA's GHG Reporting Program. Because NC has one phosphoric acid production facility that reports emissions to EPA, the DAQ added these emissions for the years for which they were available (2010 through 2020). Calendar year 2002-2009 emissions were estimated using data reported to the DAQ, current carbon weight percent values obtained from the facility, and the calculation equation Z-1A in Part 98 Subpart Z of the Federal Mandatory GHG Reporting Rule. No throughput data or weight percent of carbon are readily available for calendar years 1990 through 2001, therefore, the 2002 CO_2 emission value is reported for these years as a best estimate.

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[86] Hu, L., et al., "Considerable contribution of the Montreal Protocol to declining greenhouse gas emissions from the United States," *Geophys. Res. Lett.*, 44, 8075–8083, 2017.

Future Refinements

For the two sectors that use national emissions, consumption of ODS substitutes and semiconductor manufacturing, the SIT default population values for NC from 1990 to 2020 were used because these tables are protected and could not be accessed. For consistency with other modules, the NC OSBM's population data could be used for the allocation process instead of the default population values.

The ODS substitutes sector is the largest contributor to PFC, HFC, and SF_6 emissions for NC. A more in-depth review of the calculation methodology for this sector may be warranted because the projected values for this sector reflect a significantly large increase.

Land Use, Land Use Change, and Forestry

Description

The LULUCF sector accounts for emissions and/or sequestration of CO_2, CH_4, and N_2O from activities on NWL. These are broken down into subsectors by major land use type, including Forest Lands; Cropland and Grassland; Settlements; and Wetlands. The source of best-available estimates varies by subsector and category, which are summarized in Table A-1 below.

GHG inventories report fluxes occurring within each land use type, as well as those resulting from conversions between land use types. A land use change refers to land converted to a different use within the previous 20 years. This inventory follows the structure of the EPA GHGI, which groups sources of emissions and sinks by current land use category.

Table A-1. Source of LULUCF Sector Emissions/Sink Estimate by Subsector/Category

Data Source/Subsector	***Category***
SIT Module	
Forest Lands	*Forest Carbon Flux** *Non-CO_2 Emissions from Forest Fires***
Cropland and Grassland	*Agricultural Soil Carbon*
Settlements	*N_2O on Settlement Soils*
EPA Greenhouse Gas Inventory for NC	
Settlements***	*SRS: Urban Trees* *SRS: Landfilled Yard Trimmings and Food Scraps* *LCS: Ecosystem Carbon* *SRS: Organic Soil*
Wetlands	*Flooded Lands and Peatlands*
NC Coastal Habitats Greenhouse Gas Workgroup	
Wetlands	*Coastal Wetlands*

* Forest Land Remaining Forest Land and Land Converted to Forest Land. Forest Carbon Flux in the SIT also includes Forest Land Converted to Settlements, see text for details.
** SIT with acreage burned data compiled from NC and federal databases, see text for details.

*** Settlements Categories: *Settlements Remaining Settlements (SRS)* and *Land Converted to Settlements (LCS)*

Since the 2022 NC GHG Inventory, EPA has updated data and/or methods in every LULUCF subsector. As a result, some estimates in this report are substantially different from those reported in the 2022 inventory. The LULUCF SIT module includes default data from the USFS and the GHGI for Forest Lands; Cropland and Grassland; and some categories within the Settlements subsector. The GHGI also includes updates to some data sources and/or methodologies which EPA has not yet integrated into the SIT.[87] As with the previous (2022) GHG inventory, this inventory includes EPA estimates of NC emissions/sinks for some Settlements and Wetlands categories missing from the SIT. The DAQ incorporated the EPA state-level estimates for these missing source categories in this inventory and incorporated the updated estimates for other source categories. Estimates used in this inventory for Coastal Wetlands were developed by the NC Coastal Habitats Greenhouse Gas Workgroup.[88]

Background and Defaults

The methodologies used within the SIT for estimating CO_2, CH_4, and N_2O emissions from the LULUCF sector are provided in the User's Guide as well as instructions and information in the spreadsheets of the LULUCF module.[89] The default input data within the SIT are revised periodically to reflect the latest data sources and methodologies, though these updates may not be completed at the same intervals as updates incorporated into EPA's GHGI. The DAQ used the SIT's LULUCF module and default inputs to develop estimates for Forest Carbon Flux (FRF and *Land Converted to Forest Land)*, non-CO_2 emissions from Forest Fires, Agricultural Soil Carbon Flux, and N_2O emissions from fertilization of Settlement Soils. The inputs varied considerably from category to category but included estimates of carbon stock changes in forests, wood products, and agricultural soils, and the amount of synthetic fertilizer applied to soil on developed lands. Carbon dioxide emissions from forest fires are automatically accounted for in the SIT's inventory of forest carbon stocks, and non-CO_2 emissions from forest fires are estimated separately in the SIT. Significant changes to estimates of carbon flux in the forest and agriculture subsectors reflect EPA's updates to the SIT default data since the previous (2022) GHG inventory.

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[87] EPA. "Inventory of U.S. Greenhouse Gas Emissions and Sinks by State: 1990-2020." April 2022. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020.

[88] NC Coastal Habitats GHG Workgroup. "NC Coastal Habitat Greenhouse Gas Inventory." September 2023.

[89] EPA. "User's Guide for Estimating Emissions and Sinks from Land Use, Land-Use Change, and Forestry Using the State Inventory Tool." Prepared for EPA's State Energy and Environment Program by ICF, June 2023.

Deviations from Defaults

Forest Fires

Emissions of CH_4 and N_2O from forest fires are estimated in the SIT module, requiring inputs of annual area burned. No single source of acreage burned data is available for all inventory years, and some sources only report data for certain fire types or jurisdictions. To compile forest fire acreage burned data, the DAQ used a combination of approaches and the best-available data sources for each year, consistent with the methods in the previous (2022) NC GHG inventory.

The acreage burned estimates developed for this inventory prioritized wildfire data from the NCFS, supplemented by the federal interagency "SIT-209" database for wildfires and prescribed burning.[90,91] Because data were not accessible from the SIT-209 for every year, the DAQ used other methods/data to estimate values in some (mostly earlier) years. Sources included the National Interagency Fire Center and the EPA's National Emissions Inventory.[92,93] The DAQ is working to identify additional sources of burn acreage data to refine these estimates for future versions of NC's inventory.

Settlements

Three Settlements categories are included in the SIT's LULUCF module. Emissions of N_2O from Settlement Soils were modeled in the SIT using default data. Estimates for carbon stock changes in both the Urban Trees and Landfilled Yard Trimmings and Food Scraps categories differed significantly between the EPA's GHGI and the SIT. In communication with EPA, it was determined that the GHGI estimates were developed using the latest data and methods and are a better representation of NC's carbon sequestration in these categories. Therefore, the DAQ incorporated carbon flux estimates from the 1990-2020 GHGI into this inventory for these categories.

The GHGI also provides estimates for other Settlements categories not included in the SIT. To provide a comprehensive LULUCF sector inventory, the previous NC GHG Inventory

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[90] NCFS. "Wildfire and Acreage Statistics: 1928- Present." https://www.ncforestservice.gov/fire_control/wildfire_statistics.htm. Accessed November 2023.

[91] U.S. Department of Agriculture and the U.S. Department of the Interior. SIT-209 data obtained from Wildland Fire Application Information Portal: https://www.wildfire.gov/application/sit209. Accessed October 2023.

[92] U.S. Department of Interior, National Interagency Fire Center. Historical year-end fire statistics by state compiled from National Interagency Coordination Center fire records. https://www.nifc.gov/nicc/predictive-services/intelligence.

[93] EPA. "Pollutant Emissions Summary Files for Earlier NEIs." https://www.epa.gov/air-emissions-inventories/pollutant-emissions-summary-files-earlier-neis. Accessed February 2021.

supplemented SIT Settlements estimates with additional GHGI Settlements estimates. In the previous NC inventory, GHGI estimates for Land Converted to Settlements (LCS) – *Changes in Ecosystem Carbon Stocks* were incorporated into a category listed as "Categories not included in SIT." At that time, it was not clear that Forest Land Converted to Settlements (FCS) was also included in the SIT's Forest Carbon Flux subsector. The SIT/GHGI overlap is demonstrated in Table A-2 showing LCS estimates by carbon pool from both the SIT (which only includes FCS) and the GHGI (which includes all land use types converted to settlements). The SIT and GHGI estimates for living biomass and dead plant matter are an exact match, because those LCS carbon pools only apply to FCS. SIT data includes estimates for mineral soils in FCS, and GHGI includes those FCS mineral soil estimates as well as mineral and organic soil estimates for other land use types converted to settlements.

Table A-2. LCS Emissions Estimates by Data Source ($MMTCO_2e$)

	1990		2005		2020	
LCS* Carbon Pools	**SIT (only FCS**)**	**GHGI (all LCS)**	**SIT (only FCS)**	**GHGI (all LCS)**	**SIT (only FCS)**	**GHGI (all LCS)**
Aboveground Biomass	1.75	1.75	1.81	1.81	1.85	1.85
Belowground Biomass	0.34	0.34	0.35	0.35	0.36	0.36
Deadwood	0.23	0.23	0.24	0.24	0.24	0.24
Litter	0.41	0.41	0.42	0.42	0.43	0.43
Soil (Mineral)	0.04	0.23	0.07	0.65	0.05	0.41
Soil (Organic)	-	0.05	-	0.08	-	0.03
Total LCS	**2.77**	**3.00**	**2.89**	**3.55**	**2.93**	**3.32**
Non-forest LCS	**0.23**		**0.66**		**0.39**	

* Land Converted to Settlements

** Forest Land Converted to Settlements

Because this NC Inventory follows the GHGI's category structure, LCS emissions are reported within the Settlements subsector. The GHGI estimates for LCS, which include all land use types converted to settlements (including FCS), are incorporated into this inventory as LCS: *Ecosystem Carbon Flux*. The removal of previously double-counted FCS estimates results in significantly lower LCS estimates in the current inventory. The correction, summarized in Table A-3 results in lower emissions by about 3 MMT.

The EPA's GHGI estimates for Settlements Remaining Settlements – *Organic Soil Carbon Flux* are also incorporated into this NC inventory.

Table A-3. LCS Emissions Estimates by Inventory Year ($MMTCO_2e$)

Report year/ *Subsector*	**Category/** Subcategory/ *Data Source*	**1990**	**2005**	**2010**	**2015**	**2018**	**Average 2005-2018**
2022	**Total LCS Reported**	**5.92**	**6.57**	**6.47**	**6.40**	**6.35**	**6.46**
Forest Carbon Flux Categories not included in SIT	FCS *from SIT*	2.84	2.94	2.95	2.98	2.97	
	LCS *from GHGI*	3.08	3.64	3.52	3.42	3.38	
2024 *Settlements*	**Total LCS** *from GHGI*	**3.00**	**3.55**	**3.43**	**3.35**	**3.32**	**3.42**
						Average Difference	**-3.04**

Wetlands

The Wetlands subsector includes emissions/sequestration estimates for Peatlands, Flooded Lands, and Coastal Wetlands. The GHGI includes estimates for Wetlands subcategories related to Peatlands and Flooded Lands.[94] Three new GHGI subcategories are incorporated into this updated NC inventory: Land Converted to Wetlands – *Changes in Carbon Stocks in Lands Converted to Flooded Lands*, Wetlands Remaining Wetlands – *Flooded Lands Remaining Flooded Lands* (CH_4), and Land Converted to Wetlands – *Land Converted to Flooded Lands* (CH_4).

In 2023, the NC Coastal Habitats Greenhouse Gas Workgroup (Workgroup), formed within the NC Natural and Working Lands Stakeholder Group, developed a new inventory of GHG emissions/sinks from land converted to/remaining coastal wetlands.[95] In order to refine estimates for NC, the Workgroup utilized high-resolution federal land use and land cover data for coastal wetlands that have not yet been integrated into the SIT or GHGI methodologies. The DAQ has incorporated Workgroup estimates for estuarine coastal wetlands (salinity ≥ 0.5 practical salinity units) into this inventory. The Workgroup also developed estimates of GHG emissions and removals within high-salinity seagrass meadows, which are not inventoried in any EPA inventory. The Workgroup's seagrass estimates are included as a new subcategory in this inventory. NC's Coastal Wetlands are a net GHG emitter, but at a very small scale relative to the overall LULUCF Sector. Table A-4 shows Coastal Wetlands emissions and sinks by gas and category in kilotons (kt) CO_2e (1 MMT = 1,000 kt). The estimates reflect a decrease in both annual carbon sequestered and annual emissions from Coastal Wetlands between 2005 and

[94] EPA. "Inventory of U.S. Greenhouse Gas Emissions and Sinks by State: 1990-2020." April 2022. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020.

[95] NC Coastal Habitats GHG Workgroup. "NC Coastal Habitat Greenhouse Gas Inventory." September 2023.

2020. For 2020, net Coastal Wetlands flux was estimated at 34.1 kiloton of carbon dioxide equivalent (kt CO_2e) (0.034 $MMTCO_2e$).

Carbon sequestered in high-salinity seagrass meadows has decreased over time due to a loss in coverage area. The Workgroup expects that this trend will continue over the coming decades and has projected acreage and emissions for 2030 and 2050 as shown in Table A-5 below.[96] Because of their small magnitude and the uncertainty surrounding these projected emission changes, this projection is not incorporated into the LULUCF sector forecast for the state.

Table A-4. GHG Emissions and Sinks from Coastal Wetlands (kt CO2e)

Gas/*Category*	**1990**	**2005**	**2017**	**2018**	**2019**	**2020**
CO_2						
Coastal Wetlands Remaining Vegetated Coastal Wetlands	-276.03	-270.57	-279.91	-278.58	-277.25	-275.92
Land Converted to Vegetated Coastal Wetlands	-2.58	-1.24	-2.07	-2.09	-2.11	-2.14
Seagrass Soil Carbon Flux	-70.46	-70.46	-60.53	-59.18	-57.83	-56.49
Coastal Wetlands Carbon Flux	**-349.08**	**-342.27**	**-342.51**	**-339.86**	**-337.20**	**-334.54**
CH_4						
Coastal Wetlands Remaining Vegetated Coastal Wetlands	373.29	382.31	373.25	371.32	369.38	367.44
Land Converted to Vegetated Coastal Wetlands	0.07	0.07	0.86	0.97	1.08	1.19
Coastal Wetlands Emissions	**373.37**	**382.37**	**374.12**	**372.29**	**370.46**	**368.63**
Net GHG Flux (kt CO_2e)	**24.29**	**40.11**	**31.60**	**32.43**	**33.26**	**34.09**

Table A-5. Workgroup Projections for Seagrass Area (acres) and Emissions (kt CO_2e)

Seagrass Projections	**2020**	**2030**	**2050**
Area (acres)	88,526	67,383	36,399
Soil Carbon Flux (kt CO_2e)	-56.49	-42.99	-23.22

Planned integration by EPA of coastal land use and land cover datasets into future inventories will result in further refinement of coastal wetlands GHG estimates.

Future Refinements

The EPA releases annual state-level estimates of emissions/sinks for the LULUCF sector as part of its state GHGI. For several subsectors, these data have matched the default data in the

[96] NC Coastal Habitats GHG Workgroup. “High Salinity Seagrass Meadows: Projections of area and carbon net accumulation to 2030 and 2050.” Email transmitted by Workgroup to Amanda Crenshaw, NCDAQ, December 2023.

SIT module. Where the estimates differed between the two sources, DAQ made the determination of which data to include in this inventory through communication with EPA. The DAQ anticipates that future LULUCF sector estimates from EPA will be more closely aligned between the two sources. For those LULUCF sector subcategories that are not estimated in the SIT, EPA's state-level emission/sink estimates are incorporated into NC's inventory. The notable exceptions are coastal wetlands subcategories, which are taken from the NC Coastal Habitats Greenhouse Gas Inventory. Future versions of the LULUCF sector inventory will incorporate emissions/carbon flux estimates reflecting the best information available at that time.

Harvested Wood Products (HWP) are a component of Forest Carbon Flux, estimating carbon sequestered in trees that are cut for wood products such as building materials, furniture, or paper. The EPA and USFS are working to develop refined state-level estimates of carbon flux in HWP. These estimates are of particular interest in NC, where forestry and HWP manufacturing are among the state's largest industries. The DAQ anticipates that more accurate assessments of carbon stored in wood products will be available for inclusion in future versions of NC's inventory.

An expert panel exploring the carbon sequestration potential of NC's NWL found that restoration of peatlands may have the potential to convert them into a net sink, as well as building resilience to fire and creating broad ecosystem benefits.[97] Further study, including data from restoration projects, may allow development of sequestration estimates in NC peatlands for future inventories.

Projected GHG Emissions (2021-2050)

Description

Because of delays in preparing and releasing historical data by various government agencies, 2020 is generally the last year for which historical data are used in estimating NC's GHG emissions. This section summarizes the methods and data sources that are used to project the 2020 emissions from 2021 through 2050. These projections represent a characterization of future emissions based on information available at the time of this study and only reflect the effects of "on-the-books" measures to limit GHG emissions where information is available to characterize their effects.

[97] "NC Climate Risk Assessment and Resilience Plan: Appendix B: North Carolina Natural and Working Lands Action Plan." June 2020.

Background and Defaults

Emissions forecasts are generally developed using the Projections Tool module within EPA's SIT. The Projections Tool has 18 sub-modules for estimating source sector emissions using different default data and forecasting techniques for each sector. The methodologies incorporated into the Projections Tool are summarized in the User's Guide for this module, as well as instructions and information provided in the spreadsheets for each module subsector.[98]

This module forecasts emissions for each source sector using one of the following approaches.

(1) Projections of emissions activity such as fuel use or number of livestock or surrogates for such activity (e.g., human population is used to develop state-level projections from national forecasts).
(2) Extrapolation of historical trends in emissions or emissions activity.

The following table summarizes the default projection methodology for each source sector.

Table A-6. Projection Methods for Each Source Sector

Forecast Based on Projections Data	Forecast Based on Historical Trend
Electric Generation and Consumption*	Agricultural Soils
RCI Combustion*	Agricultural Residue Burning
Transportation/Mobile Source Combustion	Waste Combustion
ODS Substitutes; Electric Power Systems	Industrial Processes (except subsectors at left)
Solid Waste Management	Wastewater
Livestock	
Natural Gas Systems	

*Excludes wood. Wood consumption is based on the historical trend in fuel consumption.

For sectors that forecast emissions based on projections data, the tool relies on projections of activity data (or surrogate activity data) obtained from similar federal and state resources as those used in calculating historical emissions.

Note that the Projections Tool does not have a sub-module for the LULUCF sector, therefore, the 2020-year estimates for GHG emissions and carbon sinks are generally carried forward to each forecast year (the one exception, as discussed below, is the Forest Fires category).

Deviations from Defaults

In some cases, different projections methods/data are used to estimate emissions than the default methods/data provided in EPA's Projections Tool. These revisions reflect the use of more current data, NC-specific data, or a methodology that results in projected emissions better in line with NC historical trends. The revisions to the use of Tool defaults are summarized in

[98] EPA. "User's Guide for States Using the Greenhouse Gas Projection Tool." Prepared for EPA's State Energy Program by ICF, June 2023.

Table A-7. In addition to the revisions listed in this table, the Tool default population projections are replaced with projections from the NC OSBM.[99]

Table A-7. Summary of Revisions to EPA Projections Tool Defaults

Sector	Revised Projections Approach(es)	Rationale for Use
Electricity Generation and Imported Electricity	*Electricity Generation* For 2021 & 2022, heat input (in MMBtu) by fuel type from fuel used in 2021 & 2022, which was obtained from EIA Form 923 data.[100] For 2023 through 2050 heat input, two different approaches are used:	Historical fuel use data are preferable to a projection.
	(a) For Duke Energy facilities: 2024 through 2050 - Duke Energy Corporation's October 2023 Pathway 1/ Core Portfolio 1 forecast of NC fuel use (in MMBtu).[101] For 2023, values interpolated between actual 2022 EIA fuel input and Duke Energy's 2024 forecast fuel use.	Duke Energy's forecast is preferred because it is developed via the Integrated Resource Plan process. 2023 interpolated values are used because 2023 actual values are not yet available.
	(b) All other NC electricity generation reflect the average of the last three available years (2020-2022) of fuel consumption (in MMBtu) compiled from EIA Form 923 data.	The historical average fuel use is used because these sources represent a small percentage of sector emissions and forecasts for all these smaller sources are not available.
	Imported Electricity (a) For 2021-2050, SIT projections of retail electricity consumption are used. (b) The percent of imported electricity for all projection years is assumed to be the average of the percent imported over the last three (2019-2021) available years (11.22%) based on EIA data.[102]	Imported electricity emissions were calculated using the most recent data available for characterizing net imports (2019-2021). This value was held constant for projection years since there are many

[99] NC Office of State Budget and Management. "County/State Population Projections." https://www.osbm.nc.gov/facts-figures/population-demographics/state-demographer/countystate-population-projections. Accessed November 2023.

[100] EIA. "2020-2022 Form EIA-923 detailed data with previous form data (EIA-906/920)." https://www.eia.gov/electricity/data/eia923/. Accessed July 2023.

[101] Duke Energy, 2023 CPIRP NCDAQ Data Request – P1.xlsx, e-mail transmittal from Cynthia Winston to Ming Xie, NC Division of Air Quality, October 11, 2023.

[102] EIA, State Energy Data System (SEDS): 1960-2021, available from https://www.eia.gov/state/seds/seds-data-complete.php?sid=NC#Consumption, accessed September 2023.

Sector	Revised Projections Approach(es)	Rationale for Use
	(c) The imported electricity used for a given year is calculated as the projected retail electricity consumption multiplied by the percent imported.	uncertainties in projecting imported electricity.
	(d) Projected GHG emission rates are based on information provided in a recent EPA regulatory impact analysis.[103]	Projected rates for South Carolina are the highest of the rates of adjoining states, so represent a conservative assumption.
Transportation	*Onroad Vehicles* – MOVES4 model runs with NC historical/forecast VMT inputs used to estimate 2021, 2030, and 2050 emissions. Emissions for 2022-2029 estimated as product of VMT and emission factors interpolated from 2021 and 2030 MOVES4 model run output. Emissions for 2031-2049 estimated similarly from 2030 and 2050 MOVES4 model run output.	A more sophisticated modeling approach that uses official EPA onroad mobile source emissions estimation model, provides additional subsector granularity, and future year modeling flexibility.
	Non-highway – Aviation and Boats use a linear extrapolation of historical emissions data. Locomotives, Farm Equipment, Construction Equipment, and Other Equipment apply the average of 2003-2020 emissions in each category and apply this value to each forecast year.	Forecast emission trends were not in line with historical trends. Forecast approach based on historical emissions trend – if there is a clear trend (Aviation/Boats) or not (all other categories). With Aviation and Boats, a clear trend only started with 2003 emissions (probably due to post-9/11 travel/economic impacts), so pre-2003 data were excluded from use in each forecast approach.
Industrial Processes	*ODS substitutes* – apply HFC emissions growth rates from national EPA non-CO_2 projections report to 2020 NC emissions.[104]	Default Tool projections result in emission values that are unrealistically high.

[103] EPA, “Regulatory Impact Analysis for the Proposed New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule,” EPA-452/R-23-006, May 2023.

[104] EPA, "Global Non-CO_2 Greenhouse Gas Emission Projections & Mitigation, 2015–2050," Office of Atmospheric Programs, EPA-430-R-19-010, October 2019.

Sector	Revised Projections Approach(es)	Rationale for Use
	Phosphoric acid production is not included in the SIT Industrial Processes module; however, NC emissions data are reported for this process to EPA's GHG Reporting Program. The 2021 CO_2e value is carried forward every year to 2050.	Reported GHG emissions from phosphoric acid production are relatively constant from 2002. through 2016, so the 2016 value is held constant for projected years.
Solid Waste/Landfill CH_4 Emissions	Apply average of 2003-2020 emissions to each forecast year.	Best identified approach given historical emissions did not indicate a clear trend (periods with increases and periods with decreases), while the SIT Projection Tool consistently forecast unrealistically large emissions increases.
Land Use/Forest Fires	Forest Fire emissions held constant at the 10-year average for 2011-2020.	Emissions from wildfires and prescribed burns are highly variable. Recent longer-term values capture high, medium, and low occurrence years related to shorter-term climate interactions with normal seasonal trends.

Electricity Generation

To incorporate an initial estimate of the impact associated with the 2030 and 2050 CO_2 emissions reduction targets established in SL 2021-165, the emissions forecast for the electricity generation sector in this report incorporates the generation forecast for Pathway 1/Core Portfolio 1 Duke Energy included in its proposed Carbon Plan/Integrated Resources Plan (CPIRP) submitted to the NCUC on August 17, 2023.[105]

For use in this Electricity Generation forecast, the DAQ summed Duke Energy's proposed Pathway 1/Core Portfolio 1 unit-level fuel use (i.e., heat input) projections by fuel type for each year from 2024 through 2050. These projections were used along with the SIT's Projection Tool fuel-specific emission factors to project GHG emissions for Duke Energy facilities for these years. Because actual 2021 and 2022 heat input by fuel type was available from EIA for Duke Energy facilities, these data were used to develop emission projections for these years. Because 2023 heat input data were not available at the time that this forecast was produced, the DAQ interpolated between the actual 2022 heat input by fuel type and the 2024 proposed CPIRP Pathway 1 fuel type projections to estimate 2023 fuel use for Duke Energy units. The

[105] Duke Energy, 2023 CPIRP NCDAQ Data Request - P1.xlsx, e-mail transmittal from Cynthia Winston to Ming Xie, NC Division of Air Quality, October 11, 2023.

fuel use estimates for Duke Energy for 2021-2023 were combined with the SIT Projection Tool's fuel-specific emission factors to estimate emissions in these years.

For non-Duke Energy units in NC, emission projections reflect use of the Tool's emission factors and the average of the last three available years of fuel consumption data (2020-2022), compiled from the EIA.[106] This approach is consistent with that used in the previous GHG inventory, and reflects the lack of information for projecting fuel use/emissions for these generating units.

The DAQ applied the same approach to estimating net interstate flow of electricity for NC as was used in the previous GHG inventory. This approach relies on electricity demand forecasts for NC from EPA's Projections Tool, and the recent historical average percentage of NC demand met by imports (approximately 11% for 2019-2021). To estimate future year imported electricity CO_2 emission factors per kilowatt-hour (kWh), the DAQ applied the emission rates projected for South Carolina from EPA's regulatory impact analysis for its proposed New Source Performance Standards/Emission Guidelines for GHGs from Electric Generating Units.[107] Because EPA did not develop CH_4 and N_2O emission projections in this regulatory analysis, the DAQ calculated forecast year CH_4 and N_2O emission rates by first calculating ratios of the projected South Carolina CO_2 emission rate in each forecast year to the 2021 CO_2 emission rate. The DAQ then applied these ratios to 2021 CH_4 and N_2O emission rates to develop projected CH_4 and N_2O emission rates for imported electricity.

Onroad Vehicles

Forecasts for the onroad vehicle sector were developed from a 2021 emissions baseline. For the 2021 GHG onroad emissions modeling, the DAQ used 2021 VMT estimates from the NCDOT based on the data compiled for the HPMS. For the 2030 and 2050 onroad vehicle GHG emissions modeling, the DAQ used VMT estimates projected from the 2022 NC HPMS VMT dataset. County-level growth factors for 2023 through 2050, relative to a 2022 base year, were first developed based on population forecasts for each NC county obtained from the NC OSBM State Demographer's Office and on annual per capita VMT forecasts obtained from Annual Energy Outlook (AEO) 2023. The DAQ then developed 2030-year and 2050-year county-level VMT projections by multiplying each county's 2022 annual VMT by their corresponding 2030 and 2050 growth factors.

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[106] EIA, "2020-2022 Form EIA-923 detailed data with previous form data (EIA-906/920)," available from https://www.eia.gov/electricity/data/eia923/, accessed July 2023.

[107] EPA. "Regulatory Impact Analysis for the Proposed New Source Performance Standards for Greenhouse Gas Emissions from New, Modified, and Reconstructed Fossil Fuel-Fired Electric Generating Units; Emission Guidelines for Greenhouse Gas Emissions from Existing Fossil Fuel-Fired Electric Generating Units; and Repeal of the Affordable Clean Energy Rule," EPA-452/R-23-006. May 2023.

To evaluate the impact of battery electric vehicles (BEVs) on future GHG emissions, estimates of VMT by vehicle type and fuel type were developed for 2021, 2030, and 2050 from MOVES4 model runs using statewide vehicle fleet and VMT estimates for each year. The output data, which reflected the MOVES4 default fractions of BEVs in the fleet, were compiled to provide statewide annual VMT estimates by vehicle type and fuel type. Estimates of 2030 and 2050 fleet populations of light-, medium-, and heavy-duty BEVs were then developed for the Duke Energy service areas of the state (roughly 83 counties) and were extended to cover the remaining 17 counties serviced by other utilities. Duke Energy provided projected annual numbers of light-, medium-, and heavy-duty BEVs in operation within the Duke Energy service areas for the years 2023 through 2040, consistent with its corresponding projections for BEV-related energy generation.[108] Based on these data, the DAQ developed estimates of BEVs in service for years 2041-2050. The DAQ then used the 2030 and 2050 BEV population estimates to revise the distribution, by vehicle type and fuel type, of the 2030 and 2050 statewide VMT estimates, assuming that BEVs would be one-to-one replacements of light-, medium-, and heavy-duty internal combustion engine vehicles. Under this assumption, each BEV introduced into the fleet effectively zeroes out the GHG emissions from an internal combustion engine vehicle of the same type. This provided 2030 and 2050 VMT estimates consistent with the Duke Energy BEV projections.

To generate statewide GHG onroad mobile source emission factors, MOVES4 modeling runs, using the model default inputs data for NC, were completed for 2021, 2030, and 2050. GHG emission factors, in units of grams per mile, were calculated for each vehicle type and fuel type combination. GHG emissions for each year were calculated by multiplying the annual VMT estimates described above by the corresponding emission factors to provide annual grams per year emissions by vehicle type and fuel type, and then converted to annual MT.

Projected onroad emission estimates for each interim year between the modeled years (2021-2029 and 2031-2049) were developed by first interpolating VMT estimates and emission factors between adjacent modeled years (2021-2030 and 2030-2050) and then multiplying the values as described above. Combined with the modeled years, this provided GHG emissions by vehicle/fuel type for each of the three GHGs for all years from 2021 through 2050.

Ozone-Depleting Substances (ODS)

Although there are some other ODS substitutes, HFCs are by far the most prevalent. The EPA has been working to implement the American Innovation and Manufacturing (AIM) Act, which authorizes EPA to reduce production and consumption of HFCs on the same schedule as the Kigali Amendment, which the U.S. recently ratified. The EPA has begun evaluating the impacts on HFC emissions from the AIM Act, but information is not currently sufficient for use in forecasting emissions from ODS substitutes in NC. Therefore, the DAQ applied growth rates

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[108] Winston, Cynthia, Duke Energy Corporation, “NC EV Forecast,” transmitted to Andy Bollman, NCDEQ, October 23, 2023.

reflecting national HFC emission projections developed by EPA in 2019 to forecast this category (this approach was deemed reasonable when described with an EPA ODS substitute contact).[109] While these projections account for other ODS substance reducing policies (e.g., EPA's Significant New Alternatives Policy Program), they do not account for AIM Act-related emission reductions. Therefore, the projections for this category should be considered conservatively high. Future support from EPA will be essential in developing state-level ODS substitute projections reflecting the AIM Act.

Future Refinements

Additional research may identify improved forecast data/methods for sectors for which projections are based on historical trends. It is also important to keep current with the regulatory landscape and determine when the existing projections no longer reflect current standards. For example, the EPA is planning to finalize MHD vehicle CAFE/GHG emissions standards later this year. In addition, projections for a few subsectors are based on EPA national forecasts from many years ago (e.g., the ODS substitute projections are from a 2019 report). The EPA information used to project emissions for this inventory does not account for the impacts of the IRA and IIJA. As these statutes become more fully implemented, it is expected that EPA will release projection information and tools for estimating their associated GHG reductions.[110] Future versions of this inventory will utilize the most recent available forecast data at the time that the inventory is prepared. Finally, it is good practice to review the accuracy of these projections as historical data become available, and to incorporate any lessons learned in preparing future GHG forecasts.

Uncertainty

In keeping with our approach of using the SIT for developing historical emissions estimates, the DAQ generally relied on the SIT's Projection Tool to forecast emissions over the 2019-2050 period (major exceptions are use of Duke Energy heat input forecasts for electricity generation and MOVES4-based emissions forecasts for onroad vehicles). In cases where more state-specific and/or recent data were identified than provided in the SIT, the DAQ replaced default values with these more representative data.

There is associated uncertainty with the forecast capability of the SIT and MOVES4, use of potentially outdated default data, and inherent uncertainty of future GHG policy changes. The

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[109] EPA, "Global Non-CO_2 Greenhouse Gas Emission Projections & Mitigation, 2015–2050," Office of Atmospheric Programs, EPA-430-R-19-010, October 2019.

[110] The DAQ has incorporated Duke Energy's heat input and electric vehicle projections reflecting their modeling of the estimated impacts of IRA. We anticipate that these projections will be further refined in the future by Duke Energy as additional IRA and IIJA program information becomes available.

DAQ emphasizes our commitment to review the validity of the GHG projections methods used in this effort when undertaking future GHG inventory efforts.

Appendix B. Identification of LIDACs in NC

Table B-1 and Table B-2 list the LIDAC census tract IDs anticipated to be affected by implementation of priority measures included in this PCAP.

*Table B-1. A full list of NC Counties with LIDAC census tracts identified by the **CEJST dataset**.*

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Alamance	37001020400	11
	37001021201	
	37001020300	
	37001020200	
	37001021000	
	37001020802	
	37001020702	
	37001022002	
	37001021102	
	37001021207	
	37001021803	
Alexander	37003040500	3
	37003040400	
	37003040200	
Alleghany	37005950100	3
	37005950300	
	37005950200	
Anson	37007920500	5
	37007920600	
	37007920100	
	37007920200	
	37007920400	
Ashe	37009970200	4
	37009970300	
	37009970500	
	37009970800	
Avery	37011930301	4
	37011930302	
	37011930400	
	37011930200	
Beaufort	37013930100	7
	37013931000	
	37013930800	
	37013930300	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Beaufort (continued)	37013930400	
	37013930502	
	37013930501	
Bertie	37015960100	4
	37015960300	
	37015960400	
	37015960200	
Bladen	37017950400	6
	37017950500	
	37017950600	
	37017950300	
	37017950100	
	37017950200	
Brunswick	37019020509	7
	37019020603	
	37019020101	
	37019020104	
	37019020204	
	37019020403	
	37019020505	
Buncombe	37021000600	11
	37021000100	
	37021000200	
	37021000900	
	37021001300	
	37021002900	
	37021000700	
	37021002506	
	37021002803	
	37021002401	
	37021002603	
Burke	37023020802	15
	37023020900	
	37023021301	
	37023021100	
	37023021203	
	37023021202	
	37023020100	
	37023020302	
	37023020600	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Burke (continued)	37023021302	
	37023020801	
	37023020201	
	37023020301	
	37023021201	
	37023021400	
Cabarrus	37025041000	8
	37025040800	
	37025041902	
	37025042101	
	37025040701	
	37025040703	
	37025041702	
	37025041901	
Caldwell	37027030900	10
	37027031000	
	37027030400	
	37027030200	
	37027030300	
	37027030800	
	37027030100	
	37027031201	
	37027031202	
	37027031403	
Carteret	37031970200	11
	37031970103	
	37031970304	
	37031970501	
	37031970401	
	37031970402	
	37031970704	
	37031970101	
	37031970302	
	37031970603	
	37031970701	
Caswell	37033930200	3
	37033930100	
	37033930300	
Catawba	37035011802	13
	37035011101	
	37035010303	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Catawba (continued)	37035010304	
	37035010201	
	37035010700	
	37035011000	
	37035010900	
	37035011300	
	37035011602	
	37035011402	
	37035011401	
	37035011601	
Chatham	37037020300	5
	37037020500	
	37037020600	
	37037020402	
	37037020401	
Cherokee	37039930300	6
	37039930200	
	37039930400	
	37039930100	
	37039930602	
	37039930601	
Chowan	37041930102	2
	37041930101	
Clay	37043950200	1
Cleveland	37045950200	10
	37045950400	
	37045951200	
	37045950900	
	37045951000	
	37045950500	
	37045951100	
	37045950102	
	37045950301	
	37045950101	
Columbus	37047930300	12
	37047930400	
	37047931300	
	37047930100	
	37047930200	
	37047930600	
	37047930700	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Columbus (continued)	37047931200	
	37047930500	
	37047930900	
	37047931000	
	37047931100	
Craven	37049960800	7
	37049960300	
	37049960500	
	37049960600	
	37049960900	
	37049960200	
	37049961302	
Cumberland	37051001603	28
	37051002401	
	37051003104	
	37051003310	
	37051003403	
	37051003405	
	37051003800	
	37051002900	
	37051001100	
	37051002300	
	37051001400	
	37051000500	
	37051000200	
	37051000900	
	37051001000	
	37051001200	
	37051001500	
	37051001700	
	37051002200	
	37051003600	
	37051003500	
	37051003204	
	37051001901	
	37051001903	
	37051003302	
	37051003305	
	37051003002	
	37051002402	
Currituck	37053110402	1

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Dare	37055970502	3
	37055970602	
	37055970601	
Davidson	37057060800	13
	37057061400	
	37057061100	
	37057061500	
	37057061300	
	37057061600	
	37057060202	
	37057061201	
	37057061702	
	37057061902	
	37057062002	
	37057061901	
	37057061703	
Davie	37059080700	2
	37059080500	
Duplin	37061090400	8
	37061090600	
	37061090200	
	37061090300	
	37061090100	
	37061090802	
	37061090801	
	37061090702	
Durham	37063001802	17
	37063001502	
	37063001801	
	37063001100	
	37063001709	
	37063001400	
	37063000500	
	37063001002	
	37063000102	
	37063000900	
	37063000200	
	37063001001	
	37063001301	
	37063002009	
	37063001304	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
	37063001806	
	37063002300	
Edgecombe	37065020800	14
	37065020900	
	37065021000	
	37065021100	
	37065021200	
	37065021300	
	37065020700	
	37065020600	
	37065021600	
	37065021500	
	37065020200	
	37065020300	
	37065020400	
	37065021400	
Forsyth	37067003108	26
	37067003105	
	37067003313	
	37067001700	
	37067001800	
	37067002901	
	37067001500	
	37067001602	
	37067002806	
	37067000500	
	37067001400	
	37067001601	
	37067000200	
	37067000302	
	37067000301	
	37067000600	
	37067000400	
	37067000802	
	37067000700	
	37067001901	
	37067000801	
	37067002002	
	37067002001	
	37067003701	
	37067002903	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
	37067003404	
Franklin	37069060100	7
	37069060700	
	37069060302	
	37069060402	
	37069060401	
	37069060801	
	37069060802	
Gaston	37071033400	20
	37071033100	
	37071032100	
	37071031500	
	37071032000	
	37071031600	
	37071032800	
	37071031900	
	37071031800	
	37071033202	
	37071032302	
	37071032704	
	37071033203	
	37071033204	
	37071030902	
	37071031101	
	37071030205	
	37071030302	
	37071030802	
	37071030801	
Graham	37075920100	3
	37075920200	
	37075920300	
Granville	37077970300	4
	37077970400	
	37077970703	
	37077970702	
Greene	37079950200	4
	37079950300	
	37079950101	
	37079950102	
Guilford	37081010100	34
	37081010200	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Guilford (continued)	37081012706	
	37081013800	
	37081011101	
	37081011400	
	37081012604	
	37081012608	
	37081014200	
	37081012707	
	37081015402	
	37081014412	
	37081016405	
	37081014300	
	37081012611	
	37081014000	
	37081013900	
	37081014503	
	37081011000	
	37081011602	
	37081011102	
	37081012705	
	37081013601	
	37081011500	
	37081012805	
	37081012704	
	37081014408	
	37081014406	
	37081010300	
	37081016600	
	37081016800	
	37081011300	
	37081014501	
	37081011200	
Halifax	37083930600	12
	37083930800	
	37083930700	
	37083930900	
	37083931000	
	37083931100	
	37083930100	
	37083930300	
	37083930200	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Halifax (continued)	37083930400	
	37083930502	
	37083930501	
Harnett	37085071101	12
	37085071401	
	37085070901	
	37085070100	
	37085070300	
	37085070200	
	37085070700	
	37085070600	
	37085070500	
	37085070402	
	37085070902	
	37085070801	
Haywood	37087920700	2
	37087920900	
Henderson	37089930200	4
	37089931000	
	37089931400	
	37089931300	
Hertford	37091950200	4
	37091950100	
	37091950300	
	37091950402	
Hoke	37093970300	5
	37093970402	
	37093970202	
	37093970201	
	37093970401	
Hyde	37095920100	1
Iredell	37097060400	9
	37097060200	
	37097060300	
	37097060603	
	37097060601	
	37097060802	
	37097060801	
	37097061501	
	37097060902	
Jackson	37099950300	3

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Jackson (continued)	37099950900	
	37099940200	
Johnston	37101040700	13
	37101040600	
	37101041400	
	37101040400	
	37101040500	
	37101040100	
	37101041300	
	37101040201	
	37101040202	
	37101040301	
	37101041201	
	37101041202	
	37101040302	
Jones	37103920100	3
	37103920300	
	37103920200	
Lee	37105030300	6
	37105030200	
	37105030402	
	37105030401	
	37105030502	
	37105030503	
Lenoir	37107011300	12
	37107010700	
	37107011200	
	37107011100	
	37107010200	
	37107010100	
	37107010300	
	37107010500	
	37107010600	
	37107010900	
	37107010400	
	37107011400	
Lincoln	37109070300	5
	37109070800	
	37109070201	
	37109071002	
	37109070901	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Macon	37113970200	3
	37113970400	
	37113970302	
Madison	37115010100	4
	37115010400	
	37115010200	
	37115010700	
Martin	37117970500	6
	37117970400	
	37117970100	
	37117970600	
	37117970200	
	37117970300	
McDowell	37111970200	7
	37111970800	
	37111970700	
	37111970500	
	37111970300	
	37111970902	
	37111970901	
Mecklenburg	37119004900	47
	37119001509	
	37119001801	
	37119001608	
	37119001607	
	37119005305	
	37119005307	
	37119006109	
	37119001920	
	37119005306	
	37119005616	
	37119001508	
	37119001507	
	37119005000	
	37119005308	
	37119003902	
	37119004302	
	37119005200	
	37119001916	
	37119001922	
	37119003600	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Mecklenburg (continued)	37119001702	
	37119001701	
	37119004800	
	37119005100	
	37119003807	
	37119005916	
	37119004700	
	37119003903	
	37119005301	
	37119006005	
	37119004305	
	37119004304	
	37119000700	
	37119000800	
	37119000900	
	37119001603	
	37119001912	
	37119004600	
	37119004500	
	37119004200	
	37119004000	
	37119003700	
	37119005401	
	37119002300	
	37119003802	
	37119001504	
Mitchell	37121950200	2
	37121950100	
Montgomery	37123960500	5
	37123960200	
	37123960100	
	37123960402	
	37123960401	
Moore	37125950200	3
	37125951200	
	37125950801	
Nash	37127011300	7
	37127011500	
	37127010900	
	37127011000	
	37127010300	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Nash (continued)	37127010200	
	37127010400	
New Hanover	37129010300	15
	37129010800	
	37129011400	
	37129011500	
	37129010501	
	37129011902	
	37129010100	
	37129010200	
	37129010502	
	37129010700	
	37129011000	
	37129011100	
	37129011200	
	37129011300	
	37129011903	
Northampton	37131920300	4
	37131920200	
	37131920100	
	37131920401	
Onslow	37133002400	15
	37133002500	
	37133001800	
	37133001500	
	37133001700	
	37133000500	
	37133000600	
	37133000800	
	37133000900	
	37133001000	
	37133000302	
	37133000301	
	37133002202	
	37133001102	
	37133002600	
Pamlico	37137950101	2
	37137950102	
Pasquotank	37139960300	5
	37139960400	
	37139960100	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Pasquotank (continued)	37139960503	
	37139960701	
Pender	37141920300	5
	37141920501	
	37141920502	
	37141920601	
	37141920401	
Perquimans	37143920201	1
Person	37145920300	4
	37145920400	
	37145920602	
	37145920601	
Pitt	37147001700	14
	37147001800	
	37147000800	
	37147000701	
	37147002002	
	37147000900	
	37147001900	
	37147000100	
	37147001500	
	37147002001	
	37147000702	
	37147001402	
	37147001401	
	37147000601	
Polk	37149920301	1
Randolph	37151030100	17
	37151030202	
	37151030301	
	37151030302	
	37151030400	
	37151030600	
	37151031100	
	37151031400	
	37151030900	
	37151030700	
	37151031000	
	37151031200	
	37151031501	
	37151031601	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Randolph (continued)	37151031602	
	37151031305	
	37151031304	
Richmond	37153970100	11
	37153970200	
	37153970800	
	37153970900	
	37153971000	
	37153971100	
	37153970300	
	37153970400	
	37153970600	
	37153970700	
	37153970500	
Robeson	37155960600	31
	37155961700	
	37155961500	
	37155961400	
	37155961900	
	37155961000	
	37155961100	
	37155960900	
	37155961200	
	37155960300	
	37155960102	
	37155960701	
	37155960202	
	37155960201	
	37155960101	
	37155960402	
	37155962001	
	37155960401	
	37155960501	
	37155961801	
	37155962002	
	37155960801	
	37155961601	
	37155961802	
	37155960503	
	37155961302	
	37155961301	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
	37155961602	
	37155960502	
	37155960802	
	37155960702	
Rockingham	37157040700	13
	37157040102	
	37157040900	
	37157041400	
	37157040800	
	37157041300	
	37157040101	
	37157040400	
	37157041200	
	37157040200	
	37157040502	
	37157040501	
	37157041500	
Rowan	37159051700	15
	37159050201	
	37159051303	
	37159050700	
	37159051202	
	37159050400	
	37159050901	
	37159050800	
	37159050202	
	37159051204	
	37159050904	
	37159051502	
	37159051801	
	37159051501	
	37159052000	
Rutherford	37161960100	6
	37161960700	
	37161961000	
	37161960800	
	37161960900	
	37161961102	
Sampson	37163970200	8
	37163970500	
	37163970900	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Sampson (continued)	37163971000	
	37163970100	
	37163970600	
	37163970800	
	37163970700	
Scotland	37165010200	7
	37165010600	
	37165010300	
	37165010400	
	37165010500	
	37165010102	
	37165010101	
Stanly	37167931100	3
	37167930500	
	37167931202	
Stokes	37169070700	3
	37169070300	
	37169070100	
Surry	37171930400	9
	37171930202	
	37171930101	
	37171930201	
	37171930102	
	37171931102	
	37171930502	
	37171930802	
	37171930801	
Swain	37173960200	4
	37173940100	
	37173960302	
	37173960301	
Transylvania	37175960100	4
	37175960500	
	37175960200	
	37175960600	
Tyrrell	37177960100	1
Union	37179020901	6
	37179020800	
	37179020602	
	37179020502	
	37179020601	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
	37179020404	
Vance	37181960200	10
	37181960300	
	37181960100	
	37181960400	
	37181960600	
	37181960700	
	37181960800	
	37181960900	
	37181961000	
	37181960500	
Wake	37183052102	17
	37183052101	
	37183054108	
	37183054104	
	37183052001	
	37183054302	
	37183054008	
	37183052704	
	37183052701	
	37183050900	
	37183050700	
	37183050800	
	37183052002	
	37183051102	
	37183052408	
	37183051101	
	37183052806	
Warren	37185950300	5
	37185950400	
	37185950200	
	37185950103	
	37185950101	
Washington	37187950100	3
	37187950300	
	37187950200	
Watauga	37189920200	3
	37189920500	
	37189920601	
Wayne	37191000700	16
	37191000602	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Wayne (continued)	37191001200	
	37191000601	
	37191001500	
	37191001800	
	37191001900	
	37191001400	
	37191000200	
	37191000302	
	37191000101	
	37191000304	
	37191001302	
	37191001301	
	37191000902	
	37191002000	
Wilkes	37193960200	7
	37193960900	
	37193960300	
	37193960500	
	37193960600	
	37193960700	
	37193961001	
Wilson	37195001000	15
	37195001600	
	37195001200	
	37195000802	
	37195000700	
	37195001300	
	37195001100	
	37195000600	
	37195000801	
	37195000400	
	37195001700	
	37195000900	
	37195000100	
	37195000300	
	37195000200	
Yadkin	37197050200	3
	37197050400	
	37197050300	
Yancey	37199960200	5
	37199960300	

County Name (CEJST LIDAC)	Census Tract GEOIDS	Total Census Tracts by County
Yancey (continued)	37199960400	
	37199960102	
	37199960101	
TOTAL		**815**

*Table B-2. A full list of additional LIDAC census tracts identified by the **NCDEQ dataset of Potentially Underserved Communities**.*

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
Alamance	37001021204	9
	37001021400	
	37001021300	
	37001020100	
	37001020901	
	37001020801	
	37001020502	
	37001021101	
	37001021206	
Alexander	37003040100	1
Anson	37007920300	1
Ashe	37009970700	1
Avery	37011930100	1
Beaufort	37013930700	3
	37013930900	
	37013930200	
Brunswick	37019020506	11
	37019020511	
	37019020601	
	37019020202	
	37019020303	
	37019020305	
	37019020404	
	37019020504	
	37019020508	
	37019020602	
	37019020203	
Buncombe	37021002000	27
	37021000500	
	37021000800	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37021001500	
	37021001400	
	37021000300	
	37021000400	
	37021003001	
	37021002102	
	37021002101	
	37021001600	
	37021001000	
	37021001100	
	37021001802	
	37021002402	
	37021002505	
	37021003201	
	37021003203	
	37021002203	
	37021002204	
	37021002604	
	37021002607	
	37021002701	
	37021002702	
	37021002703	
	37021002804	
	37021003104	
Burke	37023021000	2
	37023020500	
Cabarrus	37025041200	7
	37025041100	
	37025040500	
	37025042200	
	37025042300	
	37025040702	
	37025042102	
Caldwell	37027030600	4
	37027031100	
	37027030500	
	37027031401	
Camden	37029950102	2
	37029950101	
Carteret	37031970703	4
	37031970403	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37031970503	
	37031970604	
Caswell	37033930600	3
	37033930500	
	37033930400	
Catawba	37035010102	8
	37035010600	
	37035011701	
	37035010401	
	37035010202	
	37035010302	
	37035010402	
	37035011102	
Chatham	37037020200	2
	37037020702	
Cherokee	37039930500	1
Chowan	37041930200	1
Clay	37043950100	1
Cleveland	37045950800	7
	37045950700	
	37045951300	
	37045950302	
	37045950602	
	37045951602	
	37045951601	
Columbus	37047930800	1
Craven	37049961001	6
	37049960402	
	37049961002	
	37049960401	
	37049960404	
	37049961301	
Cumberland	37051001604	27
	37051003102	
	37051003103	
	37051003401	
	37051003408	
	37051980200	
	37051002600	
	37051002700	
	37051002501	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37051002502	
	37051002503	
	37051002504	
	37051000600	
	37051001800	
	37051001902	
	37051002100	
	37051003201	
	37051003205	
	37051003203	
	37051003307	
	37051003304	
	37051003309	
	37051002001	
	37051002002	
	37051003001	
	37051003314	
	37051003311	
Dare	37055970200	2
	37055970300	
Davidson	37057060700	12
	37057060500	
	37057061000	
	37057060900	
	37057061802	
	37057060601	
	37057060602	
	37057060203	
	37057061803	
	37057061804	
	37057061701	
	37057060101	
Davie	37059080100	5
	37059080600	
	37059080200	
	37059080300	
	37059080400	
Duplin	37061090501	2
	37061090701	
Durham	37063000301	14
	37063002100	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37063001711	
	37063000600	
	37063001710	
	37063002015	
	37063000302	
	37063001303	
	37063002016	
	37063001501	
	37063000101	
	37063002200	
	37063002027	
	37063002021	
Forsyth	37067003703	23
	37067002801	
	37067002807	
	37067002804	
	37067003903	
	37067002604	
	37067002701	
	37067000900	
	37067003201	
	37067002702	
	37067002703	
	37067001300	
	37067002200	
	37067001000	
	37067003500	
	37067001100	
	37067003600	
	37067001902	
	37067003805	
	37067003106	
	37067003107	
	37067003309	
	37067003403	
Franklin	37069060200	1
Gaston	37071031401	13
	37071032505	
	37071030700	
	37071031302	
	37071032200	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37071031701	
	37071032600	
	37071032900	
	37071032702	
	37071032402	
	37071032506	
	37071032507	
	37071032703	
Gates	37073970200	2
	37073970300	
Granville	37077970200	5
	37077970603	
	37077970101	
	37077970102	
	37077970701	
Guilford	37081014502	31
	37081012504	
	37081012703	
	37081010602	
	37081012803	
	37081010900	
	37081012607	
	37081011601	
	37081010800	
	37081014411	
	37081015901	
	37081016701	
	37081014410	
	37081015902	
	37081016407	
	37081016410	
	37081016505	
	37081014407	
	37081011904	
	37081013602	
	37081011905	
	37081010601	
	37081012612	
	37081012617	
	37081015300	
	37081012609	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37081016502	
	37081016503	
	37081012804	
	37081015100	
	37081012601	
Harnett	37085071203	4
	37085071402	
	37085071201	
	37085071202	
Haywood	37087920500	8
	37087920200	
	37087921000	
	37087921200	
	37087920800	
	37087920300	
	37087920400	
	37087921302	
Henderson	37089930300	7
	37089930100	
	37089931500	
	37089931100	
	37089931200	
	37089930402	
	37089932000	
Hertford	37091950401	1
Hoke	37093970101	3
	37093970103	
	37093970102	
Iredell	37097060100	10
	37097061101	
	37097060701	
	37097061301	
	37097061303	
	37097061602	
	37097061601	
	37097061404	
	37097061403	
	37097060901	
Jackson	37099950500	6
	37099950700	
	37099950800	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37099950200	
	37099950400	
	37099950600	
Johnston	37101040800	7
	37101040902	
	37101041001	
	37101040901	
	37101041002	
	37101041501	
	37101040203	
Lee	37105030601	5
	37105030101	
	37105030701	
	37105030501	
	37105030702	
Lenoir	37107010800	2
	37107011002	
Lincoln	37109070100	1
Macon	37113970700	3
	37113970600	
	37113970301	
Madison	37115010500	2
	37115010600	
McDowell	37111970100	2
	37111970400	
Mecklenburg	37119005710	51
	37119005618	
	37119005612	
	37119002100	
	37119001605	
	37119003109	
	37119001802	
	37119001609	
	37119001606	
	37119001915	
	37119001923	
	37119006006	
	37119005613	
	37119001510	
	37119004303	
	37119001917	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37119005524	
	37119000600	
	37119005523	
	37119005609	
	37119001919	
	37119001914	
	37119005604	
	37119006104	
	37119005706	
	37119980300	
	37119001918	
	37119005620	
	37119003008	
	37119005829	
	37119000500	
	37119003806	
	37119001505	
	37119003108	
	37119003808	
	37119005907	
	37119005906	
	37119004100	
	37119001200	
	37119006009	
	37119006010	
	37119006208	
	37119006406	
	37119005521	
	37119005610	
	37119003201	
	37119004400	
	37119005826	
	37119003106	
	37119003300	
	37119005605	
Mitchell	37121950300	2
	37121950400	
Moore	37125951000	5
	37125951100	
	37125950301	
	37125950302	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37125950802	
Nash	37127010503	9
	37127011400	
	37127011200	
	37127010800	
	37127010700	
	37127010502	
	37127011102	
	37127011101	
	37127010504	
New Hanover	37129012101	3
	37129011606	
	37129011605	
Northampton	37131920402	1
Onslow	37133001200	11
	37133001300	
	37133001400	
	37133002300	
	37133000700	
	37133002800	
	37133000402	
	37133000401	
	37133001101	
	37133002201	
	37133000403	
Orange	37135011000	16
	37135011800	
	37135011101	
	37135010701	
	37135010703	
	37135011102	
	37135012100	
	37135011700	
	37135010706	
	37135010705	
	37135012202	
	37135010901	
	37135010902	
	37135011602	
	37135012201	
	37135011901	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
Pasquotank	37139960600	4
	37139960200	
	37139960502	
	37139960501	
Pender	37141920204	3
	37141920602	
	37141920403	
Perquimans	37143920100	1
Person	37145920100	3
	37145920500	
	37145920200	
Pitt	37147001600	11
	37147001100	
	37147000202	
	37147000302	
	37147001001	
	37147000502	
	37147000501	
	37147000603	
	37147001301	
	37147000602	
	37147000201	
Polk	37149920200	1
Randolph	37151030201	3
	37151030502	
	37151030801	
Rockingham	37157041001	1
Rowan	37159051301	7
	37159051902	
	37159051201	
	37159050500	
	37159051102	
	37159050300	
	37159051600	
Rutherford	37161960200	4
	37161960600	
	37161960500	
	37161961101	
Sampson	37163970400	3
	37163970302	
	37163970301	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
Stanly	37167931000	2
	37167931201	
Surry	37171930600	5
	37171931002	
	37171930902	
	37171930901	
	37171930302	
Transylvania	37175960300	1
Union	37179020702	4
	37179020701	
	37179020501	
	37179020306	
Wake	37183054014	35
	37183054115	
	37183054114	
	37183054110	
	37183054111	
	37183054210	
	37183054015	
	37183052809	
	37183053517	
	37183054500	
	37183052705	
	37183052404	
	37183054301	
	37183054001	
	37183054402	
	37183051000	
	37183054106	
	37183052301	
	37183052803	
	37183052801	
	37183052302	
	37183051900	
	37183054004	
	37183050600	
	37183052802	
	37183052706	
	37183052407	
	37183052409	
	37183052406	

County Names (NCDEQ LIDAC)	GEOIDS	Total Census Tracts by County
	37183054018	
	37183052707	
	37183052807	
	37183052808	
	37183053516	
	37183054113	
Warren	37185950102	1
Watauga	37189920100	5
	37189920900	
	37189920400	
	37189921000	
	37189920703	
Wayne	37191000800	10
	37191001000	
	37191000500	
	37191001101	
	37191000401	
	37191000402	
	37191000303	
	37191001102	
	37191000901	
	37191000102	
Wilkes	37193961100	5
	37193961200	
	37193960100	
	37193960400	
	37193960802	
Wilson	37195001400	3
	37195001500	
	37195000502	
Yadkin	37197050502	1
TOTAL		**512**

Appendix C. CPRG Project Ideas and Stakeholder Input

The NCDEQ used webinars, workgroups, and a survey to gather ideas for potential CPRG projects. NCDEQ received more than 137 total project ideas that were collected through public and stakeholder engagement efforts. Some of the project ideas submitted were multiple projects within one submission. The project ideas are summarized in Table C-1 by category within each sector. Many of these ideas are aligned with PCAP measures, but some, that did not align with PCAP prioritization criteria (see Section 1.3.3) are being maintained for consideration to include in the comprehensive climate plan NCDEQ will be developing later in 2024 into 2025. The entire list of project ideas was considered during the creation of PCAP measures. The project summaries are an illustrative list of potential project categories that were submitted to NCDEQ.

Table C-1 – Summary of Organizations Submitting CPRG Project Ideas by Category within each Sector

Organizations Submitting Project Ideas by Category and Sector	Total Project Ideas
Buildings Sector	**19**
Energy Audit Tools	**1**
North Carolina League of Conservation Voters Foundation	1
Energy Efficiency Improvements	**8**
Appalachian State University	2
Buncombe County	1
Individual	1
NC GreenPower	1
North Carolina Advanced Energy Corp	1
Town of Chapel Hill	1
WNC Communities	1
Financial Incentives	**2**
Citizens' Climate Lobby	1
North American Sustainable Refrigeration Council (NASRC)	1
Planning	**1**
Durham Public Schools	1
Policy Changes	**1**
Schneider Electric	1
Resiliency	**2**
NC Clean Energy Technology Center	1
NCDHHS/DPH/EPI/OEEB	1
Solar Solutions	**4**
Buncombe County	1
Department of Environmental Sciences and Engineering, University of North Carolina at Chapel Hill	1
Individual	1
Town of Chapel Hill	1

Organizations Submitting Project Ideas by Category and Sector	Total Project Ideas
Electricity Sector	**29**
Alternative Fuels	**6**
Buncombe County Solid Waste	1
Cape Fear Public Utility Authority	1
Montauk Renewables, Inc.	1
Town of Selma	1
UNC Wilmington	2
Education and Outreach	**1**
Town of Boone	1
Energy Efficiency Improvements	**4**
Cape Fear Public Utility Authority	1
City of Winston-Salem	2
Individual	1
Equipment Conversions	**1**
City of Winston-Salem	1
EV's and Charging	**1**
Individual	1
Financial Incentives	**1**
Western Carolina University	1
Other	**1**
Green Built Alliance	1
Planning	**1**
City of Winston-Salem	1
Resiliency	**1**
Buncombe County	1
Solar Solutions	**12**
Appalachian State University	1
Buncombe County	1
Cape Fear Public Utility Authority	2
Durham Public Schools	1
East Carolina University	1
Individual	1
Johnson Controls Inc.	1
NC Department of Information Technology	1
Town of Boone	1
Town of Waynesville's Environmental Sustainability Board	1
UNC Wilmington	1
Industry Sector	**27**
Alternative Fuels	**1**
Corning Incorporated	1

Organizations Submitting Project Ideas by Category and Sector	Total Project Ideas
Education and Outreach	**2**
Grifols Therapeutics LLC	1
North Carolina Museum of Life and Science Inc	1
Energy Efficiency Improvements	**8**
Carolina Utility Customers Association on behalf of a member manufacturer	5
Corning Incorporated	1
North Carolina Advanced Energy Corp	2
Equipment Conversions	**13**
Carolina Utility Customers Association on behalf of a member manufacturer	7
Corning Incorporated	6
Other	**1**
Construction Partners, Inc.	1
Policy Changes	**1**
Jay Jordan Deluxe Realty, LLC	1
Solar Solutions	**1**
WOLFSPEED, INC.	1
Natural and Working Lands Sector	**7**
Alternative Fuels	**1**
NC State University - Forestry	1
Education and Outreach	**2**
EarthShare NC	1
Pamlico County Planning and Economic Development	1
Energy Efficiency Improvements	**1**
Warren Wilson College - Dean and Director, The Center for Working Lands	1
Equipment Conversions	**1**
Community Technical Assistance, Inc.	1
Financial Incentives	**1**
Citizens' Climate Lobby	1
Solar Solutions	**1**
Orange County	1
Transportation Sector	**42**
EV's and Charging	**10**
Buncombe County	1
ChargePoint	1
City of Wilmington	1
Greenspeed Energy	1
Kenworth Truck Company	1

Organizations Submitting Project Ideas by Category and Sector	Total Project Ideas
Land of Sky Regional Council	1
Murfreesboro Chamber of Commerce	1
Town of Boone	1
Town of Chapel Hill	1
Town of Rutherfordton	1
Fleet Efficiency	**12**
Asheville-Buncombe Air Quality Agency	1
Buncombe County	3
Durham Public Schools	1
Individual	1
Model 1 Commercial Vehicles	1
NCDHHS/DPH/EPI/OEEB	1
NFI	1
Republic Services, Inc.	1
The Shyft Group	1
Town of Spring Lake	1
Policy Changes	**5**
Clean Air Task Force	1
Daimler Trucks North America	1
Fayetteville Area System of Transit (FAST)	1
NCDHHS/DPH/EPI/OEEB	1
UNC Charlotte	1
Port Improvements	**1**
Southeast Energy Efficiency Alliance (SEEA)	1
Transit Improvements	**3**
Citizens' Climate Lobby	1
Individual	1
Key Environmental Consulting	1
Transit Infrastructure	**11**
City of Fayetteville NC	1
Individual	2
NCDOT Division 6	7
Prologis Mobility LLC	1
Waste Sector	**13**
Alternative Fuels	**3**
Cumberland County	1
Waste Not Group, LLC	1
Water Funding Financial	1
Equipment Conversions	**1**
Republic Services, Inc.	1

Organizations Submitting Project Ideas by Category and Sector	Total Project Ideas
Fleet Efficiency	**1**
Republic Services, Inc.	1
Policy Changes	**1**
Stop Over-development in Brunswick County NC	1
Waste Diversion	**7**
Fayetteville State University	1
Ghost Fleet Oyster Company	1
RGJ, The Waste Not Group	2
RTI International	1
The Farmlink Project	1
Town of Chapel Hill	1
Grand Total	**137**

Appendix D. State and Federal Climate Funding Opportunities

Table D-1 summarizes state and federal climate funding opportunities that could be or are being used for climate actions in NC. This table does not represent an exhaustive list of all funding opportunities.

Table D-1. State and Federal Climate Funding Opportunities

Program/Grant Name	Funding Source	Description of Funding Opportunity
State Energy Program	Federal – Formula	Provides funding and technical assistance to enhance energy security, advance state-led energy initiatives, and increase energy affordability. Eligible uses for this funding include energy conservation measures, renewable energy measures, and programs to increase deployment of clean energy technologies in buildings, industry, and transportation. NC's formula allocation is approximately $1.4 million annually.
Energy Efficiency Revolving Loan Fund Capitalization Grant Program	Federal – Formula	Provides capitalization grants to States to establish a revolving loan fund under which the state shall provide loans and grants for energy efficiency audits, upgrades, and retrofits to increase energy efficiency and improve the comfort of buildings. NC's allocation of this Infrastructure Investment and Jobs Act program was $2,358,830.
Weatherization Assistance Program	Federal – Formula	Provides funds to reduce energy costs for low-income households by increasing the energy efficiency of their homes in addition to health and safety measures. Eligible uses for this funding include Improvement of heating and cooling of dwellings by the installation of weatherization materials such as attic insulation, caulking, weather-stripping, furnace efficiency modifications, certain mechanical measures to heating and cooling systems, and replacement furnaces, boilers, and air-conditioners. NC's Fiscal Year 2023 total allocation of Weatherization Assistance funds is $6,094,445.
Energy Efficiency and Conservation Block Grant	Federal – Formula	Activities must be for a financial incentive program, such as a rebate, loan, energy savings performance contracts, or other financing program for the purpose of improving energy efficiency; and limited to resident, non-profits,

Program/Grant Name	Funding Source	Description of Funding Opportunity
		government entities, or businesses within the jurisdiction of the eligible entity. Funds available until expended.
Home Energy Performance-Based, Whole-House Rebate Program	Federal – Rebates Administered by States	Uses money provided to states to incentivize whole-house energy-saving retrofits for homeowners. NC may receive up to $37 million for program implementation.
High Efficiency Electric Home Rebate Program	Federal – Rebates Administered by States	Provides point-of-sale consumer discounts on the purchase of high-efficiency electric home appliances, specifically targeted to low-income households. NC may receive up to $37 million for program implementation.
VW Mitigation Plan	State – VW Mitigation Plan	NC developed a phased VW Mitigation Plan that focuses on medium- and heavy-duty road reduction projects and electric vehicle infrastructure programs. NC ware has been allocated approximately $92 million from the Environmental Mitigation Trust.
National Electric Vehicle Infrastructure Program	Federal – Formula	Provides dedicated funding to states to strategically deploy electric vehicle charging infrastructure and establish an interconnected network to facilitate data collection, access, and reliability. NC submitted their National Electric Vehicle Infrastructure Plan in August 2023 and expects to receive $109 million in funding.
Carbon Reduction Program	Federal – Formula	Provides funds for projects designed to reduce transportation emissions, defined as CO_2 emissions from onroad highway sources. Eligible activities under this program include projects to establish or operate a traffic monitoring, management, and control facility or program, eligible public transportation projects, eligible transportation alternatives projects.
Assistance for Latest and Zero Building Energy Code Adoption	Federal – Formula	Provides funding for state activities regarding the adoption, implementation, training, enforcement, and measurement of compliance rates of specified building energy codes. Funding can be used to adopt the latest versions of the building code (ICC and IRC) as long as adoption of such code includes an eligible energy code. NC's total initial allocation is $8,658,687.
Solid Waste Infrastructure for	Federal – Competitive	Provides funding to support state and local waste management infrastructure and recycling programs.

Program/Grant Name	Funding Source	Description of Funding Opportunity
Recycling Grant Program		DEQ applied for and received a grant to support activities in the state including conducting a statewide materials management optimization study, a market assessment for key commodities, a gap analysis of statewide Materials Recovery Facility capacity and effectiveness, a recycling hub and spoke infrastructure assessment, and other components as appropriate.
Clean School Bus Program	Federal – Competitive	Provides $5 billion over five years (FY 2022-2026) to replace existing school buses with zero-emission and low-emission models.
Green and Resilient Retrofit Program	Federal – Competitive	Provides funding for direct loans and grants to fund projects that improve energy or water efficiency, enhance indoor air quality or sustainability, implement the use of zero-emission electricity generation, low-emission building materials or processes, energy storage, or building electrification strategies, or address climate resilience, of eligible HUD-assisted multifamily properties.
Renew America's Schools Program	Federal – Competitive	Provides funding to support the implementation of energy infrastructure improvements in schools, with a focus on local education agencies (LEAs) that qualify as rural and/or high poverty. Eligible projects include a range of energy improvements, including new HVAC.
Zero-Emission Technologies Grant Program	Federal – Competitive	Provides funding for competitive grants to mobilize financing and leverage private capital for clean energy and climate projects that reduce greenhouse gas emissions, with an emphasis on projects that benefit low-income and disadvantaged communities.
Clean Diesel Grant Program/Diesel Emissions Reduction Act	Federal – Competitive	Provides funding assistance to accelerate the upgrade, retrofit, and turnover of legacy diesel fleet vehicles. NC has previously received DERA funding to replace diesel vehicles in the state.
Powering Affordable Clean Energy	Federal – Competitive	PACE program funding enables loan forgiveness (USDA Rural Development Rural Utilities Service) of up to 60 percent for renewable energy projects that use wind, solar, hydropower, geothermal, or biomass, in addition to renewable energy storage projects.

Program/Grant Name	Funding Source	Description of Funding Opportunity
Greenhouse Gas Reduction Fund	Federal – Competitive	Provides funding through three grant programs: National Clean Investment Fund, Clean Communities Investment Accelerator, and Solar for All with the goal to support projects that reduce emissions and air pollutants and mobilize financing and private capital to stimulate deployment of such projects.
Rural Energy for America Program	Federal – Competitive	Provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements.
Empowering Rural America Program	Federal – Competitive	Provides funds for energy efficiency improvements to eligible generation and transmission systems, to purchase, build, or deploy renewable energy, zero-emission systems, carbon capture storage systems, or to purchase renewable energy.
Urban and Community Forestry Grants	Federal – Competitive	Provides funding to increase tree cover in urban, suburban, and rural communities nationwide.
Surface Transportation Block Grant Program	Federal – Formula	Provides flexible funding that may be used by states and localities for projects to preserve and improve the conditions and performance on any federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

Appendix E. Approaches for Quantifying GHG Reductions from PCAP Measures

This appendix outlines the approaches used to quantify GHG emission reductions for the PCAP measures. In some instances, NCDEQ conducted new analysis, and in others already modeled or quantified data was used.

Transportation

Emission reductions for Measures 1 and 2 are combined due to the investments in electric vehicles and charging infrastructure being intrinsically linked.

Measure 1: Increase the number of zero-emission and electric vehicles on the road through partnerships, technical assistance, financial incentives, and other mechanisms.

Measure 2: Identify, install, and maintain a public electric vehicle charging network accessible to all North Carolinians.

2025-2030 Low Emission Reductions (Reference Scenario)

2025-2030 Low Emission Reductions (Reference Scenario)	**GHGs**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**SO_x**
	Million Metric Tons						
LDV - Low Range	2.57	26.6	0.643	0.066	0.058	2.60	0.012
MHD -Low Range	0.121	0.347	0.536	0.005	0.004	0.025	0.001
Total Million Metric Tons	**2.69**	26.9	1.18	0.071	0.063	2.63	0.013

2025-2030 High Emission Reductions (High Decarbonization/electrification Scenario)

2025-2030 High Emission Reductions (High Decarbonization/ electrification)	**GHGs**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**SO_x**
	Million Metric Tons						

LDV - Low Range	3.44	35.5	0.860	0.089	0.078	3.48	0.016
MHD -Low Range	0.102	0.291	0.449	0.004	0.004	0.021	0.001
Total Million Metric Tons	**3.54**	35.8	1.31	0.092	0.082	3.50	0.016

Cumulative Reductions from 2025-2050

2025-2050 Low Emission Reductions (Reference Scenario)

2025-2050 Low Emission Reductions (Reference Scenario)	**GHGs**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**SO_x**
	Million Metric Tons						
LDV - Low Range	58.8	608.1	14.7	1.52	1.34	59.6	0.27
MHD -Low Range	4.26	12.2	18.9	0.16	0.15	0.87	0.04
Total Million Metric Tons	63.1	620.3	35.6	1.68	1.49	60.4	0.30

2025-2050 High Emission Reductions (High Decarbonization/ Electrification Scenario)

2025-2050 High Emission Reductions (High Decarbonization/ electrification)	**GHGs**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**SO_x**
	Million Metric Tons						
LDV - Low Range	132.6	1,370	33.1	3.41	3.01	134.2	0.60
MHD -Low Range	11.0	31.4	48.5	0.42	0.39	2.23	0.09
Total Million Metric Tons	**143.5**	1,401	81.6	3.83	3.40	136.4	0.69

GHG reduction calculations approach

The process used to calculate the cumulative GHG reductions was completed in four steps. First the potential vehicle population growth from 2025 to 2050 was determined using a linear growth model. Vehicle population growth was calculated yearly using constants for the estimated annual vehicle sales and end of life. The NC Pathways Analysis (NCPA) Deep Decarbonization Scenario and the NCPA References Scenario were used for the high and low range boundaries. The estimated ZEV LDV population range in 2050 is 2 million to 5.9 million

and 2050 ZEV MHD vehicle population range is 74,614 to 263,632. The 2050 projected statewide vehicle population is 11 million. The ZEV population estimates were then used as inputs in the Alternative Fuels Data Centers Electric Vehicle Infrastructure Projection Tool (EVI-Pro) Lite to find the amount of charging infrastructure needed to charge the expected ZEV population. The infrastructure requirements were added to the AFLEET CFI Emissions Tool to estimate the emission reductions from expected charging based on fuel savings. Next the emissions reductions for each year were added to find the cumulative emissions for each range of vehicle populations. This was done for both NCPA Reference and High Decarbonization Pathways Scenarios.

Notes:

- The AFLEET CFI Emissions Tool estimates well-to-wheel GHG emissions and vehicle operation air pollutant emissions for proposals to the FHWA Charging and Fueling Infrastructure Discretionary Grant Program (CFI Program). The CFI Program covers EVs charging, as well as hydrogen, propane, and natural gas fueling infrastructure. This tool was developed with the support of the Joint Office of Energy and Transportation, using the AFLEET Tool available at: https://greet.es.anl.gov/afleet. The AFLEET Tool uses emissions data from both the EPA's MOVES (Motor Vehicle Emission Simulator) and Argonne's GREET (Greenhouse gases, Regulated Emissions, and Energy use in Technologies) models.
- In 2030 the NCPA Reference and High Decarbonization Scenarios estimates 400,000 registered light duty ZEV's. Under the Reference Scenario the sales growth was a business-as-usual case increasing the ZEV populations to 2 million in 2050. Under the High Decarbonization Scenario the 2030, the ZEV population is estimated to be 400,000 with a more aggressive sales growth projection through 2050. This increased the ZEV vehicle population to 5,900,000 in 2050.
- Current Registered Vehicle Population 8,417,030
- Annual Sales of LDV were constant at 422,967.
- LD ZEV sales increase under the Reference case from 11% to 35% in 2050.
- LD ZEV sales increase under the High Decarbonization case from 35% to 100% in 2045.
- Annual Sales of MHD were constant at 18,542.
- MHD ZEV sales increase under the Reference case from 11% to 29% in 2050.
- MHD ZEV sales increase under the High Decarbonization case from 32% to 100% in 2045.
- Fleet End of Life is 4% LDV and 1.5% for MHD.

Measure 3: Increase the number of zero emission and electric vehicles in the state fleet, school buses, and transit buses.

Action	GHG reductions (MMT CO2e), 2025-2030	GHG reductions (MMT CO2e), 2025-2050
Increase the number of zero emission and electric vehicle in state and local government fleets	0.05 - 0.07	1.3 - 2.9

GHG reduction calculations approach

- Used a percentage of the ranges of emission reductions explained above for Measures 1 and 2.
- Public fleets make up 2% of the total registered vehicle population, therefore the range of emission reductions noted here for Measure 3 are 2% of the ranges outlined for Measures 1 and 2.

Measure 4: Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.

Action	GHG reductions (MMT CO2e), 2025-2030	GHG reductions (MMT CO2e), 2025-2050
Support intermodal rail service from seaports to inland ports	0.01 – 0.05	0.11 – 0.55

GHG reduction calculations approach

The CO2 emission reductions calculated for this measure were estimated for 2025-2044 and held constant for 2045-2050. It is estimated that numbers of containers that could be shipped by rail would reach the 50,000 container rail movements per year capacity limit by 2040. Net emission reduction estimates were prepared for each year and summed to develop cumulative estimates for 2025-2030 and 2025-2050.

The incremental avoided CO2 emissions for trucks was estimated using the total number of containers that could be diverted from trucks (one container per truck) to trains (200 containers/train for Charlotte and 234 containers/train for Rocky Mount) and the mileage from the Port of Wilmington to Charlotte (206 miles one way) or Rocky Mount (169 miles one way).

Total truck miles diverted was multiplied by the CO2 emission factor to estimate emissions. For truck container shipments to Charlotte, emissions were estimated incremental to existing shipments; therefore, container shipments diverted to train would not occur until 2036. The inland port in Rocky Mount is new; therefore, container shipments diverted to train would start in 2025. The CO2 emission factor for a heavy truck (1,646.77 grams CO2 per mile) was multiplied by the total miles diverted from trucks to trains to estimate avoided CO2 emissions (see U.S. Environmental Protection Agency, Emission Factors for Greenhouse Gas Inventories, Last Modified March 9, 2018, see Table 2).

The incremental increase in CO2 emissions for trains was estimated using the total amount of incremental fuel that would be consumed by transporting containers diverted from trucks. The incremental fuel consumption was based on an estimate of the additional rail revenue ton miles using an average weight of the cargo per container (40 tons per train car), transport distance from the Port of Wilmington to Charlotte (206 miles one way) or Rocky Mount (169 miles one way), and number of containers transferred from trucks to trains. The Association of American Railroads reports rail fuel efficiency in 2018 at about 470 ton-miles of cargo hauled per gallon of fuel on average (see Association of American Railroads, The Environmental Benefits of Moving Freight by Rail, July 2019). The inverse of this value (0.00188 gallon per revenue ton mile) was multiplied by total revenue ton miles to estimate total fuel consumption. Total fuel consumed for both routes was then multiplied by a CO2 emission factor for diesel fuel (10,180 grams CO2 per gallon) to calculate the incremental increase in CO2 emissions (see U.S. Environmental Protection Agency, Greenhouse Gases Equivalencies Calculator)

There are many other benefits associated with this measure including a net decrease in $PM_{2.5}$, NOx, and SO2 emissions; travel time savings; and contributions to a decrease in on-road highway congestion, accidents, and fatalities.

Measure 5: Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.

Leverage and adopt innovative methods, technologies, and programs to reduce VMT, increase access to multimodal transportation, increase support for bike and pedestrian-friendly infrastructure, and create equitable access to healthier living and working environments across the state.

GHG reduction calculations approach

The Federal Highway Administration (FHWA) Office of Natural Environment developed the Congestion Mitigation and Air Quality Improvement (CMAQ) Emissions Calculator Toolkit. These spreadsheet-based tools facilitate the calculation of representative air quality benefit data. These publicly available tools can be downloaded here: https://www.fhwa.dot.gov/environment/air_quality/cmaq/toolkit/

Using the CMAQ Toolkit, potential benefits were calculated with past (reasonable) activity data. Here, we have assumed 37.5 kg/day (CO2e) per project. This assumes a trip length of 2 miles on a facility with 5000 vehicles per day and a mode switch of 1%.

Assumes incentive and gap funding is provided for up to 59 projects statewide.

Low end estimate	
37.5	kg/day/project
	Assumes a trip length of 2 miles on a facility with 5000 vehicles per day and a mode switch of 1%
0.038	metric tons/day/project
13.688	metric tons/year/project
0.00001	MMT/year/project
807.563	metric tons/year reduced from those 59 projects
0.001	MMT/year/reduced from those 59 projects
0.004	MMT CO23 reduced 2025-2030
0.020	MMT CO2e reduced 2025-2050
High end estimate (including land use reforms that require a longer runway)	
0.008	MMT CO23 reduced 2025-2030
0.081	MMT CO2e reduced 2025-2050

Electricity

Measure 6: Increase the amount of electricity generated by low and no carbon energy resources in NC.

PCAP Measure Actions	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Implement residential and community solar through EnergizeNC.	0.015 - 0.15	0.74 - 1.2
Develop programs and incentives to facilitate small scale solar installments by local governments, commercial entities, institutions, and other locations. ($10,000,000)	0.008	0.04

GHG reduction calculations approach

For the EnergizeNC calculation an assumed 69.5 MW of residential solar will be installed, as this is the lower bound of the program. This value was entered into NREL's PVWatts calculator for an estimated 97,317,336 kWh/year, the lifetime of the panels is assumed to be 25 years, resulting in a total of 2,432,993,400 kWh. To derive the amount of MMTCO2e, EPA's eGrid Emission Factor that is contained within the NCSEO's Annual E80 report, the current value being 0.000303907 MTCO2e/kWh, was used. This resulted in 0.74 MMTCO2e. The 2025-2030 numbers are lower to reflect the rollout of the program, and the 2025-2050 values have a higher range than calculated due to the potential for more installations.

Assumption for solar installments at local governments, commercial entities, institutions, and other locations will be based on $10,000,000 of funds. Average cost per watt was estimated at 2.62, resulting in 3816 kW of Solar installed. That value was entered into NREL's PVWatts calculator which resulted in an estimated 5,365,539 kWh/year. The lifetime of the panels is assumed to be 25 years, resulting in a total of 134,138,475 kWh. To derive the amount of MMTCO2e, EPA's eGrid Emission Factor that is contained within the NCSEO's Annual E80 report, the current value being 0.000303907 MTCO2e/kWh, was used. This resulted in 40766 MTCO2e over 25 years, or 0.04 MMTCO2e.

Measure 7: Implement measures to increase energy resiliency in NC communities.

Calculation based on Duke Energy's microgrid project located in Hot Springs, NC, which contains a 2 MW Solar system for a total system cost of $14.5 million dollars. NREL's PVWatts

Calculator was used to estimate a total annual production of 2,736,046 kWh/year, this assumed optimal shading. The lifetime of the system was assumed to last 25 years. To derive the amount of MMTCO2e, EPA's eGrid Emission Factor that is contained within the NCSEO's Annual E80 report, the current value being 0.000303907 MTCO2e/kWh, was used. This results in 20,788 MTCO2e over 25 years, or 0.2 MMTCO2e. The initial rollout for 2025-2030 would be 5 sites, totaling $72.5 million, and then 100 sites by 2050, totaling $1.45 billion.

PCAP Measure	GHG reductions ($MMTCO_2e$), 2025-2030	GHG reductions ($MMTCO_2e$), 2025-2050
Implement measures to increase energy resilience in NC communities.		2.08

Buildings

Measure 8: Reduce per square foot energy usage in buildings in NC.

Reduction calculations approach

According to NCCEP, the state of North Carolina's Electricity Direct Usage was 459 TBtu/year total in 2016. This usage was split between the commercial and residential sectors (36% and 44%, respectively). Using this information, the respective energy uses for commercial and residential sectors were calculated. From this information, NCDEQ assumed that energy consumption could potentially be reduced by 25% for both residential and commercial buildings for this measure, based on the EPA rule of thumb for energy efficiency projects in buildings which estimates that such projects would save 20-30% energy usage.[111] The calculated avoided emissions from reduce energy usage was then input into the EPA Simplified GHG Emissions Calculator[112] to determine the GHG equivalent.

Measure 9: Decarbonize buildings in NC, through replacement of fossil fuel combustion sources and other greenhouse gas emissions.

Reduction estimates were determined by pulling down the state of North Carolina's entire consumption of natural gas and assuming it could be fully offset by carbon neutral sources over the long term.

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[111] EPA. Rules of Thumb, Energy Efficiency in Buildings. 2016. https://www.epa.gov/sites/default/files/2016-03/documents/table_rules_of_thumb.pdf

[112] EPA. Simplified GHG Emissions Calculator. May 2023. https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator

Industry

Measure 10: Develop programs to support or incentivize implementation of energy efficiency and emissions reduction measures in NC industry.

All estimates were based on the DOE Industrial Decarbonization Roadmap107F113, which states that with the implementation of the Decarbonization pillars, up to 87% decarbonization can be expected, including the addition of carbon capture and storage (CCS) technologies, which encompass 40% of the GHG emissions reductions. The range estimates a low of 47%, which excludes the use of CCS technology and the high of 87%, if CCS technology is fully used. Reductions were calculated from the baseline GHG emissions values from the 2022 NC GHG Emission Inventory Report, which totals the GHG emissions from industrial fuel combustion, industrial electricity, and industrial processes as shown in Tables 1-1 and 2-9.

Waste

Measure 11: Reduce food waste.

The diversion of organics from landfills will result in a reduction in emissions produced at these facilities. Our 25-year GHG reduction goal for this measure is 4.45 $MMTCO_2e$ with an additional 3.20 MMTCO $MMTCO_2e$ that could be avoided for the next 25 years (2050-2075). This GHG reduction goal was determined based on our statewide diversion goal on a weight basis (tons/year) and current waste generation trends. EPA's Waste Reduction Model (WARM) was used to determine the estimated emissions under our BAU scenario (food waste going to a landfill). These emission reductions were determined on an annual basis that accounted for the estimated diversion rate over a 25-year period starting in 2025. In addition, the rate of diversion considered the current capacity of existing NC compositing facilities as well as the average daily diversion that could be achieved through either curbside collection or community drop off locations. In our CCAP we will do a detailed breakdown of the alternative management options for these organics and determine the net impacts of diversion from landfills.

Measure 12: Decarbonize waste collection.

The calculation of the GHG reductions from this measure were determined using the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Online tool and the associated default values. The default values included diesel as the business-as-usual fuel (1.7 MPDGE) and average miles traveled was 23,400 per year per truck. The GHG reductions were calculated by

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[113] US DOE. "Industrial Decarbonization Roadmap." September 2022. https://www.energy.gov/sites/default/files/2022-09/Industrial%20Decarbonization%20Roadmap.pdf

comparing the use of a diesel refuse truck versus electric vehicles. The reductions account for emissions on a well-to-wheels & vehicle production petroleum use, GHGs, and air pollutants.

Measure 13: Reduce landfill gas emissions.

It is estimated that GHG reduction benefits may be on the order of 300 to 600 tons per year of CO_2e, per acre of transitional cover installed, over a ten-year period (~4500 tons/acre). Considering the decrease in the landfill gas over time the annual GHGs reductions were calculated to be ~4500 tons/acre to account for field conditions. The use of more robust covers, prior to closure, at multiple landfills across NC with a total application of 200 acres over 25 years.

Natural and Working Lands

Measure 14: Protect and restore high-carbon coastal habitats and peatlands.

An estimated 350,000 acres of peatlands in NC are degraded and in need of restoration; of this, approximately 90,000 acres are in LIDAC communities.[114] Rewetting drained peatlands creates an expected carbon benefit of 22.7-24.8 $mtCO_2e$/acre/year.[115, 116] Restoring 40,000 acres of peatlands within LIDAC communities would achieve estimated GHG emissions reductions of 4.4-4.8 $MMTCO_2e$ by 2030 and 22.4-24.8 $MMTCO_2e$ by 2050. If this restoration work would cost approximately $4,000/acre for land acquisition and restoration, this would cost approximately $160 million to achieve.

As discussed above, an estimated 92,000-130,000 acres of coastal marsh in NC is at risk of loss by 2050 given 1.5 ft of SLR. Carbon stored in coastal marsh biomass and the top meter of soil, 415.11 $mtCO_2e$/acre, is assumed to be emitted when marshes are lost.[117] Restoring 120 acres of vulnerable coastal marsh using thin-layer sediment addition and similar projects (e.g., living shorelines) to enhance marsh resilience to SLR would create an expected carbon benefit of 0.403 $MMTCO_2e$ by 2050 at a projected cost of $10 million.[118]

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[114] Duke University. “NC Pocosin Map.”https://dukeuniv.maps.arcgis.com/apps/webappviewer/index.html?id=a52bb5da376f4699adc4f9514a39fb56

[115] Representing 7.8-9.9 $mtCO_2e$/acre/year from reduced peat oxidation in restored peatlands and 14.9 $mtCO_2e$/acre/year from avoided deep peat fire emissions due to peat rewetting.

[116] Richardson, Curtis J. et al. “Annual carbon sequestration and loss rates under altered hydrology and fire regimes in southeastern USA pocosin peatlands.” September 2022. Global Change Biology | Environmental Change Journal | Wiley Online Library

[117] “NC Coastal Habitat GHG Inventory.” https://static1.squarespace.com/static/6171b544d98dde62bfdbcf28/t/63e16e45b8b8ba54dc942711/1675718214856/Interim+Report+on+NC+Coastal+Habitat+Greenhouse+Gas+Inventory+1.12.23.pdf

[118] Assuming coastal marsh restoration via sediment placement is $83,333/acre.

There are 270,000 acres of marsh migration corridors in NC projected to convert to coastal marsh by 2050.[119] Conserving 5,000 acres of these migration corridors so they remain available for coastal marsh migration and managing these areas to minimize carbon emissions during the transitional phase creates an expected carbon benefit of 0.08 MMT by 2050 at a projected cost of $24 million.[120]

An analysis by NCDEQ of surveys conducted by Albemarle-Pamlico National Estuary Partnership and NCDEQ from 2019-2021 indicated that high-salinity seagrasses only covered 93,520 acres of the 145,645 acres they have historically covered since 1981, representing a net loss of 56,520 acres, or 39% of the historical extent. Restoration of 50,000 acres of high-salinity seagrass in their historic footprint would create an expected carbon benefit of 0.658 $MMTCO_2e$ by 2050 at a cost of $52.5 million.[121]

Measure 15: Protect, use, and develop agricultural and forest land.

North Carolina has more than 15.3 million acres of forests (including forested wetlands) that are not in protected management areas. These ecosystems store approximately 5.6 billion $MTCO_2e$ and sequester an additional 27 $MMTCO_2e$ each year; when converted to other land uses, carbon sequestration stops and some of the stored carbon may be emitted. In addition, about 5.1 million acres of land that is not currently forested or developed could support forests. While about 80% of this land is currently in agriculture (pasture or crops), if all the nonagricultural land and just a small proportion of the agricultural land that is less productive were reforested, that would be 1.1 million additional acres of forest. Reforestation of the 1.1 million acres would sequester 3.4 $MMTCO_2e$ each year (for the first 20 years after restoration).[122] This would increase NC's annual carbon sequestration by 10% from the estimated 34 $MMTCO_2e$ sequestered in 2017. This is a conservative estimate given that restoration performed through cost-share programs today is expected to sequester more carbon than the forest it replaces due to better genetics in nursery stock and the application of improved silviculture.[123]

The goal of this measure is to restore 0.5 million acres of forests on private lands across the state through cost-share programs and protect (through acquisition and stewardship) or restore 0.5 million acres of forests in areas that will have resilience and economic benefits to low-

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[119] NC Coastal Federation, personal communication regarding the draft North Carolina Salt Marsh Action Plan.
[120] Assuming conservation of marsh migration corridors is $4,800/acre.
[121] Assuming seagrass restoration is $1,050/acre and living shoreline installation is $300/linear foot.

[122] NCDEQ. "NC Natural and Working Lands Action Plan."

[123] Shephard, Noah, Lana Narine, Yucheng Peng, and Adam Maggard. "Climate Smart Forestry in the Southern United States." *Forests* 13, no. 9 (September 11, 2022): 1460. https://doi.org/10.3390/f13091460.

income and disadvantaged communities and ecosystem health and increase urban canopy coverage by 10% in LIDAC in urban areas by 2030. Reforestation of 1 million acres will achieve GHG reductions of 15.4 MMTCO_2e by 2030 and 77 MMT by 2050 (increased sequestration).

Other Key Personnel

NCDEQ will utilize the additional staff noted below to implement the program activities, in addition to staff from NCDEQ's partners CPRC and Centralina. Also noted below are positions to be added once the CPRG funding is awarded.

Grant Role	Experience, Qualifications, and Knowledge
Star Hodge, SEP Manager, NCDEQ	
Program Administrator – will provide guidance and oversight for general programmatic reporting and grants agreement processing.	Ms. Hodge has 25+ years of experience managing, monitoring, and implementing State and Federal programs with the SEO. During her tenure the SEP has been awarded, appropriated, and properly reported on more than $200 million in federal and $30 million in state funds. Ms. Hodge has a BS in Mechanical Engineering from NCSU.
Bob Leker, Environmental Program Consultant, NCDEQ	
Program Consultant – will provide program strategy assistance, outreach engagement, and program operation.	Mr. Leker has extensive experience managing statewide energy programs at SEO. He has knowledge and expertise in energy policy and energy education. He also has experience working with a wide range of energy organizations in NC. Mr. Leker has an A.S. in Solar Technology, a B.A. in Environmental Studies, and a Master's in Education.
Michelle Nance, FAICP, Deputy Executive Director, Centralina	
Program Sponsor – will provide expertise related to regional and local mobility, community health benefits and partner coordination.	Ms. Nance serves as Deputy Executive Director at Centralina, leading regional planning, community economic development and government affairs for nine counties in the Charlotte region. Her portfolio includes land use and transportation and 29+ years of experience in partnerships. Ms. Nance has a bachelor's degree in planning and an MPA from ECU.
Megan Upchurch, AICP, Senior Planner, Centralina	
Program Manager – Lead coordination project deliverables and leverage regional partner and stakeholder interests	Megan Upchurch, AICP, is a Senior Regional Planner for Centralina and Director of the Centralina Clean Fuels Coalition, an affiliate of the DOE Clean Cities program. Megan holds a Master's in Public Administration from the UNC Wilmington and a B.A. in Political Science from the University of Tennessee.
Shuchi Gupta, TDM Grant Manager, Principal Planner, CPRC	
VMT Reductions Program Administrator – VMT implementation and overall strategy and guidance.	Ms. Gupta currently manages the TDM grant program for the 7 -county triangle region; the program has a key goal of 25% reduction in annual growth in region's VMT. She also leads the diversity, equity, and inclusion efforts of CPRC as an organization. Ms. Gupta has a Master's in Sustainability and Environmental Management from Harvard Extension School.
Hunter Fillers, Housing Programs Manager, CPRC	
CPRC Building Program Consultant – will provide program management for the CPRG building programs.	Mr. Fillers has 5+ years of experience with managing federal, state, and local housing programs. He successfully administered over $15 million for foreclosure and eviction prevention, downpayment assistance, and home preservation. He is a graduate of the University of Illinois at Urbana-Champaign with a Master's degree in urban planning.
New, NCDEQ	
Environmental Program Manager	Position will ensure accomplishment of division goals, appropriate application of federal and state laws and regulations, management of daily tasks, progress toward longer term programmatic or management goals; and manage CPRG budget and personnel issues.
Contract Specialist	Position will be responsible for the oversight, coordination, TA, and compliance with CPRG procurement and contracts.
Energy Manager (6)	Positions provide energy and environmental analysis, reviews and engineering models. Positions develop and manage energy and environmental programs and projects, and provide TA, assessment and consultation for these programs and projects.
Budget Manager	Position performs managerial and professional duties in accounting, budgeting or finance. Position develops and implements policies and procedures related to financial management. Position develops, prepares, and compiles financial data for state and federal reporting.
Technical Environmental Program Consultants (3)	Position serves as a technical resource in matters related to climate, energy, or air quality, and supports the development of the state's CCAP.

Other Key Personnel: North Carolina Implementation Grant
Bridging Science, Communities, and Innovation for a Clean Energy Future

Grant Role	**Experience, Qualifications, and Knowledge**
Information & Communications Specialist (Outreach Coordinator)	Position supports NCDEQ and other state CPRG stakeholders through communications, stakeholder and public outreach, LIDAC coordination, and dissemination of error-free information in a customer-centric, timely and professional manner that can be understood by the public.
Business Officer	Position manages the daily office operations, including its assets, financial management, budget, HR/procurement activities, support staff and offices. Position assists management in the conception and development of policies, procedures, regulations and program planning.
Technical Environmental Program Assistant	Positions support grant program and contract administration. Positions provide TA to grantees during project implementation, ensure compliance, and monitor and report performance data.
Program Development Coordinator	Position is responsible for coordinating, developing and maintaining federal grant in aid programs with public and private agencies in and outside the state and supplying TA and appropriate information to such agencies.
Budget Manager II	Position coordinates and plans budget activities, including annual and biennial budgets. This position is governed by state and federal laws and agency/institution policy and directs the activities of a large-sized, mostly professional and administrative support staff.
Program Coordinator	Position administers an agency/statewide program of considerable scope, requiring specialized knowledge of the program and the associated processes/procedures. Position performs administrative work in developing and maintaining departmental or institutional programs.
Clean Energy Workforce Analyst	Position involves accessing workforce development needs; designing workforce training programs; and identifying resources needed and supporting training programs, program accountability, quality assurance measures, and student/trainee success metrics.
Program Analyst I	Position consults with program stakeholders internal to and external to the agency and involves considerable analysis and interpretation of data and trends in the program area of assignment.

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CENTRAL PINES
REGIONAL COUNCIL

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Date: March 12, 2024

U.S. Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality

This letter serves as Central Pines Regional Council's (CPRC) commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. North Carolina has made substantial strides in implementing climate policies and initiatives, but the state is encumbered by restrictive funding sources that limit potential additional climate action. The proposed work in this application comes at an important time, particularly for decarbonizing the transportation sector and commercial and residential buildings sector. North Carolina consistently ranks as one of the highest states that experiences escalating economic and societal losses due to weather and climate-related natural disasters each year. The programs outlined below will increase investment in historically under sourced and supported multi-modal transportation initiatives and target market transformation gaps that are unaddressed in traditional weatherization programs.

I write this letter of commitment as the Executive Director of CPRC. We are a member-driven organization serving as a leading resource to connect communities and enhance their strategic priority outcomes through regional policy, collaboration, and technical assistance at the local, regional, and state level. CPRC is committed to helping communities reduce their GHG emissions and prepare for the effects of our changing climate by creating and implementing climate and energy action plans, hazard mitigation plans, energy-use and GHG inventories, climate vulnerability assessments, and climate resiliency plans. We are excited to implement programs that will reduce GHG emissions in our eight-county CPRC Climate Action Plan (PCAP) region.

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We anticipate supporting NCDEQ on the following CPRG implementation activities, including:

- Establishing and administering a Regional Electrify Program to reduce the barriers-to-entry for energy audits, energy efficiency and weatherization+ retrofits, conversion to heat pump heating and cooling, electric appliances, electric micro-mobility, and electric lawn equipment. This will include funding for weatherization of non-residential buildings in low-income disadvantaged communities (LIDAC) in our region as well as "make-ready" funds for homes that have been deferred from the state weatherization program for low income households.

- Establishing and administering a systems approach to address critical funding gaps within existing vehicle miles travelled (VMT) reduction programs to reduce the transportation related GHG emissions, ensuring convenient, affordable, and easy mobility access for residents.

The effort to decarbonize North Carolina is critically important. As noted above, we will work with NCDEQ to undertake GHG efforts, serving as a partner to establish and administer and the Regional Electrify program and to establish and administer a systems approach to current VMT reduction programming. For additional information, please contact Emily Barrett the Environment & Resilience Director here at Central Pines Regional Council at ebarrett@centralpinesnc.gov.

Respectfully,

Lee Worsley

Centralina - Letter of Commitment

April 1, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ***EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality***

I am pleased to provide Centralina Regional Council's (Centralina) commitment to North Carolina Department of Environmental Quality's (NCDEQ) application for the Climate Pollution Reduction Grants (CPRG) Implementation Program.

This effort to decarbonize North Carolina is critically important. Transportation is the largest emissions source sector in the state at 36%, followed by Electricity Generation and Use at 30%, and Residential, Commercial, and Industrial Combustion at 14%. Together, combustion activities contribute to 80% of the total statewide gross greenhouse gas (GHG) emissions. The programs set forth in this application have the potential to create true market transformation and maximize benefits to North Carolinians. We are excited to partner with NCDEQ to leverage CPRG funding to establish the programs outlined which will invest in active transportation strategies and street connectivity to reduce vehicle miles traveled (VMT), as well as modernize building technologies and systems to further reduce GHG emissions associated with construction, operation, and maintenance of buildings and facilities.

Centralina was created to serve the needs of the nine-county Greater Charlotte region through planning, coordination, and advocacy services. Our mission is to lead regional collaboration and spark local action to expand opportunity and improve the quality of life of our community-members. Centralina's recent priorities include planning for and achieving low-cost reductions in GHG emissions, creating economic growth and job creation to foster a low carbon economy and substantial public health co-benefits. As the lead for the Charlotte-Gastonia-Concord NC/SC MSA Climate Pollution Reduction Planning Grant, Centralina is well versed in the priority climate actions that will transform our region. The measures outlined in NCDEQ's CPRG application align with our region's strategic priorities as outlined in the PCAP and Centralina's strategic plan.

We anticipate working with NCDEQ on the following CPRG activities:

- Implement regional VMT reduction strategies including transit rider support projects and regional traveler access solutions.
- Fund local VMT reduction solutions with an emphasis on multi-modal projects such as bike and pedestrian infrastructure development that implement the CONNECT Beyond regional mobility plan.
- Decarbonize industrial facilities and weatherization+ in multi-family and single-family residential buildings.

As the Executive Director of Centralina Regional Council, I am excited to express my commitment to NCDEQ as they implement this transformative program. We will work with NCDEQ to advance decarbonization in the state as a partner and to carry out the above listed activities. Please feel free to contact me at ggardner@centralina.org with any questions.

Sincerely,

Geraldine I. Gardner
Executive Director

Equal Opportunity/Affirmative Action Employer. Auxiliary aids and services available upon request to individuals with disabilities.

North Carolina Clean Energy Fund

March 18, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: **EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality**

The North Carolina Clean Energy Fund is pleased to offer this letter of commitment to the North Carolina Department of Environmental Quality (NCDEQ) on behalf of its Climate Pollution Reduction Grant (CPRG) program as part of the EPA Climate Pollution Reduction Grant (CPRG) Implementation Grant General Competition application. The CPRG Program is an important next step in realizing the State's climate and environmental justice goals.

I write this letter of commitment as the Co-Director of the North Carolina Clean Energy Fund (NCCEF), an independent 501(c)(3) financial institution, with a mission to accelerate investment in clean and efficient energy solutions and increase climate resilience in North Carolina, particularly to promote climate and economic equity. NCCEF was formally organized as a nonprofit organization in November 2020, the culmination of three parallel stakeholder processes in the state – including the state's Clean Energy Plan - that all called for the development of a green bank/clean energy fund to fill critical financing gaps in the clean energy project landscape. Located in EPA Region IV, we serve the entire State of North Carolina. We serve households, nonprofits, and small business in underserved communities, which suffer from disproportionate energy burden – including urban, rural, and tribal communities. We have strong and longstanding relationships across the state, specifically within the communities that are in greatest need of this funding.

Using affordable financing to achieve greenhouse gas reduction goals will allow NCDEQ to leverage the investment in CPRG with investments by building owners in the small business, small industrial and residential sectors, aligned with the sectors that eventually are developed by NCDEQ and its partners once CPRG awards are finalized. We stand ready to serve as administrator of revolving loan funds and related financing strategies requested by NCDEQ and its partners to fully implement the state's CPRG Program.

As financial program administrators, we will be responsible for designing and deploying direct loans to allow building owners and fleet managers to finance clean energy and clean transportation measures, including bridge loans to facilitate accessing federal rebates, tax credits or cost share requirements. These loan products will incorporate other available rebates and incentives to the greatest degree available. In addition, we anticipate working with NCDEQ and its partners to design and deploy credit enhancements that will encourage other lenders to offer financing. Such credit enhancements will be designed using tried-and-true options such as interest-rate buydowns, loan loss reserves, and loan participations.

North Carolina Clean Energy Fund

We welcome any questions from EPA.

Sincerely,

Melissa Malkin-Weber
NC Clean Energy Fund Co-Director
MelissaMW@nccleanenergyfund.org
(919) 201- 4605

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
JAMIE RAGAN
Director

NORTH CAROLINA
Environmental Quality

March 18, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality

Dear Sir or Madam:

I am pleased to provide NCDEQ's Division of Environmental Assistance and Customer Service's commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. We are excited about the opportunity to work with our Departmental colleagues to help decarbonize the waste sector.

The work proposed in this application will provide market transformation through funding for approaches that divert organics from landfills by directing food to communities in need and creating infrastructure for alternative management pathways.

I write this letter of commitment as the Section Chief of the Recycling and Materials Management Section (RMMS) in the NCDEQ. In this role, I manage statewide efforts to reduce waste, grow recycling and organics processing capacity and infrastructure, and expand recovery programs that enable the state to realize important emission reductions to meet state and national climate goals.

In 2022, NC generated 2.6 million tons of food waste across all sectors with a 2.1-million-ton gap for organics recovery and recycling infrastructure. This new funding opportunity through the CPRG Implementation Grant aims to reduce that gap by providing funding for a variety of edible food recovery strategies, organics diversion programs, and organics recycling infrastructure including onsite organics recycling processing that will expand access and reduce GHG emissions by eliminating the need for hauling heavy compostables across the state.

Our RMMS team will support NCDEQ's activities through the CPRG implementation efforts by administering the food waste reduction grant program to divert organics from landfills by directing food to communities in need and creating organic resources through composting or digestion.

Again, we are excited by the opportunity to bring new sustainable waste recovery infrastructure into productive use and are commitment to making this program successful. For additional information, please feel free to contact me at wendy.worley@deq.nc.gov or 919-707-8136.

Sincerely,

Wendy Worley

Wendy G. Worley, Section Chief
Recycling and Materials Management Section
NCDEQ – Division of Environmental Assistance and Customer Service
wendy.worley@deq.nc.gov
919-707-8136

NORTH CAROLINA
DEPARTMENT of
COMMERCE

Roy Cooper
GOVERNOR

Machelle Baker Sanders
SECRETARY

March 16, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ***EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality***

This letter serves as the North Carolina Department of Commerce's (Commerce or Department) commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program, as part of the EPA CPRG Implementation Grant General Competition application. We are excited to support this project by lending our expertise to the development and delivery of relevant industry workforce training and educational support programs.

Workforce training to support a clean energy economy aligns with the Department's mission to "improve the economic well-being and quality of life for all North Carolinians," and will yield significant investments and family-sustaining jobs in communities across the State, many of which have been underserved and under resourced for generations. The opportunities in the clean energy economy will result in improved economic well-being, economic mobility, and better quality of life for all.

The Department is committed to developing and fostering a "first in talent" workforce to meet the needs of our best in class, fast-growing economy. Commerce employs a Business Relationship Manager and Head of Corporate Citizenship who serves as a liaison between the Department and the business community, assisting in developing and implementing stakeholder engagement strategy and projects focused on our key priorities including environmental sustainability, work-based learning, workforce development, and childcare solutions. The Department is committed to diversity, equity, inclusion, and accessibility which permeates internal and external relationships. In addition, Commerce is a member of the CLEANCarolinas NSF Type 1 Award alongside academic, industry, and other public members working to stand up the Carolinas as an innovation engine, creating, manufacturing, piloting, and deploying use-inspired clean energy innovations in offshore wind and grid enhancement technologies and the jobs that go with each stage.

We anticipate supporting NCDEQ on the following CPRG implementation activities:

- Workforce evaluation, needs assessment, and assistance with development of or referral to appropriate training and education resources.

- Developing and fostering industry and training/education relationships.
- Engaging with appropriate business and industry about the opportunities inherent in CPRG implementation.

Again, we are excited to support NCDEQ's CPRG application and are committed to work with NCDEQ towards our shared goals of reducing greenhouse gas emissions and transitioning North Carolina to a clean energy economy. Please feel free to contact me if you would like additional information.

Sincerely yours,

Jennifer R.F. Mundt
Assistant Secretary for Clean Energy Economic Development
North Carolina Department of Commerce

301 North Wilmington Street
Raleigh, NC 27603
(919) 441-7430 / jennifer.mundt@commerce.nc.gov

STATE OF NORTH CAROLINA
OFFICE OF THE GOVERNOR

ROY COOPER
GOVERNOR

March 21, 2024

The Hon. Michael S. Regan, Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20004

Dear Administrator Regan:

Please accept this letter outlining my strong support for the three North Carolina Climate Pollution Reduction Grant applications: (1) the Atlantic Conservation Coalition ("ACC") application led by the North Carolina Department of Natural and Cultural Resources; (2) North Carolina's statewide application led by the North Carolina Department of Environmental Quality; and (3) the Hawai'i Green Infrastructure Authority's "States Enabling Resilient Local Energy Systems" application which includes the North Carolina Department of Environmental Quality as a committed coalition member. Each of these applications is a strong and transformative proposal that builds upon North Carolina's historic climate action, maximizes greenhouse gas reductions and benefits to surrounding communities, and presents a unique opportunity to create durable, bipartisan partnerships across state borders to address crucial climate challenges.

The ACC proposal is a bipartisan effort to reduce greenhouse gas emissions while bolstering climate resiliency in North Carolina, South Carolina, Virginia, and Maryland. The coalition states contain some of the nation's most vital carbon sequestering coastal habitats, peatlands, and forests and I am pleased to support this new regional approach to reduce greenhouse gas emissions with our neighbors to the north and south.

In North Carolina, our natural and working lands sequester 34% of our state's gross greenhouse gas emissions. That's why in February of this year I signed Executive Order No. 305, setting bold and actionable targets for protecting and restoring forests and wetlands in North Carolina. The ACC grant would provide the significant funding needed to help make those goals a reality. The ACC presents a unique opportunity for the entire region to work together in pursuit of common goals to protect what we have and restore what we have lost.

North Carolina's statewide application specifically targets key gaps in investment across the state, with a particular focus on underserved communities. If awarded, the

state will be able to substantially expand eligibility for home weatherization to those most in need of assistance. It will allow us to electrify polluting heavy-duty vehicles that travel through our most vulnerable communities. This proposal will also make our streets safer by investing in multi-modal and active transportation infrastructure.

Finally, last year's deadly Maui wildfires are a stark reminder of the need for rapid investments in climate adaptation and resilience. North Carolina is no stranger to increasingly severe natural disasters, and we are proud to join Hawai'i's States Enabling Resilient Local Energy Systems coalition. Under this program, we plan to make substantial resiliency investments at emergency shelters to reduce emissions and provide vital stability to vulnerable communities in times of crisis.

I applaud the Environmental Protection Agency's efforts in building an exciting and innovative program that will have lasting effects long after funds are invested. My administration took an active role in developing these proposals, and I strongly encourage the Environmental Protection Agency to consider funding these innovative efforts to tackle the climate crisis head-on.

With kind regards, I am

Very truly yours,

Roy Cooper

RAC/cm/swh

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
JULIE WOOSLEY
Director

NORTH CAROLINA
Environmental Quality

March 22, 2024

Hon. Michael Regan
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

RE: *EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality,* Funding Opportunity Number: EPA-R-OAR-CPRGI-23-07

Dear Administrator Regan,

The State of North Carolina is dedicated to the transition to a clean and equitable economy, as outlined in Executive Order No. 246, which established the goal to reduce statewide GHG emissions by 50% from 2005 levels by 2030 and reach net-zero no later than 2050. To date, North Carolina has established 48 individual climate action-related documents, including the Clean Energy Plan and the Climate Risk Assessment and Resilience Plan, that lay the groundwork for achieving these reductions. Additionally, DEQ established an Environmental Justice and Equity Advisory Board which has worked to achieve Executive Orders 246 and 292 to advance environmental equity in the state. Funding from the CPRG Implementation grant will help North Carolina achieve a transformative impact in these areas as we work to achieve the state's lofty but imperative climate and equity goals.

North Carolina's Department of Environmental Quality (NCDEQ), the lead applicant for the State of North Carolina's statewide plan, has partnered with the Centralina Regional Council and the Central Pines Regional Council (formerly Triangle J Council of Governments) on a collaborative application and are requesting a $199,999,000 USD statewide Implementation Grant. As recipients of CPRG Planning Grant Funds to develop Priority Climate Action Plans, these partners have worked to identify areas of priority overlap and synergy. This partnership will allow for further efficiency in the project implementation and grant management processes to achieve unprecedented climate pollution reductions throughout the state. Building on the work outlined in climate action documents, this effort will spur transformative change in the transportation, buildings, industrial, and waste sectors, with a focus on the underrepresented and underserved areas of our state.

In addition to this statewide CPRG application to be implemented through a partnership with the two Metropolitan Statistical Areas in the state (the greater Charlotte and Raleigh areas), North Carolina will also submit CPRG Implementation Grant applications as: 1) the lead agency for the multi-state Atlantic Conservation Coalition ("ACC") focused on carbon reductions through natural and working lands; and 2) a member of Hawaii's coalition application entitled "States Enabling Resilient Local Energy Systems,"

which will advance the state's work outlined in the Clean Energy Plan and the Climate Risk Assessment and Resiliency Plan to bring resiliency investments to storm shelters in vulnerable communities in the area of our state most impacted by climate change.

North Carolina's clean energy, risk assessment and resilience, and environmental justice work ensure we are well prepared to implement transformative change across the state. We appreciate your agency's efforts to create this opportunity and look forward to working with you to achieve unprecedented climate reductions and resiliency benefits across the state.

Sincerely,

Elizabeth Biser

Elizabeth Biser
Secretary

North Carolina Department of Environmental Quality | State Energy Office
217 West Jones Street | 1613 Mail Service Center | Raleigh, North Carolina 27699-1613
919.707.8778

NORTH CAROLINA PORTS

March 14, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality

This letter serves as North Carolina State Ports Authority's (the "Authority") commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. The Authority is proud to partner with NCDEQ to develop and implement ambitious plans for reducing greenhouse gas emissions and other harmful air pollution.

The Authority owns and operates an ocean terminal in Wilmington, North Carolina and the operation of such a terminal is a tremendous catalyst for economic growth and development throughout North Carolina and the region. The Authority contributes more than $16.2 billion in annual economic contribution to the state's economy constituted by goods moving through the port facilities and supported 88,200 full-time jobs at North Carolina businesses. In 2022, the container terminal at the Port of Wilmington was ranked as the most productive port in North America in the latest Container Port Performance Index (CPPI), underlining its importance to the regional economy.

We anticipate supporting NCDEQ on the following CPRG implementation activities:

- Transportation Sector Implementation Grant Narrative – Measure 4, Project/Program #4: Significantly increase efficiency of freight container shipment system to reduce GHG emissions and foster many other benefits.
- The Authority commits to reducing GHG emissions and other pollutants by diverting shipping container transport from medium- and heavy-duty (MHD) vehicles to the intermodal railway system utilized by the Authority.
- The Authority also commits to improving the efficiency of freight container shipments to promote regional connectivity, facilitate economic growth and competitiveness, and reduce congestion and bottlenecks on the National Highway Freight Network.

We plan to work closely with NCDEQ to undertake greenhouse gas reduction efforts by improving the efficiency of freight container shipments to promote regional connectivity, facilitate economic growth and competitiveness, and reduce

2202 Burnett Blvd, Wilmington, NC 28401 | 800-334-0682 | ncports.com

NORTH CAROLINA PORTS

congestion and bottlenecks. We look forward to your favorable consideration of the EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality application. For additional information, please contact Stephanie Ayers (910-746-6371, stephanie.ayers@ncports.com).

Sincerely,

Brian E. Clark
Executive Director

2202 Burnett Blvd, Wilmington, NC 28401 | 800-334-0682 | ncports.com

339 New Leicester Hwy., Suite 140
Asheville, NC 28806
p: 828.251.6622 | 800.727.0557
f: 828.251.6353 | w: landofsky.org

March 18, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: Letter of Commitment: Land of Sky Regional Council, Waste Reduction Partners
NC Department of Environmental Quality - CPRG Implementation Grant Application:

The Land of Sky Regional Council's Waste Reduction Partners is pleased to commit to serve as a partner service provider for NC Department of Environmental Quality's Climate Pollution Reduction Grant implementation proposal. LOSRC's Waste Reduction Partners program has held a special partnership with NCDEQ over 20 years, helping North Caolina implement pollution prevention and Clean Energy objectives, meet a 30% energy use reduction goal for state buildings in 2015 and now working to address a 40% energy use reduction Executive Order goal for public buildings. WRP has worked under contract with DEQ's State Energy Office to support the institutional, business and industrial energy assessments, technical assistance, resource guides, follow-up M&V studies, and Energy Saving Performance Contracting guidance. In the past five years, WRP's unique statewide team of 25 retired engineers has assisted 242 clients to reduce energy use by 1.16 Million MMBtu (TBtu), cut greenhouse gas emissions by 105,646 $MTCO_{2e}$ and save more than $22.7 million.

For the term of the NCDEQ CPRG proposal, the LOSRC's Waste Reduction Partners will commit to performing up to 150 energy efficiency assessments per year in proposal's Building and Industry target sectors including state agencies, universities, K-12 school, community colleges, local governments, public water/wastewater systems, as well as industrial manufacturing across rural, LIDAC and urban communities statewide under contract with NCDEQ. Based on past WRP client performance, each energy assessment performed is projected to achieve reductions of 300 MTCO2e/year, 3,004 $MTCO_{2e}$ cumulative by 2030 and 15,925 $MTCO_{2e}$ cumulative through 2050. This partnership/contractor agreement could also include technical assistance, resource development, and follow-up performance tracking and Energy Saving Performance Contracting support for DEQ's CPRG efforts.

The Land of Sky Regional Council is excited to work with NC DEQ on this unprecedented opportunity to advance decarbonization efforts in North Carolina, a state the has led the Southeast in energy efficiency, renewables deployment and clean energy.

Sincerely,

Terry Albrecht, PE, CEM
Waste Reduction Partners State Director
Land of Sky Regional Council/NCDEACS Partnership, phone (828) 707-2834, TAlblrecht@wrpnc.org

advanced energy

March 15, 2024

North Carolina Advanced Energy Corporation
909 Capability Drive, Suite 2100
Raleigh, NC 27606

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ***EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality***

Advanced Energy would like to express our commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application.

Advanced Energy is a nonprofit energy consulting firm that works with electric utilities, government and a wide variety of private organizations in the residential, commercial and industrial, renewables, motors and drives, and electric transportation markets. Since the 1980s our commercial and industrial team has helped business and industry understand and manage energy to reduce costs and harmful emissions and increase economic competitiveness. Our services include energy and electrification assessments, Strategic Energy Management consulting, air leak surveys, and general decarbonization consulting. We conduct dozens of assessments for commercial and industrial facilities each year, using a mix of on-site and off-site components to identify energy conservation measures that can save energy, reduce carbon emissions and produce non-energy benefits as well.

I write this letter of commitment to serve as a contractor to provide energy audits, strategic energy management consulting, and general technical assistance to industrial customers for the period of performance of the project.

Advanced Energy's interests closely align with the outcomes of this project and its overall goal of reducing greenhouse gas emissions and other harmful pollutants to achieve a more sustainable and equitable future for all of North Carolina's business and industry. We are pleased to have the opportunity to support NCDEQ on this project.

Sincerely,

Brian Coble,
Chief Operating Officer

Kendal C. Bowman
North Carolina State President
411 Fayetteville Street
Mail Code: 0993
Raleigh, NC 27601-1849
o: 919.546.6794
kendal.bowman@duke-energy.com
www.duke-energy.com

March 14, 2024

U.S. Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality

To Whom It May Concern:

Duke Energy is pleased to provide this letter of commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. Duke Energy is actively supporting the State of North Carolina with a number of relevant efforts, including IRA home energy efficiency rebates, health and safety repairs of single and multi-family dwellings, and electrification of the transportation sector. We believe DEQ's strategy for leveraging existing programs with CPRG funding will significantly and positively impact the lives of North Carolinians, many of whom are Duke Energy customers.

Duke Energy is a Fortune 150 company serving 83 of the 100 counties of North Carolina with reliable, affordable, and increasingly clean electricity. We have committed to aggressive decarbonization goals using a 2005 baseline that include an 80% reduction by 2040 and net-zero by 2050. For decades, we have implemented energy efficiency grant programs aimed at helping to alleviate the energy burden of our customers most in need. In addition, Duke Energy adopted a series of Environmental Justice principles in 2021 that are designed to guide the work we do across our enterprise. In addition, we are partnering with the State of North Carolina on an IIJA GRIP application for upgraded transmission that will support the integration of additional renewable energy projects in the eastern part of our state.

We anticipate supporting NCDEQ on the following CPRG implementation activities:

- Leveraging CPRG funding with existing energy efficiency programs to increase the number of dwellings impacted, resulting in direct GHG reductions through decreased energy load.
- Ensuring grid readiness for additional EV charging infrastructure deployment, impacting GHG emissions from the largest contributing sector in North Carolina.

As the electricity provider to millions of North Carolinians, we are excited to support NCDEQ with this important work. For additional information, please contact Mark McIntire (mark.mcintire@duke-energy.com).

Sincerely,

Kendal C. Bowman
Duke Energy, North Carolina State President

NC COMMUNITY COLLEGES
CREATING SUCCESS

North Carolina Community College System
Dr. Jeff A. Cox
President
200 W. Jones St., Raleigh NC 27603

3/19/24

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: *EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality*

To Whom it May Concern,

I am pleased to provide the North Carolina Community College System's commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. We are excited about the positive impact this initiative could have on workforce skill development and environmental sustainability across our state.

As the Associate Vice President of Workforce Strategies at the North Carolina Community College System, I am proud to lead an organization that serves as a pivotal hub for workforce development, education, and community engagement throughout the state. Our commitment to reducing carbon footprints and promoting sustainable practices is evident through various initiatives, such as workforce training programs in renewable energy technologies, green building practices, and sustainability management.

We recognize that a well-trained and skilled workforce is essential to overcoming barriers and advancing sustainable projects. The North Carolina Community College System is eager to collaborate with NCDEQ. We will focus on implementing workforce training programs in renewable energy technologies to build a skilled workforce for the clean energy sector.

We are confident that NCDEQ is well-positioned to drive sustainable practices across North Carolina. Our organization fully supports NCDEQ's application and eagerly anticipates the outcomes and benefits this program will bring to our communities.

Dr. Andrew Gardner
Associate Vice President, Workforce Strategies
North Carolina Community College System

NCMA
NORTH CAROLINA MANUFACTURERS ALLIANCE

March 18, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

RE: ***EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality***

The North Carolina Manufacturers Alliance (NCMA) is pleased to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. NCMA has a strong and positive relationship with NCDEQ. We will work with the department to benefit North Carolina's environment and economy in general and through funding planned for industrial projects.

NCMA is a trade organization representing manufacturers in our state. We advocate legislation, regulation, and policies that protect North Carolina's environment, provide a reliable energy future, and promote a healthy manufacturing sector. Our members are actively engaged in NCDEQ programs that achieve these mutual points of interest. Many of our manufacturers are Environmental Stewards in the NCDEQ Environmental Stewardship Initiative (ESI) that recognizes and supports companies that go above and beyond to reduce their impact on the environment. Together with NCDEQ, NCMA hosts a series of environmental compliance workshops throughout the year that cover air quality, water quality, and hazardous waste management bringing the regulated community together with the regulators for better relationships and fuller understanding of regulatory requirements. We host an Environmental, Energy, Health & Safety School each year with NCDEQ staff serving on our steering committee and providing speakers for the event. We appreciate NCDEQ's demonstrated long-term commitment to work with the manufacturing community in matters that affect us. NCMA offers this letter of support as part of a larger and holistic commitment for the benefit of our state.

NCMA anticipates supporting NCDEQ on CPRG implementation activities including but not limited to:

- Develop electric vehicle charging infrastructure.
- Increase the amount of electricity generated by low- and no-carbon energy resources in NC.
- Implement measures to increase energy resiliency in NC.
- Develop programs to support or incentivize implementation of energy efficiency and emission reduction measures in NC industry.

NCMA will promote CPRG implementation activities and engage the manufacturing community through our weekly update to members, workshops, EEHS school, annual meeting, committee meetings, etc. NCMA also stands ready to participate in NCDEQ stakeholder meetings when the opportunities arise. NCMA would like to reiterate our support for NCDEQ's application. We plan to work with NCDEQ and the State Energy Office to undertake greenhouse reduction efforts in our role as advocates for manufacturers in North Carolina.

For additional information, please contact Jimmy Carter – jimmy.carter@myncma.org.

Sincerely,

Kenneth Lin, Senior Regional Manager
Government Relations, International Paper
Chair, Board of Directors
North Carolina Manufacturers Alliance
3901 Barrett Drive, Raleigh, NC 27609
kenneth.lin@ipaper.com

REPUBLIC SERVICES

Sustainability in Action

March 25, 2024

U.S Environmental Protection Agency
Office of the Greenhouse Gas Reduction Fund
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Subject: ***EPA Climate Pollution Reduction Grant Implementation Grant Application (General Competition) submitted by the North Carolina Department of Environmental Quality***

Dear EPA Climate Reduction Team:

This letter serves as Republic Services Inc.'s commitment to support the North Carolina Department of Environmental Quality's (NCDEQ) Climate Pollution Reduction Grant (CPRG) program as part of the EPA CPRG Implementation Grant General Competition application. Republic Services has tremendous enthusiasm for this project and the environmental transformation it will have within the community. We believe the electrification of the refuse fleet will impact and improve the communities served in a more sustainable and safe way.

I write this letter of commitment as the Area President overseeing the communities served in the Mid-Atlantic region for Republic Services, which includes the state of North Carolina. As an organization, we are committed to reducing greenhouse gas emissions 35% by 2030 through a variety of strategies including landfill and fleet emissions reductions. This aggressive target is backed by Science Based Targets initiatives and aligned with the Paris Climate Agreement.

As one of the largest vocational fleet operators in the country with 17,000 collection vehicles, we believe the electrification of our fleet can greatly impact Scope 1 and Scope 2 emissions reductions internally and can also assist states and municipalities with their own emissions reduction goals. Through collaborations with vehicle OEM's and a partnership with McNeilus trucks, we helped develop the industry's first fully integrated, all electric refuse truck. This, combined with our CEO's public commitment for all new truck purchases to be zero-emissions by 2028, Republic Services is leading the drive for fleet adoption of cleaner and safer technologies operating within your communities.

REPUBLIC SERVICES

Sustainability in Action

We anticipate supporting NCDEQ by leveraging our experience and expertise on the following CPRG implementation activities:

- *Lead the development of electric vehicle charging infrastructure at Republic's Durham, NC hauling facility*. Our existing relationships and site development experience minimize the development risk to locate charging infrastructure with local utility power availability.
- *Own and operate zero-emission electric refuse collection vehicle(s) for committed municipality partners*. Our development partnerships with manufacturers ensure we have timely access to this emerging technology, and we are familiar with the performance of the vehicles to ensure reliable community service.
- *Reduction of greenhouse gas emissions in the local communities served and the State of North Carolina as a whole.* Our vehicles serve customers throughout North Carolina, and these pollution reductions will directly impact citizens within the neighborhoods where they live and work.

Republic Services is excited to be a leader in the industry for sustainability and we look forward to a potential partnership to improve the quality of life for communities in North Carolina. We plan to work with NCDEQ to undertake greenhouse gas reduction efforts, serving as a developer and operator of zero-emission electric refuse trucks. For additional information, please contact me.

Sincerely,

Shane Walker
Area President, Mid-Atlantic Area
swalker@republicservices.com

TOWN *of*
WAKE FOREST

301 S. Brooks Street
Wake Forest, NC 27587
t 919.435.9400

www.wakeforestnc.gov

March 18, 2024

Re: Support for Republic Service's application to the NC Climate Pollution Reduction Grant Program

Dear Climate Pollution Reduction Team,

The Town of Wake Forest is pleased to offer this letter of support for Republic Services of North Carolina's (Republic) Electrification Project located at 5111 Chin Page Road, Durham, NC. The North Carolina Department of Environmental Quality's (DEQ) decision to fund the project, through the Climate Pollution Reduction program, would drive the growth of zero-emission vehicle infrastructure equipment for medium and heavy-duty battery electric vehicles in North Carolina. Furthermore, DEQ funding would generate needed air quality benefits in the surrounding communities impacted by diesel pollution.

With support from the DEQ, Republic's Electrification Project will deploy electric refuse collection vehicles (eRCV) and charging equipment to support the deployment of battery-electric zero emission vehicles in and around the city of Raleigh / Durham, and contribute to transportation electrification among the community. Republic is well qualified to successfully implement this project which will reduce air pollution and vehicle noise in our community and expand visibility of heavy-duty electric vehicles overall.

The Town of Wake Forest appreciates the NC DEQ for funding opportunities to accelerate the market for zero-emission technologies and improve air quality throughout our heavily diesel-pollution burdened community.

Should you have any questions about our organization, sustainability efforts, or our commitment to the project, please do not hesitate to contact me.

Sincerely,

Kip Padgett
Town Manager

Sector	Benefit Category	Burden	Percentile
Transportation	Health	Asthma	≥90th
		Diabetes	≥90th
		Heart Disease	≥90th
		Low Life Expectancy	≥90th
	Transportation	PM2.5	≥60th
		Traffic Proximity and Volume	≥90th
		Transportation Barriers	≥90th
	Workforce Development	Unemployment	≥90th
		Low Median Income	≥90th
		Below 200% Federal Poverty Line	≥90th
Building	Health	Asthma	≥90th
	Energy	Energy Cost	≥90th
Industry	Health	Asthma	≥90th
		Diabetes	≥90th
		Heart Disease	≥90th
		Low Life Expectancy	≥90th
	Energy	Energy cost	≥90th
	Workforce Development	Unemployment	≥90th
		Low Median Income	≥90th
		Below 200% Federal Poverty Line	≥90th
Waste	Health	Asthma	≥90th
		Diabetes	≥90th
		Heart Disease	≥90th
		Low Life Expectancy	≥90th
	Transportation	PM2.5	≥60th
		Diesel Particulate Matter Exposure	≥80th
	Workforce Development	Unemployment	≥90th
		Low Median Income	≥90th
		Below 200% Federal Poverty Line	≥90th
Raleigh Cary and Durham-Chapel Hill	Central Pines Regional Council standard https://www.epa.gov/system/files/documents/2024-03/raleigh-durham-nc-		
Charlotte-Concord-Gastonia NC/SC	Centralina Regional Council standard https://centralina.org/wp-content/uploads/2024/03/Charlotte-Gastonia-Concord-		

Transportation - Ports	
	LIDAC IDs
	371290110002
	371290107004
	371290107003
Port East EJ Screen	371290107002
	371290113002
	371290111001
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Port North EJ Screen	371290110001
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Port South EJ Screen	371290120071
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	371190019142
	371190019182
	371190019191

Transportation - VMT Ped	
Municipality - County	Block Group
Murfreesboro - Hertford	370919501011
Havelock (Webb) - Craven	370499613023
Havelock (Church) - Craven	370499613013
Brevard - Transylvania	371759602021
Roxboro - Person	371459203003, 371459203004
Silver City - Chatham	370370204024
Silver City - Chatham	370370204024
Norwood - Stanly	371679311011, 371679311023
Wadesboro - Anson	370079204002, 370079205011, 370079205021
Bakersville - Mitchell	371219502002

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Port Trucking Route - WmPort2Charlotte	371650101021
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	371639702023
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	371950016002
Port Trucking Rout - WmPort2RockyMount	371950016003
	371950017002

	County	LIDAC IDs	Population	Affected Burdens
Building Sector	Richmond County	37153971000	4516	Asthma (≥90th)
(256 census tracts)	Richmond County	37153971100	4426	Energy Cost (≥90th)
	Richmond County	37153970300	4027	
	Richmond County	37153970600	4054	
	Richmond County	37153970700	2778	
	Franklin County	37069060100	4744	
	Franklin County	37069060302	2702	
	Davidson County	37057061400	3141	
	Davidson County	37057061500	6309	
	Carteret County	37031970200	1260	
	Carteret County	37031970101	959	
	Sampson County	37163970500	5949	
	Sampson County	37163970900	3538	
	Sampson County	37163971000	5060	
	Sampson County	37163970100	7110	
	Sampson County	37163970700	7316	
	Johnston County	37101040600	3821	
	Montgomery County	37123960402	2691	
	Cumberland County	37051002401	1439	
	Cumberland County	37051003800	2754	
	Chatham County	37037020500	3626	
	Halifax County	37083930600	4333	
	Halifax County	37083930800	5047	
	Halifax County	37083930700	4059	
	Halifax County	37083930900	5051	
	Halifax County	37083931000	3168	
	Halifax County	37083931100	4519	
	Halifax County	37083930100	3246	
	Halifax County	37083930501	3675	
	Iredell County	37097060200	2354	
	Iredell County	37097060300	2332	
	Greene County	37079950200	4828	
	Greene County	37079950300	7173	
	Greene County	37079950101	3808	
	Durham County	37063001100	3183	
	Durham County	37063001709	6964	
	Durham County	37063001400	2397	
	Cumberland County	37051001100	3912	
	Cumberland County	37051000500	2288	
	Cumberland County	37051000200	2202	
	Durham County	37063001002	5931	
	Durham County	37063000900	1710	
	Cumberland County	37051001000	2556	
	Cumberland County	37051001200	5156	
	Durham County	37063001001	3706	
	Durham County	37063001301	1382	
	Durham County	37063001304	3411	
	Lenoir County	37107010700	2043	
	Lenoir County	37107011100	5847	

Lenoir County	37107010200	2452
Lenoir County	37107010300	1437
Lenoir County	37107010500	3475
Surry County	37171930400	2535
Surry County	37171930201	3178
Lenoir County	37107010400	740
Forsyth County	37067001800	4308
Robeson County	37155960600	6794
Robeson County	37155961700	5035
Robeson County	37155961900	4939
Robeson County	37155961100	2237
Robeson County	37155960300	6428
Robeson County	37155960202	4379
Robeson County	37155960201	4940
Robeson County	37155960101	4123
Forsyth County	37067001602	3449
Beaufort County	37013930300	3714
Robeson County	37155960402	4044
Robeson County	37155962001	3506
Robeson County	37155960401	7197
Robeson County	37155960501	3517
Robeson County	37155961801	5687
Robeson County	37155962002	3310
Robeson County	37155960801	3352
Robeson County	37155961601	4313
Robeson County	37155961802	5418
Robeson County	37155960503	1838
Robeson County	37155961302	5617
Robeson County	37155960502	4683
Robeson County	37155960802	1475
Robeson County	37155960702	3265
Forsyth County	37067000500	2271
Forsyth County	37067001400	3641
Forsyth County	37067000302	1546
Forsyth County	37067000301	1858
Forsyth County	37067000600	2259
Forsyth County	37067000400	3559
Forsyth County	37067000802	2536
Forsyth County	37067000700	2238
Forsyth County	37067001901	1608
Forsyth County	37067000801	3399
Nash County	37127011500	7001
Nash County	37127010200	4146
Forsyth County	37067002001	2692
Nash County	37127010400	2784
Forsyth County	37067003404	4198
Mecklenburg County	37119004900	669
Guilford County	37081010100	1910
Guilford County	37081012706	3373
Guilford County	37081013800	4786

Guilford County	37081011101	3867
Guilford County	37081011400	5090
Guilford County	37081014200	4637
Guilford County	37081012707	2950
Mecklenburg County	37119001507	5216
Mecklenburg County	37119003902	4725
Mecklenburg County	37119005200	1825
Mecklenburg County	37119004800	3233
Mecklenburg County	37119005100	2247
Mecklenburg County	37119004700	1789
Mecklenburg County	37119003903	2211
Guilford County	37081014300	3220
Guilford County	37081014000	3408
Guilford County	37081013900	4338
Guilford County	37081014503	3618
Guilford County	37081011000	5474
Guilford County	37081011102	2740
Guilford County	37081012705	3831
Mecklenburg County	37119000800	2975
Mecklenburg County	37119004600	2668
Guilford County	37081013601	2539
Guilford County	37081011500	2630
Mecklenburg County	37119004500	2724
Mecklenburg County	37119004200	3249
Guilford County	37081014408	2325
Mecklenburg County	37119002300	3431
Mecklenburg County	37119003802	3543
Mecklenburg County	37119001504	6940
Guilford County	37081011300	3044
Guilford County	37081014501	1136
Guilford County	37081011200	6033
Anson County	37007920500	5566
Pitt County	37147000800	3270
Pitt County	37147000701	3248
Pitt County	37147000900	8102
Pitt County	37147001900	2485
Pitt County	37147000100	6499
Wayne County	37191000601	4615
Wayne County	37191001500	2314
Wayne County	37191001800	2233
Wayne County	37191001900	4716
Wayne County	37191001400	6167
Madison County	37115010200	2175
Duplin County	37061090200	4963
Duplin County	37061090300	5913
Duplin County	37061090802	5675
Duplin County	37061090801	3053
Duplin County	37061090702	6586
Warren County	37185950300	4239
Warren County	37185950103	2720

Warren County	37185950101	2145
Pitt County	37147002001	6324
Pitt County	37147000702	2910
Wayne County	37191002000	966
Vance County	37181960600	1545
Vance County	37181960700	4206
Vance County	37181960800	2338
Vance County	37181960500	4379
Pasquotank County	37139960300	2412
Pasquotank County	37139960100	1491
Wilson County	37195001000	1586
Wilson County	37195001200	3473
Wilson County	37195000802	3809
Wilson County	37195000700	4853
Wilson County	37195001100	1505
Wilson County	37195000801	1740
Northampton County	37131920300	6073
Northampton County	37131920200	3742
Northampton County	37131920100	4392
Northampton County	37131920401	4405
Wilson County	37195000100	3831
Wilson County	37195000300	2231
Wilson County	37195000200	1213
Alamance County	37001020400	6746
Alamance County	37001021000	3999
Alamance County	37001020802	5915
Anson County	37007920100	3031
Anson County	37007920400	3175
Rowan County	37159050400	2870
Rutherford County	37161960800	4649
Catawba County	37035010900	3219
Martin County	37117970400	2093
Martin County	37117970600	3263
Martin County	37117970200	3905
Martin County	37117970300	3774
Alleghany County	37005950100	4117
Alleghany County	37005950300	3180
Columbus County	37047930100	4615
Columbus County	37047930700	4313
Columbus County	37047930500	4393
Columbus County	37047930900	4738
Person County	37145920300	5487
Person County	37145920400	2875
Watauga County	37189920500	7376
Brunswick County	37019020403	5336
Edgecombe County	37065020800	3324
Edgecombe County	37065020900	2582
Edgecombe County	37065020600	2364
Edgecombe County	37065021600	2984
Edgecombe County	37065021500	3305

Edgecombe County	37065020200	6214
Edgecombe County	37065020300	4821
Edgecombe County	37065020400	4724
Cabarrus County	37025042101	3180
Graham County	37075920300	3528
Hoke County	37093970300	5237
Hoke County	37093970402	3245
Hoke County	37093970202	4224
Hoke County	37093970401	3682
Bertie County	37015960100	5616
Bertie County	37015960300	3276
Bertie County	37015960400	6535
Bertie County	37015960200	3953
Bladen County	37017950400	6281
Bladen County	37017950500	6646
Bladen County	37017950600	5752
Bladen County	37017950300	6549
Bladen County	37017950100	5080
Bladen County	37017950200	3099
Dare County	37055970502	3649
Cherokee County	37039930300	2741
Swain County	37173940100	4870
Tyrrell County	37177960100	4095
Stokes County	37169070300	4359
Craven County	37049960800	1989
Washington County	37187950100	4529
Washington County	37187950300	1752
Washington County	37187950200	5641
New Hanover County	37129011400	1715
Hyde County	37095920100	5213
New Hanover County	37129011000	2353
Pamlico County	37137950102	3546
Wake County	37183050900	3193
Wake County	37183050800	4090
New Hanover County	37129011100	2656
Avery County	37011930200	2348
Lee County	37105030300	3015
Lee County	37105030200	3304
Harnett County	37085070200	3053
Scotland County	37165010200	4123
Scotland County	37165010600	6584
Scotland County	37165010300	4575
Scotland County	37165010500	7028
Jackson County	37099950900	2350
Jackson County	37099940200	6063
Cleveland County	37045950900	2649
Cleveland County	37045951100	2742
Hertford County	37091950200	5736
Hertford County	37091950100	7384
Hertford County	37091950300	3567

	Gaston County	37071031500	3760	
	Gaston County	37071032000	2913	
	Granville County	37077970702	2615	
	Hertford County	37091950402	3779	
	Gaston County	37071031900	2278	
	Gaston County	37071031800	3375	
	Wilkes County	37193961001	4294	
TOTAL			973320	

	County	LIDAC IDs	Population	Affected Burdens
Industry Sector	Richmond County	37153970900	4929	Asthma (≥90th)
(572 census tracts)	Richmond County	37153971000	4516	Diabetes (≥90th)
	Richmond County	37153971100	4426	Heart Disease (≥90th)
	Richmond County	37153970300	4027	Low Life Expectancy (≥90th)
	Richmond County	37153970600	4054	Energy Cost (≥90th)
	Richmond County	37153970700	2778	Unemployment (≥90th)
	Richmond County	37153970500	2406	Low Median Income (≥90th)
	Union County	37179020602	4996	Below 200% Federal Poverty Line
	Union County	37179020502	3789	(≥90th)
	Franklin County	37069060100	4744	
	Franklin County	37069060302	2702	
	Franklin County	37069060402	4984	
	Davidson County	37057060800	3764	
	Davidson County	37057061400	3141	
	Davidson County	37057061500	6309	
	Davidson County	37057061300	2323	
	Union County	37179020404	7071	
	Carteret County	37031970200	1260	
	Davidson County	37057061600	2796	
	Davidson County	37057061201	6337	
	Davidson County	37057062002	4035	
	Davidson County	37057061901	5796	
	Carteret County	37031970304	2209	
	Carteret County	37031970401	1591	
	Carteret County	37031970402	1315	
	Carteret County	37031970101	959	
	Sampson County	37163970500	5949	
	Sampson County	37163970900	3538	
	Sampson County	37163971000	5060	
	Sampson County	37163970100	7110	
	Sampson County	37163970600	4681	
	Sampson County	37163970800	6944	
	Sampson County	37163970700	7316	
	Carteret County	37031970701	1105	
	Johnston County	37101040700	3901	
	Johnston County	37101040600	3821	
	Johnston County	37101041400	7159	
	Johnston County	37101040500	6673	
	Johnston County	37101040100	7209	
	Johnston County	37101040301	4899	
	Johnston County	37101040302	5573	
	Caldwell County	37027030900	4695	
	Caldwell County	37027030400	3947	
	Caldwell County	37027030200	4712	
	Caldwell County	37027030300	4170	
	Caldwell County	37027030100	5448	
	Montgomery County	37123960500	5069	
	Montgomery County	37123960402	2691	
	Montgomery County	37123960401	2320	
	Cumberland County	37051001603	3887	
	Cumberland County	37051002401	1439	
	Cumberland County	37051003310	5162	
	Cumberland County	37051003403	4337	
	Cumberland County	37051003405	1923	
	Cumberland County	37051003800	2754	
	Chatham County	37037020300	2790	
	Chatham County	37037020500	3626	
	Chatham County	37037020401	6099	
	Halifax County	37083930600	4333	
	Halifax County	37083930800	5047	
	Halifax County	37083930700	4059	
	Halifax County	37083930900	5051	
	Halifax County	37083931000	3168	
	Halifax County	37083931100	4519	
	Halifax County	37083930100	3246	
	Halifax County	37083930400	4005	
	Halifax County	37083930502	5170	
	Halifax County	37083930501	3675	
	Burke County	37023020802	3553	
	Burke County	37023020100	4318	
	Burke County	37023020600	5573	

Burke County	37023020201	6586
Burke County	37023021400	4997
Iredell County	37097060400	3924
Iredell County	37097060200	2354
Iredell County	37097060300	2332
Greene County	37079950200	4828
Greene County	37079950300	7173
Greene County	37079950101	3808
Iredell County	37097060603	1868
Durham County	37063001502	5928
Durham County	37063001100	3183
Durham County	37063001709	6964
Iredell County	37097061501	3863
Durham County	37063001400	2397
Cumberland County	37051001100	3912
Cumberland County	37051002300	4360
Cumberland County	37051001400	6257
Cumberland County	37051000500	2288
Cumberland County	37051000200	2202
Durham County	37063000500	4532
Durham County	37063001002	5931
Durham County	37063000900	1710
Cumberland County	37051001000	2556
Cumberland County	37051001200	5156
Cumberland County	37051001500	2954
Durham County	37063001001	3706
Durham County	37063001301	1382
Durham County	37063002009	5052
Cumberland County	37051002200	2296
Cumberland County	37051003204	8374
Durham County	37063001304	3411
Cumberland County	37051001901	1976
Cumberland County	37051001903	4105
Cumberland County	37051003302	6131
Perquimans County	37143920201	2948
Durham County	37063002300	1633
Forsyth County	37067003108	3822
Lenoir County	37107011300	4967
Lenoir County	37107010700	2043
Lenoir County	37107011100	5847
Lenoir County	37107010200	2452
Lenoir County	37107010100	4085
Lenoir County	37107010300	1437
Lenoir County	37107010500	3475
Surry County	37171930400	2535
Surry County	37171930202	3246
Surry County	37171930201	3178
Mitchell County	37121950200	3601
Mitchell County	37121950100	2463
Lenoir County	37107010600	3649
Lenoir County	37107010900	3225
Lenoir County	37107010400	740
Surry County	37171930502	3433
Surry County	37171930802	3021
Forsyth County	37067001700	5678
Forsyth County	37067001800	4308
Forsyth County	37067002901	4812
Forsyth County	37067001500	4674
Beaufort County	37013930100	4981
Robeson County	37155960600	6794
Robeson County	37155961700	5035
Robeson County	37155961500	5041
Robeson County	37155961900	4939
Robeson County	37155961000	1991
Robeson County	37155961100	2237
Robeson County	37155961200	3236
Robeson County	37155960300	6428
Robeson County	37155960701	6120
Robeson County	37155960202	4379
Robeson County	37155960201	4940
Robeson County	37155960101	4123
Forsyth County	37067001602	3449

Forsyth County	37067002806	3147
Beaufort County	37013930800	2628
Beaufort County	37013930300	3714
Beaufort County	37013930400	4724
Robeson County	37155960402	4044
Robeson County	37155962001	3506
Robeson County	37155960401	7197
Robeson County	37155960501	3517
Robeson County	37155961801	5687
Robeson County	37155962002	3310
Robeson County	37155960801	3352
Robeson County	37155961601	4313
Robeson County	37155961802	5418
Robeson County	37155960503	1838
Robeson County	37155961302	5617
Robeson County	37155961602	4030
Robeson County	37155960502	4683
Robeson County	37155960802	1475
Robeson County	37155960702	3265
Forsyth County	37067000500	2271
Forsyth County	37067001400	3641
Forsyth County	37067001601	3256
Forsyth County	37067000200	1083
Forsyth County	37067000302	1546
Forsyth County	37067000301	1858
Forsyth County	37067000600	2259
Forsyth County	37067000400	3559
Forsyth County	37067000802	2536
Forsyth County	37067000700	2238
Forsyth County	37067001901	1608
Forsyth County	37067000801	3399
Nash County	37127011500	7001
Nash County	37127011000	4902
Nash County	37127010200	4146
Forsyth County	37067002002	3627
Forsyth County	37067002001	2692
Forsyth County	37067003701	4337
Forsyth County	37067002903	3898
Nash County	37127010400	2784
Forsyth County	37067003404	4198
Mecklenburg County	37119004900	669
Guilford County	37081010100	1910
Guilford County	37081010200	5375
Guilford County	37081012706	3373
Mecklenburg County	37119001509	3699
Mecklenburg County	37119001608	4442
Guilford County	37081013800	4786
Guilford County	37081011101	3867
Guilford County	37081011400	5090
Mecklenburg County	37119001607	3277
Mecklenburg County	37119005305	4279
Mecklenburg County	37119005307	4184
Mecklenburg County	37119006109	4150
Mecklenburg County	37119001920	5936
Guilford County	37081012604	4277
Guilford County	37081012608	2829
Guilford County	37081014200	4637
Guilford County	37081012707	2950
Mecklenburg County	37119005306	2135
Mecklenburg County	37119005616	1657
Mecklenburg County	37119001508	6893
Mecklenburg County	37119001507	5216
Mecklenburg County	37119005000	2155
Mecklenburg County	37119005308	2717
Guilford County	37081014412	3128
Mecklenburg County	37119003902	4725
Mecklenburg County	37119004302	5460
Mecklenburg County	37119005200	1825
Mecklenburg County	37119001916	4624
Mecklenburg County	37119001922	4710
Henderson County	37089931000	5236
Henderson County	37089931400	6227

Mecklenburg County	37119003600	4053
Mecklenburg County	37119001702	5881
Mecklenburg County	37119001701	4434
Mecklenburg County	37119004800	3233
Mecklenburg County	37119005100	2247
Mecklenburg County	37119004700	1789
Mecklenburg County	37119003903	2211
Mecklenburg County	37119005301	4247
Mecklenburg County	37119006005	3380
Mecklenburg County	37119004305	6658
Mecklenburg County	37119004304	4737
Guilford County	37081014300	3220
Guilford County	37081012611	3958
Guilford County	37081014000	3408
Guilford County	37081013900	4338
Guilford County	37081014503	3618
Guilford County	37081011000	5474
Guilford County	37081011602	3957
Guilford County	37081011102	2740
Guilford County	37081012705	3831
Mecklenburg County	37119000800	2975
Mecklenburg County	37119000900	1825
Mecklenburg County	37119001603	4366
Mecklenburg County	37119001912	8311
Mecklenburg County	37119004600	2668
Guilford County	37081013601	2539
Guilford County	37081011500	2630
Guilford County	37081012805	3210
Mecklenburg County	37119004500	2724
Mecklenburg County	37119004200	3249
Mecklenburg County	37119004000	4691
Mecklenburg County	37119003700	3876
Mecklenburg County	37119005401	6183
Guilford County	37081012704	3846
Guilford County	37081014408	2325
Guilford County	37081014406	2576
Mecklenburg County	37119002300	3431
Mecklenburg County	37119003802	3543
Guilford County	37081010300	2650
Guilford County	37081016600	2266
Mecklenburg County	37119001504	6940
Guilford County	37081011300	3044
Guilford County	37081014501	1136
Guilford County	37081011200	6033
Anson County	37007920500	5566
Anson County	37007920600	3753
Pitt County	37147001700	4644
Pitt County	37147001800	6599
Pitt County	37147000800	3270
Pitt County	37147000701	3248
Pitt County	37147000900	8102
Pitt County	37147001900	2485
Pitt County	37147000100	6499
Wayne County	37191000700	2804
Wayne County	37191001200	3704
Wayne County	37191000601	4615
Wayne County	37191001500	2314
Wayne County	37191001800	2233
Wayne County	37191001900	4716
Wayne County	37191001400	6167
Wayne County	37191001301	6270
Madison County	37115010100	2553
Madison County	37115010200	2175
Duplin County	37061090600	3885
Duplin County	37061090200	4963
Duplin County	37061090300	5913
Duplin County	37061090802	5675
Duplin County	37061090801	3053
Duplin County	37061090702	6586
Warren County	37185950300	4239
Warren County	37185950400	3715
Warren County	37185950200	5814

Warren County	37185950103	2720
Warren County	37185950101	2145
Pitt County	37147001500	3328
Pitt County	37147002001	6324
Pitt County	37147000702	2910
Pitt County	37147001402	2647
Pitt County	37147001401	4644
Pitt County	37147000601	8471
Wayne County	37191000902	5042
Wayne County	37191002000	966
Macon County	37113970200	3828
Macon County	37113970400	4225
Macon County	37113970302	4292
Transylvania County	37175960500	4658
Transylvania County	37175960200	4687
Vance County	37181960200	4015
Vance County	37181960100	4051
Vance County	37181960600	1545
Vance County	37181960700	4206
Vance County	37181960800	2338
Vance County	37181960500	4379
Pasquotank County	37139960300	2412
Pasquotank County	37139960100	1491
Wilson County	37195001000	1586
Wilson County	37195001200	3473
Wilson County	37195000802	3809
Wilson County	37195000700	4853
Wilson County	37195001100	1505
Wilson County	37195000801	1740
Wilson County	37195000400	8326
Northampton County	37131920300	6073
Northampton County	37131920200	3742
Northampton County	37131920100	4392
Northampton County	37131920401	4405
Wilson County	37195000100	3831
Wilson County	37195000300	2231
Wilson County	37195000200	1213
Alamance County	37001020400	6746
Alamance County	37001020300	7400
Alamance County	37001020200	4093
Alamance County	37001021000	3999
Alamance County	37001020802	5915
Stanly County	37167931100	5656
Stanly County	37167930500	3357
Alamance County	37001020702	4941
Anson County	37007920100	3031
Anson County	37007920200	1881
Anson County	37007920400	3175
Rowan County	37159050201	4236
Rowan County	37159050700	3222
Rowan County	37159050400	2870
Rowan County	37159050800	2633
Rowan County	37159050202	5346
Clay County	37043950200	5916
Rowan County	37159051502	3440
Rowan County	37159051501	3951
Rowan County	37159052000	2371
Rutherford County	37161960100	7420
Rutherford County	37161960700	4027
Rutherford County	37161960800	4649
Catawba County	37035011101	3885
Rutherford County	37161960900	5725
Rutherford County	37161961102	3248
Catawba County	37035010700	2366
Catawba County	37035011000	2140
Catawba County	37035010900	3219
Catawba County	37035011402	3893
Martin County	37117970500	5306
Martin County	37117970400	2093
Martin County	37117970600	3263
Martin County	37117970200	3905
Martin County	37117970300	3774

Alleghany County	37005950100	4117		
Alleghany County	37005950300	3180		
Alleghany County	37005950200	3711		
Brunswick County	37019020509	4861		
Moore County	37125950200	8237		
Chowan County	37041930101	5230		
Columbus County	37047930300	2859		
Columbus County	37047930400	3596		
Columbus County	37047931300	5637		
Columbus County	37047930100	4615		
Columbus County	37047930200	2235		
Columbus County	37047930600	3560		
Columbus County	37047930700	4313		
Columbus County	37047931200	7034		
Columbus County	37047930500	4393		
Columbus County	37047930900	4738		
Person County	37145920300	5487		
Person County	37145920400	2875		
Person County	37145920602	4982		
Moore County	37125950801	5440		
Watauga County	37189920500	7376		
Watauga County	37189920601	6313		
Brunswick County	37019020403	5336		
Cabarrus County	37025041000	5842		
Cabarrus County	37025040800	3760		
Edgecombe County	37065020800	3324		
Edgecombe County	37065020900	2582		
Edgecombe County	37065021000	3006		
Edgecombe County	37065021200	4806		
Edgecombe County	37065020700	1918		
Edgecombe County	37065020600	2364		
Edgecombe County	37065021600	2984		
Edgecombe County	37065021500	3305		
Edgecombe County	37065020200	6214		
Edgecombe County	37065020300	4821		
Edgecombe County	37065020400	4724		
Cabarrus County	37025041902	4239		
Cabarrus County	37025042101	3180		
Cabarrus County	37025040701	1671		
Cabarrus County	37025040703	2763		
Cabarrus County	37025041702	3672		
Cabarrus County	37025041901	2216		
Graham County	37075920100	2554		
Graham County	37075920300	3528		
Haywood County	37087920700	3910		
Haywood County	37087920900	1890		
Hoke County	37093970300	5237		
Hoke County	37093970402	3245		
Hoke County	37093970202	4224		
Hoke County	37093970201	5193		
Hoke County	37093970401	3682		
Bertie County	37015960100	5616		
Bertie County	37015960300	3276		
Bertie County	37015960400	6535		
Bertie County	37015960200	3953		
Bladen County	37017950400	6281		
Bladen County	37017950500	6646		
Bladen County	37017950600	5752		
Bladen County	37017950300	6549		
Bladen County	37017950100	5080		
Bladen County	37017950200	3099		
Dare County	37055970502	3649		
Randolph County	37151030302	2735		
Randolph County	37151030400	4256		
Randolph County	37151031100	6360		
Randolph County	37151030700	6503		
Randolph County	37151031200	4940		
Randolph County	37151031602	1307		
Cherokee County	37039930300	2741		
Cherokee County	37039930200	2155		
Cherokee County	37039930400	5969		
Cherokee County	37039930100	4228		

Cherokee County	37039930602	4158
Cherokee County	37039930601	3421
Swain County	37173960200	3076
Swain County	37173940100	4870
Swain County	37173960302	3325
Swain County	37173960301	2989
Tyrrell County	37177960100	4095
Stokes County	37169070700	5344
Stokes County	37169070300	4359
Wake County	37183052102	6960
Wake County	37183052101	9240
Craven County	37049960800	1989
Craven County	37049960500	7715
Craven County	37049960600	6237
Wake County	37183052001	4323
Craven County	37049960900	2032
Craven County	37049960200	8244
Washington County	37187950100	4529
Washington County	37187950300	1752
Washington County	37187950200	5641
Wake County	37183052704	6420
Pender County	37141920300	4368
New Hanover County	37129010800	2653
New Hanover County	37129011400	1715
New Hanover County	37129010501	4072
New Hanover County	37129011902	5809
Hyde County	37095920100	5213
Pender County	37141920501	4971
Pender County	37141920502	1811
Pender County	37141920401	2667
New Hanover County	37129010100	2400
New Hanover County	37129010502	9303
New Hanover County	37129010700	4579
New Hanover County	37129011000	2353
Pamlico County	37137950102	3546
Wake County	37183050900	3193
Wake County	37183050700	3142
Wake County	37183050800	4090
Wake County	37183052002	5931
Wake County	37183051102	4977
New Hanover County	37129011100	2656
New Hanover County	37129011903	9353
Yadkin County	37197050200	4320
Yadkin County	37197050300	6104
Avery County	37011930301	3252
Avery County	37011930302	2566
Avery County	37011930200	2348
Ashe County	37009970200	2958
Ashe County	37009970300	2573
Ashe County	37009970500	5839
Wake County	37183052408	3586
Wake County	37183051101	5363
Lee County	37105030300	3015
Lee County	37105030200	3304
Lee County	37105030503	7292
Harnett County	37085070100	4642
Harnett County	37085070300	5062
Harnett County	37085070200	3053
Harnett County	37085070600	4520
Jones County	37103920100	3472
Jones County	37103920300	3237
Jones County	37103920200	2885
Lincoln County	37109070300	4097
Yancey County	37199960200	4605
Yancey County	37199960300	3017
Yancey County	37199960102	1995
Scotland County	37165010200	4123
Scotland County	37165010600	6584
Scotland County	37165010300	4575
Scotland County	37165010500	7028
Scotland County	37165010102	4861
Buncombe County	37021000100	1445

	Polk County	37149920301	1102	
	Buncombe County	37021000900	2996	
	Buncombe County	37021001300	4551	
	Buncombe County	37021000700	1605	
	Buncombe County	37021002506	3655	
	Buncombe County	37021002603	3818	
	Jackson County	37099950900	2350	
	Jackson County	37099940200	6063	
	Cleveland County	37045950200	4647	
	Cleveland County	37045950400	7254	
	Cleveland County	37045951200	5651	
	Cleveland County	37045950900	2649	
	Cleveland County	37045951000	3092	
	Cleveland County	37045950500	3310	
	Cleveland County	37045951100	2742	
	Cleveland County	37045950101	4997	
	Alexander County	37003040400	6761	
	Caswell County	37033930200	5376	
	Caswell County	37033930100	2407	
	Caswell County	37033930300	3922	
	Onslow County	37133002500	3448	
	Gaston County	37071033400	2734	
	Onslow County	37133001800	1883	
	Onslow County	37133001500	2863	
	Onslow County	37133000600	10751	
	Onslow County	37133000800	1370	
	Hertford County	37091950200	5736	
	Hertford County	37091950100	7384	
	Hertford County	37091950300	3567	
	Gaston County	37071033100	2955	
	Gaston County	37071032100	2952	
	Gaston County	37071031500	3760	
	Gaston County	37071032000	2913	
	Gaston County	37071031600	4035	
	Onslow County	37133000900	6870	
	Onslow County	37133001000	5490	
	Onslow County	37133001102	3923	
	Granville County	37077970300	3529	
	Granville County	37077970400	3753	
	Granville County	37077970703	4389	
	Granville County	37077970702	2615	
	Hertford County	37091950402	3779	
	Rockingham County	37157040102	2680	
	Gaston County	37071032800	6005	
	Gaston County	37071031900	2278	
	Gaston County	37071031800	3375	
	Gaston County	37071033202	2232	
	Onslow County	37133002600	3069	
	Wilkes County	37193960900	4714	
	Wilkes County	37193960300	6462	
	Wilkes County	37193960500	3177	
	Wilkes County	37193960600	2438	
	Wilkes County	37193960700	3663	
	Wilkes County	37193961001	4294	
	Rockingham County	37157040900	2631	
	Rockingham County	37157041400	2953	
	Rockingham County	37157041300	6150	
	Rockingham County	37157040400	6087	
	Rockingham County	37157041200	4841	
	Gaston County	37071032302	2967	
	Gaston County	37071032704	4193	
	Rockingham County	37157040501	3541	
	Gaston County	37071033204	3527	
	Gaston County	37071030902	3782	
	Gaston County	37071031101	3025	
	Gaston County	37071030302	2518	
	Gaston County	37071030802	4096	
	McDowell County	37111970300	3012	
	Gaston County	37071030801	1538	
TOTAL			2309536	

	County	LIDAC IDs	Population	Affected Burdens
Waste Sector	Richmond County	37153970900	4929	Asthma (≥90th)
(551 census tracts)	Richmond County	37153971000	4516	Diabetes (≥90th)
	Richmond County	37153971100	4426	Heart Disease (≥90th)
	Richmond County	37153970300	4027	Low Life Expectancy (≥90th)
	Richmond County	37153970600	4054	PM2.5 (≥60th)
	Richmond County	37153970700	2778	Diesel Particulate Matter Exposure (≥80th)
	Richmond County	37153970500	2406	Unemployment (≥90th)
	Union County	37179020602	4996	Low Median Income (≥90th)
	Union County	37179020502	3789	Below 200% Federal Poverty Line (≥90th)
	Franklin County	37069060100	4744	
	Franklin County	37069060302	2702	
	Franklin County	37069060402	4984	
	Davidson County	37057060800	3764	
	Davidson County	37057061400	3141	
	Davidson County	37057061500	6309	
	Davidson County	37057061300	2323	
	Union County	37179020404	7071	
	Carteret County	37031970200	1260	
	Davidson County	37057061600	2796	
	Davidson County	37057061201	6337	
	Davidson County	37057061702	7222	
	Davidson County	37057062002	4035	
	Davidson County	37057061901	5796	
	Carteret County	37031970304	2209	
	Carteret County	37031970401	1591	
	Carteret County	37031970402	1315	
	Carteret County	37031970101	959	
	Sampson County	37163970900	3538	
	Sampson County	37163971000	5060	
	Sampson County	37163970100	7110	
	Sampson County	37163970600	4681	
	Sampson County	37163970800	6944	
	Carteret County	37031970701	1105	
	Johnston County	37101040700	3901	
	Johnston County	37101040600	3821	
	Johnston County	37101041400	7159	
	Johnston County	37101040500	6673	
	Johnston County	37101040100	7209	
	Johnston County	37101040301	4899	
	Johnston County	37101040302	5573	
	Caldwell County	37027030900	4695	
	Caldwell County	37027030400	3947	
	Caldwell County	37027030200	4712	
	Caldwell County	37027030300	4170	
	Caldwell County	37027030100	5448	
	Montgomery County	37123960500	5069	
	Montgomery County	37123960402	2691	
	Montgomery County	37123960401	2320	
	Cumberland County	37051001603	3887	
	Cumberland County	37051002401	1439	
	Cumberland County	37051003310	5162	
	Cumberland County	37051003403	4337	
	Cumberland County	37051003405	1923	
	Cumberland County	37051003800	2754	
	Chatham County	37037020300	2790	
	Chatham County	37037020401	6099	
	Halifax County	37083930600	4333	
	Halifax County	37083930800	5047	

Halifax County	37083930700	4059
Halifax County	37083930900	5051
Halifax County	37083931000	3168
Halifax County	37083931100	4519
Halifax County	37083930100	3246
Halifax County	37083930400	4005
Halifax County	37083930502	5170
Halifax County	37083930501	3675
Burke County	37023020802	3553
Burke County	37023020100	4318
Burke County	37023020600	5573
Burke County	37023020201	6586
Burke County	37023021400	4997
Iredell County	37097060400	3924
Iredell County	37097060200	2354
Iredell County	37097060300	2332
Greene County	37079950200	4828
Greene County	37079950300	7173
Iredell County	37097060603	1868
Durham County	37063001502	5928
Durham County	37063001100	3183
Durham County	37063001709	6964
Iredell County	37097061501	3863
Durham County	37063001400	2397
Cumberland County	37051001100	3912
Cumberland County	37051002300	4360
Cumberland County	37051001400	6257
Cumberland County	37051000500	2288
Cumberland County	37051000200	2202
Durham County	37063000500	4532
Durham County	37063001002	5931
Durham County	37063000900	1710
Cumberland County	37051001000	2556
Cumberland County	37051001200	5156
Cumberland County	37051001500	2954
Durham County	37063001001	3706
Durham County	37063001301	1382
Durham County	37063002009	5052
Cumberland County	37051002200	2296
Cumberland County	37051003204	8374
Durham County	37063001304	3411
Cumberland County	37051001901	1976
Cumberland County	37051001903	4105
Cumberland County	37051003302	6131
Perquimans County	37143920201	2948
Durham County	37063002300	1633
Forsyth County	37067003108	3822
Lenoir County	37107011300	4967
Lenoir County	37107010700	2043
Lenoir County	37107011100	5847
Lenoir County	37107010200	2452
Lenoir County	37107010100	4085
Lenoir County	37107010300	1437
Lenoir County	37107010500	3475
Surry County	37171930400	2535
Surry County	37171930202	3246
Mitchell County	37121950200	3601
Mitchell County	37121950100	2463
Lenoir County	37107010600	3649

Lenoir County	37107010900	3225
Lenoir County	37107010400	740
Surry County	37171930502	3433
Surry County	37171930802	3021
Forsyth County	37067001700	5678
Forsyth County	37067001800	4308
Forsyth County	37067002901	4812
Forsyth County	37067001500	4674
Beaufort County	37013930100	4981
Robeson County	37155960600	6794
Robeson County	37155961700	5035
Robeson County	37155961500	5041
Robeson County	37155961900	4939
Robeson County	37155961000	1991
Robeson County	37155961100	2237
Robeson County	37155961200	3236
Robeson County	37155960300	6428
Robeson County	37155960701	6120
Robeson County	37155960202	4379
Robeson County	37155960101	4123
Forsyth County	37067001602	3449
Forsyth County	37067002806	3147
Beaufort County	37013930800	2628
Beaufort County	37013930300	3714
Beaufort County	37013930400	4724
Robeson County	37155960402	4044
Robeson County	37155962001	3506
Robeson County	37155960401	7197
Robeson County	37155960501	3517
Robeson County	37155961801	5687
Robeson County	37155962002	3310
Robeson County	37155960801	3352
Robeson County	37155961601	4313
Robeson County	37155961802	5418
Robeson County	37155960503	1838
Robeson County	37155961302	5617
Robeson County	37155961602	4030
Robeson County	37155960502	4683
Robeson County	37155960802	1475
Robeson County	37155960702	3265
Forsyth County	37067000500	2271
Forsyth County	37067001400	3641
Forsyth County	37067001601	3256
Forsyth County	37067000200	1083
Forsyth County	37067000302	1546
Forsyth County	37067000301	1858
Forsyth County	37067000600	2259
Forsyth County	37067000400	3559
Forsyth County	37067000802	2536
Forsyth County	37067000700	2238
Forsyth County	37067001901	1608
Forsyth County	37067000801	3399
Nash County	37127011000	4902
Nash County	37127010200	4146
Forsyth County	37067002002	3627
Forsyth County	37067002001	2692
Forsyth County	37067003701	4337
Forsyth County	37067002903	3898
Nash County	37127010400	2784

Forsyth County	37067003404	4198
Mecklenburg County	37119004900	669
Guilford County	37081010100	1910
Guilford County	37081010200	5375
Guilford County	37081012706	3373
Mecklenburg County	37119001509	3699
Mecklenburg County	37119001608	4442
Guilford County	37081013800	4786
Guilford County	37081011101	3867
Guilford County	37081011400	5090
Mecklenburg County	37119001607	3277
Mecklenburg County	37119005305	4279
Mecklenburg County	37119005307	4184
Mecklenburg County	37119006109	4150
Mecklenburg County	37119001920	5936
Guilford County	37081012604	4277
Guilford County	37081012608	2829
Guilford County	37081014200	4637
Guilford County	37081012707	2950
Mecklenburg County	37119005306	2135
Mecklenburg County	37119005616	1657
Mecklenburg County	37119001508	6893
Mecklenburg County	37119001507	5216
Mecklenburg County	37119005000	2155
Mecklenburg County	37119005308	2717
Guilford County	37081014412	3128
Mecklenburg County	37119003902	4725
Mecklenburg County	37119004302	5460
Mecklenburg County	37119005200	1825
Mecklenburg County	37119001916	4624
Mecklenburg County	37119001922	4710
Henderson County	37089931000	5236
Henderson County	37089931400	6227
Mecklenburg County	37119003600	4053
Mecklenburg County	37119001702	5881
Mecklenburg County	37119001701	4434
Mecklenburg County	37119004800	3233
Mecklenburg County	37119005100	2247
Mecklenburg County	37119005916	3029
Mecklenburg County	37119004700	1789
Mecklenburg County	37119003903	2211
Mecklenburg County	37119005301	4247
Mecklenburg County	37119006005	3380
Mecklenburg County	37119004305	6658
Mecklenburg County	37119004304	4737
Guilford County	37081014300	3220
Guilford County	37081012611	3958
Guilford County	37081014000	3408
Guilford County	37081013900	4338
Mecklenburg County	37119000700	1001
Guilford County	37081014503	3618
Guilford County	37081011000	5474
Guilford County	37081011602	3957
Guilford County	37081011102	2740
Guilford County	37081012705	3831
Mecklenburg County	37119000800	2975
Mecklenburg County	37119000900	1825
Mecklenburg County	37119001603	4366
Mecklenburg County	37119001912	8311

Mecklenburg County	37119004600	2668
Guilford County	37081013601	2539
Guilford County	37081011500	2630
Guilford County	37081012805	3210
Mecklenburg County	37119004500	2724
Mecklenburg County	37119004200	3249
Mecklenburg County	37119004000	4691
Mecklenburg County	37119003700	3876
Mecklenburg County	37119005401	6183
Guilford County	37081012704	3846
Guilford County	37081014408	2325
Guilford County	37081014406	2576
Mecklenburg County	37119002300	3431
Mecklenburg County	37119003802	3543
Guilford County	37081010300	2650
Guilford County	37081016600	2266
Mecklenburg County	37119001504	6940
Guilford County	37081011300	3044
Guilford County	37081014501	1136
Guilford County	37081011200	6033
Anson County	37007920600	3753
Pitt County	37147001700	4644
Pitt County	37147001800	6599
Pitt County	37147000800	3270
Pitt County	37147000701	3248
Pitt County	37147000900	8102
Pitt County	37147001900	2485
Pitt County	37147000100	6499
Wayne County	37191000700	2804
Wayne County	37191001200	3704
Wayne County	37191000601	4615
Wayne County	37191001500	2314
Wayne County	37191001800	2233
Wayne County	37191001900	4716
Wayne County	37191001400	6167
Wayne County	37191001301	6270
Madison County	37115010100	2553
Madison County	37115010200	2175
Duplin County	37061090600	3885
Duplin County	37061090200	4963
Duplin County	37061090300	5913
Duplin County	37061090801	3053
Duplin County	37061090702	6586
Warren County	37185950300	4239
Warren County	37185950400	3715
Warren County	37185950200	5814
Warren County	37185950103	2720
Warren County	37185950101	2145
Pitt County	37147001500	3328
Pitt County	37147002001	6324
Pitt County	37147000702	2910
Pitt County	37147001402	2647
Pitt County	37147001401	4644
Pitt County	37147000601	8471
Wayne County	37191000902	5042
Wayne County	37191002000	966
Macon County	37113970200	3828
Macon County	37113970400	4225
Macon County	37113970302	4292

Transylvania County	37175960500	4658
Transylvania County	37175960200	4687
Vance County	37181960200	4015
Vance County	37181960100	4051
Vance County	37181960600	1545
Vance County	37181960700	4206
Vance County	37181960800	2338
Vance County	37181960500	4379
Pasquotank County	37139960300	2412
Wilson County	37195001200	3473
Wilson County	37195000802	3809
Wilson County	37195000700	4853
Wilson County	37195001100	1505
Wilson County	37195000801	1740
Wilson County	37195000400	8326
Northampton County	37131920300	6073
Northampton County	37131920200	3742
Northampton County	37131920100	4392
Northampton County	37131920401	4405
Wilson County	37195000100	3831
Wilson County	37195000300	2231
Wilson County	37195000200	1213
Alamance County	37001020400	6746
Alamance County	37001020300	7400
Alamance County	37001020200	4093
Alamance County	37001021000	3999
Alamance County	37001020802	5915
Stanly County	37167931100	5656
Stanly County	37167930500	3357
Alamance County	37001020702	4941
Anson County	37007920100	3031
Anson County	37007920200	1881
Anson County	37007920400	3175
Rowan County	37159050201	4236
Rowan County	37159050700	3222
Rowan County	37159050400	2870
Rowan County	37159050800	2633
Rowan County	37159050202	5346
Clay County	37043950200	5916
Rowan County	37159051502	3440
Rowan County	37159051501	3951
Rowan County	37159052000	2371
Rutherford County	37161960100	7420
Rutherford County	37161960700	4027
Rutherford County	37161960800	4649
Catawba County	37035011101	3885
Rutherford County	37161960900	5725
Rutherford County	37161961102	3248
Catawba County	37035010700	2366
Catawba County	37035011000	2140
Catawba County	37035010900	3219
Catawba County	37035011402	3893
Martin County	37117970500	5306
Martin County	37117970400	2093
Martin County	37117970600	3263
Martin County	37117970200	3905
Martin County	37117970300	3774
Alleghany County	37005950100	4117
Alleghany County	37005950300	3180

Alleghany County	37005950200	3711
Brunswick County	37019020509	4861
Moore County	37125950200	8237
Chowan County	37041930101	5230
Columbus County	37047930300	2859
Columbus County	37047930400	3596
Columbus County	37047931300	5637
Columbus County	37047930200	2235
Columbus County	37047930600	3560
Columbus County	37047930700	4313
Columbus County	37047931200	7034
Columbus County	37047930500	4393
Columbus County	37047930900	4738
Person County	37145920300	5487
Person County	37145920400	2875
Person County	37145920602	4982
Moore County	37125950801	5440
Watauga County	37189920500	7376
Watauga County	37189920601	6313
Brunswick County	37019020403	5336
Cabarrus County	37025041000	5842
Cabarrus County	37025040800	3760
Edgecombe County	37065020800	3324
Edgecombe County	37065020900	2582
Edgecombe County	37065021000	3006
Edgecombe County	37065021200	4806
Edgecombe County	37065020700	1918
Edgecombe County	37065020600	2364
Edgecombe County	37065021600	2984
Edgecombe County	37065020200	6214
Edgecombe County	37065020300	4821
Edgecombe County	37065020400	4724
Cabarrus County	37025041902	4239
Cabarrus County	37025042101	3180
Cabarrus County	37025040701	1671
Cabarrus County	37025040703	2763
Cabarrus County	37025041702	3672
Cabarrus County	37025041901	2216
Graham County	37075920100	2554
Graham County	37075920300	3528
Haywood County	37087920700	3910
Haywood County	37087920900	1890
Hoke County	37093970300	5237
Hoke County	37093970402	3245
Hoke County	37093970201	5193
Hoke County	37093970401	3682
Bertie County	37015960100	5616
Bertie County	37015960300	3276
Bertie County	37015960400	6535
Bertie County	37015960200	3953
Bladen County	37017950400	6281
Bladen County	37017950600	5752
Bladen County	37017950100	5080
Bladen County	37017950200	3099
Randolph County	37151030302	2735
Randolph County	37151030400	4256
Randolph County	37151031100	6360
Randolph County	37151030700	6503
Randolph County	37151031200	4940

Randolph County	37151031602	1307
Cherokee County	37039930200	2155
Cherokee County	37039930400	5969
Cherokee County	37039930100	4228
Cherokee County	37039930602	4158
Cherokee County	37039930601	3421
Swain County	37173960200	3076
Swain County	37173940100	4870
Swain County	37173960302	3325
Swain County	37173960301	2989
Stokes County	37169070700	5344
Stokes County	37169070300	4359
Wake County	37183052102	6960
Wake County	37183052101	9240
Craven County	37049960800	1989
Craven County	37049960500	7715
Craven County	37049960600	6237
Wake County	37183052001	4323
Craven County	37049960900	2032
Craven County	37049960200	8244
Washington County	37187950100	4529
Washington County	37187950200	5641
Wake County	37183052704	6420
Pender County	37141920300	4368
New Hanover County	37129010800	2653
New Hanover County	37129011400	1715
New Hanover County	37129010501	4072
New Hanover County	37129011902	5809
Pender County	37141920501	4971
Pender County	37141920502	1811
Pender County	37141920401	2667
New Hanover County	37129010100	2400
New Hanover County	37129010502	9303
New Hanover County	37129010700	4579
New Hanover County	37129011000	2353
Pamlico County	37137950102	3546
Wake County	37183050900	3193
Wake County	37183050700	3142
Wake County	37183050800	4090
Wake County	37183052002	5931
Wake County	37183051102	4977
New Hanover County	37129011100	2656
New Hanover County	37129011903	9353
Yadkin County	37197050200	4320
Yadkin County	37197050300	6104
Avery County	37011930301	3252
Avery County	37011930302	2566
Avery County	37011930200	2348
Ashe County	37009970200	2958
Ashe County	37009970300	2573
Ashe County	37009970500	5839
Wake County	37183052408	3586
Wake County	37183051101	5363
Lee County	37105030300	3015
Lee County	37105030200	3304
Lee County	37105030503	7292
Harnett County	37085070100	4642
Harnett County	37085070300	5062
Harnett County	37085070200	3053

Harnett County	37085070600	4520
Jones County	37103920100	3472
Jones County	37103920300	3237
Jones County	37103920200	2885
Lincoln County	37109070300	4097
Yancey County	37199960200	4605
Yancey County	37199960300	3017
Yancey County	37199960102	1995
Scotland County	37165010200	4123
Scotland County	37165010300	4575
Scotland County	37165010500	7028
Scotland County	37165010102	4861
Buncombe County	37021000100	1445
Polk County	37149920301	1102
Buncombe County	37021000900	2996
Buncombe County	37021001300	4551
Buncombe County	37021000700	1605
Buncombe County	37021002506	3655
Buncombe County	37021002603	3818
Jackson County	37099940200	6063
Cleveland County	37045950200	4647
Cleveland County	37045950400	7254
Cleveland County	37045951200	5651
Cleveland County	37045950900	2649
Cleveland County	37045951000	3092
Cleveland County	37045950500	3310
Cleveland County	37045951100	2742
Cleveland County	37045950101	4997
Alexander County	37003040400	6761
Caswell County	37033930200	5376
Caswell County	37033930100	2407
Caswell County	37033930300	3922
Onslow County	37133002500	3448
Gaston County	37071033400	2734
Onslow County	37133001800	1883
Onslow County	37133001500	2863
Onslow County	37133000600	10751
Onslow County	37133000800	1370
Hertford County	37091950200	5736
Hertford County	37091950100	7384
Hertford County	37091950300	3567
Gaston County	37071033100	2955
Gaston County	37071032100	2952
Gaston County	37071031500	3760
Gaston County	37071032000	2913
Gaston County	37071031600	4035
Onslow County	37133000900	6870
Onslow County	37133001000	5490
Onslow County	37133001102	3923
Granville County	37077970300	3529
Granville County	37077970400	3753
Granville County	37077970703	4389
Granville County	37077970702	2615
Hertford County	37091950402	3779
Rockingham County	37157040102	2680
Gaston County	37071032800	6005
Gaston County	37071031900	2278
Gaston County	37071031800	3375
Gaston County	37071033202	2232

	Onslow County	37133002600	3069
	Wilkes County	37193960900	4714
	Wilkes County	37193960300	6462
	Wilkes County	37193960500	3177
	Wilkes County	37193960600	2438
	Wilkes County	37193960700	3663
	Rockingham County	37157040900	2631
	Rockingham County	37157041400	2953
	Rockingham County	37157041300	6150
	Rockingham County	37157040400	6087
	Rockingham County	37157041200	4841
	Gaston County	37071032302	2967
	Gaston County	37071032704	4193
	Rockingham County	37157040501	3541
	Gaston County	37071033204	3527
	Gaston County	37071030902	3782
	Gaston County	37071031101	3025
	Gaston County	37071030302	2518
	Gaston County	37071030802	4096
	McDowell County	37111970300	3012
	Gaston County	37071030801	1538
TOTAL			2214635

	County	LIDAC ID	Population
Raleigh Cary and Durham-Chapel Hill Metropolitan Statistical Areas (72 census tracts)	Chatham County	37037020500	3626
	Chatham County	37037020600	5187
	Chatham County	37037020300	2790
	Chatham County	37037020401	6099
	Chatham County	37037020402	4499
	Durham County	37063001304	3411
	Durham County	37063001801	8618
	Durham County	37063000101	3150
	Durham County	37063000900	1710
	Durham County	37063000102	4430
	Durham County	37063001802	8121
	Durham County	37063002015	5801
	Durham County	37063000500	4532
	Durham County	37063001100	3183
	Durham County	37063001400	2397
	Durham County	37063001502	5928
	Durham County	37063002009	5052
	Durham County	37063000200	3343
	Durham County	37063002016	5304
	Durham County	37063001001	3706
	Durham County	37063001002	5931
	Durham County	37063001301	1382
	Durham County	37063001709	6964
	Durham County	37063002300	1633
	Durham County	37063001806	7416
	Franklin County	37069060700	6391
	Franklin County	37069060100	4744
	Franklin County	37069060302	2702
	Franklin County	37069060401	2774
	Franklin County	37069060402	4984
	Franklin County	37069060801	4102
	Franklin County	37069060802	5105
	Granville County	37077970702	2615
	Granville County	37077970703	4389
	Granville County	37077970400	3753
	Granville County	37077970300	3529
	Johnston County	37101041201	4153
	Johnston County	37101041202	5241
	Johnston County	37101041300	6502
	Johnston County	37101040500	6673
	Johnston County	37101040100	7209
	Johnston County	37101040400	4422
	Johnston County	37101040700	3901
	Johnston County	37101040800	3807
	Johnston County	37101040600	3821
	Johnston County	37101040201	6361
	Johnston County	37101040202	7060

	Johnston County	37101040301	4899
	Johnston County	37101040302	5573
	Johnston County	37101041400	7159
	Person County	37145920300	5487
	Person County	37145920400	2875
	Person County	37145920601	5789
	Person County	37145920602	4982
	Wake County	37183052102	6960
	Wake County	37183050900	3193
	Wake County	37183052001	4323
	Wake County	37183054302	7998
	Wake County	37183051101	5363
	Wake County	37183054104	12003
	Wake County	37183052101	9240
	Wake County	37183052002	5931
	Wake County	37183052704	6420
	Wake County	37183054008	7475
	Wake County	37183050700	3142
	Wake County	37183052408	3586
	Wake County	37183051102	4977
	Wake County	37183052806	18085
	Wake County	37183054108	7913
	Wake County	37183050800	4090
	Wake County	37183052701	6389
	Wake County	37183053517	5097
TOTAL			377400

	County	State	LIDAC ID
Charlotte-Concord-Gastonia NC/SC Metropolitan Statistical Area (102 census tracts)	Anson	NC	37007920100
	Anson	NC	37007920200
	Anson	NC	37007920400
	Anson	NC	37007920500
	Anson	NC	37007920600
	Anson	NC	37045950302
	Anson	NC	37045950400
	Anson	NC	37045950602
	Anson	NC	37045951000
	Anson	NC	37045951100
	Anson	NC	37071031102
	Anson	NC	37097060400
	Anson	NC	37119001300
	Anson	NC	37119001701
	Anson	NC	37119001910
	Anson	NC	37119001914
	Anson	NC	37119003109
	Anson	NC	37119003201
	Anson	NC	37119003802
	Anson	NC	37119003902
	Anson	NC	37119004000
	Anson	NC	37119004200
	Anson	NC	37119004302
	Anson	NC	37119005301
	Anson	NC	37119006010
	Anson	NC	37167930300
	Anson	NC	45023020900
	Anson	NC	45023021000
	Anson	NC	45057010800
	Anson	NC	45091060300
	Anson	NC	45091060901
	Cabarrus	NC	37025041901
	Cabarrus	NC	37025042101
	Chester	SC	37025042300
	Chester	SC	45023020100
	Chester	SC	45023020300
	Chester	SC	45023020400
	Chester	SC	45023020500
	Chester	SC	45023020800
	Cleveland	NC	37025041902
	Cleveland	NC	37045950101
	Cleveland	NC	37045950102
	Cleveland	NC	37045950200
	Cleveland	NC	37045950301
	Cleveland	NC	37045950900
	Gaston	NC	37071030205
	Gaston	NC	37071031500
	Gaston	NC	37071032000
	Gaston	NC	37071032100
	Gaston	NC	37071033400
	Iredell	NC	37025042000
	Iredell	NC	37097060200
	Iredell	NC	37097060300
	Iredell	NC	37097060601
	Iredell	NC	37097060603
	Iredell	NC	37097060801
	Iredell	NC	37097060802
	Iredell	NC	37097060902
	Lancaster	SC	45057010200
	Lancaster	SC	45057010700
	Lancaster	SC	45057011001

Lancaster	SC	45057011002
Lincoln	NC	37109070201
Lincoln	NC	37109070300
Lincoln	NC	37109070800
Lincoln	NC	37109070901
Lincoln	NC	37109071002
Lincoln	NC	37159050201
Mecklenburg	NC	37119001504
Mecklenburg	NC	37119001507
Mecklenburg	NC	37119001608
Mecklenburg	NC	37119001801
Mecklenburg	NC	37119003600
Mecklenburg	NC	37119003700
Mecklenburg	NC	37119003807
Mecklenburg	NC	37119004500
Mecklenburg	NC	37119004600
Mecklenburg	NC	37119004800
Mecklenburg	NC	37119004900
Mecklenburg	NC	37119005100
Mecklenburg	NC	37119005200
Mecklenburg	NC	37119005616
Mecklenburg	NC	37119005916
Rowan	NC	37159050800
Rowan	NC	37159050904
Rowan	NC	37159051204
Rowan	NC	37159051303
Rowan	NC	37159051502
Rowan	NC	37159051700
Rowan	NC	37159051801
Stanly	NC	37167931202
Union	NC	37179020601
Union	NC	37179020800
Union	NC	37179020901
York	SC	45091060401
York	SC	45091060501
York	SC	45091060502
York	SC	45091061202
York	SC	45091061301
York	SC	45091061401
York	SC	45091061701
York	SC	45091061900

Section 1: Overall Project Summary and Approach

With ambitious goals to reduce greenhouse gas (GHG) emissions, including reducing statewide emissions to at least 50% below 2005 levels by 2030 and net-zero emissions no later than 2050, North Carolina (NC) has an important task at hand to implement the right measures that achieve these targets. But this is a complex challenge: transportation is the underpinning of trade and the economy in the state but continues to be energy-intensive and reliant on internal-combustion vehicles; buildings and residences rely on fossil fuels for heat and energy-intensive cooling, especially with volatile temperatures on the rise; industrial facilities are capital-intensive, have high energy requirements to drive core business operations that are often reliant on hydrocarbons and fossil fuels, and yet need to remain economically competitive; and, the waste sector has proved particularly emissions-intensive as population and economic growth in the state and waste generation volumes have increased significantly in recent years.

North Carolina's Climate Goals

- Reduce statewide GHG emissions to at least 50% below 2005 levels by 2030 and achieve net-zero emissions no later than 2050.
- Increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50% of in-state sales of new passenger vehicles are zero-emission by 2030.
- Reduce energy consumption per square foot in state-owned buildings by at least 40% from fiscal year 2002-2003 levels by 2025.
- Reduce electric power sector GHG emissions by 70% below 2005 levels by 2030 and attain carbon neutrality by 2050.
- Develop 2.8 gigawatts (GW) of offshore wind energy resources by 2030 and 8.0GW by 2040.

The Climate Pollution Reduction Grant (CPRG) Program is an important opportunity for NC to receive critical funding to reduce emissions and transform the state's market so that CPRG implementation creates catalytic change and to enable the achievement of NC's existing climate goals while maintaining a business-friendly economy. This application - *Bridging Science, Communities, and Innovation for a Clean Energy Future* - and implementation approach demonstrates the deep and intentional planning processes and whole-of-government approach that the North Carolina Department of Environmental Quality (NCDEQ) has led to determine the right portfolio of measures for implementation, with leaders across key state agencies, the Governor's Office, two Metropolitan Statistical Areas (MSAs), and local governments, being closely engaged at every step. Primary organizations within NCDEQ who were engaged in this application were the Secretary's Office, Division of Air Quality (DAQ), State Energy Office (SEO), and NCDEQ Environmental Justice (EJ) team.

NC's Clean Transportation Plan, Zero Emission Vehicle (ZEV) Plan, Clean Energy Plan, and transformative bipartisan legislation enacted under House Bill 951, the 2022 Executive Order (EO) 246, *NC's Transformation to a Clean and Equitable Economy,* and the 2018 EO 80, *Commitment to Address Climate Change and Transition to a Clean Energy Economy* have served as models across the Southeast region and nationwide for energy transition action and demonstrated the state's longstanding focus on: quantifying emissions, as one of the first states to develop and provide a state-specific, peer-reviewed, emissions inventory and forecast using tools such as the EPA State Inventory Tool (SIT); identifying climate-related benefits and burdens on disadvantaged communities in the NC Risk Assessment and Resilience Plan published in 2020; and, institutionalizing climate action into every state agency by requiring that each state agency identify, track, and measure climate resilience benefits and burdens related to their programming. With demonstrated leadership and decades of experience designing and implementing climate-forward plans, the state is well positioned to manage and implement the CPRG program to reduce and mitigate climate pollution across the state.

Based on the inputs gathered in the planning phase and a deep understanding of the needs across the state, the implementation measures were designed based on the following NC Climate North Stars:

- Implementation programs must either **build on NCDEQ's existing momentum of climate programs and plans** to scale for higher impact *or* **seed a new market or innovative approach** to spur further investments that can lead to market transformation.

- Implementation **programs should increase sustainability through activities to mitigate and reduce emissions** to better protect NC against future climate vulnerabilities.
- **Prioritize Low-Income and Disadvantaged Communities (LIDACs) at every opportunity** and continue to think and act creatively and collaboratively to maximize benefits to underserved and under resourced communities.
- Where possible, **braid together and bundle existing and forthcoming federal and non-federal funding** to maximize community impacts and scale programs.
- Leverage the **ecosystem of climate partners and thought leaders in NC** and stakeholder input throughout implementation.
- Program **implementation should be deployed statewide** and not solely in urban/suburban areas.

The application of these principles and analysis of NC's GHG Emissions Inventory led to the following set of programs focused in four CPRG-priority emitting sectors: **Transportation, Buildings, Industry, and Waste**.

Transportation: The state's five transportation programs increase low-emission and electric vehicles (EVs) on the road, remove barriers to EV use by expanding the public EV charging network accessible to all North Carolinians, reduce vehicle miles traveled (VMT), and decarbonize port operations.

- **Transportation 1 (T1) Commercial Fleet and Fuel Transition:** Incentivizing the transition of commercial sector medium-to-heavy duty (MHD) internal-combustion vehicles to cleaner vehicles and EVs.
- **Transportation 2 (T2) EV Charging Infrastructure:** Enabling publicly accessible and multi-unit dwelling (MUD) Level 2 charging infrastructure.
- **Transportation 3 (T3) Government Fleet and Fuel Transition:** Enabling the transition of local and state government light-duty (LD) and MHD fleet vehicles to cleaner options including EVs.
- **Transportation 4 (T4) Port Operations Decarbonization:** Reducing freight container transportation-related emissions.
- **Transportation 5 (T5) Pedestrian VMT Program:** Reducing VMTs through pedestrian infrastructure.

Buildings: The state's three buildings programs focus on addressing critical Make Ready measures in LIDAC homes and multi-family buildings and prepare their structural eligibility for the Weatherization and Home Energy Rebate Programs and reducing energy intensity of public buildings to reduce emissions, save costs, , and lead by example.

- **Buildings 1 (B1) Weatherization+ Assistance Program:** Expanding the Weatherization Assistance Program (WAP) to implement Make Ready preparations in LIDAC residences.
- **Buildings 2 (B2) State Building Decarbonization and Efficiency:** Enabling decarbonization and energy efficiency (EE) improvements in State-owned buildings.
- **Buildings 3 (B3) Local Public Building Decarbonization and Efficiency**: Enabling decarbonization and EE in local government-owned buildings.

Industry: The state's three industry programs focus on funding market gaps in this hard-to-abate sector to assess and identify decarbonization opportunities for industrial facilities, prepare the workforce to implement facility decarbonization measures, and seed innovative decarbonization initiatives through a low-interest loan fund for small-to-medium sized enterprises.

- **Industry 1 (I1) Industrial Electrification, Efficiency, and Process Emissions Reduction:** Providing no-cost energy assessments and technical assistance (TA) to industrial facilities.
- **Industry 2 (I2) Industrial Decarbonization Workforce Development:** Establishing workforce capacity building and continue educational support.
- **Industry 3 (I3) Industrial Decarbonization Loan Fund:** Establishing a low-interest energy loan financing program for industry to fund decarbonization measures.

Waste: The state's three waste programs focus on reducing methane emissions from food waste landfilling, landfill operation emissions, and air pollution from waste collection processes, and collecting landfill gases more efficiently and earlier in the lifecycle.

- **Waste 1 (W1) Organic Waste Reduction:** Diverting organics from landfills by directing food to communities in need and creating organic resources through composting or anaerobic digestion (AD).
- **Waste 2 (W2) Waste Operations Electrification and Decarbonization:** Enabling the transition of diesel waste and materials recovery vehicles to electric motors or lower-carbon fuels.

- **Waste 3 (W3) Landfill Gas Reductions:** Reducing landfill gas emissions through improved landfill operations to collect gas more efficiently and earlier in a landfill life while utilizing the collected gas as an energy source.

MSA CPRG Partnership: In CPRG implementation, NCDEQ is partnering with Central Pines Regional Council (CPRC) and Centralina Regional Council (Centralina) to further achieve state- and MSA-wide climate pollution reduction goals by strategically partnering to achieve more for NC residents than can be achieved individually. The programs for CPRG implementation that the MSAs have designed are the following:

CPRC: In the Raleigh-Durham metropolitan area, CPRC has designed two programs to address key program gaps to prepare buildings for EE and electrification and to reduce transportation related emissions by expanding mobility options for LIDAC residents.

- **Central Pines Regional Council 1 (CPRC1) Building EE and Emissions Reductions:** Providing TA to support participant navigation of existing energy rebate programs, implementing non-residential EE upgrades for commercial and faith-based buildings, providing funding for EE and electrification to multi-family homes (MFHs) that do not qualify for the WAP, and performing community outreach to elicit program participation.
- **Central Pines Regional Council 2 (CPRC2) VMT Reductions:** Reducing VMT through bus fares, micro mobility, electric vans for community-based organizations, and sidewalk construction in LIDACs to encourage multiple modes of transportation.

Centralina: With similar needs in the Charlotte metropolitan area, Centralina has designed two programs to address key program gaps to provide EE and electrification upgrades to non-residential structures and to homes that do not qualify for the WAP, and to reduce transportation related emissions.

- **Centralina 1 (C1) Building Decarbonization:** Decarbonizing non-residential buildings including industrial facilities through increased EE and decarbonizing residential homes ineligible for existing and upcoming energy rebate programs (e.g., MFHs with 40-49% low-to-moderate income households in dwelling units).
- **Centralina 2 (C2) VMT Reductions:** Implementing regional VMT reduction strategies focused in LIDACs through the installation of multimodal solutions (sidewalks and bike lanes), transit rider incentives, and incentives for micro-mobility (such as e-bikes) in high-traffic areas.

Upon program implementation, the state will have lower-emitting and more efficient transportation, building, industry, and waste sectors, where all North Carolinians live in cleaner, healthier, more equitable communities.

Section 1.1: Description of GHG Reduction Measures

This section provides additional details on each of the programs and the rationale for why this measure was chosen for CPRG implementation.

Table 1: Description of GHG Reduction Measures

Transportation 1 (T1) Commercial Fleet and Fuel Transition Program	
Program Description	Program T1 will replace non-government MHD vehicles with electric and clean diesel vehicles to reduce transportation related emissions. NCDEQ will establish a competitive grant program to provide grant funding to commercial entities. Commercial entities can utilize the grant funding to purchase new electric and clean diesel MHD vehicles. Commercial entities situated in or serving LIDACs will be eligible for up to 65% of the vehicle replacement costs. Projects located outside of LIDAC areas and non-EV replacement projects would have a greater cost share requirement. $40,000 would be deducted from the awarded amount for any MHD EV funded. In addition, there is flexibility for vehicle replacements to include electric and clean diesel fuel.
Rationale	The transportation sector is the largest contributor to emissions and the transition away from internal-combustion vehicles, particularly for MHD vehicles that are less efficient than LD vehicles, will have a positive impact on emissions and air pollutant reductions. Clean MHD vehicles are often more expensive than internal-combustion MHD vehicles but with the CPRG funds in this area, initial costs can be reduced to incentivize the transition to cleaner vehicles in the short term and bring down costs for these vehicles in the long term as demand rises.
Risks and Mitigation Strategies	Even with incentives, it can be challenging to foster uptick in programs from commercial entities who lack funding for the upfront costs for vehicle replacement. To address this NCDEQ will increase the grant incentive amounts for LIDAC focused entities.
PCAP Measure 1. Increase the number of ZEVs and EVs on the road through partnerships, TA, financial incentives, and other mechanisms.	

Transportation 2 (T2) EV Charging Infrastructure	
Program Description	Program T2 will implement community-based level 2 EV charging infrastructure at MUDs and other locations that are accessible to the public. NCDEQ will issue three RFPs to implement this program. RFP 1 will focus on MUDs and utilize rebates for fast implementation. RFP 2 will encompass a competitive MUD program for larger scale MUD projects. RFP 3 will target publicly accessible projects.
Rationale	Rural communities and people living in MUDs are not well-served by current federal EV charging infrastructure investments. This program will address the EV adoption barrier of range anxiety.
Risks and Mitigation Strategies	EV charging infrastructure availability is a higher need for people that live in MUDs where charger availability is usually non-existent. To address this, level 2 rebate projects will have a two-port minimum requirement and a maximum of four-ports. Any single rebate applicant will be eligible for $50,000 in funding.
PCAP Measure 2. Identify, install, and maintain a public EV charging network accessible to all North Carolinians.	
Transportation 3 (T3) Government Fleet and Fuel Transition Program	
Program Description	Program T3 is to replace government MHD fleets and government LD fleets with cleaner vehicles. NCDEQ will support state agencies with larger fleets and local government agencies to assess their current vehicle use and specific fuel usage amounts (and associated emissions) for each vehicle to identify which vehicles should be prioritized for replacement to EVs (e.g., highly inefficient vehicles with heavy use). LIDACs lack funding for the upfront costs for vehicle replacement. To address this, Program T3 will allow government projects in LIDAC areas to be eligible for 100% funding. Projects located outside of LIDAC areas and non-electric vehicle replacement projects will have a cost share requirement. $40,000 will be deducted from the awarded amount for any MHD EV funded and up to $7,500 for any LD EV funded in the vehicle replacement programs.
Rationale	State agencies are directed under EO 246 to increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50% of in-state sales of new vehicles are ZEV by 2030. Local and state agencies have constrained budgets and may not be able to replace their MHD and LD fleets with EVs – the adoption of EVs will also further allow the state government to Lead by Example and encourage others to transition fleets to EVs.
Risks and Mitigation Strategies	MHD EVs will require an adjustment in how government fleets are operated and maintained. There may be a lack of clear training on how to plan for use of these vehicles could lead to less uptick or use of these vehicles compared to internal-combustion vehicles. Fleet managers will need to plan for solutions such as charging EVs at the appropriate times to make sure they are available for use.
PCAP Measure 3. Increase the number of ZEVs and EVs in state and local government fleets.	
Transportation 4 (T4) Port Operations Decarbonization	
Program Description	Program T4 will fund increased container transport via intermodal rail between Port of Wilmington and two inland NC ports, Charlotte and Rocky Mount. Presently, rail service is capped at about 16,000 containers per year due to structural constraints. Using funding provided by the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant, NC Ports will complete a project by the end of 2024, building a dedicated Intermodal Rail Yard at the Port of Wilmington and expanding rail capacity to more than 50,000 container rail movements annually by 2040. Program T4 will continue to enable the expansion of intermodal rail operations that has the potential to divert nearly 250,000 container boxes from trucks to rail over the next decade, which would result in significant emissions reductions around the ports and in communities along the existing truck corridor.
Rationale	NC Ports have a funding gap to support the near-term costs of the intermodal rail service. CPRG funding for rail shipment is expected to achieve breakeven and profitability no later than 2030, enabling it to be sustained by the private sector.
Risks and Mitigation Strategies	There could be potential job losses in the trucking industry based on the mode change from freight to rail. Because these drivers are often with long-haul trucking companies and may not live in the state, there is limited ability for NCDEQ to address this risk.
PCAP Measure 4. Pursue programs to increase efficiency and reduce GHG emissions at port/freight terminals.	
Transportation 5 (T5) Pedestrian VMT Program	
Program Description	Program T5 will increase pedestrian-friendly infrastructure with the goal of reducing VMTs and associated emissions and air pollutants from LD vehicles. Through the Carbon Reduction Plan process, the North Carolina Department of Transportation (NCDOT) has identified an unmet need for pedestrian infrastructure in rural areas that represent a cost-effective way to reduce pollution and increase alternatives to transportation. NCDOT's Integrated Mobility Division will work with Metropolitan and Rural Planning Organizations in the State to facilitate the adoption of local

	pedestrian infrastructure through funding and technical support. Examples of these projects include providing an alternative pathway for students who must cross Highway 226 to attend school, a pedestrian crosswalk along Highway 74 to connect a high-transit area to Anson High School in Wadesboro to provide safer, more accessible paths for pedestrians in LIDACs.
Rationale	The state's Strategic Transportation Investments (STI) Law prohibits stand-alone pedestrian projects. This means that funding for these types of projects in areas outside of metropolitan planning organization boundaries is difficult. About 36% of NC's GHG emissions come from the transportation sector each year with approximately 75% of these emissions attributable to LDs. VMT in NC grew 31% between 2003 and 2019, compared to 13% nationally.
Risks and Mitigation Strategies	Construction of pedestrian lanes could add short-medium term burdens (e.g., disruption in traffic patterns, increased pollution, or noise pollution while construction is happening) to proximal communities. Insights derived though community engagement where VMT projects would take place, would determine the priority mitigation strategies to address this potential burden. Examples could include limited construction hours, dust management plan, and defined construction routes to avoid vulnerable populations.
PCAP Measure 5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.	
Building 1 (B1) Weatherization+ Assistance Program	
Program Description	Program B1 will fund home readiness repairs and improvements for LIDAC single- and MFHs currently on the state's WAP deferral lists. Additionally, Program B1 aims to organize regional collectives of established contractors to accelerate projects, providing training, workforce development through community colleges and universities, and TA.
Rationale	Leverage existing infrastructure of the WAP programs, successfully managed by NCDEQ under the Department of Energy (DOE) and the Department of Health and Human Services (DHHS) awards, and list of deferred homes to reduce emissions, benefit LIDACs in the short-term, and increase home values.
Risks and Mitigation Strategies	Residents on the deferral list are not actively engaged with the existing WAP program. The state has also acknowledged residents' concerns and confusion with WAP eligibility. To mitigate this uptake risk, Program B1 will leverage the current deferred maintenance list and leverage this data for targeted outreach.
PCAP Measure 8. Reduce per square foot energy usage in buildings in NC.	
Building 2 (B2) State Building Decarbonization and Efficiency	
Program Description	Program B2 provides program management support to assess, identify, and oversee EE projects for state-owned facilities with a focus on projects that can provide benefits to disadvantaged communities. Program B2 will provide training and TA for key facilities staff to facilitate the implementation of identified priority EE projects. Program B2 will fund implementation of EE and electrification projects for state-owned facilities.
Rationale	NC General Statute set a goal for all state agencies to reduce energy consumption by 30% from their 2002/2003 baseline levels. Further building on this effort, EO 80 increased the energy reduction goal to 40% per square foot by 2025 for Cabinet Agencies. Governmental units are encouraged to adopt the same 40% energy reduction goal. Program B2 will leverage the existing infrastructure of the Utility Savings Initiative (USI) program, which supports all state-owned buildings in achieving these efficiency targets, to fund implementation of EE and electrification projects. There is significant deferred maintenance in state-owned buildings and this program provides an opportunity to reduce emissions while improving building conditions. Furthermore, this program can serve as an example for commercial industry that implementation of EE measures can reduce emissions, lower utility bills, and address building maintenance.
Risks and Mitigation Strategies	Program B2's funding distribution may pose a risk for effective targeting of abatement measures in state buildings. However, this can be mitigated by energy managers, hired under CPRG funding, assessing the portfolio of buildings and prioritizing projects based on set criteria that includes optimizing for LIDAC benefits, short-term emissions reductions, and cost effectiveness.
PCAP Measure 9. Decarbonize buildings in NC, through replacement of fossil fuel combustion sources and reduction of other GHG emissions.	
Buildings 3 (B3) Local Public Building Decarbonization and Efficiency	
Program Description	Program B3 provides TA to local governments to assess and plan for EE and electrification activities in local government-owned assets located in or serving LIDACs. This includes providing energy management training to local governments, in addition to conducting energy audits and implementing EE and electrification projects in local government assets. For this program, EE at public water and wastewater treatment facilities and electrification of commercial lawn and grounds

	care equipment are allowed under the buildings sector for all public entities. Addition of solar panels on public buildings is also allowed.
Rationale	There is significant deferred maintenance and a lack of EE upgrades in local government-owned buildings and this program provides an opportunity to reduce emissions while improving building conditions. Similar to Program B2, Program B3 will build on the Inflation Reduction Act (IRA) tax deductions credits to reduce the overall costs of EE upgrades and maintenance.
Risks and Mitigation Strategies	Funding distribution may pose a risk for effective targeting of abatement measures in local public buildings. However, this can be mitigated by energy managers, hired under CPRG funding, assessing the portfolio of buildings and prioritizing projects based on set criteria that includes optimizing for LIDAC benefits, short-term emissions reductions, and cost effectiveness.
PCAP Measure 9. Decarbonize buildings in NC, through replacement of fossil fuel combustion sources and reduction of other GHG emissions.	
Industry 1 (I1) Industrial Electrification, Efficiency, and Process Emissions Reduction	
Program Description	Program I1 provides no cost energy assessments to small and medium industrial organizations across NC with the goal of identifying EE opportunities and helping organizations better understand and manage their utility costs. NCDEQ expects to target 150 small to medium organizations, with an emphasis on those in LIDACs, that support a diverse and robust economy, including but not limited to business within the following industries: medical equipment, food and beverage production, agriculture, machinery, electrical equipment and appliances, plastics and rubber products, and furniture. Funding will be directed to Waste Reduction Partners (WRP) and Advanced Energy, who are implementing the existing energy assessment program in the industrial sector, and other external partners to provide assessments for the additional facilities identified under this program. In addition, Program I1 would also support TA for industrial organizations to provide insight and guidance around cost-saving methods for EE and clean energy technologies that may be implemented in their facility as a result of the energy assessment recommendations and encourage voluntary GHG emissions reporting to DAQ.
Rationale	The existing industrial energy assessment program has led organizations to implement 65% of the recommended EE upgrades at their facilities on average. Funding to expand the energy assessment program to additional small and medium industrial facilities will significantly increase EE upgrades across NC industry.
Risks and Mitigation Strategies	Industrial facilities that receive energy assessments may not address the recommendations and implement EE measures due to costs. This can be mitigated by the loan fund proposed in Program I3 to incentivize industries to invest in these measures with a low cost of capital.
PCAP Measure 10. Develop programs to support or incentivize implementation of EE and emission reduction measures in NC industry.	
Industry 2 (I2) Industrial Decarbonization Workforce Development	
Program Description	Program I2 will set up a working group dedicated to retaining and expanding the workforce to support industrial decarbonization efforts. NCDEQ will issue a RFP to implement development of workforce training programs to support upskilling. Several external clean energy workforce training partners currently exist in NC and this funding will expand their scope to include training programs that fill the gaps based on the support of the industry working group. Under program I2, NCDEQ plans to continue engagement with STEPS4GROWTH, a program that weaves together workforce training and apprenticeship programs to not only skill up workers, but also provide them with successful transition into the workforce. The workforce training execution timeline is strategically designed to coincide with the energy assessments in Program I1 so additional workers are trained and ready to support implementation of the projects recommended in I1 assessments.
Rationale	NC stakeholders expressed the lack of contractors available to perform EE and equipment upgrades in the industrial sector. Additionally, existing funding sources target only commercial and residential workforce development programs.
Risks and Mitigation Strategies	The state acknowledges that there is an overlap in workforce training material across existing programs. To address this, I2 will engage with those workforce development training partners to leverage existing resources and create a unified EE training program.
PCAP Measure 10. Develop programs to support or incentivize implementation of EE and emission reduction measures in NC industry.	
Industry 3 (I3) Industrial Decarbonization Loan Fund	
Program Description	Program I3 will allow businesses to take advantage of IRA tax credits that assist with the transition to clean energy technologies and GHG reductions. Smaller industries may not have upfront capital

	available to spend on decarbonization projects while the IRA tax refund is processed. This program could provide short-term no-interest loans that bridge the financial gap between the time the upfront capital is due to when the tax refund is received. Additionally, this program could provide low-interest loans for industrial organizations who require a temporary infusion of funds to support projects that increase EE and reduce GHG emissions. NCDEQ has applied for $2.5 million in state revolving loan funds (RLF) but lacks internal capacity to execute the program. Program I3 will combine the existing NCDEQ RLF with CPRG funding to maximize benefits for industrial decarbonization efforts. Due to the limited funding and state statute, NCDEQ will only finance up to 50% of the project cost, with a maximum loan of $1M.
Rationale	Smaller industries lack the upfront capital to purchase clean energy technologies before the tax refund is processed. Program I3 will bridge the funding gap to support the near-term costs of clean energy technology.
Risks and Mitigation Strategies	The state received public concern for directed funding to industrial facilities during stakeholder engagement of the PCAP. To address this and stay within state statue limitations, Program I3 will only finance up to 50% of the project cost, with a maximum loan of $1M.
PCAP Measure 10. Develop programs to support or incentivize implementation of EE and emission reduction measures in NC industry.	
Waste 1 (W1) Organic Waste Reduction	
Program Description	NCDEQ will provide grant funding to entities to implement activities to reduce organic waste by diverting unwanted food to community programs or capturing organics for alternative management methods (i.e., not landfilling). These approaches could include (1) capturing pre-consumer food from educational institutions, grocery stores, etc. and directing to other programs that can distribute this food prior to becoming waste; (2) organics diversion programs that promote home composting, curbside collection, and/or community drop off locations for organics for sustainable materials management (i.e., composting, AD); and (3) onsite organics recycling infrastructure that promote management options closer to the source of generation. Key milestones will include the establishment of capture and diversion programs. Program W1 will also direct funding to onsite AD at NC universities.
Rationale	Similar to other southeastern states, NC is experiencing positive growth and is estimated to reach a population of 14.24 million in 2050. In 2022, NC generated 2.6 million tons of food waste across all sectors with a 2.1-million-ton gap for organics recovery and recycling infrastructure. When food waste is disposed of in landfills, methane is produced and even with control infrastructure in place, there can still be fugitive emissions that need to be reduced. By reducing food waste landfilling, Program W1 will promote significant future methane reductions and is estimated to divert more than 1,900 tons of food waste annually.
Risks and Mitigation Strategies	A potential risk for Program W1 is the lack of composting participation by stakeholders. To address this relatively low risk, Program W1 plans to establish a marketing and educational campaign to target and incentivize as many community members as possible.
PCAP Measure 11. Reduce food waste to reduce the methane emissions from food waste landfilling, direct food to communities in need, and create organic resources through composting or digestion.	
Waste 2 (W2) Waste Operations Electrification and Decarbonization	
Program Description	Program W2 promotes the conversion of existing municipal solid waste (MSW) and material recovery collection currently serviced with conventional diesel fueled trucks to an electric or other low-carbon fuels fleet (e.g., compressed natural gas or renewable natural gas). Key milestones will include the distribution of grants to public (municipalities) or private entities to procure new vehicles. Grants are aimed to provide partial funding for the procurement of these vehicles. Program W2 will include a demonstration project to transition existing diesel collection vehicles to electric for the Town of Wake Forest.
Rationale	Solid waste and materials recovery collection vehicles typically travel over 25,000 miles annually and spend over 8 hours on the road each day. Because landfills, transfer stations, and other material recovery facilities are largely located in LIDACs, benefits will accrue to these communities even for vehicle replacements not primarily in a LIDAC service area. The conversion of waste and material recovery collection trucks to electric or low-carbon fuel will significantly reduce GHG emissions, co-pollutants, and noise pollution.
Risks and Mitigation Strategies	The procurement of new vehicles may take a long time. To address this, Program W3 will prioritize applicants who can procure vehicles within the award period.

PCAP Measure 12. Decarbonize waste and material recovery 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.	
Waste 3 (W3) Landfill Gas Reductions	
Program Description	The breakdown of MSW produces GHGs (methane and carbon dioxide) which are often captured through landfill gas collection systems. Methane may be oxidized to carbon dioxide (lower GWP) as landfill gas moves through soil covers or at flared. Although landfill gas collection systems are complex because of the heterogeneity of MSW, infiltration of moisture, and atmospheric conditions, the industry has evaluated ways to reduce fugitive emissions and improve collection efficiency. The latter allows gas that is captured to be used as a renewable source and either onsite or added to the electricity grid. Gas collection efficiency is affected by the following: active gas collection system operation, cover type across the landfill (daily, interim, final as well as soil, clay, geomembrane), and other site-specific conditions. An example of ways that gas collection efficiency can be increased, and fugitive emissions reduced is through installation of a transitional cover system on exterior slopes of landfills prior to final cover installation. A transitional cover is often composed of an exposed geomembrane or an enhanced soil interim cover. Program W3 will distribute funds to landfill operators to procure gas reduction solutions and the implementation of the gas reduction measures at landfills. Program W3 will prioritize landfills that are flaring gas as opposed to producing energy (where possible), do not have gas collection systems in place, or could install a collection system earlier in the landfill life.
Rationale	Methane has more than 28-80 times the warming power of CO2 in the first 10-20 years. Additionally, methane release at landfills is associated with other air pollution and odors in and around LIDACs. By leveraging CPRG funding, the state can utilize these new approaches to provide near-term solutions to reduce methane and create a proof of concept to scale further.
Risks and Mitigation Strategies	There may be a lack of technical expertise at the municipality to validate reduced emissions or improved collection efficiency. Consultants may be relied on to validate measures.
PCAP Measure 12. Reduce landfill gas emissions through improved landfill to collect gas more efficiently and earlier in a landfill life and explore utilizing it as a renewable energy source.	
Central Pines Regional Council 1 (CPRC1) Building EE and Emissions Reduction	
Program Description	Program CPRC1 will include TA funding to support homeowners, with an emphasis on delivering support and uptake in LIDAC communities, in navigating existing energy programs. Program CPRC1 will also provide competitive grants to non-residential buildings to implement EE projects and grant funding for home readiness repairs and improvements for residential houses currently on the state's WAP deferral lists. Outreach to community-based organizations will also be incorporated to enable participation in these programs. Key milestones will include the launch of these grant programs, the implementation of measures within these buildings and residences, and the launch of the TA offerings.
Rationale	Program CPRC1 will leverage existing infrastructure of the WAP program and list of deferred homes to reduce emissions, increase home values, and bridge the funding gap for residents that are ineligible for WAP funding and IRA rebates. Program CPRC1 will also provide EE upgrades to faith-based and commercial buildings, furthering reach to an underserved group.
Risks and Mitigation Strategies	Residents on the deferral list are not actively engaged with the existing WAP. To mitigate this uptake risk, Program CPRC1 will leverage the deferred maintenance list for targeted outreach.
PCAP Measure 8. Reduce per square foot energy usage in buildings in NC.	
Central Pines Regional Council 2 (CPRC2) Vehicle Miles Traveled (VMT) Reductions	
Program Description	Program CPRC2 will implement regional VMT reduction strategies through transit system incentives (e.g., bus fares), micro-mobility (e.g., commuter e-bikes and scooters), van replacement with EVs for faith-based buildings, and sidewalk construction projects in LIDACs. To implement these program activities, CPRC will initiate a competitive process to secure vendors to install the multi-modal infrastructure, directly provide transit fares to encourage public transit use, and provide rebates for e-bikes and scooters in high traffic areas. Key milestones will include securing the vendors for the infrastructure projects and completing those projects, launching the transit rider support program, and measuring annual changes in transit use, and distributing the full e-bike rebates.
Rationale	Program CPRC2 will enable the use of alternative modes of transportation and reduce VMT. In addition, the van replacement for faith-based buildings will remove older, polluting vehicles off the road without compromising the work in the community.

Risks and Mitigation Strategies	Sidewalk construction in LIDACs could add short-medium term burdens (e.g., disruption in traffic patterns, increased pollution, or noise pollution while construction is happening) to proximal communities. Insights derived though community engagement where VMT projects would take place, would determine the priority mitigation strategies to address this potential burden. Examples could include limiting construction hours, requiring a dust management plan, and defining routes for construction vehicles to avoid vulnerable populations.
PCAP Measure 5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.	
Centralina 1 (C1) Building Decarbonization	
Program Description	Program C1 will include home readiness repairs and improvements and EE measures for residential homes that will not be eligible for IRA rebates. This program will be implemented using Centralina's existing WAP infrastructure and will distribute grants to eligible households. Program C1 will also support industrial facilities to implement EE projects and clean technology implementation to further industrial decarbonization efforts. Centralina's Economic Development District (CEDD) will manage the implementation of the industrial buildings decarbonization program by establishing a competitive grant program. Key milestones include the launch of these grant programs and grant distribution.
Rationale	Program C1 will bridge the funding gap for residents that are ineligible for IRA rebates. Small-to-medium sized enterprises often lack the upfront capital to purchase clean energy technologies for facilities but are often also high emitters. By incentivizing clean energy technology and decarbonization measures Centralina can encourage adoption and reduce emissions in this hard-to-abate sector. These projects could also serve as proofs-of-concept to other industrial entities to encourage further EE and decarbonization projects.
Risks and Mitigation Strategies	Residents on the deferral list are not actively engaged with the existing WAP program. To mitigate this uptake risk, Program C1 will leverage the current deferred maintenance list and leverage this data for targeted outreach.
PCAP Measure 8. Reduce per square foot energy usage in buildings in NC.	
Centralina 2 (C2) Transportation Decarbonization	
Program Description	Program C2 will include bike and pedestrian-friendly infrastructure projects in LIDACs, transit rider support, and micro mobility (e.g., e-bikes) with the goal of reducing VMTs and reducing air pollution. To implement these program activities, Centralina will initiate a competitive process to secure vendors to install the multi-modal infrastructure, provide transit fares to LIDACs, and provide rebates for e-bikes in high traffic areas. Key milestones will include securing the vendors for the infrastructure projects and completing those projects, launching the transit rider support program, and measuring annual changes in transit use, and distributing the full e-bike rebates.
Rationale	The state's STI Law prohibits the expenditure of state funds for independent bike and pedestrian projects. Funding for these types of projects in areas outside of metropolitan planning organization boundaries is difficult. Local governments often cannot provide the required 20% match for federal transportation funding and there is no state funding available to fill the gap. CPRG funding will allow for Program C2 to address this funding gap and support the use of alternative modes of transportation to reduce emissions.
Risks and Mitigation Strategies	Rider experience across the CLT MSA region varies and strategies to address VMT reductions may not be evenly substantiative. To address this, Program C2 plans to coordinate between the 14 transit agencies within the CLT MSA to improve rider experience across the region. Additionally, construction of VMT projects such as sidewalk construction could add short-medium term burdens (e.g., disruption in traffic patterns, increased pollution, or noise pollution while construction is happening) to proximal communities. Mitigation solutions could include limited construction hours and defined construction routes to avoid vulnerable populations.
PCAP Measure 5. Pursue programs to improve the quality of life and reduce GHG emissions for all North Carolinians.	

Section 1.2: Demonstration of Funding Need

As a part of NC's efforts to reduce emissions and air pollution, NCDEQ has fully reviewed and applied for several federal and non-federal funding sources related to renewable energy generation, energy workforce development, decarbonization, clean transportation, and EE. The proposed programs are not eligible for funding under other existing funding sources and are critical to addressing key emissions reduction market gaps. The below narrative identifies funding sources reviewed and why CPRG funding is needed to implement these measures.

- **Transportation**: The State plans to build on the one-time payment coming out of the NC Volkswagen (VW) Settlement and awards under the **Diesel Emissions Reduction Act** program to fund additional MHD vehicle replacements and EV charging infrastructure and further catalyze this market. Additional demand for MHD EVs

from the combined VW and CPRG funds can spur additional supply on the market and lower prices for further uptake from commercial entities. Programs T1-3 and W2 are not eligible under the **National Electric Vehicle Infrastructure Program** (NEVI) as NEVI only funds community-based charging projects once Alternative Fuel Corridors are built out. Program T4 is ineligible under the **Congestion Mitigation and Air Quality Improvement Program** (CMAQ) to receive funding for the intermodal service after 2024 due to a requirement that future CMAQ funding be used on projects that are substantially different from what the existing funding has supported. Program T4 is also not eligible for funding under the **Clean Ports Program** since the operational activities proposed are not focused on *zero*-emissions equipment or planning initiatives. Program T4 is eligible for **Surface Transportation Block Grant Program-Direct Attributable funds**; however, NC Ports prefers to not compete with local municipalities that rely solely on these local funds. The current STI law prohibits the expenditure of state funds for independent bike and pedestrian projects such as T5. It also limits the state's ability to invest in active transportation strategies, street connectivity, and other strategies to reduce VMT proposed in Programs T5, CPRC2, and C2.

- **Buildings:** There is currently limited funding available (~$600k annually from the DOE WAP) for home readiness repairs and improvements for structures on the state's WAP deferral list. This list includes more than 800 homes, totaling over $12,000,000. CPRG funds under Programs B1, CPRC1, and C1 are needed to carry out repairs required to remove homes from the deferral list and maximize the benefits and assistance provided through WAP. Funds under **WAP** are not eligible to be used for providing homes with vulnerable populations with cooling. Under Programs B1, CPRC1, and C1, CPRG funds are needed to provide homes populations at risk from extreme heat with air conditioning, which is a particular need in NC due to the southern climate. Programs B2 and B3 will build on **IRA tax deductions credits**, such as the 179D Tax Deduction and Section 48 Investment Tax Credit, to reduce the overall costs of EE upgrades and maintenance for state-owned and local government buildings. The North Carolina General Assembly (NCGA) funds approximately four positions to assist state agencies to reduce their building energy consumption. However, funding for implementation of EE measures must be identified elsewhere. Additionally, there is no available funding for local governments to fund EE and electrification upgrades, beyond the Federal tax credits. This program will build on the success of the WRP program to provide energy audits with fully assessed and implementable projects, and NCDEQ will provide limited project funding.
- **Industry:** Program I1 plans to build on the success of the WRP program to expand the energy assessment contractors' capability in NC's industrial sector. Program I2 is ineligible to receive funding from the **Training for Residential Energy Contractors** Program and the **Energy Auditor Training Grant** as funding is limited to commercial and residential EE workforce training programs. There is also no available funding for industry-related EE workforce activities under Program I2. CPRG funds will fill this gap and leverage insights from the existing training programs and partners to create unified energy efficient workforce development programs. Small-to-medium sized enterprises often do not have the upfront capital available to take advantage of IRA tax credits that assist with GHG emissions reduction projects and operating expenses. Program I3 plans to braid the current NCDEQ RLF program with CPRG funds to provide short-term no-interest loans to bridge the financial gap between the time the upfront capital is due to when the tax refund is received.
- **Waste:** There is currently limited funding available for landfill gas reductions and since NC is not an oil and gas state, NCDEQ was not eligible for formula funding under the initial **Methane Emissions Reduction Program** (MERP) to reduce methane and other GHG emissions from landfills. CPRG funds are needed to provide near-term solutions to reduce methane which has more than 28-80 times the warming power of CO2 in the first 10-20 years. By leveraging CPRG funding, the state can utilize these new approaches to and create a proof of concept to scale further as proposed under Programs W1 and W3. Forthcoming competitive grants under MERP could be braided together with CPRG funds to enhance landfill gas reductions proposed in W3 through the purchase of methane monitoring equipment.

CPRG funding for the proposed programs will cover projects that existing federal and state funding does not reach. In the case that a local government receives CPRG funding for a project that would otherwise be eligible under this program (e.g., MSA application and award), such a project would expressly not be eligible for funding under this proposed program. Furthermore, NCDEQ will follow the Excessive Benefits Rule to ensure that total subsidy (e.g., coalition support, tax credits) does not exceed the total project costs.

Section 1.3: Transformative Impact

Following the state's North Stars, NCDEQ designed and prioritized the proposed GHG reduction measures to build on the existing momentum of climate programs, target underserved groups and hard-to abate sectors, and deploy new market and innovative approaches to further reduce emissions and transform the state's market. The below narrative identifies how each implementation program can enable transformative impact across the State and improve the quality of life for North Carolinians:

- **Transportation:** NCDEQ has nearly 3 decades of experience in awarding and overseeing Mobile Sources Emissions Reduction Grants, including the administration of the State's share of the VW Settlement funds, aimed at vehicle replacement and Electric Vehicle Supply Equipment (EVSE) installation, and incentivize the state's transition to EVs in accordance with Governor Cooper's EOs 80, 246, and 271. The commitment and engagement to LIDACs under the VW Settlement Phase 2 Mitigation Plan increased the number of applications funded in historically under-resourced counties by 59% and the number of EVs funded increased by 173%. The state received funding requests of over $215M for the approximately $92M in available funding for the program. By targeting key areas of concern, utilizing the identified "shovel ready" vehicle replacement and EVSE projects not funded through the VW Settlement programs, and leveraging systems in place when administering CPRG funds, Programs T1-T3 will advance the state's environmental goals while fostering a culture of sustainability and innovation within the transportation industry. Program T4 will divert over 250,000 container movements from truck to rail and is expected to achieve breakeven and profitability no later than 2030, enabling it to be sustained by the private sector. Programs T5, CPRC2, and C2 will address key shortcomings from current VMT reduction programming and offer a low-cost approach to enabling alternative transportation options, street connectivity, transit rider support, and micro-mobility to further reduce VMT. These programs and the incentives they provide are strategically designed to pair with or address gaps in local, NCDOT, and federal investments to accelerate adoption making the transition of the transportation system less expensive. Leading by Example, as many of the measures aim to do, de-risks technologies and brings the price down for all adopters. Reducing overall VMTs and electrifying transportation addresses climate pollution and makes NC cleaner, safer, more resilient, and more enjoyable for all, especially LIDACs.
- **Buildings:** Lead by Example approaches and the innovative Make-Ready WAP+ program enable scale buildings decarbonization possible and more likely. WAP+ will help make forthcoming programs and IRA rebates more successful, especially for the most vulnerable to co-pollutants and climate impacts like heat. Program B2 will leverage the existing infrastructure of the USI program and list of identified projects to invest in electrification and EE updates. Since the program's inception, USI has avoided over $1.3 billion in utility costs. Program B2 will serve as an example of what the cost savings can and should be, further incentivizing other state-owned assets and commercial buildings to invest in EE. Many of the state's community colleges and university campuses do not have energy managers and have never had an energy audit to identify, scope, and price potential energy saving and electrification projects, or to assess potential funding opportunities. Program B2 will address this barrier and identify and implement energy saving and decarbonization opportunities. Further, many local governments lack the upfront costs and personnel to be able to provide energy audits, identify potential EE projects and calculate the expected cost savings. In addition, there are little to no mechanisms to assist commercial property owners and faith-based buildings with the various barriers to entry into electrification and EE. Program B3 and Program CPRC1 will bridge this critical gap, supporting the public in navigating existing energy rebate programs and enabling EE upgrades to faith-based and commercial buildings. Prioritizing EE and retrofits in community spaces like faith-based institutions has been shown in other states to increase the rate of adoption in the surrounding communities as homeowners get more comfortable with the process and have a trusted example to follow. Furthermore, the buildings addressed under these programs often serve as critical infrastructure and disaster response locations. Projects carried out here will increase climate resiliency and our ability to adapt to the common hazards. The approach we lay out in CPRG punches above its weight class by combining existing and future funding sources to accelerate the energy transition in the buildings sector, particularly for low to moderate income households.
- **Industry:** Energy assessments through the WRP program have prompted industrial organizations to successfully implement approximately 65-80% of EE upgrades. Program I1 will leverage the success and existing infrastructure of the WRP to implement and maintain EE equipment upgrades to approximately 150 small to medium industrial facilities which will serve as further proofs-of-concept for other industrial players in

the market to understand the benefits of implementing these measures. Program I2 will address a critical market gap in energy contractors to implement energy measures at industrial facilities via workforce training and apprenticeship programs for the industrial workforce, allowing North Carolinians to gain the necessary skills to be adept at working in the EE industry and achieve a successful transition into the workforce for the long term. Program I3 will braid the forthcoming NCDEQ RLF funds with CPRG funding to maximize benefits for industrial EE and decarbonization efforts in this hard-to-abate sector.

- **Waste:** Nationally, more than one-third of food goes uneaten each year. In 2021, NC generated about 2.7 million tons of food waste. Despite the amount of food available, many North Carolinians are food insecure. Program W1 will promote significant methane reductions and divert approximately 1,900 tons of food waste annually to communities with food insecurity or organics recycling facilities if a higher use is not feasible. Program W3 will leverage new industry approaches to reducing fugitive emissions and improving collection efficiency to provide near-term solutions to reduce methane and create a proof of concept to scale further.

Section 2: Impact of GHG Reduction Measures

Section 2.1 – 2.3: Magnitude of GHG Reductions from 2025-2030 and 2025-2050 and Cost Effectiveness of GHG Reductions

Upon completion of the 5-year CPRG program, NCDEQ plans to reduce approximately 396,617 MTCO2e of NC's current emissions. NCDEQ has designed these programs to enable permanent reductions, where possible. While some electrification and EE measures and EV improvements will have a limited useful life, it is unlikely that facility and fleet managers would revert back to less efficient and more costly (between capital and operational expenditures) measures in the future. VMT measures such as sidewalks will require maintenance, but once the infrastructure is installed will continue to enable use and mode switching, resulting in permanent reductions. Waste reduction measures have been designed to be permanent by establishing long-term food waste reduction programs in high-waste areas and installing infrastructure to facilitate lower emissions landfills.

The cost effectiveness for the overall program is $504.26 / MTCO2e reduced over the 2025-2030 grant period. This value includes costs of each program in addition to NCDEQ administrative costs directed towards managing the implementation of all state-wide programs proposed under this application. The cost effectiveness of each program varies by sector and within sectors. These programs were strategically selected and designed to address key market gaps and catalyze emissions mitigation. Program I1 is the most cost-effective measure with the program planning to enable the identification and implementation of "low-hanging fruit" EE and decarbonization measures in high-energy use facilities, which will show large gains in emissions reductions at low costs. Programs B1-B3 being some of the less cost-effective programs compared to the others is consistent with expectations for the sector. These programs are still a key component along NC's critical path to achieving statewide emissions reduction goals and can build momentum for commercial building decarbonization. Program T5 has the lowest cost-effectiveness but is key to making permanent emissions reductions while also improving safety and health outcomes in LIDACs. Some potential projects that have been identified include installing a pedestrian infrastructure along a highway to connect a high-transit area to a LIDAC and a pedestrian crosswalk project that will safely connect existing pathways to a school to encourage pedestrian modes of transportation. The waste programs show promising cost-effectiveness, consistent with the effectiveness of reducing methane emissions.

Table 2: Magnitude and Cost Effectiveness of GHG Reductions Per Program

Program	Cumulative GHG Emissions Reductions (MTCO2e)		Cost Effectiveness (2025 – 2030)
	2025 - 2030	2025 - 2050	
Program T1. Commercial Fleet and Fuel Transition Program	5,281	26,408	$2,045.41
Program T2. EV Charging Infrastructure	28,105	140,525	$220.15
Program T3. Government Fleet and Fuel Transition Program	7,834	39,171	$3,928.39
Program T4. Port Operations Decarbonization	7,728	112,426	$567.89
Program T5. Pedestrian VMT Program	751	3,755	$15,726.75
Program B1. Weatherization+ Assistance Program	1,307	6,534	$11,040.82
Program B2. State Building Decarbonization and Efficiency	2,162	10,810	$8,998.10

Program	Cumulative GHG Emissions Reductions (MTCO2e)		Cost Effectiveness (2025 – 2030)
	2025 - 2030	2025 - 2050	
Program B3. Local Public Building Decarbonization and Efficiency	2,683	13,417	$9,448.38
Program I1. Industrial Elec., Efficiency, and Emissions Reduction	65,813	438,750	$68.38
Program I2. Industrial Decarbonization Workforce Development	0	0	N/A
Program I3. Industrial Decarbonization Loan Fund	71,555	477,032	$94.33
Program W1. Organic Waste Reduction	81,945	409,726	$67.14
Program W2. Waste Operations Electrification and Decarbonization	8,005	40,025	$687.07
Program W3. Landfill Gas Reductions	101,250	506,250	$44.43
Program CPRC1. Building EE and Emissions Reduction	525	2,624	$16,168.40
Program CPRC2. VMT Reductions	1,061	5,307	$6,195.23
Program C1. Building Decarbonization	9,132	55,167	$515.03
Program C2. VMT Reductions	1,482	7,409	$9,505.57
Total	**396,618**	**2,295,336**	**$504.26**

Section 2.4: Documentation of GHG Reduction Assumptions

Information on the methodologies, calculations, and assumptions used to develop the above-listed GHG reductions can be found in the attached Technical Appendix.

Section 3: Environmental Results – Outputs, Outcomes, and Performance Measures

Section 3.1 – 3.2: Expected Outputs and Outcomes and Performance Measures and Plan

Table 3 outlines the expected outputs and outcomes for each proposed program, as well as potential performance measures for tracking. NCDEQ in coordination with contractors and sub-awardees will effectively track and measure implementation progress for each proposed program. NCDEQ will begin by establishing data collection and reporting mechanisms to determine what baseline data will need to be collected upfront, throughout the program, and post-implementation. NCDEQ will utilize the methodologies from the PCAP and this implementation application for GHG emissions reductions and the other planned outputs and outcomes tracking and will generate methodologies to track any new performance measures that develop during program implementation. To measure the performance and impact of these programs, NCDEQ will deploy a modeled approach and a measured approach depending on appropriateness of the methodology. Where data is not currently available, such as decibel measurement for the VMT programs, NCDEQ may explore deploying new data collection approaches such as sensors. Periodic intentional reviews will be conducted to gather insights from the data collected to adjust programming based on lessons learned and successes, which will be reported to the public. Status reports will be provided to EPA on a semi-annual basis and a final report will be provided to EPA upon program completion.

Table 3: Expected Outputs, Outcomes, and Performance Measures

Expected Outputs	Expected Outcomes	Performance Measures
Program T1. Commercial Fleet and Fuel Transition Program		
•Approximately 40 new MHD EVs Approximately 20 new MHD clean diesel vehicles in LIDACs	•GHG reductions along transportation corridors •Co-pollutant reductions along transportation corridors •Improved health benefits in LIDACs especially for asthma and respiratory illness	•Net Metric Tons (MT) CO2e of GHGs reduced •MT of co-pollutants reduced
Program T2. EV Charging Infrastructure		
•Approximately 700 new community-based charging stations across the state with a focus on deployment in rural communities and at MUDs	•Increase EV uptake by deploying an interconnected network of charging beyond the main transportation corridors addressed by DOT's NEVI program •GHG reductions •Co-pollutant reductions	•Net MTCO2e of GHGs reduced •MT of co-pollutants reduced

Expected Outputs	Expected Outcomes	Performance Measures
Program T3. Government Fleet and Fuel Transition Program		
•Approximately 95 new LD EVs •Approximately 40 new MHD EVs •Approximately 24 new MHD clean diesel vehicles (key in cashflow constrained communities who cannot accommodate the time prior to reimbursement)	•GHG reductions in urban and suburban areas and LIDACs along transportation corridors •Significant co-pollutant reductions •Improved health outcomes in LIDACs especially for asthma and respiratory illness	•Net MTCO2e of GHGs reduced •MT of co-pollutants reduced
Program T4. Port Operations Decarbonization		
•Progressively increase the number of containers transported by rail annually to 25,600 by 2030.	•Divert 250,000 container boxes from trucks to rail by 2050 •GHG reductions primarily in LIDACs •Co-pollutant reductions in LIDACs due to reduced truck idling proximal to both wet and dry port sites •Improved health outcomes in LIDACs especially for asthma/respiratory illness	•Number of container boxes diverted from truck to rail transportation annually •MTCO2e of GHGs avoided •MT of co-pollutants avoided
Program T5. Pedestrian VMT Program		
•New pedestrian paths in LIDACs	•LDV VMT reductions •LDV GHG reductions •Reduced road noise pollution •Improved health outcomes in LIDACs especially for asthma and respiratory illness •Reduced pedestrian accidents and fatalities	•Linear feet of new pedestrian sidewalk lanes •MTCO2e of GHGs reduced •MT of co-pollutants reduced •Decibel reductions
Program B1. Weatherization+ Assistance Program		
•Building envelope and structural repairs required to be eligible for the WAP •Reduced energy costs for LIDAC households	•Reduced emissions •Improved indoor air quality •Reduced respiratory impact •Improved health outcomes in LIDACs especially for asthma and respiratory illness •Increased LIDAC homes eligible for WAP •Increased home values in LIDACs •Increased wealth generation in LIDACs related to home repairs and WAP uptake	•$ saved on residential utility bills •Number of residences removed from the WAP deferral list •Cost change in Fair Market Value of residences who have completed the Make Ready Program •Number of residences who complete a Make Ready project followed by a WAP+ project
Program B2. State Building Decarbonization and Efficiency		
•EE measures implemented at state buildings •Lower utility bills for state governments	•Reduced emissions •Improved indoor air quality •Reduced respiratory impact	•$ saved on utility bills •Number of energy audits conducted •Number of buildings receiving energy measures •MTCO2e of GHGs reduced on site and from indirect electricity usage
Program B3. Local Public Building Decarbonization and Efficiency		
•EE measures implemented at local government buildings •Lower utility bills for local governments	•Reduced emissions •Improved air quality for LIDACs	•Number of local government parties receiving TA •Number of energy audits conducted •Number of buildings and towns receiving energy measures •$ saved on utility bills •MTCO2e of GHGs reduced on site and from indirect electricity usage
Program I1. Industrial Electrification, Efficiency, and Process Emissions Reduction		
•Energy assessments at industrial sites •TA sessions with industries	•Increased EE •Reduced GHG emissions •Reduced air pollution	•Number of assessments completed •% of energy assessments that resulted in EE upgrades

Expected Outputs	Expected Outcomes	Performance Measures
	•Reduced dependency on fossil fuels •Increased number of quality jobs	•Projects implemented and $ saved on utility bills
Program I2. Industrial Decarbonization Workforce Development		
•Trained workforce •Education programs at community colleges •Apprenticeship programs at workforce organizations	•Increased number of quality, good paying jobs •Increased job retention	•Number of increased workforce and increased skills •Number of job opportunities •Number of energy assessments completed •Number of EE upgrades completed
Program I3. Industrial Decarbonization Loan Fund		
•Short term, no-interest and low-interest loans for industrial facilities	•Increased EE upgrades •Increased number of clean energy technology	•MTCO2e of GHGs reduced on site and from indirect electricity usage •Reduced fine particulate matter (PM 2.5) •Improved health benefits to LIDACs, especially for respiratory illnesses •Reduced dependency on fossil fuels based on BTUs reduced
Program W1. Organic Waste Reduction		
•Reduced food waste in landfills •Conserve landfill space and extend life of the site •Discarded food can be diverted to individuals and families facing food insecurity	•Methane reductions at landfills •Improved air quality in LIDACs •Increased efficiency of food production and use	•Amount of methane reduced •Number of individuals and households participating in new composting programs •Amount of food collected in composting program and diverted from a landfill
Program W2. Waste Operations Electrification and Decarbonization		
•Approximately 8-15 new electric or low-carbon fuel collection trucks	•Reduced GHG emissions •Reduced co-pollutants •Improved health benefits, especially for respiratory illnesses	•MTCO2e of GHGs reduced •Net reductions in GHGs, accounting for electricity usage •Decibel reductions in noise •Co-pollutant reduced
Program W3. Landfill Gas Reductions		
•Gas efficiency upgrades and fugitive emissions reductions to approximately 40 acres of landfill area	•Reduced GHG emissions •Reduced co-pollutants •Reduced odors •Improved energy resilience	•Amount of methane reduced •MTCO2e of GHGs reduced •Amount of co-pollutants reduced •Reduction in odor complaints
Program CPRC1. Building EE and Emissions Reduction		
•Building envelope and structural repairs required to be eligible for the WAP •Reduced energy costs for LIDAC households •EE measures implemented at commercial and faith-based buildings •EE measures implemented at MFH not eligible for WAP •Lower utility bills for commercial entities	•Reduced emissions •Improved indoor air quality •Reduced respiratory impact •Improved health outcomes in LIDACs especially for asthma and respiratory illness •Increased LIDAC homes eligible for WAP •Increased home values in LIDACs •Increased wealth generation in LIDACs related to home repairs and WAP uptake	•Utility bill savings •Number of residences removed from the WAP deferral list •Cost change in Fair Market Value of residences who have completed the Make Ready Program •Number of residences who complete a Make Ready project followed by a WAP+ project •Number of commercial and faith buildings with energy measures •Number of buildings receiving TA
Program CPRC2. VMT Reductions		
•New bicycle and pedestrian paths •Increased e-bikes and e-scooters •Reduced bus fares	•LDV VMT reductions •LDV GHG reductions •Reduce road noise pollution	•Linear feet of new sidewalk and bicycle lanes •Number of new e-bikes and e-scooters •Number of new bus riders

Expected Outputs	Expected Outcomes	Performance Measures
	•Improved health outcomes in LIDACs especially for asthma and respiratory illness •Reduced pedestrian accidents and fatalities	•MTCO2e of GHGs reduced •MT of co-pollutants reduced •Decibel reductions
Program C1. Building Decarbonization		
•Building envelope and structural repairs to be eligible for WAP •Reduced energy costs for LIDAC households •EE measures implemented at MFH not eligible for WAP • EE measures implemented at industrial facilities •Lower utility bills for industrial organizations	•Reduced emissions •Improved indoor air quality •Improved health outcomes in LIDACs especially for asthma and respiratory illness •Increased LIDAC homes eligible for WAP •Increased home values in LIDACs •Increased wealth generation in LIDACs related to home repairs and WAP uptake	•$ saved on utility bills •Number of residences removed from the WAP deferral list •Cost change in Fair Market Value of residences who have completed the Make Ready Program •Number of residences with Make Ready followed by a WAP+ project •Number of industrial facilities participating
Program C2. VMT Reductions		
•New bicycle and pedestrian paths •Increased e-bikes •Transit support	•LDV VMT reductions •LDV GHG reductions •Reduce road noise pollution •Improved health outcomes in LIDACs especially for asthma and respiratory illness •Reduced pedestrian and bicycle accidents and fatalities	•Linear feet of new sidewalk and bicycle lanes •Number of new e-bikes •Number of new transit riders •MTCO2e of GHGs reduced •MT of co-pollutants reduced •Decibel reductions

Section 3.3: Authorities, Implementation Timeline, and Milestones

NCDEQ receives state and federal funding to distribute grants and loans for a variety of environmental projects. NCDEQ awards millions in grant funding and other assistance each year to a variety of recipients, from local governments to businesses and non-profit organizations. Recurring and one-time funding sources provide opportunities for communities and governments across NC to achieve their environmental stewardship goals. The Environmental Stewardship Initiative, housed in NCDEQ, recognizes and supports companies and facilities that go above and beyond regulatory requirements to reduce their impact on the environment. Additionally, the programs and projects outlined above will support EOs and legislation in NC, including:

- **EO 271:** Instructs cabinet agencies to pursue and invest eligible federal funds, in a manner consistent with applicable law, toward growing the MHD ZEV market in NC, including but not limited to investing in charging infrastructure and vehicle purchase incentives. Cabinet agencies are instructed to support an affordable and reliable transition to ZEVs in the MHD sector, including but not limited to increasing affordability and access to MHD ZEVs in underserved communities.
- **EO 246:** NC's Transformation to a Clean, Equitable Economy establishes goals to increase the total number of registered ZEVs to at least 1,250,000 by 2030 and increase the sale of ZEVs so that 50% of in-state sales of new vehicles are ZEV by 2030 and instructs cabinet agencies to invest relevant federal and state funding, consistent with applicable law, to actions that reduce GHG emissions and air pollution in historically underserved communities.
- **EO 80:** NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy, charged NCDEQ with collaborating with businesses, industries, power providers, technology developers, NC residents, local governments, and other interested stakeholders to increase the utilization of clean energy technologies and EE and clean transportation measures.
- **HB 951 / SL 2021-165:** Authorizes the NC Utilities Commission to take all reasonable steps to achieve a 70% reduction in emissions of carbon dioxide from electric public utilities from 2005 levels by the year 2030 and carbon neutrality by 2050, including authorizing performance-based regulation of electric public utilities; rulemaking to change utility funding options; and modification of power purchase agreements with eligible small power producers.
- **§ 130A-309.04:** Establishes the state's solid waste management policy and goals. This includes the directive to avoid waste disposal at landfill, with a preference for other methods in the following order: 1) Waste

reduction at the source; 2) Recycling and reuse; 3) Composting; 4) Incineration with energy recovery; 5) Incineration without energy recovery. Additionally, this order requires state agencies to develop a waste recovery plan and encourages public-private partnerships to improve waste management outcomes.

- **Energy Policy Council (EPC) 2022 Biennial Report:** The EPC, pursuant to Chapter 113B of the NC General Statutes (GS), recommended NC's legislative and regulatory bodies to evaluate additional supportive funding and legislation, regulation, and policies needed to support further reduction of carbon emissions from the energy sector.
- **§ 143-64.12:** Set a goal for all state agencies and state institutions of higher learning to reduce energy consumption by 30%. To assist with this goal, the GS also established the USI which is charged with the management of energy, water, and other utility usage.
- **§ 130A-309.09B:** Governs local government bodies in their management of waste reduction programs and encourages the implementation of recycling, composting, and other sustainable waste management.
- **§ 130A-309.10:** Prohibits acts relating to packaging to support recycling efforts and other sustainable waste management practices and governs the disposal of coded plastics to landfill or incinerator.
- **§ 130A-309.11:** Governs compost standards and applications to protect the state's natural lands and water sources from improper waste disposal.
- **GS 143B-344.42, Part 32 Energy Loan Fund**: SEO has the power to establish RLFs not greater than $1 million per entity for industrial and commercial business in NC that install EE and renewable energy improvements. To encourage development and use, SEO has the option to provide loans as low as 0% and shall not exceed 3%.
- **NCDOT NC Ports**: Under existing RAISE grant from U.S. Department of Transportation, NC Ports will complete a project by the end of 2024 to build a dedicated Intermodal Rail Yard at the Port of Wilmington that will expand rail capacity to more than 50,000 container rail movements annually. With existing NCDOT NC Ports Authority, NC's goal is to secure operating funds to maximize utilization of this new intermodal container shipping capacity as quickly as possible over the next four years (2025-2029) to further reduce GHG and other pollutant emissions.

CPRC and Centralina are two of sixteen Councils of Government (COGs) that span the entire state. The two COGs each received a $1M CPRG planning grants and collectively house approximately 43% of the NC population across their combined regions encompassing 18 of NC's 100 counties. NCDEQ is strategically partnering with the two COGs during implementation to broaden reach across the Raleigh-Cary, Durham-Chapel Hill, and Charlotte-Concord-Gastonia MSAs and achieve more for NC residents than can be achieved individually. The statutory authority for regional COGs is in G.S. 160A-470, et. seq. For example, regional COGs are specifically authorized by statute "[t]o apply for, accept, receive, and dispense funds and grants made available to it by [NC] or any agency thereof, the United States of America or any agency thereof, any unit of local government (whether or not a member of the council), and any private or civic agency[,] … [t]o contract with consultants[,] … [t]o contract with [NC], any other state, the United States of America, or any agency thereof, for services[,] … [t]o promote cooperative arrangements and coordinated action among its member governments … [and] [a]ny other powers that are exercised or capable of exercise by its member governments and desirable for dealing with problems of mutual concern to the extent such powers are specifically delegated to it from time to time by resolution of the governing board of each of its member governments which are affected thereby, provided." G.S. 160A-475. NC statute views its COGs and Regional COGs as local governments, and as such the code that governs COGs/Regional COGs is the same as the code that governs their member governments.

The below table outlines the implementation timeline and the implementing entities for each proposed measure. The authority for each of the below listed entities to implement is discussed above.

Table 4: Implementation Timeline Per GHG Reduction Measures

Implementation Task/Milestone	Dates (MM/YY)	Implementing Entity and Role
Program T1. Commercial Fleet and Fuel Transition Program		
Establish competitive grant program	10/24 - 4/25	NCDEQ - DAQ (Transportation Manager, staff); Program Support (contractor); Commercial Entities (contractor)
Make awards to commercial entities	4/25 – 5/25	
Entities purchase new electric and clean diesel MHD vehicles	5/25 – 10/29	
Program T2. EV Charging Infrastructure		

Implementation Task/Milestone	Dates (MM/YY)	Implementing Entity and Role
Prepare 3 RFPs for solicitation	10/24 – 4/25	NCDEQ - DAQ (Transportation Manager, staff); Program Support (contractor); Awardees (contractor)
Procurement and award	4/25 – 10/25	
Implementation of EV charging infrastructure under 3 contracts	10/25 – 10/29	
Program T3. Government Fleet and Fuel Transition Program		
Prepare 2 RFPs for solicitation	10/24 – 4/25	NCDEQ – DAQ (Transportation Manager, staff); Program Support (contractor); State and local govt. awardees (contractor)
Procurement and award	4/25 – 10/25	
State and local governments awarded assess current vehicle use and prioritize	10/25 – 2/26	
State and local governments facilitate replacements	3/26 – 10/29	
Program T4. Port Operations Decarbonization		
New Intermodal Rail Yard completed and existing CMAQ funding ends	10/24	NC Ports Authority (sub-awardee)
Execute rail operations as container volume increases annually	12/24 – 10/29	
Program T5. Pedestrian VMT Program		
Finalize project sites	10/24 – 12/24	NCDOT (sub-awardee); Construction manager (contractor)
Project design development	1/25 – 12/25	
Construction of pedestrian infrastructure	1/26 – 10/29	
Program B1. Weatherization+ Assistance Program		
Conduct home readiness repairs	10/24 – 10/27	NCDEQ – SEO (energy managers, WAP PM); Program Support (contractor)
Workforce development and TA	10/24 – 10/27	
Program B2. State Building Decarbonization and Efficiency		
Training and TA to identify implementation projects	10/25 – 4/27	NCDEQ – SEO (PM, energy managers)
Implement EE and electrification projects for state government facilities	5/27 – 10/28	
Program B3. Local Public Building Decarbonization and Efficiency		
Training and TA to identify implementation projects	10/25 – 4/27	NCDEQ - SEO (PM, energy managers)
Implement EE and electrification projects for state government facilities	5/27 – 10/29	
Program I1. Industrial Electrification, Efficiency, and Process Emissions Reduction		
Identify small and medium industrial facilities to target	10/24 – 12/24	NCDEQ - SEO (Project Analyst); Waste Reduction Partners (contractor for energy assessments); Technical assistance (contractor)
Conduct energy assessments and provide recommendations	1/25 – 1/27	
Provide TA to industrial organizations around EE projects	10/24 – 10/29	
Program I2. Industrial Decarbonization Workforce Development		
Establish working group to retain workforce	10/24 – 10/27	NCDEQ – SEO (Energy Managers, Project Analyst); Workforce Building (contractor); Pre-apprenticeship program (contractor); Apprenticeship program (contractor)
Develop workforce training programs	10/24 – 10/27	
Conduct workforce training, pre-apprenticeship, & apprenticeship programs	10/25 – 10/29	
Program I3. Industrial Decarbonization Loan Fund		
Staff officer and set up loan fund	10/24 – 12/24	NCDEQ – SEO (Business officer)
Provide loans to industrial organizations	12/24 – 10/29	
Program W1. Organic Waste Reduction		
Prepare RFP for solicitation	10/24 – 4/25	NCDEQ (PMs); Awardee (contractor); Organics Refrigerator Program Manager (contractor)
Procurement and award	5/25 – 10/25	
Implementation of organics diversion programs	11/25 – 10/29	
Implementation of refrigerator program	11/24 – 10/29	
Program W2. Waste Operations Electrification and Decarbonization		
Prepare RFP for solicitation	10/24 – 4/25	NCDEQ (PMs); Awardee (contractor); Wake Forest Pilot Program Manager (contractor)
Procurement and award	5/25 – 10/25	
Implementation of refuse and waste recovery vehicle replacements	11/25 – 10/29	
Implementation of Wake Forest pilot program for EVs	11/24 – 10/29	

Implementation Task/Milestone	Dates (MM/YY)	Implementing Entity and Role
Program W3. Landfill Gas Reductions		
Prepare RFP for solicitation	10/24 – 4/25	NCDEQ (PMs); Awardee (contractor)
Procurement and award	5/25 – 10/25	
Implementation of landfill gas collection	1/25 – 10/29	
Program CPRC1. Building EE and Emissions Reduction		
Conduct home readiness repairs	10/24 – 10/29	CPRC (sub-awardee)
Implement EE and electrification projects for non-residential buildings	10/24 – 10/29	
Program CPRC2. VMT Reductions		
Finalize project sites and conduct design development	10/24 – 4/26	CPRC (sub-awardee)
Construction of VMT infrastructure	4/26 – 10/29	
Program C1. Building Decarbonization		
Conduct home readiness repairs	10/24 – 10/29	Centralina (sub-awardee)
Implement EE and electrification projects for non-residential buildings	10/24 – 10/29	
Program C2. VMT Reductions		
Finalize project sites and conduct design development	10/24 – 4/26	Centralina (sub-awardee)
Construction of VMT infrastructure	4/26 – 10/29	
General		
Prepare semi-annual CPRG reports	4/25 – 10/29	NCDEQ (PM)
Prepare final CPRG report	10/29	

Section 4: Low-Income and Disadvantaged Communities

Section 4.1: Community Benefits

Benefits to LIDACs are prioritized at every opportunity of NC's approach and GHG emissions reduction measures selection. Geographic coverage and the diverse cross-sector nature of benefits to LIDACs is also a notable feature of the approach. Partnering directly with the CPRC and Centralina MSAs who represent the two major population centers has been a key collaboration in the development of this application enabling benefits to accrue to the greatest number of people living in NC's LIDACs. Outside of the largest cities are vast natural lands home to rural communities, and one federally recognized tribe who is in the western most corner of the state. LIDACs across the state have challenges in common as well as challenges distinct to their particular contexts. Benefits included in this section, and throughout this application, represent the current understanding of community priorities combined with project feasibility and viability considerations like size and impact area. The state's LIDAC map is noted in Figure 1 and further sector and program specific geospatial maps are exhibited in the Technical Appendix. The purple census tracts are disadvantaged under the Climate and Economic Justice Screening Tool (CEJST) while the yellow block groups are disadvantaged under the 90th percentile threshold in EJ Screen. NC has 884 disadvantaged tracts under CEJST out of 2195 total tracts, representing 40.3% disadvantaged.

Figure 1: NC's LIDAC Map

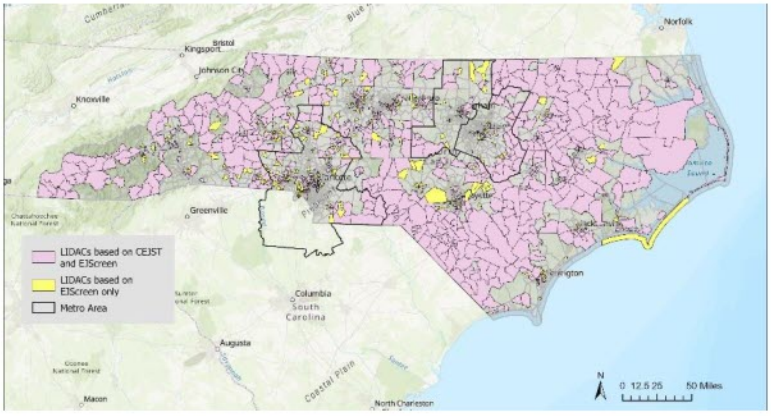

Table 3 in Section 3 reflects each measure's planned outputs, outcomes, and performance measures. Section 4 focuses just on the benefits specifically to LIDACs. This is not a comprehensive list as additional direct and indirect benefits are likely to accrue as projects proceed, as leading practices are applied, as states and localities learn from each other, as community engagement uncovers new insights, and as communities' priorities change, as benefits are measured and tracked, and as adjustments are made over time to create the best outcomes.

Census tract and block group numbers for community benefits by measure, where known, can be found in the Areas.xlsx attachment. As noted in the ReadMe tab of the Areas.xlsx file, some CPRG measures have the potential for statewide impact. As noted above, 884 tracts of a total 2195 census tracts in NC are qualified LIDACs, amounting to 40.3% of all tracts. For that reason, NCDEQ considers statewide measures compliant with the spirit and letter of Justice40. Pursuant to the LIDAC guidance provided by EPA under this funding opportunity for at least 40% of the benefits of investments to accrue to LIDACs, a number of NC's measures will focus a majority of the benefits, up to 100%, in vulnerable areas. This approach is aligned with NCDEQ's North Star to prioritize investments and benefits in LIDACs wherever possible.

Table 5: Direct Benefits to LIDACs for CPRG Activities in NC (see key)

Program	LIDAC Commitment	Expected Benefits to LIDACs **
T1. Commercial Fleet and Fuel Transition Program	40% LIDAC carve out under the RFP	
T2. EV Charging Infrastructure	40% LIDAC carve out under the RFP	
T3. Government Fleet and Fuel Transition Program	40% LIDAC carve out under the RFP	
T4. Port Operations Decarbonization	Nearly 100% LIDACs*	
T5. Pedestrian VMT Program	Nearly 100% LIDACs*	
B1. Weatherization+ Assistance Program	100% of homes on WAP deferral list are in LIDACs*	
B2. State Building Decarbonization and Efficiency	At least 40% of projects selected will be in LIDACs	
B3. Local Public Building Decarbonization and Efficiency	At least 40% of projects selected will be in LIDACs	
I1. Industrial Electrification, Efficiency, and Process Emissions Reduction	At least 40% of projects selected will be in LIDACs	
I2. Industrial Decarbonization Workforce Development	At least 40% of projects selected will be in LIDACs	
I3. Industrial Decarbonization Loan Fund	At least 40% of projects selected will be in LIDACs	
W1. Organic Waste Reduction	100% of landfills are in LIDACs*	
W2. Waste Operations Electrification and Decarbonization	100% of landfills are in LIDACs*	
W3. Landfill Gas Reductions	100% of landfills are in LIDACs*	
CPRC1. Building EE and Emissions Reduction	90-100% of projects are in LIDACs	
CPRC2. VMT Reductions	40-50% of projects are in LIDACs	
C1. Building Decarbonization	50-60% of projects are in LIDACs	
C2. VMT Reductions	40-50% of projects are in LIDACs	

*denotes a geospatial map in the Technical Appendix to display the projected impact area

**LIDAC benefit calculation and geospatial measurement approach can be found in the Technical Appendix

Figure 2: Table 5 Key for Direct Benefits

Increased access to services and amenities in LIDACs	Reduced noise pollution in LIDACs
Increased housing quality, comfort, and/or safety in LIDACs	Reduced co-pollutants and/or VOCs in LIDACs (MT)
Reduced transportation burden as it related to cost, access, time, or safety in LIDACs	Jobs created in LIDACs and/or workforce development pathways for people facing barriers to employment
GHG emissions reductions in LIDACs (MTCO2e)	Improved public health resulting from reductions in co-pollutants in LIDACs (reductions in new asthma cases, ER visits and hospital admissions for respiratory or cardiac events, new cases of diabetes, increased life expectancy)

✓ Reduced energy costs, increased energy resilience, and/or increased energy security in LIDACs	✓ Increased wealth generation resulting from increased home value due to home improvements in LIDACs

Reduced risk of extreme weather events, hurricanes, flood risk, and sea level rise are indirect benefits of NC's CPRG work that will accrue statewide. It is likely coastal communities, including LIDACs in flood and hurricane prone areas will be the greatest beneficiaries. Other measurable benefits to LIDACs accrued throughout the CPRG implementation include dollars spent and number of stakeholder engagement events held with LIDACs.

Potential disbenefits of GHG emissions reductions measures and proposed mitigation strategies:

The construction of bicycle and pedestrian lanes and other various eligible VMT strategies, proposed under Programs T5, CPRC2, and C2, could add short-medium term burdens to proximal communities including noise and dust. Insights derived though community engagement where VMT projects would be created will determine the priority mitigation strategies to address this potential burden. Examples mitigation strategies could include limiting construction hours, requiring a dust management plan, and defining routes for construction vehicles to avoid vulnerable populations living in LIDACs.
Homes are on the WAP deferral list because they need repairs to be eligible for the WAP. Under Programs B1, CPRC1, C1, NC aims to invest in these important repairs and Make Ready for WAP. One of these example repairs is mold remediation. Disturbing the mold could result in the disbursal of spores and make respiratory issues worse for workers, households, and people nearby. To mitigate this potential burden, only Make Ready projects using certified mold remediation specialists will be eligible for funding under WAP+. There is currently no license or certification in the state. Certifications for mold remediation companies in other states require training, licensing, and minimum work standards like the use personal protective equipment, the use of disinfectants consistent with EPA standards, posted notice of the project and contractor license, and completion of post-remediation assessments. NC is considering either adopting these standards or excluding mold remediation from the measure so as not to increase burden on workers and LIDAC households.
Program W3 may demonstrate an increase in landfill gas collection efficiency. Under one EPA model, this project forecasts a potential for an increase in fugitive emissions. Because nearly all landfills in NC are located in LIDACs, this presents a potential disbenefit. The scientific community has published information and findings through field and theoretical research that runs counter to EPA's model. EPA has reviewed these findings and acknowledged that the model does not seem to represent likely outcomes. To mitigate the potential for disbenefits, NCDEQ will proceed with a pilot to with expanded sensing and monitoring capabilities to determine if fugitive emissions are occurring. If so, the project commits to a pause and re-evaluation including community consultation and additional mitigation strategies before proceeding.

Section 4.2: Community Engagement

As the state moves into the CPRG implementation phase, additional and ongoing engagement will be a critical part of project site selection, project and program design, and actual implementation including the construction of measures, programs, and projects identified under the Transportation, Buildings, Industrial, and Waste sectors in Section 1 above. To the state, meaningful involvement means people have an opportunity to participate in decisions about activities that may affect their environment, health, or economic resilience. NC has and will continue to proactively seek out and facilitate the involvement of impacted stakeholders, and their input will be incorporated into the state's CPRG activities throughout the lifecycle of the project or program. The guiding principles of NC's community engagement approach are:

- Benefits that community stakeholders care about most are prioritized; the burdens/disbenefits that community stakeholders are most concerned about, are mitigated, or to the extent possible, eliminated.
- Engagement with impacted stakeholders begins before the project is designed and continues through the lifecycle of the project through implementation, commissioning, and decommissioning as relevant.
- Important historical context, cumulative burdens that a community experiences, the nature of trust between key stakeholders including the government and the community, and the potential for systemic barriers to stakeholders to participate meaningfully in engagement opportunities, the baseline awareness of the state's CPRG plan and its technical underpinnings are all considered during engagement and outreach planning.
- Highly impacted stakeholders (e.g., near a project, experience significant project benefits or disbenefits, etc.) who historically have less ability or access to influence decisions (e.g., LIDACs) are prioritized in the engagement process. Input from these stakeholders carry the most influence over project decisions.
- Engagement is a two-way experience, is done transparently and in good faith, and should build trust.
- Engagement should include both participatory and deliberative tactics. Engagement tactics used should be tailored to the needs of the stakeholder group, the nature of the project, and the stage of development.

Where feasible and desired by the community, stakeholders may wish to have a role in the governance or hold some decision-making power in the project or program.

- Engagement should be accessible to all North Carolinians statewide. As such, a variety of formats should be used including virtual, in-person events with geographic coverage, online, and asynchronous. The format selection for each engagement opportunity should be tailored to the needs of the stakeholder group, the nature of the project, and the stage of project development. Accessibility will be prioritized to support engagement for all, including language translation services and reasonable accommodations.

NCDEQ conducted thorough outreach and engagement with a diverse group of stakeholders throughout the CPRG planning and implementation application development process. Stakeholder input, especially from LIDACs was prioritized and heavily influenced the design and selection of GHG reduction measures proposed. Further, benefits to LIDACs are a central theme across all GHG reduction measures selected for implementation in this plan. NCDEQ commits to additional and ongoing engagement during the implementation phase as is outlined below.

Outreach and engagement with LIDAC stakeholders during the planning phase: To begin, NCDEQ integrated the CPRG LIDAC geospatial definition using CEJST and EJ Screen block groups into outreach planning. NCDEQ prioritized its in-person public events in communities where there might be barriers to participation. Additional online virtual sessions were promoted through CBOs and community influencers including faith-based institutions, community centers, libraries, environmental organizations, environmental networks, local governments, local tribal organizations, public engagement centers at local universities, environmental justice groups, and social welfare groups. A mix of in-person and virtual sessions were held to encourage participation from a wider audience including those who might have transportation or childcare barriers, language barriers, might work non-traditional hours, or who might find virtual engagement a more convenient way to participate in the civic process. Meetings were promoted both in English and in Spanish with the option to request live interpretation services to increase accessibility. Prior to the in-person events in Fayetteville and Morganton, the NCDEQ Environmental Justice team conducted a search for contacts representing LIDACs in the surrounding 13-county areas for targeted outreach to increase participation. In these public and stakeholder engagement events, NCDEQ shared information about CPRG and asked for input from communities on how they would like to see the state prioritize climate action and funding. During each session, members of the public and organization representatives engaged with presenters by asking questions about the process, expressing concerns that they would like addressed, and proposing possible projects that they felt would be beneficial for their communities. Breakout sessions focused on specific sectors were offered to allow participants the chance to discuss topics in more depth. NCDEQ provided information and engagement opportunities with the NC Commission of Indian Affairs for amplification to their networks and offered a 1:1 meeting to discuss opportunities for involvement. Following this outreach effort, representatives of state-recognized tribes and tribal organizations attended LIDAC-focused CPRG engagement sessions. NCDEQ encouraged tribal organizations to share feedback on priority measures and potential CPRG project ideas through its online form. A website was set up to share information with the public during the process, and engagement meeting slide decks and recordings were posted for transparency. Additional engagement was performed including with state and local government agencies, with NC's 16 COGs, many municipalities, cities, and counties all of whom also serve and, in some cases, themselves represent LIDAC stakeholders. More information on the full range of engagement activities performed during the planning phase can be found in NC's PCAP.

Meaningful engagement planned during the implementation phase: To begin the implementation phase, NC will stand up a Climate Pollution Reduction Community Engagement Working Group whose majority is made up of citizens and community-based groups who represent impacted stakeholders with an emphasis on LIDACs. The working group will advise NC on the overarching engagement and outreach planning approach, the development of a stakeholder map, and engagement tactics suited to the diversity of contexts, track engagement over time, and advise on adjustments needed to engagement approaches to maintain a productive two-way communication.

Deliberative and participatory engagement methods and tactics will be employed during the implementation phase. Deliberative engagement tactics appropriate during the implementation phase may include but are not limited to stakeholder meetings and community events (in person, hybrid, and virtual), additional citizen advisory committees or working groups for more complex or long-running projects, open planning forums, partnered piloting, co-defined metrics development especially performance measures prioritized by LIDACs that address Justice40. Participatory engagement tactics appropriate during the implementation phase may include but are not

limited to collaborative project site down selection, climate pollution reduction 101 workshops to address technical gaps, webinars, fact sheets, presentations, video explainers, public comment periods, focus groups, polling, online forums, panels, 1:1 engagement, and participatory budgeting approaches.

NC will launch and accelerate high quality engagement with communities particularly with LIDAC stakeholders leveraging the advice and counsel of the Climate Pollution Reduction Community Engagement Working Group and in accordance with the guiding principles for community engagement noted above. A posture of openness to community stakeholder input and insight is a part of the culture of NCDEQ and this broader project team. In alignment with the state's values, engagement will be performed on an ongoing basis throughout the CPRG implementation phase. NC acknowledges the engagement and outreach needed to successfully execute the implementation phase of CPRG will exceed the engagement completed to inform the development of the PCAP and the CPRG planning phase.

Section 5: Job Quality

While NC encourages, but does not require, employers to implement the strategies listed in the CPRG NOFO, the State has several practices in place that help ensure NC companies create high-quality jobs in the energy-related sectors. One example is the Job Development and Investment Grant (JDIG) program for companies considering expansion or relocation in NC. Companies that receive JDIG awards commit to creating full-time jobs with benefits. The projected wages of these jobs compared to the country average is one of the factors in the formula used to determine the company's incentive package. These jobs typically pay a family-sustaining wage, defined as earning a family income equivalent to 300% or more of the federal poverty line. In the JDIG application process, the NC Department of Commerce (NCDOC) and the Economic Development Partnership of NC receive information about any additional benefits the company will provide to employees, the expected provision of training for the new employees, a list of prior citations under the Occupational Safety and Health Act (OSHA) within the last three years, and any efforts around corporate social responsibility, such as environmental responsibility, inclusive hiring practices, diversity, equity, and inclusion, and participation of historically excluded talent in executive leadership. Led by the NC Community College System, we continue to grow our apprenticeship programs as they provide greater opportunities for wage progression, skills development, and earning credentials.

In EO 303, Governor Roy Cooper directed a whole-of-government approach to improve the economic mobility of formerly incarcerated people. This EO specifically directed the NCDOC to increase the number of second chance employers hiring people prior to and following release and foster commitments within the business community to remove barriers for qualified applicants with criminal records. This aligns with the Department's *First in Talent* Strategic Economic Development Plan, which is built around differentiating NC from its peers by aggressively meeting the workforce challenges of our global economy. Relevant goals in this *Plan* include: (i) increasing access to high-quality early childhood education and decreasing childcare expenses for working families; (ii) improving regional access to quality, affordable housing and transportation to grow and retain a vibrant workforce; and (iii) supporting initiatives that seek to build healthier communities. In collaboration with NCDOC, NCDEQ plans to support retention and creation of high-quality, family-sustaining jobs via CPRG implementation.

Section 6: Programmatic Capability and Past Performance

Section 6.1: Past Performance

NCDEQ successfully manages a variety of grants, cooperative agreements, and competitive awards including, awarding and overseeing Mobile Sources Emissions Reduction Programs, awarded by EPA's Diesel Emissions Reduction Act (DERA) Program and the State's share of the VW Settlement funds, as previously highlighted in Section 1.3. Additionally, NCDEQ received over $200 million from the American Recovery and Reinvestment Act funds for the combined State Energy Programs (SEP) and WAPs. Over the last three years, SEO was directly awarded and performed the following federal assistance agreements:

- **1) SEP Formula, DE-EE0009483; 2) SEP Competitive Planning for an Affordable, Resilient, and Sustainable Grid in NC, DE-EE0008607:** Awarded $4,063,830 for 2021-2024 (SEP Formula) and $360,000 for 2019-2023 (SEP Competitive to fund EE and clean energy projects, as well as develop a roadmap to be used during the integrated resource planning process to support investments that enhance grid resiliency, improve reliability,

and maintain affordability. DOE, Myles Rogers (myles.rogers@hq.doe.gov; (240)-597-6348); DOE, Ryan Moore (ryan.moore@netl.doe.gov; (304)-285-5053)

- **3) WAP, DE-EE0009920, WAP, DE-EE0007939; 4) WAP Bipartisan Infrastructure Law (BIL) EE0010005; 5) DHHS FAIN 22B1NCLIEA, 23B1NCLIEA, 2301NCLIEA, and 2401NCLIEA:** Awarded $12,625,218 for 2022-2024 (DOE), $25,648,111 for 2017-2022 (DOE), $89,776,045 (WAP BIL), and $40,018,050 (DHHS' LIHEAP and HARRP program). The WAP provides annually awarded funding for EE and clean energy projects which increase the EE of the economy, reduce energy costs and energy waste, and promote economic growth. DOE, Christine Askew (christine.askew@hq.doe.gov; (202)-586-8224); DOE, Christine Askew (christine.askew@hq.doe.gov; (202)-586-8224); DHHS Claudia Gonzalez, (Claudia.Gonzalez@acf.hhs.gov, (202)-545-4918)

The SEP Formula Awards and WAP funds (in the bulleted list above) are awarded annually to NCDEQ from the DOE. The SEP Competitive (in the bulleted list above) was also awarded by DOE and was a one-time assistance award completed successfully by NCDEQ. NCDEQ utilizes internal staff members to effectively manage and monitor funding awards ensuring that grant agreements are completed as expected. NCDEQ utilizes its Financial Services Division, legal staff members, and internal auditors to assure that financial protocols and federal requirements are followed. NCDEQ staff are in regular communication with grant award federal representatives providing project progress and accomplishments. As part of regular communications, NCDEQ discusses anticipated barriers and seeks suggestions to solve those barriers. NCDEQ also consults with federal project liaisons and in-state technical experts for guidance on how to avoid implementation delays and ensure outcomes.

Section 6.2: Reporting Requirements

The above-mentioned assistance award agreements have multiple reporting requirements that were met in a timely manner in the Performance and Accountability for Grants in Energy (PAGE) system. NCDEQ reported the progress towards achieving expected outcomes and provided acceptable final reports as required on all assistance award agreements. The following are reporting requirements for all award agreements that NCDEQ has met:

- **Program/Quarterly Progress Reports (QPR):** Required quarterly within 30 days of end of quarter and within 90 days after the expiration or termination of award via the PAGE system.
- **Financial Reporting:** Required quarterly within 30 days of end of quarter and within 90 days after expiration or termination of award. The form is SF-425: Federal Financial Report, submitted through PAGE system.
- **Annual Indirect Cost Proposal:** The annual Indirect Rate Agreement or Cost Allocation Plan is submitted with the State Plan into the PAGE document library annually.
- **Historical Preservation:** Required annually via the PAGE system.
- **Davis-Bacon (applicable to WAP funds):** Required semi-annually at the end of each period.
- **Closeout Reporting (SF-428 and 428B Final Property Report):** Required 90 days after the expiration or termination of 3-year or 5-year Grant Period.
- **Special Status Reports:** Developed and submitted as required.

Section 6.3: Staff Expertise

NCDEQ has staff that develop, implement, monitor, evaluate, and report on CPRG implementation. NCDEQ staff include engineers, program specialists, program administrators, and account specialists providing a range of expertise and experience to successfully develop, manage, and carry out programs and initiatives. NCDEQ will utilize the staff noted below to implement the program activities, which includes staff from NCDEQ's partners CPRC and Centralina. Additional key personnel and positions to be added once the CPRG funding is awarded is included in the Team Biographies attachment.

Table 6: Key Staff Bios

Grant Role	Experience, Qualifications, and Knowledge
Julie Woosley, SEO Director, NCDEQ	
Program Administrator – will provide guidance and oversight to the overall implementation of the CPRG program.	Ms. Woosley currently serves as the Director of the SEO within NCDEQ and is a Certified Public Manager (CPM). She has extensive experience with environmental and energy programs including in 25 years with NCDEQ. During her tenure, she has successfully provided program oversight for more than $75 million in federal, state, and private funds.
Michael A. Abraczinskas, Director, DAQ, NCDEQ	

Grant Role	Experience, Qualifications, and Knowledge
Sector Program Manager – will provide guidance and oversight for implementation of the Transportation Sector programs included in the CPRG grant.	Mr. Abraczinskas is the Director of the DAQ. He has 25 years of experience with DAQ including regulatory development, planning, meteorological and air quality modeling, mobile sources emissions modeling, and mobile source compliance activities. He provided oversight for the State's share of the VW Settlement funds. Mr. Abraczinskas holds a Bachelor of Science (BS) in Meteorology from NCSU, is certified as an Engineer-In-Training (EIT), and a CPM.
Matthew Davis, WAP Manager, NCDEQ	
Program Consultant – will support program strategy development.	Mr. Davis currently manages the SEO's WAP and brings approximately 10 years of successful experience working with energy and environmental programs in NCDEQ. He currently manages, monitors, and implements over $100 million in NC Weatherization Assistance funds.
Bridget Parrish, Engineer, NCDEQ	
Program Consultant – will provide program strategy and TA for the grant.	Ms. Parrish serves as an Engineer with the SEO and brings 10+ years of experience from the public and private sector. She has extensive knowledge in managing, monitoring, and researching energy and environmental technologies.
Stephanie C. Bolyard, PhD, Senior Engineer to the Assistant Secretary, NCDEQ	
Technical Program Manager – will provide technical support, oversight and guidance, and lead the waste sector implementation.	Dr. Bolyard serves as the Senior Engineer to the Assistant Secretary. Her 15+ years of experience and expertise includes solid waste management, wastewater permitting, environmental compliance, and emerging contaminants. Dr. Bolyard has a PhD and MS in Environmental Engineering from the University of Central Florida and a BS in chemistry.
Helen Hossley, Special Projects Manager, NCDEQ	
Program Consultant – will provide program strategy and implementation.	Ms. Hossley has extensive experience managing national and statewide programs. She navigated through the intricacies of government agencies and created ground swell involvement at the grass roots level. She has a BS from Rochester Institute of Technology.
Jason Wager, AICP, CEP Regional Planning Director, Centralina	
Regional Technical and Program Advisor – Oversees contract administration, scope/schedules, cost reviews, risk management, and QA/QC.	Mr. Wager serves as Director of Planning in support of the 9-county Centralina Region. He has 28+ years of experience, with a significant energy and environment focus, and has developed programs and projects that include the establishment of the DOE Clean Cities coalition affiliate for our area and leads the regional mobility vision and implementation recommendations of the CONNECT Beyond initiative. He holds a B.A. and Masters of Geography.
Emily Barrett, Director of Environment and Resilience, CPRC	
CPRC CPRG Administrator	With over 20 years of professional environmental experience in government and private sectors, Ms. Barrett has spent the last 14 years in local government sustainability implementation both at the local and regional levels. She is a graduate of UNC Chapel Hill with an MS in Environmental Science and Engineering from the School of Public Health.

NOTE: USE OF THIS EXAMPLE COVER PAGE IS OPTIONAL. IF THIS INFORMATION IS PROVIDED IN A DIFFERENT FORMAT, EPA WILL NOT REVIEW AN APPLICATION UNFAVORABLY.

CPRG IMPLEMENTATION GRANTS COMPETITION
COVER PAGE FOR APPLICATION

APPLICANT INFORMATION

Organization	North Carolina Department of Environmental Quality
Primary Contact Name	Julie Woosley
Phone Number	919-707-9203
Email Address	julie.woosley@deq.nc.gov

TYPE OF APPLICATION ☑ Individual Applicant ☐ Lead Applicant for a Coalition

If lead applicant for a coalition, provide a list of the coalition members below.

FUNDING REQUESTED: *Provide total EPA CPRG Implementation Grant funding requested.*

$ 199,999,999

APPLICATION TITLE: *Provide the title of your proposed project.*

North Carolina Implementation Grant Bridging Science, Communities, and Innovation

BRIEF DESCRIPTION OF GHG MEASURES: *Describe each GHG reduction measure contained in the application (1-2 sentences each).*

• Transportation 1 (T1) Commercial Fleet and Fuel Transition: Incentivizing the transition of commercial internal-combustion vehicles to cleaner vehicles and EVs.
• Transportation 2 (T2) EV Charging Infrastructure: Enabling publicly accessible and multi-unit dwelling (MUD) Level 2 charging infrastructure.
• Transportation 3 (T3) Government Fleet and Fuel Transition: Enabling the transition of local and state government light-duty (LD) and medium-to-heavy duty (MHD) fleet vehicles to cleaner options including EVs.
• Transportation 4 (T4) Port Operations Decarbonization: Reducing transportation-related emissions for freight container transportation.
• Transportation 5 (T5) Pedestrian VMT Program: Reducing VMTs through pedestrian

SECTORS: *Identify the sector(s) associated with the GHG reduction measures included in the application.*

- [x] Industry
- [ ] Electricity Generation
- [x] Transportation
- [ ] Other (please describe)
- [x] Commercial and Residential Buildings
- [ ] Agriculture/Natural and Working Lands
- [x] Waste and Materials Management

EXPECTED TOTAL CUMULATIVE GHG EMISSION REDUCTIONS

For all proposed measures combined, provide the estimated cumulative GHG reductions:

Estimated cumulative GHG reductions for 2025-2030 (in metric tons)

396618

Estimated cumulative GHG reductions from 2025-2050 (in metric tons)

2,295,336

LOCATIONS: *List the primary location(s) where the proposed measures will be implemented*

City Asheville, Cary, Chapel Hill, Charlotte, Columbia, Concord, Durham, Fayetteville,

State; Territory; Federally recognized Tribe North Carolina

APPLICABLE PRIORITY CLIMATE ACTION PLAN(S) (PCAP) ON WHICH MEASURES ARE BASED

PCAP Lead Organization(s): North Carolina Department of Environmental Quality

PCAP Title(s): North Carolina Priority Climate Action Plan

PCAP Website link(s) (if applicable): https://www.deq.nc.gov/north-carolina-priority-clima

List of GHG reduction measures and PCAP page reference for each measure:

- T1 Commercial Fleet and Fuel Transition: PCAP Measure 1 (pages 38 - 42)
- T2 EV Charging Infrastructure: PCAP Measure 2 (pages 38 - 42)
- T3 Government Fleet and Fuel Transition: PCAP Measure 3 (pages 42 - 45)

Section 7: Budget and Timely Expenditure of Grant Funds

The below narrative outlines each budget item for each CPRG implementation program, how those funds will be expended, and the reasonableness of the budget formulation.

Section 7.1: Budget Details

Below is the overall state CPRG implementation budget by budget category. The budget follows the anticipated distribution across the five years with higher start-up costs in Year 1 and costs progressively reducing over the subsequent four years, with the goal of programming being less reliant on public funding to sustain. And, the budget is designed to standup the state government's internal functions to manage and oversee CPRG implementation instead of contracting out externally

Table 7: NC CPRG Implementation Budget by Year

North Carolina CPRG Implementation Budget by Year							
Cost Type	**Category**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs	*Total Personnel*	$2,221,211	$2,680,233	$2,704,033	$2794,534	$2,754,856	$13,154,867
	Total Fringe Benefits	$927,513	$1,107,295	$1,087,483	$1,089,580	$1,074,163	$5,286,035
	Total Travel	$222,527	$227,526	$169,239	$166,920	$131,921	$918,132
	Total Equipment	$0	$0	$0	$0	$0	$0
	Total Supplies	$180,187	$25,970	$35,466	$35,466	$35,464	$312,553
	Total Contractual (Including RFPs)	$22,881,259	$10,112,173	$6,286,604	$4,225,853	$2,203,066	$45,708,955
	Total Other	$68,038,650	$23,124,500	$20,598,635	$14,855,996	$4,085,750	$130,703,531
	Total Direct	$94,471,346	$37,277,697	$30,881,460	$23,168,349	$10,285,221	$196,084,073
Indirect Costs	*Total Indirect*	$730,964	$807,002	$777,762	$806,176	$794,024	**$3,915,927**
	Total Funding	**$95,202,310**	**$38,084,698**	**$31,659,221**	**$23,974,525**	**$11,079,245**	**$199,999,999**

Below is the implementation budget by sector, with the amounts allocated to each sector approximately reflecting the total GHG emissions coming from each sector with the Transportation sector receiving the most funding. The NCDEQ administration costs represent funding directed to NCDEQ to manage implementation of the state-wide programs proposed in this application.

Table 8: NC CPRG Implementation Budget by Sector

North Carolina CPRG Implementation Budget By Sector (and MSA)			
Project Number	**Project Name**	**Total Cost**	**% of Total Funding Requested**
1	NCDEQ Administration costs	$8,356,811	4%
2	Transportation	$63,964,535	32%
3	Buildings	$61,780,688	31%
4	Industry	$15,000,000	8%
5	Waste	$15,499,999	8%
6	CPRC (MSA)	$15,620,107	8%
7	Centralina (MSA)	$19,768,869	10%
Total Funding		**$199,999,999**	**100%**

Table 9: NC CPRG Implementation Program by Program

Program T1. Commercial Fleet and Fuel Transition Program						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$51,950	$53,509	$55,114	$56,767	$58,470	**$275,810**
Notes and Assumptions: Project Manager at Salary 0.5 FTE (assuming annual 3% raise), Staff at salary 0.25 FTE (assuming annul 3% raise)						

Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$1,392	$1,392	$1,392	$1,392	$1,392	**$6,960**
Notes and Assumptions: Travel for conference and workshop presentations: Airfare - $400 roundtrip @ 1 roundtrip per year, Luggage Fees - $25 per flight @ 2 flights per year, Hotel - $105 per day @ 3 days per year, Per Diem - $49.5 per day @ 3.5 days per year, Taxi - $45 per year, Parking - $20 per day @ 4 days per year, Mileage for local travel (500 miles per year at $0.655/mi)						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$20,400	$20,400	$20,400	$20,400	$20,400	**$102,000**
Notes and Assumptions: Contractor to assist with program management 25% of time @ $35/hr., Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr.						
Total Other	$10,387,000	$0	$0	$0	$0	**$10,387,000**
Notes and Assumptions: Non-government RFP MHD Vehicle replacements						
Total Direct	$10,460,742	$75,301	$76,906	$78,559	$80,262	**$10,771,769**
Indirect Costs						
Total Indirect	$5,662.55	$5,832.43	$6,007.40	$6,187.62	$6,188	**$6,373**
Notes and Assumptions: 10.9% negotiated rate of personnel costs						
TOTAL FUNDING	**$10,466,404**	**$81,133**	**$82,913**	**$84,747**	**$86,635**	**$10,801,833**

Program T2. EV Charging Infrastructure						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$88,450	$91,104	$93,837	$96,652	$99,551	**$357,836**
Notes and Assumptions: 2 Project Managers at Salary 0.5 FTE (assuming annual 3% raise), Staff at salary 0.25 FTE (assuming annul 3% raise)						
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$1,392	$1,392	$1,392	$1,392	$1,392	**$6,960**
Notes and Assumptions: Travel for conference and workshop presentations: Airfare - $400 roundtrip @ 1 roundtrip per year, Luggage Fees - $25 per flight @ 2 flights per year, Hotel - $105 per day @ 3 days per year, Per Diem - $49.5 per day @ 3.5 days per year, Taxi - $45 per year, Parking - $20 per day @ 4 days per year, Mileage for local travel (500 miles per year at $0.655/mi)						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$20,400	$20,400	$20,400	$20,400	$20,400	**$102,000**
Notes and Assumptions: Contractor to assist with program management 25% of time @ $35/hr., Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr.						
Total Other	$5,557,500	$0	$0	$0	$0	**$5,557,500**
Notes and Assumptions: Level 2 publicly accessible charging infrastructure RFP, Level 2 MUD charging infrastructure competitive RFP, Level 2 MUD charging infrastructure rebates RFP						
Total Direct	$5,667,742	$112,896	$115,629	$118,444	$121,343	**$6,136,053**
Indirect Costs						
Total Indirect	$9,641.05	$9,930	$10,228	$10,535	$10,851	**$51,186**
Notes and Assumptions: 10.9% negotiated rate of personnel costs						
TOTAL FUNDING	**$5,677,383**	**$122,826**	**$125,857**	**$128,979**	**$132,194**	**$6,187,239**

Program T3. Government Fleet and Fuel Transition Program						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$51,950	$53,509	$55,114	$56,767	$58,470	**$275,810**
Notes and Assumptions: Project Manager at Salary 0.5 FTE (assuming annual 3% raise), Staff at salary 0.25 FTE (assuming annul 3% raise)						
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$1,392	$1,392	$1,392	$1,392	$1,392	**$6,960**
Notes and Assumptions: Travel for conference and workshop presentations: Airfare - $400 roundtrip @ 1 roundtrip per year, Luggage Fees - $25 per flight @ 2 flights per year, Hotel - $105 per day @ 3 days per year, Per Diem - $49.5 per day @ 3.5 days per year, Taxi - $45 per year, Parking - $20 per day @ 4 days per year, Mileage for local travel (500 miles per year at $0.655/mi)						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$20,400	$20,400	$20,400	$20,400	$20,400	**$102,000**
Notes and Assumptions: Contractor to assist with program management 25% of time @ $35/hr., Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr.						
Total Other	$30,360,175	$0	$0	$0	$0	**$30,360,175**
Notes and Assumptions: Government MHD replacement RFP, Government LD replacement RFP						

Total Direct	$30,433,917	$75,301	$76,906	$78,559	$80,262	**$30,744,944**
Indirect Costs						
Total Indirect	$5,663	$5,832	$6,007	$6,188	$6,373	**$30,063**
Notes and Assumptions: 10.9% negotiated rate of personnel costs						
TOTAL FUNDING	**$30,439,579**	**$81,133**	**$82,913**	**$84,747**	**$86,635**	**$30,775,008**

Program T4. Port Operations Decarbonization						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$0	$0	$0	$0	$0	**$0**
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$0	$0	$0	$0	$0	**$0**
Total Other	$1,911,600	$1,256,100	$855,535	$365,396	$0	**$4,388,631**
Notes and Assumptions: Increase efficiency of freight container shipment system to reduce GHG emissions						
Total Direct	$1,911,600	$1,256,100	$855,535	$365,396	$0	**$4,388,631**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	**$1,911,600**	**$1,256,100**	**$855,535**	**$365,396**	**$0**	**$4,388,631**

T5. Pedestrian VMT Program						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$0	$0	$0	$0	$0	**$0**
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$0	$0	$0	$0	$0	**$0**
Total Other	$11,811,825	$0	$0	$0	$0	**$11,811,825**
Notes and Assumptions: Funding is a sum of the following projects: 1) Herford Co., Union Street Pedestrian Project in Murfreesboro; 2) Craven Co., Webb Blvd. Sidewalk Project (Havelock); 3) Craven Co., City of Havelock - Church Road Sidewalk Project; 4) Transylvania Co., US 64 (Asheville Hwy.) Pedestrian Crossing and Sidewalk Improvements; 5) Person Co., N Main Street Sidewalk in Roxboro; 6) Chatham Co., Construct sidewalk in Siler City on E. 3rd St. on north side of street from N. 2nd Ave. to 800 feet west of E. 5th St. (end of new Montaire sidewalk); 7) Chatham Co., Construct sidewalk on the west side of SR 1006 (North Second Avenue) from East Fourth Street to West Eleventh St.; 8) Stanly Co. B-191541 - continue sidewalk along Allenton Rd from Ray Lee Rd to Lake Tillery; 9) Anson Co., B-192119 - install pedestrian crosswalks at Hwy 74 and Anson High School Rd.; 10) Mitchell Co.; New sidewalk along South Mitchell Avenue from Downtown Bakersville (Morgan Oil Company) to Bowman Middle School (Willis Cove Road)						
Total Direct	$11,811,825	$0	$0	$0	$0	**$11,811,825**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	**$11.811.825**	**$0**	**$0**	**$0**	**$0**	**$11,811,825**

Program B1. Weatherization+ Assistance Program, Program B2. State Building Decarbonization and Efficiency, & Program B3. Local Public Building Decarbonization and Efficiency Program						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$498,000	$512,940	$528,328	$544,178	$560,503	**$2,643,950**
Notes and Assumptions: Program Analyst I - Energy Managers 6.0 FTE; 3% annual salary increase						
Total Fringe Benefits	$164,548	$168,106	$171,772	$175,547	$179,436	**$859,409**
Notes and Assumptions: Medical = $7654 / person, SS = 7.65%, Retirement = 23.82% (31.47% total)						
Total Travel	$72,693	$72,693	$72,693	$72,693	$57,693	**$348,465**
Notes and Assumptions: Per diem: 6 staff x event x 3 events/year @41.30/day, Mileage: 6 staff x 3 site visits/month each x 12 months at average 230 miles round trip, Hotel: multi-day Conferences (2,500 pp) x 6 FTE x 2 per year, & Airfare						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$42,000	$3,000	$3,000	$3,000	$3,000	**$54,000**
Notes and Assumptions: Office and related supplies to support outreach meetings, trainings, etc.						
Total Contractual (Including RFPs)	$60,000	$63,000	$66,150	$69,150	$69,458	**$328,065**

Notes and Assumptions: Contractor to assist with program management						
Total Other	$7,680,000	$20,110,000	$15,420,000	$10,500,000	$3,800,000	**$57,510,000**
Notes and Assumptions: Funding is a sum of the following projects: 1) WAP + Readiness funds; 2) EE and Electrification of State-Owned Buildings, Community Colleges and University campuses; & 3) EE and Electrification of public buildings in LIDACs, including schools and local gov't buildings						
Total Direct	$8,517,241	$20,929,739	$16,261,943	$11,364,879	$4,670,090	**$61,743,888**
Indirect Costs						
Total Indirect	$68,724	$70,786	$72,909	$75,097	$77,349	**$364,865**
Notes and Assumptions: Using SEO Indirect of 13.8%						
TOTAL FUNDING	**$8,585,965**	**$21,000,525**	**$16,334,852**	**$11,439,972**	**$4,747,439**	**$62,108,753**

Program I1. Industrial Electrification, Efficiency, and Process Emissions Reductions						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$40,500	$41,816	$43,175	$44,578	$46,027	**$216,097**
Notes and Assumptions: Project Analyst I @ $81,000/yr., 0.5 FTE						
Total Fringe Benefits	$20,250	$20,908	$21,588	$22,289	$23,014	**$108,049**
Notes and Assumptions: Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary						
Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$2,500	$0	$0	$0	$0	**$2,500**
Notes and Assumptions: 1 Laptop Computer @ $2,500 each						
Total Contractual (Including RFPs)	$1,300,000	$1,550,000	$1,275,000	$25,000	$23,354	**$4,173,354**
Notes and Assumptions: 1) Contractor to perform 150 energy assessments total in the first three years at industrial facilities, allowing 2 years for facilities to execute EE upgrades; 2) Contractor to provide TA to industrial facilities to guide and support facilities as they work to reduce energy consumption and reduce emissions.						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$1,363,250	$1,612,724	$1,339,763	$91,868	$92,395	**$4,500,000**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	**$1,363,250**	**$1,612,724**	**$1,339,763**	**$91,868**	**$92,395**	**$4,500,000**

Program I2. Industrial Decarbonization Workforce Development						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$40,500	$41,816	$43,175	$44,578	$46,027	**$216,097**
Notes and Assumptions: Project Analyst I @ $81,000/yr., 0.5 FTE						
Total Fringe Benefits	$20,250	$20,908	$21,588	$22,289	$23,014	**$108,049**
Notes and Assumptions: Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary						
Total Travel	$2,319	$2,319	$2,319	$0	$0	**$6,957**
Notes and Assumptions: In-State Travel Expenses - $154.50 per day @ 3 days per year for up to 5 employees during first 3 years of program development						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$2,500	$0	$0	$0	$0	**$2,500**
Notes and Assumptions: 1 Laptop Computer @ $2,500 each						
Total Contractual (Including RFPs)	$250,000	$954,099	$804,099	$704,099	$704,099	**$3,416,397**
Notes and Assumptions: 1) Subaward for workforce capacity building and coordination with Industrial Working Group (e.g., partnerships, employer engagement, marketing); 2) Subaward for pre-apprenticeship program for 300 students (including personnel and instructors; classroom instruction, hands-on training, curriculum, supplies, supportive services for students, and mentorship program); 3) Subaward for registered apprenticeship program for 300 apprentices (including personnel and instructors; classroom instruction, on-the-job training, curriculum, supplies, employer incentives, supportive services for students). Note: apprenticeship wages paid by the employer in this example.						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$315,569	$1,019,143	$871,181	$770,967	$773,140	**$3,750,000**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	**$315,569**	**$1,019,143**	**$871,181**	**$770,967**	**$773,140**	**$3,750,000**

Program I3. Industrial Decarbonization Load Fund						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**

Direct Costs						
Total Personnel	$0	$72,000	$74,340	$76,756	$79,251	**$302,347**
Notes and Assumptions: Business Officer I @ $72,000/yr., 1 FTE						
Total Fringe Benefits	$0	$36,000	$37,170	$38,378	$39,625	**$151,173**
Notes and Assumptions: Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary						
Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$2,500	$0	$0	$0	$0	**$2,500**
Notes and Assumptions: 1 Laptop Computer @ $2,500 each						
Total Contractual (Including RFPs)	$2,863,761	$2,863,761	$188,819	$188,819	$188,819	**$6,293,980**
Notes and Assumptions: Programmatic fees @ 15% for financial administrator to manage loan program. Programmatic funds available for no- or low-interest loans or grants. No new funds used during years 3-5 with the expectation that loan repayments will continue to fund future projects.						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$2,866,261	$2,971,761	$300,329	$303,953	$307,695	**$6,750,000**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	$2,866,261	$2,971,761	$300,329	$303,953	$307,695	$6,750,000

Program W1. Organic Waste Reduction						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$180,000	$180,000	$0	$0	$0	**$360,000**
Notes and Assumptions: 2 Full-Time DEACS employees @ $90,000/yr. each						
Total Fringe Benefits	$71,760	$71,760	$0	$0	$0	**$143,520**
Notes and Assumptions: Full-time staff						
Total Travel	$54,288	$54,287	$0	$0	$0	**$108,575**
Notes and Assumptions: Workshops						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$4,820,000	$0	$0	$0	$0	**$4,820,000**
Notes and Assumptions: 1) Organics RFP; 2) CPRC Organics Program, 3) Simple Gesture Refrigerator Program						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$5,126,048	$306,047	$0	$0	$0	**$5,432,095**
Indirect Costs						
Total Indirect	$34,743	$34,743	$0	$0	$0	**$69,486**
TOTAL FUNDING	$5,160,791	$340,790	$0	$0	$0	$5,501,581

Program W2. Waste Operations Electrification and Decarbonization						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$0	$0	$0	$0	$0	**$0**
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**
Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$5,500,000	$0	$0	$0	$0	**$5,500,000**
Notes and Assumptions: 1) Wake Forest Pilot Project for EVS; 2) RFP for EVs						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$5,500,000	$0	$0	$0	$0	**$5,500,000**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	$5,500,000	$0	$0	$0	$0	$5,500,000

Program W3. Landfill Gas Reductions						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$0	$0	$0	$0	$0	**$0**
Total Fringe Benefits	$0	$0	$0	$0	$0	**$0**

Total Travel	$0	$0	$0	$0	$0	**$0**
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$0	$0	$0	$0	$0	**$0**
Total Contractual (Including RFPs)	$4,498,418	$0	$0	$0	$0	**$4,498,418**
Notes and Assumptions: 1) Landfill Gas RFP						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$4,498,418	$0	$0	$0	$0	**$4,498,418**
Indirect Costs						
Total Indirect	$0	$0	$0	$0	$0	**$0**
TOTAL FUNDING	$4,498,418	$0	$0	$0	$0	$4,498,418

Program CPRC1. Building EE and Emissions Reduction						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$187,629	$193,258	$198,860	$204,631	$162,936	**$947,313**
Notes and Assumptions: Project Manager @ $84,652/yr, 1 FTE, with salary increase for years 1-4 and 0.5 FTE for year 5; Housing Planner @ $56,866/yr, 0.3 FTE, with salary increase; Communications project staff @ $63,242/yr, 0.1 FTE, with salary increase; Supervisor Project staff @ $101,837/yr, 0.1 FTE with salary increase; Project Coordinator staff @ $84,652/yr, 0.15 FTE with salary increase; Director @ $113,422/yr., 0.50 FTE with salary increase						
Total Fringe Benefits	$87,181	$89,796	$92,400	$95,081	$75,707	**$440,165**
Notes and Assumptions: Fringe @ 46.4646% of salary						
Total Travel	$6,500	$9,000	$9,000	$9,000	$4,000	**$37,500**
Notes and Assumptions: Mileage for meetings, presentations, and home visits; Travel for conference and workshop presentations (Including mileage, boarding and lodging, per diem for 2-3 project staff)						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$20,969	$1,291	$1,291	$1,291	$1,289	**$26,131**
Notes and Assumptions: 2 Laptop Computers @ $2,000 each; Blower Door Test Equipment; Energy Assessment Equipment, including IR Thermometers and Thermal Imaging Equipment; Printing paper, pens, postage, markers etc.						
Total Contractual (Including RFPs)	$1,083,000	$1,714,750	$1,714,750	$1,676,750	$261,250	**$6,450,500**
Notes and Assumptions: Funding is a sum of the following projects: 1) Kerr Tar COGs; 2) Weatherization Deferral Make-Ready for LIDACs and LMI Homes for Single Family Homes; 3) Incentives for weatherization+ in LIDACs--MFHs, Commercial, Nonprofits, Schools, Faith Based Institutions; 4) Credit Enhancement Measures for Single Family Homes for Those Not Served by Other Federal Programs for Home EE and Electrification; 5) Rebuilding Together of the Triangle Program Implementation Partner/Staff; 6) Community College/Community Based Organization Coordination/State Extension for Workforce Development and Program Outreach						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$1,385,279	$2,008,095	$2,016,301	$1,986,752	$505,182	**$7,901,610**
Indirect Costs						
Total Indirect	$115,411	$118,873	$122,319	$125,869	$100,222	**$582,695**
Notes and Assumptions: Indirect @ 41.9967% (salary + fringe)						
TOTAL FUNDING	$1,500,690	$2,126,969	$2,138,620	$2,112,621	$605,405	$8,484,305

Program CPRC2. VMT Reductions						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$209,855	$216,150	$222,635	$229,314	$236,193	**$1,114,148**
Notes and Assumptions: Project Manager @ $76,350/yr, 0.5 FTE, with salary increase; Communications Project Staff @ $63,242/yr, 0.1 FTE, with salary increase; Data Analyst, reporting and technical staff@ $69,197/yr, 1 FTE, with salary increase; Project Coordinator staff @ $69,197/yr, 1 FTE with salary increase; Executive Director @ $224,682/yr, 0.12 FTE with salary increase						
Total Fringe Benefits	$97,508	$100,433	$103,446	$106,550	$109,746	**$517,684**
Notes and Assumptions: Fringe @ 46.4646% of salary						
Total Travel	$7,416	$7,416	$7,416	$7,416	$7,416	**$37,081**
Notes and Assumptions: Travel for professional development, conferences, and workshop presentations (Including registration, mileage, boarding and lodging, per diem for 2-3 project staff); Mileage for local meetings						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$5,619	$3,619	$1,617	$1,617	$1,617	**$14,089**
Notes and Assumptions: 3 Laptop Computers @ $2,000 each (includes software and IT support); Printing paper, pens, postage, markers etc.						
Total Contractual (Including RFPs)	$719,111	$1,236,861	$1,236,861	$661,200	$143,450	**$3,997,483**

Notes and Assumptions: Funding for gaps in existing VMT programs. 50% of funds reserved for LIDACs. 1) Incentivize/Subsidize purchase of 7 electric vans @ 65K each ($65K includes $20K charging infrastructure costs) for a total of $455,000/year for Year 2,3, and 4. 2) Subsidized bus passes (1,000 fully subsidized bus trip/month) @ 3.00/trip = $36,000/year for all years. 3) Commuter E-bike rebate ($2,000 each for a total of 75 e-bikes/year + $150,000/year for all years except Years 1 and 5. For years 1 and 5, 45 e-bikes. 4) Commuter E-scooter rebate ($500 each for a total of 110 e-scooters/year) = @$55,000/year for all years except Year 1. 50 scooters in Year 1. Sidewalks for LIDACs (assume all sidewalks).						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$1,039,509	$1,564,480	$1,571,976	$1,006,097	$498,424	**$5,680,485**
Indirect Costs						
Total Indirect	$129,082	$132,955	$136,943	$141,052	$145,283	**$685,316**
Notes and Assumptions: Indirect @ 41.9967% (salary + fringe)						
TOTAL FUNDING	**$1,168,591**	**$1,697,435**	**$1,708,919**	**$1,147,149**	**$643,707**	**$6,365,801**

Program C1. Building Decarbonization						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$65,060	$61,232	$64,294	$67,511	$71,092	**$329,189**
Notes and Assumptions: Director – CED; 2 Project Staff – CED; Project Manager – CED/CEDD						
Total Fringe Benefits	$36,759	$34,596	$36,326	$38,144	$40,167	**$185,992**
Notes and Assumptions: Fringe @ 56.50% of salary						
Total Travel	$4,000	$1,500	$0	$0	$0	**$5,500**
Notes and Assumptions: Site visits to existing relevant project examples, 3-5 community forums for outreach						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$4,000	$4,000	$4,000	$4,000	$4,000	**$20,000**
Notes and Assumptions: Supplies and Communication Materials						
Total Contractual (Including RFPs)	$816,013	$819,500	$807,500	$760,000	$721,706	**$3,924,719**
Notes and Assumptions: Implementation funds for EE pilot project; Industrial Engineering Retro Fit SME Evaluator, Direct improvements to qualified MFHs (DEQ ICAST contract), GHG testing pre- and post-construction						
Total Other	$0	$0	$0	$0	$0	**$0**
Total Direct	$923,332	$923,328	$923,328	$912,120	$869,965	**$4,465,400**
Indirect Costs						
Total Indirect	$47,040	$44,273	$46,486	$48,813	$51,402	**$238,014**
Notes and Assumptions: Indirect @ 0.0462%						
TOTAL FUNDING	**$970,372**	**$967,601**	**$958,606**	**$918,468**	**$888,367**	**$4,703,414**

Program C2. VMT Reductions						
Category	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
Direct Costs						
Total Personnel	$181,530	$210,355	$206,248	$216,561	$227,387	**$1,042,081**
Notes and Assumptions: Deputy Executive Director, TDM Program Oversight (.2 FTE), Regional Planner II (TDM Program manager) (1 FTE) (new), Senior Planner (.5 FTE), Regional Planner II (.5 FTE) (RIA), RIA Program Manager, Contract Admin / RFP support (new)						
Total Fringe Benefits	$102,564	$118,851	$116,530	$122,357	$128,474	**$588,776**
Notes and Assumptions: Fringe @ 56.50%						
Total Travel	$3,172	$3,172	$3,172	$3,172	$3,172	**$15,860**
Notes and Assumptions: Per diem ($2,360); Hotel ($7,500); Air ($6,000)						
Total Equipment	$0	$0	$0	$0	$0	**$0**
Total Supplies	$1,000	$1,000	$1,000	$1,000	$1,000	**$5,000**
Total Contractual (Including RFPs)	$297,559	$247,969	$198,374	$148,784	$99,188	**$991,874**
Notes and Assumptions: Program Implementation Support						
Total Other	$330,550	$1,758,400	$4,323,100	$3,990,600	$285,750	**$10,688,400**
Notes and Assumptions: VMT multi-modal projects solicitation, Transit rider support, Regional traveler access solutions (LIDAC focus), Participant Support Costs						
Total Direct	$916,375	$2,339,747	$4,848,424	$4,482,474	$744,971	**$13,331,991**
Indirect Costs						
Total Indirect	$131,251	$152,093	$149,123	$156,580	$164,408	**$753,455**
Notes and Assumptions: 0.0462						
TOTAL FUNDING	**$1,047,626**	**$2,491,840**	**$4,997,547**	**$4,639,054**	**$909,379**	**$14,085,446**

Section 7.2: Expenditure of Awarded Funds

NCDEQ has successfully managed a variety of federal assistance award agreements, grants, cooperative agreements, and competitive awards in a timely and efficient manner. NCDEQ has policies and procedures that allow the department to establish and maintain effective internal controls and to manage federal awards in compliance with applicable federal statutes, regulations, terms, and conditions. NCDEQ financial practices and accounting standards are promulgated by the Governmental Accounting Standards Board. Proper financial management is a key area of focus for the NCDEQ, and transparency, accountability, oversight, risk management, and efficiency are at the core of this management. Departmental policies shield against waste, fraud, and abuse of funds. The following financial management policies will be adhered to when managing and expending CPRG funds:

- All funds must be budgeted in accounts separate from all other transactions.
- Expenditures and subaward encumbrances must be applied to duly approved budget line items.
- Internal controls for disbursements of funds must have multiple approvals.
- Up-to-date records keeping functions and duties for requisite functions are required.
- Regular reconciliation of budget and expenditures.
- Prior audit findings for subrecipients must be corrected.
- Internal controls ensure robust risk management and prevent fraud, waste, and abuse of funds.

In accordance with the State Budget Act G.S. 143C, funds received by state agencies are budgeted in accordance with rules established by the NC Office of State Budget and Management (OSBM). Additionally, the application for and receipt of are governed by the DEQ Grant Application Policy and are subject to additional accounting procedures established and administered by the DEQ Financial Services Division. The NC General Assembly included a provision in the Appropriations Act of 2023 requiring all grants received over $2.5M go through a 90-day Joint Legislative Commission on Government Operations review before they can be accessed by programs to establish positions and begin work.

NCDEQ worked closely with OSBM on the CPRG PCAP and implementation grant application. OSBM supports state agency financial control structures such as grant planning and management and internal audits. OSBM also works closely with the agencies to manage their budgets and allotment planning over the course of the fiscal year and considers any budget adjustments within the framework of relevant laws, rules, and policies. NCDEQ internal business team staff will work with OSBM and NCDEQ Fiscal Services Division staff to follow state practices for grant budgeting and reporting, contracts, staffing, and auditing. The budget includes funding for staff to focus on contracts, fiscal tasks, and grant reporting, working with the new Business Officer II supervisory position in SEO. The project manager will work closely with subgrantees to ensure program success, who will have financial and project reporting requirements as part of their contracts.

Section 7.3: Reasonableness of Cost

NCDEQ has carefully planned the CPRG implementation program to focus funding on achieving measurable, transformative results and minimize overhead. The budget is front-loaded so that it prioritizes fund commitment in years one through three and then tapers as programs identify other funding sources for long-term sustainment.

Program	Reasonableness of Costs
T1. Commercial Fleet and Fuel Transition Program	This program will utilize existing state infrastructure to keep administrative costs low (e.g., for all Transportation programs approximately 97% of funding will go towards operations and 3% to administrative costs) and with these funds first costs can be reduced to incentivize the transition (via grants to commercial entities) to cleaner vehicles in the short term and bring down costs for these vehicles in the long term as demand rises.
T2. EV Charging Infrastructure	The majority of the program's funding supports public EV charging infrastructure program and serves key market gaps for charging infrastructure in MUDs to encourage an uptick in EVs and reduce emissions in the largest emitting sector.
T3. Government Fleet and Fuel Transition Program	This program minimizes operational costs and focuses the funding on identifying optimal vehicles for fleet transition to those that have the highest abatement potential at the lowest cost to maximize emissions reductions.
T4. Port Operations Decarbonization	This program addresses a market gap in the short term that has a high return on point-source emissions reductions in LIDACs.

Program	Reasonableness of Costs
T5. Pedestrian VMT Program	The majority of this funding will go to support infrastructure installations and has the potential to have a catalytic effect on transportation decarbonization as more and more people utilize cleaner modes of transportation with the new infrastructure.
B1. Weatherization+ Assistance Program	This program will utilize the existing program infrastructure of the WAP program to minimize startup and management costs – and will better prepare the state to implement the IRA Rebates program to maximize emissions reductions in LIDACs.
B2. State Building Decarbonization and Efficiency	This program will support the hiring of energy managers to assess and optimize investments (among other responsibilities) in state-owned buildings with the highest abatement potential at the lowest cost.
B3. Local Public Building Decarbonization and Efficiency	This program will support the hiring of energy managers to support municipalities to assess and optimize investments (among other responsibilities) in municipal buildings with the highest abatement potential at the lowest cost.
I1. Industrial Electrification, Efficiency, and Process Emissions Reduction	This program will utilize an existing program for the energy assessments - Waste Reduction Partners (retired professionals who volunteer their time and have a proven track record of significant energy reductions from their audits) to reduce program costs and maximize impact.
I2. Industrial Decarbonization Workforce Development	While this program will not directly reduce emissions, it will enable a skilled workforce to achieve future industrial decarbonization results and will help to establish more energy workforce training program options.
I3. Industrial Decarbonization Loan Fund	Combining the management of RLF along with this fund will allow NCDEQ to reduce overall startup and management costs related to the loan fund and will seed funds into this hard-to-abate sector to jumpstart future projects.
W1. Organic Waste Reduction	Given methane has more than 28-80 times the warming power of CO2 in the first 10-20 years it's produced, funds going towards reducing methane emissions are highly cost effective and the bulk of the funding for this program will support implementation of new activities to mitigate methane emissions and serve as proofs of concept for the market.
W2. Waste Operations Electrification and Decarbonization	This program is going to build on existing municipal-based programs and will require minimal startup and management costs, with a high emissions reduction payoff.
W3. Landfill Gas Reductions	This program will seed funds to support proofs of concepts around methane reduction solutions in waste that can be scaled further.
CPRC1. Building EE and Emissions Reduction	This program reduces costs by leveraging the existing infrastructure of the WAP program for implementation of Make Ready measures in buildings. These projects can also serve as proofs-of-concept to other non-residential entities to encourage further EE and decarbonization projects.
CPRC2. VMT Reductions	Funding for this program will allow Central Pines to address an unmet need and support the use of alternative modes of transportation to reduce emissions in LIDACs.
C1. Building Decarbonization	Some of the funding for this program supports TA to advise potential program participants on their options, but the majority will go to funding decarbonization measures in buildings that are ineligible for other benefits. These projects can also serve as proofs-of-concept to other non-residential entities to encourage further EE and decarbonization projects.
C2. VMT Reductions	Funding for this program will allow Centralina to address an unmet need and support the use of alternative modes of transportation to reduce emissions in LIDACs.

Introduction:

This Excel Spreadsheet is provided to aid Climate Pollution Reduction Grant implementation grant applicants in developing the required budget table(s) within the budget narrative. Applicants may submit a budget spreadsheet (no page limit) with their application.

The individual worksheets are formatted for 1 page width of 8.5" x 11" landscape orientation.

Instructions:

The template contains 5 tabs (titled "Measure 1 Budget" through "Measure 5 Budget") where applicants can create budgets for up to 5 discrete GHG measures contained in their application. Applicants should leave excess tabs blank (ie, if an application is for a single GHG measure, only Tab 1 should contain any numerical entries.) The Consolidated Budget tab will automatically sum budget totals across all GHG measure Tabs. If an application includes more than 5 GHG measures, users may add duplicate tabs, but will need to manually update the formulas contained on the Consolidated Budget tab.

Measure Tab Instructions:

Below is a description of the steps an applicant should complete to finish each measure tab of the template.

- **In column C,** provide itemized costs descriptions in each cost category. Insert or delete rows as needed.

- **In columns D through H,** fill in the cost for the line item per year - personnel, fringe benefits, travel, equipment, installation, or labor supplies, contractual costs, and other direct costs (i.e., subawards, participant support costs), and indirect costs for each applicable year. Subtotals will calculate automatically.

- **Column J** will automatically calculate the total cost for the line item for the entire measure, including subtotals for each budget category - personnel, fringe benefits, travel, equipment, installation, or labor supplies, contractual costs, and other direct costs (i.e., subawards, participant support costs), and indirect costs.

Please check all formulas and calculations before finalizing your budget tables.

Consolidated Budget Instructions:

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table to include the additional measures.

Consolidated Budget Table

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table to include the additional measures.

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	TOTAL PERSONNEL	*$2,221,211*	*$2,680,233*	*$2,704,033*	*$2,794,534*	*$2,754,856*	*$13,154,867.22*
	TOTAL FRINGE BENEFITS	*$927,513*	*$1,107,295*	*$1,087,483*	*$1,089,580*	*$1,074,163*	*$5,286,034.58*
	TOTAL TRAVEL	*$222,527*	*$227,526*	*$169,239*	*$166,920*	*$131,921*	*$918,132.00*
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0.00*
	TOTAL SUPPLIES	*$180,187*	*$25,970*	*$35,466*	*$35,466*	*$35,464*	*$312,553.00*
	TOTAL CONTRACTUAL (including RFP)	*$22,881,259*	*$10,112,173*	*$6,286,604*	*$4,225,853*	*$2,203,066*	*$45,708,955.02*
	TOTAL OTHER	*$68,038,650*	*$23,124,500*	*$20,598,635*	*$14,855,996*	*$4,085,750*	*$130,703,530.79*
	TOTAL DIRECT	*$94,471,346*	*$37,277,697*	*$30,881,460*	*$23,168,349*	*$10,285,221*	*$196,084,072.61*
	TOTAL INDIRECT	$730,964	$807,002	$777,762	$806,176	$794,024	$3,915,926.89
TOTAL FUNDING		**$95,202,310**	**$38,084,698**	**$31,659,221**	**$23,974,525**	**$11,079,245**	**$199,999,999**

$0

BUDGET BY PROJECT			
Project Number	**Project Name**	**Total Cost**	**% of Total**
1	*Admin*	*$8,365,811*	*4%*
2	*Transportation*	*$63,964,535*	*32%*
3	*Buildings*	*$61,780,688*	*31%*
4	*Industry*	*$15,000,000*	*7%*
5	*Waste*	*$15,499,999*	*8%*
6	*Central Pines*	*$15,620,107*	*8%*
7	*Centralina*	*$19,768,860*	*10%*
Total		*$199,999,999*	*100%*

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Grant Administrator 1 - 1 FTE @ 60000		*$60,000*	*$61,950*	*$63,963*	*$66,042*	*$251,956*
	Environmental Program Manager 1 @107000/yr for 3 yrs 1 FTE			*$107,000*	*$ 110,478*	*$ 114,068*	*$217,478*
	Outreach Coordinator 1 FTE for first 3 years @77,00/yr		*$77,000*	*$79,503*	*$82,086*		*$238,589*
	Contract Specialist II 1 FTE @80,000/yr	*$80,000*	*$82,600*	*$85,285*	*$88,056*	*$90,918*	*$426,859*
	Budget Manager 1 - 1 FTE @97,000/yr	*$97,000*	*$100,153*	*$103,407*	*$106,768*	*$110,238*	*$517,566*
	Technical Enviromental Program Consultants 3 FTE @85,000/yr for 3 yrs (1 Consultant accounted for in Planning Grant budget)		*$170,000*	*$175,525*	*$181,230*	*$187,120*	*$713,874*
	Budget Manager II - 1 FTE @112,527/yr	*$112,527*	*$116,184*	*$119,960*	*$123,859*	*$127,884*	*$600,414*
	Program Development Coordinator - 1 FTE @87000/yr	*$87,000*	*$89,828*	*$92,747*	*$95,761*	*$98,873*	*$464,209*
	Program Coordinator - 1 FTE @ 70000/yr	*$70,000*	*$72,275*	*$74,624*	*$77,049*	*$79,553*	*$373,501*
	Clean Energy Workforce Anaylst - 1 FTE yrs 3-5 @ 80,000/yr			$80,000	$82,600	$85,285	*$247,885*
	Program Anaylst 1 FTE yrs 2-5 @82,000/yr		$82,000	$84,665	$87,417	$90,258	*$344,339*
	TOTAL PERSONNEL	*$446,527*	*$768,039*	*$980,000*	*$1,011,850*	*$959,981*	*$4,396,670*
	Fringe Benefits						
							$0
	Medical = $7654 / person	*$91,848*	*$107,156*	*$107,156*	*$76,540*	*$76,540*	*$459,240*
	SS = 7.65%, Retirement = 23.82% (31.47% total)	*$140,522*	*$241,702*	*$308,406*	*$318,429*	*$302,106*	*$1,311,166*
							$0
	TOTAL FRINGE BENEFITS	*$232,370*	*$348,858*	*$415,562*	*$394,969*	*$378,646*	*$1,770,406*
	Travel						
	Per diem: 6 staff x 3 events/year @41.30/day	*$2,230*	*$2,230*	*$2,230*	*$2,230*	*$2,230*	*$11,151*
	Mileage: 6 staff x 3 site visits/month each x 12 months at average 230 miles round trip	*$29,063*	*$29,063*	*$29,063*	*$29,063*	*$29,063*	*$145,314*
	Hotel	*$5,400*	*$5,400*	*$5,400*	*$5,400*	*$5,400*	*$27,000*
	multi-day Conferences (2,500 pp) x 6 FTE x 2 per year	*$30,000*	*$30,000*	*$30,000*	*$30,000*	*$15,000*	*$135,000*
	Airfare	*$6,000*	*$6,000*	*$6,000*	*$6,000*	*$6,000*	*$30,000*
							$0

							$0
							$0
	TOTAL TRAVEL	$70,463	$70,463	$70,463	$70,463	$55,463	$348,465
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	$0	$0	$0	$0	$0	$0
	Supplies						
	Office and related supplies to support outreach meetings, trainings, etc. Includes laptop computers and IT support for new staff 7,000/person 1st year only	$98,000	$12,000	$12,000	$12,000	$12,000	$146,000
	Translation Services			$7,500	$7,500	$7,500	
	Printing and Publication fees			$4,000	$4,000	$4,000	
							$0
	TOTAL SUPPLIES	$98,000	$12,000	$23,500	$23,500	$23,500	$146,000
	Contractual (including RFP)						
	Contractors to assist with standing up the programs	$672,197	$664,033				$1,336,230
							$0
							$0
	TOTAL CONTRACTUAL	$672,197	$664,033	$0	$0	$0	$1,336,230
	OTHER						
							$0
							$0
							$0
	TOTAL OTHER	$0	$0	$0	$0	$0	$0
	TOTAL DIRECT	$1,519,557	$1,863,393	$1,489,525	$1,500,783	$1,417,590	$7,790,848
	Indirect Costs						
Indirect Costs	*Using SEO Indirect of 13.8%*	$61,621	$105,989	$135,240	$139,635	$132,477	$574,963
							$0
	TOTAL INDIRECT	$61,621	$105,989	$135,240	$139,635	$132,477	$574,963
		$1,581,178	***$1,969,382***	***$1,624,765***	***$1,640,418***	***$1,550,068***	***$8,365,811***
TOTAL FUNDING							

Consolidated Budget Table

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	TOTAL PERSONNEL	*$192,350*	*$198,121*	*$204,064*	*$210,186*	*$216,492*	*$1,021,212*
	TOTAL FRINGE BENEFITS	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL TRAVEL	*$4,176*	*$4,176*	*$4,176*	*$4,176*	*$4,176*	*$20,880*
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL CONTRACTUAL (including RFP)	*$61,200*	*$61,200*	*$61,200*	*$61,200*	*$61,200*	*$306,000*
	TOTAL OTHER	*$60,028,100*	*$1,256,100*	*$855,535*	*$365,396*	*$0*	*$62,505,131*
	TOTAL DIRECT	*$60,285,826*	*$1,519,597*	*$1,124,975*	*$640,958*	*$281,868*	*$63,853,223*
	TOTAL INDIRECT	$20,966	$21,595	$22,243	$22,910	$23,598	$111,312.14
TOTAL FUNDING		**$60,306,792**	**$1,541,192**	**$1,147,218**	**$663,868**	**$305,465**	**$63,964,535**

BUDGET BY PROJECT			
Project Number	**Project Name**	**Total Cost**	**% of Total**
1	*Commercial Fleet & Fuel Transition*	*$10,801,833*	*17%*
2	*Charging Infrastructure*	*$6,187,239*	*10%*
3	*Gov't Fleet & Fuel Transition*	*$30,775,008*	*48%*
4	*Port Operations Decarbonization*	*$4,388,631*	*7%*
5	*Bike & Pedestrian VMT Program*	*$11,811,825*	*18%*
Total		*$63,964,535*	*100%*

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR								
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**		**TOTAL**
Direct Costs	**Personnel**							
	Project Manager @ salary 0.5 FTE (assuming annual 3% raise)	*$36,500*	*$37,595*	*$38,723*	*$39,885*	*$41,081*		*$193,783*
	Staff @ salary 0.25 FTE (assuming annual 3% raise)	*$15,450*	*$15,914*	*$16,391*	*$16,883*	*$17,389*		*$82,026*
								$0
	TOTAL PERSONNEL	*$51,950*	*$53,509*	*$55,114*	*$56,767*	*$58,470*		*$275,810*
	Fringe Benefits							
	Medical (in kind)							*$0*
	Retirement (in kind)							*$0*
	Social Security (in Kind)							*$0*
	TOTAL FRINGE BENEFITS	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Travel							
	Travel for conference and workshop presentations:							*$0*
	Airfare - $400 roundtrip @ 1 roundtrip per year	*$400*	*$400*	*$400*	*$400*	*$400*		*$2,000*
	Luggage Fees - $25 per flight @ 2 flights per year	*$50*	*$50*	*$50*	*$50*	*$50*		*$250*
	Hotel - $105 per day @ 3 days per year	*$315*	*$315*	*$315*	*$315*	*$315*		*$1,575*
	Per Diem - $49.5 per day @ 3.5 days per year	*$174*	*$174*	*$174*	*$174*	*$174*		*$870*
	Taxi - $45 per year	*$45*	*$45*	*$45*	*$45*	*$45*		*$225*
	Parking - $20 per day @ 4 days per year	*$80*	*$80*	*$80*	*$80*	*$80*		*$400*
	Mileage for local travel (500 miles per year at $0.655/mi)	*$328*	*$328*	*$328*	*$328*	*$328*		*$1,640*
	TOTAL TRAVEL	*$1,392*	*$1,392*	*$1,392*	*$1,392*	*$1,392*		*$6,960*
	Equipment							
								$0
								$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Supplies							
								$0
								$0
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Contractual (including RFP)							
	Contractor to assist with program management 25% of time @ $35/hr	*$18,000*	*$18,000*	*$18,000*	*$18,000*	*$18,000*		*$90,000*
	Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr	*$2,400*	*$2,400*	*$2,400*	*$2,400*	*$2,400*		*$12,000*
								$0
								$0
	TOTAL CONTRACTUAL	*$20,400*	*$20,400*	*$20,400*	*$20,400*	*$20,400*		*$102,000*
	OTHER							
	Non-government RFP MHD Vehicle repalcements	*$10,386,999.94*						*$10,387,000* Adjusted (decreased) for admin cost
								$0
	TOTAL OTHER	*$10,387,000*	*$0*	*$0*	*$0*	*$0*		*$10,387,000*
	TOTAL DIRECT	*$10,460,742*	*$75,301*	*$76,906*	*$78,559*	*$80,262*		*$10,771,770*

Indirect Costs	**Indirect Costs**						
	10.9% negotiated rate of personnel costs	*$5,662.55*	*$5,832.43*	*$6,007.40*	*$6,187.62*	*$6,373.25*	*$30,063*
							$0
	TOTAL INDIRECT	*$5,663*	*$5,832*	*$6,007*	*$6,188*	*$6,373*	*$30,063*
TOTAL FUNDING		***$10,466,404***	***$81,133***	***$82,913***	***$84,747***	***$86,635***	***$10,801,833***

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Project Manager @ salary 0.5 FTE (assuming annual 3% raise)	*$36,500*	*$37,595*	*$38,723*	*$39,885*	*$41,081*	*$193,783*
	Project Manager @ salary 0.5 FTE (assuming annual 3% raise)	*$36,500*	*$37,595*	*$38,723*	*$39,885*	*$41,081*	*$193,783*
	Staff @ salary 0.25 FTE (assuming annual 3% raise)	*$15,450*	*$15,914*	*$16,391*	*$16,883*	*$17,389*	*$82,026*
	TOTAL PERSONNEL	*$88,450*	*$91,104*	*$93,837*	*$96,652*	*$99,551*	*$469,593*
	Fringe Benefits						
	Medical (in kind)						*$0*
	Retirement (in kind)						*$0*
	Social Security (in Kind)						*$0*
	TOTAL FRINGE BENEFITS	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Travel						
	Travel for conference and workshop presentations:						*$0*
	Airfare - $400 roundtrip @ 1 roundtrip per year	*$400*	*$400*	*$400*	*$400*	*$400*	*$2,000*
	Luggage Fees - $25 per flight @ 2 flights per year	*$50*	*$50*	*$50*	*$50*	*$50*	*$250*
	Hotel - $105 per day @ 3 days per year	*$315*	*$315*	*$315*	*$315*	*$315*	*$1,575*
	Per Diem - $49.5 per day @ 3.5 days per year	*$174*	*$174*	*$174*	*$174*	*$174*	*$870*
	Taxi - $45 per year	*$45*	*$45*	*$45*	*$45*	*$45*	*$225*
	Parking - $20 per day @ 4 days per year	*$80*	*$80*	*$80*	*$80*	*$80*	*$400*
	Mileage for local travel (500 miles per year at $0.655/mi)	*$328*	*$328*	*$328*	*$328*	*$328*	*$1,640*
							$0
	TOTAL TRAVEL	*$1,392*	*$1,392*	*$1,392*	*$1,392*	*$1,392*	*$6,960*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
							$0
							$0
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Contractual (including RFP)						
	Contractor to assist with program management 25% of time @ $35/hr	*$18,000*	*$18,000*	*$18,000*	*$18,000*	*$18,000*	*$90,000*
	Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr	*$2,400*	*$2,400*	*$2,400*	*$2,400*	*$2,400*	*$12,000*
							$0
							$0
							$0
	TOTAL CONTRACTUAL	*$20,400*	*$20,400*	*$20,400*	*$20,400*	*$20,400*	*$102,000*

	OTHER							
	Level 2 Publicly Accessible Charging Infrastructure	*$2,850,000*					*$2,850,000*	Adjusted (decreased) for admin cost
	Level 2 MUD Charging Infrastructure -Competitive	*$1,900,000*					*$1,900,000*	Adjusted (decreased) for admin cost
	Level 2 MUD Charging Infrastructure - Rebates	*$807,500*					*$807,500*	Adjusted (decreased) for admin cost
							$0	
							$0	
							$0	
	TOTAL OTHER	*$5,557,500*	*$0*	*$0*	*$0*	*$0*	*$5,557,500*	
	TOTAL DIRECT	*$5,667,742*	*$112,896*	*$115,629*	*$118,444*	*$121,343*	*$6,136,053*	
Indirect Cos	**Indirect Costs**							
	10.9% negotiated rate of personnel costs	*$9,641.05*	*$9,930.28*	*$10,228.19*	*$10,535.04*	*$10,851.09*	*$51,186*	
							$0	
	TOTAL INDIRECT	*$9,641*	*$9,930*	*$10,228*	*$10,535*	*$10,851*	*$51,186*	
TOTAL FUNDING		***$5,677,383***	***$122,826***	***$125,857***	***$128,979***	***$132,194***	***$6,187,239***	

Detailed Budget Table

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BUDGET BY YEAR								
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**	
Direct Costs	**Personnel**							
	Project Manager @ salary 0.5 FTE (assuming annual 3% raise)	*$36,500*	*$37,595*	*$38,723*	*$39,885*	*$41,081*	*$193,783*	
	Staff @ salary 0.25 FTE (assuming annual 3% raise)	*$15,450*	*$15,914*	*$16,391*	*$16,883*	*$17,389*	*$82,026*	
							$0	
	TOTAL PERSONNEL	*$51,950*	*$53,509*	*$55,114*	*$56,767*	*$58,470*	*$275,810*	
	Fringe Benefits							
	Medical (in kind)						*$0*	
	Retirement (in kind)						*$0*	
	Social Security (in Kind)						*$0*	
	TOTAL FRINGE BENEFITS	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	
	Travel							
	Travel for conference and workshop presentations:						*$0*	
	Airfare - $400 roundtrip @ 1 roundtrip per year	*$400*	*$400*	*$400*	*$400*	*$400*	*$2,000*	
	Luggage Fees - $25 per flight @ 2 flights per year	*$50*	*$50*	*$50*	*$50*	*$50*	*$250*	
	Hotel - $105 per day @ 3 days per year	*$315*	*$315*	*$315*	*$315*	*$315*	*$1,575*	
	Per Diem - $49.5 per day @ 3.5 days per year	*$174*	*$174*	*$174*	*$174*	*$174*	*$870*	
	Taxi - $45 per year	*$45*	*$45*	*$45*	*$45*	*$45*	*$225*	
	Parking - $20 per day @ 4 days per year	*$80*	*$80*	*$80*	*$80*	*$80*	*$400*	
	Mileage for local travel (500 miles per year at $0.655/mi)	*$328*	*$328*	*$328*	*$328*	*$328*	*$1,640*	
							$0	
	TOTAL TRAVEL	*$1,392*	*$1,392*	*$1,392*	*$1,392*	*$1,392*	*$6,960*	
	Equipment							
							$0	
							$0	
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	
	Supplies							
							$0	
							$0	
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	
	Contractual (including RFP)							
	Contractor to assist with program management 25% of time @ $35/hr	*$18,000*	*$18,000*	*$18,000*	*$18,000*	*$18,000*	*$90,000*	
	Participant Support Costs: Stipends for 2 Summer Interns for six weeks @ $15/hr	*$2,400*	*$2,400*	*$2,400*	*$2,400*	*$2,400*	*$12,000*	
							$0	
							$0	
							$0	
	TOTAL CONTRACTUAL	*$20,400*	*$20,400*	*$20,400*	*$20,400*	*$20,400*	*$102,000*	
	OTHER							
	Government MHD Fleet Vehicles	*$14,539,175*					*$14,539,175*	Adjusted (decreased) for admin cost
	Government LD Fleet Vehicles	*$5,434,000*					*$5,434,000*	Adjusted (decreased) for admin cost
	Government RFP MHD Vehicle repalcements	*$10,387,000*					*$10,387,000*	
							$0	
							$0	

							$0
	TOTAL OTHER	*$30,360,175*	*$0*	*$0*	*$0*	*$0*	*$30,360,175*
	TOTAL DIRECT	*$30,433,917*	*$75,301*	*$76,906*	*$78,559*	*$80,262*	*$30,744,944*
Indirect Costs	**Indirect Costs**						
	10.9% negotiated rate of personnel costs	*$5,662.55*	*$5,832.43*	*$6,007.40*	*$6,187.62*	*$6,373.25*	*$30,063*
							$0
	TOTAL INDIRECT	*$5,663*	*$5,832*	*$6,007*	*$6,188*	*$6,373*	*$30,063*
TOTAL FUNDING		***$30,439,579***	***$81,133***	***$82,913***	***$84,747***	***$86,635***	***$30,775,008***

NC Ports Measure 4

Detailed Budget Table

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BUDGET BY YEAR								
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**		**TOTAL**
Direct Costs	**Personnel**							
								$0
								$0
								$0
	TOTAL PERSONNEL	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Fringe Benefits							
								$0
								$0
								$0
	TOTAL FRINGE BENEFITS	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Travel							
								$0
								$0
								$0
								$0
								$0
								$0
								$0
								$0
								$0
	TOTAL TRAVEL	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Equipment							
								$0
								$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Supplies							
								$0
								$0
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Contractual (including RFP)							
								$0
								$0
								$0
								$0
	TOTAL CONTRACTUAL	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
	Other							
	Increase efficiency of freight container shipment system to reduce GHG emissions	*$1,911,600*	*$1,256,100*	*$855,535*	*$365,396*			*$4,388,631*
								$0
								$0
								$0
	TOTAL OTHER	*$1,911,600*	*$1,256,100*	*$855,535*	*$365,396*	*$0*		*$4,388,631*
	TOTAL DIRECT	*$1,911,600*	*$1,256,100*	*$855,535*	*$365,396*	*$0*		*$4,388,631*
Indirect Costs	**Indirect Costs**							
								$0
								$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*
TOTAL FUNDING		*$1,911,600*	*$1,256,100*	*$855,535*	*$365,396*	*$0*		*$4,388,631*

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
							$0
							$0
							$0
	TOTAL PERSONNEL	$0	$0	$0	$0	$0	$0
	Fringe Benefits						
							$0
							$0
							$0
	TOTAL FRINGE BENEFITS	$0	$0	$0	$0	$0	$0
	Travel						
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL TRAVEL	$0	$0	$0	$0	$0	$0
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	$0	$0	$0	$0	$0	$0
	Supplies						
							$0
							$0
	TOTAL SUPPLIES	$0	$0	$0	$0	$0	$0
							$0
							$0
							$0
							$0
	TOTAL CONTRACTUAL	$0	$0	$0	$0	$0	$0
	OTHER						
	Herford Co.; Union Street Pedestrian Project in Murfreesboro	$1,191,579					$1,191,579

	Craven Co.; Webb Blvd. Sidewalk Project (Havelock)	$1,584,000					*$1,584,000*
	Craven Co.; City of Havelock - Church Road Sidewalk Project	$869,037					*$869,037*
	Transylvania Co.; US 64 (Asheville Hwy.) Pedestrian Crossing and Sidewalk Improvements	$1,584,000					*$1,584,000*
	Person Co.; N Main Street Sidewalk in Roxboro	$2,258,694					*$2,258,694*
	Chatham Co.; Construct sidewalk in Siler City on E. 3rd St. on north side of street from N. 2nd Ave. to 800 feet west of E. 5th St. (end of new Montaire sidewalk)	$486,003					*$486,003*
	Chatham Co.; Construct sidewalk on the west side of SR 1006 (North Second Avenue) from East Fourth Street to West Eleventh St.	$845,325					*$845,325*
	Stanly Co.; B-191541 - CONTINUE SIDEWALK ALONG ALLENTON RD FROM RAY LEE RD TO LAKE TILLERY	$1,584,000					*$1,584,000*
	Anson Co.; B-192119 - INSTALL PEDESTRIAN CROSSWALKS AT HWY 74 AND ANSON HIGH SCHOOL RD.	$792,000					*$792,000*
	Mitchell Co.; New sidewalk along South Mitcheel Avenue from Downtown Bakersville (Morgan Oil Company) to Bowman Middle School (Willis Cove Road)	$617,187					*$617,187*
	TOTAL OTHER	*$11,811,825*	*$0*	*$0*	*$0*	*$0*	*$11,811,825*
	TOTAL DIRECT	*$11,811,825*	*$0*	*$0*	*$0*	*$0*	*$11,811,825*
Indirect Costs	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$11,811,825***	***$0***	***$0***	***$0***	***$0***	***$11,811,825***

Detailed Budget Table

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BUDGET BY YEAR									
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5		TOTAL	
Direct Costs	**Personnel**								
	Program Analyst I - Energy Managers 6.0 FTE	*$498,000*	*$512,940*	*$528,328*	*$544,178*	*$560,503*		*$2,643,950*	
								$0	
								$0	
	TOTAL PERSONNEL	*$498,000*	*$512,940*	*$528,328*	*$544,178*	*$560,503*		*$2,643,950*	
	Fringe Benefits								
	Medical = $7654 / person	*$45,924*	*$45,924*	*$45,924*	*$45,924*	*$45,924*		*$229,620*	
	SS = 7.65%, Retirement = 23.82% (31.47% total)	*$118,624*	*$122,182*	*$125,848*	*$129,623*	*$133,512*		*$629,789*	
								$0	
	TOTAL FRINGE BENEFITS	*$164,548*	*$168,106*	*$171,772*	*$175,547*	*$179,436*		*$859,409*	
	Travel								
	Per diem: 6 staff xevent x 3 events/year @41.30/day	*$2,230*	*$2,230*	*$2,230*	*$2,230*	*$2,230*		*$11,151*	
	Mileage: 6 staff x 3 site visits/month each x 12 months at average 230 miles round trip	*$29,063*	*$29,063*	*$29,063*	*$29,063*	*$29,063*		*$145,314*	
	Hotel	*$5,400*	*$5,400*	*$5,400*	*$5,400*	*$5,400*		*$27,000*	
	multi-day Conferences (2,500 pp) x 6 FTE x 2 per year	*$30,000*	*$30,000*	*$30,000*	*$30,000*	*$15,000*		*$135,000*	
	Airfare	*$6,000*	*$6,000*	*$6,000*	*$6,000*	*$6,000*		*$30,000*	
	TOTAL TRAVEL	*$72,693*	*$72,693*	*$72,693*	*$72,693*	*$57,693*		*$348,465*	
	Equipment								
								$0	
								$0	
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*	
	Supplies								
	Office and related supplies to support outreach meetings, trainings, etc	*$42,000*	*$3,000*	*$3,000*	*$3,000*	*$3,000*		*$54,000*	
								$0	
	TOTAL SUPPLIES	*$42,000*	*$3,000*	*$3,000*	*$3,000*	*$3,000*		*$54,000*	
	Contractual (including RFP)								
								$0	
								$0	
								$0	
								$0	
								$0	
	TOTAL CONTRACTUAL	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*	
	OTHER								
	Energy Efficiency and Electricfication of State Owned Buildings, Community Colleges and University campuses		*$7,680,000*	*$6,720,000*	*$4,800,000*			*$19,200,000*	$19,453,825 Adjusted (decreased) for admin cost
	WAP + Readiness funds	*$7,680,000*	*$4,750,000*	*$2,050,000*				*$14,480,000*	Adjusted (decreased) for admin cost
	Energy Efficiency and Electricfication of public buildings in LIDAC Communities including schools and local gov't buildings		*$7,680,000*	*$6,650,000*	*$5,700,000*	*$3,800,000*		*$23,830,000*	$25,353,271 Adjusted (decreased) for admin cost
								$0	
								$0	
								$0	
	TOTAL OTHER	*$7,680,000*	*$20,110,000*	*$15,420,000*	*$10,500,000*	*$3,800,000*		*$57,510,000*	
	TOTAL DIRECT	*$8,457,241*	*$20,866,739*	*$16,195,793*	*$11,295,418*	*$4,600,632*		*$61,415,823*	
Indirect Costs	**Indirect Costs**								
	Using SEO Indirect of 13.8%	*$68,724*	*$70,786*	*$72,909*	*$75,097*	*$77,349.5*		*$364,865*	
								$0	
	TOTAL INDIRECT	*$68,724*	*$70,786*	*$72,909*	*$75,097*	*$77,349*		*$364,865*	

TOTAL FUNDING		*$8,525,965*	*$20,937,525*	*$16,268,702*	*$11,370,515*	*$4,677,982*	*$61,780,688*

Consolidated Budget Table

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	TOTAL PERSONNEL	*$81,000*	*$155,633*	*$160,691*	*$165,913*	*$171,305*	*$734,541*
	TOTAL FRINGE BENEFITS	*$40,500*	*$77,816*	*$80,345*	*$82,956*	*$85,653*	*$367,271*
	TOTAL TRAVEL	*$2,319*	*$2,319*	*$2,319*	*$0*	*$0*	*$6,957*
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL SUPPLIES	*$7,500*	*$0*	*$0*	*$0*	*$0*	*$7,500*
	TOTAL CONTRACTUAL (including RFP)	*$4,413,761*	*$5,367,860*	*$2,267,919*	*$917,919*	*$916,273*	*$13,883,731*
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$4,545,080*	*$5,603,628*	*$2,511,274*	*$1,166,788*	*$1,173,230*	*$15,000,000*
	TOTAL INDIRECT	$0	$0	$0	$0	$0	0
TOTAL FUNDING		**$4,545,080**	**$5,603,628**	**$2,511,274**	**$1,166,788**	**$1,173,230**	**$15,000,000**

BUDGET BY PROJECT			
Project Number	**Project Name**	**Total Cost**	**% of Total**
1	*Industry Program 1*	*$4,500,000*	*30%*
2	*Industry Program 2*	*$3,750,000*	*25%*
3	*Industry Program 3*	*$6,750,000*	*45%*
Total		*$15,000,000*	*100%*

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Project Analyst I @ $81,000/yr, .5 FTE	*$40,500*	*$41,816*	*$43,175*	*$44,578*	*$46,027*	*$216,097*
							$0
	TOTAL PERSONNEL	*$40,500*	*$41,816*	*$43,175*	*$44,578*	*$46,027*	*$216,097*
	Fringe Benefits						
	Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary	*$20,250*	*$20,908*	*$21,588*	*$22,289*	*$23,014*	*$108,049*
							$0
	TOTAL FRINGE BENEFITS	*$20,250*	*$20,908*	*$21,588*	*$22,289*	*$23,014*	*$108,049*
	Travel						
							$0
	TOTAL TRAVEL	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	1 Laptop Computer @ $2,500 each	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
							$0
	TOTAL SUPPLIES	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
	Contractual						
	Contractor to perform 150 energy assessments total in the first three years at industrial facilities, allowing 2 years for facilities to execute energy efficiency upgrades.	*$1,250,000*	*$1,500,000*	*$1,225,000*	*$0*	*$0*	*$3,975,000*
	Contractor to provide technical assistance to industrial facilities to guide and support facilities as they work to reduce energy consumption and reduce emissions.	*$50,000*	*$50,000*	*$50,000*	*$25,000*	*$23,354*	*$198,354*
	TOTAL CONTRACTUAL	*$1,300,000*	*$1,550,000*	*$1,275,000*	*$25,000*	*$23,354*	*$4,173,354*
	OTHER						
							$0
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$1,363,250*	*$1,612,724*	*$1,339,763*	*$91,868*	*$92,395*	*$4,500,000*
Indirect Costs	**Indirect Costs**						
							$0
							$0

	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$1,363,250***	***$1,612,724***	***$1,339,763***	***$91,868***	***$92,395***	***$4,500,000***

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Project Analyst I @ $81,000/yr, .5 FTE	*$40,500*	*$41,816*	*$43,175*	*$44,578*	*$46,027*	*$216,097*
							$0
	TOTAL PERSONNEL	*$40,500*	*$41,816*	*$43,175*	*$44,578*	*$46,027*	*$216,097*
	Fringe Benefits						
	Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary	*$20,250*	*$20,908*	*$21,588*	*$22,289*	*$23,014*	*$108,049*
							$0
	TOTAL FRINGE BENEFITS	*$20,250*	*$20,908*	*$21,588*	*$22,289*	*$23,014*	*$108,049*
	Travel						
	In-State Travel Expenses - $154.50 per day @ 3 days per year for up to 5 employees during first 3 years of program development	*$2,319*	*$2,319*	*$2,319*	*$0*	*$0*	*$6,957*
	TOTAL TRAVEL	*$2,319*	*$2,319*	*$2,319*	*$0*	*$0*	*$6,957*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	1 Laptop Computer @ $2,500 each	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
							$0
	TOTAL SUPPLIES	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
	Contractual						
	Subaward for workforce capacity building and coordination with Industrial Working Group (e.g., partnerships, employer engagement, marketing)	*$250,000*	*$250,000*	*$100,000*	*$0*	*$0*	*$600,000*
	Subaward for pre-apprenticeship program for 300 students (including personnel and instructors; classroom instruction, hands-on training, curriculum, supplies, supportive services for students, and mentorship program)	*$0*	*$200,000*	*$200,000*	*$200,000*	*$200,000*	*$800,000*

	Subaward for registered apprenticeship program for 300 apprentices (including personnel and instructors; classroom instruction, on-the-job training, curriculum, supplies, employer incentives, supportive services for students). Note: apprenticeship wages paid by the employer in this example	*$0*	*$504,099*	*$504,099*	*$504,099*	*$504,099*	*$2,016,397*
	TOTAL CONTRACTUAL	*$250,000*	*$954,099*	*$804,099*	*$704,099*	*$704,099*	*$3,416,397*
	OTHER						
							$0
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$315,569*	*$1,019,143*	*$871,181*	*$770,967*	*$773,140*	*$3,750,000*
Indirect Cos	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$315,569***	***$1,019,143***	***$871,181***	***$770,967***	***$773,140***	***$3,750,000***

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Business Officer I @ $72,000/yr, 1 FTE	*$0*	*$72,000*	*$74,340*	*$76,756*	*$79,251*	*$302,347*
							$0
	TOTAL PERSONNEL	*$0*	*$72,000*	*$74,340*	*$76,756*	*$79,251*	*$302,347*
	Fringe Benefits						
	Full-time Employees (Includes: FICA, Retirement, Health based on annual rates set by NCGA) @ ~50% of salary	*$0*	*$36,000*	*$37,170*	*$38,378*	*$39,625*	*$151,173*
							$0
	TOTAL FRINGE BENEFITS	*$0*	*$36,000*	*$37,170*	*$38,378*	*$39,625*	*$151,173*
	Travel						
							$0
	TOTAL TRAVEL	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Equipment						
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	1 Laptop Computer @ $2,500 each	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
							$0
	TOTAL SUPPLIES	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
	Contractual						
	Programmic fees @ 15% for finanacial administrator to manage loan program	*$188,819*	*$188,819*	*$188,819*	*$188,819*	*$188,819*	*$944,097*
	Programmatic funds available for no- or low-interest loans or grants. No new funds used during years 3-5 with the expectation that loan repayments will continue to fund future projects.	*$2,674,941*	*$2,674,941*	*$0*	*$0*	*$0*	*$5,349,883*
							$0
	TOTAL CONTRACTUAL	*$2,863,761*	*$2,863,761*	*$188,819*	*$188,819*	*$188,819*	*$6,293,980*
	OTHER						
							$0
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$2,866,261*	*$2,971,761*	*$300,329*	*$303,953*	*$307,695*	*$6,750,000*
Indirect Costs	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$2,866,261***	***$2,971,761***	***$300,329***	***$303,953***	***$307,695***	***$6,750,000***

Consolidated Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	TOTAL PERSONNEL	*$180,000*	*$180,000*	*$0*	*$0*	*$0*	*$360,000*
	TOTAL FRINGE BENEFITS	*$71,760*	*$71,760*	*$0*	*$0*	*$0*	*$143,520*
	TOTAL TRAVEL	*$54,288*	*$54,287*	*$0*	*$0*	*$0*	*$108,575*
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL CONTRACTUAL (including RFP)	*$14,818,418*	*$0*	*$0*	*$0*	*$0*	*$14,818,418*
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$15,124,466*	*$306,047*	*$0*	*$0*	*$0*	*$15,430,513*
	TOTAL INDIRECT	$34,743	$34,743	$0	$0	$0	69485.76
TOTAL FUNDING		**$15,159,209**	**$340,790**	**$0**	**$0**	**$0**	**$15,499,999**

BUDGET BY PROJECT			
Project Number	**Project Name**	**Total Cost**	**% of Total**
1	Divert organics from landfills	*$5,501,581*	*35%*
2	*Converstion of Trucks*	*$5,500,000*	*35%*
3	Reduce landfill gas emissions	*$4,498,418*	*29%*
4	*Name 4*	*$0*	*0%*
5	*Name 5*	*$0*	*0%*
Total		*$15,499,999*	*100%*

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Full Time Position (DEACS)	*$90,000*	*$90,000*				*$180,000*
	Full Time Position (DEACS)	*$90,000*	*$90,000*				*$180,000*
							$0
	TOTAL PERSONNEL	*$180,000*	*$180,000*	*$0*	*$0*	*$0*	*$360,000*
	Fringe Benefits						
	Full Time Staff	*$71,760*	*$71,760*				*$143,520*
							$0
							$0
	TOTAL FRINGE BENEFITS	*$71,760*	*$71,760*	*$0*	*$0*	*$0*	*$143,520*
	Travel						
	Workshops	*$54,288*	*$54,287*				*$108,575*
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL TRAVEL	*$54,288*	*$54,287*	*$0*	*$0*	*$0*	*$108,575*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
							$0
							$0
	TOTAL SUPPLIES	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Contractual (including RFP)						
	Organics RFP	*$4,190,000*					*$4,190,000*
	Central Pines Organics Program	*$130,000*					*$130,000*

	Simple Gesture Refrigerator Program	*$500,000*					*$500,000*
							$0
	TOTAL CONTRACTUAL	*$4,820,000*	*$0*	*$0*	*$0*	*$0*	*$4,820,000*
	OTHER						
							$0
							$0
							$0
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$5,126,048*	*$306,047*	*$0*	*$0*	*$0*	*$5,432,095*
Indirect Costs	**Indirect Costs**						
		$34,742.88	*$34,742.88*				*$69,486*
							$0
	TOTAL INDIRECT	*$34,743*	*$34,743*	*$0*	*$0*	*$0*	*$69,486*
TOTAL FUNDING		***$5,160,791***	***$340,790***	***$0***	***$0***	***$0***	***$5,501,581***

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
							$0
							$0
							$0
	TOTAL PERSONNEL	$0	$0	$0	$0	$0	$0
	Fringe Benefits						
							$0
							$0
							$0
	TOTAL FRINGE BENEFITS	$0	$0	$0	$0	$0	$0
	Travel						
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL TRAVEL	$0	$0	$0	$0	$0	$0
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	$0	$0	$0	$0	$0	$0
	Supplies						
							$0
							$0
	TOTAL SUPPLIES	$0	$0	$0	$0	$0	$0
	Contractual (including RFP)						
	Wake Forest Pilot Project for EVs	$3,500,000					$3,500,000
	RFP for EV	$2,000,000					$2,000,000
							$0
							$0

							$0
	TOTAL CONTRACTUAL	$5,500,000	$0	$0	$0	$0	$5,500,000
	OTHER						
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL OTHER	$0	$0	$0	$0	$0	$0
	TOTAL DIRECT	$5,500,000	$0	$0	$0	$0	$5,500,000
Indirect Cos	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	$0	$0	$0	$0	$0	$0
TOTAL FUNDING		**$5,500,000**	**$0**	**$0**	**$0**	**$0**	**$5,500,000**

Detailed Budget Table

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BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
							$0
							$0
							$0
	TOTAL PERSONNEL	$0	$0	$0	$0	$0	$0
	Fringe Benefits						
							$0
							$0
							$0
	TOTAL FRINGE BENEFITS	$0	$0	$0	$0	$0	$0
	Travel						
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL TRAVEL	$0	$0	$0	$0	$0	$0
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	$0	$0	$0	$0	$0	$0
	Supplies						
							$0
							$0
	TOTAL SUPPLIES	$0	$0	$0	$0	$0	$0
	Contractual (including RFP)						
	Landfill Gas RFP	$4,498,418					$4,498,418
							$0
							$0
							$0
							$0

	TOTAL CONTRACTUAL	*$4,498,418*	*$0*	*$0*	*$0*	*$0*	*$4,498,418*
	OTHER						
							$0
							$0
							$0
							$0
							$0
							$0
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$4,498,418*	*$0*	*$0*	*$0*	*$0*	*$4,498,418*
Indirect Costs	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$4,498,418***	***$0***	***$0***	***$0***	***$0***	***$4,498,418***

Consolidated Budget Table

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	TOTAL PERSONNEL	*$466,831*	*$480,836*	*$495,065*	*$509,722*	*$477,180*	*$2,429,634*
	TOTAL FRINGE BENEFITS	*$216,911*	*$223,418*	*$230,030*	*$236,840*	*$221,720*	*$1,128,920*
	TOTAL TRAVEL	*$13,916*	*$16,416*	*$16,416*	*$16,416*	*$11,417*	*$74,581*
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL SUPPLIES	*$27,448*	*$5,770*	*$3,766*	*$3,766*	*$3,764*	*$44,514*
	TOTAL CONTRACTUAL (including RFP)	*$1,802,111*	*$2,951,611*	*$2,951,611*	*$2,337,950*	*$404,700*	*$10,447,983*
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$2,527,217*	*$3,678,051*	*$3,696,889*	*$3,104,694*	*$1,118,781*	*$14,125,632*
	TOTAL INDIRECT	$287,149	$295,763	$304,516	$313,531	$293,515	$1,494,475
TOTAL FUNDING		**$2,814,366**	**$3,973,815**	**$4,001,405**	**$3,418,226**	**$1,412,295**	**$15,620,107**

BUDGET BY PROJECT			
Project Number	**Project Name**	**Total Cost**	**% of Total**
1	*CPRC Administration*	*$770,000*	*5%*
2	*CPRC Buildings*	*$8,484,305*	*54%*
3	*CPRC VMT*	*$6,365,801*	*41%*
Total		*$15,620,107*	*100%*

$0

LIDAC and LMI Budget	$7,137,233
Percent of Total Budget LIDAC or LMI	45.69%

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR																
COST-TYPE	CATEGORY	Salary	Average % of Hrs	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL	Hours YR 1	Hours YR 2	Hours YR 3	Hours YR 4	Hours YR 5	Average Hours	% Hrs.	FY25 RATE	2	3	4	5
Direct Cost	Enter Position / Name									ENTER HOURS BELOW							ENTER RATE FROM COLUMN K - SALARY RATE TAB				
	ED - GG	192,962	0.0%	-	-	-	-	-	$0	0					0	0.0%	$ 92.77	97.41	102.28	107.39	112.76
	Deputy Director -MN	150,654	0.0%	-	-	-	-	-	$0	0					0	0.0%	$ 72.43	76.05	79.85	83.84	88.03
	Director - CED - CD	115,274	7.2%	28,818	30,259	31,772	33,363	35,033	$159,245	150	150	150	150	150	150	7.2%	$ 55.42	58.19	61.1	64.16	67.37
	Project Sr. Staff - CED - JL	115,752	0.0%	6,678	-	-	-	-	$6,678	0					0	0.0%	$ 55.65	58.43	61.35	64.42	67.64
	Project Staff - CED - KF	61,277	0.0%	8,838	9,279	9,744	10,230	10,743	$48,834	0	0	0	0	0	0	0.0%	$ 29.46	30.93	32.48	34.1	35.81
	Project Staff - CED - IS	56,826	1.9%	1,093	1,148	1,205	1,265	1,328	$6,039	40	40	40	40	40	40	1.9%	$ 27.32	28.69	30.12	31.63	33.21
	Project Manager CED/CEDD - ALW	69,410	10.6%	19,633	20,546	21,573	22,653	23,988	$108,393	222	220	220	220	225	221.4	10.6%	$ 33.37	35.04	36.79	38.63	40.56
		-	0.0%	-	-	-	-	-	$0	0	0	0	0	0	0	0.0%	$ -	0	0	0	0
	Communications - EH	92,165	0.0%	-	-	-	-	-	$0	0	0	0	0	0	0	0.0%	$ 44.31	46.53	48.86	51.3	53.87
	Grant Management - LH	88,379	0.0%	-	-	-	-	-	$0	0	0	0	0	0	0	0.0%	$ 42.49	44.61	46.84	49.18	51.64
										0	0	0	0	0	0	0.0%	$ -	0	0	0	0
	TOTAL PERSONNEL	$942,698		$65,060	$61,232	$64,294	$67,511	$71,092	$329,189												
	Fringe Benefits																				
	56.50%			36,759	34,596	36,326	38,144	40,167	$185,992												
									$0												
									$0												
	TOTAL FRINGE BENEFITS	$0		$36,759	$34,596	$36,326	$38,144	$40,167	$185,992												
	Travel																				
									$0												
	Site visits to existing relevant project examples			$1,500	$1,500				$3,000												
	Three to five community forums for outreach				$2,500				$2,500												
									$0												
									$0												
									$0												
									$0												
									$0												
	TOTAL TRAVEL	$0		$1,500	$4,000	$0	$0	$0	$5,500												
	Equipment																				
									$0												
									$0												
	TOTAL EQUIPMENT	$0		$0	$0	$0	$0	$0	$0												
	Supplies																				
	Supplies and Communication Materials			$4,000	$4,000	$4,000	$4,000	$4,000	$20,000												
									$0												
	TOTAL SUPPLIES	$0		$4,000	$4,000	$4,000	$4,000	$4,000	$20,000												
	Contractual																				
	Implementation funds for energy efficiency pilot project			$221,013	$237,500	$237,500	$190,000	$190,000	$1,076,013	Note: Adjusted for admin cost											
	Industrial Engineering Retro Fit SME Evaluator			$25,000	$12,000			$10,000	$47,000												
	Direct improvements to qualified multifamily buildings - DEQ ICAST contractor			$546,250	$546,250	$546,250	$546,250	$521,706	$2,706,706	Note: Adjusted for admin cost											
	GHG testing pre-and post-construction			$23,750	$23,750	$23,750	$23,750		$95,000	Note: Adjusted for admin cost											
									$0												
	TOTAL CONTRACTUAL	$0		$816,013	$819,500	$807,500	$760,000	$721,706	$3,924,719												
	OTHER																				
									$0												
									$0												
									$0												
									$0												
									$0												
									$0												
	TOTAL OTHER	$0		$0	$0	$0	$0	$0	$0												
	TOTAL DIRECT	$942,698		$923,332	$923,328	$912,120	$869,655	$836,965	$4,465,400												
Indirect Co	**Indirect Costs**																				
	0.0462			47,040	44,273	46,486	48,813	51,402	$238,014												
									$0												
	TOTAL INDIRECT	$0		$47,040	$44,273	$46,486	$48,813	$51,402	$238,014												
TOTAL FUNDING		$942,698		$970,372	$967,601	$958,606	$918,468	$888,367	$4,703,414												

Consolidated Budget Table

This table will update automatically based on the budget detail entered in the tabs for measures 1-5. If your application includes more than 5 individual measures, you will need to add additional tabs, update the formulas below, and add additional lines to the "Budget by Project" table to include the

BUDGET BY YEAR								
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5		TOTAL
Direct Costs	TOTAL PERSONNEL	$356,503	$384,665	$335,884	$352,685	$369,395		$1,799,132
	TOTAL FRINGE BENEFITS	$201,424	$217,336	$189,774	$199,267	$208,709		$1,016,510
	TOTAL TRAVEL	$4,672	$7,172	$3,172	$3,172	$3,172		$21,360
	TOTAL EQUIPMENT	$0	$0	$0	$0	$0		$0
	TOTAL SUPPLIES	$5,239	$5,200	$5,200	$5,200	$5,200		$26,039
	TOTAL CONTRACTUAL	$1,113,572	$1,067,469	$1,005,874	$908,784	$820,893		$4,916,593
	TOTAL OTHER	$330,550	$1,758,400	$4,323,100	$3,990,600	$285,750		$10,688,400
	TOTAL DIRECT	$2,011,960	$3,440,242	$5,863,004	$5,459,708	$1,693,119		$18,468,034
	TOTAL INDIRECT	$257,761	$278,125	$242,853	$255,002	$267,085		$1,300,826
TOTAL FUNDING		$2,269,721	$3,718,367	$6,105,857	$5,714,710	$1,960,204		$19,768,860

BUDGET BY PROJECT			
Project Number	Project Name	Total Cost	% of Total
1	C1 Buildings Industrial	$4,703,414	24%
2	C2 VMT	$14,085,446	71%
3	Admin	$980,000	5%
4			
5			
Total		$19,768,860	100%

	Alternative Transportation		Decarbonize Buildings			
	Measure 1	Measure 2	sure 1 Bldgs - Industrial	Measure 2 Bldgs - MF	Admin Functions	TOTAL
Total	$14,700,000.00	$0.00	$1,400,000.00	$3,500,000.00	$980,000.00	$20,580,000.00
Direct	$12,315,688	$0	$646,805	$2,959,164		$15,921,657.00
Staff	$2,384,312	$0	$753,195	$540,836	$980,000	$3,678,343.00
Staff %	16%		54%	15%	100%	18%

Detailed Budget Table for A Systems Approach to VMT Reduction and Enhancing Mobility Access

BUDGET BY YEAR									
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**		**TOTAL**	**Budget Narrative**
Direct Costs	**Personnel**								
	Project Manager @ $76,350/yr, 0.50 FTE, with salary increase	*$38,175*	*$39,320*	*$40,500*	*$41,715*	*$42,966*	####	*$202,676*	Project Manager for the overall VMT Reduction project.
	Communications project staff @ $63,242/yr, 0.1 FTE, with salary increase	*$6,324*	*$6,514*	*$6,709*	*$6,910*	*$7,118*		*$33,575*	Develops materials and does communications throughout the CPRG grant period.
	Data Analyst, reporting and technical staff @ $69,197/yr, 1 FTE with salary increase	*$69,197*	*$71,273*	*$73,411*	*$75,613*	*$77,882*		*$367,376*	Responsible for data collection, monitoring, analysis, reporting GHG reduction accounting
	Project Coordinator staff @ $69,197/yr, 1 FTE with salary increase	*$69,197*	*$71,273*	*$73,411*	*$75,613*	*$77,882*		*$367,376*	Coordinator for executing RFP'S, contracting, grant administration, outreach and overall program deployment.
	Executive Director @$224,682/yr, 0.12 FTE with salary increase	*$26,962*	$27,771	$28,604	$29,462	$30,346		*$143,144*	High-level elected official communication and education regarding VMT reduction, its benefits, and the tactics communities can use to enhance mobility access while reducing emissions.
	TOTAL PERSONNEL	*$209,855*	*$216,150*	*$222,635*	*$229,314*	*$236,193*	####	*$1,114,148*	
	Fringe Benefits								
	Fringe @ 46.4646% of salary	*$97,508*	*$100,433*	*$103,446*	*$106,550*	*$109,746*	####	*$517,684*	The rate includes FICA (7.65%), Retirement (12.88%) , 401 (k) (5%), HSA and Health based on annual rates as approved annually by CPRC Governing Board.
	TOTAL FRINGE BENEFITS	*$97,508*	*$100,433*	*$103,446*	*$106,550*	*$109,746*	####	*$517,684*	
	Travel								
	Travel for professional development, conferences and workshop presentations (including registration, mileage, boarding and lodging, per diem etc. for 2-3 project staff)	*$6,000*	*$6,000*	*$6,000*	*$6,000*	*$6,000*		*$30,000*	Based on CPRC's internal policies.
	Mileage for local meetings	*$1,416*	*$1,416*	*$1,416*	*$1,416*	*$1,417*		*$7,081*	Based on IRS Mileage Rate OF 67 cents/mile.
	TOTAL TRAVEL	*$7,416*	*$7,416*	*$7,416*	*$7,416*	*$7,417*	####	*$37,081*	
	Equipment								
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*		*$0*	
	Supplies								
	3 Laptop Computers @ $2,000 each (includes	*$4,000*	*$2,000*	*$0*	*$0*	*$0*	####	*$6,000*	Essential supplies for project staff to execute
	Printing paper, pens, markers, postage etc.	*$1,619*	*$1,619*	*$1,617*	*$1,617*	*$1,617*		*$8,089*	Regular office supplies to conduct meetings and outreach.
	TOTAL SUPPLIES	*$5,619*	*$3,619*	*$1,617*	*$1,617*	*$1,617*		*$14,089*	
	Contractual								
	Funding for Gaps in Existing VMT Programs. 50% of funds reserved for LIDAC. 1)Incentivize/Subsidize purchase of 7 Electric Vans @ $ 65K each ($65k includes $20K charging infrastructure costs) for a total of $455,000/ year for Year 2,3, and 4. 2) Subsidized bus passes (1000 fully subsidized bus trips/month) @3.00/ trip = $36,000/ year for all years. 3) Commuter E-bike rebate ($2000 each for a total of 75 e-bikes/year) = $150,000/year for all years except Years 1 and 5. For years 1 and 5, 45 e-Bikes. 4) Commuter E-Scooter Rebate ($ 500 each for a total of 110 e-scooters/year)= @ $55,000/year for all years except Year 1. 50 scooters in Year 1.	*$143,450*	*$661,200*	*$661,200*	*$661,200*	*$143,450*		*$2,270,500*	21 electric vans (6-15 passengers)for non-profits /CBO's serving LIDAC communities. 8,000 miles/year/van. 50 car purchases avoided. Cars drive 1,000/miles/year. Assume newer cars here. Assume the vehicle mix is a bit older than average mix of today in 2024. BRT is part of our narrative. Assume bus fare supplementation avoids 1,000 trips per month, which is 12,000 trips/year, with an average distance of 5 miles. Note: Adjusted for admin cost
	Sidewalks for LIDAC Communities (Assume All Sidewalks)	*$575,661*	*$575,661*	*$575,661*	*$0*	*$0*		*$1,726,983*	Note: Adjusted for admin cost
	TOTAL CONTRACTUAL	*$719,111*	*$1,236,861*	*$1,236,861*	*$661,200*	*$143,450*		*$3,997,483*	
	OTHER								
							####		
	TOTAL OTHER								
	TOTAL DIRECT	*$1,039,509*	*$1,564,480*	*$1,571,976*	*$1,006,097*	*$498,424*		*$5,680,485*	
Indirect Costs	**Indirect Costs**								
	Indirect @ 41.9967% salary plus fringe	*$129,082*	*$132,955*	*$136,943*	*$141,052*	*$145,283*	####	*$467,905*	
	TOTAL INDIRECT	*$129,082*	*$132,955*	*$136,943*	*$141,052*	*$145,283*		*$685,316*	
TOTAL FUNDING		***$1,168,591***	***$1,697,435***	***$1,708,919***	***$1,147,149***	***$643,707***	0	***$6,365,801***	**Total budget is $6,576,195**

Bus fares are coming back in the region for FY25 onwards after being fare free during the COVID times. Based on data from 2 larget cities in the two MSA's (Durham and Raleigh), 22% of current Raleigh transit riders say they did not use GoRaleigh tranist during the pandemic, and 18% say they did not use prior to the pandemic either. Thus 40% of of these riders are new riders and not returning riders who have been enjoying fare free transit. It is critical to maintain this ridership by providing incentives to subsidize the fares. Similarly, city of Durham's ridership data analysis reveals that the Fare-free transit service *"has eased the burden for essential workers our community relied upon during the height of the pandemic (hospitals, skilled nursing facilities, pharmacies, and grocery stores). Continuing fare-free service has been a tremendous investment in equity. 77% of GoDurham riders do not have access to a vehicle and 88% of riders have a household income of less than $35,000"*

Detailed Budget Table for Raleigh-Cary-Durham-Chapel Hill Regional Efficiency for Homes and Buildings

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR								
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**	**Budget Narrative**
Direct Costs	**Personnel**							
	Project Manager @ $84,652/yr, 1 FTE, with salary increase for years 1-4 and 0.5 FTE for year 5	$ 84,652	$ 87,192	$ 89,807	$ 92,502	$ 47,638	$ 401,791	Project Manager for the Regional Efficiency for Home and Building project.
	Housing Planner @ $56,866/yr, 0.3 FTE, with salary increase	$ 17,060	$ 17,572	$ 18,099	$ 18,642	$ 19,201	$ 90,574	Coordinator for executing RFP'S, contracting, grant administration, outreach and overall program deployment.
	Communications project staff @ $63,242/yr, 0.1 FTE, with salary increase	$ 6,324	$ 6,514	$ 6,514	$ 6,514	$ 6,514	$ 32,379	Develops materials and does communications throughout the CPRG grant period.
	Supervisor Project staff @ $101,837/yr, 0.1 FTE with salary increase	$ 10,184	$ 10,490	$ 10,804	$ 11,128	$ 11,462	$ 54,068	Provides direction on weatherization deferral component of the program.
	Project Coordinator staff @ $84,652/yr, 0.15 FTE with salary increase	$ 12,698	*$13,079*	*$13,471*	*$13,875*	*$14,292*	*$67,415*	Responsible for data collection, monitoring,reporting , and other project duties.
	Director @ $113,422/yr, 0.50 FTE with salary increase	$ 56,711	$ 58,412	$ 60,165	$ 61,970	$ 63,829	*$ 301,086*	Overall project lead for high level relationship building, negotiations, guidance and direction to the project.
	TOTAL PERSONNEL	*$ 187,629*	*$ 193,258*	*$ 198,860*	*$ 204,631*	*$ 162,936*	*$ 947,313*	
	Fringe Benefits							
	Fringe @ 46.4646% of salary	*$87,181*	*$89,796*	*$92,400*	*$95,081*	*$75,707*	*$440,165*	The rate includes FICA (7.65%), Retirement (12.88%) , 401 (k) (5%), HSA and Health based on annual rates as approved annually by CPRC Governing Board.
							$0	
							$0	
	TOTAL FRINGE BENEFITS	*$87,181*	*$89,796*	*$92,400*	*$95,081*	*$75,707*	*$440,165*	
	Travel							
	Mileage for meetings, presentations, and home visits	*$5,000*	*$5,000*	*$5,000*	*$5,000*	*$2,000*	*$22,000*	Based on IRS Mileage Rate OF 67 cents/mile.
	Travel for conference and workshop presentations (including mileage, boarding and lodging, per diem for 2-3 project staff)	*$1,500*	*$4,000*	*$4,000*	*$4,000*	*$2,000*	*$15,500*	Based on CPRC's internal policies.
							$0	
	TOTAL TRAVEL	*$6,500*	*$9,000*	*$9,000*	*$9,000*	*$4,000*	*$37,500*	
	Equipment							
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	
	Supplies							
	2 Laptop Computers @ $2,000 each	*$4,000*	*$0*	*$0*	*$0*	*$0*	*$4,000*	Essential supplies for project staff to execute project duties.
	Blower Door Test Equipment	*$12,178*	*$0*	*$0*	*$0*	*$0*	*$12,178*	Essential supplies for project staff to execute
	Energy Assessment Equipment, including IR Thermometers and Thermal Imaging Equipment	*$3,500*	*$0*	*$0*	*$0*	*$0*	*$3,500*	Essential supplies for project staff to execute project duties.
	Printing paper, pens, postage, markers etc.	*$1,291*	*$1,291*	*$1,291*	*$1,291*	*$1,289*	*$6,453*	Essential supplies for project staff to execute project duties.
	TOTAL SUPPLIES	*$20,969*	*$1,291*	*$1,291*	*$1,291*	*$1,289*	*$26,131*	
	Contractual (including RFP)							
	Kerr Tar Council of Governments	$52,250	$52,250	$52,250	$14,250	$0	*$171,000*	Assistance with LIDAC outreach in KerrTar communities.

	Weatherization Deferral Make-Ready for LIDAC Communities and LMI Homes for Single Family Homes	$237,500	$237,500	$237,500	$237,500	$0	*$950,000*	Weatherization budget is $15k for each building.
	Incentives for weatherization+ in LIDAC Communities--Multifamily, Commercial, Nonprofits, Schools, Faith Based Institutions	$475,000	$950,000	$950,000	$950,000	$0	*$3,325,000*	Financial incentives only for buildings in LIDAC tracts that do not have existing programs to aid in energy efficiency through the federal and state governments.
	Credit Enhancement Measures for Single Family Homes for Those Not Served by Other Federal Programs for Home Energy Efficiency and Electrification	$47,500	$166,250	$166,250	$166,250	$166,250	*$712,500*	
	Rebuilding Together of the Triangle Program Implementation Partner/Staff	$175,750	$213,750	$213,750	$213,750	$95,000	*$912,000*	
	Community College/Community Based Organization Coordination/State Extension for Workforce Development and Program Outreach	$95,000	$95,000	$95,000	$95,000	*$0*	*$380,000*	
	TOTAL CONTRACTUAL	*$1,083,000*	*$1,714,750*	*$1,714,750*	*$1,676,750*	*$261,250* #	*$6,450,500*	Note: Adjusted for admin cost
	OTHER							
		$0	$0	$0	$0	$0	*$0*	
		$0	$0	$0	$0	$0	*$0*	
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*	
	TOTAL DIRECT	*$1,385,279*	*$2,008,095*	*$2,016,301*	*$1,986,752*	*$505,182*	*$7,901,610*	
Indirect Costs	**Indirect Costs**							
	Indirect @ 41.9967% (salary + fringe)	*$ 115,411*	*$ 118,873*	*$ 122,319*	*$ 125,869*	*$ 100,222*	*$ 582,695*	
	TOTAL INDIRECT	*$115,411*	*$ 118,873*	*$122,319*	*$125,869*	*$ 100,222*	*$582,695*	
TOTAL FUNDING		*$1,500,690*	*$2,126,969*	*$2,138,620*	*$2,112,621*	*$605,405*	***$8,484,305***	**8823805** $339,500

Detailed Budget Table

BUDGET BY YEAR							
COST-TYPE	**CATEGORY**	**YEAR 1**	**YEAR 2**	**YEAR 3**	**YEAR 4**	**YEAR 5**	**TOTAL**
Direct Costs	**Personnel**						
	Accounting Coordinator@ $67,459 /yr, 0.71 FTE with salary increase	*$47,896*	*$49,333*	*$50,813*	*$52,337*	*$53,907*	*$254,286*
	Data Analyst for Grant Reporting @ $69,197, 0.31 FTE with salary increase	*$21,451*	*$22,095*	*$22,757*	*$23,440*	*$24,143*	*$113,887*
	TOTAL PERSONNEL	*$69,347*	*$71,427*	*$73,570*	*$75,777*	*$78,051*	*$368,172*
	Fringe Benefits						
	Full-time Employees @ 46.4646% of salary	*$32,222*	*$33,188*	*$34,184*	*$35,210*	*$36,266*	*$171,070*
	TOTAL FRINGE BENEFITS	*$32,222*	*$33,188*	*$34,184*	*$35,210*	*$36,266*	*$171,070*
	Equipment						
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	Software and office Supplies such as printing paper, pens etc.	$860	$860	$858	$858	$858	$4,294
	TOTAL SUPPLIES	*$860*	*$860*	*$858*	*$858*	*$858*	*$4,294*
	Contractual						
							$0
	TOTAL CONTRACTUAL	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	OTHER						
	TOTAL OTHER	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$102,429*	*$105,476*	*$108,612*	*$111,845*	*$115,175*	*$543,536*
Indirect Costs	**Indirect Costs**						
	*(Salary + Fringe) *41.9967%*	*$42,656*	*$43,935*	*$45,253*	*$46,611*	*$48,009*	*$226,464*
	TOTAL INDIRECT	*$42,656*	*$43,935*	*$45,253*	*$46,611*	*$48,009*	*$226,464*
TOTAL FUNDING		***$145,084***	***$149,411***	***$153,866***	***$158,456***	***$163,184***	***$770,000***

Budgeted amount is $770,000

($0)

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR

COST-TYPE	CATEGORY	Salary	Average % of Hrs	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL	
Direct Costs	**Personnel - Enter Position and Employee**									
		-	0.0%	-	-	-	-	-	$0	
	Deputy Executive Director	150,654	4.8%	7,243	7,605	7,985	8,384	8,803	$40,020	
	TDM Program Oversight (.2 FTE)	126,110	20.0%	25,222	26,483	27,805	29,195	30,655	$139,360	
	Regional Planner II (TDM Program manager) (1 FTE) (new)	61,152	90.0%	55,037	57,789	60,672	63,704	66,887	$304,089	
	Senior Planner (.5 FTE)	77,938	50.0%	38,969	40,914	42,962	45,115	47,372	$215,332	
	Regional Planner II (.5 FTE) (RIA)	61,152	49.6%	15,288	35,809	37,596	39,475	41,447	$169,615	
	RIA Program Manager	-	0.0%	-	-	-	-	-	$0	
	Contract Admin / RFP support (new)	88,379	36.0%	39,771	41,755	29,228	30,688	32,223	$173,665	
		-	0.0%	-	-	-	-	-	$0	
		-	0.0%	-	-	-	-	-	$0	
		-	0.0%	-	-	-	-	-	$0	
	TOTAL PERSONNEL			$181,530	$210,355	$206,248	$216,561	$227,387	$1,042,081	
	Fringe Benefits									
	56.50%			102,564	118,851	116,530	122,357	128,474	$588,776	
									$0	
									$0	
	TOTAL FRINGE BENEFITS			$102,564	$118,851	$116,530	$122,357	$128,474	$588,776	
	Travel									
	Per diem ($2,360); Hotel ($7,500); Air ($6,000)	15860		$3,172	$3,172	$3,172	$3,172	$3,172	$15,860	
									$0	
									$0	
									$0	
									$0	
									$0	
									$0	
									$0	
	TOTAL TRAVEL			$3,172	$3,172	$3,172	$3,172	$3,172	$15,860	
	Equipment									
									$0	
									$0	
	TOTAL EQUIPMENT			$0	$0	$0	$0	$0	$0	
	Supplies									
	5000			$1,000	$1,000	$1,000	$1,000	$1,000	$5,000	
									$0	
	TOTAL SUPPLIES			$1,000	$1,000	$1,000	$1,000	$1,000	$5,000	
	Contractual									
	Program Implementation Support			$297,559	$247,969	$198,374	$148,784	$99,188	$991,874	Note: Adjusted for admin cost
									$0	
									$0	
									$0	
									$0	
	TOTAL CONTRACTUAL			$297,559	$247,969	$198,374	$148,784	$99,188	$991,874	
	OTHER									
	VMT multi-modal projects solicitation				$902,500	$3,182,500	$3,135,000		$7,220,000	Note: Adjusted for admin cost
	Transit rider support			$329,650	$570,000	$712,500	$617,500	$285,000	$2,514,650	Note: Adjusted for admin cost
	Regional traveler access solutions (UDAC focus)				$285,000	$427,500	$237,500		$950,000	Note: Adjusted for admin cost
	Participant Support Costs			$900	$900	$600	$600	$750	$3,750	
	TOTAL OTHER			$330,550	$1,758,400	$4,323,100	$3,990,600	$285,750	$10,688,400	
	TOTAL DIRECT			$916,375	$2,339,747	$4,848,424	$4,482,474	$744,971	$13,331,991	
Indirect Costs	**Indirect Costs**									
	0.0462			131,251	152,093	149,123	156,580	164,408	$753,455	
									$0	
	TOTAL INDIRECT			$131,251	$152,093	$149,123	$156,580	$164,408	$753,455	
TOTAL FUNDING				$1,047,626	$2,491,840	$4,997,547	$4,639,054	$909,379	$14,085,446	
									55%	
							sidewalk budget		$ 3,971,000	

Hours YR 1	Hours YR 2	Hours YR 3	Hours YR 4	Hours YR 5	Average Hours	% Hrs.	age hrs % c	1	2	3	4	5
ENTER HOURS BELOW								**ENTER RATE FROM COLUMN K - SALARY RATE TAB**				
0	0	0	0	0	0	0.0%		$ -	0	0	0	0
100	100	100	100	100	100	4.8%		$ 72.43	76.05	79.85	83.84	88.03
416	416	416	416	416	416	20.0%		$ 60.63	63.66	66.84	70.18	73.69
1872	1872	1872	1872	1872	1872	90.0%		$ 29.40	30.87	32.41	34.03	35.73
1040	1040	1040	1040	1040	1040	50.0%		$ 37.47	39.34	41.31	43.38	45.55
520	1160	1160	1160	1160	1032	49.6%		$ 29.40	30.87	32.41	34.03	35.73
0	0	0	0	0	0	0.0%		$ -	0	0	0	0
936	936	624	624	624	748.8	36.0%		$ 42.49	44.61	46.84	49.18	51.64
0	0	0	0	0	0	0.0%		$ -	0	0	0	0
0	0	0	0	0	0	0.0%		$ -	0	0	0	0
0	0	0	0	0	0	0.0%		$ -	0	0	0	0

Detailed Budget Table

This Excel Workbook is provided to aid applicants in developing the required budget table(s) within the budget narrative.

BUDGET BY YEAR

COST-TYPE	CATEGORY	Salary	Average % of Hrs	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Cost	**Enter Position / Name**								
	ED - GG	*192,962*	*5.8%*	*21,596*	*12,176*	*12,774*	*12,887*	*12,404*	*$81,337*
	Deputy Director -MN	*150,654*	*1.2%*	*1,811*	*1,901*	*1,996*	*2,096*	*2,201*	*$10,005*
		-	*0.0%*	-	-	-	-	-	*$0*
	Finance - Staff - Tech- 1FTE (new)	*58,000*	*66.0%*	*45,000*	*47,249*	*27,960*	*28,943*	*30,389*	*$179,541*
	Contract Admin (new)	*88,379*	*30.0%*	*39,771*	*41,755*	*19,485*	*20,459*	*21,482*	*$142,952*
		-	*0.0%*	-	-	-	-	-	*$0*
		-	*0.0%*	-	-	-	-	-	*$0*
	Communications - EH	*92,165*	*4.8%*	*8,862*	*6,980*	*2,443*	*2,565*	*2,694*	*$23,544*
	Communications - VT	*59,758*	*3.4%*	*2,873*	*1,017*	*1,584*	*1,663*	*1,746*	*$10,883*
	Grant Management - LH	*88,379*	*0.0%*						*$0*
	TOTAL PERSONNEL	*$722,298*		*$109,913*	*$113,078*	*$65,342*	*$68,613*	*$70,916*	*$457,862*
	Fringe Benefits								
	36.50%			*62,101*	*63,889*	*36,918*	*38,766*	*40,068*	*$241,742*
									$0
									$0
	TOTAL FRINGE BENEFITS	*$0*		*$62,101*	*$63,889*	*$36,918*	*$38,766*	*$40,068*	*$241,742*
	Travel								
									$0
									$0
									$0
									$0
									$0
									$0
									$0
	TOTAL TRAVEL	*$0*		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Equipment								
									$0
									$0
	TOTAL EQUIPMENT	*$0*		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies								
	Office Supplies			*$239*	*$200*	*$200*	*$200*	*$200*	*$1,039*
									$0
	TOTAL SUPPLIES	*$0*		*$239*	*$200*	*$200*	*$200*	*$200*	*$1,039*
	Contractual								
									$0
									$0
									$0
									$0
									$0
	TOTAL CONTRACTUAL	*$0*			*$0*	*$0*	*$0*	*$0*	*$0*
	OTHER								
									$0
									$0
									$0
									$0
									$0
	TOTAL OTHER	*$0*		*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	TOTAL DIRECT	*$722,298*		*$172,253*	*$177,167*	*$102,460*	*$107,579*	*$111,184*	*$670,643*
Indirect Co	**Indirect Costs**								
	0.0452			*79,470*	*81,759*	*47,244*	*49,609*	*51,275*	*$309,357*
									$0
	TOTAL INDIRECT	*$0*		*$79,470*	*$81,759*	*$47,244*	*$49,609*	*$51,275*	*$309,357*
TOTAL FUNDING		*$722,298*		*$251,723*	*$258,926*	*$149,704*	*$157,188*	*$162,459*	*$980,000*

$980,000 Total Cost Allocated

$0 Under / (Over)

Hours YR 1	Hours YR 2	Hours YR 3	Hours YR 4	Hours YR 5	Average Hours	% Hrs.
ENTER HOURS BELOW						
125	125	120	120	110	120	5.8%
25	25	25	25	25	25	1.2%
0	0	0	0	0	0	0.0%
1872	1872	1040	1040	1040	1372.8	66.0%
936	936	416	416	416	624	30.0%
0	0	0	0	0	0	0.0%
0	0	0	0	0	0	0.0%
200	150	50	50	50	100	4.8%
100	100	50	50	50	70	3.4%
0					0	0.0%
0	0	0	0	0	0	0.0%

FY25 RATE	2	3	4	5
ENTER RATE FROM COLUMN K - SALARY RATE TAB				
$	97.41	102.28	107.39	112.76
$	76.05	79.85	83.84	88.03
-	0	0	0	0
$	25.24	26.5	27.83	29.22
$	44.61	46.84	49.18	51.64
-	0	0	0	0
	0	0	0	0
$	46.53	48.86	51.3	53.87
$	30.17	31.68	33.26	34.92
$	44.61	46.84	49.18	51.64
$ -	0	0	0	0

Centralina Council of Governments
Employee Salary Projections

			2025 PROJECTED					2026 PROJECTED					2027 PROJECTED					2028 PROJECTED					2029 PROJECTED				
				56.50%					56.50%					56.50%					56.50%					56.50%			
			5.00%	8.00%		46.20%		5.00%	8.00%		46.20%		5.00%	8.00%		46.20%		5.00%	8.00%		46.20%		5.00%	8.00%		46.20%	
			Rate	Fringe	Subtotal	Indirect	Total	Rate	Fringe	Subtotal	Indirect	Total	Rate	Fringe	Subtotal	Indirect	Total	Rate	Fringe	Subtotal	Indirect	Total	Rate	Fringe	Subtotal	Indirect	Total
CED	22	Lutter, James W[0022]	55.65	31.44	87.09	40.24	127.33	58.43	33.01	91.44	42.25	133.69	61.35	34.66	96.01	44.36	140.37	64.42	36.40	100.82	46.58	147.40	67.64	38.22	105.86	48.91	154.77
CED	105	Wilson, Anna L[0105]	33.37	18.85	52.22	24.13	76.35	35.04	19.80	54.84	25.34	80.18	36.79	20.79	57.58	26.60	84.18	38.63	21.83	60.46	27.93	88.39	40.56	22.92	63.48	29.33	92.81
CED	125	Davis, Christina M[0125]	55.42	31.31	86.73	40.07	126.80	58.19	32.88	91.07	42.07	133.14	61.10	34.52	95.62	44.18	139.80	64.16	36.25	100.41	46.39	146.80	67.37	38.06	105.43	48.71	154.14
CED	135	Kadar, Zsuzsanna E[0135]	40.75	23.02	63.77	29.46	93.23	42.79	24.18	66.97	30.94	97.91	44.93	25.39	70.32	32.49	102.81	47.18	26.66	73.84	34.11	107.95	49.54	27.99	77.53	35.82	113.35
CED	141	Salicco, Joseph M[0141]	27.32	15.44	42.76	19.76	62.52	28.69	16.21	44.90	20.74	65.64	30.12	17.02	47.14	21.78	68.92	31.63	17.87	49.50	22.87	72.37	33.21	18.76	51.97	24.01	75.98
CED	154	Fensinger, Kate M[0154]	29.46	16.64	46.10	21.30	67.40	30.93	17.48	48.41	22.37	70.78	32.48	18.35	50.83	23.48	74.31	34.10	19.27	53.37	24.66	78.03	35.81	20.23	56.04	25.89	81.93
GAME	27	Nance, Michelle E[0027]	72.63	40.92	113.35	52.37	165.72	76.05	42.97	119.02	54.99	174.01	79.85	45.12	124.97	57.74	182.71	83.84	47.37	131.21	60.62	191.83	88.03	49.74	137.77	63.65	201.42
GAME	59	Weston, Kelly V[0059]	33.63	19.00	52.63	24.32	76.95	35.31	19.95	55.26	25.53	80.79	37.08	20.95	58.03	26.81	84.84	38.93	22.00	60.93	28.15	89.08	40.88	23.10	63.98	29.56	93.54
GAME	143	Hawkins, Lenessa E[0143]	42.49	24.01	66.50	30.72	97.22	44.61	25.20	69.81	32.25	102.06	46.84	26.46	73.30	33.86	107.16	49.18	27.79	76.97	35.56	112.53	51.64	29.18	80.82	37.34	118.16
GAME	155	Holmes, John E[0155]	24.49	13.84	38.33	17.71	56.04	25.71	14.53	40.24	18.59	58.83	27.00	15.26	42.26	19.52	61.78	28.35	16.02	44.37	20.50	64.87	29.77	16.82	46.59	21.52	68.11
Gen Gov	99	Hiskok, Emily A[0099]	44.31	25.04	69.35	32.04	101.39	46.53	26.29	72.82	33.64	106.46	48.86	27.61	76.47	35.33	111.80	51.30	28.98	80.28	37.09	117.37	53.87	30.44	84.31	38.95	123.26
Gen Gov		Gardner, Geraldine I[0107]	92.77	52.42	145.19	67.08	212.27	97.41	55.04	152.45	70.43	222.88	102.28	57.79	160.07	73.95	234.02	107.39	60.68	168.07	77.65	245.72	112.76	63.71	176.47	81.53	258.00
Gen Gov		Townsend, Virginia F[0147]	28.73	16.23	44.96	20.77	65.73	30.17	17.05	47.22	21.82	69.04	31.68	17.90	49.58	22.91	72.49	33.26	18.79	52.05	24.05	76.10	34.92	19.73	54.65	25.25	79.90
PLAN	36	Wager, Jason R[0036]	60.63	34.26	94.89	43.84	138.73	63.66	35.97	99.63	46.03	145.66	66.84	37.76	104.60	48.33	152.93	70.18	39.65	109.83	50.74	160.57	73.69	41.63	115.32	53.28	168.60
PLAN	122	Niess, Sarah M[0122]	36.89	2.95	39.84	18.41	58.25	38.73	3.10	41.83	19.33	61.16	40.67	3.25	43.92	20.29	64.21	42.70	3.42	46.12	21.31	67.43	44.84	3.59	48.43	22.37	70.80
PLAN	127	Murphy, Reaghan K[0127]	29.63	16.74	46.37	21.42	67.79	31.11	17.58	48.69	22.49	71.18	32.67	18.46	51.13	23.62	74.75	34.30	19.38	53.68	24.80	78.48	36.02	20.35	56.37	26.04	82.41
PLAN	128	Lowry, Luke J[0128]	29.40	16.61	46.01	21.26	67.27	30.87	17.44	48.31	22.32	70.63	32.41	18.31	50.72	23.43	74.15	34.03	19.23	53.26	24.61	77.87	35.73	20.19	55.92	25.84	81.76
PLAN	144	Upchurch, Megan L[0144]	37.47	21.17	58.64	27.09	85.73	39.34	22.23	61.57	28.45	90.02	41.31	23.34	64.65	29.87	94.52	43.38	24.51	67.89	31.37	99.26	45.55	25.74	71.29	32.94	104.23
PLAN	158	Heard, Lavery J[0158]	25.24	14.26	39.50	18.25	57.75	26.50	14.97	41.47	19.16	60.63	27.83	15.72	43.55	20.12	63.67	29.22	16.51	45.73	21.13	66.86	30.68	17.33	48.01	22.18	70.19
PLAN	161	Sailor, Dailyn K[0161]	30.29	17.11	47.40	21.90	69.30	31.80	17.97	49.77	22.99	72.76	33.39	18.87	52.26	24.14	76.40	35.06	19.81	54.87	25.35	80.22	36.81	20.80	57.61	26.62	84.23
PLAN	162	Jamison, Melissa R[0162]	21.00	11.87	32.87	15.19	48.06	22.05	12.46	34.51	15.94	50.45	23.15	13.08	36.23	16.74	52.97	24.31	13.74	38.05	17.58	55.63	25.53	14.42	39.95	18.46	58.41
PLAN		RIA Coordinator	37.57																								
		Finance	24.03	13.46																							

Fringe Rate Breakdown

FICA/Federal	9.26	9.26
workers comp/unemployment	0.54	0.54
retirement	18.27	18.26
health/dental/vision/other	16.69	15.2
vac, sick, holiday	11.91	11.91
life insu/short term dis	1.33	1.33
total	58	56.5

Detailed Budget Table

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	Personnel						
	Project Manager @ $80,000/yr, .5 FTE, with salary increase	$40,000	$42,500	$45,000	$47,500	$50,000	$225,000
	Project Staff @ $60,000 .5 FTE each year with salary increase	$30,000	$32,500	$35,000	$37,500	$40,000	$175,000
	TOTAL PERSONNEL	$70,000	$75,000	$80,000	$85,000	$90,000	$400,000
	Fringe Benefits						
	Full-time Employees @ 17% of salary	$11,900	$12,750	$13,600	$14,450	$15,300	$68,000
							$0
							$0
	TOTAL FRINGE BENEFITS	$11,900	$12,750	$13,600	$14,450	$15,300	$68,000
	Travel						
	Travel for conference and workshop presentations:						
	Airfare - $400 roundtrip @ 1 roundtrip per year	$400	$400	$400	$400	$400	$2,000
	Luggage Fees - $25 per flight @ 2 flights per year	$50	$50	$50	$50	$50	$250
	Hotel - $150 per day @ 3 days per year	$450	$450	$450	$450	$450	$2,250
	Per Diem - $71 per day @ 3.5 days per year	$248	$248	$248	$248	$248	$1,240
	Taxi - $45 per year	$45	$45	$45	$45	$45	$225
	Parking - $20 per day @ 4 days per year	$80	$80	$80	$80	$80	$400
	Mileage for local travel (500 miles per year at $0.655/mi)	$328	$328	$328	$328	$328	$1,640
	TOTAL TRAVEL	$1,601	$1,601	$1,601	$1,601	$1,601	$8,005
	Equipment						
	2 Building Thermal Imagers @ $9,000 each	$18,000					$18,000
							$0
	TOTAL EQUIPMENT	$18,000	$0	$0	$0	$0	$18,000
	Supplies						
	1 Laptop Computer @ $2,500 each	$2,500	$0	$0	$0	$0	$2,500
							$0
	TOTAL SUPPLIES	$2,500	$0	$0	$0	$0	$2,500
	Contractual						
	Contractor to perform 30 energy assessments per year at industrial facilities. Assumes 740 hours per assessment (pre-visit analysis, site visit, post-visit analysis, report with recommendations) @ $46/hr	$1,021,200	$1,021,200	$1,021,200	$1,021,200	$1,021,200	$5,106,000
	Contract for 10 small or medium-scale projects per year at industrial facilities (renewable energy, energy storage, energy efficiency, electrification, or energy planning). Assumes average cost $450,000/project	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$22,500,000
	Contract for 5 large-scale energy efficiency or decarbonization demonstration projects per year at industrial facilities (e.g., industrial heat pumps). Assumes average cost $3 million/project	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$75,000,000
							$0
	TOTAL CONTRACTUAL	$20,521,200	$20,521,200	$20,521,200	$20,521,200	$20,521,200	$102,606,000
	OTHER						
	Participant Support Costs: Stipends for 2 Summer Interns	$8,000	$8,000	$8,000	$8,000	$8,000	$40,000
	Participant Support Costs: Industrial Retrofit Rebates, 50 facilities/yr @ $200,000 each	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$50,000,000
							$0
	TOTAL OTHER	$10,008,000	$10,008,000	$10,008,000	$10,008,000	$10,008,000	$50,040,000
	TOTAL DIRECT	$30,633,201	$30,618,551	$30,624,401	$30,630,251	$30,636,101	$153,142,505
Indirect Costs	Indirect Costs						
							$0
							$0
	TOTAL INDIRECT	$0	$0	$0	$0	$0	$0
TOTAL FUNDING		$30,633,201	$30,618,551	$30,624,401	$30,630,251	$30,636,101	$153,142,505

Detailed Budget Table

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	Personnel						
	Project Manager @ $80,000/yr, .5 FTE, with salary increase	$40,000	$42,500	$45,000	$47,500	$50,000	$225,000
	Project Staff @ $60,000 .5 FTE each year with salary increase	$30,000	$32,500	$35,000	$37,500	$40,000	$175,000
	TOTAL PERSONNEL	$70,000	$75,000	$80,000	$85,000	$90,000	$400,000
	Fringe Benefits						
	Full-time Employees @ 17% of salary	$11,900	$12,750	$13,600	$14,450	$15,300	$68,000
							$0
							$0
	TOTAL FRINGE BENEFITS	$11,900	$12,750	$13,600	$14,450	$15,300	$68,000
	Travel						
	Travel for conference and workshop presentations:						
	Airfare - $400 roundtrip @ 1 roundtrip per year	$400	$400	$400	$400	$400	$2,000
	Luggage Fees - $25 per flight @ 2 flights per year	$50	$50	$50	$50	$50	$250
	Hotel - $150 per day @ 3 days per year	$450	$450	$450	$450	$450	$2,250
	Per Diem - $71 per day @ 3.5 days per year	$248	$248	$248	$248	$248	$1,240
	Taxi - $45 per year	$45	$45	$45	$45	$45	$225
	Parking - $20 per day @ 4 days per year	$80	$80	$80	$80	$80	$400
	Mileage for local travel (500 miles per year at $0.655/mi)	$328	$328	$328	$328	$328	$1,640
	TOTAL TRAVEL	$1,601	$1,601	$1,601	$1,601	$1,601	$8,005
	Equipment						
	2 Building Thermal Imagers @ $9,000 each	$18,000					$18,000
							$0
	TOTAL EQUIPMENT	$18,000	$0	$0	$0	$0	$18,000
	Supplies						
	1 Laptop Computer @ $2,500 each	$2,500	$0	$0	$0	$0	$2,500
							$0
	TOTAL SUPPLIES	$2,500	$0	$0	$0	$0	$2,500
	Contractual						
	Contractor to perform 30 energy assessments per year at industrial facilities. Assumes 740 hours per assessment (pre-visit analysis, site visit, post-visit analysis, report with recommendations) @ $46/hr	$1,021,200	$1,021,200	$1,021,200	$1,021,200	$1,021,200	$5,106,000
	Contract for 10 small or medium-scale projects per year at industrial facilities (renewable energy, energy storage, energy efficiency, electrification, or energy planning). Assumes average cost $450,000/project	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$4,500,000	$22,500,000
	Contract for 5 large-scale energy efficiency or decarbonization demonstration projects per year at industrial facilities (e.g., industrial heat pumps). Assumes average cost $3 million/project	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$15,000,000	$75,000,000
							$0
	TOTAL CONTRACTUAL	$20,521,200	$20,521,200	$20,521,200	$20,521,200	$20,521,200	$102,606,000
	OTHER						
	Participant Support Costs: Stipends for 2 Summer Interns	$8,000	$8,000	$8,000	$8,000	$8,000	$40,000
	Participant Support Costs: Industrial Retrofit Rebates, 50 facilities/yr @ $200,000 each	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$10,000,000	$50,000,000
							$0
	TOTAL OTHER	$10,008,000	$10,008,000	$10,008,000	$10,008,000	$10,008,000	$50,040,000
	TOTAL DIRECT	$30,633,201	$30,618,551	$30,624,401	$30,630,251	$30,636,101	$153,142,505
Indirect Costs	Indirect Costs						
							$0
							$0
	TOTAL INDIRECT	$0	$0	$0	$0	$0	$0
TOTAL FUNDING		$30,633,201	$30,618,551	$30,624,401	$30,630,251	$30,636,101	$153,142,505

Detailed Budget Table

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	**Personnel**						
	Project Manager @ $80,000/yr, .5 FTE, with salary increase	*$40,000*	*$42,500*	*$45,000*	*$47,500*	*$50,000*	*$225,000*
							$0
							$0
	TOTAL PERSONNEL	*$40,000*	*$42,500*	*$45,000*	*$47,500*	*$50,000*	*$225,000*
	Fringe Benefits						
	Full-time Employees @ 17% of salary	*$6,800*	*$7,225*	*$7,650*	*$8,075*	*$8,500*	*$38,250*
							$0
							$0
	TOTAL FRINGE BENEFITS	*$6,800*	*$7,225*	*$7,650*	*$8,075*	*$8,500*	*$38,250*
	Travel						
	Workforce development program:						
	Travel for conference and workshop presentations:						
	Airfare - $400 roundtrip @ 1 roundtrip per year	*$400*	*$400*	*$400*	*$400*	*$400*	*$2,000*
	Luggage Fees - $25 per flight @ 2 flights per year	*$50*	*$50*	*$50*	*$50*	*$50*	*$250*
	Hotel - $150 per day @ 3 days per year	*$450*	*$450*	*$450*	*$450*	*$450*	*$2,250*
	Per Diem - $71 per day @ 3.5 days per year	*$248*	*$248*	*$248*	*$248*	*$248*	*$1,240*
	Taxi - $45 per year	*$45*	*$45*	*$45*	*$45*	*$45*	*$225*
	Parking - $20 per day @ 4 days per year	*$80*	*$80*	*$80*	*$80*	*$80*	*$400*
	Mileage for local travel (500 miles per year at $0.655/mi)	*$328*	*$328*	*$328*	*$328*	*$328*	*$1,640*
	TOTAL TRAVEL	*$1,601*	*$1,601*	*$1,601*	*$1,601*	*$1,601*	*$8,005*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	2 Laptop Computer @ $2,500 each	*$5,000*	*$0*	*$0*	*$0*	*$0*	*$5,000*
							$0
	TOTAL SUPPLIES	*$5,000*	*$0*	*$0*	*$0*	*$0*	*$5,000*
	Contractual						
							$0
	TOTAL CONTRACTUAL	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	OTHER						
	Subaward for workforce ecosystem capacity building and coordination (e.g., partnerships, employer engagement, student recruitment, marketing)	*$75,000*	*$75,000*	*$75,000*	*$75,000*	*$75,000*	*$375,000*
	Subaward for pre-apprenticeship program for 300 students (including personnel and instructors; classroom instruction, hands-on training, curriculum, supplies, supportive services for students, and mentorship program)	*$125,000*	*$156,250*	*$156,250*	*$156,250*	*$156,250*	*$750,000*
	Subaward for registered apprenticeship program for 200 apprentices (including personnel and instructors; classroom instruction, on-the-job training, curriculum, supplies, employer incentives, supportive services for students). Note: apprenticeship wages paid by the employer in this example	*$333,332*	*$416,667*	*$416,667*	*$416,667*	*$416,667*	*$2,000,000*
							$0
							$0
							$0
	TOTAL OTHER	*$533,332*	*$647,917*	*$647,917*	*$647,917*	*$647,917*	*$3,125,000*
	TOTAL DIRECT	*$586,733*	*$699,243*	*$702,168*	*$705,093*	*$708,018*	*$3,401,255*
Indirect Costs	**Indirect Costs**						
							$0
							$0
	TOTAL INDIRECT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
TOTAL FUNDING		***$586,733***	***$699,243***	***$702,168***	***$705,093***	***$708,018***	***$3,401,255***

Detailed Budget Table

BUDGET BY YEAR							
COST-TYPE	CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Direct Costs	**Personnel**						
	Project Manager @ $80,000/yr, .5 FTE, with salary increases	*$40,000*	*$42,500*	*$45,000*	*$47,500*	*$50,000*	*$225,000*
	Project Staff @ $60,000 .5 FTE each year with salary increase	*$30,000*	*$32,500*	*$35,000*	*$37,500*	*$40,000*	*$175,000*
							$0
	TOTAL PERSONNEL	*$70,000*	*$75,000*	*$80,000*	*$85,000*	*$90,000*	*$400,000*
	Fringe Benefits						
	Full-time Employees @ 17% of salary	*$11,900*	*$12,750*	*$13,600*	*$14,450*	*$15,300*	*$68,000*
							$0
							$0
	TOTAL FRINGE BENEFITS	*$11,900*	*$12,750*	*$13,600*	*$14,450*	*$15,300*	*$68,000*
	Travel						
	Workforce development program:						
	Travel for conference and workshop presentations:						
	Airfare - $400 roundtrip @ 1 roundtrip per year	*$400*	*$400*	*$400*	*$400*	*$400*	*$2,000*
	Luggage Fees - $25 per flight @ 2 flights per year	*$50*	*$50*	*$50*	*$50*	*$50*	*$250*
	Hotel - $200 per day @ 3 days per year	*$600*	*$600*	*$600*	*$600*	*$600*	*$3,000*
	Per Diem - $71 per day @ 3.5 days per year	*$245*	*$245*	*$245*	*$245*	*$245*	*$1,225*
	Taxi - $45 per year	*$45*	*$45*	*$45*	*$45*	*$45*	*$225*
	Parking - $20 per day @ 4 days per year	*$80*	*$80*	*$80*	*$80*	*$80*	*$400*
							$0
	TOTAL TRAVEL	*$1,420*	*$1,420*	*$1,420*	*$1,420*	*$1,420*	*$7,100*
	Equipment						
							$0
							$0
	TOTAL EQUIPMENT	*$0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Supplies						
	1 Laptop Computer @ $2,500 each	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
							$0
	TOTAL SUPPLIES	*$2,500*	*$0*	*$0*	*$0*	*$0*	*$2,500*
	Contractual						
	Tribal Community Center Solar Project: 5 MW PV + 3 MW/12 MWh battery storage:						*$0*
	Storage system	*$0*	*$6,200,000*	*$0*	*$0*	*$0*	*$6,200,000*
	PV module and inverter	*$0*	*$3,142,000*	*$0*	*$0*	*$0*	*$3,142,000*
	Installation labor	*$0*	*$850,000*	*$0*	*$0*	*$0*	*$850,000*
	PV operation & maintenance/yr	*$0*	*$82,100*	*$82,100*	*$82,100*	*$82,100*	*$328,400*
	TOTAL CONTRACTUAL	*$0*	*$10,274,100*	*$82,100*	*$82,100*	*$82,100*	*$10,520,400*
	OTHER						
	Participant Support Cost: Environmental Intern @ $4000/yr summer stipend	*$4,000*	*$4,000*	*$4,000*	*$4,000*	*$4,000*	*$20,000*
							$0
							$0
							$0
							$0
							$0
	TOTAL OTHER	*$4,000*	*$4,000*	*$4,000*	*$4,000*	*$4,000*	*$20,000*
	TOTAL DIRECT	*$89,820*	*$10,367,270*	*$181,120*	*$186,970*	*$192,820*	*$11,018,000*
Indirect Costs	**Indirect Costs**						
	Indirect Cost Rate: 40% of full time personnel and fringe benefits	*$32,760*	*$35,100*	*$37,440*	*$39,780*	*$42,120*	*$187,200*
							$0
	TOTAL INDIRECT	*$32,760*	*$35,100*	*$37,440*	*$39,780*	*$42,120*	*$187,200*
TOTAL FUNDING		***$122,580***	***$10,402,370***	***$218,560***	***$226,750***	***$234,940***	***$11,205,200***

Documentation of GHG Reduction Assumptions

Methodology and Assumptions	Calculation
Program T1. Commercial Fleet and Fuel Transition Program	
Average Annual GHG Reductions per Vehicle Type: Emissions numbers are pulled from past NCDEQ VW/DERA awarded projects. Averages were used where possible, other numbers came from specific projects. Other vehicle types were calculated using the EPA's Diesel Emissions Quantifier tool. • Electric Class 4-7: 6.6375 short tons of CO2e (per VW Phase 2); Electric Class 8: 24.75 short tons of CO2e (per VW Phase 2); Electric Yard Tractors: 63.51 short tons of CO2e (per DERA); Electric LD: 4.7 short tons of CO2e (per AFLEET 2020 Defaults); Diesel Class 4-7: 2.03 short tons of CO2e (per EPA Diesel Emissions Quantifier Tool, VW 4-7 non-refuse diesel trucks); Diesel Class 8: 13.23 short tons of CO2e (VW Phase 2) **Vehicle Types:** Vehicle types were selected based on information gathered in NCDEQ awarded VW/DERA projects. **Number of Vehicles per Type**: Determined number of vehicles per vehicle type using vehicle costs from VW project and funding amount for replacements of $10,387,000. Total of 56 vehicles are transitioned to cleaner vehicles: • 16 Class 4-7 Trucks to electric ($262,600 per vehicle); 12 Class 8 Trucks to electric ($39,285 per vehicle); 10 Class 4-7 to clean diesel ($289,250 per vehicle); 8 Class 8 to clean diesel ($39,285 per vehicle); 10 Yard Tractors to electric ($39,285 per vehicle)	**Annual GHG Reductions for one Vehicle Type (short tons)** = Number of Vehicles per Type * Average Annual GHG Reductions per Vehicle Type (short tons) **Annual GHG Reductions for all Vehicle Types (short tons)** = Sum {Annual GHG Reductions for each Vehicle Type (short tons)} **Total GHG Reductions for all Vehicle Types from 2025-2030 (MT) =** Annual GHG Reductions for all Vehicle Types (short tons)* 5 (years) * 0.90718474 (conversion to MT) **Total GHG Reductions for all Vehicle Types from 2025-2050 (MT) =** Annual GHG Reductions for all Vehicle Types (short tons)* 25 (years)* 0.90718474 (conversion to MT)
Program T2. EV Charging Infrastructure	
Annual GHG Reductions for Each Port: The Afleet CFI tool was used to calculate the potential emissions reductions from the potential Level 2 ports. Moderate utilization was used and all other defaults for North Carolina utility grid were used in the Afleet CFI tool. This is a conservative approach since it does not account for continued vehicle population growth. **Per Afleet CFI, Level 2 EVSE Annual GHG reductions:** 9.1 short tons of CO2e **Number of Charging Ports**: Assumed cost per port = $8,254 (per NC VW charging ports projects) and $5,557,500 total funding for a total of 680 ports to be constructed **Charger Lifespan:** The expected life of a level 2 charger is 8-10 years. Assumed the chargers will remain active for the 25-year period, being maintained and replaced as needed.	**Annual GHG Reductions for all Ports (short tons)** = 700 * Average Annual GHG Reductions for Each Port (short tons) **Total GHG Reductions for all Ports from 2025-2030 (MT) =** Annual GHG Reductions for all Ports (short tons)* 5 (years) * 0.90718474 (conversion to MT) **Total GHG Reductions for all Ports from 2025-2050 (MT) =** Annual GHG Reductions for all Ports (short tons)* 25 (years) * 0.90718474 (conversion to MT)
Program T3. Government Fleet and Fuel Transition Program	
Average Annual GHG Reductions per Vehicle Type: Emissions numbers are pulled from past NCDEQ VW/DERA projects. Averages were used where possible, other numbers came from specific projects. The emissions estimate for light duty vehicles came from the AFLEET 2020 tool using the defaults. Other vehicle types were calculated using the EPA's Diesel Emissions Quantifier tool (see values in T1). **Number of Vehicles per Type**: Assumed number of vehicles per vehicle type using vehicle cost from VW project and funding amount for replacements of $30,360,175. Total of 169 vehicles are transitioned to cleaner vehicles: • 26 MD Class 4-7 Trucks to electric ($404,000 per vehicle); 18 MD Class 8 Trucks to electric ($445,000 per vehicle); 16 MD Class 4-7 to clean diesel ($132,353 per vehicle); 11 MD Class 8 to clean diesel ($157,140 per vehicle); 8 MD Yard Tractors to electric ($317,684 per vehicle); 90 Light-Duty Vehicles to electric ($60,000 per vehicle)	**Annual GHG Reductions for one Vehicle Type (short tons)** = Number of Vehicles per Type * Average Annual GHG Reductions per Vehicle Type (short tons) **Annual GHG Reductions for all Vehicle Types (short tons)** = Sum {Annual GHG Reductions for each Vehicle Type (short tons)} **Total GHG Reductions for all Vehicle Types from 2025-2030 (MT) =** Annual GHG Reductions for all Vehicle Types (short tons)* 5 (years) * 0.90718474 (conversion to MT)

Methodology and Assumptions	Calculation
Vehicle Types: Vehicle types were selected based on information gathered in NCDEQ VW/DERA projects.	**Total GHG Reductions for all Vehicle Types from 2025-2050 (MT) =** Annual GHG Reductions for all Vehicle Types (short tons)* 25 (years) * 0.90718474 (conversion to MT)
Program T4. Port Operations Decarbonization	
Truck Miles Diverted: Avoided CO2e for trucks estimated using total number of containers diverted from trucks (1 container/truck) to trains (200 containers/train for Charlotte, 234 containers/train for Rocky Mount); mileage from the Port of Wilmington to Charlotte (206 mi one way) or Rocky Mount (169 mi one way). To Charlotte, emissions were estimated incremental to existing shipments; therefore, container shipments diverted to train would not occur until 2036. The in-land port in Rocky Mount is new; therefore, container shipments diverted to train would start in 2025 (per EPA Emissions Factors for GHG Inventories, Table 2 Mobile Combustion CO2). **Increased Rail Fuel:** Increase in CO2e for trains estimated using total amount of incremental rail fuel consumed by transporting containers diverted from trucks. Incremental fuel consumption was based on estimate of the additional rail revenue ton miles using an average weight of the cargo per container (40 tons/train car), transport distance from Port of Wilmington to Charlotte or Rocky Mount (206 mi, 169 mi), and number of containers transferred from trucks to trains. The Association of American Railroads reports rail fuel efficiency in 2018 at about 470 ton-miles of cargo hauled per gallon of fuel on average. The inverse of this value (0.00188 gallon per revenue ton mile) was multiplied by total revenue ton miles to estimate total fuel consumption. **Emissions Factors:** Standard VMT emissions reductions factors were used for truck and rail calculated using EPA website. Assumed CO2 per mile (heavy truck): 1646.774194 grams (per EPA Emissions Factors for GHG Inventories, Table 2 Mobile Combustion CO2, GHG Equivalencies Calculator) Assumed CO2 per gallon (rail): 10,180 grams (per Association of American Railroads, The Environmental Benefits of Moving Freight by Rail). **Time Period:** The CO2 emission reductions calculated for this measure were estimated for 2025-2040 and held constant for 2045-2050 – estimated capacity limit of 50,000/yr rail containers hit in 2040.	**Reduced Annual Emissions from Decreased Trucks (MT of CO2e)** = Truck miles diverted per year (grams) * CO2 per mile **Increased Annual Emissions from Rail (MT of CO2e)** = Increased Rail Fuel Consumed (gal) * CO2 per gallon **Annual GHG Reductions (MT of CO2e) =** Increased Annual Emissions from Rail (MT of CO2e) - Reduced Annual Emissions from Decreased Trucks (MT of CO2e) **Total GHG Reductions from 2025-2030 (MT of CO2e) =** Sum {Annual GHG Reductions (MT of CO2e) 2025: Annual GHG Reductions (MT of CO2e) 2030} **Total GHG Reductions from 2025-2050 (MT of CO2e) =** Sum {Annual GHG Reductions (MT of CO2e) 2025: Annual GHG Reductions (MT of CO2e) 2050}
Program T5. Pedestrian VMT Program0	
GHG Reductions from Single Trip: Used CMAQ tool to determine GHG reductions from a single trip. Assumed average trip distance of 1 mile (above 1 mile most people choose to take motorized travel). **Number of Trips / Day:** Assumed 100 trips per day (out of 5000 trips) in targeted regions would switch from motorized to pedestrian (based on North Carolina DOT data that ~2% of trips adjust to new modes with new infrastructure) **Number of Projects:** 11 pedestrian infrastructure projects were proposed under this measure using individual project costs determined by NCDOT and total funding of $11,811,825.	**GHG Reductions / Day / Project (kg CO2e) =** Number of Trips / Day * GHG Reductions from Single Trip **Annual GHG Reductions for all Projects (MT CO2e) =** GHG Reductions / Day / Project (kg CO2e) * 365 (days/year) * 11 (number of projects) * 0.001 (conversion to MT) **Total GHG Reductions for all Vehicle Types from 2025-2030 (MT of CO2e) =** Annual GHG Reductions for all Projects (MT CO2e)* 5 (years) **Total GHG Reductions for all Vehicle Types from 2025-2050 (MT of CO2e) =** Annual GHG Reductions for all Projects (MT CO2e)* 25 (years)
Program B1. Weatherization+ Assistance Program	
Total budget: $14,430,000 **Average cost of WAP+ measures/home:** $15,000	**Total NG Emissions (MT)** = National Average Annual Elec. Use (kwh) * Gas National Emissions Factor (MT)

Methodology and Assumptions	Calculation
National Average Annual Elec. Use = Calculation based on EIA Residential Energy Consumption Survey data (converted kwh to mwh) **Rate of energy reduction:** 19%; Calculation assumes rate of energy bill savings match rate of energy consumption reductions from WAP+ measures **Energy Bill Savings Rate from WAP+** = 19%; Calculation is based on the total savings from WAP divided by total energy bills to determine the savings rate **National Average Annual Elec. Uses** = 19%; Calculation is based on EIA Residential Energy Consumption Survey Data (converted CCF to therms) **Annual Weatherization Savings ($/Year):** $372; This value is based on DOE's WAP fact sheet for "energy savings." While not perfect, this can be used to interpolate a reduction in energy use. **Average annual residential electricity costs** = $1,380; Value is based on the EIA Residential Energy Consumption Survey – data is nationwide since WAP savings is nationwide **Average annual residential natural gas costs** = $630; Value is based on the EIA Residential Energy Consumption Survey – data is nationwide since WAP savings is nationwide **National Average NG Use (CCF)** = 563; Based on the EIA Residential Energy Consumption Survey Data **Gas National Emissions Factor:** .00531 MT **Elec. National Emissions Factor:** .375346 MT	**Total number of homes (rounded down)** = Total budget / (Average Cost of WAP+ Measures/Home) **Total Elec. Emissions** = National Average Annual Elec. Use (mwh) * Elec. National Emissions Factor (MT) **Total Energy Emissions/Home (MT)** = Total Elec. Emissions + Total NG Emissions **Total GHG Reductions (Elec. And NG)** = (Total Energy Emissions/Home) * Rate of Energy Reduction **Total GHG Reductions from 2025 – 2030 (MT)** = Total GHG Reductions (Elec. And NG) * Total number of homes (rounded down) **Total GHG Reductions from 2025 – 2050 (MT)** = Total GHG Reductions from 2025 – 2030 * 5 (years)
Program B2. State Building Decarbonization and Efficiency	
Total budget: $19,200,000 **Average cost of ECM:** $300,000; Value is based on the approximate average of lower-cost projects from WRP for NC state buildings **Rate of Energy Reduction** = 20%; Value is a standard assumption **National average elec. Use/ Building:** Calculation based on the DOE Average Commercial Buildings Use Per Square Foot (converted from kwh to mwh) and Average Public Building Size • Average Commercial Buildings Elec. Use/Square Foot: 22.5 kwh; Value based on the EIA CBECs average commercial building use • Average Public Buildings Size: Approximately 20,000 square feet **Elec. National Emissions Factor (MT):** 0.375346 MT/MWH; Value based on lb CO2e per MWH (converted lb to MT) **National Average NG Use/Sq. Foot (Therms):** 0.000700; Value based on EIA CBECs (converted Mbtu to Therms Unit) **Gas National Emissions Factor (MT):** 0.00531 MT/Therm	**Total NG Emissions (MT)** = (National Average NG Use/ Sq. foot) * Gas National Emissions Factor (MT) **Total number of Projects (rounded down)** = Total budget / Average Cost of ECM **Total Elec. Emissions** = (National Average Elec. Use / Building) * Elec. National Emissions Factor (MT) **Total Energy Emissions/Building (MT)** = Total Elec. Emissions + Total NG Emissions **Total GHG Reductions (Elec. And NG)** = (Total Energy Emissions/Building) * Rate of Energy Reduction **Total GHG Reductions from 2025 – 2030 (MT)** = Total GHG Reductions (Elec. And NG) * Total number of projects (rounded down) **Total GHG Reductions from 2025 – 2050 (MT)** = Total GHG Reductions from 2025 – 2030 * 5 (years)
Program B3. Local Public Building Decarbonization and Efficiency	
Total budget: $23,830,000 **Average cost of ECM:** $300,000; Value is based on the approximate average of lower-cost projects from WRP for NC state buildings **Total GHG Reductions (Elec. And NG):** Calculation assumes even split between NG and elec. **Rate of Energy Reduction** = 20%; Value is a standard assumption	**Total NG Emissions (MT)** = (National Average NG Use/ Sq. foot) * Gas National Emissions Factor (MT) **Total Elec. Emissions** = (National Average Elec. Use / Building) * Elec. National Emissions Factor (MT)

Methodology and Assumptions	Calculation
National average elec. Use/ Building: Calculation based on the DOE Average Commercial Buildings Use Per Square Foot (converted from kwh to mwh) and Average Public Building Size • Average Commercial Buildings Elec. Use/Square Foot: 22.5 kwh; Value based on the EIA CBECs average commercial building use • Average Public Buildings Size: Approximately 20,000 square feet **Elec. National Emissions Factor (MT):** 0.375346 MT/MWH; Value based on lb CO2e per MWH (converted lb to MT) **National Average NG Use/Sq. Foot (Therms):** 0.000700; Value based on EIA CBECs (converted Mbtu to Therms Unit) **Gas National Emissions Factor (MT):** 0.00531 MT/Therm	**Total number of Projects (rounded down) =** Total budget / Average Cost of ECM **Total Energy Emissions/Building (MT)** = Total Elec. Emissions + Total NG Emissions **Total GHG Reductions (Elec. And NG)** = (Total Energy Emissions/Building) * Rate of Energy Reduction **Total GHG Reductions from 2025 – 2030 (MT)** = Total GHG Reductions (Elec. And NG) * Total number of projects (rounded down) **Total GHG Reductions from 2025 – 2050 (MT)** = Total GHG Reductions from 2025 – 2030 * 5 (years)
Program I1. Industrial Electrification, Efficiency, and Process Emissions Reduction	
Total Funding: $4,500,000 **Percentage of Energy Audits that lead to Project Implementation**: 65% per current program with WRP **Total Implementation Funding:** Assumed "low-hanging fruit" projects (e.g. replacing lightbulbs) will be implemented following energy audit with no additional CPRG investment per current WRP program. WRP program estimates 150 facilities to be supported given total funding. WRP estimates $52,601,250 total funding based on current project costs to implement low-hanging fruit projects across all facilities receiving energy audits. **Emissions Factor:** Assume Investment Factor of $8/MTCO2e for low-hanging fruit energy efficiency projects per WRP program. WRP estimates $350,000 per facility would result in approximately 440 MT CO2e reductions at the facility. **Years to Implement:** Assume 3 years to implement over 2025-2030 period and 20 years over 2025-2050 period.	**Funding associated with Project Implementation ($) =** Total Funding ($) * Percentage of Energy Audits that lead to Project Implementation **Percentage of Implementation Funding associated with CPRG (%) =** Funding associated with Project Implementation ($) / Total Implementation Funding ($) **Annual GHG Reductions (MT CO2e)** = (Funding Associated with Project Implementation ($) * Percentage of Implementation Funding associated with CPRG (%)) / Investment Factor ($/MT) **Total GHG Reductions from 2025-2030 (MT CO2e) =** Annual GHG Reductions (MT CO2e) * 3 **Total GHG Reductions from 2025-2050 (MT CO2e) =** Annual GHG Reductions (MT CO2e) * 20
Program I2. Industrial Decarbonization Workforce Development: This workforce development program will enable other programs to achieve GHG emissions reductions but will not directly reduce emissions alone.	
Program I3. Industrial Decarbonization Loan Fund	
Loan Fund Assumptions: • % of CPRG Measure: 45%; Total CPRG Funding: $15,000,000; % Leverage Estimate: 200%; • Direct Funds Invested: $6,750,000; Calculation based off proposed funding directed to this program; Funds Leveraged: $13,500,000; Calculation based off % Leverage Estimate of Direct Funds Invested **Factor Investment:** Factor Investment ($/MMBtu): $46.8; Calculation is based on the average of WRP – EPA Carbon Road Mapping Project (Automotive mfg 2023, Textiles mfg 2023, Aluminum Foundry 2024) and WRP optics mfg 2023. **Factor Investment ($/MTCO2e):** $566; Calculations is based on the average of WRP – EPA Carbon Road Mapping Project (Automotive mfg 2023, Textiles) and WRP optics mfg 2023. WRP data comes from recent EPA funded project, "Net Zero Carbon Road Mapping for NC Manufacturers" and historic empirical data from performing approximately 600 energy assessment in C/I/I sectors.	**Annual Loan Program GHG Reductions (MT)** = Funds Leveraged / (Factor: Investment $/MTCO2e) **Funds Leveraged** = Direct Funds Invested * (% Leverage Estimate) **Direct Funds Invested** = (% of CPRG Measure) * Total CPRG Funding **Total GHG Reductions from 2025-2030 (MT) =** Annual Loan Program GHG Reductions * 5 (years) **Total GHG Reductions from 2025-2050 (MT) =** Annual Loan Program GHG Reductions * 25 (years)
Program W1. Organic Waste Reduction	

Methodology and Assumptions	Calculation
School Refrigerator Assumptions: • Number of Schools = 1,250; Calculation is based on half of the number of NC Schools • Total Cost of Refrigerator/School: $875,000; Number of Schools*Average Refrigerator Cost ($700) **General Organic RFP Assumptions:** • Total funding amount: $3,494,999; Estimated Cost/Program: $160,000 • Food waste diverted from a landfill(lb/YR): 300,000lbs; Food waste calculation is based on the Morrisville Food Diversion Program • Number of Programs: 21; Total funding amount/(Estimated cost/program) • Amount of Food Waste Diverted (tons) 3276.56 tons; Cost of Disposal ($/ton): $31 **Morrisville Food Waste Assumptions:** • Annual Food Waste Diverted from Landfill Emissions: 75.22 MT; Food Waste Diverted and Composted: 22.82 MT; Food waste diverted from a landfill (tons/yr) 150 tons; (Food waste diverted from a landfill(lb/YR)/2000); Food waste diverted from a landfill(lb/YR): 300,000lbs; Food waste calculation is based on the Morrisville Food Diversion Program • Morrisville Food Diversion Program = $130,000 **Backyard Composting Assumptions:** • GHG from Landfilling: 8692 MT; Calculation is based on the WARM Model; GHG from Composting: -2637 MT; Calculation is based on the WARM Model • Food Waste (lb/gal): 3.8lbs • Backyard Composting (capacity lb/4-6 weeks): 304lbs; Backyard Composting (80Gls)*Food Waste (lb/Gl); Backyard Composting (capacity lbs/YR): 2,635lbs; (52/6*Backyard Composting (capacity lb/4-6 weeks)) • Backyard Program: $500,000	**Annual School Refrigerator Reductions** = 2821 MT **Annual General Organics RFP Reductions** = 2141 MT **Annual Morrisville Food Waste Reductions (MT)** = Food Waste Diverted from Landfill Emissions – Food Waste Diverted and Composted **Annual Backyard Composting Reductions (MT)** = (GHG from Landfilling/YR) – (GHG from Composting/YR) **Annual GHG Reductions for all Organic Waste Strategies** = Sum {Annual GHG Reductions for each Organic Waste Strategy} **Total GHG Reductions for all Organic Waste Strategies from 2025-2030 (MT) =** Annual GHG Reductions for all Organic Waste Strategies * 5 (years) **Total GHG Reductions for all Organic Waste Strategies from 2025-2050 (MT) =** Annual GHG Reductions for all Organic Waste Strategies * 25 (years)
Program W2. Waste Operations Electrification and Decarbonization	
Number of Waste Trucks: • Remaining RFP Funds: $2,000,000 • Cost/EV Truck: $250,000 • Number of Wake Forest Demo Trucks: 8 • Number of RFP Trucks: 8; Determined number of trucks using vehicle costs from Wake Forest Demo and funding amount under Remaining RFP Funds. **Miles Driven Per Truck:** Miles Driven/Truck: 23,400 miles. Miles driven is based off literature citing about 25,000 miles/year. Therefore, our assumption is conservative. • Fuel price (private): $4.68 Fuel Economy (MPDGE): 1.7 • Determined use of Low Nox Engine by confirmation with a private company. • Days Trucks are Operated: 255 days **Emission Factors:** • Diesel GHG Emissions/YR: 171.91 MT CO2e • EV GHG Emissions/YR: 71.85 MT CO2e	**Annual Wake Forest Demo Reductions** = Number of Wake Forest Demo Trucks * Annual GHG Emissions Difference (MT) **Total RFP Reductions** = Cost Difference/EV * Annual GHG Emissions Difference (MT) **Annual GHG Emissions Difference (MT)** = (Difference in GHG Emissions/YR) **Difference in GHG Emissions/YR (MT)** = (Diesel GHG Emissions/YR)*(EV GHG Emissions/YR) **Annual GHG Reductions for one Waste Operation Strategy** = Number of Waste Trucks * Average Annual GHG Emissions Difference **Annual GHG Reductions for all Waste Operations Strategies** = Sum {Annual GHG Reductions for each Waste Operations Strategy}

Methodology and Assumptions	Calculation
	Total GHG Reductions for all Waste Operations Strategies from 2025-2030 (MT) = Annual GHG Reductions for all Waste Operations Strategies * 5 (years) **Total GHG Reductions for all Waste Operations Strategies from 2025-2050 (MT)** = Annual GHG Reductions for all Waste Operations Strategies* 25 (years)
Program W3. Landfill Gas Reductions	
Total Funding: $4,499,999 **Cost/Acre:** $1,00,000 **Reductions/Acre (MT):** 450 MT CO2eq. Assumption is based on the average that 300-600 tons CO2eq/year is used	**Project Minimum** = (Cost/Acre) * 10 **Total Acres from Program** = Total Funding / Project Minimum (10 acres) * 10 **Total GHG Reductions from 2025-2030 (MT)** = Total Acres from Program * Reductions Per Acre (MT CO2eq/year) * 5 **Total GHG Reductions from 2025-2050 (MT)** = Total Acres from Program * Reductions Per Acre (MT CO2eq/year) * 25

MSAs:

Methodology and Assumptions	Calculation
Program CPRC1. Building EE and Emissions Reduction	
Average cost of WAP+ Measures/Home: Assumed $15,000 **Total Budget for WAP+ Implementation:** $950,000 **National Average Annual Elec. Use:** Value based on EIA Residential Energy Consumption Survey Data (converted kwh to mwh) **Elec. National Emissions Factor (MT):** 0.375346 MT; Value based on lb CO2e/mwh (standard lb to MT conversion) **Rate of Energy Reduction for WAP+:** 19%; Value assumes rate of energy bill savings matches rate of energy consumption reductions from WAP+ measures **National Average Annual NG Use (therms):** 583.83; Value based on EIA Residential Energy Consumption Survey data (converted CCF to Therms Unit; CCF * 1.037) **Gas National Emissions Factor:** 0.00531 MT **Average Annual Residential Energy (Elec. + NG) Costs:** $2,010; Value based on EIA Residential Energy Consumption Survey – data is nationwide since WAP Savings in Nationwide **Average Weatherization Savings ($/Year):** $372; This value is based on DOE's WAP fact sheet for energy savings". While not perfect, this can be used to interpolate a reduction in energy use.	**Total NG Emissions for WAP+ =** National Average Annual NG use (therms) * Gas National Emissions Factor (MT) **Total Elec. Emissions for WAP+** = National Average Annual Elec. Use (mwh) * Elec. National Emissions Factor (MT) **Total MT Reductions (Elec. + NG) for WAP+** = Total Elec. Emissions + Total NG Emissions **Total Number of Homes for WAP+** = Total Budget for Implementation / (Average Cost of WAP+ Measures/Home) **Annual GHG Reductions for WAP+** = Total MT Reductions (elec. + NG) * Total Number of Homes (Rounded Down) **5 year GHG Reductions for WAP+ (MT)** = Annual MT * 5 (years) **25 year GHG Reductions for WAP+ (MT)** = Annual MT * 25 (years) **Total Elec. Emissions** = National Average Elec. Use Per Building (mwh) * Elec. National Emissions Factor **Total NG Emissions** = National Average NG Use per Sq. Foot * Gas National Emissions Factor **Total Energy Emissions per Building (Elec. + NG)** = Total Elec. Emissions + Total NG Emissions **Total MT Reductions (Elec. + NG) for Non-Res.** = Total Energy Emissions per Building (Elec. + NG) * Rate of Energy Reduction **Total Number of Projects (Rounded Down)** = Total budget / Average Cost of ECM **5 year GHG Reductions for Non-Res.** = Total MT Reductions (Elec. + NG) * Total Number of Projects (Rounded Down) **25 year GHG Reductions for Non-Res.** = 5 year GHG Reductions for Non-Res * 5 (years) **Total GHG Reductions from 2025-2030 (MT)** = SUM {Total GHG Reductions from 2025 - 2030 for each Building Type}

Methodology and Assumptions	Calculation
Total Budget: $4,037,500 **Average Cost of ECM:** $300,000; Value based on approximate average of lower-cost projects from WRP for NC State Buildings **Total MT Reductions (Elec. + NG) for Non-Res.:** Calculation assumes even split between NG and elec. **Rate of Energy Reduction:** Assumed 20% **National Average Elec. Use Per Building:** 450mwh; Calculation based on DOE Average Commercial Building using 22.5 kwh per sq. foot and average public building size approximately 20,000 square feet **National Average NG Use Per Sq. Foot:** 0.000700 therms; Value based on EIA CBECs (Mbtu to Therms Conversion)	**Total GHG Reductions from 2025-2050 (MT) =** SUM {Total GHG Reductions from 2025 - 2050 for each Building Type}
Program CPRC2. VMT Reductions	
Gasoline Vehicle FE: Assumed 22 mpg **Intervention Lifetime:** Assumed 10 years **Number of E-bikes/Scooters:** Assumed 200 **Car Use avoided/ car:** Assumed 1,000 miles/year **Motor Gasoline Heating Value** (0.125 mmBtu/gallon) and **Motor Gasoline CO2e** (70.469 kg/mmBtu) values pulled from the solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. **Avoided Miles:** Assumed 12,000 miles **Annual Miles per van:** Assumed 8,000 miles **Number of Electric Vans:** Assumed 19 vans, 15 passengers/van **Gasoline Vehicle Occupancy:** 1.6 **kg Co2e reduced per day per project:** 37.41kg; Value pulled from CMAQ tool	**Miles Avoided** = Intervention Lifetime (years) * Number of E-bikes/Scooters * (Car use avoided / Car) **Gasoline Avoided (Gallons)** = Miles Avoided / Gasoline Vehicle FE **Gasoline GHG Emissions Avoided (MT)** = Gasoline Avoided (Gallons) * Motor Gasoline Heating Value (mmBtu/gallon) * Motor Gasoline CO2e (kg/mmBtu) / 1000 **Avoided Gasoline (Gallons)** = Avoided miles / Gasoline Vehicle FE **Avoided Gasoline Emissions (MT)** = Avoided Gasoline (Gallons) * Motor Gasoline Heating Value (mmBtu/gallon) * Motor Gasoline CO2e (kg/mmBtu) / 1000 **Total GHG Reductions from 2025 - 2030 for Fares/Micro mobility =** (Gasoline GHG Emissions Avoided + Avoided Gasoline Emissions) – (E-bike/Scooter GHG Emissions) **Total GHG Reductions from 2025 - 2050 for Fares/Micro mobility =** Total GHG Reductions from 2025 - 2030 for Fares/Micro mobility * 5 (years) **Displaced Vehicle Miles** = Annual Miles per Van * Number of Electric Vans / Gasoline Vehicle Occupancy **Displaced Gasoline (Gallons)** = Displaced Vehicle Miles / Gasoline Vehicles FE **Annual Reductions for EVs** = Displaced Gasoline (Gallons) * Gasoline Heating Value (mmBtu/gallon) * Motor Gasoline CO2e (kg/mmBtu) / 1000 **Total GHG Reductions from 2025 - 2030 for EVs =** Annual Reductions for EVs * 5 (years) **Total GHG Reductions from 2025 - 2050 for EVs =** Annual Reductions for EVs * 20 (years) **kg Co2e reduced across VMT projects** = (kg Co2e reduced per day per project) * 365 (days in a year) *2 (projects) * 5 (total years) **Total GHG Reductions from 2025 - 2030 for VMTs =** Total kg CO2e Reduced * 0.0001 (Conversion of kg to MT) **Total GHG Reductions from 2025 - 2050 for EVs =** Total GHG Reductions from 2025 – 2030 for VMTs * 5 (years) **Total GHG Reductions from 2025-2030 (MT) =** SUM {Total GHG Reductions from 2025 - 2030 for each VMT Type} **Total GHG Reductions from 2025-2050 (MT) =** SUM {Total GHG Reductions from 2025 - 2050 for each VMT Type}

Methodology and Assumptions	Calculation
Program C1. Building Decarbonization	
Industrial Buildings: • Direct Funds Invested: $1,076,013 • Factor: Investment $ / MT: $566 • Factor: Investment $ / MMBtu: $46.80 **MUD:** • Units possible per $10k: 270 units; Calculation based on total budget divided by cost per unit • Total Budget: $2,706,706 • Cost per Unit: Assumed $10,000 • Annual GHG Savings (lbs): 1,516,725 lbs; Calculation based on units possible per $10k * 5,617.5 • Lifetime GHG Savings (lbs): 30,334,500 lbs; Calculation based on units possible per $10k * 112,350 • Lifetime Energy Savings (MWh): 19,421,10 MWh; Calculation based on units possible per $10k * 71.93	**Annual Energy Reduction Outcome for Industrial Buildings (MMBtu)** = Direct Funds Invested / (Factor: Investment $ / MMBtu) **Annual GHG Reductions Outcome for Industrial Buildings (MT)** = Direct Funds Invested / (Factor: Investment $/MT) **2025 – 2030 GHG Reduction, 2 year implementation for Industrial Buildings (MT)** = Annual GHG Reductions Outcome (MT) * 3 (years) **2025 – 2050 GHG Reduction, 2 year implementation for Industrial Buildings (MT)** = Annual GHG Reductions Outcome (MT) * 20 (years) **Annual GHG Reductions for MUDs (MT)** = Units possible per $10k * 2.54 **5 year GHG Reductions for MUDs (MT)** = Annual MT * 5 (years) **25 year GHG Reductions for MUDs (MT)** = Annual MT * 25 (years) **Total GHG Reductions from 2025-2030 (MT)** = SUM {Total GHG Reductions from 2025 - 2030 for each Building} **Total GHG Reductions from 2025-2050 (MT)** = SUM {Total GHG Reductions from 2025 - 2050 for each Building}
Program C2. VMT Reductions	
VMT: • Total years: 5 years • Number of Projects: 5 projects • kg CO2e Reduced / Day / Project: Value pulled from CMAQ tool **Transit Rider Support:** Motor Gasoline Heating Value (mmBtu/gallon) and Motor Gasoline CO2e (kg/mmBtu) values pulled from the solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98; Mandatory Reporting of Greenhouse Gases; Final Rule, 17Dec10, 81 pp. • Gasoline vehicle FE: Assumed 22 mpg • Car use avoided / pass: Assumed 730 miles/year • Number of Transit Passes: Assumed 200 • Intervention Lifetime: Assumed 5 years **Access Solutions:** • Car use avoided/bike: Assumed 1,608 miles / year • Number of e-bikes: Assumed 400 • E-bike Lifecycle CO2 emissions (g/km): Assumed 22 g/km • Intervention Lifetime: Assumed 10 years	**Total kg CO2e reduced across all VMT projects** = (kg CO2e reduced / day / project) * 365 (Days in a year) * Total Years * Number of projects **Total VMT GHG Reductions for 5 years (MT)** = Total kg CO2e Reduced * 0.001 (Conversion of kg to MT) **Total VMT GHG Reductions for 25 years (MT)** = Total VMT GHG Reductions for 5 years * 5 (years) **Miles Avoided Annually for Transit Rider Support** = (Car use avoided / pass) * Number of Transit Passes **Gasoline Avoided for Transit Rider Support (gallons) =** Miles Avoided Annually / Gasoline Vehicle FE (mpg) **Annual Transit Rider Support GHG Reductions (Gasoline)** = Gasoline Avoided (gallons) * Motor Gasoline Heating Value (mmBtu/gallon) * Motor Gasoline CO2e (kg/mmBtu) / 1000 **Total Transit Rider Support GHG Reductions for 5 years (MT)** = Annual Transit Rider Support GHG Reductions (Gasoline) * 5 (years) **Total Transit Rider Support GHG Reductions for 25 years (MT)** = Total Transit Rider Support GHG Reductions for 5 years * 5 (years) **Miles Avoided Annually for Access Solutions (Miles/ Year)** = (Car use avoided/bike) * Number of E-bikes **Annual Access Solutions GHG Reductions (E-bike emissions)** = Miles Avoided Annually * 1.61 * E-bike Lifecycle CO2 emissions (g/km) / 1000 / 1000 **Total Access Solutions GHG Reductions for 5 years (MT)** = Annual Access Solutions GHG Reductions * 5 (years) **Total Access Solutions GHG Reductions for 25 years (MT)** = Total Access Solutions GHG Reductions for 5 years * 5 **Total GHG Reductions from 2025-2030 (MT)** = SUM {Total GHG Reductions from 2025 - 2030 for each VMT Type} **Total GHG Reductions from 2025-2050 (MT)** = SUM {Total GHG Reductions from 2025 - 2050 for each VMT Type}

Low-Income and Disadvantaged Communities (LIDACs) Measurement Approach

To track, measure, and report benefits over time, NCDEQ will employ measured and modeled approaches. NCDEQ will capture actual KPI data whenever possible. A modeled approach where actual data accruing to specific census tracts is not easily or accurately measured may be necessary. Using GIS, the project impact area will be overlaid with the LIDAC map, then KPI data for the project tracked proportionally across the impacted census tracts, as shown in Figure 8. The project and portfolio dashboard insights, shown in Figure 9, inform decisions, help identify opportunities for improvement, and communicate achieved benefits transparently to stakeholders. Figures 1-7 depict geospatial maps of North Carolina's LIDACs for the Building, Industry, and Waste sectors programs.

Figure 1: Building Sector

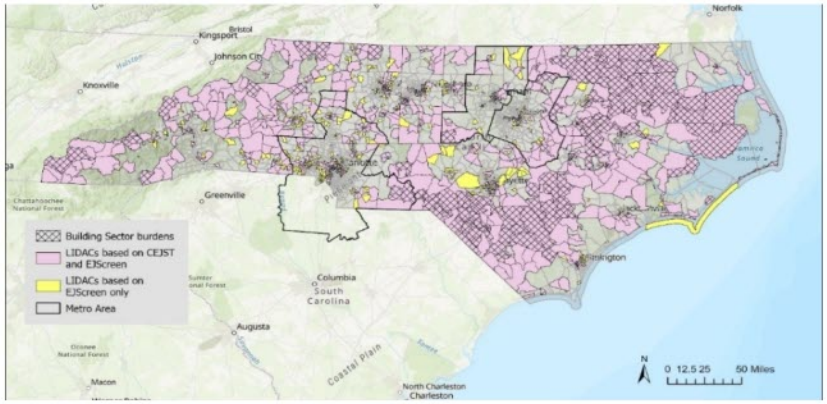

Figure 2: Building Sector WAP Deferrals (7/1/2008 – 6/30/2018)

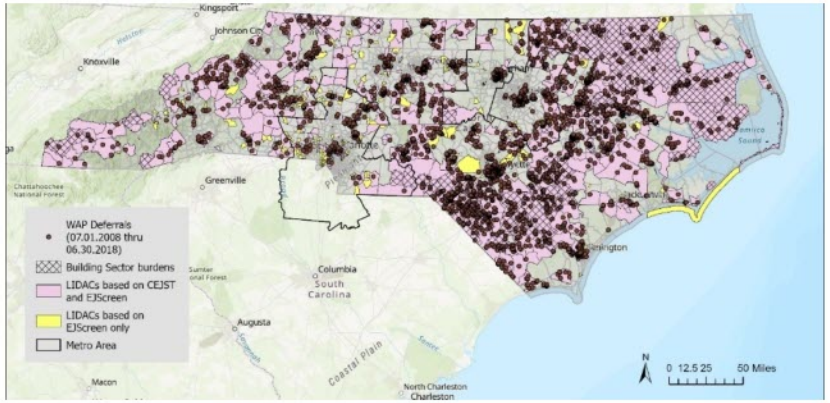

Figure 3: Building Sector WAP Deferrals (7/1/2008 - 8/17/2023)

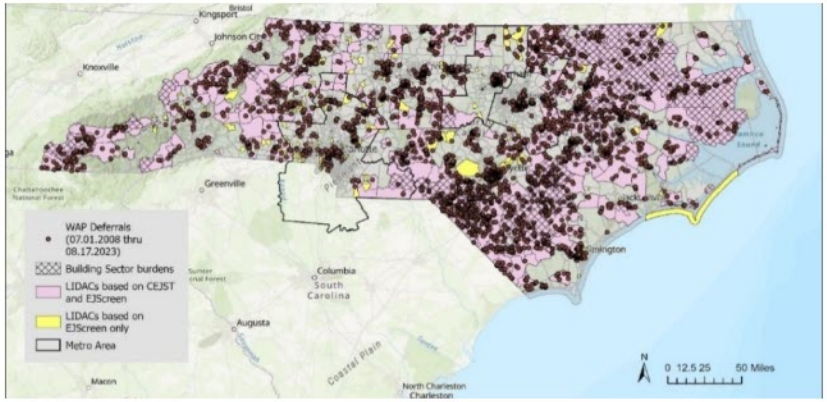

Figure 4: Building Sector WAP Deferrals (7/1/2018 - 8/17/2023)

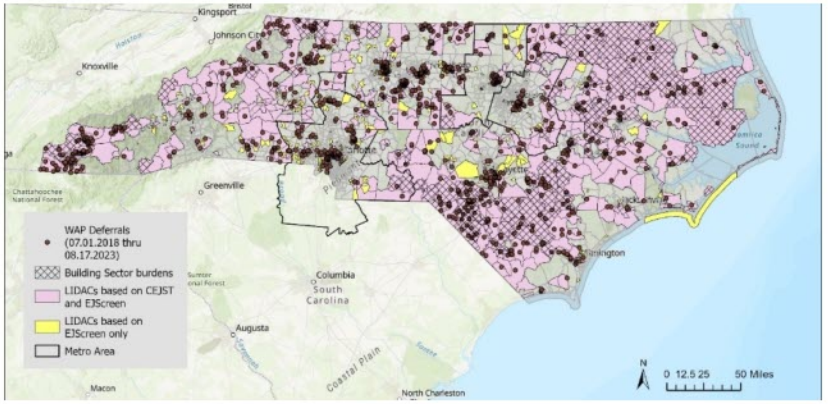

Figure 5: Industry Sector

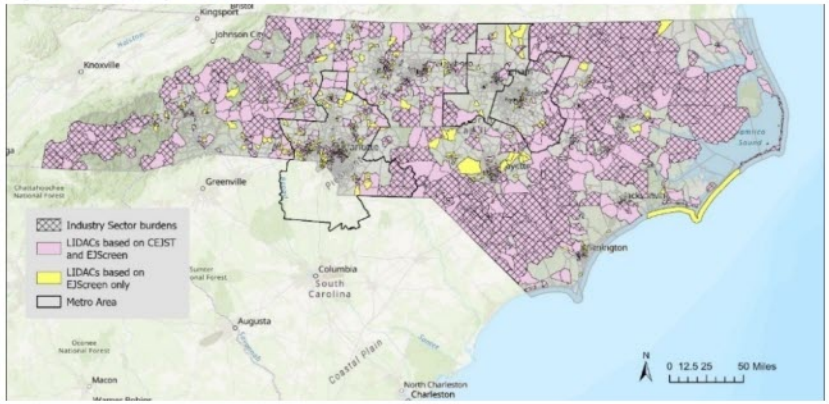

Figure 6: Waste Sector

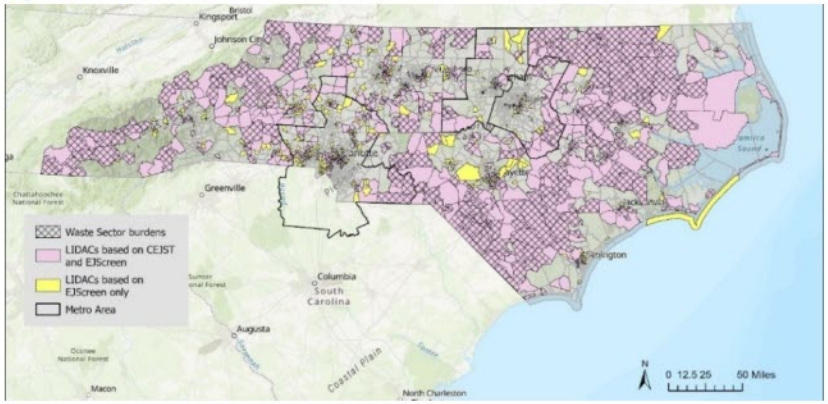

Figure 7: Waste Sector Landfills

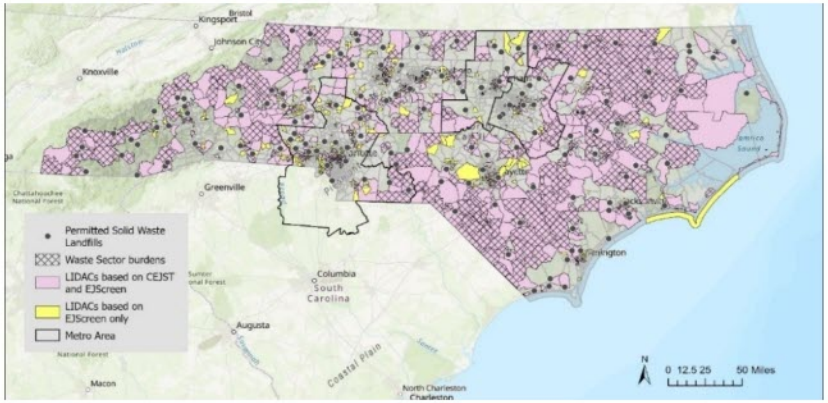

Figure 8: Geospatial Benefits Measurement Approach, Individual Project

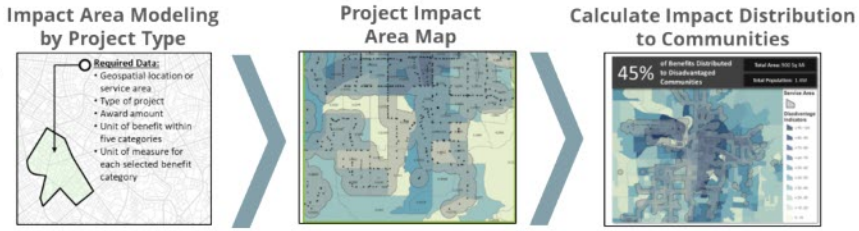

Figure 9: Geospatial Community Impacts Dashboard, Project and Portfolio Views