Changes along the North Carolina Coast

Physical Environment (*change*)
- Oceanfront shoreline erosion
- Estuarine shoreline erosion and wetland losses
- Habitat transitions
- Water

Human Environment (*disruptions*)
- Increased local government interest in resilience: *Vulnerability assessments, planning, finance, engagement*
- Increased stakeholder interest: NGOs, media, citizens, academia
2010 Sea Level Rise Survey and Assessment Report

North Carolina Sea-Level Rise Assessment Report
March 2010

Prepared by the N.C. Coastal Resources Commission's Science Panel on Coastal Hazards
NORTH CAROLINA SEA LEVEL RISE IMPACT STUDY

FINAL STUDY REPORT

Produced by North Carolina Emergency Management Geospatial and Technology Management
June 2014
The Colbert Report, Comedy Central
GENERAL ASSEMBLY OF NORTH CAROLINA
SESSION 2011

SESSION LAW 2012-202
HOUSE BILL 819

AN ACT TO STUDY AND MODIFY CERTAIN COASTAL MANAGEMENT POLICIES.

The General Assembly of North Carolina enacts:

SECTION 1. G.S. 113A-103(2) reads as rewritten:
“(2) "Coastal area” means the counties that (in whole or in part) are adjacent to, adjoining, intersected by or bounded by the Atlantic Ocean (extending offshore to the limits of State jurisdiction, as may be identified by rule of the Commission for purposes of this Article, but in no event less than three geographical miles offshore) or any coastal sound. The Governor, in accordance with the standards set forth in this subdivision and in subdivision (3) of this section, shall designate the counties that constitute the "coastal area,” as defined by this section, and his designation shall be final and conclusive. On or before May 1, 1974, the Governor shall file copies of a list of said coastal area counties with the chairmen of the boards of commissioners of each county in the coastal area, with the mayors of each incorporated city within the coastal area (as so defined) having a population of 2,000 or more and of each incorporated city having a population of less than 2,000 whose corporate boundaries are contiguous with the Atlantic Ocean, and with the Secretary of State. By way of illustration, the counties designated as coastal area counties under this subdivision as of July 1, 2012, are Beaufort, Bertie, Brunswick, Camden, Carteret, Chowan, Craven, Currituck, Dare, Gates, Hertford, Hyde, New Hanover, Onslow, Pamlico, Pasquotank, Pender, Perquimans, Tyrrell, and Washington. The coastal area counties and cities shall thereafter transmit nominations to the Governor of members of the Coastal Resources Commission as provided in G.S. 113A-104(d).”

SECTION 2. (a) Article 7 of Chapter 113A of the General Statutes is amended by adding a new section to read:

"§ 113A-107.1. Sea-level policy.\(\)
(a) The General Assembly does not intend to mandate the development of sea-level policy or the definition of rates of sea-level change for regulatory purposes.
(b) No rule, policy, or planning guideline that defines a rate of sea-level change for regulatory purposes shall be adopted except as provided by this section.
(c) Nothing in this section shall be construed to prohibit a county, municipality, or other local government entity from defining rates of sea-level change for regulatory purposes.
(d) All policies, rules, regulations, or any other product of the Commission or the Division related to rates of sea-level change shall be subject to the requirements of Chapter 150B of the General Statutes.
(e) The Commission shall be the only State agency authorized to define rates of sea-level change for regulatory purposes. If the Commission defines rates of sea-level change for regulatory purposes, it shall do so in consultation with the Division of Coastal Management of the Department. The Commission and Division may collaborate with other State agencies, boards, and commissions; other public entities; and other institutions when defining rates of sea-level change.

(b) The Coastal Resources Commission and the Division of Coastal Management of the Department of Environment and Natural Resources shall not define rates of sea-level change for regulatory purposes prior to July 1, 2016."
Regional Engagement on Climate Resilience
NCSSC partners work collaboratively across disciplines to share research, monitoring and other information that address resilience to flooding, inundation and sea level rise.
The issue of sea level rise is of great importance to the State, its policy makers and the citizens of NC. Periodic updates using current data are vital to help inform planning and decision making.

The CRC therefore charges the Science Panel to conduct a comprehensive review of scientific literature and available North Carolina data that addresses the full range of North Carolina-specific sea level change. The CRC further charges the Science Panel to report regional rates of potential sea level rise as was done in the 2015 Report. The time period assessed in the report should extend a minimum of 30 years.

The Panel should have a draft ready for technical peer review by February 1, 2020, and a peer-reviewed draft ready for public review by May 1, 2020. The CRC requests a final report by August 31, 2020.

<table>
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<tr>
<th>Station</th>
<th>Tide Gauge Projections</th>
<th>IPCC RCP 2.6 + VLM</th>
<th>IPCC RCP 8.5 + VLM</th>
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<tr>
<td></td>
<td>RSLR in 30 years</td>
<td>RSLR in 30 years</td>
<td>RSLR in 30 years</td>
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<tr>
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<td>(inches)</td>
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<tr>
<td></td>
<td>Mean       Range</td>
<td>Mean   Range</td>
<td>Mean   Range</td>
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<td>7.1     4.8-9.4</td>
<td>8.1     5.5-10.6</td>
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<td>5.9     3.7-8.2</td>
<td>6.9     4.4-9.4</td>
</tr>
</tbody>
</table>

*Note: Projections were rounded to the nearest tenth of an inch*
2019: $50,000 provided to NCEM to upgrade five tide gauges
Resilience Evaluation & Needs Assessment

Building Coastal Resilience in North Carolina

Pilot Communities
Resilience Evaluation & Needs Assessment

Building Coastal Resilience in North Carolina

Town of Duck

Top Needs:
The community in Duck cited a wide variety of needs to address their concerns.

Top needs included assistance with finding funding; digital resources to communicate risk and help with planning efforts; and resources to increase community buy-in, specifically on large-scale mitigation projects.

Photo credit: Town of Duck
Building Coastal Resilience in North Carolina

Working Together on Coastal Resilience
Coastal Adaptation and Resiliency

What is coastal resilience and why does it matter?

Building coastal resilience in a community generally means ensuring all members and systems within it can better withstand major events and long-term stressors in a way that helps meet larger community goals. There is no one-size fits all answer because every community is unique. Learn more by exploring the Frequently Asked Questions (FAQs).

- N.C. Resilient Coastal Communities Program
- N.C. Coastal Community Resiliency Guide
- Coastal Resilience FAQs
- EO 80: NC Climate Change Interagency Council
- Coastal Resilience Projects
Coastal Community Resilience Guide

Hazard Forecasts
Explore short-term (e.g., tides, river flooding, coastal storm surge) and long-term (e.g., sea level rise) predictions for your region.

Adaptation Examples
Discover new ideas and types of structural and non-structural adaptations being implemented in North Carolina and beyond.

Tools
Understand hazards risk, conduct a community-wide assessment or planning process, and use mapping applications to aid decision-making.

Data
Explore and download data to guide

Planning and Policy
Learn from others and ensure

Funding and Assistance
Find out how to fund adaptation
North Carolina
Coastal Resilience Summit
June 11-12th at the Havelock Tourist & Event Center

Keynote Address
A Post-Event Review of Hurricane Florence in North Carolina: Lessons Learned
Rachel Norton, Researcher & Lead Author
ISEE International & Zurich Flood Resilience Program

Register: www.nccoastalmanagement.net

2019 North Carolina Coastal Regional Resilience Workshops
Summary Report
North Carolina Department of Environmental Quality
Division of Coastal Management
September 2019
Executive Order 80 (October 2018)

North Carolina

Climate Risk Assessment and Resilience Plan

Impacts, Vulnerability, Risks, and Preliminary Actions

June 2020
Introduction

Welcome to the North Carolina Coastal Communities Resilience Guide! To get started, please scroll down to view or select the sections below that further describe how to use this interactive guide:

- Navigating the guide
- Purpose
- Intended audience
- What to look for
- About this guide
N.C. Coastal Community Resiliency Guide

Step #1: Establish Context and Expectations

The Town's CASLRC prioritizing actions to build resilience that were identified during VCAPS process through a dot-voting exercise (Source: ...
Step #2: Assess Vulnerability and Risk

Source: Town of Edenton RENA Community Asset Mapping

Other Tools for Mapping &
Step #3: Identify Adaptation Strategies

Examples of Nature-based Solutions

Moving People Out of Harm’s Way: Property Buyouts

Property buyouts are a means by which communities can remove development from... (Read more)

Waterfront Parks

Waterfront parks are communal recreational spaces that are intentionally designed to... (Read more)

Living Breakwaters

Breakwaters are offshore structures designed to limit wave energy by creating a... (Read more)

Horizontal Levees

A horizontal levee consists of a hardened structure (a “levee”) setback from the... (Read more)

Rain Gardens

Rain gardens are planted basins which have several key purposes including, increasing... (Read more)

Living Shorelines

Living shorelines are a suite of shoreline erosion control techniques that combine... (Read more)
Coastal Community Resilience Guide

Case Studies and Examples
See the four categories below for various case studies and examples describing resiliency strategies or projects pursued by communities in coastal North Carolina. See the "Submit a Case Study" tab to add additional examples!

Local Planning and Regulations
1. Town of Nags Head - Land Use Plan & UDO
2. Village of Duck - Vulnerability...
3. City of Elizabeth City - Charles Creek Flood...
4. Town of Edenton -

5. Currituck County -
6. Town of Swansboro -

Structure & Infrastructure Projects
Natural Systems Protection
Education & Awareness Programs

Earthstar Geographics | Esri, HERE, Garmin, FAO, NOAA...
Summary

Technical & Financial Assistance to Local Governments

- Planning & Management grants
- Resilience Evaluation & Needs Assessments, VCAPS
- New Coastal Resilience Portal for local governments
- $375,000 in grants over last three years
- *New* Resilient Coastal Communities Program

Research, Data, Regulatory

- Sea Level Rise Assessment Reports: 2010, 2016, 2021
- Emphasis on natural & nature-based infrastructure: living shorelines, nourishment
- Perform & sponsor research on erosion control, habitat restoration
Summary

Collaboration & Networking

- In-State partners: DEQ, NC Emergency Management, NC Sea Grant, NGOs
- Southeast & Caribbean Region (NC, SC, GA, FL, PR, USVI): Community of Practice, Disaster Recovery Partnership, Carolinas Integrated Sciences & Assessments
- Federal partners: National Oceanic & Atmospheric Administration, Army Corps

Executive Order 80 (Oct. 2018)

- Cabinet Agencies: DEQ, DHHS, DIT, DMVA, DOA, DOR, DOT, DPS
- Evaluate impacts on agency programs and operations
- *Climate Risk Assessment & Resiliency Plan*
- Assist local communities with vulnerability assessments & planning
- Integrate mitigation & adaptation into agency programs & operations
WHEREAS, North Carolina recently has suffered from multiple natural disasters, including hurricanes Matthew, Florence, and Dorian, and has in the past four years, our communities continue to rebuild and recover from past disasters and prepare for future disasters; and

WHEREAS, increasing North Carolina’s resilience, including by rebuilding smarter and stronger from storms and floods, helps our state and its people weather future disasters and recover more rapidly; and

WHEREAS, hazard mitigation is the effort to reduce loss of life and property by lessening the impact of disasters; the concept of resilience builds on hazard mitigation to include the ability of society to adapt and prosper amid emergencies and climate change; these concepts are most effective as part of long-term resiliency planning, including comprehensive hazard mitigation plans; and

WHEREAS, hazard mitigation and resilience strategies can include a combination of traditional infrastructure and nature-based strategies, such as protecting and restoring floodplains, marshes, and wetlands that absorb floodwaters and help make communities less vulnerable to intense rains and storms; and

WHEREAS, effective pre-disaster mitigation protects lives and property and reduces the risks to first responders who bravely and selflessly serve in times of disaster; and

WHEREAS, programs and measures exist to help states and local communities implement hazard mitigation plans and become more resilient to disasters; examples include the North Carolina Resilient Communities Program led by the North Carolina Department of Environmental Quality’s Division of Coastal Management; the North Carolina Department of Public Safety’s (DPS) North Carolina Office of Recovery and Resiliency (NCORR); and the Hazard Mitigation Grant Programs led by NCORR and DPS’s Division of Emergency Management; and

WHEREAS, the 2020 North Carolina Climate Risk Assessment and Resilience Plan is the state’s most comprehensive effort to date to address North Carolina’s vulnerability to climate change, providing a framework to guide state action, engage policy-makers and stakeholders, facilitate collaboration across the state, and focus attention on climate resilience actions; and

WHEREAS, the state of North Carolina encourages all residents to protect their homes, learn about disaster and climate change risks, and strengthen connections with neighbors, businesses, non-profits, and local government that support long-term resiliency to future disasters;

NOW, THEREFORE, I, ROY COOPER, Governor of the State of North Carolina, do hereby proclaim October 4 – 10, 2020, as “NORTH CAROLINA RESILIENCE WEEK” in North Carolina, and commend its observance to all citizens.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Great Seal of the State of North Carolina at the Capitol to Kangaroo this thirtieth day of September in the year of our Lord two thousand and twenty and of the Independence of the United States of America the two hundred and forty-fifth.

[Signature]
Governor

Project: B-2500B
County: Dare
Proposed Bridge on NC 12