ORIENTATION (2023)

NC RESILIENT COASTAL COMMUNITIES PROGRAM

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NC DIVISION OF COASTAL MANAGEMENT

NORTH CAROLINA DEQ Department of Environmental Quality

North Carolina RESILIENT COASTAL COMMUNITIES PROGRAM

WebEx Controls

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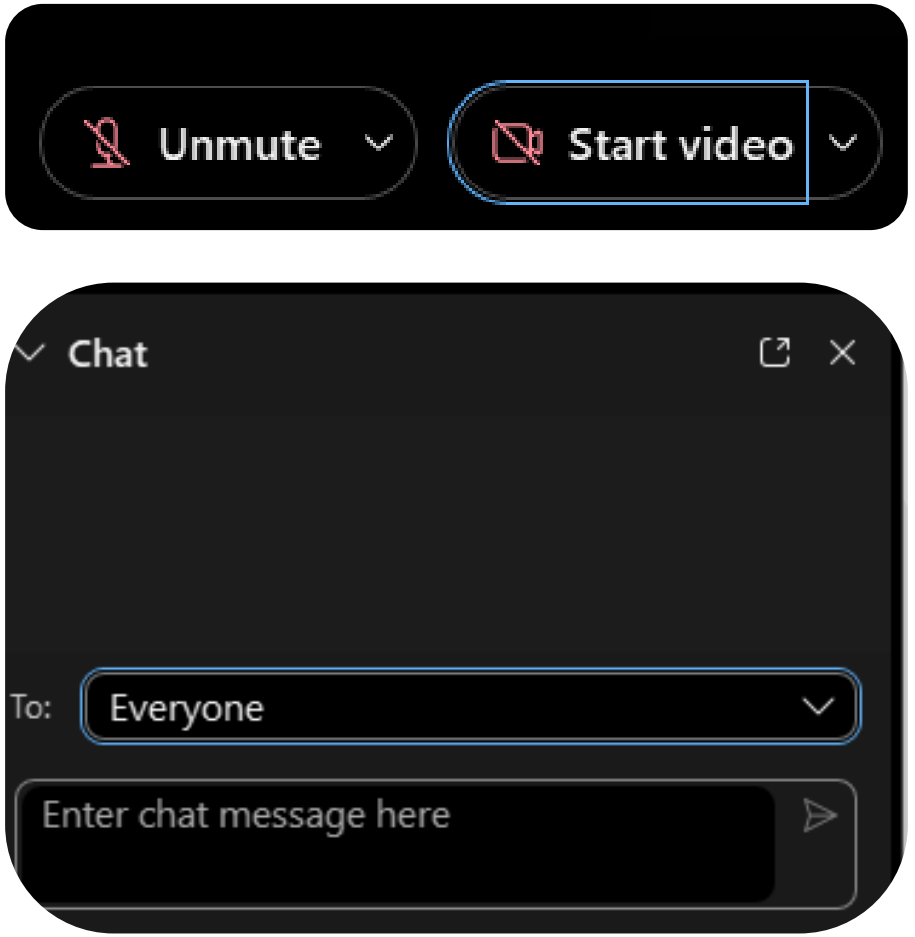


Agenda Overview

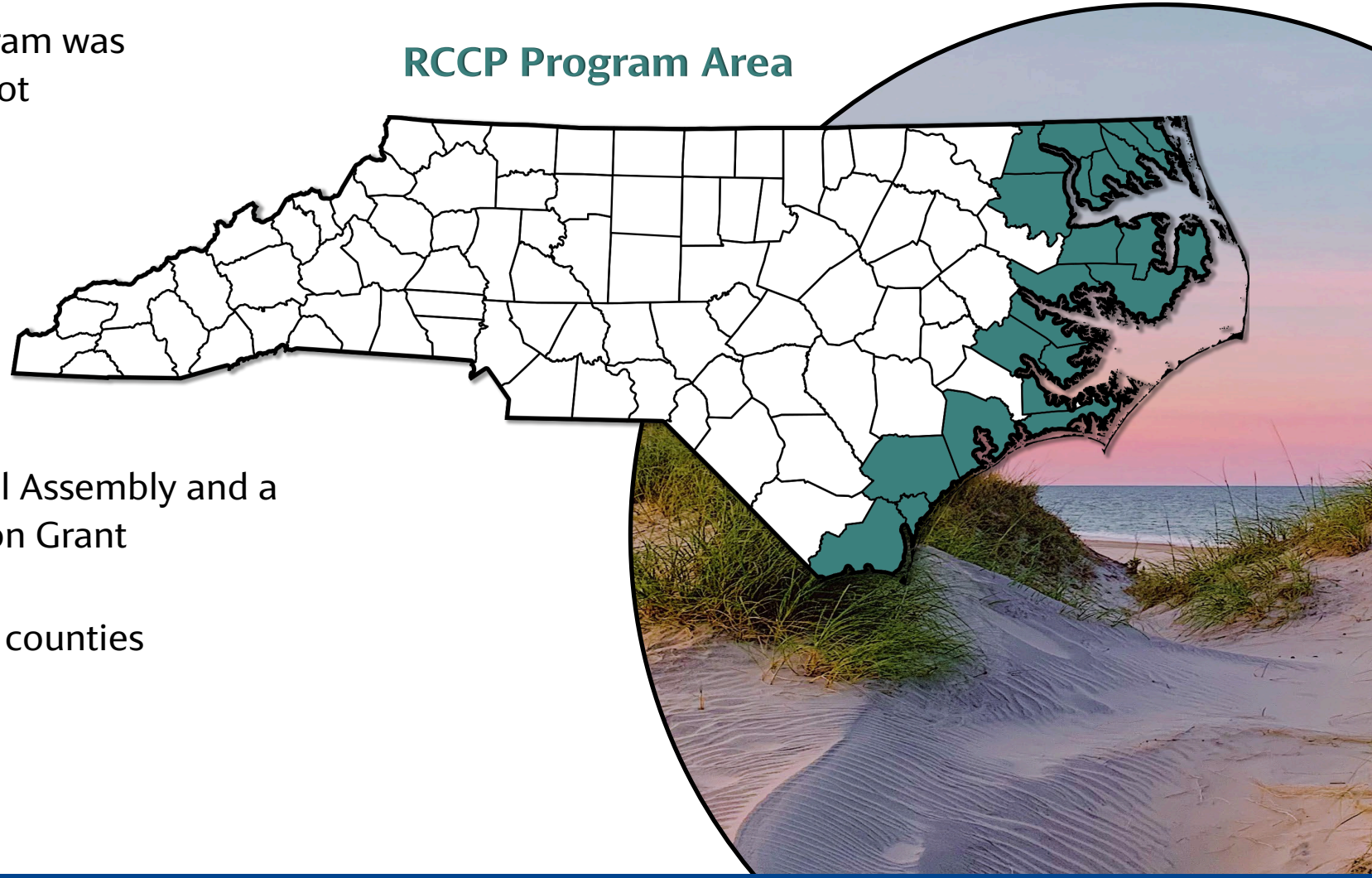
Time	Agenda Item	Presenter
1:30 PM	Welcome, Agenda Overview & Introductions	Mackenzie Todd
2:00 PM	Phase 1: Steps 1-6	Kasen Wally
3:00 PM	Questions/Discussion	Kasen Wally
3:10 PM	Break	
3:15 PM	Phase 2: Steps 1 & 2	Mackenzie Todd
3:40 PM	Final Deliverables	Mackenzie Todd
3:50 PM	Expectations/Recommendations	Mackenzie Todd
4:00 PM	Program next steps, questions and closing remarks	Mackenzie Todd/Kasen

Introductions

Contractor	Communities
Dewberry	Atlantic Beach & Carteret County
Kleinfelder	Burgaw & Holly Ridge
Moffatt & Nichol	Ocean Isle Beach
Mid-East Commission and RK&K	Ahoskie, Aulander, Plymouth, and Washington Park
Stewart	Kitty Hawk
SWCA	Creswell & Washington County
WSE	Elizabeth City & Pasquotank County
WSP	Edenton

Program Background

- The foundation of the RCCP program was laid in 2016 through the RENA pilot program
- Executive Order 80 created the NC Climate Risk & Resilience Plan, which eventually led to the RCCP
- RCCP Funded through the General Assembly and a National Fish & Wildlife Foundation Grant
- Program Scope: 20 coastal CAMA counties



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Program Partners & Funding

The Nature Conservancy

NCORR
NORTH CAROLINA OFFICE OF RECOVERY AND RESILIENCY

Sea Grant
North Carolina

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

THE GREAT SEAL OF THE STATE OF NORTH CAROLINA
MAY 20, 1775
APRIL 12, 1776
ESSE QUAM VIDERI

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NOAA
U.S. DEPARTMENT OF COMMERCE

NC DIVISION OF COASTAL MANAGEMENT

Program Objectives

Address	Assist	Help	Advance	Link
Address barriers to coastal resilience at the local level	Assist communities with risk & vulnerability assessments	Help communities develop a portfolio of well-planned and prioritized projects	Advance priority projects to “shovel-ready” status	Link communities to funding streams for project implementation

Program Phases

Phase 1

COMMUNITY ENGAGEMENT & VULNERABILITY ASSESSMENT

Includes performing a risk and vulnerability assessment, developing a community action team, and engaging with the public.

Phase 2

PLANNING, PROJECT IDENTIFICATION, & PRIORITIZATION

Involves a community and data-driven process to identify priority actions that can be taken to adapt to short- and long-term hazards.

Phase 3

ENGINEERING & DESIGN

Grants are available for communities that successfully completed Phases 1 and 2 to develop projects that are shovel-ready.

Phase 4

PROJECT IMPLEMENTATION

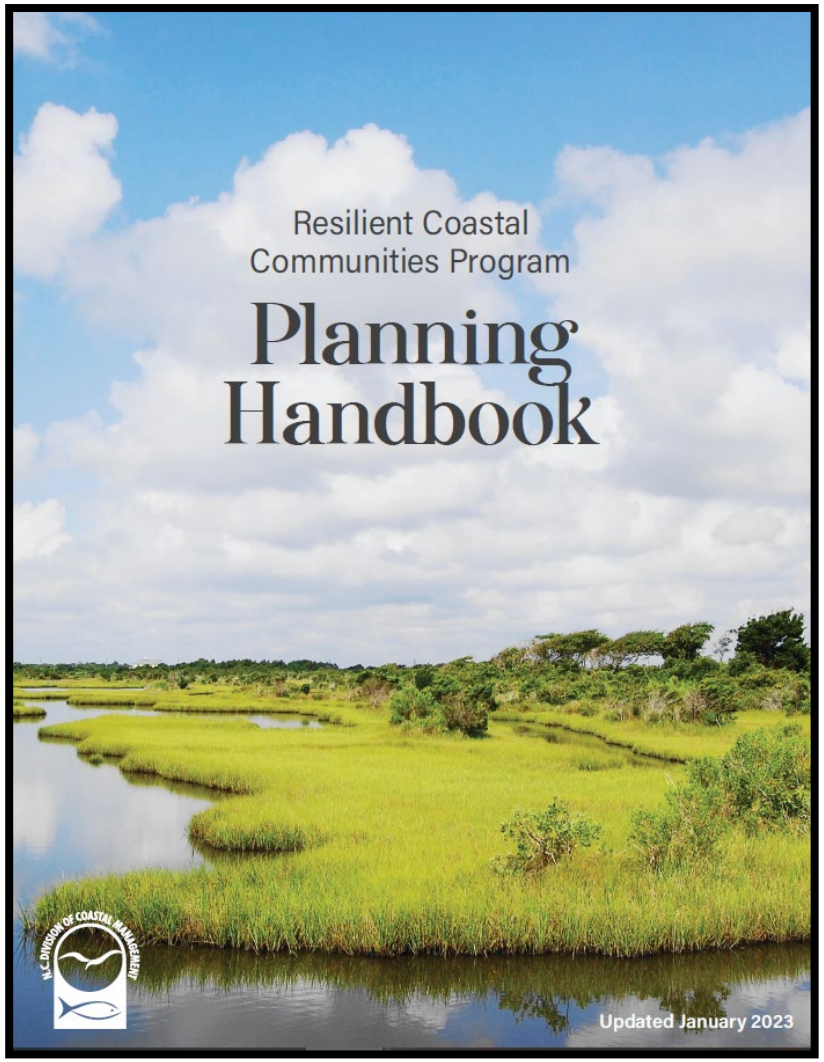
Phase 4 grants are available for communities that successfully complete Phases 1, 2, and 3 for the implementation of shovel-ready projects.

Program Planning Handbook & Technical Appendix

- The Program Planning Handbook: Updated 2023
  - Walks communities and contractors through the steps and requirements of Phases 1 and 2 of the RCCP

- Major Changes to the Planning Handbook
  - Identifying a champion in the CAT
  - Steps 2 & 3 have switched
  - Minimum list of critical assets
  - Technical Appendix

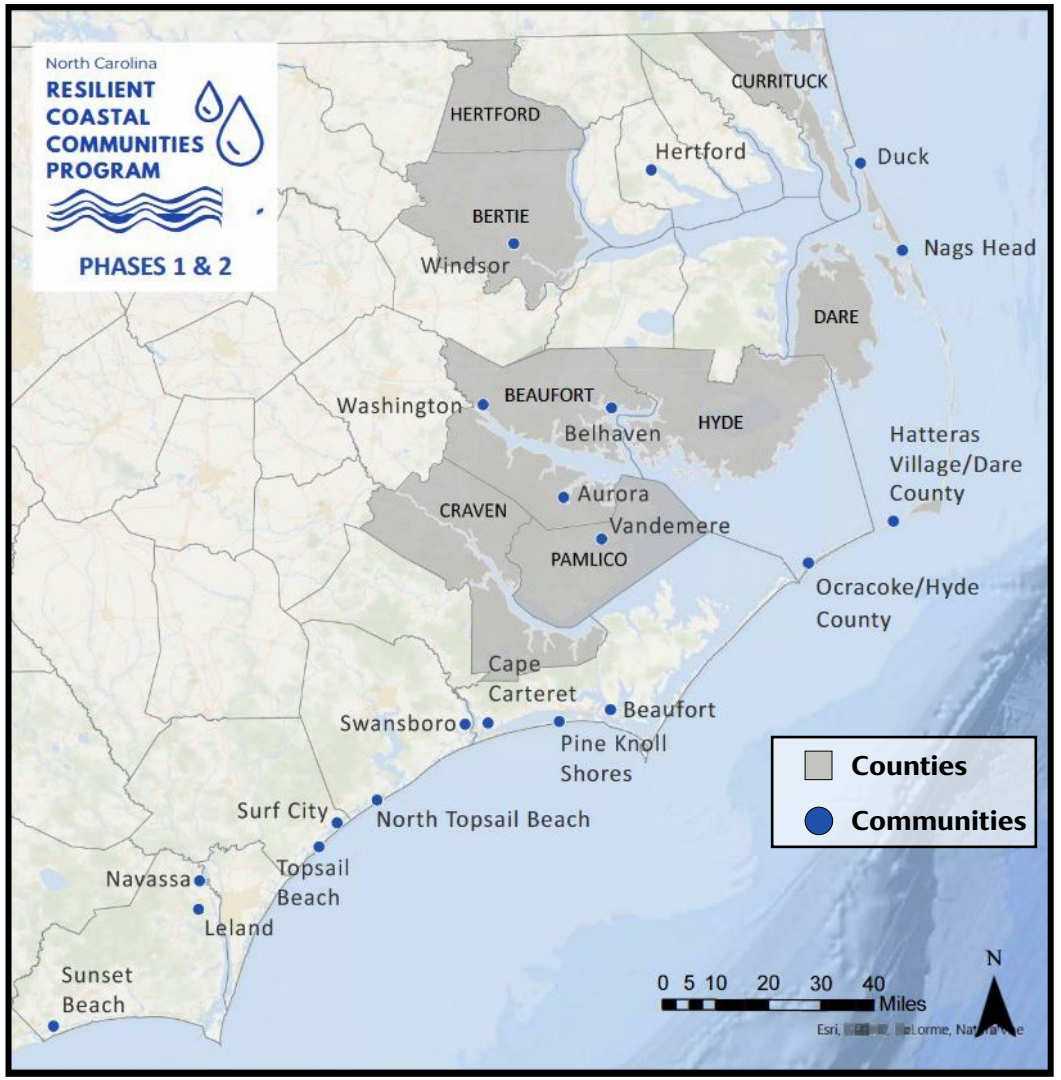
- The technical appendix provides links to additional information, such as helpful templates, maps, and formatting suggestions for deliverables, as well as examples from previous rounds of the RCCP



First Round (2020 – 2022)

- Project Period: 2020-2022
- 26 communities (8 counties and 18 municipalities)
- 10 contractors
- Total Funding Amount: $775,000
- Previous Resilience Strategies on the RCCP Website

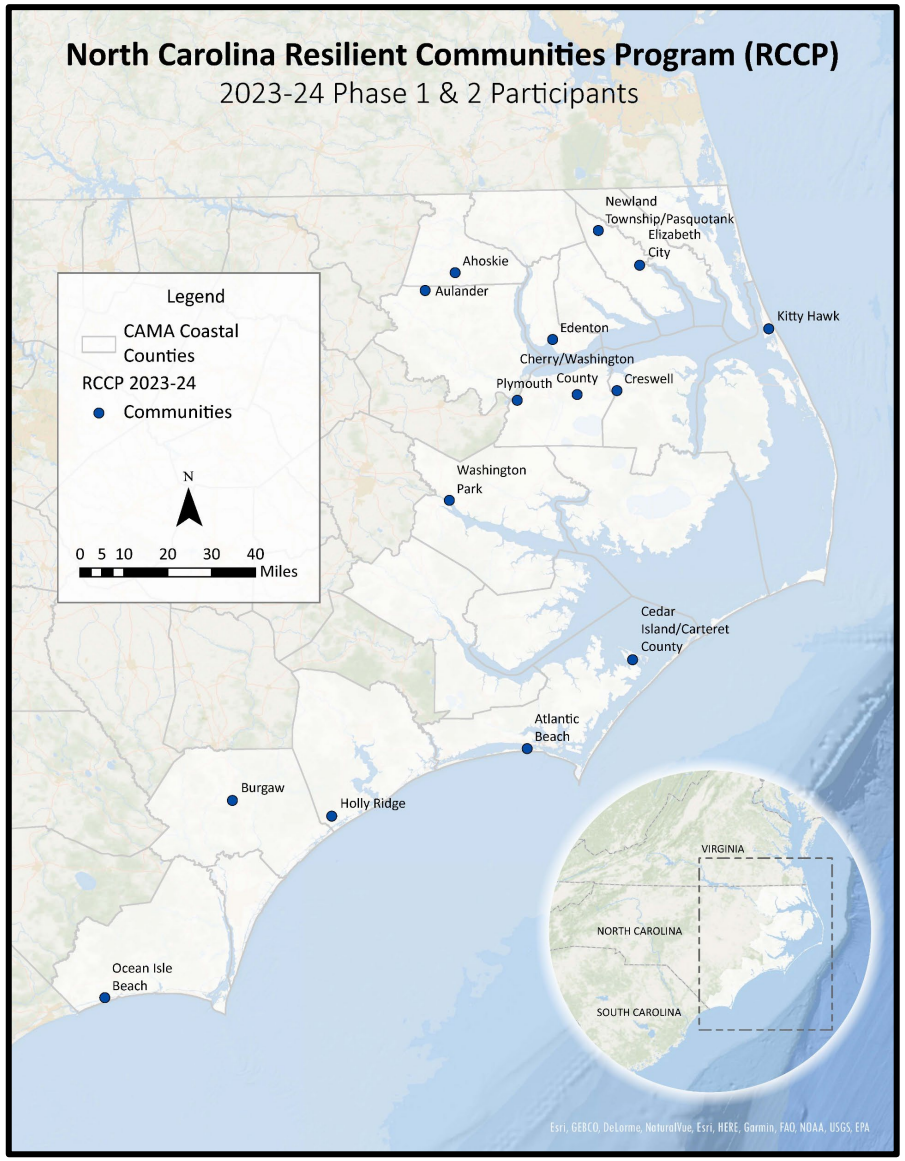
- **RK&K and Mideast Commission:** Aurora, Beaufort County, Belhaven, and City of Washington
- **SWCA:** Hertford County, Windsor, and Bertie County
- **Withers Ravenel:** Dare County (Hatteras Village), and Currituck County
- **Kimley Horn:** Vandemere, Pamlico County, and Hyde County (Ocracoke)
- **Dewberry:** Craven County, Pine Knoll Shores, Swansboro, and Cape Carteret
- **Moffatt & Nichol:** Navassa, Leland, and Sunset Beach
- **Kleinfelder:** Surf City, Topsail Beach, and North Topsail Beach
- **Stewart:** Town of Beaufort



Second Round (2023-2024)

- Project Period: 2023-2024
- 15 communities (3 counties and 12 municipalities)
- 9 contractors
- Total Funding Amount: $1.19 M

- **Dewberry:** Carteret County and Atlantic Beach
- **Kleinfelder:** Burgaw and Holly Ridge
- **Moffatt & Nichol:** Ocean Isle Beach
- **RK&K/Mid-East Commission:** Ahoskie Township, Aulander, Plymouth, and Washington Park
- **Stewart:** Kitty Hawk
- **SWCA:** Creswell and Washington County
- **WSE:** Elizabeth City and Pasquotank County
- **WSP:** Edenton



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Deliverables

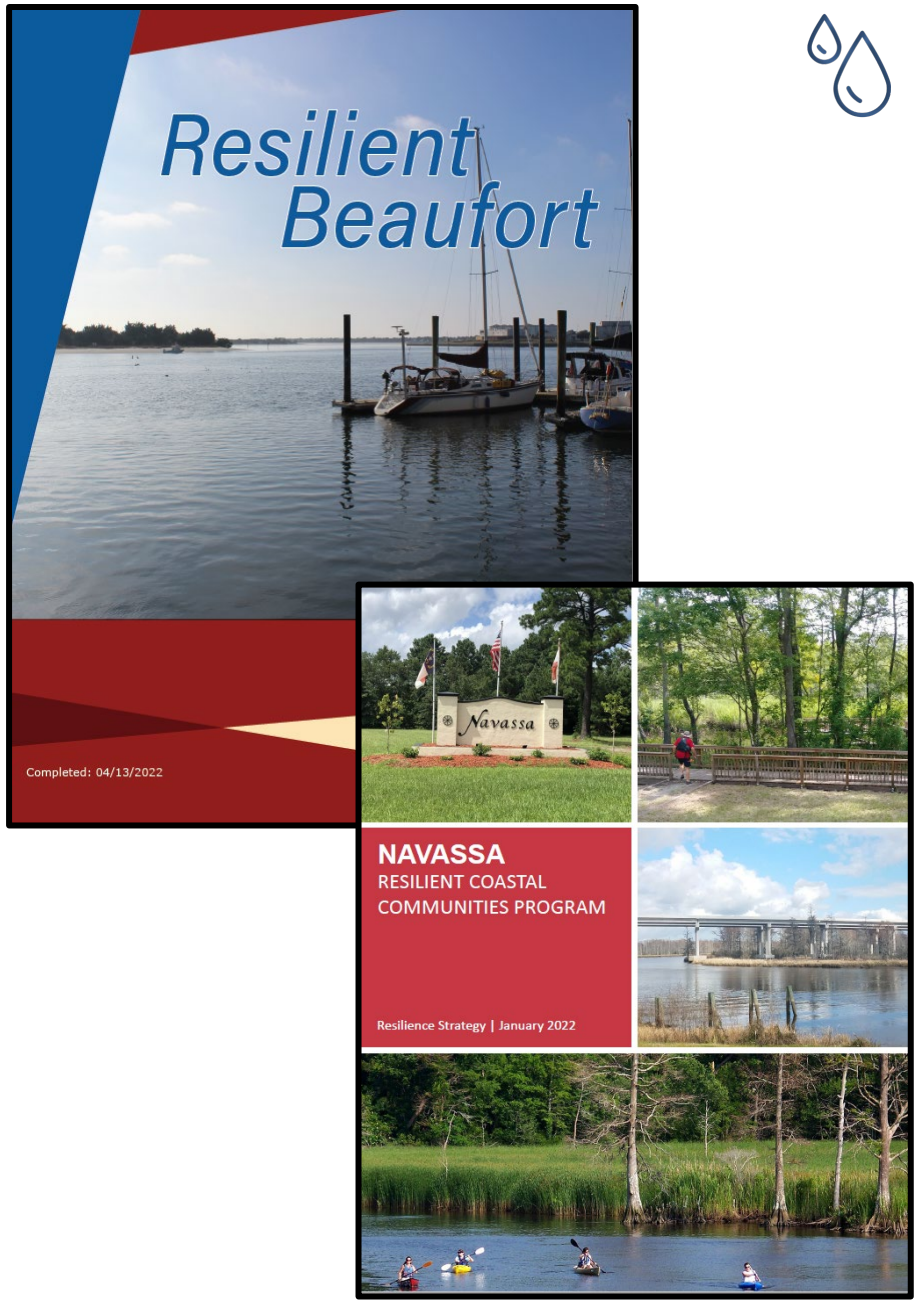
The main deliverable will include a Resilience Strategy based on guidance provided in the handbook. The two components include:

1. **Vulnerability Assessment Report:**

    - Details the quantitative and qualitative elements of assessment(s) performed

2. **Project Portfolio:**

    - Outlines a series of options to address coastal hazards with local, community-specific information.

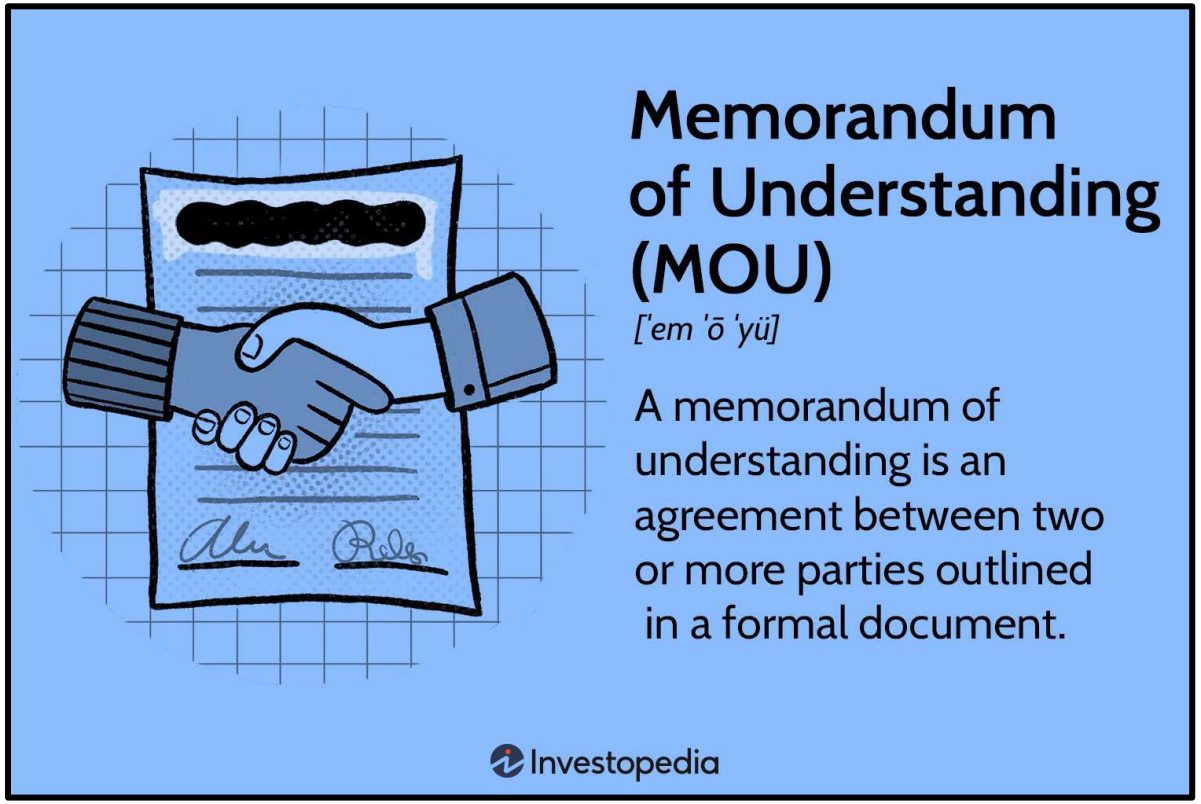


Before Getting Started

Before you begin Phase 1:

- The lead community member and lead contractor meet to discuss expectations, program timeline and process, and scope of work.

- DCM recommends that the community and contractor execute a **Memorandum of Understanding (MOU)** for Phases 1 and 2.



PHASE 1

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Step 1: Developing A Community Action Team

- The first step in the RCCP process is for each community to create a "Community Action Team" (CAT).
- The CAT for each community will be made up of key stakeholders to provide targeted input and champion the effort.
- **Why is a CAT needed for each community?**

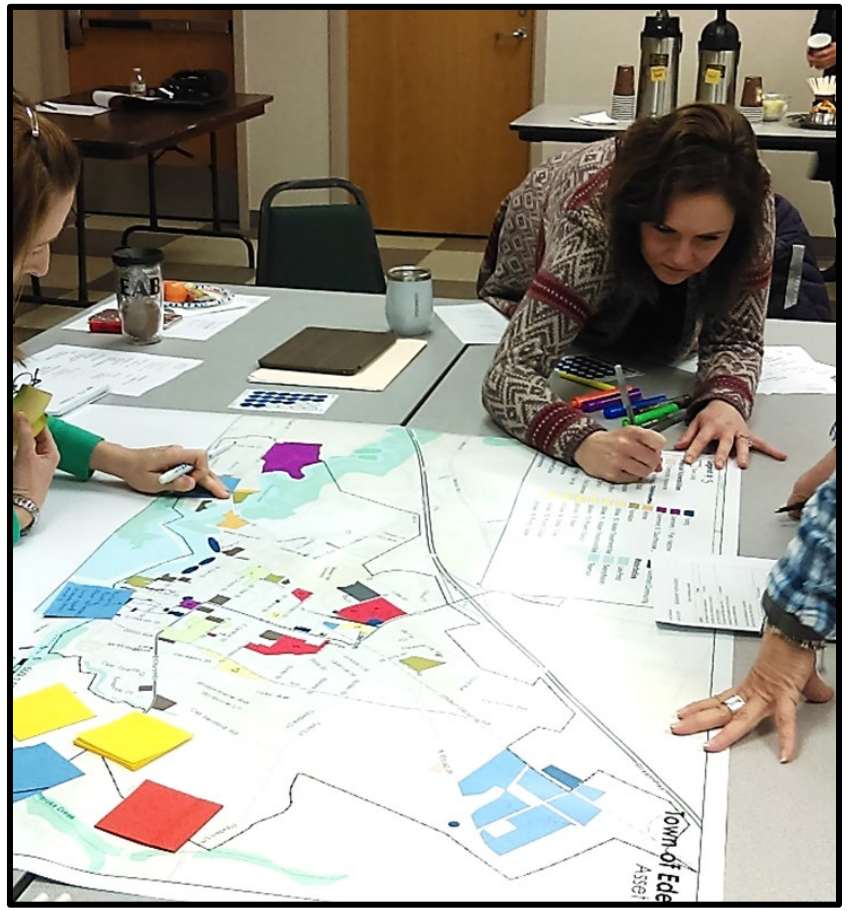
CAT Considerations

How will the CAT members be chosen?

The contractor and community will select the CAT members through a review of key stakeholders and priorities in the jurisdiction.

Some critical questions to ask when choosing representative community stakeholders to serve on the CAT include:

- Who holds community trust or is seen as a leader?
- Who is especially impacted by relevant coastal hazards?
- Who is often underrepresented in decision-making?
- What industries have the greatest ability to help build resilience?
- Who has knowledge of natural resource management and/or climate change?
- Who has been (or is) responsible for community planning/policy?



Step 1 Minimum Requirements

- Develop an inclusive and diverse Community Action Team with **at least five representative members** of the community.
- If there are gaps in the expertise on the CAT, the contractor will work with the community to fill this role.
- Appoint one of the CAT members as a “Champion” to lead the CAT team; someone who has the knowledge, expertise, and passion to act as a point person with DCM, the contracting team, and the rest of the CAT team.
- Summarize the process for developing your Community Action Team, including the members chosen and what expertise they bring to the team.

Step 2: Review Existing Plans and Efforts

After forming your CAT, conduct a review of existing plans, ordinances, policies, and programs to identify what the community has already done that can be incorporated into this process.

Group and compile information based on common themes.

Existing Efforts to Draw Upon

Non-regulatory Programs

Non-regulatory programs involving support or services that governments offer to residents, businesses, or others in the community, which may include:

- FEMA Community Rating System
- Hazard Disclosure
- Land Trusts

Ordinances

Ordinances that overlap with the community's vision and goals, including:

- Unified Development Ordinance
- Zoning or Subdivision Ordinance
- Flood Damage Prevention Ordinance
- Conservation and Hazard Overlays

Regional and Local Plans

Other regional and local plans should also be reviewed to identify overlaps with this initiative, such as:

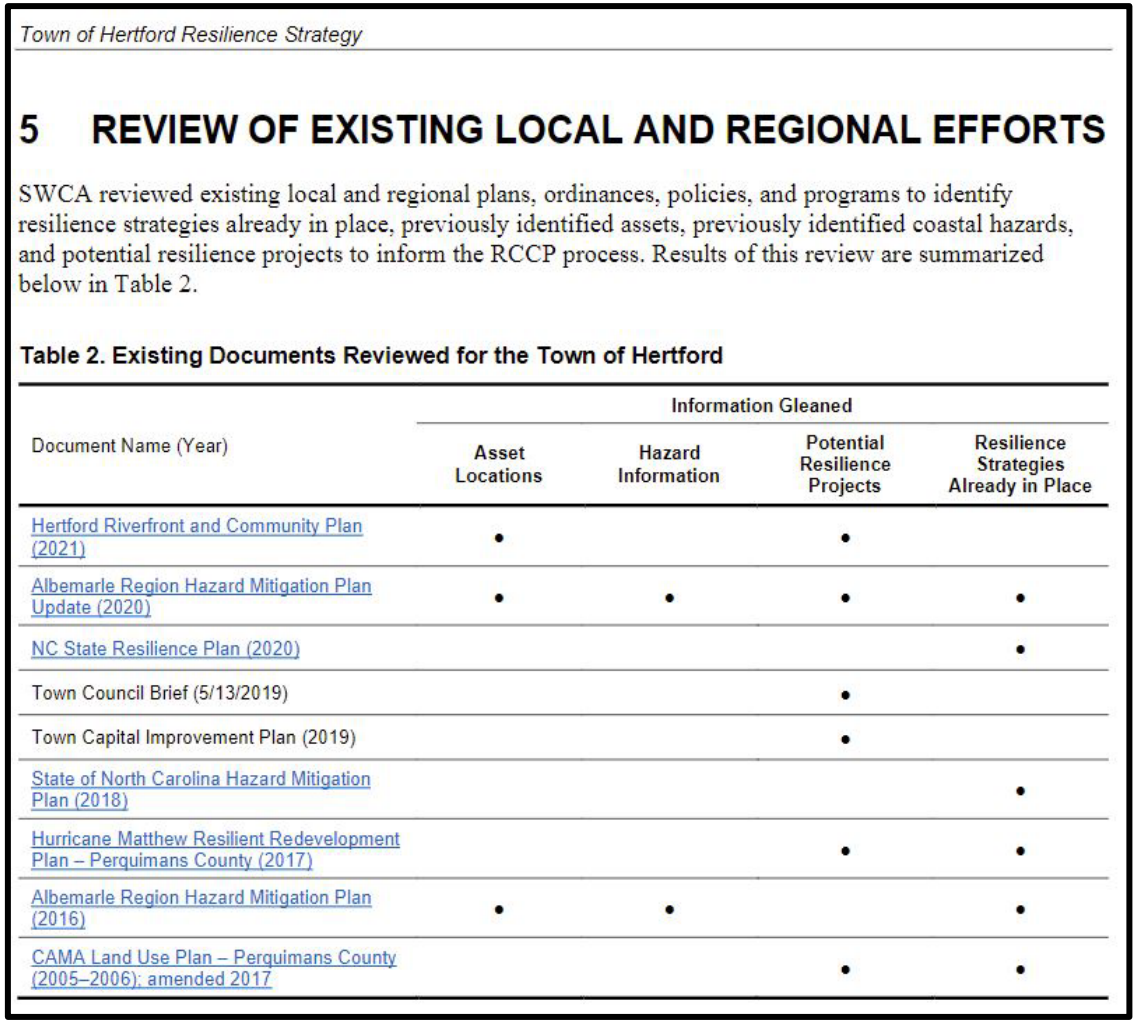
- CAMA Land Use Plans
- Local and Regional Disaster Preparedness and Recovery Plans
- Capital Improvement Plans
- Economic Development Plans
- Stormwater Management or Watershed Restoration Plans
- Open Space Plans
- Asset Management Plans

Identify & Fill Data Gaps

Once a review of existing data and information is complete, identify and document additional resources necessary for the community's vulnerability and risk assessment, including:

- An inventory of critical assets and natural infrastructure
- Any social vulnerability data
- The best available economic data

Develop a comprehensive list of previous efforts and existing plans and review and compare each to identify **knowledge gaps**.



Town of Hertford Resilience Strategy

5 REVIEW OF EXISTING LOCAL AND REGIONAL EFFORTS

SWCA reviewed existing local and regional plans, ordinances, policies, and programs to identify resilience strategies already in place, previously identified assets, previously identified coastal hazards, and potential resilience projects to inform the RCCP process. Results of this review are summarized below in Table 2.

Table 2. Existing Documents Reviewed for the Town of Hertford

Document Name (Year)	Information Gleaned			
	Asset Locations	Hazard Information	Potential Resilience Projects	Resilience Strategies Already in Place
Hertford Riverfront and Community Plan (2021)	•		•	
Albemarle Region Hazard Mitigation Plan Update (2020)	•	•	•	•
NC State Resilience Plan (2020)				•
Town Council Brief (5/13/2019)			•	
Town Capital Improvement Plan (2019)			•	
State of North Carolina Hazard Mitigation Plan (2018)				•
Hurricane Matthew Resilient Redevelopment Plan – Perquimans County (2017)			•	•
Albemarle Region Hazard Mitigation Plan (2016)	•	•		•
CAMA Land Use Plan – Perquimans County (2005–2006); amended 2017			•	•

Step 2 Minimum Requirements

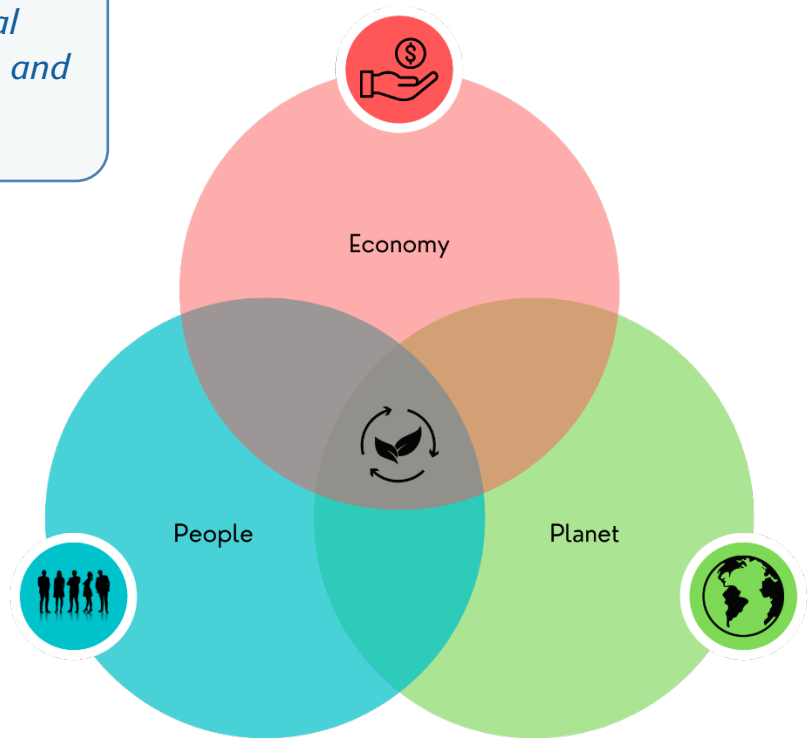
- Review existing local and regional resources, focusing on the following areas of overlap:
  - Inventory of critical assets
  - Sea level rise projections
  - Risk assessments
  - Resilience-related projects
- Identify and fill data and information gaps for vulnerability assessment inputs
- Identity and list (or visually represent) any data/knowledge gaps that exist

Step 3: Set Vision & Goals

Vision: The vision is an aspirational statement for where the community wants to be in the future (e.g., in the next ten years or more), particularly in relation to coastal hazards.

> *"The Town of Hertford is a vibrant, diverse community committed to helping its residents thrive, celebrating its riverfront, history, culture, and distinctive character while promoting commercial and residential growth, showcasing the beauty and natural resources of the Perquimans River, and integrating coastal resilience practices to address adverse environmental impacts."*

Goals: Specific, measurable goals will help the community identify steps that can be taken to achieve the vision.



Step 3 Minimum Requirements

- Develop a community resilience vision statement.
- Develop a list of locally driven goals for this effort.

Leland

Vision Statement

To promote the health, safety, and overall well-being of the residents, visitors, and patrons of Leland by creating a more resilient community, particularly with regard to floodplain and stormwater management, sheltering and evacuation, data and research, transportation and infrastructure, community planning, communication, economy, and the environment.

Goal Statements

1. **Theme:** Floodplain and Stormwater Management
   Statement: Evaluate and identify specific risks and vulnerabilities, particularly with regard to FEMA flood zones and stormwater problem areas, and establish projects and activities to evaluate, communicate, and provide solutions to reduce those risks

2. **Theme:** Sheltering and Evacuation
   Statement: Identify, establish, and provide information on facilities for use as shelters and staging areas, and identify key roadways within the community for emergency evacuations and mobility during disaster events

3. **Theme:** Data and Research
   Statement: Update and use the most recent data and innovative research to inform and support resilience activities within the community

4. **Theme:** Transportation and Infrastructure
   Statement: Create solutions for critical building and transportation infrastructure with regard to flood hazards within the community

5. **Theme:** Plans, Policies and Ordinances
   Statement: Review, revise, and implement/enforce plans, policies, and ordinances, including land use, zoning, and inspections, and incorporate incentives for strong resilience practices within the community

Step 4: Develop a Community Engagement Strategy

To ensure participation from a diverse array of public stakeholders, a community engagement strategy must be developed to outline a plan for engaging with your community while incorporating the principles of justice, equity, diversity, and inclusion in their climate adaptation planning.

Your community engagement strategy will ensure the following:

- Equitable representation and outcomes for vulnerable populations.
- Building trust, relationships, and diverse partnerships within communities.
- Providing feedback and validation of the Vulnerability Assessment (Step 5).
- Assisting with selecting and prioritizing projects in Phase 2 of the RCCP Program.

Key Considerations

Who are the stakeholders that you might want to include?

Table 1. Categories of Stakeholders Adapted from NOAA's Introduction to Stakeholder Participation

Stakeholder Category	Description	Examples
People who live, work, play, or worship at or near a resource	Those whose everyday lives and well-being are directly connected to a resource or issue. These stakeholders should be invited to participate because their lives may be substantially impacted.	Residents, resource users, businesses, community/civic organizations, interest groups, nongovernmental organizations (NGOs), government, Native American tribes, and the media
People interested in the resource, its users, its use, or its non-use	Those who assign values to a resource and are concerned about the way that resources are used. This group includes those who extract value from resources, as well as those more interested in conserving or protecting resources. This group should be invited to participate because of their sheer interest in the resource or issue.	Businesses, resource users, interest groups and NGOs, community/civic organizations, government, and Native American tribes
People interested in the decision-making process	Those deeply interested in the legal and procedural aspects of an issue. This group includes those who want to ensure that all relevant policies and procedures are observed in reaching a decision. They should be involved because of their attention to procedural detail and their ability to derail a process or litigate final decisions.	Interest groups and NGOs, government, the media, residents, and Native American tribes
People who are financially invested in the resource	Those whose money is directly or indirectly used to fund resource management through taxes, fees, and other means. This group wants to ensure that money is spent wisely and should be invited to participate because the government is accountable for how it spends public dollars.	Residents, resource users, businesses, and government
Representatives or those who are legally responsible for managing public resources	Those who have the legal authority and obligation to manage natural resources. Members of this group want to ensure the best final decision is reached and should be invited to participate because it is their duty.	Government

Key Considerations Cont'd

Ensure activities are accessible and inclusive of all demographics within your community.

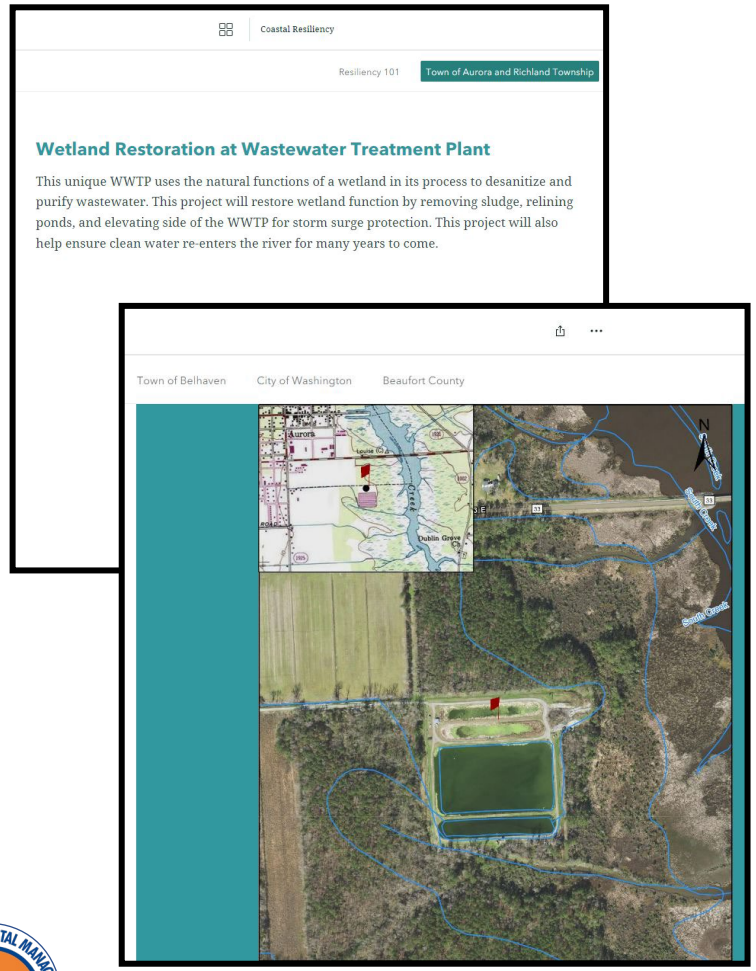
Potential Approaches:

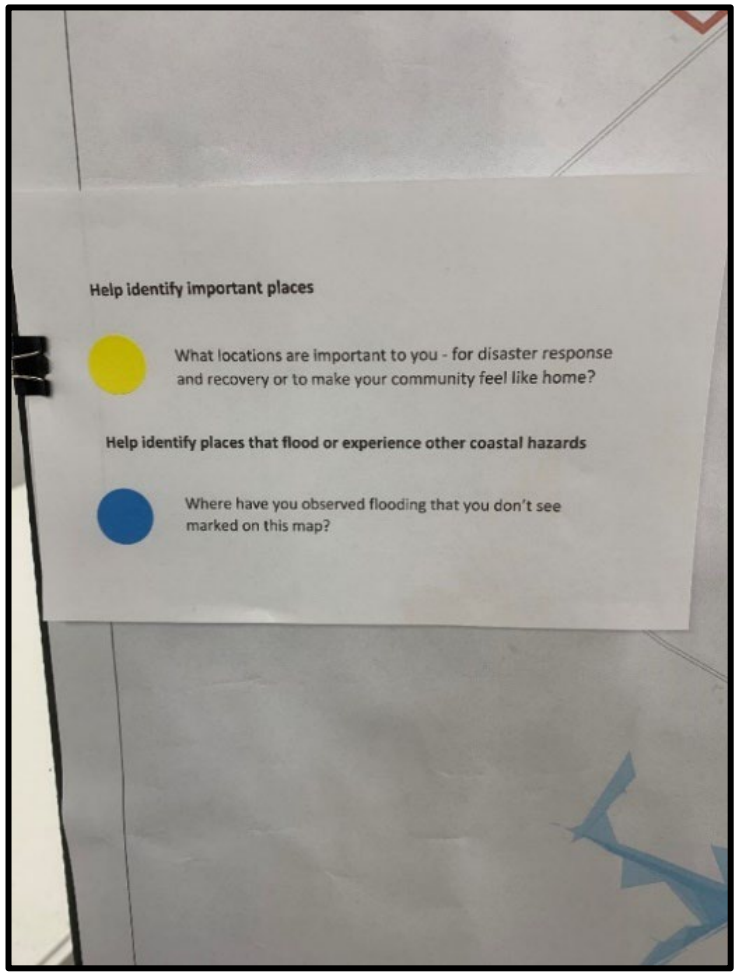
- Involve vulnerable and historically underrepresented populations, **such as...**
- Identify and incorporate trusted, neighborhood-level leaders.
- Dedicate specific space and time to discussing strategies to achieve equitable outcomes.
- Consider *going* to different groups in the community rather than relying on the community to approach you.
- Consider time restraints (such as work, school, or childcare)
- Explain how their participation will help contribute to the larger community's vision for success and resilience.

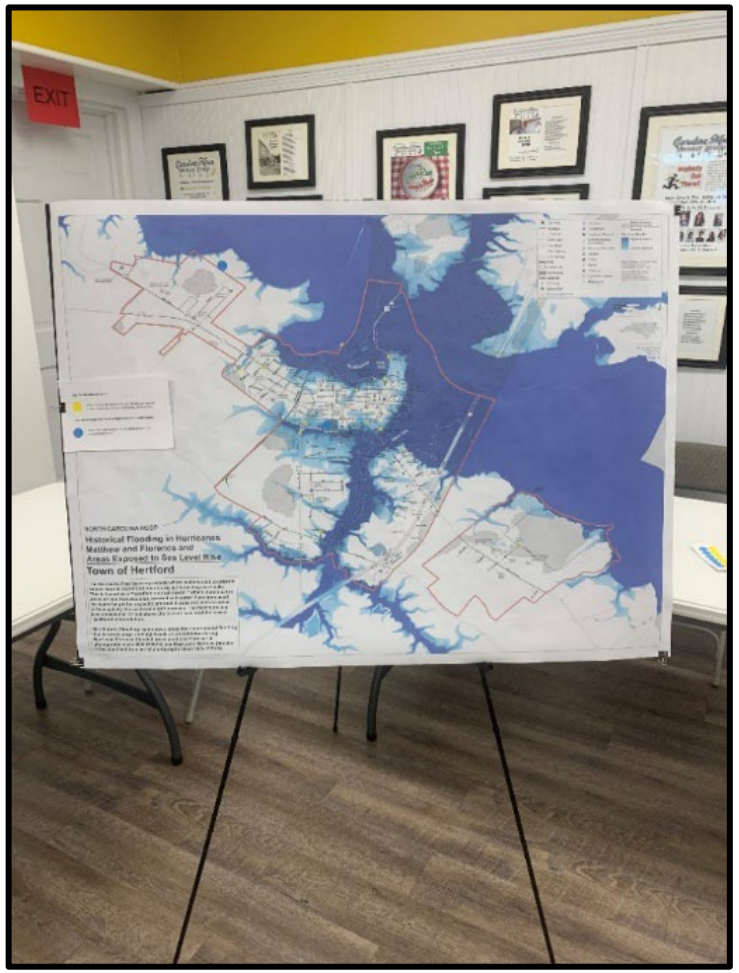
Key Considerations Cont'd

- Host an open house or workshop to present potential adaptation strategies and ask for public input.
- Brainstorm activities that go beyond simply informing or consulting with the community about resilience.
    - Involve stakeholders directly in mapping activities.
    - Invite community members to participate in field trips to discuss areas of concern.
    - Consider live polling, surveys, interactive websites, news media, etc.
- Highlight costs of inaction or potential risks with continuing to conduct "business as usual."

Examples


Coastal Resiliency
Resiliency 101
Town of Aurora and Richland Township
Wetland Restoration at Wastewater Treatment Plant
This unique WWTP uses the natural functions of a wetland in its process to desanitize and purify wastewater. This project will restore wetland function by removing sludge, relining ponds, and elevating side of the WWTP for storm surge protection. This project will also help ensure clean water re-enters the river for many years to come.
Town of Belhaven
City of Washington
Beaufort County


Help identify important places
What locations are important to you - for disaster response and recovery or to make your community feel like home?
Help identify places that flood or experience other coastal hazards
Where have you observed flooding that you don't see marked on this map?


EXIT
Historical Flooding in Hurricanes Matthew and Florence and Areas Exposed to Sea Level Rise
Town of Hertford

Additional Information

Examples of Types of Engagement:

Method	Description
Field trip	Trips to specific locations are organized so that participants can match their mental images to real, on-the-ground conditions. Participants may be asked to express their reactions verbally or in writing.
Focus group	Small discussion group led by a facilitator who draws out in-depth stakeholder input on specific questions. Normally, several focus groups are held, and participants can be chosen randomly or to approximate a subset of the community.
Internet	Dialogue between agencies and stakeholders using Internet technology such as chatrooms, online bulletin boards, e-mail, and web conferencing.
Interview	Face-to-face or telephone interaction with stakeholders conducted by the agency or by a third-party representative.
Poll or survey	Written or oral lists of questions to solicit community impressions about issues at a specific moment in time. Polls and surveys can be administered in person or via the telephone or the Internet.
Public meeting	A large public comment meeting where the participants stay together throughout the meeting and make comments to the entire audience. Public meetings are less formal than public hearings.
Workshop	Small stakeholder gatherings, typically fewer than 25 people, designed to complete a specific assignment in a short time.

Additional examples can be found in the Handbook

Step 4 Minimum Requirements

- Develop a stakeholder engagement strategy for involving community members during the following steps in this program:
  - Risk and Vulnerability Assessment (Phase 1, Step 5)
  - Project Development (Phase 2)
- Develop an approach for targeted outreach to vulnerable and historically underrepresented members of the community

Step 5: Identify & Map Critical Assets, Natural Infrastructure, & Socially Vulnerable Populations

The contractor will work with the Community Action Team (CAT) to identify any locally specific critical assets, vulnerable populations, and natural infrastructure to include within the risk and vulnerability assessment. Mapping should be completed using ArcGIS Online.

Getting Started

Who to involve in this step: Staff or community stakeholders with knowledge of major infrastructure assets; non-profit or government entities that manage natural resources or community-identified significant places.

Some questions to consider when identifying assets:

1) Are the assets critical for the continuity of daily operations?
2) Are the assets central to economic functioning and vitality?
3) Are the assets integral to social services?
4) Are the assets critical for life and safety?
5) Are the assets irreplaceable if damaged or destroyed?
6) Are the assets an integral part of community cohesiveness?
7) Do the assets have a history of damage from natural hazards?
8) What places and natural areas are important to the community's heritage?
9) How do the community's vision and goals from Step 3 relate to these built and natural assets?
10) How much information is available on each asset? Which assets lack enough data to do a meaningful assessment?

Required Assets

The **MINIMUM** critical assets that you must identify and map:

1) Roads/Evacuation Routes;
2) Water/Sewer lines (if the community has sewer);
3) Government Buildings/Offices (e.g., City/Town Hall);
4) Public Safety or Emergency Services (e.g., Police/Fire);
5) Schools;
6) Health Services; and
7) Natural Assets (e.g., natural areas, open spaces, parks, etc.).

Contractors should consult with the communities to identify additional assets, such as electrical infrastructure or environmental and social heritage sites.

FEMA Community Lifelines Toolkit

Asset ID	Asset Type	Asset Name	Location	Ownership	Estimated Value	Exposure ex. Previously Flooded or Precipitation*	Exposure ex. Current Floodplain
Number	E.g., government facilities, roadway, natural infrastructure, schools, etc.	Town Hall	X, Y	Private or public	If available	(Y/N) *edit based upon flood hazards relevant to the community	(Y/N)

Social Vulnerability

Contractors should utilize the CDC's Social Vulnerability Index (SVI) and FEMA's Resilience Analysis and Planning Tool (RAPT) to access important community data and analysis tools. You can also use any other relevant data sources to identify socially vulnerable populations for consideration throughout this planning process.

The CDC's SVI uses U.S. Census Data to rank census tracts based on 15 social factors. It groups them into four related themes: socioeconomic status, household composition, race/ethnicity/language, and housing/transportation. contractors should engage with the CAT to ground truth data related to the index and supplement it with local knowledge and information.

Step 5 Minimum Requirements

- Map critical assets, areas of social vulnerability, and natural infrastructure identified by the Community Action Team using ArcGIS.

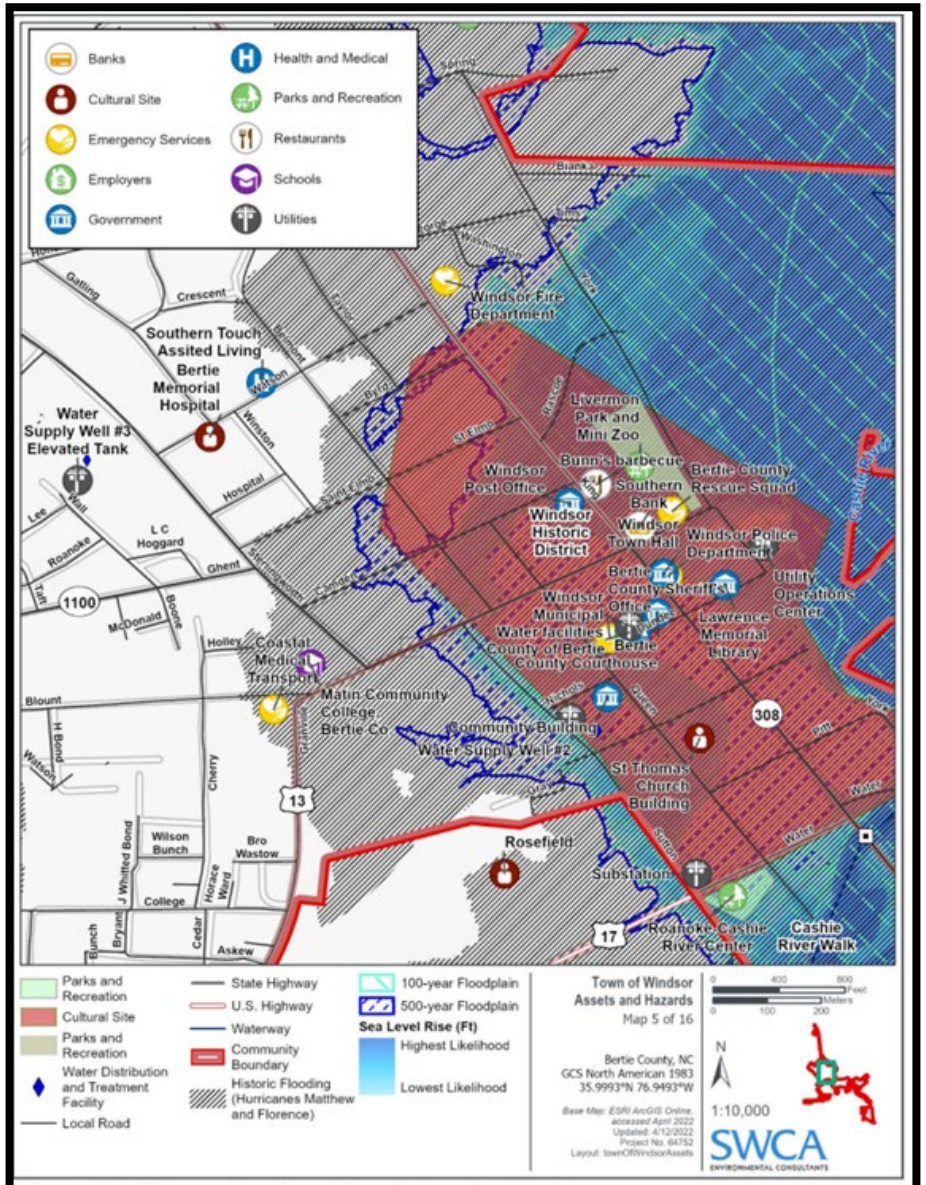


Figure F-5. Detail map of assets and hazards, keys to Figure 7.

Step 6: Conduct Risk & Vulnerability Assessment

Risk and vulnerability assessments evaluate risks to a community's people, critical assets, natural infrastructure, and ecosystems from coastal and climate hazards such as flooding, storm surge, and sea level rise.

This assessment serves as the foundation for determining what actions to take and where they should be targeted in the next steps of this process.

Use existing Hazard Mitigation Plans to create localized assessments with data and modeling that considers past, present, and future scenarios.

Risk & Vulnerability Assessment Process:

1. Identify and Map the Hazards
2. Assess Vulnerability
3. Estimate Risk

6A: Identifying & Mapping Hazards

- In this step, your team will identify and map potential hazards and stressors
- To accomplish this, teams should reference existing studies, reports, and plans, including local and regional hazard mitigation plans, and data referenced in this Handbook's appendices.
- Identify any (qualitative/quantitative) gaps necessary to complete the risk and vulnerability assessment.
- Map the geographic extent of current and future hazards and stressors relevant to the planning area.

6A: Identifying & Mapping Hazards Cont'd

Potential hazards:

- Sea level rise
- Flooding (rainfall, tidal, and riverine)
- Damaging storms, tornadoes, and winds
- Storm surge
- Shoreline erosion
- Drought, Heat Waves, and Wildfire

Non-climate stressors:

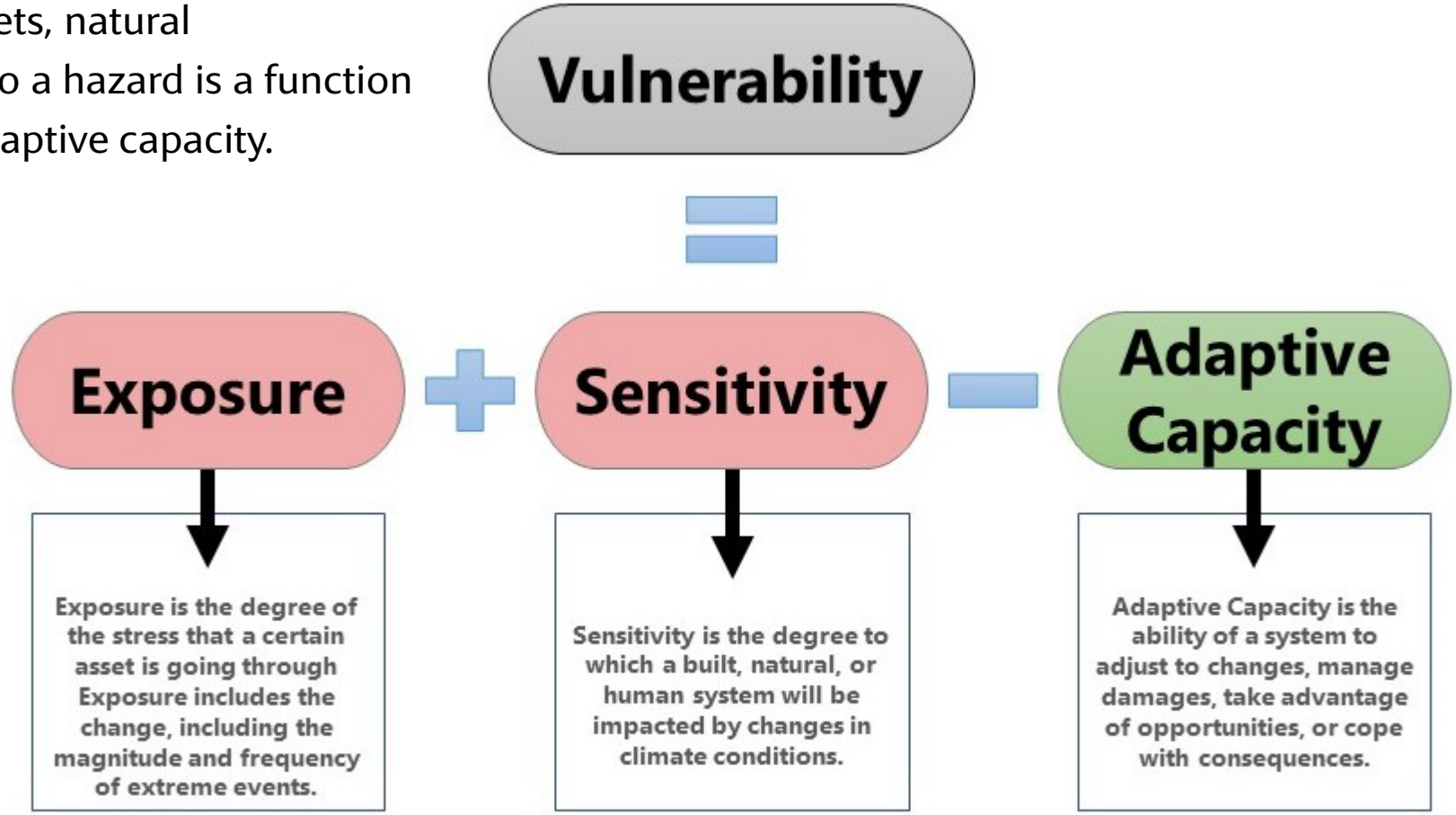
- Aging or potentially undersized infrastructure
- Population dynamics
- Economic shifts
- Increased subsidence
- Altered drainage patterns
- Land cover change (i.e., increased development and impervious surface area)

Step 6A Minimum Requirements

- Review local or regional hazard mitigation plans, extract data and information, and identify any gaps to fill
- Identify hazards and stressors to include in the risk and vulnerability assessment.
  - **At a minimum, they must include** flooding (rainfall, tidal, and riverine), storm surge, and 30-year sea level rise projection
- Map the geographic extent of the hazards and overlay them with community assets identified in Step 5.

6B: Assessing Vulnerability

The vulnerability of critical assets, natural infrastructure, or populations to a hazard is a function of exposure, sensitivity, and adaptive capacity.

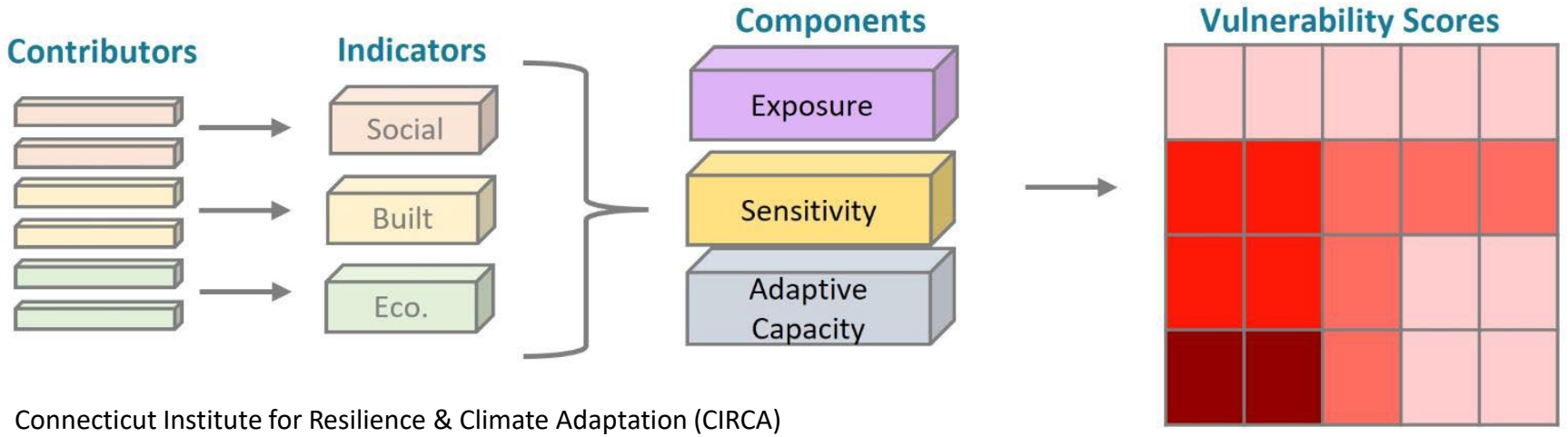


Connecticut Institute for Resilience & Climate Adaptation (CIRCA)

6B: Determining Cumulative Vulnerability

- **With help from the CAT,** the contractor will define thresholds and criteria that will be used to score assets as low, medium, or high for each vulnerability metric.

Asset	Exposure Score 0-3	Sensitivity Score 0-3	Adaptive Capacity Score 0-3	Vulnerability Score 0-3
Asset name	0= no exposure 1= low 2= Medium 3= High	0= no sensitivity 1= low 2= Medium 3= High	0= no adaptive capacity 1= low 2= Medium 3= High	0-2= Low 3-4= Medium 5-6= High



Connecticut Institute for Resilience & Climate Adaptation (CIRCA)

Step 6B Minimum Requirements

- Define thresholds and criteria that will be used to classify vulnerability of critical assets as low, medium, or high for each vulnerability metric.
- Estimate cumulative vulnerability of critical assets and natural infrastructure using vulnerability index.

Step 6C: Estimating Risk

- Understanding the financial loss communities experience when hazards occur is critical in determining what level(s) of risk call for immediate action.
- Use the risk assessment from your community's hazard mitigation plan to extract building values and other data on critical infrastructure and assets
- Where feasible, the contractor and CAT should consider supplementing or updating this information with more recent and locally relevant data.
- Outcomes of the vulnerability assessment and risk estimates will be used to engage with the CAT in determining where there is an acceptable level of risk and where strategies should be considered to reduce that risk and improve resilience.

Step 6C: Estimating Risk Cont'd

Sector	Number of Critical Assets, People, or Areas at Risk	Asset Value
E.g., Government facilities, Utilities, Roads	19	$X,000,000
E.g., Low-Income Community/Neighborhood	150 people	$X,000,000
E.g., Natural Infrastructure, Parks	1,000 acres	$X,000,000

Step 6C Minimum Requirements

- Gather supplemental data as needed past what the hazard mitigation plan provides
- Estimate the risk of the critical assets identified by using the sample table provided, or a similar table

Questions?

N.C. Division of Coastal Management, 400 Commerce Ave., Morehead City, NC 28557 | Tel: (252) 515-5400 | Email: RCCP@deq.nc.gov

BREAK

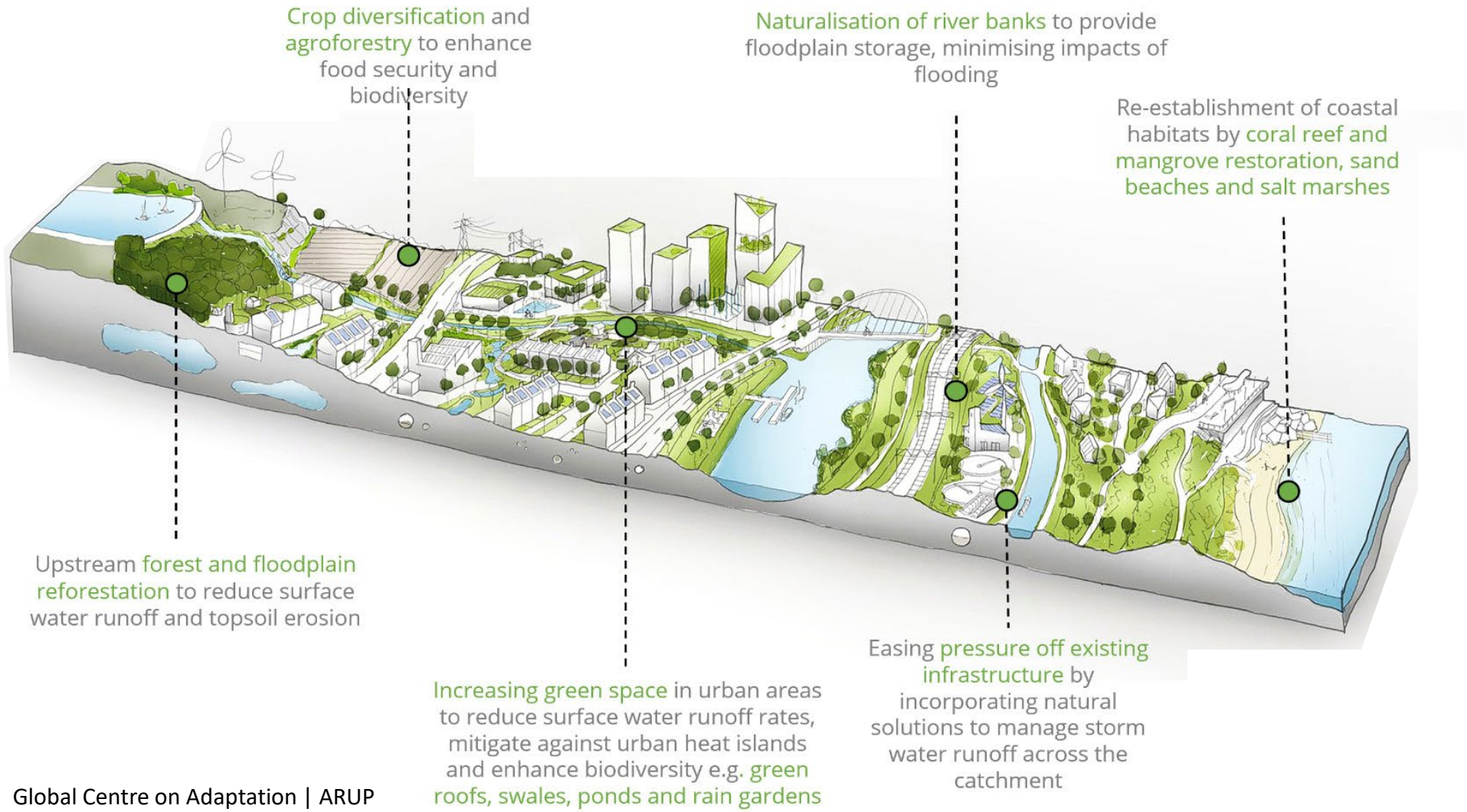
PHASE 2

N.C. Division of Coastal Management, 400 Commerce Ave., Morehead City, NC 28557 | Tel: (252) 515-5400 | Email: RCCP@deq.nc.gov

P2; Step 1: Identifying Potential Solutions

- Each community must find the right mix of **structural** (infrastructure) and **nonstructural** (policy-related) approaches, including nature-based solutions.
- **[Projects] should support basic community functions that are critical for absorbing, rebounding from, and adapting to hazards**
- **They should facilitate hazard-focused community preparedness, risk management, and mitigation actions that reduce long-term vulnerabilities; and**
- **They should enable post-disaster community recovery and redevelopment that integrates specific community-based resilience objectives.**

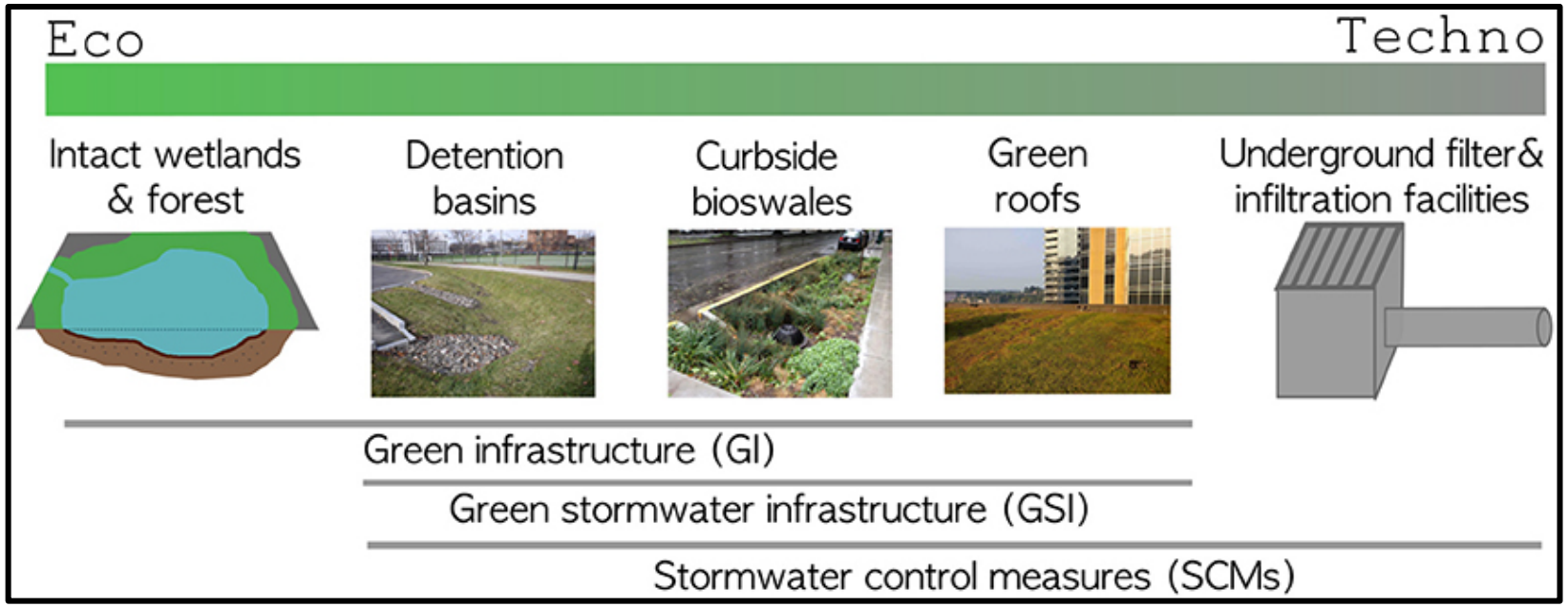
Nature-Based & Hybrid Solutions



Global Centre on Adaptation | ARUP

Floodplain & Stormwater Management

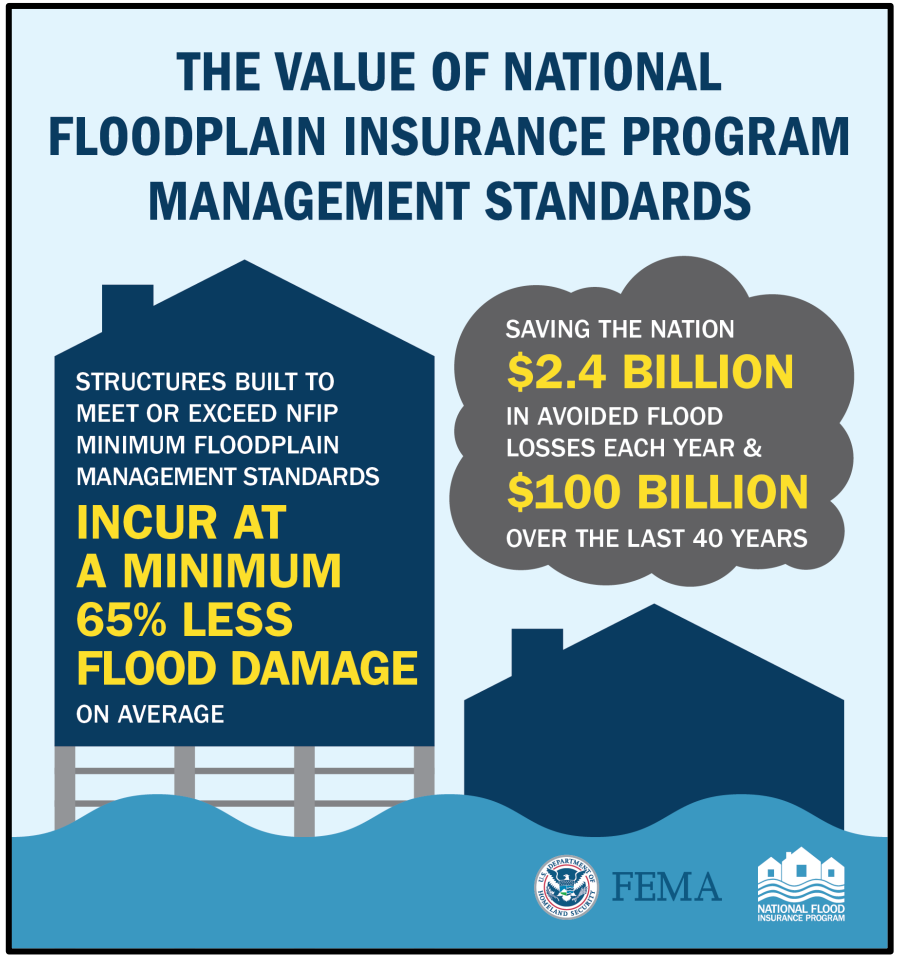
- Flooding is North Carolina's most common and costly natural hazard threat.
- Consider both nonstructural (policy-related) and structural flood mitigation and stormwater management measures during project development.



McPhillips, L. E., & Matsler, A. M. (2018). Temporal evolution of green stormwater infrastructure strategies in three US cities. *Frontiers in Built Environment*, *4*, 26.

National Flood Insurance Program (NFIP)

- Another aspect you may wish to consider is the National Flood Insurance Program Community Rating System (CRS).
- This is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program.
- In communities that participate in the CRS, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts

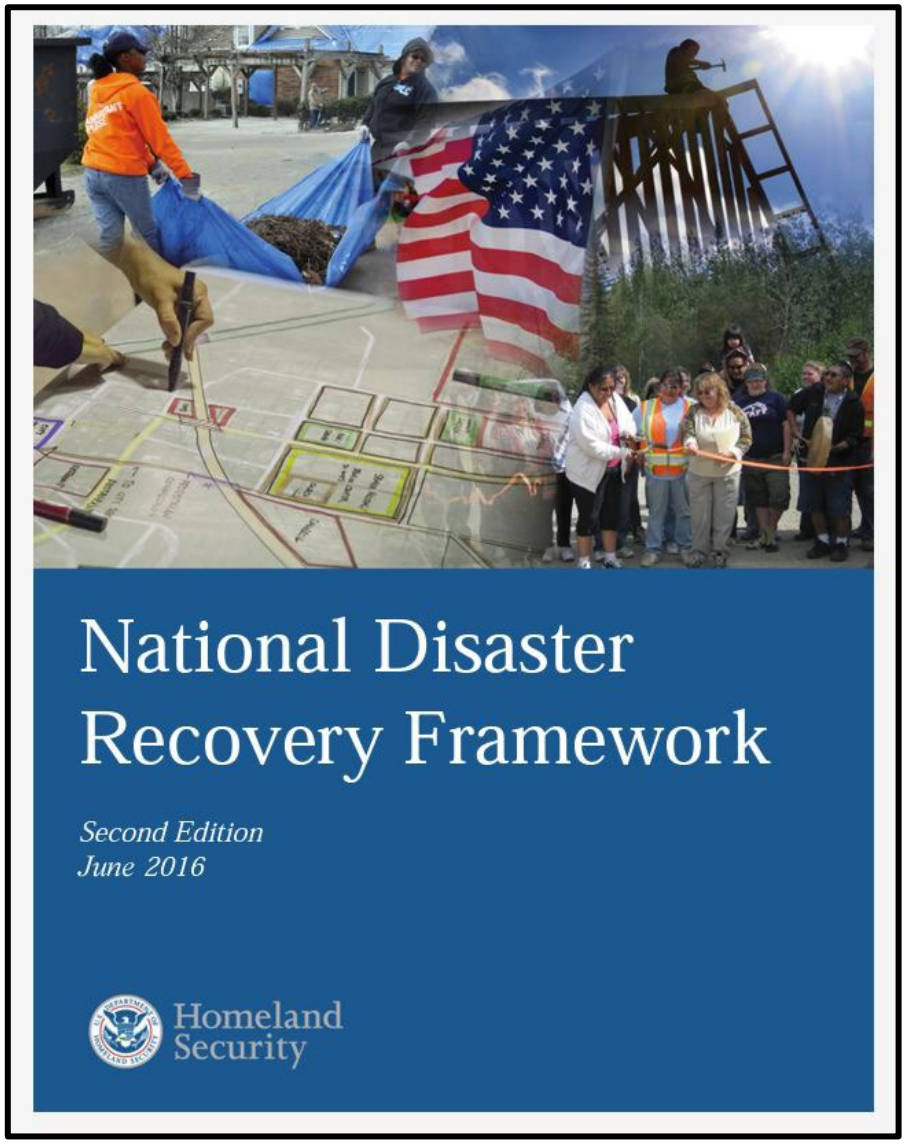


Pre- & Post-Disaster Recovery

The value of planning for a disaster beforehand is the resulting improvement of communication, response time, and utilization of funding and other disaster recovery resources. The period of disaster recovery also offers an opportunity to invest recovery funds into long-term resilience.

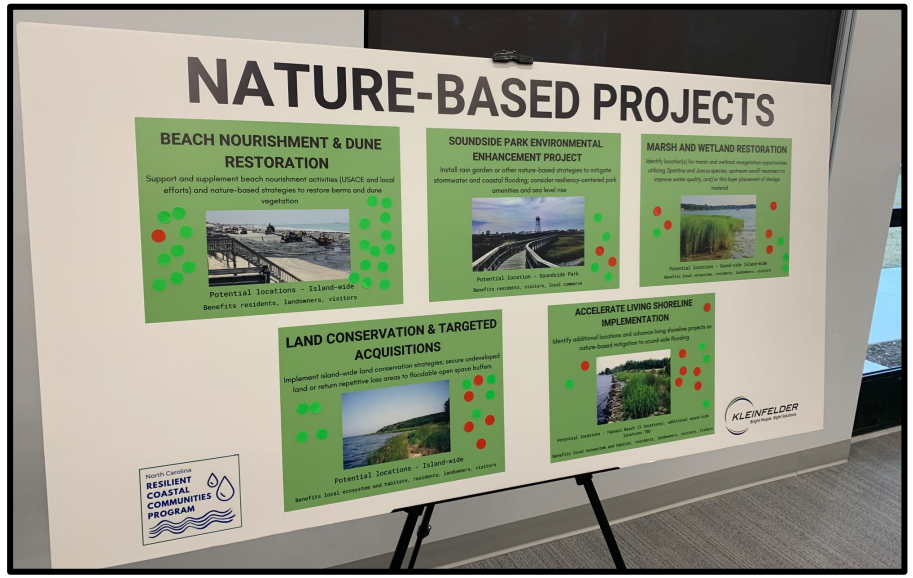
Explore the following to learn more about how to integrate resilience into recovery and redevelopment:

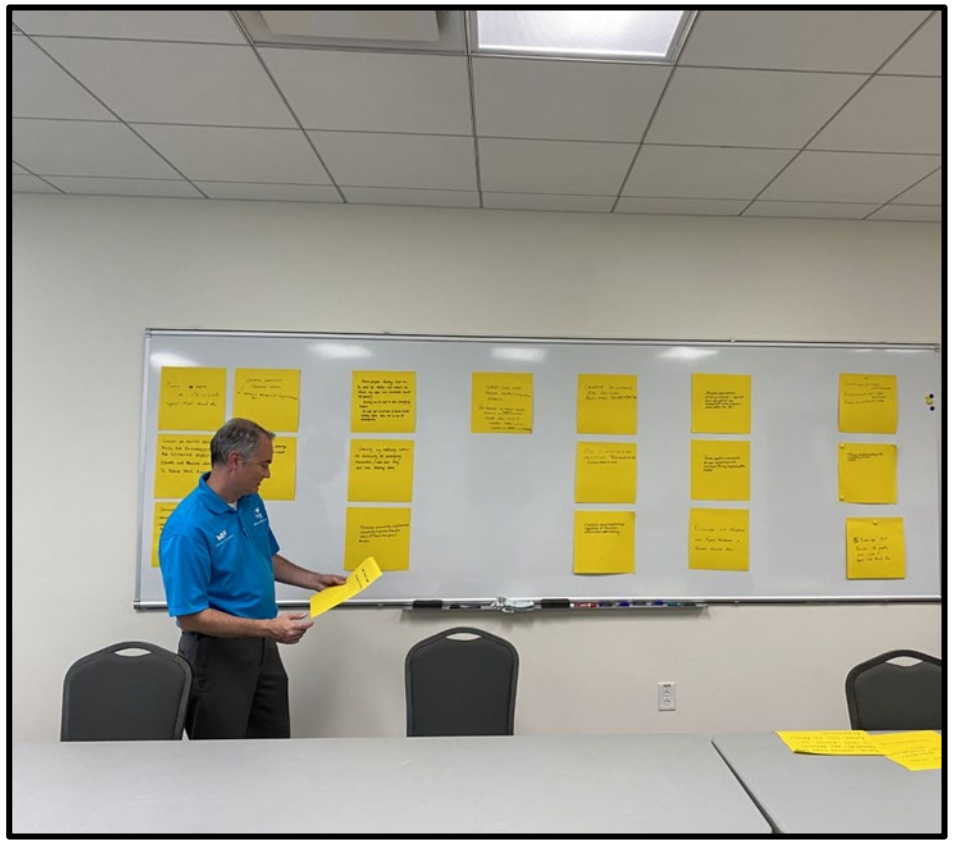
- Pre-Disaster Recovery Planning Guide for Local Governments
- National Disaster Recovery Framework
- Post-Disaster Recovery Guide for Planners



P2; Step 1 Minimum Requirements

- Develop a portfolio of resilience projects aimed at reducing exposure and sensitivity to hazards as well as strengthening the adaptive capacity of community assets and vulnerable populations.
- Ensure that each portfolio includes at least one nature-based solution.





P2; Step 2: Consolidating & Prioritizing Projects

Evaluate strategies and their feasibility.

- Include a cost-benefit estimation.
- Consolidate and prioritize strategies based on their usefulness to the community.

Return to the previous steps in the process to inform your decision-making; ask yourselves:

- Do projects meet your community's vision and goals?
- Do the identified projects correlate with community feedback?
- Does the project reduce the vulnerability or increase the adaptive capacity of a critical asset or vulnerable population?

Project Evaluation & Feasibility

Comprehensively evaluating strategies for their feasibility is key to developing strong resilience solutions.

- A cost-benefit analysis should be used to review proposed adaptation actions.
- Based on general criteria that are established by the community, ratings of high, medium, or low can be assigned to the anticipated costs and the benefits associated with each action.

Benefit	
High	Action would have a significant impact on risk reduction
Medium	Action would have an impact on risk reduction
Low	Long-term benefits are difficult to quantify in the short term

Cost	
High	Existing funding is not adequate
Medium	Requires budget reapportionment or amendment
Low	Funding available under the existing budget

- When evaluating whether a strategy is feasible, the STAPLEE method is a useful tool.

Project Evaluation & Feasibility Cont'd

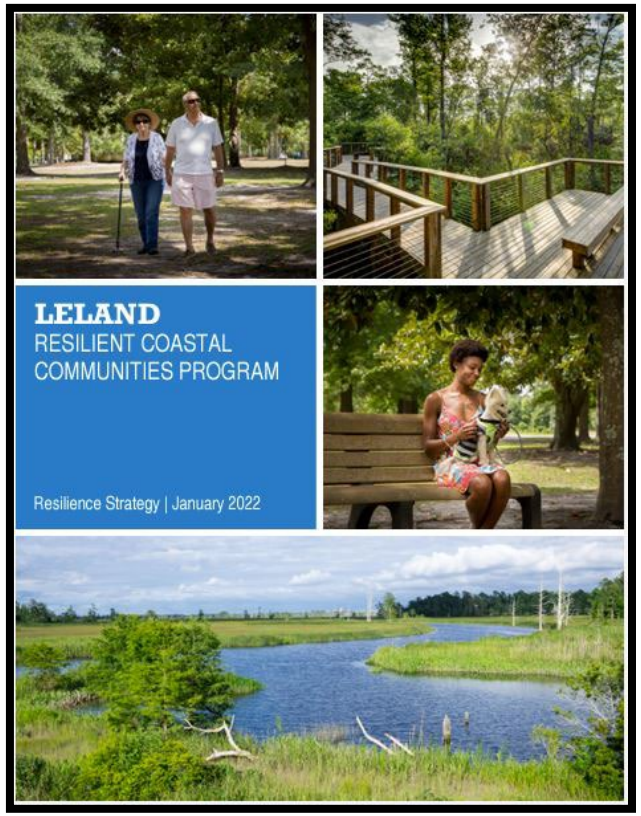
Project Name	Brief title for the project
Project Description	Describe the project, including information gathered during project development and expectations for the project moving forward. Please note that these descriptions will be used for future grant applications. Therefore, they should be as detailed as possible.
Location	Where will the proposed project take place?
Hazard(s) Addressed	List hazards specific to this program that impact the project location
Supporting Function	What essential part of the community does this project support (e.g., communications, transportation, etc.)
Type of Solution	Infrastructure, plans and policies, ordinance, non-regulatory programs, other (describe)
Estimated Timeline	Estimate the length of time the project will take to complete, as well as any anticipated delays in the timeline.
Responsible Entity	Who will primarily be responsible for project implementation (e.g., County Planning Department with a consultant)
Potential Partners	List any potential partners (i.e., individuals, organizations, agencies, etc.)
Existing Funding	List any current source of funding associated with the project.
Potential Funding Sources	Identify potential sources for project/action implementation.
Estimated Cost	Estimate the total cost of the project.
Anticipated Benefit	What are the primary benefit(s) of the project, and how much benefit will the project have (high, medium, low)?
Priority Rating	How urgent is the project (high, medium, low)
Project Map(s)	Provide any relevant maps of the project site

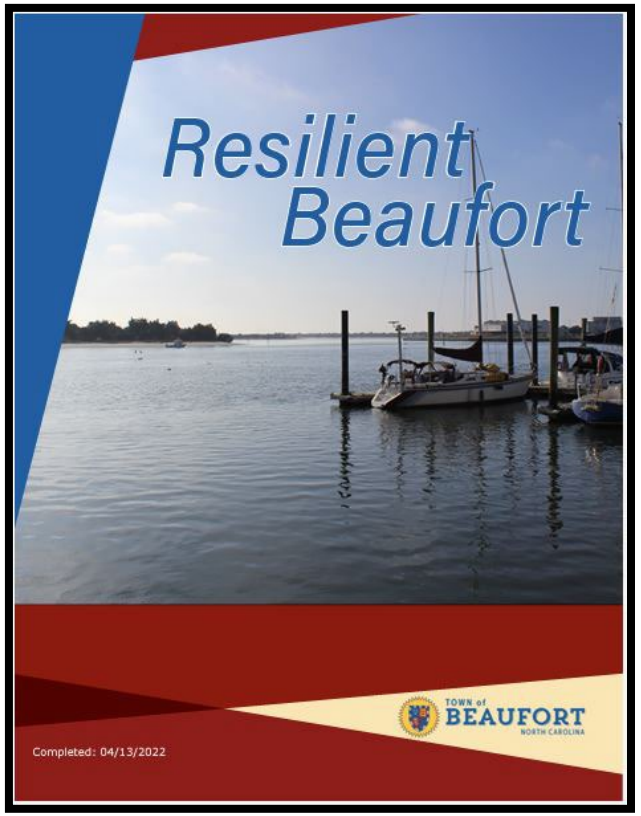
P2; Step 2 Minimum Requirements

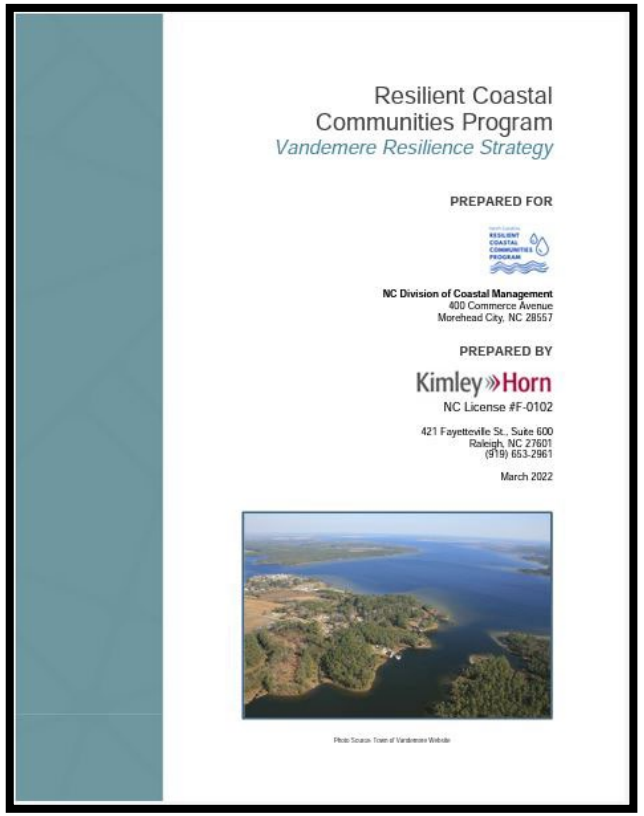
- Solicit public input on projects and evaluate projects' applicability and longevity
- Assess your Project Portfolio to prioritize **at least 5** priority projects organized using the template on the previous slide.

Water System Maintenance and Flood Mitigation	
Project Description	Maintaining the integrity of the Town's water system and accounting for future flood risk helps prevent potential interruptions in service. The drinking water infrastructure projects identified in the Town's 2019 Water Asset Capital Improvement Plan would be enhanced with the addition of flood proofing and mitigation strategies. These might include elevating structures or infrastructure such as stacks, ladders, or generator pads, or adding floodproofing or flood mitigation through nature-based features. Improvements should be undertaken according to an established schedule as it best suits the Town's maintenance planning efforts.
Hazard(s) Addressed	Tidal flooding, sea level rise inundation, and floodplain expansion. Although not covered in the assessment of vulnerabilities, saltwater intrusion underground may also be a concern, but would need to be studied separately.
Type of Solution	Grey Infrastructure Retrofits and Nature-Based
Estimated Cost	1A - Crescent Drive 1B - Campen Road $203,300 2A - Live Oak St. - Chestnut Dr. - Circle Drive 2B - Second St. - Legion Drive $2,851,125 3 - Live Oak - Mulberry Street - Pine Street $3,434,535 4 - Cedar Street - Moore Street $374,300 5 - Downtown $4,934,085 6 - West Ann Street and Queen Street: $2,648,085 7 - Front Street - Broad Street (Marsh Street to Gordon Street) $1,407,970 8 - Front Street - Broad Street (Gordon Street to Belle Air Street) $2,492,850 9 - Front Street - Ocean Street (Belle Air Street to Island View Drive) $788,260 10 - East Ann Street $194,130
Estimated Timeline	Next 10 years, one or two per year
Potential Funding Sources	Drinking Water State Revolving Fund; Community Development Block Grant-Infrastructure; State Drinking Water Reserve Program; Golden Leaf Flood Mitigation Program
Map/Location	Townwide (See Water and Critical Infrastructure Assets on page 31)
Prioritization Measures	
Cost-Benefit	High
Social Equity	Medium - Benefits entirety of Town
Internal Capacity	High
Co-Benefits	Prevents water service disruption
Public Survey Ranking	Top 4 (tied)

Deliverable:
Resilience Strategy







After Phase 2

- Continuing CAT team meetings; maintaining this network will build community capacity and may help address future resilience concerns.
- Consider integrating your Resilience Strategy into your CAMA Land Use Plan and other resilience-related policy documents.
- Complete additional feasibility studies to assess the applicability, feasibility, and cost of existing or future resilience projects.
- Leverage your new Resilience Strategy and project portfolio to guide you toward additional grant opportunities.
- Prepare for the RCCP Phase 3 “Request for Applications” to post
- Provide DCM with feedback on the RCCP process to help improve our efforts to improve coastal resilience in North Carolina.

Expectations & Recommendations

- We recommend executing a MOU with your contractor; however, it's not required
- Reach out to DCM Staff if you have gaps in your CAT
- **Notify DCM staff of all CAT and public meetings**. We will have DCM representation at each one

What's Next?

- Contractor Training on **September 7th from 1:30-4:30 pm**
- Once your Contractor has an executed contract with the state, work can begin. Contractors can submit an invoice to DCM once every 2 months.
- Begin assembling your CATs. Find a champion in your community who can help you lead the effort
- Let DCM staff know when CAT and Public Meetings are scheduled.

Contact Information

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