Resilient Coastal Communities Program

March 20, 2024



Agenda

- + Introduction & Schedule
- + Critical Facilities, Risk and Vulnerability
- + Policies and Projects
- + Next CAT Meeting



CAT Meeting Schedule

RCCP Grant-specific engagement					
CAT Meeting #1	November 15, 2023	 Introduce the RCCP and planning process Appoint a CAT Champion Discuss member roles Assign tasks to members on identifying contacts in vulnerable communities Schedule first public workshop, discuss targeted outreach & next CAT meeting 	RCCP Handbook Phase 1, Steps 1-4		
CAT Meeting #2	December 19, 2023	Discuss existing plans and efforts, Schedule targeted outreach, prepare draft goals and vision	RCCP Handbook Phase 1, Steps 2-4		
CAT Meeting #3	February 20, 2024	Community Action Team meeting to review and discuss risk and vulnerability assessment	RCCP Handbook Phase 1, Steps 5-6		
CAT Meeting #4	March 20, 2024	Community Action Team meeting to discuss development of potential resilience projects Schedule second public workshop (virtual, online survey, in person) & next CAT meeting	RCCP Handbook Phase 2, Step 1		
CAT Meeting #5	April 17, 2024	Community Action Team meeting to discuss prioritization and draft plan	RCCP Handbook Phase 2, Step 2		



The RCCP Handbook

Phase 1: Community Engagement and Risk & Vulnerability Assessment

- ✓ Step 1: Develop a Community Action Team
- ✓ Step 2: Review Existing Plans and Efforts
- ✓ Step 3: Set Vision and Goals
- ✓ Step 4: Develop a Community Engagement Strategy
- Step 5: Identify and Map Critical Assets, Natural Infrastructure, and Socially Vulnerable Populations
- Step 6: Conduct Risk and Vulnerability Assessment



The RCCP Handbook

Phase 2: Planning, Project Selection, and Prioritization

- ✓ Step 1: Identifying a Suite of Potential Solutions
- Step 2:Consolidate and Prioritize Projects



Risk and Vulnerability Assessment

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Vulnerability Equation



Source: October 2012, Hurricane Sandy, Resident of Kitty Hawk

EXPOSURE

refers to the presence of people, assets, and ecosystems in places where they could be adversely impacted by hazards

SENSITIVITY

is the degree to which an asset is potentially affected when exposed to an impact

Vulnerability= (Exposure + Sensitivity) - Adaptive Capacity

ADAPTIVE CAPACITY

is the ability of the asset and/or population to adjust to potential impacts from hazards with minimal disruption or cost

Quantifying Vulnerability-Exposure/Sensitivity

Field	Vulnerability-SLR	Vulnerability –SLOSH	Vulnerability- Future FLD	VUL_Comp
Long Name	Vulnerability to sea level rise of 2'	Vulnerability to storm surge from hurricanes and tropical storms	Vulnerability to flooding during the 1% annual flood chance storm after 2' SLR	Composite Vulnerability
Description	3=highest (Building impact or majority of property by projected SLR water level; 2=moderate (Property impacted alone); 1= low (all others)	3=highest (susceptible to flooding in Category 1 hurricanes); 2=moderate (susceptible to flooding in Category 2 hurricanes); 1=low (susceptible to flooding in Category 3-5 hurricanes)	3=highest (inundated or within the current and future SFHA at the 2' SLR scenario); 2=moderate (in the current and future SFHA at the 2' SLR scenario); 1=low (no buildings or property impacts)	Mathematical sum of all vulnerability measurements = Vulnerability- SLR+ Vulnerability-SL OSH+ Vulnerability Future FLD
Notes	2' of SLR corresponds to the anticipated in the next 30-35 years using NOAA's Intermediate scenario.	Uses National Weather Service SLOSH model to understand potential inundation expected during hurricanes of varying intensity, based on worst-case directional approach.	This approximates the potential impacts of future rainfall and storm events that are not associated with coastal vulnerability. Uses the NCEM dataset that explores what the future 1% annual flood chance area (Special Flood Hazard Area) might resemble after 2 feet of sea level rise.	To assist in prioritizing by vulnerability, which does not necessarily correlate with operational importance or community importance. This is essentially the Sensitivity Score defined in the handbook on pg. 35.

Quantifying Vulnerability-Adaptive Capacity

- Ability to raise the structure (look at existing FFE and freeboard w/ 1 ft. SLR and 2 ft. SLR)
- Is there a potential to relocate building infrastructure?
- Is the building accessible once relocated?
- Facility is not needed to operate?

Transportation

- Exposure/Sensitivity to 2 ft, 3 ft. ground inundation
- Depth of water on roadways ranging from .1-.5 ft and .5-2 ft.
- Number of buildings w/ access to critical facilities that are cut off
- Percentage of overall buildings impacted
- Percentage of roadways impacted
- Adaptive Capacity
 - Elevate Roadways
 - Barriers to Marsh Migration



Source: Coastal Roadway Inundation Simulator, NCDOT and NC Emergency Management

Natural Resources

- Exposure/Sensitivity to 1 ft, 2 ft. sea level rise scenarios
- Adaptative Capacity
 - Wetland Restoration Potential
 - Barriers to Marsh Migration



Source: Sea Level Rise Viewer, Marsh Migration, 2 ft SLR Scenario, NOAA

Dunes/Beach Nourishment

 Provide protection from overwash and/or limit occurrence of overwash



Source: DCM Interactive Viewer Map, 2020 Erosion Rates, Pre-Project Vegetation Lines, Vegetation Lines 1938-2020

Utilities

- Exposure to current 100-yr, 500-yr floodplains,
- Exposure to Category 1 and 2 hurricanes
- Exposure to Sea Level Rise 2 ft and 3 ft
- Sensitivity % of structures effected by Cat 1 and Cat 2 storm event
- Still need to factor in replacement cost
 - Preliminary Findings
 - Potential for high percentage of Septic exposed to storm events and sea level rise
 - High Percentage of water systems exposed (lines, hydrants)



Source: Dare County, Dominion Energy

Vulnerable Assets (Draft v2)

- Bob Perry Boat Launch (12)
- Kitty Hawk United Methodist (11)
- Town Hall (10)
- Kitty Hawk Police Department (10) –being relocated
- Kitty Hawk Public Works Department (9)
- Kitty Hawk Fire Department (9)-New bay being located on 158
- Unitarian Church (9)



Other Vulnerabilities and Factors

- Ocean overwash
- Rainy day localized flooding
- Adaptive capacity (i.e. potential to elevate)
- Other public input



Policies and Projects

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Overall Policies and Programs

- Keep drainageways clear to existing and future suction basins
- Regular maintenance of pump-out locations to ensure accessibility
- Program to help monitor and/or retrofit future failing septic tanks
- Stormwater asset mapping and drainage modeling for problem areas
- Pursue grants to make key infrastructure more resilient (roads, electric, water system)
- Dune plantings and tree plantings and encourage plant diversity.



Projects Detail #1: Lindbergh Ave Swales

Lindbergh Ave Swales





Projects Detail #2: Additional Pumps and Swales

- Potential Locations
- Between Bennett St and Luke Street
- Near Eckner St
- Southern part of US 158



Projects Detail #3: Dune Access Retrofit

- Retrofit existing at grade with permanent ramp over dune with ADA access
- This will improve preparedness for storms
- Currently staff moves sand prior to major storms



Projects Detail #4: Kitty Hawk Road and Twiford Road

- Asset mapping to locate and size culverts and determine material condition
- Stormwater model to understand flow during designed storms
- Potential to increase elevation of roads, replace or install culverts, create swales to improve infiltration, storage and conveyance.



Projects Detail #5: Bob Perry Convenience Center

- Under threat from sea level rise and storms
- May need to think of long-term relocation options.



Projects Detail #6: Town Hall

- Wildfire risk
- Elevation risk





Source: WUI Risk Index, Southern Wildfire Risk Assessment Portal

Projects Detail #7: Passive recreation acquisitions

 Consider buy outs along KH Bay to reduce exposure of private property. Use for passive recreation.





Projects Detail #6: Police Department Reuse

- Elevated or replaced potential for housing
- Floodproofed and used for retail
- Stormwater storage
- Pocket Park



Source: www.kittyhawkpolice.com

Projects Detail #7:Wetland Restoration

Potential

- Existing Salt/Brackish Marsh= 1,508 acres
- 504 acres of Salt/Brackish Marsh restoration potential
- Existing Estuarine Shrub/Shrub, Maritime Forest, Pine Flats =1,291 acres
- 310 acres of Estuarine Shrub/Shrub, Estuarine Forest, Maritime Swamp Forest restoration potential



Source: Potential Wetland Restoration, NC Division of Coastal Management

Other Projects

- Potential living shoreline installations
 - Moor Shore Road
 - West side of island
- Dredging canal to Bob Perry Boat Ramp
- Kitty Hawk Methodist Church



What's Next?

Today

- Discuss Critical Assets map and risk assessment
- Set date/time for next CAT meeting
 April 17 5:30- 7:30pm

Upcoming

- Develop project recommendations
- CAT #5- Rank Projects
- Public meeting #2 or Survey

Project Website:

<u>https://www.kittyhawknc.gov/departments-and-</u> <u>services/planning-and-inspections/</u> Contact: Rob Testerman, Planning Director, *Rob.Testerman@kittyhawktown.net*