



ANNUAL REPORT 2018

Climate Adaptation Working Group

Prepared by the Accomack-Northampton Planning District Commission & Partners

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CLIMATE ADAPTATION WORKING GROUP

Background

Sea level has risen nearly 420 feet in the past 18,000 years and nearly 1.5 feet since the 1930s. The Eastern Shore's coastlines are constantly responding to these changing conditions. Additionally, water temperatures are on the rise and the Shore's climate has warmed bringing a variety of changes to the types and abundances of wildlife and aquatic life, the times that certain species migrate through the region, and the growing seasons of our vegetative species.

In 2012, the Accomack-Northampton Planning District Commission (A-NPDC) assumed the role of lead agency for the Eastern Shore of Virginia Climate Adaptation Working Group (CAWG) to coordinate efforts among local, state, and federal representatives of government, aquaculture, agriculture, and community organizations to better plan and mitigate risks associated with climate change and sea level rise. CAWG's mission is to provide educational outreach and develop planning tools to assist local governments and residents. To date, CAWG has hosted multiple public workshops addressing sea level rise and developed flood vulnerability models utilizing high-resolution LiDAR elevation data for the region. The group is also working to gauge public sentiment and solicit knowledge and personal anecdotal accounts of what local residents have experienced in terms of changes related to sea level rise and climate change.

From 2012 until early 2018, the A-NPDC compiled and distributed an e-newsletter either annually or semi-monthly to hundreds of interested individuals from partner agencies, organization, and the public. In the winter of 2018, CAWG members decided that an annual summary of local efforts being taken towards climate adaptation would be more useful, this report is the first iteration of this direction.

Objectives

- Facilitate implementation of key adaptation strategies by ESVA localities
- Public education & outreach
- Forum for coordination amongst localities & agencies
- Serve as point of contact for state and regional activities
- Explore funding options for adaptation

CAWG PARTNER ACCOMPLISHMENTS

Partner organizations and agencies meet quarterly to discuss progress and share ideas. This section has a summary for many participating partners, presented in no particular order. Some projects may be referred in more than one partner summary, as often projects are implemented collaboratively.



The photo above is from the 2012 Coastal Flooding Workshop held at the Eastern Shore Community College, where there were about 200 attendees.

Accomack-Northampton Planning District Commission

- The A-NPDC is working with localities to establish the Eastern Shore Water Access Authority, enabled by 2014 legislation. In addition to owning and managing land for public use, the Authority can manage dredging and beneficial use grants, permits, and projects, restore or create tidal wetlands and manage any associated tidal mitigation credits, and manage properties for mitigation and resiliency purposes.
- The A-NPDC is submitting an application to the FEMA Hazard Mitigation Assistance and Grant Program for a number of home elevations and property acquisitions in the region.
- Working with elected officials and regional partners, the A-NPDC and the Eastern Shore Regional Navigable Waterways Committee (ESRNWC) and helped get the Waterway Maintenance Fund and Grant Program established.
- The A-NPDC and the ESRNWC have been working with the United States Army Corps of Engineers (USACE) to develop a project in the vicinity of Cedar Island and Wachapreague to protect and enhance coastal habitats via beneficial use of dredged material, artificial oyster reef construction, and marsh restoration.
- The A-NPDC leveraged a mini-grant from the Chincoteague Bay Field Station's EPA grant to construct a living breakwater at the Saxis Town Pier. Photos here, here and here.
- The A-NPDC is partnering with VDOT, Accomack and Northampton Counties, and VIMS to analyze roadside and agricultural ditches using LiDAR elevation data. The end result is anticipated to support enhanced management and design of ditches in a manner that will provide enhanced water quality and coastal resilience.
- The A-NPDC is partnering with Dr. Chris Hein of VIMS on geologic research at and in the vicinity of Parramore Island. The research is being shared with local community leaders to advance understanding of the evolution of the barrier and lagoon systems with the intent of enhancing coastal management.
- The Accomack-Northampton Economic Development Committee, under the guidance of A-NPDC staff, updated its regional economic development plan with a section dedicated to economic resilience.
- The A-NPDC hosted, co-hosted, and participated in numerous educational field trips, visits, and meetings related to coastal resilience on Virginia's Eastern Shore.

- A-NPDC Staff gave public presentations at numerous public seminars related to sea-level rise, hazard mitigation, and other topics related to natural resources.

Accomack County

- Accomack County is participating with the RAFT Team on the draft scorecard for Accomack County.
- The County has received the results of its most recent FEMA Community Rating System evaluation. The County has moved from a Class 8 Community to a Class 6 Community as of May 1, 2018.
- Accomack County is beginning its update of the Comprehensive Plan which will include sections on resiliency as well as shoreline management.
- The County participated in FEMA's Atlantic Fury Exercise.

Northampton County

- Northampton County has completed upgrades to the Red Bank boat launch.
- Dredging of Willis Wharf is being evaluated, including beneficial use options for the material.
- An Environmental Specialist was hired, Katie Spady.
- Northampton County has explored the idea of installing kayak accesses at landing sites.
- Coordination and implementation of the CRS program is scheduled to begin within the year.

The Nature Conservancy

- We are in the process of updating the Future Habitat app: for this effort we partnered with Warren Pinnacle to re-run the Sea Level Affecting Marshes Model (SLAMM) using the most recent sea-level rise projections, based on the 2017 National Climate Assessment. The selected scenarios are intermediate-low (2.32 ft by 2100), intermediate (3.96 ft by 2100), high (7.24 ft by 2100), and extreme (8.88 ft by 2100).

The updated app should be available through the Coastal Resilience tool (<http://maps.coastalresilience.org/virginia/>) in early June.

- We are currently developing 90 second Digital Stories, or short videos, to demonstrate the use of each app. Digital Stories are already available for the Flood and Sea Level Rise app, the Coastline Change app, and the Living Shoreline Explorer app.
- We are currently developing TryMe's, or click-by-click tutorials, to demonstrate the utilities of each app. The targeted audience is high-school students; however, these products will be available for everyone to use on our Coastal resilience project website (<http://coastalresilience.org/project/virginia-eastern-shore/>). We are finalizing the TryMe for the Flood and Sea Level Rise app, beta-testing (in collaboration with high-school teachers) the TryMe for the Coastline Change app; and developing the TryMe for the Living Shoreline Explorer app.
- In February 2018, we held a teachers workshop to engage teachers in the use of the Coastal Resilience tool and gather their feedback on the Flood and Sea Level Rise TryMe. We showed the utilities of each app and took the group to Camp Occohannock Living Shoreline demonstration site.
- In March 2018, we held two Coastal Resilience workshops: the first for the town of Chincoteague, at Chincoteague High School, and one for the town of Cape Charles, at Kiptopeke Elementary.

Town of Saxis

- On Saxis Island over 6000 feet of shoreline needs to be protected to prevent further erosion. The first project (to begin to address this critical problem) is located at the Southern-most point on Saxis Island. In an attempt to use a more natural solution to prevent further erosion in a high energy wave action environment, the first biogenic reefs were built by both residents and non-residents and installed in December of 2017. Saxis Island will continue to work towards abating coastal erosion as funds become available.
- A workshop hosted by the RAFT collaborators was attended by representatives from the Town of Saxis. Through this all day workshop and through the RAFT scorecard, projects relevant to these said scores were identified as the first step(s) to move forward.

- A town wide meeting was held in September and the entire RAFT project was presented to the Mayor, Town Council and residents of Saxis Island.
- A RAFT team was formulated consisting of a cross-representation of residents of the town. Represented on this team are: a veteran, a retired couple, a current military service member, members with young children, a woman-owned business member and pre-retirement members. Within this cross representation are members with various degrees and or expertise in Business, Biology, Engineering, Medical, Publishing, Account Management, Local Government and Finance arenas. The concept for this team creation is that of a good cross representation to address the needs of all residents of the community as projects of importance are selected.
- Of the 5 projects initially selected during the workshop (priority subject to change) the first two have been completed. A third project, that of creating a 'Health and Wellness and Evacuation Plan' has been completed enough that it was put in place prior to the most recent coastal hazard of September 2018. A few final touches and this project will also be completed.
- Additional projects for coastal resilience have been identified and Saxis Island will make use of the support in place via the RAFT Collaborators as well as all possible funding opportunities.

Town of Wachapreague

- The Town of Wachapreague is forming a Resilience Adaptation Feasibility Team (RAFT) to investigate and develop strategies to address flood related events.
- The Town is also entering into preliminary negotiation with several engineering firms to address the replacement/upgrade of what is considered to be the main storm drain located in the center of town, which runs from the west end of town, to the waterfront located on the east end of town. Issues to be addressed are a Preliminary Engineering Report, Environmental Report and Grant resources.
- On May 1, 2018, the Town of Wachapreague received an award from FEMA/CRS for significantly exceeding the requirements for NFIP participation and effective floodplain management. The Town is currently in process of submitting our current CRS Report.
- As of April 2017, the Town of Wachapreague has a CRS Rating of 8.

Virginia Coast Reserve Long Term Ecological Research and Anheuser-Busch Coastal Research Center (UVA)

- A salt marsh and sea level rise workshop for local interests (stakeholders, especially planners) was held on site in April 2018. A diverse team of researchers - including coastal ecologists, economists, and social scientists - presented their work and received feedback from attendees on the utility of their results for coastal resilience solutions on the Eastern Shore. The work was supported by an NSF Coastal SEES grant. Presentations included 1) models of sea level rise and marsh resilience along the seaside coast of Northampton county, parameterized with data from our research sites, 2) an overview of marsh ability to respond to sea level rise, 3) an economic approach for setting conservation portfolios to maximize the chance of retaining marshes and their function as sea level rise continues, and 4) insight into the language and interests of the local community and how that might be used to promote “buy-in” for marsh preservation strategies.
- Our marsh elevation data is being integrated with data from research sites around the Chesapeake Bay to evaluate coastal resilience to sea level rise as part of the Chesapeake Bay Sentinel Site Cooperative. The Cooperative is making plans to host a conversation between practitioners and researchers to disseminate the results of our combined data, to discuss best practices, and to inform future research needs. The conversation - a marsh resilience summit - is planned for 2019 in coastal Virginia.
- We have been continuing place-based education and professional development for teachers from coastal Virginia and nearby communities. Our courses highlight signs of climate and sea level change during observations for art repeated at the same sites over several years.
- We hosted an interdisciplinary Environmental Humanities “Listening Lab”, with faculty from Environmental Sciences, Music, Religious Studies and Ethics, focused on coastal resilience to climate.

Virginia Eastern Shore Land Trust

- Virginia Eastern Shore Land Trust holds conservation easements on 75 properties totaling 14,000 acres.

- With funding from the Land Trust Alliance and Chesapeake Bay Funders Network, VES Land Trust completed a study on where and how to expand riparian buffers on bayside conservation easements. The study was focused on reducing pollution in the Chesapeake Bay through targeted increase in riparian buffers. VES Land Trust hopes to use the data to help landowners restore riparian buffer areas with the greatest impact on water quality.

Virginia Institute of Marine Science (Coastal Geology Group)

- April 2018: Completed and published (<https://doi.org/10.1016/j.margeo.2018.04.007>) a comprehensive study of the geologic through modern history of Parramore Island as part of a study funded by Virginia Sea Grant; fully formatted *Marine Geology* article is forthcoming (May/June 2018) and can be distributed by email to CAWG members, as desired.
- September 2017: Held a three-day field campaign and coastal resilience “technology demonstration” for local through state dignitaries (including Governor McAuliffe) on Wallops Island in collaboration with partners from Randolph-Macon College and the University of Delaware (under the auspices of the Mid-Atlantic Coastal Resilience Initiative; MACRI); see details here: <http://www.dailypress.com/news/science/dp-nws-drones-vims-wallops-20170912-story.html>
- April 2018: Received funding from the Virginia Center for Innovative Technology for a comprehensive study of Fishing Point (southern Assateague Island), in collaboration with scientists from Randolph-Macon College and the University of Delaware (MACRI partners). Field data collection, including sediment cores, sub-bottom seismic, topographic and bathymetric mapping, and instrument (wave/current meters) deployments will be conducted in summer and fall 2018. VIMS field crew will be on Assateague in mid-October for a week-long sediment-coring field campaign.
- C. Hein presented public lectures on barrier islands and our findings from studies of Cedar and Parramore islands at the VIMS Eastern Shore Lab (Nov 2017) and the Barrier Islands Center (March 2018).

Virginia Institute of Marine Science (Center for Coastal Resources Management)

- CCRM along with partners from the W&M Law School, W&M Public Policy Program, and Wetlands Watch launched ADAPTVA to provide audiences with access to data, tools, and guidance for addressing climate change impacts in Virginia (www.adaptva.org/index.html).
- CCRM has initiated work to evaluate the capacity of road-side ditches and agricultural ditches under sea level rise for the Eastern Shore. Work to develop a protocol to identify ditches using LIDAR is underway.
- Working with the floodplain management division of VA Department of Conservation and Recreation, CCRM has developed and updated the VA Flood Risk Information System (cmap2.vims.edu/VAFloodRisk/vfris2.html). Phase 3 of this work will continue.

RAFT team (University of Virginia Institute for Environmental Negotiation (IEN), the Virginia Coastal Policy Center (VCPC) at William & Mary Law School, and Old Dominion University/ Virginia Sea Grant Resilience Program (ODU) - The RAFT (Resilience Adaptation Feasibility Tool) for Cape Charles

- The RAFT helps localities to address challenges posed by increasing coastal hazards so that they can thrive through three key components:
 - The RAFT Scorecard provides an assessment of a locality's coastal resilience using environmental, economic and social metrics;
 - The RAFT Resilience Action Workshop creates a Resilience Action Checklist using ideas from the assessment;
 - Implementation of the Resilience Checklist is supported by the RAFT through ongoing technical and other forms of assistance.
- The RAFT was developed by an academic interdisciplinary collaborative core team and the Scorecard has been vetted and revised by an Advisory Committee and focus groups of academic and practitioner experts including local government staff.
- In 2017, the Town of Cape Charles was selected as one of three pilot communities. The RAFT scorecard identified strengths for Cape Charles in hazard identification and planning; and opportunities in communications, community engagement, and developing policies. Community leaders developed a Resilience Action Checklist in June 2017 and have been working with the university team to implement those actions.

- As of May 2018, while some items on the Town of Cape Charles' Resilience Action Checklist are still in a formative stage, the following items have moved forward.
 - In February 2018, the RAFT team provided a special work session for the Town Council to provide detailed educational information on sea level rise, flood risk and resilience.
 - As part of the Smithsonian Institution's Museum on Main Street program, the Cape Charles Museum and Welcome Center included an exhibit on The RAFT in the "Water Ways" exhibit.
 - Public information articles provided updates on the RAFT in several editions of the Gazette.
 - A Frequently Asked Questions (FAQ) handout was developed for the Town to educate residents about sea level rise and resilience.
 - Research concerning the regulatory control of the Town's dunes along the beach road is underway and will be completed soon.
 - The RAFT team connected Cape Charles with the Green Infrastructure Center which will be developing a tree canopy map and maps of natural and cultural resources. Further work with the Green Infrastructure Center is expected in fall 2018.
 - A study is underway and will be completed soon on the legal and policy barriers or implications of the Town's ability to obtain authority from VDOT to maintain its roads.
 - A study is underway on possible policy incentives to encourage private landowners and private land management to implement conservation approaches on their properties, to help the community become more resilient and prepared for sea level rise and flooding.

CONCLUSION & SUMMARY

As evidenced in the partner project descriptions, agencies, organizations, and educational institutions are committed to researching and considering climate impacts and implementing plans and strategies on the ground to improve the resiliency of our natural areas and our developed areas. Due to our unique geographic features and coastal assets, valuable data collection and analysis are being done on the Eastern Shore, from marsh and sand migration to social effects of climate and sea-level rise predictions in a rural coastal region.

Over the coming year, the Resilience Adaptation Feasibility Tool (RAFT) project will be bringing additional attention to climate adaptation and implementing a consistent process in communities throughout the region. The network of teams developed during this process will undoubtedly prove helpful in moving forward with mitigation strategies in the coming years.

While the Eastern Shore benefits from more natural resiliency due to the high proportion of coastal wetlands, barrier islands, and mainland edge protected by conservation efforts, the specter of global climate change nevertheless renders the Shore vulnerable to dramatic changes over the next century. There is ample opportunity to begin planning now for the future to effectively build on the natural resiliency of this unique place and adapt to the coming changes.