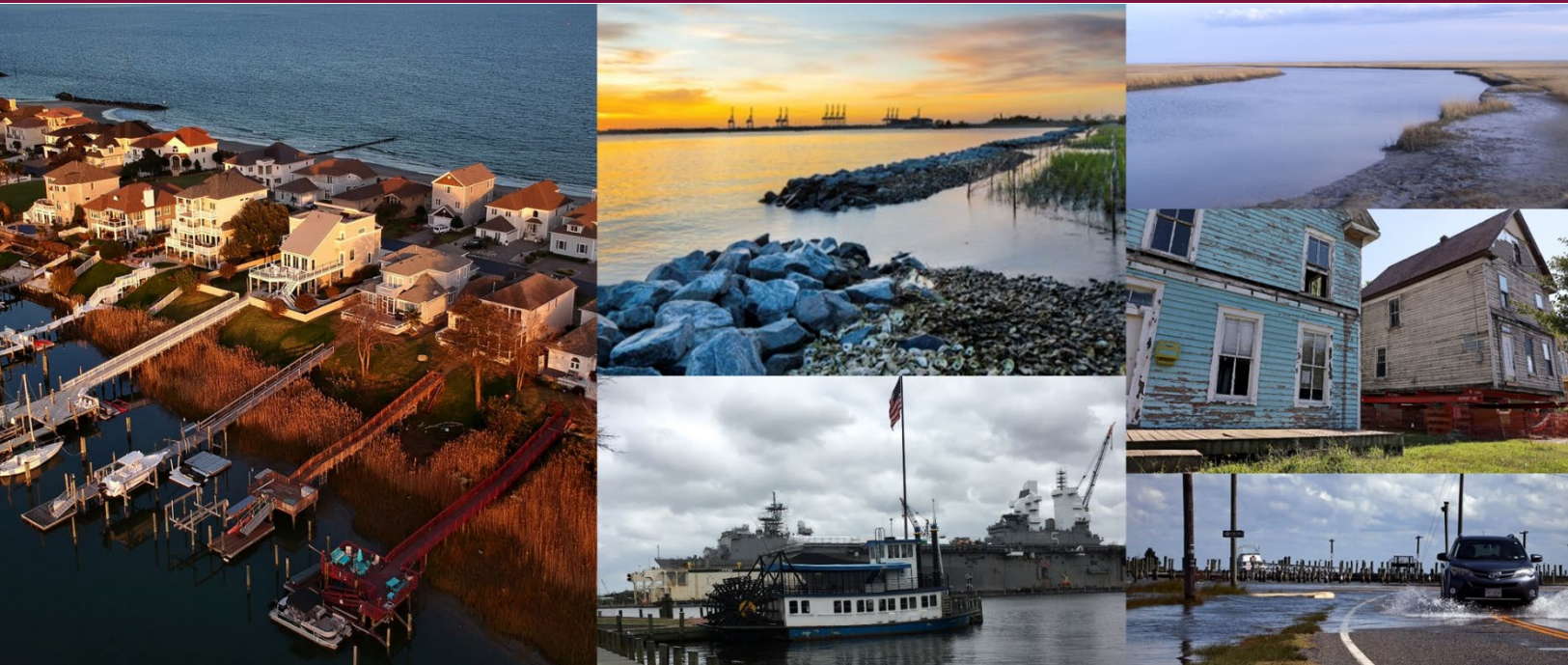


VIRGINIA COASTAL RESILIENCE MASTER PLAN

Task 5.4 – Summary of Planning District and Regional Commission
Webinars and Workshops

OCTOBER 11, 2021



FINAL REPORT

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1. OVERVIEW OF WORKSHOPS

1.1. BACKGROUND

The objectives of these sessions was to formulate a locally developed vision of resilience against sea level rise and other flood hazards; provide a summary of these hazards in the region; gather supplemental information on the impact on the community, particularly on vulnerable populations; evaluate potential mitigation measures; and identify capacity-building needs of the community to plan and implement adaptation measures.

Eight individual workshops were held for each of the Commonwealth's coastal Planning District Commissions (PDC) and Regional Commissions (RCs):

1. Accomack-Northampton PDC (A-NPDC)
2. Crater PDC
3. George Washington Regional Commission (GWRC)
4. Hampton Roads Planning District Commission (HRPDC)
5. Middle Peninsula PDC (MPPDC)
6. Northern Neck Planning District Commission (NNPDC)
7. Northern Virginia Regional Commission (NVRC)
8. Plan RVA

The duration of each meeting was approximately 4-hours. HRPDC hosted two, 4-hour sessions. Each of the workshops was customized for each PDC/RC, including:

- Pre-workshop package
- Workshop presentation content
- Regional visioning exercise
- Breakout station resources

A pre-workshop data package was developed and distributed in advance of each of the workshops to allow participants to become familiar with the materials and prepare for interactive engagement. This package included:

- impact maps summarized by PDC/RC, including:

- Flood hazard exposure
- Community resources impacts
- Critical sector impacts
- Natural infrastructure impacts
- an overview of the Regional Visioning questions; and
- a description of the Breakout Stations and anticipated outcomes.

1.2. PRE-WORKSHOP WEBINAR

Webinars were held in advance of each workshop to build understanding of the CRMP, disseminate initial findings of the impact assessment, and establish expectations for the workshop meetings.

The webinar presentation included:

1. An overview of the guiding principles and goals of the CRMP
2. A summary of the approach to the CRMP, including the definition of hazards, characterization of assets, social context, and assessment of impacts. Initial results were presented.
3. A review of the project identification and evaluation process was presented, including information regarding how projects would be screened and evaluated. It was emphasized that no projects would be removed from consideration.
4. An overview of the workshop agenda. The overview included information on the regional visioning sessions and breakout stations available for engagement.

1.3. WORKSHOP AGENDA

Introduction and Objectives (approximately 40 minutes)

- Introductions
- Summary of pre-workshop webinar
- Status of data call in the region
- Objectives of the regional visioning exercise

Regional Visioning Session (approximately 1.5 hrs)

This interactive exercise encouraged participants to begin the workshop by looking at the big picture and define what a resilient coast for their region looks like in the future.

Station Breakout Session (approximately 1.5 hrs)

Interactive stations fostered a dialogue among participants and with the CRMP project team to collect additional data to inform the Master Plan development. The stations included :

- Project Evaluation/Identification and Capacity Building
- Hazard and Impact Assessment
- Risk Summarization and Planning

1.4. REGIONAL VISIONING EXERCISE

This exercise encouraged participants to begin the workshop by looking at the big picture and defining what a resilient coastal region looks like in the future. For PDCs with minimal coastal hazard exposure, participants were also encouraged to consider riverine and pluvial hazards. The goal of this visioning process was to help regional stakeholders better identify and prioritize projects that will fulfill their needs. This exercise also helps to elaborate on the values, assets, and priorities of each region and how the CRMP can best balance the conditions and common priorities of Virginia's coastal regions. This exercise will also help the team identify priority regional assets to protect.

Part 1 – Regional Priorities – What are the assets communities in your region value most?

A Lead Facilitator stated that different communities along the coast will experience flooding and other coastal hazards differently and may have different values on what is most important to protect. The various populations within a community would also be impacted differently by flood hazards and a primary objective of the CRMP is to “encourage equitable treatment for all communities and the preservation of our coastal environment throughout all resilience efforts.” The goal of this first part of the exercise is to understand what assets communities in this region value the most , and how they may be impacted by existing and future flooding and associated natural hazards.

The Lead facilitator introduced the following questions:

- Based on the impact assessment results, what are the regional assets at risk that communities in your region value the most?

- Which are assets important to specific communities within the region, including tribal communities, low-income geographic areas, and vulnerable populations?

Attendees were asked to identify on a Post-It note: 1) an asset important to communities in their region, and 2) how that asset may be threatened by coastal flood hazards. Participants could identify as many assets as they could. Assets were defined to include a specific economic industry, type of natural resource, or a quality of life attribute.

Facilitators encouraged brainstorming and emphasized that there was no right or wrong answers. Responses were posted on a central location in the room (including whiteboards, a wall, or a large poster board). Facilitators floated amongst the attendees during this time, assisting participants, asking prompting questions, and helping to group common assets themes on the boards.

Following the individual session, the Lead Facilitator re-convened a group discussion on key themes identified in the exercise. Participants were asked to share what stood out to them as they looked at assets identified by the group and consider whether the ideas discussed reflected the perspective of all communities in the region.

Part 2 – Defining a regional vision for a resilient coast

The Lead facilitator introduced the following questions:

- What does a resilient coast for your region look like 30-50 years into the future?
- How has the coast adapted to future risks?
- How are the region’s valuable assets protected?
- What activities (economic, cultural, recreational) does the coast support?
- How is community resilience strengthened? Has it been equitable across all populations?

Each Table Facilitator lead a small group discussion on what a resilient future coast looks like in 30-50 years. The discussion was generally structured around the prompting questions but allowed to develop organically. Ten minutes before the end of the small group brainstorm, each group began synthesizing the group’s thoughts into a vision statement.

Each table identified one person to report out on the group’s synthesized vision for what a resilient future coast looks like. The Lead Facilitator lead a large-group discussion identifying key themes across groups and prompted the group to consider how this long-term vision for the coast shapes priorities for the next 5-10 years.

1.5. BREAKOUT SESSIONS

After the Regional Visioning session, participants took a 10-minute break and were then asked to begin rotating through the stations in no particular order. This setup allowed participants to focus on their most pressing needs and interests.

Each of the stations are described below.

Project Evaluation/Identification and Capacity Building Station

There were two primary activities at this station:

1. Data Call Support

- a. Project Identification – the facilitator at this station encouraged participants to submit projects or capacity building needs, answered any questions that participants had regarding the data call, and why project types were desired. The expectation was that most participants would return to their office to complete the survey form. An internet-connected tablet was on hand to help with project entry; however, not all participants elected to submit projects at the workshops.
- b. Capacity Building - the same facilitator assisted participants with any questions regarding their capacity-building needs survey. An internet-connected tablet was on hand to help with project entry; however, not all participants elected to submit projects at the workshops.
- c. Print-outs of both the project and capacity building elements of the project data call with the online-links were on-hand and provided to interested participants. Copies of the CRMP project classification schema were also on-hand and facilitated questions and answers with interested participants on the project types under the CRMP.

1. Project Evaluation Criteria Ranking Survey

- a. A printed survey with instructions was provided to participants. Participants were asked to select their top three prioritization objectives. Projects should be prioritized if they:
 - i. Incorporate forward-looking and adaptive design principles, such as accommodating existing and future flood risks.
 - ii. Are needed to reduce both existing and future flood risks.

- iii. Address multiple flood hazards (tidal, storm surge, riverine, rainfall) and associated coastal hazards such as shoreline erosion, and rising groundwater tables.
 - iv. Consider social and economic equity with attention to the most chronically underserved communities facing increased flood risks.
 - v. Utilize community- and regional-scale planning to the maximum extent possible.
 - vi. Incorporate nature-based design elements.
 - vii. Protect and enhance natural systems critical for flood and storm protection, water quality management, and wildlife habitat services.
 - viii. Maximize adaptation or protection to communities, built infrastructure, and natural systems.
- b. The results of the ranking survey are shown in the table below. Since each participant could select up to three criteria, scores can only be totaled by criterion. The number of participants is developed by dividing the total number of votes received at each PDC by 3 (the number of selections permitted).
- c. **Based on the results, workshop attendees believe that the top three prioritization criteria are that projects should:**
- i. Provide benefits to communities facing lack of economic resources and capacity.
 - ii. Maximize benefits to the built, social, and natural environment; and
 - iii. Address regional priorities for protection and adaptation of community resources, critical sectors, and natural infrastructure.

| Criterion | Number of Selections | | | | | | | | |
|--|----------------------|-------|------|-------|---------|--------|-------|------|-------------|
| | NOVA | ANPDC | GWRC | HRPDC | PlanRVA | Crater | MPPDC | NNRC | Total Score |
| Provide benefits to communities facing lack of economic resources and capacity | 2 | 2 | 7 | 4 | 2 | 2 | 2 | 5 | 26 |
| Maximizes project benefits to the built, social, and natural environment | 2 | 2 | 6 | 4 | 3 | 2 | 2 | 2 | 23 |
| Address regional priorities for protection and adaptation of community resources, critical sectors, and natural infrastructure | 2 | 3 | 5 | 7 | 0 | 0 | 1 | 4 | 22 |
| Incorporation of nature-based design elements | 2 | 2 | 5 | 3 | 3 | 1 | 0 | 2 | 18 |
| Have the potential to add resilience to socially vulnerable communities | 2 | 1 | 6 | 3 | 1 | 1 | 0 | 0 | 14 |
| Incorporate forward looking and adaptive design principles | 0 | 1 | 4 | 3 | 1 | 2 | 0 | 2 | 13 |
| Needed to address both existing and future flood risk | 0 | 1 | 1 | 2 | 3 | 0 | 1 | 2 | 10 |
| Address multiple types of flood hazards | 0 | 0 | 5 | 1 | 2 | 1 | 0 | 1 | 10 |
| <i>Survey Participants* (n=45)</i> | 3 | 4 | 13 | 9 | 5 | 3 | 2 | 6 | |
| * - participants are calculated by dividing the total number of selections per PDC/RC by 3. | | | | | | | | | |

Hazard and Impact Assessment Station

At this station, participants used printed graduated hazard exposure maps from 2020 to:

- facilitate the identification of areas of known flooding exposure that have not yet been captured in the modeling process, including riverine and rainfall-driven flooding
- identify assets and areas of notable concern where flooding has historically impacted neighborhoods, roadways, critical facilities, natural infrastructure, etc.
- use printed graduated hazard exposure maps from 2080 to support discussions around the projected change in flood hazards and new assets and areas of concern.

Risk Summarization and Planning

At this station, participants used impact summarization maps and graphics to:

- Ascertain whether the mapped impact priority areas align with participants understanding of the risk landscape
- Identify regional priority areas by drawing generalized polygons around areas that should be prioritized for adaptation or protection
- Gather supplemental information about vulnerable populations, natural resources, and other relevant local characteristics not captured in impact assessment data.
- Confirm or discuss assumptions that the study team may have made in the impact assessment
- Discuss how participants might envision using this information to inform planning and project development and what summarization products/outputs would be most useful

2. FEEDBACK RECEIVED

2.1. GEORGE WASHINGTON REGIONAL COMMISSION

| Summary | |
|---|---|
| Date and Time | July 27, 2021, 1:00-5:00 PM |
| Location | Germanna Community College Fredericksburg, VA |
| Representation | City of Fredericksburg County of Stafford Environmental Defense Fund Friends of the Rappahannock George Washington Regional Commission Lake Anna Civic Association Rappahannock Area Health District University of Mary Washington |
| Total Attendance | In-Person: 15 |
| Pre-Workshop Webinar Date and Time | July 20, 2021, 1:00-3:00 PM |
| Webinar Attendance: | 26 |

2.1.1. SUMMARY

The George Washington Regional Commission, which encompasses Caroline, King George, Spotsylvania, and Stafford counties as well as the City of Fredericksburg, possesses a plethora of historic places and excellent access to water-based recreation. Colonial era, Revolutionary, and Civil War attractions are scattered throughout the area. National and state parks, area museums, and a forty-block historic district in downtown Fredericksburg offer many opportunities for residents and visitors alike. The region is home to Lake Anna, one of the largest freshwater inland reservoirs in Virginia, and the Potomac, Rappahannock, and North Anna Rivers. Some of its recreational access points include Fredericksburg City Doc; Port Royal; Widewater, Lake Anna, and Caledon State Parks; and Crow's Nest Natural Area Preserve. Fredericksburg is also the home of the American Canoe Association. GWRC has a diverse spectrum of landscapes, ranging from rolling hills in the west to coastal plains to the east. The Rappahannock River delineates the divide between these two topographies while providing a valuable source for water-based recreation.

Despite the Rappahannock River’s geographic and economic importance, recent upstream development has led to a sharp increase in stormwater and riverine flooding events along the river and other nearby water bodies. Lake Anna provides a consistent source of fresh water for nearby residents. However, the reservoir floods approximately once per year due to upstream stormwater runoff impacts and there are frequent problems associated with water quality. Additionally, local farms are experiencing more frequent and severe riverine and rainfall flooding, leading to erosion, soil loss, and inundated fields. Transportation infrastructure is also at risk; in Stafford County, Brooke Road, the sole means of access for 450 homes, is often cut off due to stormwater flooding.

During a recent workshop, participants called attention to the fact that urban unhoused communities in the region are at heightened risk of experiencing adverse flooding impacts due to a dearth of data concerning unhoused populations along with a lack of an efficient means of communicating risk to homeless residents. This inequitable distribution of hazard exposure highlights the need for increased data and communications methods for mitigating the hazard risks experienced by homeless communities and provides an overview of evaluation factors, criteria, and metrics to assign the relative priority of projects for funding and implementation across the State and by Master Planning Region.

2.1.2. VISIONING

The following assets were identified by participants to be of regional importance.

| Asset Theme | Description |
|--|--|
| Built/Critical Infrastructure and Utilities | <ul style="list-style-type: none"> • Treatment and Detention Facilities <ul style="list-style-type: none"> ◦ Need to update stormwater handbook • Transportation <ul style="list-style-type: none"> ◦ Brooke Rd in Stafford County – frequent flooding causes 450+ homes to be cut off during moderate flooding • Hospitals • Schools |
| Natural Resources | <ul style="list-style-type: none"> • Lake Anna Reservoir (western Spotsylvania Co.) • Wetlands and springs along Rappahannock River • Riverine flooding <ul style="list-style-type: none"> ◦ Flood levels rising (2nd highest on record in Fredericksburg in 2018) ◦ Need more accurate riverine flooding data; how does SLR impact riverine flood events in Fredericksburg ◦ River gauging needs to be more consistent between upstream and downstream of Fredericksburg • Reforestation • Agricultural lands |
| Historic/Cultural Resources and Areas | <ul style="list-style-type: none"> • Historic Downtown Fredericksburg • Fredericksburg Riverfront Park • Crow’s Nest Boat Landing |

| Asset Theme | Description |
|--|---|
| | <ul style="list-style-type: none"> Fredericksburg City Dock |
| At-Risk Populations and Communities | <ul style="list-style-type: none"> Homeless population in Fredericksburg area Elderly populations near stormwater infrastructure Lake communities – rainfall/stormwater flooding and erosion |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Local stakeholders identified an important question: what are you planning resiliency for? Resiliency of the built or natural environment?
- Emergency access for everyone - safety nets, multiple options
 - Who do you go to? Clear lines of communication and points of contact (VDEM vs DEQ vs VDOT)
- Prohibit development in floodplain (home and septic risk)
 - Notes that there is risk to both homes (private property damage) and septic systems (threat to natural environment)
 - Localities need State and county support to enact prohibitions on development, but even then, it is likely that FEMA floodplains will eventually expand to locations not
 - Need progressive zoning but bigger issue of residents desiring bigger houses dash population growth and spread
 - Planning tools and ordinances (carrots versus sticks) for tree canopy and percentage enhancements (to limit stormwater runoff)
- For people living in floodplains (City of Fredericksburg)
 - Provide case studies
 - Buyout program in place to provide support when an event happens
 - Stable funding mechanisms to deal with flooding impacts
- Protect and enhance natural resources for use by community
- Establishment of Chesapeake Bay Preservation Act protections for all of GW

- County zoning regulations that promote development that does not encroach on our remaining open spaces and forest
- Vertical, higher density growth over suburban sprawl
- Alternative building techniques
- Continued protection of greenspace their easement investment for example easement on Rappahannock upstream
- Education, recreation, emergency facilities must account for all infrastructure that comes with growth - what might this look like?
- Smart infrastructure - open greenspace, public access to natural resources to encourage their commitment to protecting them
- For resilience, discourage building in the floodplain through economic extent incentives
- Incorporated water retention areas
- Improved flood forecasting and public awareness
- Locally accurate alerts targeting road closures and evacuations

2.1.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Identified flooding at Brooke Road cutting off homes due to medium frequency events.
- Vulnerable populations near the Rappahannock River were identified. Many are elderly and lack internet access.
- There is poor drainage near a number of lake communities, including Lake of the Woods, Fawn Lake, and Lake Caroline.
- Identified that many tributary creeks to Lower Rappahannock are dammed by beavers and that modeling may not take these into account.

- Areas near Aquia Harbor could be most at risk to future sea level rise. This includes some residential and commercial properties.

2.2. PLAN RVA REGIONAL COMMISSION

| Summary | |
|---|--|
| Date and Time | July 28, 2021, 1:00-5:00 PM |
| Location | Plan RVA Richmond, VA |
| Representation | County of Powhatan County of Hanover County of Henrico Environmental Defense Fund James River Association Town of Ashland Plan RVA |
| Total Attendance | In-Person: 10 |
| Pre-Workshop Webinar Date and Time | July 23, 2021, 1:00-3:00 PM (jointly held with Crater PDC) |
| Webinar Attendance | 34 |

2.2.1. SUMMARY

PlanRVA region experiences risks from riverine and rainfall-caused flooding which are unevenly distributed along socioeconomic lines. For example, homeless communities in Richmond experience frequent and severe flooding and cannot usually be reached via usual communications methods to warn of flooding hazards. Throughout the PDC, many private properties experience drainage issues which can lead to flooding. However, some communities within the planning district have become leaders in proactive resilient development practices. For example, in Henrico County, most residential buildings do not experience flooding due to the prohibition of building within the floodplain and an innovative floodplain development ordinance which goes above and beyond the measures required by FEMA.

2.2.2. VISIONING

The following assets were identified by participants to be of regional importance.

| Asset Theme | Description |
|--|---|
| Built/Critical Infrastructure and Utilities | <ul style="list-style-type: none"> • Transportation <ul style="list-style-type: none"> ○ Flash flooding along major roadways (Hanover) ○ Richmond International Airport (Kristen Owen-Henrico County) ○ CSX Railroad |

| Asset Theme | Description |
|---|--|
| | <ul style="list-style-type: none"> ○ Trains ○ Buses ○ Bike/Pedestrian infrastructure • Critical Facilities <ul style="list-style-type: none"> ○ Fire and Police stations ○ Medical centers • Schools <ul style="list-style-type: none"> ○ Universities, such as Randolph Macon College • Water, Treatment, and Detention Facilities <ul style="list-style-type: none"> ○ Wells and septic systems in low-lying flood prone areas ○ Wooden water pipes in RVA- ancient infrastructure ○ Increased precipitation and SLR impacts to Combined Sewer Systems and wastewater infrastructure ○ Wastewater treatment plants (James River Association) ○ Old dams ○ Ensuring clean water supply <ul style="list-style-type: none"> ▪ Increased salinity complications ▪ Variable regional water supply with multiple jurisdictions ○ RVA Flood Wall • Energy <ul style="list-style-type: none"> ○ Surry Nuclear Facility ○ North Anna Nuclear Facility ○ Dominion Energy in Chesterfield on the James River ○ Plantation Pipeline • Communications and Internet • Multimodal/Integrated infrastructure |
| <p style="text-align: center;">Natural Resources</p> | <ul style="list-style-type: none"> • Parks and public use areas <ul style="list-style-type: none"> ○ James River Park System ○ Department of Wildlife Resources Boat Ramps • Virginia Capital Trail • Wildlife Refuge Areas <ul style="list-style-type: none"> ○ Presque Isle Wildlife Refuge ○ James River National Wildlife Refuge • Rivers <ul style="list-style-type: none"> ○ James River ○ Chickahominy River • Many private lakes and ponds • Channel erosion due to higher flow rates and frequency |
| <p style="text-align: center;">Historic/Cultural Resources and Areas</p> | <ul style="list-style-type: none"> • Battlefields • National Parks • Cemeteries • Museums • Downtown Richmond • Highland Springs Historic District |

| Asset Theme | Description |
|--|---|
| <p style="text-align: center;">Economic</p> | <ul style="list-style-type: none"> • Port of VA and Port of Richmond • Industrial sites along the James River- flooding has economic impact and sites can cause chemical contamination <ul style="list-style-type: none"> ○ Above-ground storage • Plan RVA as an economic development hub for Virginia <ul style="list-style-type: none"> ○ Limited planning for long-term economic resiliency ○ Commercial business center ○ Data centers ○ Company headquarters ○ Distribution centers ○ Riverfront dining ○ Marinas • Agriculture <ul style="list-style-type: none"> ○ Part of rural heritage • Richmond Raceway |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Plan and execute revitalization projects that are multi-purpose and holistic, including upgraded drainage with a focus on livability, walkability. Will need capital to address these issues.
- Continuing land preservation. Increase public access to rivers and natural resources. Improve awareness and pursue land acquisition along riparian corridors.
- Better balance of grey/green and natural infrastructure. Integrate open space with greenways, such as Virginia capital trails network.
- Pursue low impact development; Reduced\limit impervious pavement, Incorporate green space\ trees, Incentivized low impact development (density bonus, etc.)
- Emphasize water reuse
 - Graywater system
 - Water conservation for landscaping
- Replaced roads and bridges with high flood risk/vulnerability
- Environmentally friendly agriculture
- Preserve fisheries (Crab, oyster, shad, striped bass)

- Centralized focus for resiliency efforts on the state level
 - Programs, agencies, and funding sources need to be coordinated
- Smart infrastructure system
 - E.g., ability to redirect systems where capacity is available during an event (storm water, sewer, transportation, etc.)
- Integrative planning on all levels
 - Overlap between FPM, HM, community planning, environmental, etc.
- Incorporation and implementation of efforts that address climate change, social vulnerability, heat island, air quality, and associated issues (different weather, insects, etc.)
- Removal of floodplain structures and replace with green multi beneficial uses
- Economic development\ commercial hub (logistics, data centers, IT, etc.)
- Potential for population growth from coastal Virginia due to climate change\ SLR
- Clean energy
- Incorporating future conditions mapping into planning and land use regulation for new infrastructure is safe in the future
- Forward thinking and creative repurposing of existing properties and facilities
- Changes to the NFIP innovative flood projects can be utilized from other countries
- Restoring natural resources (reforestation of abandoned sites, rehabilitation of brownfields, etc.)
- Real regional multijurisdictional planning with a leadership buy-in and strong participation (not just a few of us doing this) like CVTA
- Fish habitat protection\restoration and fish passage (e.g., American shad and Atlantic sturgeon in the James)

2.2.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Identified Chesterfield power station and its accompanying coal ash ponds as vulnerable to increasing flood levels
- Identified several historical and cultural resources along the James River that may be at risk. In one case a nature preserve was already lost to recurrent flooding.
- Identified road flooding and flooding at the airport in eastern Henrico County and along the Chickahominy River
- Discussed that a proposed natural gas pipeline along the Chickahominy River could be at risk.

2.3. CRATER PLANNING DISTRICT COMMISSION

| Summary | |
|---|--|
| Date and Time | August 2, 2021, 9:00 AM - 1:00 PM |
| Location | Tabernacle Baptist Church and Community Life Center Petersburg, VA |
| Representation | Crater PDC County of Surry City of Emporia City of Petersburg Environmental Defense Fund Virginia Environmental Justice Collaborative |
| Total Attendance | In-Person: 8 Virtual: 7 |
| Pre-Workshop Webinar Date and Time | July 23, 2021, 1:00-3:00 PM (jointly held with Plan RVA) |
| Webinar Attendance | 34 |

2.3.1. SUMMARY

Riverine flooding frequently inundates waterfront towns, where the adverse impacts of flooding disproportionately affect low-income residential neighborhoods. This presents a clear level of inequity regarding the distribution of risk along socioeconomic lines. However, it is not just flooding which poses a threat to the area’s resilience; in a recent workshop, Crater PDC residents and planners alike identified the lack of coordination of, and collaboration between, Federal, State, County, and local agencies as one of the main factors impeding the alleviation of resilience concerns. Local planning officials also highlighted the need for enhanced capacity at the local level to promote and implement resilience planning efforts as well as the need for more data to make informed choices regarding resilient development.

2.3.2. VISIONING

| Asset Theme | Description |
|--|--|
| Built/Critical Infrastructure and Utilities | <ul style="list-style-type: none"> • Transportation • Water, Treatment, and Detention Facilities <ul style="list-style-type: none"> ○ Septic Systems ○ At Risk Wells ○ Freshwater withdrawals along dams |

| Asset Theme | Description |
|--|---|
| | <ul style="list-style-type: none"> ○ Dam of the Meherrin River provides all of the water to the city |
| Natural Resources | <ul style="list-style-type: none"> • Wetlands • Rivers <ul style="list-style-type: none"> ○ Nottoway River and Creek ○ Meherrin River ○ Appomattox and James River – confluence ○ Protection of shorelines needed • Parks & Trails <ul style="list-style-type: none"> ○ Appomattox River Trail ○ Meherrin River Trail ○ Greensville Emporia Sports Park • Farmland |
| Historic/Cultural Resources and Areas | <ul style="list-style-type: none"> • Old Town • Petersburg Historic District • Greensville Emporia Sports Park |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Put a focus on developing and maintaining equity data
- Additional analysis of agricultural data
- Assist localities with developing HMPs and comprehensive plans
 - Include Incentives to incorporate resilience into local plans
 - Regional development plan is conducted
- A list of projects or achievement milestones
- Funding for planned updates from DCR
- Integration\ alignment of plans across localities
- Economic development opportunities, jobs (long term/permanent), protection of revenue stream
- Preservation of natural resources, recreation, and watersheds
 - Sports complexes and trails
- Increased tourism

- Stormwater data dash Regional Greenhouse Gas Initiative project
- GIS coordinators used to help map ongoing resilience plan
- Establish vision policy for development along waterways
- Capacity to support inward migration
- Green infrastructure - repairing buffers combined with recreation
- Standardization of environmental regulations and policies across jurisdictional boundaries, watersheds, and regions
- Management of the impacts of upstream development on downstream flooding
 - Guidance support and authorization to enforce regulations
- Political will & public support
- Education, engagement, and assistance from the state - support
- Identification of needed capacity
- Project supported PDC level and regional organizations
- Funding for capacity building and resilience planning
- Data collection and analysis
 - Ditch, groundwater, stormwater, drainage mapping
- Interdisciplinary resilience dash streets, environment, transportation, economy
- Interagency/Inter-locality communication, coordination, collaboration

2.3.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Identified numerous issues with failing sewer infrastructure and localized flooding in Petersburg's Lakemont Community

- Identified that by 2080, it may be necessary to upgrade and/or raise Interstate 95 to accommodate increased flood hazards near Petersburg and the Appomattox River.
- Drainage problems in low-lying areas just north of Colonial Heights near the Appomattox River
- Identified that the Town of Jarrat has recurrent flooding problems and socially vulnerable populations.
- Identified water infrastructure at risk of increased SLR and flooding, including a wastewater treatment plant at Petersburg and freshwater intakes near Hopewell

2.4. MIDDLE PENINSULA PLANNING DISTRICT COMMISSION

| Summary | |
|--|--|
| Date and Time | August 3, 2021, 9:00 AM - 1:00 PM |
| Location | Rappahannock Community College – Glens Campus Saluda, VA |
| Representation | Middle Peninsula PDC Town of West Point |
| Total Attendance* | In-Person: 3 |
| Pre-Workshop Webinar Date and Time | July 28, 2021, 10:00 AM-12:00 PM |
| Webinar Attendance | 15 |
| * It is important to note that while in-person attendance was low, there was considerable participation among local governments at the pre-meeting webinar and coordination with the MPPDC staff at the workshop. This does not reflect a lack of importance or awareness of the risks and impacts of coastal flood hazards. | |

2.4.1. SUMMARY

Nearly 40,000 Middle Peninsula residents commute out of the region for work. For those local workers, average salaries are ranked the fourth-lowest in the state. Four of the six constituent counties have poverty rates above 10%, with Essex County's rate exceeding 15%. Timber harvesting, water-based food production, agriculture, and nature-based recreation form the foundation of the region's economy, making clear the urgent need to protect natural resources from the dual threats of sea level rise and rainfall-caused flooding.

The region largely lacks the tax base necessary to make substantial investments in resilience. This has not stopped community leaders from creating their own solutions to protect residents' health, safety, and quality of life. For example, the MPPDC manages the Fight the Flood Program. Fight the Flood (www.FightTheFloodVA.com) is the first program of its kind in the Nation to place private and public property owners in a better position to access financial resources and professional services needed to build more resilient communities. The program is designed to meet the customized needs of private and public property owners by meeting them where they are in their flood mitigation journey to protect their homes, yards and/or shorelines against flooding of all types and storm damage. That could mean, through the program, accessing information about flooding risk and solutions available; tapping into a vetted list of contractors with known flood and resiliency solutions to protect public and private assets under duress from flooding,

including shorelines; or submitting detailed property information and flooding issues into a database to gain access to a team who can guide them through the complicated process of accessing a complex and growing network of financial solutions (including grants and loans such as the Middle Peninsula Living Shoreline Revolving Loan program) customized to help fund their unique needed flood mitigation solution. The “Fight the Flood” program represents a toolbox which contains education, contractors and financial products as the tools needed to achieve the region's flood protection and resilience needs in an organized and efficient manner.

The Middle Peninsula also faces a challenge with population change. In recent years, there has been a net outflow of population. This outflow decreases economic output and ultimately diminishes the resources of local governments. On the other hand, the Middle Peninsula is becoming a popular destination for retirees, who often build their homes along the scenic waterfront. However, local and regional planners are concerned that these new residents are unaware of the risks of living so close to the shore and that they will become more vulnerable as sea levels rise. This disconnect between the uptick in retiree waterfront homes and the increased flood hazards inherent to sea level rise could pose a heightened threat to elderly and otherwise vulnerable coastal communities moving forward, which could serve to strain existing local resilience resources. The communities of the Middle Peninsula will need to consider how these resources may be augmented through existing and future funding processes and programs.

2.4.2. VISIONING

| Asset Theme | Description |
|-------------|--|
| Various | <ul style="list-style-type: none"> • Blue/Green Infrastructure and built environment • Water management economy – jobs, holistic approach, and influx of money into local economy • People, workforce, tax base, and natural resources • Protection of public health, safety, welfare, and quality of life |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Resilience is driven by the financial source/provider of resources
- Resilient employment sectors emerge – attract businesses that have a focus on resilience (brick and mortar facilities, business hubs)
- Intact / resilient tax base
- Readily available funding for resilience

- Federal/state agencies delivering on promises to get resources/funding to rural communities
- Support to buy time to work on larger issues of managed retreat
- Keep people and businesses in the region
- High quality of local jobs and life in the area
- Maximize utility of waterfront properties
 - Nuanced uses of private land
- Public access authority – Increase public access to rivers and natural resources in the area
- Accessible health care
- Retention of population and intellectual capital – maintain high quality of local jobs and life in the area
- “The most resilient community on the eastern seaboard” as the overarching vision/goal of the Fight the Flood program
- Alignment of local resident’s priorities with those of businesses in the area
- Resilience as an economic driver
- Holistic approach across service areas
- Tailoring grant money to community needs. Train grant review staff on coastal specific issues
- Modernization of working waterfront
- Political courage to legislate solutions
- Put a focus on developing and maintaining equity and environmental justice in the area
- Preservation of cultural and historical identity should be prioritized in resilience discussions

2.4.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study

team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Identified inundation of forests in the Mobjack Bay area.
- Identified that ghost forests have developed near Moon and Diggs.
- Phragmites (common reed) have begun to invade forests in the Hallieford area
- In several areas (Deltaville, New Point, and Gloucester Point), second home wealth skews the social vulnerability data, meaning these areas are more socially vulnerable than results suggest.
- Most of low-lying tidal Middle Peninsula is designated as low income under the Flood Fund definition.

2.5. NORTHERN NECK PLANNING DISTRICT COMMISSION

| Summary | |
|---|--|
| Date and Time | August 4, 2021, 1:00 - 5:00 PM |
| Location | Northern Neck Electrical Cooperative Warsaw, VA |
| Representation | Friends of the Rappahannock Northern Neck PDC Virginia Department of Health Town of Colonial Beach County of Lancaster County of Richmond Environmental Defense Fund |
| Total Attendance | In-Person: 9 Virtual: 2 |
| Pre-Workshop Webinar Date and Time | July 27, 2021, 9:00-11:00 AM |
| Webinar Attendance | 5 |

2.5.1. SUMMARY

In Northern Neck, recent rainfall-induced flooding has inundated farm fields, created erosion problems, and caused residents' septic systems to fail. There are also significant flooding hazards to unique historic places; for example, the Village of Morattico, listed on the National Register of Historic Places, faces the possibility of being cut off from essential services due to frequent and severe flooding. In the future, even heavier rainfalls will mean more inland flooding - which has residents concerned about the safety of their communities, the health of their waterways, and the preservation of their way of life.

In addition to the impacts of flooding on the local economy, historic assets, and natural resources, there is an overabundance of fragile and flood-prone infrastructure near vulnerable rural and low-income communities which often lack the resources to adapt and respond to natural hazards. This combination of natural hazard exposure and social vulnerability leaves Northern Neck residents worried about at-risk communities being cut off from essential emergency services during flood events. As rainfall levels intensify and sea levels rise, those existing threats - and their impacts to vulnerable communities - will be exacerbated.

Another challenge to resilience efforts in Northern Neck stems from a lack of capacity. Local planning officials and residents alike called attention to the fact that rural communities within the PDC often do not have the resources necessary to apply for grants,

implement innovative ideas, or even to enforce existing ordinances, plans, and policies. However, to combat its challenges with both capacity and hazard exposure, the Northern Neck Planning District Commission has encouraged its constituent counties to participate in the Resilience Adaptation Feasibility Tool (RAFT).

The RAFT provides communities with external assessments of their existing resilience efforts and opportunities to develop actionable “checklists” to improve their community’s resilience. Northern Neck communities are making their way through this process. This has provided many of the communities in the Northern Neck with benchmarks on the status of resilience efforts and help identify next steps in the road to a more resilient community.

2.5.2. VISIONING

| Asset Theme | Description |
|---|--|
| <p>Built/Critical Infrastructure and Utilities</p> | <ul style="list-style-type: none"> • Transportation • Water, Treatment, and Detention Facilities • Emergency Services • Schools and education • Community facilities • Medical facilities • Hazards to infrastructure – utilities and roads • Agricultural industry and farmland • Marine/Seafood industry • Tourism |
| <p>Natural Resources</p> | <ul style="list-style-type: none"> • Parks • Rivers and Creeks • Wetlands and Habitats • River Access Points – flooding or extreme tides reduce access |
| <p>Historic/Cultural Resources and Areas</p> | <ul style="list-style-type: none"> • Historic downtown district and buildings • Museums |
| <p>At-Risk Populations and Communities</p> | <ul style="list-style-type: none"> • Downtown business districts • Homes along waterfront areas • Low-lying coastal communities • Historical/current communities with one access way |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Established / integrated planning process at all levels of government
 - United by resilience
- Emergency preparedness is included in planning

- Reimagined infrastructure
 - Planning for sustainability
- Create specific community strategies for various stakeholders (Residents, local governments, intergovernmental agencies)
- Government coordination with communities - Information is coming from a centralized source
- Informed public – Keep the public up to date on resilience planning. Include informational campaigns
- Lifespan planning – Land use, zoning, and decommissioning plans for solar farms
- Future proofing
- Conservation of wetlands\ trees
 - Incorporate into planning
 - Connect water and land
- Culture and heritage preservation
 - Relationship to the land and natural resources
- Balance the combination of development, conservation, and safety in resilience planning
 - Living shorelines + natural shorelines to address both erosion and flooding
- Involve a broader set of voices, include vulnerable communities in discussions
- Residents staying local - adapting to risk
- Inform and educate residents and businesses on resilience plans rather than mandate
- Centralized resources
- Financial incentives for private property resilience
- Get more resources into the hands of people who lack them
 - Underserved\ underrepresented communities

- o Build trust and awareness and community capacity
- o Advocates to access government resources
- o Education of all community members
- o Deliberate communication strategies
- o Lessons learned from military orgs

5 - 10 Year Resilient Vision

- Education and outreach is emphasized to build trust with communities
 - o Community buy-in / consensus
 - o Especially with private landowners
- Maintain balance - hold on to what we have
- Funding to remove resilience roadblocks
- Political cover for local governments
- Resources for private property owners
- Funding for emergency services
- Map at-risk septic systems
 - o Human health
 - o Water quality
- Prevent displacement
- Balance holistic approach with immediate needs

2.5.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Identified several flooding areas along the tidal Rappahannock, particularly near Belle Isle State Park, Farnham Creek, and Lancaster Creek.
 - In the same region, there is high income along the waterfront.
 - On the upper reaches of Farnham and Lancaster Creek, there a number of Amish populations.
 - Low soil permeability around Farnham also creates surface flooding problems.
- Near the Corrotoman River and nearby communities, there are wealthy but typically older populations.
- Just south of Lancaster, low income populations at risk of pluvial flooding were also identified.
- Windmill Point (a wetlands beach) is the only public access beach on the southern Northern Neck. Access is threated by SLR.
- Along Lower Machodoc Creek (north of Hague and Sandy Point), there is heavy recurrent flooding in an area that includes both wealthy second homeowners and low income residents.

2.6. HAMPTON ROADS PLANNING DISTRICT COMMISSION

| Summary | |
|---|--|
| Date and Time | August 5, 2021, 8:00 AM - 12:00 PM August 5, 2021, 1:00 PM – 5:00 PM |
| Location | Hampton Roads PDC Chesapeake, VA |
| Representation | County of York Moffat & Nichol CDM Smith City of Norfolk City of Chesapeake US Department of Defense City of Virginia Beach City of Suffolk City of Hampton Chesapeake Climate Action Network Hampton Roads PDC Chesapeake Bay Fund Environmental Defense Fund Wetlands Watch City of Newport News Old Dominion University/Institute for Coastal Adaptation and Resilience Hampton Roads Transportation Planning Organization City of Poquoson Office of US Senator Timothy Kaine Atlantic Reefmaker Jacobs Engineering Virginia Department of Forestry City of Portsmouth |
| Total Attendance | In-Person AM: 27 In-Person PM: 18 |
| Pre-Workshop Webinar Date and Time | July 29, 2021, 8:00-10:00 AM |
| Webinar Attendance | 75 |

2.6.1. SUMMARY

Hampton Roads Planning District Commission (HRPDC) is Virginia’s southeasternmost coastal PDC and the only PDC within the Hampton Roads Master Planning Region. Hampton Roads is a regional economic hub and an international maritime gateway for the

movement of commercial goods and military assets. The region hosts the Port of Virginia and numerous Department of Defense facilities and is home to a large tourism industry centered around its public beaches, coastal lifestyle and historic resources.

Hampton Roads faces frequent and severe flooding that has significant impacts on vulnerable residents, including farmers, low-income populations, and people of color. Impacts also extend to visitors and employment centers. Effective communication and education for the general public regarding those flooding risks is an ongoing challenge.

Due to the frequent flooding of both underserved communities and valuable economic assets, the Hampton Roads region has embraced the urgent need for innovation regarding coastal risks by incorporating resiliency into its planning processes and policies. For example, the City of Norfolk passed a zoning ordinance in 2018 which promotes development in less flood-prone and environmentally sensitive areas.

In a recent workshop, residents agreed that accessible communications, equitably distributed preparedness and recovery measures, responsible development away from floodplains, and the incorporation of both green and gray infrastructure to protect both vulnerable communities and economic assets were the key driving factors for making Hampton Roads a more resilient region. This type of holistic approach could be of vital importance in ensuring that Hampton Roads will be a thriving center for innovation, commerce, and socioeconomic equity for generations to come.

2.6.2. VISIONING

The following assets were identified by participants to be of regional importance.

| Asset Theme | Description |
|---|--|
| <p style="text-align: center;">Built/Critical Infrastructure and Utilities</p> | <ul style="list-style-type: none"> • Public/Government buildings <ul style="list-style-type: none"> ◦ Recreation/community centers that act as emergency centers ◦ King’s Grant, Lake Taylor, and East Suffolk schools act as emergency residence centers • Emergency Services and Vehicles <ul style="list-style-type: none"> ◦ Public safety buildings – police, fire, EMS • Electricity <ul style="list-style-type: none"> ◦ Surry Nuclear Power Station • Water supply/distribution • Internet/Communication channels • Gas/propane supply • Food supply chain • Medical facilities <ul style="list-style-type: none"> ◦ Most hospitals are in low-lying areas, Regional 1 Trauma Center ◦ Norfolk General |

| Asset Theme | Description |
|---------------------------------|---|
| | <ul style="list-style-type: none"> o VA Hospital o Sentara Careplex Hospital • Schools <ul style="list-style-type: none"> o Universities o Hampton University o Old Dominion University o Norfolk State University o William & Mary University o Thomas Nelson Community College • Treatment Facilities <ul style="list-style-type: none"> o Wastewater treatment facilities o Drinking water treatment facilities • Transportation <ul style="list-style-type: none"> o Roads <ul style="list-style-type: none"> ▪ West Freemason Street ▪ Route 10 – Suffolk ▪ Hampton Boulevard o Bridges <ul style="list-style-type: none"> ▪ Main Street Bridge – Suffolk o Tunnels o Norfolk International Airport • Dismal Swamp Canal – can be a flooding source (Hurricane Matthew) • Orphaned landfills |
| <p>Natural Resources</p> | <ul style="list-style-type: none"> • Rivers <ul style="list-style-type: none"> o Elizabeth River o James River o Lafayette River o Hampton River o Northwest River o Mill Creek • Healthy waterways for recreation, boating, fishing, and other mutual community benefits • Wetlands – at-risk or currently eroding • Natural shorelines <ul style="list-style-type: none"> o Natural shoreline stabilization features – dunes, submerged aquatic vegetation, oyster reefs • Beach and water access <ul style="list-style-type: none"> o Virginia Beach boardwalk o Buckroe Beach o Factory Point o Ocean View Beach o Coastal recreation – boating and fishing • Parks and Trails <ul style="list-style-type: none"> o First Landing State Park |

| Asset Theme | Description |
|---|--|
| | <ul style="list-style-type: none"> o Town Point Park o Northside Park o Bay Crater Park • Wildlife Preservation Areas <ul style="list-style-type: none"> o Grandview Natural Preserve o Plum Tree National Wildlife Refuge • Working forests/trees/urban canopy • Salt ponds • Marine life |
| <p style="text-align: center;">Economy</p> | <ul style="list-style-type: none"> • Ports and Shipyards <ul style="list-style-type: none"> o Port of Virginia o Virginia International Terminal o Portsmouth Marine Terminal o Newport News Marine Terminal o Norfolk International Terminal o Virginia Port Authority o Shipyards – BAE, Lyons, MHI • Industry and Business <ul style="list-style-type: none"> o Bulk storage terminal facilities – rail, barge, truck o Manufacturing facilities o Norfolk Southern Coal Piers o Huntington Ingalls Industries o Coal yards o Industrial waterfront infrastructure • Economic Development <ul style="list-style-type: none"> o Future infrastructure for offshore wind industry o Coliseum Central – commercial development o Rosie’s Casino o Economic resilience and potential for development • Agriculture <ul style="list-style-type: none"> o Southern Watershed • Jefferson Labs • Jobs and Recruitment talent • Tourism • Supply chain management potential |
| <p style="text-align: center;">Historic/Cultural Resources and Areas</p> | <ul style="list-style-type: none"> • Jamestown • Yorktown • First Landing • Fort Monroe • Chrysler Museum • The Hermitage • Downtown Hampton • Phoebus community • Wythe • Ogden Hall • New American Theatre • Hampton University Museum |

| Asset Theme | Description |
|---|--|
| | <ul style="list-style-type: none"> • Hampton History Museum • Virginia Air and Space Center |
| <p>At-Risk Populations and Communities</p> | <ul style="list-style-type: none"> • Coastal/Waterfront residential properties/neighborhoods <ul style="list-style-type: none"> ◦ Losing land to erosion or flooding • Low-income and quality affordable housing • Olde Towne Portsmouth – threatened by proximity to Elizabeth River and rainfall flooding • Downtown Norfolk • Northwest Annex • Areas located in the Shingle Creek Watershed • Remaining residential housing stock is vulnerable and vital to preserving the tax base • Oceanfront/resort areas • Retention of both urban centers and rural landscapes • Preventing communities and neighborhoods from being cut off or isolated • People <ul style="list-style-type: none"> ◦ Residents – early notification of flooding risk to residents ◦ Visitors/tourists ◦ Drivers/commuters ◦ Coastal fishermen ◦ Tax base – homeowners and businesses |
| <p>Federal/Military Installations</p> | <ul style="list-style-type: none"> • Norfolk Naval Base • Langley Airforce Base • NASA Langley • Joint Expeditionary Base Little Creek – Fort Story • Fort Eustis • Oceana Naval Air Station • Joint military facility • Fentress Airfield • Craney Island Fuel Depot • Portsmouth Coast Guard • US Army Corps of Engineers (USACE) Norfolk District • North Atlantic Treaty Organization (NATO) North American Headquarters |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Floodgates
- Downtown Norfolk -hard protection
- Discussion: managed retreat versus staged protection

- Replace stormwater pipes and upsize (and other infrastructure)
- Convey water faster and more maintainable
- Capture runoff before it enters system
- Natural ponds and natural storage
- Above ground storage
- Infiltration
- Suffolk -too many ponds to maintain -need alternative
- Increased access to infrastructure
- More technology-based stormwater management strategies
- Densified development in high lying areas?
- Potentially increased community resilience in comparison to sprawling suburbs?
- How to manage retreat into more rural areas with least conflict
- Policy change regarding stricter requirements for building on wetlands and low-lying areas
- Improving conditions for flooding via protected infrastructure in areas that might/will be densified in the future
- Maintain natural structures that protect against flooding
- Manage expectations -prevent catastrophic flooding but understand living with the water is OK
- Manage the idea that current buildings will be considered historic in 50 years
- Comprehensively define flooding
- How to incorporate structure elevation in local guidelines. Sensitive and contextualize process for elevation, demolition, etc. Approach to historic resources
- Successful communication with economic and business communities about resilience and the need for retreat, projects, etc. that may require sacrifice. Economic incentives. Education and outreach -clarified messages for consistent outreach across stakeholders

- Long term look at economic resiliency in the face of flooding
- Policy changes to fill in gaps between permitting requirements and what should be allowed
- Equity - Educate - schools, churches, senior centers - go to the public. Equitable sharing of risk – not Benefit-Cost Analysis (BCA) priorities
- Most important – homes, military (largest employer), jobs/economy, tourism, many vulnerable communities

What does success look like?

- Decrease in drainage complaints
- Accessible roadways
- Managed expectations
- Protect priority areas and prepare others for managed retreat
- Consistent messaging and policy /economic developments
- Adaptive land use and building codes
- Population and economic growth are sustained
- More trees for water and air quality
- Mitigation measures that enhance or preserve natural resources and quality of life
- Strengthened and risk informed social and community fabric
- Ports, military, and tourism are still here and thriving •Distributed and resilient community infrastructure
- National security/national economy
- Transportation/infrastructure
- Natural infrastructure (buffering effects of climate change) - Building resilience, Economy, Quality of life, Tourism, Recreation
- Ports
- Business friendly

- Healthy ecosystems
- More detailed view of how we respond to resiliency
- Not building in flood zones
- Thinking about strategic retreat -incentivized development in protected areas
- Dense development next to green space/open areas
- Resilient roadways for evacuation
- Citizen awareness and preparedness – flooding, wind, coastal storm
- Reforming National Flood Insurance Program (NFIP)
- Stronger Wetland protection -modeling where wetlands will be in 50 years
- Tree vegetation -increase in parks with storage capacities
- Increase in permeable spaces
- Water-oriented -quality of life - Aquatic industries and Beaches/water-based Recreation
- History / culture / sense of place
- Residents
- Schools / education
- Transportation
- Innovation Center
- Hampton Roads has Army Corps of Engineers (ACOE) – Coastal Storm Risk Management (CSRM) studies and constructed all projects
- More trees infrastructure / stormwater management - Choose tree type for function
- Housing - New standards for development. Retrofit existing, Relocate when significant, Risk or redevelop appropriately
- Information -climate informed community - real time road flooding info
- In 50 years, a resilient Hampton Roads looks like Hampton Roads just with more trees

How are assets protected?

- Raised infrastructure, no more slab on grade housing, updated design standards
- More informed public that is aware and supportive of resilient planning
- More reliable predictive modeling that is presented in a way that is easy to use and understand from the public's point of view (such as avoiding flooded roads)
- Align future land use and investments with elevation and topographic information
- Assets are able to continue functions and mitigation measures, allow COO
- Acquire adjacent lands to facilities to grow develop •Relocated or protected

Vision – 30-year Culture Of:

- Preparedness
- Risk awareness
- Public
- Flood insurance
- Business
- Living with water - Disruption tolerance/Working remote on flood days
- Information systems - Roads and navigation, Forecast and hazard risk communication-real time
- Education
- Risk informed decision making
- A well-informed region - Culture of awareness and preparedness. Equitable sharing of risk
- Systems to equip and educate region– “Why is our region this way?” •
- inform –build broader industry –multigenerational
- Lead to Greenhouse Gas (GHG) mitigation
- Reliance on good information/data -informed decision making

- Innovation -forward thinking planning and resilient building
- Sustainable funding sources public and private
- Informed community stakeholders, community empowerment/coordination
- Better utilization of community groups
- Fair balance between green and gray infrastructure
- Cost effective and sustainable - Must address maintenance costs requirements to ensure project sustainability
- Strategic approach/plan for how retreat may need to occur -plans in place
- Funding source for coastal resilience projects –sales/use tax, or other potential leveraging
- Comprehensive plan that fully incorporates coastal resiliency
- Shifting energy sources -offshore wind
- Robust and resilient utility systems
- Normalization of flooding -adaptation of structures
- “Center of expertise and excellence in coastal resilience”
- Use of science and technology to better understand the problem and inform change and decisions
- Measuring flooding to see who is affected
- Accurate predictions / forecasts to model trends
- Where do we put our money?
- Activities -ports, military, recreation, community functions
- People buy into vision of resilient development, design, and planning
- Make a market for resilient development/design
- Created corridors of transition for natural habitat
- Created a community aware of sustainability and enviro-conscious public

- Strategic relocation of high-risk communities
- People who want the water > can
- People who don't > resources/policies
- • International model for adaptation and innovation - Planning in stages. Sliding scale of risk tolerance. Create movement within society (adaptation and mitigation)
- "Culture in Society of innovation for living with the water"
- Space for wetlands - How to plan in nearly developed communities
- Retreat areas > density. Allow for those with connection to have access
- Diversification of transportation
- Growing population with appropriate development
- Living shorelines
- Tidal gates
- Retreat - how and where - recognize when the cost-effective time is to retreat
- More vegetation
- Using the building materials that are adaptable and respond to - flooding, Litter prevention, Green infrastructure, Oyster reef, Submerged Aquatic Vegetation (SAV) increase habitats
- Increase protection of the northwest river - Prohibit septic, building, and non-porous surfaces in this area
- Finding the economic incentives to protect natural resources
- Assigning economic value to maintaining/protecting vegetative resources/trees
- Enforcement of building codes
- Utilizing technology to limit loss of personal property
- Living shorelines
- Raised houses, but also adaptation
- Communication to avoid risk

- Historic preservation element to promote equity
- How does new development affect existing residences?
- Divide funding for low-income houses to allow mitigation/adaptation
- Flood insurance
- Filling basements
- Prioritizing transportation - Fostering ability to live daily life and maintain access to services
- Prioritize residents>existing
- Proper maintenance of infrastructure
- Equal services
- "Use our money in our community, not others"
- Intercity communication about regional/resilient strategies
- Healthy ecosystems
- Resilient use of public funds
- Resilient historic preservation
- Environmental justice
- Fixed flooding in underserved communities
- Funding to localities that needed
- Coordination between state and federal agencies to help localities address resilience - Combine and facilitate efforts and mediate
- Holistic thinking across agencies
- One coordinating state agency
- Stakeholder mapping –include as appendix - Who has power and influence? Who regulates? Defined Roles? What strings to pull ? Who to talk to?
- Balance / integration of green and gray infrastructure

- Integrate community resources into green stormwater infrastructure

2.6.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- In the Newport News area;
 - Identified areas of pluvial flooding affecting low income communities, including just south of Forth Eustis as well as communities near I-664 in Hampton.
 - At Langley Air Force Base and Fort Monroe, SLR may pose a threat to residential populations.
- In the Portsmouth area;
 - Olde Towne Portsmouth is at very low elevation and at risk of SLR
 - Immediately south of Olde Town, low-income communities are at risk of both rainfall and tidal flooding.
 - Along the Southern Branch of the Elizabeth River, there are numerous industrial sites along the river with the potential to spill contaminants during flooding.
- In the Norfolk area;
 - Attendees identified that flood walls in the area limit flooding. This should be considered in the modeling.
 - Along the Eastern Branch of the Elizabeth River – there is increasing climate gentrification pressure. There is a need for equitable relocation practices / policies.
- In the Virginia Beach area;
 - Areas near Joint Expeditionary Base Little Creek and Lynnhaven Bay are known tidal flooding problem areas.
 - There are recurrent flooding problems through central Virginia Beach, particularly in the areas near Rosemont Rd and Lynnhaven Parkway.

- In the Chesapeake area;
 - There are low lying roads subject to ditch flooding along the Northwest River.
 - There is a water treatment plant near the community of Northwest that is at risk of flooding (located along VA Route 168).

The study team notes that the HRPDC and local jurisdictions are some of the most advanced in terms of planning for coastal resilience and there are many more data points available than described here. The Cities of Norfolk, Hampton, and Virginia Beach maintain extensive plans and data sets to describe flood impacts.

2.7. NORTHERN VIRGINIA REGIONAL COMMISSION

| Summary | |
|---|--|
| Date and Time | August 10, 2021, 1:00 - 5:00 PM |
| Location | Northern Virginia Community College – Annandale Campus Annandale, VA |
| Representation | County of Fairfax Environmental Defense Fund County of Arlington Marine Corps Base Quantico Northern Virginia RC |
| Total Attendance | In-Person: 7 Virtual: 13 |
| Pre-Workshop Webinar Date and Time | July 30, 2021, 9:00 AM - 11:00 AM |
| Webinar Attendance | 21 |

2.7.1. SUMMARY

Northern Virginia’s long and storied history, while a valuable component of the local economy and social fabric, also serves to create challenges for resilience. For instance, several historic districts within the region were developed directly adjacent to the Potomac River, which often spills over and floods historic neighborhoods and waterfront businesses. Additionally, all three military bases in Northern Virginia have low-lying areas which have experienced flooding issues due to increased rainfall and sea level rise. Many of Northern Virginia’s sewer systems predate modern standardization and thus often lack the capacity to contain runoff from high-volume storms, which leads to the overflow of sewer systems into nearby creeks and streams, presenting a clear hazard to both human health and the environment. Nearby highways and roads – of critical importance to regional transportation and national security – also often experience flooding. These myriad flooding-related challenges speak to a clear need for resilience measures in Northern Virginia. Several municipalities and counties within the region have stepped up to the challenge by implementing green infrastructure, including living shorelines and rechanneled creeks.

In addition to flood hazard exposure, Northern Virginian residents identified several other threats to coastal community resilience. One common thread was that there is a lack of coordination and alignment of State, local, and Federal efforts which leads to a disjointed pattern of investment and development, and that there is not enough free rein given to local governments to enact and implement resilience measures. There is also a

lack of communication to residents about flooding, which puts vulnerable community members at increased risk of adverse impacts due to natural hazards.

One obstacle in Northern Virginia’s path to achieving resilience is the fact that the region’s waterfront properties have extremely high values, with an undeveloped acre of land sometimes having over a \$1 million price tag. Although local officials have expressed a desire to return flood-prone coastal properties to their natural state as open green spaces to absorb storm surges and rainfall while providing a buffer between rising waters and coastal communities, high property values make the acquisition of such flood-prone coastal lands difficult.

2.7.2. VISIONING

| Asset Theme | Description |
|---|--|
| <p>Built/Critical Infrastructure and Utilities</p> | <ul style="list-style-type: none"> • Built infrastructure and utilities <ul style="list-style-type: none"> ○ Low-lying water and sewer utilities ○ Flooding manholes • Possum Point <ul style="list-style-type: none"> ○ Power lines that cross the Potomac ○ Low-lying coal fired power plant • Data cables • Transportation <ul style="list-style-type: none"> ○ Metro stations ○ Roads <ul style="list-style-type: none"> ▪ George Washington Parkway ▪ Route 1 Corridor ▪ I-95 ▪ I-395 • Ronald Regan National Airport • Bridges • CSX railroad tracks • C&O canal • Military Installations / Operations <ul style="list-style-type: none"> ○ Pentagon ○ Marine Corps Base Quantico ○ Fort Belvoir ○ Airfields |
| <p>Natural Resources</p> | <ul style="list-style-type: none"> • Freshwater tidal wetlands • Living shorelines • Parks and recreational access <ul style="list-style-type: none"> ○ Mason Neck Peninsula ○ Leesylvania State Park ○ C&O canal ○ Mt. Vernon Trail ○ Potomac Heritage Trail |

| Asset Theme | Description |
|---|---|
| | <ul style="list-style-type: none"> ○ Trails move through different regions (West Virginia, Maryland), requiring coordination ○ State parks are used heavily by Latino communities and low-income populations ● Recreational access to water ● Wildlife refuges and nature preservation areas <ul style="list-style-type: none"> ○ C&O canal ○ Potomac River National Wildlife Refuge Complex <ul style="list-style-type: none"> ▪ Occoquan ▪ Featherstone ● Dyke Marsh Wildlife Preserve |
| <p>Historic / Cultural Resources and Areas</p> | <ul style="list-style-type: none"> ● George Washington's Mt. Vernon and the viewshed ● Museums ● Monuments ● Historical trails ● Key historic infrastructure not meant to sustain flooding ● Residential and commercial structures |
| <p>At-Risk Populations and Communities</p> | <ul style="list-style-type: none"> ● Old Town Alexandria ● Mt. Vernon district residences <ul style="list-style-type: none"> ○ New Alexandria ○ Huntington – levee was built but area requires continued resiliency efforts ● Prince William County <ul style="list-style-type: none"> ○ Woodbridge ● Economic development along Richmond Highway needs to emphasize economic resilience and resilient infrastructure. Coastal resiliency is not a direct focus of current development efforts. <ul style="list-style-type: none"> ○ Enhanced public transportation to increase accessibility ○ Focus on creating an equitable environment for surrounding communities ○ Increase affordable housing efforts |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Increased flood insurance coverage
- Implement flood mitigation program for residential properties
- Elevation, flood proofing, buyouts (renaturalization)
- Nature based solutions such as building up wetlands, integrating with hard infrastructure (multiple lines of defense)

- Targeted land acquisition strategy
- Allowing for tidal marsh migration
- Long term ecological, community, and resilience benefits and water quality
- Infrastructure utilities and roadways dash updating standards and assets. Integrate CC/SLR language in CIP update and infrastructure funding. Also, public transportation.
- Enhanced policy framework from General Assembly. State level flexibility given to localities to go above and beyond.
- Living shorelines -utilized local and alternative datasets and processes. Regulate beyond 100-year flood plains and consider future conditions. Chesapeake Bay policy implementation to restrict exceptions.
- More information related to flood risk inside and outside mapped floodplains. Climate change impacts to riverine and rainfall flooding.
- Route 1 corridor -capitalizing on redevelopment areas for resilience opportunities.
- Increase coordination and collaboration between DoD / federal installations and surrounding communities to address mutual impacts and risks (example JLUS). Encourage higher standards in federal contexts. Increased coordination of efforts between state, local, and federal efforts (including USACE studies –Dyke Marsh project.
- Air quality improvement with involvement from citizens and local government. Reducing emissions, and other co-benefits more robust bicycle, public transit, and pedestrian infrastructure.
- Increased access to emergency alerts and communications.
- Economic development combined with resilience efforts to strengthen / increase natural infrastructure and enhance quality of life.
- Systematic and regular measurement of proportion / burden of hazards on vulnerable population
- Decreasing disproportionate burdens (hazards don't increase inequity).
- Developing a program for flood mitigation projects that can help homeowners. Implement a flood mitigation program for residential properties. Ex. home elevation, floodproofing, relocation / managed retreat, buyout program, etc. Depends in different areas regarding what solutions will be most cost-effective. For New Alexandria, the option to build a levee has a variety of environmental impacts, as well as a land use restriction-need to look at other solutions, possibly nature-based, such as revitalization.

NoVA may need greater understanding of nature-based solutions and how they can be used to protect and revitalize wetlands. Targeted land conservation / acquisition strategy where nature-based solutions may help a tidal wetland move inland, as well as protect communities that are on the other side. What locations could a nature-based solution be used to improve resiliency, as well as provide conservation and water quality benefits?

- Implementation of infrastructure protection measures, such as utilities, roads, public transportation, etc. Could include updating standards and implementing those standards effectively to protect assets. Integrate climate changes / sea level rise language into ways you update CIP and prioritize funding for different infrastructure projects.
- Enhanced policy framework via general assembly down to local governments that encourage more flexibility at the local level to dictate policies that are enacted for development and preservation of infrastructure. Given Dillon Rule restrictions, localities must be given explicit permissions to engage resiliency projects. Need more flexibility given to localities. Often stymied by what the GA says they can do. If a locality wants to go above and beyond, the localities want the authority to do so. Unless you are simply putting recommendations into comp plans, there is little else you can do. Statewide datasets may not be directly applicable or reflect the nuances of the locality.
- Expansion of use of living shorelines-utilizing local and alternative datasets instead of just the Statewide datasets that they are required to use.
- Regulate beyond 100-year floodplains and consider future conditions.
- Clarify what is allowed and not allowed-the governance of policies (updated Chesapeake Bay Preservation Act amendments). Challenge is that there are still exceptions allowed that allow encroachments into the RVA-want stricter implementation flexibility.
- Economic flood loss outside of the floodplain - database would not exist unless a property owner had made a claim. Trying to do this with drainage complaints, but if the owner does not know to call and have them assessed, then they do not have that data. Floodplain maps that reflect riverine and rainfall flooding, as well as climate change. More representative information of flooding that is occurring inside and outside of the floodplain by ensuring it is communicated to the public who is to be contacted if flooding occurs.
- Route 1 corridor-looking beyond at opportunities to build resiliency. Not just looking community by community but looking at the big picture. Prioritizing green space and resiliency efforts as the corridor is developed. DoD would be interested in working

closely with surrounding communities on encroachment issues, air quality issues, stormwater flooding from recent development. More JLUS-like studies.

- Collaborate to make sure community decisions don't negatively impact the base and vice versa. Coordinate to address shared risks and mutual impacts.
- Encourage federal use of higher standards for infrastructure impacting the environment. Increase coordination of efforts between state, local, and federal efforts (USACE, CZMP, etc.). How do we have alignment between these studies. Dike Marsh study-how the wetland will protect the adjacent neighborhoods and how it will impact resiliency for the shoreline. Improved Air Quality with involvement from citizens and local government to reduce emissions. Building out more robust public transportation and bike / pedestrian active transportation. Increased access to emergency alerts-not every individual is signed up for alerts. Economic initiatives-nature based solutions can be very economically attractive and increase beautification of areas. Coordinate resiliency and economic efforts to enhance quality of life. Systematic and regular measurement of hazards on vulnerable populations-specific timeframe for determining if these hazards are being disproportionately experienced. Decreasing disproportionate burden among specific segments of the population that are already underserved, so that hazards do not increase inequity.

2.7.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Along the Richmond Highway, there is a historically minority, low-income population. There are also large apartment buildings and limited English-speakers.
- Ronald Reagan Washington National Airport is directly adjacent to the Potomac River and a critical asset that will require monitoring and protection.
- Identified large portions of the tidal Potomac River which would benefit from the development and maintenance of living shorelines.
- Along the Occoquan Bay, attendees identified the need for coordinated conservation of waterfowl habitat.
- Along the Occoquan Bay and River, the Belmont Bay community is low-lying and at potential risk of flooding.

- Marine Corps Base Quantico and Fort Belvoir are important local assets that are adjacent to the tidal Potomac and its tributaries.
- Portions of Mason Neck State Park are also at risk of flooding.

2.8. ACCOMACK-NORTHAMPTON PLANNING DISTRICT COMMISSION

| Summary | |
|---|---|
| Date and Time | August 11, 2021, 1:00 - 5:00 PM |
| Location | Eastern Shore Community College Melfa, VA |
| Representation | County of Northampton Virginia Department of Forestry County of Accomack Commonwealth Transportation Board Accomack-Northampton PDC The Nature Conservancy Virginia Coast Long-Term Ecological Research Project Town of Oyster |
| Total Attendance | In-Person: 14 Virtual: 2 |
| Pre-Workshop Webinar Date and Time | July 2, 2021, 1:00 PM – 3:00 PM |
| Webinar Attendance | 4 |

2.8.1. SUMMARY

Accomack-Northampton Planning District Commission is located on the Eastern Shore of Virginia and comprised of both Accomack and Northampton Counties. This PDC is home to a wealth of historic places, abundant natural resources, and a unique water-based economy. The region’s rich historical and cultural fabric includes the Chincoteague Island wild pony roundup, the historic railroad town of Cape Charles, and countless centuries-old historic homes. These cultural and historic gems are vitally important to both the region’s identity and tourism industry, but they are already experiencing the impacts of flooding hazards.

In addition to its myriad historic and cultural assets, the Eastern Shore is home to more than 78,000 acres of globally recognized rare and diverse habitats and natural areas. For instance, its barrier islands have been designated as an International Biosphere Reserve by the United Nations and are the largest chain of undeveloped temperate zone barrier islands in the world. The Eastern Shore’s coastal habitats teem with life, providing a respite for migratory birds as well as an abundance of fresh seafood and recreational opportunities to support the Shore’s water-based economy.

Beaches, historic locales, aquatic recreation, and beautiful natural spaces provide the backbone for the region’s tourism industry, bountiful aquacultural resources and fertile agricultural lands which serve to create a strong tradition of local food production. A NASA facility provides high-quality jobs for residents. However, regardless of its unique economic assets, the Eastern Shore faces a challenge of severe income disparity: throughout the region, wealthy waterfront communities are juxtaposed with communities experiencing severe levels of poverty, leading to a clear level of income inequality.

These existing inequities are becoming more severe due to the effects of climate change. Roads are often inundated or washed out by coastal flooding, stranding residents and preventing emergency services from reaching at-risk communities; inland farms experience frequent flooding due to increased rainfall, threatening both local and regional food security; and some of the shore’s irreplaceable natural areas also face the risk of permanent inundation or tidal flooding due to sea level rise, which could have serious ramifications for the local economy and the region’s most economically disadvantaged residents.

2.8.2. VISIONING

| Asset Theme | Description |
|---|--|
| <p>Built / Critical Infrastructure and Utilities</p> | <ul style="list-style-type: none"> • Hospitals and health care centers • Water treatment and detention facilities <ul style="list-style-type: none"> ○ Existing ditches don’t have the capacity for increasing rainfall ○ Sole aquifers ○ Sewer mounds ○ Stormwater detention ditches • Transportation <ul style="list-style-type: none"> ○ Chincoteague Causeway ○ Saxis Causeway ○ Route 13 ○ Chesapeake Bay Bridge Tunnel • Harbor infrastructure • Educational institutions • Churches • Public services <ul style="list-style-type: none"> ○ Emergency Vehicle and first responder access to low-lying areas |
| <p>Natural Resources</p> | <ul style="list-style-type: none"> • Barrier islands • Natural area preserves <ul style="list-style-type: none"> ○ Chincoteague National Wildlife Refuge • Bird nesting sites • Wildlife • Working forests; critical and natural habitats (water quality enhancement and protection) |

| Asset Theme | Description |
|--|--|
| | <ul style="list-style-type: none"> • Wetlands • Marsh Islands • Seaside bays, beaches, and lagoons • Wallops Island • Nature trails and campgrounds <ul style="list-style-type: none"> ○ Cherrystone campgrounds ○ Shoreline trails • Public access to bayside and seaside waterways <ul style="list-style-type: none"> ○ Public boat ramps ○ Public landings |
| Economy | <ul style="list-style-type: none"> • Aquaculture sites and facilities <ul style="list-style-type: none"> ○ Oyster, Willis Wharf, Cherrystone ○ Coastal bays / waters - Wallops Island ○ Fishing • Agricultural lands and facilities <ul style="list-style-type: none"> ○ Farmlands at risk of saltwater intrusion • Ecotourism and hospitality • Waterfront businesses • Preserving the watermen profession |
| Historic / Cultural Resources and Areas | <ul style="list-style-type: none"> • Holden’s Creek Native American Burial site • Tangier cemeteries |
| At-Risk Populations and Communities | <ul style="list-style-type: none"> • Tangier Island • Hacksneck • Chincoteague • Sanford (floods from two directions) • Watts Island • Houses and communities on necks of land • Low-income residents • Historic sites and homes • Seaside communities |
| Research Assets | <ul style="list-style-type: none"> • University of Virginia’s Coastal Research Center: Virginia Coast Reserve Long-Term Ecological Research (VCR-LTER) • Research facilities • Comprehensive plans updated every year in Northampton |

Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Following the identification of assets, the participants turned their attention to what a resilient future looked like for their region. Below are some of the key themes that emerged from that session.

- Essential services available for all -transportation, roads and access, hospitals, schools, energy and utilities, water, broadband
- Rural communities are intact - Towns and rural spaces
- Agriculture and aquaculture are sustained
- Maintaining people to nature connections through ecotourism, heritage, culture, economy, research and education
- Flood controls -natural and otherwise
- Sustained source of groundwater or source of fresh water - PDC expressed the need for additional studies and understanding of sea level rise on water systems, as well as updated permitting and guidance
- No crisis at the edge
- All communities have a plan are implementing that plan, communities have a voice
- Changes in state policy to increase an allow for affordable housing
- Increased communication and participation from localities. Residents understand the opportunities available to them (including CFPF); Increased capacity for smaller unincorporated communities and towns; Audit, Comp plan, pathways to accessing resources; Need to make it easy to do the things they need to do (plan, relocate, participate, etc.)
- Balance new opportunities with existing businesses which are compatible with the local way of life
- Preservation of the spirit of the shore
- Preserving coves and inland backwaters
- Safe coastal neighborhoods and the safety of coastal historic and cultural assets
- Open, inclusive, and thoughtful planning processes for the county level
- Public engagement education with easy access to accurate information for the general public

50-Year Visions

- “Flood free transportation”

- Aquaculture, timber, farming still here –resources still have enough value and can be managed. No sawmills -timber won't have value, oyster too hard to farm or water quality can't support, families may not wish to continue "natural resource-based industries"
- "Safe drinking water" – drawing faster than it can possibly recharge. Increased rainfall may help with shallow aquifer.
- Preservation of seaside / bayside villages and waterfront communities, and keeping them affordable
- Waterfront (bayside) communities / ways of life preserved
- Quality of Schools is suffering –no one will be educated to be the farmers or businesspeople of tomorrow.
- Accessible fire and EMS–can take 30-45 minutes to get to areas on either side of Route 13
- Economy that is accessible for all –help people out of poverty, improve or maintain quality of life, job creation, population retention. Maintain what is here and helping them flourish, but also bringing in new businesses that are compatible with the lifestyle and quality of life here, that also provide living wages. "Preservation of the Spirit of the Shore". We will see more remote workers. It is important for people to be able to access the high paying jobs.
- Access to Broadband -Broadband is almost like drinking water in necessity
- Viability and quality of coves and backwaters are silting or nutria –preserve the inland backwaters of the shore.
- People who care for the historic and cultural resources aren't really under threat – the people who care for the historic and cultural resources are under threat and they may not be there to care from them in the future.
- Limited uses on waterfront –no condominiums, etc. Zoning is in place to keep development limited.
- A more open comp planning process –not as political, open to the public with meaningful input. This isn't really happening in NH county. Comp plan being updated every year makes it harder to get the public involved. They get tired and don't feel they are being heard. People should be educated / engaged on the process and the plan updated every five years without the political lens.

- County level planning seems right size, but easy access to information -drinking water / working waterfront, no political spin, just facts –is harder to come by.
- Accomack County Plan was citizen driven in 2008 and has been relatively untouched since then. We can't get much participation. Mission statement change made it more economic friendly, but that's about it.

A resilient Eastern Shore is:

- Farm fields, crops, aquaculture, the bay and barrier islands, resilient homes raised above BFE fishing, sunshine and beaches, children on bicycles, a fantastic childhood for all, crabs and herons, deer hunting, main streets -land and sea and quality of life. A great place to live and visit.
- Fully staffed with all required positions filled.
- Global perspective –taking advantage of near shore
- Be like the Netherlands
- Living Shorelines –we were an example for efforts in Australia.
- A center for innovative resilient thought and industry with the preservation of our way of life. Not just responding to risk but developing solutions.
- “A great place to live, work, and play –preserving the past, paving the way for the future.”
- Thriving and affordable housing.
- A human nature connection that drives our economy and culture
- Global leader for resilient communities, safe from a changing climate.
- At the forefront of resilience work
- Natural area preserves and barrier islands
- Commercial operations and wharf / oyster, Oyster + Willis wharf infrastructure / harbor (industry / natural resources). “Working waterfronts that are commercial operations-multi-million-dollar economic structure and the way of life in the area. Instead of being able to be relocated, it has to exist on the waterfront.” Watermen need access to those waterfronts; Oyster is a community; Working waterfronts.

- Houses and communities on necks of land - we have lots of areas that are isolated down one-way access points (necks) – big asset that is impacted by flooding and inhibits access to services (emergency / schools / food / utilities, etc.)
- Eastern Shore is huge for eco-tourism. Losing access to natural assets will result in huge hit on tourism. Nature trails are all along the coastline.
- Heritage: “Even if residents don’t live on the water, they feel very tied to it. When natural assets disappear, it hurts them from a cultural standpoint.” Aquaculture relies on a lot of these habitats. Migratory birds and other species rely on these habitats, which is why the region is protecting them. Important for maintaining ecosystems. Aquaculture spans the land and the water. There are facilities on and in the water. “The relationship between the water and the community is completely intertwined.” How much of this plan is focused on resilient habitats vs. resilience based on the existence of humans and facilities?
- Agriculture and Aquaculture-both a critical resource and a community resource. “So much of our assets are intertwined and overlap across multiple sectors. Classify them as both critical and community resources.” “They are distinctly separate heritages, never married. They do not seem themselves as the same community. They can be allies, but they are distinct.”
- Aquaculture-water quality focus. Agriculture-loss of land focus. They require different solution designs. Farmers will not just be willing to give up their land to provide a new water access point. -Also see pollution of water sources by agriculture. Conflicts: loss of farmland-who controls it?
- “Considering the barrier islands through the scope of resiliency and climate change has been important for decades in this region. There is no development on the barrier islands. They are protected for the habitats they support and the role they play in resilience and adaptation, which is unique to this PDC.”
- Barrier islands will be left to evolve naturally as of right now. It is important to allow them to be dynamic.
- This region is one of the most studied coastlines in the world. It is an important knowledge sector as a result.
- “Undeveloped barrier systems are not common, which is a representation of the cultural and heritage of the region. The connection between the people and nature is extremely strong here.” “There have been breaches along the barrier islands, and some of them close naturally. The system changes constantly. The sediment moves around a lot.”

- Current research looking for natural solutions-would definitely need a nature-based approach if a solution were to be applied.
- Making sure that we don't interfere with them in the way in which adjacent properties inhibit the natural progression of sediment. Need to be careful in any way we implement strategic solutions so that they do not inhibit or harm natural structures / systems. Roadways-vulnerable roadways that access land / towns that are more vulnerable than the land itself. There is land and towns that are still viable but the roadways connecting them to the rest of the shore are flooding. Critical roads are cutting off viable properties that will be viable for decades. There is a map where you can see emergency roads. Pieces of high evaluation property that are a huge asset and will be highly valued as we move into the future
- Low-Income Communities- Can't afford to move or raise their houses. Southern Northampton workforce housing is limited and therefore will not have availability in the future. Most housing authority-built low-income housing is built outside of the floodplain and at a higher elevation. All of these are full.

What does a resilient Eastern Shore look like?

- Essential services are still available to all residents-transportation (roads and access), hospitals, schools, utilities, internet, water quality, broadband.
- Rural communities are intact-they may not be in the same location, but they remain intact. Want rural spaces to still exist.
- Aquaculture and agriculture are sustained
- Ecotourism industry is sustained.
- Maintaining the people to nature connection that incorporates ecotourism, cultural, heritage, economy, and so many other aspects of the community.
- Flood controls-natural and hard structure balance.
- Sustained groundwater sources or new sources of freshwater -"We have one sole source aquifer. If it gets drained or has saltwater intrusion, we will not have freshwater." Changes in salinity are already being seen. Going forward, groundwater is going to become very important-will have to maintain restrictions on economy to protect groundwater source. -What will happen to our freshwater source as sea level rises?
- Using new information to guide permitting on groundwater use.

- All of our coastal communities have a resiliency plan and are implementing those plans. Such a strong connection between the land and the water that there will be difficulty getting individuals to relocate. No individuals / communities getting to the point of a crisis. State policies must change (if new workforce units cannot be built, then there will be nowhere for workforce individuals to move).
- Policy changes that allow individuals access to affordable housing. Communities need to have a voice and be represented. More region-wide collaboration between counties and increased communication / participation from localities (with agencies who are capable of assisting/promoting new projects)
- Community Flood Preparedness Fund - need to communicate to individuals the opportunities that exist for them. So that residents can push locality leaders to vie for funding opportunities. A lot of communities in the area do not have leadership and therefore no capacity to vie for funding or build projects. Updated comp plans and audits conducted. Need capacity to build a resilience plan. PDCs help the towns from the standpoint of planning. The towns that are on the edges-need to make it easy for them because they do not have the capacity.

A resilient Eastern Shore would look like:

- Beach and dune restoration
- Shoreline stabilization and restoration
- Habitat creation
- Environmental benefits to the Bay
- Safe and resilient roads and infrastructure
- Comprehensive approach to development and resilience
- Communication with residents
- Shifting perspective from short term to long term solutions
- Community care for natural resources
- No pollution or litter
- Stainable building practices, education about stormwater management, preparedness, responsible agricultural practices, litter
- Fewer people

- Responsible development away from the water
- Historic resource preservation
- Better or more intelligent stormwater drainage
- Responsible lawn maintenance
- Equitable information access and communication
- Wastewater management
- Change or improve agricultural practices
- Safe evacuation routes
- Resilient utilities
- More resource conservation zoning
- Conservation of marshes and habitat
- Capacity building
- Sustainable funding sources
- More political will for resilience projects
- New aquatic industries

2.8.3. MAPPING STATION INPUT

During the breakout stations, attendees examined the initial results of the hazard and impact assessment maps. Participants were asked, where applicable, to provide the study team with information that may improve resilience planning efforts. These comments were added to a GIS database and archived for use in the planning process. Below is a brief summary of some of the comments received:

- Near Onancock;
 - A parking lot and street flood during storms and high-high tide.
 - A group of waterfront houses in the East Point area are or recently were for sale

- Extensive areas on the bay-side of the Eastern Shore are lower-income working families and watermen. Many of these people live in low-lying areas subject to recurrent flooding.
- Near Jamesville, there has been significant erosion on the bay-side. Several homes have been lost to erosion, a cliff is falling, and roads / utilities are directly adjacent to the bay.
- While many areas of the Eastern Shore have lower-income populations, there are some places where wealthy populations skew the social vulnerability data to show areas as less vulnerable.
- Near Chincoteague;
 - Flooding of causeway and footbridge along Chincoteague Rd.
 - During storms, the intersection of main bridge and the island floods, cutting off access to the island by vehicle.
 - Throughout Chincoteague, water backs up through storm drains, flooding roads and homes.

3. SUMMARY

On the completion of the workshops, several key themes emerged.

Nearly all the coastal PDCs identified undersized or aging stormwater infrastructure as a major problem. Many localities have experienced increased frequency of heavy rainfall events that overwhelm existing infrastructure. A key need is for an update of intensity-duration-frequency information to guide the sizing of new and upgraded stormwater infrastructure. This infrastructure needs to plan not only for existing increases in frequency but also future variability to provide resilient protection moving forward.

Many communities indicated a universal desire to marry the resilience planning process with both the comprehensive and hazard mitigation planning process. As it currently stands, there is not a streamlined method to sequence these processes to ensure that each plan ‘talks’ to the others. This is a problem that spans responsibilities and requirements of not only localities, but also of the Commonwealth and the Federal government. In practice, localities (under the Dillon Rule) will need General Assembly support of a resiliency vision to pursue resilience projects that go above and beyond existing state regulations.

During the map review, many PDCs identified specific areas of low-income, minority, or otherwise socially vulnerable populations living in known hazardous areas. These hazards include coastal, fluvial, and pluvial caused flooding. In many cases, these areas are directly adjacent to high-value waterfront homes, of whom the owners do not meet the typical definition of socially vulnerable. One resident of the Eastern Shore succinctly described this problem: “you’ve got dirt-poor communities next to multi-million-dollar mansions. If that isn’t inequality, I don’t know what is.” This is echoed in many places throughout coastal Virginia. Moving forward, funding decisions for projects must consider that the benefit of protecting these populations cannot adequately be modeled using existing benefit-calculations.

Finally, coastal Virginia has a proud water heritage. Residents cherish their natural resources – rivers, forests, beaches, and wetlands - and understand that heavy rainfall and increasing severity of coastal flood hazards put many of these natural assets at risk. Similarly, a history of recreational and commercial fishing and agriculture is also at risk of fading. The PDCs all envision a resilient coast that preserves existing natural infrastructure, provides suitable habitat for fisheries, and emphasizes the maintenance of urban and natural forests.

The information gathered during the workshops represents a diverse set of viewpoints and visions. Some visions may not come to pass; however, the input from Virginia’s coastal communities is an invaluable and absolute requirement to guide the development and maintenance of the Coastal Resilience Master Plan.

4. APPENDIX

4.1. SUMMARY OF WORKSHOP AND WEBINAR ATTENDEES

Accomack-Northampton Workshop Attendees List (n=16, in-person: 14, virtual: 2)

| Name | Title | Agency / Locality | Email Address |
|-------------------|--|----------------------|--|
| Susan McGhee | Director Planning, Permitting, & Enforcement | Northampton Co | smchee@co.northampton.va.us |
| Robbie Lewis | Senior Area Forester | VDOF | Robbie.lewis@dof.virginia.gov |
| Chris Guvernator | Environmental Programs Director | Accomack | cguvernator@co.accomack.va.us |
| Steve Johnson | CTB Member | CTB | sajwhitehall@gmail.com |
| Shannon Alexander | Coastal Region Steward | VDCR | Shannon.alexander@dcr.virginia.gov |
| Rick Morrison | Deputy Co. Admin | Accomack Co | rmorrison@co.accomack.va.us |
| Elaine Meil | Executive Director | A-N PDC | emeil@a-npdc.org |
| Jessica Steelman | Coastal Planner | A-N PDC | jsteelman@a-npdc.org |
| Jill Bieri | Director, UCR, TNC | TNC | jbieri@tnc.org |
| Susan Bates | Coastal Science Project Manager | TNC | Susan.bates@tnc.org |
| Donna Fauber | Office Assistant | LTER / VCR | DHF4K@virginia.edu |
| Davis Fauber | Supervisor | Northampton Co | Dfauber3@gmail.com |
| Joe Betit | Owner | Earth Systems M. | lwbetit@gmail.com |
| Deb Campbell | Resident | Silver Beach, VA | RunawayVA@gmail.com |
| Katie Nunez | | Town of Cape Charles | knunez@capecharles.org |
| Kelly Busquets | | NASA | kmbusque@ndc.nasa.gov |

* rows highlighted indicate virtual participation

Accomack-Northampton Pre-Webinar Attendees List (n=4)

Elaine Meil
 Fauber, Donna H (dhf4k)
 Jessica Steelman, A-NPDC
 Robbie Lewis

Crater Workshop Attendees List (n=15, in-person: 8, virtual: 7)

| Name | Title | Agency / Locality | Email Address |
|-------------------|-------------------------------------|-------------------|--|
| Denise Nelson | Environmental Planner | Berkley / CPDC | denise@bgllc.net |
| Luke Peters | Environmental Planner | Berkley / CPDC | Luke.peters@bgllc.net |
| Horace Wade | Director of Planning | Surry County | hwade@surrycounty.va.gov |
| Matthew Culbreath | Planning and Zoning Project Manager | Emporia City | mculbreath@ci.emporia.va.us |
| Jay Ruffa | Director of Planning | Crater PDC | jruffa@craterpdc.org |
| Daryol Walker | Public Works | Petersburg | |
| Grace Tucker | Senior Analyst | EDF | gtucker@edf.org |
| Queen Shabazz | EJ coordinator | VEJC | qshabazz@vaejc.org |
| Alec Brebner | Executive Director | Crater PDC | |
| Heather Barrar | | | |
| Reginald Tabor | | | |
| Chris Ward | | Hopewell | |
| Sarah Stewart | | | |
| Robert Wilson | | | |
| Dana Bradshaw | | | |

* rows highlighted indicate virtual participation

GWRC Workshop Attendees List (n=15)

| Name | Title | Agency / Locality | Email Address |
|------------------------|--|-----------------------------|--|
| Brent Hunsinger | State Policy Coordinator | Friends of the Rappahannock | Brent.hunsinger@riverfriends.org |
| Les Johnson | Project Manager | UMW | Ajohnso3@umw.edu |
| Denise Nelson | Environmental Planner | GWRC | denise@bgllc.net |
| Nadya Syazsa | Planner | GWRC | |
| Luke Peters | Planner | GWRC | Luke.peters@bgllc.net |
| Becca Adand | Planner | GWRC | |
| Grace Tucker | Senior Analyst | EDF | gtucker@edf.org |
| Emily Torrey | Deputy Environmental Program Administrator | Stafford | etorrey@staffordcounty.va.gov |
| Mike Rigdon | N / A | LACA | mike.rigdon@lakeannavirginia.org |
| Jack McGovern | Batt Chief / Deputy EM | Fredericksburg City | jmcmgovern@fd.fredericksburgva.gov |
| Adam Lynch | River Steward | Friends of the Rappahannock | Adam.Lynch@riverfriends.org |
| Marisa Payne | GIS Technician | Friends of the Rappahannock | gis@riverfriends.org |
| Kate Gibson | Interim Executive Director | GWRC | gibson@gwregion.org |
| Tyler Gelles | Senior Stormwater Manager | City of Fredericksburg | tgelles@fredericksburgva.gov |
| Dr. Olugbenga Obasanjo | Health Director | RAHD | Olugbenga.obasanjo@vdh.virginia.gov |

GWRC Pre-Webinar Attendees List (n=26)

| | |
|--|--|
| Adam Lynch | John Saunders |
| Barber, Michael (DCR) | Kate Gibson gibson@gwregion.org |
| Michael.Barber@dcr.virginia.gov | Killgore, Mark (DCR) |
| Becca Acland | Mark.Killgore@dcr.virginia.gov |
| Ben Leach | Les Johnson |
| Brent Hunsinger, Friends of the Rappahannock | Luke Peters (Berkley Group) |
| Bryant Bays, VDOF | Matt Jones |
| Buford, Brandy (DCR) | Patrick Coady |
| Brandy.Buford@dcr.virginia.gov | Reyes, Julio (VDEM) |
| Chris R. Clarke | Julio.Reyes@vdem.virginia.gov |
| chrisrc@co.kinggeorge.state.va.us | Scott Rae - City of Fredericksburg, PW |
| David Nunnally | Sharon Conner |
| Davis, Angela (DCR) | Steven Nelson SNelson@rappahannocktribe.org |
| Angela.Davis@dcr.virginia.gov | Tyler Gelles, City of Fredericksburg |
| Denise Nelson denise@bgllc.net | Wendt, Aaron (DCR) |
| Emily Torrey | Aaron.Wendt@dcr.virginia.gov |
| Jack McGovern (Fredericksburg FD) | |

Hampton Roads AM Workshop Attendees List (n=27)

| Name | Title | Agency / Locality | Email Address |
|-------------------|--------------------------------|---------------------------|--|
| Joseph Brogan | Stormwater | York County | broganj@yorkcounty.gov |
| Martin Malone | WR Engineer | CDM Smith | malonema@cdmsmith.com |
| Brian Joyner | SR Engineer | Moffatt & Nichol | bjoyner@moffottnichol.com |
| Tristian Barnes | Floodplain Planner | Norfolk | Tristian.barnes@norfolk.gov |
| Kevin DuBois | DoD Chesapeake Bay Program | DoD | kevin.dubois@navy.mil |
| Danielle Spach | Mitigation Program Manager | VB OEM | DRSpach@vbgov.com |
| Toni Utterback | Stormwater Admin | City of VB | tutterback@vbgov.com |
| Richard Stephens | Deputy EM | City of Suffolk | rstephens@suffolkva.us |
| Justin Shafer | Project Manager | City of Norfolk | justin.shafer@norfolk.gov |
| Scott Smith | Project Manager | Hampton | Scott.smith@hampton.gov |
| Homa Jalaeian | Fellow | SNR | hjalaoool@odu.edu |
| Sophia Latz | City Planner- Historic | City of Norfolk | Sophia.latz@norfolk.gov |
| Lauren Landis | HR Field Coordinator | CCAN | lauren@chesapeakeclimate.org |
| Katherine Rainone | Regional Economist | HRPDC | krainone@hrpdcva.gov |
| Heather Baggett | Environmental Specialist | Suffolk | hbaggett@suffolkva.us |
| Matt Fanghella | Civil Engineer | Suffolk | mfanghella@suffolkva.us |
| Lucy Stoll | Principal Planner | Chesapeake | Lstoll@cityofchesapeake.net |
| Bob Crum | Executive Director | HRPDC / HRTPO | Rcrum@hrpdcva.gov |
| Christy Everett | Hampton Roads Director | Chesapeake Bay Foundation | Ceverett@cbf.org |
| Grace Tucker | Senior Analyst | EDF | Gtucker@edf.org |
| Ross Weaver | Project Assistant Director | Wetlands Watch | Ross.weaver@wetlandswatch.org |
| Heather Brown | Emergency Ops. Planner | City of Newport News | Brownhl@nnva.gov |
| Sam Belfield | Senior Transportation Engineer | HRTPO | Sbelfield@hrtpo.org |
| Ben McFarlane | Senior Regional Planner | HRPDC | Bmcfarlane@hrpdcva.gov |
| Carol Considine | Director | ICAR / CCRFR | Cconsidi@odu.edu |
| Jessica Whitehead | Executive Director | ICAR @ ODU | jcwhiteh@odu.edu |
| Sean Segerblom | Deputy Coordinator EM | York County | Segerbis@yorkcounty.gov |

Hampton Roads PM Workshop Attendees List (n=18)

| Name | Title | Agency / Locality | Email Address |
|-----------------------|------------------------------------|---------------------------|--|
| Allison Jackura | Senior City Planner | City of Hampton | Allison.jackura@hampton.gov |
| Carolyn Heaps | Resiliency Officer | City of Hampton | Carolyn.heaps@hampton.gov |
| Terry O'Neill | Director of Community Development | City of Hampton | Toneill@hampton.gov |
| Sam Turken | WHRO reporter | WHRO | Sam.turken@whro.org |
| Randy Wheeler | City Manager | Poquoson | Randy.wheeler@poquoson-va.gov |
| Joe Rieger | ERP | Norfolk | jrieger@elizabethriver.org |
| Whitney McNamara | Planner | VB | wmcnamar@vbgov.com |
| Diane Kaufman | | Senator Kaine | Diane_kaufman@kaine.senate.gov |
| John Harbin | Planner | HRPDC | jharbin@hrpdcva.gov |
| Speaker Pollard | Partner | Williams Mullen | Hpollard@williamsmullen.com |
| Phillip Todd | | Atlantic Reefmaker | p.todd@atlanticreefmaker.com |
| Shelly Frie | Project Manager | Jacobs | Shelly.frie@jacobs.com |
| Meghan Mulroy-Goldman | Community Forestry Specialist | VA Department of Forestry | Meghan.mulroy@dof.virginia.gov |
| Angela Y. Hopkins | Senior Planner | City of Newport News | Hopkinsay@nnva.gov |
| Matt Simons | Planner / Floodplain Administrator | City of Norfolk | Matthew.simons@norfolk.gov |
| Brandon Rogers | Transportation Planner | HRTPO | |
| Meg Pittenger | Assistant Planning Director | City of Portsmouth | Megp@portsmouth.gov |
| John Paine | Engineer | GKY | jpaine@gky.com |

Hampton Roads PDC Pre-Webinar Attendees List (n=75)

| | | |
|----------------------------------|------------------------|-----------------------------|
| Allison Jackura | Hudson, Daniel | Peter Corrigan |
| Anderson, Lisa (VDEM) | Jay Ford | Phillip Todd |
| Angle, Kathie K. | Jill Sunderland | Pollard, Henry |
| Ashley Gordon | John Harbin | Ross Weaver, Wetlands Watch |
| Barbachem, Michael | John Paine | rstephens |
| Beaver, Douglas J | Joyner, Brian | Sam Belfield |
| Ben McFarlane | Judy Shuck | Scott Stevens |
| Beth Lewis Southampton County | Katherine Filippino | Sean Crawford |
| Beverly Walkup | Katherine Rainone | Simons, Matthew |
| Bob Crum | Keith Cannady | Slate, Louise |
| Botts, Linda (VDSS) | Kent Henkel | Slater, Noelle |
| Bresee, Harrison (VDEM) | Khambhammettu, Uday | Swanson, Chris (VDOT) |
| Brogton | Liz Scheessele | Tammy Rosario |
| Carlee Smith | Lucy E. Stoll | Terry O'Neill |
| Carolyn Murphy | M. Moore | Tonia P. Utterback |
| Chris Moore | Mandy Stamnitz | Whitney K. McNamara |
| Christy Everett | Martz, Robert | Whitney Katchmark |
| Diane Kaufman | Marvin, Steph | Wittenberg, Matthias |
| Ethan C. Hoar | Matt Fanghella | 16142711349 |
| Frie, Shelly/VBO | Mcallister, Sheila W. | 17575091125 |
| Glazner, George T. | Meghan Mulroy-Goldman, | 17575144067 |
| Heather Brown, Newport News | VDOF | 17575147675 |
| Hickman, Curtis | Mertig, Karl | 17576793566 |
| Hopkins, Angela Y. | Morgan, Michael | 17576924412 |
| | Mutuc, Maria (VDOT) | 17578692839 |
| | Perla Santillan, OCME | 19199715641 |

Middle Peninsula Workshop Attendees List (n=3)

| Name | Title | Agency / Locality | Email Address |
|----------------|---------------|--------------------|--|
| Lewie Lawrence | | MPPDC | llawrence@mppdc.com |
| John Edwards | Town Manager | Town of West Point | jedwards@westpoint.va.us |
| Curtis Smith | Chief Planner | MPPDC | csmith@mppdc.com |

Middle Peninsula Pre-Webinar Attendees List (n=15)

18047855975
Curt Smith
David W. Kretz
Denise Nelson
Donna Sprouse - King and Queen County
Ducey-Ortiz, Anne
Garth Wheeler
Holly McGowan
Jackie Rickards
John Edwards
Michael Lombardo
Payne, Brenton
Rizzio, Carol A.
Sherry Graham
Thomas Jenkins

Northern Neck Workshop Attendees List (n=11, in-person: 9, virtual: 2)

| Name | Title | Agency / Locality | Email Address |
|-------------------|---------------------------------|----------------------|--|
| Anne Self | River Steward | Friends of the River | Anne.self@riverfriends.org |
| Brent Hunsinger | State Policy Coordinator | Friends of the River | Brent.hunsinger@riverfriends.org |
| David Fridley | EH Manager | VDH | David.fridley@vdh.virginia.gov |
| Kaylynn DeBernard | Planning | Colonial Beach | kdebernard@colonialbeachva.net |
| Matthew Smith | ES Chief | Lancaster County | msmith@lancova.com |
| Kathleen Easley | Planning Director | Colonial Beach | keasley@colonialbeachva.net |
| Hope Mothershead | Director of Planning and Zoning | Richmond County | hmothershead@co.richmond.va.us |
| Grace Tucker | Senior Analyst | EDF | gtucker@edf.org |
| Emily Steinhilber | Director VA Coastal Resiliency | EDF | esteinhilber@edf.org |
| Rob Murphy | | | Attended Online |
| Stuart Mckenzie | | | Attended Online |

* rows highlighted indicate virtual participation

Northern Neck Pre-Webinar Attendees List (n=5)

John Bateman, NNPDC
 Vanesa Livingstone
 Beth McDowell
 18044930120

PlanRVA Workshop Attendees List (n=10)

| Name | Title | Agency / Locality | Email Address |
|----------------|--|-------------------------|--|
| Shaun Reynolds | Environmental Coordinator | Powhatan Co | sreynolds@powhatanva.gov |
| Kate Hale | Department Coordinator | New Kent EM | kchale@newkent-va.us |
| Andrew Pompei | Principal Planner | Hanover | ajpompei@hanovercounty.gov |
| Sarah Stewart | Planning Manager | PlanRVA | sstewart@planrva.org |
| Jen Cobb | Engineering and Environmental Director | Henrico | Cob008@henrico.us |
| Rob Rowley | Henrico EM | Henrico | Row08@henrico.us |
| Kristin Owen | Floodplain and Dam Safety Manager | Henrico County | Owe042@henrico.us |
| Grace Tucker | Senior Analyst | EDF | gtucker@edf.org |
| Justin Doyle | Community Conservation Manager | James River Association | jdoyle@thejamesriver.org |
| Troy Aronhalt | Major | Ashland Police | taronhalt@ashlandpolice.us |

PlanRVA / Crater Pre-Webinar Attendees List (n=34)

| | |
|--------------------------|-----------------------------|
| 18046777625 | Morris, Scott |
| Workman, Christopher | Owen, Kristin |
| Sarah Stewart | Rob Rowley |
| Kate Hale | Luke Peters (Berkley Group) |
| Haasch, Steven | Dunn, Scott |
| Dana Adkins | Cobb, Jen |
| Katie Moody | 18043637437 |
| Parikh, Darshan | Grace |
| Kathleen Hall | Conley, Kim |
| Jay Ruffa | anonymous |
| Rebekah Cazares | Olsen, Surani S. - DPU |
| Myles Busching | taronhalt |
| Matt Jones | Rowley, Rob |
| Johnson, Rhonda L. - DPU | Gillies, Andrew |
| Woodburn, John | Justin Doyle (he/him) |
| Bingham, April N. - DPU | Parker Agelasto |
| Alec Brebner | Ingrid Stenbjorn |

Northern Virginia Workshop Attendees List (n=20, in-person: 7, virtual: 13)

| Name | Title | Agency / Locality | Email Address |
|--------------------|------------------------------|--|--|
| Corey Miles | Senior Environmental Planner | NVRC | cmiles@novaregion.org |
| Katie Hermann | Environmental Planner | Fairfax County | Katherine.hermann@fairfax.county.gov |
| Allison Homer | Planner | Fairfax County | Allison.homer@fairfax.county.gov |
| Matt Meyers | Division Manager | Fairfax County | Matthew.meyers@fairfax.county.gov |
| Grace Tucker | Senior Analyst | EDF | gtucker@edf.org |
| Erin DeLuca | EM Specialist | Arlington County | edeluca@arlington.va.us |
| Walter Christensen | Environmental Director | MCB Quantico | Walter.christensen@usmc.mil |
| Catie Torgersen | | Fairfax County DPWES Stormwater | |
| Rich Dooley | | Arlington County AIRE Program Manager | |
| Katie Dyer | | MWCOG | |
| Tom Wasaff | | MWAA | Thomas.wasaff@mwa.com |
| Bob Lazaro | Executive Director | NVRC | |
| Ishrat Dollan | Ph.D. Student | George Mason University | |
| Matt Gerhart | | Northern Virginia Conservation Trust | |
| Madan Mohan | | Prince William County | |
| Ty Asfaw | | Arlington County | tasfaw@arlingtonva.us |
| Jerry Stonefield | | Fairfax County Land Development Services | |
| Tom Smith | | Prince William County | |
| Jesse Maines | | City of Alexandria | |
| Peggy Tadej | | NVRC | |

* rows highlighted indicate virtual participation

Northern Virginia Pre-Webinar Attendees List (n=21)

| | | |
|--------------------|---------------------|------------------------|
| Allie Wagner | Homer, Allison | Peggy Tadej |
| Corey Miles | Ishrat Jahan Dollan | Richard Dooley |
| Demetra McBride | Jeffrey King | Smith, Thomas J. |
| Dhakar, Thakur P. | Katherine Dyer | Stephanie Lavey |
| Elizabeth Thurber | Matt Gerhart | Steven Bieber |
| Heidi Bonnaffon | Meyers, Matthew | Stonefield, Jerry |
| Hermann, Katherine | Normand Goulet | Torgersen, Catherine S |