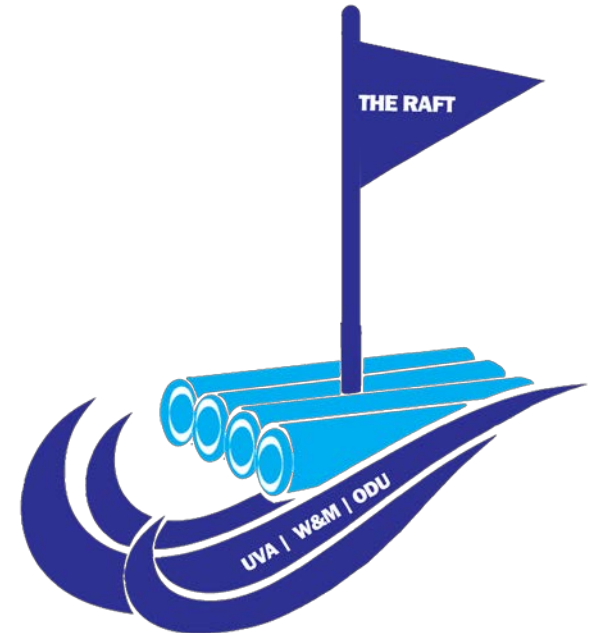


# THE RAFT

Resilience Adaptation Feasibility Tool

PRESENTATION TO  
VA WATER QUALITY MONITORING COUNCIL

APRIL 10, 2019



# THE RAFT GOAL



*To help Virginia's coastal localities  
improve resilience to flooding  
and other coastal storm hazards  
while remaining  
economically and socially viable.*



Cape Charles, June 2017

# THE RAFT TEAM

- The RAFT was born of a multi-disciplinary academic partnership.
- Our Core Team:
  - **University of Virginia**
    - *Institute for Environmental Negotiation*
  - **William & Mary Law School**
    - *Virginia Coastal Policy Center*
  - **Old Dominion University**
    - *Virginia Sea Grant Resilience Program*



# THE RAFT FUNDING

National Fish and Wildlife Foundation

Virginia Environmental Endowment

Virginia Department of Environmental  
Quality (DEQ) Coastal Zone  
Management Program (CZM)

Anonymous

General staff funding:

- Commonwealth Center for Recurrent Flooding Resiliency
- UVA Institute for Engagement & Negotiation
- Virginia Sea Grant



Virginia  
Environmental  
Endowment



# THE RAFT PROCESS

## 1. Scorecard

Resilience Assessment

## 2. Community Workshop

Resilience Action Checklist

## 3. Implementation

Ongoing Assistance



# THE SCORECARD

## 1. LEADERSHIP, POLICY AND COLLABORATION

## 2. RISK ASSESSMENT AND EMERGENCY MANAGEMENT

## 3. INFRASTRUCTURE RESILIENCE

## 4. PLANNING FOR RESILIENCE

## 5. COMMUNITY ENGAGEMENT, HEALTH, AND WELL BEING

### PLANNING FOR RESILIENCE

#### 4.2 COASTAL RESILIENCY IN COMPREHENSIVE PLAN

##### DESCRIPTION

A comprehensive plan is a locality's vision for future land use, development, adaptation, and resilience. Coastal resilience can be addressed in comprehensive plans by incorporating elements such as green infrastructure, open space preservation, infill development, the National Flood Insurance Program (NFIP), the Community Rating System (CRS), and stormwater management. The ideal comprehensive plan identifies equity and the need to identify and support socially vulnerable populations as a priority for resilience, as well as a priority preference for restoration, green infrastructure and connectivity.

##### LOCALITY ACTIONS

- 4.2.a: Locality staff, residents, stakeholders, and others are involved in creating the comprehensive plan.
- 4.2.b: Locality recognizes coastal resilience as an issue for consideration in the comprehensive plan, and gathers information (either by conducting its own studies and analysis, or locating other sources) to develop strategies to enhance its coastal resilience.
- 4.2.c: The comprehensive plan identifies natural resources that help mitigate flooding, and provides strategies to preserve and protect such resources from risks associated with coastal storm hazards.
- 4.2.d: The comprehensive plan identifies critical infrastructure necessary for essential services, and provides strategies to protect such infrastructure from risks associated with coastal storm hazards.

##### SCORING

- 1 point – The comprehensive plan discusses how community engagement around coastal resilience informed the plan.
- 1 point – The comprehensive plan includes clear discussion of coastal resilience and coastal storm hazards, and incorporates assessments to inform the development of policies to reduce vulnerability to coastal storm hazards.
- 1 point – The comprehensive plan includes goals and objectives for preserving and protecting natural resources that mitigate coastal storm hazards.
- 1 point – The comprehensive plan addresses impacts on critical infrastructure and essential services from coastal storm hazards, particularly for impacts affecting socially vulnerable populations.

##### DATA SOURCES

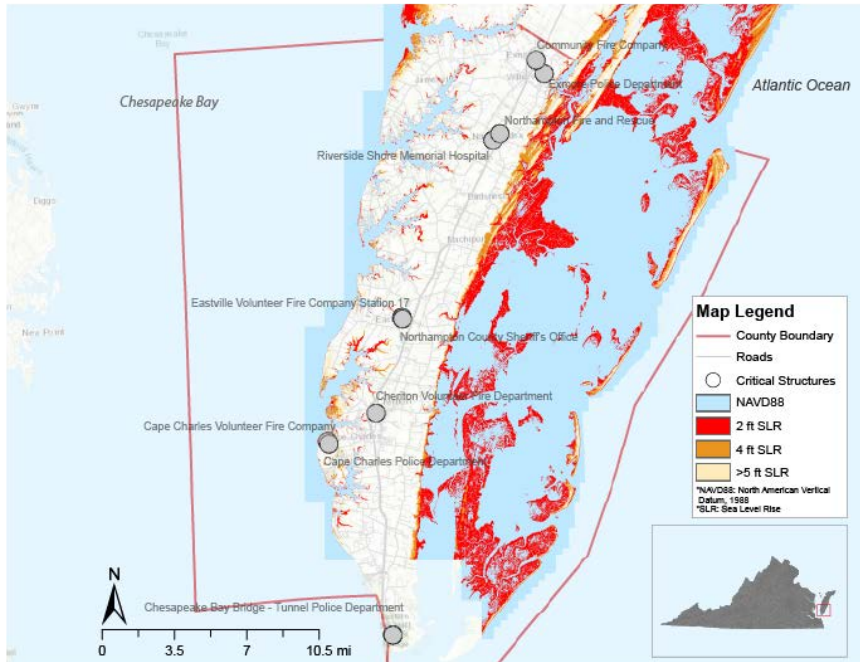
- Comprehensive Plan.

##### LOCALITY SCORE

1/4 POINTS

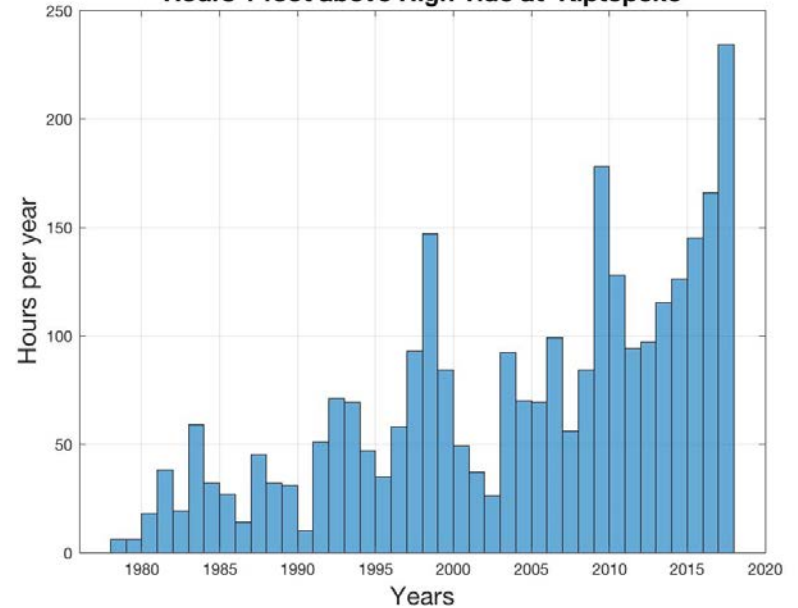
# PRESENTING FINDINGS TO LOCALITIES: DATA AND MAPS

## Northampton Inundation Probability



Source: Institute of Engagement & Negotiation, UVA

## Hours 1 foot above High Tide at Kiptopeke



Larry Atkinson, CCPO, Old Dominion University

# WHAT TO EXPECT: COASTAL INUNDATION (SEA LEVEL RISE)

BY 2040

BY 2065

BY 2100

1ft. (lowest)  
to  
1.9 ft. (highest)

1.9 ft. (lowest)  
to  
4ft. (highest)

3.2 ft. (lowest)  
to  
7.4 ft. (highest)



# 7 PRIMARY OPPORTUNITIES

SECTION	SCORE	WAYS TO IMPROVE
2.1 Flood Exposure and Vulnerability Assessment	1/4	Complete a <b>flood exposure and vulnerability assessment</b> that includes <b>maps</b> .
2.3 Business and Economic Risk Assessment	2/4	Provide programs for small businesses for <b>emergency preparation and business continuity</b> .
3.1 Stormwater Infrastructure	1/4	Provide <b>incentives for private property</b> activities that manage <b>stormwater and demonstrational BMPs</b> on public property for stormwater education.
3.5 Natural and Nature-Based Features	1/4	Create a <b>green infrastructure plan</b> that outlines use of natural and nature-based features to <b>enhance coastal resilience</b> .

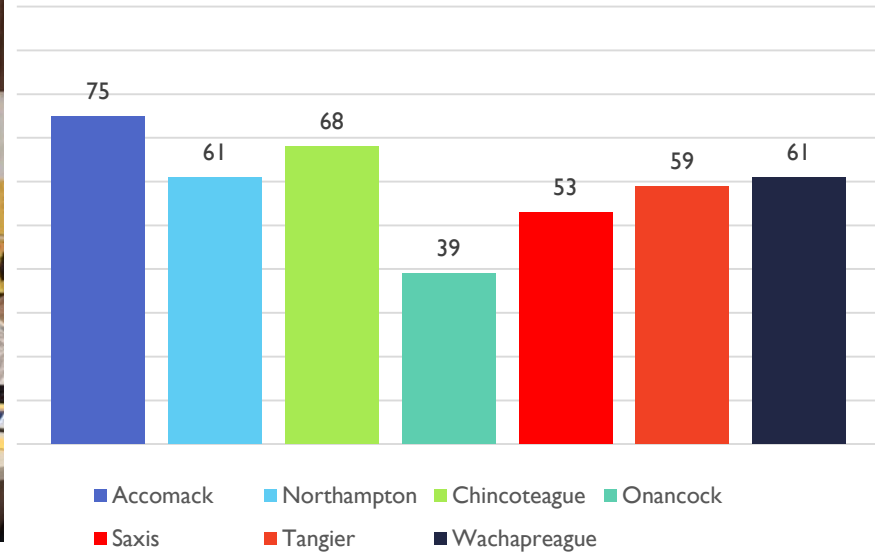
# 7 PRIMARY OPPORTUNITIES

SECTION	SCORE	WAYS TO IMPROVE
3.3 Water Supply and Wastewater Management Services	0/4	Update <b>water supply</b> plan to include coastal hazards and dangers they pose to <b>potable water</b> .
4.2 Coastal Resilience in Comprehensive Plan	2/4	Provide clear discussion in comprehensive plan of coastal resilience and <b>discuss strategies to mitigate coastal hazards</b> .
5.1 Public Involvement in Resilience Planning	2/4	Adopt a <b>written policy statement</b> regarding the roles of residents, commercial, and other stakeholders in coastal resilience.

# COMMUNITY LEADERSHIP WORKSHOP

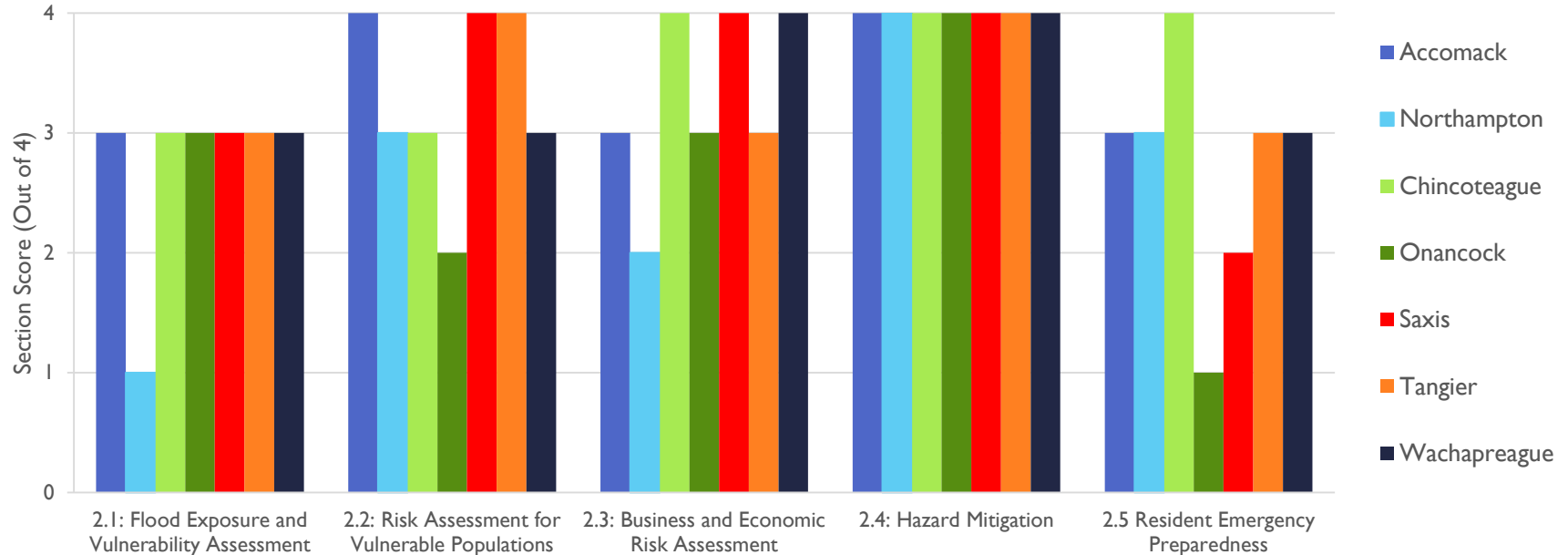


Total RAFT Score Comparison

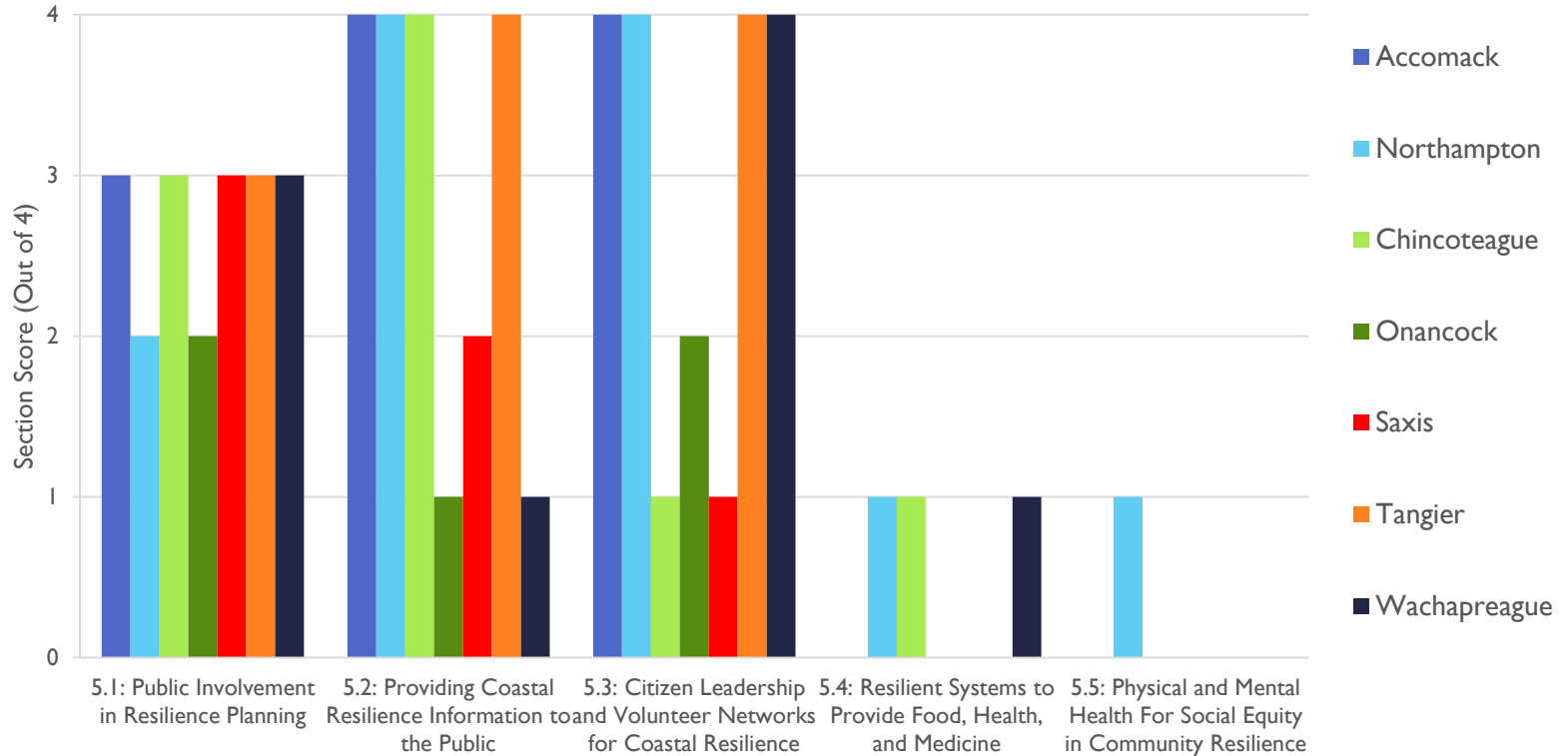


# REGIONAL COMPARISON: EASTERN SHORE

## Section 2. Risk Assessment & Emergency Management



## Section 5. Community Engagement, Health & Wellbeing



# RESILIENCE ACTION CHECKLIST

Project	Description/ Rationale
<b>Conduct tour</b> for County Administrators, Planners, Staff, Wetlands Boards, etc.	Tour of both bayside and oceanside natural areas and Best Management Practices (BMPs) to <b>demonstrate what resilient natural systems look like</b>
<b>Conduct information sessions with the</b> Planning Commission + Board of Supervisors	<b>Share information about resilience with these groups</b> to help inform the new Comp Plan
<b>Identify areas</b> for tree planting	<b>Identify spaces</b> on both ocean and bay sides where County and others can slow erosion & sedimentation
<b>Create 5 different maps to assist decision-making</b>	<b>Show risks</b> to vulnerable populations, cultural and natural resources, economic resources, other key county resources
<b>Coordinate resident preparedness meetings</b>	<b>Share information with County residents about preparedness,</b> through meetings and distribution venues
<b>Establish a basic needs preparedness list</b>	Gather baseline information and what is currently being done to <b>determine needs for water, shelter, food, medicine, etc.</b>
<b>Organize a Task Force For Vulnerable Populations</b>	<b>Identify different types of risks for vulnerable populations</b> and customize the message for those groups

# IMPLEMENTATION ASSISTANCE FOR ONE YEAR

- **Monthly Calls led by a designated core team member**
- **Provide assistance, as needed, on checklist items:**
  - Communication Products
  - Policy and Legal Analysis
  - Model Ordinances and Comp Plan Language
  - GIS Mapping
  - Green Infrastructure or Other Planning
  - Facilitation, Community Engagement, Surveys

# HOW THE RAFT CAN HELP WITH GROUND WATER



## The RAFT Identifies Actions Locality Can Take to Improve Drinking Water Resilience

- Conduct assessment of drinking water supply – both public and private well owners – to identify vulnerabilities to coastal storm hazards.
- Expand water supply plan to address coastal flooding impacts on safe drinking water supply.
- Conduct resident education program on safe drinking water pre- and post-event for public health and safety.
- Establish communication with private well and water system owners to protect and increase water system resiliency.



# HOW THE RAFT CAN HELP WITH NATURAL RESOURCES



## The RAFT Identifies Actions Locality Can Take To Improve Natural Resources Resilience

- Identify natural and nature-based features (NNBF) that are protective and can assist with coastal resilience.
- Develop plans and policies that use NNBF to enhance coastal resilience.
- Conduct a flood vulnerability assessment every 5 years and use it in developing policy and programs.
- Identify sources of flooding (tidal, and precipitation driven) and update every 5 years.
- Fund actions that implement the NR Preservation Plan.

# HOW THE RAFT CAN HELP WITH ECONOMIC VITALITY



## The RAFT Identifies Actions Locality Can Take to Improve Economic Resilience

- Create emergency preparedness program for small businesses, esp. those serving the socially vulnerable.
- Develop emergency comm. plan with business sector.
- Provide incentives for private property activities that manage stormwater.
- Discuss resilience and coastal storm hazards in Comp Plan, including assessments to inform policies and reduce vulnerability.
- In Comp Plan, address impacts of coastal hazards on critical infrastructure and essential services.

## LESSONS LEARNED

- *Importance of presentations & discussion with elected officials and staff*
- *Key role of implementation team, and the importance of establishing this team before the workshop*
- *Long-term value of creating community-wide discussion and strengthening collaborations for resilience*
- *Need to present Scorecard findings in a manner that assists development of most effective Resilience Action Checklist items; and determine potential effect of participation on CRS scores.*
- *Localities value durable relationships with the universities*

# Next Steps

- Northern Neck
- Middle Peninsula





# THE RAFT CORE TEAM

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**QUESTIONS ?**