The RAFT: Maintaining Progress in Coastal Virginia

Grant # NA23NOS4190255 Task 91.02

Virginia Department of Environmental Quality, Coastal Zone Management Program

THE RAFT

Resilience Adaptation Feasibility Tool

[Locality or Tribe Name]

Scorecard Report

[Date: Month and Year]

The RAFT Goal

To help Virginia's localities and tribal nations improve environmental, economic, and social resilience to climate change and other stresses.

raft.ien.virginia.edu

University of Virginia | Institute for Engagement & Negotiation, Shaping Our World Together | Institute for Coastal Adaptation & Resilience | Old Dominion University | VT | Coastal Collaborator, Virginia Tech

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For more information visit The RAFT website: raft.ien.virginia.edu

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Background

What is The RAFT?

- A "full-service tool" and collaborative, community-driven process designed to assist localities and tribal nations in increasing their resilience to climate impact-influenced hazards including flooding, storms, winter weather, wildfires, and extreme temperatures, and addressing those hazards' impacts on a community, including physical infrastructure, the economy, and social factors such as addiction, unemployment, and outmigration for jobs.
- Conceived and developed by an academic interdisciplinary collaborative called the "RAFT Team":
    - Institute for Engagement & Negotiation (IEN) at the University of Virginia
    - Virginia Coastal Policy Center (VCPC) at William & Mary Law School
    - Old Dominion University (ODU)/Virginia Sea Grant Climate Adaptation & Resilience Program.

  VCPC was closed in 2023, and Virginia Tech's Coastal Collaborator joined the RAFT Team in June 2023, and ODU now partners on the RAFT through its Institute for Coastal Adaptation and Resilience (ICAR).

The RAFT has three key components:

1. **Quantitative and qualitative assessments of resilience:** The RAFT Scorecard assesses how much a locality or Tribe's programs, ordinances, and policies incorporate resilience to climate impact-influenced hazards. The assessment includes impacts on physical infrastructure, emergency operations, and socio-economic factors. For Tribes, resilience is assessed for Tribal lands. While land utilization as well as member distribution varies widely by Tribe, resilience measures are assessed for a Tribe's capacity to address the needs of affiliated individuals from their respective Tribal lands. A qualitative assessment, including focus groups and interviews complements this quantitative, policy-based assessment.
2. A **Resilience Action Workshop** where participants review the assessment findings, identify achievable action items and create a Resilience Action Checklist (RAC) of items to improve community resilience.
3. **RAC Implementation** in which the RAFT Team works with a locality or Tribe's Implementation Team for one year to achieve items identified on the Resilience Action Checklist, incorporating support from state or federal agencies, university experts, and community organizations when possible.

How does The RAFT help a Locality or Tribe?

1. Opens a community-wide conversation about community resilience, including gaps and needs, and provides local-level information on predicted climate impacts.
2. Supports the locality or Tribe in identifying priority actions for the largest impact in increasing resilience.
3. Improves communication and coordination within the locality or Tribe with regional and state agencies.
4. Helps the locality or Tribe become better positioned to find and apply for relevant funding opportunities.
5. Can enable the locality or Tribe to earn a better Community Rating System (CRS) score, which saves citizens money on their national flood insurance premiums.

The Resilience Cycle

Adapted from: NOAA Coastal Community Resilience Indicators and Rating Systems, 2015

What is resilience?

A resilient community is one that is able to anticipate, adapt, endure, and thrive in the face of change, uncertainty, and adversity.

The RAFT focuses on community resilience, improving the ability of a community to bounce back from hazard events such as hurricanes and extreme heat and deal with chronic issues such as flooding. The RAFT takes a comprehensive approach by including environmental, economic, and social resilience. All three are vital for a community to thrive.

To build resilience, localities and Tribes need capacities in areas of emergency management, infrastructure, planning, policy, and community well-being.

Total Score

Category	Score Received	Possible Score
1) **POLICY, LEADERSHIP, AND COLLABORATION** *Measures policy and legislation in place for resilience and includes coordination and collaboration between various levels of government, and how accessible and open government data is to the public or members of the Tribe.*		20
2) **RISK ASSESSMENT AND EMERGENCY MANAGEMENT** *Examines how well a locality or Tribe has conducted risk assessments to prepare for flood, storm, wildfire, drought, and extreme temperature hazards (as relevant), identified vulnerable populations and their needs during or after a hazard, and developed plans for disaster preparedness and response, including a Hazard Mitigation Plan.*		20
3) **INFRASTRUCTURE RESILIENCE** *Assesses how well the locality or Tribe has identified methods and plans for protecting critical infrastructure from climate impact-induced hazards, including using natural or nature-based features (NNBFs).*		30
4) **PLANNING FOR RESILIENCE** *Assesses the comprehensive plan and zoning code for resilience, how a locality or Tribe is using incentives to promote resilience in building and development, how policies protect ecosystems, how they use green infrastructure to improve resilience, and how much resilience has been incorporated into planning.*		20
5) **COMMUNITY ENGAGEMENT, HEALTH, AND WELL BEING** *Assesses how the locality or Tribal government and staff engage with residents in planning for flood, storm, wildfire, drought, or extreme temperature hazards, including social equity considerations, and examines the locality or Tribe's attention to issues of health and wellness during and after hazards.*		20
Total Score (Percentage of total applicable metrics)		

Interpreting the Score

Low Resilience: Less than 50%- There are plenty of opportunities for improvement. The locality or Tribe should decide whether it will be more beneficial to achieve the least difficult improvements first, or to tackle more challenging problems. The key is to decide which of these approaches makes the most sense, as the locality or Tribe develops their Resilience Action Checklist.

Moderate Resilience: 50% - 74% – The locality or Tribe is actively involved in resilience planning and has achieved some successes. There are still opportunities for strengthening resilience. The Resilience Action Checklist should focus on weak categories and anticipate moderate to difficult improvements.

High Resilience: 75% or More- The locality or Tribe is well prepared! There may still be room for resilience and the Resilience Action Checklist may focus on ways to improve resilience and further engage residents. Examples of

locality policies, plans, and activities may assist other localities or Tribes in the region and beyond.

If you see **CRS** next to an item, action to improve that metric can result in CRS credit.

If you see **$$$** next to an item, action to improve that metric supports economic resilience.

If you see  next to an item, action to improve that metric supports environmental resilience.

If you see  next to an item, action to improve that metric supports engagement with vulnerable populations.

1) LEADERSHIP, POLICY, AND COLLABORATION

1.1 LEADERSHIP AND PLANNING FOR RESILIENCE: / 4 Points

Collaboration among local government or Tribal government decision makers, officials, departments, academia, and nonprofits is important in planning for resilience. Effective collaboration requires identifying local leaders and organizations, establishing the roles of such leaders and organizations, and providing leadership training and educational resources.

Points		Scoring Metric	Notes
		a. Leadership roles are identified for staff and/or elected officials important for planning for resilience to climate-induced hazards (wildfires, extreme temperatures, drought, and flooding due to sea level rise or increasingly severe storms, as applicable), including planning for socio-economic impacts such as employment, economic development, tourism, and access to housing and healthcare. If staff is limited or nonexistent, the locality or Tribe has tasked someone with handling resilience efforts for the community.	
		b. Training and education events are held for elected or appointed officials specifically on resilience to climate - induced hazards. For Tribes, this could include traditional cultural trainings that may increase resilience.	
		c. Training and education events on climate impact resilience are held for locality/Tribe staff, or if staff is limited or nonexistent, training of whomever has been tasked with handling resilience efforts for the community.	
		d. Staff and/or elected officials, or whomever has been tasked with handling extreme temperatures, flood, wildfire, drought and storm hazard resilience efforts for the community (as applicable), are meeting at least once per quarter to coordinate planning specifically on these resilience issues.	

1.2 LEADERSHIP AND RESPONDING TO EMERGENCY: / 4 Points

Collaboration among officials and relevant stakeholders is equally important in responding to hazards. An organized, coordinated response to a hazard requires identifying stakeholders, establishing roles, creating plans, and publicizing information.

Points		Scoring Metric	Notes
		a. Locality or Tribe has identified stakeholders who will require emergency response due to natural hazards (extreme temperatures, drought, wildfire, and flooding due to sea level rise or increasingly severe storms, as applicable), including socio-economically vulnerable populations such as the elderly and medically fragile.	
		b. Locality or Tribe has established internal emergency response roles (e.g., standing committees, staff titles) for natural hazards, and these staff and partners participate in at least one training each year.	
		c. Locality or Tribe collaborates on resilience planning with the stakeholders who will need emergency response services for extreme temperatures, drought, wildfire, flood, and storm hazards (as applicable), and has provided the public or Tribal members with opportunity to give input, including input from socio-economically vulnerable populations such as low-income households.	
		d. Locality or Tribe has a means of communicating these plans to the public or Tribal members during such hazardous events.	

1.3 COLLABORATION WITH STATE AGENCIES AND REGIONAL PDCs: / 4 Points

Resilience issues go beyond political boundaries; therefore, localities and Tribes benefit from regional collaboration. Regular communication between local, multi-jurisdictional, and state officials encourages sharing of information and ideas. Collaboration should include working with agencies that serve socio-economically vulnerable communities. A locality is part of a Planning District Commission (PDC), which coordinates many activities at the regional level.

Points		Scoring Metric	Notes
		a. Staff and/or officials engage with regional and state agencies on resilience to natural hazards (such as wildfires, extreme temperatures, drought, and flooding due to increasingly severe storms and sea level rise).	
		b. Locality or Tribe participates in local and regional resilience-oriented committees and initiatives to serve socio-economically vulnerable populations.	
		c. Locality elected officials or Tribe elected/appointed officials participate on relevant local and regional commissions addressing resilience.	
	$$$	d. Staff work to identify funding opportunities and priorities at the regional and state level to address extreme temperatures, wildfire, drought, flood, and storm hazard resilience (as applicable).	

1.4 ADAPTIVE MANAGEMENT: / 4 Points

Adaptive management involves updating ordinances and plans to incorporate resilience based on new findings and emerging strategies. Use of data, scientific analyses, and new information is important to inform local policies. Adaptive management means incorporating lessons learned from research that informs best methods for addressing the needs of socio-economically vulnerable populations.

Points		Scoring Metric	Notes
		a. Locality or Tribe incorporated new data and scientific analyses concerning climate impacts into its Floodplain Management Ordinance within the last five years.	
		b. Locality or Tribe incorporated new data and scientific analyses concerning climate impacts into its Zoning Ordinance within the last five years.	
		c. Locality or Tribe incorporated new data and scientific analyses concerning climate impacts into its Site and Subdivision Ordinances within the last five years.	
		d. Locality or Tribe incorporated new data and scientific analyses concerning climate impacts into its Comprehensive Plan within the last five years.	

1.5 THE NFIP'S COMMUNITY RATING SYSTEM: / 4 Points

Communities wishing to go above and beyond the minimums of the National Flood Insurance Program can choose to participate in the Community Rating System (CRS). Participating communities implement higher standards of floodplain management, and, in return, residents are eligible for flood insurance premium reductions. Localities and Tribes that are NFIP participating communities for their Tribal lands can do many things to improve their scores. For more information, see FEMA's CRS website or the Wetlands Watch website on the subject.

Points		Scoring Metric	Notes
	CRS	a. Locality or NFIP-participating Tribe has achieved a CRS Score of 9 or higher.	
	CRS	b. Locality or NFIP-participating Tribe has achieved a CRS Score of 8.	
	CRS	c. Locality or NFIP-participating Tribe has achieved a CRS Score of 7.	
	CRS	d. Locality or NFIP-participating Tribe has achieved a CRS Score of 6 or lower.	

TOTAL SCORE FOR SECTION 1: / 20 POINTS

2) RISK ASSESSMENT AND EMERGENCY MANAGEMENT

2.1 EXPOSURE AND VULNERABILITY ASSESSMENT: / 4 Points

Localities and Tribes should conduct and use an assessment of their exposure and vulnerability to climate impacts (such as increased flooding, wildfire, drought, severe storm, and extreme temperature hazards) in developing policies and programs. Localities and Tribes should be knowledgeable of their natural hazard risks, raise awareness in the community about vulnerable areas, help target action to assist the most threatened areas and reduce possible damage, and save costs by being preemptive, not reactive.

Points		Scoring Metric	Notes
	CRS	a. Exposure and/or vulnerability assessments for extreme temperatures, wildfire, drought, flood, and storm hazards (as applicable) are completed, mapped and updated within the last 5-7 years, available at the locality level, and (as evidence of being used) referenced in locality or Tribal policy making.	
	CRS	b. Sources of flooding (for coastal riverine, and/or flash flood events), wildfire, drought and distribution of heat (blacktop/asphalt surfaces and heat islands) are identified and updated within last 5 years as applicable.	
	CRS	c. Flooding for different return period events, wildfire-impacted acreage, drought impacts (as applicable), and number of extreme temperatures days are identified, projected, and mapped.	
	$$$ CRS	e. Additional vulnerabilities, including impacts on social, cultural, historic, and economic assets, are identified, and updated within the last 5 years.	

2.2 RISK ASSESSMENT FOR VULNERABLE POPULATIONS: / 4 Points

Localities and Tribes should conduct risk assessments of their socio-economically vulnerable populations. These populations include those in areas of high poverty, elderly, caregivers, veterans, homeless, transient or nomadic communities, children and youth, physically or mentally disabled people, medically fragile people, and non-English speakers. Because these populations may not have resources to change their vulnerability, it is vital for localities and tribal governments to identify these populations and ways to reduce their risk and create plans for assistance during and after hazard events. Localities and Tribes need to conduct outreach to vulnerable populations.

Points		Scoring Metric	Notes
	CRS 	a. Locality or Tribe has identified vulnerable populations that are at increased risk from natural hazards like flooding, severe storms, wildfire, drought and extreme temperatures - both increased physical risks, and social and economic risks such as unemployment, food insecurity, and lack of access to healthcare and safe housing.	
		b. Locality or Tribe has engaged vulnerable populations and provided them with meaningful information (e.g., accessible, in their own language, relevant to their circumstances) relating to their vulnerability to natural hazards.	
		c. Locality or Tribe has worked with vulnerable populations to increase their emergency preparedness and evacuation plans so they know their risk and know what steps should be taken during and after an event requiring evacuation or sheltering, including seeking refuge in cooling centers during extreme temperatures events.	
		d. Locality or Tribe partners with organizations that provide assistance to vulnerable populations before, during and after hazard events, including medical facilities, transit services, counseling services, and food banks or pantries with refrigeration units and backup generators.	

2.3 BUSINESS AND ECONOMIC RISK ASSESSMENT: / 4 Points

Localities and Tribes need to identify local business and economic vulnerabilities to flood, storm, wildfire, drought, and extreme temperatures hazards, as relevant. Businesses are differentially affected by these hazards and attention should be paid to making sure that businesses that serve socio-economically vulnerable populations are considered. Including business and economic vulnerability in a risk assessment and emergency management plan is important for resilience and recovery after a hazard event.

Points		Scoring Metric	Notes
	$$$	a. Locality or Tribe has included the business sector (including tourism) in its assessment and mapping of vulnerability to natural hazards such as extreme temperatures, wildfire, drought, flooding, and storms, including considering long-term risks to major industries within the community.	
	$$$	b. Locality has engaged its economic development department and/or independent chamber of commerce in locality hazard mitigation and/or resilience planning. Tribe has engaged Council and finance staff in hazards mitigation and/or resilience planning.	
	$$$ 	c. Locality and/or business associations have programs for small businesses, particularly businesses that serve socio-economically vulnerable populations, to encourage each business to be prepared for an emergency and plan for business continuity. Tribe has programs for cultural asset management particularly assets that serve socio-economically vulnerable populations, to encourage each asset to be protected in case of an emergency and plan for preservation.	
	$$$	d. Locality emergency management staff communicates with business sector regarding businesses' operations, roles and communications with employees during and after hazard events or evacuation. Tribal emergency management communicates with business sector regarding business' operations, cultural preservation, and roles during hazard events or evacuation.	

2.4 HAZARD MITIGATION: / 4 Points

The Hazard Mitigation Plan (HMP) is required for local and Tribal governments that are seeking federal hazard mitigation funding. It is important for regional HMPs to specifically address flood, storm, extreme temperatures, wildfire and drought hazards by identifying what resources and areas are at risk, to enable actions to reduce future risks. Furthermore, having an HMP is essential to be eligible for certain grants and funding related to hazards.

Points		Scoring Metric	Notes
		a. The locality or Tribe has a FEMA-approved HMP that specifically addresses applicable and significant hazards.	
		b. The locality or Tribe is engaging in regional coordination for Hazard Mitigation through a regional plan.	
		c. The HMP details how the locality or Tribe collaborates with the Virginia Department of Emergency Management (VDEM), Department of Conservation and Recreation Floodplain Management Program, Department of Forestry, and the Federal Emergency Management Agency State Hazard Mitigation Officer.	
		d. The HMP is approved by VDEM and FEMA, was developed with meaningful public engagement with socio-economically vulnerable communities, and was formally adopted by the locality or Tribal governing body.	

2.5 RESIDENT EMERGENCY PREPAREDNESS: / 4 Points

Well-organized emergency preparedness plans save lives and property and help ensure that localities and Tribes can act in sufficient time. They contribute to faster and more efficient post-hazard recovery. Ensuring that vulnerable populations are prepared for emergencies includes providing them with the opportunity to learn about flooding, wildfire and heat safety, including learning swimming skills. Communities should consider participating in regional, national, or state-wide outreach events such as Hurricane Preparedness Week.

Points		Scoring Metric	Notes
	CRS	a. Locality or Tribe has a current resident emergency preparedness plan, updated within the last five years, which identifies resident emergency preparedness risks and needs (including education on water safety, flooding risks including nonfunctional septic systems and wells, heat safety including heat related illnesses, and safety measures during wildfires and droughts).	
	CRS	b. Locality or Tribe conducts community outreach at least once a year to inform residents or Tribal members about community emergency preparedness.	
	CRS	c. Locality or Tribe engages resident groups, including occupants of schools, hospitals, nursing homes, adult group homes, and other group facilities, in testing preparedness through emergency drills, disaster simulations, and risk planning workshops.	
	CRS 	d. Locality or Tribe has implemented early warning signals/systems/emergency warning tools for its residents, particularly those most vulnerable.	

TOTAL SCORE FOR SECTION 2: / 20 POINTS

3) INFRASTRUCTURE RESILIENCE

3.1 STORMWATER INFRASTRUCTURE: / 4 Points

Stormwater management is regulated by state law, which requires localities to either create and operate a stormwater management program or request the state to operate one for them. Local ordinances must comply with the Virginia Stormwater Management Act and regulations, as well as the Virginia Erosion and Sediment Control Law. Additional stormwater management and flood risks are typically handled at the local level or Tribal government level through environmental regulation, site plan approval, and subdivision approval. Localities and Tribes that go beyond the minimum state requirements are better able to manage stormwater and increase their resilience to storm and flooding hazards. Stormwater infrastructure may include use of bioswales, dry ponds, retention basins, rainwater management systems, low impact development, rainwater collection and management systems, green infrastructure, rooftop gardens, and green and open spaces.

Points		Scoring Metric	Notes
	$$$ 	a. Locality or Tribe offers at least one official incentive for private property activities that manage stormwater.	
		b. Locality or Tribe funds stormwater management projects through stormwater utility fees, user fees, grants, or other funding mechanisms.	
		c. Locality or Tribe implements one or more stormwater BMPs on public property for educational demonstration purposes, as shown by signage, tours, or other information.	
		d. Locality/Tribal stormwater policy goes above and beyond the minimum state requirements.	

3.2 CRITICAL TRANSPORTATION INFRASTRUCTURE: / 4 Points

An evaluation of critical transportation infrastructure allows a locality or Tribe to understand its capacity and preparedness for flood, storm, wildfire, and extreme temperatures hazards. Roads in cities, counties, and on Tribal lands may be administered by various entities at the state or federal level, but it is still important for local and Tribal governments to assess and identify their transportation needs and priorities and communicate them to the appropriate entities.

Points		Scoring Metric	Notes
		a. Locality or Tribe has identified critical transportation infrastructure and assessed its vulnerability to natural hazards within the last 5 years.	
		b. Locality or Tribe has developed a protection plan and a contingency plan for critical transportation infrastructure within the last 5 years.	
		c. Locality or Tribe has a plan available and has informed its residents or Tribal members which critical transportation infrastructure to utilize in the case of flood, storm, drought, wildfire, and extreme temperatures hazards.	
		d. Locality or Tribe has informed residents or its Tribal members about which critical transportation infrastructure are vulnerable to storm, drought, flood, wildfire, and extreme temperatures hazards.	

3.3 WATER SUPPLY AND WASTEWATER MANAGEMENT SERVICES: / 4 Points

Communication and coordination between a locality or Tribe and its residents or Tribal members in areas with private well owners, municipal water utility, and wastewater utility enable a coordinated, cohesive, and synchronized response to a hazard.

Points		Scoring Metric	Notes
		a. Locality or Tribe conducts an assessment of its water supply (both public sources and private wells), and wastewater management (both municipally provided and in areas with septic systems), to identify vulnerabilities to flood, heat, drought, wildfire and storm hazards.	
		b. Locality or Tribal water supply plan addresses flooding, drought, wildfires, extreme temperatures events and other hazards to assure safe, uninterrupted water supply and water conservation.	
		c. Locality or Tribe conducts a resident/Tribal member education program on safe water supplies and septic systems maintenance to assure pre- and post-event public health and safety.	
		d. Locality or Tribe communicates with municipal water and wastewater utilities to manage ongoing challenges to safe water supplies and wastewater treatment, including during and after a storm. Additionally, the locality or Tribe has established methods of communication with private water and wastewater system owners, to ensure all are informed about how they can increase their systems' resiliency.	

3.4 UTILITIES INFRASTRUCTURE: / 4 Points

The failure of utilities, including electricity, natural gas, broadband, and telecommunications, may be caused by flood, storm, wildfire, and extreme temperatures hazards. Power outages pose health risks, particularly for the elderly and other vulnerable populations. Electricity is generated by private providers within the Commonwealth. Companies are subject to voluntary and mandatory energy production standards and regulations set at the state or federal level and managed by various state agencies. Companies participate in partnerships within their sector for power restoration following a hazard. Additional electricity production matters are typically handled at the local level through fire safety inspection and site plan approval. Localities and Tribes that go beyond the minimum Commonwealth requirements are better able to manage electricity, natural gas, broadband, and telecommunications disruptions, and increase their resilience to flood, storm, wildfire, and extreme temperatures hazards. When there is an electrical outage, back-up infrastructure may include use of generators or on-site fuel storage, and the use of cooling centers and spray parks during extreme heat events.

Points		Scoring Metric	Notes
	$$$	a. Locality or Tribe fire safety plan has been updated within the last 5 years and addresses flood, storm, wildfire, and extreme heat hazard effects (as applicable) upon utility infrastructure.	
		b. Locality or Tribe has developed a plan to protect critical electric, natural gas, broadband, and telecommunications infrastructure and address gaps in back-up power provision within the last 5 years.	
		c. Locality or Tribe conducts education program for its residents or Tribal members on back-up power resources, public sites providing broadband and telecommunications access, and electrical safety to assure pre- and post-event public health and safety.	
		d. Locality or Tribe communicates with electric, natural gas, broadband, and telecommunications utilities to manage ongoing challenges to utilities provision of services, including during and after a heat wave, flood, wildfire, or storm event (as applicable). Additionally, the locality or Tribe has established methods of communication with consumers, to ensure all are informed about how they can increase their utility system resiliency and avoid or respond to power outages.	

3.5 CRITICAL INFRASTRUCTURE FOR EMERGENCY SERVICES: / 4 Points

An evaluation of critical infrastructure for emergency services- including shelters, cooling centers and spray parks, elder care facilities, emergency facilities, and medical, electrical, and other essential services - allows a locality or Tribe to understand its capacity and preparedness for hazards. Critical infrastructure ensures that socio-economically vulnerable populations, not just those who can afford it, will have access to quality drinking water, electricity, telecommunications, the internet, food, and shelter.

Points		Scoring Metric	Notes
		a. Locality or Tribe identifies critical infrastructure for emergency services, including hospitals, shelters, and cooling centers, and assessed vulnerability within the last 5 years.	
		b. Locality or Tribe has developed a plan to protect critical infrastructure from storms, floods, wildfires, drought impacts, and extreme heat (as applicable) within the last 5 years.	
		c. Locality or Tribe informs its residents or Tribal members which critical emergency infrastructure they should use during flood, storm, wildfire, drought and extreme heat hazards (as applicable).	
		d. Locality or Tribe has a contingency plan for continuing emergency services. This plan has been developed or updated in the last 5 years.	

3.6 FLOOD CONTROL INFRASTRUCTURE: / 4 Points

Flooding may be caused by seasonal melt, precipitation patterns, storms, accelerating sea level rise, waterway blockages, tides, and impoundment failure, depending on the locality or Tribe. Impounding structures of a certain size are regulated by the state through permitting and reporting requirements. These and other built flood control structures require maintenance to maintain their designed capacity and safety. Localities or Tribes engaged in awareness raising and planning are better able to manage flood hazards.

Points		Scoring Metric	Notes
	$$$	a. Locality or Tribe has identified flood control and dam safety infrastructure vulnerabilities for current and predicted flooding levels and developed a contingency or emergency plan within the last 5 years.	
		b. Locality or Tribe has developed plans to maintain and repair flood control infrastructure, including levees and dams if applicable, and other structures, such as nature-based solutions.	
		c. Locality or Tribe informs its residents or Tribal members which flood control structures, including dams, are vulnerable to breach or overtopping due to flooding.	
		d. Locality or Tribe communicates with state agencies to manage ongoing challenges to structural safety. Alternatively, or additionally, the locality or Tribe has established methods of communication with structure and adjacent landowners, to ensure all are informed about how they can increase their resiliency and avoid or respond to flooding.	

3.7 NATURAL AND NATURE-BASED FEATURES: / 4 Points

Natural and nature-based features (NNBF) are features that define natural landscapes and are either naturally occurring or have been engineered to mimic natural conditions. Examples include beaches and dunes; vegetated forest buffers, salt marshes, freshwater wetlands, parks, greenways, preserves, and submerged aquatic vegetation; oyster reefs; and barrier islands. Green infrastructure (GI) is similar and complementary, and uses vegetation, soils, and other elements and practices to restore some of the natural processes required to manage water and heat and create healthier urban environments. At the city or county scale or on Tribal lands, green infrastructure is a patchwork of natural areas that provides habitat, flood and wildfire protection, temperature regulation, cleaner air, and cleaner water. At the neighborhood or site scale, stormwater and heat management systems that mimic nature soak up and store water as well as reduce temperatures. Both NNBF and GI may be undertaken by a locality or Tribe in a variety of ways.

Points		Scoring Metric	Notes
		a. Locality or Tribe has identified natural and nature-based features that are protective and can assist with resilience such as by reducing wind speeds, wildfire spread, flooding, and heat.	
		b. Locality or Tribe has developed plans and policies that use natural and nature-based features to enhance resilience to flood, wildfire, storm, and extreme temperatures hazards (as applicable).	
		c. Locality or Tribe is implementing projects that are in accordance with the plans and policies developed to utilize natural and nature-based features to increase resilience to flood, wildfire, storm, and extreme temperatures hazards (as applicable).	
	$$$ 	d. Locality or Tribe offers incentives for the use of natural and nature-based features to increase resilience to flood, wildfire, storm, and extreme temperatures hazards (as applicable).	

TOTAL SCORE FOR SECTION 3: / 30 POINTS

4) PLANNING FOR RESILIENCE

4.1 BUDGET, FUNDING AND STATE & FEDERAL ASSISTANCE: / 4 Points

Hazard mitigation efforts, when properly funded, can reduce or prevent damage and decrease costs from storms, extreme temperatures, wildfires, drought, and other hazards. To ensure proper funding, a locality or Tribe can budget for mitigation efforts, assess the potential economic impacts from a hazard, and identify sources of funding for mitigation projects.

Points		Scoring Metric	Notes
		a. Locality or Tribe has incorporated funding for resilience into its Capital Improvement Plan (CIP). Projects include upgrading critical infrastructure, water systems, and food and public health systems, with priority for needs of vulnerable populations.	
	$$$	b. Locality or Tribe has conducted an economic and cultural impacts assessment of flood, wildfire, drought, storm, and extreme temperatures hazards (as applicable).	
		c. Locality or Tribe has identified specific actions for resilience (pre-post extreme temperatures, wildfire, drought, storm, and flooding mitigation) in a Hazard Mitigation Plan.	
	$$$	d. Locality or Tribe has identified funding for non-CIP resilience projects, including priority needs of vulnerable populations impacted by flood, wildfire, drought, storm, and extreme temperatures hazards (as applicable).	

4.2 HAZARD RESILIENCY IN COMPREHENSIVE PLAN: / 4 Points

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

Points		Scoring Metric	Notes
		a. The comprehensive plan discusses how community or Tribal member engagement around resilience informed the plan.	
		b. The comprehensive plan includes clear discussion of resilience and incorporates assessments to inform the development of policies to reduce vulnerability to hazards.	
		c. The comprehensive plan includes goals and objectives for preserving and protecting natural resources that mitigate hazards, such as trees to address heat islands, buffer zones to protect against wildfire, and riparian buffers and wetlands to act as flood buffers.	
		d. The comprehensive plan addresses impacts on critical infrastructure and essential services from flood, storm, wildfire, drought, and extreme temperatures hazards, particularly for impacts affecting socio-economically vulnerable populations.	

4.3 LAND USE ORDINANCES: / 4 Points

A locality or Tribe's land use ordinances (such as zoning, subdivision, and floodplain management) should enact the vision and policies laid out in the locality or Tribe's comprehensive plan or equivalent planning document. Land use ordinances can be used to conserve and protect natural resources, ecosystems, agricultural lands, heat-prone areas, and areas vulnerable to flooding. Localities are required to enact Chesapeake Bay Preservation Act ordinances and adopting requirements that go beyond those ordinances provides greater resilience. For Tribes, Chesapeake Bay Preservation Act ordinances serve as a model for achieving greater resilience.

Points		Scoring Metric	Notes
	CRS 	a. Locality or Tribal land use regulations protect areas vulnerable to flooding by limiting development inside the floodplain or encouraging development outside the floodplain.	
	CRS 	b. Locality or Tribal land use regulations protect areas vulnerable to flooding by setting higher standards in existing flood zones or by designating additional flood zones beyond those designated by FEMA.	
	CRS 	c. Locality or Tribal land use regulations protect heat-prone areas and areas vulnerable to flooding by establishing buffers, including open space.	
	CRS 	d. Locality or Tribal land use regulations protect areas vulnerable to flooding by using setbacks to protect flood-prone areas.	

4.4 INCENTIVES FOR HAZARD RESILIENCE: / 4 Points

Incentive programs can promote resilience through actions like encouraging infill development and protecting open spaces, while protecting flood- and heat-prone areas and critical ecosystems. Incentives can also build economic and social resilience pre- and post-hazard. Incentives should be developed with community or Tribal member input, with particular attention to consulting agencies and organizations working with or providing services to socio-economically vulnerable populations as well as agencies and organizations working to build community resilience.

Points		Scoring Metric	Notes
	$$$	a. Locality or Tribe offers an incentive for achieving resilience goals: 1) discourage development in areas prone to flooding or wildfire; 2) protecting critical ecosystems; 3) encourage sustainable development; 4) addressing public health risks for vulnerable populations, promoting resilience-building economic development initiatives, improve resilience (physical, social and economic) in high-risk areas; 5) reduce heat island effects; and 6) preserve natural assets.	
	$$$	b. Locality or Tribe offers a second incentive for achieving the goals listed above.	
	$$$	c. Locality or Tribe offers three or more incentives for achieving the goals listed above.	
	$$$	d. Locality or Tribe develops incentives in consultation with agencies and organizations that work with socio-economically vulnerable populations.	

4.5 NATURAL RESOURCE PRESERVATION: / 4 Points

Natural resources are important to the locality or Tribe's economy, environment, and quality of life. Natural resources also can help protect against storm hazards and excess heat, and minimize damage from storm events. The preservation of these critical natural resources is paramount to providing resilience for a locality or Tribe during these events. These actions should go beyond the required Chesapeake Bay Preservation Act riparian buffers.

Points		Scoring Metric	Notes
	CRS 	a. Locality or Tribe has identified and mapped natural resources that are important for broad ecosystem health and heat reduction, and which are at risk of being lost due to extreme temperatures, wildfire, drought, flooding, and storm hazards (as applicable).	
	CRS 	b. Locality or Tribe has developed and is implementing plans and policies that preserve and restore natural resources to increase resilience to extreme temperatures, wildfire, drought, floods, and storms.	
		c. Locality or Tribe has programs with residents and/or Tribal members, civic organizations, and nonprofit organizations to educate the community about natural resource preservation planning and engage them in helping to implement the plan.	
		d. Locality or Tribe is funding actions that implement natural resource preservation plans.	

TOTAL SCORE FOR SECTION 4: / 20 POINTS

5) COMMUNITY ENGAGEMENT, HEALTH, AND WELL-BEING

5.1 COMMUNITY INVOLVEMENT IN RESILIENCE PLANNING: / 4 Points

For community resilience, it is important to use meaningful engagement strategies where residents or Tribe members are able to provide feedback and suggestions through meetings, workshops, and surveys. To reach people of color and the elderly, media and social media that serve these populations is effective. Public engagement enables residents/Tribal members and other stakeholders to provide input to the locality or Tribe. Better informed residents or Tribal members are better able to ensure their locality or Tribe remains resilient to hazards.

Points		Scoring Metric	Notes
		a. Locality or Tribe has a written policy regarding the role of residents/Tribal members and businesses, schools and educators, local institutions, nonprofit organizations, faith-based communities, veterans, and other stakeholders in developing resilience to extreme temperatures, wildfire, drought, flood, and storm hazards (as applicable).	
	CRS	b. Locality or Tribe has staff dedicated to public engagement on resilience to extreme temperatures, flood, wildfire, drought, and storm hazards (as applicable), including a standing committee or council that addresses resilience as part of its work.	
	CRS 	c. Locality or Tribe holds at least one public meeting per year, including one for residents/Tribal members in vulnerable areas to address extreme temperatures, flood, wildfire, drought, and storm hazard resilience issues (as applicable); provides residents/Tribal members with the opportunity to provide input at the meetings; and posts the results of the public meetings. For 75-150,000 residents/Tribal members, at least two such public meetings per year; for 150,000+ residents/Tribal members, at least three per year.	
	CRS 	d. Locality or Tribe informs and engages vulnerable populations about extreme temperatures, flood, wildfire, drought, and storm hazard resilience and associated socioeconomic risks (as applicable) by using locality or Tribe website, social media, media serving people of color and minorities, and faith-based organizations to enable them to provide suggestions about issues and strategies.	

5.2 PROVIDING HAZARD RESILIENCE INFORMATION TO THE COMMUNITY: / 4 Points

The public and Tribal members need free and open access to information related to resilience and planning. Information sharing allows residents and Tribal members to understand their risks and the importance of resilience. Information should be shared easily and presented in a manner which is clear and easy to understand, and easy to access in ways that reach different populations in the community.

Points		Scoring Metric	Notes
	CRS	a. Locality or Tribe provides to the public/its Tribal members localized, user-friendly information on extreme temperatures, flood, wildfire, drought, and storm resilience (as applicable), in digital and non-digital formats and in multiple languages where appropriate based on demographics.	
	CRS	b. Locality or Tribe provides to the public/Tribal members with localized, user-friendly information on extreme temperatures, wildfire, drought, flood, and storm resilience (as applicable), on a website (e.g., interactive maps).	
	CRS	c. Locality or Tribe provides localized, user-friendly information on extreme temperatures, wildfire, drought, flood, and storm resilience (as applicable) in public spaces (e.g., public offices, community centers or libraries).	
	$$$	d. Locality or Tribe provides the public/Tribal members with localized, user-friendly information about economic costs and risks associated with extreme temperatures, wildfire, drought, flood, and storm hazards (as applicable).	

5.3 COMMUNITY LEADERSHIP & VOLUNTEER NETWORKS FOR RESILIENCE: / 4 Points

Developing community leaders and strong volunteer networks are important aspects of building a locality or Tribe's health and wellness resilience. Leaders can be responsible for informing residents or Tribal members, expressing community concerns, and assisting with local preparedness. Community leaders can be called on during emergencies to assist residents/Tribal members in need and to assist with post-hazard recovery. Communities can build this capacity by offering volunteer opportunities to cultivate experienced, local responders.

Points		Scoring Metric	Notes
		a. Locality or Tribe supports and invests in community-led initiatives on extreme temperatures, wildfire, drought, flood, and storm hazard resilience, and relevant socioeconomic knock-on effects (as applicable). For Tribes, this may also include traditional cultural trainings that increase resilience.	
		b. Locality or Tribe offers training opportunities and education opportunities for resident/Tribal member leaders or volunteers to educate the community on what they can do to increase their extreme temperatures, wildfire, drought, flood, and storm hazard resilience (as applicable) on individual properties or in neighborhoods. For Tribes, this may also include traditional cultural trainings that increase resilience.	
		c. Locality or Tribe supports resident/Tribal member leaders or volunteers in community education and outreach efforts about extreme temperatures, wildfire, drought, flood, and storm hazard resilience (as applicable), and relevant socioeconomic knock-on effects by providing them with materials, speakers for gatherings, or support for resident/Tribal member-led action projects. For Tribes, this may also include traditional cultural trainings that increase resilience.	
		d. Locality highlights the work of resident/Tribal member leaders or volunteers in supporting and advancing extreme temperatures, wildfire, drought, flood, and storm hazard resilience (as applicable), on its website, through social media, Facebook, awards, or other means.	

5.4 RESILIENT SYSTEMS TO PROVIDE FOOD, HEALTHCARE, AND MEDICINE: / 4 Points

If a community's food, healthcare, housing, and medicine systems are not resilient before a hazard event, then the community may face a substantially longer recovery. Food, health, and medicine systems must be sustained before, during and after hazard events, and are dependent on critical systems, including transportation and utilities. Lower-income and minority populations often already struggle to access food, housing, healthcare, and medicine, and are among the vulnerable populations during a flood, storm, drought, wildfire and extreme temperatures hazard.

Points		Scoring Metric	Notes
		a. Locality or Tribe has plans for providing food to populations, has developed partnerships to address needs, and has provided information to residents or Tribal members on how to access food during emergencies, through its comprehensive plan, emergency operations plan, or other relevant plans.	
		b. Locality or Tribe has plans for providing healthcare to populations, has developed partnerships to address needs, and has provided information to residents/Tribal members on how to access healthcare during emergencies, through its comprehensive plan, emergency operations plan, public health plan, or other relevant plans.	
		c. Locality or Tribe has plans for providing medicine to populations, has developed partnerships to address needs, and has provided information to the public/Tribal members on how to access medicine during emergencies, through its comprehensive plan, emergency operations plan, public health plan, or other relevant plans.	
		d. Locality or Tribe has plans for providing cooling centers or temporary shelter to vulnerable populations, to address needs during an extreme temperatures, drought, wildfire, flood, or storm event (as applicable), and has provided information to the public/Tribal members on how to obtain access, through its comprehensive plan, emergency operations plan, or other relevant plans.	

5.5 PHYSICAL AND MENTAL HEALTH FOR SOCIAL EQUITY IN COMMUNITY RESILIENCE: / 4 Points

To ensure that socio-economically vulnerable and underserved populations do not experience disproportionate impacts from flooding, extreme temperatures, and other hazards, a locality or Tribe needs to be able to predict how its residents or Tribal members may fare during a hazard event, and then help those who are most vulnerable. One key measure that can be useful to localities and Tribes in this effort is the metric for "deaths of despair"— or the prevalence of suicide, cirrhosis of the liver, and overdoses – which can serve as a proxy for the locality or Tribe's physical and mental health, as persons who are suffering from depression and addictions are less likely to be able to respond effectively during storm, flood, and extreme temperature events. A locality or Tribe with good physical and mental health will be better able to respond effectively to new or changing conditions as well as to recover from stressful events.

Points		Scoring Metric	Notes
		a. Locality or Tribe maintains data on community physical and mental wellbeing and challenges through specific metrics, such as the number of "deaths of despair" (suicide, cirrhosis of the liver, overdoses) and hazard-related deaths and injuries (drowning, debris impact, heat stroke).	
		b. Locality or Tribe has met at least once with community partners to identify "trusted messengers" for communicating with vulnerable populations that are at greater risk due to physical and mental challenges.	
		c. Locality or Tribe has identified or mapped its vulnerable neighborhoods, areas, and populations, and has done this in partnership with nonprofits, faith-based organizations, or its health and community services board.	
		d. Locality or Tribe has a plan with these nonprofits, faith-based organizations, or its health and community services board that helps its economically, physically and mentally challenged vulnerable populations to prepare for flood, storm, wildfire, drought and extreme temperature events, and that provides assistance to them before, during and after these events.	

TOTAL SCORE FOR SECTION 5: / 20 POINTS

Opportunities

Example of an Opportunity Actions Checklist showing possible actions to improve scores in each scorecard category. Opportunity Actions for your locality or Tribe will be determined by your implementation team and The RAFT Team.

Locality Action Category	**Score**	**Opportunity Actions for Score Improvement**	**Potential Time Commitment** Short-Term: < 1 year; Mid-Term: 1-3 years; Long-Term: > 3 years

Next Steps

Resilience Action Workshop

1) Community leaders work together to create a one-year **Resilience Action Checklist.**

2) The RAFT Team helps to **identify achievable action items** for improving resilience.

3) Localities or Tribes break into focused discussion groups to **identify 3 to 5 top opportunities** for the next year to increase resilience.

4) Large group discussion on **regional sharing**, if applicable, followed by breakout sessions discussion groups to:
    a. **Identify a Locality/Tribe Implementation Team;**
    b. **Create a timeline for actions;**
    c. **Coordinate logistics;**
    d. **Determine next steps for implementation.**

Implementation

- **Identify a Locality or Tribe Implementation Team** made up of local officials or Tribal Council members, and residents or Tribal members, community groups and nonprofits, and state or federal agencies if desired that will work with the RAFT Team and Locality/Tribe Implementation team to accomplish checklist actions and projects.

- **Work with one of the RAFT Team members** who will set up periodic check-in meetings or calls to track progress and provide support.

- Assistance from RAFT partners could take the form of:
    - **Communications product development;**
    - **Hazard and critical infrastructure mapping;**
    - **Policy and legal analysis;**
    - **Model ordinance and comprehensive plan language;**
    - **Green infrastructure projects;**
    - **Workshop or meeting facilitation;**
    - **Community engagement recommendations;**
    - **Specific research or data collection projects.**

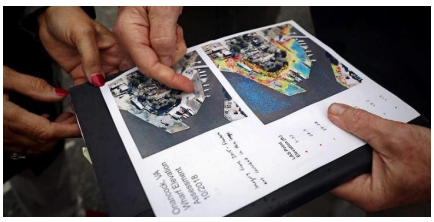

Photo by Aileen Devlin, Virginia Sea Grant

Data Sources Used to Complete Scoring

Data Sources	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	2.4	2.5	3.1	3.2	3.3	3.4	3.5	4.1	4.2	4.3	4.4	4.5	5.1	5.2	5.3	5.4	5.5
Business Association Website																									
Calls to the locality/Tribe																									
Calls to the PDC if applicable																									
Capital Improvement Plan																									
Community Services Board																									
County Health Rankings and Roadmaps																									
Dam Management Plan																									
DCR Floodplain Management Program																									
Department of Conservation and Recreation																									
Department of Emergency Management																									
Department of Environmental Quality																									
Department of Health																									
Department of Transportation Road and Bridge Standards																									
Emergency Management Plans																									
Emergency Operations Plan																									

FEMA's CRS website																									
Fire Department website																									
Flood exposure and vulnerability assessment publications (VIMS, FEMA, and DCR)																									
Hazard Mitigation Plan																									
Local Assessments of Ecological Assets																									
Local Boards to advise elected officials																									
Local Budget																									
Data Sources	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**3.1**	**3.2**	**3.3**	**3.4**	**3.5**	**4.1**	**4.2**	**4.3**	**4.4**	**4.5**	**5.1**	**5.2**	**5.3**	**5.4**	**5.5**
Local Chamber Website																									
Local Economic Impact Assessments																									
Local Ordinances and Comprehensive Plan																									
Local Public Works Design & Construction Standards																									
Local Transportation Plan																									
Local Utility Website																									
Local Water Supply Plan																									
Locality or Tribe Resilience Plan or Strategy																									

Locality or Tribe Social Media																									
Locality or Tribe Website																									
School Curriculum																									
Social Services																									
Planning District Commission (PDC) website																									
Public Libraries																									
Wetlands Watch																									
Zoning Codes																									
Other [please insert]																									

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