

# VFPMP Stage Setting

## Workshop Summary



September 26, 2024 | Stage Setting Workshop Summary



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### VFPMP Presentation (Krista Jankowski, Arcadis)

- Introductions of VFPMP Development Team
- Anticipated Meeting Outcomes
- VFPMP Overview
- VFPMP Components & Timeline
- VFPMP Stakeholder Overview & Engagement Points
- VFPMP Final Products
- Questions & Answers

### Stage Setting Workshop Overview

Virginia stakeholders were given introductory information on the VFPMP project by the Arcadis team. Initial information included an overview of the project, its components, timeline, and how the Arcadis team plans to engage stakeholders throughout the development of the VFPMP.

Stakeholders have been defined in two categories for this effort, “Core” and “Supporting” stakeholders. “Core” stakeholders were invited to attend this meeting in-person. “Supporting” stakeholders and members of the public were invited to listen into the presentation virtually via Teams. After the conclusion of the presentation, the virtual portion of the meeting ended.

The “Core” stakeholders in the room then participated in a small group activity where they were split into four groups. Each group consisted of various Virginia state agencies and organizations and the Arcadis team organized the individuals in the groups by level of responsibility in their organization (e.g., agency directors were assigned to one group, program managers were assigned to one group). Each group was asked to discuss flood resilience successes and challenges in response to recent flood events. Discussion points were recorded by notetakers.

Summarized below are the flood resilience success and challenges that were discussed in the small groups. Each group also came up with 1-3 goals in relation to addressing the challenges they discussed.

## Breakout Group 1

### SUCCESSFUL EFFORTS

- Successful initiatives in reforestation, such as the Hardwood Habitat Initiative, along with effective forest land retention and management, contribute significantly to enhancing ecological health and resilience.
- The Department of Forestry (DOF) supports green infrastructure (GI) projects and living shorelines, while the Voluntary Wetland Restoration Enhancement and Protection Program actively improves wetland ecosystems, further bolstering coastal resilience.
- The non-profit RISE has played a role in advancing resilience planning and redevelopment in the Norfolk watershed, with successful permitting for living and hardened shorelines supported by innovative shoreline management technologies, alongside Community Flood Preparedness Fund (CFPF) grants and FEMA compliance assistance that strengthen local efforts.

### CHALLENGES

- There is a need for effective community outreach, with consistent engagement primarily from local government.
- There is a need for intentional concentration on critical infrastructure, particularly dams, with a lack of proactive management.
- There is a need for funding, many projects may not qualify for federal funding unless they meet specific criteria.
- There is a need for greater emphasis on the value of coastal forests in resilience planning.

### REPORT OUT GOALS

- Effective community outreach is needed to address the difficulty in reaching parts of the broader public to participate in master plans and local resilience planning. Feedback consistently comes from the same group of folks, such as local government officials and NGOs. Establish a process/program for quick-need funding for localities/communities
- Address resource capacity issues for state agencies to be able to achieve flood resilience responsibilities
  - Identify needs by agency and coordinate through Resilience Team
  - Identify potential sources of funding and develop strategies to secure them to increase capacity and funding for resilience efforts.

**GROUP 1 REPRESENTATIVES**

Facilitator: Linda Warren

Note Taker: Dave Hirschman

Group Members:

First Name	Last Name	Job Title	Organization Name	Programs Being Represented
Michael	Perez	Deputy Chief Diversity Officer	Office of the Governor	Office of Diversity, Opportunity, and Inclusion
Becky	Gwynn	Deputy Director	Virginia Department of Wildlife Resources	habitat restoration/enhancement, land protection, infrastructure protection and rehabilitation
Alex	Samms	Chief Deputy, DEQ	Virginia Department of Environmental Quality	DEQ
Jamie	Green	Commissioner	Virginia Marine Resources Commission	Tidal Natural Resources
Shawn	Crumlish	Executive Director	Virginia Resources Authority	Community Flood Preparedness and Resilient Virginia Revolving Funds
Shawn	Talmadge	State Coordinator	Virginia Department of Emergency Management	TAC, FRAC, IRMT
Terry	Lasher	Assistant State Forester	Virginia Department of Forestry	Conservation, Forest Management, Emergency Response, Watersheds

## Breakout Group 2

### SUCCESSFUL EFFORTS

- VDOT has updated structure and bridge standards to address sea level rise, while the Community Flood Preparedness Fund and the Resilient VA Revolving Loan Program enhances local resilience efforts.
- Increased staffing and consultant support have assisted the development of tools that leverage various data sets to evaluate flooding and climate impacts on individual properties.
- Initiatives include creating public-facing toolkits for property owners, localities, and preservation planners, along with funding opportunities for projects after hurricanes in coordination with the Department of Historical Resources.
- More grant funding opportunities have provided further education, implementation, and resources for resilience planning.

### CHALLENGES

- Local communities need to increase their participation in the National Flood Insurance Program (NFIP) and seek greater inclusion in the decision-making process, emphasizing the importance of accessible communication strategies for public engagement. Capacity from the state is not available to help the communities be compliant.
- Enhanced political support is essential, as elected officials play a crucial role in securing funding and influencing decisions related to flood resilience.
- There is a pressing need for dedicated funding for flood resilience initiatives and improvements in stormwater drainage systems to effectively manage and mitigate flooding impacts.

### REPORT OUT GOALS

- Targeted Communications
  - Challenge: Communication with stakeholders including general public, legislators, and state actors
  - Goal: Develop a specific Outreach and Engagement strategy to educate and foster widespread support for implementing solutions, especially among those with the power to support through funding (fostering political will).
- Long-term resilience solutions
  - Challenge: There is a lack of focus on long-term issues including relocation and retreat.
  - Goal: Develop a long-term strategy to address relocation issues (and other long-term issues).

**GROUP 2 REPRESENTATIVES**

Facilitator: Sidney Huffman

Note Taker: Keesler Morrison

Group Members:

First Name	Last Name	Job Title	Organization Name	Programs Being Represented
Peter	D'Alema	Director of Program Management	Virginia Resources Authority	Virginia Community Flood Preparedness Fund, Resilient Virginia Revolving Fund, Virginia Flood Prevention and Protection Assistance Fund
Jolene	Smith	Director, Resource Information & Register	Department of Historic Resources	GIS and Data, Cultural Heritage and Climate Planning
Adrienne	Kotula	Virginia Director	Chesapeake Bay Commission	Chesapeake Bay Watershed Agreement
Sharon	Baxter	Dir, Division of Environmental Enhancement	Virginia Department of Environmental Quality	Pollution Prevention, CZM and Environmental Impact Review
Tom	Berry	Planning and Intelligence Division Director	Virginia Department of Emergency Management	State Hazard Mitigation Planning
Chris	Berg	Assistant Division Director, Environmental Division	Virginia Department of Transportation	VDOT Resilience Program

## Breakout Group 3

### SUCCESSFUL EFFORTS

- PDCs (Planning District Commissions) effectively serve as administrative arms of the Commonwealth, facilitating the implementation and distribution of funds during disaster events. This has been proven to be highly effective.
- The use of data to identify flood-prone and socially vulnerable areas enhances the development of resources during flood events, supported by the development of local resilience plans and institutional structures that ensure consistency in program implementation.
- Initiatives such as the Hampton Roads pilot flood sensor for roads and a 5-year planning cycle foster collaboration among various partners, creating valuable touchpoints for local and regional staff during the hazard mitigation planning process.

### CHALLENGES

- State agencies face challenges due to policies that restrict cash-flowing projects upfront, impacting indirect costs, staff salaries, and overall project feasibility, while planning efforts often lack synchronization across various departments.
- The reliance on outdated data during state plan submissions has hindered effectiveness, compounded by the presence of "hidden" or "unwritten" rules that complicate the planning process and communication with the public.
- Localities struggle with different incentives compared to state agencies, leading to gaps in riverine and rainfall-driven data, highlighting the need for improved governance structures and enhanced attention to data-rich systems like the Smart Scale, which effectively prioritizes funding and projects.

### REPORT OUTS

- Goal: Strong state leadership: decision makers need to be action-oriented, but also need to understand the downstream implications of their actions, including unintended consequences. Need to conduct front end analysis – and once that has been conducted, actions of change need to happen so the same barriers/mistakes/etc. don't continue to happen.
- There is a need to fill in data gaps and build trust of that new data through training. The data needs to be reliable and known levels of accuracy of the data need to be shared transparently.



**GROUP 3 REPRESENTATIVES**

Facilitator: Katya Wowk

Note taker: Madison Teeter

Group Members:

First Name	Last Name	Job Title	Organization Name	Programs Being Represented
William	Curtis	DHCD Assistant Director	Virginia Department of Housing and Community Development	State Housing Resilience Programs
Debbie	Messmer	Deputy Director Grant Management and Recovery	Virginia Department of Emergency Management	FMA, HMGP, BRIC
Lewie	Lawrence	MPPDC Executive Director	Middle Peninsula PDC	VAPDC
Jitender	Ramchandani	Statewide Transportation Planning Manager	Virginia Office of Intermodal Planning and Investment	Statewide Transportation Planning
Ryan	Green	Program Manager	Virginia Coastal Zone Management Program	Virginia Coastal Zone Management Program
Brandy	Buford	NFIP Coordinator	Virginia Department of Conservation and Recreation	NFIP
Rachel	Slotter	Strategic Planning Branch Manager	Virginia Department of Emergency Management	VDEM Planning & Intelligence Division - State Hazard Mitigation Plan

**Breakout Group 4**

**SUCCESSFUL EFFORTS**

- VDOT Flood Resilience Master Plan and VDOT Data Viewer have been successful.

- VDOT research – flooding (research council)
- DEQ: currently collecting high and low flow data for flood and drought risk. DEQ has a drought monitoring task force. DEQ has a cooperative agreement with USGS that allows them to directly upload their stream gauge data to the USGS website. It's almost real-time data, there is only a 15min lag time. DEQ's stream gauge data is used internally and externally.
- DGS: state agency compliance for construction in the floodplain will help simplify some processes.
- DWR: jetties protect boat ramps to ensure access
- DCR: a success of Phase 1 of the Coastal Resilience Master Plan was having data readily available to customers (as raw data, a map explorer, etc.). A way to build on this success would be to provide information to users on how to use the data.
- Regular funding to 8 coastal PDCs (Planning District Commissions) for resilience planning and engagement/communications.

### CHALLENGES

- Working across multiple jurisdictions/jurisdictional boundaries has been a challenge, whether that has been state, federal, regional, or otherwise. Coordination between state agencies has also been a challenge.
- Operational challenges include consistent funding for equipment maintenance upgrades. A lack of available resources and maintenance over the years had led to deteriorating infrastructure, due to a lack of funding. In need of sufficient funding for flash flood equipment downstream, preparedness and response capabilities for vulnerable areas are limited.
- Inconsistent data availability, including flood data and VFRIS Base Flood Elevation data.
- There are multiple unconnected GIS databases across the state at the state (inter-agency) and local levels.
- There is no catalog of existing data and tools, which often leads to duplicative efforts by state agencies.

### REPORT OUTS GOALS

- Funding for resiliency
  - Identifying existing sources of funding, how they are being used and how they could be used
  - Define buckets of funding needs (e.g., data, maintenance & operations, projects)
  - Unified way of prioritizing funding, focusing on where the risk is
  - Data quality, synthesis, and coordination and finding ways to optimize funding around data resources
- Coordination
  - Maximize opportunities for coordination across agencies and levels of government from the respective lenses of different entities' priorities.
  - Educational component – integrate data and tools

**GROUP 4 REPRESENTATIVES**

Facilitator: Colleen McHugh

Note Taker(s): Muthu Narayanaswamy and Catherine Johnson

Group Members:

First Name	Last Name	Job Title	Organization Name	Programs Being Represented
Jacob	Compton	Dam Safety Project Manager	Virginia Department of Wildlife Resources	Capital programs and dam safety
Fred	Kirby	State Review Engineer	Department of General Services - Division of Engineering and Buildings	State Building Official and Capital Outlay
Emmett	Heltzel	State Location and Design Engineer	Virginia Department of Transportation	statewide highway engineering function to include highway drainage and riverine analysis and design
Will	Isenberg	Coastal Planner	Virginia Department of Environmental Quality	Virginia Coastal Zone Management Program
Mitchell	Smiley	Policy Manager	Virginia Municipal League	Local Government
Dave	Davis	Manager, Office of Wetlands & Stream Protection	Virginia Department of Environmental Quality	Surface Water Investigations program & Virginia Water Protection Permit program
Abiot	Gemechu	Hydraulics Engineer	Virginia Department of Transportation	Location and Design

## **Appendix**

Workshop Slides

Workshop Handouts

# Small Group Activity – Introductions Discussion

## Goal 1 – Through VFPMP Overview Presentation

Provide a clear overview of the planned VFPMP development process and the role of stakeholders in that process

Outcome: Ensure you feel equipped to participate and contribute to the collective decision-making about recommendations for inclusion in the plan

## Goal 2 – Through Small Group Discussions

Gain additional information about your recent and current experience with regard to flood resilience and flood mitigation work in your role

Outcome: Gain valuable insights from the directors and practitioners that work daily to keep Virginians safer in light of flooding hazards

# Small Group Activity – Objectives

## Small Group Discussions

Through facilitated discussion, we aim to

- Identify what is working for your agency with regard to flood resilience responsibilities
- Identify what is not working as well for your agency with regard to flood resilience responsibilities
- Understand the data, resources, and capacities that your agency has or needs to be more successful

We will be taking notes to capture all of your input and insights.

## Small Group Activity – Flood Resilience Successes Discussion

What flood resilience efforts are you aware of in your agency/organization that were successful?

Questions to help guide the conversation:

- Was data used to inform the process? If so, what specific type of data was most useful? What was the source and how often do you use that data?
- What was the role of your agency/organization in the process? How did your capacity to work on the effort enhance the process? What was really important?
- What resources were critical to the effort's success (e.g. funding, previous planning efforts, staff expertise, etc.) Which of these resources was the most important?



# Small Group Activity – Flood Resilience Challenges Discussion

What challenges are you facing when trying to plan or implement flood resilience efforts?

Questions to help guide the conversation:

- What types of information or data did you not have access to that would have made decision-making more effective or efficient?
- How did/do limitations in agency capacities (e..g. data, resources, knowledge, staff) impact your ability to carry out flood resilience efforts?
- Were any of the resources you did have access to insufficient for carrying out tasks related to the flood resilience efforts? If so, how?

## Small Group Activity – Group Report Outs

1. Assign a Group Reporter to share out during the Report Out section
2. As a group, consider the notes from the “Challenges” discussion and think about the questions:
  - a. If you could reframe some of your “Challenges” as goals for your agency to achieve, what would those goals be?
  - b. What would it look like for your agency to better support flood resilience across Virginia?
3. As a group, select 1 or 2 reframed “Challenges” to share out to the group and provide an explanation of what challenge led to identifying this goal and (as applicable) what data, resources, or capacities are needed to support achieving the goal in the near-term.
4. Keep comments brief (~2 minutes max) to ensure we can get through all groups and wrap up on time

## Virginia Flood Protection Master Plan – 4.2 Stage Setting Meeting Handout – Definitions

**Resources:** In the context of flood resilience, resources refer to the tangible and intangible assets that state agencies can utilize to prepare for, respond to, and recover from flood events. These include financial assets, physical infrastructure, human resources, and technological tools.

### Example Resources

#### **Financial Resources:**

**Grants and Funding:** Federal and state grants, emergency funds, and budget allocations specifically for flood resilience projects.

**Insurance:** Policies that cover flood damage to public infrastructure.

**Budgets:** Allocations from state budgets, federal grants, and other funding sources.

**Revenue Collection:** Taxes, fees, and other revenue-generating mechanisms.

#### **Physical Resources:**

**Infrastructure:** Levees, floodwalls, drainage systems, and water retention basins.

**Equipment:** Pumps, sandbags, emergency response vehicles, and monitoring devices.

#### **Human Resources:**

**Personnel:** Engineers, planners, emergency responders, and community outreach specialists.

**Volunteers:** Community members trained to assist in flood response and recovery efforts.

#### **Technological Resources:**

**Data:** Real time monitoring systems, LIDAR, historical flood data, etc.

**Information Systems:** Geographic Information Systems (GIS), flood modeling software, and early warning systems.

**Communication Tools:** Radios, mobile apps, and public alert systems.

**Capacities:** Capacities are the abilities and skills that state agencies possess or need to develop to effectively use their resources for flood resilience. This includes the knowledge, expertise, organizational structures, and processes that enable agencies to plan, implement, and manage flood resilience activities.

### Example Capacity

#### **Technical Capacity:**

**Expertise:** Knowledge in hydrology, civil engineering, urban planning, and environmental science.

**Training:** Regular training programs for staff on the latest flood resilience techniques and technologies.

**Certification:** Emergency response, first aid, CFM, AICP, etc.

#### **Organizational Capacity:**

**Coordination Mechanisms:** Established protocols for inter-agency collaboration and communication during flood events.

**Leadership:** Strong leadership to guide flood resilience initiatives and make informed decisions.

**Policy Implementation:** Ability to design, implement, and enforce policies and regulations.

**Operations:** Efficient delivery of public services with sufficient staffing for tasks, etc.

#### **Community Capacity:**

**Public Awareness:** Programs to educate the public about flood risks and preparedness measures.

**Engagement:** Mechanisms for involving community members in planning and decision-making processes.

#### **Adaptive Capacity:**

**Flexibility:** Ability to adapt plans and strategies based on new information or changing conditions.

**Innovation:** Encouraging the development and implementation of new technologies and approaches to flood resilience.

## Virginia Flood Protection Master Plan – 4.2 Stage Setting Meeting Handout – Questions

Each group will discuss their efforts and experiences related to:

- July 2022 Flooding
- Tropical Storm Debby
- Other recent events (participants can choose any other relevant flooding related events they have managed).

### Flood Resilience Successes (10 min)

- What flood resilience-related efforts by your agency were particularly successful during these events?
- What factors do you think contributed most to the success of these efforts?
  - What specific data was most useful? What was the source and how often do you use that data?
  - How did agency capacities enhance the action (related to mitigation/ preparation/ response/ recovery)? What was really important?
  - Were there partnerships that were key to the success of the action?
  - Which resources were most critical and why? Are those resources commonly available to you or was this a special situation?

### Flood Resilience Challenges (15 min)

- What were the main challenges encountered by your agency during these events?
- What factors do you think contributed most to the challenges you faced?
  - What data was lacking or problematic?
  - How did limitations in agency capacities affect the response?
  - Which resources were insufficient and why?

### Prepare for Report Outs (5 min)

- How could you reframe the selected “Challenges” as goals for your agency/the State to achieve?
- What resources or capacities would you need to achieve those goals?
- What would it look like for your agency to better support flood resilience across Virginia?

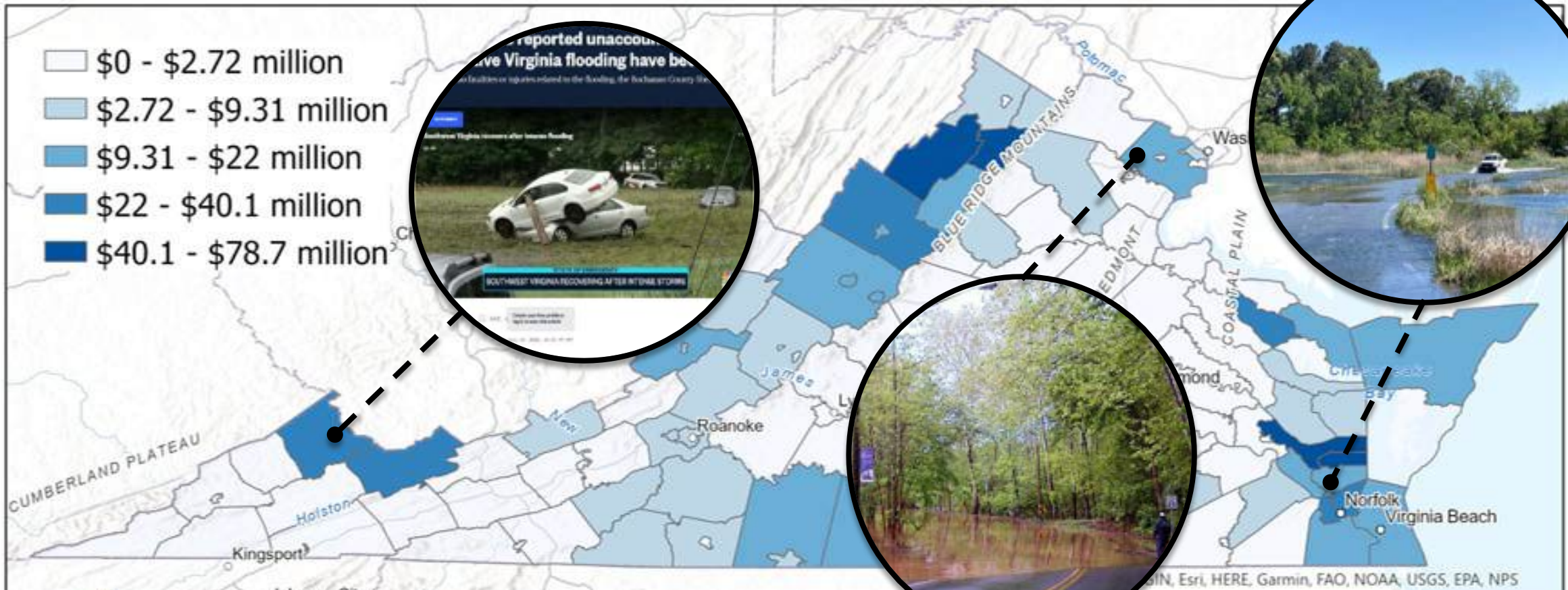


# Welcome & Setting the Stage

2024 Virginia Flood Preparedness Coordination Meeting  
Matthew Wells, Director, Department of Conservation and Recreation



# Flooding is a challenge across the Commonwealth

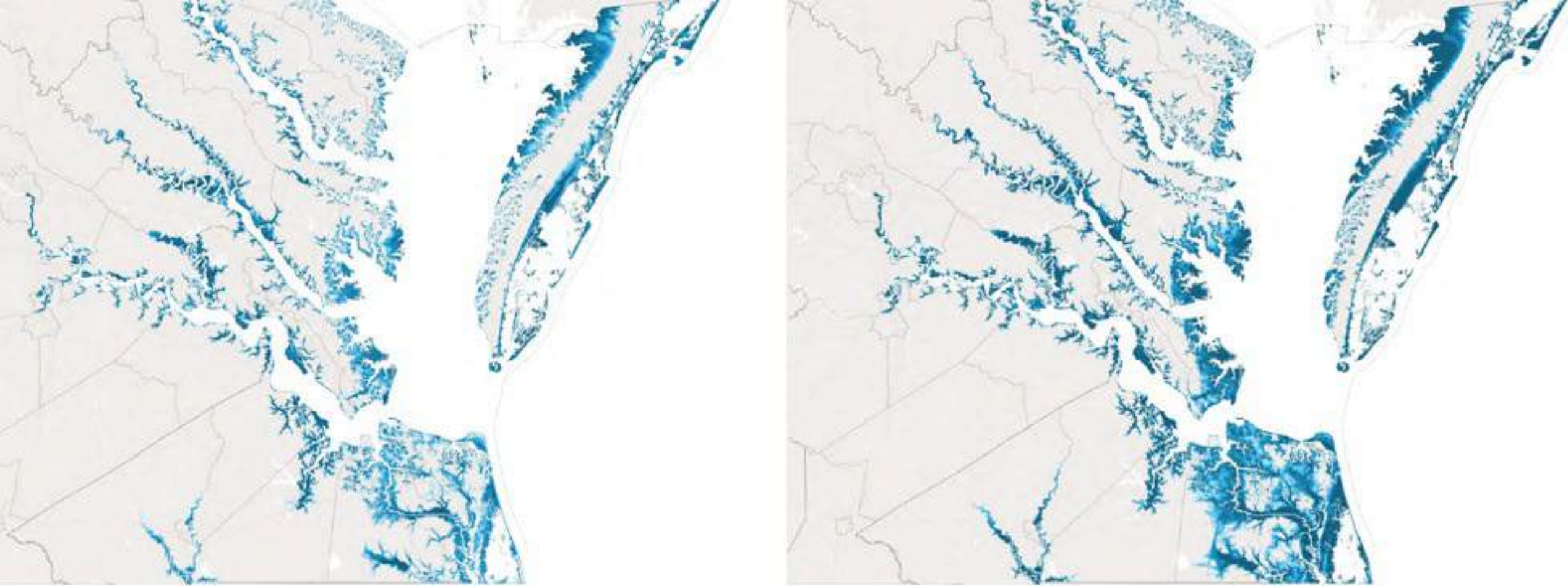


**VALUE OF FLOOD DAMAGES TO CROPS AND PROPERTY (1950-2021)**

Source: COVA Hazard Mitigation Plan, 2023 via NCEI



# Severe and repetitive flooding are projected to rise



**COASTAL FLOOD EXTENTS: 2020 VS. 2080**

Source: Coastal Resilience Master Plan, Phase I



# Our Charge to Address Flooding

Minimize the loss of life, property damage, and negative impacts on the environment resulting from flooding.

## GUIDING PRINCIPLES:



Address challenges related to flooding and resiliency



Establish programs that work for all impacted parts of Virginia



Create comprehensive, cohesive plans and ensure our programs work together



Develop and implement programs and plans with transparency and input from the public

# Building Flood Resilience in Virginia

## 2020

Coastal Resilience Master Planning Framework released

Virginia Community Flood Preparedness Fund (CFPF) is established

## 2021

Coastal Resilience Master Plan, Phase I released

CFPF Round 1 awards \$7.8M in grants

CFPF Round 2 awards \$24.5M in grants

## 2022

Coastal Resilience Master Plan codified

Coastal Resilience Technical Advisory Committee codified

Resilient Virginia Revolving Loan Fund (RVRF) established

CFPF Round 3 awards \$65.4M in grants

## 2023

Office of Resilience Planning established

Status of Flood Resilience Report released

Resilience Coordination Working Group report recommendations

CFPF Round 4 awards \$53.9M in grants

RVRF receives \$100M in General Fund appropriation & Round 1 offers \$12.5M in loans

## 2024

Coastal Resilience Master Plan, Phase II released

Community Outreach and Engagement Plan released

Flood Resilience Advisory Committee established

Interagency Resilience Management Team established

Chief Resilience Officer strengthened and Office of Commonwealth Resilience established

CFPF receives \$100M in General Fund appropriation & Round 5 offers \$85M in grants and loans

# State-Level Coordination for Resilience

## FLOOD RESILIENCE ADVISORY COMMITTEE

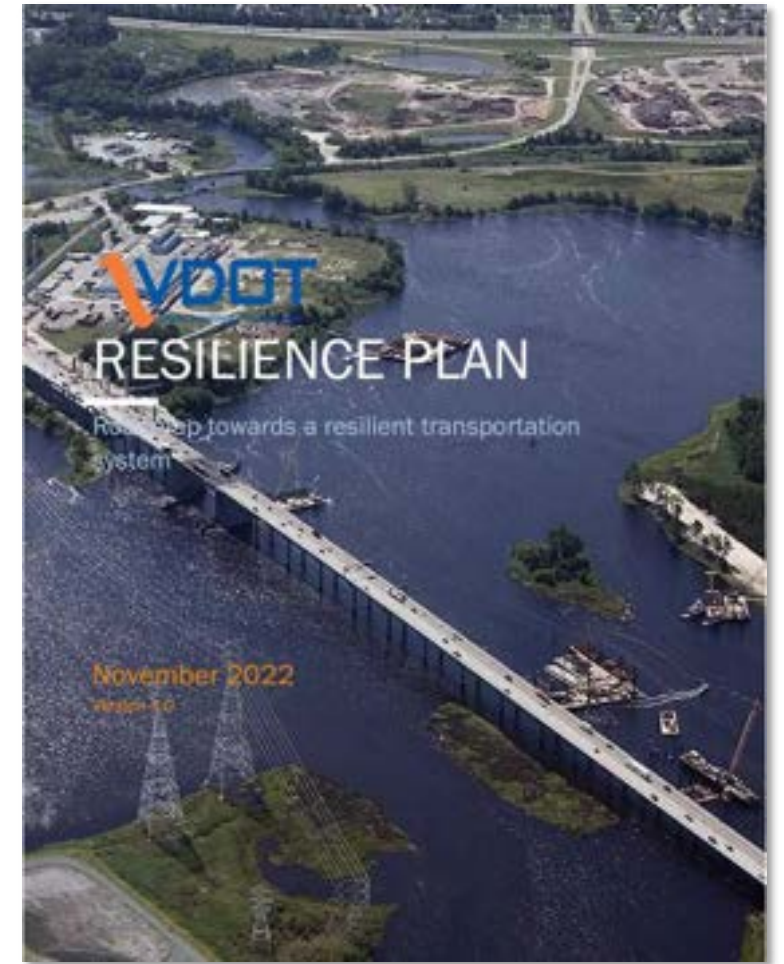
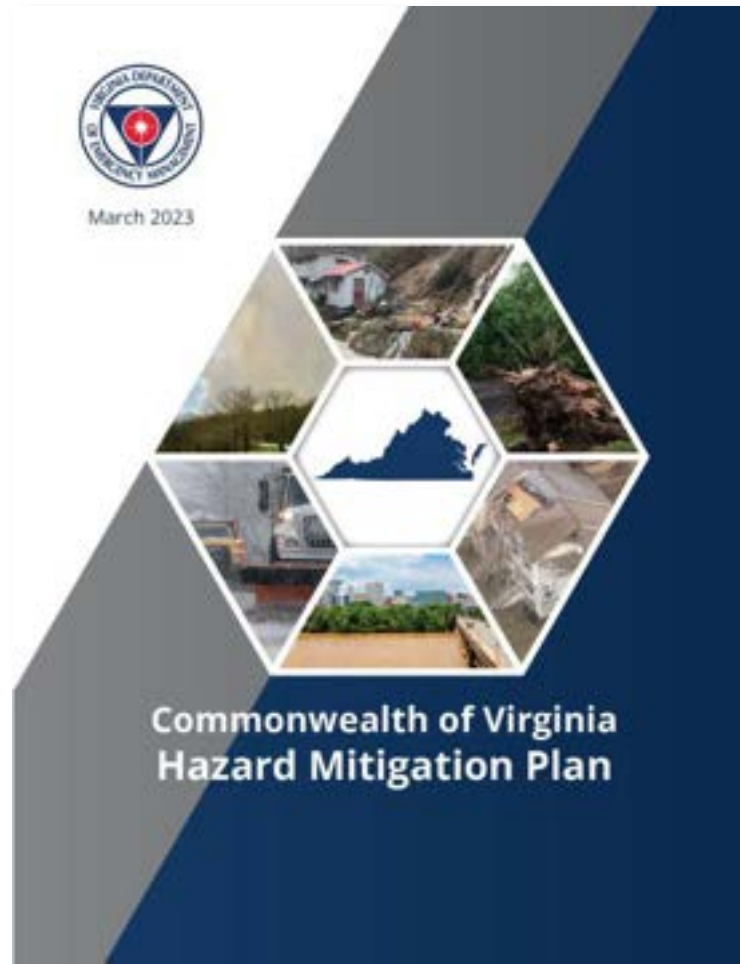
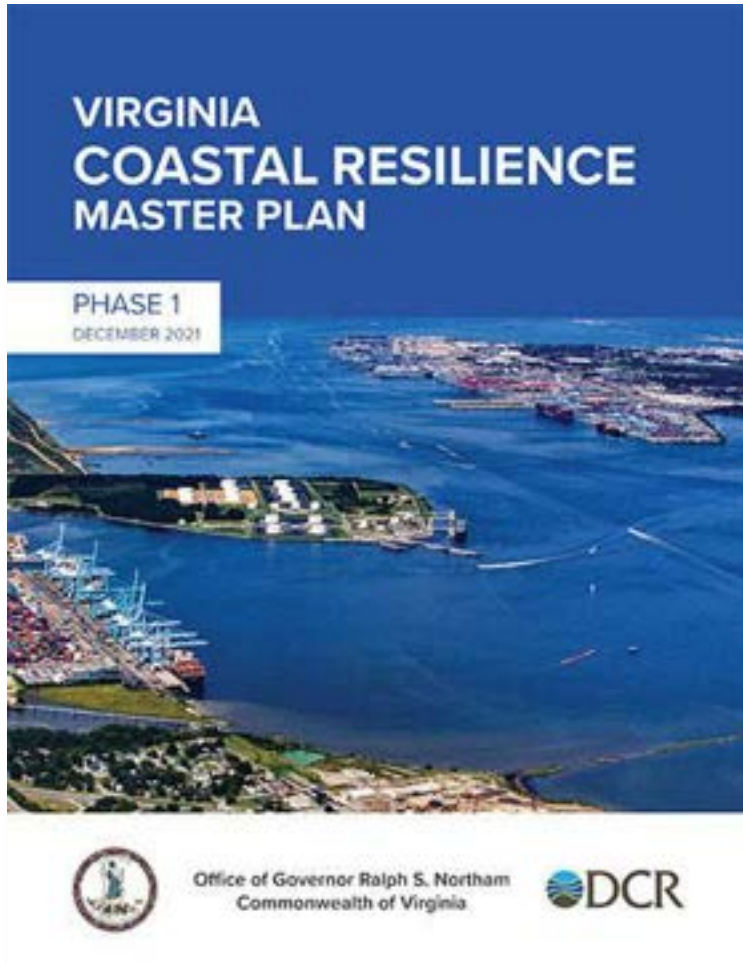
- Chaired by the Director of the Virginia Department of Conservation and Recreation and staffed by DCR.
- Committee members represent state agencies, commissions, authorities, and localities responsible for **flood resilience**.
- Assists DCR with developing, updating, and implementing the Virginia Flood Protection Master Plan.
- Meets at least twice annually
- Will convene after February 2025

## INTERAGENCY RESILIENCE MANAGEMENT TEAM

- Led by the Chief Resilience Officer and staffed by the CRO's Office.
- Team is comprised of named "Resilience Coordinators" from state agencies.
- Supports the coordination of planning and implementation of **all-hazards resilience** efforts.
- Meets quarterly.

**"Resilience"** is the capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, health, the economy, and the environment.

# Existing Plans and Programs



# Flood Resilience Master Plans for the Commonwealth

## COASTAL RESILIENCE MASTER PLAN

- A trusted resource to assist government entities in making evidence-based decisions to mitigate severe and repetitive flooding.
- Provides a unified baseline analysis of the threat of increasing flood exposure and impacts.
- Identifies opportunities to prioritize impactful flood resilience solutions.
- Phase I was released in 2021
- Phase II will be released in December 2024



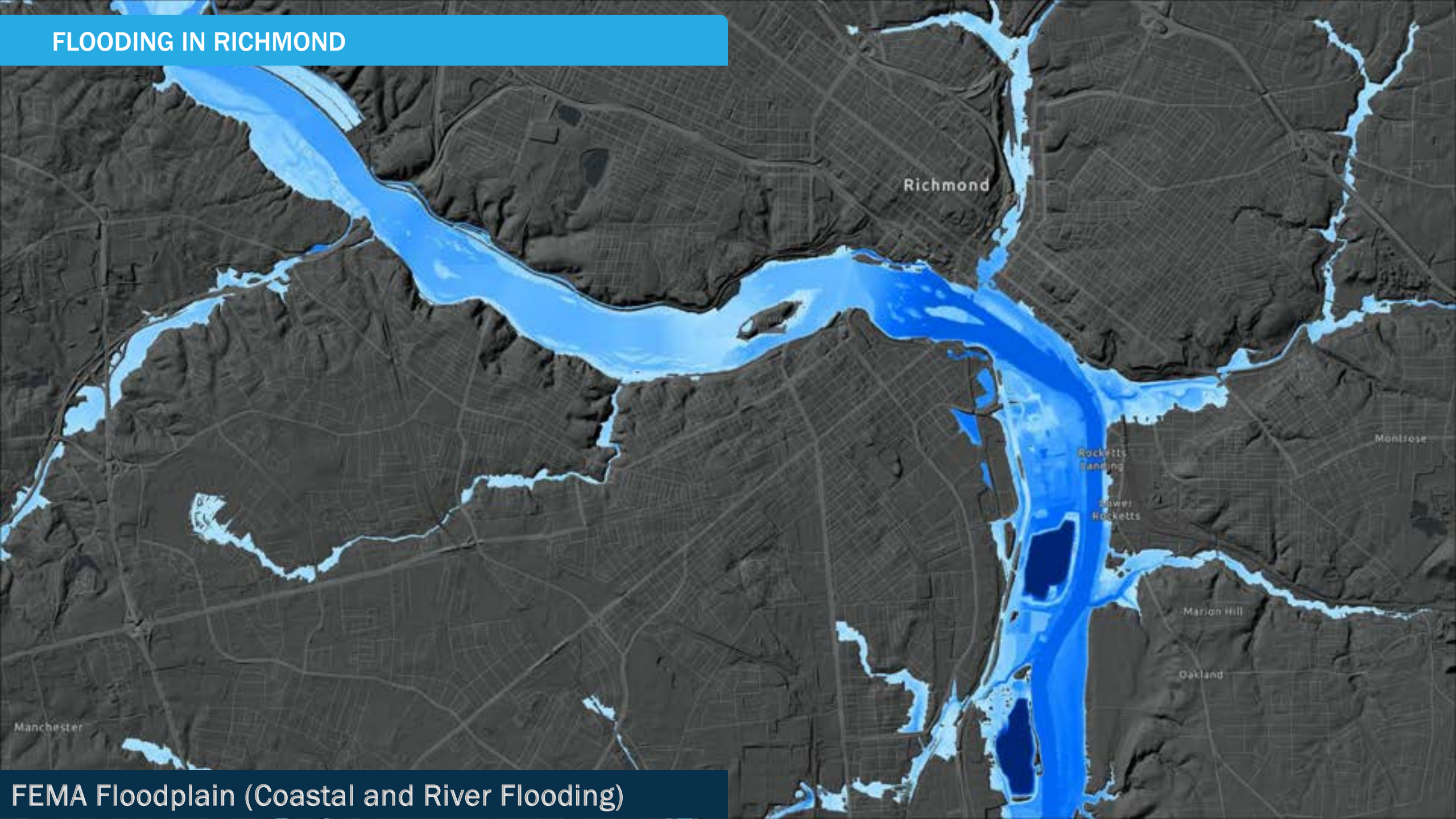
## VIRGINIA FLOOD PROTECTION MASTER PLAN

- An actionable framework for state government to align and craft policies and programs to mitigate the impacts of flooding on people, the economy, and the environment.
- Establishes flood resilience goals and metrics to track progress toward achieving them.
- Identifies strategies informed by a holistic picture of current and future flood impacts across the state, as well as identified gaps in data, resources and capacity.
- The VFPMP will be released in December 2025.



Stakeholder outreach and engagement are important elements of both planning processes.

# FLOODING IN RICHMOND



FEMA Floodplain (Coastal and River Flooding)

# FLOODING IN RICHMOND



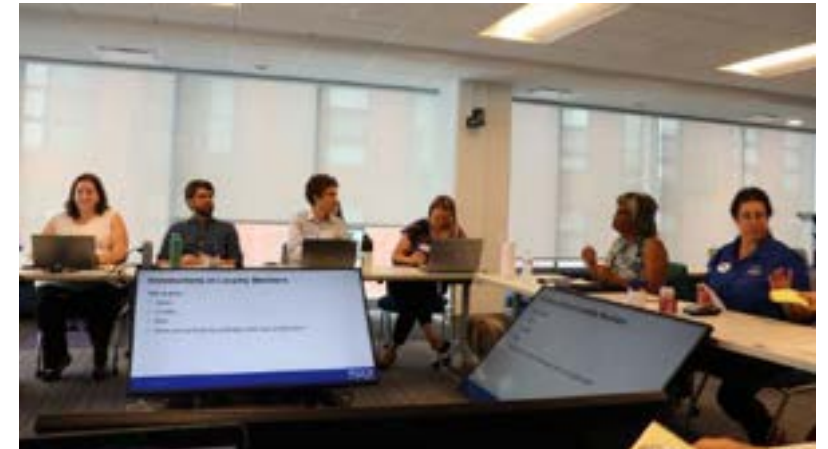
FEMA Floodplain + DCR Rainfall Floodplain

# Our Goals for Today's Meeting

## WHEN YOU LEAVE TODAY, WE HOPE YOU WILL...

- Take away new ideas and opportunities for enhancing coordination between flood resilience and preparedness activities in the Commonwealth.
- Have a clear understanding of the purpose and process for developing the Virginia Flood Protection Master Plan (VFPMP).
- Feel comfortable connecting with DCR and our consultants to provide your input and feedback on the VFPMP throughout its development.

This workshop kicks-off DCR's stakeholder engagement process for the VFPMP. There will be additional opportunities for the whole community of flood resilience actors to participate in the months to come.





**Thank you.**



**Web**

[dcr.virginia.gov/resilience-planning](https://dcr.virginia.gov/resilience-planning)

**Newsletter**

[dcr.virginia.gov/signup](https://dcr.virginia.gov/signup)

**Email**

[flood.resilience@dcr.virginia.gov](mailto:flood.resilience@dcr.virginia.gov)





Virginia Department of  
Emergency Management

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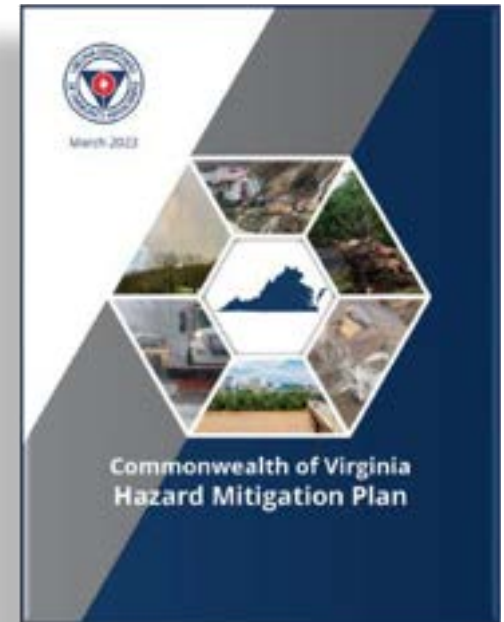
# Commonwealth of Virginia 2023 Hazard Mitigation Plan

September 26, 2024

# Introduction

The Commonwealth of Virginia (COV) Hazard Mitigation Plan (HMP) provides guidance for hazard mitigation activities within the Commonwealth.

The plan's vision is supported by goals, objectives and prioritized actions for Virginia that aim to reduce damages or injuries from natural hazards to residents, communities, state facilities, and critical facilities.



# Authorities

- Disaster Mitigation Act of 2000 (DMA2K)
- Code of Virginia at §44-146.17
- Code of Virginia at §44-146.18
- Code of Virginia at §44-146.22



# State Hazard Mitigation Plan (SHMP) Elements

- Description of the planning process
- Risk assessments
- Mitigation strategy
- Maintenance process
- Adoption process
- Assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to grant funding periods (44 CFR §13.11(c))



# Adoption and Coordination

The 2023 COV HMP is formally adopted by the Governor of Virginia.

## Coordination

- VDEM Hazard Mitigation Planner
- Old Dominion University (ODU) Virginia Modeling and Simulation Center (VMASC)
  - Salter's Creek Consulting, Inc.
  - ODU Institute of Coastal Adaptation & Resilience (ICAR)
  - University of Virginia's Center for Risk Management of Engineering Systems
  - Moffatt & Nichol
  - Dozens of State and local representatives



# Planning Process

Phases	Steps
<b>Phase I: Organize Resources</b>	<b>Step 1: Get Organized</b> <b>Step 2: Plan for Stakeholder Involvement</b> <b>Step 3: Coordinate with other Departments &amp; Agencies</b>
<b>Phase II: Assess Risk</b>	<b>Step 4: Identify the Hazards</b> <b>Step 5: Assess the Risks</b>
<b>Phase III: Develop Mitigation Plan</b>	<b>Step 6: Review Mitigation Alternatives</b> <b>Step 7: Set Planning Goals</b> <b>Step 8: Draft an Action Plan</b>
<b>Phase IV: Adopt &amp; Implement</b>	<b>Step 9: Adopt the Plan</b> <b>Step 10: Implement the Plan</b>

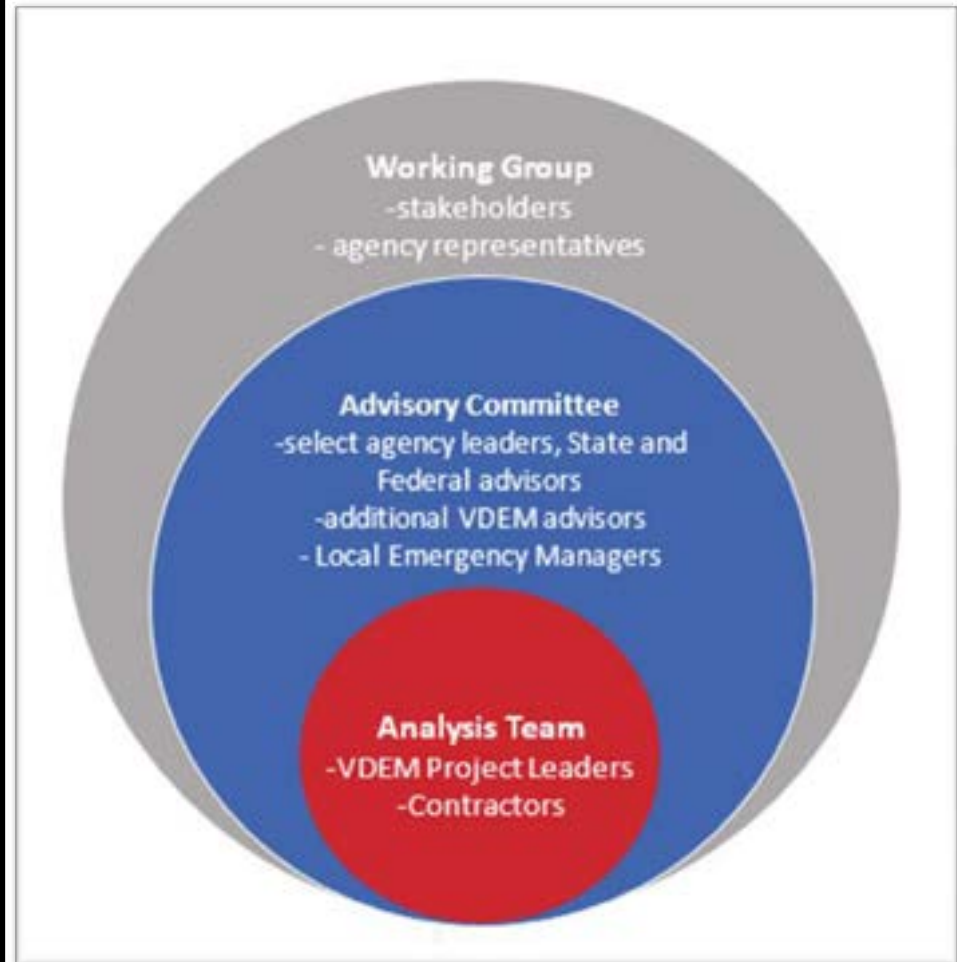


# Stakeholders

The National Mitigation Framework emphasizes a cross section of state partners working together to identify and implement effective, long-term mitigation solutions and investments.

The framework emphasizes that mitigation should consider several systems or sectors:

- Emergency Management
- Economic development
- Land use and development
- Housing
- Health and social services
- Infrastructure
- Natural and cultural resources





# Hazard Identification and Risk Assessment

- The Hazard Identification and Risk Assessment (HIRA)
- VDEM's methodology compared risks of 17 different hazard-types across jurisdictions to rank and prioritize them. The following parameters were considered:
  - History of Occurrence
  - Vulnerability of people in the hazard area
  - Probable geographic extent of the hazard area
  - Historical crop and property damage

Commonwealth of Virginia – 2023 Overall Hazard Ranking					
High	Medium-High	Medium	Medium-Low	Low	Negligible
Flood	Extreme Heat	Drought	Earthquake	Erosion	Land Subsidence
Hurricane	Non-Tornadic Wind	Extreme Cold	Pandemic	Impoundment Failure	Space Weather
Winter Weather	Tornado		Wildfire	Karst (Sinkholes)	
				Landslide	



# HIRA - Community Lifelines



# Capability Assessment

Confirms that a state’s final mitigation strategy is based on the principles found in, or missing from, existing authorities, policies, programs, and resources, and based on the state’s ability to expand and improve these existing tools.

This chapter discusses the following:

<p><b>Local Capabilities in Virginia</b></p>	<p><b>Local Planning and Development</b>  <b>Local Emergency Response and Recovery</b>  <b>Effectiveness of Local Capabilities</b></p>
<p><b>State and Regional Capabilities</b></p>	<p>State Agencies          Related State Plans and Documents</p>
<p><b>Federal Agencies and Programs</b></p>	<p>Federal Emergency Management Agency (FEMA)          US Department of Housing and Urban Development (HUD)          US Army Corps of Engineers (USACE)          US Department of Agriculture, Natural Resources Conservation Service (NRCS)          US Department of Agriculture          US Small Business Administration (SBA)          Other Funding Capabilities</p>



# Mitigation Strategy & Actions

The Mitigation Strategy is a critical part of the planning process that outlines and prioritizes actions in order to reduce future risk from natural hazards.

The hazard mitigation plan begins with a mitigation vision supported by four major goals and related objectives.

**VISION:** Promote resiliency and reduce the long-term impacts of hazards on human, economic, and natural resources throughout the state.

There are **74** total mitigation actions in this plan, **28** are new, **41** are retained with modification, **3** in progress, and **2** ongoing.

Table 5.1 – Mitigation Categories Matrix

Mitigation Technique	Prevention of Future Risk	Protection of Built Environment	Natural Resource Protection	Hazard Modification Through Construction	Emergency Services	Public Education and Awareness
HIGH RISK HAZARDS	Flooding	✓	✓	✓	✓	✓
	Hurricane	✓	✓	✓	✓	✓
	Winter Weather	✓	✓		✓	✓
MEDIUM RISK HAZARDS	Tornado	✓	✓		✓	✓
	Non-Tornadoic Wind	✓	✓	✓	✓	✓
	Extreme Heat	✓	✓	✓	✓	✓
	Drought	✓		✓	✓	✓
	Extreme Cold	✓	✓		✓	✓
LOW RISK HAZARDS	Impoundment Failure	✓	✓	✓	✓	✓
	Wildfire	✓	✓	✓	✓	✓
	Erosion	✓	✓	✓		✓
	Earthquake	✓	✓		✓	✓
	Landslide	✓		✓	✓	✓
	Karst (Sinkholes)	✓				✓
	Pandemic	✓		✓		✓
NEGLECTIBLE	Land Subsidence	✓				✓
	Space Weather	✓				✓



This is one example of the 74 mitigation actions.


Elevation of Flood Prone Properties	
Mitigation Action FL-8	
Implement elevation projects to raise flood-prone structures to or above the BFE, in accordance with State and local floodplain management requirements. Repetitive Loss and Severe Repetitive Loss properties are targeted and prioritized for this project type.	
BACKGROUND INFORMATION	
<b>Cost Benefit:</b>	Cost effectiveness is project dependent; however, multiple properties can be included together for an aggregate benefit cost ratio.
MITIGATION ACTION DETAILS	
<b>Hazard(s) Addressed:</b>	Flooding; Impoundment Failure
<b>Goal(s) Addressed:</b>	Goal 1; Goal 4: Objective 4.1, 4.3
<b>Category(s) Addressed:</b>	2,3
<b>Priority (High, Medium, Low):</b>	High
<b>Impact on Socially Vulnerable Populations:</b>	High – target repetitive flood loss areas with high NRI rating for flood as identified in the HIRA
<b>Estimated Cost:</b>	Project Dependent; see examples with costs below
<b>Potential Funding Sources:</b>	DHS: BRIC, HMGP, FMA; USACE: Continuing Authorities, Planning Assistance to States, Flood Plain Management Services, and Silver Jackets; Virginia CFPF
<b>Lead Agency/Responsible Department:</b>	VDEM, DCR
<b>Implementation Schedule:</b>	Ongoing
<b>Status:</b>	<b>Retained with modifications</b>
ADDITIONAL COMMENTS	
Structure elevation may be achieved through a variety of methods, including elevating on continuous foundation walls; elevating on open foundations, such as piles, piers, posts, or columns; or elevating on fill. Foundations will require designs to properly address all loads, appropriate connections to the floor structure above, and elevation of utilities.	
Specific examples of elevation projects in Virginia include: <ul style="list-style-type: none"> <li>• Project to elevate 4 homes in the Northern Neck and one in Essex County at cost of \$860,930</li> <li>• Project to elevate additional 6 homes in the Northern Neck, with estimated cost of \$1.3 million</li> </ul>	



# Local Plan Coordination

This chapter provides details on the following:

- History of Local Hazard Mitigation Plan Development in Virginia
- Prioritize and provide funding for Local Hazard Mitigation Plans
- VDEM Technical Assistance
  - Participation and presentations for local or tribal meetings/conferences
  - Consultations by phone
  - Facilitation of local training workshops for local or tribal plan steering committees, planning agency staff and DRU staff
  - Support of local, tribal, university, agency, and regional contacts in developing HMA applications
- Providing Support for Plan Revisions
- Local Hazard Mitigation Planning Workshops
- State Review of Local and Tribal Hazard Mitigation Plans
  - VDEM All-Hazard Planners will assist with regular updates and review of local, DRU and tribal HMP's before plan submittal to FEMA.



**Success Story: FEMA Region 3 Approves Its First Tribal Hazard Mitigation Plan**

Region 3 approved its first tribal-only Hazard Mitigation Plan (HMP). It took the nine-member Chickahominy Tribal Hazard Mitigation Committee more than a year of work. Chief Stephen Adkins adopted the tribe's plan on March 8. Adoption allows for final approval of the HMP. It also helps communities get some types of non-emergency disaster aid.

The Chickahominy Tribe had a strong planning process to develop the HMP. The tribe's citizens mostly live along the James River near Richmond and the tribe has land holdings in both Charles City County and New Kent County, Virginia. The hazard mitigation committee met in four working sessions and held interviews with neighboring communities. The committee also held two online public participation workshops and had an online survey. The survey got 60 replies—a remarkable response rate.

The Sandy Recovery Improvement Act of 2013 allowed federally recognized tribal governments to get their own major disaster declaration for the first time. The Act lets tribes apply directly to FEMA for disaster aid. The Chickahominy Tribe made use of this change. It addressed the impacts of flash floods, hurricanes, and tornadoes on tribal lands.

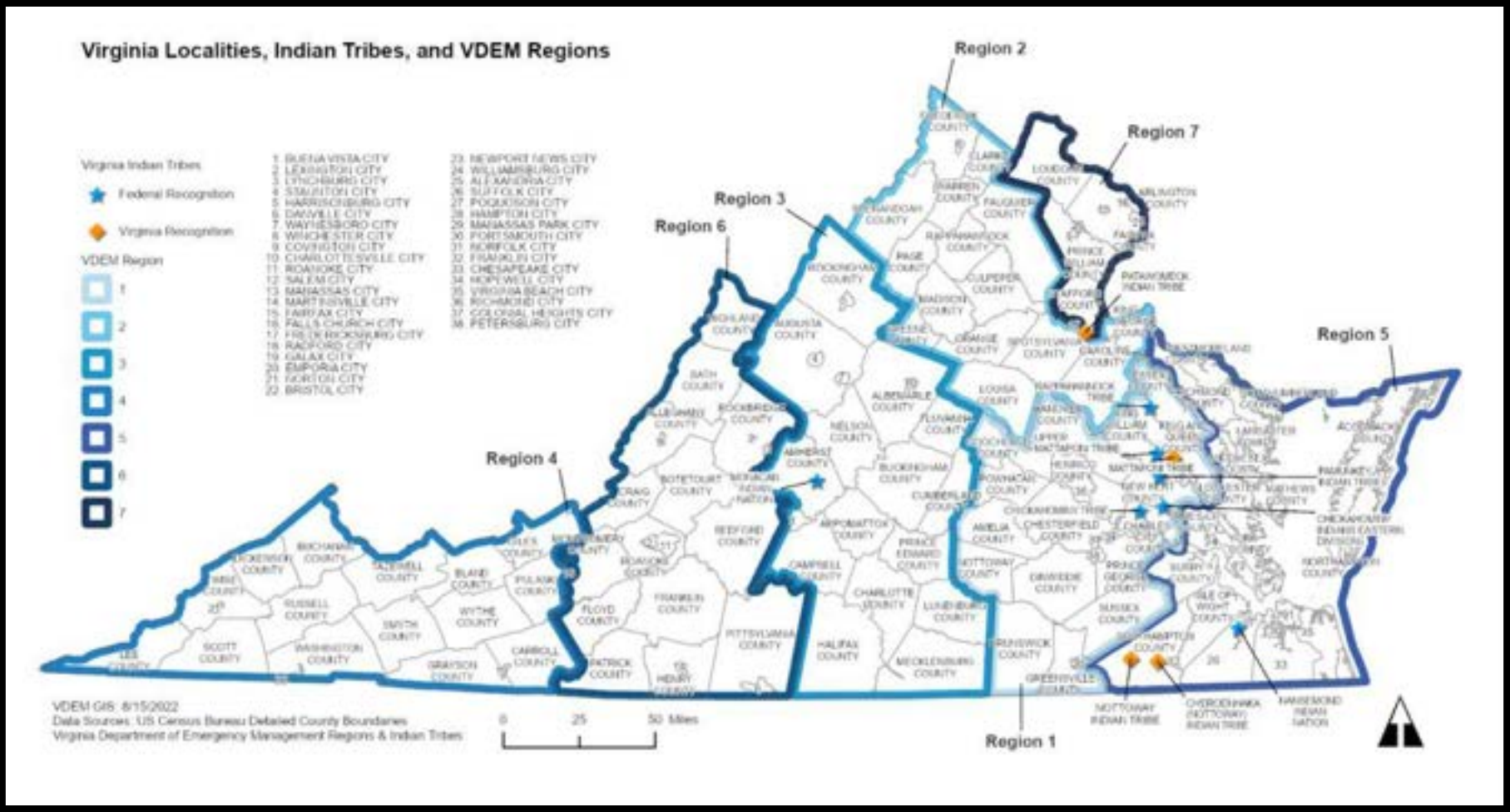
An approved HMP helps tribes prepare before a disaster. It also readies them to recover more quickly, because the hazards, capabilities and mitigation actions are recorded. This helps tribes act on them throughout the disaster cycle. Hazard mitigation planning leads to actions that will reduce long-term risk from hazards, as well as protect tribal citizens.

[FEMA Region 3 Resilience Report](#)

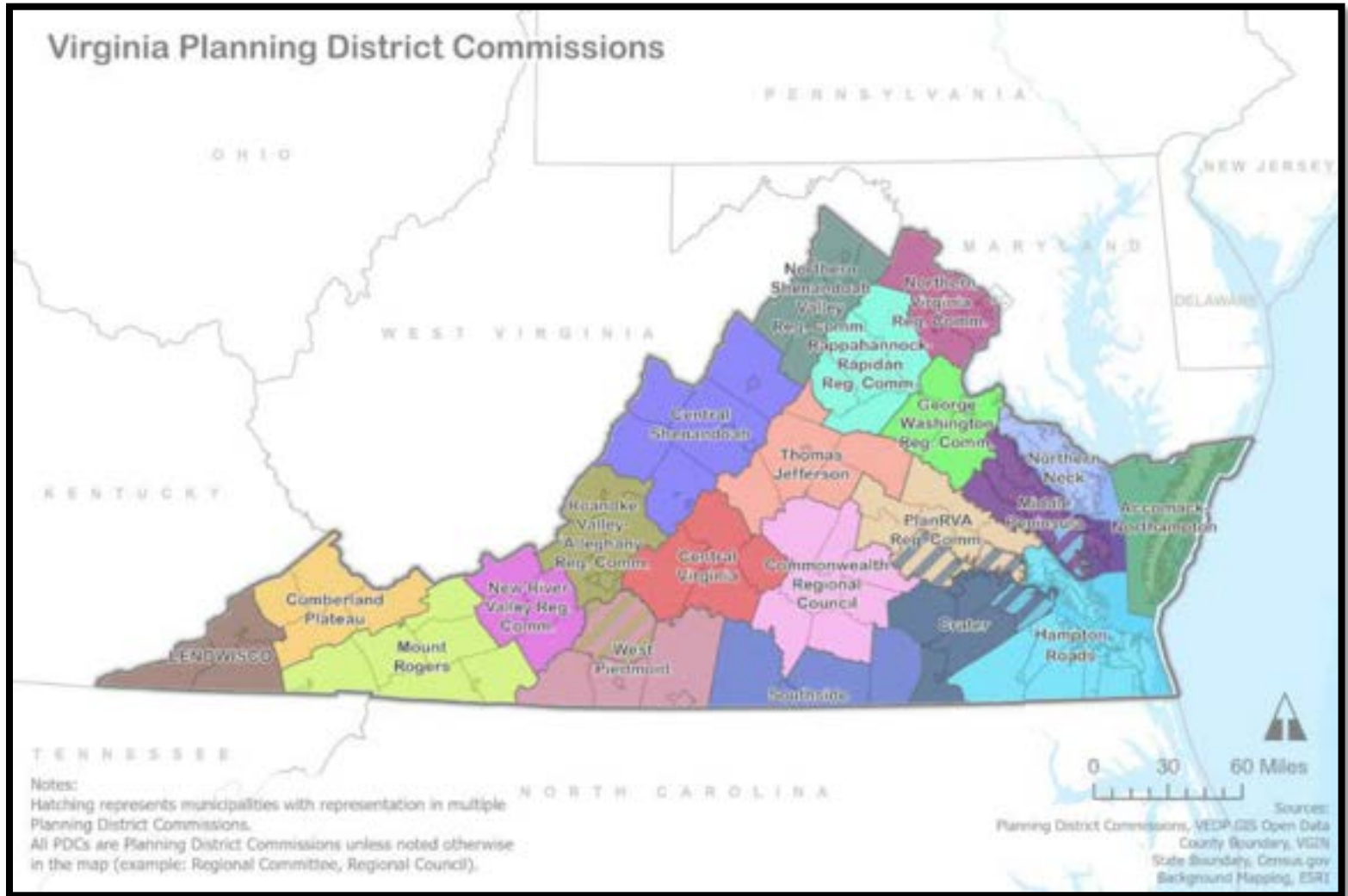
Highlighted in this section: FEMA Region 3 **approved its first tribal-only Hazard Mitigation Plan** by The Chickahominy Indian Tribe, approved in August 2022



# Local Plan Coordination



# Local Plan Coordination





# Plan Implementation & Maintenance

The Hazard Mitigation Plan is intended to be a living document, one that is operationalized through the continuous implementation of the actions identified in the Mitigation Strategy.

It is also intended to be dynamic – changing and improving as needed through routine maintenance procedures that help to ensure the plan is reviewed, revised, and updated as conditions and information change.

This chapter outlines more specifically how the plan will be implemented and maintained by the Commonwealth.

The key components of the schedule for regularly maintaining the plan are below:

- Annual Plan Review
- Post Disaster Review
- Five Year Plan Review and Update
- Annual Consultation with FEMA



# What's Changed

## HIRA

- Hazard name changes
  - Non-Rotational Wind to Non-Tornadic Wind
  - Communicable Disease to Pandemic
  - Solar Storm to Space Weather
- New and recategorized hazards
  - Extreme Heat, Extreme Cold, and Erosion are now standalone hazards
  - Hurricane was added as a new hazard.
- New information included in the hazard sections
  - Description of expected/anticipated climate change-related impacts
- New inclusive analysis and assessments for all hazards
  - Potential impacts to vulnerable populations (FEMA's National Risk Index (NRI) tool)
  - Assessed for linkages to FEMA's Community Lifelines

**Mitigation Strategy:** Revised Mitigation Goals and New Mitigation objectives

**The Planning Committee:** Increased participation

	2018	2023
Advisory Committee	20	45
Working Group	43	71



# Closing

## Notable Items

- Plan Approved - March 2023
  - Full draft plan submitted to FEMA – December 2022
  - FEMA Approvable Pending Adoption (APA) and State Adoption – February 2023
- New Mitigation Action Tracker concept introduced – Summer 2023
- Enhanced Plan Revisions – Fall 2024/Summer 2025

## Strengths

- Increased committee membership
- Objectives added to the Mitigation goals
- Involvement of VDEM Community Impact Specialist

## Opportunities for Improvement

- Speak more to the need for potential funding to survey environmental and historic resources at the local level – relates to preparing for future disasters and mitigating potential loss.
- Include some top CRS communities in Virginia to help other jurisdictions with best practices in enforcing their floodplain ordinance and have a good floodplain program.
- Include state agency and NGO social services reps to provide insight and information on vulnerable populations (actual needs/requirements, etc.) and can assist in outreach to these vulnerable populations.



# THANK YOU!



## Contact Information

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thomas.berry@vdem.virginia.gov, 804-659-5282  
leigh.chapman@vdem.virginia.gov

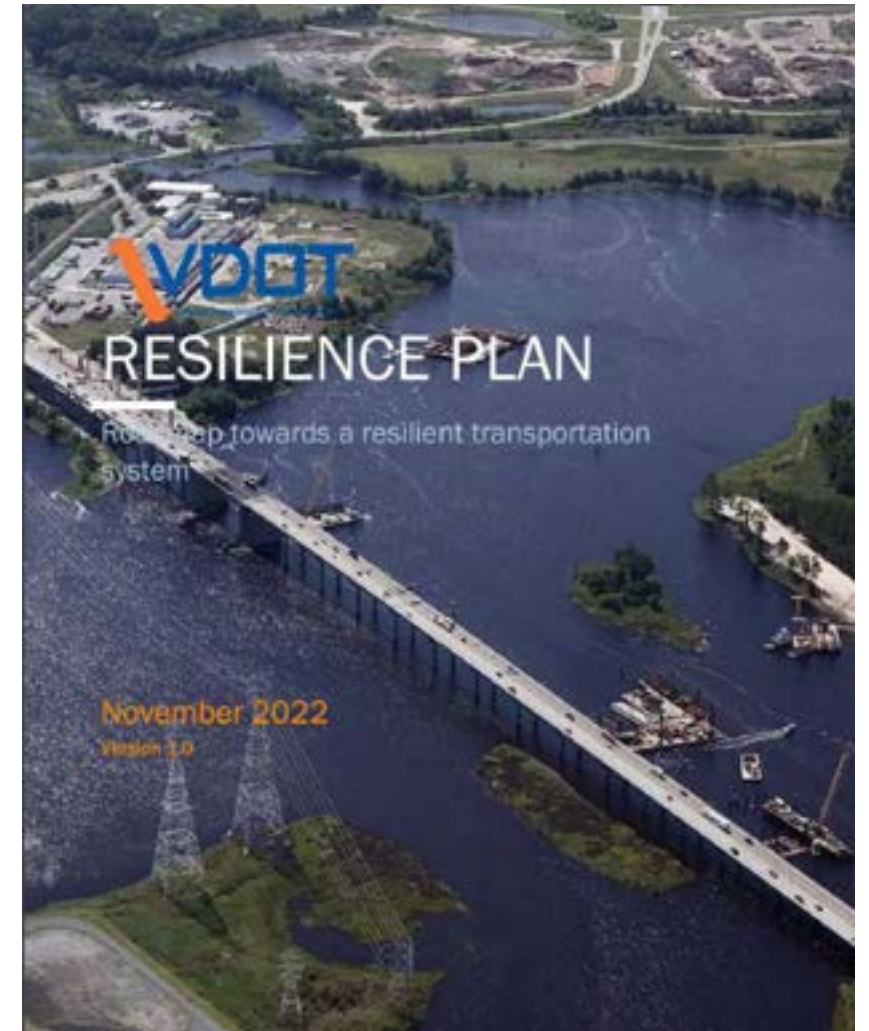
# VIRGINIA DOT RESILIENCE PLAN UPDATE



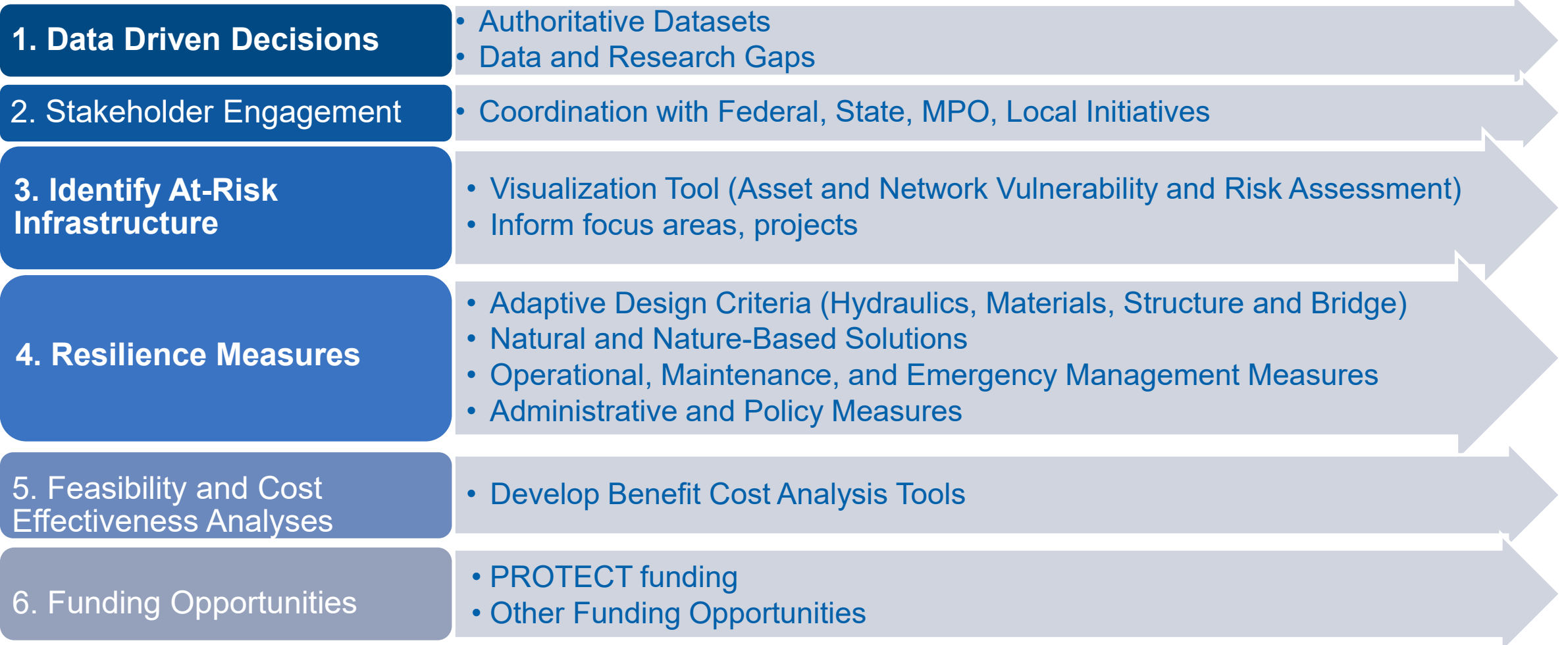
# Transportation Resilience

**Resilience** is the capability of a transportation project or strategy to anticipate, prepare for, respond to, or recover from significant multi hazard threats with minimum damage and disruption to the transportation network, while preserving and incorporating natural and built infrastructure that helps to mitigate these threats.

*Incorporate resilience into existing business practices*



# Resilience Plan Objectives & Strategies



# Strategy 1: Data and Research Plan

## Promote Data Driven Decisions

- Data and Research Plan to:
  - Identify existing and forthcoming datasets;
  - Evaluate the scope and limitations of existing datasets;
  - Designate authoritative datasets;
  - Identify data gaps and needs

## Status Updates:

- 16 research projects underway
- Research focuses on hydraulics, materials, and geotechnical impacts, historical flooding, traffic operations, etc.
- Data & Research Plan undergoing reviews

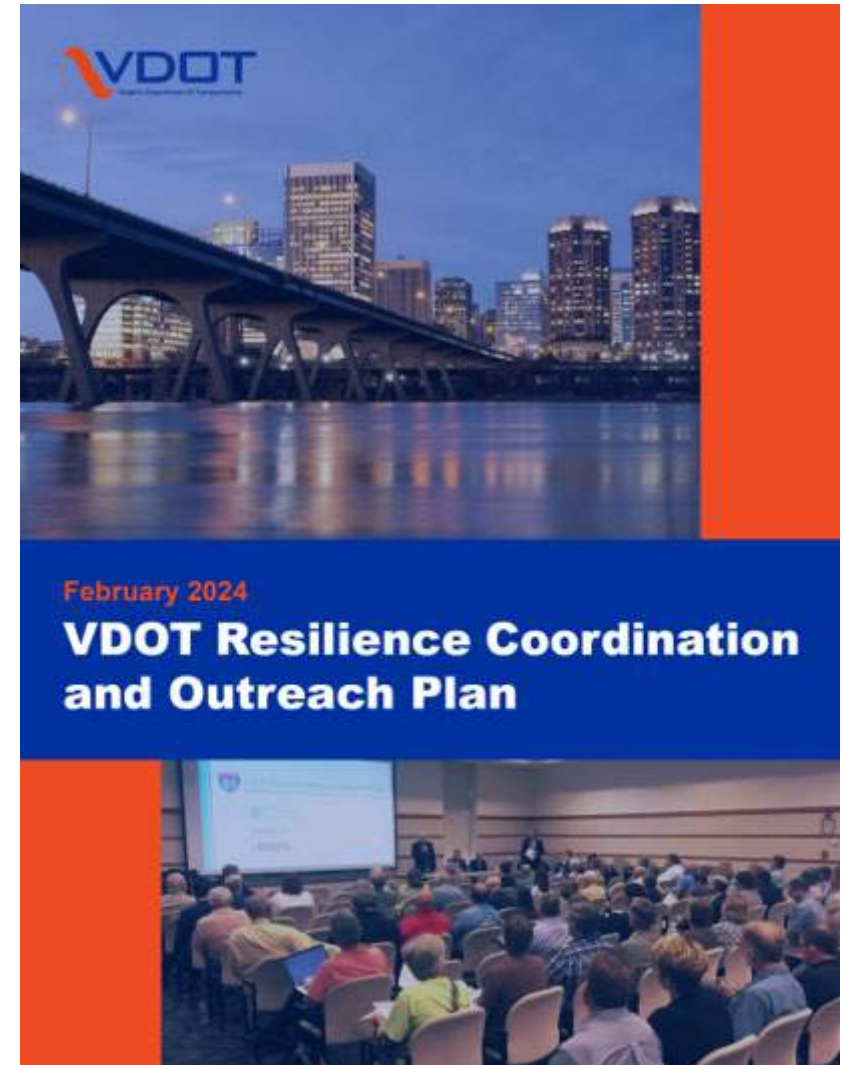


# Strategy 2: Coordination and Outreach Plan

- Stakeholder engagement
- Coordination with statewide policy and other local and regional efforts in the Commonwealth

## Status Updates:

- Continued coordination and outreach: internal and external
  - CRMP, HRPDC, NVRC, MWCOCG, MRRI, Peer Exchanges and Pooled Fund Studies, Resilient VA – Resilience Academy Series, AASHTO CES Annual Meeting
- Coordination and outreach (C&O) plan – completed (2/2024)



# Strategy 3: Identify At-Risk Infrastructure

## Develop a methodology for determining asset vulnerability

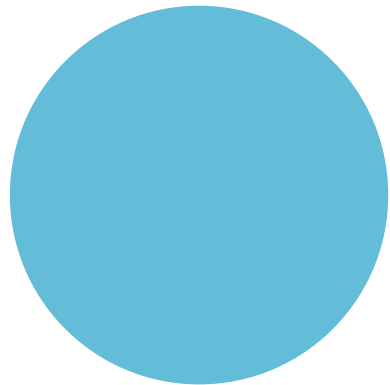
- A risk-based methodology that considers exposure, sensitivity, and criticality would provide a measure of overall vulnerability and a systematic, documented approach for the application of resilience strategies to VDOT assets

## Status Update:

- Working towards final At-Risk Infrastructure Visualization Tool in 2024

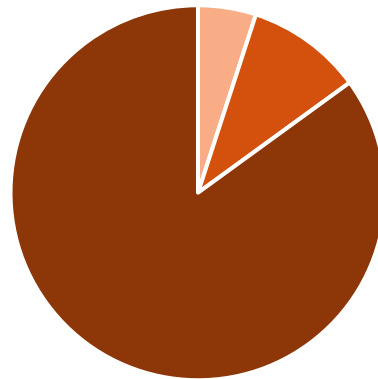
# Methodology

For a given hazard (flooding/landslide), a vulnerability score is calculated based on three components:



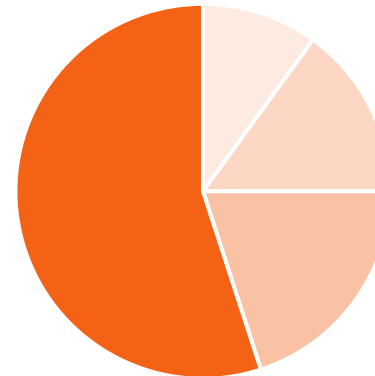
**Exposure**

Whether an asset is located in an area that has or will experience direct effects of climate variability and extreme weather events. Exposure is a prerequisite for vulnerability.



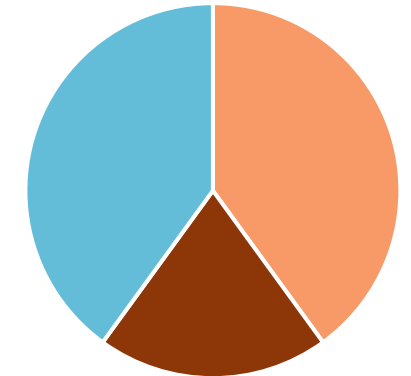
**Sensitivity**

How an asset responds to, or is affected by, exposure to a climate change stressor. A highly sensitive asset will experience a large degree of impact if the climate varies even a small amount.



**Adaptive Capacity/Criticality**

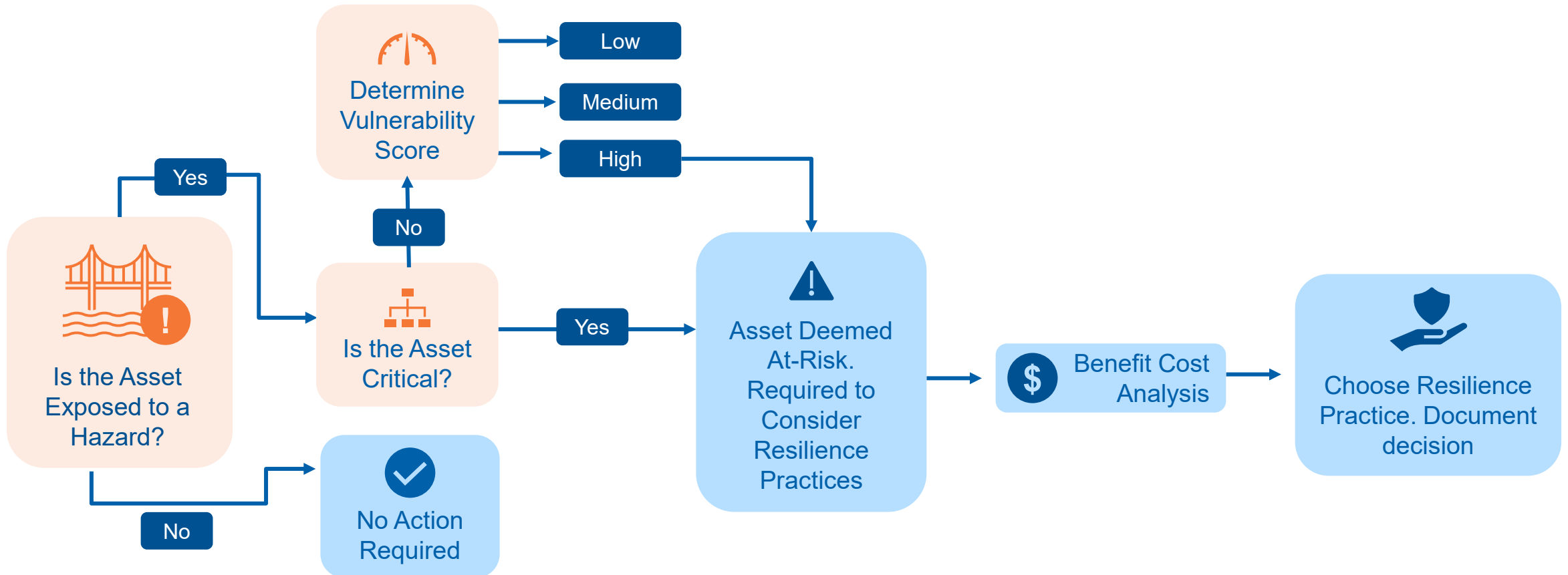
The ability of a transportation asset or system to adjust, repair, or flexibly respond to damage caused by climate variability or extreme weather.



**Vulnerability**

The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change or extreme weather events.

# At-Risk Infrastructure Visualization and Decision Support Tool



# High-Level Planning

The image displays the VDOT Resilience Risk Assessment Data Visualization tool interface. The main window is titled "Welcome to the VDOT At-Risk Infrastructure Tool" and "What would you like to do today?". It features three tabs: "High Level Planning" (selected), "Project Planning", and "Tutorial". The "High Level Planning" tab contains several sections:

- Strategic Planning:** Review asset criticality and vulnerability, and which assets are required to consider resilience positions.
- Investment Planning:** Home in on the most vulnerable and critical assets in the state or region.
- Grant Planning:** View layers related to equity and other grant planning considerations.
- Flood Extents and Depths:** View coastal and inland flood extents under a range of planning years.

Below these options, there are two main choices for vulnerability scoring:

- Default Scoring:** If you select default scoring, you will be taken to the Settings tab where you can adjust how indicator and component scores are weighted in the vulnerability calculations.
- Custom Scoring:** (Selected)

The interface also includes a "Done" button at the bottom right of the configuration panel. The background shows a map of Virginia with various infrastructure assets overlaid. A "DRAFT" watermark is visible in the bottom right corner of the map area.

# Project Planning

The image displays the VDOT Resilience Risk Assessment Data Visualization tool interface. The main window is titled "VDOT Resilience Risk Assessment Data Visualization" and features a navigation menu with "Scoring", "Search", "Layers", "Weights", and "Filter". The "Project Planning" tab is selected, showing a "Welcome to the VDOT At-Risk Infrastructure Tool" message and a "What would you like to do today?" section. This section includes options for "High Level Planning", "Project Planning", and "Tutorial". The "Project Planning" option is selected, and the text reads: "Select this option if you are a project manager, engineer, or planner looking at a specific asset or project, and want to understand its vulnerability and if resilience practices should be considered for that asset. This data can inform project development and CBM decisions." Below this, there are radio buttons for "Asset exists" (selected) and "Asset does not yet exist". The "For Existing Assets, we recommend:" section includes "Searching for Existing Assets" (with a search icon), "Refining Scores and Filters" (with a plus icon), and "Selecting Hazards and Map Layers" (with a gear icon). The interface also shows a map of Virginia with a red line indicating a project location. On the left, there are filters for "Scoring" (2040 year, Mathews county, Any District, Any Locality, Roadway types: Bridge, Culvert, All, Vulnerability scores: Low, Med, High). On the right, there are filters for "Roadways" and "Structures" with sliders for "Condition Rating" and "Age". A large red "DRAFT" watermark is overlaid on the bottom right of the map area.

# Strategy 4: Resilience Practices - Tools in the Toolbox

## Resilience Practices Being Evaluated Include:

- Adaptive Design Criteria
  - Structure & Bridge Manual Chapter 33
  - Draft VDOT Drainage Manual Chapter 18
  - Draft Pavement Section 609, and Draft Geotech Section 3
- Other Physical Enhancement Practices
  - Small Scale Flood Barriers
  - Flood Attenuation: Breakwater, Groins, Riverine Veins, Flow Redirection Berms
  - Stormwater Improvements: Drainage/Storage Capacity, Alternative Designs, Newer innovations
  - Slope Stabilization: Revetments and Reinforcements

# Strategy 4: Resilience Practices - Tools in the Toolbox

- Other Administrative and Policy Practices
  - Resilient Procurement
  - Enhanced Resilience Practices/Betterments
    - Resilience Certifications
    - Stormwater, Groundwater, and Green Infrastructure
    - Cool Pavements
- Operational, Maintenance, and Emergency Management
  - Enhanced Maintenance Practices in Advance of Weather Events
  - Maintenance Activities for Identified At-Risk Infrastructure
  - Early Warning Device Technology
  - Equipment Design Considerations for ITS and Traffic Operations
  - Power redundancy for ITS and Traffic Operations Equipment
  - Network Redundancy Review
  - Identify Mitigation Opportunities



# Strategy 4c: Natural and Nature Based Solutions

## Structural solution



Traditional Seawalls: concrete and riprap

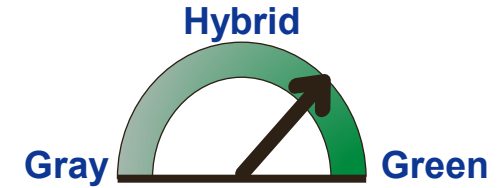
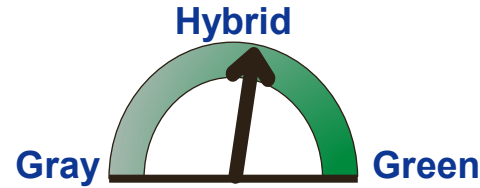
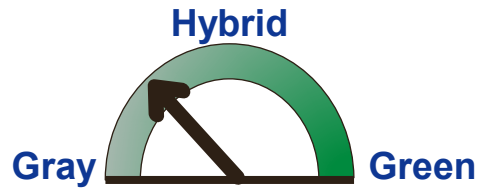
Constructed marsh, including fill and planting.  
Can include breakwaters/sills to reduce wave energy

## Nature-based solution

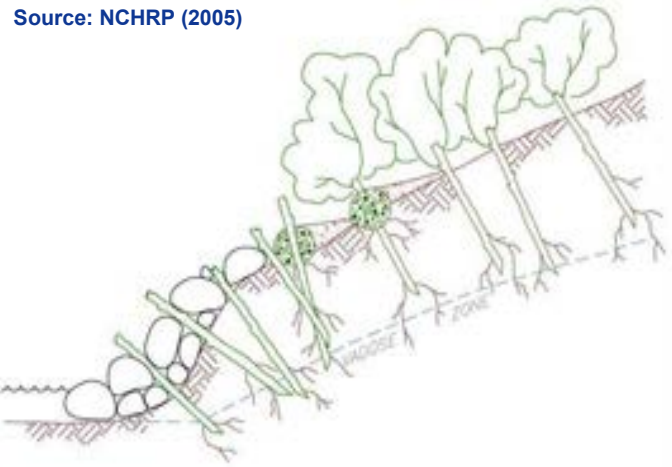


# Strategy 4c: Natural and Nature Based Solutions

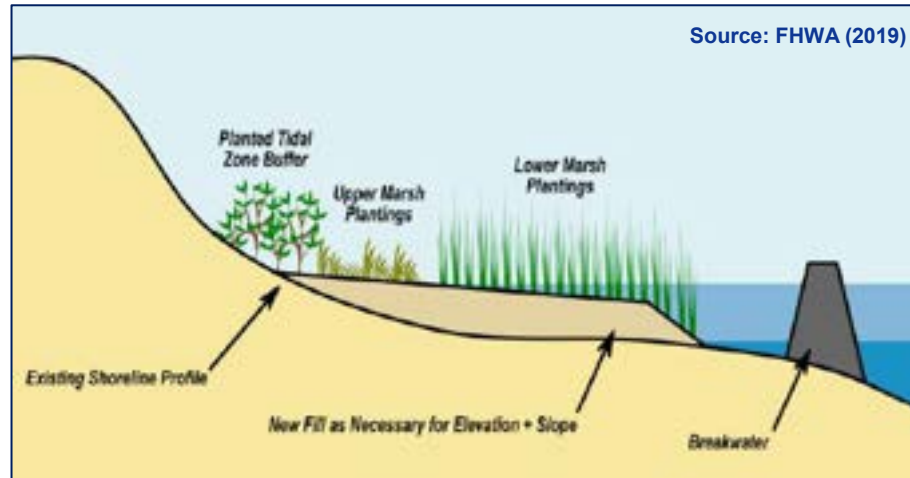
## Conceptual Design Alternatives with corresponding benefit cost analysis



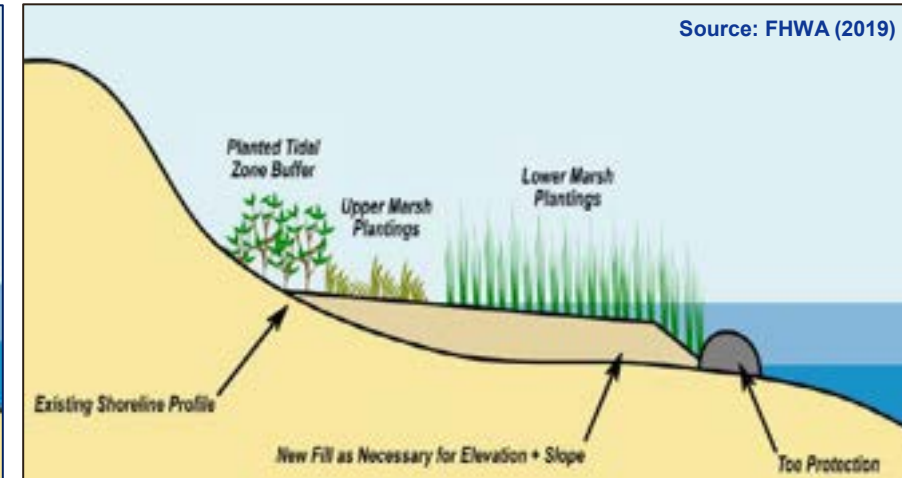
Source: NCHRP (2005)



Source: FHWA (2019)



Source: FHWA (2019)



### Vegetated Revetment

- Simple materials
- Simple construction
- Low ecological benefits
- Low upfront costs

### Marsh + Breakwater

- Reduces wave height
- Generates pocket beaches
- Moderate ecological benefits
- Moderate upfront costs

### Marsh + Sill

- Attenuates wave energy
- Stabilizes marsh platform
- High ecological benefits
- High upfront costs

# Strategy 5: Feasibility and Cost Effectiveness Methodology

- Benefit-Cost Analysis Tool under development

Baseline	Hours of Closure per event	36
Resilient	Hours of Closure per event	24
Δ	Hours of Closure Reduced per year	24
	Miles of Detour	2
Δ	Detour Miles Saved per year	48
	Detour MPH	45
Δ	Detour Hours Saved per year	1.1
	AADT	500
	Truck %	20%
Trucks:	Travel Time Savings per hour	\$ 33.50
	Vehicle Operating Cost Savings per mile	\$ 1.32
	Emissions Savings per mile	\$ 0.336
	<b>Total Truck Benefit per year</b>	<b>\$ 11,522.13</b>
	Car %	80%
Cars:	Travel Time Savings per hour	\$ 19.60
	Vehicle Operating Cost Savings per mile	\$ 0.52
	Emissions Savings per mile	\$ 0.119
	<b>Total Car Benefit per year</b>	<b>\$ 20,631.47</b>
	Others? All summing to...	
<b>D</b>	<b>Annual Traffic Benefit</b>	<b>\$ 32,153.60</b>

# Strategy 6: Resilience Needs Incorporation into Investment Processes

- Incorporate resilience needs in current investment processes and programs
- Identify opportunities to incorporate resilience into the Department's various funding programs
- Identify new funding opportunities available for resilience projects and initiatives
  - The Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation (PROTECT)

# PROTECT Program

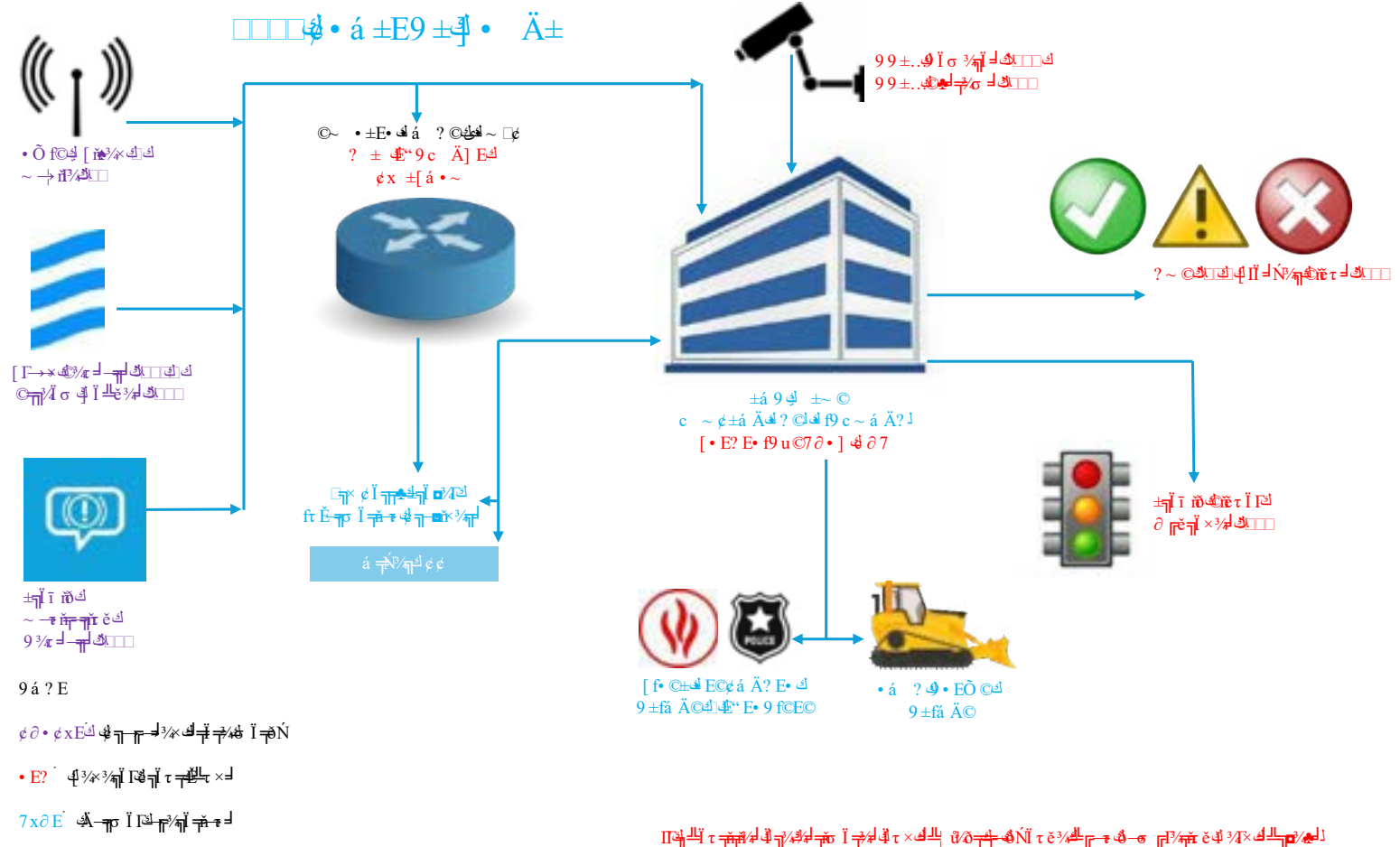
- Formula Funding and Discretionary Grants
  - Coastal Planning Activities, including Resilience Improvement Plan (RIP)
  - Resilience Improvements
  - Community Resilience
  - At-Risk Infrastructure
- Initial formula funding applied to:
  - Resilience planning, research, and capacity building;
  - Evacuation route planning;
  - Hardening and elevation of vulnerable bridges
- VDOT awarded a discretionary grant in 2024

# MOVER Grant Project

**\$5.4M Award +  
\$1.3M VDOT Match**

Hampton Roads | Fredericksburg |  
Richmond | Central Office

- Closed-Circuit Television (CCTV) Cameras
- Dynamic Message Signs (DMS)
- Road Weather Information System (RWIS)
- Traffic Signal Upgrades (detection for ATSPM)
- Traffic Monitoring Sensors
- Flood Sensors
- Stream Gauges





Thank you

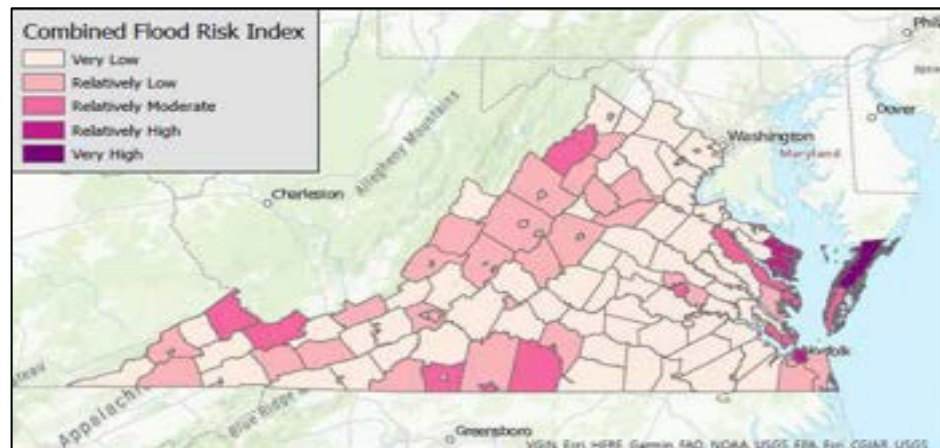
# Floodplain Management Virginia RiskMAP Studies

Angela Davis, CFM  
Division Director, Floodplain Management  
Annual Flood Coordination Meeting  
September 2024



# Floodplain Management

- DCR serves as the National Flood Insurance Program (NFIP) coordinator and floodplain manager for Virginia
- There are 108,500 structures in Virginia's regulatory floodplains.
  - Only 47% carry NFIP policies
- Nationally, 40% of NFIP claims occur outside of the regulatory floodplain
- Flooding in VA from 1950 – 2021 caused almost \$900 million in reported damages



# National Flood Insurance Program (NFIP)

Created by the National Flood Insurance Act of 1968

Adopt and enforce regulations = Eligible for flood insurance

Benefits of participation

- Flood insurance
- Grants and loans
- Disaster assistance
- Federally-backed mortgages

Goals of the NFIP include

- Saving lives and protecting property
- Encouraging a comprehensive approach to floodplain management

DCR serves as the National Flood Insurance Program (NFIP) coordinator and floodplain manager for Virginia.



# RiskMAP



# Discovery

## Discovery Report

- Summary of data, analysis, meetings, and action items or decisions

## Discovery Maps

- Flood Hazards
- Potential Economic Loss
- Mapping Needs

## Target Study Areas



Watershed  
Stakeholder  
Coordination

Data  
Collection &  
Analysis

Discovery  
Meeting and  
Follow-Up

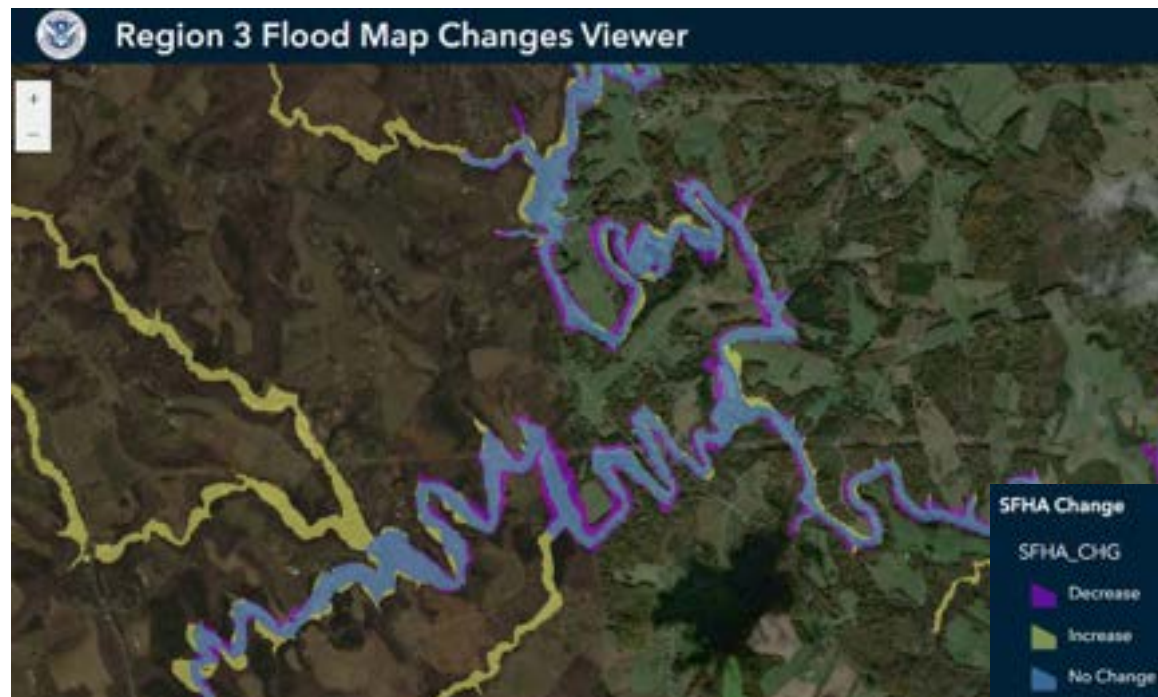
Post-  
Meeting  
Review

Final Report

# Analysis & Mapping

## Flood Risk Review Meeting

- Engineering Analysis
- Draft Work Maps
- 30-day review period



# Preliminary Flood Map Release

## Community Coordination & Outreach Meeting (CCO)

- Preliminary Maps Publicly Available
- 90-Day Appeal and Comment Period
- Flood Risk Open House



### Preliminary Products (46)

**Please note:** Preliminary data are for review and guidance purposes only. By viewing preliminary data and maps, the user acknowledges that the information provided is preliminary and subject to change. Preliminary data, including new or revised FIRMs, FIS reports, and FIRM Databases, are not final and are presented on the MSC as the best information available at this time. Additionally, preliminary data cannot be used to rate flood insurance policies or enforce the Federal mandatory purchase requirement. FEMA will remove preliminary data once effective data are available.

- Preliminary FIRM Panels (44) 
- Preliminary FIS Reports (1) 
- Preliminary FIRM Database (1)

<https://msc.fema.gov/portal/home>

# Map Adoption

## Letter of Final Determination

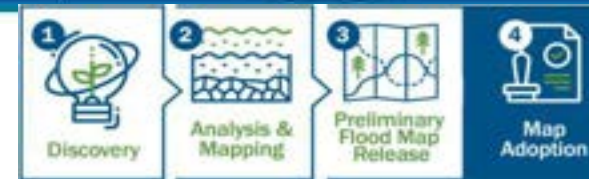
- Floodplain Ordinance
- 180-day adoption period
- Failure to adopt = **suspension**

## Summary of Map Actions

- Revalidation of previous Letters of Map Change (LOMCs)

## Flood Risk Products

- Flood Insurance Rate Map (FIRM)
- Flood Insurance Study (FIS)
- Geospatial Database



# Impact to State Agencies

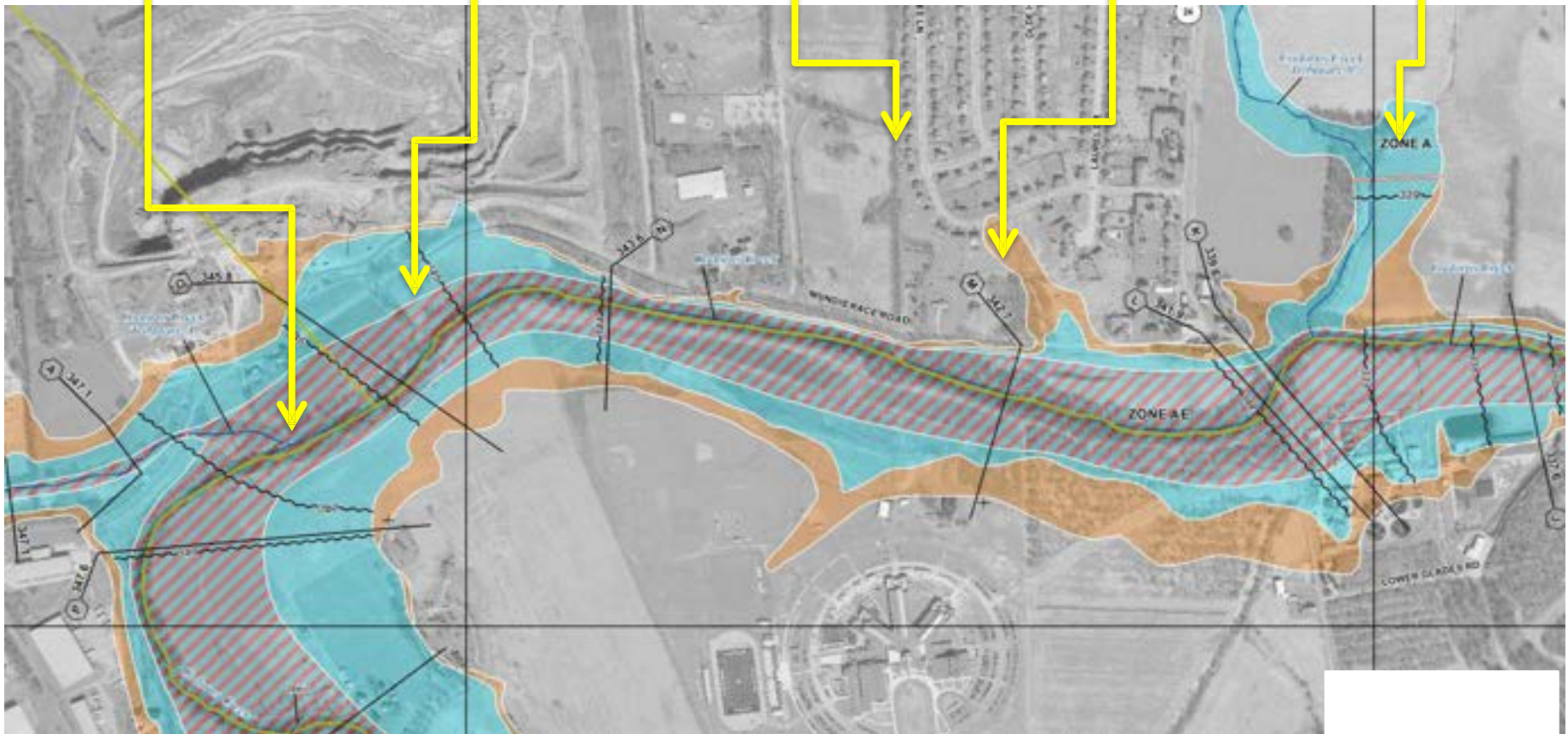
Zone AE  
Floodway

Zone AE

Zone X

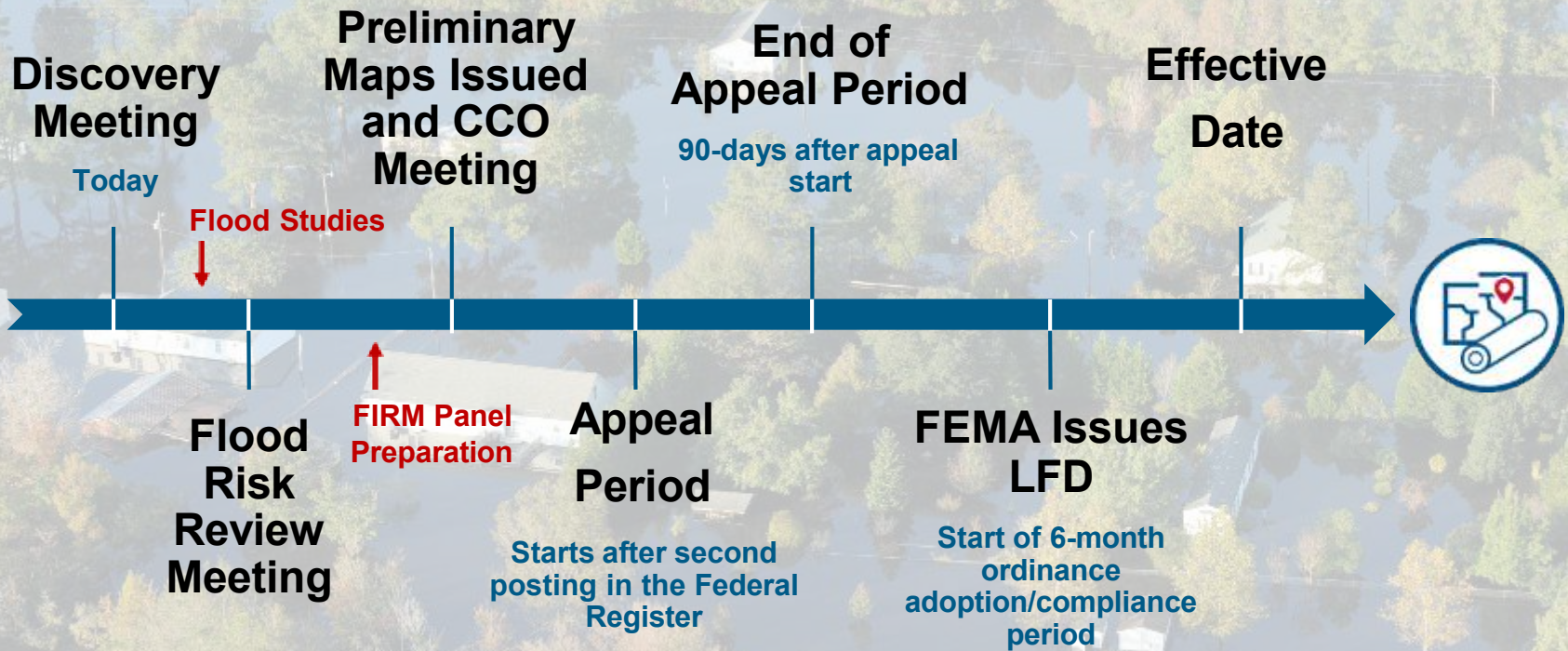
Shaded  
Zone X

Zone A





# Typical Flood Study Timeline



# Project Contacts



## Contacts

**Angela Davis, CFM**  
Division Director, Floodplain Mgmt.  
[Angela.Davis@dcr.virginia.gov](mailto:Angela.Davis@dcr.virginia.gov)



**Brandy Buford, CFM**  
NFIP State Coordinator  
[Brandy.buford@dcr.virginia.gov](mailto:Brandy.buford@dcr.virginia.gov)



**Floodplain Program Planners**  
[FloodplainMgmt@dcr.virginia.gov](mailto:FloodplainMgmt@dcr.virginia.gov)



# Virginia Flood Protection Master Plan Presentation

Thursday, September 26<sup>th</sup> 2024



Photo: Virginia Department of Conservation & Recreation

# Arcadis Team Introductions



John Millspaugh, PE, PMP



Krista Jankowski, PG, PhD



Catherine Johnson



Madison Teeter, CFM

# Subcontractor Introductions



# Anticipated Meeting Outcomes

Stakeholder participants in the Stage Setting Meeting will...

1. Have a clear understanding of the purpose of the VFPMP
2. Feel confident about their role in the development of the VFPMP
3. Understand the development timeline of the VFPMP
4. Feel comfortable connecting with DCR and the Arcadis team with input and feedback they may have on the VFPMP throughout its development

# Anticipated Meeting Outcomes

## Plan Development Team will...

1. Understand the best methods of how to communicate with stakeholders throughout VFPMP development to include their expertise and insights
2. Understand stakeholders' expectations of our team as the VFPMP is developed

The Virginia Flood Protection Master Plan (VFPMP) will be **an actionable plan** for the Commonwealth to use in crafting policies and programs to mitigate the impacts of flooding on people, the economy, and the environment.





# Virginia Flood Protection Master Plan (VFPMP)

## MOTIVATION

**Recurrent Flooding and Minimizing Losses:** Frequent storm events and rising tidal waters cause recurrent flooding, leading to loss of life, property damage, and unsafe conditions. The development of the VFPMP aims to minimize losses from future flooding events.

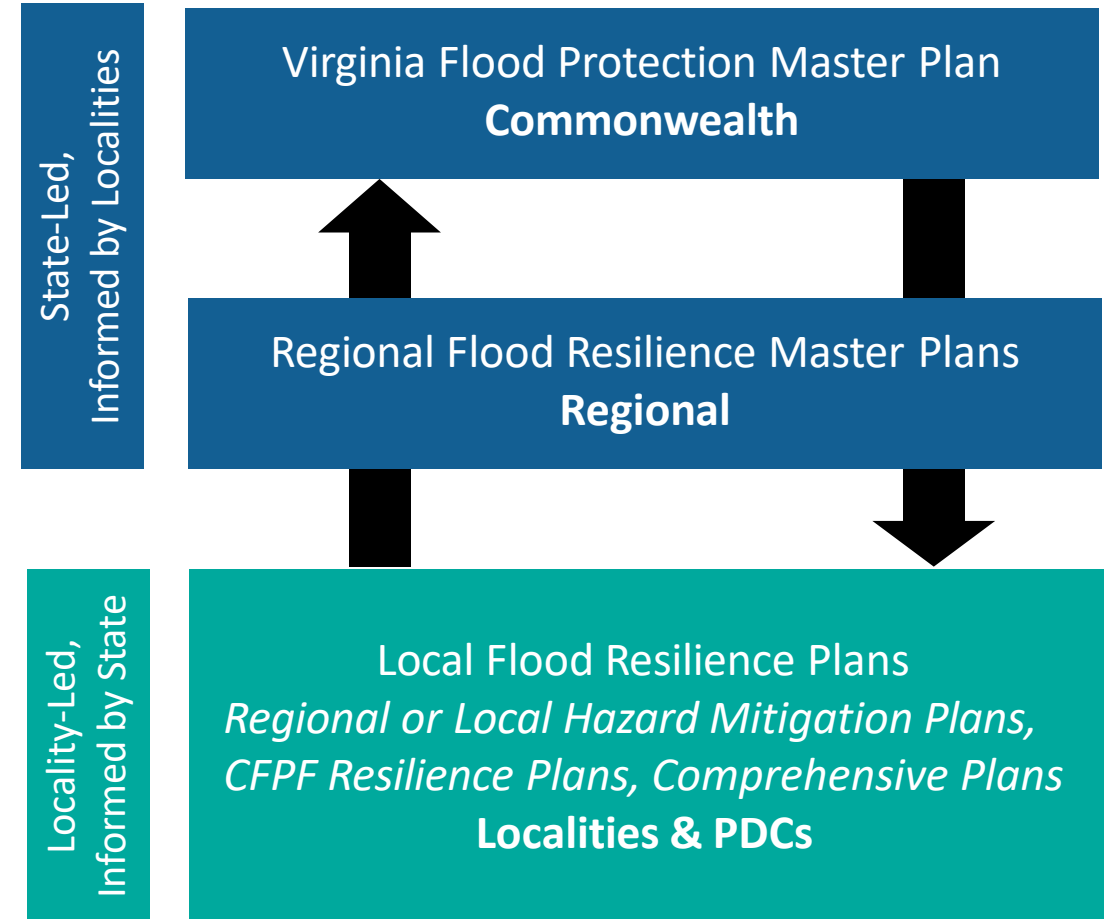
**Enhancing Resilience:** The VFPMP development process seeks to improve the Commonwealth's flood resilience. The ability to anticipate, prepare for, respond to, and recover from flood hazards with minimal damage to social well-being, health, the economy, and the environment.

**Need for a Coordinated Approach:** Flood resilience planning has become common at local and regional levels, but there is a need for a coordinated state-level approach in the Commonwealth to connect state agency initiatives with local needs.

The VFPMP will be updated every 5 years to identify further gaps and needs as approaches are implemented and more information about how flooding impacts the Commonwealth is collected.

# Understanding VFPMP's Role in Virginia's Flood Resilience Planning Efforts

- The Virginia Flood Protection Master Plan is intended to inform smaller scale plans and vice-versa
- The primary end users of the Virginia Flood Protection Master Plan will be Virginia state agencies
- Focus on state agencies will allow for flood resilience planning to spread throughout state initiatives and flow down into regional & local programs



## Components of VFPMP

Flood  
Impact  
Summary

Flood  
Resilience  
Gap Analysis

Policy &  
Program  
Strategy

# Flood Impact Summary

## Process

- Flood data collection and review
- Asset inventory of population, economic, environmental, and critical infrastructure data
- Develop & perform statewide impact analysis

## Outcome

- A holistic picture of current and future flood impacts across Virginia to use in prioritizing state resources

# Flood Resilience Gap Analysis

## Process

- Identify gaps in flood data necessary for decision-making in resilience planning informed by **Flood Impact Summary**
- Identify technical and capacity resources that will be needed to implement flood resilience activities statewide

## Outcome

- A list of potential actions to fill gaps in data, resources, capacity needs at the state agency level

# Policy & Program Strategy

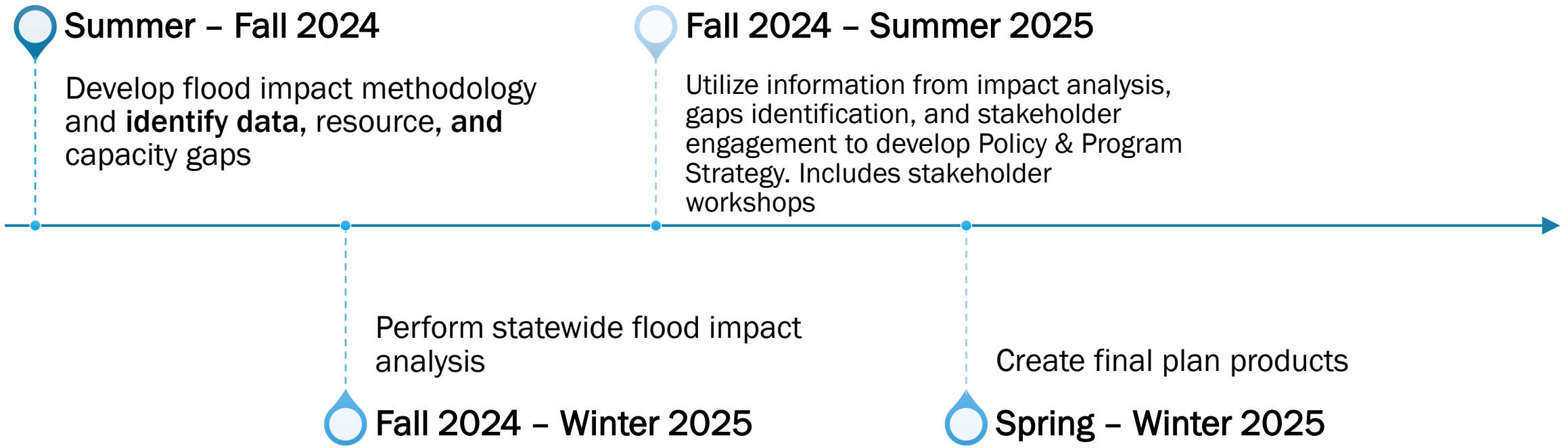
## Process

- Create a shared vision and goals for the VFPMP through a collaborative stakeholder engagement process
- Identify flood resilience strategies informed by **Flood Resilience Gap Analysis**
- Develop an implementation road map for the flood resilience strategies to be implemented in 2025-2030

## Outcome

- An actionable strategy to achieve a shared vision and goals, which includes flood resilience metrics for state agencies

# Overview Timeline of VFPMP Component Development



# Stakeholders' Role in VFPMP Development

## Core Stakeholders

- State agencies or entities that will play a critical role in developing and/or implementing the VFPMP.
  - Based on their agency's or organization's function, they will be able to contribute actionable input and feedback during multiple stages of plan development.
  - These stakeholders can play a leading role in implementing the plan after its development.

## Supporting Stakeholders

- State agencies or entities situated outside of the core plan development team who may:
  - Possess a vested interest in the plan
  - Be impacted by the plan's activities
  - Be able to provide expertise to specific components of the plan.

## General Public of the Commonwealth

- All other entities, organizations, and individuals in the Commonwealth. Engagement opportunities will be made available to these stakeholders throughout the VFPMP's development.



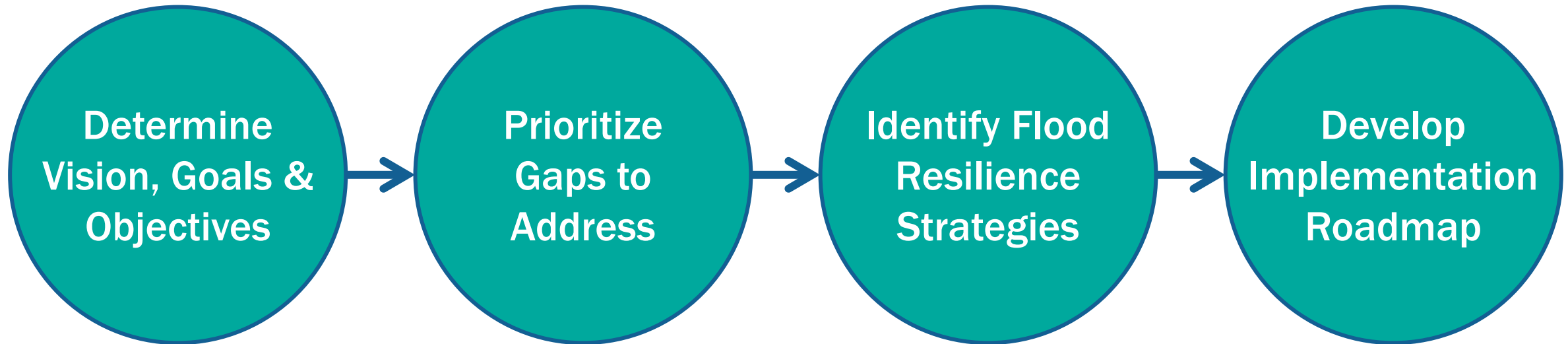
# Core Stakeholders

- Flood Resilience Advisory Committee
- Office of Commonwealth Resilience / Chief Resilience Officer
- Office of Diversity, Opportunity, and Inclusion
- Virginia Department of Conservation and Recreation
- Virginia Department of Emergency Management
- Virginia Department of Environmental Quality
- Virginia Department of Forestry
- Virginia Department of General Services
- Virginia Department of Historic Resources
- Virginia Department of Housing and Community Development
- Virginia Department of Transportation
- Virginia Department of Wildlife Resources
- Virginia Marine Resources Commission
- Virginia Resources Authority
- Office of Intermodal Planning and Investment
- Chesapeake Bay Commission
- Virginia Association of Counties
- Virginia Association of Planning District Commissions
- Virginia Municipal League
- Virginia Silver Jackets

# Key Points in Collaboratively Developing the VFPMP



Today's Stage Setting meeting & workshop will help inform future key collaboration points with stakeholders by mapping out agency roles and identifying past and on-going flood resilience efforts. Future engagement points will be centered around the following topics:





*Collectively define clear desired outcomes to guide the Virginia Flood Protection Master Plan.*



### **Inputs**

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A draft set of goals and objectives, drawing from and crosswalking against existing state agency documents and resources.



### **Virtual Feedback Session**

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Review and provide input on draft goals and objectives.

What's missing? How can we strengthen?



### **In-Person Workshop**

---

Collaborative vision-setting exercise.

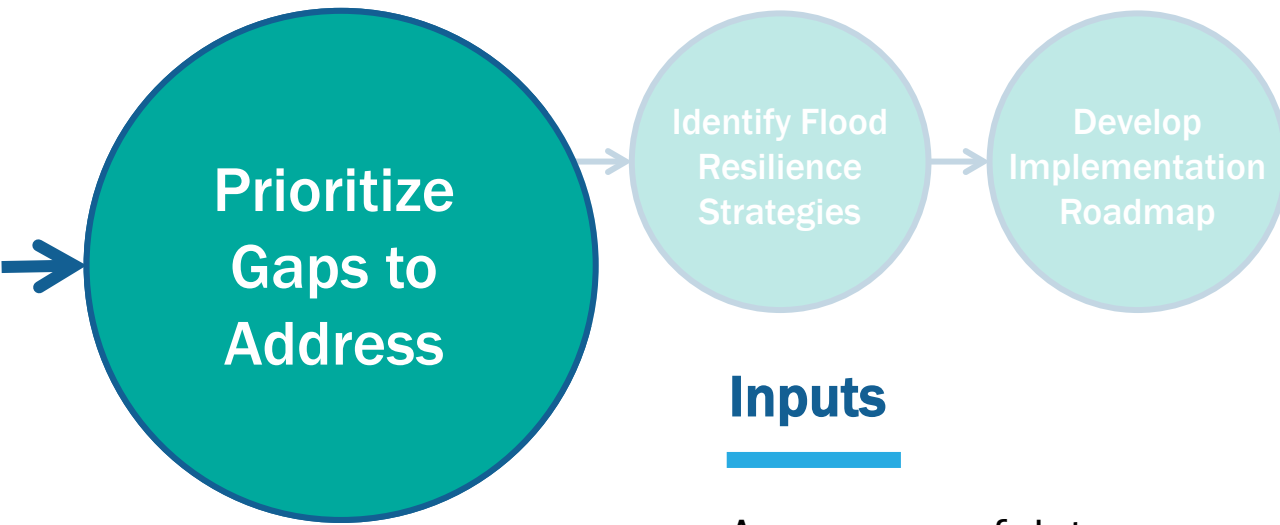
Finalize goals and objectives.

Identify objectives that may require trade offs later in the process.

#### **Attendance:**

- Core & Supporting stakeholders will be invited to the Virtual Feedback Sessions
- Core stakeholders will be invited to the In-Person Workshops

**Consensus on objectives** that will provide the foundation for how gaps and strategies are prioritized.



*Identify and prioritize data, resource, and capacity gaps in statewide management of flood risk.*

**Attendance:**

- Core & Supporting stakeholders will be invited to the Virtual Feedback Sessions
- Core stakeholders will be invited to the In-Person Workshops

**Inputs**

A summary of data, resource, and capacity gaps that emerge from a review of existing documentation.

**Virtual Feedback Session**

Review identified gaps and map them to plan objectives.



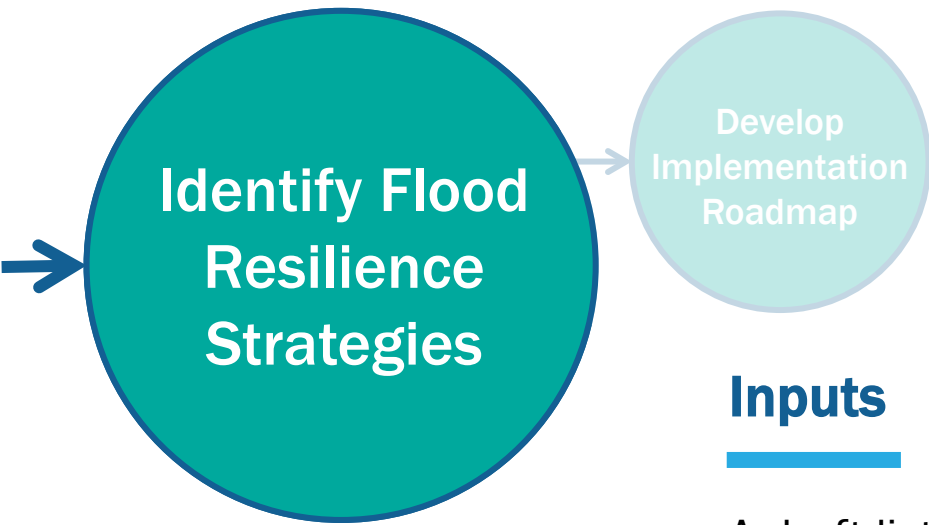
**In-Person Workshop**

Discuss how identified gaps may impact plan objectives in the future if not addressed.

Prioritize gaps based on objectives and feasibility.

Map gaps to agency roles and responsibilities.

**Consensus on priority data, resource, and capacity gaps to address through flood resilience strategies.**



## Identify Flood Resilience Strategies

Develop Implementation Roadmap

### Inputs

A draft list of potential solutions and strategies to address identified gaps and flood impacts.

### Virtual Feedback Session

Review and provide input on identified list of potential strategies.

What additional options are there? How can strategies be improved?



### In-Person Workshop

Discuss how potential strategies may improve plan objectives if implemented.

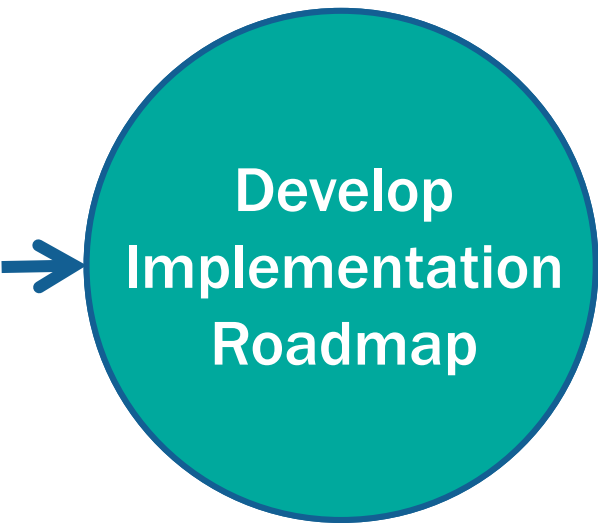
Discuss and weigh tradeoffs between different approaches.

*Identify statewide actions that can be taken within the next five years to address gaps and strengthen Virginia's flood resilience.*

#### Attendance:

- Core & Supporting stakeholders will be invited to the Virtual Feedback Sessions
- Core stakeholders will be invited to the In-Person Workshops

**Collectively developed set of flood resilience policies and programs to include in the plan.**



# Develop Implementation Roadmap

*Outline mechanisms, timelines, responsible parties, required resources, and success metrics to guide implementation.*

## Attendance:

- Core & Supporting stakeholders will be invited to the Virtual Feedback Sessions
- Core stakeholders will be invited to the In-Person Workshops

## Inputs

---

Draft implementation details for identified strategies.

## Virtual Feedback Session

---

Review and provide input on draft implementation details.

Discuss alignment with other plans and programs.



## In-Person Workshop

---

Identify agency roles, responsibilities, and opportunities for collaboration and plan alignment

Identify sequencing, necessary resources, and adaptive management of plan.



**A clear roadmap** for how the plan will be implemented and managed across agencies over its five-year timeframe.

## Other Forms of Engagement

### One-on-one Interviews with Core Stakeholders

- Interviews with Core Stakeholders who have a high influence over how the VFPMP will be implemented

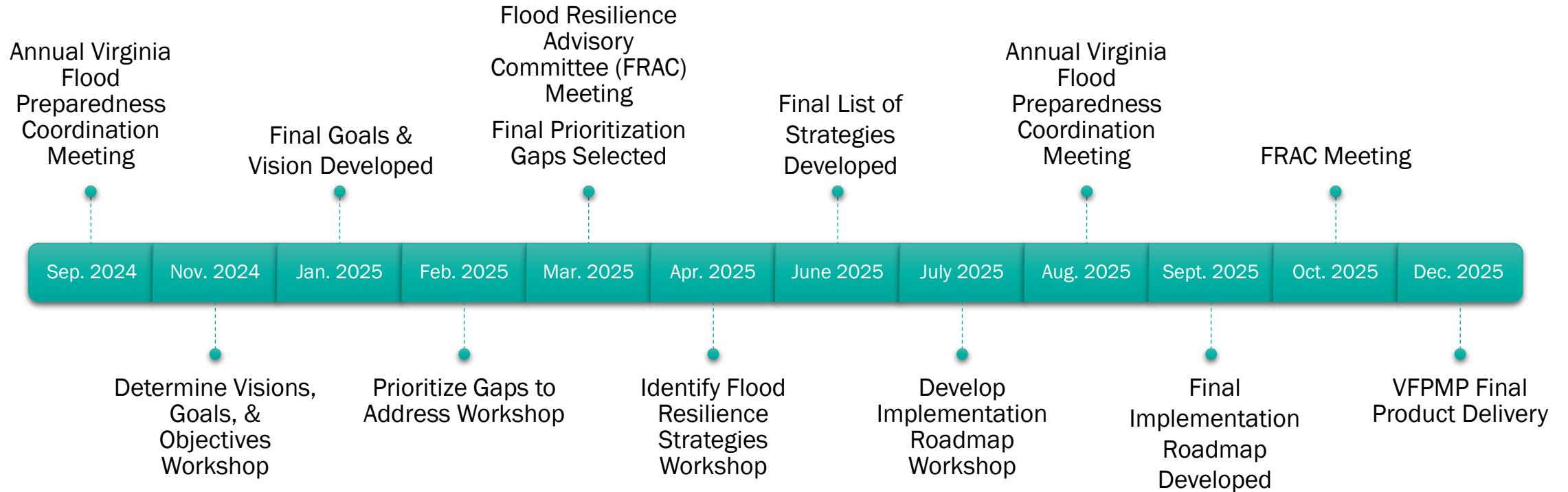
### General Public

- The public will have the opportunity to provide feedback on the VFPMP during its development through:
  - Public surveys
  - Public comment periods during meetings

### Further Engagement Sessions for Stakeholders

- Based on the level of feedback and engagement received from stakeholders throughout VFPMP development, other engagement points may become available, such as:
  - Working Group sessions focused on specific VFPMP components
  - Detailed feedback surveys

# Overview of VFPMP Development Schedule & Engagement Points



\*Schedule subject to change based on VFPMP development



# VFPMP Final Products



Written PDF Plan

The full plan document designed for state leadership, and appendices designed for use by practitioners.

Audience:  
Governor & GA



Implementation Guide

A summary of the policy and program strategy designed for quick reference.

Audience:  
State Agencies



StoryMap & Data Viewer

A summary of the major plan elements that allows for interactive engagement.

Audience:  
Public



VFPMP Webpage

General plan information (purpose, process, & results). Periodically updated with progress/metrics tracking.

Audience:  
Public

Questions?

# Thank you!



**Web** [dcr.virginia.gov/resilience-planning](https://dcr.virginia.gov/resilience-planning)

**Newsletter** [dcr.virginia.gov/signup](https://dcr.virginia.gov/signup)

**Email** [flood.resilience@dcr.virginia.gov](mailto:flood.resilience@dcr.virginia.gov)

