



# Flood Resilience Advisory Committee

September 10, 2025

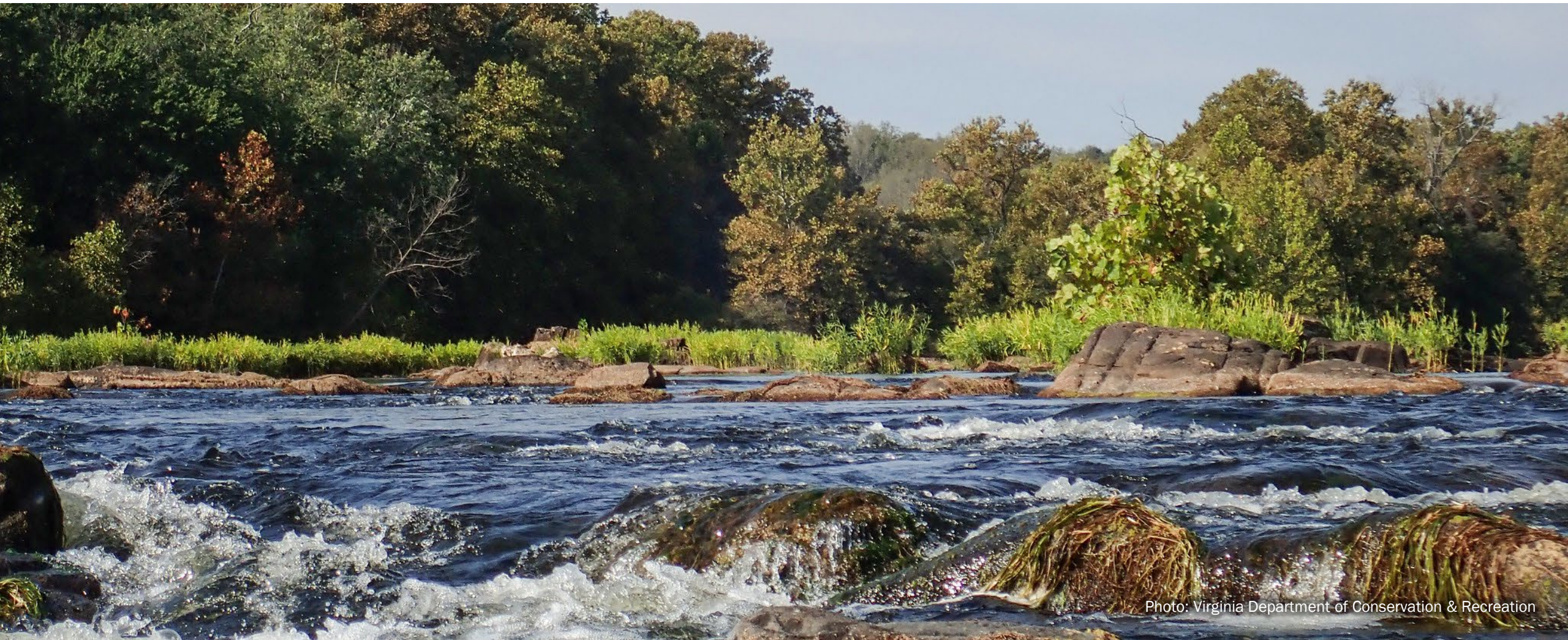


Photo: Virginia Department of Conservation & Recreation



Full Name	Title	Organization
Matthew Wells (Chair)	Director	Virginia Department of Conservation and Recreation
Greg Steele (Vice-chair)	Chief Resilience Officer	Office of Commonwealth Resilience
Martin D. Brown	Chief Diversity Officer	Office of Diversity, Opportunity and Inclusion
Robbie Coates	Director, Grant Management and Recovery Division	Virginia Department of Emergency Management
Shawn Crumlish [Peter D'Alema]	Executive Director [Director of Program Management]	Virginia Resource Authority
Bill Curtis	Assistant Director	Virginia Department of Housing and Community Development
Jamie Green	Commissioner	Virginia Marine Resources Commission
LJ Hansen	Director of Public Works, Virginia Beach	Virginia Municipal League
James Hutzler	Government Relations Associate	Virginia Association of Counties
Fred Kirby	State Review Engineer	Virginia Department of General Services
Adrienne Kotula	Virginia Director	Chesapeake Bay Commission
Lewie Lawrence	Executive Director, MPPDC	Virginia Association of Planning District Commissions
John Lawson	Director	Office of Intermodal Planning and Investment
Alex Samms	Chief Deputy	Virginia Department of Environmental Quality
Chris Swanson [Angel Deem]	Director, Environmental Division [Chief of Policy]	Virginia Department of Transportation

# Meeting Agenda

- 1) Call to Order & Roll Call
- 2) Adoption of the Agenda
- 3) Adoption of the Meeting Minutes from May 27, 2025
- 4) Chief Resilience Officer Updates
- 5) Department of Conservation and Recreation Updates
- 6) Hurricane Helene Recovery Updates
- 7) Virginia Flood Protection Master Plan
  - 1) Plan Overview
  - 2) Implementation Roadmap Status
  - 3) Flood Resilience Strategies in the Plan
  - 4) Monitoring and Metrics
  - 5) Next Steps
- 8) Committee Member Updates
- 9) Public Comment
- 10) Adjourn



# Chief Resilience Officer Updates

Greg Steele - Chief Resilience Officer

# Department of Conservation and Recreation Updates

Matthew Wells – Director

# Flood Resilience Funding

## Community Flood Preparedness Fund

	Round 1	Round 2	Round 3	Round 4	Round 5	Totals
Funds Available	\$18,000,000	\$17,000,000	\$70,000,000	\$85,000,000	\$85,000,000	\$275,000,000
Number of Applications	32	37	64	69	70	202
CFPF Funds Requested	\$14,532,740	\$29,725,495	\$92,472,050	\$75,600,000	\$65,000,000	\$277,330,285
Funds Awarded	\$7,796,040	\$24,551,923	\$65,388,627	\$53,900,000	\$67,000,000	\$218,636,590
Low Income Awarded	\$3,766,515	\$19,759,944	\$42,384,643	\$30,700,000	\$39,620,000	\$136,231,102
Non-Low Income Awarded	\$4,029,525	\$4,791,979	\$23,003,983	\$23,200,000	\$27,380,000	\$50,580,000

# Flood Resilience Funding

## Community Flood Preparedness Fund

### Proposed Round Six

- \$85 million total
- Public comment closed July 17, 2025
- Proposed changes:
  - Addition of tribes as eligible
  - Capping per-grant amounts for capacity-building, studies, and resilience plans
  - Changes to property-acquisitions and consideration of public recreation areas

Category	Amount	Award Type	Notes
Planning & Capacity Building, Studies, and Resilience Projects	\$50,000,000	Grants	Awards require match that varies depending on activity/project type. Reduced match for low-income geographic areas. Total awards per applicant are capped.
Resilience Projects	\$25,000,000	Loans	Below market-rate loans for resilience projects. Awards do not require match. Designed primarily to accommodate large projects that exceed grant caps.
Start-Up Funding	\$10,000,000	Loans	Short term (36 month) loans to provide up-front funding for activities funded by CFPF grants. Currently, CFPF grants are paid on a reimbursement basis, which is a limiting factor for some localities.

# Flood Resilience Funding

## Resilient Virginia Revolving Fund – Resilient Recovery and Rebuilding in SWVA

- Targeted at areas impacted by Helene and February 2025 storms
- Intended to complement programs from federal government, VDEM, and DHCD VDAF
- Three proposed categories – total \$60 million
  - Category 1: Grants and loans to support the resilient rebuilding of communities
  - Category 2: Grants and loans to support the resilient rebuilding of infrastructure
  - Category 3: Loans to mobilize federal grants
- Public comment closed July 6, 2025, final manual and opening of round pending



# Dam Safety

## Dam Inventory

- DCR regulates over 2,500 dams across the Commonwealth through the Soil and Water Conservation Board. Over 80% of these dams are privately owned
- Almost 400 are known to be “High Hazard”
- It is estimated nationally that up to 70% of dams are reaching the end of their useful life
- American Society of Dam Safety Officials estimates bringing Virginia dams up to regulatory standards will cost \$5.4 billion in a 2023 report

Regulatory Dam Inventory		
Metric	Initial	June 2025
Number of dams with unknown ownership	812	3
Number of dams of unknown hazard	1876	1,367
Number of regulated dams with 'not rated' condition assessment	1974	1,620

## Dam Safety, Flood Prevention and Protection Assistance Fund

- \$10.6 million awarded in 2024 for 78 projects
- \$4.3 million awarded in 2025 for 63 projects
- \$5 million available for 2026 round – targeted to open Dec 2025

# Dam Safety

## Regulatory and Statutory Updates

- In 2024 DCR convened a Statutory Workgroup and a Regulatory Advisory Panel to assist with review and development of proposed revisions to the Dam Safety Act and Impounding Structure Regulations.
- Regulatory Advisory Panel proposal focused on low hazard dams – Soil and Water Board to consider final adoption late 2025
- Statutory Workgroup proposal lowered match for Dam Safety Grants, established general permit process for low hazard dams, and made other improvements – Passed during 2025 session and signed into law
- Additional fast track regulatory changes to incorporate statutory changes

# Hurricane Helene Recovery Updates

# Department of Housing and Community Development

## Hurricane Helene Recovery Update





Virginia Department of  
Emergency Management

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# Hurricane Helene Update

Date: September 10, 2025

# Programs VDEM Manages/Coordinates

- FEMA Individual Assistance
  - Disaster Case Management
- FEMA Public Assistance
- FEMA Hazard Mitigation Grant Program
- FEMA FMA Swift Current (supplemental)

Across these programs – it is estimated that Virginia will receive **\$366M** in federal assistance, but true costs will not be known for some time. Estimated state cost share is **\$49M**



# Individual Assistance

- 18 localities declared
- Individuals and Household Program
  - 10,303 registrants, 4,602 eligible - \$17M in funding



# Disaster Case Management – In Virginia

- Phase 1: Virginia Bridge Case Work
  - Partnership with 211
  - Outreach, referrals, initial intake
  - Establish and strengthen outreach and partnerships with long-term recovery
- Transition Phase and End of Program
  - All cases will be transferred to long-term recovery groups or other appropriate service providers.





# Disaster Case Management – In Virginia

Needs Reported	
Clean-up	426
Crisis Counseling	11
Employment Assistance	11
FEMA Appeals Support	244
Financial Assistance	260
Food	254
Home Repairs	599
Housing/Shelter	83
Legal Support	8
Medical	25
Other	290
Transportation	63
Grand Total	2274

- During the current period of performance, our disaster case managers were successfully able to intake 1,134 cases.
- Our team triaged and referred hundreds with 454 households meeting their recovery plan goals.
- 123 were referred to the Long-Term Recovery Group for additional resource alignment.
- There are 173 open cases that need recovery plans, resource alignment and case closure



# Identified Needs Categories

- Basic Needs
  - Financial; Food; Housing/Shelter; Medical; Personal Property; Transportation
- Home Repairs
  - Appliances; HVAC; Roofing; Interior; Unspecified
  - Cleanup: Mold Remediation; Muck and Gut; Clean-up
- Private Infrastructure
  - Culvert; Bridge/Land Erosion; Gravel; Grading; Debris; Tree Removal
  - Dredging; Riverbank Mitigation; Stream/Lake Debris; Landscaping
- Support
  - Crisis Counseling; Employment Assistance; FEMA Application Support; Legal Support



# Disaster Case Management – The Local Role

- Local role: integrate with Virginia DCM program and its providers to support survivors
- Working with
  - The United Way Southwest Virginia
  - Long Term Recovery Groups
  - Virginia VOAD members
  - Virginia United Methodist Committee on Relief (UMCOR)
  - Local Emergency Managers
  - County Social Services



# Active Agencies

Organizations still active in SW Virginia:

- American Red Cross- Washington County
- Feeding SW VA
- United Way of SW VA
- Gleaning for the World
- Adventist Community Services
- Southern Baptist Convention
- Mennonite Disaster Services
- Storm Aid (Amish Disaster Relief)
- Latter Day Saints Charities
- United Methodist Committee on Relief (UMCOR)
- International Orthodox Christian Charities (IOCC)
- Team Rubicon
- The Salvation Army
- Crisis Clean Up
- ALAN Aid





# FEMA Public Assistance

- Estimated \$314M
  - \$228M being debris
  - Majority of costs attributed to VDOT work
- \$7M distributed to eligible applicants to date



# Hazard Mitigation Grant Program

- 100 applications totaling \$81M
- \$54M available
- Applications range over 18 different project types, most prominent are generators, water/wastewater protection, and flood control/stormwater management.
- Applications are due to FEMA in January



# FMA Swift Current

- Limited to RL and SRL properties, available statewide
- Very short application period

Applicant Name	Application Title	Amount
Tazewell County	Acquisition and Demolition of a Church	\$2,100,000.00
Roanoke County	Acquisition and Demolition of 1 Property	\$460,850.00
Chesapeake, City of	Acquisition and Demolition of 1 Property on Fernwood Farms	\$457,000.00
Suffolk, City of	Acquisition and Demolition of a Gas Station on Main Street	\$2,876,770.00
Poquoson, City of	Elevation of 1 Property	\$323,000.00
Northern Neck Planning District Commission	Elevation of 1 Property	\$204,710.00
Middle Peninsula Planning District Commission	Elevation of 1 Property	\$323,000.00
Wise County	Acquisition and Demolition of 8 Properties	\$3,365,780.00



# Questions?



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[Robert.coates@VDEM.virginia.gov](mailto:Robert.coates@VDEM.virginia.gov)



# THANK YOU!



# Virginia Flood Protection Master Plan

Overview

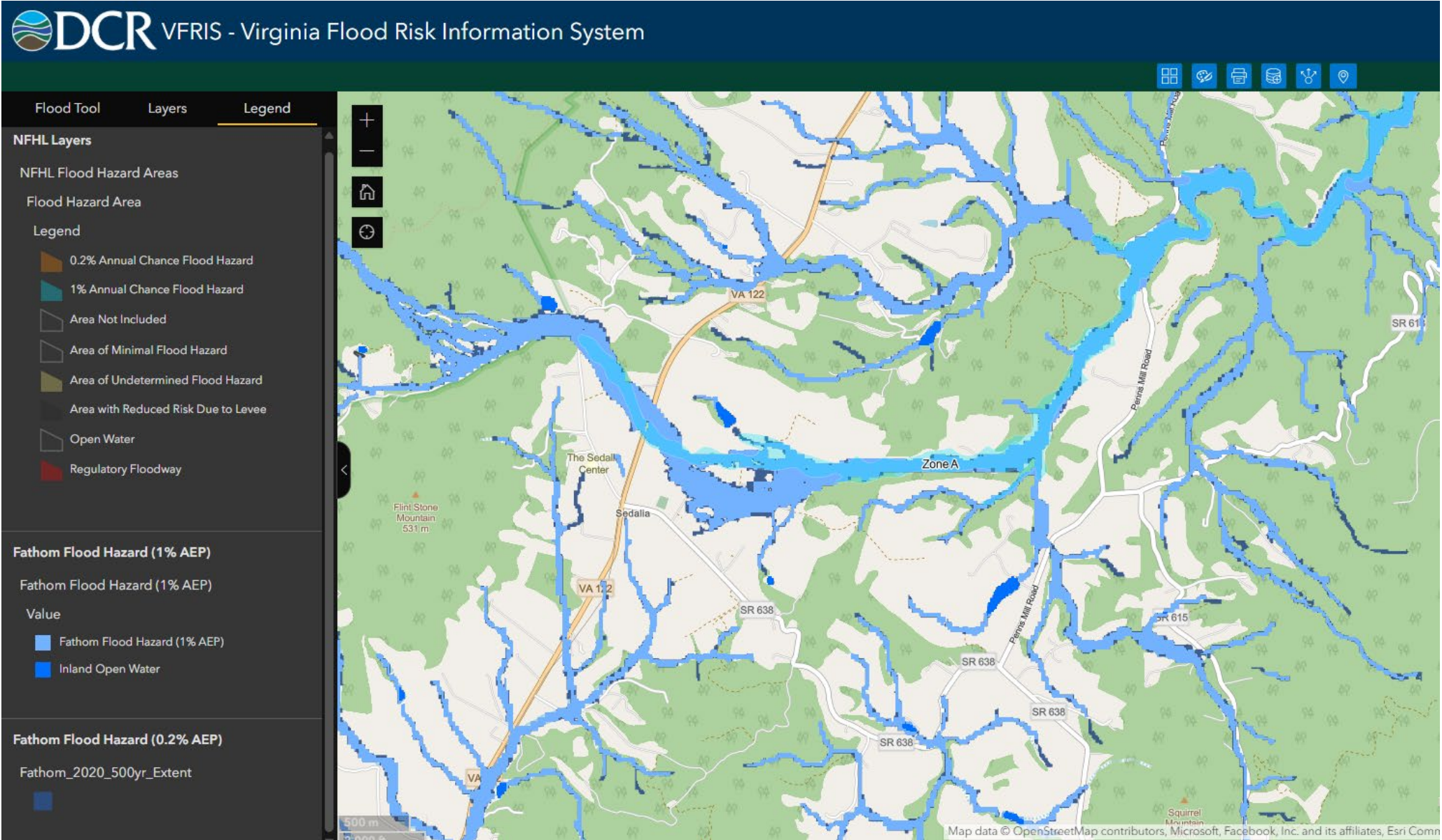
Implementation Roadmap Status

Flood Resilience Strategies in the Plan

Monitoring and Metrics

Next Steps

# Fathom Public Layers in VFRIS, Open Data Portal, and REST Services



# Additional Fathom Layers available to Virginia Public Entities with an EULA

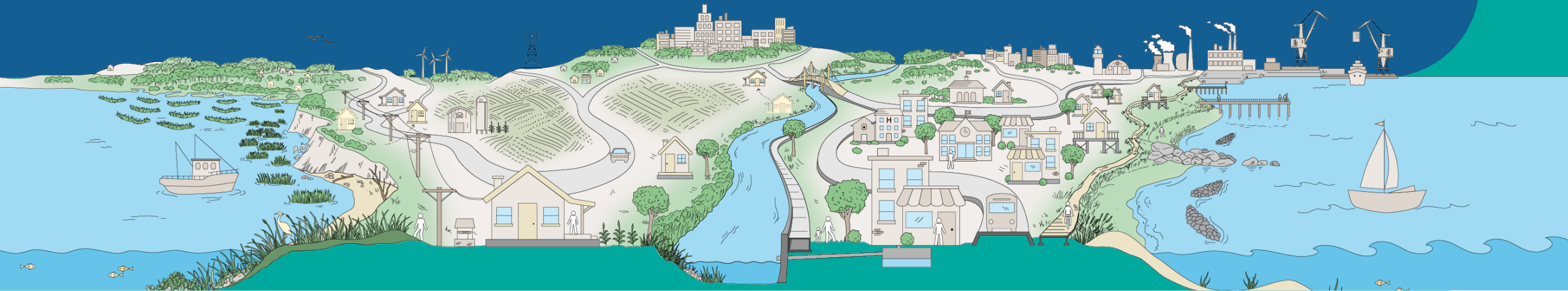
- All datasets are available as 10-meter raster depth grids, with depth values in centimeters.
- Separate datasets are available for inland (rainfall-driven/ pluvial and riverine/fluvial hazards), and coastal flood hazards. **Several merged versions of the two datasets are also available.**
- Flood hazard data is available for five annual flood exceedance probabilities 0.2%, 1%, 2%, 4%, & 10% (500-yr, 100-yr, 50-yr, 25-yr, 10-yr)

Flood Hazard	Time Horizon		
	2020	2060	2100
Inland (Pluvial + Fluvial)	50 <sup>th</sup> Percentile	50 <sup>th</sup> 83 <sup>rd</sup>	50 <sup>th</sup> 83 <sup>rd</sup>
Coastal	50 <sup>th</sup> Percentile	50 <sup>th</sup> 83 <sup>rd</sup>	50 <sup>th</sup> 83 <sup>rd</sup>

*Fathom data product availability for baseline (2020) and future conditions by time horizon. Two percentile options represent uncertainty in climate scenario projections.*

End User License Agreement [EULA] between DCR and Virginia Political Subdivisions/Public Universities/Tribes is needed for DCR to provide Fathom data. For more information on the EULA and Fathom Data see the [Fathom Data Flyer](#) or contact DCR at [flood.resilience@dcr.virginia.gov](mailto:flood.resilience@dcr.virginia.gov).

**The Virginia Flood Protection Master Plan (VFPMP) will  
be a comprehensive plan to align and enhance  
the Commonwealth's policies and programs  
to mitigate the impacts of flooding  
on people, the economy, and the environment.**





# Where we are going

*Timeframe: Next 20 years*

## Vision



Long-term aspirations and desired outcomes for flood risk reduction across Virginia

## Goals



Succinct statements of what needs to be accomplished to move towards the Vision

## Objectives

Provide the basis for evaluating alternatives and measuring progress towards goals

# How we get there

*Timeframe: Next 5 years*

## Strategies



Actionable approaches to address gaps in the current state of practice and advance the plan's goals

## Implementation Roadmap

Outline the specific steps and mechanisms to implement the strategies and actions identified



# Key Points in Collaboratively Developing the VFPMMP



## Stage Setting

*Identify past and current flood resilience successes and challenges to inform the development of initial VFPMMP goals.*

## Determine Vision, Goals & Objectives

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

## Prioritize Gaps to Address

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

## Identify Flood Resilience Strategies

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

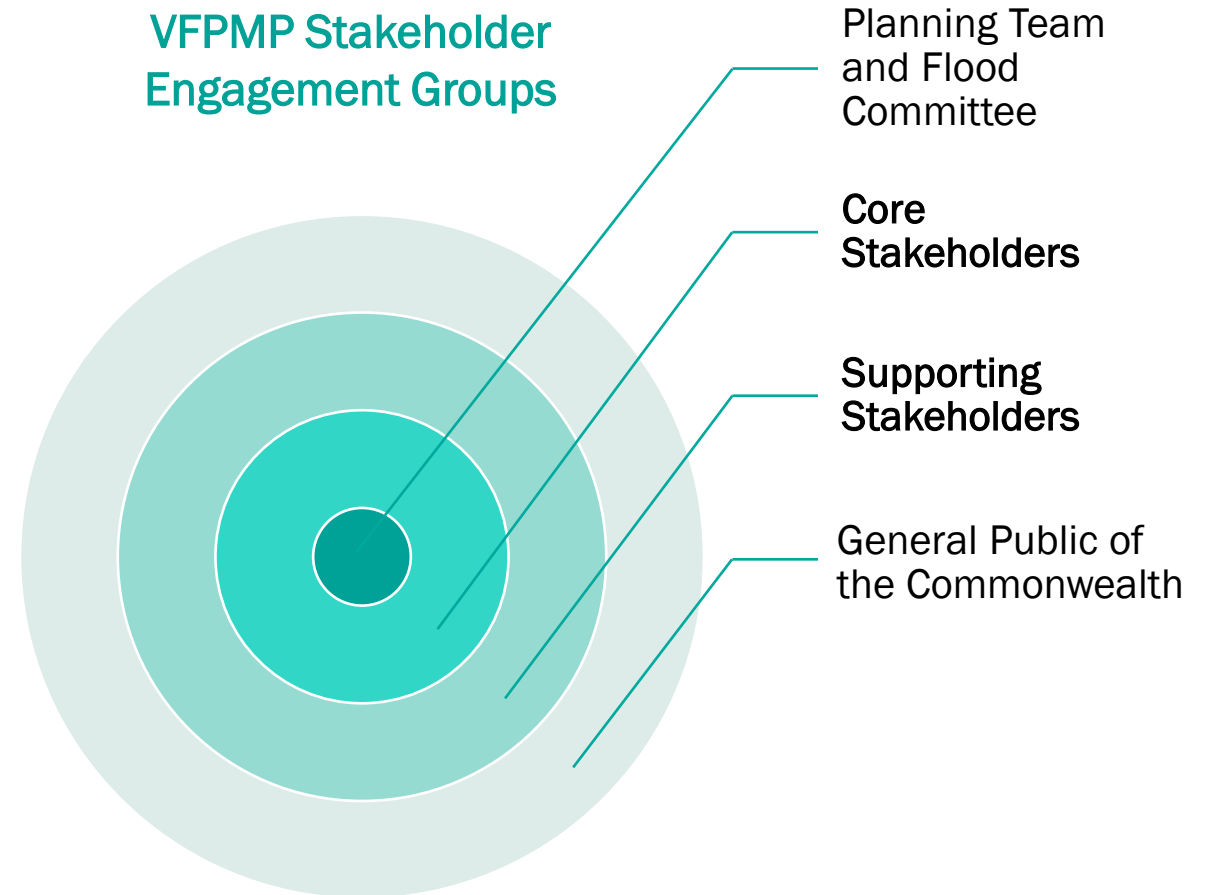
## Develop Implementation Roadmap

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

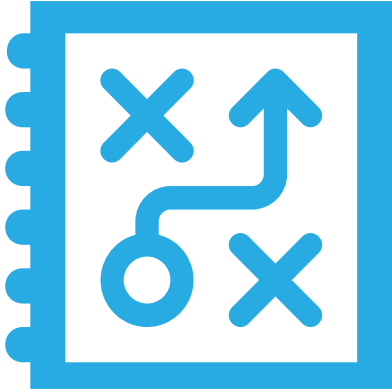


# Stakeholder Engagement Summary

- Core and Supporting Stakeholders
  - 34 engagement activities
  - 18 core stakeholder organizations
  - 93 supporting stakeholder organizations
  - 373 engagements
- Public Outreach and Engagement
  - 7 outreach and engagement activities
  - 12,000+ people reached via social media
  - 21 of 22 PDCs represented in the public survey
  - 6 website updates
  - Additional activities planned for release



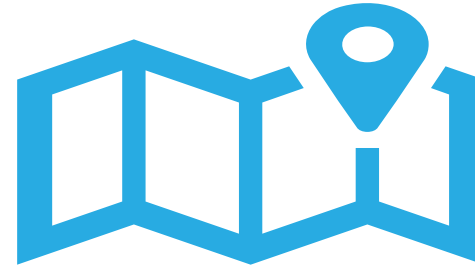
## VFPMP Final Products\*



The Plan



Report in  
Brief



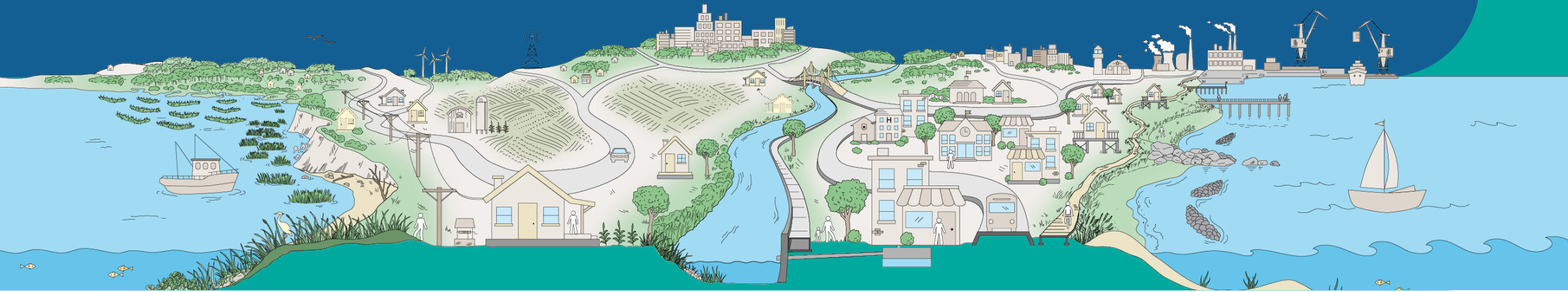
Data Viewer



Status  
Tracker

# THE VISION

A thriving Commonwealth  
proactively addressing flood risks to further strengthen  
the resilience of communities, the economy, and the environment  
now and into the future.



## THE GOALS AND OBJECTIVES



### ***Mitigate current and future flood risks statewide.***

- Reduce negative effects on human health from flooding.
- Reduce negative impacts to vulnerable populations from flooding.
- Reduce flood damage to buildings and infrastructure.
- Reduce economic disruptions and losses from flooding.
- Reduce negative effects to natural and cultural resources from flooding.



### ***Advance lasting and unified strategies to address flood risk.***

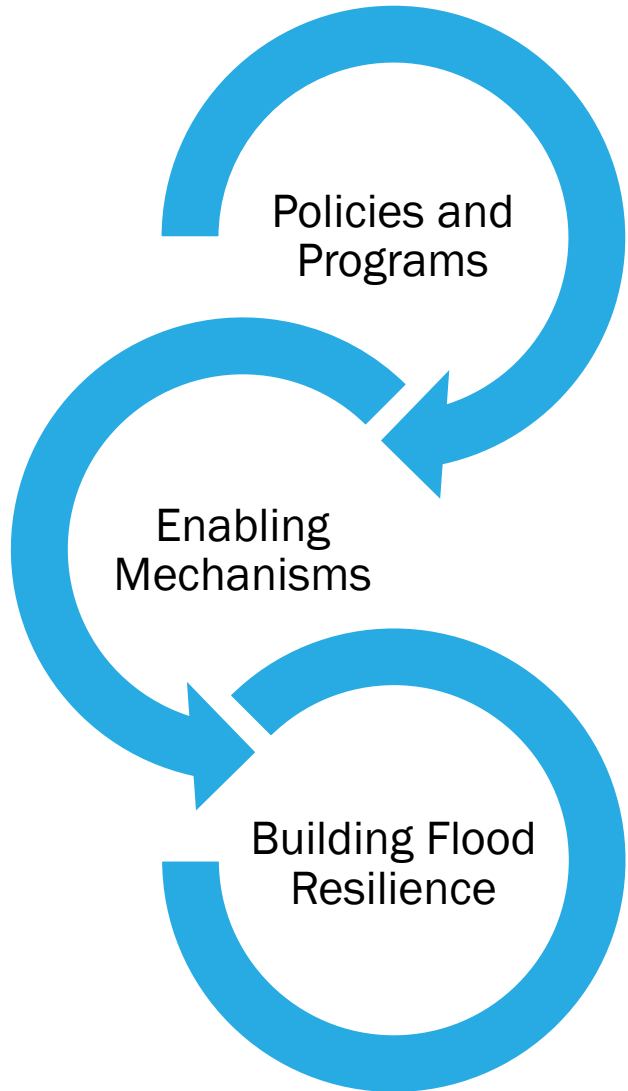
- Increase understanding of current and potential future flood risks.
- Strengthen the ability to prepare for and manage flood risks.
- Increase the adaptability and effectiveness of flood resilience strategies to potential future conditions and regional interests.
- Increase the return on public investments in flood resilience.
- Increase the accessibility of flood resilience resources, opportunities, and information for all Virginians.



### ***Capture additional benefits through flood resilience.***

- Improve health and quality of life through flood resilience.
- Boost the economy through flood resilience.
- Enhance the natural environment through flood resilience.

## STRATEGIES AND GAP ARE ORGANIZED BY THEMES



## The GAPS between current practices and best practices for Statewide Flood Resilience

Proactive Adaptation	<ul style="list-style-type: none"> <li>• Robust decision-making frameworks and capacities to facilitate long-term planning efforts and resource allocation decisions.</li> </ul>
Supported Local Governments	<ul style="list-style-type: none"> <li>• Community knowledge and capacity to take proactive steps to reduce vulnerability to flooding.</li> <li>• Staff capacity and funding resources for additional grant application and management support to local governments.</li> </ul>
Resilience Funding	<ul style="list-style-type: none"> <li>• Funding resources for long-term resilience planning that supports a wide breadth of needs at both the state and local government levels.</li> <li>• Funding resources for asset maintenance.</li> <li>• Reliance on unsustainable federal funding posing challenges in sustaining flood resilience programs.</li> </ul>
Reliable Data Systems	<ul style="list-style-type: none"> <li>• Access to up-to-date data resources that support long-term flood resilience planning and resource allocation decisions.</li> <li>• Staff capacity and data management resources for coordination between federal, state, and local agencies during events to ensure targeted event response.</li> <li>• Staff capacity and resources for interdepartmental data aggregation and coordination for comprehensive flood risk assessments, including those for state-owned assets.</li> </ul>
Enhanced Capacity	<ul style="list-style-type: none"> <li>• Staff capacity hindering collaboration, assistance provision, and funding outreach efforts.</li> <li>• Staff capacity to address and assist with federal and state regulations.</li> <li>• Staff capacity for integration of flood resilience tools.</li> </ul>
Meaningful Coordination	<ul style="list-style-type: none"> <li>• Coordination among state agencies to streamline flood resilience strategies and reduce redundancies.</li> <li>• Staff capacity and resources to coordinate assistance for funding and program initiatives to address long-term flood resilience goals.</li> </ul>

# The STRATEGIES to advance the Goals and Objectives and address Gaps

**Proactive Adaptation:** We are actively adapting and implementing solutions to enhance flood resilience outcomes.

- Invest in effective and innovative flood resilience solutions.
- Support the deployment and maintenance of Nature-Based Solutions where appropriate.
- Encourage the incorporation of flood resilience best practices during revisions of plans, policies, regulations, codes, and standards.

**Supported Local Governments:** We are actively enhancing partnerships with local, regional, and tribal governments to support place-based actions that advance the Virginia Flood Protection Master Plan goals and objectives.

- Provide technical assistance for local, regional, and tribal governments on flood resilience.
- Explore state agency pathways for supporting locally driven adaptation solutions.
- Expand engagement with local, regional, and tribal governments to increase understanding of flood resilience.

**Resilience Funding:** We are actively enhancing flood resilience through strategic financial management of existing and potential funding.

- Optimize existing flood resilience funding resources to accomplish flood resilience goals.
- Identify the financial needs to manage flood risk and drive action at the state level.
- Explore new financial mechanisms to advance implementation.

# The STRATEGIES to advance the Goals and Objectives and address Gaps

**Reliable Data Systems:** We are actively acquiring, managing, and sharing flood resilience-related data across agencies to inform decision-making and guide policy and program administration.

- Establish a statewide comprehensive flood data management program.
- Establish data-informed decision-making frameworks for prioritizing flood resilience actions.

**Enhanced Capacity:** We are actively integrating comprehensive staff training and development opportunities with strategic workforce planning to effectively manage and expand flood resilience efforts.

- Expand the flood resilience knowledge of state agencies.
- Routinely assess and adapt state agency roles, responsibilities, and authorities in flood resilience.

**Meaningful Coordination:** We are actively increasing awareness and understanding of flood resilience efforts across state agencies and programs and leveraging existing networks to efficiently improve flood resilience outcomes.

- Leverage coordination networks and relationships with nongovernmental entities and the private sector to advance flood resilience.
- Coordinate across all levels of government to align and advance flood resilience actions.
- Coordinate among applicable personnel across state agencies to increase their awareness and responsiveness to flood resilience.



# Strategies v. Actions (Implementation Roadmap)

## Strategies

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**Higher-level policy/program Strategies** that build flood resilience and meet plan Objectives.

**Timeframe:** next **five years**, with longer-term relevance as the plan is updated over the next 20 years.

Room for **flexibility in how implemented**, to accommodate changing administrations and allow for alignment with agency-specific plans.

### Characteristics:

- Broad and overarching.
- Focused on "what".
- Aimed at aligning resources and initiatives toward goals and objectives.
- Sets the foundation for decision-making and prioritization.

## Actions

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Illustrative examples of the kinds **of more detailed recommended actions** that can support the implementation of strategies in the near term.

**Timeframe:** next **two years**, with ability to be updated during implementation to advance the plan over the next five years.

This content will continue be **revised and refined with stakeholder input** as part of a living Implementation Roadmap.

### Characteristics:

- Specific and focused on execution.
- Can be targeted at and customized by agencies.
- Focused on "how" to achieve the strategy.
- Often short- to medium-term in nature and measurable.
- Can be one of many actions supporting the broader strategy.

# Virginia Flood Protection Master Plan

Flood Resilience Strategies in the Plan

# VFPMP Draft Strategy Review

During the February 2025 Flood Resilience Advisory Committee meeting, members reviewed and commented on flood resilience strategy layouts from other states/regions.

- Members noted:
  - Flexibility in Strategy description/components to allow for state actors to integrate Strategy in programs where applicable
  - Clear connections between the Strategy and the plan's Goals/Objectives
  - Highlighting ongoing efforts related to the Strategy that could be further built upon

# VFPMP Draft Strategy Review

## Purpose of Review:

- Are all the correct elements included?
- Does each element have the correct level of detail? Does it include enough flexibility to integrate the Strategy into your own projects, policies, and programs?
- What elements do you think are the most effective in communicating the need for the Strategy?
- Is there anything missing?

# Mockup of VFPMP Draft Strategy



## Proactive Adaptation

We are proactively adapting and implementing solutions to enhance flood resilience outcomes.

The strategies under the Proactive Adaptation Theme focus on anticipating flood risks and implementing preemptive measures to enhance resilience. This involves investing in effective and innovative solutions, advancing infrastructure, deploying resilience tools, and supporting nature-based approaches. A key strategy focuses on integrating flood resilience best practices into the revision of plans, policies, and regulations, ensuring that Virginia's approach to flood management is both proactive and adaptive to emerging challenges.



### STRATEGY:

#### INVEST IN EFFECTIVE AND INNOVATIVE FLOOD RESILIENCE SOLUTIONS.

To advance flood resilience statewide, Virginia can implement a combination of proven, effective solutions and emerging, innovative approaches. State, regional, and local officials possess valuable insight into which solutions and tools work most effectively for certain scenarios. By deploying and promoting tested solutions, the state can increase its return on investment in flood resilience. Where uncertainty or knowledge gaps persist, pilot solutions can be deployed to evaluate the effectiveness of innovative flood resilience strategies. Designing programs and utilizing pilot efforts to address complex or region-specific flood risks also ensure the state's ability to adapt to future challenges.

By tracking both effective and innovative solutions implemented throughout the state, Virginia can establish itself as a leading example of a coordinated flood resilience program. This Strategy also allows state actors to identify and prioritize cost-effective solutions for the protection and adaptation of communities, in alignment with Virginia's resilience principle § 10.1-602, by promoting a comprehensive evaluation of all available options. Cost-effectiveness can be enhanced where networks with industry and academic partners can be leveraged to draw on their expertise and research to inform decision-making. Collaborative analysis of trade-offs and a holistic assessment of resilience solutions ensure that state programs operate in alignment, reducing the risk of isolated or conflicting actions.



#### DHCD RISE PROGRAM – PILOTING INNOVATIVE SOLUTIONS

Virginia's Department of Housing and Community Development (DHCD) partners with RISE, a nonprofit helping communities to address flooding by supporting innovative resilience projects. RISE works with localities to identify flood-related challenges and offers business loans to companies to pilot potential solutions on the community scale. Winning projects have focused on water management, data analytics, building protection, urban mobility, and more. Creating additional opportunities for partnerships between localities and businesses can enable real-world testing of emerging resilience concepts and promote economic development.

#### WHAT VFPMP OBJECTIVES DOES THIS STRATEGY HELP ACHIEVE?

Increase the adaptability and effectiveness of flood resilience strategies to potential future conditions and regional interests.

- Using the best available science and lessons learned from Virginia programs, state actors can deploy and help inform others of effective flood resilience solutions. Thorough analysis of all project and/or site parameters can allow decision-makers to determine the most robust solutions to be implemented despite uncertainty in future environmental conditions. Ongoing evaluation of a project's outcomes can help identify gaps where new approaches may be needed, allowing Virginia to remain adaptable to evolving and regional flood resilience needs

Increase the return on public investments in flood resilience.

- Assessing all project needs from the outset and determining whether an existing solution or tool can be deployed, or if a new solution is needed, will help Virginia make informed investments that advance flood resilience statewide. Decision-makers should prioritize the best available science, project lifespan, regional and community needs, cost-effectiveness, and the potential to leverage natural resources for flood mitigation when selecting the most appropriate solution. By making these strategic decisions, implemented solutions will be more effective in minimizing the impacts of flooding to businesses and infrastructure, thereby reducing economic burden to communities.

#### Emerging Opportunities

Facilitate innovative flood resilience policy and projects through pilot efforts.

Demonstrate effective risk mitigation strategies for state-owned infrastructure.





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First page of spread highlights VFPMP Theme name and Theme Description



17 VA Flood Protection Master Plan

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### STRATEGY:

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To advance flood resilience statewide, Virginia can implement a combination of proven, effective solutions and emerging, innovative approaches. State, regional, and local officials possess valuable insight into which solutions and tools work most effectively for certain scenarios. By deploying and promoting tested solutions, the state can increase its return on investment in flood resilience. Where uncertainty or knowledge gaps persist, pilot solutions can be deployed to evaluate the effectiveness of innovative flood resilience strategies. Designing programs and utilizing pilot efforts to address complex or region-specific flood risks also ensure the state's ability to adapt to future challenges.

By tracking both effective and innovative solutions implemented throughout the state, Virginia can establish itself as a leading example of a coordinated flood resilience program. This Strategy also allows state actors to identify and prioritize cost-effective solutions for the protection and adaptation of communities, in alignment with Virginia's resilience principle § 10.1-602, by promoting a comprehensive evaluation of all available options. Cost-effectiveness can be enhanced where networks with industry and academic partners can be leveraged to draw on their expertise and research to inform decision-making. Collaborative analysis of trade-offs and a holistic assessment of resilience solutions ensure that state programs operate in alignment, reducing the risk of isolated or conflicting actions.



#### DHCD RISE PROGRAM – PILOTING INNOVATIVE SOLUTIONS

Virginia's Department of Housing and Community Development (DHCD) partners with RISE, a nonprofit helping communities to address flooding by supporting innovative resilience projects. RISE works with localities to identify flood-related challenges and offers business loans to companies to pilot potential solutions on the community scale. Winning projects have focused on water management, data analytics, building protection, urban mobility, and more. Creating additional opportunities for partnerships between localities and businesses can enable real-world testing of emerging resilience concepts and promote economic development.

#### WHAT VFPMP OBJECTIVES DOES THIS STRATEGY HELP ACHIEVE?

Increase the adaptability and effectiveness of flood resilience strategies to potential future conditions and regional interests.

- Using the best available science and lessons learned from Virginia programs, state actors can deploy and help inform others of effective flood resilience solutions. Thorough analysis of all project and/or site parameters can allow decision-makers to determine the most robust solutions to be implemented despite uncertainty in future environmental conditions. Ongoing evaluation of a project's outcomes can help identify gaps where new approaches may be needed, allowing Virginia to remain adaptable to evolving and regional flood resilience needs

Increase the return on public investments in flood resilience.

- Assessing all project needs from the outset and determining whether an existing solution or tool can be deployed, or if a new solution is needed, will help Virginia make informed investments that advance flood resilience statewide. Decision-makers should prioritize the best available science, project lifespan, regional and community needs, cost-effectiveness, and the potential to leverage natural resources for flood mitigation when selecting the most appropriate solution. By making these strategic decisions, implemented solutions will be more effective in minimizing the impacts of flooding to businesses and infrastructure, thereby reducing economic burden to communities.

#### Emerging Opportunities

Facilitate innovative flood resilience policy and projects through pilot efforts.

Demonstrate effective risk mitigation strategies for state-owned infrastructure.

VFPMP Strategy title and description.

Description outlines the value of progressing the VFPMP Strategy statewide and the benefits if it is implemented.





## Proactive Adaptation

We are proactively adapting and implementing solutions to enhance flood resilience outcomes.

The strategies under the Proactive Adaptation Theme focus on anticipating flood risks and implementing preemptive measures to enhance resilience. This involves investing in effective and innovative solutions, advancing infrastructure, deploying resilience tools, and supporting nature-based approaches. A key strategy focuses on integrating flood resilience best practices into the revision of plans, policies, and regulations, ensuring that Virginia's approach to flood management is both proactive and adaptive to emerging challenges.



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Call out box of how the Strategy helps achieve VFPMP Objectives. For this Strategy, two Objectives are highlighted.

For all Strategies, up to three Objectives or three Prioritized Gaps will be highlighted to outline the value of the Strategy.





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Text highlighting a current state-level project or program that corresponds with the Strategy. This is meant to highlight how current work can be expanded to progress the Strategy.

Where an existing project/program does not exist for a VFPMP Strategy, a regional case study may be included to highlight how a similar effort can be implemented on the state level.





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#### Emerging Opportunities

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Demonstrate effective risk mitigation strategies for state-owned infrastructure.

Emerging Opportunities: More specific actions that could be implemented by state actors to progress the Strategy.

# VFPMP Draft Strategy Review

## Purpose of Review:

- Are all the correct elements included?
- Does each element have the correct level of detail? Does it include enough flexibility to integrate the Strategy into your own projects, policies, and programs?
- What elements do you think are the most effective in communicating the need for the Strategy?
- Is there anything missing?

# Virginia Flood Protection Master Plan

Evaluation Framework & Metrics Discussion

# VFPMP Metrics Development Review

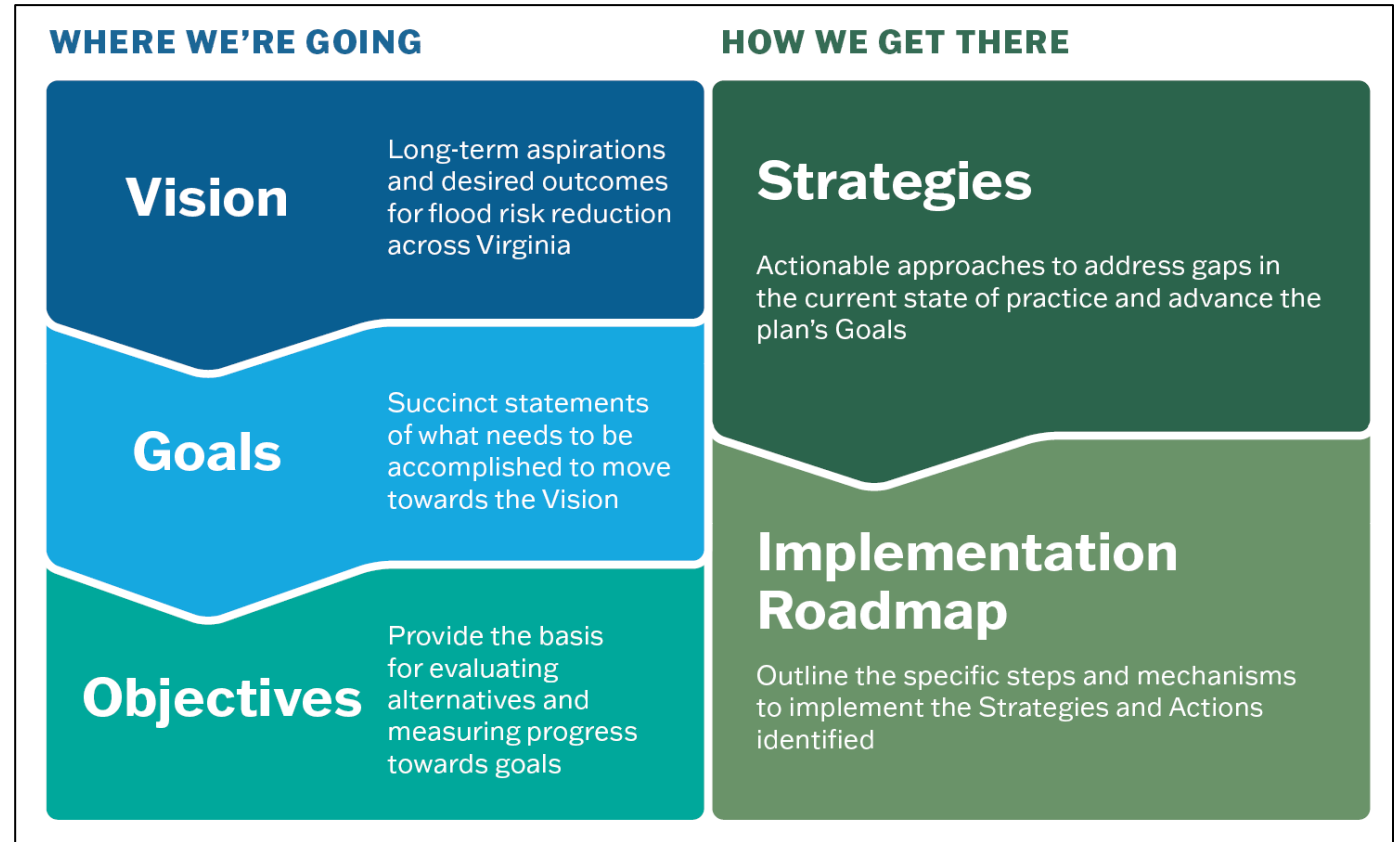
During the February 2025 Flood Resilience Advisory Committee meeting, members reviewed and commented on the goals, objectives, gaps, and strategy development process of the plan. A few items were noted regarding the metrics during the meeting

- Members noted:
  - A need to consider that many agencies are still developing their performance metrics
  - A need to focus on attainable metrics that tie back to the objectives

# VFPMP Evaluation Framework & Metrics Background

## Purpose of VFPMP Metrics:

- Utilize VFPMP data to track progress in mitigating flood risk
  - Expectation **is** to track how the risk is changing over time to be adaptable and responsive
  - Expectation **is not** to see large reductions in risk within a 5-year planning cycle
- Evaluate effectiveness of VFPMP Strategies in advancing VFPMP Goals and Objectives





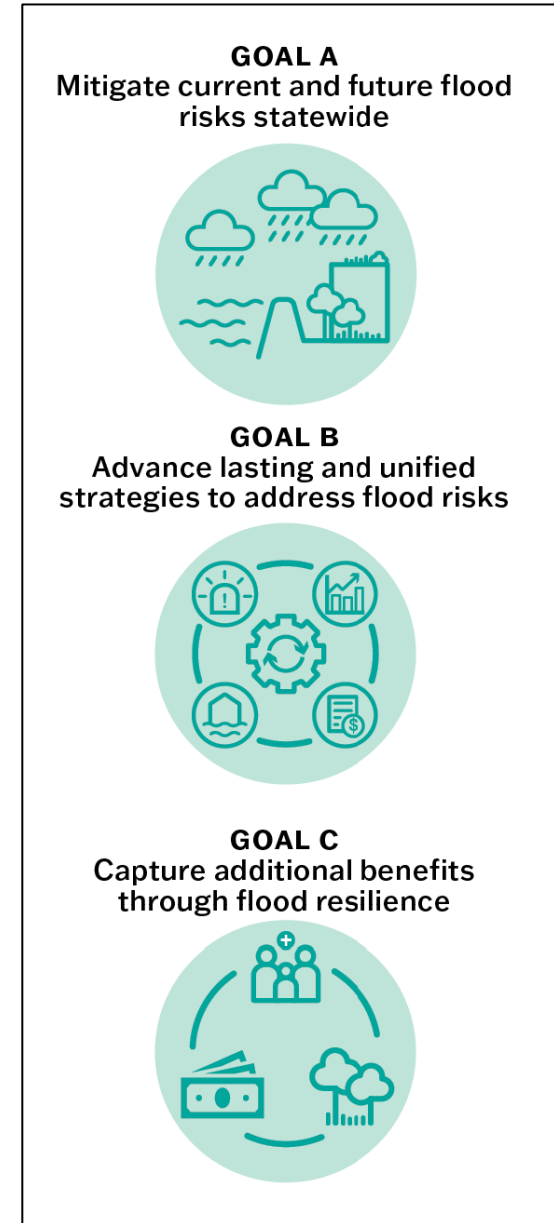
# VFPMP Evaluation Framework & Metrics Background

## Definitions:

- **Outcomes:** Where we're going
- **Outputs:** How we get there
- **Benchmarks:** Signposts/more specific reference points to measure progress along the way (for both outcomes and outputs)

## Evaluation Focus:

- Goal A evaluation utilizes **existing data** to track **outcomes** tied to flood risk reduction impacts on people, the economy, and the environment
- Goal B & C evaluation utilizes **benchmarks** of programs and policies to track **outputs**



# VFPMP Metrics – Guiding Questions

Questions to Consider for Developing Metrics:

- Is this structure/organization of metrics successful in communicating what needs to be tracked for advancing VFPMP Goals/Objectives?
- Is this level of detail appropriate for what you need to track progress within your own programs and projects?
- Does this achieve your expectations for how to track the success of the VFPMP?



# VFPMP Goal A Monitoring & Evaluation Structure



## *People*

- Decrease injuries and fatalities from flood events



## *Economy & Built Environment*

- Increase public funding invested in mitigation.
- Decrease annualized losses from flood events.
- Decrease expected annual damage from flood events.
- Decrease the number of buildings and properties in mapped floodplains.



## *Natural and Cultural Resources*

- Increase acres of natural habitat protected or restored.
- Decrease the number and area of historic and cultural sites damaged during flood events.

## **GOAL A**

**Mitigate current and future  
flood risks statewide**



A1. Reduce negative effects on human health from flooding.

A2. Reduce negative impacts to vulnerable populations from flooding.

A3. Reduce flood damage to buildings and infrastructure.

A4. Reduce economic disruptions and losses from flooding.

A5. Reduce negative effects to natural and cultural resources from flooding.

# VFPMP Goals B & C Monitoring & Evaluation Structure

## GOAL B

Advance lasting and unified strategies to address flood risks



B1. Increase understanding of current and potential future flood risks.

B2. Strengthen the ability to prepare for and manage flood risks.

B3. Increase the adaptability and effectiveness of flood resilience strategies to potential future conditions and regional interests.

B4. Increase the return on public investments in flood resilience.

B5. Increase the accessibility of flood resilience resources, opportunities, and information for all Virginians.

## GOAL C

Capture additional benefits through flood resilience



C1. Improve health and quality of life through flood resilience.

C2. Boost the economy through flood resilience.

C3. Enhance the natural environment through flood resilience.

# VFPMP Goals B & C Monitoring & Evaluation Structure

For Goals B & C:

- More qualitative approach than Goal A evaluation
- Evaluation involves assigning the VFPMP Strategies as outputs for each Objective
- For each VFPMP Strategy, benchmarks are also identified to describe what success could tangibly look like

**VFPMP Strategy (output) + Success Indicator (benchmark) = Evaluation of Goal**

# Goals B & C Monitoring & Evaluation Framework Structure – Example

EXAMPLE TABLE: Goal B-Objective 1-Increase Understanding of Current and Potential Future Flood Risks

OUTPUTS: Which strategies advance this objective?	BENCHMARKS: How will we know if this strategy is successfully achieving the objective?
A3 Encourage the incorporation of flood resilience best practices during revisions of plans, policies, regulations, codes, and standards.	Plans, etc. will show evolving flood risk standards over time through multiple cycles of updates. Plans, etc. may be updated outside of a regular update cycle if there is new flood risk information.
B1 Provide assistance and expand engagement for local, regional, and tribal governments on flood resilience.	Assistance and engagement includes relevant flood risk information for their area and understanding of how and when to apply it in a local context.
D1 Establish a statewide comprehensive flood data management program.	Flood data are accessed from throughout the state and are used (as in A3 and B1).
D2 Establish data-informed decision-making framework for prioritizing flood resilience actions.	Flood data are accessed and used in decision-making and prioritization of actions. State agency leaders and localities all understand and accept the framework for prioritization.
E1 Expand the flood resilience knowledge of state agencies.	Agency plans, projects, and programs incorporate flood resilience, and agency staff and leaders regularly push to expand their flood resilience capabilities and reach.
E2 Routinely assess and adapt state agency roles, responsibilities, and authorities in flood resilience.	Roles and responsibilities for flood resilience are catalogued by a lead implementer and assessed according to a well-understood process and timeline. Flood resilience projects and programs proceed more smoothly because of well-characterized roles and responsibilities.
F1 Coordinate among applicable personnel across state agencies to increase their awareness and responsiveness to flood resilience.	Agencies offer opportunities and venues for coordination of key personnel to improve flood resilience. Gatherings, communication channels, and other pathways to coordination are used frequently and are valued by key personnel.

## VFPMP Metrics – Feedback

Questions to Consider for Developing Metrics:

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- Is this level of detail appropriate for what you need to track progress within your own programs and projects?
- Does this achieve your expectations for how to track the success of the VFPMP?

*Additional Questions or Comments*

# Virginia Flood Protection Master Plan

## Next Steps



# Member Updates

# Public Comment

# Contact and Additional Information



**Flood Committee FOIA Officer – Breanne Lindsey:**  
[flood.resilience@dcr.virginia.gov](mailto:flood.resilience@dcr.virginia.gov)

**Flood Committee Website:**  
<https://www.dcr.virginia.gov/dam-safety-and-floodplains/flood-resilience-advisory-committee>

