Virginia Coastal Resilience Technical Advisory Committee

Project Prioritization Quarterly Subcommittee Meeting

Thursday, February 15, 2024, 10:00 am

Training Room, Boulders Building VII

7325 Beaufont Springs Drive, Richmond, VA 23225

Virtual Access: Register Online

Ken Pfeil (Chair)	Office of Data Governance and Analytics
Marcus Thornton (A)	
Kellen Singleton	Accomack-Northampton Planning District Commission
Jack Krolikowski	American Flood Coalition
Jay Ellington	Crater Planning District Commission
Andrew Franzyshen (A)	
Ben McFarlane	Hampton Roads Planning District Commission
Whitney Katchmark (A)	
Brianna Heath	Northern Neck Planning District Commission
Sarah Stewart	PlanRVA
Eli Podyma (A)	
Chris Swanson	Virginia Department of Transportation
Christopher Berg (A)	
Jamie Green	Virginia Marine Resources Commission
Rachael Peabody (A)	
Randy Owen (A)	
Scott Whitehurst	Virginia Port Authority
Mary-Carson Stiff	Wetlands Watch
Ian Blair (A)	

Meeting Agenda

1. Call to Order, Roll Call
2. Adoption of Agenda
3. Adoption of Q4 2023 Meeting Minutes
4. Subcommittee Overview
5. Old Business
   a. End-User Survey update
   b. Impact Assessment approach
6. New Business
   a. Projects and Initiatives update
   b. Subcommittee discussion
7. Public Comment
8. Action Items, Scheduling
9. Adjourn

Coastal Resilience Master Plan, Phase II

Purpose

A **place-specific** plan for mitigating severe and repetitive flooding.

Incorporates:

- **all major flood hazards**, including precipitation-driven flooding
- a **comprehensive risk assessment** of critical human and natural infrastructure
- **a list of all projects** considered and an update of the status of all projects previously implemented

Elements

1. Flood Hazard Exposure Model
2. **Flood Hazard Impact Assessment**
3. **Planned Resilience Actions**
4. Financial Needs for Flood Resilience
5. **TAC Subcommittee Recommendations**

Details

- Dec. 2024 timeline for delivery
- Updated every five years
- Est. in Code §10.1-658, 659

Subcommittee Objectives

1. **Inform and support the flood hazard risk assessment.**

    *   Specifically: the asset data inputs; the approach to quantifying the vulnerability of assets; and impact assessment outputs needed to support decision-making, coordination, and collaboration.

2. **Inform and support the identification of planned resilience actions.**

    *   Specifically, identify shared themes, and gap trends between projects and initiatives submitted to the Coastal Resilience Web Explorer User Portal.

3. **Develop recommendations for future planning.**
    This includes, but is not limited to:

    *   Identify goals and associated metrics for resilience that should be used to determine project/needs evaluation and prioritization in future plans.

    *   Develop objective protocols for evaluating and prioritizing identified project **needs** for the Coastal Region.

    *   Develop a process and objective protocols for evaluating and prioritizing resilience **actions**. (Consider separate evaluation protocols for critical human, built, and natural infrastructure needs.)

Subcommittee Schedule

Q3 2023	CRMP PII – Impact Assessment Outputs
Q4 2023	CRMP PII – Impact Assessment Outputs + Inputs
Q1 2024	**CRMP PII – Impact Assessment Approach**
	CRMP PII – Discuss Planned Resilience Actions
Q2 2024	CRMP PII – Analyze Planned Resilience Actions
	Future Plans – Recommendations
Q3 2024	CRMP PII – Analyze Planned Resilience Actions
	Future Plans – Recommendations
Q4 2024	Future Plans – Final Recommendations

General Updates

Contractor Support for CRMP Phase II

Dewberry:

- Flood hazard data

- Impact assessment

- End user survey analysis

- Web explorer update mock-up

Status: in progress

TBD Contractor:

- Projects & initiatives analysis
  - Includes assistance to end users to submit projects

- Financial tools and information

- Outreach and engagement

- Final report development

- Web explorer updates

Status: DCR selecting consultant

Old Business
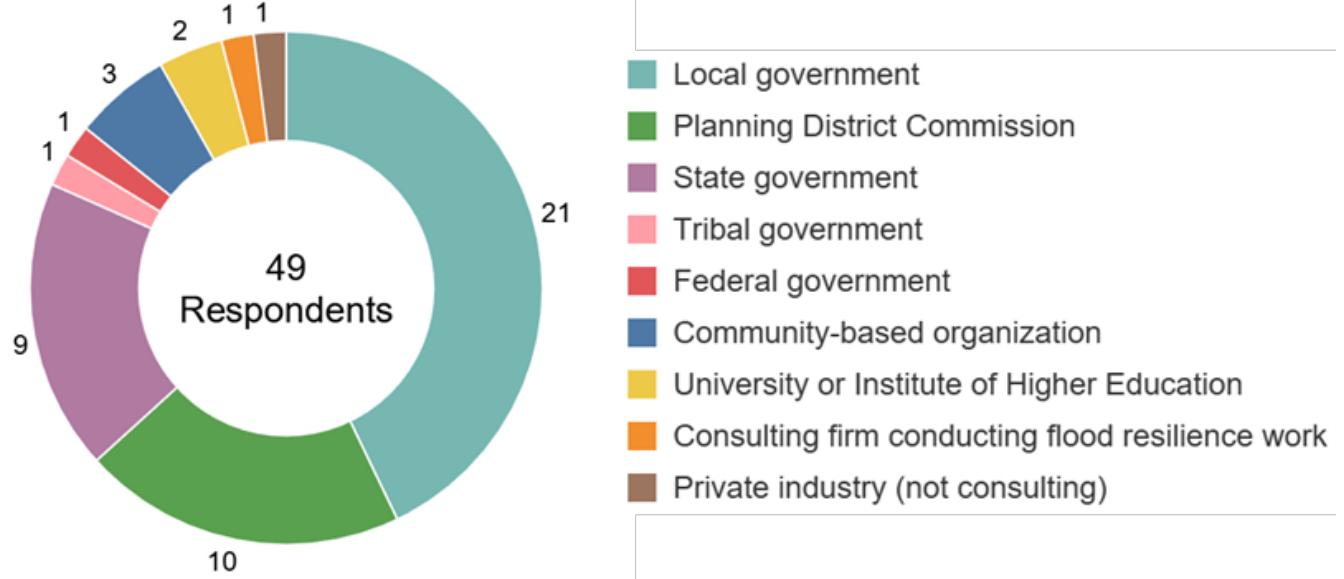
End-User Survey update

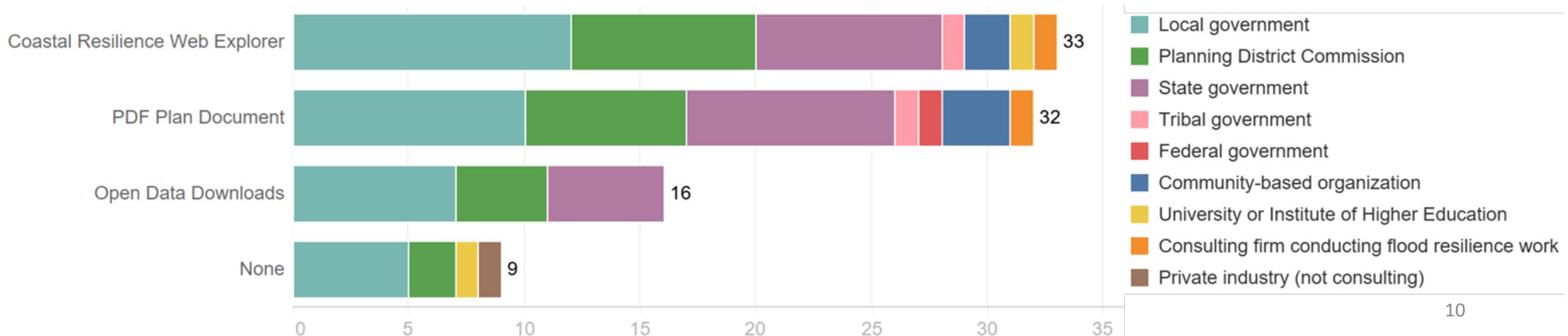Impact Assessment approach

End-User Survey Update

Key Takeaways:

- 49 total responses, 41 of which were from our desired end users.

- Most respondents think the Phase I products are useful.
  - The Web Explorer is most used
  - Open data downloads are least used

- The CRMP products have previously been utilized for a wide variety of use cases
  - Across all use cases, many more respondents said they will use the products in the future than said they have used the products previously.

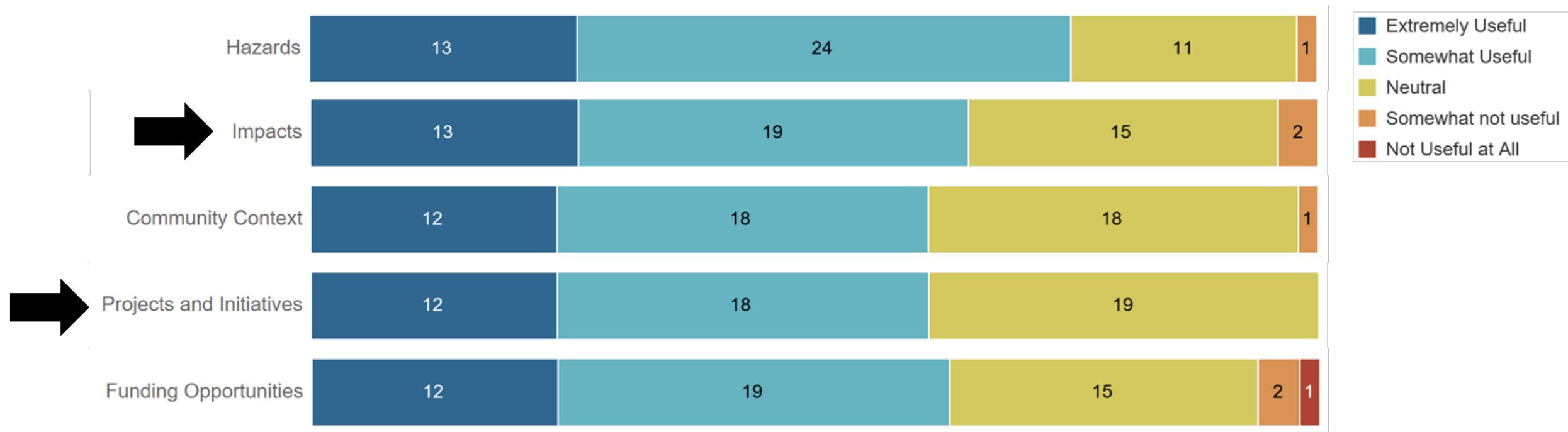- Respondents see clear opportunities for the Commonwealth to support flood resilience.
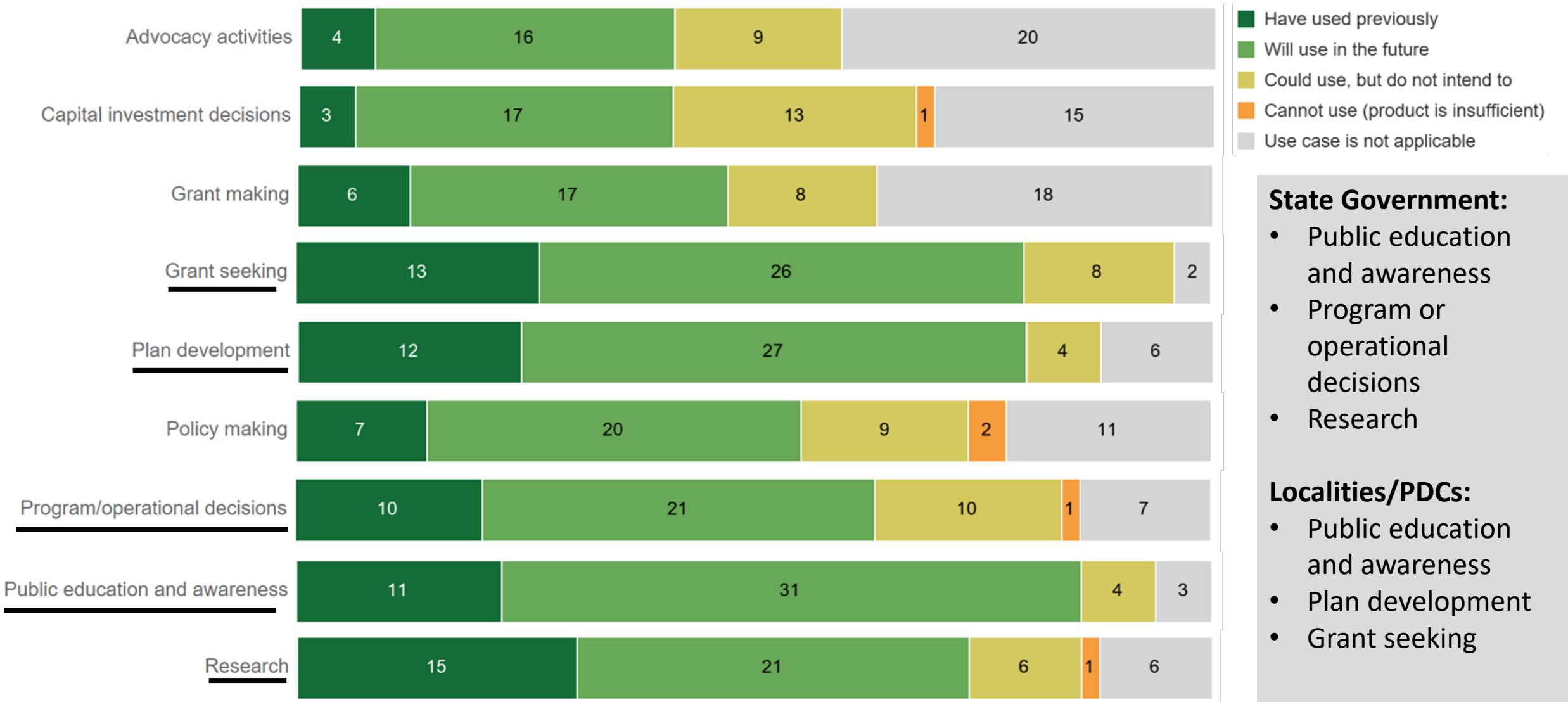
Who responded?

49 Respondents

Legend:
- Local government — 21
- Planning District Commission — 10
- State government — 9
- Tribal government — 1
- Federal government — 1
- Community-based organization — 3
- University or Institute of Higher Education — 2
- Consulting firm conducting flood resilience work — 1
- Private industry (not consulting) — 1

What products have they used?

Product	Total
Coastal Resilience Web Explorer	33
PDF Plan Document	32
Open Data Downloads	16
None	9

Legend:
- Local government
- Planning District Commission
- State government
- Tribal government
- Federal government
- Community-based organization
- University or Institute of Higher Education
- Consulting firm conducting flood resilience work
- Private industry (not consulting)

Is the Coastal Resilience Web Explorer useful?

How can the Phase I products be used?

Use case	Have used previously	Will use in the future	Could use, but do not intend to	Cannot use (product is insufficient)	Use case is not applicable
Advocacy activities	4	16	9		20
Capital investment decisions	3	17	13	1	15
Grant making	6	17	8		18
Grant seeking	13	26	8		2
Plan development	12	27	4		6
Policy making	7	20	9	2	11
Program/operational decisions	10	21	10	1	7
Public education and awareness	11	31	4		3
Research	15	21	6	1	6

State Government:
- Public education and awareness
- Program or operational decisions
- Research

Localities/PDCs:
- Public education and awareness
- Plan development
- Grant seeking

Opportunities for improvement

Most respondents think the impact assessment and projects & initiatives data from Phase I are useful, but there are opportunities for improvement.

Impact Assessment:
- Include impacts from all forms of flooding.
- Communicate more of the impacts in dollar terms.
- Include information about flood insurance coverage and gaps.
- Improve access to data behind the impact assessment via web explorer, open data downloads.

Planned Resilience Actions:
- Highlight examples of how the plan is being used.
- Further integrate and align the plan with other state plans, including the HMP.
  - Include a narrative about coordination between state agencies and plans.
- Revise approach to selecting and describing example projects
  - Ensure example projects address the most pressing regional needs.
  - Add icons for project types; add descriptions or scores of population served.
- Include more specific actions to guide other state planning work.
- Improve and expand on the inventory of past, present, and future resilience work so that it is a more user-friendly and living database.

Subcommittee Discussion

End-User Survey Feedback

Impact Assessment Approach

Dewberry Presentation

Impact Assessment Process

In Dewberry scope

In future scope

Asset List Review
Developing the base asset database

Methodology Review
Updating the impact calculation methodology

Impact Assessment and Data Summary
Overlay hazards data on assets to estimate impacts.

Data Review and Story Development
Identify and summarize the most important findings to communicate in the plan.

Final Product Design and Delivery
Communicate the key data and stories in the plan.

January - April

March - July

July – September

August - December

Flood hazard data inputs are due in April.

Will also incorporate qualitative data and input, and separate contextual data analysis.

VIRGINIA COASTAL RESILIENCE MASTER PLAN

DCR
Virginia Department of Conservation & Recreation

Virginia Coastal Resilience Master Plan

Phase II Impact Assessment Updates

February 15, 2024

Goals of Impact Assessment Update

Revisit Phase I data and methods

Expand flood hazard types assessed

Expand set of impact indicators

Improve data quality

New data products

Dewberry

Updates

Data

- Restructuring asset data types
- Inclusion of fluvial and pluvial flood hazards
- Expanded QC

Methodology

- Impacts for new hazard and asset types
- Expanded vulnerability and risk assessments for select asset types
- Summarizing results across new geographies (incl. HUCs)

Dewberry

Data Overview

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Asset Data

- Differentiate between human and built infrastructure (formerly grouped as critical sectors)

- Infrastructure sectors align with VDEM approach (CISA)

Community Resources

Built Infrastructure

Human Infrastructure

Natural Infrastructure

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Hazard Data

Coastal Flooding

Tidal/Nuisance   Storm Surge

- Included in previous CRMP
- Updated SLR to planning horizon links
- Multi-frequency flood data available

Precipitation

- New flood hazard added to CRMP
- Relies on ATLAS 14 and MARISA data
- Multi-frequency flood data available
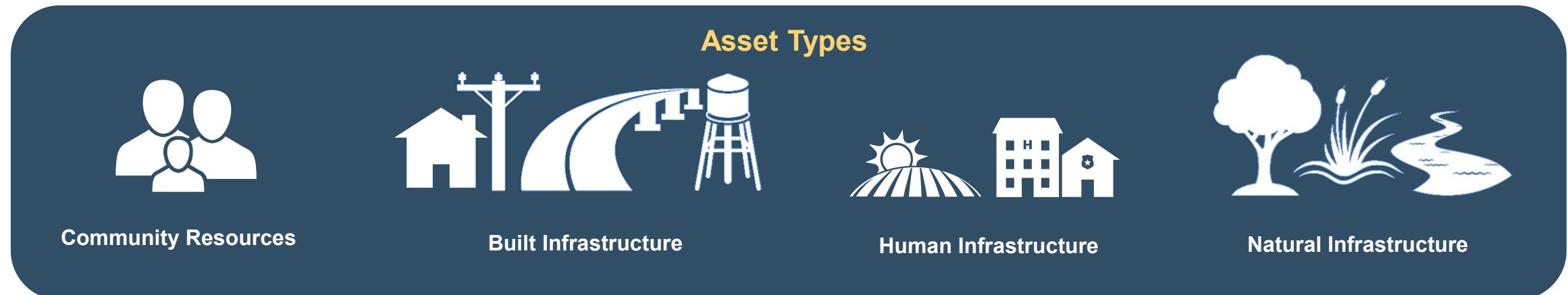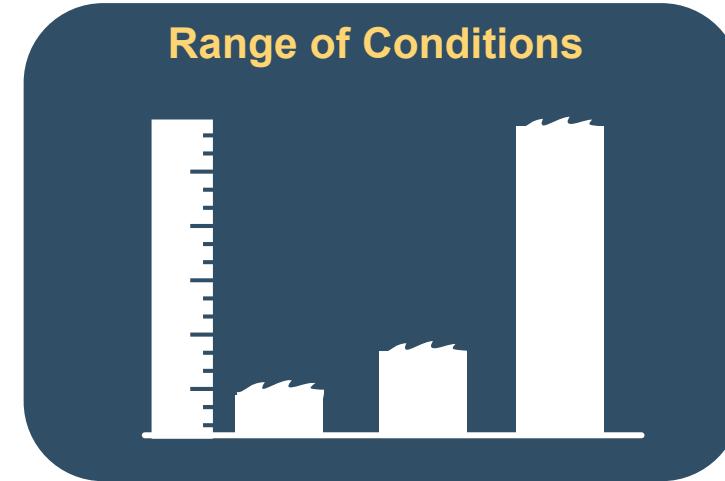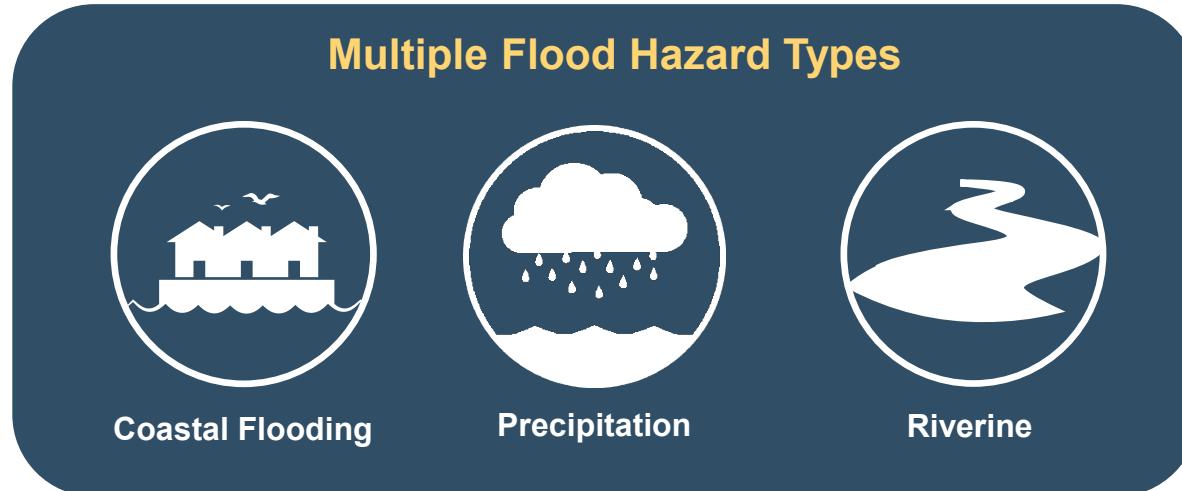
Riverine
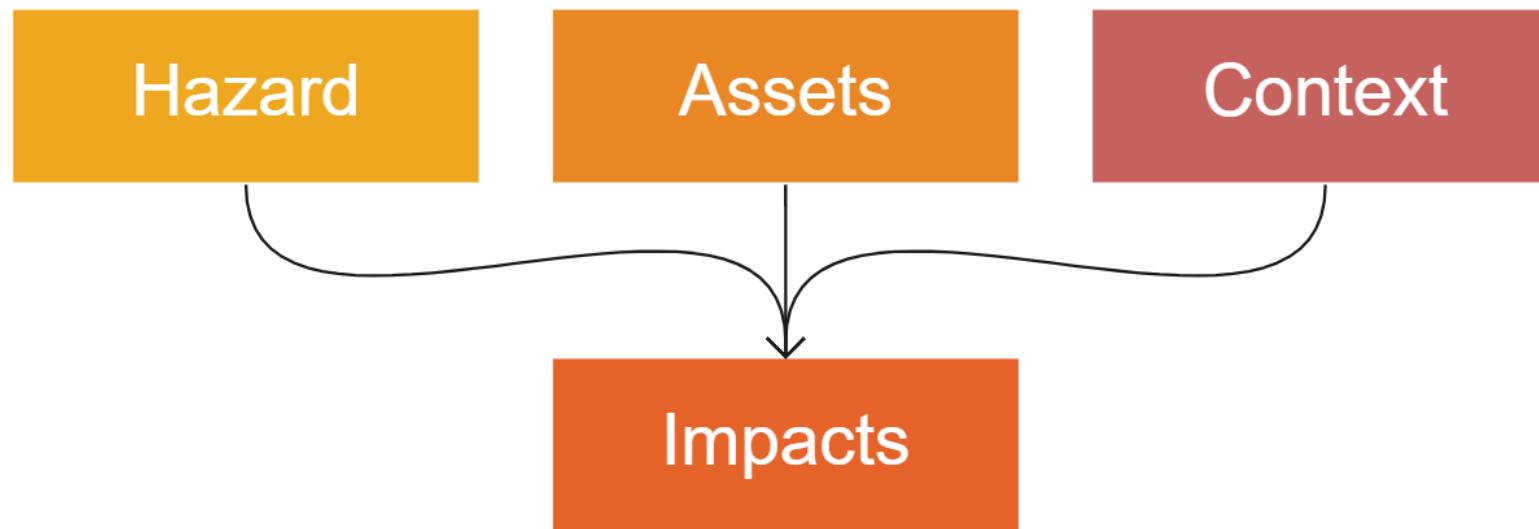
- New flood hazard added to CRMP
- Leveraging FEMA floodplain zones
- Multi-frequency data in select pilot locations

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Impact Assessment Methods

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Impact Assessment

Multiple Flood Hazard Types

Coastal Flooding

Precipitation

Riverine

Range of Conditions

Asset Types

Community Resources

Built Infrastructure

Human Infrastructure

Natural Infrastructure

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Impact Assessment Components

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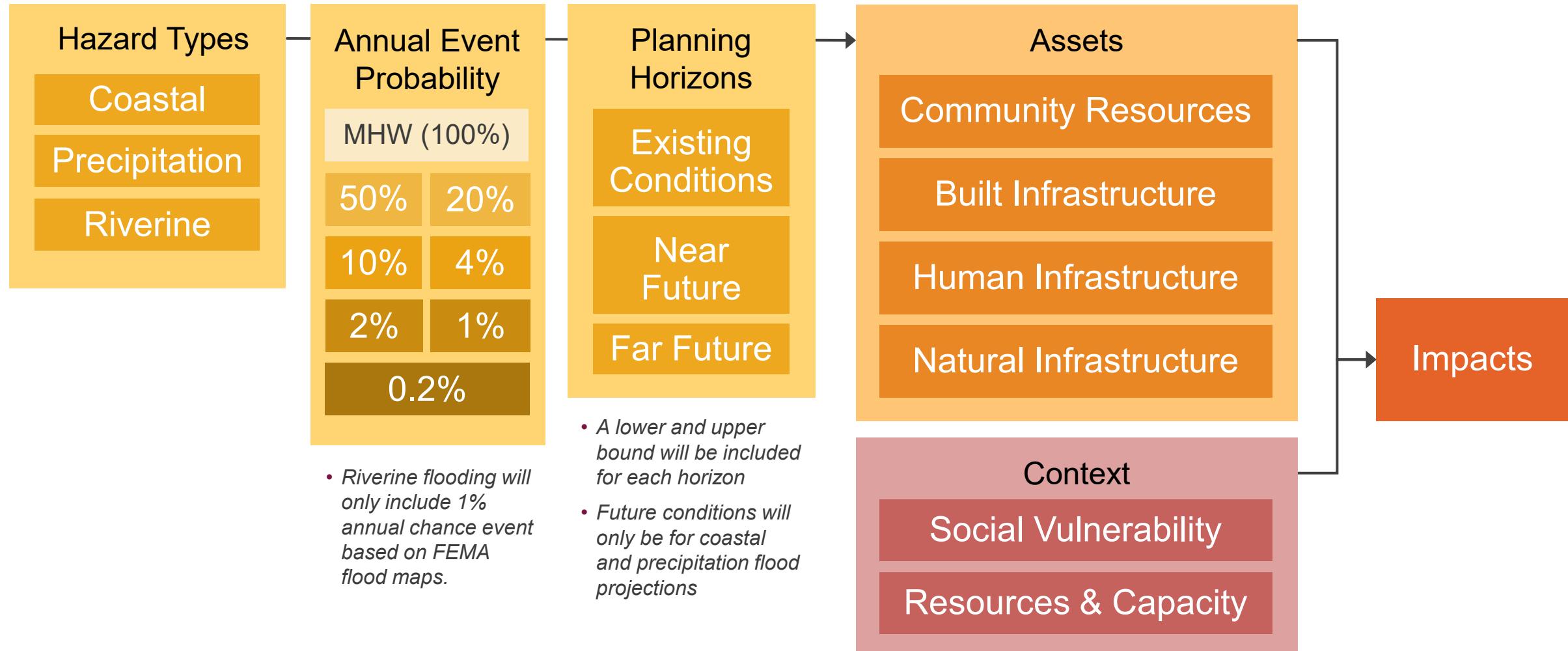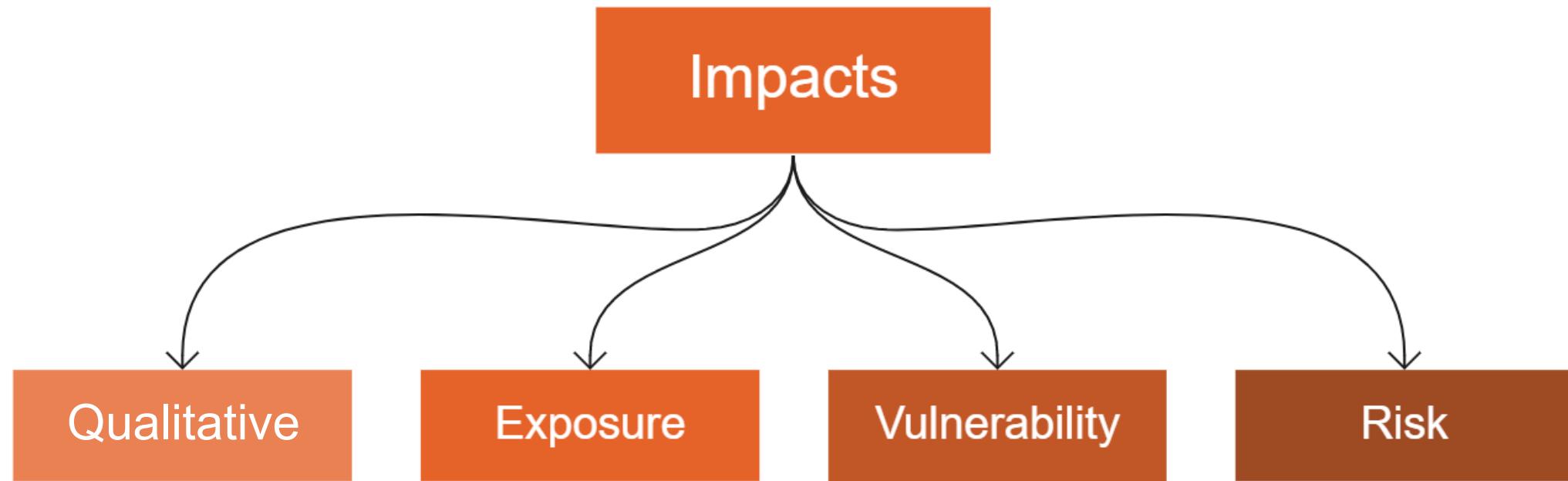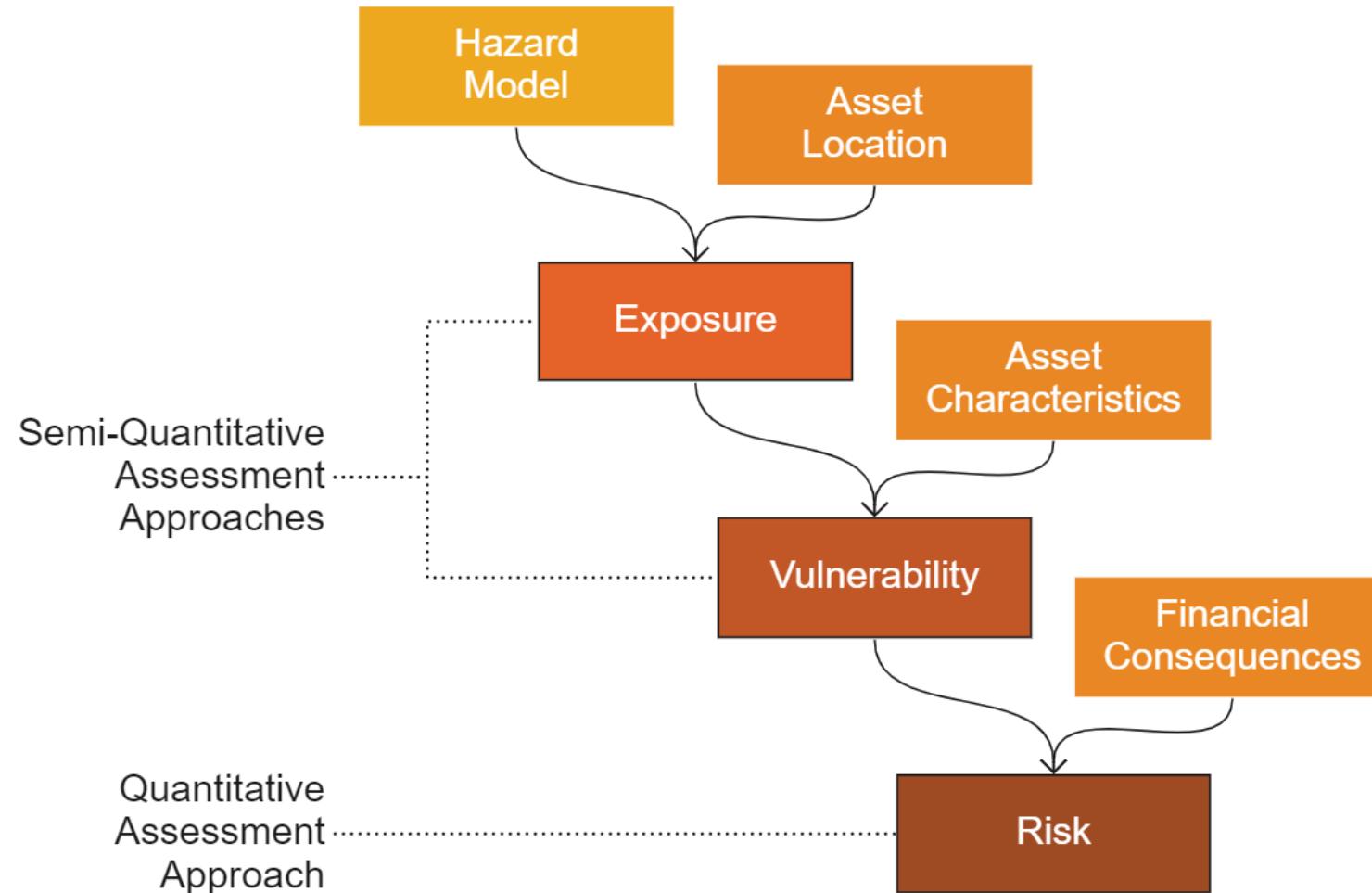
Quantitative Impact Assessment Components
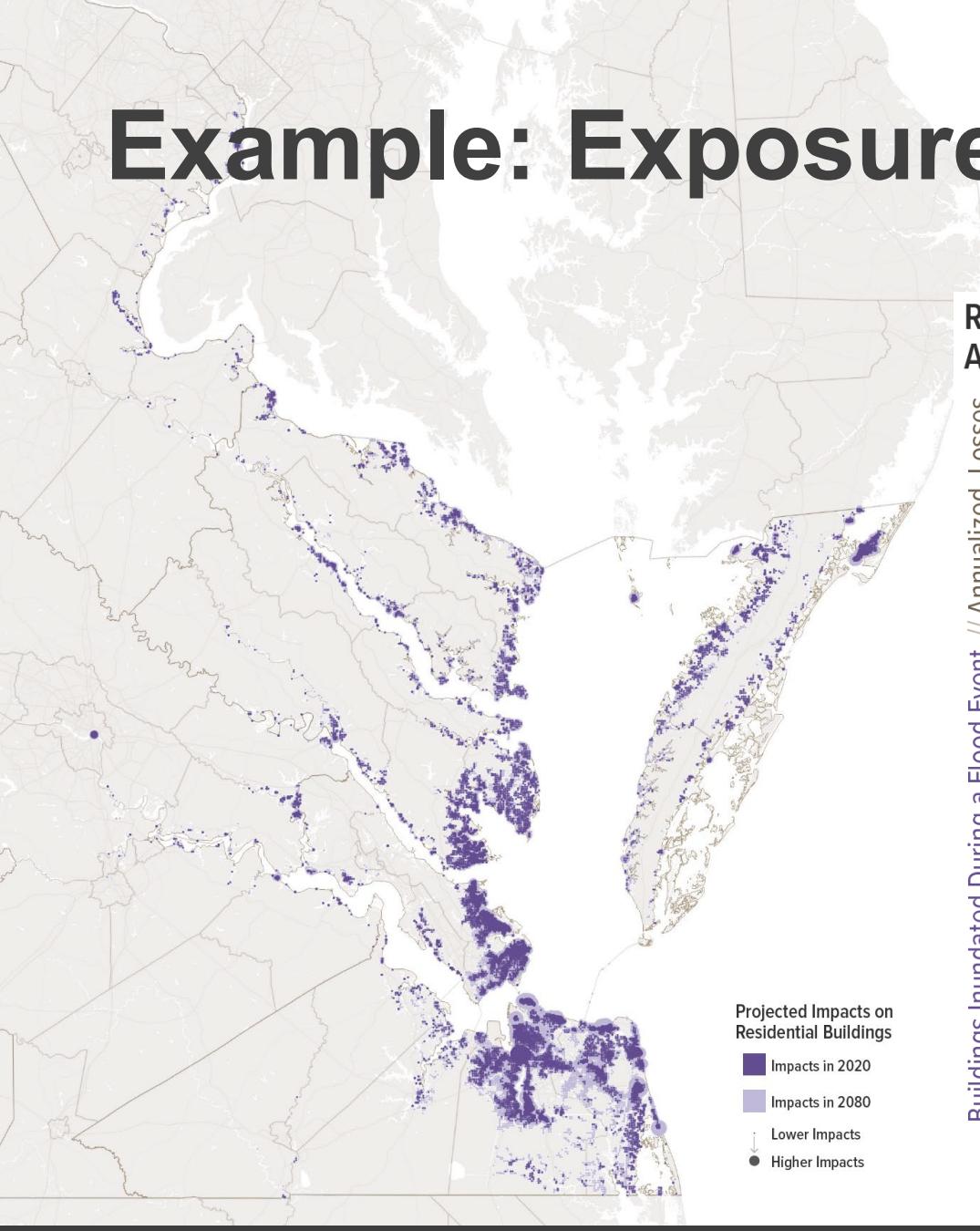
Progressive Levels of Impact Details
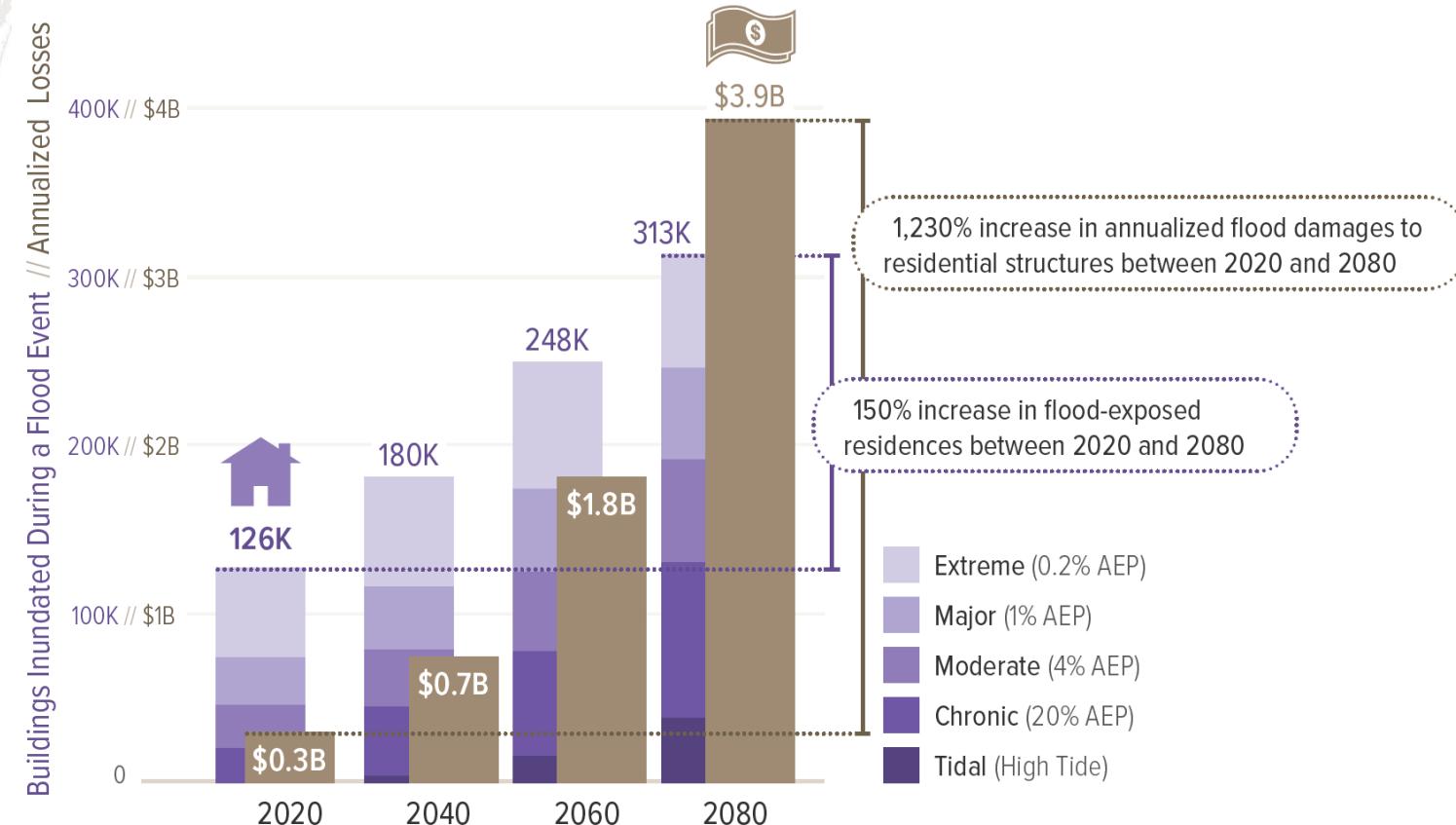
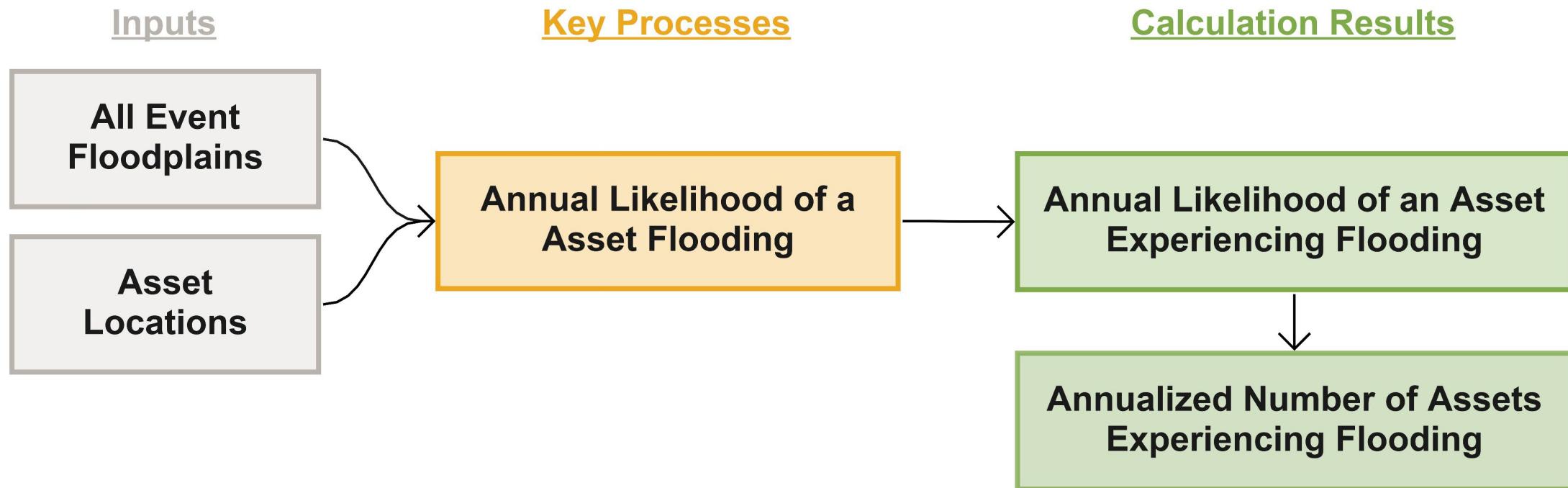# Progressive Levels of Impact Details

Example: Exposure vs. Risk

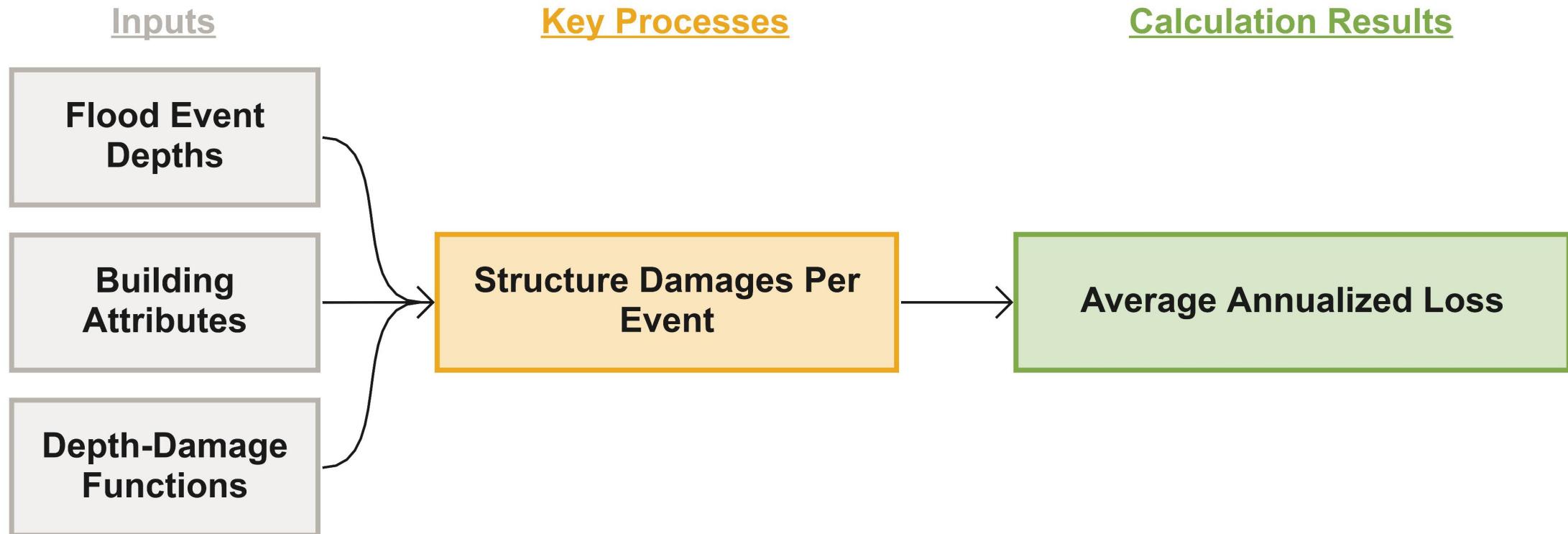Residential Building Exposure Across Event Types and Averaged Annualized Loss

Buildings Inundated During a Flood Event // Annualized Losses

- 400K // $4B
- 300K // $3B
- 200K // $2B
- 100K // $1B
- 0

2020: 126K, $0.3B
2040: 180K, $0.7B
2060: 248K, $1.8B
2080: 313K, $3.9B

1,230% increase in annualized flood damages to residential structures between 2020 and 2080

150% increase in flood-exposed residences between 2020 and 2080

Legend:
- Extreme (0.2% AEP)
- Major (1% AEP)
- Moderate (4% AEP)
- Chronic (20% AEP)
- Tidal (High Tide)

Projected Impacts on Residential Buildings
- Impacts in 2020
- Impacts in 2080
- Lower Impacts
- Higher Impacts

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Impact Detail Across Flood Hazards & Assets

	Narrative	Exposure	Vulnerability	Risk
Coastal	All Assets	All Multi-Frequency	Some Assets	Some Assets
Precipitation				
Riverine		All Single Frequency		
Combined				

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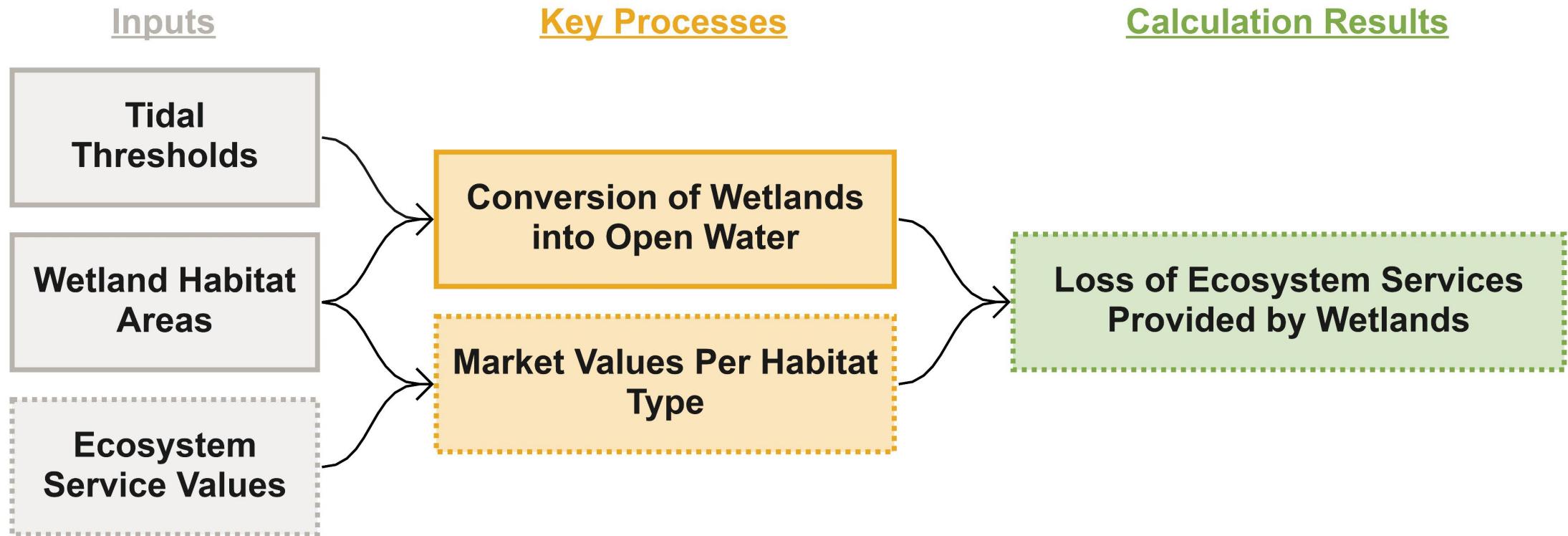
Process for Assessing Asset Flood Exposure

Inputs

Key Processes

Calculation Results

All Event Floodplains

Asset Locations

Annual Likelihood of a Asset Flooding

Annual Likelihood of an Asset Experiencing Flooding

Annualized Number of Assets Experiencing Flooding

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Process for Assessing Flood Structure Risk

Inputs

Key Processes

Calculation Results

Flood Event Depths

Building Attributes

Depth-Damage Functions

Structure Damages Per Event

Average Annualized Loss

Dewberry

Process for Assessing Loss of Habitat

Inputs

Key Processes

Calculation Results

Tidal Thresholds

Wetland Habitat Areas

Ecosystem Service Values

Conversion of Wetlands into Open Water

Market Values Per Habitat Type

Loss of Ecosystem Services Provided by Wetlands

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Community Resources

Asset Data Sources	Metrics	Level
Population-Attributed Building Footprints *(Lightbox, Census)*	Population Exposed (#), ALF (%)	Exposure
	Population Displacement (#)	Vulnerability
Residential Building Footprints & Parcels *(Lightbox)*	Buildings Exposed (#), ALF (%)	Exposure
	Damages ($), AAL ($)	Risk
Public, Religious, Commercial, Industrial, Agricultural Building Footprints & Parcels *(Lightbox)*	Buildings Exposed (#), ALF (%)	Exposure
	Damages ($), AAL ($)	Risk
Tribal-Owned Lands *(Census)*	Annualized Inundated Acres (ac)	Exposure
	Land Lost (ac)	Vulnerability
Structures* on Tribal-Owned Lands *(Census, Lightbox)*	Buildings Exposed (#), ALF (%)	Exposure
	Damages ($), AAL ($)	Risk
Cultural Resource Preservation Index *(DCR/DHR)*	ALF (%)	Exposure
Nature Based Recreational Access *(DCR)*	ALF (%)	Exposure
Development Vulnerability Model *(DCR)*	ALF (%)	Exposure
Watershed Impact Model *(DCR)*	ALF (%)	Exposure

*Overlap with other components   ALF = Annual Likelihood of Flooding   AAL = Average Annualized Loss

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Built Infrastructure (Pt 1)

New Source

Asset Data Sources	Metrics	Level
Building Footprints on Commercial Parcels *(Lightbox)*	Buildings Exposed (#), ALF (%)	🟧 Exposure
	Damages ($), AAL ($)	🟫 Risk
Phone, Radio, & TV transmitters *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Broadband Internet transmitters *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
EPA Toxic Substance Control Act Facilities *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
DoD Sites *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
DoD Federal Land *(ESRI)*	Annualized Inundated Acres (ac)	🟧 Exposure
	Land Lost (ac)	🟫 Vulnerability
Electric Substations & Power Plants *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Nuclear Power Plants *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Petroleum & Natural Gas Infrastructure *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure

*Overlap with other components

ALF = Annual Likelihood of Flooding
AAL = Average Annualized Loss

Built Infrastructure (Pt 2)

Asset Data Source(s)	Metrics	Level
General Manufacturing (HIFLD)	Assets Exposed (#), ALF (%)	▬ Exposure
Airports	Assets Exposed (#), ALF (%)	▬ Exposure
Freight, Ports, Bus, & Shipping Facilities (HIFLD, USDOT, VEDP, VGIN)	Assets Exposed (#), ALF (%)	▬ Exposure
Roadways & Evacuation Routes (VDOT, HIFLD, DRPT)	Miles Exposed (mi), ALF (%)	▬ Exposure
	Average Annualized Depth (ft)	▬ Vulnerability
Hazardous Waste Generators (DEQ)	Assets Exposed (#), ALF (%)	▬ Exposure
Solid Waste & Wastewater Treatment Facilities, Septic Systems (DEQ, VHD)	Assets Exposed (#), ALF (%)	▬ Exposure
Public Water Supply (VDH)	Assets Exposed (#), ALF (%)	▬ Exposure

ALF = Annual Likelihood of Flooding

Dewberry

Human Infrastructure

New Source

Asset Data Source(s)	Metrics	Level
Public Refrigerated Warehouses *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Building Footprints on Agricultural Parcels *(Lightbox)*	Buildings Exposed (#), ALF (%)	🟧 Exposure
	Damages ($), AAL ($)	🟫 Risk
Hospitals *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Emergency Operations Centers, *Shelters* *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
EMS, Fire Stations, Police Stations *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
State Government Buildings *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Childcare Facilities *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Public (K-12) Schools, Private (K-12) Schools *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Higher Education Facilities *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
Supplemental Colleges *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure
FDIC insured banks *(HIFLD)*	Assets Exposed (#), ALF (%)	🟧 Exposure

*Overlap with other components

ALF = Annual Likelihood of Flooding
AAL = Average Annualized Loss

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Natural Infrastructure

New Source

Asset Data Source(s)
Land Cover Data (Chesapeake Conservancy/VSLCD)
Nature and Nature Based Features at elev < 10 ft (VIMS)
Unprotected lands with high conservation value *(DCR)*
Biodiversity priority and lands around conserved lands *(DCR)*
Predicted suitable habitat for sensitive species *(DCR)*
Agriculture and Forestry *(DCR)*
Conserved Lands *(DCR)*

Metrics	Level
Acres Exposed (ac), Annualized Inundated Acres (%)	Exposure
Acres of inter-tidal areas lost to open water at MLW (ac)	Vulnerability
Acres of upland lost to inter-tidal at ~1.5 x MTR (ac)	Vulnerability
Change in tidal acreage (ac)	Vulnerability
Value of Ecosystem Services Lost ($)	Risk

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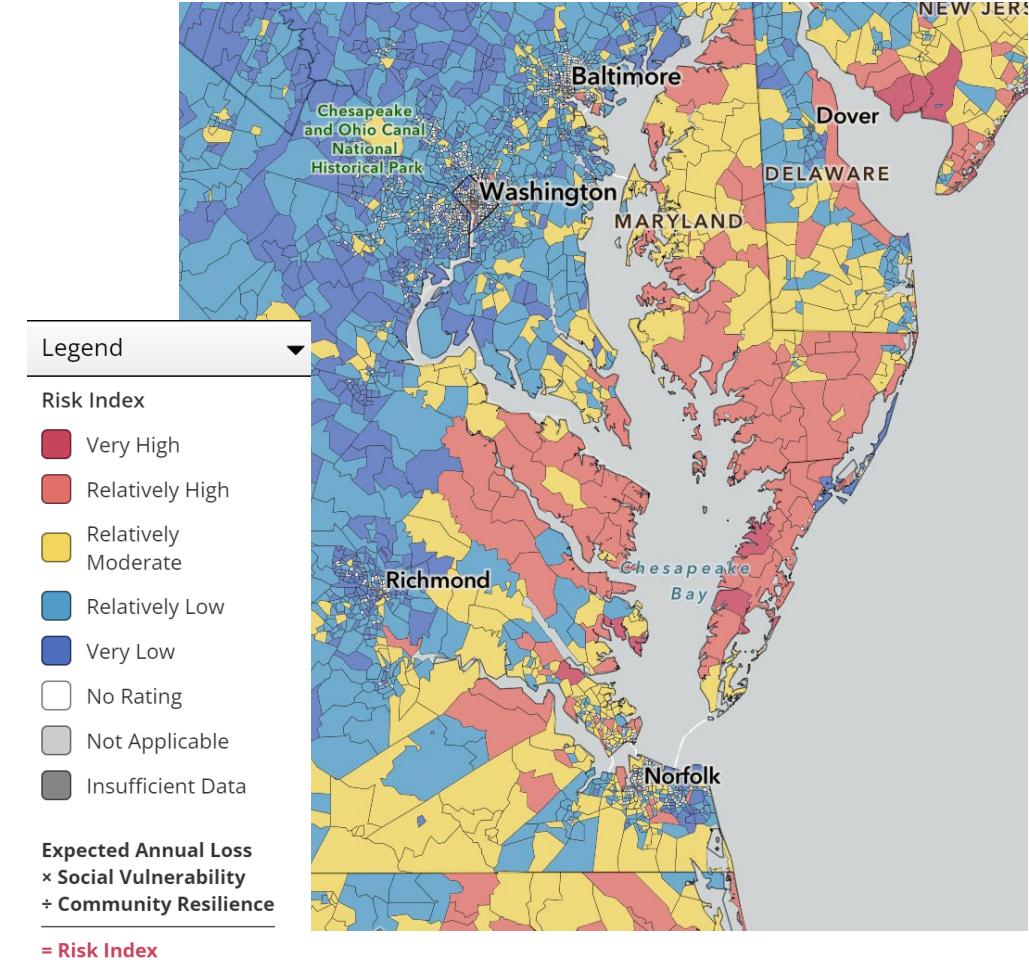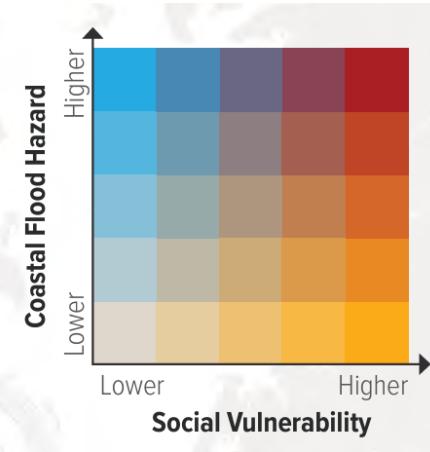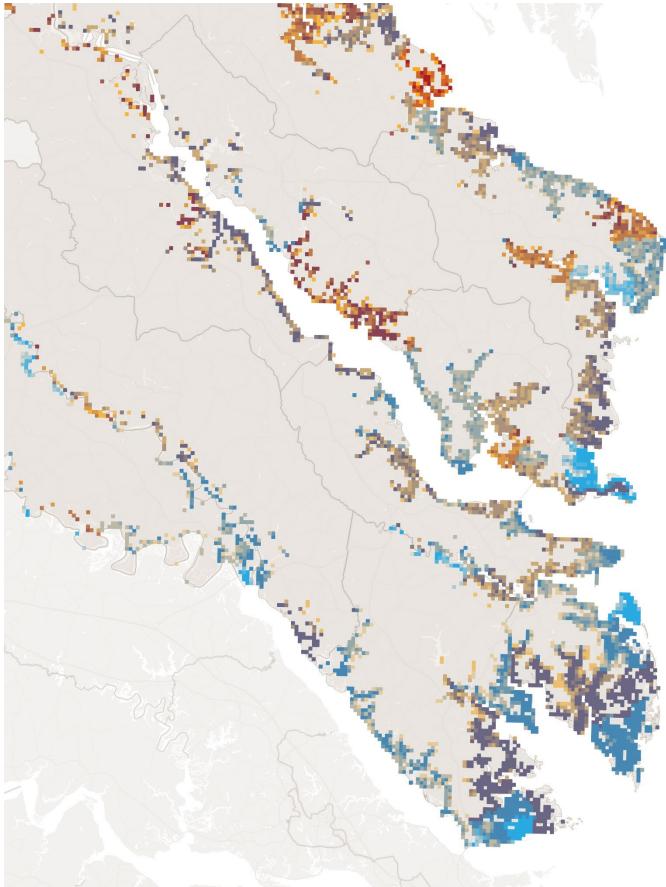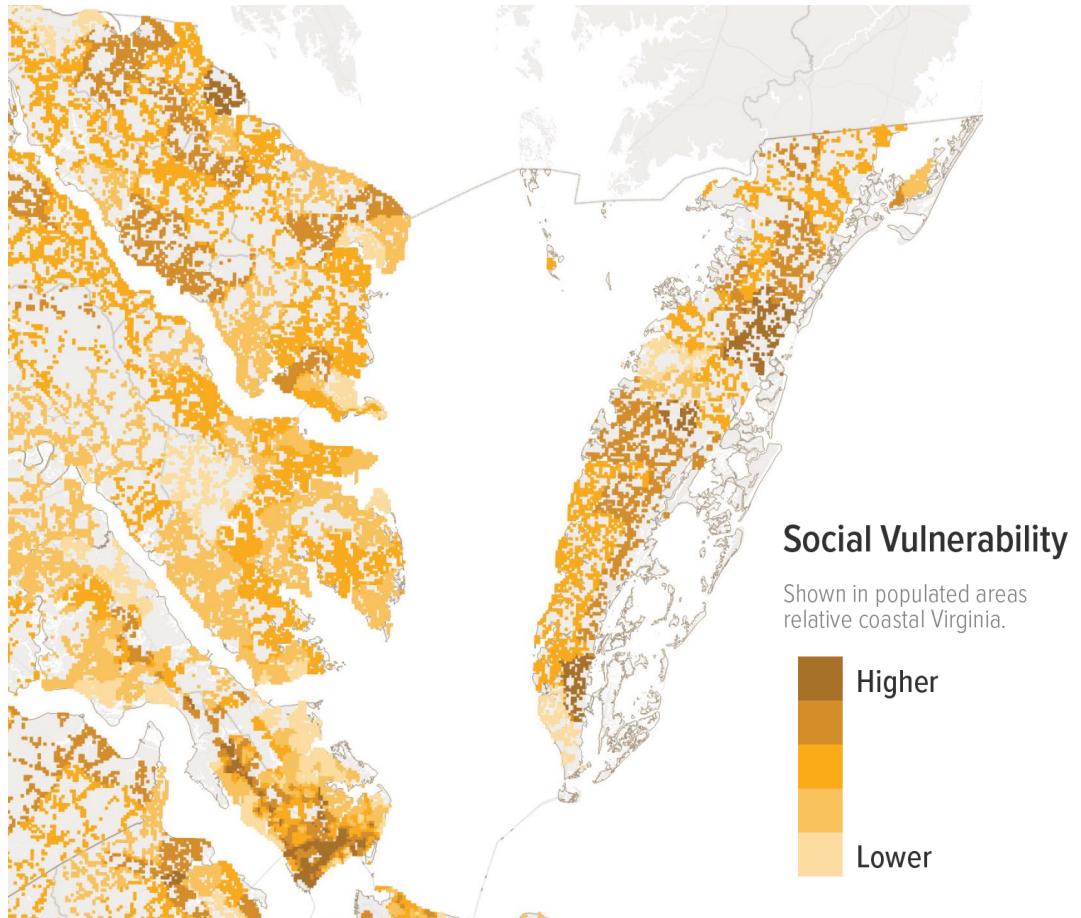
Community Context

Updating coastal hazard & vulnerability data

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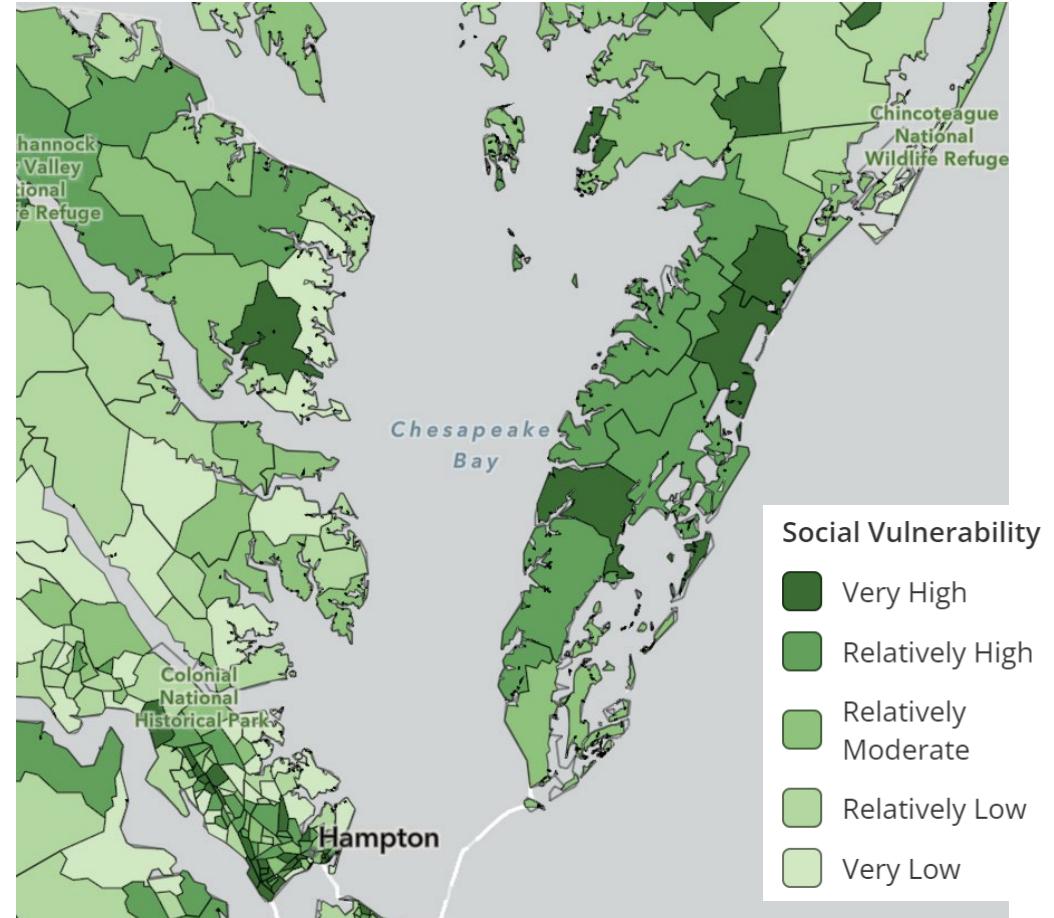
Community Context
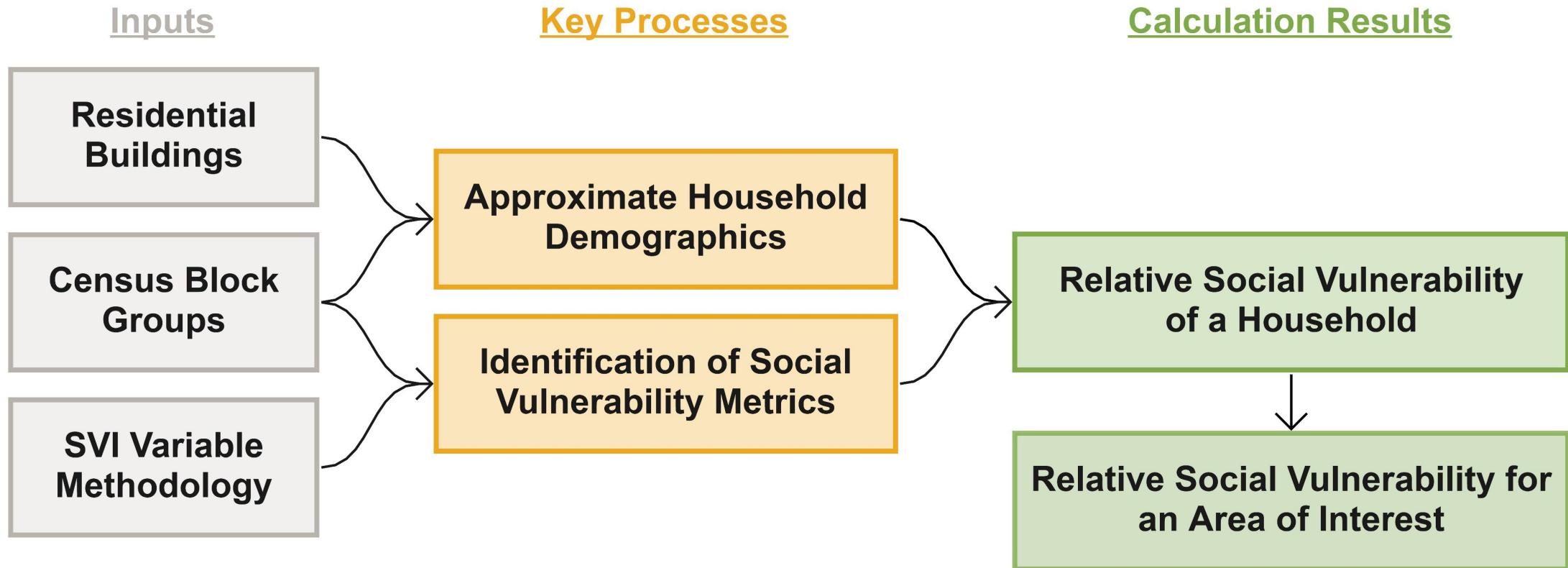
CRMP Phase I downscaled SVI data

Social Vulnerability

Shown in populated areas relative coastal Virginia.

Higher

Lower

CDC SVI, used in CFPF and FEMA NRI

Social Vulnerability

Very High

Relatively High

Relatively Moderate

Relatively Low

Very Low

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Process for Assessing Social Vulnerability

Inputs

Key Processes

Calculation Results

Residential Buildings

Census Block Groups

SVI Variable Methodology

Approximate Household Demographics

Identification of Social Vulnerability Metrics

Relative Social Vulnerability of a Household

Relative Social Vulnerability for an Area of Interest

Dewberry

Next Steps

- **Database Compilation:** Finish data review and migration into database structure *(through March)*

- **Impact Assessment:** Conduct the flood hazard impact analysis and summarize initial results *(through June)*

Dewberry

Subcommittee Discussion

Impact Assessment Approach

New Business

Projects and Initiatives Update

Subcommittee Discussion

Collecting Projects & Initiatives Data

August 2021: Initial Development

- CRMP Phase I Plan

August 2023: Second Bulk Upload

- Six of the 8 PDCs submitted updates

September 2023: User Portal Launch

- 11 registered users
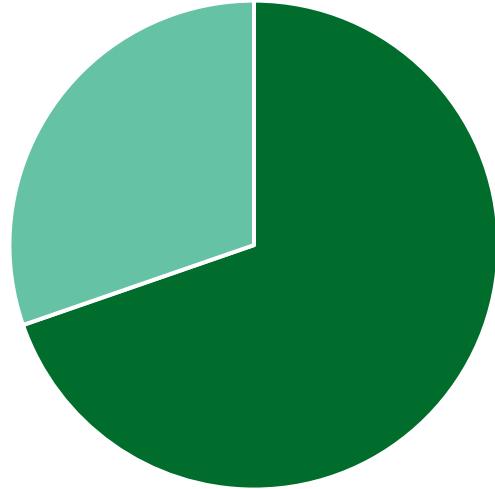
April 2024: Phase II Deadline

- Submit projects or notify DCR of need for assistance

VIRGINIA COASTAL
RESILIENCE MASTER PLAN

DCR
Virginia Department of Conservation & Recreation

Projects & Initiatives Update
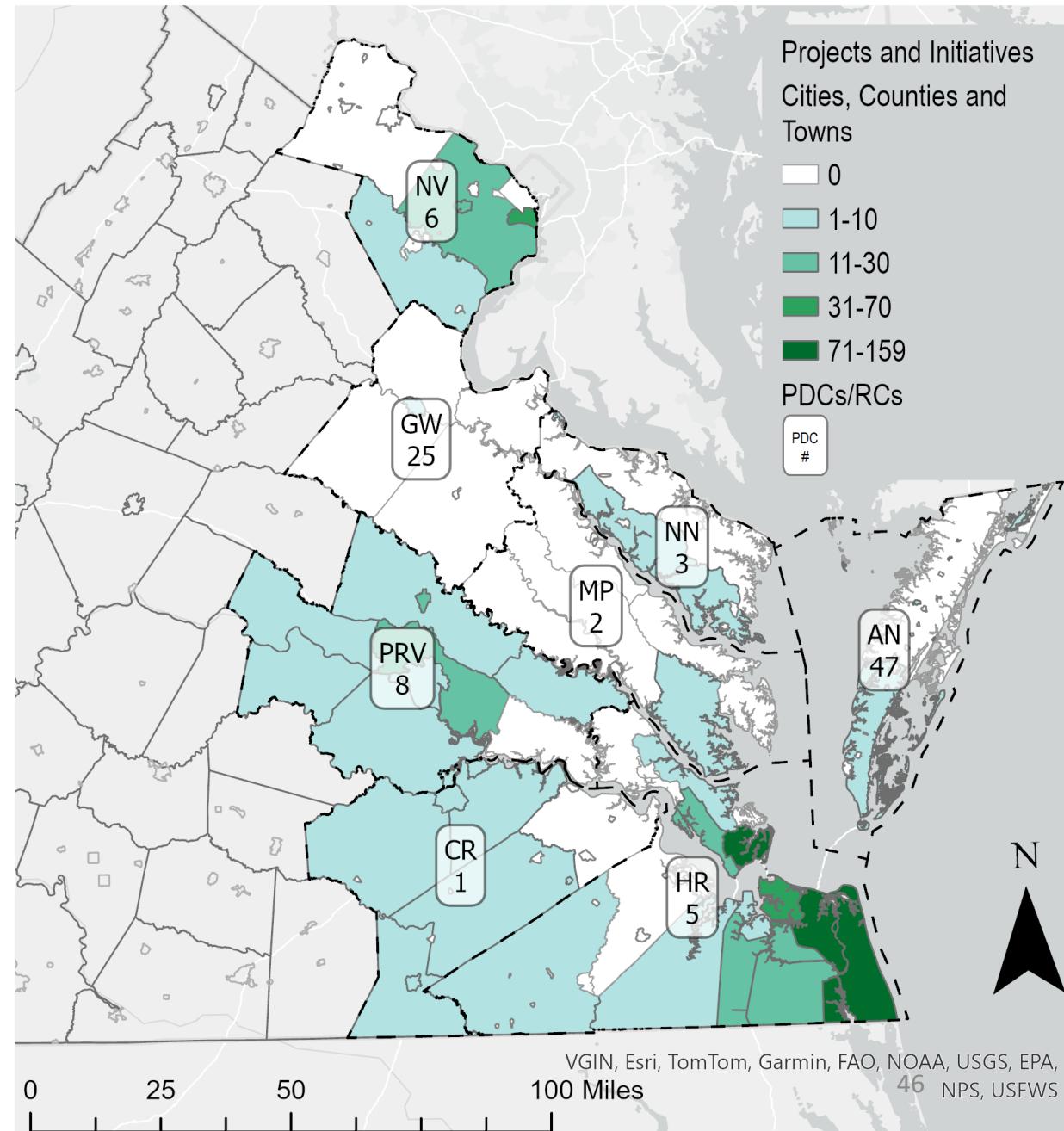
Total Actions in the Explorer: 660

- Projects
- Initiatives

No changes have been made to the original batch of projects and initiatives uploaded in 2021.
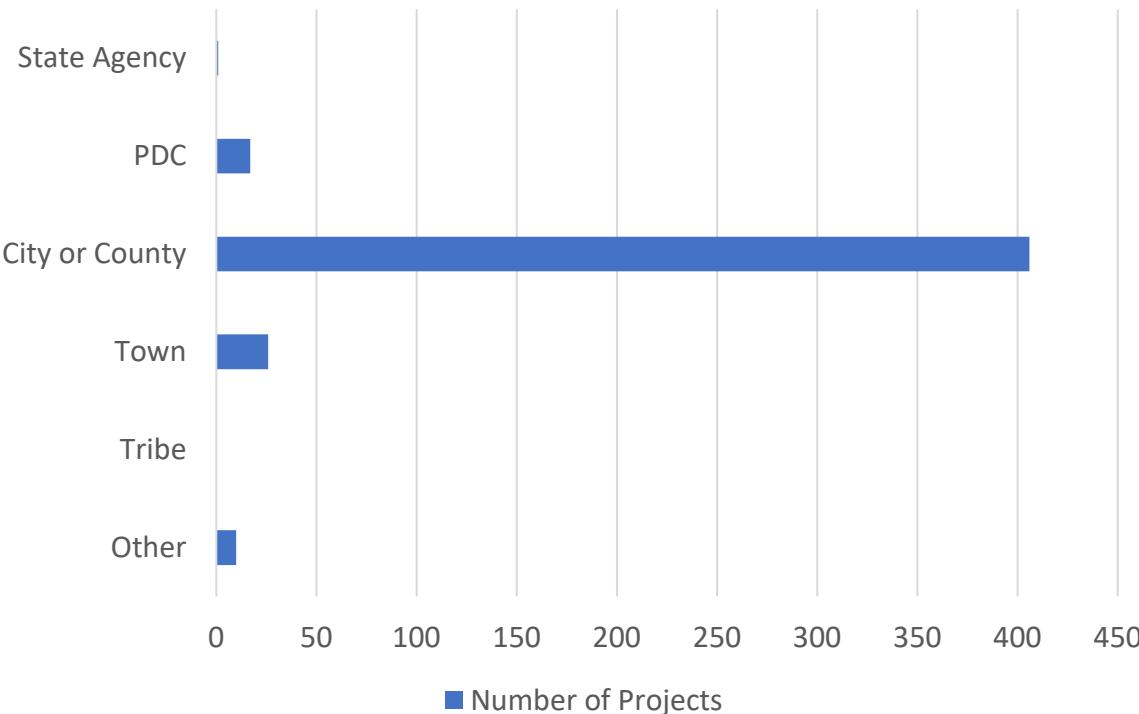
Number of Local Government Projects and Initiatives

Appearing in the Coastal Resilience Web Explorer as of December 30, 2023

Projects and Initiatives
Cities, Counties and Towns
- 0
- 1-10
- 11-30
- 31-70
- 71-159

PDCs/RCs
PDC #

NV 6
GW 25
NN 3
MP 2
PRV 8
AN 47
CR 1
HR 5

N

VGIN, Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, NPS, USFWS

0   25   50   100 Miles

46
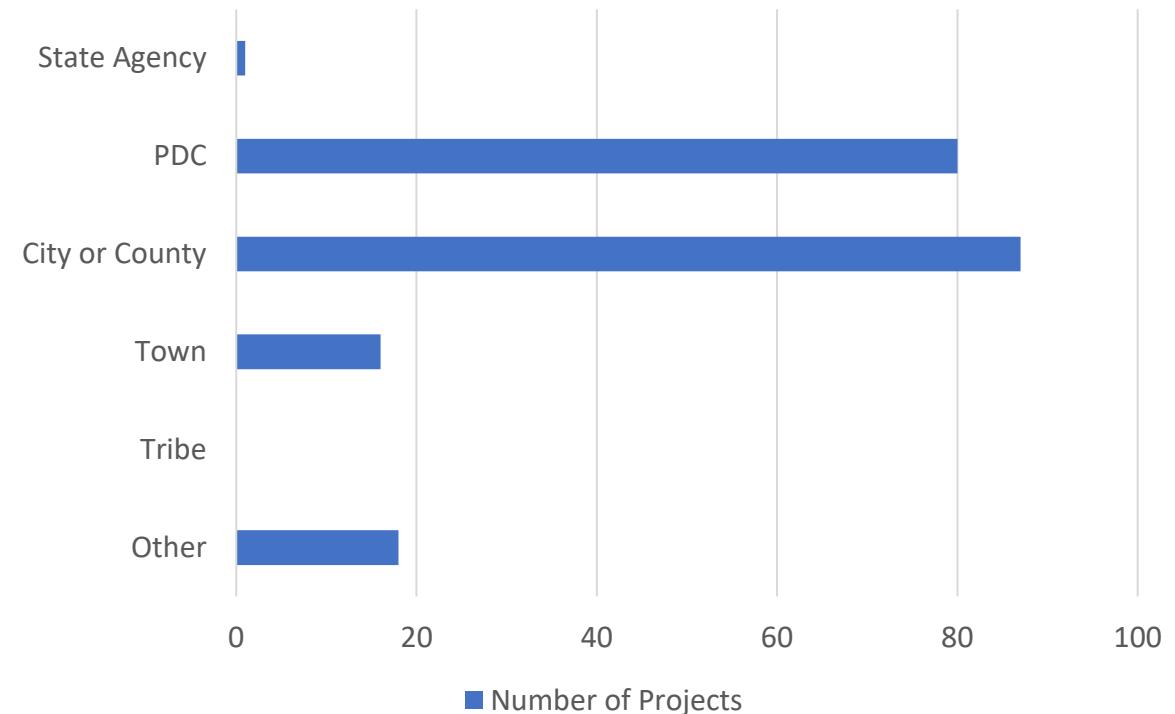
Projects & Initiatives Update

Number of Projects in the Web Explorer
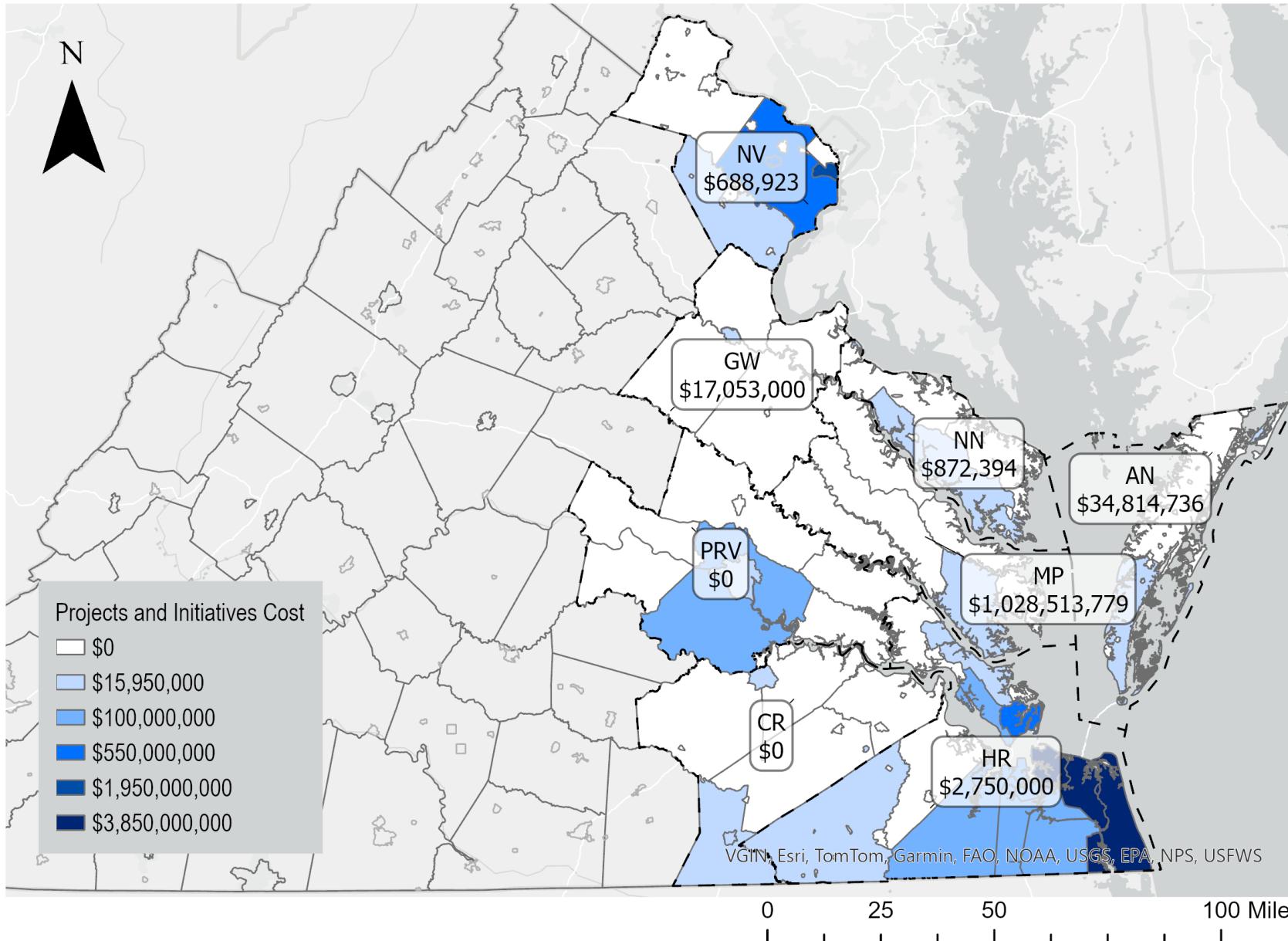
Number of Initiatives in the Web Explorer

Cost of Local Government Projects and Initiatives

Appearing in the Coastal Resilience Web Explorer as of December 30, 2023

Total Cost: $8.37 Billion

- State agency: $800,000
- PDC: $1.08 Billion
- City or County: $7.21 Billion
- Town: $13.89 Million
- Tribe: $0
- Other: $61.23 Million

Considerations:
- Some projects are significantly more complex and costly than others.
- Many projects and initiatives are missing implementation costs.

Phase I Projects & Initiatives

Purpose:
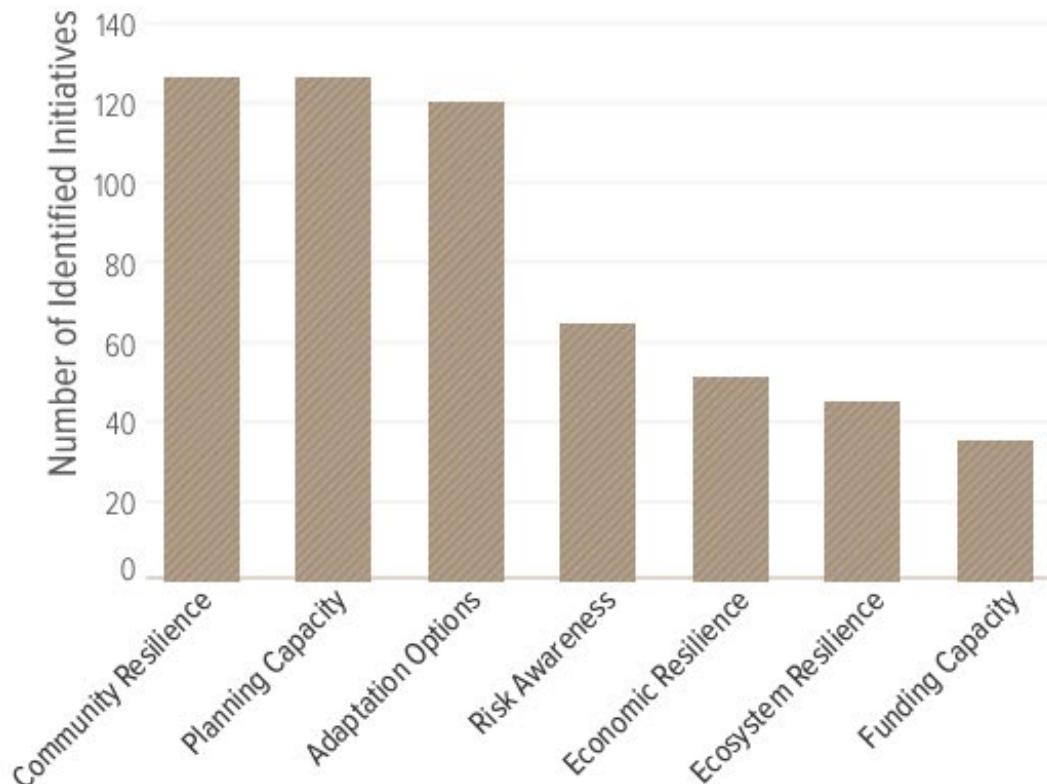
- **Prioritize projects and initiatives** that provide the most benefits for future financial and technical support. *(This was not accomplished.)*

- **Identify best practices** that can be shared across coastal localities.

- **Determine which, if any, areas or assets lack** projects and initiatives and require additional resources.

Challenges:
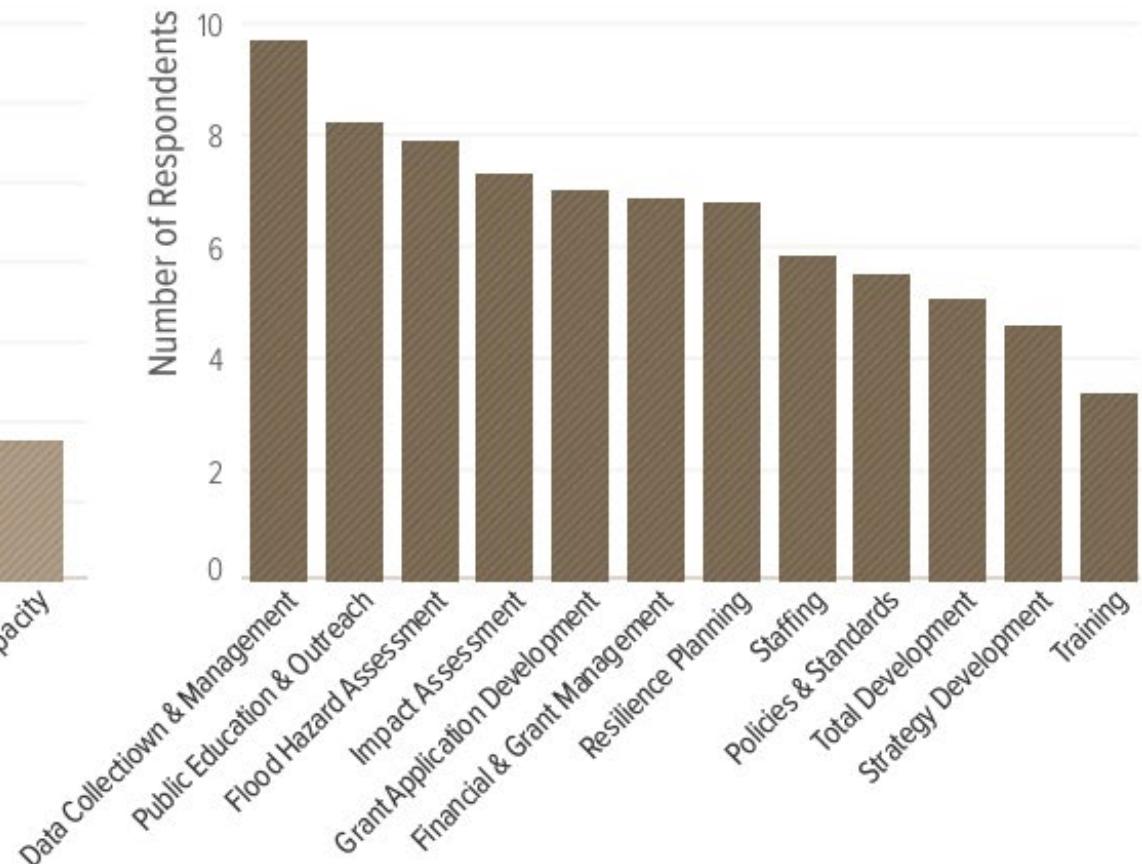
- Data call open for a short time frame.

- Not all project owners were able to respond.

- Project footprints and other details were inconsistently defined.

- Inadequate time to vet and refine info with project owners. Requires better educating owners on how to participate.

- Gaps analysis limited to coastal impacts.

Phase I Initiatives

Capacity-Building and Planning Needs Addressed through Identified Initiatives*

* Note most initiatives identified more than one type of capacity-building and planning need.

Identified Outstanding Capacity-Building and Planning Needs**

** Note this chart summarizes responses collected by the capacity-building data call. Respondents submitted outstanding needs only once per locality.
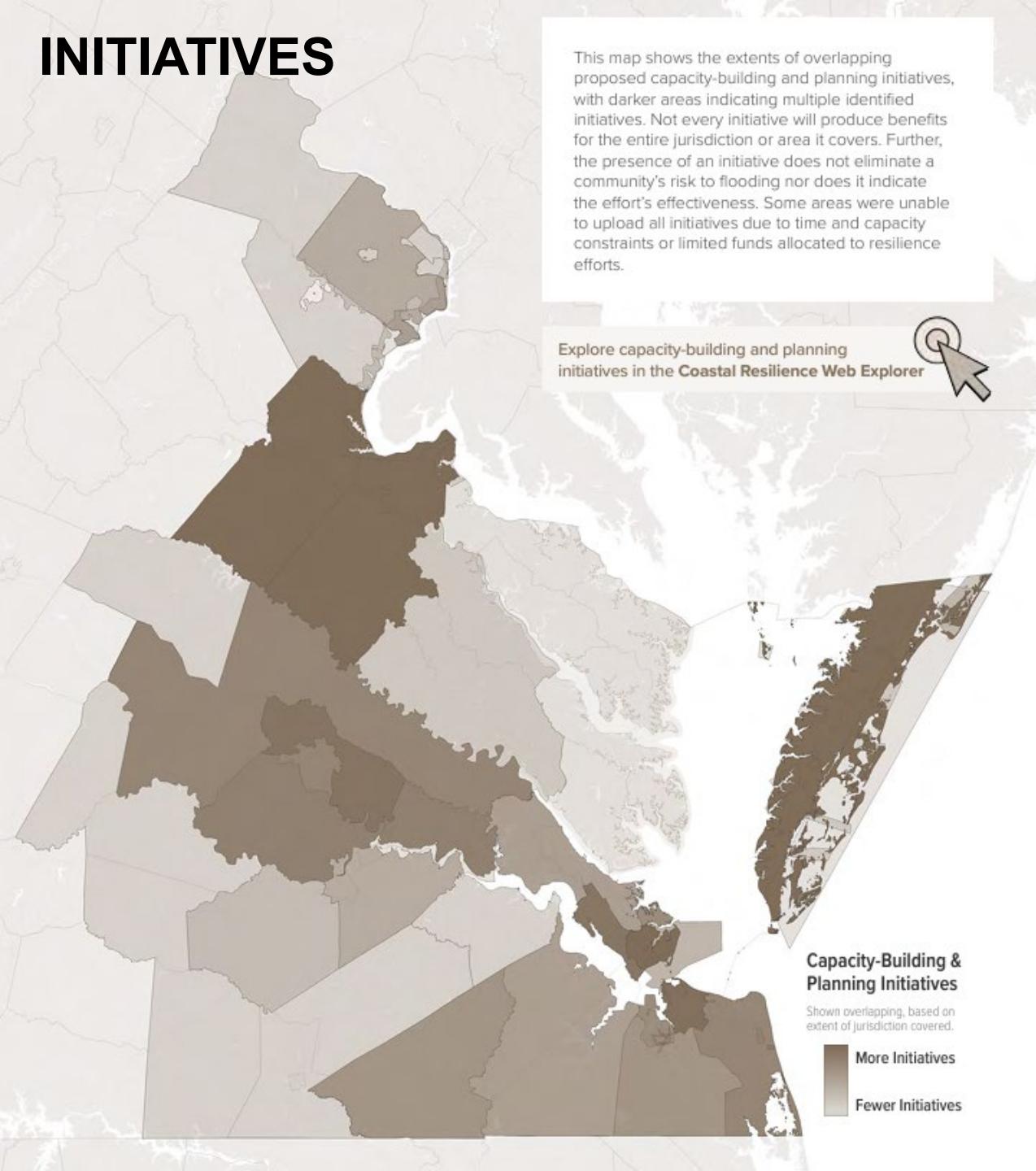
Phase I Projects

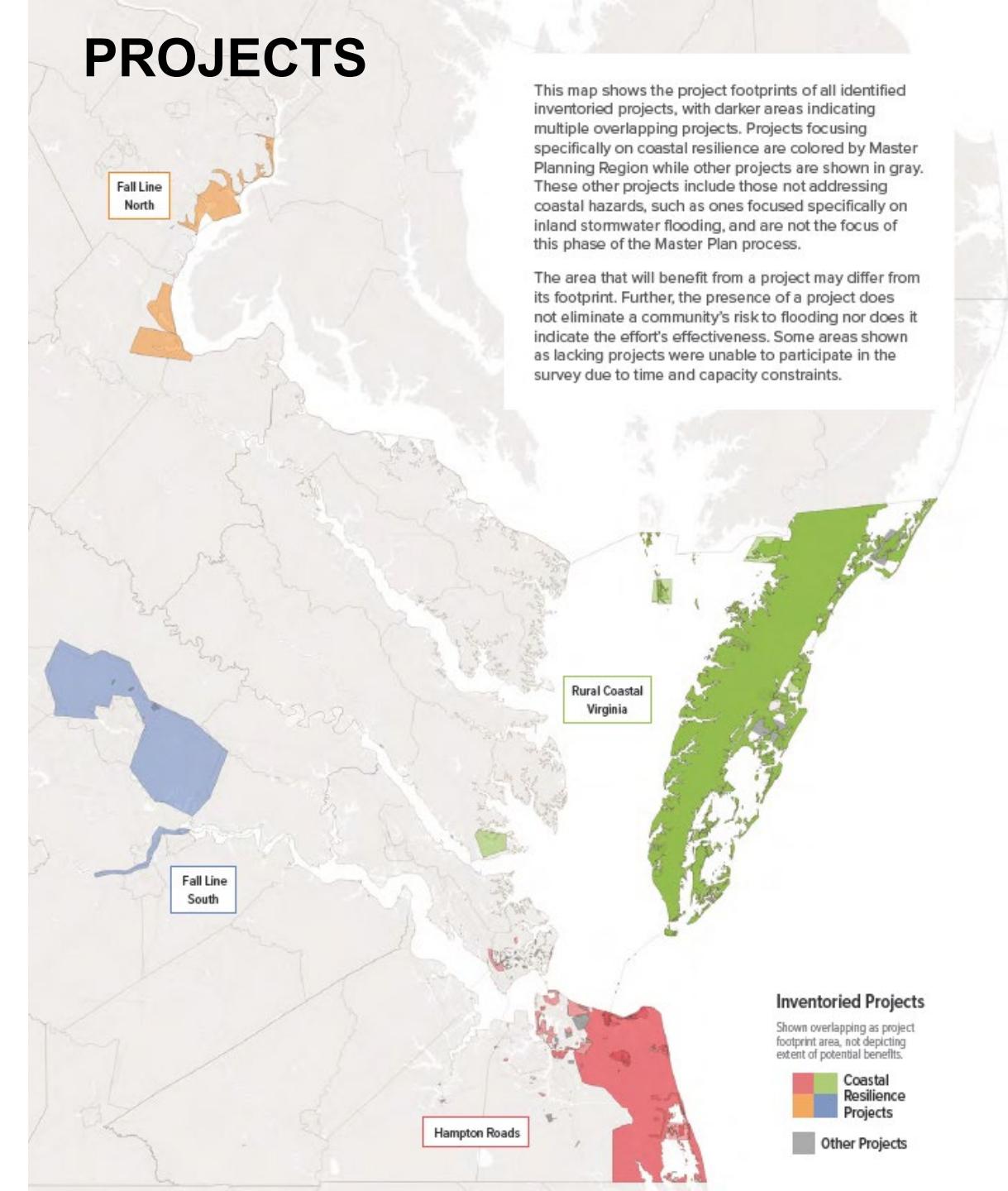## Cataloged Coastal Resilience Projects by Class and Region

Breakdown of the 140 coastal resilience projects that focus specifically on coastal flooding by project class and Master Planning Region.
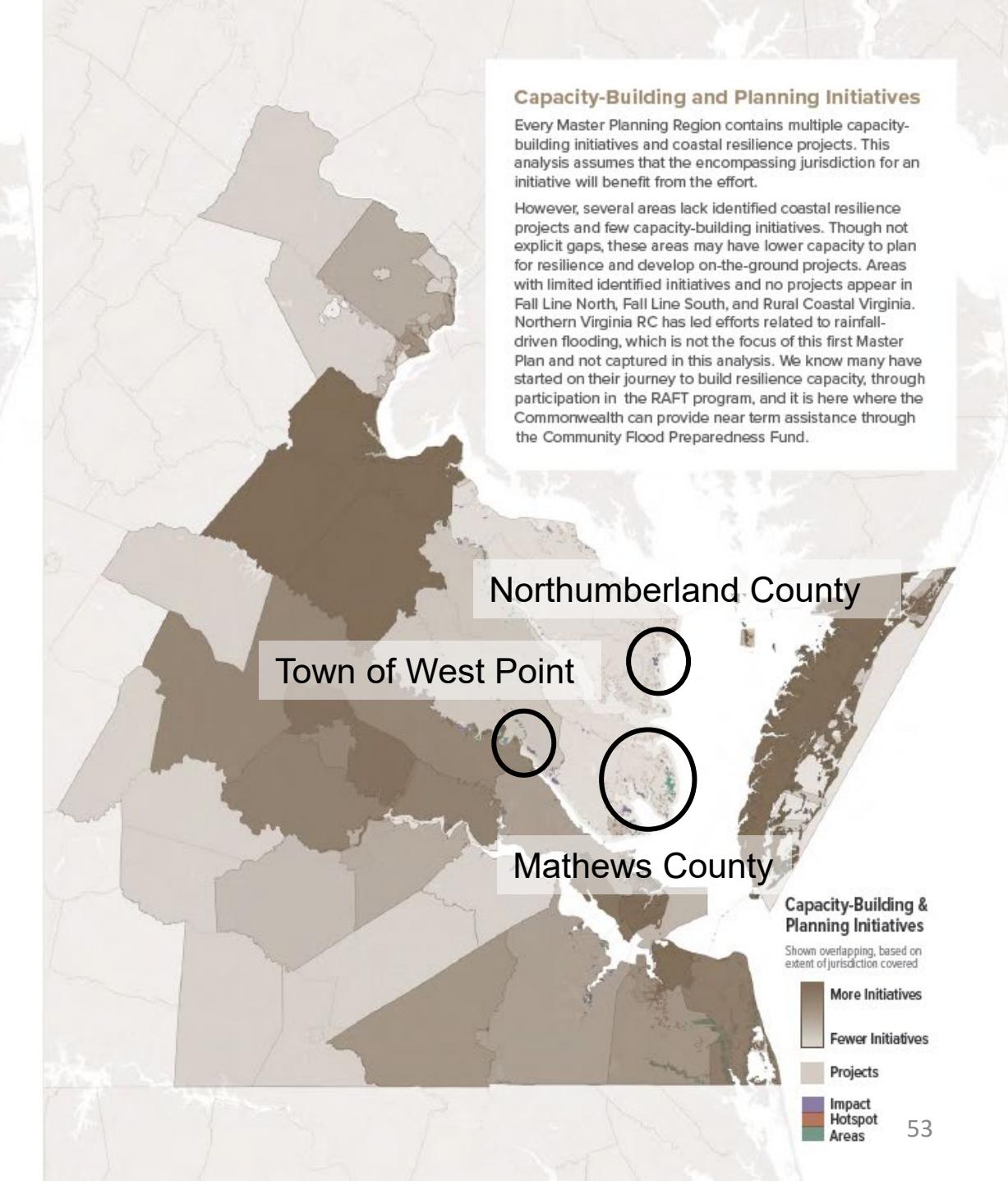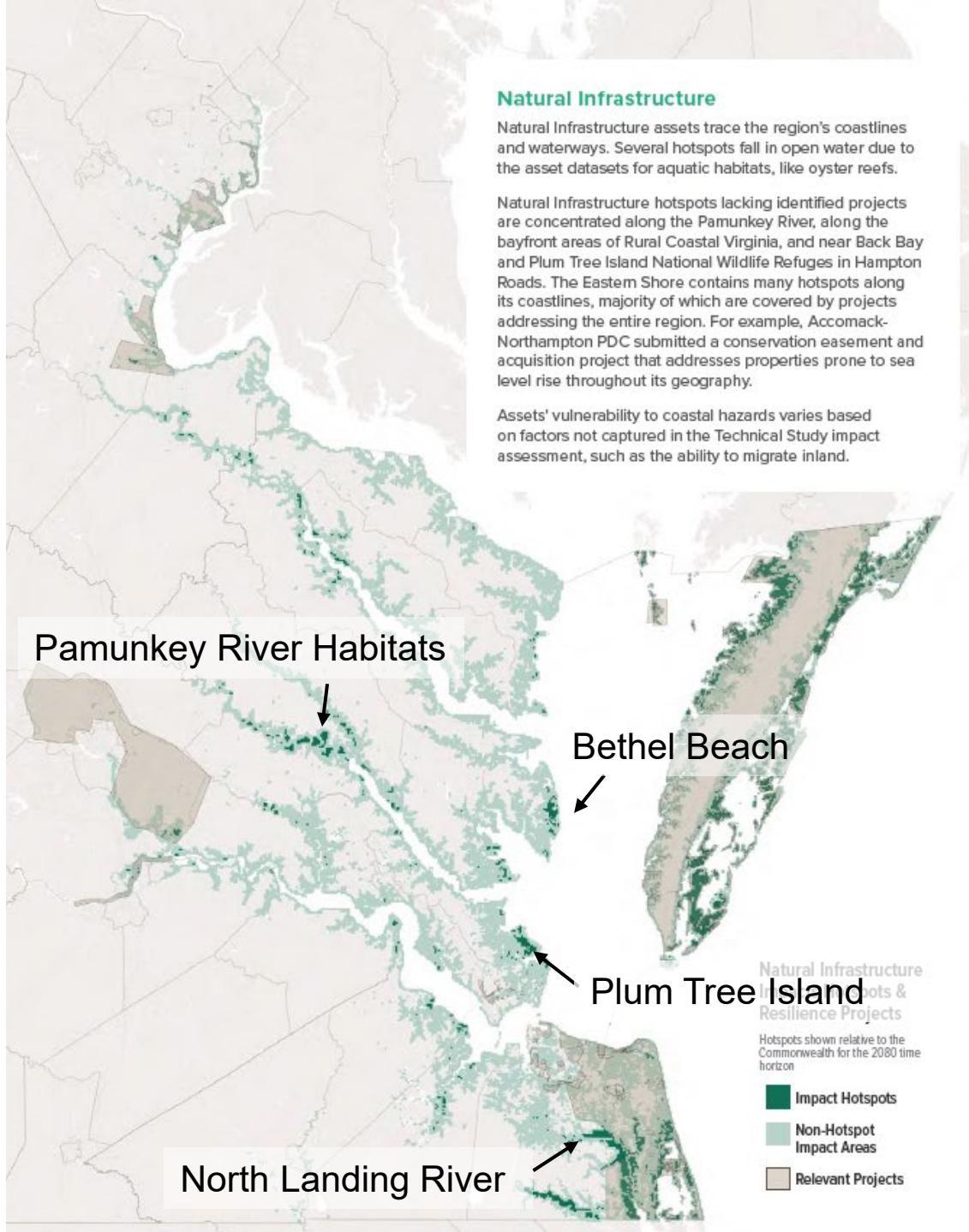
Nature-Based Coastal Resilience Projects: 31
- Rural Coastal Virginia: 12
- Fall Line North: 4
- Fall Line South: 1
- Hampton Roads: 14

Hybrid Coastal Resilience Projects: 75
- Hampton Roads: 72

Structural Coastal Resilience Projects: 34
- Rural Coastal Virginia: 2
- Hampton Roads: 32

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INITIATIVES

This map shows the extents of overlapping proposed capacity-building and planning initiatives, with darker areas indicating multiple identified initiatives. Not every initiative will produce benefits for the entire jurisdiction or area it covers. Further, the presence of an initiative does not eliminate a community's risk to flooding nor does it indicate the effort's effectiveness. Some areas were unable to upload all initiatives due to time and capacity constraints or limited funds allocated to resilience efforts.

Explore capacity-building and planning initiatives in the **Coastal Resilience Web Explorer**

Capacity-Building & Planning Initiatives

Shown overlapping, based on extent of jurisdiction covered.

More Initiatives
Fewer Initiatives

PROJECTS

This map shows the project footprints of all identified inventoried projects, with darker areas indicating multiple overlapping projects. Projects focusing specifically on coastal resilience are colored by Master Planning Region while other projects are shown in gray. These other projects include those not addressing coastal hazards, such as ones focused specifically on inland stormwater flooding, and are not the focus of this phase of the Master Plan process.

The area that will benefit from a project may differ from its footprint. Further, the presence of a project does not eliminate a community's risk to flooding nor does it indicate the effort's effectiveness. Some areas shown as lacking projects were unable to participate in the survey due to time and capacity constraints.

Fall Line North

Rural Coastal Virginia

Fall Line South

Hampton Roads

Inventoried Projects

Shown overlapping as project footprint area, not depicting extent of potential benefits.

Coastal Resilience Projects

Other Projects

Natural Infrastructure

Natural Infrastructure assets trace the region's coastlines and waterways. Several hotspots fall in open water due to the asset datasets for aquatic habitats, like oyster reefs.

Natural Infrastructure hotspots lacking identified projects are concentrated along the Pamunkey River, along the bayfront areas of Rural Coastal Virginia, and near Back Bay and Plum Tree Island National Wildlife Refuges in Hampton Roads. The Eastern Shore contains many hotspots along its coastlines, majority of which are covered by projects addressing the entire region. For example, Accomack-Northampton PDC submitted a conservation easement and acquisition project that addresses properties prone to sea level rise throughout its geography.

Assets' vulnerability to coastal hazards varies based on factors not captured in the Technical Study impact assessment, such as the ability to migrate inland.

Pamunkey River Habitats

Bethel Beach

Plum Tree Island

North Landing River

Natural Infrastructure Hotspots & Resilience Projects

Hotspots shown relative to the Commonwealth for the 2080 time horizon

- Impact Hotspots
- Non-Hotspot Impact Areas
- Relevant Projects

Capacity-Building and Planning Initiatives

Every Master Planning Region contains multiple capacity-building initiatives and coastal resilience projects. This analysis assumes that the encompassing jurisdiction for an initiative will benefit from the effort.

However, several areas lack identified coastal resilience projects and few capacity-building initiatives. Though not explicit gaps, these areas may have lower capacity to plan for resilience and develop on-the-ground projects. Areas with limited identified initiatives and no projects appear in Fall Line North, Fall Line South, and Rural Coastal Virginia. Northern Virginia RC has led efforts related to rainfall-driven flooding, which is not the focus of this first Master Plan and not captured in this analysis. We know many have started on their journey to build resilience capacity, through participation in the RAFT program, and it is here where the Commonwealth can provide near term assistance through the Community Flood Preparedness Fund.

Northumberland County

Town of West Point

Mathews County

Capacity-Building & Planning Initiatives

Shown overlapping, based on extent of jurisdiction covered

- More Initiatives
- Fewer Initiatives
- Projects
- Impact Hotspot Areas

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Planned Resilience Actions

Phase I TAC Project Subcommittee Recommendations:

- Reflect the needs of the whole Commonwealth, including **public and private**.

- Incorporate an **objective review** to address potential for overvaluation of project benefits.

- Include projects that address **all forms of flooding**, not just coastal.

- Establish a means of **identifying new actions**, rather than only compiling existing ones.

- **Provide guidance** regarding the type and location of projects that will advance the Commonwealth's flood resilience goals.

"The population of projects under evaluation is not the product of a comprehensive needs assessment but rather a compilation of independently identified local interests."

Draft Next Steps

April-June: Technical Assistance

- Ongoing assistance in response to owner requests.

April: Further Analyze Submissions & Outline Report Section

- Present findings at Q2 subcommittee meeting.

May-June: Data Quality Improvement

- Clean data, fill data gaps.

June-August: Mockup Coastal Resilience Web Explorer

- May include projects and initiatives updates.

July-September: Develop Summary Products for Final Report

- Draft to be shared at Q3 subcommittee meeting.

Projects and Initiatives in Phase II

Analysis will:

- Summarize number, cost, and type of action for each locality, watershed, planning district, and full coastal region

- Identify areas with no actions that are at high flood risk (from coastal, riverine, and rainfall-driven sources) at multiple planning horizons

- Identify common themes in classes and types of actions

- Identify potential opportunities for coordination based on geographic proximity and action type

- **What else should we include?**

Required Fields:
- Location
- Phase
- Scale of Benefits
- Coastal Hazards Addressed
- Climate Scenarios
- Class/Type/Subtype
- Implementation Cost

Optional Fields:
- Estimated Start Date
- Estimated End Date
- Design Life
- Additional Costs (Planning, Engineering, Permitting; Construction; Operations)
- Permitting Status
- Funding - Cost-Share Capacity
- Funding - Administrative Capacity

Projects and Initiatives in Phase II

Featuring Individual Resilience Actions in the Report Document

Should the Phase II plan include examples of projects and initiatives?

If so, how should they be incorporated into the plan?

How should we go about selecting the projects and initiatives to include?

Projects and Initiatives in Phase II

Updating the Coastal Resilience Web Explorer

How could the electronic inventory of projects and initiatives be improved?

Subcommittee Discussion

Projects & Initiatives Analysis for Next Meeting

Planned Resilience Actions in the Phase II Plan

Public Comment

If you seek to provide public comment, please sign up either in-person or virtually using the Chat window.

Action Items, Scheduling

- Action Item Review

- Full TAC Meeting on March 13, 2024

- Quarter 2 Subcommittee Meeting
  - Impact Assessment Updates
  - Planned Resilience Actions Analysis
  - Recommendations for Future Planning

Homework! **Please review the Phase I Recommendations handout and End-User Survey results prior to our next meeting.**

VIRGINIA COASTAL RESILIENCE MASTER PLAN END USER SURVEY – RESULTS SUMMARY

Virginia Coastal Resilience Master Plan, Phase 2

JANUARY 22, 2024

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Document contains edits by DCR Office of Resilience Planning.

CONTENTS

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Overview

This memorandum presents and interprets responses to the Virginia Coastal Resilience Master Plan (CRMP) End-User Survey that was conducted in December 2023 – January 2024. The purpose of the survey was to collect feedback from the plan's intended end users to inform development of the data and products created during the Phase II plan update, due December 2024. This memo presents a summary of survey respondents, responses and key findings disaggregated by organization type, and key takeaways for Phase II development.
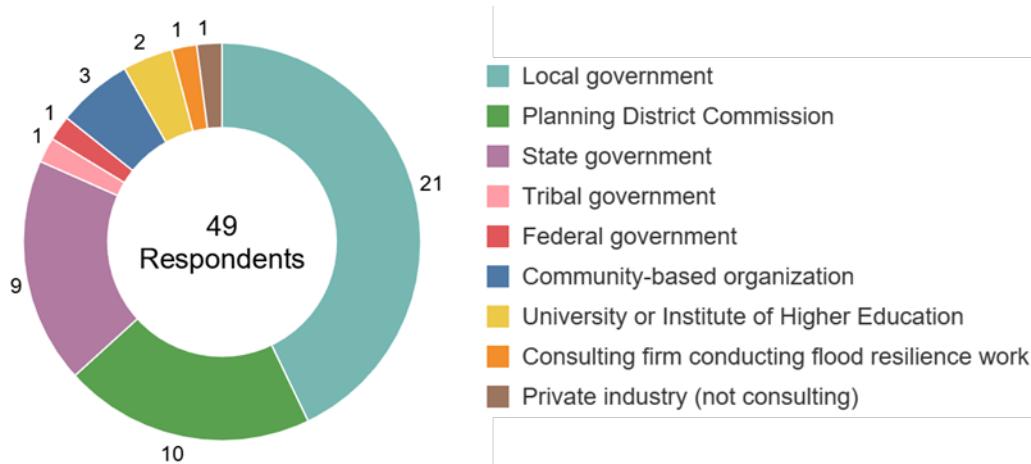
Survey Respondents

The survey had 49 total respondents, with the majority representing government agencies. Respondents represented:

- 18 Local governments
- 8 Planning District Commissions
- 8 State government agencies, departments, or divisions
- 9 other organizations, including tribal or federal governments, community-based organizations, universities, or private industry.

A summary of the respondents by organization type is provided below in Figure 1. A complete list of respondents by organization can be found at the end of this memorandum (Table 7, pages 18-19). Organization type is also used to classify responses to questions throughout the survey.

Figure 1. Count of survey respondents by employer type as indicated in the question "Please indicate which of the following best represents your employer's primary function."

Summary of Key Findings

Survey responses across all questions are consolidated into the below summary of key findings. This summary groups findings into feedback that is either: (1) relevant to the overall CRMP planning effort; (2) specific to the creation of the PDF document; (3) specific to the creation of the web-based services; or (4) funding-relevant findings relevant to work beyond the scope of the CRMP. Within each group, feedback is classified as either positive feedback, critique, or specific suggestion.

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Overall Feedback

Of the 49 survey respondents, 40 (82%) reported actively using at least one of the CRMP products before filling out the survey.

Positive Feedback

- The CRMP products have previously been utilized for a wide variety of use cases, with the most popular being public education and awareness (11 responses), grant seeking (13), and plan development (12), and research (15).
- Products are helpful for providing an overview of resilience-related activities happening across the state, both top-down driven by the Commonwealth and bottom-up driven by communities.
- Products are useful for communicating to non-technical audiences, ranging from individual residents to elected officials.

Critiques

- The Phase I plan's focus on coastal flooding limits its applicability for communities that face significant interior flooding and leads to a potentially misleading narrative that more inland areas do not face flood risks.
- CRMP data products (including underlying sea-level rise scenarios and funding sources) can become outdated, and require regular update to ensure relevancy for use.
- Not all critical infrastructure (as identified by localities) and resilience-related projects are captured.

Specific Suggestions

- Incorporate revised sea level rise projections.
- Expand analysis and narrative to encompass other flooding types, including pluvial/rainfall-driven flooding, riverine flooding, and composite flood impacts.
- Conduct additional economic analysis to capture more impacts in terms of dollars. This will help communicate risks and importance of resilience investments to decision makers.
- Add contextual information about flood insurance coverage, and the insurance gap that needs to be addressed.
- Further integrate and align the plan with other state plans, including the HMP.
- Develop a scorecard and tracking on community outreach by localities and regions.
- Continue education and engagement efforts with localities to further resilience planning capacity.

Plan Document

32 survey respondents (65%) have used the PDF plan document.

Positive Feedback

- Clear communication and flow in the plan document, making it readable and easy to navigate.

Critiques

- Example projects are seemingly arbitrary and often do not address the most pressing regional resilience needs.
- Impacts are not framed in terms of economic losses, which would be more helpful for driving decisions.

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Specific Suggestions

- Project sheets should be expanded and could be improved by including an icon to indicate project type and description or score to indicate population served.

- Include a narrative about coordination between state agencies and plans.

- Highlight case studies about how the plan and related products are being used.

- Expand content related to resilience-related economic development, job creation, and innovation.

- Place greater emphasis on natural infrastructure and incorporate biodiversity and ecological resilience.

- Include more specific actions to guide other state planning work.

- Improve tribal representation.

Web Explorer & Data Download

33 survey respondents (67%) have used the Web Explorer, while 16 (33%) have used the Portal Hub, and 4 (8%) have used the AWS data download options.

Positive Feedback

- Users found all elements of the web explorer useful, with the hazard information cited as being the most useful.

Critiques

- Web explorer can feel cluttered, hard to navigate, and overwhelming to users – there is almost too much information.

- Metadata and calculation methods are not clear in the web application, nor where to go to find that information.

- Not all data is available for download, and downloadable data can be hard to work with.

Specific Suggestions

- Include more context to explain the data, possibly through a pop-up function.

- Integrate more dynamic and user-friendly data download process, including:
  - Jurisdiction-specific impacts
  - Projects and initiatives
  - SLR models as a locally-storable raster rather than web service.

- Adding recommended citations in metadata would be helpful when referencing information in plans and grant applications.

- Improve and expand on the inventory of past, present, and future resilience work so that it is a more user-friendly and living database.

Funding & Financing

- Respondents have most experience seeking and winning federal and state grant funding sources.

- Barriers to engaging with funding include:
  - Lack of staff and staff capacity, both in terms of numbers and expertise.
  - Challenges related to funding caps and local match requirements.
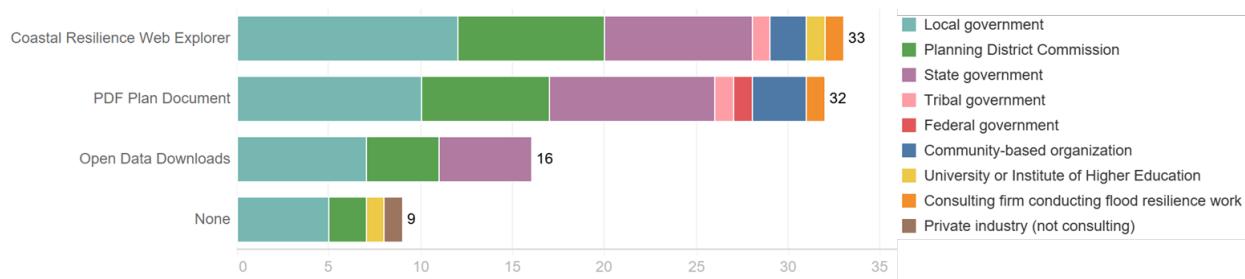
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- Competitive landscape and meeting requirements related to benefit-cost and environmental justice metrics.
- Gaps in data hindering project design and grant applications.
- Lack of awareness about relevant grant opportunities and timelines.
- Issues with slow administration and lack of coordination between state and localities/tribes.
- Limited political will and prioritization of resilience across competing interests.
- There are many steps the Commonwealth can take to address these barriers. Most popular were offering training for local government staff, highlighting best practices and successful case studies, and offering resources for evaluating funding opportunities.
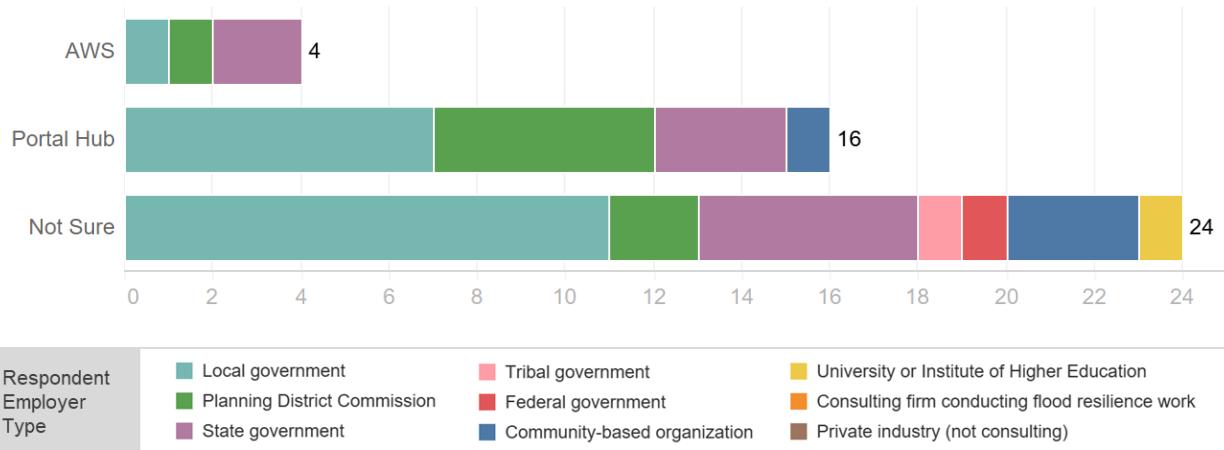
Detailed Survey Responses

Product Use

Respondents were asked which products they've used in their work, shown in Figure 2. 67% of respondents have used the Web Explorer while 65% of respondents have used the PDF Plan document. 18% of respondents had not yet used any of the Coastal Resilience Master Plan products in their work.

Figure 2. Responses to "Which of the Coastal Resilience Master Plan products have you used in your work?" broken down by organization type.

More specifically, respondents were asked if they had used the open data products through AWS or portal hub. Responses are shown in Figure 4.

Figure 3. Responses to "If you have downloaded open data, which of the two Coastal Resilience Open Data Portals have you used?" broken down by organization type.

Product Usefulness

When asked about the usefulness of each product, the majority of respondents said all three products were either somewhat or extremely useful, as shown in Figure 4. and Figure 5.

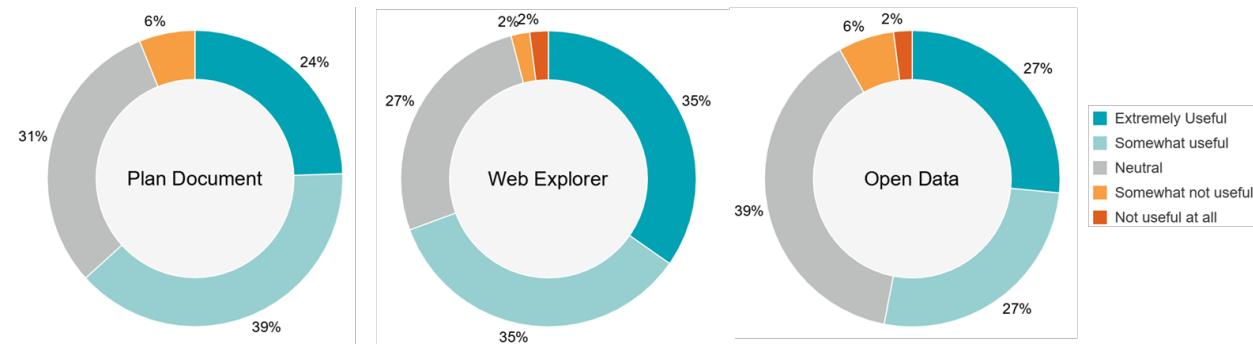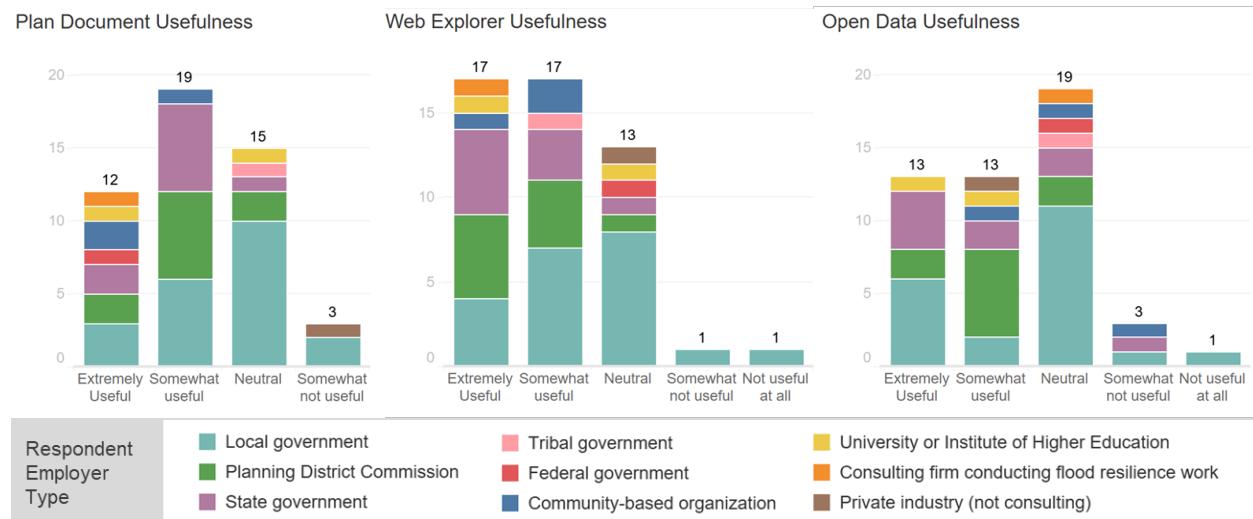Figure 4. Responses to "Please rank the overall usefulness of the Coastal Resilience Master Plan products."

Figure 5. Responses to "Please rank the overall usefulness of the Coastal Resilience Master Plan products" broken down by organization type.

More specifically, respondents were asked to reflect on the usefulness of the Web Explorer tabs and responses are presented in Figure 6 and Figure 7.

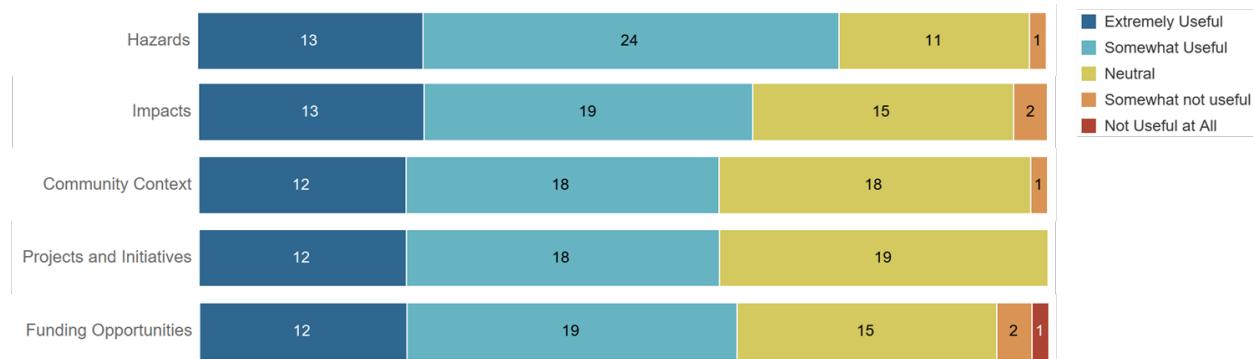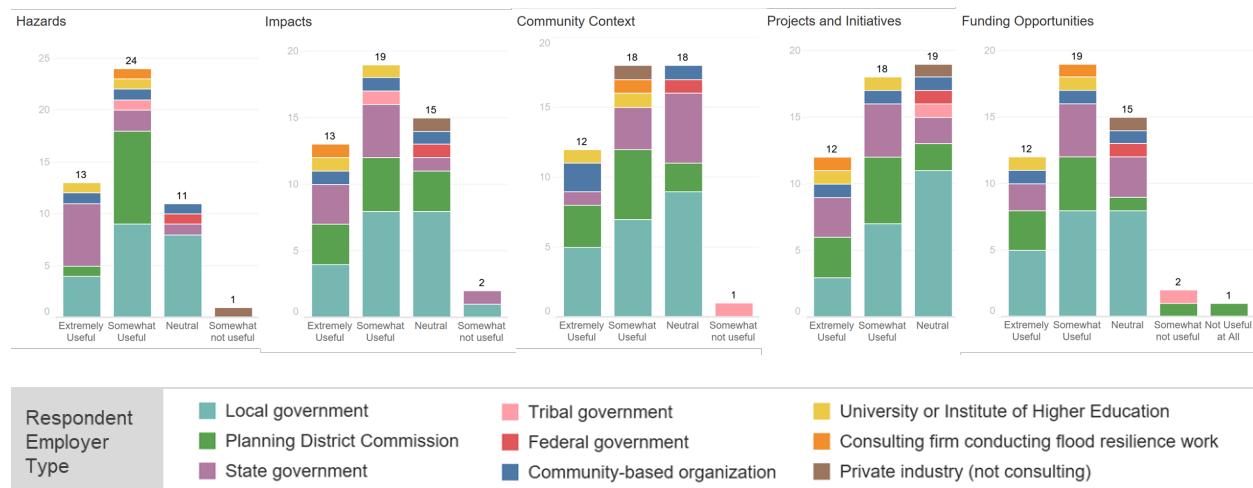Figure 6. Responses to "Please rank the usefulness of the Coastal Resilience Web Explorer tools."

Figure 7. Responses to "Please rank the usefulness of the Coastal Resilience Web Explorer tools." broken down by organization type.

Respondents provided additional comments regarding product usefulness, described in Table 1.

Table 1. Responses to "Please provide any comments regarding the usefulness of the Coastal Resilience Master Plan products." Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	The updated Energy and Climate Change Action Plan (May 2023) utilized the Coastal Resilience Master Plan: https://www.alexandriava.gov/energy/energy-and-climate-change-action-plan. The City plans to develop a Flood Resilience Plan in 2024 and will utilize all products as we discuss updates to policy and programs understanding what is happening across the state is incredibly valuable. I'm not sure how the products were or were not used for the City's Waterfront Mitigation Program.
	Current plan is too focused. As a coastal community we face many types of flooding.
	Articulated very clearly. Clear format and flow, very readable and easy to navigate to find everything I'm looking for.
	The social vulnerability index map has been useful when social vulnerability is a criteria for grants.

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ORG TYPE	RESPONSE
	I am grateful for the staff that produced the Coastal Resilience Master Plan.
	These products should prove helpful
	Information from this plan will be utilized in PWC's upcoming development of a PWC Flood Resilience Plan.
	Southampton County is a considerable distance from the coast, so the usefulness of the Plan hasn't been determined.
	I really like the mapping products. As we implement our MS-4 program it will be good to know what areas of Spotsylvania are most at risk for climate impacts.
	I've used these products to discuss resilience resources and goals with elected officials.
	I don't know that I've had the need to use the coastal resilience master plan.
Planning District Commission	Coastal Resilience Web: Funding Opportunity update would be useful. Lack of downloadable Impact data. The data that is downloadable is difficult to parse and navigate. Most ESVA projects are initiated at the local town level - specific impacts on especially prone towns and jurisdictions would be useful. PDF Plan Document: Example projects are seemingly arbitrary and often do not address the most pressing regional resilience needs. Impacts on Community Resources, Critical Sectors, and Natural Infrastructure except Annual Structure Losses not put into dollar amounts - info that local stakeholders and decision-makers use to make determinations. Open Data Downloads: Dynamic Mapping would help with utilization.
	They are needed guidance in our own resilience planning.
	The primary benefit of the pdf is that it provides a solid overview of the context and history of the Commonwealth's planning efforts while also providing a narrative of what we are trying to accomplish. Static maps are nice and easy to read, but they can quickly become outdated. The web explorer is almost too much information. It's not clear how the "composite" impacts are calculated, and directing someone to the plan without a link is unhelpful. The project tab is very cluttered. The open data downloads are great to have, but the datasets themselves are not particularly useful.
	There are some nice graphics and statistics. But we don't come back to these products much.
	Its usefulness relates to either a public policy issue where we need context/data or if a grant funder requires certain data, maps, or narrative which the plan can assist with. We know the Master Plan is a good document, how we use it is driven by policy or $
	Since I am rather new to my position, I haven't had a lot of opportunities to utilize the CRMP products in any real-world scenarios. However, from what I have been able to see of the products, I can see how they would be of use in planning for resilience in our area. I think that it helps to see what areas are most at risk when planning ahead since it costs less to be proactive rather than reactive to potential risks.
	I found the print/PDF master plan product to be easily digestible. Having started my current position after the Master plan Phase I was completed, I thought it was really helpful to understand the foundations of resilience planning progress for the Commonwealth and to get a sense of the direction for future efforts.
State government	The future inundation products were very useful for assessing the resilience of natural heritage resources and protected lands in the coastal zone of Virginia.
	The products provide great historical data.
	The PDF was useful for someone who is new coming into this field. It gave a good lay of the landscape.
	The web explorer has been helpful for visualizing and exploring the data. Especially for someone new to all of

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ORG TYPE	RESPONSE
	this. We've also used the map services in a mapping tool we've been using on the Eastern Shore to identify future impacted communities.
	In using the plan, data download, and tools for grant writing and other technical reporting, it would be great to have recommended citations for each. For example, DCR is using the 2080 SLR projections in our planning and related grant proposals. The data comes from NOAA, but it's housed in Open Data Downloads. Having a recommended citation in the metadata, or ArcGIS Online landing page, would alleviate some ambiguity, i.e., should NOAA be the citation for the SLR map service or is it DCR, another entity?
	PDF Plan Document lists TAC recommendations, needs for improvement, and other locality/regional information not provided elsewhere. CRWE provides tabular summary at the locality scale and very local mapping impacts
	At VDEM there is some commonalities in the FEMA required hazard mitigation plans (state and local). The PDF document provides the references - where we can incorporate those findings into future hazard identification and risk assessments. FEMA requires the best available data. The better integrated these planning processes, the more useful these products will be for grant making decisions at our agency. It is challenging to set funding priorities from two different planning efforts, so alignment is key. The Coastal Resilience Web Explorer is helpful to get a quick glance at flood hazards, and social vulnerabilities.
	Provides good insights to coastal flooding exposure of transportation infrastructure. Provides good information on planned transportation related resilience improvements.
	I have not used the web explorer hence the answer to #7. Most design effort at the port is handled by consulting services.
Tribal government	I know the document would be really useful and I have had a chance to read some of it, but because of limited capacity, I have not been able to dedicate time to reading the whole document, and so I have not been able to fully take advantage of all of the information it has to offer.
Other	Key core resource for developing crucial Coastal Community on-community Community Action Plans to implement and actualize positioning for funding opportunities that are direct Shoreline and unique Riverine based Communities.
	Used data tables from plan document to supplement sea level rise risk and vulnerability info in 2 regional hazard mitigation plans, as well as the State HMP.
	Data driven information useful for grant writing and assessment of integrated services to broker and deliver.

Use Cases

Respondents were asked how they have used or would apply the products to their work across nine potential use cases. Across all respondents, there was the greatest interest in using the products in the future for public education and awareness (31), grant seeking (26), and plan development (27). The top use cases for the products to date have been research (15), grant seeking (13), plan devleopment (12), and public education and awareness (11).

- **Localities and PDCs** are particularly interested in using for public education and awareness, plan development, and grant seeking.
- **State government respondents** were most interested in public education and awareness, program/operational decisions, and research.

A breakdown of responses is shown in Figure 8 and Figure 9.

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Figure 8. Responses to "Consider the following potential use cases of the Coastal Resilience Master Plan products. Which of the following responses best reflect how you use the plan in your work?"

Figure 9. Responses to "Consider the following potential use cases of the Coastal Resilience Master Plan products. Which of the following responses best reflect how you use the plan in your work?" broken down by organization type.
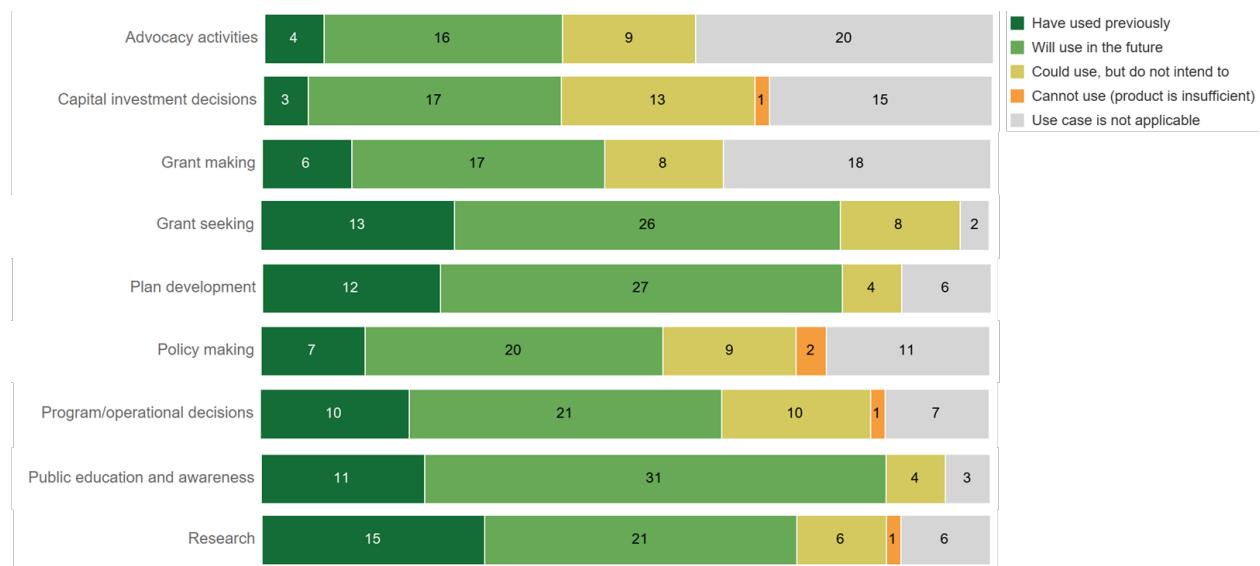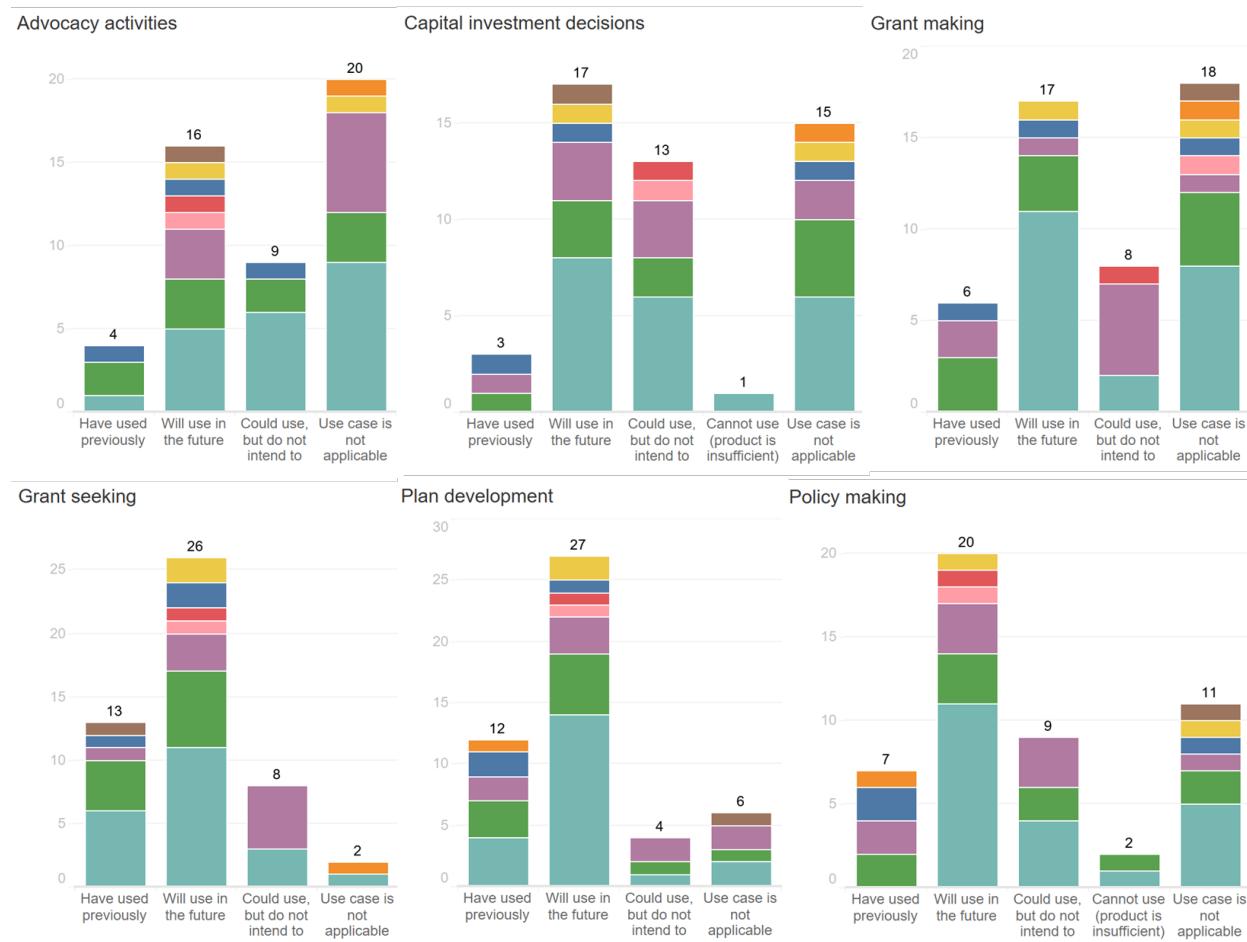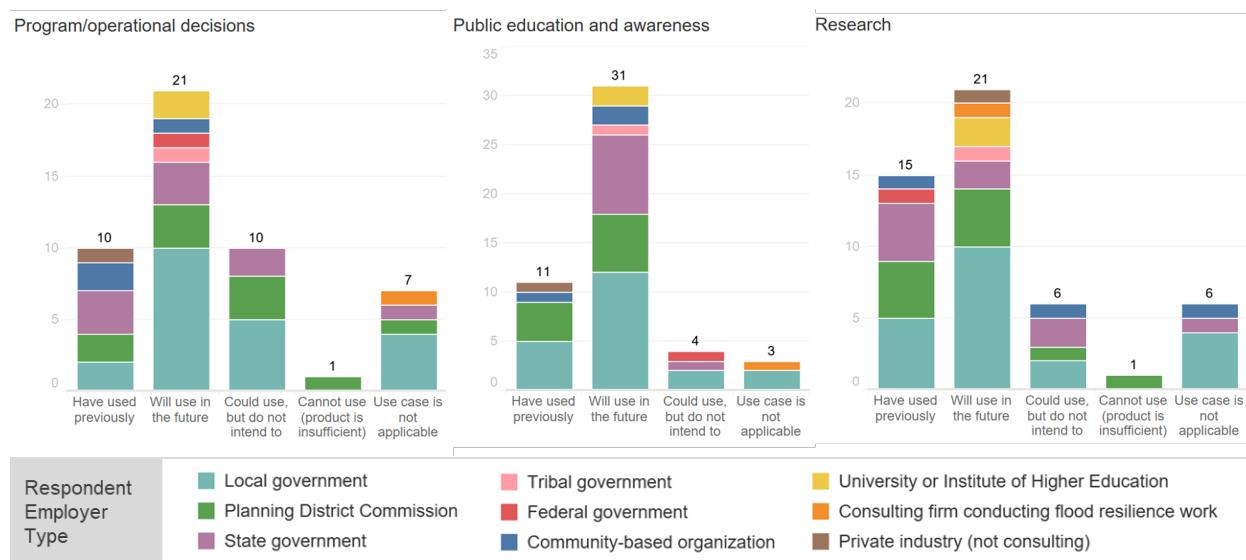
To complement the nine use cases presented above, respondents were also asked if they had used the products in other ways. Through this open-ended question, respondents generally provided more detailed information on the ways they have used products for planning and grant application development.

Table 2. Responses to "Have you used the Coastal Resilience Master Plan products in other ways? If so, please describe the product and its applications." Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	Our consultant has used the data for our own master planning effort.
	To build educational and outreach materials.
	We have used it to determine social vulnerability for grant applications.
	I have used it to inform property owners of potential for sea level rise at or near their property.
Planning District Commission	Used as a base or point of reference for other tools and products.
	I have embedded them in our website.
	We refer to the master plan when giving presentations or briefings, usually in the context of being consistent with our own regional policies.
	Its driven by the question and how best to answer such question either qualitative or quantitative
	I have used the CRMP products as a way to understand the region that I now work in and the potential risks that it faces. It has helped me to get a better idea of what issues I am working with and what areas may need the most focus for resilience projects.
State government	We used the future inundation products to assess the resilience of natural heritage resources and protected lands in the coastal zone of Virginia.
	Mentioned above, we used the map service from the data portal to identify future impacted communities. We are using that information to design a community project on the Eastern Shore around flooding impacts.
	None other than already mentioned, we look at grant projects that are funded by FEMA that were identified in the plan.
Other	Community Action Plan partnership

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Limitations

Respondents were asked about the limitations they have encountered when using the CRMP materials and responses are presented in Table 3.

Table 1. Responses to "Have you encountered any limitations in the plan's products that have prevented you from using them how you would like? If so, please describe the product and its limitations" broken down by organization type. Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	Focus is too limited for all the climate change/flooding issues localities face. In addition, we have developed our own City-specific and more focused materials and evaluations.
	The example project sheets need an icon or indicator for the project type (ex. for structural projects, is the example a flood risk reduction measure, a structural shoreline stabilization, or community infrastructure). See pg. 180-181.
	I have used them despite limitations and just have caveats added to my product.
	We have a small town, but we have critical infrastructure that will be inundated during a 100-yr flood event. Don't see this info on the map.
	Already answered that I have not used the products.
Planning District Commission	Coastal Resilience Web: Funding Opportunity update would be useful. Lack of downloadable Impact data. The data that is downloadable is difficult to parse and navigate. Most ESVA projects are initiated at the local town level - specific impacts on especially prone towns and jurisdictions would be useful. PDF Plan Document: Example projects are seemingly arbitrary and often do not address the most pressing regional resilience needs. Impacts on Community Resources, Critical Sectors, and Natural Infrastructure except Annual Structure Losses not put into dollar amounts - info that local stakeholders and decision-makers use to make determinations. Open Data Downloads: Dynamic Mapping would help with utilization.
	The Resilience Web Explorer is not linked everywhere it should be across State Agencies and so it can be difficult to find.
	It doesn't consider rain driven flooding and the associated stormwater projects. It doesn't layout enough implementation strategies to drive state budget discussions and priorities (compared to state programs other than resiliency).
	The scenarios for hazards do not really correspond to local or regional planning scenarios or timelines. (e.g. 2020/2040/etc. vs twenty-five years, thirty years).
	I have not encountered limitations in its use. However, as part of the project prioritization committee for phase II, we have discussed how more information/data could be useful.
	Any limitations are being addressed through phase 2, i.e. precipitation impacts as a key component to coastal resilience in the region.
	On the web explorer, I really want to click on map shading to see a popup that explains the underlying data. Also, the data available for the Projects and Initiatives is almost non-existent, making that page not so useful.
State government	Not really, but I/we've used them at a very high level.
	Much of my work with the plan and related data includes GIS analysis. The current format of the SLR models (web map service) limits our ability to analyze the spatial data. Having these data available as rasters that can be locally stored and analyzed with typical GIS processing abilities would improve efficiency and produce better results.

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ORG TYPE	RESPONSE
	Limited to coastal flooding. We are looking at statewide flooding.
Other	Access/Awareness/Communication/Inclusion

Desired Plan Content

Respondents were asked to reflect more specifically on the PDF plan document and what content they would like to see in a future revision. Responses are presented in Table 4.

Table 2. Responses to "What content would you most like to see included in future PDF plan documents?" broken down by organization type. Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	We would benefit by more in depth info on pluvial flooding in coastal zones. It sounds like this will be explored more in future versions.
	rainfall data, urban flooding issues
	More project sheets, with a EJ lens/score on sheet, plus population served/protected.
	I'm new here, so I really don't feel qualified to make a recommendation.
	I would like to see information about storm surge flooding
Planning District Commission	Specific impacts on especially prone towns and jurisdictions. Dollar amounts on flooding impacts.
	Drainage issues
	Revised sea level rise projections. Narrative about coordination between state agencies and plans. Case studies of how the plan is being used.
	Expand sections on water management economic development, job creation, innovation being developed in Virginia
	It may be helpful to know what percentage of homes and businesses have flood insurance within each area identified for coastal flood exposure. There are Land Acres Exposed and Buildings Exposed with High Tide and Extreme Flood for both 2020 and 2080 with the percent change, but knowing the extent of insurance and how many will need it would be nice.
State government	Greater emphasis on natural infrastructure.
	Data currency
	An inventory of past, present, and future resilience work in the Coastal Zone. It's too easy to reinvent the wheel and documenting this work somewhere that is searchable and living would be a huge value add.
	recommended citation and more specific actions for land conservation and conservation planning. Incorporation of biodiversity priorities and ecological resilience
	No recommendations, however I would like to request an overview of the plan and web based products to our agency. We have a wide range of divisions and programs that may find these products useful.
	Pluvial and fluvial impacts. Composite flooding impacts.
Tribal government	I would really like to see something mentioned about the Tribes in Virginia. I think it is important that a state-wide planning document have at least some reference to how Tribes experience coastal resilience issues in the larger context of the surrounding community, and the state in general.
Other	Scorecard on Community Outreach by Local and Regional levels

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Funding & Financing Experience

Separate from the CRMP materials, respondents were also asked about their experience seeking and using funding and financing mechanisms to implement resilience activities. Responses are presented in Figure 10 and Figure 11.

Figure 10. Responses to "What types of financing have you *successfully used* to fund your flood resilience activities (projects, staffing, initiatives, planning, etc.)?" broken down by organization type.
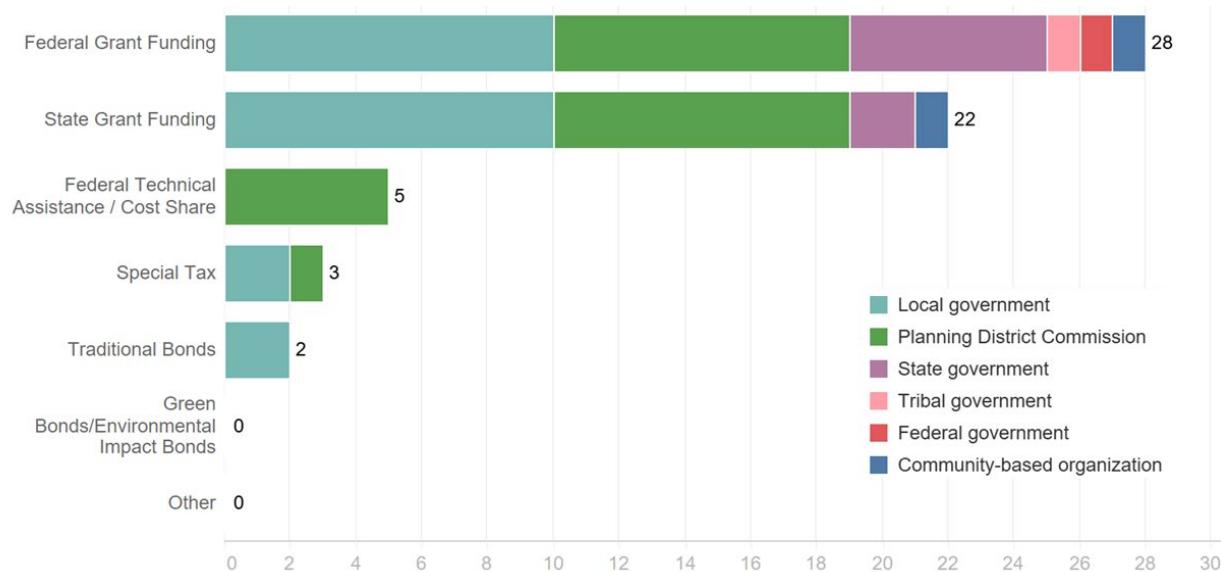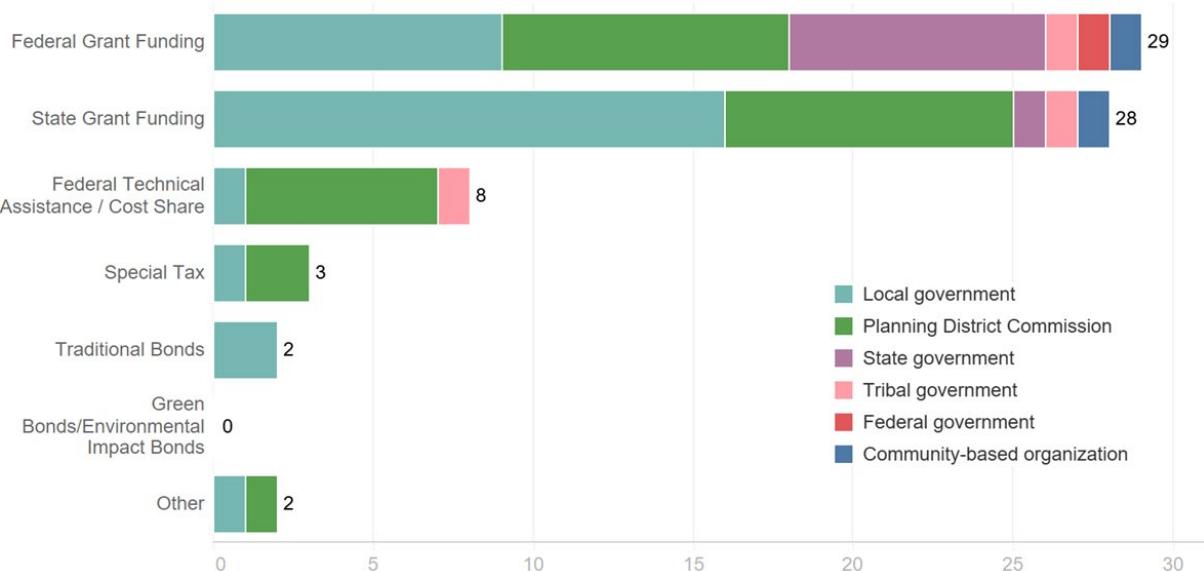

Figure 11. Responses to "What types of financing have you *sought* to fund your flood resilience activities (projects, staffing, initiatives, planning, etc.)?" broken down by organization type.

Funding Barriers

Additionally, respondents were asked about the barriers they face when seeking or accessing funding for resilience activities and responses to that are presented in Table 5.
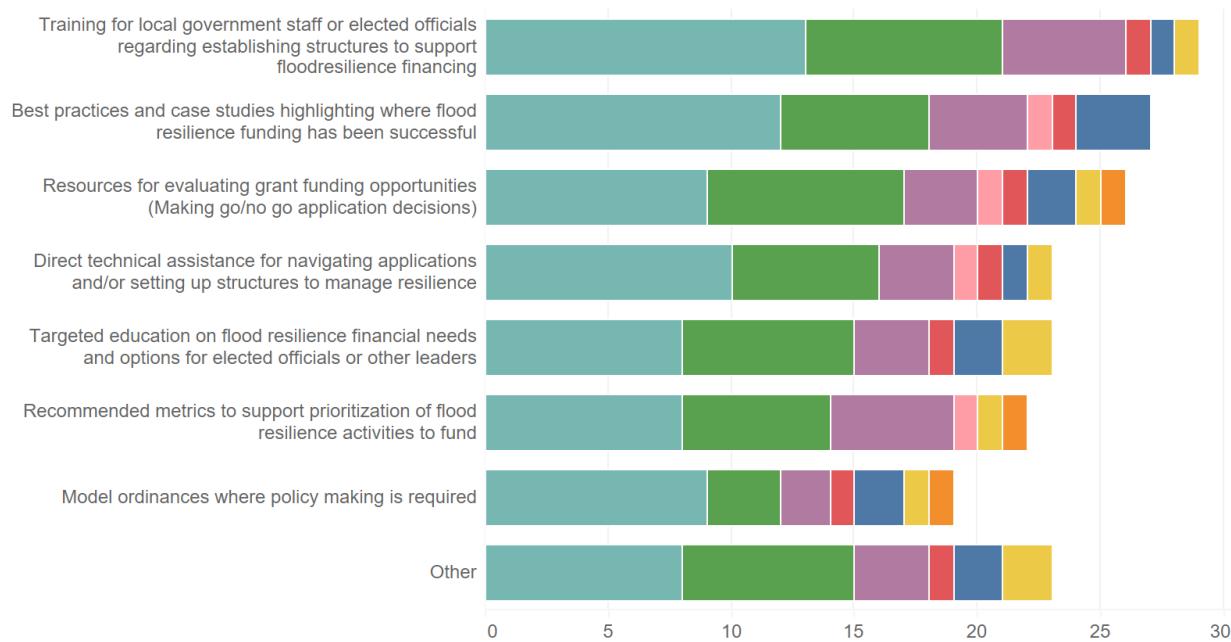
Table 3. Responses to "Are there any specific barriers that have prevented you from seeking or accessing funding for flood resilience activities?" broken down by organization type. Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	Many funding sources require the project to be identified in a 'plan' so having all of our projects in this plan is expected to be beneficial as we look for future funding.
	The Grant application process has become extremely cumbersome and time consuming. We weigh the amount against how much we will need to spend just to put an application together which is getting ridiculous. Also many state grants are becoming difficult to get funds back in a timely manner, which means we are fronting the money for months or a year.
	CFPF maximum grant cap, state revolving loan max. cap, limited time between NOFO and grant deadline (need time for City Manager signature).
	Lack of staff to apply for grants is the biggest challenge for us. Also, better communication of grants that are available.
	I think our limited population size might have prevented us from obtaining BRIC funding. Not sure about that.
	insufficient staff
	lack of staff - Because the VA grants only cover the cost of hiring new employees and do not cover salaries of existing employees, we do not have the staff to execute any grants. In small areas like Northampton County, the cost of a CFM has historically been too much. Until the Phase one of the CFPF grant we did not have a CFM. Now the county is deciding whether or not they will continue to have a CFM because the funding for that position is gone.
	Local match required by state and federal grants.
	Just that I haven't decided yet how to approach grant application for project related to LiDAR or aerial drone imagery
	County Admin does not want to do anything that curbs the development community.
	Capacity
	General capacity to write the grants and apply for them.
	Staff time
	staffing/matching funding
	H & H analysis before addressing flooding issues, but no funds for the analysis
Planning District Commission	Agency and government capacity. Willingness of local decision-makers.
	Because flood resilience doesn't include more ancillary impacts (such as rates of septic failure and soil mapping), our region appears to not be impacted which can dissuade elected officials from acting and hurt our grant funding chances. There are also just more opportunities out there than we can possibly keep up with and we rarely have extra capacity to keep making "shovel ready" projects.
	Local contributions
	Limitations on how often one can apply (DSFPP five-year gap). Inability to use CFPF funds for existing staff or to include indirect costs. Staff capacity for developing proposals.

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ORG TYPE	RESPONSE
	staff to manage new initiatives.
	Limitations are related to grant funder priorities.
	I'm honestly unsure since I haven't done anything with funding so far.
	Northern Virginia is often limited by environmental justice and/or marginalized community requirements within grant programming, especially in recent BIL/IRA programs. While this is important to ensure that marginalized communities have equitable access to funding, the screening tools can be limiting for communities in the region that are marginalized, but do not fit into the screening tools' programming.
	we need more data on Pluvial flooding before we can design resilience projects and apply for funding.
State government	Challenged to find grants that apply to specific needs
	Not sure/NA - Our program (CZM) is a pass through organization, so we're driven by the needs of our network.
	VDEM traditionally seeks funding on behalf of localities that are interested in applying. Barriers we have seen at the local level are cost share, and staffing.
	Seeking funding grants for resilience requires quite a bit of work. There is a limitation on staffing resources.
Tribal government	Limited staff capacity in terms of numbers and subject-matter expertise hinder out ability to apply for funding for a multitude of reasons, some of which amount to simply not having enough time to read a NOFO. At the state-level, some funding opportunities are not available to Tribes, and for those that are, the competition is so strong that it often is not worth the time and resources to apply for a grant that likely will not be awarded anyway. In general, I think Tribe-to-state funding and coordination processes are still very new, especially for the Federally recognized Tribes, so it's just uncharted territory for both sides.
Other	A lack of grant writing personnel
	Local match requirements
	NOAA/EPA Smart Growth for Coastal and Waterfront Communities (2009) not adopted locally by Locality, initially, no locality Certified Floodplain Manager, and deficient implementation of Planning for any but headwater area the Locality. Without administrative Implementation, Planning and incorporated language in State Statute required local "Plans" i.e. Official Map (Zoning) and Comprehensive Plan, the Administrative representation of Hazards is poor and poorly positions Community Action Plans in the most at risk communities. I
	Petersburg City Council
	We do not specifically engage in flood resilience advocacy, education or other activities. However, we are working with RAFT to see how we can empower business owners who seek to facilitate flood resilience for area residents.

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When presented with a multiple-choice question about actions the Commonwealth could take to address funding barriers, the majority of respondents said that training for local staff, best practices and case studies, and resources for evaluating grant opportunities would be helpful. The distribution of responses are show in Figure 12.

Figure 12. Responses to "What could the Commonwealth do to help address barriers that prevent you from seeking or accessing funding for flood resilience activities?" broken down by organization type.

General Support Needs

Finally, respondents were asked for additional input on ways the Commonwealth could support their flood resilience needs. Responses are presented in Table 6.

Table 4. Responses to "Are there any other ways in which the Commonwealth could support your organization's flood resilience needs?" broken down by organization type. Responses that were left blank or indicated a simple "no" or "not applicable" are excluded.

ORG TYPE	RESPONSE
Local government	It is very valuable to understand what is happening across the state, especially in communities like ours - small and highly urban with older infrastructure being decimated with these very severe storm events that don't trigger a declaration of a NR disaster but they really negatively impact our community (cars are totaled, basements and first floors under water, driving is unsafe, pets get swept away, people are displaced, etc.). While we understand what is happening here in NoVA through those relationships and through our PDC, it would be great to learn from other cities facing these challenges! We are looking to learn as much as we can from our partners across the state so helping to facilitate that would be very valuable! Thank you!
	Climate Change issues are more than just sea level rise. Extreme rainfall and urban flooding in old drainage systems is a major issue. Unfortunately, in an effort to provide funding to coastal issues, other issues now have less priority.
	Create a model pathway for communities to obtain a state-match on large federal Coastal Storm Risk Management projects. Similar to NY/NYC.
	This falls into another Departments purview.
	Education classes and updates telling local government how to be involved.

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ORG TYPE	RESPONSE
	You all are doing a wonderful job and I am grateful for your support thus far.
	Yes. Our county does not have the funds to hire a full time grant expert. At this time the CFM is also the grant writer. This person is not experienced in writing grants. The county would benefit from funding staff so that the employee can get acquainted with the job and the funding available.
	Continue to fund traditional grey infrastructure flood resilience projects (flood walls, elevation projects, etc.) and Dam Safety improvements/upgrades. While green infrastructure is important, it is not always feasible and limited in certain major flooding applications.
Planning District Commission	More capacity-building initiatives and opportunities. Supporting and scaling proven efforts, skill sharing. Developing and supporting more regional-wide approaches. Reaching out to local decision-makers and non-traditional partners. Monetizing future flood impacts.
	To be determined
	change the stormwater regulations to reflect projected rainfall, provide more grants even to low scoring CFPF applications, setup policy that guarantees state share of non-federal match for large construction projects, invest more state funding to address roadway flooding
	The waterfront along the Chesapeake Bay and tributaries are ~98% privately owned. Clearly declare that funding flooding problems on private property with public resources helps to protect the tax base of rural localities. There is a public nexus between spending public dollars on private property and protection of public health, safety, and welfare. If flooding decreases real-estate values, local govt can't fund essential services. If they raise taxes to cover the lost revenue, flooding becomes a regressive tax on the poor who don't live on the waterfront.
	Training on grant writing itself would be really helpful for myself. Also, more information on where to start for dam assessments either locally or on a regional scale. We have many that are not assessed and we know that there is funding. I'm just not sure where/who to start with.
	Continued communication and education opportunities with the PDCs to pass information on to the localities. At least in Northern Virginia, this has worked well through our workgroups and engagement with localities, but additional engagement opportunities for localities to participate and understand how they can utilize the plan and its tools would also be helpful. An example would be through the precipitation data/analyses through Phase II - having a workshop or training event for interested localities to understand how they could utilize/apply the data to their own planning and projects.
	Capacity is a major issue. Every community has flood resilience projects they want to see implemented, but who is going to design it, plan it, seek funding for it, manage the grant, and execute the project? Staff and nonprofits are mostly at capacity. Can the Commonwealth do anything to make flood resilience projects more accessible to neighborhoods?
State government	More certainties around how state funds will be tied to planning efforts. This may just take time to get to, but it's definitely an issue we hear about in our network a lot.
	Could DCR provide a presentation to VDEM staff on the CRMP products?
Tribal government	I really think more meaningful engagement and more frequent dialogue needs to happen between the state government and Tribal governments. I believe the state is making great strides to that end, but there is a lot of work left to do. For example, this survey did not have an option at the beginning for Tribal entity. It is vital to Tribal communities that they be actively consulted and that the results of those conversations are shown in spaces like this where DCR is seeking feedback from the different groups affected by sea-level rise and other coastal resilience issues. I do believe as conversations progress that incorporation of the Tribes will be easier and more evident so long as the conversation is continuous.
Other	Provide examples of completed projects with the details of the project. Include lessons learned and pitfalls encountered, if any.
	Public Outreach in mobilized communities. "See one do one" approach. Communication and technical guidance for positioning where Communities have provided feedback and engagement to DCR is key.

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ORG TYPE	RESPONSE
	Hire someone who knows about these things to work for the city of Petersburg. We simply need more people in order to do the job.

Survey Respondents by Organization

Table 7. Number of survey respondents from each organization, classified by organization type.

ORG TYPE	ORGANIZATION	NUMBER OF RESPONDENTS
Local government	City of Alexandria	1
	City of Newport News	1
	City of Norfolk	1
	City of Portsmouth	1
	City of Richmond	1
	City of Suffolk	1
	King George County	1
	King William County	1
	Lancaster County	1
	Middlesex Department of Social Services	1
	Northampton County	2
	Prince William County	2
	Southampton County	1
	Spotsylvania County	1
	Stafford County	2
	Town of Ashland	1
	Town of Dumfries	1
	Town of West Point	1
Planning District Commission	Accomack-Northampton PDC	1
	Crater PDC	1
	George Washington RC	2
	Hampton Roads PDC	2
	MPPDC	1
	Northern Neck PDC	1
	Northern Virginia RC	1
	PlanRVA	1
State government	Department of Environmental Quality	1
	Department of Housing and Community Development	1

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ORG TYPE	ORGANIZATION	NUMBER OF RESPONDENTS
	Virginia Coastal Zone Management Program; DEQ	1
	Virginia Department of Conservation & Recreation - Division of Natural Heritage	2
	Virginia Department of Conservation and Recreation	1
	Virginia Department of Emergency Management	1
	Virginia Department of Transportation	1
	Virginia Port Authority	1
Tribal government	Nansemond Indian Nation	1
Federal government	Marine Corps Base Quantico	1
Community-based organization	Bay Aging	1
	Crittenden, Eclipse and Hobson (CE&H) Heritage Civic League	1
	Northumberland Public Library	1
University or Institute of Higher Education	Virginia State University	2
Consulting firm conducting flood resilience work	Salter's Creek Consulting	1
Private industry (not consulting)	Communities In Schools of Petersburg, Inc.	1

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Project Identification

The types of projects coming in should be reflective of the needs of the whole Commonwealth.

- 95% of waterfront property in the rural localities is privately owned, so publicly-owned projects cannot be the only ones included in the Master Plan.

Develop ways to encourage local governments to care about flood mitigation and tax base protection.

- Rural jurisdictions are lagging behind urban jurisdictions in this effort, largely due to issues of staff capacity.

Project Evaluation

- Project scoring is largely dependent on applicant characterizations of project type, extent, and benefits. Without objective and critical evaluation this can lead to significant over-valuation of projects.

- The scoring of projects tends to place a premium on those that address current flooding issues. This is not necessarily a strategic use of funds in building long-term resilience.

- There is no basis for evaluating project benefits for precipitation driven flooding in the absence of spatially explicit risk exposure information.

Natural and nature-based features should be considered critical infrastructure and projects that preserve ecosystem service capacity through coming decades should be ranked highly, regardless of proximity to developed landscapes.

As currently implemented, the project evaluation protocol is incapable of leading to a strategic increase in coastal flood resilience that reflects the CRMP guiding principles. The population of projects under evaluation is not the product of a comprehensive needs assessment but rather a compilation of independently identified local interests.

Even if the protocol was capable of reliable identification of the most impactful proposed projects, it cannot ensure critical needs across the entire coastal zone will be addressed. Absent some well-considered guidance regarding the type and location of projects which will advance the CRMP goals, current evaluation practices will simply result in creative project characterizations to gain funding for a hodgepodge of public works projects.

Federal Installation Partnerships

Following study of relationships, resources, and coastal resilience challenges in the shared locality, state, and federal Installation space, the Subcommittee identified the following:

1. Mutual benefit exists for localities and federal installations when they combine efforts for resilience solutions.

2. The best solutions will be locally driven, state supported, and federally shared. In this context, federal installations are regarded as local partners.

3. Wide awareness and relationship gaps exist between localities, state, and federal entities.

4. The state's primary CRMP value proposition is Locality support through information sharing, technical assistance, federal advocacy, and funding.

5. Tools and resources exist that can convey awareness, align relationships, and galvanize a locally driven, state supported, and federally shared approach to current and future resilience threats.

6. Localities and the state can help champion federal authorities to better serve local and federal installation resilience needs by advocating for policy changes at the Congressional level.

The Subcommittee recommends the following:

1. Develop formalized and sustained local and regional resilience networks that include local, state, and federal representatives-- and provide:

   a. Sustained resilience planning teams with an Executive Steering Committee and widely representative stakeholder pool.

   b. Well defined geographical areas of study.

   c. Sustained vulnerability and risk assessments that result in prioritized projects and implementation plans.

   d. Funding solutions.

2. Implement existing Compatible Use Study (formerly Joint Land Use Study) vulnerability/risk assessments, and associated plans and proposed projects.

   a. Include capacity building recommendations in the Coastal Resilience Master Plan (CRMP) [enclosure 1]

     b. Encourage sustained Compatible Use or Military Installation Resilience (locality/federal installation shared) studies to be updated at least every 5 years.

     c. Apply similar studies for non-Department of Defense federal installations.

3. Initiate and sustain a state campaign to support localities.

     a. Educate and advocate for federal and state supporting resources (funding, capacity, etc.)

     b. Build and incorporate a resources "roadmap", tied to state agency representatives, that closes the existing awareness and resource gaps among locality, state, and federal stakeholders. Include a "checklist" of suggested prerequisites localities should complete to increase eligibility and competitiveness for federal funding. Examples include an approved All hazards Mitigation Plan, Compatible Use or Military Installation Resilience study, and U.S. Army Corps of Engineers Vulnerability Assessment.

     c. Designate state funding sources to help localities meet match requirements for federal grants.

     d. Ensure every Defense Community in the CRMP study area is aware of the Association of Defense Communities— [Advancing Resilience for Defense Communities - A Planning Framework](). Although intended for Defense Communities, this publication is relevant for all communities contending with coastal resilience challenges and should be included in their resource libraries.

     e. Partner with bordering states for locally driven, state supported, and federally shared resilience solutions.

4. Support federal authorities that will provide local and state advantages. Specifically, support legislative changes at the Congressional level to enable the U.S. Army Corps of Engineers (USACE) to conduct feasibility studies that include Coastal Storm Risk Management (CSRM) project features on federal properties, and to construct such features, utilizing shared federal civil works appropriations and/or non-federal sponsor funds.

5. Seek to adapt existing wide-area infrastructure models (e.g. VDOT Smart Scale) to Coastal Resilience solutions.

Enclosure 1: Existing Compatible Use Study (Joint Land Use Study) Plan Capacity Building
Actions

A. 2017 Virginia Regional JLUS

1. Adopt Statewide Military Compatible Land Use Planning Guidelines for Local
   Governments to Integrate into Regional and Local Planning and Zoning Documents
   (2017 Virginia Regional JLUS)

2. Establish Permanent Funding Sources for Military Compatibility Planning and Assistance
   for Local Governments and Other Agencies, (2017 Virginia Regional JLUS)

3. Virginia Leadership should consider working with the military and Maryland Leadership
   to formally establish a Virginia -Maryland Military Compatibility Working Group. If
   established, this group should consider being responsible for communication,
   coordination, and monitoring the implementation of actions needed to address
   compatibility issues that occur within the identified public resources used for military
   training. The primary focus for this group is broad military capabilities that can affect
   state installations that have operational or influence areas that span both states (such as
   Military Training Routes). (2017 Virginia Regional JLUS)

4. Virginia Leadership should consider working with the military and North Carolina
   Leadership to formally establish a Virginia -North Carolina Military Compatibility
   Working Group. It would helpful if this group would consider being responsible for
   communication, coordination, and monitoring the implementation of actions needed to
   address compatibility issues that occur within the identified public resources used for
   military training. The primary focus for this group is broad military capabilities that can
   affect state installations that have operational or influence areas that span both states
   (such as Military Training Routes). (2017 Virginia Regional JLUS)

B. 2019 Norfolk and Virginia Beach Joint Land Use Study

1. To address both installation and DoD personnel readiness, implement the applicable,
   climate resilience "Recommended JLUS Actions" found in Table 3-2 of the report. The
   top four, highest scoring actions are capacity building projects including (in order):

   Action 1: Hampton Boulevard Comprehensive Flood Mitigation and Stormwater
   Management Strategy

   Action 2: Shore Drive Comprehensive Flood Mitigation and Stormwater Management
   Strategy

   Action 3: JEB Little Creek Gate 1 - Amphibious Drive - Shore Drive Flooding Study

Action 4: East Amphibious Drive, Chubb Lake, and Lake Bradford Flood Mitigation and Stormwater Management Strategy

2. Implement "Coordination and Outreach Strategies" identified in Table 4-1 of the report, including:

   ● Develop a stormwater systems maintenance MOU for each installation and respective locality to define ongoing roles and responsibilities for routine maintenance of ditches, culverts, and other drainage components that span locality/ Navy jurisdiction.

   ● Establish coordination protocols between city floodplain managers and Navy support personnel to share information about flood risk, flood insurance, existing city programs, and floodplain development regulations.

   ● Update the Military Commuter Survey (HRTPO) to address issues related to flooding and sea level rise and how these issues affect overall access to work and other services.

3. While the document's "Advocacy Strategies" regarding federal funding (DCIP) are discussed, new resilience funding resources available from the Commonwealth should also be recognized (REGGI auction funds, etc) and used to advance the recommendations of the JLUS)

C. 2018 Hampton-Langley JLUS Resilience Addendum

   1. To address both installation and DoD personnel readiness, implement the climate resilience recommendations of the Addendum, including:

      ● Determine which roadways are designated as high priorities for JBLE-Langley

      ● Establish a plan to maintain access of key corridors

      ● Establish support for strategic relocation to higher ground

      ● Develop a stormwater management plan

      ● Manage stormwater off the base in City owned land

      ● Coordinate ecological improvements with base development

D. Fort Pickett JLUS

1. COM-3A: Establish a JLUS Implementation Coordination Committee Formalize through a resolution that the Fort Pickett JLUS Policy and Technical Committees will transition to a JLUS Coordination Committee and be responsible for monitoring the achievement of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with military compatibility. Jurisdictions should appoint a military liaison to be the point of contact to be on the committee who would be present at jurisdiction meetings. The resolution should outline such assigned responsibilities. (Partners: Nottoway County Brunswick County Dinwiddie County Town of Blackstone)

2. COM-8A: Review Existing Military Operations that Use Facilities / Resources Located Off Fort Pickett Fort Pickett should identify and review all existing military training operations that make use of facilities, equipment or other resources that belong to other organizations. A determination should be made if the training activities could be conducted in the future and may still require use of facilities, equipment or resources that do not belong to Fort Pickett. Those operations without current agreements (MOU / MOA) should be flagged. See COM-8B

3. DSS-2A: Ensure Affected Jurisdictions and Public are Notified of Wildland Fires Fort Pickett and the VAARNG should work closely with Dinwiddie County and other jurisdictions in the Study Area to ensure timely notifications when wildland fires are burning on the installation, particularly when there are off installation impacts such as smoke. To the extent possible, Fort Pickett should also provide notification to the public via their website and social media sites

   DSS-2B: Jurisdictions Need to Keep Community Informed of Wildland Fires Government departments in the local communities need to ensure they provide adequate information to members of the public when the potential exists for wildland fire impacts. Actual wildfire information should be provided including whether natural occurring fire or prescribed burn event. Jurisdictions should establish telephone (consider use of CodeRED type notification) and text message notifications to residents along with websites and social media sites to provide updates and status of wildland fire impacts such as smoke moving into communities.

4. LU-1B: Add a Fort Pickett element to Comprehensive Plans JLUS Partner jurisdictions should incorporate a Fort Pickett element into their comprehensive plans that looks into compatibility and encroachment issues with the installation.

5. RE-1: Stormwater on the airfield runways and taxiways. During heavy rain events there are instances where stormwater drainage backs up onto the Allen C. Perkinson Airport Blackstone AAF runway and taxiways. This can affect aircraft movements on taxiways and aircraft sorties (landing, take-offs, touch and goes, etc.) impacting training operations. (This was identified as an internal issue only – are there any off-base contributing factors? Town of Blackstone?) The recent construction of the State Department FASTC complex has added additional impervious surfaces to the south and east of the airfield. While new construction projects on Fort Pickett are required to comply with federal and state requirements for management of stormwater runoff, the increased impervious surface in combination with the existing impervious surface has the potential to increase stormwater runoff on and around the airfield. Over long periods of time stormwater runoff has the potential to affect the integrity of the runways, taxiways and ramps on the airfield due to soil erosion. (http://www.pickettlanduse.com/images/docs/fpmtc_final_backgroundreport.pdf Page 5-119)

6. RE-1B: Conduct Periodic Stormwater Infrastructure Maintenance Fort Pickett should ensure maintenance teams conduct periodic stormwater infrastructure preventative maintenance that is regularly scheduled. Maintenance should include clearing obstructions in manmade (e.g. culverts) and natural (e.g. waterways) infrastructure and correcting any identified deficiencies. Maintenance teams should also ensure locations where flooding occurs s are visited in advance of major weather events when flooding is predicted and take any necessary actions. (This was identified as an internal issue only – are there any off-base contributing factors? Town of Blackstone?)

7. RC-2: Concern with impacts to roadways in the Town of Blackstone. The Town of Blackstone is the closest jurisdiction to Fort Pickett. Some of the economic development commercial activities located within the boundary of the installation but located on non-military land (e.g. Pickett Park) cause impacts to roadways within the town. In addition, trucks supporting FASTC during construction have also caused some deterioration to town roads. These roadway impacts can cause issues for the town where limited road maintenance funds are available. Flooding not considered?

E. 2014 Marine Corps Base Quantico JLUS

1. Update the JLUS with an addendum that provides a new and more detailed assessment of climate vulnerabilities with the goal of identifying recommendations to eliminate or mitigate those threats. See:

   a. Recommendations CO.6 - Develop a regional dialogue towards mitigation of environmental impacts and resource conservation (on and off base) .

    b. Recommendation EC.1 - Pursue conservation partnering opportunities through the Readiness and Environmental Protection Integration (REPI) under DoD and through state, local and private conservation efforts (in collaboration with conservation partners) to pursue suitable properties for conservation in JLUS Military Influence Area Zones 1.2, 1.3, 2.1, 2.4 , 3.1 and 5.1. (EC.2)

    c. Recommendation EC.3 - Using the QRESC/QRPT structure, cooperatively work together on stormwater management and other water quality initiatives for shared watersheds (see Recommendation CO.6)

    d. Recommendation EC.4 - Through coordination between Prince William County and MCB Quantico, pursue restoration projects along Little Creek to address erosion and flooding issues in this water body and the adjacent properties from Route 1 to the Potomac River. SEE ONGOING, MID-TERM, and LONG-TERM strategies.

F. Naval Weapon Station Yorktown – 2013 Encroachment Action Plan

    1. Use the CUP process to update the NWSY 2013 Encroachment Action Plan and provide greater specificity than the 2017 Virginia Regional JLUS to address current resilience issues/needs. See the Regional JLUS, Goal 8, page 43 where it states:

        ● There are several public waterways including the Appomattox, Potomac, James, and York Rivers that provide invaluable training assets and realistic training environments for the military; however, these public waterways are also utilized by the general public and commercial business. These waterways should be protected to support ongoing multiple uses.

G. Fort AP Hill

    1. Use the CUP process to provide greater specificity than the 2017 Virginia Regional JLUS to address current resilience issues/needs.

H. 2021 Portsmouth & Chesapeake JLUS

    1. To address both installation and DoD personnel readiness, including flooding impacts to infrastructure, access, rail and port operations at the Craney Island Fuel Depot, implement the applicable, climate resilience "JLUS Actions" found in Table 5.2 of the report. The top four, highest scoring actions (Tier 1) are capacity building projects including (in order):

Action 1: Effingham Street Comprehensive Flood Mitigation and Stormwater Management Strategy.

Action 2: George Washington Highway Comprehensive Flood Mitigation and Stormwater Management Strategy.

Action 3: Victory Boulevard Comprehensive Flood Mitigation and Stormwater Management Strategy

Action 4: Portsmouth Boulevard Comprehensive Flood Mitigation and Stormwater Management Strategy.

Other notable JLUS actions include:

Action 16: Work with VDOT to pursue a flood risk/ vulnerability assessment of highway interchanges (access ramps) that considers future SLR and future rainfall along with traffic generation patterns.

Action 17: Complete a future flood risk/vulnerability assessment of all public facilities and their associated access corridors.

I. Fort Lee

1. Use the CUP process to provide greater specificity than the 2017 Virginia Regional JLUS to address current resilience issues/needs.

J. NSF Dahlgren

1. Use the CUP process to provide greater specificity than the 2017 Virginia Regional JLUS to address current resilience issues/needs.

K. Installations in VA not covered by an existing JLUS (are these considered to be in the "coastal" area identified in the VCRMPF?):

- Army Reserve National Guard sites in VA

- Arlington & US Soldiers and Airmen's Home National Cemeteries

- Defense Supply Center Richmond

- NSA Washington – NSF Arlington

- WHS Pentagon

- AFETA Camp Peary

Aligning Economic Development

The Master Plan should include a definition of economic development, and contain a clear message of the economic impacts of increased flooding in the coastal zone. The subcommittee recommends that the Master Plan provide acknowledgement and support for industries that develop a resilience and adaptation economy in Virginia. The scale of impacts in coastal Virginia and across the state provide an opportunity for the Commonwealth to be a global market leader in solutions that enhance resilience.

We recommend that the General Assembly provide incentives for businesses to develop innovative resilience-enhancing products, technologies, designs, and services, to partner with universities to capitalize on their expertise, and to foster workforce development in building and implementing resilience solutions. These incentives could include such nonfinancial measures as expedited permitting so that innovative solutions like green infrastructure can be rapidly implemented. However, funded incentives — including tax breaks for related R&D and capital investment as well as grants and low-interest financing — will also be important.

As part of this effort, we recommend that the Commonwealth continue to support economic development investments in Virginia's resilience and adaptation economy, such as the recent GO Virginia grant to foster coastal resilience and an adaptation economy (Virginia Sea Grant). We further recommend that the state explore making financial and nonfinancial incentives available to smaller local jurisdictions to increase their ability to support business activities that further resilience, and enable them to address impacts such as overburdened septic systems and ditch networks that affect water quality.

Stakeholders need a better understanding of scientific topics to better understand how coastal resiliency efforts would impact economic development, and there is a need to educate elected officials who are in the business of economic development. The subcommittee compiled a list of economic outreach contacts and sought their feedback to a series of questions in order to guide the focus and priorities of the subcommittee. By working with our contacts in coastal Virginia, the subcommittee will be able to provide the CRMP with valuable feedback that aids stakeholders.

For future iterations of the CRMP, the subcommittee is committed to the following:

- Continuing to survey the capacity of its members and how they can contribute to the CRMP planning process.
- Representing all of coastal Virginia and restructuring the subcommittee if needed.
- Developing a list of Virginia Economic Development Partnership approved recommendations that will benefit the CRMP.