

Coastal Resilience Technical Advisory Committee

Quarterly Meeting
September 19, 2023
1:00 – 4:00 pm
Patrick Henry Building, Richmond VA

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COASTAL RESILIENCE TAC MEETING

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Meeting Agenda

- 1) Call to Order, Roll Call, and Introductions
- 2) Adoption of the Agenda
- 3) Adoption of Meeting Minutes from June 27, 2023
- 4) Reports from DCR
 - a. Coastal Resilience Master Plan Update
 - b. Other Updates
- 5) Reports from TAC Subcommittees and Consideration of Subcommittee Recommendations
 - a. Research, Data, and Innovation Subcommittee
 - b. Project Prioritization Subcommittee
 - c. Funding Subcommittee
 - d. Outreach and Coordination Subcommittee
- 6) Old Business
 - a. Consideration of Revised TAC Charter
 - b. Procedure Clarifications
- 7) New Business
 - a. TAC Member Discussion
- 8) Public Comment

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TAC Roles and Responsibilities

Roles and Responsibilities via [§10.1-659](#)

The CRO shall establish the TAC to assist with developing, updating, and implementing the Virginia Coastal Resilience Master Plan.

The TAC shall ensure that:

- Risk evaluations and project prioritization protocols are regularly updated and are informed by the best applicable scientific and technical data;
- Statewide/regional needs are addressed using the best applicable science and long-term resilience approaches; and
- The [Virginia Coastal Resilience Master Planning Framework](#) is adhered to in the development and updating of the Virginia Coastal Resilience Master Plan.

Attend Quarterly TAC Meetings to:

- Review updates to the Virginia Coastal Resilience Master Plan
- Receive updates about the progress of the Virginia Flood Protection Master Plan
- May be called upon to assist DCR with the Virginia Flood Protection Master Plan

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Virginia Coastal Resilience Master Plan, Phase II Update

Coastal Resilience Web Explorer, User Portal Update

Pluvial Modeling Update

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Coastal Resilience Master Plan, Phase II Update

Phase 2 Code Requirements [2022 GA HB516/SB551 now §[10.1-658, 659](#)]

- SACAP in coordination with DCR, shall update the Virginia Coastal Resilience Master Plan no later than December 31, 2024 (every 5 years thereafter)
- CRMP shall be a place-specific plan for mitigating severe and repetitive flooding and shall [adhere to the Framework Principles]
- Phase 2 will incorporate:
 - 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
- Phase 2 will implement the Community Outreach and Engagement Plan

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CRMP Phase II – December 2024

This planning process will result in two major deliverables:

- 1) an updated Coastal Resilience Web Explorer
- 2) a PDF Document Plan

The key components of these two deliverables are:

- 1) Flood Hazard Exposure Model
- 2) Flood Hazard Risk Assessment
- 3) Planned Resilience Actions
- 4) Financial Need for Flood Resilience
- 5) TAC Subcommittee Recommendations

Outreach and engagement will be utilized throughout the plan's development to collect feedback on the content and direction of these key components.

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CRMP Phase II - Plan Development Timeline

Jul 23	Aug 23	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24	Sep 24	Oct 24	Nov 24	Dec 24	
Meetings																		
	Sub	TAC			Sub	TAC			Sub	TAC			Sub	TAC			Sub	TAC
Schedule																		
Develop Flood Hazard Exposure Model Research, Data, and Innovation									Data Display (CRWE Update) Research, Data, and Innovation									
		Data Collection Project Prioritization							Flood Hazard Risk Assessment Project Prioritization									
Project and Initiative Info Collection Project Prioritization								Analyze Planned Resilience Actions Project Prioritization, Funding										
				Quantify Financial Need for Flood Resilience Funding														
Ongoing Stakeholder Outreach and Engagement Outreach and Coordination																		
Develop TAC Subcommittee Recommendations All Subcommittees																		

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Consulting Approach

RFPs to support Flood Resilience Planning

Resilience Planning and Consulting Contract(s)

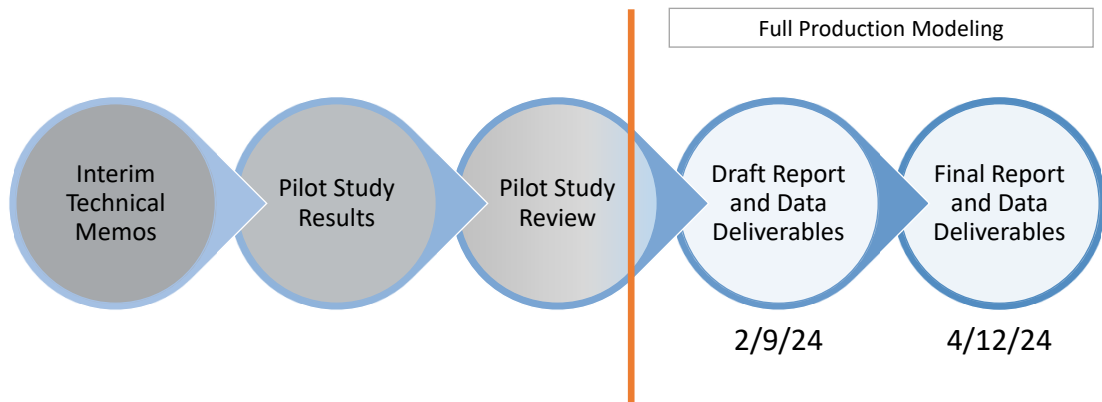
- Qualification-based
- Task order-based
- May award multiple contracts
- Maximizing flexibility and resources
- DCR is developing RFP
 - Released: Jul 31, 2023
 - Proposals Due: Sept 21, 2023
 - Anticipated award: Jan 2024
 - Task Order NTP: Feb/Mar 2024

Ongoing Dewberry Contracts:

- Pluvial modeling in coastal region
- Project and funding web app development for coastal resilience web explorer
- Flood hazards impact analysis
- Coastal resilience web explorer updates

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Major Flood Hazards Pluvial Modeling Update



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Major Flood Hazards Pluvial Modeling Update

- Decisions needed for full production modeling
 - Depth threshold for display and impact analysis
 - Land Cover Land Use input data
 - Precipitation input values
 - Median climate projections
 - Intervals referenced to climate projections

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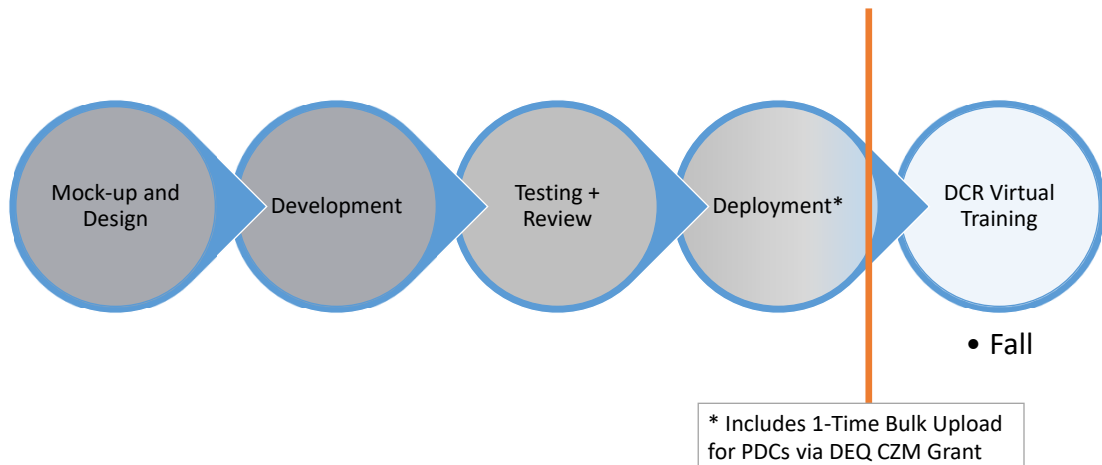
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Coastal Resilience Web Explorer (CRWE) User Portal Update



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Coastal Resilience Web Explorer (CRWE) User Portal Update

- Coastal Resilience Web Explorer: dcr.virginia.gov/crmp/cr-web-explorer
- CRWE User Portal: VAResilienceExplorer.com/
- CRWE User Access Form: www.dcr.virginia.gov/dam-safety-and-floodplains/document/DCR-Resilience-Explorer-User-Access-Form.pdf
 - Form must be completed, signed, and processed by DCR to provide user access
- CRWE User Portal Training: DCR to announce virtual user portal trainings
- Project and Initiatives Phase II Inventory and Analysis
 - Open data call for projects and initiatives (Fall '23 ~ Spring '24)
 - PDC project and initiatives bulk upload
 - Gaps analysis

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Other DCR Updates

Resilience Coordination Working Group

Community Flood Preparedness Fund & Resilience Virginia Revolving Fund

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Resilience Coordination Working Group

- This Working Group is being established by the Chief Resilience Officer in furtherance of Governor Youngkin's goal of addressing challenges related to flooding and resilience, and in the spirit of engaging collaboratively with the General Assembly on this important issue. The Working Group has the following purposes:
 - To consider and assess strategies and policies for the Commonwealth to improve intergovernmental and interagency coordination; and
 - To maximize the procurement of federal and private funding opportunities in planning for and implementing flood resilience throughout the Commonwealth
- Started in January 2023 and will issue report in November 2023
- Final Meeting 9/26 in Richmond
- Meetings are open to the public
- <https://www.dcr.virginia.gov/dam-safety-and-floodplains/resilience-coordination-working-group>

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CFPF Round 4

Community Flood Preparedness Fund Round 4 – Total Available \$85,000,000

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

Application period will close on November 12, 2023 at 11:59 p.m.



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RVRF Round 1

Resilient Virginia Revolving Fund Round 1 – Total Available \$18,500,000

Category	Amount	Award Type	Notes
Non-federal match for federal resilience grants to localities.	\$5,000,000	Loans	Below market-rate loans for localities to use as non-federal match for resilience projects (FMA, HMA, CDBG, BRIC, etc).
Hazard Mitigation of Buildings	\$7,500,000	Loans	Below market-rate loans for projects related to the hazard mitigation of buildings. Awards are for discrete projects that localities wish to support (may be on private property). Satisfies statutory requirement that a portion of the RVRF be set aside for this purpose.
Capitalization for Local Flood Resilience Programs	\$1,000,000	Loans	Interest-only loans to localities with existing revolving funds. Providing interest-only loans allows principal to be revolved within the locality. Loans to localities may be rolled over indefinitely.
Capacity Building for Local Flood Resilience Funding Programs	\$5,000,000	Grants	Grants to localities to support the establishment of Local Flood Resilience Funding Programs. Subject to the approval of DCR, these programs could fund a range of property-scale projects.

Application period will close on December 12, 2023 at 11:59 p.m.



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Research, Data and Innovation Subcommittee

Quarter 3 Update

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Research, Data, and Innovation Objectives

1. Inform Development of Flood Hazard Exposure Model.

Using the best available data, provide recommendations to DCR and Dewberry to select pluvial modeling approach (including climate scenarios), advise on the selection of fluvial modeling data and scenarios, and advise on approach to compound flooding joint probability analysis.

2. Inform Inputs to Flood Hazard Risk Assessment.

Based on the flood hazard exposure model developed, advise DCR and Dewberry on how to utilize the flood hazard model for conducting the flood hazard risk assessment.

3. Develop recommendations for future planning.

This includes, but is not limited to:

- Develop a data development plan to fill gaps in advance of future planning processes. Consider research and data products that can meet the state's needs.
- Advise on innovations suited to address flood risks and fill gaps in resilience action for future planning efforts. Consider R&D, public-private partnerships, collaborative research.

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Subcommittee Discussion Summary

- Subcommittee Objectives
- Pluvial Pilot Study Approach and Results
 - Subcommittee was asked to consider:
 - Precipitation inputs using median climate scenario values or intervals related to climate scenarios
 - Future considerations
 - Land cover/land use data input
 - Flood depth output threshold
- Fluvial Data for VFPMP
 - Subcommittee was asked to consider:
 - Available FEMA data vs other data options

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Subcommittee Next Steps

- Discussion at next subcommittee meeting
 - Flood hazard data scenarios for flooding (Coastal, Fluvial, Pluvial)
 - How should the existing (Coastal & Fluvial) and pending (Pluvial) data be combined to represent the major sources of flooding for current and future planning scenarios?
 - Gathering desired flood hazard model outputs from end-users

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Subcommittee and Staff Additions

- Flood depth output threshold
- Land cover/land use data input
- Precipitation scenario inputs
- 3rd party flood hazard data

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Pilot Basins in Study Area

HUC	Name	Terrain	Population Density Type	Tidal Conditions
020403040104	Wachapreague Inlet	Shoreline/tidal flats	Rural	Yes
020403040301	Mockhorn Bay-The Thorofare	Moderate ridge/shelf above tidal flats	Rural	Yes
020700080301	South Fork Catoclin Creek	High relief with stream network	Dispersed rural suburban and farmsteads	No
020700110601	Upper Machodoc Creek	High relief with stream network, steep ridge/shelf, outlet directly to the Potomac River	Rural	Tidal River
020801040102	Hazel Run-Rappahannock River	Moderate relief with major river	Urban	Tidal River
020802060501	Powhite Creek-Chickahominy River	Moderate relief with swamp	Urban	No
020802060906	Cooper Creek-James River	Shoreline	Urban	Yes
030102011004	Poplar Swamp-Three Creek	Moderate relief with swamp	Rural	No
030102020401	Reddy Hole Branch-Seacock Swamp	Moderate relief with swamp	Rural with small urban area	No

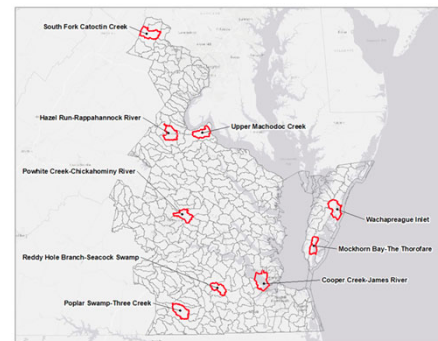


Figure 1. A map of the HUC-12's in the study area with locations modeled in the pilot study shown in red.

- 439 HUC 12's in Study Area
- 57 Pilot Models from 9 HUC-12's

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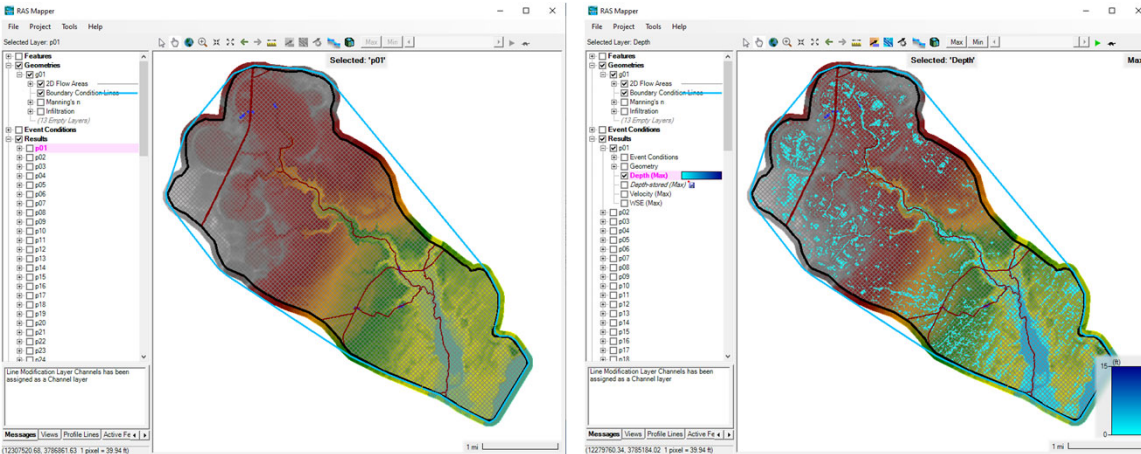
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HEC-RAS 2D Models



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Using the Models beyond the CRMP

- HEC-RAS models may be customized to
 - Compute new or additional storm scenarios
 - Evaluate changes in topography / land use, development, community growth, etc.
 - Vet project proposals and locations to provide insight into flood impacts at the site and potential impacts to neighboring areas.
 - Incorporate fluvial impacts through linkage or boundary condition changes
- HEC-RAS models limited to surface water. Does not include groundwater or stormwater infrastructure.

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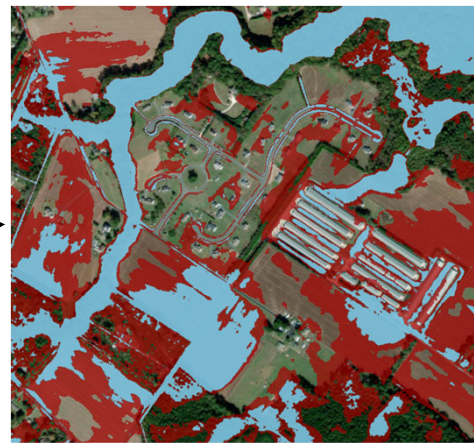
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Depth Threshold Decision



2050-2100 100-yr 24-hr Storm	Area (mi ²)
Inundation Boundary	6.99
Inundation Boundary (filtered to 0.5')	3.61

0.5-ft Recommended by DCR & Dewberry

Pluvial Modeling – Land Cover Land Use Data



Figure 1. VBMP imagery, 30-meter NLCD, and one-meter VSLCD.

Land Cover Land Use Decision

- National Land Cover Dataset
 - 2019 Aerial Imagery
 - 30-meter resolution
 - Reduced infiltration = increased flooding
- Virginia Statewide Land Cover Dataset
 - 2013/14 Aerial Imagery
 - 1-meter resolution
 - Increased infiltration = reduced flooding
- Chesapeake Conservancy Land Cover Dataset
 - 2017/18 Aerial Imagery
 - 1-meter resolution
 - Limited to Chesapeake Bay Watershed

Recommended by DCR & Dewberry

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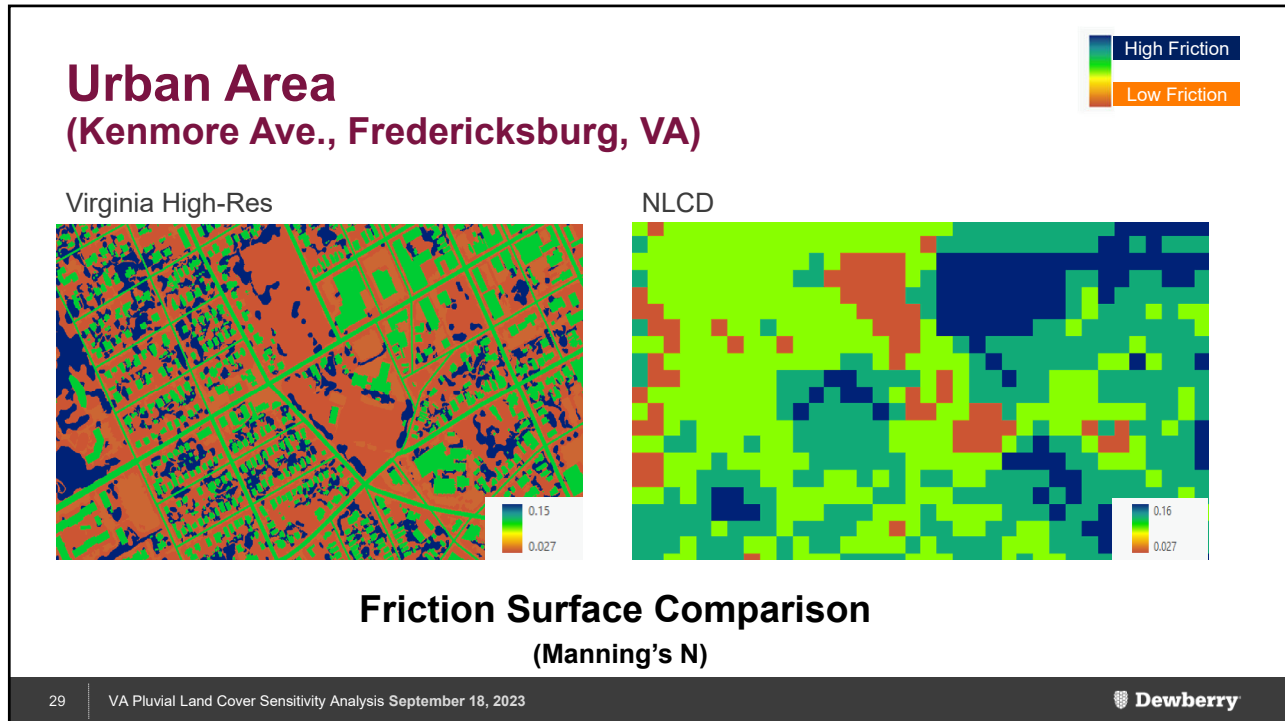


LULC Sensitivity Analysis

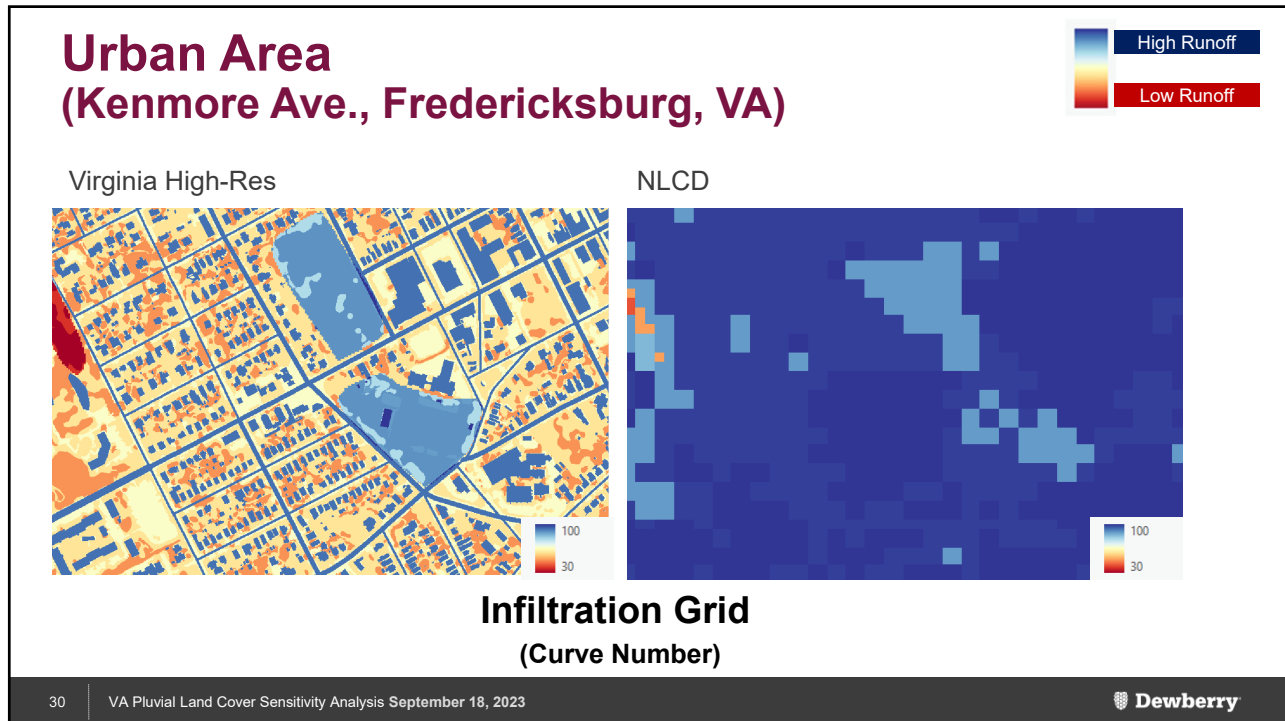
VA Pluvial Modeling

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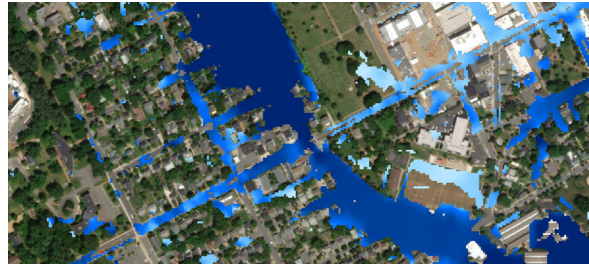
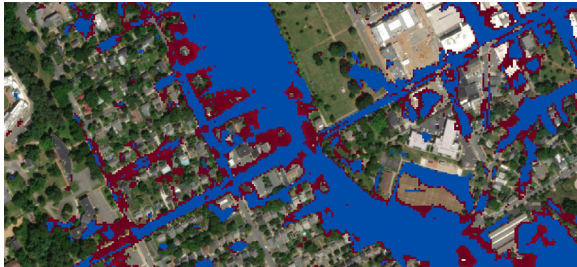


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Kenmore Ave., Fredericksburg, VA



Horizontal Impact:

- Flooding extent **decreased** with high-res land cover
- Areas removed from floodplain using VA High-Res shown in Red

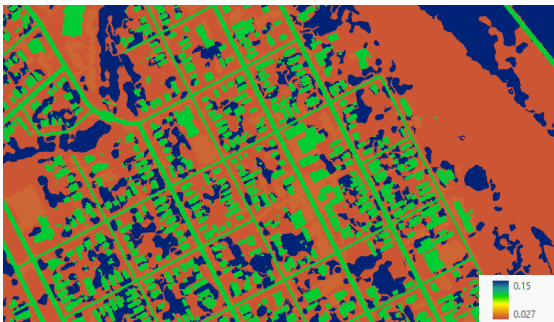
Vertical Impact:

- Difference < 1.25'
- Max difference in dark blue

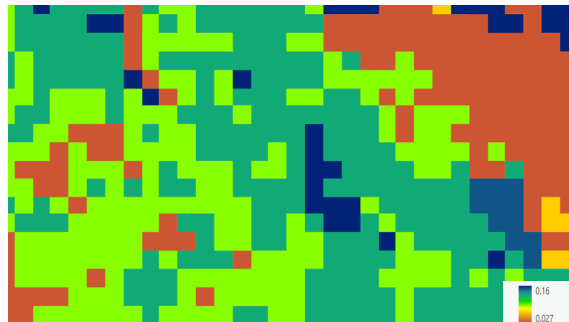
Mixed Urban / Industrial: (Pitt St., Fredericksburg, VA)



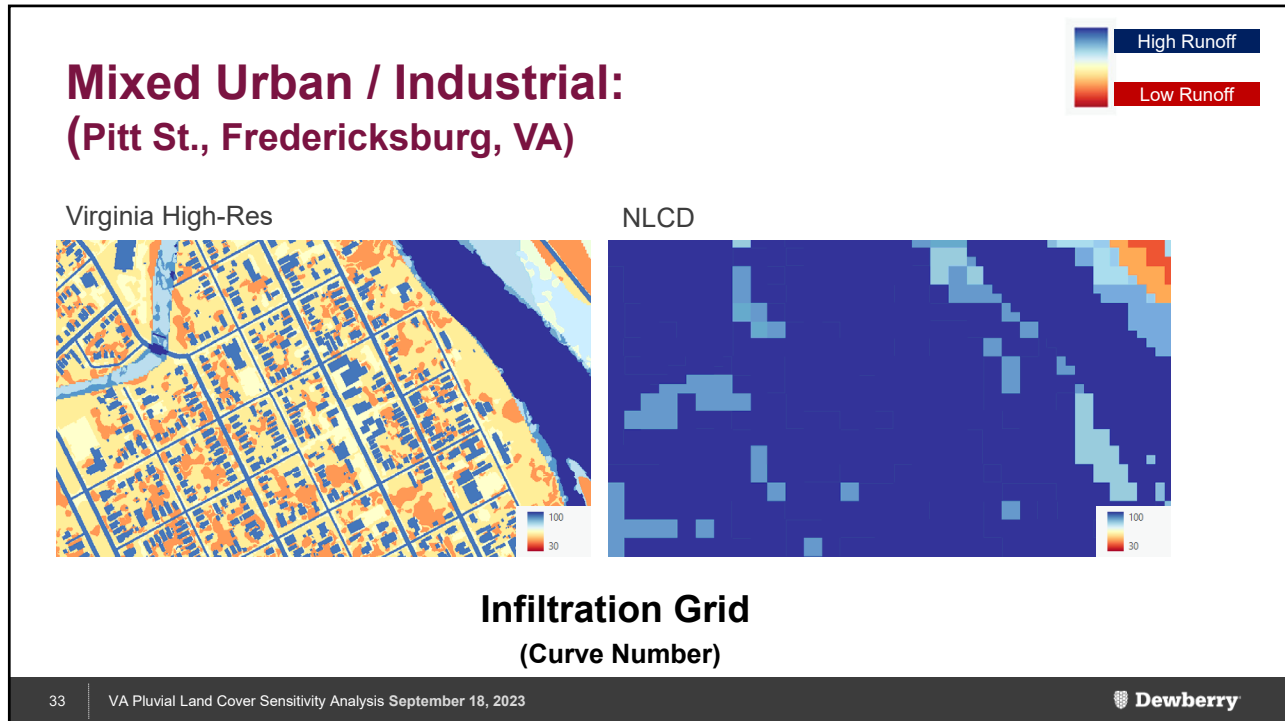
Virginia High-Res



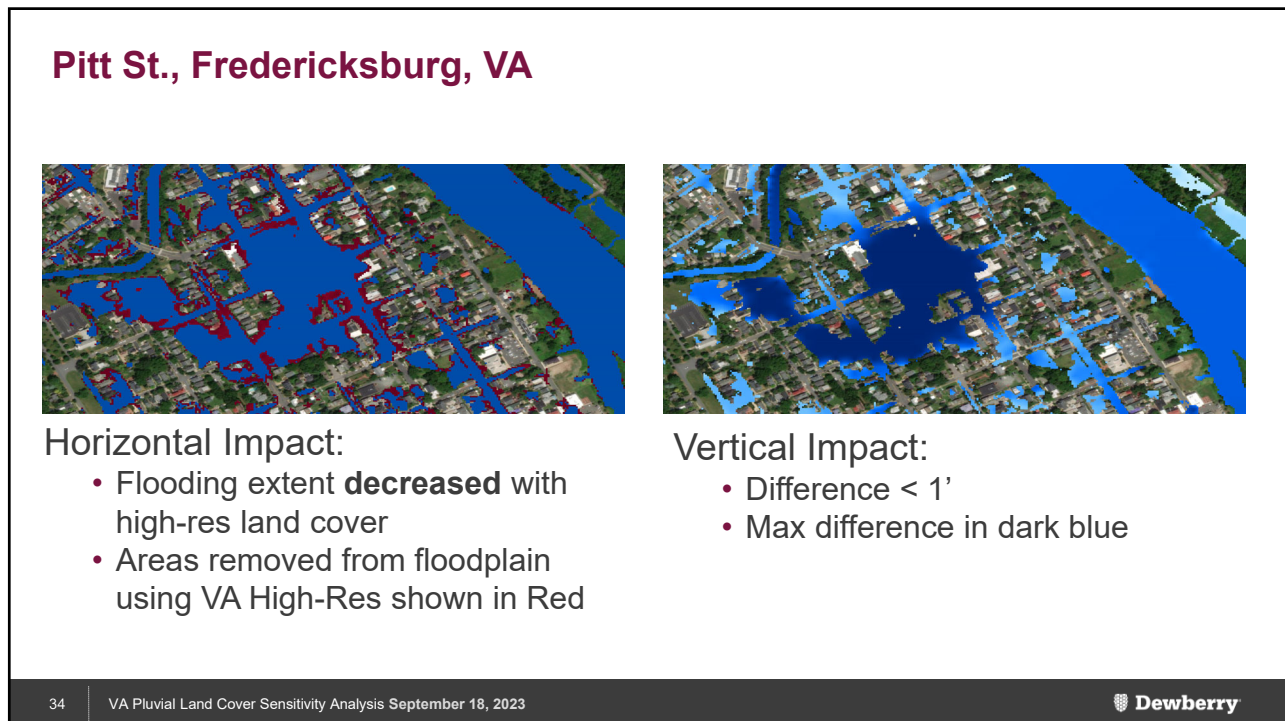
NLCD



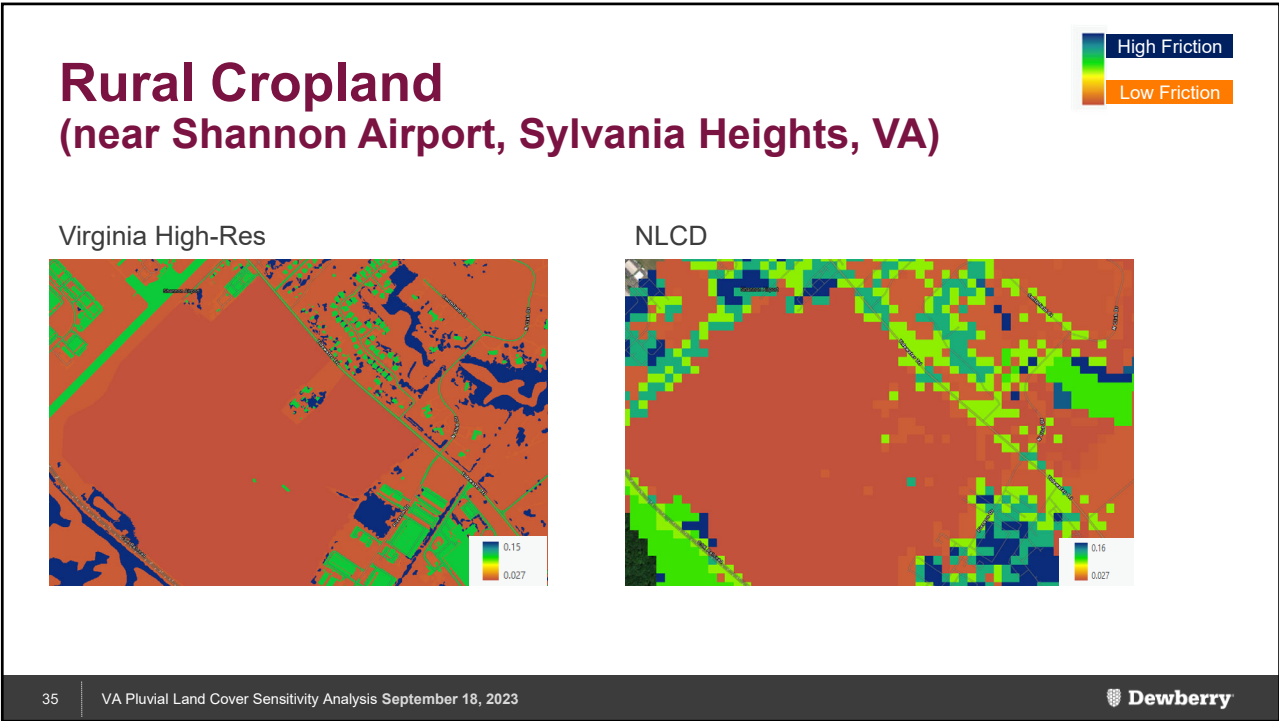
Friction Surface Comparison (Manning's N)



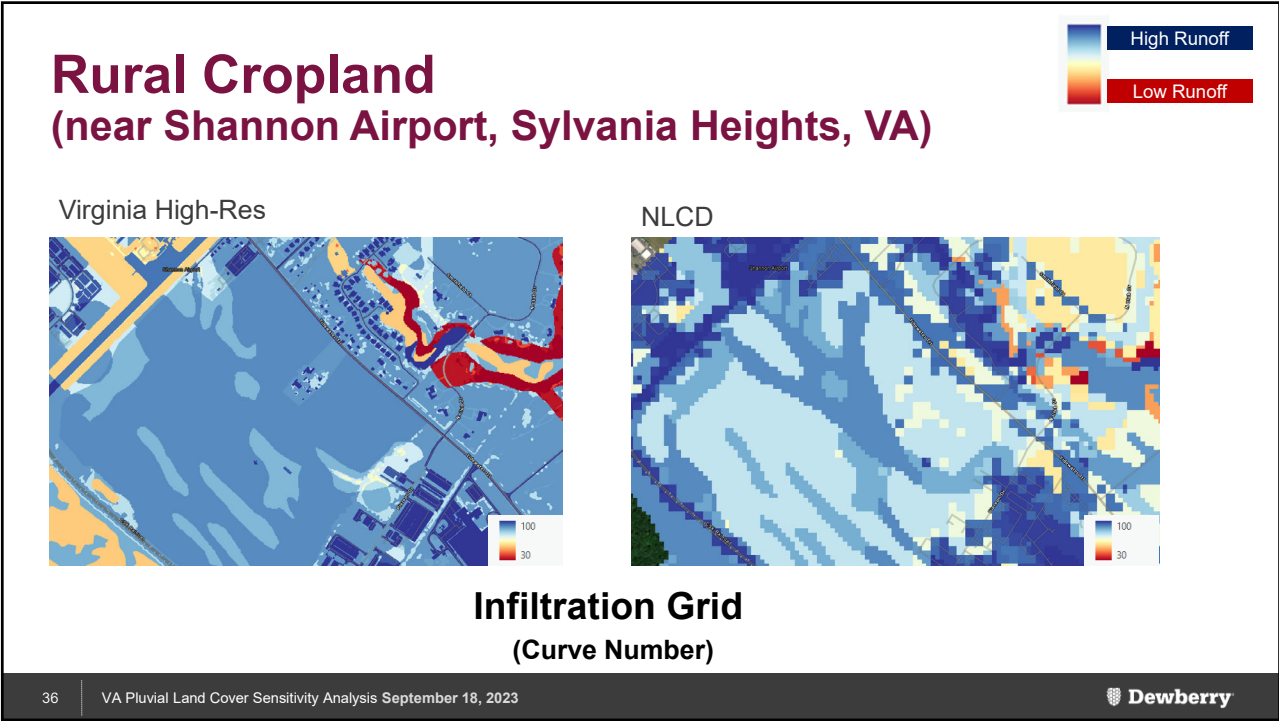
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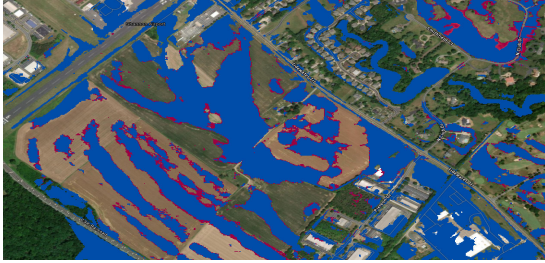


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Cropland near Shannon Airport, Sylvania Heights, VA



Horizontal Impact:

- Flooding extent **decreased** with high-res land cover
- Areas removed from floodplain using VA High-Res shown in Red

Vertical Impact:

- Difference < 0.7'
- Max difference in dark blue

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VA Pluvial Land Cover Sensitivity Analysis September 18, 2023



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Land Cover Land Use Decision

- National Land Cover Dataset
 - 2019 Aerial Imagery
 - 30-meter resolution
 - Reduced infiltration = increased flooding
- Virginia Statewide Land Cover Dataset
 - 2013/14 Aerial Imagery
 - 1-meter resolution
 - Increased infiltration = reduced flooding
- Chesapeake Conservancy Land Cover Dataset
 - 2017/18 Aerial Imagery
 - 1-meter resolution
 - Limited to Chesapeake Bay Watershed

Recommended by DCR & Dewberry

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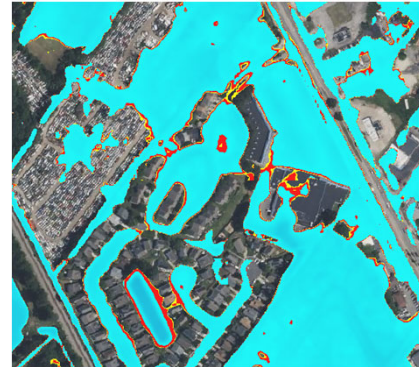
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Pilot Study Pluvial Precipitation Values

- Intensity (inch) via Climate Scenarios
 - Atlas 14 median values
 - MARISA Median 2020-2070 RCP8.5 values
 - MARISA Median 2050-2100 RCP4.5 values
 - MARISA Median 2050-2100 RCP8.5 values
- Duration
 - 2-hr, 6-hr, 24-hr durations;
- Frequency
 - 2-, 5-, 10-, 25-, 50-, 100-, 500-year



6-hr, 4% AEP (25-yr) Event Example:
 Blue = Current conditions
 Red = 2020-2050 @ RCP8.5
 Yellow = 2050-2100 @ RCP8.5

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Pilot Study Pluvial Precipitation Alternative

- Intensity: Median Climate Scenarios
 - Atlas 14 median values
 - Median 2020-2070 RCP8.5 median values
 - Median 2050-2100 RCP4.5 median values
 - Median 2050-2100 RCP8.5 median values
- Duration
 - 2-hr, 6-hr, 24-hr durations;
- Frequency
 - 2-, 5-, 10-, 25-, 50-, 100-, 500-year
- Intensity: Intervals related to Climate Scenarios
 - 2-hr Duration
 - Range = 1.45 – 7.63 in
 - 1 – 8 in @ 0.5-in interval (15+ runs)
 - 6-hr Duration
 - Range = 1.94 – 10.71 in
 - 1 – 11 in @ 1-in interval (11+ runs)
 - 24-hr Duration
 - Range = 2.75 – 16 in
 - 2 – 16 in @ 1-in interval (15+ runs)
- Frequency mapped to:
 - 2-, 5-, 10-, 25-, 50-, 100-, 500-year
- Additional runs needed at tidal boundary for SLR considerations

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Pilot Study Pluvial Flood Model Scenario Decision

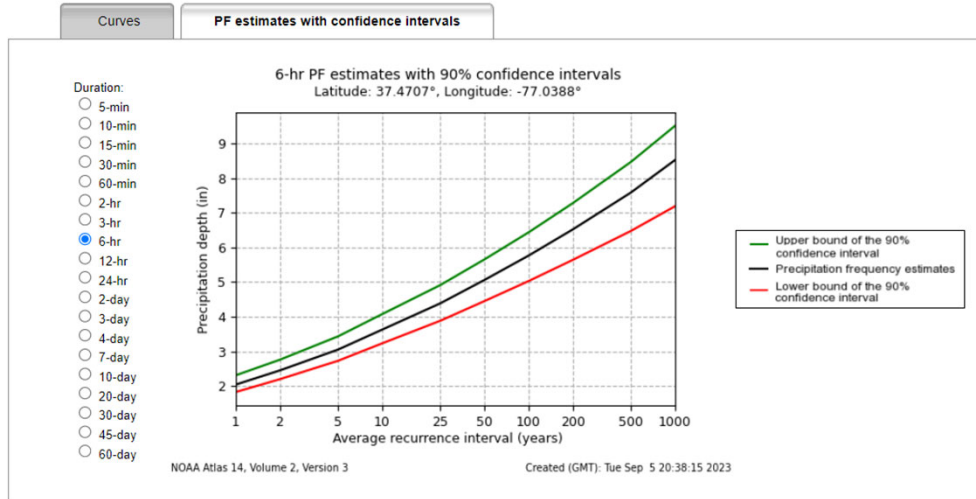
- Climate Scenario Median Values
 - Coupled to Atlas14 & MARISA Data (Individual data point for an individual climate scenario, duration, and return interval)
 - Consistent with CRMP Coastal Flood Hazard
 - Facilitates impact data calculation and summary
 - Data shelf life due to Atlas 14/15 Updates (Models are available to be updated)
 - Does not represent full range of conditions (Median Value only)
- Intervals Related to Climate Scenarios
 - Intensity Based (Inches)
 - Cross-walk needed for each subbasin for return interval and climate scenario
 - Adaptable to pair with CRMP coastal flood hazard and impacts
 - Adaptable for future data/ climate scenarios

Recommended by DCR, Dewberry, VTRC, VDOT, VIMS, and George Mason University

NOAA Atlas 14 – confidence interval range

PDS-based precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.387 (0.350-0.429)	0.457 (0.415-0.506)	0.531 (0.482-0.587)	0.599 (0.541-0.662)	0.674 (0.607-0.743)	0.734 (0.658-0.810)	0.790 (0.705-0.872)	0.842 (0.747-0.930)	0.906 (0.797-1.00)	0.960 (0.838-1.06)
10-min	0.618 (0.558-0.686)	0.732 (0.664-0.809)	0.851 (0.771-0.940)	0.958 (0.866-1.06)	1.07 (0.967-1.18)	1.17 (1.05-1.29)	1.26 (1.12-1.38)	1.34 (1.18-1.47)	1.43 (1.26-1.58)	1.51 (1.32-1.68)
15-min	0.772 (0.698-0.857)	0.920 (0.834-1.02)	1.08 (0.976-1.19)	1.21 (1.10-1.34)	1.36 (1.22-1.50)	1.48 (1.33-1.63)	1.59 (1.42-1.75)	1.68 (1.50-1.86)	1.80 (1.59-2.00)	1.90 (1.66-2.10)
30-min	1.06 (0.957-1.18)	1.27 (1.15-1.40)	1.53 (1.39-1.69)	1.76 (1.59-1.94)	2.02 (1.82-2.22)	2.23 (2.00-2.46)	2.43 (2.17-2.68)	2.62 (2.33-2.90)	2.87 (2.52-3.18)	3.07 (2.68-3.41)
60-min	1.32 (1.19-1.46)	1.59 (1.45-1.76)	1.96 (1.78-2.16)	2.29 (2.07-2.53)	2.69 (2.42-2.96)	3.02 (2.71-3.33)	3.35 (2.99-3.69)	3.68 (3.26-4.06)	4.12 (3.62-4.56)	4.49 (3.92-4.97)
2-hr	1.57 (1.42-1.75)	1.89 (1.72-2.10)	2.36 (2.13-2.61)	2.78 (2.51-3.08)	3.32 (2.99-3.67)	3.78 (3.37-4.18)	4.25 (3.77-4.69)	4.74 (4.17-5.23)	5.41 (4.71-5.97)	5.97 (5.16-6.60)
3-hr	1.69 (1.52-1.90)	2.04 (1.84-2.28)	2.54 (2.29-2.84)	3.01 (2.70-3.35)	3.61 (3.22-4.01)	4.13 (3.66-4.58)	4.67 (4.11-5.17)	5.23 (4.57-5.80)	6.01 (5.20-6.66)	6.68 (5.72-7.41)
6-hr	2.04 (1.82-2.31)	2.45 (2.20-2.76)	3.05 (2.73-3.43)	3.63 (3.23-4.07)	4.39 (3.88-4.92)	5.06 (4.45-5.66)	5.76 (5.03-6.44)	6.52 (5.64-7.28)	7.59 (6.48-8.47)	8.52 (7.19-9.51)
12-hr	2.42 (2.16-2.77)	2.91 (2.59-3.31)	3.64 (3.24-4.15)	4.36 (3.86-4.95)	5.34 (4.68-6.04)	6.22 (5.41-7.03)	7.17 (6.17-8.07)	8.20 (6.97-9.21)	9.68 (8.10-10.9)	11.0 (9.10-12.4)
24-hr	2.78 (2.53-3.09)	3.38 (3.08-3.76)	4.35 (3.96-4.84)	5.19 (4.70-5.77)	6.44 (5.79-7.14)	7.52 (6.71-8.32)	8.72 (7.72-9.62)	10.1 (8.82-11.1)	12.1 (10.4-13.3)	13.8 (11.8-15.2)

NOAA Atlas 14 – confidence interval range



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MARISA IDF confidence interval range

CHART	TABLE	COMPARISON	DOWNLOAD CSV			WARSAW 2 NW
Percentile	10th	25th	Median	75th	90th	Atlas 14 Depth (inches)
County Change Factors:	1.02	1.07	1.15	1.23	1.33	
Duration	Projected 2050-2100 Depth (inches)					
2 hr	1.89	1.98	2.13	2.28	2.46	1.85
3 hr	2.04	2.14	2.30	2.46	2.66	2
6 hr	2.47	2.59	2.78	2.98	3.22	2.42
12 hr	2.94	3.08	3.31	3.54	3.83	2.88
24 hr	3.34	3.50	3.76	4.02	4.35	3.27

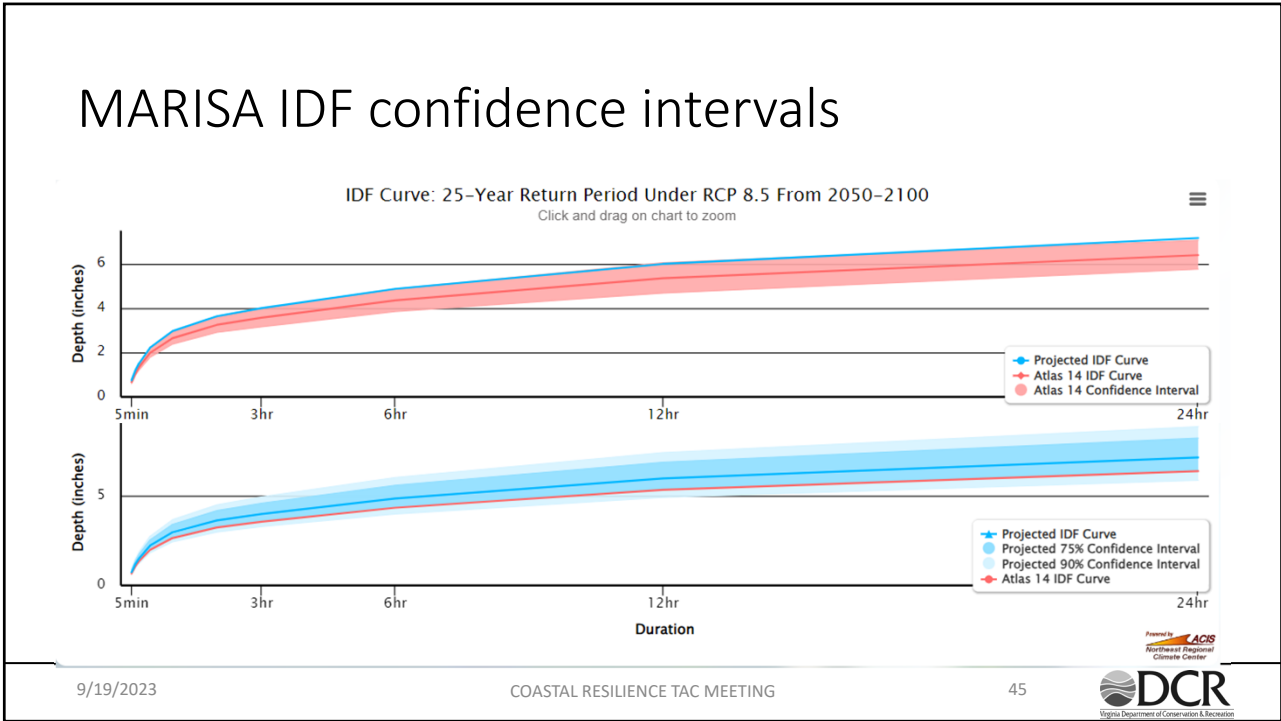
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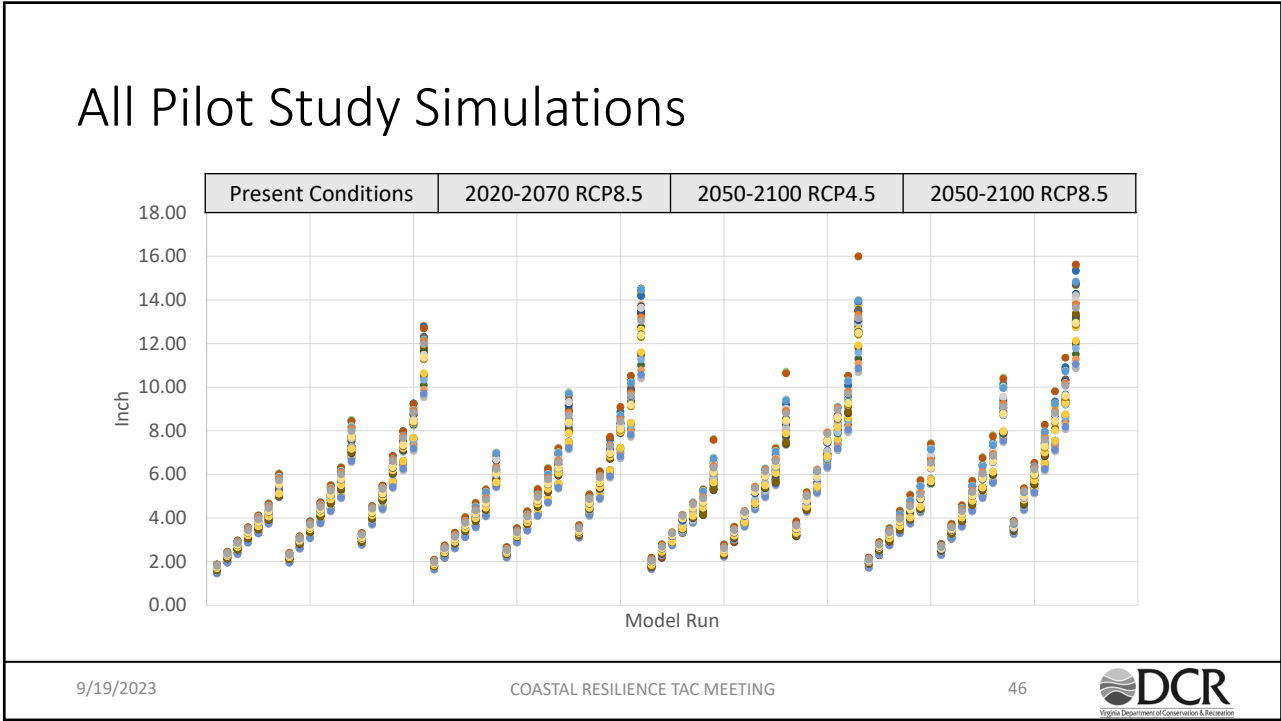
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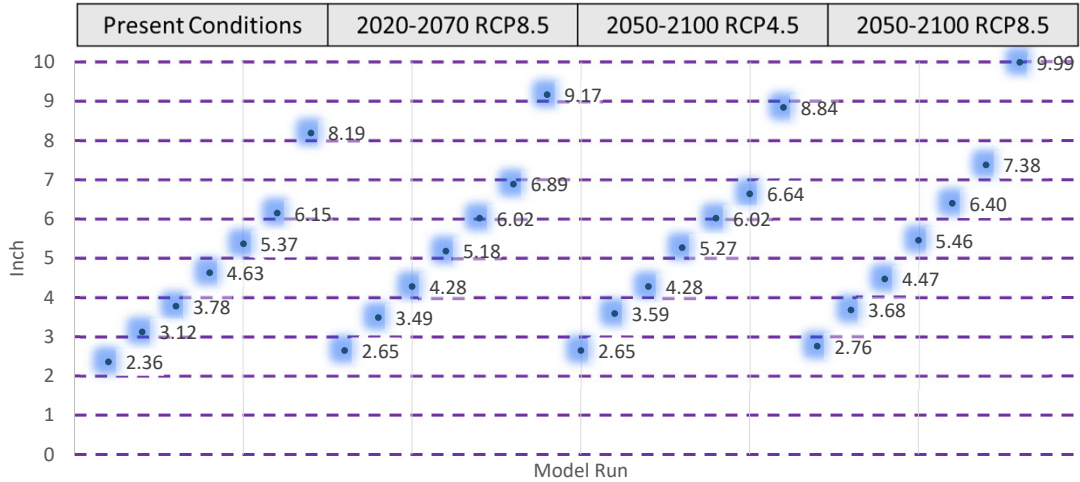


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Individual Subbasin, 6-hr Model Simulations



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Pilot Study Pluvial Precipitation Alternative

- Intensity: Median Climate Scenarios
 - Atlas 14 median values
 - Median 2020-2070 RCP8.5 median values
 - Median 2050-2100 RCP4.5 median values
 - Median 2050-2100 RCP8.5 median values
- Duration
 - 2-hr, 6-hr, 24-hr durations;
- Frequency
 - 2-, 5-, 10-, 25-, 50-, 100-, 500-year
- Intensity: Intervals related to Climate Scenarios
 - 2-hr Duration
 - Range = 1.45 – 7.63 in
 - 1 – 8 in @ 0.5-in interval (15+ runs)
 - 6-hr Duration
 - Range = 1.94 – 10.71 in
 - 1 – 11 in @ 1-in interval (11+ runs)
 - 24-hr Duration
 - Range = 2.75 – 16 in
 - 2 – 16 in @ 1-in interval (15+ runs)
- Frequency mapped to:
 - 2-, 5-, 10-, 25-, 50-, 100-, 500-year
- Additional runs needed at tidal boundary for SLR considerations

Recommended by DCR, Dewberry, VTRC, VDOT, VIMS, and George Mason University

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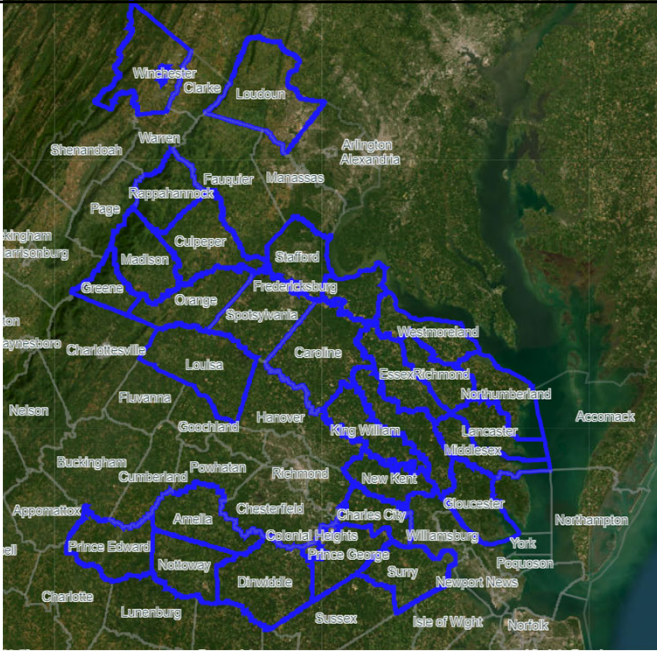
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Fluvial Flood Hazard Data

- Existing FEMA Data
 - Pluvial Not Included
 - Fluvial Limited
- Future Federal Data
 - FEMA Data Updates
 - NWS Flood Inundation Models
 - Federal Flood Risk Management Standards, Climate Informed Scientific Approach Data
- VFPM 2025
 - Data Development vs Data Leasing via 3rd Party Vendors?



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What are the 3rd Party Vendors Offering?

3rd Party Flood Hazard Data

- Coastal, pluvial, fluvial full coverage models
- Coarser resolution (~10m)
- Multiple return periods
- Multiple climate scenarios
- Impacts and risk scoring
- Leased/licensed data
- Quick data delivery
- Texas utilizing 3rd party data

Issues Discussed


- 3rd party means and methods
- Procurement
- Need to review and discuss

DCR recommends utilizing best available FEMA fluvial data for CRMP and continue to explore 3rd party flood hazard data suitability for Virginia Flood Protection Master Plan.

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Project Prioritization Subcommittee

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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.)

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Analysis of Planned Resilience Actions

A possible role for this Subcommittee and use for the CRMP Phase II is **supporting the regionalization of planning efforts** through the identification of commonalities and opportunities for localities and PDCs to work together.



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Recommendations for Future Planning

The subcommittee should **identify metrics** for how progress toward **recommendations for future planning** can be tracked to ensure success.



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Flood Hazard Risk Assessment Outputs

The subcommittee was asked to consider:

- Changes to be made to the Phase I impact assessment.
- Potential opportunities to reorganize assets in the Phase II assessment.
- The types of plan deliverables that will be most useful to end users.

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Flood Hazard Risk Assessment Outputs

Themes from the subcommittee's discussion:

The **intended audiences and objectives** of this risk assessment should be clearly defined.

Data should contextualize the impacts of flood exposure for intended audiences.

- Provide more accessible analysis of the duration and frequency of flooding.
- Clear definitions are needed for what is "at risk" and why. For ex., at what flood depth does a roadway become impassible?
- Provide summary statistics for status of risk at multiple geographic scales (statewide, PDC, locality), including for grant application purposes.

Flood Hazard Risk Assessment Outputs

Themes from the subcommittee's discussion:

The planning products should provide guidance alongside the assessment to support decision-making. For example, to:

- Set goals for infrastructure protection.
- Decide where and when to invest in new or expanded infrastructure (for ex., state capital investment decisions, pursuit of grant dollars).
- Consider timing and location of relocation and adaptation strategies.
- Conduct benefit-cost analyses for policy decisions.

Flood Hazard Risk Assessment Next Steps

- DCR will develop updated risk assessment output summary to present at next subcommittee meeting for review and feedback.
 - Identify opportunities to build on Phase I results.
- Chair will investigate state agency business impact assessments to share findings at next meeting.

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Subcommittee and Staff Additions

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Funding Subcommittee

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Funding Subcommittee Objectives

- Inform quantification of financial need for flood resilience.
 - What funding needs should be identified in the CRMP Phase II, including to guide appropriations needs?
- Identify and examine financial tools and processes that are suited and/or needed to implement flood resilience.
- Identify challenges/opportunities to implementing financial tools.
- Develop recommendations for future planning.
This includes, but is not limited to:
 - Recommend approach to quantifying and presenting financial need for flood resilience during future planning efforts.

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Building on CRMP Phase I Funding Information

- | | |
|--|--|
| <ul style="list-style-type: none"> • Additional context needed on <ul style="list-style-type: none"> • Funding and financing options (Info Sheets) • Challenges to secure funding (Case Study) • Challenges to implement funding (Case Study) | <ul style="list-style-type: none"> • Additional information needed on <ul style="list-style-type: none"> • Financial tools and processes • Environmental baselines assessments • Mapping the entire funding/finance process include: <ul style="list-style-type: none"> • Resources and skillsets needed • Best practices for success/question checklist • Tide gauge network to implement parametric insurance |
|--|--|

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Funding Needs for CRMP Phase II and Beyond

- **Forward Looking**
 - \$ needed for sustainable flood resilience capacity in PDCs and local government
 - \$ needed to protect critical infrastructure
- **Existing Conditions**
 - \$ available for flood resilience through state and federal sources.
- **Historical Context**
 - \$ spent building flood resilience in Virginia and the source of those funds
- **Investment Justification (Providing value beyond risk reduction. co-benefits and indirect impacts.)**
 - Natural-and-Nature-Based project benefits to support funding justification
 - Social project benefits to support funding justification
 - Economic project benefits (economic development and reduced economic impacts)
- **Case Studies detailing funding challenges and successes**

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Funding Subcommittee Lines of Effort

- **Building the Financial Baseline**
 - What is the value of the assets we manage/protect?
 - What is the financial risk?
 - What is the estimated need for resilience?
- **Making the Financial Case**
 - Tailored messaging
 - Gather regional and local perspectives
- **Document Opportunities for State Support**
- **Providing Guidance and Information on Financial Tools and Processes**
 - Case study examples
 - Guidance documents on securing and implementing funding

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Next Steps

- Continue to build out the financial needs assessment across the lines of effort
- Prioritize financial needs assessment
 - CRMP Phase 2 vs Future Plans
- Review flood resilience plan funding sections from other States/Regions

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Outreach and Coordination Subcommittee
Quarter 3 Meeting Updates

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Subcommittee Objectives

Outreach and Coordination

1. Inform and support outreach and engagement for the CRMP Phase II.

- Specifically: identify and prioritize stakeholders to engage; advise on purpose, goals and strategies for stakeholder engagement consistent with DCR's COEP; guide implementation of engagement strategies.

2. Strengthen relationships with key stakeholders identified as critical to engaging in the CRMP Phase II.

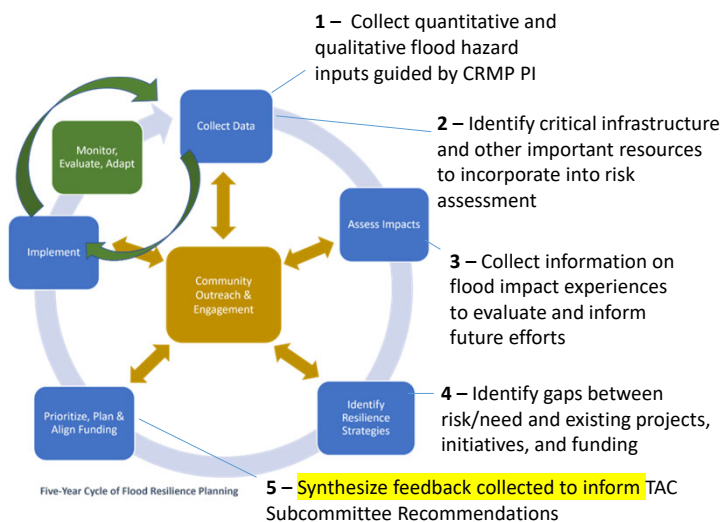
- Examples include, but are not limited to minority communities, Tribal Nations, the Department of Defense, critical infrastructure facility owners, and other federal facilities owners.

3. Develop recommendations for future planning.

This includes, but is not limited to:

- Identifying sustainable outreach and engagement goals and strategies for state support to build coastal resilience beyond CRMP Phase II.
- Developing locality capacity and needs assessment approaches.

Establish Clear Goals for Outreach & Engagement



Subcommittee Feedback:

Strengthen and clarify the opportunities to influence decision making into goals.

Is it a goal of this plan to encourage collective action toward resilience in concert with the state?

Produce Phase I O&E Gaps Analysis

Which stakeholders were not reached during Phase I of the plan?

- Understand which stakeholders were not heard during Phase I.
- Prioritize reaching those stakeholders during Phase II.

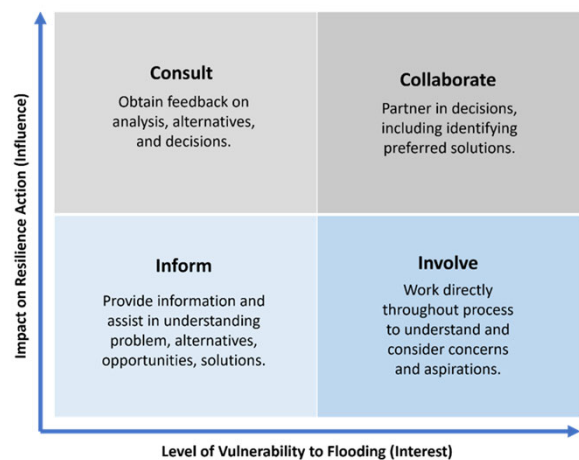
DCR does not have the resources to host collaborative planning processes at the level of the community/ neighborhood.

Stakeholder Identification

The subcommittee was asked to consider:

Who needs to be engaged to prioritize state support for **regional needs** in flood mitigation **and actions** for flood resilience?

- Where does/will flooding happen?
- What does/will flooding impact?
- How can the challenges be addressed?



Outreach and Engagement Next Steps

DCR Staff will:

- Update the stakeholder analysis map to include additional stakeholders identified by the subcommittee.
- Develop and present a gaps analysis for Phase I engagement reach to inform where to prioritize Phase II outreach and engagement.
- Identify localities to prioritize for engagement which are highly vulnerable and have lower capacity.
- Develop and present an outreach and engagement strategy based on the bullets above and the draft Community Outreach and Engagement Plan.

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Survey End Users

Collect Feedback on Phase I, Products for Phase II

Goals:

- Understand how different stakeholders have used the Phase I plan and products.
- Identify what flood hazard exposure and risk assessment products would be most useful to include in Phase II.
- Understand current experiences and barriers to funding and financing resilience activities to inform related products in Phase II.

Primary audiences: local government staff, PDC staff, state agency staff, consulting firms conducting flood resilience efforts on behalf of government.

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Old Business

Proposed TAC Charter Changes for Remote Participation and Virtual Meetings
Procedure Clarifications

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Proposed TAC Charter Changes

- **Section 2-4 Policy for Remote Participation in TAC Meeting - Changed**
 - Additional provisions for remote participation added
- **Section 2-5 Policy for All-Virtual Meetings – Added**
 - Convene a maximum of two all-virtual public meetings per calendar year or up to 25% of the meetings held per calendar year
 - Cannot have consecutive all-virtual meetings.
 - These limitations shall apply separately with respect to the meetings of each of the TAC's Subcommittees
- **Other minor changes and clarifications as noted**

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TAC Procedure Clarifications

- TAC FOIA Officer – Michael.Fletcher@dcr.virginia.gov
- Advisors and Alternates
- Subcommittee Invited Guests

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New Business

TAC Member Discussion

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Public Comment Period

In-Person Attendees

- Please sign up

Virtual Attendees

- Please enter your name into the Chat Box

Please state your name, location, and organization (if applicable)