# **Recommendation A**

## **DRAFT Revised Recommendation**

State agencies and the Commonwealth’s research universities should coordinate the collection and sharing of quantitative and qualitative flood resilience data, data production efforts, and inventories of data usage in decision-making applications across state agencies, planning district commissions, and the Commonwealth’s research universities.

## **Recommendation Changes and Comments**

### TAC comments at 9/18 TAC meeting

* No Comments

### Revised Recommendation Text presented at the 9/18 TAC meeting

See revised draft recommendation.

### Subcommittee Comments prior to 9/18 TAC meeting

HRPDC

State agencies and the Commonwealth’s ~~Research University Collaborative~~ research universities should coordinate ~~and collate~~ the collection and sharing of quantitative and qualitative flood resilience data production and application across state agencies, planning district commissions, local governments, and the Commonwealth’s ~~Research University Collaborative~~ research universities.

* *Additional comment*: “Unless this is an official group, I would recommend changing the language - it’s not a proper noun. Other options could include Virginia Sea Grant or the Commonwealth Center for Recurrent Flooding Resiliency, but I would recommend leaving it open-ended.”
  + *Response*: “supported by VASG.”

ODU

State agencies and the Commonwealth’s Research University Collaborative should coordinate and collate quantitative and qualitative flood resilience data, data production efforts, and inventories of data usage in decision-making applications ~~coordinate and collate quantitative and qualitative flood resilience data production and application across state agencies~~, planning district commissions, local governments, and the Commonwealth’s Research University Collaborative.

* *Additional comment*: “This is confusing about what is being coordinated and collated. Is it resilience data (and what is resilience data)? Or is it state, regional, local, and university efforts to produce data and apply it to flood resilience? I suggested an edit based on the original recommendation and purpose but open to clarification if it’s the right edit based on correct emphasis.

### Revised Recommendation for Subcommittee Comment prior to 9/18 TAC meeting

State agencies and the Commonwealth’s Research University Collaborative should coordinate and collate quantitative and qualitative flood resilience data production and application across state agencies, planning district commissions, local governments, and the Commonwealth’s Research University Collaborative.

### Original Recommendation Text

Support multi-institutional efforts to collate quantitative AND qualitative data on modeling, risk assessment, and planning decisions in Virginia. [A.2.1.a.]

## **Additional Information about the Recommendation (For Context Only)**

### DRAFT Purpose for Subcommittee Review

Minimize duplication of efforts and effectively mobilize our collective capacity to support evidence-based flood resilience decision making.

### Corresponding Flood Resilience Principle

The programs we implement must work together as parts of comprehensive, cohesive plans.

# **Recommendation B**

## **DRAFT Revised Recommendation**

The DCR Office of Resilience Planning and other state agencies should determine and adopt programmatic responsibility for acquiring, developing, processing, analyzing, updating, and managing critical (*temporal)* flood resilience data needs to support ongoing planning and decision-making.

## **Recommendation Changes and Comments**

### TAC comments at 9/18 TAC meeting

* Remove parenthesis and italics around “temporal”
* Critical and temporal are not synonymous
* Discus the meaning behind this recommendation and make sure the wording captures that meaning (e.g., refine what temporal flood resilience data is)

### Revised Recommendation Text presented at the 9/18 TAC meeting

Same as revised draft recommendation.

### Subcommittee Comments prior to 9/18 TAC meeting

HRPDC:

The DCR Office of Resilience Planning and other state agencies should determine and adopt programmatic responsibility for acquiring and managing critical ~~temporal~~ flood resilience data ~~needs to furnish recurrent updates~~ to support ongoing planning and decision-making.

ODU:

The DCR Office of Resilience Planning and other state agencies should adopt programmatic responsibility for ~~acquiring, creating, processing, analyzing, and updating critical temporal flood resilience data needs to furnish recurrent updates~~ acquiring, creating, processing, analyzing, and updating critical temporal flood resilience data.

* *Additional comment*: “Edit to ensure that the original recommendation and purpose are there - the revision implied that DCR would be responsible only for tracking what data is needed, not actually doing it.”

### Revised Recommendation for Subcommittee Comment prior to 9/18 TAC meeting

The DCR Office of Resilience Planning and other state agencies should adopt programmatic responsibility for critical temporal flood resilience data needs to furnish recurrent updates.

### Original Recommendation Text

Identify critical data needs for resilience planning and develop a plan for regular funding for acquisition, processing, and analysis. [A.2.6.a.]

## **Additional Information about the Recommendation (For Context Only)**

### DRAFT Purpose for Subcommittee Review

Maintain the best available data to inform decisions in a changing environment.

### Corresponding Flood Resilience Principle

Acknowledge climate change and its consequences, and base decision-making on the best available science.

# **Recommendation C**

## **DRAFT Revised Recommendation**

The Flood Resilience Advisory Committee should define resilience success, while the Commonwealth’s research universities should identify and develop indicators and monitoring methods to assess the performance of resilience projects, with key and relevant stakeholders (entities, NGOs, etc.). The indicators should be based on Virginia-centric data and address ecological, infrastructure, social, economic, cultural, and environmental justice performance.

## **Recommendation Changes and Comments**

### TAC comments at 9/18 TAC meeting

* New suggested purpose: “Once a project is implemented, how do we know if it’s working”
* Imposing assessment on public or private projects?
  + Possibility of private projects voluntarily accepting assessment and monitoring.
* There is a need to provide both public and private entities with resources and funding opportunities
* This recommendation is also about giving those private individuals the proper information they need to make informed decisions about their property.
* When considering rewriting or wordsmithing, discuss how “identify and develop” is doing important work in this recommendation.
  + We are not implying the forceful monitoring of someone’s property (for example, a living shoreline) against their will.
* Need to discuss the intent of the recommendation; while it is important to identify whether a project is working or not, it is also important to ensure the financial investments being made are effective.
* Once a project is implemented, how do we know that it is working?
  + Come up with criteria that tangibly will define success, then use the criteria to go out and make sure it works.
  + The need to understand the types of projects is more important than the monitoring of every project related to the plan.
* Find the connection or relationship between the funder and the researcher/monitor.
* Does this overlap with another recommendation about projects being effective? Maybe P-e: The DCR Office of Resilience Planning should work with the Flood Resilience Advisory Committee to establish a coordinated framework tooperationalize the Coastal Resilience Master Plan at local, regional, and state scales. The framework should be informed by data and needs assessments and should define success and set clear long-term goals, to be measured on regular, near-term timespans.

### Revised Recommendation Text presented at the 9/18 TAC meeting

See draft revised recommendation.

### Subcommittee Comments prior to 9/18 TAC meeting

Wetlands Watch

The Flood Resilience Advisory Committee should define resilience success, while ~~and~~ the Commonwealth’s Research University Collaborative should convene the evaluation of ~~examine~~ both performance indicators to monitor the success of resilience projects, and innovative and cost-effective data gathering and analysis methodologies to monitor these measures with key and relevant stakeholders (entities, NGOs, etc.) who will be reporting on the resilience projects.  The measures should include Virginia flood-centric data on ecological, infrastructure, social, economic, cultural, and environmental justice indicators.

HRPDC

The Flood Resilience Advisory Committee should define resilience success and the Commonwealth’s ~~Research University Collaborative~~ research universities should identify and develop indicators and monitoring methods to assess the performance ~~examine both performance indicators to monitor the success~~ of resilience projects~~, and innovative and cost-effective data gathering and analysis methodologies to monitor these measures~~. The indicators should be based Virginia-centric data and address ecological, infrastructure, social, economic, cultural, and environmental justice performance ~~measures should include Virginia flood-centric data on ecological, infrastructure, social, economic, cultural, and environmental justice indicators~~.

### Revised Recommendation for Subcommittee Comment prior to 9/18 TAC meeting

The Flood Resilience Advisory Committee should define resilience success and the Commonwealth’s Research University Collaborative should examine both performance indicators to monitor the success of resilience projects and innovative and cost-effective data gathering and analysis methodologies to monitor these measures. The measures should include Virginia flood-centric data on ecological, infrastructure, social, economic, cultural, and environmental justice indicators.

### Original Recommendation Text

* A.4.2.a Define what resilience success looks like.
* A.1.4.a Develop measures and methods to monitor performance of resilience projects (dashboards including ecological, infrastructure, social, economic, cultural, and justice indicators), including sensor, drone, and other smart-tech data gathering and analysis methodologies.
* A.1.1.e Support research on next generation Social Vulnerability Indices (SVI) and understanding of climate justice, cultural and historic resources, including a Virginia flood-centric SVI dataset to inform project prioritization.

## **Additional Information about the Recommendation (For Context Only)**

### DRAFT Purpose for Subcommittee Review

Define, measure, and monitor the efficacy of resilience projects to support adaptive management.

### Corresponding Flood Resilience Principle

These programs and plans must be developed and implemented with transparency and input from the public.

# **Recommendation D**

## **DRAFT Revised Recommendation**

DCR’s Office of Resilience Planning should engage with local government stakeholders to understand local obstacles and gaps in state-level programs and develop a statewide strategy that leverages co-production of innovative state level solutions to meet local needs.

## **Recommendation Changes and Comments**

### TAC comments at 9/18 TAC meeting

* Clarify “local government stakeholders.” Are we referring to the government themselves, or broader constituents?
  + Need to use the same language throughout.
* Considering obstacles and gaps: when identified, the state could potentially bring the resources to fill in the gaps.
* How does it relate to O&C-d: The DCR Office of Resilience Planning or the Flood Resilience Advisory Committee should develop a strategy to increase use of the Coastal Resilience Mater Plan by intended plan end-users, including local governments. The strategy should seek to bridge recognized capacity constraints that prevent plan uptake and should clearly define roles for state agencies to support resilience champions.

### Revised Recommendation Text presented at the 9/18 TAC meeting

See draft revised recommendation.

### Subcommittee Comments prior to 9/18 TAC meeting

HRPDC

DCR’s Office of Resilience Planning should engage with local (government?) stakeholders to understand local obstacles and gaps in state-level programs, and develop a statewide strategy that leverages co-production of innovative state level solutions to meet local needs.

### Revised Recommendation for Subcommittee Comment prior to 9/18 TAC meeting

DCR’s Office of Resilience Planning should engage with local stakeholders to understand local obstacles and gaps in state-level programs, and develop a statewide strategy that leverages co-production of innovative state level solutions to meet local needs.

### Original Recommendation Text

* A.3.2.a. Develop statewide strategy to support co-production of initiatives/products/future research needs with stakeholders, including mechanisms to engage and incorporate community and stakeholder input into research, data visualization, and project implementation.
* A.1.2.a. Research (planning, design, regulatory, legal, financial) obstacles that exist at the local scale, and what innovations are required at the state level to meet local needs innovatively and effectively.

## **Additional Information about the Recommendation (For Context Only)**

### DRAFT Purpose for Subcommittee Review

Identify appropriate state-scale collective actions to support local resilience challenges through community engagement and innovation.

### Corresponding Flood Resilience Principle

Utilize community and regional scale planning to the maximum extent possible, seeking region specific approaches tailored to the needs of individual communities.

# **Recommendation E**

## **DRAFT Revised Recommendation**

The Commonwealth’s research universities should convene to evaluate the performance of existing and innovative nature-based solutions for water quantity and water quality protections through use-inspired collaborations with public (including other universities) and private partners, and establish working groups to track progress, adapt approaches, and identify funding sources for continued collaborative efforts.

## **Recommendation Changes and Comments**

### TAC comments at 9/18 TAC meeting

* The purpose was to recognize importance of nature-based solutions, and that there is more need for understanding (their uses and efficacy, etc.).
* Recommendation R-c covers all items, but this one is more for nature-based.
* Drop the “(including other universities),” because we said Research University Collaborative.
* Not sure that what’s being described can or should be the only university function. Lost some context of other parties while combining the recommendations. It’s not only university sources.
* What is meant by “use-inspired collaborations?”
  + There is a need to tweak this current wording because the original wording was more expansive, and it showed applied science rather than fundamental science.
* Consider the usage of the word “convene.” That would imply the physical meeting of the universities—ICAR is on board with that, but we need to check with the other universities before finalizing wording.
* Importance of considering the whole catalog of solutions such as gray and hybrid approaches, as well as green/nature based. Is this the correct place to identify the wholeness of the catalog, and not just the singular of nature-based solutions?
  + We need to create hardened structures that adapt and move through time (not just nature-based solutions).
  + Consider what works under what conditions (and external factors).
  + Need opportunity costs of choosing one solution versus another
  + Should there be a space in the recommendation that speaks to the managing of water?

### Revised Recommendation Text presented at the 9/18 TAC meeting

See draft revised recommendation.

Subcommittee Comments prior to 9/18 TAC meeting

Wetlands Watch:

The Commonwealth’s Research University Collaborative should ~~evaluate~~ convene evaluation of water quantity and water quality metrics for existing and innovative nature-based solutions through use-inspired, collaborative research with public (including other universities) and private partners, and by establishing working groups to track progress, adapt approaches, and identify funding sources for continued collaborative efforts.

HRPDC:

The Commonwealth’s ~~Research University Collaborative~~ research universities should research and evaluate ~~water quantity and water quality metrics for~~ the performance of existing and innovative nature-based solutions for water quantity and water quality protection through use-inspired, ~~collaborative research~~ collaborations with public and private partners, and by establishing working groups to track progress, adapt approaches, and identify funding sources for continued collaborative efforts.

ODU:

The Commonwealth’s Research University Collaborative should evaluate water quantity and water quality metrics for existing and innovative nature-based solutions through use-inspired, collaborative research with public and private partners, and establish working groups to track progress, ~~and by establishing working groups to track progress,~~ adapt approaches, and identify funding sources for continued collaborative efforts.

### Revised Recommendation for Subcommittee Comment prior to 9/18 TAC meeting

The Commonwealth’s Research University Collaborative should evaluate water quantity and water quality metrics for existing and innovative nature-based solutions through use-inspired, collaborative research with public and private partners, and by establishing working groups to track progress, adapt approaches, and identify funding sources for continued collaborative efforts.

### Original Recommendation Text

* A.1.1.b. Support research to evaluate flood reduction metrics of natural and nature-based solutions. Establish topic-specific, standing, and ad hoc sub-working groups to track research progress on needed research and data gaps, identify research priorities regularly, and catalyze teams to secure funding from applicable RFPs.
* A.3.1.b. Conduct use-inspired collaborative R&D between public and private partners on adaptation solutions, including nature-based solutions that simultaneously meet water quality and water quantity standards; enhance marsh plant production; alternative septic; wells – saltwater intrusion; beneficial dredge use; property scale monitoring technologies (sensors, drones).
* A.1.3.a. Support research to evaluate the benefits and costs of resilience action and of failing to take resilience actions.

## **Additional Information about the Recommendation (For Context Only)**

### DRAFT Purpose for Subcommittee Review

Understand the flood risk reduction and other benefits of existing and innovative nature-based solutions through collaborative research efforts.

### Corresponding Flood Resilience Principle

Recognize the importance of protecting and enhancing green infrastructure like natural coastal barriers and fish and wildlife habitat by prioritizing nature-based solutions.