



MIDDLE PENINSULA CHESAPEAKE BAY PUBLIC ACCESS AUTHORITY

TO: PAA Directors
FROM: Lewis Lawrence, PAA Staff
DATE: July 9, 2020
RE: PAA Special Meeting Agenda and Notice

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In light of the 2020 COVID-19 virus and current guidance regarding physical distancing to reduce the potential for spread, meetings of the Middle Peninsula Chesapeake Bay Public Access Authority has transitioned to a virtual meeting format.

Regional Public Bodies were granted authority to conduct meetings electronically, pursuant to the provisions of Virginia Code § 2.2-3708.2 and related legislation approved by the General Assembly of Virginia during the period of the Governor's State of Emergency Declaration for COVID-19. While we do not know the exact duration of the current practice of electronic meetings, we will continue to function in this manner until such time as it is deemed advisable to return to in-person meetings.

Staff provided notice of this special PAA meeting and the means by which we are virtually gathered to members of the public through multiple methods including electronic email notification and physical posting at the office of 125 Bowden Street on July 7, 2020 and through electronic Twitter posting as well as to PAA alternates and known interested parties, including the media.

This meeting will be recorded. Audio and visual recordings of the meeting and materials will be posted on the PAA website within 48 hours of this meeting. Any member of the public participating as an observer during the meeting may submit comments or questions at any time during the meeting via email at stephanie@consociatemediamedia.com or by using the online chat functions of the meeting platform. Those individuals who are observing by phone may be called upon to share questions or comments. This meeting agenda includes public comment. All comments and questions submitted during the meeting will be reviewed following the meeting and to the extent practical, responses will be provided or posted on the MPPDC website.

We ask that everyone identify themselves first when speaking so we can more accurately record the activities of the meeting. All lines have been muted by the meeting administrator to minimize additional noise and feedback. You may unmute your line at any time to request acknowledgement from the Chair. Staff will be monitoring the chat functions throughout the meeting to assure we do not overlook anyone wishing to participate, as appropriate, in the discussion.

PAA Agenda

Special Meeting 7/10/2020

125 Bowden Street

Meeting time 10:30 A.M.

1. Roll call for certification of participation in meeting.
2. Public Comment
3. Discussion of Virginia Sea Grant Request for support for Go Virginia Proposal titled *Coastal Resilience & Adaptation Economy Proposal*
4. Motion to adjourn

Please join my meeting from your computer, tablet or Smartphone.

<https://www.gotomeet.me/ConsociateMedia>

You can also dial in using your phone.

United States: +1 (571) 317-3112

Access Code: 731-146-477

Statewide Competitive Project Materials



Statewide Competitive Projects - Initial Project Review Form/Cover Sheet

Project Name: LAUNCHING A COASTAL RESILIENCE & ADAPTATION ECONOMY

Project Applicant Name: Troy Hartley and Emily Steinhilber

Project Applicant Organization: Virginia Sea Grant College (VASG – Hartley) and Old Dominion University (ODU – Steinhilber)

Date: 07/10/2020

Partnering Regions: Region 6 and Region 5

What Region 6 Growth and Diversification plan priority industry cluster/s is your project in?

- Aquaculture/Seafood/Commercial Fishing/Marine Industries
- Forestry/Wood Products/Paper
- Manufacturing
- Distribution/Logistics
- Information/Data Centers
- Professional, Scientific, and Technical Services

What other partnering regions Growth and Diversification plan priority industry cluster/s is your project in? Region 5: Water Technologies

What statewide category does your project fall into?

- Entrepreneurial Activities
- Site Development
- Workforce Development

Participating Localities (Minimum 2 Required)

Projects must have at least two participating localities. “Participation” can include financial participation, in-kind contribution, participation on a project advisory team, and/or administration of the project.

Caroline County		King William County	X	Spotsylvania County	
Essex County	X	Lancaster County		Stafford County	
City of Fredericksburg		Mathews County	X	Westmoreland County	
Gloucester County	X	Middlesex County	X	Town, Tappahannock	X
King and Queen County	X	Northumberland County		Town, Urbanna	X
King George County		Richmond County		Town, West Point	X

Please define the level of participation by each of the localities. Compose the Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA), will be negotiating and approving an MOU with Virginia Sea Grant, RISE, and Rappahannock Community College regarding use of the MPCBPAA properties as research field stations in the Region 6 Resilience Innovation Center.



Proposed Localities to be Served by Project

Caroline County		King William County	X	Spotsylvania County	
Essex County	X	Lancaster County		Stafford County	
City of Fredericksburg		Mathews County	X	Westmoreland County	
Gloucester County	X	Middlesex County	X	Town, Tappahannock	X
King and Queen County	X	Northumberland County		Town, Urbanna	X
King George County		Richmond County		Town, West Point	X

What other Regions localities does this project cover?

Region 5: Hampton Roads

Other Proposed Partners and Collaborators:

- RISE, Region 5
- Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA), Region 6
- Rappahannock Community College (RCC), Region 6
- Thomas Nelson Community College (TNCC), Region 5
- Hampton University (HU), Region 5



Project Description Provide a one-page summary of the proposed project. This should convey your project concept(s) assuming no prior knowledge of the project, including: 1) The expenses that GO Virginia funding and match will pay for, 2) Project activities 3) The expected outcome/final product(s) of this project, 4) How this project will create higher paying jobs (or line of sight for potential jobs for an enhanced capacity building grant)?

Identify the project's approach, outcomes, and goals and how the project relates to the region's Economic Growth and Diversification plan and the goals of GO Virginia. Specify the evidence of demand/community need for this project.

The Coastal Resilience and Adaptation Economy initiative takes a three-pronged approach to laying the foundation of an innovation ecosystem that will create a new, long-term, high-paying economic industry cluster: 1) Builds resilience entrepreneurship through a business plan competition and a suite of accelerator services; 2) Forms an integrated Region 5 and 6, multi-stakeholder Consortium to build expertise and support capacity development, including an architecture, engineering and construction professional pipeline; and 3) Shapes the brand identity of Virginia as a global leader in the emerging resilience and adaptation economy and connects businesses with opportunities in Virginia and beyond. Aligning with both Region's Growth & Diversification Plans, this initiative builds critical pathways and avenues for collaboration between the two regions and rural and urban economies.

A. Resilience Entrepreneurship Capacity & Accelerator Services. The entrepreneurship, workforce development, R&D, and small business commercialization activities will be conducted by VASG, RISE, Middle Peninsula Chesapeake Bay Public Access Authority and Rappahannock Community College, including: 1) **Business Plan Competition:** Protecting rural public assets facing resilience challenges through demonstration projects of novel, cost-effective adaptation products and services; Assess the companies R&D and commercialization needs and potential. 2) **Entrepreneurship and Business Development Assistance:** Assess and aggregate procurement demand and other domestic and global market opportunities. Support commercialization and growth through business acceleration, executive coaching, and connection to other investors and customers. 3) **Product Validation and Refinement Assistance:** Conduct product validation R&D between Virginia universities and businesses. 4) **Workforce Development Assistance:** Identify specific short and long-term workforce needs for the businesses and the implementation of the demonstration project. Establish a technician-level, Work-Based Learning apprenticeship. 5) **Region 6 Resilience Innovation Center Development.** Plan and initiate the development of the Resilience Innovation Center to conduct R&D on integrated blue-green-gray infrastructure designs in public-private partnerships with any academic or research institution. [GO Virginia: \$2,628,200. MATCH: \$2,834,744]

B. Consortium. Located in Hampton Roads and led by ODU, a consortium of Region 5 and 6 partners from academia, business, government, professional societies, non-profits, and economic development and innovation sectors will collaborate to successfully grow the coastal resilience and adaptation economy in coastal Virginia. The Consortium will promote collaboration across sectors, develop and vet best practices, and develop career pathways. [GO Virginia: \$343,392. MATCH: \$333,851]

C. Brand Identity. A coordinated platform and outreach plan will facilitate the branding of Virginia as a leader in this sector, recruit new innovative businesses to the area, support professional development, and provide avenues to access career development and educational opportunities. The brand identity will be built through a collaborative planning process engaging the economic development organizations of Region 5 and 6, the Virginia Economic Development Partnership, and other regional marketing entities in coastal Virginia. [GO Virginia: \$167,809. MATCH: \$166,925]



Anticipated Outcomes. These strategic approaches were identified through extensive planning, engagement with subject matter experts, and evaluation of Virginia’s unique assets in both rural Region 6 and urban/suburban Region 5. The short-term job growth and business development (2-3 years) in an emerging coastal resilience and adaptation economic cluster is supporting hundreds of jobs predominantly in the small business community – jobs that are particularly significant in coastal rural Region 6. However, once the innovation ecosystem and cluster are established, the longer-term (5-10 years) business and workforce development could produce thousands on high-paying positions in highly specialized, sought-after professionals and businesses, given the domestic and global demand for adaptation solutions. By YR3, there will be ~30 small businesses using Region 5 and 6 as test beds.

Proposed Budget:

GO Virginia Request:	\$3,139,401
Total Match:	\$3,743,651
Total Project Cost:	\$6,883,052

Please explain in the chart below your proposed sources of revenue and how you plan to expend these funds. These totals must match.

Project Revenues

Source of Revenue	Amount	Type of Revenue (Cash/In Kind)	Source of Match	Status of the Match
GO VA Funds	\$3,139,401	Cash		
VASG	\$486,124	In-kind	U.S. Dept of Commerce, NOAA	In-hand
RISE	\$1,172,500	Cash/In-kind	U.S. Dept of Housing & Urban Development, CDBG	In-hand
MPCBPAA – 9 Region 6 municipalities	\$1,176,120	In-kind	Waterfront property	In-hand
ODU	\$500,777	In-kind	National Science Foundation; US Dept of Commerce, EDA.	In-hand
Region 5 municipalities	\$408,130	In-kind	Norfolk, Virginia Beach, Portsmouth, ANPDC	In-hand

Project Expenditures – See the Project Milestones & Drawdown Schedule and the Budget Overview – Project Expenditures in attachments for more detail

Line Item (These come directly from project activities)	If other, specify	Cost Estimate	Description	Funding Source(s)
RESILIENCE ENTREPRENEURSHIP CAPACITY & BUSINESS ACCELERATOR		\$2,627,660	Business plan competition, business accelerator services,	GO Virginia



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			entrepreneurship training, workforce development	
CONSORTIUM		\$343,932	Region 5-6 public-private consortium	GO Virginia
BRAND IDENTITY		\$167,809	Create Virginia's brand	GO Virginia



Implementation and Statewide Competitive Application

Application Information

Project Name: LAUNCHING A COASTAL RESILIENCE & ADAPTATION ECONOMY

Date: 07/10/2020

Project Applicant

Legal Name: Virginia Institute of Marine Science

EIN/TIN: 54-2027915

Address: 1370 Great Rd. Gloucester Point, VA 23062

Website: www.vims.edu

Application Contact

Name: Troy Hartley

Title: Director, Virginia Sea Grant

Phone: 804-684-7248

Email: thartley@vaseagrant.org

Funding Request Summary

GO Virginia Request*:	\$3,139,401
Total Match**:	\$3,743,651
Additional Leverage***:	\$
Total Project Cost:	\$6,883,052

* There is no cap on the amount of GO Virginia funding that can be requested for Implementation Projects.

**Normally, match from non-state appropriated sources (cash or in-kind) must equal or exceed the GO Virginia fund request. Of the total match amount, 20% or \$50,000 (whichever is greater) must be from local sources (cash or in-kind). *Note: The total match requirement has been reduced to 50% of the grant request, and the local match requirement has been waived until further notice.

***State appropriated resources cannot be used as match but can be included as “additional leverage.”



Economic Impact

1. Identify the project goals, approach, and outcomes, and how the project relates to the goals of GO Virginia. (Character Limit: 3,000)

ATTACHMENT: 1-2 Page Executive Summary that explains to someone who does not know anything about the project what it is trying to accomplish. What are the goals of the project? What is the approach to the project? What are the expected outcomes of the project?

Goal & Approach: The *Launching a Coastal Resilience and Adaptation Economy* initiative targets entrepreneurial and business accelerator activities, and workforce development in the emerging coastal resilience and adaptation economy, meeting an expanding global market for rural, suburban and urban solutions to increased flooding, erosion, coastal hazards, and sea level rise. The initiative takes a three-pronged approach to laying the foundation of an innovation ecosystem in this economic cluster that produces new, long-term, high-paying jobs and businesses: A) Builds resilience entrepreneurship through a RISE-proven business plan competition and accelerator model, including workforce apprenticeships, product validation and refinement, and the design of a university-private sector R&D partnership in Region 6 (i.e., a resilience innovation center); B) Forms a multi-stakeholder Region 5-6 Consortium to build expertise and support capacity development, including an architecture, engineering and construction professional pipeline; and C) Shapes Virginia's brand identity as a global leader in the emerging coastal resilience and adaptation economy and connects businesses with opportunities in Virginia.

These strategic approaches were identified through extensive planning, studies, engagement with subject matter experts, and evaluation of Virginia's unique resilience and adaptation assets in both rural Region 6 and urban/suburban Region 5. The approach plays to Virginia's strengths in and opportunities for novel integrated blue-green-gray solutions to rural, suburban and urban resilience challenges. An innovation ecosystem and resulting economic industry cluster surrounding these unique strengths would position Virginia in a globally competitive advantage relative to others in the broad water management economic domain, e.g., Louisiana and the Dutch. The initiative directly addresses priority industry clusters and strategies in both Region 6's and Region 5's Growth and Diversification Plans.

Outcome: The Coastal Resilience and Adaptation Economy initiative advances short-term job growth and business development (2-3 years) in an emerging coastal resilience and adaptation economic cluster. The scale of job growth is typical of business accelerator services and support for small businesses, supporting a few hundred jobs. Once the innovation ecosystem and cluster are established the longer-term (5-10 years) business and workforce development could produce thousands on high-paying positions in highly specialized, sought-after professionals and businesses (e.g., architecture, civil engineering, civil engineering technology, business management, construction management, material sciences, coastal ecology), including include bachelor's, Associate's, and professional certifications (e.g., landscape, green infrastructure practitioners, sanitation, concrete contractor). For example, businesses could serve individuals and developers in coastal real estate markets searching of affordable, effective adaptation strategies – Virginia's coastal rural county of Mathews lost \$75M in property value due to recurring flooding and erosion of their waterfront properties. Municipal and corporate clients are adapting their water infrastructure world wide – the American Water Works Association estimates that \$1 trillion is needed to maintain and expand services to meet demand over the next 25yrs. Demand exists, innovation is needed, and Virginia is posed to build the innovation ecosystem to support the emerging coastal resilience and adaptation economy.



2. Provide a detailed overview of the proposed project and project activities included in the project budget (scope of work). If the full project scope goes beyond the reflected budget, please provide a breakdown of the current and later phases of project activities. Be sure to clearly detail each activity and how it relates directly to a line item(s) in your budget. (Character Limit: 3,000)

Coastal Resilience and Adaptation Economy initiative contains three major Activities:

A. Resilience Entrepreneurship Capacity & Accelerator Services. Led by Virginia Sea Grant (VASG), RISE, Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) and Rappahannock Community College (RCC): [GO Virginia: \$2,627,660. MATCH: \$2,834,744]

- 1. Business Plan Competition: Protecting Rural Public Assets Facing Resilience Challenges.**
 - a. Administer a business plan competition, using RISE's proven Challenge model, for firms to conduct resilience improvement demonstration projects on public properties and address coastal rural flooding issues. Competition and project team will assess R&D and commercialization needs and potential of the companies.
 - b. Procure services from up to five selected firms to protect public properties through demonstration projects that spur innovation and commercialization potential.
- 2. Entrepreneurship and Business Development Assistance.**
 - a. Assess and aggregate procurement demand and other domestic and global market opportunities, as further incentives to companies;
 - b. Support commercialization and growth through business acceleration, executive coaching, and connection to other investors and customers.
 - c. [MATCH] Provide businesses with workshop space and co-working office space, entrepreneur network and peer mentoring with up to 16 winners of other RISE competitions;
- 3. Product Validation and Refinement Assistance.**
 - a. Identify product validation testing needs for specific markets (e.g., meeting specifications and performance standards to qualify for projects with local municipalities, state and federal agencies, private commercial clients);
 - b. Conduct product validation R&D between Virginia universities and businesses (e.g., graduate student and faculty to test products, verify performance standards, recommend further refinements to improve performance).
- 4. Workforce Development Assistance.**
 - a. Identify specific workforce needs for the businesses, including the 15 small business winners of previous RISE Resilience Competitions, and the implementation of the demonstration project;
 - b. Establish and fund a technician-level, Work-Based Learning (WBL) apprenticeship between community colleges and each business to meet workforce needs. The Chesapeake Bay Governor's School is on the RCC campus; depending upon the needs, RCC could consider high school graduate participation in a WBL apprenticeship program. Apprenticeships would start in summer/fall 2021; however existing Covid-19 training protocols will be followed if needed.
- 5. Region 6 Resilience Innovation Center Development.**
 - a. Plan and initiate the development of the Resilience Innovation Center, as discussed in the Region 6 Growth and Diversification Plan, that conducts R&D on integrated blue-green-gray infrastructure designs and is available for public-private partnership R&D



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with any academic or research institution. MPCBPAA properties will be field stations in a Center, and a TBD R&D Hub facility will most likely be located in Region 6.

- b. Characterize the environmental conditions and profiles on MPCBPAA sites to identify the network of most promising field stations.
- c. [MATCH]: 1) Finalize conceptual plans, governance systems, and operational procedures (e.g. MOUs, IP agreements, Charter, etc.) 2) Conduct a resilience design competition at the 2021 international Coastal & Estuarine Research Federation (CERF) conference in Richmond. 3) With Louisiana Sea Grant and its Coastal Sustainability Studio conduct joint R&D.

B. Consortium. Located in Hampton Roads, a consortium of Region 5 and 6 partners from academia, business, government, professional societies, non-profits, and economic development and innovation sectors will collaborate to grow the coastal resilience and adaptation economy in coastal Virginia. The Hampton Roads AEC industry approached ODU in 2019 with interest in development of an industry coalition, to support coastal resilience efforts and this project will build on those efforts. The goals for this project include: A) Build a consortium in the coastal resilience and adaptation sector. B) Drive innovation in coastal resilience and adaptation through collaboration across sectors. C) Engage industry in Regions 5 and 6 in the development and vetting of best practices. D) Encourage private/public partnerships to implement best practices. E) Develop career pathways in the AEC sector related to coastal resilience and adaptation. F) Further professional bridge-building and knowledge transfer between Regions 5 and 6. [GO Virginia: \$343,392. MATCH: \$668,256]

C. Brand Identity. In support of the Coastal Resilience and Adaptation Economy proposal, a coordinated platform and outreach plan will facilitate the branding of Virginia as a leader in this sector, and market the Regions' activities as a well-defined industry and demonstrate the interconnectedness of these activities. This web-based platform will also serve to recruit new innovative businesses to the area, including those searching for a "natural testbed," support professional development within Virginia's Coastal Resilience and Adaptation Economy, and provide avenues to access career development and educational opportunities. The branding narrative will illustrate civic and community assets that create a vibrant community within which the Coastal Resilience and Adaptation Economy can thrive, in addition it will emphasize the ability to export knowledge and expertise to other coastal regions. The brand identity will be built through a collaborative planning process engaging the economic development organizations of Region 5 and 6, the Virginia Economic Development Partnership, and other regional marketing entities in coastal Virginia. [GO Virginia: \$167,809. MATCH: \$240,651]



3. Project Timeline and Milestones: Describe the project timeline in terms of rough months/quarters and the specific project milestones that will be utilized to track project progress and fund disbursement. (GO Virginia is a reimbursement-based grant and funds will only be disbursed after funds are expended. Match funds must be expended prior to or in proportion to GO Virginia funds.) Projects must be completed within two years from the start date agreed upon in the final contract. Projects should base their timeline on beginning approximately 30 days after the date of approval at the State Board meeting. Address the project administrator’s ability to meet these milestones and to take remedial actions in the event that are not achieved. (Character Limit: 3,000)

ATTACHMENT: Project Milestones & Drawdown Schedule

ACTIVITIES		2021				2022			
GO Virginia funded	Match funded	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
A. RESILIENCE ENTREPRENEURSHIP CAPACITY & ACCELERATOR SERVICES									
1. Business Plan Competition									
	a. Administer RISE Challenge for coastal rural topics, select winning business plans		X	X					
	b. Demonstration pilots to protect public properties			X	X	X	X	X	X
2. Entrepreneurship & Business Development Assistance									
	a. Assess domestic, global and procurement market	X	X						
	b. Business acceleration services, investor connections		X	X	X	X	X	X	
	c. Workshop, office space, entrepreneur network (MATCH)			X	X	X	X	X	X
3. Product Validation and Refinement									
	a. ID product validation needs for each business				X				
	b. Product testing with university R&D support			X	X	X	X	X	X
4. Workforce Development Assistance									
	a. ID workforce needs for each business				X				
	b. Launch work-place learning apprenticeship		X	X	X	X	X	X	X
5. Region 6 Resilience Innovation Center									
	a. Assess environmental conditions on MPCBPAA properties		X	X	X	X	X	X	X
	b. Planning & design for Region 6 Resilience Innovation Ctr	X	X	X	X	X	X	X	X
	c. Finalize organizational and governance system (MATCH)	X	X	X	X	X	X	X	X
	d. Launch resilience design competition (MATCH)	X	X	X	X	X	X	X	
	e. R&D with LASG Coastal Sustainability Studio (MATCH)	X	X	X	X	X	X	X	X
B. CONSORTIUM									
	1. Consortium planning and scoping	X	X						
	2. Formation of working group		X	X					
	3. Research Architecture, Engineering & Construction (AEC) resilience career pathways			X	X				
	4. Stakeholder engagement			X	X				
	5. Operational development and documentation				X	X			
	6. Formalize AEC resilience career pathways							X	X
	7. Consortium Structure and Board Development					X	X		
	8. Develop web site of best adaptation implementation practices				X	X		X	X
	9. Consortium strategic operations							X	X
	10. Investigate resilience career pathways beyond AEC							X	X



C. BRAND IDENTITY								
1.Branding identity planning and scoping	X	X						
2. Develop branding platform			X	X				
3. Develop branding outreach strategy					X	X		
4. Launch branding platform and outreach strategy						X	X	
5. Update branding platform and outreach strategy							X	X

Virginia Sea Grant (VASG) is part of a 34-state national network of university-based research, extension, education and workforce development programs that are nationally peer reviewed regularly and share best management practices. VASG has managed remedial actions, including the growth and refinement of resilience and adaptation programming with an extension specialist at ODU, legal and policy analysis lawyers at William & Mary Law School’s Virginia Coastal Policy Center, and resilience design workforce development through partnerships with engineering and architectural firms. Dr. Hartley has over 20-years of experience leading and managing coastal and marine programs and is the project lead.

RISE, accelerates innovation and business growth by identifying and scaling solutions to coastal communities’ resilience challenges. RISE employs its proven approach that allows businesses to move from design to market effectively. RISE Executive Director Dr. Robinson is the founder and CEO of AeroTech Research, Senior Advisor to Focus Investment Bank on government, aerospace and defense issues, and a member of the local angel investment group 757 Angels and Abundance 360. He is an adaptive manager, taking remedial actions, in technical and managerial positions with several startups. Dr. Katerina Oskarsson is the Chief Strategy Officer for RISE. Previously, the Deputy Chief Resilience Officer for the City of Norfolk, she worked on the development and implementation of the City’s Resilience Strategy as part of the Rockefeller Foundation’s 100 Resilient Cities initiative, and a winning proposal of \$120 million from the HUD’s National Disaster Resilience Competition.

Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) created by the General Assembly in 2002, the MPCBPAA represents nine Middle Peninsula localities, including: Essex, Gloucester, King & Queen, King William, Mathews, and Middlesex Counties, and the Towns of Tappahannock, Urbanna, and West Point. Holding the title to and managing over 50 waterfront properties the MPCBPAA and makes properties available for various activities important to the economy and citizens and manages multiple, sometimes competing, needs and uses. The Middle Peninsula Planning District Commission (MPPDC) serves as MPCBPAA fiscal agent and staff support.

Rappahannock Community College (RCC) provides inclusive access to exceptional training and educational opportunities meeting the community’s needs and preparing individuals for success as learners, employees, and citizens. RCC has a successful Work-Based Learning apprenticeship program in the maritime trades and a partnership with the Chesapeake Bay Governor’s School, which is on the RCC campus.

Old Dominion University (ODU).

ODU Research Foundation is an independent, not-for-profit, tax-exempt 501(c)(3) organization chartered to “promote the educational objectives of the University by encouraging, fostering, and conducting investigation, research, and development in engineering, the physical and life sciences, the humanities, education, and all other branches of learning; and utilizing, publishing, and otherwise making known the results of such investigations, research, and development . . .” The ODU project team consists of Emily Steinhilber, Research Assistant Professor, Commonwealth Center for Recurrent



Flooding Resiliency (CCRFR) located in the Office of Research, and Carol Considine, Assistant Dean and Associate Professor in the Batten College of Engineering & Technology. Emily Steinhilber has been working in the field of climate adaptation and resilience for more than 10 years and has successfully managed numerous resilience projects. She recently lead website development projects for CCRFR and the Institute for Coastal Adaptation and Resilience (ICAR). Carol Considine has over 15 years of construction industry project management where she was responsible for successful project completion. She has been working in coastal resilience and adaptation for over 10 years. She has successfully completed more than \$2 million in research projects, within budget and schedule.

4. Performance Measures: Provide a detailed description of the performance metrics that will be used to quantify success, both quantitative and qualitative, and how the metrics were developed.

ATTACHMENTS: Performance Metrics

The Coastal Resilience and Adaptation Economy initiative project team has identified critical strategic performance measures to monitor the growth and development of an innovation ecosystem. Monitoring these measures, along with jobs and businesses, will ensure careful, bold steps to lay the foundation for long-term growth and global leadership in an emerging industry cluster. The metrics were developed by the team, based upon their past experience with these metrics and their application for resilience-enhancing technologies and solutions.

Resilience Entrepreneurship & Business Accelerator.

- Number of businesses receiving entrepreneurship support – business development coaching and connections to business accelerator services and investors/customers
- Number of businesses receiving product validation and R&D support
- Workforce development initiatives (apprenticeship/work-based learning, graduate student R&D) developed; Initiatives developed in collaboration with community colleges and VASG universities to support Region 5 and 6 small businesses and entrepreneurs, to meet immediate employment demand, and to establish the partnership structure for meeting longer term workforce development and R&D needs.
- Workforce development initiatives (apprenticeship/work-based learning, graduate student R&D) implemented.
- Number of Region 5 and 6 businesses supported through workforce development (apprenticeship/work-based learning, graduate student) initiatives.
- Number of individuals placed in apprenticeship/work-based learning positions and graduate student R&D fellows.
- The creation and expansion of the manufacturing, and professional, scientific and technical service industry clusters in GO Virginia Regions 5 and 6. This includes the number of new firms opening or relocating to the regions and the associated number of new jobs created from the creation and/or expansion of these businesses.
- Increase of the average wage of workers within Region 6
- Initial steps in the establishment of a Resilience Innovation Center (organizational and governance structure, lab capacity, and assessment of field sites).
- Number of novel resilience solutions (technologies, products and services) tested, validated and proven to add substantial new value by performing more effectively and efficiently than currently available (or traditional) approaches. Long-term ROI is realized through costs avoided as a result of more affordable and effective protection of assets. The coastal resilience and



adaptation field is ripe for innovation and in the early stages of disruption, where new approaches can significantly change project costs and successful outcomes on the ground.

Benefits such as improved performance, ecological outcomes, costs savings, availability of a wider range of affordable options that help communities reduce risk represents a critical outcome metric of this proposal. Two examples of recent RISE Competition winners illustrate the performance metric/ROI tracking and approach we will take:

InfraSGA is developing a flood mitigation solution called the RAFT System planter. The solution will be piloted in Norfolk to demonstrate that the RAFT System can remove over 2.5 times cubic feet of water from the area at a lower cost, increased environmental benefits, and decreased disruption to the area than a traditional approach the City planned to implement.

Stormwater Management Alternatives	Traditional Solution: Inlet, Private Parking Lot, Underground Storage	RAFT Planter developed by InfraSGA
Water Storage Capacity Provided	2,600 cubic feet	6,941 cubic feet
Cost	\$572,400	\$567,900
Permanent Removal from Conveyance System	No	Yes
Pollutant Reduction Benefits	No	2.4 lb TP removed 20 lb TN removed
Private Property Easement Required	Yes	No
Utility Relocations Required	Yes	No
Traffic Calming for Local Streets	No	Yes

Natrx is developing Mobile Manufacturing Units to efficiently produce nature-based, custom shoreline protection structures to reduce flooding. The novel solution will significantly improve material efficiency, performance, ecological outcomes and overall project cost.

Shoreline Protection (per 150 linear foot)	Stone Sill used in Hampton Roads Shoreline Projects	Eco-Module Sill developed by Natrx
Material usage	100 to 225 tons	4 to 75 tons
Wave dissipation	Up to 20%	Up to 70%
Transportation needs	15-30 dump truck loads	1-4 flatbed trailer loads
Material cost	\$8,000 - \$18,000	\$1,000 - \$4,000
Habitat Growth Potential (3-year growth in weight)	15%	50%+

Consortium

- Number of consortium partners
- Number of sectors included in consortium
- Career pathways in AEC industry for the Coastal Resilience and Adaptation Economy
- Identification of opportunities and gaps in career pathways for AEC industry in Coastal Resilience and Adaptation Economy
- Web portal with best practice resources for rural and urban adaptation
- Business plan for Consortium
- Consortium board and management structure



- Plans for business innovation in the coastal resilience and adaptation economy
- Plans to develop and vet best practices in coastal resilience and adaptation sector
- Analysis of opportunities for private/public partnerships in coastal resilience and adaptation sector
- Sustainability plan for consortium.

Brand Identity

- Develop brand tag line for Coastal Resilience and Adaptation Economy for coastal Virginia
- Number of organizations included in development of branding identity and strategy
- Launch branding platform

5. Return on Investment (ROI): Describe the methodology utilized to calculate the State's Return on Investment (ROI) to the Commonwealth over a 3-year period. Include an explanation and identify the sources of any data used as the basis for ROI and outcome projections.

- a) **If applicable, please explain the expected economic impact of the project that may not be capture within the ROI calculation. This may include both indirect and induced jobs as a result of a relevant multiplier effect, as well as qualitative impacts that cannot be quantified.**

(Character Limit: 3,000)

ATTACHMENTS: Return on Investment (ROI) Calculations

The proposal team consulted with Terry Clower, George Mason University and GO Virginia's ROI consultant. Total jobs from the resilience entrepreneurship and business accelerator services (YR1: 91; YR2: 200; YR3: 200), consortium (YR1: 10; YR2: 11; YR3: 17); and the project team and student support (YR1: 11; YR2:9), produced an **ROI of 82.58%**. See the attached ROI Calculations for details.

While the magnitude of ROI for small business entrepreneurship and accelerator programs, as calculated with the GO Virginia ROI calculator, is typically low, research shows that startups and early stage companies are job creators and economic drivers. Young businesses less than 5yrs old have been responsible for almost all net job growth in the U.S. between 2008-2014 (Kaufman Foundation). Performance and other types of returns can be substantial from building the essential, foundational elements of an innovation ecosystem (workforce development, innovation and R&D, entrepreneurship capacity, small business accelerator services) in this emerging economy. A short-term ROI will be realized by building upon an existing resilience cohort of 15 small business winners of the previous RISE Competitions. These businesses, already developing their novel resilience products and services in Hampton Roads, actively look for workforce and apprentices. This proposal will facilitate immediate opportunities to address some of their needs. Additional job and business growth are longer-term ROI (beyond 3YRs) for an emerging coastal resilience and adaptation sector. Additional return measures include:

- Accelerator services (e.g., 10 of companies directly supported, up to 40 companies trained in business development principles, up to 10 companies attracted to/retained in Regions 5 and 6).
- Cost savings, reduced time to implementation, increased efficiency
- Avoided loss tax revenues (e.g., 2019 coastal rural Mathews County property re-assessment resulted in a \$75M loss in taxable land value due to flooding and erosion of waterfront property. More cost-effective resilience and adaptation solutions could retain viable properties longer.)
- Avoided state expenditures (e.g., Resilience investments have a \$4 to \$6:1 return on investment. Implementation of resilience strategies provides a net tax gain.)



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- Growing demand for cost-effective solutions (e.g., June 2020: U.S. House of Representatives Oceans Caucus seeks “no less than \$10 billion for coastal restoration and resilience programs in any [future Covid-19] recovery package”. Signed by four members of Virginia delegation.)
- ROI of public-private R&D partnerships (e.g., June 2020 SCHEV *Report on a Research and Development Inventory Effort for the Commonwealth*, discussed ways to measure ROI from R&D partnerships, including: Equipment and lab use; Collaboration resulting in new grant funding and research outputs; Improved human condition resulting from R&D activities via marketing and success stories; Eminent researcher activities such as awards, clinical trials, IP and startups; and Inventions and successful matches via technology licensing and bundled IP.)

Building the workforce, entrepreneurship, and R&D capacity of an innovation ecosystem is an investment in the future, with multiplier growth impacts beyond three-years. For example, Louisiana is seeking to be a global leader in water management – particularly large-scale coastal hazards recovery and ecosystem restoration water projects. Louisiana is planning for a 23.4% expansion of its’ water management economy over the next decade. During the November 2018 fact-finding discussion about Louisiana’s growing water management economy, Stephen Moret, former Louisiana Secretary of Economic Development and current President and CEO of the Virginia Economic Development Partnership, reflected on Louisiana’s experience:

“We had what I think was a very compelling vision. I think there may be an opportunity for us to leverage a similar concept here [in Virginia]...building a global image of Virginia as one of the places in the world with the people doing the best science and the best engineering in this venue.”

(<https://law.wm.edu/academics/programs/jd/electives/clinics/vacoastal/conferences/building-a-resilient-virginia/index.php>)

Last, the resilience and adaptation economy and its solutions include a significant, yet difficult to measure, indirect multiplier impact. Many other economic sectors depend upon a resilient coastal community with adequate services, roads, and other critical infrastructure and amenities. Tourism, aquaculture, shipping, military and defense services, hospitals and public health, schools, cultural amenities – they all depend upon coastal communities’ resilient infrastructure. Yet, a November 2016 *Cost of Doing Nothing: Economic Consequences of Not Adapting to Sea Level Rise in the Hampton Roads Region* study concluded that NOT adapting could cost the region \$100M annually by 2040. A 2015 *Eastern Shore of Virginia Transportation Infrastructure Inundation Vulnerability Assessment* showed that 371miles (24.5% of all roads on the Eastern Shore) are vulnerable to regular tidal flooding by 2090. Seven communities may be disconnected or inaccessible during high tide and stillwater conditions beginning sometime between 2025 and 2050. The Chincoteague Causeway serves as the sole access route to the Town of Chincoteague, the Chincoteague National Wildlife Refuge, and the Assateague Island National Seashore; it is vulnerable to inundation between 2045 and 2090. A 2009 Middle Peninsula Planning District Commission report estimated that by 2050, the Middle Peninsula could see \$187-249M worth of infrastructure and wetlands function impacted by sea level rise and flooding. The scale of ROI and benefits from a coastal resilience and adaptation economy is broad and needs multiple measures to fully and accurately capture.



6. In terms of interregional collaboration, how do the ROI, performance metrics, and economic impact take into consideration the varying populations of the participating localities and/or regions. For example, for urban-rural collaborations, do the calculations take into account how the project's economic impact may be proportionally greater in a locality/region with a smaller population and lower average wages?

The Coastal Resilience and Adaptation Economy initiative was developed with the Region 5-urban/suburban and Region 6-rural dichotomy in mind – we sought to strategically leverage the assets of both regions to complement economic growth opportunities across the state. The proposal leverages blue-green assets of Region 6 and its research capacity, with Region 5's urban markets, professional networks, entrepreneurship and business accelerator capacity, and R&D capacity. The Consortium will include members from both Region 5 and 6, increasing communication, mutual understanding and respect, and opportunities to collaborate. The Brand Identity activities will unify the messaging and collective advantages of rural, suburban and urban coastal Virginia. A multiplier impact from enhanced resilience is the maintenance and enhancement of coastal Virginia's quality of life – thus, enabling coastal Virginia to recruit and retain businesses and jobs completely unrelated to the coastal resilience and adaptation economy, benefiting both Regions 5 and 6, and the entire Commonwealth.

GO Virginia Region 6 is predominantly rural, with a population of 508,626 and median income of \$44,058 – the average wage across coastal resilience and adaptation industry cluster jobs (as identified in the Region 6 Action Plan for this sector) from Bureau of Labor Statistics was \$67,774 (i.e., 54% higher).

According to the August 2019 *Empirical Assessment: Economic and Labor Market Conditions* report (<https://govirginia6.org/wp-content/uploads/2019/09/2019-Region-6-Empirical-Report-FINAL.pdf>), private sector average weekly wage growth in Region 6 was below the statewide average over the last five years. Alternatively, Region 5 is predominantly urban and suburban, with over 1.7M people and \$45,720 median income. The GO Virginia Region 5 *Economic Growth and Diversification Plan*, notes that growth in regional real gross domestic product (GDP), growth in per-capita income and growth in employment have improved and stabilized since 2010-2015, with some of the economic improvement linked to increases in federal spending. There will be a disproportionate positive impact on Region 6, given its economic demographics, over Region 5.



Regional Collaboration

7. Service Area and Local Partners: Describe the service area of the project. Identify localities participating in the project (financially or administratively) as well as those localities that are served by the project. **Please define the level of participation by each of the localities.** “Participation” can include financial participation, in-kind contribution, participation on a project advisory team, and/or administration of the project. (Character Limit: 3,000)

Does the application request a waiver of the local match requirement? (\$50,000 or 20% provided by participating localities, whichever is greater). *Beginning in April 2020 all local match is waived by the GO Virginia State Board until otherwise noted.

A. Resilience Entrepreneurship Capacity & Business Accelerator Services

The nine participating counties and towns compose the Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) and establish priority uses of the public properties in the MPCBPAA. Priority uses have included the Resilience Innovation Center, a public-private R&D hub and network of field stations, consistent with GO Virginia Region 6’s Growth & Diversity Plan. Further, the coastal resilience and adaptation economy activities have been included in the Middle Peninsula Comprehensive Economic Development Strategy as well, underscoring its priority status among local municipalities and enabling eligibility for competitive Economic Development Administration funding. The MPCBPAA and its municipality members will be collaborating with the project team leaders and involved in

- Developing strategic plans and long-range plans with the project team leaders for the continued growth of the innovation ecosystem surrounding coastal resilience and adaptation industry cluster in Virginia.
- Setting the criteria and expectations for business plan competition for firms to conduct resilience improvement demonstration projects on public properties, thus protecting the public assets in the MPCBPAA while spurring innovation and commercialization opportunities in the coastal resilience and adaptation economy.
- Judging applicants’ business plans.
- Assisting with identification of business workforce development needs and strategies for meeting those needs, particularly with VASG, Rappahannock Community College, and local high schools.
- Negotiating MOUs, charters and operating procedures for the resilience innovation center.

Development of these public lands for field testing will accelerate and support the creation and expansion of companies into the area. Proximity and access to the network of field stations will provide private industry with an advantage and simultaneously grow jobs and increase the average wage in Region 6.

	Participating Locality	Part of Project Service Area	Population Estimates (2016 Census Data)
Caroline County	<input type="checkbox"/>	<input type="checkbox"/>	30,178
Essex County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	11,123
City of Fredericksburg	<input type="checkbox"/>	<input type="checkbox"/>	28,297
Gloucester County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	37,214
King and Queen County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7,159



King George County	<input type="checkbox"/>	<input type="checkbox"/>	25,984
King William County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	16,334
Lancaster County	<input type="checkbox"/>	<input type="checkbox"/>	10,972
Mathews County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8,782
Middlesex County	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	10,778
Northumberland County	<input type="checkbox"/>	<input type="checkbox"/>	12,222
Richmond County	<input type="checkbox"/>	<input type="checkbox"/>	8,774
Spotsylvania County	<input type="checkbox"/>	<input type="checkbox"/>	132,010
Stafford County	<input type="checkbox"/>	<input type="checkbox"/>	144,361
Westmoreland County	<input type="checkbox"/>	<input type="checkbox"/>	17,592
Other (specify):Tappahanock	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2,397
Other (specify):Urbana	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	467
Other (specify):West Point	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3,261

Are there localities or other GO Virginia regions (including interstate collaborations) that are outside the applying region that are participating in the project? If so, describe the nature of the collaboration and the anticipated impact.

B. Consortium

Within region 5, the Accomack-Northampton Planning District Commission, and Cities of Virginia Beach, Portsmouth, and Norfolk have submitted or agreed to submit letters of support and match. The Hampton Roads Planning District Commission has been consulted and staff will participate in the project, however their internal processes for letters of support means this is currently under advisement and review. The service area of the consortium and branding initiatives includes the full geographic area of Region 5 and Region 6. The nature of the consortium and branding projects are that they are inclusive of building bridges and defining the sector within coastal Virginia. While we have done significant outreach in previous resilience work and during the development of this proposal, we expect that throughout the development of the consortium and branding initiative new stakeholders in both regions will be identified and included. While the service area of the project includes the full region because water does not follow political boundaries, and many AEC firms work across municipalities, we expect more involvement in partners from communities with higher flood risk.

C. Brand Identity

Brand identity will be built through a collaborative planning process engaging the economic development organizations of Region 5 and 6, including Hampton Roads Alliance, Middle Peninsula Alliance, the Virginia Economic Development Program, and other regional and statewide entities This is a joint GO Virginia Region 5 and 6 proposal. Region 5 partners, RISE, Old Dominion University, Hampton University, and Thomas Nelson Community College, will be collaborating with Region 6 (VASG, Middle Peninsula Chesapeake Bay Public Access Authority, and Rappahannock Community College). Aligning with both Region’s Growth & Diversification Plans, this proposal builds critical pathways and avenues for collaboration between the two regions and rural and urban economies. The three-pronged approach seeks to lay the foundation of a long-term, high-paying economic cluster in coastal resilience and adaptation.

Collaboration. The proposal seeks to promote greater regional cooperation, a Region 6 Growth & Diversity Plan goal. For example, VASG is a seven-university coalition, including Region 5 institutions



ODU and William & Mary. All universities in the Commonwealth will be available and eligible to conduct product validation through the Resilience Entrepreneurship and Business Accelerator Services activities of this proposal. Region 6 companies will be members of the Consortium. The multi-stakeholder and regional Brand Identity development process will lead to a Virginia-wide brand, identity, message and outreach plan that establishes all of Virginia and its' coastal zone as a global leader in R&D, innovation and commercialization of coastal resilience and adaptation solutions.

We are committed to ensure that both Region 5 and Region 6 are equally represented in both the consortium and branding. A focus of the project will be on building bridges between the two regions and between rural and urban areas identifying strengths and opportunities within each type of coastal landscape. The Consortium will work through the Branding initiative to share best practices for both rural and urban water management and resilience strategies. Further, many parties are in different positions with different expertise and resources, and we will work to marry the two where appropriate and build a network across regions. For example, our discussions with the Middle Peninsula Planning District Commission (MPPDC) about their Fight the Flood initiative, we identified pathways to build awareness among members of the consortium who are located within Hampton Roads of the financial resources and customer base within the Middle Peninsula and vice versa. We also discussed opportunities to explore supply chain efficiencies between the two regions. Within the Accomack-Northampton region, which does not share the same resources as the MMPDC, we've identified needs for trainings and a priority for virtual meetings so that engineers and others on the Eastern Shore can be more easily included. It is our goal for the branding initiative to tell the story of resilience in Coastal Virginia, a diverse region with both marshland and hardened commercial ports, but all impacted and rising to the challenge of rising tides.

8. Collaboration and Cost Efficiencies: Identify cost efficiencies, repurposing of existing funds, leveraging of existing assets, or other evidence of collaboration that can be demonstrated as a result of the project. (Character Limit: 3,000)

The project team is leveraging considerable program capacity, existing assets and stable, long-term support that advance collaboration, relationships, efficiencies and sustainability of the proposed Coastal Resilience and Adaptation Economy activities.

The ***Virginia Sea Grant College Program*** (VASG) administrative staff capacity (10 FTEs) cover financial management, program and project management, professional development, R&D funding administration, communication, and fund-raising capacity. VASG will leverage its' workforce development funding and professional development training capacity with WBL apprentices and university graduate students. Its' R&D funding administration experience provides an extensive network of product validation and technical support from faculty and students.

VASG is leveraging its national network of state-based Sea Grant programs and competitive funding dedicated to Sea Grant programs, particularly in collaboration with Louisiana, where considerable complementary resources and capacity has been built in large-scale water management and ecosystem restoration activities. Specifically, VASG and Louisiana Sea Grant are partnering to:

- Launch a national resilience design competition at the November 2021 Coastal & Estuarine Research Federation conference in Richmond, VA. This is a high-profile event that will incentivize innovation in resilience and adaptation solutions.



- Share lessons learned and assist Virginia in supporting the development of integrated, transdisciplinary resilience and adaptation solutions in universities through coastal sustainability design studios.
- Building partnerships with the HUD Community Development Block Grant program, a critical federal partner and construction funding source. This Sea Grant—HUD partnership aims to bridge between academic expertise and the needs of communities, and will be enhanced through Sea Grant’s strengths in public-private partnerships.

RISE, a Region 5 partner, leverages local assets and global networks to enable businesses to develop, demonstrate and scale innovations that help coastal communities adapt to changing climate. RISE achieves its mission by: Surfacing resilience challenges faced by organizations operating in coastal environments; Conducting international competitions to surface entrepreneurs with solutions; Brokering access to the Hampton Roads region’s living laboratory to innovators with resilience technologies, products or services to test, demonstrate and scale; and Providing access to funding, space, data, demo sites, experts, business mentors and other support to help resilience-focused businesses grow. RISE will leverage its design and refinement of its business plan competition process and capacity.

Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) leverages over fifty donated coastal and waterfront properties valued at several millions of dollars. The waterfront properties are experiencing flooding, erosion, and other impacts of sea level rise; these are perfect and unique conditions to field test resilience innovations. Only one percent of Virginia’s coastal land is publicly owned and readily available for coastal resilience and adaptation R&D, making the MPCBPAA properties an extremely valuable blue, green and gray infrastructure asset for Region 6.

MPCBPAA and its fiscal agent and staffing partner, the Middle Peninsula Planning District Commission (MPPDC) has several complementary, and strategic initiatives that support this proposal:

- Funding in-hand for the Fight-the-Flood program to subsidize companies providing resilience services and products to coastal rural property owners. Services range from shoreline protection, septic systems, to novel flood insurance products. (funding ranging from thousands to hundreds of thousands of dollars)
- Pending proposal with the Economic Development Administration’s Disaster Supplemental Assistance Grant (proposal invited by EDA) for: Resiliency Product and Service Development; Resiliency Insurance; Living Breakwater Demonstration; and Disaster Recovery Planning for Businesses. (\$4.6M)

Rappahannock Community College (RCC) will leverage its existing, successful Work-Based Learning (WBL) apprenticeships with the maritime trade industry to expand its applications for Coastal Resilience and Adaptation companies.

Old Dominion University will leverage in the following ways:

- The Consortium will build on existing relationships with academia, municipalities, and industry. The architecture, engineering and construction industry approached ODU in 2019 to collaborate in building an industry coalition. ODU has close working relationships with Norfolk, Portsmouth, Hampton and Virginia Beach.
- ODU has a history of industry outreach and collaboration including the Hampton Roads Pilot Project, a Tourism Resilience Study, and the Hampton Roads Adaptation Forum.



- The web portal for best practice resources in urban and rural adaptation will build on the work of the Coastal Community Design Collaborative (CCDC) which is a cross-university and cross-disciplinary entity between Hampton University and Old Dominion University
- ODU's Institute for Coastal Adaptation & Resilience will support this initiative through outreach and industry connections; VASG and ODU co-fund an extension outreach agent on resilience and adaptation located at ODU. The Commonwealth Center for Recurrent Flooding (CCRFR) has been instrumental in creating research and white papers that will support this initiative. New research needs identified by the Consortium may be supported by CCRFR. The Hampton Roads Alliance supports the Coastal Resilience and Adaptation economy growth. The Branding Campaign will align with and support their work.
- ODU, Hampton University and the VCCS community college system work closely to align articulation agreements for seamless transfer, which will support the career pathways initiative.

9. Coordination with Existing Programs: Discuss existing grant requests or programs with similar goals and indicate how the proposed project is not duplicative of, but additive to, other efforts to support economic diversification and the creation of higher-paying jobs. Have existing efforts been successful and sustainable? (Character Limit: 3,000)

The Coastal Resilience and Adaptation Economy initiative described here does not duplicate existing efforts, and provides a multiplier impact for several complementary programs discussed in Sections 8. Collaboration and Cost Efficiencies, and 11. Partner Roles and Resources Committed.

Resilience Entrepreneurship Capacity & Business Accelerator Services

VASG, working closely with MPCBPAA and the MPPDC for years, has been strategically investing programming and fund-raising efforts to support the growth of a Coastal Resilience and Adaptation Economy in Region 6. This initiative is in the Comprehensive Economic Development Strategy (CEDS) planning process and the Region 6 Growth and Diversification Plan. Current pending grants and funded initiatives that provide complementary resources and capacity to this proposal include:

- A formal partnership between VASG and Louisiana Sea Grant's (LASG) Coastal Sustainability Studio. The Sustainability Studio will advise VASG on the development of the Region 6 resilience innovation center and collaborate with researchers and companies in Virginia. (funding in-hand)
- Resilience design competition in 2020 for the 2021 Coastal & Estuarine Research Federation (CERF) conference being held in Richmond, VA. The competition will spur novel resilience designs for pre-selected sites in Virginia that integrate green-blue-gray infrastructure solutions. (funding in-hand)

VASG supports MPPDC's extensive Fight the Flood programming and its current discussions with the U.S. Economic Development Administration for a Disaster Supplemental Assistance Grant to support: 1) Resiliency Product/Service Development, 2) Resiliency Insurance, 3) Living Breakwater Demonstration and 4) Disaster Recovery Planning for Businesses. The project supports an expanded market by facilitating resiliency improvements to real property located along the miles and miles of shoreline of the five Middle Peninsula counties, Essex, King and Queen, King William, Mathews and Middlesex. The \$4.6M proposal has proceeded through preliminary EDA review and a full proposal has been requested to provide:

- 25 businesses expanding resiliency/flood mitigation products or services,
- 10 business loans for expanded resiliency/flood mitigation businesses,
- 4 "riprap" storage areas for marine contractors prepared,



- 8 test demonstrations of innovative private sector sponsored shoreline treatment alternatives on publicly owned property
- A shoreline parametric insurance flood risk analysis conducted,
- 2 certified tidal gages for more accurate flood insurance rate analysis,
- A demonstration of “Living Breakwater” shoreline protection and
- A Middle Peninsula Business Disaster Recovery Plan.

Consortium

This project will increase the engagement of the architecture, engineering, and construction (AEC) industry in the coastal resilience and adaptation economy and builds on previous efforts. It will empower local industry to use their expertise in vetting best practices in coastal adaptation and resilience, and to engage with local municipalities to develop opportunities for private investment in these best practices.

The AEC industry have a 6-10% projected employment growth between 2018 and 2028 and have high paying median salaries (above \$80,000/year) based on data from the Bureau of Labor Statistics. Creating jobs in the area of coastal adaptation and resilience is sustainable and will be an area of growth throughout the United States.

The Consortium coordinates well and builds on other successful initiatives:

- Hampton Roads Resilience Coalition: architecture, engineering, and construction (AEC) firms interested in playing a larger role in resilience in the Hampton Roads region.
- Hampton Roads Adaptation Forums: this project will expand the number of AEC firms involved in resilience activities and provides a venue for local expertise to be vet best practices in resilience and adaptation for the Regions 5 & 6.

The AEC career pathways work builds on the following successful projects:

- Coastal Communities Design Collaborative, a partnership between ODU and Hampton University, educating students in coastal adaptation.
- Funded NSF Projects: “Hampton Universities NSF Broadening Participation Research Project”, which tests pedagogic methods to broaden participation in trans-disciplinary design for sea level rise adaptation courses; and the “CoPe Conference: Identification and Prioritization of Recurrent Flooding Research Foci Workshop: A Synergistic Approach”, which has a goal to broaden participation across sectors (including industry) in understanding research needs related to nuisance flooding.
- Funded National Fish and Wildlife Foundation Grant that supported development of Green Infrastructure training, which was aligned with the Chesapeake Bay Landscape Professionals Certification program.

Branding Identity

There is currently not a brand identity for the coastal resilience and adaptation economy in the Commonwealth of Virginia. As stated earlier, this sector has many high paying jobs and potential for growth however the industry is not well defined or organized. This will be the first effort to brand this growing economic sector. This web-based platform will differ from other information focused platforms by showcasing the economic and workforce development initiatives serving to match talent with resources and will rely on active connections and participation from partners and stakeholders, preventing duplication of existing resources.



10. Does this project align with the Economic Growth & Diversification Plan for each of the participating regions? Does the project align with any previously funded GO Virginia per capita or enhanced capacity building projects?

ATTACHMENT: If the project does not align with the Economic Growth & Diversification Plan for a participating region, please attach the subsequent addendum to the plan that demonstrates such alignment and why this project is a priority for the region(s).

Goals & Alignment with Plan Priorities. The Coastal Resilience and Adaptation Economy initiative leverages the unique strengths and assets of Regions 6 and 5 and creates higher paying jobs and supports traded sector businesses. The initiative addresses entrepreneurial activities and workforce development, primarily, and preliminary stages of site development funding categories. The project team aims to:

- Expand Virginia’s resilience entrepreneurship capacity through a business plan competition, demonstration R&D pilots to improve resilience and protect public lands, and a suite of business accelerator services (workforce development, product validation and testing, entrepreneurship and business development coaching).
- Expand a multi-stakeholder resilience Consortium to build expertise and support capacity development and innovation, including the development of a Resilience Professional Pipeline.
- Advance Virginia’s global brand identity as a leader in the coastal resilience and adaptation economy.

The Coastal Resilience and Adaptation Economy initiative supports the growth and diversification of Virginia’s economy through collaboration between business, education, and government across regions. It provides opportunities to create efficiencies that will result in cost-savings and long-term investment in a coastal resilience and adaptation, creating opportunities to capture transformational private sector growth in an emerging economic cluster. The initiative is transformational in that it utilizes each region’s assets to shape a coastal resilience and adaptation economy of the future, which in turn supports the continued operation of other key sectors and the high quality of life in coastal Virginia that attracts new businesses.

The *GO Virginia Region 6 Growth & Diversification Plan Update 2019* noted that resiliency is a growth industry sector, with “numerous institutions in Coastal Virginia are developing innovative solutions to mitigate...the high risk of sea level rise, increased flooding and damage from extreme weather patterns. Many of these innovations have the potential to be business led solutions that can be used across the planet.” This proposal advances several priority investment goals, strategies and recommendations from the Growth & Diversification Plan, and targets multiple industry clusters in the regions; Manufacturing, Professional/Scientific/Technical Services, Aquaculture/Seafood/Commercial Fishing/Marine Industries, Water Technologies, and Advanced Manufacturing,

Region 5 Growth and Diversification Plan from 2017 identifies water technologies, focused on resilience, mitigation, and adaptation as a priority cluster having “the best chance for growth in the medium-term”. It is also noted that based on coastal Virginia’s needs there is an incredible opportunity for testing in the natural lab of coastal Virginia. This proposal is led by the organizations highlighted in the cluster, Virginia Institute of Marine Science (which is the headquarters of Virginia Sea Grant), RISE, and Old Dominion University, and provides opportunities to expand collaborations across additional academic institutions, industry, non-profits, government and economic development and innovation organizations. This priority was retained in the 2019 *Region 5 Growth and Diversification Plan*. The term used here: Coastal Resilience and Adaptation Economy is inclusive of the emerging water technology sector.



2.1 Table. Alignment with Economic Growth & Diversification Plans

Coastal Resilience Adaptation Economy Initiative	Economic Growth & Diversification Plans	
	Goals:	Strategies:
Business Plan Competition	R6, Goal 1: Accelerate the creation and expansion of businesses in identified industry clusters	R6, #15: Conduct business plan competitions
Entrepreneurship and Business Development	R5, Goal 2: Increase pace of SME job creation through expansion of existing firms & the attraction of out-of-region firms R6, Goal 1: Accelerate the creation and expansion of businesses R6, Goal 2: Increase the average wages of workers above the State’s average R6, Goal 5: Reduce out-commuters	R6, #12: Expand “Innovation Centers” R6, #15: Conduct business plan competitions R6, #25: Commercialize resiliency products and services
Product Validation & Refinement	R6, Goal 1: Accelerate the creation and expansion of businesses in identified industry clusters	R6, #19: Develop new product lines in priority industry clusters
Workforce Development	R5, Goal 3: Close all skills, credentialing and degree gaps in the regional clusters’ workforce through in-region production and talent importation R6, Goal 4: Provide an adequate supply of appropriately trained and educated workers	R6, #5: Realign training to meet industry requirements R6, #6: Expand work-based learning R6, #9: Expand regional workforce development
Region 6 Resilience Innovation Center	R5, Goal 1: Create a coordinated region capacity for innovation R6, Goal 3: Expand, diversify and modernize the high-performance natural resource-based industries throughout the region	R6, #3: Encourage the development of regional business/industrial properties with cost/revenue sharing agreements R6, #12: Expand “Innovation Centers” R6, #22: Preserve and develop “working waterfronts” R6, #24: Establish a “Center for Resiliency Innovation” Center R6, #25 Commercialize resiliency products and services
Coastal Resilience and Adaptation Consortium	R5, Goal 1: Create a coordinated region capacity for innovation in Region’s Key Cluster Areas R5, Goal 3: Close all skills, credentialing and degree gaps in the regional clusters’ workforce through in-region production and talent importation. R6, Goal 4: Provide an adequate supply of appropriately trained and educated workers.	R6, #8: Create occupational career paths for priority industry clusters R5, #1: Coordination of Innovation R5, #4: Integration of cluster into economy R5, #17: Asses higher education skills gaps R5, Pursue placemaking activities to facilitate retention and attraction of young technical talent. R5, #19: Promote technical education



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Global brand identity	R5, Goal 1: Create a coordinated region capacity for innovation R5, Goal 2: Increase pace of SME job creation through expansion of existing firms & the attraction of out-of-region firms in key cluster areas.	R6, #24: Establish a “Center for Resiliency Innovation” Center R5, #5: Regional marketing initiative/HR Brand R5, #13: Promote expansion of small businesses as key element of innovation R5, #15: Fund special websites
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Project Readiness

11. Partner Roles and Resources Committed: Describe all partner organizations involved with the implementation of the project, including the entity's role, financial or in-kind commitment, and capacity to successfully execute their duties as they relate to the project. These may include but are not limited to school divisions, community colleges, public and private institutions of higher education, economic and workforce development entities, local governments, regional organizations, planning district commissions, and nonprofit organizations. (Character Limit: 3,000)

Virginia Sea Grant College Program (VASG) is a seven-university coalition, headquartered in GO Virginia Region 6 at the Virginia Institute of Marine Science (VIMS) with William & Mary, and composed of the University of Virginia, Virginia Tech, and George Mason, James Madison, Old Dominion, and Virginia Commonwealth Universities. VASG's will:

- Overall proposal lead and fiduciary agent at the Virginia Institute of Marine Science, including issuing and overseeing sub-awards to RISE, MPCBPAA, RCC, and ODU.
- Project lead for the Resilience Entrepreneurship Capacity and Business Accelerator activities, including facilitating planning and implementation
- Facilitate access to and administer university services for product validation and R&D
- Coordinate matching firms with resilience apprenticeships.
- Facilitate access to and administer environmental characterization of MPCBPAA sites
- Lead development of governance and operating procedures and agreements for a Region 6 Resilience Innovation Center with MPCBPAA, an R&D hub and network of field stations.
- VASG will contribute \$486,124 in match: \$270,421 in NOAA funding, \$168,103 of NOAA funding to support in-kind staff time, and waived administrative costs on its sub-awards to ODU, RISE, MPCBPAA and RCC, as an in-kind contribution of \$47,600.

RISE is a non-profit, economic development organization with a mission to accelerate innovation and business growth around solutions to coastal communities' resilience challenges. RISE leverages local assets and global networks to enable businesses to develop, demonstrate and scale innovations that help coastal communities adapt to changing climate. RISE's role:

- Lead the national competition design, recruitment, vetting, and competitive selection of business plans for enhancing resilience and protecting public properties on the MPCBPAA.
- Work with selected businesses and project partners to assess and aggregate procurement demand and other domestic and global market opportunities
- Provide businesses with access to existing workshop and co-working office space in Region 5, support commercialization and growth of selected companies utilizing their existing industry relationships and connections, and supply other business accelerator services.
- Collaborate on the planning and coordination of other business accelerator services, including product validation and R&D support, workforce development and apprenticeships, and property access.
- RISE will contribute \$1.1M in match:

The ***Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA)*** created by the General Assembly in 2002 and is composed of nine Middle Peninsula localities. Holding the title to and managing over 50 waterfront properties, MPCBPAA's role:



- Working with partners on implementation of a business plan competition to conduct resilience improvement demonstration projects on public properties
- Procuring services for the selected firms to protect public properties through demonstration projects
- Working with partners to identify specific workforce needs for the businesses and the implementation of the demonstration project on the MPCBPAA properties
- Work with partners to finalize conceptual plans and diagrams, governance systems, and operational procedures for the Region 6 Resilience Innovation Center hub and network of field stations
- MPCBPAA will contribute in-kind match including waived R&D rental rates for access and use of the MPCBPAA properties, totaling \$1.1M.

Rappahannock Community College (RCC) provides inclusive access to exceptional training and educational opportunities meeting the community's needs and preparing individuals for success as learners, employees, and citizens. RCC has a successful Work-Based Learning apprenticeship program in the maritime trades and a partnership with the Chesapeake Bay Governor's School, which is on the RCC campus. RCC's role:

- Identify specific workforce needs for the businesses and the implementation of the demonstration project on the MPCBPAA properties designed to protect the public property from flooding, erosion, and other impacts from sea level rise;
- Establish and fund a technician-level, Work-Based Learning apprenticeship between RCC students and each business to meet workforce needs.
- Work with high school graduates from the Chesapeake Bay Governor's School on RCC campus to participate in the WBL apprenticeship program.
- Work with partners on the long-term planning (e.g., R&D facility needs, governance systems, and operational procedures) for the Region 6 Resilience Innovation Center hub and network of field stations.

Old Dominion University is a dynamic public research institution that serves its students and enriches the Commonwealth, the nation and the world through rigorous academic programs, strategic partnerships and active civic engagement. ODU's role:

- Lead on the Consortium, including planning, scoping, working group facilitation, stakeholder engagement, operational protocols.
- Research and launch architecture, engineering and construction resilience career pathways, along with partners at Thomas Nelson Community College.
- Develop web-portal of best practice resources for urban and rural coastal adaptation.
- Lead Branding Identity activities, including planning, scoping
- Develop, launch and update brand platform and outreach strategy
- ODU will contribute match including: \$78,940 in NSF funding, \$250,000 in Federal Economic Development Administration funding and \$20,000 funding to support in-kind staff time for the development of a web portal of best practices. As an ODU partner on the career pathways activities, Hampton University will contribute \$85,847 in match from NSF funding.

ATTACHMENTS: Letters of commitment from localities and other partners participating in project detailing commitment, in-kind contribution forms, and letters of support from localities, local government entities, and other partners, or businesses that support this project.



12. Identify the primary project manager(s) from each region, and how they will facilitate project implementation across regions. Describe the division of responsibility and the plan for communication between project administrators, support organizations, higher education institutions, private businesses, etc. from across regions.

The Coastal Resilience and Adaptation Economy initiative has a lead with the Region 6 primary fiduciary agent, Virginia Sea Grant at the Virginia Institute of Marine Science (Dr. Troy Hartley), and the Region 5 lead Old Dominion University (Emily Steinhilber). Further, the project team will coordinate overall project implementation, communicate and meet regularly, and manage supporting organizations and partners.

Dr. Troy Hartley is the Director of Virginia Sea Grant and a Research Professor of Marine Science & Policy at the Virginia Institute of Marine Science and the William & Mary Public Policy Program. Virginia Sea Grant is a seven-university coalition, headquartered at the Virginia Institute of Marine Science with William & Mary, and composed of the University of Virginia, Virginia Tech, and George Mason, James Madison, Old Dominion, and Virginia Commonwealth Universities. He has over 20 years of experience studying and leading multi-stakeholder and multi-disciplinary collaboration in research, management and governance of coastal, marine and natural resources, including resilience design and adaptation initiatives. Troy is the lead Principal Investigator on numerous projects funded by the U.S. Department of Commerce, the National Science Foundation, private foundations, industry partners, and state agencies. Dr. Hartley has a Ph.D. in environmental and natural resource policy from the University of Michigan, an M.A. in environmental policy from George Mason University, and a B.S. in zoology from the University of Vermont.

Ms. Emily Steinhilber is a Research Assistant Professor, Commonwealth Center for Recurrent Flooding Resiliency (CCRFR) located in the Office of Research, and Carol Considine an Assistant Dean and Associate Professor in the Batten College of Engineering & Technology. Emily Steinhilber has been working in the field of climate adaptation and resilience for more than 10 years and has successfully managed numerous resilience projects. She has recently lead website development projects for CCRFR and for the Institute for Coastal Adaptation and Resilience (ICAR). Her leadership in CCRFR provides her with an excellent understanding of the adaptation and resilience community in coastal Virginia.

Other key members of the project implementation team, who will work closely with Hartley and Steinhilber are:

- Paul Robinson and Katerina Oskarsson, RISE
- Sabine Rogers, VASG
- Lewis Lawrence, MPCBPAA and Middle Peninsula Planning District Commission
- Carol Constantine, ODU
- Jason Perry, RCC



14. Project Barriers: Discuss any major barriers to successful implementation and other associated risks along with a plan to overcome them. How will the project administrator address these barriers? The response also should include any items that must occur prior to initiation of the project or execution of the contract (acquisitions, funding, agreements, partnerships, permits, etc.) and potential timeline impacts for those items. (Character Limit: 3,000)

Challenges for the emergence of a Coastal Resilience & Adaptation Economy in Virginia include:

- Changing state and federal funding environment resulting from Covid-19 recovery efforts. While opportunities to grow new jobs and businesses will be important for economic stability and diversification in Virginia, building the foundational elements (workforce development, R&D capacity, small business support, and the initial steps to commercialization) of an innovation ecosystem needs seed funding and benefits from active government involvement. Government agencies will remain under-resourced and overwhelmed with Covid-19-related recovery efforts.
- While unlikely by the start of this grant (January 2021) and the full implementation with businesses selected and working on field stations (summer/fall 2021), a Covid-19 resurgence is a possibility and universities are planning for this possible scenarios. If Covid levels remain high or return, the partners will continue to follow meeting, travel, training protocols of their host institution. The protocols contain contingency plans and are in place at Virginia's universities and community colleges, as all universities and community colleges are adhering to the Commonwealth's guidelines. Further, community colleges, VASG institutions, and ODU have extensive experience with online learning, teaching, meetings, and conferences.
- While investments in elements of an innovation ecosystem for Coastal Resilience and Adaptation Economy is essential to make Virginia a global leader in this industry cluster, its' ROI is more wide-ranging than immediate increases in jobs, businesses and tax revenues. The June 2020 SCHEV report to the Virginia Research Investment Committee, *Report on a Research and Development Inventory Effort for the Commonwealth*, noted that ROI is tied to sustainability of R&D initiatives. Expanded ROI measures that help program leaders monitor viability of R&D and workforce development projects include elements discussed in Section 4. Performance Measures and Section 5. ROI, as well as items identified by SCHEV:
 - Resources used (equipment, labs, field station use)
 - Collaboration resulting in new grant funding and research outputs
 - Improved human condition (e.g., resilience) resulting from R&D activities via marketing and success stories.
 - Eminent researcher activities, such as awards, intellectual property (IP), patents, startups
 - Inventions and successful matches via technology licensing and bundled IP.
- The conversion of many R&D funding sources toward Covid-19 recovery, including GO Virginia, make competition greater for the remaining GO Virginia funding among non-Covid-19 applicants. However, Virginians and their businesses will continue to be fiscally impacted by coastal storms and rising tides.
- Delays in investing in the emerging Coastal Resilience and Adaptation Economy and innovation ecosystem risks wasting Virginia's competitive advantage. The silver lining in being one of the most vulnerable locations in the U.S. to flooding, erosion, and other impacts of a higher rate of sea level is that Virginia needs to solve these problems before others. While Virginia could purchase expensive solutions developed in the Netherlands, Louisiana, or from other competitors, a Coastal Resilience and Adaptation industry cluster in Virginia would seek to



produce novel, cost-effective solutions and sell them to the global market. Supporting this existing emerging sector throughout Coastal Virginia, building talent pipelines and supporting entrepreneurs and innovators now will ensure Virginia keeps moving forward. However, other parts of the country will begin to experience regular flooding, shoreline erosion and sea level impacts and they will seek to capitalize on the emerging global market. Some have started – Boston, Rhode Island, Houston – and Virginia will lose its competitive advantage if it is slow to take action.

No other item or action needs to take place or be initiated to fully execute this proposal.

15. Demand Indicators: Describe any feasibility studies that have been conducted or other efforts that have been made to establish the demand for the proposed outputs/outcomes of the proposed project. Has this type of effort been tried and failed in the past? How will this be different? Why is this project needed? For site development, what is the demand from targeted industry sectors for this project? (Character Limit: 3,000)

ATTACHMENTS: Previously completed feasibility studies (if applicable) and demand documentation.

The Coastal Resilience and Adaptation Economy will develop advanced manufacturing, professional services, and water technology jobs and businesses, priority growth areas for Region 6 and 5. A 2010 market analysis for Milwaukee’s Water Council concluded that the “world’s market for water-related equipment and operations is projected to be...growing to well over \$600B by 2016. By contrast the world’s IT market [in 2010] is \$650B; the cell phone market is \$600B...” (White, et al., 2010, pg. 8). In the U.S. alone, in 2016 ~1.7M workers in 212 different occupations designed, constructed, operated and governed water infrastructure. Water jobs pay more on average than all occupations nationally, and pay up to 50% more for employees at the lower ends of the economic scale (Kane and Tomer, 2018). In the Hampton Roads region, 6% of total employment is in water technology-related industries (43,000 in 2015), with strengths in logistics services, engineering services, civil engineering construction, and water and sewer line construction (Filer, 2017). All existing water-related infrastructure, and all sectors of the coastal economy, will need to adapt to more frequent flooding, greater shoreline erosion, stronger storms and coastal hazards, and other ramifications of living with more water.

Virginia is on the leading edge of this trend with higher levels of relative sea level rise than other locations on the East Coast, and thus there is an opportunity to produce novel, cost-effective solutions to these challenges here in Virginia and then market them to the world. The Dutch water sector with a focus on flood protection and managing flood waters is a ~\$30B industry (Rago 2019). Rural coastal communities contain additional market opportunities. Rural areas account for 80% of the US landmass, and the demand for cost effective resilience solutions in coastal rural communities will be great (Lai, et al., 2011). A 2009 Middle Peninsula Planning District Commission report estimated that by 2050, the rural coastal Middle Peninsula could see \$187-\$249M worth of infrastructure (roads, houses, onsite waste disposal systems) and wetlands function impacted by sea level rise and flooding (MPPDC 2009). The Middle Peninsula’s Mathews County county-wide property assessment recorded a lost \$75M in taxable property value caused by recurring flooding and erosion on their waterfront properties. Similarly, in Region 5, A 2012 Hampton Roads Planning District Commission report estimated over 877 miles of roadway and over 3,659 businesses at risk to flooding at one meter of sea level rise (HRPDC 2012) and a 2015 report by the Accomack Northampton Planning District Commission estimated over 13% of roadways would be impacted at 3 feet of sea level rise (ANPDC 2015). A 2020 CCRFR report completed in support of the development of the Commonwealth’s Coastal Resilience Master Plan



estimates that statewide by 2040 over 140 square miles of land will be vulnerable to frequent recurrent tidal flooding or “nuisance flooding” including land area in all of the above planning district areas (McLeOd 2020).

Responding to Demand with R&D The lifecycle of research, development and commercialization is referred to as an innovation ecosystem. A productive innovation ecosystem generates economic growth by connecting public and private economic development resources and services across R&D activities, technology development and commercialization, entrepreneurship development, and then employment in the economic sector (TEconomy 2018). Virginia has elements of this lifecycle for a coastal resilience and adaptation economy, although gaps exist – gaps that this initiative is poised to fill.

Resilience Entrepreneurship Capacity & Accelerator Support. The resiliency innovation center and public-private partnership capacity in Virginia is a unique asset with few direct competitors in the world. At the same time, advanced manufacturing R&D centers from other sectors provide critical administrative and market lessons learned that can jump-start the Region 6 Resiliency Innovation Center. A 2012 study by the Center for American Progress concluded that more engagement between industry and universities would move novel ideas out of R&D and into the market faster (Pool and Erikson 2012). This proposal links the blue, green and gray infrastructure and university and community college assets of Region 6 with the coastal resilience and adaptation entrepreneurship and business development, business plan competition, and commercialization capacity of Region 5.

Consortium & Branding. A 2016 CCRFR report *From Filling a Local Demand to Becoming an International Brand: An Analysis of a Water Technology Cluster in Hampton Roads, Virginia* recommended actions for growing a water technology cluster: (1) the creation of a trade association, (2) regular networking and educational events to facilitate cooperation, and (3) a strengthened connection between this emerging cluster and the regional innovation community. The development of this consortium will meet all three of these recommended actions. Further, final recommendations from the Hampton Roads Sea Level Rise Preparedness and Resilience Intergovernmental Pilot Project. Phase 2 Report: Recommendations, Accomplishments and Lessons Learned recommended supporting a water management economy, a business resilience initiative, and developing resources to support the growth of that sector in line with the consortium and branding initiatives.

The June 2020 SCHEV *Report on a Research and Development Inventory Effort for the Commonwealth*, discussed the importance of highlighting how R&D improves human wellbeing through marketing and sharing success stories.

ATTACHMENTS: Previously completed feasibility studies (if applicable) and demand documentation.

- **Draft Region 6 Action Plan**

16. Prerequisite Activities: What levels of preparation have been done ahead of this grant. Examples include MOUs, RIFAs, other grants, feasibility studies, etc. (Character Limit: 3,000)

The project team has been advancing this initiative for several years, with many activities and projects contributing to the refinement of ideas, principles, elements and partnerships necessary to establish Virginia as a global leader in this emerging industry cluster. Team members are also undertaking leverage-funded activities that will secure partnership arrangements to promote sustainability of



proposal elements. Selected examples of feasibility studies and related projects that have built the project team experience include:

- 2012, Launch of the quarterly VASG-ODU-Hampton Roads Planning District Commission Adaptation Forum. Participants (local municipal government staff, scientific experts, private sector engineers, state and federal agency staff, NGOs and other stakeholders) exchange information and share best practices. There have been 26 Adaptation Forums.
- 2014, *Middle Peninsula – Virginia Sea Grant/University Partnership Project: Summary Report*. W&M Public Policy Program case studies, interviews, surveys, and focus groups.
- 2015 *Captain Sinclair’s Recreation Area Plan*. Virginia Commonwealth University Center for Urban and Regional Analysis.
- 2017, *From Filling a Local Demand to Becoming an International Brand: An Analysis of a Water Technology Cluster in Hampton Roads, Virginia*. Commonwealth Center for Recurrent flooding Resiliency.

Virginia Sea Grant (VASG) was awarded a GO Virginia Region 6 planning grant to assess the assets and strengths, gaps, and potential opportunities for a water management economy in Region 6, and build an action plan for moving forward to realize those opportunities. The planning grant project identified innovation and potential commercialization opportunities in the following economic sectors: Living Shoreline & Hybrid Green-Gray Infrastructure; Waterfront, Water-Dependent Business Infrastructure; Rural Wastewater & Water Management; Waterfront Homes & Properties. The Action Plan development involved case studies of other water-related industry cluster development efforts around the country:

- *Milwaukee’s water cluster*. Lesson: tailor economic cluster to the region’s existing strengths; critical to assess existing assets.
- *Louisiana Water Campus*. Lesson: the critical need of neutral territory for university collaboration...the non-profit Water Institute and the physical location, the Water Campus, Louisiana Sea Grant’s Coastal Sustainability Studio for collaboration and enhanced team-based R&D. Novel solutions will only come from cross-sector, inter-disciplinary integration.
- *Netherlands. Golden Triangle*. Academic-Industry-Government partnership. Lessons: role of government partners, mechanism for testing proof of concept.
- *Newport Innovation District*. Lessons: they have floundered without champions; federal partner important, although led to a narrow economic cluster.
- *Commonwealth Center for Advanced Manufacturing (CCAM)*. Lessons: critical to get the governance system fleshed out (e.g., transparency, IP agreement, multi-university, private partnerships, advisory structure, administrative capacity, etc.,).

The 2017 Commonwealth Center for Recurrent Flooding Resiliency report found “The Hampton Roads region has a concentration of labor in industries that are well equipped to provide goods and services to the [water technology] cluster.” The report also highlighted that the region has “a number of regional groups, higher education institutions and nonprofits that could support a water technology cluster. These players are vitally important. They assist in innovation, networking, development of the labor force and the financing of smaller local projects.” Proposed recommendations of the report include: Creation of a regional water technology trade association; A monthly or bi-monthly event to serve as the “meeting place” for businesses, universities and nonprofits; Systematic, ongoing collection and analysis of cluster statistics.



Last, the RISE’s business plan competition approach has been validated in two rounds of similar competitions between 2018 and 2020, resulting in 11 small businesses currently piloting, validating and scaling novel resilience solutions in Region 5.

Consortium and Brand Identity. Recommendation from the Phase 2 Hampton Roads Intergovernmental Pilot Project report included ensuring business and industry as active participants in shaping regional strategies and methods, incentivize business and industry action and innovation, and develop a business and industry outreach program:

- The need for a consortium was confirmed by a 2016 research report from the Commonwealth Center for Recurrent Flooding (CCRFR) titled *From Filling a Local Demand to Becoming an International Brand: An Analysis of a Water Technology Cluster in Hampton Roads, Virginia*.
- Scoping and feasibility of an architecture, engineering, and construction (AEC) industry consortium confirmed by industry participation in the Hampton Roads Resilience Coalition which met during the fall of 2019 and spring of 2020.
- Grants:
 - Coastal Communities Design Collaborative, a partnership between ODU and Hampton University, educating students in coastal adaptation.
 - Funded NSF Projects: “Hampton Universities NSF Broadening Participation Research Project”, and the “CoPe Conference: Identification and Prioritization of Recurrent Flooding Research Foci Workshop: A Synergistic Approach”.
 - Funded National Fish and Wildlife Foundation Grant that supported development of Green Infrastructure training, aligned with the Chesapeake Bay Landscape Professionals Certification program.
 - Economic Development Administration I6 Grant supporting the Open Seas Technology Innovation Hub with coastal resilience as one of the focal pillars

17. Consultation with Subject Matter Experts: Discuss how each regional council and project developers have consulted with subject matter experts regarding the efficacy and viability of the proposal and how the methodology and approach has been validated. (Character Limit: 3,000)

The project team has consulted and engaged Subject Matter Experts (SMEs) at several points in the development of the Coastal Resilience and Adaptation Economy. Specifically:

Resilience Entrepreneurship Capacity & Accelerator Services. GO Virginia Region 6 investing in a planning grant to thoroughly assess Region 6’s assets and opportunities, consulting with experts in economic development, university resources, government resources, and NGO capacity. VASG consulted with the following SMEs from Louisiana:

- Stephen Moret, President and CEO, Virginia Economic Development Partnership
- Dale Morris, Director of Strategic Partnership, The Water Institute of the Gulf
- John Spain, Executive Vice President, Baton Rouge Area Foundation
- Robert R. Twilley, Executive Director, Louisiana Sea Grant College, and Chairman of the Board, Coastal Sustainability Studio, Louisiana State University

SMEs that participated in the planning effort includes representatives from:



Mary Ball Washington Regional Council

GO Virginia Region 6

www.govirginia6.org

- Economic Development: Virginia Economic Development Partnership; VA Dept of Housing & Community Development; Middle Peninsula Alliance; RISE
- Private Sector: Clark Nexsen; AECOM; Arcadis; Dewberry; Moffatt & Nichol; Michael Baker International; Flood Mitigation Services; Community Futures; Virginia Port Authority;
- State Government: Secretary of Natural Resources; Office of the Governor/Special Assistant for Coastal Adaptation and Protection; VA Coastal Zone Management Program; General Assembly (Delegate Hodges).
- Local/Regional Government: Middle Peninsula Planning District Commission (PDC); Hampton Roads PDC; Accomack-Northampton PDC
- Academic: Virginia Institute of Marine Science; William & Mary; Hampton University; James Madison University; Virginia Tech; George Mason; Old Dominion University; University of Virginia; Rappahannock Community College; and Easter Shore Community College.
- NGO: Wetlands Watch

Generation of the Action Plan involved case studies of other water-related industry cluster development efforts around the country (see discussion in Section 16. Prerequisites Activities), although site visits were limited by Covid-19 travel bans at Virginia's universities. A leveraged trip to Louisiana, paid for by the National Oceanic & Atmospheric Administration as part of a federal program evaluation committee (Dr. Hartley was a member of the committee), did enable further assessment of Louisiana's Water Campus.

Nonetheless, remote research led to preliminary lessons learned from those case studies, which in turn led to further examination of existing public-private R&D partnership models in other sectors. Cases included:

- The Water Council, Milwaukee, WI.
- Louisiana Water Campus, including the Water Institute of the Gulf, LA Coastal Sustainability Studio, LA Sea Grant, and LSU Center for River Studies
- Deltares, Netherlands. Golden Triangle.
- Newport Innovation District, Innovation and Resiliency Center of Excellence, Newport Project Development Company.
- Houston Advanced Research Center, Resilient Houston, and Greater Houston Flood Mitigation Consortium
- EIT Climate-Knowledge and Innovation Community, European Union
- Commonwealth Center for Advanced Manufacturing (CCAM), Virginia.
- Syracuse University, Unmanned Aerial Systems
- Clemson University, International Center for Automotive Research
- Resilient Boston, MA
- Charleston Resilience Network, SC

Consortium and Brand Identity. A 2016 Commonwealth Center for Recurrent Flooding (CCRFR) report *From Filling a Local Demand to Becoming an International Brand: An Analysis of a Water Technology Cluster in Hampton Roads, Virginia* provided recommended actions for the coastal and adaptation industry sector that included creation of a trade association and regular networking and educational events to facilitate cooperation. This initiative fills a gap that research identified for new partnerships in adaptation and resilience.



The architecture, engineering and construction (AEC) industry also recognized this gap and approached ODU in the summer of 2019 expressing a need for an industry organization that would lead coastal Virginia in the adoption of resilience standards to position the region as leaders in resilience and adaptation economy. Industry representative include - AECOM, AES Consulting Engineers, Armada Hoffler Properties Clark Nexsen, Clancy & Theys, Cottrell Contracting, DAL Construction, Dewberry, Edgewater Construction, Fugro, GET Solutions, Hanbury, HBA, Hourigan Construction, Kimley Horn, Moffat & Nichol, MSA, Norfolk Dredging, RP Consortium, RRMM, S.B. Ballard, Speight Marshall, & Francis, TS3 Architects, W.M. Jordan, M.T. Curry Inc, The Smithfield Station, and WPL.

Other SME's consulted include:

- Economic Development: Hampton Roads Alliance (formerly, Hampton Roads Alliance Association), Middle Peninsula Alliance,
- State Government: Office of the Governor/Special Assistant for Coastal Adaptation and Protection
- Local Government: City of Norfolk, City of Portsmouth
- Academic: Virginia Institute of Marine Science; William & Mary; Hampton University; Thomas Nelson Community College

Additionally, several Region 6 & Region 5 Go VA Board members were briefed on the joint Region 6 & 5 proposal at meeting on March 27, 2020.

18. Consultation with Localities: Discuss how each regional council and project developers have consulted with local government entities regarding the strategy and implementation of the project.

(Character Limit: 3,000)

The project team has consulted and engaged local and state government, and economic development partners at several points in the development of the coastal resilience and adaptation economy initiative. Specifically:

Resilience Entrepreneurship Capacity & Accelerator Services. Virginia Sea Grant (VASG) was awarded a GO Virginia Region 6 planning grant to assess the assets and strengths, gaps, and potential opportunities for a water management economy in Region 6, and build an action plan for moving forward to realize those opportunities. The planning grant launched a set of multi-stakeholder discussions including:

- Fact-finding workshop, Louisiana's water management economy and the Water Campus. November 2, 2018. A panel of experts from Louisiana discussed the development path of their water management economy, including best practices and hurdles. (<https://www.youtube.com/watch?v=4wvJzpm8RBo&feature=youtu.be>)
- Inventory Assets and Gaps workshop, informed by additional case studies. February 21, 2019. Meeting attendees aided in completing an inventory of Virginia's existing capacity in elements of a resilience, adaptation, and water management economy. Specifically: workforce development; R&D; innovation, commercialization and economic development assistance; and capital and funding.
- Prioritize Opportunities workshop. June 12, 2019. Meeting attendees completed prioritizing R&D innovation opportunities for an action plan for an adaptation, resilience and water management economy in Virginia, including critical next steps to launch the action plan (e.g.,



market analysis, additional case study research). In addition, there were discussions surrounding the organizational design of a university-private sector R&D network in Virginia.

The above workshops included the engagement and input of multiple representatives from local and state government, and economic development partners including;

- Economic Development: Virginia Economic Development Partnership; VA Dept of Housing & Community Development; Middle Peninsula Alliance; RISE
- State Government: Secretary of Natural Resources; Office of the Governor/Special Assistant for Coastal Adaptation and Protection; VA Coastal Zone Management Program; General Assembly (Delegate Hodges).
- Local/Regional Government: Middle Peninsula Planning District Commission (PDC); Hampton Roads PDC; Accomack-Northampton PDC

VASG has provided briefings to and held consultation discussions on the GO Virginia Region 6 Action Plan findings with the Region 6 Executive Committee and the General Assembly's Joint Subcommittee on Coastal Flooding. VASG has briefed and consulted with other General Assembly members (e.g. Senators Mason and Lewis; Delegates Hodges, Bulova, Sickles) and Virginia's Congressional Delegation.

VASG has been working closely and systematically with the Middle Peninsula Planning District Commission and MPCBPAA, including its nine municipalities, on the long-term strategy for university-community partnerships and the planning for a Resilience Innovation Center with R&D capacity on PAA waterfront properties. A sample of projects, with extensive stakeholder engagement in the Middle Peninsula, have included:

- November 2014, *Middle Peninsula – Virginia Sea Grant/University Partnership Project: Summary Report*. 8-month intern, graduate student from W&M Public Policy Program conducted case studies, interviews, surveys, and focus groups
- May 2015 *Captain Sinclair's Recreation Area Plan*. Virginia Commonwealth University Center for Urban and Regional Analysis. Involved faculty-student teams over 1YR from the following VCU graduate courses: Citizen Participation and Negotiation; Land Use Planning; Principles of Design; Desktop Publishing.

Additional topic-specific university-community projects have further clarified resilience and adaptation needs, e.g., taxation policy to raise resilience funding; dredging policies to maintain working waterfronts.

Consortium & Branding.

Within the last year, principles at multiple engineering firms approached ODU Engineering for assistance in convening a professional coalition to support workforce and business development in the resilience sector. Thus, the Hampton Roads Resilience Coalition was formed to help support, foster, and build a resilience industry in Hampton Roads. This group, which includes all of the architecture, engineering and construction firms is in its inaugural stage and this initiative will provide the necessary support to continue the development of the Coalition. Joining the Coalition with partners from other sectors including academic, professional societies, non-profit, government, economic development and innovation will provide a broader perspective and bring additional expertise and resources to the development of the coastal adaptation and resilience sector.



19. Project Budget: Identify the total project budget and the sources and uses for matching funds and leverage. If the project is requesting a waiver of the total match requirement and/or local match requirement, please explain the justification for the waiver. (Character Limit: 6,000)

ATTACHMENTS: Budget Overview Form, Financial Letters of Commitment, and In-Kind Contribution Forms.

- a) Does the project have the required \$1:1 match? If so, what are the sources/uses for these funds?
- b) Does the project have the required 20% (or \$50,000 if request is less than \$250k) local match? If so, what are the sources/uses for these funds? *Beginning in April 2020 all local match is waived by the GO Virginia State Board until otherwise noted.
- c) Are any additional funds or in-kind contributions serving as leverage for the project? If so, what are the sources/uses for these funds?

The coastal resilience and adaptation economy initiative requires no waiver of the total match or local match requirement. Further, the diversity of federal match sources noted below (HUD, NOAA, NSF, EDA) reflect the breadth of opportunity and interest among federal funding sources for resilience and adaptation solutions.

COASTAL RESILIENCE ADAPTATION ECONOMY INITIATIVE	GO VIRGINIA		MATCH		MATCH SOURCE
	Year 1	Year 2	Year 1	Year 2	
Resilience Entrepreneurship Capacity & Accelerator Services	\$2,627,660		\$2,834,744		NOAA, HUD, MPCBPAA Funding and In-Kind
	\$1,573,673	\$1,053,986	\$1,822,335	\$1,012,408	
Consortium & Brand Identity	\$511,741		\$908,907		NSF, EDA, In-Kind
	\$317,756	\$193,985	\$534,756	\$374,151	
ANNUAL TOTALS	\$1,891,429	\$1,247,971	\$2,357,091	\$1,386,559	
TOTAL	\$3,139,401		\$3,743,651		



Project Sustainability

20. Project Sustainability: Discuss how the program will achieve stable, long-term sustainability beyond the initial funding period? Have any funding sources been secured to continue implementing the program or strategy following the exhaustion of these funds? (Character Limit: 6,000)

The project team has a vested interest in the success and continued support and sustainability of the coastal resilience and adaptation initiatives outlined in this proposal. Specific sustainability plans for each initiative is outlined below:

Resilience Entrepreneurship & Accelerator Services. Several strategies are underway to ensure the sustainability of Region 6's resilience entrepreneurship activities, accelerator services, and R&D innovation center including:

- A formal partnership between VASG and Louisiana Sea Grant's (LASG) Coastal Sustainability Studio, including exchange of lessons learned and best practices (e.g., public-private partnership models, membership structure, governance systems) for an R&D hub linking universities and the private sector. The Sustainability Studio will advise VASG on the development of the Region 6 resilience innovation center and collaborate with researchers and companies in Virginia.
- VASG launching a resilience design competition in 2020 for the 2021 Coastal & Estuarine Research Federation (CERF) conference being held in Richmond, VA. The competition will spur novel resilience designs for pre-selected sites in Virginia that integrate green-blue-gray infrastructure solutions. It will be a high-profile event that draws brand identity and attention to Virginia through the international conference.
- Building a partnership with a Federal agency – VASG and LASG collaborating on a NOAA National Sea Grant Office proposal (i.e. funding only available to state Sea Grant programs) for a full-time liaison position with the US Dept of Housing & Urban Development's (HUD) Community Development Block Grant (CDBG) program and the US Dept of Homeland Security's National Institute of Standards and Technology (NIST). The proposed 4-YR grant-funded position would work in the Region 6 resilience innovation center facilitating public-private partnerships and novel resilience designs for CDBG projects. Other federal partners of interest include those involved in major construction funding, e.g., DOD, Army Corps, Dept of Transportation, Park Service.
- VASG has secured \$270,427 in NOAA funding to formalize the governance structure for the Region 6 resilience innovation center, e.g., Charter and MOUs with member universities and private sector partners, dues structure, operating procedures for the R&D hub and field stations, template agreements for intellectual property, etc. Similar to an advanced manufacturing center, the resilience innovation center will be sustainable through member dues, grants, federal, state and local government partners, and foundation support.
- The Region 6 Resilience Innovation Center and the coastal resilience and adaptation economy are identified in the Middle Peninsula Comprehensive Economic Development Strategy, which makes them eligible for additional, dedicated competitive funding from the US Economic Development Administration.

Consistent with the June 2020 SCHEV *Report on a Research and Development Inventory Effort for the Commonwealth*, sustainability of the resilience entrepreneurship and business accelerator services can

come from revenue generation via use of the R&D innovation center, cost-sharing among partners using the R&D innovation center, and government contributions (federal and potentially, state).

Consortium & Brand Identity. The following will be implemented to ensure the long-term success of the consortium and the brand identity web site:

- The consortium sustainability will be critical to the long-term success, and developing a plan for sustainability is incorporated in the consortium Operational Development and Documentation phase of the project schedule. Options to pursue include sponsorships from private sector companies listed as consortium members, on-going support from partnering cities/counties, or member university support or a combination of these funding mechanisms. ODU’s Institute for Coastal Adaptation and Resilience will support sustainability of the consortium.
- The coastal adaptation and resilience website will be maintained by ODU and supported by the Center for Recurrent Flooding Resilience (CCRFR) and the Institute for Coastal Adaptation and Resilience (ICAR). It will be updated regularly to highlight:
 - Projects, events, and successes in the two regions
 - Industry expertise and innovations
 - Educational pathways and opportunities

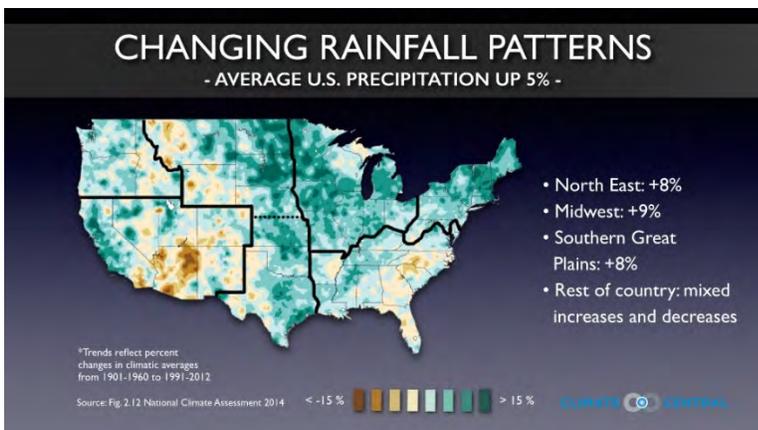
Federal Partners

The diversity of federal match sources in this proposal (HUD, NOAA, NSF) reflect the breadth of opportunity and interest among federal funding sources for resilience and adaptation solutions.

21. Describe how this project has been structured to allow for replication in other regions or statewide?

- a) **Are there localities or other GO Virginia regions (including interstate collaborations) that are outside the applying region(s) that are participating in the project? If so, describe the nature of the collaboration and the anticipated impact.**

Resilience and adaptation to more flooding, increased severity of storms, erosion, warmer temperatures and other environmental changes is not exclusive to coastal communities. Inland flooding is increasing, with changing rainfall patterns (see Changing Rainfall Patterns map). As the innovation ecosystem for a



Coastal Resilience and Adaptation Economy is built in GO Virginia Regions 5 and 6, and the industry cluster grows, the technical expertise developed here can seed specialized resilience and adaptation economies in other regions of Virginia.

Further, the collaborative rural-suburban-urban strategy brought together in this Coastal Resilience and Adaptation Economy initiative enables a comprehensive, integrated blue-green-

gray infrastructure strategy that creates holistic design solutions to resilience challenges. This approach, tailored for coastal communities, provides opportunities for further regional and national partnerships



Mary Ball Washington Regional Council

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with others in specialized niches of resilience and adaptation. For example, a collaboration with local experts from inland Virginia could address inland freshwater flooding, while partnerships in the Southwest and Western US could bring Virginia’s technical approach and strategies to problems of wildfires and drought. In other words, Virginia can export its “method” and extend its reach in the resilience and adaptation economies. Similarly, Virginia’s Coastal Resilience and Adaptation Economy niche of integrated blue-green-gray solutions at the individual property, neighborhood and community scales, opens up collaborative opportunities with Louisiana (large scale ecosystem restoration, and hurricane recovery and protection) and the Dutch (large scale urban solutions).

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MIDDLE PENINSULA CHESAPEAKE BAY PUBLIC ACCESS AUTHORITY

July 10, 2020

Dr. Troy Hartley
Virginia Sea Grant, Director
Virginia Institute of Marine Science
PO Box 1346
Gloucester Point, VA 23062

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Town of West Point

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125 Bowden Street

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Saluda, VA 23149-0286

Phone: (804) 758-2311

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PublicAccess@mppdc.com

RE: Letter of Support, Commitment and In-Kind Support for the VASG Coastal Resilience & Adaptation Economy Proposal

Dear Dr. Hartley,

The Middle Peninsula Chesapeake Bay Public Access Authority (MPCBPAA) was created by the General Assembly on April 7, 2002 and ratified by participating localities on June 13, 2003. Holding the title to and managing over 50 waterfront properties, MPCBPAA places a high priority on shorelines and natural areas and makes them available for activities important to the economy and citizens. Among other responsibilities, the MPCBPAA is charged with identifying land that can be secured for use by the general public as a public access site; determining appropriate public use levels of identified access sites; and developing appropriate site management plans for public access usage. Past strategic planning and assessments of various uses for waterfront properties have identified the priority need and interest in building resilience and adaptation R&D capacity on MPCBPAA properties. Over the past 6-8 years, MPCBPAA has been working with Virginia Sea Grant to realize the Resilience Innovation Center, as a hub and network of R&D field stations composed of MPCBPAA properties.

Support from Local Municipalities

Given the long-standing partnerships and planning for the Coastal Resilience & Adaptation R&D capacity between MPCBPAA and VASG, the following nine municipalities that make up the MPCBPAA and are the same localities who have formed the Middle Peninsula Planning District Commission strongly support the Coastal Resilience and Adaptation Economy proposal being led by Virginia Sea Grant;

- Essex County,
- Gloucester County,
- King & Queen County,
- King William County,
- Mathews County,
- Middlesex County
- The Town of Tappahannock,
- The Town of Urbanna, and
- The Town of West Point.

Commitment of Services and Participation

As a full partner with VASG and RISE, the MPCBPAA will commit to implementing the joint GO Virginia Region 5 and 6 proposal workplan, including but not limited to:

- Working with RISE and VASG on implementation of a business plan competition to conduct resilience improvement demonstration projects on public properties
- Procuring services for the selected firms to protect public properties through demonstration projects
- Working with VASG, Rappahannock Community College, RISE and selected companies, identify specific workforce needs for the businesses and the implementation of the demonstration project on the MPCBPAA properties
- Work with VASG and RISE to finalize conceptual plans and diagrams, governance systems, and operational procedures for the Region 6 Resilience Innovation Center hub and network of field stations

Commitment of Match

The MPCBPAA will provide *in-kind* match support for this project through waived rental rates for use and assessment of properties within the Public Access Authority. The total match is \$1,179,120, calculated as:

- 12 sites access for environmental assessments, \$1.00/ft²/month, 10,890 ft² (1/4 acre) lot, 1.5 months, 12 sites = \$196,020
- 5 sites for demonstration pilots, \$1.00/ft²/month, 10,890 ft² lot, 18 months, 5 sites = \$980,100
- TOTAL: \$1,176,120

Rental rate calculated as the average rate for renting R&D space in the VIMS Seawater Research Lab, the other R&D facility in the Middle Peninsula.

MPCBPAA sees the ROI from this investment of match support arriving from the realization of a Resilience Innovation Center with a public-private R&D partnership advancing innovation to support a coastal resilience and adaptation economy. The center will include a collaborative R&D hub and a network of field stations where novel resilience and adaptation technologies, products and services are tested and refined. From this R&D infrastructure, GO Virginia Region 6 and the MPCBPAA will benefit from:

- Membership-driven public private R&D partnership with dues and advisory group participation
- Potential shared intellectual property from co-produced innovations that enhance coastal resilience and adaptation.
- Resilience Innovation Center with high-paid staff, and R&D infrastructure, which in turn can attract business incubator capacity and start-up companies.

If you have any questions about MPCBPAA's enthusiastic support and participation in the VASG Coastal Resilience & Adaptation Economy proposal to the state GO Virginia board, please contact me at LLawrence@mppdc.com, 804-758-2311.

Sincerely,



Lewis L. Lawrence
Secretary