FUNDING ANNOUNCEMENT

$1M COLLABORATIVE RESEARCH CHALLENGE

RURAL COASTAL ADAPTATION & RESILIENCE

SUMMARY

Virginia Sea Grant (VASG) is pleased to announce the availability of **$1M** for collaborative research on water adaptation and resilience-enhancing innovations. Leveraging funding from **GO Virginia** and VASG's federal funding from the National Oceanic and Atmospheric Administration (NOAA), we anticipate making approximately five awards. University teams will provide collaborative R&D support (e.g., assessing the impact of adaptation and resilience interventions on coastal properties, product performance validation, product development) to business winners of an ongoing GO Virginia-funded Rural Coastal Resilience Challenge announcement concerning: Flood Management; Protection of Buildings and Property; and Water Quality Management.

Important dates:

- Submit Statement of Interests & Qualifications: **March 31, 2022**
- Requests for additional information in order to match university capacity with business and water adaptation, resilience and innovation needs: April, 2022
- Submit requested information: late April/early May, 2022.
- Project start dates summer/fall, 2022.

For more information

Contact Sabine Rogers, **sarogers@vaseasgrant.org**, or Troy Hartley, **thartley@vaseagrant.org.**

https://wateradaptationeconomy.org/1m-collaborative-research-challenge/

VIRGINIA SEA GRANT'S COASTAL ADAPTATION & RESILIENCE INITIATIVE

VASG is a federal-state partnership, funded by the National Oceanic and Atmospheric Administration (NOAA) with matching support from our university partners - Virginia Institute of Marine Science at William & Mary, University of Virginia, Virginia Tech, George Mason University, Old Dominion University, and Virginia Commonwealth University. The mission of VASG is to provide transformative, integrated education, research, communication, extension, legal and policy programs – programs that create the coastal and marine workforce, and novel solutions to meet challenges in coastal communities. We do this through funding, and by conducting research, education, outreach, and communication services.

VASG, with its partners the Middle Peninsula Chesapeake Bay Public Access Authority (PAA) and RISE, are administering a business challenge grant competition through a GO Virginia grant. GO Virginia is a Commonwealth initiative led by Virginia's senior business leaders to foster private-sector growth and job creation through state incentives for regional collaboration by business, education, and government. The VASG team secured a GO Virginia grant to launch a coastal adaptation and resilience economy. RISE is leading a business competition seeking innovative private-sector solutions to pressing rural coastal flooding problems; approximately five business finalists will receive coaching from RISE and funding to test and refine their innovative solutions on PAA waterfront properties. In addition to serving as the coordinating lead, VASG is incentivizing university public-private partnerships to conduct collaborative research and facilitating workforce development support for the winning businesses.

Businesses will design and build or implement their products, services and other innovative approaches to enhance resilience on the publicly-owned, waterfront properties on the PAA. Universities will be conducting their collaborative research with the private sector on these properties.

Funding

The Statements of Interests & Qualifications (SIQ) is the first step in identifying Virginia universities' interests and capacity to participate in collaborative research with the private sector to improve coastal adaptation and resilience products and services. The SIQ will be used to match capacity with needs and invite additional, more detailed information relative to the particular needs of business challenge grant winners. Sub-awards will be made from VASG. While the final funding level will be dependent upon the specific business need, VASG anticipates awards of approximately $200,000-250,000. There is no match requirement.

Eligibility

All institutions of higher education in the Commonwealth of Virginia are eligible.

ADAPTATION AND RESILIENCE CAPACITY

This call seeks university capacity to partner with the private sector, collaborate on R&D, assess both the impact the innovation had on improving adaptation and resilience of a coastal waterfront property and validate the full extent of the business products' performance, and potentially work directly with the company on product development. The SIQs should speak to both the university's interests and experience in collaborative research (e.g., research partnerships with the private, public or non-profit sectors, product development) and the capacity (human resources, facilities, programs and expertise, policies, etc.) to conduct the specific research on flood management, protection of buildings and properties, and water quality maintenance in a coastal rural context. It is anticipated that business winners will be addressing one or more of the following topics (see links to business challenge web-site for more information):

RURAL COASTAL FLOOD MANAGEMENT

Flood management solutions in rural coastal communities can be different than urban and suburban areas with stormwater management systems.

For example, nature-based approaches such as strategic land conservation, wetland restoration, and living shorelines have greater potential to address water quality and to aid in flood management solutions in rural coastal Virginia, as well as locations world-wide. Living shorelines and emerging hybrid nature-based shoreline solutions also provide erosion protection by absorbing wave energy. However, the production of sufficient plants for the need throughout Virginia's coastal region is beyond current farming resources. The business challenge seeks approaches that sustainably provide, produce and transport vegetation for living shorelines. Of particular interest, the challenge calls for:

- Identification of suitable plants for local living shoreline implementations as well as sustainable means of production and transportation.
- Identification of new plants (and/or existing species that need to be farmed more widely) and/or production methods for living shoreline vegetation.
- Demonstration of new business models to ease the bottleneck that vegetation production introduces in living shoreline implementation region-wide and scalable to other coastal states.

Further, drainage and maintenance of rural stormwater management systems (i.e. roadside ditches) is a major struggle for rural coastal communities. Rural stormwater ditch systems often have standing water because they are at zero grade. Maintenance of these ditches can be expensive, with tidal backflow up ditch systems leading to flooding and the introduction of brackish or saltwater. The nitrogen, phosphorous and other contaminants in the ditches may impact water quality of the Chesapeake Bay. The challenge sought solutions that:

- Are effective in low/zero grade environments
- Protect properties from flooding
- Reduce nutrient runoff
- Reduce maintenance and operation costs

PROTECTION OF RURAL COASTAL BUILDINGS & PROPERTY

Protecting buildings and properties in the coastal environment and prolonging their viability and rethinking future designs of coastal properties demand innovative technologies, products and services that introduce new materials, methods and integrated designs.

For example, the focus of the business competition included: use and application of dredge materials; holistic and integrated coastal property designs; rehabilitation of existing and historic buildings; and accessibility to coastal properties. How might dredge materials be beneficially used in economically sustainable ways to address resilience needs in the community and region?

Holistic, integrated coastal property designs might simultaneously consider open water in front of property, living shoreline along the property, landscaping, and residential, commercial or industrial buildings on the property as a

single system. Might we design, build or intervene in any one of the elements differently if we thought of the entire system as a single unit? The business challenge sought solutions that:

- Design integrated living shoreline, landscape, and buildings, incorporating green and blue infrastructure with novel building materials.
- Design more effectively live-with-water strategies and drive toward net zero energy and carbon encumbrance.
- Measure and monitor the effectives of the holistic, integrated water-marsh-landscape-building design, including use of smart system technology.

Many existing coastal homes and properties are vulnerable to inundation from flooding and sea level rise impacts, including access to the property. To extend their useful lifecycle, beyond 15 years, many buildings require rehabilitation to make them habitable and more resilient to flooding. The business challenge sought solutions that:

- Prepare structures for flooding events and minimize the amount of time it will be out of service after that event.
- Repair structures after flooding events to allow it to return to use and minimize the effects of future flooding events.

Private roads connecting buildings to public roadways are affected by flooding conditions limiting property access and effectively isolating the home. Building new or elevating existing roads are time consuming and costly propositions. Altered roads, bridges, causeways, etc. (material, structure, elevation) or alternatives to roads are required to provide consistent access to properties during flooding events for up to 10-15 years.

RURAL COASTAL WATER QUALITY MANAGEMENT

Wastewater, stormwater, and general water quality management strategies are often different in rural than urban and suburban contexts. Innovative approaches to the treatment and use of potable, grey, and black water on rural properties can reduce the impact of the occupants on the environment and limit the negative effects of sea level rise, flooding and other climate change impacts on water quality in coastal rural communities. Specifically, solutions are needed related to septic system design and broader water system redesigns.

The failure of conventional septic systems in rural coastal Virginia threatens public health and water quality. The business challenge sought innovative, cost-effective solutions that can withstand the environmental conditions of rural coastal Virginia and produce clean water that passes all public health standards. In-ground and elevated system solutions were sought that:

- In-ground (conventional or alternative systems) that: retrofitted existing systems or were new installations; could function effectively in high-water table environments, including conditions of saltwater intrusion.
- Elevated treatment tanks that could function for up to 72 hours after main power is interrupted (e.g., from flooding) and be protective against several environmental or weather conditions.

Wells that provide properties with potable water are experiencing saltwater intrusion. The challenge sought new approaches to reassessing buildings' water needs providing solutions that reduce the use of potable well water, while maximizing the uses of other sources of water. Solutions may be integrated and permittable system of fresh, grey and other water sources for use in a building's operations, or develop a localized water processing capacity for desalination, purification, recycling, or other strategy.

While we are interested in hearing from applicants with interests and qualifications in all the areas of the business challenge, we particularly need qualifications that can assess performance of property-scale interventions and the resilience impact on properties and communities (e.g., longer duration of property viability, mitigation of erosion or flood damage, etc.) relative to:

- **Beneficial use and applications of dredge materials**
- **Nutrient removal strategies from rural storm and wastewater**
- **Nature-based shoreline stabilization**
- **Building designs for living with more water**

HOW TO APPLY

A university may submit unlimited SIQs for one or more of the topical areas – no competitive advantage or disadvantage to having capacity in more than one topical area.

Webinars

VASG will host three webinars to present the funding opportunity, information about the waterfront property field stations, answer questions, and to solicit information about expanding Virginia's collaborative R&D capacity in water adaptation and resilience. In addition to the $1M for universities to participate in collaborative R&D, VASG has funding to further scope and design the codification of the field stations into an R&D network and the design of a collaborative R&D hub facility in the coastal region. To further assess university needs and opportunities with this capacity, Clark Nexsen is assisting in the scoping exercise and the webinars. Dates for the webinars are:

- March 2, 10am-12noon.
- March 15, 10am-12noon

To register for a webinar, visit the project web-site:
https://wateradaptationeconomy.org/1m-collaborative-research-challenge/

Submit Statement of Interests & Qualifications

By **March 31, 2022 at 11:59 PM**, upload and submit a statement of interests and qualifications as a single PDF, through your eSeaGrant account. There is no limit to the number of Statements an individual or an institution can submit.

1. **Create an eSeaGrant account** at **http://vaseagrant.ecsion.com**. We strongly encourage you to create an eSeaGrant account several days prior to the deadline in order to trouble-shoot any problems with VASG staff and ensure smooth upload of the Statement of Interests & Qualifications.

a. On the eSeaGrant website, select the "Register" tab, and complete the required information – name, affiliation, email address.

b. If you do not receive a "welcome" email with login credentials shortly after creating an account, please check your junk mail folder. You can contact Sam Lake at VASG (sjlake@vaseagrant.org), if you have not received an email.

2. **Narrative** (Compiled into a single PDF. Limit to 8-pages each, excluding the 2-page CVs or resumés of key personnel. Include hyperlinks to web-sites or other resources, as appropriate.)

a. Title and University

b. Primary point of contact and contact information (affiliation , email, and phone)

c. Abstract (200 words maximum) expressing the university's particular interests in water adaptation, innovation and collaborative research to advance resilience and adaption to climate change in a coastal context.

d. Keywords.

e. University Strengths – describe particular capacity, resources, awards or recognition, and other assets that reflect the university's qualifications in the coastal, rural resilience topical area relevant to this call.

f. General Approach to Public-Private Partnerships. Discuss how students would be involved in any collaborative R&D with industry. Include a link to the universities policies on intellectual property, Non-Disclosure Agreements, internal confidentiality policies, and organizational capacity in economic development and public-private partnerships.

g. Collaborative Research Experience – describe examples of collaborative research with industry in relevant topical area. Include roles and responsibilities of the university in the partnership, outcomes, and impacts.

h. Expanding Research & Development (R&D) Capacity – Coastal Virginia has a network of over 50 publicly owned waterfront properties (see wateradaptationeconomy.org) and an interest in expanding the capacity for collaborative R&D for climate change adaptation and innovation at these field stations and other facilities. If Virginia expands its water adaptation and innovation collaborative research capacity, making it available to all universities, NGOs, and the private sector, what physical and functional capacity would you like to see in it:

i. What infrastructure needs might you have for waterfront field stations (facilities, access, staging infrastructure, etc.)?

ii. Expanded collaborative research facilities (e.g., wet lab, dry lab, workshop, fabrication, assembly, high bay, test chambers/flumes, data/IT technology, special equipment, storage, etc.)?

iii. What environmental conditions of the properties do you need to know in order to conduct your research (e.g., soils/geology, wave energy, vegetation, hydrogeological conditionals, etc.)?

i. Short CVs (2-page) for all key personnel.

No budgetary information is required at this time.

REVIEW AND SELECTION PROCESS

VASG follows strict conflict-of-interest policies in all of its review procedures.

Stage 1

VASG staff, key stakeholder advisors, and partners on the GO Virginia award will review all Statements of Interests and Qualifications for scientific and technical strengths, collaborative research and public-private partnership experience and competencies, and university R&D capacity for the coastal rural resilience challenges.

Stage 2

For each business challenge winner, VASG will share university proposals illustrating alignment with the business's adaptation innovation. The businesses, VASG, RISE, PAA, and other expert technical reviewers will discuss the alignment of capacity with needs and identify additional questions and requests for information, specific to the business needs, the property where the innovation will be deployed, and the needs to assess the performance of the innovative product, technology, services, or design and to assess the impact on property/neighborhood-scale resilience from the introduction of the innovation. Requests for follow-up information and more detailed work plans will be provided to the university point of contact in mid-March, with a deadline for submission of any additional proposal information by mid/late-April. The work-plans will be used in the sub-awards from VASG.

Follow-up meetings may be requested between businesses, VASG, RISE, PAA and the university point of contact and any key participants from the university.

Evaluation criteria include:

- Scientific and technical merit and capacity related to the adaptation topical areas
- Collaborative research competencies
- Potential for workforce development through the collaborative R&D activities.

Project start dates could be in the summer or fall, 2022.

TENTATIVE TIMELINE FOR COMPETITION

Statement of Interests and Qualifications released	**February 2022**
Webinars	**February/March 2022**
Statement of Interests and Qualifications due	**March 31, 2022**
Stage 1 review	**March 2022**
Stage 2 workplan submission	**April 2022**
Sub-awards	**Late spring/summer 2022**
Start date	**Summer/fall 2022**

ADDITIONAL INFORMATION AND CONTACT

For more information, contact Sabine Rogers, **sarogers@vaseasgrant.org**, or Troy Hartley, **thartley@vaseagrant.org**.

Information about the business challenge competition can be reviewed at:
https://riseresilience.org/rural-resilience-challenge/.

Background on the collaborative R&D field stations and initiative can be reviewed at:
https://wateradaptationeconomy.org/1m-collaborative-research-challenge.