



RISE

Resilience Innovations

2024 RIVERINE COMMUNITY RESILIENCE CHALLENGE APPLICANT GUIDELINES

APPLICATION DEADLINE: MAY 6, 2024, 2PM EST
ALL INQUIRIES SHOULD BE DIRECTED TO INFO@RISERESILIENCE.ORG

About RISE

RISE is a U.S.-based nonprofit with a mission to accelerate innovation and business growth by identifying, validating and scaling solutions to community climate resilience challenges such as flooding and sea level rise. RISE achieves this by running Community Resilience Challenge competitions and offering funding and other support from its Resilience Innovation Fund (RIF), Accelerator, Hub, and Testbed in Virginia.

Community Resilience Challenges

RISE Community Resilience Challenges accelerate innovation by connecting problems in need of better solutions to innovators with new resilience-building technologies, products and services. RISE sources challenges from diverse entities operating in communities vulnerable to flooding.

Resilience Innovation Fund

Since 2018, RISE has deployed more than \$7 million in non-equity funding and services from the RIF to 35 businesses developing scalable solutions that create substantial new value, can be demonstrated inl Virginia and can be built into sustainable ventures. The RIF is seeded with funds from the U.S. Department of Housing and Urban Development and the Commonwealth of Virginia.

Resilience Innovation Accelerator

RISE accelerates the growth of businesses developing innovative solutions to climate resilience challenges. The Accelerator works with winners of the RISE Community Resilience Challenges to help businesses maximize the impact and become sustainable after the RISE funding. The Accelerator offers a two-months program based on the National Science Foundation's I-Corps techniques tailored to the resilience sector.

Resilience Innovation Hub & Testbed

RISE brokers access to Virginia resources to businesses in need of testing, validating and otherwise demonstrating resilience-building innovations. RISE facilitates access to real-world pilot sites and permits, a co-working office and workshop space in Norfolk, Virginia, data and key stakeholders, a community of resilience entrepreneurs, PR opportunities, and regulatory technical assistance.

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Overview

As climate change brings more frequent and intense storms, riverine communities are increasingly vulnerable to unique flood threats that can change lives in an instant. On August 30, 2021, Hurley, Virginia, experienced severe consequences when 7 inches of rainfall from the remnants of Hurricane led to a riverine flood that tragically took one life, destroyed 19 homes, and severely damaged 24 more. Less than a year later, on July 12, 2022, similar circumstances struck Whitewood and Pilgrims Knob in Virginia. Though no lives were lost in this latter event, the storm led to the [destruction of 21 homes and damage to 25 others](#).

In both instances, [FEMA did not provide individual homeowner assistance](#), and few affected residents received insurance payouts.

The hazards of such events are multifaceted, including heavy rain, strong winds, high and swift waters, and mudslides. These natural forces can cause significant damage to buildings, potentially leading to destruction, injuries, or fatalities. Furthermore, they often result in large quantities of debris, the collection and removal of which are not only costly but also time-consuming, adding to the challenges faced by impacted communities.

Before a disaster, communities need several key preparations to mitigate the impact of flooding:

- **Affordable Building Protection:** Implementing cost-effective measures to make buildings more flood resistant.
- **Early Warning Systems:** Establishing awareness and alert mechanisms for imminent flooding threats, including varying threat levels.
- **Pre-Event Coordination Plan:** Developing a swift and efficient coordination plan that can be activated immediately after a flooding event. This plan will support relief efforts and help meet residents' needs at various stages after an event.
- **Insurance Programs:** Having insurance options in place to aid residents in managing the disruptions caused by flooding, and to support home repair or rebuilding efforts post-event.

After a disaster, the focus shifts to recovery and reinforcement:

- **Rebuilding and Repair Funds:** Securing access to funds for repairing or rebuilding damaged properties within a set timeframe, ideally supported by a sustainable risk transfer insurance model.
- **Support for Residents' Recovery:** Often residents require support to find shelter, food, and other needs after an event. Understanding those needs will be an important part of this Challenge.
- **Guidance for Resilient Reconstruction:** Offering expertise and guidance in repairing or rebuilding damaged buildings to better withstand future flooding events.

To address these issues, the RISE Riverine Community Resilience Challenge offers a total of up to \$1 million in non-dilutive funding to source innovative solutions that support comprehensive pre- and post-disaster protection for the entire Southwest region of Virginia, including areas within LENOWISCO PDC, Cumberland Plateau PDC, Mount Rogers PDC, and the New River Valley Regional Commission by addressing the range of needs described above.

With its rich biodiversity and socio-economic fabric, Southwest Virginia offers a unique testbed for developing, testing, and refining innovative solutions that enhance environmental adaptability. Innovators have a rare opportunity to validate their technologies in real-world conditions, ensuring their solutions are both effective and scalable across different ecosystems and cultures. This living laboratory allows today's threats into tomorrow's sustainable opportunities, fostering a replicable model of adaptation.

Winning businesses and nonprofits will get access to:

- Up to \$300,000 USD in non-dilutive grant and revenue-based loan funding
- Assistance with securing real-world pilot sites in the Southwest region of Virginia
- Feedback from government pilot hosts
- Datasets
- Customized business accelerator curriculum
- Government, technical and business mentors
- PR opportunities and media visibility
- Regulatory assistance with government funding
- Introductions to potential investors and customers
- The only ecosystem of coastal resilience entrepreneurs in the U.S.

Eligibility

To be eligible for funding from the Resilience Innovation Fund and other resources from the Resilience Innovation Accelerator, Hub, and Testbed, applicants must meet the following criteria:

- Entity must meet the definition of a small business, as defined by the U.S. Small Business Administration and found under [13 CFR Section 121.201](#), or be a nonprofit organization.
- Must be eligible to receive government funds from the Commonwealth of Virginia and adhere to applicable requirements (please note that RISE provides compliance assistance to meet these requirements).
- Must meet goals of the Challenge and be selected as one of the winners of the Challenge (for more details see Topic Eligibility).
- Must be able to demonstrate the proposed solution in the Southwest region of Virginia (for more details see Geography Eligibility).
- Must have a solution at a prototype stage or later.
- Must be able to execute a grant agreement by June 14, 2024.
- Must be able to complete a proposed project by June 2025.

Challenge Topic Eligibility

Solutions submitted to the Riverine Community Resilience Challenge must fall within one or more of the three topics. Submissions do not need to be limited to these areas. However, to be eligible for funding from RISE, entrants must focus on a Virginia Riverine Community’s need while demonstrating the ability to scale to other communities. For more details about these pain points, sought solutions and available datasets, please refer to *Detailed Challenge Topics Descriptions*.

Flood Event Early Warning

RISE is seeking solutions to produce localized, accurate, and rapidly updated forecasts to warn communities of impending threats, provide evacuation guidance, and can communicate the information and guidance in real-time to the communities. Successful end-to-end solutions will provide:

1. Identification of flooding affected regions from 12 hours before pluvial-induced flooding events, continuously updated through the passage of the rainfall activity.
2. Generation of flood event warnings and the development of a warning-generation protocol to keep potentially affected regions aware of threats.
3. Inclusion of communication infrastructure to ensure that messages/data get transferred to required personnel in a timely manner.
4. Protocols for actions to messages for all constituents (e.g., emergency managers, rescue squads, first responders, etc.).

Landscape and Building Adaptation

RISE is seeking solutions that:

1. Consider building/landscape mitigations in the four areas including dry floodproofing, wet floodproofing, building elevation, and buyout/demolition. Either new or existing adaptation techniques may be applied. Additional mitigations

may be considered if the applicant provides comprehensive details of the technology and its benefits. Both rural and more urban environments may be considered.

2. Identify the most appropriate and cost-effective building/landscape adaptations on a parcel-by-parcel basis including a method or access to a method, for performing a benefit-cost analysis for every building and parcel.
3. Provide mitigation that can be implemented on properties pre- and post-disaster.
4. Offer a benefit-cost analysis (BCA) on a parcel-by-parcel basis using the most current topography and flood event datasets.
5. May be implemented using local labor and contractors, to support the local business community and workforce
6. Provide analysis and estimate of the reduced cost of insurance enabled by the mitigations.

Community Insurance Program

RISE is seeking solutions to develop an insurance program that:

1. Provides support to households and businesses after events by shifting risk through insurance and other financial strategies, ensuring protection against major losses. In its final form, support should align with Residents’ needs (see detailed topic description).
2. Address residents’ and businesses’ needs at (approximately) defined times:
 - Pre-flood event.
 - Within hours after the flood event.
 - Up to one week after the flood event.
 - Up to one month after the flood event.
 - Up to one year after the flood event.
3. Needs may range from food, shelter, and short-term funds to building replacement costs. Part of the Challenge will be to document these needs.
4. Pays out after clearly describable and measurable flooding event level if a parametric program is proposed. Approaches other than parametric programs will also be considered.
5. Provides payout funds quickly and in a way that is accessible by all constituents – in conjunction with findings from the Residents’ Community Insurance topic area.
6. Considers riverine flooding as the only peril.
7. Is sustainable throughout the region of Southwest Virginia covered by the LENOWISCO PDC, Cumberland Plateau PDC, Mount Rogers PDC, and the New River Regional Commission. Some sustainability objectives are:
 - The insurance program design incentivizes adaptation which will bend the total cost curve down over time.
 - The program will allocate costs in an equitable way.
 - The cost of the program is affordable and defensible to stakeholders based on scope and allocation of costs.
 - The total cost is affordable over long time horizons to the stakeholders paying the costs contemplated.
 - The premium payment(s) allocation is clear.
 - Clear rules and processes are set for fund distribution.
8. Is supported by a resident recovery program to provide guidance pre- and post-event assistance and guidance. Offers pre- and post-event assistance and guidance through a resident recovery program. The goal of this Challenge is not to develop such a program, but to design an insurance program that can work with and aid in such support programs.

Geographic Eligibility

Applicants must demonstrate that the proposed solution may be implemented in or directly benefit the communities in the region of Southwestern Virginia defined by the regional jurisdictions of the LENOWISCO PDC, Cumberland Plateau PDC, Mount Rogers PDC, and the New River Valley Regional Commission (“the Riverine Challenge Region”). If an applicant is not located in this region, the solution must be deployed, installed, tested or otherwise demonstrated in the region. Solutions must be scalable to other riverine communities, and Applicants should address this in their submissions.

Timeline*

March 29, 2024

Challenge Launch

April 4, 11, 18 and 25 — 1PM EST

Informational webinars.

May 6, 2024 — 2PM EST.

Application Submission Deadline

May 10, 2024

Alert Finalists

May 20, 2024

Deadline to Submit Additional Documentation

June

Winners Announced

**All dates are subject to change.*

Selection Process

Selection Committee Review

Applicants must submit applications *no later than May 6, 2024, 2pm ET*. The Selection Committee will select finalists to submit additional documentation, including technical details of their solution, a work plan (with budget, schedule, milestones and deliverables), and three-year financial projections. The semi-finalists will have 7 calendar days to submit this additional documentation. Once all scores and comments are consolidated, and the technical reviews are complete, the highest scoring finalists will be invited to pitch to the Selection Committee for funding and other resources. After the pitches, the Selection Committee will update all scores and comments and select winners.

Oral Pitch Presentations

Shortlisted finalists will present their proposed project to the Selection Committee. Finalists will have 30 minutes to present, with an additional 30 minutes for questions and discussion from the Selection Committee. Presentations will take place virtually. The finalists will receive questions from the Selection Committee in advance to aid their preparation.

Investment Committee Conference

The Investment Committee will assess the presentations and RIF application as a complete package and make award recommendations to the RISE Executive Director.

RISE Resilience Innovation Accelerator

Winners will receive feedback from the Selection Committee who may recommend making the award (or a portion of the award) contingent upon refinement of a business plan and/or work plan. In such a case, the applicant will be offered to participate in a customized RISE Resilience Innovation Accelerator program (Accelerator) that will assist with addressing the Selection Committee's concerns and recommendations.

Each winner will receive up to **\$10,000** in grant funding for their participation in the Accelerator and associated deliverables. If the Committee recommends this course and the applicant, for any reason, decides not to participate, the applicant is free to withdraw from the program at that time with no penalty. Winners are not guaranteed any funding for their pilot projects until they successfully complete the Accelerator (if required by the Selection Committee).

Upon the conclusion of the Accelerator, the Selection Committee will have the option, but is in no way obligated, to negotiate a contract to proceed with a pilot project in response to the Challenge. The final scope of the project will be subject to negotiation based on the findings and refinements from the Accelerator.

Evaluation Process

An application will be evaluated on adherence to these guidelines, including the following criteria and how clearly and completely it provides the information requested.

Strength of the Solution & Intellectual Property (30 points)

- Need addressed & value proposition
- Innovativeness
- Solution stage

Business Plan (30 points)

- Strength of entrepreneurs & management team
- Size of the market and revenue opportunity
- Strength of competitive environment
- Marketing, sales, and partners

Project Work Plan/Approach (20 points)

- Relevance to and advancement towards business plan goals
- Clarity and quantification of milestones and metrics
- Feasibility
- Costs and timeline reasonableness

Economic Impact Potential/Economic Benefit to the Southwestern region and Virginia (20 points)

- Jobs creation and/or retention
- Workforce development
- Benefit to Virginia-based businesses (if an applicant is not a Virginia-based business)

Award

The total of up to **\$1 million** in funding is available to support solutions in response to this Challenge. RISE is looking to fund innovative approaches that can be built into viable and sustainable businesses. This means businesses that generate revenues through sales of its product and/or attract further investment to grow or develop revenue sources. RISE intends for its funding to be used to get the company to that point.

Applicants can apply for up to \$300,000. RIF awards come in two forms: 1) Revenue Based Loan and 2) Grant. Grant awards may be combined with the Revenue Based Loan. The award type and amount is determined by the RISE Executive Director based on the scoring and recommendations of the RIF Selection Committee.

Grant Terms and Conditions

Awardees that are awarded funds from RISE may be awarded a grant from RIF. Grants are awarded for the costs of product development, project setup in Southwestern region, and Southwestern-focused use case discovery and development, product development,. All grant funds must be fully expended and closed out by **June 30, 2025**. Payments made to the awardee under the grant are made on a reimbursement basis for eligible costs.

Payments made to grantees under the agreement are made on a reimbursement basis for eligible costs. Grantees must incur costs and request reimbursement for eligible expenses. Reimbursements will be issued only for eligible expenses that are supported by the appropriate documentation and are directly linked to project milestones and deliverables. At a maximum, the grantee will be able to request reimbursement twice a month.

All costs charged to the grant shall be supported by properly executed payrolls, time records, invoices, contracts, or vouchers evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders, or other accounting documents pertaining in whole or in part to the grant shall be clearly identified, readily accessible, and separate and distinct from all other such documents.

Payments will be contingent upon successful performance against key milestones and other performance standards outlined in the agreement. The grantee is required to meet the terms of the grant agreement. If the grantee does not meet the agreed upon deliverables, a portion of the entirety of the grant must be repaid. A repayment plan will be determined on a case-by-case basis, with all repayments due by June 30, 2025.

The grantee will be required to repay all or a portion of their grant for any of the following reasons:

- Failure to abide by the terms and conditions set forth in the grant Agreement;
- Failure to achieve successful completion of the activity funded by the grant;
- Failure to follow any federal, state, or local laws, regulations, and requirements.

1. RISE reserves the right to change this threshold.

Revenue Based Loan Terms and Conditions

Awardees that are awarded funds from RISE may be awarded a Revenue Based Loan from RIF. Revenue Based Loans are awarded to selected applicants who already have a product and seek funding to launch or grow their revenue generation by refining, expanding and/or piloting their resilience-building solution, launching or scaling marketing, sales, fabrication and other capacity.

Companies are awarded an amount based on their capital needs and projected revenue stream. Payments are made monthly to RISE based on the company's monthly gross revenue from sales (as defined by GAAP). Key features of this loan include:²

- No equity
- No collateral required
- No board seats or personal guarantees
- Return caps of 1.0x – 2.0x
- Repaid over up to 5 years
- Up to 20% of monthly revenues

Only those revenues associated with the product or service proposed are considered. Terms of this loan (e.g., percentage of monthly gross revenues, term, cap) will all be negotiated individually between RISE and the company based on the financial model. No traditional underwriting will be required to receive this loan. This loan is non-dilutive.

The Revenue Based Loan must be fully expended by **June 30, 2025**. It is structured around milestones and payments are made according to the milestone schedule outlined in the loan agreement. If the deliverables are not met, the loan will enter repayment. At a maximum, applicants with RIF loans will be able to request draws bi-monthly. The remainder of loan terms are negotiated on a case-by-case basis.

The following is a non-exhaustive list of appropriate documentation that may be used to support eligible expenses for grants and loans:

- Receipts
- Invoices that show proof of payment
- Canceled checks
- Pay stubs that detail date, hours and work completed

² Terms may vary according to agreement between teams and RISE.

Resilience Innovation Hub & Testbed

In addition to funding the winners will gain access to a suite of resources, including:

- Assistance with securing real-world pilot sites in the Southwestern region of Virginia
- Feedback from government pilot hosts
- Datasets
- Government, technical, and business mentors
- PR opportunities and media visibility
- Regulatory assistance with government funding
- Introductions to potential investors and customers
- Customized business accelerator curriculum
- The only ecosystem of coastal resilience entrepreneurs in the U.S.

Resilience Innovation Accelerator

The Accelerator offers a business assistance program based on the National Science Foundation's I-Corps techniques tailored to the resilience sector and specific feedback from the Selection Committee. The goal is to increase the likelihood of the businesses becoming sustainable and attracting private capital and/or customers after the Challenge award.

1. RISE reserves the right to change this threshold.

Eligible Uses and Costs

The RISE Resilience Innovation Fund (RIF) is funded with Community Development Block Grant funds and matching funds from the Commonwealth of Virginia, resulting from the National Disaster Competition led by the U.S. Housing and Urban Development (HUD). Projects funded by RIF must meet HUD Community Development Block Grant – National Disaster Resilience (CDBG-NDR) and Commonwealth of Virginia funding regulations and requirements. Based on the requirements of these funds, the following uses are examples of RIF eligible funding uses.

- Purchase of fixed assets, working capital, salaries, and technical assistance to businesses.
- Prototype, planning, drafts, versions, and proof-of-concept development created prior to a final product.
- Installation and testing of prototype, or installation of pilots on publicly owned property
- Recruitment and educational activities.
- Creation of plans, reports, or similar deliverables aimed at providing lessons learned, guidance, and best practices.
- Acquisition or rental of machinery, equipment or services if integral to the proposed project, program or plan.
- Administrative costs related to servicing or ensuring compliance with RIF requirements.
- Payments for salaries and support of staff or the contracting of an outside entity to implement any part of the project, program, or a plan.
- Provisions of technical assistance to businesses such as preparation of financial packages, survey, engineering, legal, architectural or other similar assistance if integral to the proposed project, program, or plan.
- Expenses related to business recruitment, marketing, promotional activities, and related administrative expenses, including, but not limited to, salaries, travel, office expenses, advertising, legal and related costs.

RISE reserves the right to consider the eligibility of items at their discretion, provided those costs are consistent with the RISE mission and support economic development and coastal resilience in the Hampton Roads region. All costs proposed shall be necessary and reasonable to deliver the solution and are subject to the approval of eligibility and cost reasonableness, as determined by RISE. RISE may review any proposed costs and provide an eligibility determination to an applicant.

Construction costs

For construction projects, applicants will be required to demonstrate to RISE that their project is feasible. This is satisfied if a registered professional engineer (or other design professional) certifies that the design meets the appropriate code or industry design and construction standards.

Construction activities are also subject to an Environmental Review. Depending on the scale and impact of the project, the Environmental Review can range from a determination that the activity is exempt from the Environmental Review requirement to a determination that a full Environmental Impact Statement is required before the project can proceed. Funded applicants should be aware that completing an Environmental Review can be a lengthy and time-consuming process, especially for any construction activities. Applicants should factor this time and effort into their proposal for funding. If the Environmental Review process timeline inhibits the successful completion of the project or project milestones, the RIF award may be rescinded.

Ineligible costs

The following costs are ineligible. Applicants may include these costs in solution budgets, so long as there is another source of funding which is responsible for covering the costs.

Pre-award costs

Costs incurred prior to the execution of the contract with RISE including the development of the CCC and RIF applications, prototypes, plans, or other work required to secure RIF funds, are not eligible for RIF funding.

Patents, copyrights, and related legal fees

RIF funds cannot be used for the advancement of patents or copyrights of the solution, whether costs are incurred by applicant personnel, partners, vendors or contractors.

Single and multi-family residential projects

RIF funds cannot be used to provide new or rehabilitated housing units. However, solutions that are applied to residential properties or development, such as a prototype for a new mitigation method, may be considered for funding.

Debt payments

The refinancing or payment of existing debt, including secured and unsecured debt capital or interest payments are not an eligible use of RIF funds.

Penalty payments

The payment of governmental fines or penalties arising from late or improper payment of occupational taxes and fees, sales tax, income tax, or other penalties are not an eligible use of RIF funds.

Political or religious activities

All funded activities must be secular and apolitical in nature.

Buybacks

RIF funds may not be used to buy out current stockholders, equity holders, or any family members with vested interest in the applicant business or entity.

Investment instruments

RIF funds may be used to purchase investment instruments if required for the implementation or development of a program or plan. However, purchasing items for the sole purpose of increased return on investment or increased revenue alone is not allowable.

Buildings for the general conduct of government

Except to the extent necessary to fund the rehabilitation or reconstruction of public buildings, or portions thereof, used for the general conduct of government, cannot be assisted with these funds.

General government expenses

Expenses required to carry out the regular responsibilities of local government are not eligible for assistance.

Purchase of equipment

The purchase of construction equipment is ineligible, but compensation for the use of such equipment through leasing or depreciations is allowed. In addition, the purchase of equipment, fixtures, motor vehicles, furnishings, or other personal property not an integral structural fixture is generally ineligible.

Operating and maintenance expenses

Any expense associated with repairing, operating or maintaining public facilities, improvements and services is ineligible.

Improvements to private property

RIF funds may not be used for any improvements and installations on private property.

Income payments

These funds may not be used to pay individuals or families for items such as food, clothing, housing, or utilities, withstanding emergency grant payments.

Application Submittal Requirements

Application Submission

Application process is divided into two phases: Phase 1 application shall be submitted online at xx. Proposals may be started at any time and can be edited until the submission deadline of **May 6, 2024, at 2pm ET**. Timely submission of the proposal is solely the responsibility of the applicant. Proposals received after the specified date and time will not be accepted.

Application Technical Assistance

During the pre-submission application period, RISE staff are available to answer general questions about the application and provide general subject matter technical assistance to all applicants. Technical assistance is limited to the application and process, and staff are unable to provide direct assistance in completing the application.

In order to answer applicants' questions, RISE will hold a series of webinars. These webinars will be open to anyone and attendance or non-attendance does not affect entrants' chances of success. Dates for the webinars will be posted on the RISE website.

Phase 1 application includes the following components:

- A. Executive Summary & Company Background
- B. Solution Overview
- C. Business Plan
- D. Economic Impact
- E. Pilot Site Needs
- F. References

Following a review of Phase 1 applications, the Selection Committee will select finalists to submit additional details using an online Phase 2 application. Finalists will receive a link to upload additional documentation including:

- A. Detailed/Updated Business Plan
- B. Work Plan/Approach
- C. Technical Approach
- D. Detailed/Updated Economic Impact

Specifically, the additional documentation should include following:

A. Detailed/Updated Business Plan

The Business Plan demonstrates what is going to sustain and grow the business once the project is complete. Applicants must upload the latest version of the Business Plan for their venture that answers all of the questions below:

1. A statement of the problem you are solving, and a description of your solution
2. A description of the business model(s)
3. A three-year financial projection of revenues and expenses, as well as cash flows
4. Marketing plan for the solution
5. Schedule for the overall business plan
6. Major milestones for the solution beyond RIF award
7. An organizational chart
8. A description of partnerships with other organizations and individuals
9. Team resumes
10. A description of the market for the solution, customers and beneficiaries
11. Value proposition of the solution to the buyer and rationale for why a buyer would purchase
12. Anticipated market penetration at the end of CY 2024, 2025 and 2026
13. Alternatives to the solution that are currently available in the market
14. Description of active competitors delivering a similar solution
15. A description of obstacles that may be encountered when trying to enter the market with this product/service
16. A description of intellectual property (IP) protection
17. Other key information that is key to understanding the market for the solution and how the team will capitalize on the solution

The Business Plan should be a maximum of 15 pages.

B. Work Plan/Approach

The Project Work Plan will have four components:

1. Project Overview Narrative
2. Project Work Plan Narrative by Stage
3. Technical Approach
4. Work Plan Workbook with Budget, Schedule, and Milestones

Applicants should break down the proposed project into a series of stages, each with measurable objectives and deliverables to create the project Work Plan narrative. Each stage must advance the effort toward the overall goals in a measurable and meaningful way, clearly demonstrating an advancement of the project. Deliverables can be in the form of physical objects, experiment/test results, analyses, reports, evidence of job creation, etc.

1. Project Overview Narrative

The Project Overview should include the following in narrative form:

- Overall technical goal(s) and strategies for the project, including an explanation of how the entity is achieving the project goal(s) and will advance the goal(s) outlined in the Business Plan.
- The critical accomplishments, deliverables, or achievement points over the duration of the award.
- Anticipated permit requirements of the locality and other authorizing jurisdictions that will be required for the project.
- Period of performance for the project, as well as a description of current related efforts and work that may extend beyond the expenditure timeline.
- For Construction Projects only: Attach existing feasibility studies or reports. If no existing studies are available, please include a feasibility study in the timeline.

2. Project Work Plan Narrative by Stage

- Name of stage.
- Description of tasks to be performed.
- Key personnel working on the tasks and description of qualifications of the team (principal, key personnel, subcontractors and consultants) to execute the stage of the Work Plan.
- Milestones of each stage.
- Deliverables/objectives and measurable criteria to determine that the deliverables/objectives have been met/achieved.
- Schedule of each stage.

3. Project Work Plan Workbook

The Project Work Plan Workbook will have the following components (required template will be made available prior to inviting Phase 2 applications):

- Total budget with line items.
- Milestones by quarter through the expenditure period (expenditure deadline is June 30, 2023).

C. Technical Approach

Technical report(s), and/or presentation describing your solution in further detail from a technical perspective.

D. Economic Impact

Anticipated economic and other outcomes within and outside the Commonwealth of Virginia during and following the end of the project and the timeframe for these outcomes (outcomes may include, though are not limited to: job creation, job retention, workforce development, sub-contracting to Virginia-based businesses, revenue, private investment and/or other follow-on funding, spin-out company formation, new or expanded facilities, customer acquisition, technology pilots, regulatory approvals, and licensing)

Proprietary Information/Non-Disclosure & IP Ownership

All application materials are considered confidential. Applicants will retain ownership of intellectual property.

Cost Incurred in Responding

This Challenge does not commit RISE to pay any costs incurred in the preparation and submission of proposals or in making necessary studies or designs for the preparation thereof, nor to procure or contract for services.

No Requirement of Award; Non-commitment

Notwithstanding any other provision of this document to the contrary, the Coastal Community Resilience Challenges do not commit RISE to award any funding to any applicant. RISE reserves the right to reject any and all applications or any portions thereof, at any time, and to cancel the Challenges and to request new applications under a new Challenge or other vehicle.

Monitoring and Oversight

RISE monitors each funded applicant throughout the lifetime of their award. Monitoring serves to identify risks and deficiencies early in the process, so that any issues may be remedied at the outset. In general, the levels of monitoring range from desk auditing, to on-site monitoring, to integrity monitoring. Any risks and deficiencies identified result in a request for timely corrective action from the entity being monitored. RISE provides Technical Assistance (TA) to all entities being monitored in order to facilitate compliance with all applicable federal, State, and local regulations.

Reporting

As a condition of the award, awardees are required to submit a monthly progress report(s) and final report discussing project and financial performance. Awardees are required to briefly report on commercialization and/or other outcomes and impact annually for three years after the period of performance.

Award Appeals Process

Applicants are notified by email regarding the results of their application. Applicants who are not selected for funding can appeal their determination. Applicants must make appeals within 15 calendar days after receipt of the notification. Appeals must be received in writing and include supporting documentation to justify a change in status. RISE will notify the appealing applicant when an appeal is received.

All appeals are reviewed in the order in which they are received by the Chief Strategy Officer of RISE. The Chief Strategy Officer makes an appeal determination and forwards it to the Executive Director for confirmation and approval. The results of the appeal are provided to the applicant by email within 30 days of appeal acceptance.

Award amount appeals

Applicants selected for funding can appeal the awarded amount of funding. Appeals for awarded amounts must include sufficient documentation to revise an award offer, such as:

- Updated financial statements;
- Newly identified private funds, loans, or equity;
- Updated cost estimates; and/or,
- Revised scopes and deliverables.

The award appeal process does not allow for substantial revisions of applications and appeals that substantially alter the original proposal are not accepted.

Appeals of the amount of loan funds awarded may require a revised underwriting analysis. The underwriting analysis may adjust the review time frame for appeal determinations beyond the standard 30-day window. Before a revised underwriting review occurs, the Chief Strategy Officer makes an initial determination on the merit of the appeal to prevent duplicative efforts from the underwriting team.

Following approval from the Chief Strategy Officer, the Executive Director, and a satisfactory underwriting review, if applicable, the applicant is offered a revised award amount.

Board appeals

Applicants who have had their appeal denied for award amount or participation in RIF may direct their appeal to the RISE Board of Directors. Appeals to the Board must contain a detailed rationale justifying the reversal of the Chief Strategy Officer's decision.

Appeals to the Board must be made in writing within 10 calendar days of receipt of the appeal determination from RISE. The Board reviews appeals during their regularly scheduled quarterly board meetings and documents appeal decisions made in meeting minutes. Appeal determinations are made when most of the Board reaches a decision regarding the appeal. The results of the appeal are provided to the applicant by standard mail and email. Decisions reached by the Board are final.

Key Regulations

RISE and its funded applicants must adhere to all applicable State and federal laws, rules, and regulations. This section provides a summary of the significant and applicable rules and regulations for the RIF awards. RISE provides extensive regulatory and compliance technical assistance to its awardees during the entire period of their projects.

Procurement requirements

Funded applicants will be required to follow 2 CFR 200.318-326. RIF awards must be expended in compliance with applicable 2 CFR 200, which outlines cost principles, and procurement standards. All costs are subject to the approval of eligibility and cost reasonableness, as outlined in [2 CFR 200.404](#).

Where applicable, the requirements set forth at 2 CFR Part 200 will apply to the procurement, selection, and contract requirements of any participating consultant, vendor, or contractor that engages with the applicant in the course of expended grant and/or loan funds.

Cross-cutting requirements

Americans with Disabilities Act (ADA)

RISE takes affirmative steps to ensure that qualified persons with disabilities are informed of the availability of program services and activities, and RISE's programs or services are readily accessible to, and usable by, individuals with disabilities. RISE will also ensure that handicapped persons are provided with benefits and services as those provided to non-handicapped individuals. And will ensure that all programs and activities are accessible, both structurally and administratively, to handicapped and disabled persons. The types of reasonable accommodations that can be provided include accommodations or adjustments to a rule, policy, practice or service.

Equal Employment Opportunity

Executive Order 11246, Equal Employment Opportunity, as Amended, prohibits federal contractors and federally-assisted construction contractors and subcontractors, who do over \$10,000 in Government business in one year from discriminating in employment decisions on the basis of race, color, religion, sex, sexual orientation, gender identity or national origin. The Executive Order also requires Government contractors to take affirmative action to ensure that equal opportunity is provided in all aspects of their employment. This regulation is adhered to within RISE programs.

Record Retention and Access, Retention requirements for Records 2 CFR 200.333

The Subgrantee shall maintain such records in such a manner as will be prescribed. Records shall be readily accessible to DHCD, appropriate state and federal agencies, and the general public during the course of this Agreement and shall remain intact and accessible for three years thereafter. The exception is if any litigation claim or audit is started before the expiration of the three-year period, the records shall be retained until such action is resolved. Records must be maintained until completion of action of all litigation, claims, negotiations, or audits. For property and equipment, the retention period starts upon disposition of the property/equipment.

Avoidance of Conflict of Interest

Subgrantee warrants that neither it nor its employees, assigns, or subcontractors do not have any interest nor shall they acquire any interest that would conflict in any manner with the performance of this Agreement. Subgrantee further warrants that no person having any such interest shall be employed or engaged in the performance of this Agreement. Subgrantee agrees that no office or member of its governing board, and no public official of the governing body of the locality in which the services under this Agreement are provided, shall participate in any decision relating to this Agreement that directly affects his or her personal interest.

Equal Employment Opportunity

Grantee shall comply with federal directives concerning equal employment. Subgrantee agrees to post in a conspicuous place, available to employees and applicants for employment, notices setting forth such policy for non-discrimination. Subgrantee shall, in all solicitations or advertisements for employees placed by or on behalf of Subgrantee state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, handicap or national origin or status as a veteran. Subgrantee will cause the foregoing provisions to be inserted in all assignments and subcontracts for any work under this Agreement, except that such provisions shall not apply to contracts or subcontracts for standard commercial supplies or raw materials.

Discrimination

No person shall be excluded from participation in or be denied the benefits of the services provided for in this Agreement, or subjected to discrimination in the provision of services under this Agreement, because of his or her race, color, religion, sex, age, handicap, or national origin, or status as veteran.

Civil Rights Act of 1964

Grantee will comply with Title VI of the Civil Rights Act of 1964 (Pub. L 88-352), and the regulations issued pursuant thereto (24 CFR Part 1), which provides that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Subgrantee receives Federal or State financial assistance and will immediately take any measure necessary to effectuate this assurance. If any real property or structure thereon is provided or improved with the aid of Federal or State financial assistance extended to the Subgrantee, this assurance shall obligate the Subgrantee, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the Federal or State financial assistance is extended or for another purpose of involving the provision of similar services to benefits.

Topic Areas

Flood Event Early Warning

Riverine Flooding Early Warning Problem(s)

Forecasting riverine flooding is a topic of interest [nationally](#) and internationally. According to [recent research](#), from 2000 to 2018, 5338 water-related disasters have been reported and have led to over 326,000 fatalities and economic losses of more than USD 1.7 trillion globally. The [UN Sendai Framework for Disaster Risk Reduction](#) is an international effort with 4 priorities:

- Understanding disaster risk
- Strengthening disaster risk governance to manage disaster risk
- Investing in disaster risk reduction for resilience
- Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction

In the US recently, several events focused attention on riverine flooding:

- In Hurley, Buchanan County, Virginia, on August 30th, 2021, within hours, 7” of rain caused life-threatening flash flooding that damaged or destroyed homes, roads, and bridges. \$17M relief funding was secured.
- In Whitewood, Buchanan County, Virginia, on July 12th, 2022, within hours, 6”+ of rain caused life-threatening flash flooding that destroyed 21 homes and damaged 25 more. \$18M relief funding was secured.
- Record heavy rain from 9th to 11th July 2023 triggered the worst flooding seen in the state of Vermont, USA, since Tropical Storm Irene in 2011.

Riverine flooding events are getting more severe and frequent. There is a need for accurate, timely, advance warning to protect the communities. Solutions being sought in this topic will meet some of the priorities of the Sendai Framework thereby having potentially international application.

The goals in this Topic Area are:

1. To produce localized (community-by-community) forecasts of flooding events that will give communities adequate forewarning of severe (pluvial induced) riverine flooding allowing residents and emergency services time to either evacuate or prepare for the event and the recovery thereafter. In the event evacuation is possible or recommended, evacuation direction guidance is needed.
2. Provide regional planners, municipalities, and state agencies with information and suitable information distribution tools and protocols and with which to manage land use, and plan.
3. Provide guidance for identifying those parcels threatened by significant flooding that should not be built on or, if they are, alerting owners.

Successful solutions will address at least one of the above.

The Pain Points in Current Solutions

The need for flood early warning systems has become greater in the past years. The elements and limitations of current programs as well the needs for new generations have been described in the literature. In order to produce a flood early warning system for the riverine communities advances are required in all four areas:

1. **Risk knowledge:** Understanding the nature of riverine flooding in terms of duration, water levels, water speeds, and other hazards.
2. **Monitoring and forecasting:** Since most of these events are caused or exacerbated by heavy rainfall events, the inclusion of meteorological observations and forecasts, as well as other sensor information, will be critical to feed the necessary analysis models which will lead to hazard assessment and prediction.
3. **Warning, dissemination, and communication:** Applying analysis results to identify hazardous events (location, severity, and duration) and producing and delivering meaningful and timely information and guidance.
4. **Response:** Recipients of the warnings need them in a timely and manageable manner and know and understand the necessary responses. Past warning systems (and their distributed warnings) have been seen to cause system overload, confusion, and lack of clarity within the emergency management organizations as well as residents.

There are needs for further development, integration and testing in all these four areas for a flood early warning system for the riverine communities.

The National Weather Service’s Flood Hazard Outlook (FHO), while a valuable tool, exhibits several limitations in its application as a riverine flooding early warning system:

1. **Lack of Localized Flood Risk Details:** The FHO does not provide specific information on localized flood risks. This is a significant limitation for communities and emergency responders who need detailed, area-specific data to adequately prepare and respond to flood threats.
2. **Non-representative Graphics:** The graphics included in the FHO do not accurately represent the actual extent or expected footprint of flooding. This lack of precise visual representation can lead to misinterpretation of the flood threat in specific areas, potentially causing inadequate preparation or response.
3. **Limited Communication Infrastructure in Target Areas:** Many riverine environments, particularly those most vulnerable to flooding, lack basic communication infrastructure like telephones, cell networks, or cable systems. This impedes the dissemination of FHO information to the communities that need it most, reducing the overall effectiveness of the warning system in real-time situations.

These points highlight critical areas where the FHO falls short in providing an optimal solution for early warning in riverine flooding scenarios.

Solutions Being Sought

RISE is seeking solutions to produce localized, accurate, and rapidly updated forecasts to warn communities of impending threats, provide evacuation guidance, and can communicate the information and guidance in real-time to the communities.

Successful end-to-end solutions will provide:

- Identification of flooding affected regions from 12 hours before pluvial-induced flooding events, continuously updated through the passage of the rainfall activity.
- Generation of flood event warnings and the development of a warning-generation protocol to keep potentially affected regions aware of threats.
- Inclusion of communication infrastructure to ensure that messages/data get transferred to required personnel in a timely manner.
- Protocols for actions to messages for all constituents (e.g., emergency managers, rescue squads, first responders, etc.).

It is understood that various districts' emergency management systems operate in different ways. Flexibility will have to be built into solutions for adaptability to different departments and regions. To accommodate this, selected winners will have access to emergency personnel within chosen pilot site regions who will assist in providing guidance in the design of the information requirements and concept of operation.

Data Available Upon Request

Some data that may be useful or helpful:

- Weather: [The High-Resolution Rapid Refresh \(HRRR\)](#). Other NOAA/NWS products may be used as applicants see fit.
- Topography: [The Virginia LiDAR Inventory Web Mapping Application for the State of Virginia](#).
- Hurley flood event modeling (Data sets available upon request.)
- [LENOWISCO report by UVA](#).
- [LENOWISCO CEDS report](#).

Landscape and Building Adaptation

The Landscape and Building Adaptation Problem(s)

Building adaptation strategies are increasingly recognized as crucial for mitigating the impacts of flooding. Modeling has shown that in the absence of building adaptation, nationwide damages from riverine flooding will increase by [20%–30% under high levels of global warming](#). In the past, four types of flood adaptations for buildings have been the focus of attention:

1. **Dry Floodproofing:** This method involves making the flood-exposed areas of a building watertight to prevent water inundation. It is typically suitable for flood events up to 3 feet, corresponding to a 1% Annual Exceedance Probability (AEP). Dry floodproofing is an effective way to protect the interior of a building from flood damage.
2. **Wet Floodproofing:** This approach includes measures that allow floodwaters to enter the structure but minimize potential damage. It's not always applicable in mountainous riverine environments due to technical constraints. However, advancements in building design and adaptation may broaden the applicability of wet floodproofing in these areas.
3. **Building Elevation:** Elevating a structure above the designated flood elevation level is another effective adaptation strategy. It is more straightforward for buildings with basements other than those on slab foundations. Building elevation is typically considered for flood events up to 8 feet (1% AEP).
4. **Buyout/Demolition:** For properties facing more than eight feet of flooding (1% AEP), structural solutions like floodproofing and elevation may become impractical. In such cases, buyout or demolition is often the only viable option to mitigate risk.

Post-flood, events frequently result in significant landscape changes, impacting the suitability of certain areas for rebuilding. Recognizing this, there's a growing consensus that some land parcels are no longer fit for traditional construction. Identifying the most beneficial post-flood use for these areas presents a challenge. Potential solutions include repurposing them into green spaces or community amenities, which are less infrastructure-intensive and more flood-resilient. Alternatively, these areas could serve as testing grounds for innovative building methods designed to withstand flooding.

Adopting such adaptive building strategies not only addresses the immediate effects of flooding but also bolsters long-term resilience and sustainability in areas vulnerable to water-related disasters. Tailoring these strategies to fit the unique environmental and topographical features of each location ensures that they provide the most effective defense against future flooding events. This approach aids in safeguarding communities while maintaining the ecological balance and aesthetic value of the landscape.

While it is understood that building adaptation can only withstand up to a certain level of flooding threat, using building adaptation as an approach to risk mitigation will, if successful, have an effect of lowering the total cost of risk transfer (insurance) for a community. This is an important aspect of this topic area and will be a key finding of winners' solutions.

Landscape adaptations are also of interest in this topic, particularly those that are needed to either enhance or support the building adaptations or provide other protection to surrounding buildings or property.

The Pain Points in Current Solutions

While there are several physical constraints in deciding the best building adaptation approach (on a parcel-by-parcel basis), cost is an important driver. One approach is to perform a benefit-cost analysis of implementing flood adaptations on each property. A good description of the [Benefit-Cost Analysis of Flood Protection Measures](#) states:

“...benefits are defined as damages avoided; therefore, the benefits of a project are equal to the damages without the project minus the damages with the project. If the project is technically sound, the damages with the project should be less than the damages without it and the net benefits will be positive.

Most flood damage is physical and includes structural damage to buildings, loss of contents in those buildings, damage to infrastructure, and damage to special or unique facilities. Nonphysical damage includes income loss for wages and profits to businesses, emergency response, temporary relocation, and post-flood cleanup.

Flood protection projects can be one or a combination of flood barriers (levees and floodwalls), building elevation, building relocation, and floodproofing. The costs of the project are mainly the capital cost of construction and O&M costs consisting of periodic inspection, preventive maintenance, and repairs throughout the useful life of the project.”

In addition, a summary of unit costs for dry floodproofing and elevation are available [here](#).

Floodproofing, elevation and property acquisition can each be cost-effective adaptations in certain situations, depending on the desired return on investment (e.g., benefit cost ratio) and each may be subsidized in the [United States if they can be shown to be cost-effective](#).

In mountainous riverine communities, proposing building adaptations for flooding typically requires a parcel-by-parcel assessment, which can be a complex and time-consuming process. Furthermore, flooding events can alter the topography, necessitating a reassessment of adaptation strategies for each parcel as the suitability of previous solutions may change. In towns or more concentrated living communities, the adaptations may be considered for groups of houses with similar attributes (e.g., first floor height, construction, etc.). Both scenarios are of interest in this Challenge.

Assessing landscape adaptations involves weighing the pros and cons of various solutions, which can be more intricate and vary widely depending on each specific parcel. This complexity arises from the need to consider a variety of factors, including environmental impact, cost, and effectiveness of each solution in the unique context of the parcel.

It is also expected that the benefits and protections of the building/landscape adaptations will also yield benefits in the cost of insurance, as these buildings will withstand some greater level of threats. Credit will be given to those solutions that address and quantify those benefits.

Solutions Being Sought

RISE is seeking solutions that:

1. Consider building/landscape mitigations in the four areas described above. Either new or existing adaptation techniques may be applied. Additional mitigations may be considered if the applicant provides comprehensive details of the technology and its benefits. Both rural and more urban environments may be considered.
2. Identify the most appropriate and cost-effective building/landscape adaptations on a parcel-by-parcel basis including a method or access to a method, for performing a benefit-cost analysis for every building and parcel.
3. Provide mitigation that can be implemented on properties pre- and post-disaster.
4. Offer a benefit-cost analysis (BCA) on a parcel-by-parcel basis using the most current topography and flood event datasets.
5. May be implemented using local labor and contractors, to support the local business community and workforce.
6. Provide analysis and estimate of the reduced cost of insurance enabled by the mitigations.

Data Available Upon Request

- First Street Foundation database.
- Event flood event modeling datasets: Hurley data sets available upon request.
- Topography: [The Virginia LiDAR Inventory Web Mapping Application for the State of Virginia.](#)
- [LENOWISCO report by UVA.](#)
- [LENOWISCO CEDS report.](#)
- [Cumberland Plateau report.](#)

Community Insurance Program

The intent of this effort is to establish a riverine flood insurance policy design covering the region of Southwestern Virginia (as defined by the coverage areas of the four PDC’s: LENOWISCO PDC, Cumberland Plateau PDC, Mount Rogers PDC, and the New River Regional Commission). In describing the problems and desired solutions for a Community Insurance Program, it is necessary to consider the needs of both the payment recipients (e.g., residents, businesses) and the payment providers (e.g., insurers).

The Residents’ Community Insurance Problem(s)

Costs and impacts of the effects of a flooding event are borne by several parties:

- Homeowners
- Renters
- Rental property owners
- Municipalities
- Local businesses

Many homeowners and renters in rural areas lack flood insurance. As a result, financial aid (and other support) for these communities after flood events typically comes from state flood relief funds, which are often allocated through specific budget requests, or from charitable donations. However, these funds are primarily directed towards homeowners, often leaving renters without similar support.

In the past, rebuilding and other support has been provided through donations to the local United Way:

‘Recovery from major natural disasters is always going to be a long process’, said Travis Staton, President and CEO of United Way of Southwest Virginia.

‘Typically, 24 to 36 months is a good turn-around,’ he said. ‘Overall, we are making tremendous progress.’

The nonprofit raised about \$1 million for Hurley relief, with \$850,000 of that “already out the door” to residents, he said.

It raised \$928,000 for Whitewood and Pilgrim’s Knob, with close to \$500,000 of that already distributed.’

The Pain Points in Current Solutions for Residents

The State government allocated \$17M for recovery in Hurley and \$18M for Whitewood. These funds became available around 15 months after the respective events, and were intended for homeowners to repair/rebuild their properties or reimburse already-incurred expenses with receipt proof. This system, however, led to several issues:

- Residents' needs ranged from those needs immediately after the event (1-7 days), where the needs were for water, food shelter, and cash, to longer term (1 month - 1 year) repairing or rebuilding dwellings, or relocating permanently elsewhere.
- Residents who completed repairs without keeping receipts couldn't get full reimbursement.
- The delay in fund disbursement forced residents to either cover costs for an extended period or move away.
- Non-homeowners (e.g., renters) were not eligible for these funds.
- Support was not provided to businesses to compensate for the loss of and/or disruption of business.

In Hurley's flood, immediate relief and support depended exclusively on charitable donations.

Also, in the Whitewood flood:

"According to an online dashboard maintained by United Way of Southwest Virginia, a lead agency in the recovery effort, 21 homes were destroyed; as of Aug. 31, six had been built to replace them. Another 25 had major damage of \$10,000 or more, and 18 had been repaired. Twenty-five more homes saw damage of \$10,000 or less."

The Pain Points in Current Solutions for Providers

Current insurance programs' (e.g., NFIP) premiums are not generally affordable, nor are the programs sustainable in their current form in this region. Often, FEMA payouts are triggered by flooding produced by named storm events. Severe convective events are not typically named storms, and so FEMA support cannot be guaranteed.

Funding allocated by State for Hurley and Whitewood (\$17M and \$18M respectively) were special legislative appropriations using Regional Greenhouse Gas Initiative (RGGI) funds from the Commonwealth, which arrived around 14-15 months after the events. While this relief was very helpful it is neither sustainable nor quick.

Solutions Being Sought

Solutions are being sought for the design of an insurance program that:

- Provides support to households and businesses after events by shifting risk through insurance and other financial strategies, ensuring protection against major losses. In its final form, support should align with Residents’ needs (see above).
- Address residents’ and businesses’ needs at (approximately) defined times:
 - Pre-flood event.
 - Within hours after the flood event.
 - Up to one week after the flood event.
 - Up to one month after the flood event.
 - Up to one year after the flood event.
- Needs may range from food, shelter, and short-term funds to building replacement costs. Part of the Challenge will be to document these needs.
- Pays out after clearly describable and measurable flooding event level if a parametric program is proposed. Approaches other than parametric programs will also be considered.
- Provides payout funds quickly and in a way that is accessible by all constituents – in conjunction with findings from the Residents’ Community Insurance topic area.
- Considers riverine flooding as the only peril.
- Is sustainable throughout the region of Southwest Virginia covered by the LENOWISCO PDC, Cumberland Plateau PDC, Mount Rogers PDC, and the New River Regional Commission. Some sustainability objectives are:
 - The insurance program design incentivizes adaptation which will bend the total cost curve down over time.
 - The program will allocate costs in an equitable way.
 - The cost of the program is affordable and defensible to stakeholders based on scope and allocation of costs.
 - The total cost is affordable over long time horizons to the stakeholders paying the costs contemplated.
 - The premium payment(s) allocation is clear.
 - Clear rules and processes are set for fund distribution.
- Is supported by a resident recovery program to provide guidance pre- and post-event assistance and guidance. Offers pre- and post-event assistance and guidance through a resident recovery program. The goal of this Challenge is not to develop such a program, but to design an insurance program that can work with and aid in such support programs.

These considerations are crucial for the program’s effective and sustainable operation.

Clearly for a solution design process to be successful access to various stakeholders in the region will be necessary. Applicant Winners will be given access to these stakeholders to design their solutions.

There are several steps to be taken in developing a flood insurance program such as this. It is up to the winning applicants to apply their own processes and analyses to their final design.

Datasets Available Upon Request

- First Street Foundation database.
- Event flood event modeling datasets: Hurley data sets available upon request.
- Topography: [The Virginia LiDAR Inventory Web Mapping Application for the State of Virginia.](#)
- [LENOWISCO report by UVA.](#)
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