Applicant Guidelines

RISE 2021 Coastal Community Resilience Challenge

Powered by Brinc

Flood Management Infrastructure
Protection of Buildings
Data Analytics
Re-establishing Critical Utilities

Version 1.2

Updated on 1/25/2021

A summary of changes made on January 25, 2021.

Pg. 2	Addition: Inclusion of RISE's collaboration with Brinc.
Pg. 3	Timeline addition: March 22, 2021 – Finalists announced. Between March 22 - April 5, 2021, finalists will be required to submit additional documentation, including technical details of a proposed solution, a detailed workplan, and 3-year financial projections. This information is no longer required as part of the initial application form due on March 15, 2021. Only finalists will be required to provide this information.
Pg. 4	Application form change: The RISE Coastal Community Resilience Challenge application form is now available online at https://www.f6s.com/riseresiliencebrinc. It can be accessed directly from the RISE website. Note that some of the application questions have been streamlined.
Pg. 4	Solution stage clarification: Applicants must have a solution at a prototype stage or later.
Pg. 5	Partnership incentive removal: Partnership incentive for applicants partnering with RISE's current teams has been removed. While partnerships are welcome, RISE no longer provides extra points for partnerships with RISE's current teams.

About RISE

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

Coastal Community Resilience Challenges

RISE Coastal Community Resilience Challenges accelerate innovation by connecting problems in need of better solutions to innovators with new resilience-building technologies, products and services. RISE surfaces Challenges from diverse entities operating in coastal communities. Each Challenge has an actual occurrence in the Hampton Roads region of southeastern Virginia and is applicable to other coastal areas. RISE provides applicants access to data and regional subject matter experts for each Challenge.

Resilience Innovation Fund

Since 2018, RISE has deployed more than $4 million in non-equity funding and services from its Resilience Innovation Fund (RIF) to innovators with resilience solutions that create substantial new value, can be demonstrated in the Hampton Roads region of Southeastern Virginia, are scalable to other coastal regions, and can be built into sustainable businesses. 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 coastal resilience challenges. The Accelerator works with winners of the RISE Coastal Community Resilience Challenges to help businesses maximize the impact of the Resilience Innovation Fund and become sustainable after the RISE funding. The Accelerator offers a 2-month program based on the National Science Foundation's I-Corps techniques tailored to the resilience sector.

Resilience Innovation Hub & Testbed

RISE brokers access to Hampton Roads 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.

New in 2021: Powered by Brinc

For its 2021 Challenge, RISE teams up with Brinc. Brinc is a venture capital and accelerator firm that empowers game changers to help solve some of the world's biggest challenges. Brinc provides outreach expertise for the Challenge.

Timeline

March 15, 2021 12:00 pm EDT	Application submission deadline.
March 22, 2021	Finalists announced. Finalists will be required to submit additional documentation, including technical details of your solution, a workplan, and financial projections.
April 5, 2021	Deadline to submit the additional documentation if selected as a finalist.
April 12, 2021	Selected finalists announced and invited to pitch to the RISE Investment Committee for up to $350,000 from the RISE Resilience Innovation Fund and other resources.
April 19-23, 2021	Finalists' pitch presentations to the Investment Committee. Finalists will have 30 minutes to present, with an additional 1½ hour for questions from the Committee. The finalists will receive questions from the Investment Committee in advance to aid their preparation.
May 3, 2021	Winners and funding levels announced. Winners will receive feedback from the Investment Committee. The Committee may recommend making the award (or a portion of the award) contingent upon refinement of a business plan and/or work plan. In such case, the winners may be required to participate in a 2-month long, customized Resilience Innovation Accelerator that will help them address Investment Committee's concerns and recommendations. Each winner will receive a $10,000 stipend for their participation and associated deliverables. Upon a successful completion of the course, the rest of the award will be authorized by RISE.
May 31, 2021	Deadline for the winners to sign contracts.
The week of June 7, 2021	Launch of the Resilience Innovation Accelerator. Launch of projects implementation.
May 31, 2022	Deadline for projects implementation and contract closeout.

*All dates are subject to change by RISE

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 be holding 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.

Application Form

The RISE Coastal Community Resilience Challenge application form is available online at https://www.f6s.com/riseresiliencebrinc

Application Eligibility

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

- Entity is a non-profit organization or meet the definition of a small business, as defined by the U.S. Small Business Administration and found under 13 CFR Section 121.201;
    - Funds may not be used to directly assist a privately-owned utility for any purpose.
- Business or entity must be registered on sam.gov, have a DUNS number
- Must be eligible to receive funds from the United States government and adhere to applicable administrative requirements as outlined in 2 CFR§200 (please note that RISE provides compliance assistance to meet these requirement);
- Must meet goals of the Coastal Community Resilience 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 Hampton Roads region of Southeastern Virginia (for more details see Geography Eligibility);
- Must have a solution at a prototype stage or later.
- Must be able to complete a proposed project by May 31, 2022.

Please note that applicants are not required to be a business or a non-profit entity and have a DUNS number or Sam.gov registration by the application submission deadline. However, applicants must be a small business or a non-profit entity and provide a DUNS number as well as sam.gov registration by May 31, 2021 which is the deadline for signing a contract with RISE if selected as a winner of the Coastal Community Resilience Challenge.

The DUNS number can be typically received within a week. The SAM.gov registration can take 4-6 weeks to receive, and applicants are strongly encouraged to begin this registration as soon as possible. There are no charges for either DUNS or SAM.gov registrations.

Geographic Eligibility

Applicants must demonstrate that the proposed solution may be implemented in or directly benefit the Hampton Roads region of Southeastern Virginia. If an applicant is not located in the Hampton Roads

region, the solution must be deployed, installed, tested or otherwise demonstrated in the region. Teams that are accepted into the RISE program do not have to located in Hampton Roads as long as COVID-19 restrictions are still in place. However, teams will still need to deploy their solution in Hampton Roads, by either hiring or partnering with local firms/organizations/individuals.

RISE can only select projects that provide a demonstrable benefit to the Hampton Roads region defined as: The City of Chesapeake; The City of Franklin; The City of Hampton; The City of Newport News; The City of Norfolk; The City of Poquoson; The City of Portsmouth; The City of Suffolk; The City of Virginia Beach; The City of Williamsburg; The Town of Smithfield; Gloucester County; Isle of Wight County; James City County; Southampton County; Surry County; and York County.

Challenge Topic Eligibility

Solutions submitted to the Coastal Community Resilience Challenge must fall within one of the four topic areas described below.

1) Flood Management Infrastructure

Objective

RISE is looking for innovative technologies, products and services that address flood management issues of coastal communities, create substantial new value, can be demonstrated in Hampton Roads, are scalable to other communities, and can be built into viable and sustainable businesses.

We are particularly interested in creative solutions for cost-effective management of ground- storm- and/or tidal water, either as affordable short-term mitigations, or low-maintenance, longer-term options in a variety of environments with high water tables.

Problem Overview

Flooding is becoming more frequent and more severe throughout the Hampton Roads area and other coastal communities, resulting in asset damage and financial losses. Flooding affects residents (i.e., homes, vehicles, disruption to daily lives), businesses (i.e., loss in economic productivity), utilities, and governments alike (i.e., critical infrastructure).

The watershed management problem combines many of the following:

- Tidal flooding overtopping seawalls
- Tidal flooding tailwater in stormwater pipes producing flooding inland
- Aging and undersized stormwater infrastructure limiting effective drainage
- High water table/groundwater limiting ability to store water underground
- Large paved areas (e.g., parking lots) increasing run-off and localized flooding
- Urban environment limiting access to existing infrastructure or new infrastructure installation
- On-site septic systems within the floodplain or otherwise experiencing persistent flooding or poorly draining soils. Existing solutions all involve subsurface disposal, which the soil composition or other physical factors preclude.

In addition to solutions to the above problems, RISE is seeking innovative approaches to three specific stormwater management problems identified by several coastal cities (see below for detailed description):

FM 1: Tidal Backflow Prevention

FM 2: Stormwater Debris & Litter Control

FM 3: Rainbomb Flooding Reduction

What We've Heard

Although not meant to be comprehensive, below are suggested areas in need of innovative solutions identified by stakeholders in Hampton Roads and other coastal communities. Submissions do not need to be limited to these areas. However, to be eligible for funding from the RISE Resilience Innovation Fund, entrants must focus on a Hampton Roads need, while demonstrating the ability to scale to other communities.

- Stormwater storage/run-off reduction from existing parking lots and other large paved areas.
- Replacement of existing residential bulkheads with living shoreline.
- Restoration of living shoreline, especially including nature-based approaches.
- Enhanced water storage under commercial parking lots and other commercial sites in high water-table areas.
- Improved stormwater management in dense urban environments with low operations and maintenance costs.
- Active watershed management and control for existing infrastructure optimization.
- Application of augmented/virtual reality for resilience infrastructure installation, operations and/or maintenance.
- "Rainbomb" detection, warning and applications.
- Stormwater pump outflow water quality improvement by the removal of contaminants (e.g., fertilizers, dirt, oil).
- Use of city stormwater fee reduction (and other incentives) to alter existing parking lots to increase stormwater storage and reduce runoff.
- Land replenishment techniques.
- Lower-cost smart self-cleaning techniques to remove litter from outfalls, ponds, and pipes.
- Cost-effective technology that can install underground stormwater lines at a fraction of the current cost.
- Personalized, actionable flood alerts for residents and field teams alike to prevent damage and build more resilient communities and economies

In addition to the broad areas listed above, RISE is seeking innovative approaches to three specific stormwater management problems identified by several coastal cities. These include: Tidal Backflow Prevention, Stormwater Debris & Litter Control, and Rainbomb Flooding Reduction.

FM 1: Tidal Backflow Prevention

The Tidal Backflow Prevention Problem(s)

During high tide events, tidal water can flow into the stormwater system and out of drains leading to significant "blue sky" flooding on roadways and intersections. Tidal valves (check valves) are placed in the stormwater system to prevent this backflow.

Coastal communities typically have many tidal outfalls requiring many valve installations. Installation, operation and maintenance costs can be significant to the city.

Many cities are looking for an affordable, effective, turn-key installation and operation at these outfalls that will prevent backflow into the stormwater system.

For instance, the City of Norfolk alone has hundreds of tidal outfalls. The City is very interested in sourcing a more effective and efficient solution to its backflow prevention problem and is willing to provide teams access to outfalls to demonstrate their solutions. This problem is expanded further in the seven other municipalities in the Hampton Roads region and beyond.

The Pain Points in Current Solutions

There is a variety of backflow prevention systems available. Typically, cities have installed different check valves and tested them for:

- ease of installation
- functionality of reducing flooding
- ease of maintenance

Of course, one of the biggest discriminators are the associated costs which fall into three components:

Installation:

- Difficulty and errors in installation lead to loss of function or blockage.
- Pipe infrastructure around the valve is in poor condition, requiring repairs and making it harder and more expensive to install.
- Valves sometimes do not fit well in the pipes.
- Labor costs.

Procurement:

- Procurement of the check valve and associated materials.

O&M:

- Keeping the valve clear of debris, biological growth, and ensuring proper operation.
- In general, cities want to keep labor costs as low as possible so automation or contractor labor (if more economical) is preferable to in-house Operations and Maintenance.

For the purposes of our Challenge, we will use the following costs as a baseline relative to which improvements will be gauged. The costs include costs of purchasing an existing technology, installing it, and maintaining it. In effect, the total cost to install a tidal valve costing around $5,000 (e.g., Tideflex) can be over $50,000 per outfall. Breakdown of the costs is available from RISE upon request.

Solutions Being Sought

Due to cities' desire to reduce labor costs, RISE seeks solutions that constitute the end-to-end installation (check valve, liners, plus any other materials required for a working installation), with a vendor providing the solution and taking care of the complete installation and maintenance (as opposed to procuring the valve and other materials from a vendor, then using another contractor to install it, and then using in-house city staff to maintain it).

RISE can only fund small businesses (including small business-led teams) to perform these pilot programs. Larger companies may be involved but can only be used as contractors to the small business prime.

RISE is seeking an installed and maintained project(s) to assess affordability and functionality of the installation over a period of several months. RISE would provide pilot sites for the installation in Norfolk, Virginia. Performance assessment is based on (relative to the baseline):

- cost of install

- functionality of reducing flooding
- ease and cost of maintenance

The evaluation period will last until May 2022.[1]

Datasets Available Upon Request

- Tidal outfall maps for Norfolk
- Cost estimates for tidal valve installation, and O&M.

FM 2: Stormwater Debris & Litter Control

The Stormwater Debris & Litter Control Problems

Maintaining efficient flow in sewer and stromwater infrastructure in daily operations means that system has more capacity to absorb high flows from extreme precipitation, storm surges, and sea level rise. In stormwater systems, lack of capacity results in surface flooding and drainage issues. In sewer systems, the result is combined/sanitary sewer overflows (a public health and environmental risk) and sewer backups into homes. Clogs and blockages cause reduced capacity in stormwater and sewer systems.

Consequences of clogged pipes are also more severe, as extreme rainfall and storm surges overwhelm clogged systems even faster. At the most basic level, clogs are caused by leaves, roots, sediment, and trash that enter into stormwater systems. As accumulation happens, flow slows, water levels rise, and backups and flooding occur. At a structural level, stormwater systems typically flow by gravity, and many coastal communities such as Hampton Roads are on flat topography to begin with. Sea level rise causes submersion of outfalls (which hinders gravity flow), higher groundwater tables (increasing sewer infiltration and decreasing soil absorption capacity), and salt damage to pipes.

Stormwater and sewer operations and maintenance (O&M) is crucial to maintaining performance of existing systems. Traditionally, stormwater O&M has consisted of manual tasks such as street sweeping, visual inspections of catch basins and other assets, and line inspections; in sewers, manual CCTV video inspection is standard. However, these methods are time- and resource-intensive, and city budgets are in a precarious situation in 2020 and beyond. O&M is even more critical in aging stormwater infrastructure as well. Sewer pipes can start exhibiting clogging after 30-40 years, and pipes become cracked, misaligned, and otherwise deteriorated over time.

The Pain Points in Current Solutions

For many cities, it is too expensive and time consuming to regularly clean litter and debris out of all street level catchment basins on a regular preventative basis. Some installations use a vortex hydrodynamic separator to separate litter and sediment from the water which are subsequently vacuumed out. These are expensive to procure and install and are not always practical to install in an urban environment. Litter and debris can therefore get into the stormwater system causing blockages or is deposited into the nearby waterways.

Backups due to stormwater blockages can cause significant flooding damage. Regular cleaning by crews using vacuum trucks can help prevent this but it is too costly and time consuming to keep all the stormwater system clean. Stormwater blockage detection is currently mainly complaint driven when streets and sidewalks begin to flood. The City doesn't get advance identification and warnings of blockages and reacts when the street-level flooding occurs.

[1] Dates subject to change at RISE discretion.

Some causes of stormwater drainage problems:

- Litter and debris can accumulate in storm drains and catch basins leading to flooding at the street level.
- Litter and debris can accumulate in the stormwater drainage pipes leading to stormwater backup and flooding at the street level.
- Litter and debris that makes it through the stormwater system are expelled into nearby waterways causing pollution and eyesores.

The problem is exacerbated by the fact that older drainage systems are not sized to manage the stormwater loads seen today.

Solutions Being Sought

RISE is seeking solutions to the litter and debris problem that:

- Reduce labor costs and do not require manual maintenance on a regular basis.
- Provide stormwater managers predictive knowledge of stormwater blockages to allow preventative actions by the city.
- Novel solutions to capture debris and litter at the street level and/or at the outfall

FM 3: Rainbomb Flooding Reduction

The Rainbomb Flooding Reduction Problems

Many cities experience heavy localized rainfall induced ("rainbomb") flooding with increased intensity. These events generate a large amount of stormwater in a very short time leading to the stormwater systems being unable to transport the water. This leads to major flooding. When this occurs in urban environments it can significantly affect transportation, flood buildings and businesses, and can lead to loss of vehicles or life. The flooding often occurs at a very localized area, making an intersection impassable with other nearby roadways being unaffected.

The Pain Points in Current Solutions

Major infrastructure projects to mitigate or alleviate this situation: floodwalls, cisterns, ponds, large pump stations, take a long time and large amounts of funding to design and install, and are often not possible in an urban environment. These types of solutions are not considered in this Challenge.

The very flat topology of Hampton Roads does not provide the pressure head to generate flows in stormwater system, leading to the stormwater pipes having standing water and reducing their capacity to hold stormwater. Green infrastructure solutions such as roadside rain gardens and bioswales are quickly overwhelmed during rainbombs.

Solutions Being Sought

RISE is seeking solutions that take advantage of existing infrastructure to reduce the flooding effect that rainbombs have on major roadway intersections to a maximum of 3" of water roadway centerline depth on the street during a rain event.

Since this work must be installed and demonstrated by May 2022, solutions that require significant prior development or installation permitting and review may not be suitable. RISE is looking for implementable submissions not just designs.

Some examples of preferred approaches include:

- Installation of sensors and/or other equipment in/on existing infrastructure as long as it does not impede the operation of the infrastructure. If costs will be associated with installing and/or maintaining these sensors and/or equipment, they should be included in the proposal.

Also, it may be that the intersection(s) of interest are affected by infrastructure elements that are:

- Poorly installed
- Incorrectly sized
- Degraded
- Some other attribute(s) causing poor stormwater management

In these cases, RISE would accept equipment installation to mitigate these shortfalls. For example, if a segment of a pipe is seen to be undersized, it may make sense to add a pump to increase the mass flow through the undersized pipe.

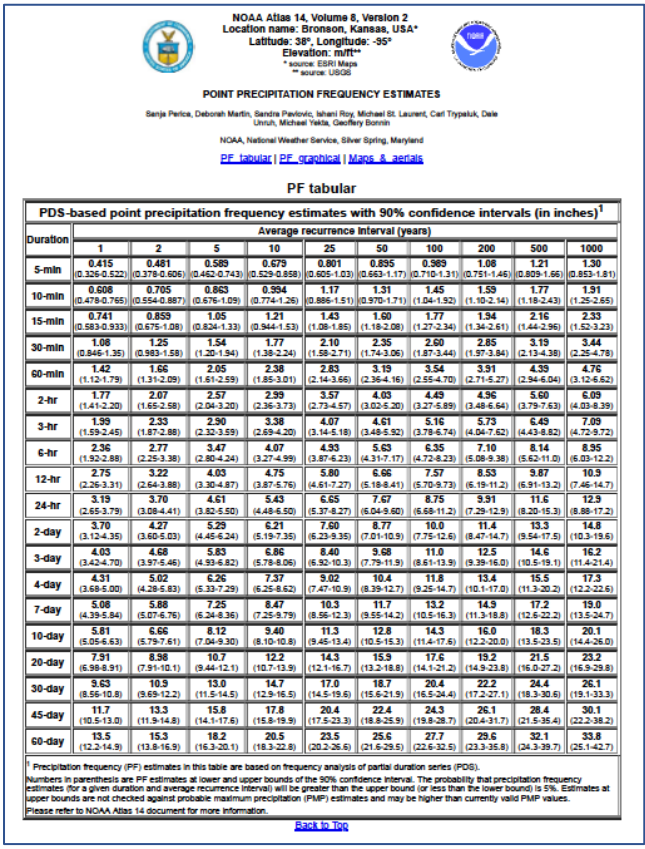
It is likely that a series of mitigations may be needed, and they should work together in an integrated manner. Mitigations implemented to improve stormwater management should not result in another area being adversely affected.

The Location(s):

RISE will provide entrants with datasets on stormwater infrastructure, topography, and other model data upon request by the entrant. Entrants should use these data to develop their solutions and their estimated performance. If selected, RISE will work with the entrant and the City of Norfolk to get access to the intersection and surrounding infrastructure as needed.

The Level of Threat:

Instead of designing solutions to a particular rainfall event, RISE wants entrants to define, as part of their submission, the rainfall events that they believe their solution can maintain less than 3" depth of water in the intersection during an event. The rainfall events are defined by NOAA in the following table, also available here.[2]



NOAA Atlas 14, Volume 8, Version 2
Location name: Bronson, Kansas, USA*
Latitude: 38°, Longitude: -95°
Elevation: m/ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)								
	1	2	5	10	25	50	100	200	500	1000
5-min	0.415 (0.326-0.522)	0.481 (0.378-0.606)	0.589 (0.462-0.743)	0.679 (0.529-0.858)	0.801 (0.605-1.03)	0.895 (0.663-1.17)	0.989 (0.710-1.31)	1.08 (0.751-1.46)	1.21 (0.809-1.66)	1.30 (0.853-1.81)
10-min	0.608 (0.478-0.765)	0.705 (0.554-0.887)	0.863 (0.676-1.09)	0.994 (0.774-1.26)	1.17 (0.886-1.51)	1.31 (0.970-1.71)	1.45 (1.04-1.92)	1.59 (1.10-2.14)	1.77 (1.18-2.43)	1.91 (1.25-2.65)
15-min	0.741 (0.583-0.933)	0.859 (0.675-1.08)	1.05 (0.824-1.33)	1.21 (0.944-1.53)	1.43 (1.08-1.85)	1.60 (1.18-2.08)	1.77 (1.27-2.34)	1.94 (1.34-2.61)	2.16 (1.44-2.96)	2.33 (1.52-3.23)
30-min	1.08 (0.846-1.35)	1.25 (0.983-1.58)	1.54 (1.20-1.94)	1.77 (1.38-2.24)	2.10 (1.58-2.71)	2.35 (1.74-3.06)	2.60 (1.87-3.44)	2.85 (1.97-3.84)	3.19 (2.13-4.38)	3.44 (2.25-4.78)
60-min	1.42 (1.12-1.79)	1.66 (1.31-2.09)	2.05 (1.61-2.59)	2.38 (1.85-3.01)	2.83 (2.14-3.66)	3.19 (2.36-4.16)	3.54 (2.55-4.70)	3.91 (2.71-5.27)	4.39 (2.94-6.04)	4.76 (3.12-6.62)
2-hr	1.77 (1.41-2.20)	2.07 (1.65-2.58)	2.57 (2.04-3.20)	2.99 (2.36-3.73)	3.57 (2.73-4.57)	4.03 (3.02-5.20)	4.49 (3.27-5.89)	4.96 (3.48-6.64)	5.60 (3.79-7.63)	6.09 (4.03-8.39)
3-hr	1.99 (1.59-2.45)	2.33 (1.87-2.88)	2.90 (2.32-3.59)	3.38 (2.69-4.20)	4.07 (3.14-5.18)	4.61 (3.48-5.92)	5.16 (3.78-6.74)	5.73 (4.04-7.62)	6.49 (4.43-8.82)	7.09 (4.72-9.72)
6-hr	2.36 (1.92-2.88)	2.77 (2.25-3.38)	3.47 (2.80-4.24)	4.07 (3.27-4.99)	4.93 (3.87-6.23)	5.63 (4.31-7.17)	6.35 (4.72-8.23)	7.10 (5.08-9.38)	8.14 (5.62-11.0)	8.95 (6.03-12.2)
12-hr	2.75 (2.26-3.31)	3.22 (2.64-3.88)	4.03 (3.30-4.87)	4.75 (3.87-5.76)	5.80 (4.61-7.27)	6.66 (5.18-8.41)	7.57 (5.70-9.73)	8.53 (6.19-11.2)	9.87 (6.91-13.2)	10.9 (7.46-14.7)
24-hr	3.19 (2.65-3.79)	3.70 (3.08-4.41)	4.61 (3.82-5.50)	5.43 (4.48-6.50)	6.65 (5.37-8.27)	7.67 (6.04-9.60)	8.75 (6.68-11.2)	9.91 (7.29-12.9)	11.6 (8.20-15.3)	12.9 (8.88-17.2)
2-day	3.70 (3.12-4.35)	4.27 (3.60-5.03)	5.29 (4.46-6.24)	6.21 (5.19-7.35)	7.60 (6.23-9.35)	8.77 (7.01-10.9)	10.0 (7.75-12.6)	11.4 (8.47-14.7)	13.3 (9.54-17.5)	14.8 (10.3-19.6)
3-day	4.03 (3.42-4.70)	4.68 (3.97-5.46)	5.83 (4.93-6.82)	6.86 (5.78-8.06)	8.40 (6.92-10.3)	9.68 (7.79-11.9)	11.0 (8.61-13.9)	12.5 (9.39-16.0)	14.6 (10.5-19.1)	16.2 (11.4-21.4)
4-day	4.31 (3.68-5.00)	5.02 (4.28-5.83)	6.26 (5.33-7.29)	7.37 (6.25-8.62)	9.02 (7.47-10.9)	10.4 (8.39-12.7)	11.8 (9.25-14.7)	13.4 (10.1-17.0)	15.5 (11.3-20.2)	17.3 (12.2-22.6)
7-day	5.08 (4.39-5.84)	5.88 (5.07-6.76)	7.25 (6.24-8.36)	8.47 (7.25-9.79)	10.3 (8.56-12.3)	11.7 (9.55-14.2)	13.2 (10.5-16.3)	14.9 (11.3-18.8)	17.2 (12.6-22.2)	19.0 (13.5-24.7)
10-day	5.81 (5.05-6.63)	6.66 (5.79-7.61)	8.12 (7.04-9.30)	9.40 (8.10-10.8)	11.3 (9.45-13.4)	12.8 (10.5-15.3)	14.3 (11.4-17.6)	16.0 (12.2-20.0)	18.3 (13.5-23.5)	20.1 (14.4-26.0)
20-day	7.91 (6.98-8.91)	8.98 (7.91-10.1)	10.7 (9.44-12.1)	12.2 (10.7-13.9)	14.3 (12.1-16.7)	15.9 (13.2-18.8)	17.6 (14.1-21.2)	19.2 (14.9-23.8)	21.5 (16.0-27.2)	23.2 (16.9-29.8)
30-day	9.63 (8.56-10.8)	10.9 (9.69-12.2)	13.0 (11.5-14.5)	14.7 (12.9-16.5)	17.0 (14.5-19.6)	18.7 (15.6-21.9)	20.4 (16.5-24.4)	22.2 (17.2-27.1)	24.4 (18.3-30.6)	26.1 (19.1-33.3)
45-day	11.7 (10.5-13.0)	13.3 (11.9-14.8)	15.8 (14.1-17.6)	17.8 (15.8-19.9)	20.4 (17.5-23.3)	22.4 (18.9-25.9)	24.3 (19.9-28.7)	26.1 (20.4-31.7)	28.4 (21.5-35.4)	30.1 (22.2-38.2)
60-day	13.5 (12.3-14.9)	15.3 (13.8-16.9)	18.2 (16.3-20.1)	20.5 (18.3-22.8)	23.5 (20.2-26.6)	25.6 (21.6-29.5)	27.7 (22.6-32.5)	29.6 (23.3-35.8)	32.1 (24.3-39.7)	33.8 (25.1-42.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.
Please refer to NOAA Atlas 14 document for more information.

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Entrants should define the range of events for which their solutions will meet the criteria.

Datasets Available Upon Request

- Stormwater infrastructure maps
- Elevation maps
- SWMM models for the location

[2] https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

2) Data Analytics

Objective

RISE is looking for innovative technologies, products, and services that address data analytics challenges of coastal communities, create substantial new value, can be demonstrated in Hampton Roads, are scalable to other communities, and can be built into viable and sustainable businesses.

We challenge innovators to propose data analytics, integration, and accessibility for multiple applications to help coastal community stakeholders maintain public safety, meet logistics needs, protect property, as well as enhance quality of life, among other applications.

Currently the RISE Urban Mobility Resilience Challenge is underway in Hampton Roads with four teams developing solutions to bring real-time flood avoidance to private and commercial drivers as well as public transportation and emergency services. There may be additional uses for such platforms augmenting their customer base and use cases.

Problem Overview

To reduce the risk of living on the coast and adapt to more frequent disruptions, coastal communities seek to utilize data and new/existing sensor networks to improve their ability to more effectively:

- Prepare for, respond to, and recover from disruptions.
- Increase knowledge and awareness of interactions between ground-, storm-, and tidal waters and their effects and understand the economic impact of the use of this information.
- Interface real-time and forecast of flooding information and other environmental hazards with new technologies in a near- to mid- term time horizon (e.g., smart city data, self-driving/autonomous vehicles and traffic control, augmented/virtual reality technologies, etc.).

What We've Heard

Although not meant to be comprehensive, below are suggested areas in need of innovative solutions identified by stakeholders in Hampton Roads and other coastal communities. Submissions do not need to be limited to these areas. However, to be eligible for funding from the RISE Resilience Innovation Fund, entrants must focus on a Hampton Roads need, while demonstrating the ability to scale to other communities.

- Augmented/virtual reality applications for enhanced resilience infrastructure installation, operation, and maintenance.
- "Rainbomb" detection, warning and applications.
- Ground-, tidal-, and stormwater measurement networks.
- Machine learning approaches to improve flooding forecast and mapping.
- Innovative smartphone apps to enhance residents' quality of life during acute and chronic (nuisance) stresses.
- Connected vehicle mobility platforms which will provide value added consumer services like contactless payments, fleet management and parking, as well as safety benefits such as emergency and evacuation services.
- Integration of climate risk data analysis into transportation infrastructure planning to characterize system-wide effects of transportation disruptions from flooding and help prioritize projects more efficiently and effectively.

3) Protection of Buildings

Objective

RISE is looking for innovative technologies and approaches that address protection of buildings challenges of coastal communities, create substantial new value, can be demonstrated in Hampton Roads, are scalable to other communities, and can be built into viable and sustainable businesses.

We challenge innovators to propose solutions to maintain the viability of existing buildings facing flood risks. What are the structural or non-structural alternatives beyond traditional approaches such as costly house elevation that individual homeowners could buy? Could these approaches protect buildings for 15 – 30 years in the flood environment? Are there cost effective protections against the higher frequency, lower magnitude recurrent flooding?

Problem Overview

Buildings in flood plains experience different levels of flooding. Some buildings may experience several feet of flooding and may require substantial modification to remain viable (e.g., building elevation). Other may only experience a few inches (6-8 inches) and minor modifications may be required to avoid the costs of damage.

Many buildings experience up to 8″ of flooding several times per year. To avoid recurring flood damage and insurance claims, effective, affordable and readily deployable remedies are needed.

Also of concern is how these modifications are to be paid for. Are costs shared amongst home/building owners, the City, and insurance companies (or others)? What are viable and sustainable options for funding these efforts? Homes in Norfolk Vision 2100's "Yellow Areas" are representative of many of these issues (see Vision 2100).[3] These areas are established neighborhoods that experience more frequent flooding.

What We've Heard

Although not meant to be comprehensive, below are suggested areas in need of innovative solutions identified by entities operating in Hampton Roads and other coastal communities. Submissions do not need to be limited to these areas. However, to be eligible for funding from the RISE Resilience Innovation Fund, entrants must focus on a Hampton Roads need, while demonstrating the ability to scale to other communities.

- Lowest/first floor elevation mapping and integration (see the next page for details about this area)
- Alternatives to raising existing homes up above the Base Flood Elevation:
    - A modular building system that can be adapted to increasing flood levels; e.g., floor levels installed as planes that can one day be mechanically lifted.
    - Retrofit solutions for existing buildings beyond FEMA approved solutions.
- "Rainbomb" detection, warning and applications to protecting buildings quickly.
- Quick-reacting, affordable building protection for "rainbomb" (rapid, short-lived) flooding events.
- 3-D printing applications for building protection and resilience infrastructure.
- Innovative financial models to make building modifications and/or protections more affordable to building owners.

[3] https://www.norfolk.gov/DocumentCenter/View/27768/Vision-2100---FINAL?bidId=

- Augmented/virtual reality applications for enhanced resilience infrastructure installation, operation, and maintenance as related to buildings.

Note that the RISE funding cannot be used to make modifications or improvements to privately-owned properties, but could be used in other areas; e.g., to develop and validate various approaches and business models.

In addition to the broad areas listed above, RISE is seeking innovative approaches to the specific first floor elevation mapping and integration problem identified by several cities:

PB 1: Lowest/First Floor Elevation Mapping & Integration

The First Floor Elevation Mapping & Integration Problems

The first finished floor elevation (FFE) or Lowest Floor Elevation (LFE)4 of a building provides critical information for understanding structural vulnerability to flood hazards and associated damage costs. In the Hampton Roads region of Virginia, FFEs have been identified as a major data gap. Although some localities have survey information or other data, the primary source of FFE information is FEMA National Flood Insurance Program elevation certificates. Less than 1% of structures within Hampton Roads have elevation certificates, and these certificates are typically only available as digital PDFs or paper copies by locality.[5]

In order to accurately assess the flood damage potential of a building, the FFE must be known to an accuracy found in the elevation certificates (as defined by FEMA's standards and guidelines).[6] Measuring the FFE to this accuracy is currently a manual process which is both time consuming and expensive, which is one reason why coverage is limited.

The value of FFE information gained by accurate widespread mapping can be realized in several ways when integrated with other information. For example, if an FFE map is integrated with information of a property's construction and Base Flood Elevation, the flood vulnerability and potential damage costs to that building (and by extension to a city as a whole) can be estimated. There are other ways the FFE mapping can be used by stakeholders to help mitigate and reduce costs of flooding. It is also felt that the FFE maps, if complete, accurate, and affordable, could be used nationwide to reduce the cost of the NFIP, and make it more solvent.

The Pain Points in Current Solutions

While there have been several efforts to deduce buildings' FFE from remote sensing, photography, artificial intelligence, and other approaches, achieving the necessary level of accuracy has been elusive to date. Getting elevation certificates for properties in a city's floodplain would be time consuming and cost prohibitive.

In addition, the required accuracy level of FFE measurements may depend upon its actual use and integration with other data to provide usable information. Assessing FFE estimation methods in the

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[4] Depending on the application FFE or LFE may be more applicable. This Challenge would accept either (or both) FFE and/or LFE as the application it is applied requires. For clarity though, the description of this Challenge will just refer to FFE.

[5] https://www.hrpdcva.gov/library/view/1386/a-regional-approach-to-applying-first-floor-elevation-data-to-coastal-flooding-vulnerability-assessments-in-hampton-roads

[6] https://www.fema.gov/flood-maps/guidance-partners/guidelines-standards

context of the information requirements may yield some early "low-hanging fruit", as well as identify future accuracy requirements.

Solutions Being Sought

The City of Norfolk has been very proactive in addressing its floodplain management needs and represents a coastal community which is willing to support solution development with feedback, guidance, and data.

Preference will be given to those solutions in which the FFE data is integrated with other data (which may be publicly available) to produce a usable decision support tool. For example, a tool which integrates FFE map information with building data to propose specific flood mitigations for each building. Other applications may be considered based on applicability, usefulness, and commercial viability.

For example, when analyzing the FFE map (integrated with provided building attributes such as foundation type, basement, structure values, etc.), queries could be performed by incorporating Depth Damage Functions from FEMA's Hazus program or using the U.S. Army Corp of Engineers NACCS Summary Report regarding Physical Depth Damage Function "Resilient Adaptation to Increasing Risk" (January 2015).

RISE is looking for solutions that develop and demonstrate new techniques to map FFE for cities which allow FFE mapping to be affordable, and applicable to an entire city floodplain.

Such outputs might include (but are not limited to):

- Using reliable FFE data merged with the City's available real estate data (building foundation information and structure valuations), a mapping tool could be created with a query dashboard that uses established NFIP insurance assumptions and Depth Damage Function assumptions to generate property-specific and aggregate outputs.

- Approximations of damage as a percentage of the structure's value amongst varying Flood Depths and Annual Chance Return Intervals.

- Approximations of NFIP premiums for standard pre-FIRM and post-FIRM policies ($250k in coverage + $100k for contents) based on distance of FFE from BFE and foundation type. Including an approximation timeline of premium increases over time for pre-FIRM subsidized policies that are actualizing (18% increase per year).
    - Using these outputs, recommendations can be made for specific mitigation solutions with a benefit-cost analysis to show homeowners how projects can pay for themselves over times (especially in the light of an NFIP actualization schedule).
- Aggregate approximations can show how outreach campaigns for various queries (i.e. pre-FIRM, homes with basements having FFE's above the BFE), can provide total premium savings if applied throughout the entire City; showing how many structures fall within various queries, with total Depth Damage Functions shown before and after mitigation.

We are looking for companies to apply their approach(es) to the AE, AH, AO and VE zones of the City of Norfolk floodplain.[7] The final solution will be estimation and integration of FFE data in ways that are demonstrably useful and valuable to coastal communities around the country and the world.

[7] https://www.norfolk.gov/1949/Flood-Zones

4) Re-Establishing Critical Utilities

Objective

RISE is looking for innovative technologies, products and services that address re-establishing critical utilities needs of coastal communities, create substantial new value, can be demonstrated in Hampton Roads, are scalable to other communities, and can be built into viable and sustainable businesses.

We challenge innovators to propose solutions that re-establish and maintain functionality of critical systems after an acute event to prevent cascading failures and degradation in the resilience of a community.

Problem Overview

After an acute event, vital installations need to be made functional as soon as possible to prevent further degradation in the resilience of a community. The types and sizes of facilities to be considered in this topic are:

- A 250 bed Level I trauma center hospital
- Stand-alone outpatient facilities
- A major company's data and operations center
- A city block

Critical functionalities include:

- Electricity
- Potable water and wastewater management
- Cell phone communications
- 911 access
- Internet access

Portable systems should be deployable within 2 hours of a disruptive event and provide 72 hours of continuous functionality to critical services.

Interdependencies among networked infrastructure that supports communities – e.g. interconnected water, stormwater, electricity, telecommunications, transportation systems – create a known risk of cascading failure: a disruption in one system may lead to a significant disruption in one or more other systems. For example, during a coastal flooding event, the vulnerability of the power grid to flooding can cause cascading failures to telecommunications, transportation, sanitation, and other interconnected networks, exponentially raising the consequence of flooding. Existing disaster preparedness analysis recognizes the problem of interdependency and dependency among networks. However, existing solutions are purpose built for single sectors, are based on standard engineering practices, do not leverage more recent network science, and do not tie cascade risk to system resilience.

What We've Heard

Although not meant to be comprehensive, below are suggested areas in need of innovative solutions identified by stakeholders in Hampton Roads and other coastal communities. Submissions do not need to be limited to these areas. However, to be eligible for funding from the RISE Innovation Fund, entrants must focus on a Hampton Roads need, while demonstrating the ability to scale to other communities.

- Deployable critical utilities for major installations.

- "Rainbomb" detection, warning and applications to protecting and/or re-establishing critical utilities.
- Mitigating the risk of cascading failure in interdependencies among networked infrastructure that supports communities.

Evaluation Criteria

RISE awards funds to applicants that demonstrate sufficient capacity to ensure they have a high likelihood of successful and compliant solution delivery. Submissions will undergo an eligibility and regulatory compliance review and will be evaluated based on the following criteria and weighting:

Strength of the solution & intellectual property (35 points)

- Need addressed & value proposition
- Innovativeness
- Solution stage

Business Plan (35 points)

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

Project Workplan (30 points)

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

Selection Process

Investment Committee Review

Applicants submit applications no later than March 15, 2021, 12:00 pm EST. Each application will be scored by at least 3 judges. Part of this scoring will include a Technical Evaluation by subject matter experts as required. The judges will select finalists who will required to submit additional documentation, including technical details of their solution, a workplan (with budget, schedule, milestones and deliverables), and 3-year financial projections. The finalists will have until April 5, 2021 (14 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 Investment Committee for RIF funding and other resources.

Presentations

Shortlisted finalists will present their proposed project to the Investment Committee between April 19-23, 2021. Finalists will have 30 minutes to present, with an additional 1½ hours for questions and discussion from the Committee. Presentations take place in person in Norfolk, Virginia or virtually. The finalists will receive questions from the Investment 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.

Structure of Financial Award – Loans and Grants

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 $350,000[8]. 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 Investment 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 initial tasks associated with project setup and Hampton Roads-focused use case discovery and development. All grant funds must be fully expended and closed out by May 31, 2022. Payments made to the awardee under the grant are made on a reimbursement basis for eligible costs.

Applicants who are awarded a RIF grant 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, applicants with RIF grants will be able to request reimbursement twice a month.

Awardees are required to meet the terms of the grant agreement. If the beneficiary does not meet the agreed upon deliverables, a portion of the entirety of the grant must be repaid. RISE will determine a repayment plan on a case-by-case basis, with all repayments due by May 31, 2022.

RISE requires its funded applicants 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.

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.

[8] RISE reserves the right to increase this threshold.

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[9]:

- 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 May 31, 2022. 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. Applicants who are awarded a loan from RIF will be allowed to drawdown funds in a reasonable advance of any expenditures. Loan draws will be limited to the anticipated expenses of each project phase. Future draws will only be authorized once the appropriate documentation for eligible expenses in the preceding draw has been submitted and deliverables are completed. 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
- Cancelled checks
- Paystubs that detail date, hours, and work completed

Resilience Innovation Accelerator

Winners will receive feedback from the Investment Committee and an underwriting entity (where applicable). The Investment Committee may recommend making the award (or a portion of the award) contingent upon refinement of a business plan and/or workplan. In such case, the winners may be required to participate in a 2-month long Resilience Innovation Accelerator program that will assist the winners with addressing the Investment Committee's concerns and recommendations.

Each winner will receive a $10,000 stipend for their participation and associated deliverables. Upon a successful completion of the course, the rest of the award will be authorized by RISE. If the Investment 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. The applicants are not guaranteed any funding for their projects until they successfully complete the course (if required by the Investment Committee).

[9] Terms may vary according to agreement between teams and RISE.

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 RISE Investment Committee. The goal is to increase the likelihood of the businesses becoming sustainable and attracting private capital and/or customers after the RISE's RIF award.

Resilience Innovation Hub & Testbed

In addition to funding and business assistance through the Resilience Innovation Accelerator, the winners will gain access to a suite of Resilience Innovation Hub & Testbed resources, including:

- Co-working office space in Hampton Roads, Virginia
- Fabrication, assembly and testing space in a warehouse/workshop space Hampton Roads, Virginia
- Assistance with securing real-world pilot sites in one or multiple Hampton Roads cities
- Datasets
- Access to experts from Hampton Roads local governments and other regional stakeholders depending on a project (e.g. NAVY, NASA, Port of Virginia, Hospitals, Universities, etc.)
- Access to Hampton Roads entrepreneurial community and programing
- PR opportunities and media visibility
- Regulatory/compliance technical assistance and assistance with permits

Eligible Uses and Eligible Solution 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 US Housing and Urban Development (HUD). Programs that RISE implements and projects funded through the RISE 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. These activities must enhance the resilience of coastal communities.

- 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 items not included in the eligible cost list eligible at their discretion, provided those costs are consistent with the RISE mission and support economic development in the Hampton Roads region. All costs proposed shall be necessary and reasonable to deliver the solution. All costs are subject to the approval of eligibility and cost reasonableness, as determined by RISE. RISE may review any proposed costs and provide and 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. Due to this, 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.

Once funding decisions are made, RISE will provide technical assistance to funded applicants, instructing them of their responsibilities and guiding them through the environmental review process. Funded applicants will not be required to pay for their environmental reviews. RISE will complete the environmental review. RISE will provide in depth technical assistance to all applicants who are implementing construction activities under the RIF.

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 non-secured 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, building 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, closing, housing, or utilities, withstanding emergency grant payments.

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 loan/grant. 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.

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 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 timeframe 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 of 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 federal 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 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.

Davis-Bacon Act and Related Acts (DBRA)

Construction projects over $2,000 must comply with Davis Bacon Act and Related Acts. The Davis-Bacon Act and Related Acts (DBRA) requires all contractors and subcontractors funded whole or in part with CDBG-DR financial assistance through the RISE in excess of $2,000 to pay their laborers and mechanics employed under the contract no less than the locally prevailing wages and fringe benefits for corresponding work on similar projects in the area. In some cases, Commonwealth of Virginia Prevailing Wage Law is in effect. In these cases, the higher prevailing wage rate between the federal and State must be adhered to and made applicable. For prime contracts in excess of $100,000, contractors and subcontractors must also, under the provisions of the Contract Work Hours and Safety Standards Act, as amended, pay laborers and mechanics, including guards and watchmen, at least one and one-half times their regular pay for all hours worked over 40 in a work week.

Additionally, RISE must follow the reporting requirements per the United States Department of Housing and Urban Development (HUD) and Department of Labor (DOL) regulations. This requirement also extends to RISE's funded applicants and contractors.

The Monitoring and Compliance Department (MCD) ensures that RISE's applicable programs and services are in compliance with DBRA through the submission of weekly payrolls as well as interviews with

laborers. RISE utilizes its Davis-Bacon FTP Submission website and electronic tracking system to both track and monitor weekly payroll submissions by contractors.

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.

Fair Housing

The Fair Housing Act requires all grantees, sub-recipients, and/or developers funded in whole or in part with HUD financial assistance to certify that no person was excluded from participation in, denied the benefit of, or subjected to discrimination in any housing program or activity because of their age, race, color, creed, religion, familial status, national origin, sexual orientation, military status, sex, disability or marital status. RISE enforces the Fair Housing Act by ensuring that all grantees, sub-recipients, and/or developers meet the applicable Fair Housing and Affirmative Marketing requirements and provide a marketing plan and report on compliance in accordance with the Fair Housing Act and the associated forms on HCR's website, where applicable. The Affirmative Marketing Plan must be in compliance with applicable Fair Housing Laws and demonstrate how the Applicant will affirmatively further fair housing throughout applicable RISE disaster recovery programs.

Fair Labor Standards Act of 1938, as Amended (FLSA)

The Fair Labor Standards Act of 1938[4] (FLSA) establishes the basic minimum wage levels for all work and requires the payment of overtime at the rate of at least one and one-half times the basic hourly rate of pay for hours worked in excess of 40 per week.[5] These labor standards are applicable to the entire construction contract whether or not CDBG-DR funds finance only a portion of the project. Excluding the exceptions listed below, all workers employed by contractors or subcontractors in the performance of construction work financed in whole or in part with assistance received under RISE CDBG-DR program must be paid wages at rates not less than those prevailing on similar construction in the Locality as determined by the Secretary of Labor in accordance with the Davis-Bacon Act, as amended. In some cases, Commonwealth of Virginia Prevailing Wages and Davis-Bacon Prevailing Wages both apply. In such instances, the higher of the two prevails.

Exceptions to Fair Labor Standards Act of 1938, as Amended (FLSA) include:

- Construction contracts of $2,000 or less;
- Real property acquisition;
- Architectural and engineering fees;
- Other services (such as legal, accounting, construction management);
- Other non-construction items (such as furniture, business licenses, real estate taxes);
- Rehabilitation of residential property designed for fewer than eight families; and,
- Demolition and/or clearance activities, unless related to construction (demolition and clearance as independent functions are not considered construction). Contact a RISE CDBG-DR Labor Specialist for assistance.

Limited English Proficiency (LEP)

Federal Executive Order 131661 and State Executive Order #26 require RISE and all satellite offices, programs, subrecipient, contractors, subcontractors, and/or developers funded whole or in part with CDBG-DR financial assistance to ensure fair and meaningful access to programs and services for families and individuals with LEP and/or Deaf/Hard of Hearing. RISE ensures fair access through the implementation of a Language Assistance Plan (LAP) which includes non-English based outreach, translation services of vital documents, free language assistance services, and staff training. RISE's LEP Coordinator is responsible for coordinating all activities associated with the LAP, and the (MCD) monitors its implementation. Refer to the "Language Assistance Plan" Provision of Language Assistance Services for additional guidance and protocols. Refer to the "Language Assistance Plan" Provision of Language Assistance Services for additional guidance and protocols.

Minority/Women-Owned Business Enterprises (MWBE)

The federal Executive Order 12432 guidelines requires for selected federal agencies to promote and increase the utilization of Minority Business Enterprises. 24 CFR 85.36 requires grantees to ensure that all sub-recipients, contractors, sub-contractors, and/or developers funded in whole or in part with HUD CDBG-DR financial assistance to make a commitment or demonstrate an acceptable "good faith effort" toward ensuring that contracts and other economic opportunities are directed to small and minority firms, women's business enterprise, and labor surplus area firms. In addition, RISE ensures compliance by requiring sub-recipients, contractors, and/or developers to achieve an overall MWBE participation goal of 30 percent of the entire contract value, consisting of 15 percent for Minority-Owned Business Enterprises (MBE) and 15 percent for Women-Owned Business Enterprises (WBE). RISE verifies MWBE certification and monitors to ensure compliance with all reporting requirements.

Section 3

Construction projects over $100,000 must comply with Section 3 hiring regulations. Section 3 of the Housing and Urban Development Act of 1968 requires grantees, sub-recipients, contractors, sub-contractors, and/or developers funded in whole or in part by the CDBG-DR funding, to the greatest extent feasible, extend hiring opportunities and contracts to Section 3 eligible residents and businesses. Section 3 eligible residents are low- and very low- income persons, particularly those who live or reside in public or government assisted housing. For those entities that receive more than $200,000 in HUD CDBG-DR assistance and contractors that are awarded covered contracts that exceed $100,000, RISE requires that an approved Section 3 plan be in place before the project is awarded and approved. RISE's Monitoring and Compliance Team monitors contracts with, sub-recipients, contractors, subcontractors, and/or developers. RISE manages the education and outreach efforts, reviews the proposed Section 3 Plans, and provides Technical Assistance (TA) when needed.

Appendices

Appendix A

General Instructions for Registering in DUNS/SAM.GOV

If you have not previously registered in DUNS or SAM, read all instructions below before you register in these
systems.

Important Facts

1. All organization/entity information MUST BE IDENTICAL IN BOTH DUNS and SAM.
   - You cannot enter one address for DUNS and then a different address for SAM. This will cause a
     system error and result in significant delays.
   - You cannot have unequal spacing between words in the primary contact information fields. Be very precise when entering all data.

2. Certain internet browsers work better than others for navigating the SAM system. If you have technical difficulties read "Browser Settings for Optimal Use of SAM": https://inside.fws.gov/media/FinancialAssistance/Documents/Browser%20Use%20of%20SAM.pdf

3. Obtaining a CAGE or NCAGE code is an important first step in this process.

4. For SAM Customer Service, contact:
   - Federal Service Desk: www.fsd.gov
   - US Calls: 1-866-606-8220
   - International Calls: 334-206-7828
   - You may also contact your DIC point of contact

5. There is no registration fee for DUNS or SAM for any organization that is a financial assistance recipient of the US government, including contracts, grants, and cooperative agreements.

6. There are businesses that will assist in registration for a fee, but you are not required to make payment to any DUNS representatives for purposes of contracts, grants, or cooperative agreements.

SAM.GOV Instructions: Read prior to application

1. Go to www.sam.gov

2. Click on the "Help" Tab.

3. Click on the "FAQs" Tab, read the "SAM User Help" information.

4. Click on the “User Guides” tab, then the “Quick User Guides” tab below.

5. Read the “Quick Start Guide for Entities Interested in Being Eligible for Grants.” https://www.sam.gov/sam/transcript/Quick_Guide_for_Grants_Registrations.pdf

6. Click on “Full User Guide” and download full instructions for completing SAM registration. This guide contains step-by-step screen shots to assist in the registration process.

7. Also under the “User Guides” tab are “Demonstration Videos:”
   - SAM Overview Video
   - Register a New Entity in SAM to be Eligible for Grants and Other Federal Assistance
   - Migrating Your Legacy System Roles

8. For SAM frequently asked questions (FAQs), go to: https://www.sam.gov/portal/public/SAM/

9. Once you have read through the formal instructions on the SAM website, you can use the instructions below for basic reference when entering SAM organizational information.

10. If you are awaiting an assistance award from DIC, please email your Grant Specialist once you have completed SAM registration.

Basic Instructions for completing SAM entry registration

1. First, complete DUNS registration for your organization. See below for DUNS information.

2. Click "Register New Entity" under "Manage Entity" on your "My SAM" page

3. Select your Entity type

4. Select "NO" to "Do you wish to bid on contracts?"

5. Select "YES" to "Do you want to be eligible for grants and other federal assistance?"

6. Complete "Core Data"
   - Validate your DUNS
   - Enter Business Information
   - Enter CAGE code if you have one. If not, one will be assigned to you after you have completed your registration. Non-domestic registrants must enter NCAGE code.
   - Enter General Information (business type, etc.)
   - Financial Info (EFT)
   - Proceedings detail

2. Complete "Point of Contact"

3. The entity's registration should be active in 3-5 business days (10 business days for manual validations.)

11. Click on “Full User Guide” and download full instructions for completing SAM registration. This guide contains step-by-step screen shots to assist in the registration process.

12. Also under the “User Guides” tab are “Demonstration Videos:”
    - SAM Overview Video
    - Register a New Entity in SAM to be Eligible for Grants and Other Federal Assistance
    - Migrating Your Legacy System Roles

13. For SAM frequently asked questions (FAQs), go to: https://www.sam.gov/portal/public/SAM/

14. Once you have read through the formal instructions on the SAM website, you can use the instructions below for basic reference when entering SAM organizational information.

15. If you are awaiting an assistance award from DIC, please email your Grant Specialist once you have completed SAM registration.

Basic Instructions for completing SAM entry registration

1. First, complete DUNS registration for your organization. See below for DUNS information.

2. Click "Register New Entity" under "Manage Entity" on your "My SAM" page

3. Select your Entity type

4. Select "NO" to "Do you wish to bid on contracts?"

5. Select "YES" to "Do you want to be eligible for grants and other federal assistance?"

6. Complete "Core Data"
    - Validate your DUNS
    - Enter Business Information
    - Enter CAGE code if you have one. If not, one will be assigned to you after you have completed your registration. Non-domestic registrants must enter NCAGE code.
    - Enter General Information (business type, etc.)
    - Financial Info (EFT)
    - Proceedings detail

4. Complete "Point of Contact"

5. The entity's registration should be active in 3-5 business days (10 business days for manual Validations.