



Resilient Rhody 2025

Executive Climate Change Coordinating Council

March 2026

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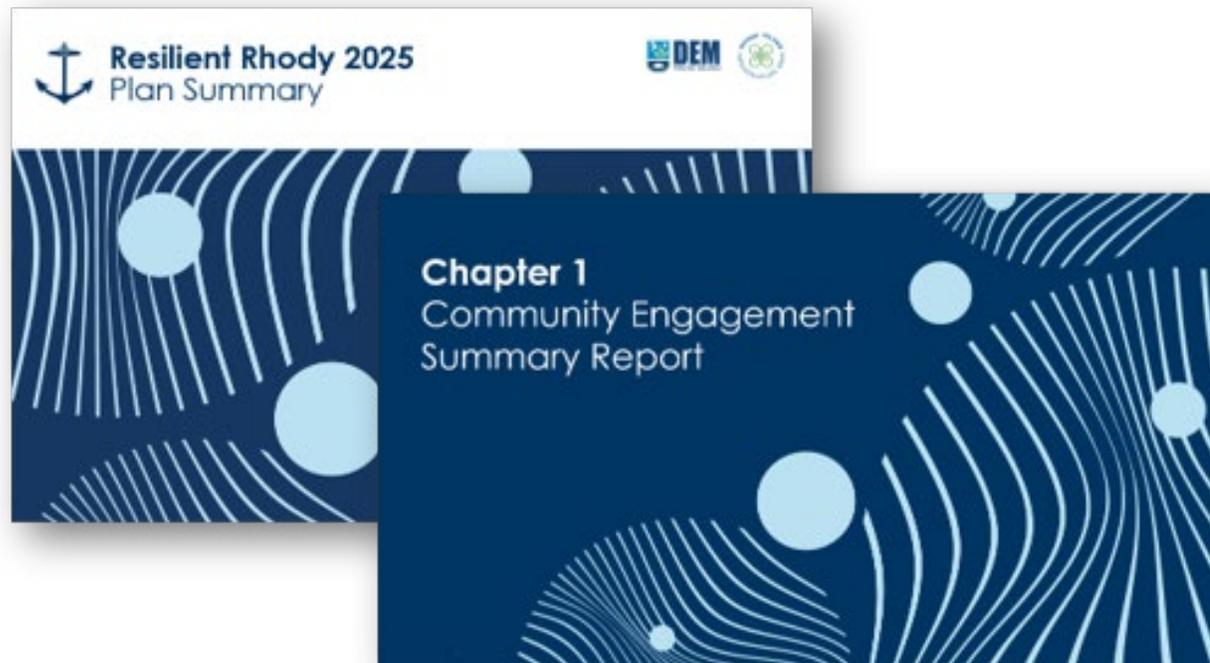
Resilient Rhody 2025 Agenda

- **Introduction**
 - *Resilient Rhody 2025* Overview
 - Scope
- **Statewide Climate Vulnerability Assessment**
- ***Resilient Rhody 2025* Actions**
- **Priority Assets & Solutions**
- **Future Investment Strategy**
- **Engagement Outcomes & Highlights**
- ***Resilient Rhody 2025* Key Takeaways**
- **Conclusion**
 - Open Discussion

Resilient Rhody 2025 Overview

Resilient Rhody 2025 is organized into a Plan Summary and nine supporting chapters.

The Plan Summary provides an accessible overview of key takeaways, while each chapter offers a more detailed explanation of the methodology, engagement approach, and findings.



Plan Summary

Purpose

Scope

Executive Summary

Engagement Process

Statewide Climate Vulnerability Assessment

Resilient Rhody 2025 Actions

Climate Adaptation & Resilience Solutions

Future Investment Strategy

Chapters

Chapter 1: Community Engagement Summary Report

Chapter 2: Resilient Rhody 2025 Actions

Chapter 3: Statewide Climate Vulnerability Assessment

Chapter 4: Priority Assets List

Chapter 5: Climate Adaptation & Resilience Solutions

Chapter 6: Future Investment Strategy

Chapter 7: Funding & Financing Mechanisms Inventory

Chapter 8: Prioritization Framework

Chapter 9: Resilience Best Practices

Resilient Rhody 2025 Scope

State Resilience Action Development

Identifies and advances **79 high-impact actions** to protect Rhode Island's residents, economy, and natural resources.

Statewide Climate Vulnerability Assessment

Conducted the state's **first comprehensive evaluation of climate risks** across **21 asset types** and **over 130,000 assets** for **five major hazards** under multiple time horizons and greenhouse gas scenarios.

Community engagement serves as the throughline across all components, ensuring local voices shape priorities and outcomes.

Resilient Rhody 2025 Scope

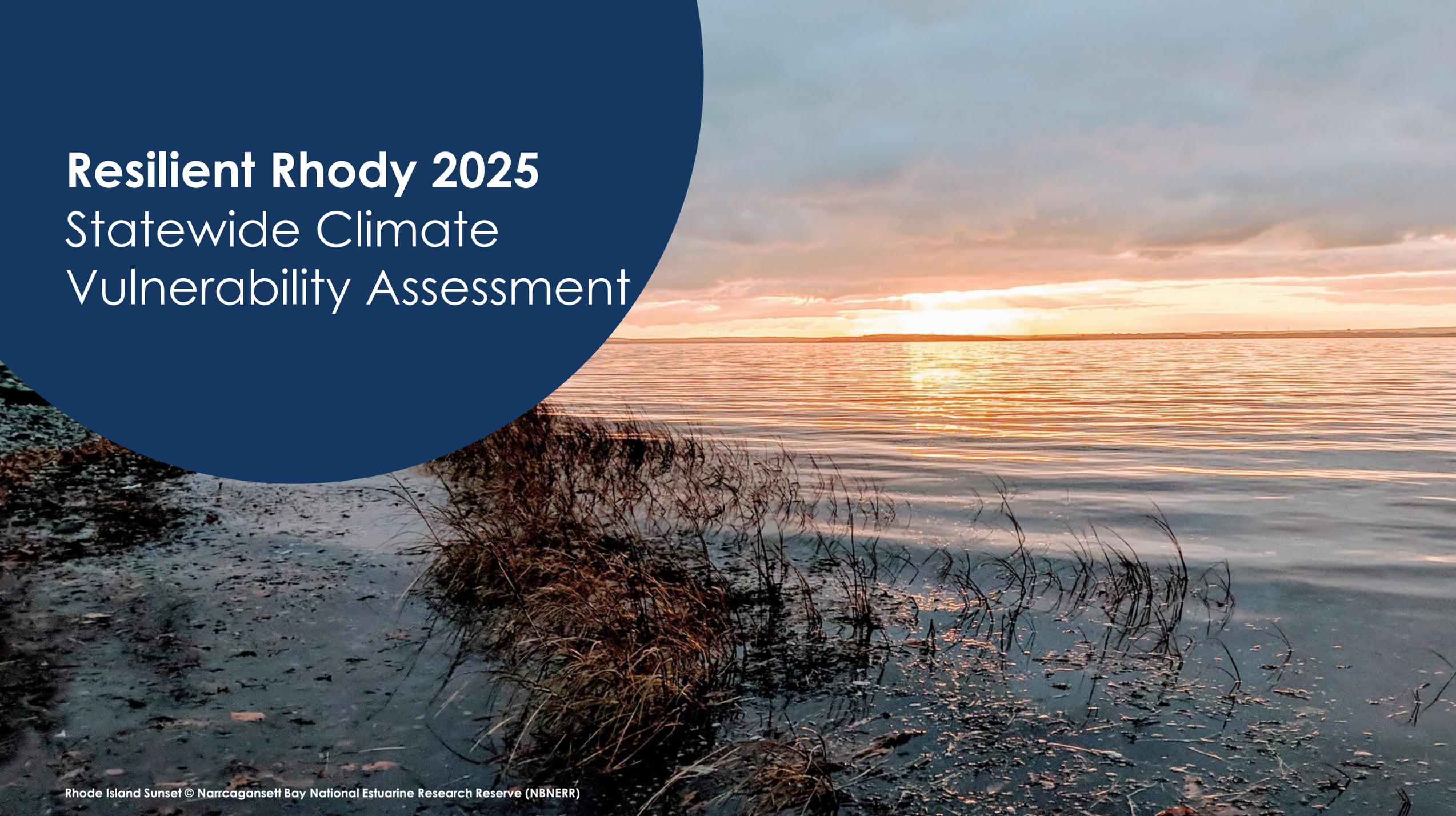
Climate Adaptation & Resilience Solutions

Outlines and costs **10 priority solutions** for critical assets, informed by vulnerability findings and community-driven prioritization.

Future Investment Analysis and Strategy

Outlines **funding pathways**, legislative needs, and strategies to implement actions and solutions effectively.

Community engagement serves as the throughline across all components, ensuring local voices shape priorities and outcomes.



Resilient Rhody 2025

Statewide Climate Vulnerability Assessment

Resilient Rhody 2025 Vulnerability Assessment

Five climate hazards were evaluated: coastal flooding, stormwater flooding, riverine flooding, extreme heat, and extreme wind.

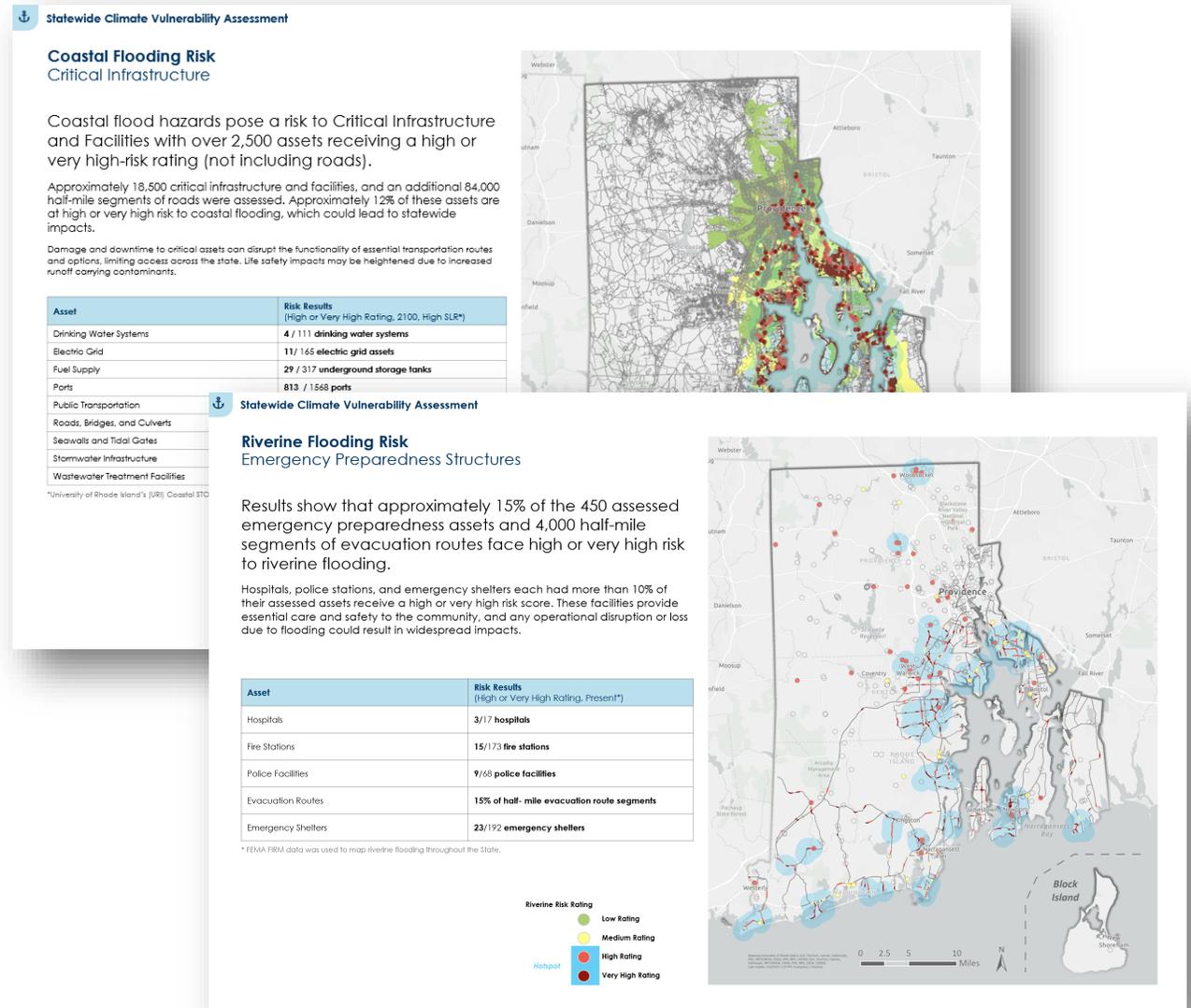
These hazards were assessed across **four time horizons** (current, 2035, 2050, and 2100), using **two greenhouse gas emission scenarios**—intermediate (SSP2-4.5) and very high (SSP5-8.5).

The analysis covered **21 asset types** grouped into four categories:

- Critical infrastructure and Facilities
- Natural Systems
- Community Resilience structures
- Emergency Preparedness Structures

A total of over **130,000 assets** were analyzed, including nearly 90,000 half-mile segments of roads and evacuation routes.

Approximately **10,000 assets** were classified as high or very high at risk (excluding roads and evacuation routes).



Resilient Rhody 2025 Key Findings

Coastal Flooding



Approximately **18%** of the assets assessed for coastal flooding will have **high or very high risk by 2100.**

The percentage of assets at high or very high risk to coastal flooding is projected to **increase by 5% between present day and 2100.**

Data Sources: STORMTOOLS, FEMA

Stormwater Flooding



By 2100 all counties could experience over 10 inches of rainfall during a 24-hr 100-yr storm.

Providence County currently has the highest rainfall totals and is projected to continue experiencing the greatest rainfall through 2100.

Data Sources: NOAA, NRCC, IPCC AR6: 24-hr 100-year storm

Riverine Flooding



Approximately **10%** of the assets assessed for riverine flooding **currently face high or very high risk.**

Approximately 17% Community Resilience assets face high or very high risk, totaling 128 at-risk assets including **more than one out of every ten PreK-12 school or college and university.**

Data Sources: FEMA

Extreme Heat



By 2100 under the SSP5-8.5 scenario, **all counties are projected to experience over 30 days per year above 90°F.**

Data Sources: NASA Earth Exchange GDDP: Heat Index; NOAA: Annual Number of Days above 90 °F and 95°F

Extreme Wind



Present-day extreme wind speeds are relatively consistent across counties, ranging from approximately 130 to 140 mph.

By 2100, wind speeds are projected to rise sharply, with Newport and Washington counties projected to reach 150 mph.

Data Sources: ASCE7 Hazard Tool; IPCC AR 5: Design Wind Speeds

Resilient Rhody 2025 Actions



Resilient Rhody 2025 Resilient Rhody Actions

79 State Resilience Actions

Four Categories:

1. **Critical Infrastructure** & Systems
2. **Natural Systems**, Preservation, and Restoration
3. **Community Resilience**, Funding, & Financing
4. **Emergency Preparedness**, Response, Procedures, and Coordination

Asset Type	Number of Actions
Critical Infrastructure	38
Statewide Resilience: All Critical Systems	14
Drinking Water	4
Wastewater	3
Dams	1
Stormwater Infrastructure	3
Ports	2
Electric Grid	4
Fuel Supply	2
Roads, Bridges, and Culverts	3
Public Transportation	2
Natural Systems	14
Beaches and Barriers	5
Coastal Wetlands	3
Forests	4
Water Resources	2
Community Resilience	18
Community Health & Resilience	10
Resilience Funding	5
Cross Sector Resilience	3
Emergency Preparedness	9
Building Design and Construction	3
Evacuation Routes & Emergency Shelters	2
Emergency Services	4

Resilient Rhody 2025 Resilient Rhody Actions

Action Components

1. **Action Language & Asset Type**
2. **Responsibility**
(Lead Agency)
3. **Action Driver**
(Community/Municipal Forum, State Agency, State Partner)
4. **Timeframe**
(Short 1-2yr, Medium 2-5yr, or Long/Ongoing)
5. **Metrics for Success**
6. **Implementation Needs**
(Funding, Policy & Compliance, Tools & Training, Coordination)
7. **Funding Needs**
8. **Potential Funding Source**

Action 14.01

State Resilience Action Tracking: Refine the tracking system for State resilience actions identified in this plan to continually measure progress and demonstrate alignment with EC4 climate resilience goals. Make sure tracking includes agency ownership, defined timelines, and regular progress updates through the EC4 and Resilience EC4 Subgroup.

Building upon the structure of the 2024 State of Resilience Report and Resilience EC4 Subgroup, continue to grow a coordinated, publicly-accessible mechanism to share progress, foster collaboration across agencies, and build coalitions across sectors and communities.

Category:

- Infrastructure
- Natural Systems
- Community Resilience
- Emergency Preparedness

Asset Type:

- | | | | | |
|--|--------------------------------|--------------------|-------------------------------|---------------------------------------|
| All Critical Infrastructure | Drinking Water | Wastewater | Dams | Stormwater |
| Ports | Electric Grid | Fuel Supply | Roads, Bridges, & Culverts | Public Transportation |
| Beaches & Barriers | Coastal Wetlands | Forests | Water Resources | |
| Evacuation Routes & Emergency Shelters | Building Design & Construction | Emergency Services | Community Health & Resilience | Financing Climate Resilience Projects |

Responsibility:

RIDEM, Resilience EC4 Subgroup

Timeframe:

- Short-Term (1-2 years)
- Medium-Term (2-5 years)
- Long-Term (Ongoing)

Driver:

- State
- Gap Analysis
- Community
- Partner
- Municipal

Metrics for Success:

- A coordinated, publicly-accessible tracking system to measure and share progress of State resilience actions is refined and made publicly accessible.

Implementation Need(s):

Intergovernmental Coordination, Collection & Information Systems, Education, Engagement, & Awareness

Potential Funding Source:

National Coastal Resilience Fund (NCRF)

Funding Need:

- N/A
- \$
- \$\$
- \$\$\$
- \$\$\$\$

- \$
- \$\$
- \$\$\$
- \$\$\$\$
- Non-monetary

Less than \$500k \$500k - \$1M \$1 - \$5M > \$5M Advocacy, efficiency, or priority setting actions where a dollar amount is not applicable, warranted, or quantifiable

Resilient Rhody 2025 Resilient Rhody Action Examples

Stormwater Infrastructure

3 Actions

Action 4.02 - Green Infrastructure & Water Quality: "...Encourage the integration of green infrastructure to enhance the capacity of traditional stormwater systems while delivering co-benefits such as improved water quality, ecosystem health, and community resilience... **Build incentives to utilize green infrastructure solutions into criteria for funding programs.** Publicize successful examples of green infrastructure projects. **Simplify the permitting process for these projects** (eg. streamlining, certification, etc.) and ensure guidance is clear on requirements for retrofits versus new development. Ensure there is also **guidance on the maintenance requirements** for green infrastructure."

Financing Climate Resilience Projects

5 Actions

Action 19.01 - Resilience Funding: "Develop **incentives to support the statewide adoption of climate resilience standards** and establish a consistent funding stream to assist municipalities in developing resilience ordinances. Strengthen State grant assistance for climate adaptation, including restoration, elevation, and buyout initiatives, to better leverage federal funding and assistance programs. Create new funding programs to specifically to **support voluntary buyouts; local vulnerability studies, hydrologic analyses, and watershed assessments, to inform best placement of adaptation solutions; emergency relief for non-federally declared disasters; maintenance of installed resilience solutions; and for other key needs** established throughout the State resilience actions. **Establish annual funding support** for these funds through State budget line items..."

Resilient Rhody 2025 Resilient Rhody Action Examples

Community Health & Resilience

10 Actions

Action 18.02 - Model Ordinances: "Develop **model municipal ordinances** to ensure climate resilience goals are met, ensuring that development does not occur in floodplains, highly erosive areas, and other climate vulnerable locations. **Make model ordinances accessible to municipalities** through a web library of these resources. Support implementation of resilience ordinances locally, including grant funding for municipalities needing legal assistance to implement. **Build off the existing model floodplain ordinance** that gets adopted by each municipality affected by a FEMA map update."

Action 18.09 - Community Resilience Planning: "Continue to develop **technical assistance and statewide support for bottom-up, community-led groups and Health Equity Zone (HEZ) community members, and Green Justice Zone (GJZ) curriculum stewards** to carry out planning and action to make their communities more climate resilient, including coordinated guidance on identifying and securing funding. **Engage community groups at the very beginning** of any State planning process. Continue to **develop Community Assessments for Climate Resilience & Implementation** as a partnership between the Executive Office of Health and Human Services and the Health Equity Zones as a part of this process."

Resilient Rhody 2025 Resilient Rhody Action Examples

Statewide Resilience: All Critical Systems

14 Actions

Action 14.05 - State Resilience Standards: "Develop **strengthened resilience standards across agencies and programs** that consider various assets, such as residential, commercial, roads, wastewater, stormwater, drinking water infrastructure, electrical infrastructure, and open space. Ensure that these resilience standards and any related permitting processes are streamlined and time effective.

Consider different timelines & scenarios across these categories, and establish a statewide, EC4 determination for SLR projection timelines to consider for specific assets. **Build upon existing State building codes and stormwater design standards** to inform this process. **Create a collaborative, consensus-driven process**—featuring municipal workshops and community engagement—to shape these standards, ensuring they reflect local needs and include input from vulnerable populations.

Conduct a **socioeconomic analysis of potential impacts to communities and businesses** to inform this process. As a part of this analysis, consider interaction of standards with insurance markets and funding & financing programs.

Provide **outreach and educational opportunities** to raise awareness of the new standards and clearly communicate them to municipalities (beyond just property owners)."



Resilient Rhody 2025

Climate Adaptation & Resilience Solutions

Resilient Rhody 2025 Prioritization Approach

Step 1: Statewide Climate Vulnerability Assessment

Assets determined to be at **high or very high risk** in the Statewide Climate Vulnerability Assessment were considered for inclusion in the prioritization process. This initial screening encompassed approximately **10,000 assets**.

Step 2: Intra-Asset Comparison

Assets were evaluated within their respective categories using **criteria tailored to each asset type**, such as role in emergency response, service capacity, and redundancy. This process reduced the list to approximately **200 assets**.

Step 3: Cross-Type Comparison

From an initial screening of approximately **200 assets**, assets were compared across categories using a **weighted scoring system**. Weightings for criteria were developed based on **aggregated feedback from stakeholder working sessions and community forums**. This approach ensured alignment with the Plan's objectives and strategic priorities.

Review & Engagement Process

After the list was narrowed to approximately **40 assets**, sites identified during community forums, municipal stakeholder sessions, technical assistance meetings, and annual resilience updates were reviewed and added. Assets were then added or removed as appropriate, ensuring that the final list reflected both technical criteria and community priorities.

Asset or Solution Type	Asset	Municipality	
Road & Bridge Flood Mitigation (Evacuation Focused)	Newport Bridge	Jamestown, Newport	
	Route 114 Corridor I-95 in Cranston	East Providence, Bristol, Warren, Barrington Cranston	
Resilient Port Infrastructure Solutions	Block Island - Port of Galilee Ferry Connectivity	New Shoreham, Narragansett	
	Port of Providence Infrastructure	Providence	
Energy Resilience Solutions with a focus on Washington County and Block Island	Block Island Energy Resilience (Transmission Lines & BIPC Connectivity)	New Shoreham	
	Washington County Transmission Lines	Multiple	
Sewer & Stormwater Infrastructure Solutions	Pawtucket Combined Sewer & Stormwater Infrastructure	Pawtucket	
	Westerly Stormwater Infrastructure	Westerly	
	Providence Sewer Overflows Mitigation	Providence	
	East Providence Sewered Area	East Providence	
	West Warwick Sewered Areas	West Warwick	
	East Greenwich Sewered Areas	East Greenwich	
Wastewater Treatment Facility Hardening	Westerly Wastewater Treatment Facility	Westerly	
	Cranston Wastewater Treatment Facility	Cranston	
	Bucklin Point Wastewater Treatment Facility	East Providence	
	Bristol Wastewater Treatment Facility	Bristol	
	West Warwick Regional Wastewater Treatment Facility	West Warwick	
Drinking Water & Reservoir Resilience	Jamestown Wastewater Treatment Facility	Jamestown	
	Schuette Reservoir	Schuette	
	Gardiner Pond Reservoir	Newport- Middletown	
	Easton Pond Reservoir & Dam	Newport- Middletown	
	Nelson Pond Reservoir	Newport- Middletown	
	Green East Pond Reservoir	Newport- Middletown	
Beach & Wetland System Restoration	North and South Pond Reservoir	Jamestown	
	Washington County Coastal Wetlands	Narragansett, North Kingstown, Westerly, Charlestown	
	Soll Pond Region Beaches and Barriers	Charlestown, Narragansett, South Kingstown, Westerly	
	Napatree Barrier Beach	Westerly	
	Newport County Coastal Wetlands	Newport, Portsmouth, Middletown, Little Compton, Tiverton, Jamestown	
River & Stream Restoration with a focus on the Moshassuck River	Bristol County Coastal Wetlands	Bristol, Warren, Barrington	
	Moshassuck River	Lincoln, Providence, Pawtucket, Central Falls	
Hospital Flood & Energy Resilience Solutions	Rhode Island Hospital	Providence	
	Landmark Medical Center (Woonsocket Hospital)	Woonsocket	
	South County Hospital	South Kingstown	
School & Public Safety Building Solutions	Narragansett Public Safety Building	Narragansett	
	North Schuette Fire Department	Schuette	
	Eveready Fire Station	Bristol	
	Chepachet Fire Department	Chepachet	
	Barrington High School	Barrington	
	Noyatt School	Barrington	
	Sowams Elementary School	Barrington	
	Mt. Hope High School	Bristol	
	Western Hills Middle School	Cranston	
	Cranston High School West	Cranston	
Vincent J. Gallagher Middle School	Smithfield		
Tox Point Hurricane Barrier Alignment	Old County Road Elementary School	Smithfield	
	Fox Point Hurricane Barrier	Providence	
Advancing Providence Station Resilience Measures	Providence Station	Providence	
	Furthering Regional Flood Planning Efforts	Barrington Coastal Flooding	Barrington
		Westerly Rivertine Flooding	Westerly
		Woonasquaket Corridor	Providence
		Pawtucket Corridor	Cranston, Warwick
		Market to Metacom	Warren
		North Kingstown & Wickford Commercial District	North Kingstown, Wickford
		Silver Creek	Bristol
		Richmond Rivertine Flooding	Richmond
		Com Neck Road	New Shoreham
Creek Bridge		Charlestown	
Poppasquash Road	Bristol		
Roads and Bridges	North Road	Jamestown	
	Roads and Bridges in Richmond	Richmond	
Hardened Structures	Coit State Park Bridges and Roads	Bristol	
	Charlestown Breachway & Inlet Structures	Charlestown	
Public Transportation	Bristol Harbor Seawalls	Bristol	
	Providence Ferry - Bristol - Providence Island - Portsmouth	Providence, Portsmouth, Bristol	
Stormwater Infrastructure	Shoreline Sewer Main on Ferry Road	Bristol	
	New Shoreham Transfer Station	New Shoreham	
Waste Management Facility	Portsmouth Park and Island Park	Portsmouth	
	Blackstone Canal	West Greenwich	
Conservation Lands	Big River Management Area	Lincoln	
	Wood-Pawcatuck River	Washington County	
Rivers and Streams	Pawtucket River	Kent and Providence Counties	
	Warwick Housing Authority	Warwick	
Housing	Warwick Housing Authority	Warwick	
	Island Park and Portsmouth Park Housing	Portsmouth	
	Wickford Housing	North Kingstown	
	Silver Creek Nursing Home	Bristol	

Resilient Rhody 2025 Priority Assets List
The Priority Assets List is the result of a comprehensive vulnerability assessment, prioritization process, and integration of statewide feedback.

Priority Assets List to Inform Solution Development
46 Assets

Priority Assets for Alignment
10 Assets

Additional Priority Assets
20 Assets

Resilient Rhody 2025 Priority Asset List

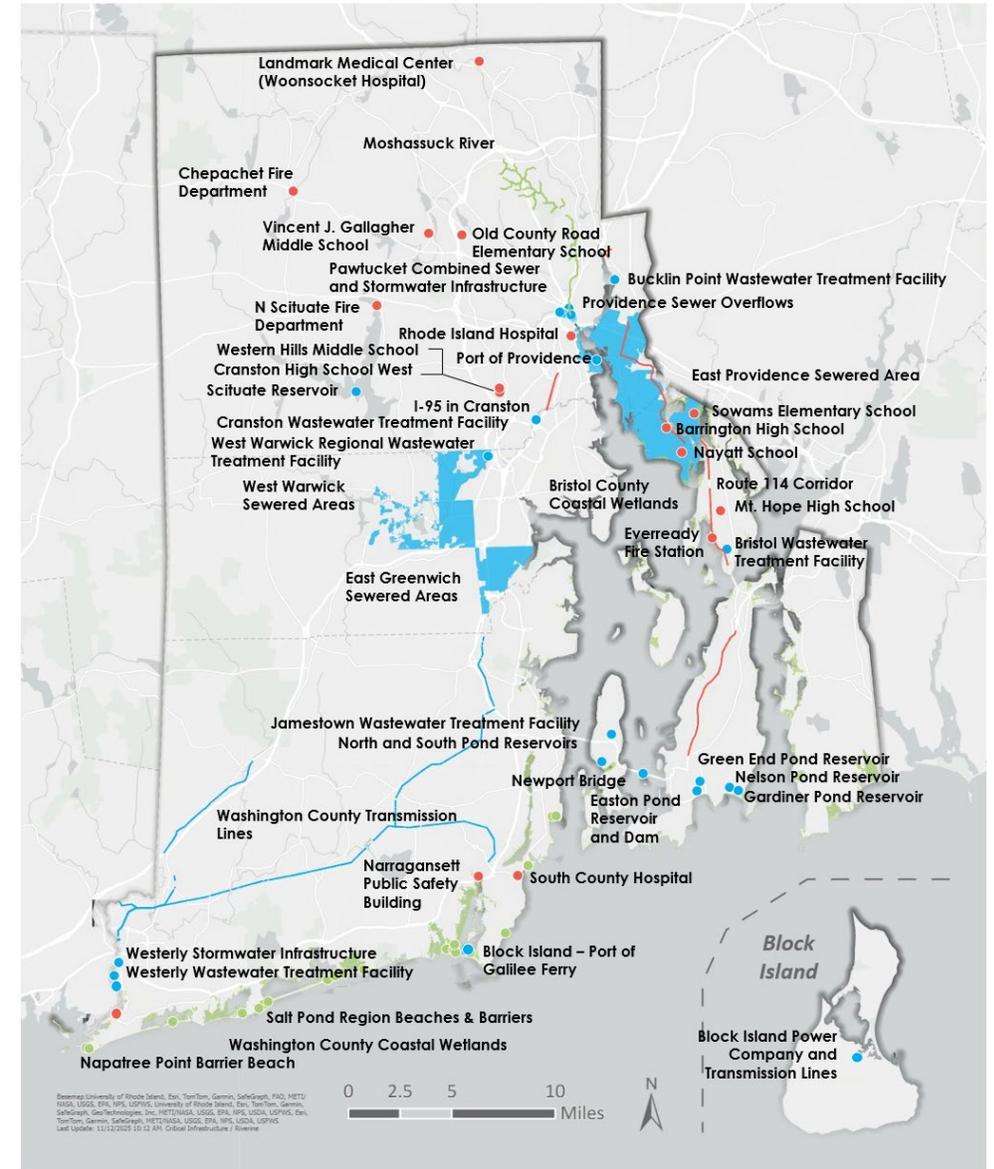
This process resulted in **46 priority assets to inform solution development**, 10 for state alignment, and 20 additional priority assets.

These assets were identified as high-risk to one or more assessed hazards, aligned with prioritization criteria, and confirmed through the engagement process.

These assets informed the ten developed and costed strategies described in Chapter 5: Climate Adaptation & Resilience Solutions.

Assets

-  Critical Infrastructure & Facilities
-  Natural Systems
-  Community Resilience & Emergency Preparedness Structures



Resilient Rhody 2025 Adaptation & Resilience Solutions

Critical Infrastructure & Facilities

1. **Road & Bridge Flood Mitigation Solutions** with a focus on evacuation routes
2. **Resilient Port Infrastructure Solutions**
3. **Energy Resilience Solutions** with a focus on Washington County and Block Island
4. **Sewer & Stormwater Infrastructure Solutions**
5. **Wastewater Treatment Facilities Hardening**
6. **Drinking Water & Reservoir Resilience**

Natural Systems

7. **Beach & Wetland System Restoration**
8. **River and Stream Restoration** with a focus on the Moshassuck River

Community Resilience & Emergency Preparedness Structures

9. **School & Public Safety Building Solutions** with a focus on hardening and relocation opportunities
10. **Hospital Flood & Energy Resilience Solutions**

These **10 solutions** with over **40 sub-strategies** were developed and **costed as outlined in Chapter 5: Climate Adaptation & Resilience Solutions based on the priority assets identified herein** while remaining flexible to accommodate additional assets as needed.

Resilient Rhody 2025 Adaptation Solutions Framework

Solution Mechanism



Protect

Defend vulnerable areas using **physical or engineered measures**



Accommodate

Adapt buildings and infrastructure to withstand changing conditions



Restore

Rehabilitate natural systems to buffer against hazards

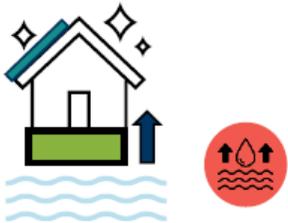


Rethink

Reevaluate planning strategies and support people, infrastructure, and critical assets relocate away from high-risk areas

Strategy Examples

Building & Infrastructure Retrofits



Ex. **Elevating and reinforcing structures**

Shoreline Protection



Ex. Engineered measures such as berms and **living shorelines** that stabilize coasts

Green Infrastructure Solutions



Ex. **Nature-based solutions** like rain gardens that capture and filter stormwater

Zoning & Regulation



Ex. Implementing land-use **policies** and **development standards** that steer growth away from high-risk areas

Resilient Rhody 2025 Adaptation Solutions

A Priority Assets Summary Pages

- Overview of asset type and climate hazard challenges
- List of at-risk assets and statewide map

B Solution Summary Pages

- Past and ongoing state initiatives
- Steps for Implementation

C Solution Strategy Pages

- Details on strategy mechanisms, innovation level, hazards addressed, and relative cost

D Funding Strategy Pages

- Summary of costs, benefits, and economic impacts of intervention
- Summary of cost of consequence
- Potential state and federal funding sources and mechanisms
- State role in supporting project type

A Road & Bridge Flood Mitigation Solutions with a focus on evacuation routes

This chapter outlines adaptation solutions for bridges and roads, focusing on evacuation routes. Road and bridge flood mitigation strategies are focused on reducing flood damages to roads that cause transportation disruption throughout the state.

The strategies presented were developed in this plan. The adjacent map illustrates how priority assets identified for this plan are distributed statewide. While these assets informed the plan, they can be applied to additional locations if they capture the breadth of critical assets. For instance, I-95 in Providence and Newport Bridge serve as vital corridors.

B Road & Bridge Flood Mitigation Solutions Summary

Flooding from heavy rain, rivers, and coastal storms increasingly threatens low lying roads and bridges throughout the state. Flooding can wash out roads, weaken bridges, and cut off safe routes, including emergency evacuation routes. Strategies like road raising, flood barriers, nature-based solutions (NBS), and strategic relocation help keep evacuation routes accessible.

More frequent and intense storm events are increasing the risk of flooding on roads and bridges, especially along critical evacuation routes like Route 114, which spans from East Providence to Bristol, and I-95 in Cranston and Providence. Flooding in these areas has caused repeated closures, erosion of embankments, damage to bridge foundations, limiting safe access for residents and emergency responders. These routes are also vital evacuation routes. Flooding events cause damage leading to isolation, safety hazards, and costly repairs.

Communities can adopt a mix of strategies tailored to local conditions, including elevating roads, implementing NBS, improving storm sewer system capacities, constructing flood barriers, and upgrading culverts of road and stream crossings.

Communities can also consider more innovative physical interventions, developing a climate data platform is essential to help municipalities identify effective flood mitigation measures and advance the RDOT Resilience Improvement Plan.

C Road & Bridge Flood Mitigation Strategies

Depending on site-specific conditions, communities may identify and implement a range of options for a particular project area. Raising roads, installing elevated roadways, and installing flood barriers, such as restored wetlands and vegetated slopes, can absorb runoff, store floodwaters, and break down wave energy before reaching coastal roadways. In some areas, choosing to retrofit and build out risk properly can support floodwater storage and permanently remove vulnerable built infrastructure from risk.

D Road & Bridge Flood Mitigation Strategies Funding Strategy

Evacuation route mitigation solutions in Rhode Island can be supported by both federal and state transportation funding programs. The following sections summarize anticipated implementation costs, cost effectiveness considerations, and the life safety, accessibility, and community benefits these solutions provide. It also outlines a funding strategy to identify the necessary next steps the State needs to take to construct and implement the road and bridge solutions.

Costs

Costs for this group of strategies generally focus on roadways, nominally used for a one-mile stretch. Projects involving greater roadway extent, increased height, and right-of-way acquisition (excluded from this exercise) will require greater capital investment and schedules. Cost and resilience for these strategies are generally positively correlated, with the most resilient and enduring strategy having the most resilience and greatest cost. However, the highest resilience solution is also associated with the longest and low maintenance, reducing the need for long-term investments significantly. Although this strategy assumes the construction of a new road to replace the deteriorated existing road, the road could theoretically be abandoned if the broader transportation network could accommodate the steps that previously utilized the abandoned route; this approach would result in lower capital cost.

Benefits

Flood mitigation strategies protect roads and bridges, allowing transportation routes to remain operational during extreme flood events. The SCV assessment estimated that Route 114 Corridor currently experiences 5.1 ft of flooding during a 100-year coastal flood event, and this is projected to increase to 7 ft by 2100. Interstate 95 is expected to see an increase of 4.8 ft in coastal flood levels for the 500-year coastal flood between now and 2100. These assets are designated FEMA evacuation routes that are critical pathways to hospitals and other emergency providers. Roads also serve as RDOT bus routes. Their continued operation is urgent to preserving the safety and daily life commute for all Rhode Islanders. Implementation of the resilient strategies reduces damage, minimizing the amount of clearing and funding efforts needed to restore roads and bridges after a flood event. When implemented, NBS bring co-benefits of enhanced biodiversity and ecosystems.

Economic Impacts

Investing in flood-resilient roads and bridges generates significant economic returns through construction employment, reduced repair costs, and sustained commerce. Infrastructure improvements create immediate jobs in engineering, construction, and materials supply while preventing costly emergency repairs and economic losses from road closures. Maintaining accessible evacuation routes and RDOT bus services protects workforce mobility and business continuity. By avoiding repeated flood damage, Rhode Island saves millions in reconstruction costs while preserving tax revenue from unimpeded commercial activity. These investments strengthen supply chains, support jobs, and enhance property values, demonstrating clear flood returns.

Consequence of Inaction

The consequence of inaction on Rhode Island's road and bridges is medium-high. Roads are highly at risk for damage and disruption when they are inundated by 2 ft of flooding, and Route 114 currently is expected to be exposed to more than 2 ft of flooding during a 100-year coastal storm. Inaction could lead to disruptions in emergency response and economic activity. Route 114, and the Newport Bridge are key corridors that connect communities, hospitals, and other critical infrastructure.

Funding Strategy

These funding programs provide strong support for transportation resilience projects that reduce flooding along critical roads and bridges. The PROTECT Program advances elevation, drainage upgrades, and nature-based right-of-way solutions, while the Municipal Road & Bridge Revolving Loan Fund enables municipalities to finance essential road and bridge improvements that strengthen long-term performance. These mechanisms help advance flood-ready transportation corridors across Rhode Island.

Mechanism Title: Promoting Resilience Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) Program

Mechanism Type: Grant/Formula Funding

Level: Federal

Agency: US Department of Transportation

The PROTECT Program funds transportation resilience projects that reduce climate-driven risks to roads, bridges, and evacuation routes. Eligible activities include elevating road segments, installing flood barriers, upgrading drainage and culverts, and integrating nature-based practices within transportation right-of-way. PROTECT also supports planning for long-term adaptation of key travel corridors.

State Role: Provide statewide flood, hydrology, and risk data to support project scoping, and coordinate with RDOT on design standards.

Next Steps: Complete preliminary flood assessments and coordinate with RDOT to position projects for PROTECT funding.

Mechanism Title: Municipal Road & Bridge Revolving Loan Fund (MRBF)

Mechanism Type: Low-interest Loan/Technical Assistance

Level: State

Agency: Rhode Island Infrastructure Bank (RIIB)

MRBF provides low-interest financing for municipal transportation projects that improve the safety, condition, and resilience of local roads and bridges. Funds can support elevation of roadways, flood mitigation retrofits, drainage upgrades, and protective infrastructure in areas experiencing chronic flooding.

State Role: Provide technical review and coordination with RDOT on design standards.

Next Steps: Prepare preliminary design materials and project readiness inquiry to RIIB and coordinate with RDOT on permitting and engineering requirements.

Community Voices

“Road projects that don't include green and complete streets” - attendees at the Municipal Stakeholder Meeting in November 2025.

Are there any resilience projects or solution types that the State should stop investing in or potentially phase out?

Notes: The Funding Strategy outlines two potential mechanisms for implementing project solutions; however, it does not represent a comprehensive list of all available funding options. For a complete overview, please refer to the Future Investment Strategy.

Resilient Rhody 2025 Adaptation Solutions Examples

Sewer & Stormwater Strategies

Develop Nature-based Flood Storage

Safely storing stormwater during flood events can reduce hydraulic loads to the conveyance system and move stormwater away from infrastructure. Storage opportunities exist in rural and urban conditions. Examples include designing and utilizing floodable parks, enhanced floodplains, and other open space to store water during floods when those spaces are not used. This approach is also a good way to create community co-benefits.



Floodable park space. Providence, RI
© Fuss & O'Neill, Inc.



School & Public Safety Building Strategies

Elevate Critical Infrastructure

Raise electrical panels, mechanical systems, and emergency generators above anticipated flood levels to maintain functionality during storm events and reduce downtime. Where elevation is not feasible, use waterproof enclosures and secure anchoring to prevent damage. Aging school infrastructure often lacks elevated critical equipment, making these measures essential to withstand future storms.



High Efficiency Boils mounted above the BFE
© Steven Winters Associates and Enterprise



Beach & Wetland Strategies



Weeakapug, RI © Redfin

Implement Voluntary Buyout Program

This strategy reduces risk by controlling where and how development occurs and by planning for the relocation of critical infrastructure away from eroding shorelines.

A voluntary buyout program for the most vulnerable coastal communities is recommended. The program will build off RI CRMC's existing adaptive development regulations that mandate setbacks and coastal buffer zones for new construction. However, this program will target existing buildings, offering incentives like voluntary buyouts and relocation programs. The time and resources required to acquire parcels will vary greatly based on market conditions, location, and assets located on the real estate of interest. Public engagement and equity considerations are essential to ensure fair implementation and community support.

For new development, additional regulations should limit new construction in high-hazard zones and require resilient design for redevelopment, while infrastructure planning focuses on phased relocation of roads, utilities, and public facilities to safer areas.

Rhode Island's Beach SAMP (Shoreline Change Special Area Management Plan) is central to this approach, providing science-based tools such as updated shoreline change maps, STORMTOOLS flood projections, and the Coastal Hazard Application process, which evaluates erosion and sea level rise risks before permits are issued.



Resilient Rhody 2025

Future Investment Strategy

Resilient Rhody 2025 Future Investment Strategy

Actions Funding Assessment

Each Action includes an estimated funding need, potential funding sources, and implementation requirements, which may fall under one or more of the following categories: Funding, Policy & Compliance, Tools & Training, and Coordination.

The Strategy additionally provides a summary of funding needs organized by agency, asset type, and focus area.

Funding Needs by Responsible Entity

The table below summarizes estimated funding requirements by the primary agency or organization responsible for implementing the Resilient Rhody 2025 Actions. Estimates reflect high-level, preliminary cost ranges associated with establishing programs, coordination mechanisms, data systems, and, where applicable, enabling infrastructure investment programs.

Responsible Entity	Number of Actions	Estimated Funding Range
RIDEM		
CRMC, RIDEM		
CRMC, RIEMA, RIDEM		
RIDEM, Resilience EC4 Subgroup		
Div. of Statewide Planning		
DPUC, PUC, OER, and Utilities		
WRB, RIDOH		
RIDEM, WRB		
RIEMA, RIDEM, RI Div. of Statewide Planning		
Commerce		
RIB, RIDEM		
RIDOH, EOHS		
OER		
RIB		
RIEMA		
Other State Agencies/Partnerships		
Total		

Action 1.02

Emergency Water Supply Management: Within Water Supply System Management Plans, ensure all major suppliers maintain up-to-date contingency contracts for emergency water supply purchases and have clearly defined interconnection and protocols for distributing alternative supply of safe drinking water. Establishment and mapping of emergency interconnections, mutual aid agreements, and distribution points for community resources. Establish mechanisms for bottled water purchase and distribution. Create a centralized coordination framework across drinking water utilities that allows for knowledge transfer and information sharing, as well as fosters partnerships for interconnection, merging, and mutual aid.

Category:

Infrastructure Natural Systems Community Resilience Emergency Preparedness

Asset Type:

All Critical Infrastructure Drinking Water Wastewater Dams Stormwater
 Pumps Electric Grid Fuel Supply Banks, Bridges, & Canals Public Transportation
 Beaches & Barren Coastal Wetlands Forests Water Resources
 Precipitation Events & Emergency Shelters Building Design & Construction Community Health & Resilience Resilient Climate Resilience Projects

Responsibility:

RIEMA w/ RIDOH Support, WRB

Driver:

State Gap Analysis Community
 Partner Municipal

Implementation Need(s): Intergovernmental Coordination, Collection & Information Systems, Enforcement & Compliance Mechanisms, Emergency Preparedness & Response Activities

Potential Funding Source: FEMA Emergency Management Performance Grant (EMPG), RIB - Drinking Water State Revolving Fund (DWSRF), DWSRF - Set Asides

Timeframe:

Short-Term (1-2 years) Medium-Term (3-5 years) Long-Term (Ongoing)

Metrics for Success:

- All major water suppliers maintain and update contingency contracts for emergency water supply purchases.
- and mapping of emergency interconnections is completed.

Funding Need:

N/A \$ \$5 \$55 \$555

Climate Adaptation & Resilience Solutions Assessment

The Strategy provides a recommended funding approach for the 10 priority Solutions, specifying primary funding mechanisms and the State's responsibilities in advancing these projects.



Drinking Water & Reservoir Resilience

Drinking water and reservoir resilience strategies are focused on reducing flooding and extreme heat impacts to Rhode Island's drinking water reservoirs, ensuring both quantity and quality of potable water. Strategies include restoring vegetated riparian buffers, enhancing existing emergency spillways, improving embankments, and building a desalination plant. Refer to Chapter 5: Climate Adaptation & Resilience Solutions for full strategy descriptions and cost estimates.

Primary Funding Mechanisms:

- RIB Drinking Water State Revolving Fund (DWSRF) - Spillway upgrades, watershed management, treatment protection, embankment reinforcement; possible principal forgiveness for disadvantaged communities.
- NOAA Coastal Resilience Grants - For coastal-influenced reservoir areas needing nature-based buffers.
- Rhode Island Voter-Approved Green Bonds - Capital investments for watershed protection, embankment reinforcement, and emergency spillway enhancements at publicly owned drinking water reservoirs.

Funding Approach

- Use DWSRF for all engineered components (spillways, embankments, structural protections).
- Pair with NOAA for watershed or shoreline stabilization and nature-based water-quality protection.
- Pursue early engineering reports with RIB technical assistance.
- Use match-eligible watershed partners (universities, NGOs) for NOAA co-applications.
- Use Rhode Island voter-approved Green Bonds to fund capital reservoir and watershed resilience investments and to provide required non-federal match for complementary federal programs.
- Establish Drinking Water Resilience Fund.

State Role

- Provide guidance on DWSRF project eligibility and support completion of preliminary engineering reports.
- Help identify opportunities for principal forgiveness for disadvantaged communities.
- Coordinate with CRMC to provide consistency determinations for coastal-influenced reservoirs.
- Provide technical data on algal blooms, runoff pollution, and saltwater intrusion risks.

Resilient Rhody 2025 Future Investment Strategy

Prioritization Framework

Provides an effective, transparent, and equitable roadmap to support state and local climate leaders systematically evaluate other candidate assets and projects beyond this Plan.

Criteria		
Need: How vital an asset is to the safety, stability, and functioning of interconnected systems or sectors.	N1	Life Safety
	N2	Urgency
	N3	Criticality
	N4	Redundancy
	N5	Number of People Impacted
Equity and Community Support: Whether an asset serves or protects vulnerable populations, aligns with community priorities, promotes environmental justice, and protects economic opportunities.	E1	Supports Vulnerable Populations
	E2	Community Supported
	E3	Advances Environmental Justice
	E4	Protects Economic Resources
Strategic Alignment: municipal, regional, comprehensive and	Criteria	
	Cost Factors: Captures the overall financial commitment required to implement and sustain the project.	
Holistic Resilience: term environmental its primary function	C1	Initial Capital Costs
	C2	Ongoing Costs
Impact: Reflects the extent to which the project benefits people and businesses in the broader community.	C3	Cost of Doing Nothing
	C4	Potential Economy of Scale
	I1	Impacted Populations
	I2	Economic Resilience and Business Impact
Lifespan: Indicates how long the investment will deliver value and remain functional without major reinvestment or degradation in performance.	I3	Number of Assets and Services Impacted
	I4	Ecosystem Health and Environmental Resilience
Implementation and Maintenance Feasibility: Measures the ease of successful implementation based on funding availability, organizational capacity, and project complexity.	S1	Longevity of Investment
	F1	Funding Source
	F2	Leading Entity
	F3	Complexity
	F4	Adaptability

Funding & Financing Mechanism Inventory

Over 80 funding sources organized into three categories: federal funding, state funding, and non-traditional funding.

Rhode Island Infrastructure Bank (RIIB)

- Resilient Rhody Infrastructure Fund
- Municipal Resilience Program (MRP)
- Municipal Infrastructure Grant Program (MIGP)
- Clean Water State Revolving Fund (CWSRF)
- Drinking Water State Revolving Fund (DWSRF)
- Stormwater Project Accelerator (SPA)
- Municipal Road & Bridge Revolving Loan Fund (MRBRF)

Rhode Island Department of Environmental Management (RIDEM)

- RI Climate Resilience Fund (CRF)
- Bay and Watershed Restoration Fund
- State Land Conservation Program
- Local Open Space Grants
- Wastewater Treatment Facility Resilience Fund (RIDEM & RI Infrastructure Bank – RIIB)
- Ocean State Climate Adaptation & Resilience Fund (OSCAR) (RIDEM & RI Coastal Resources Management Council – CRMC)

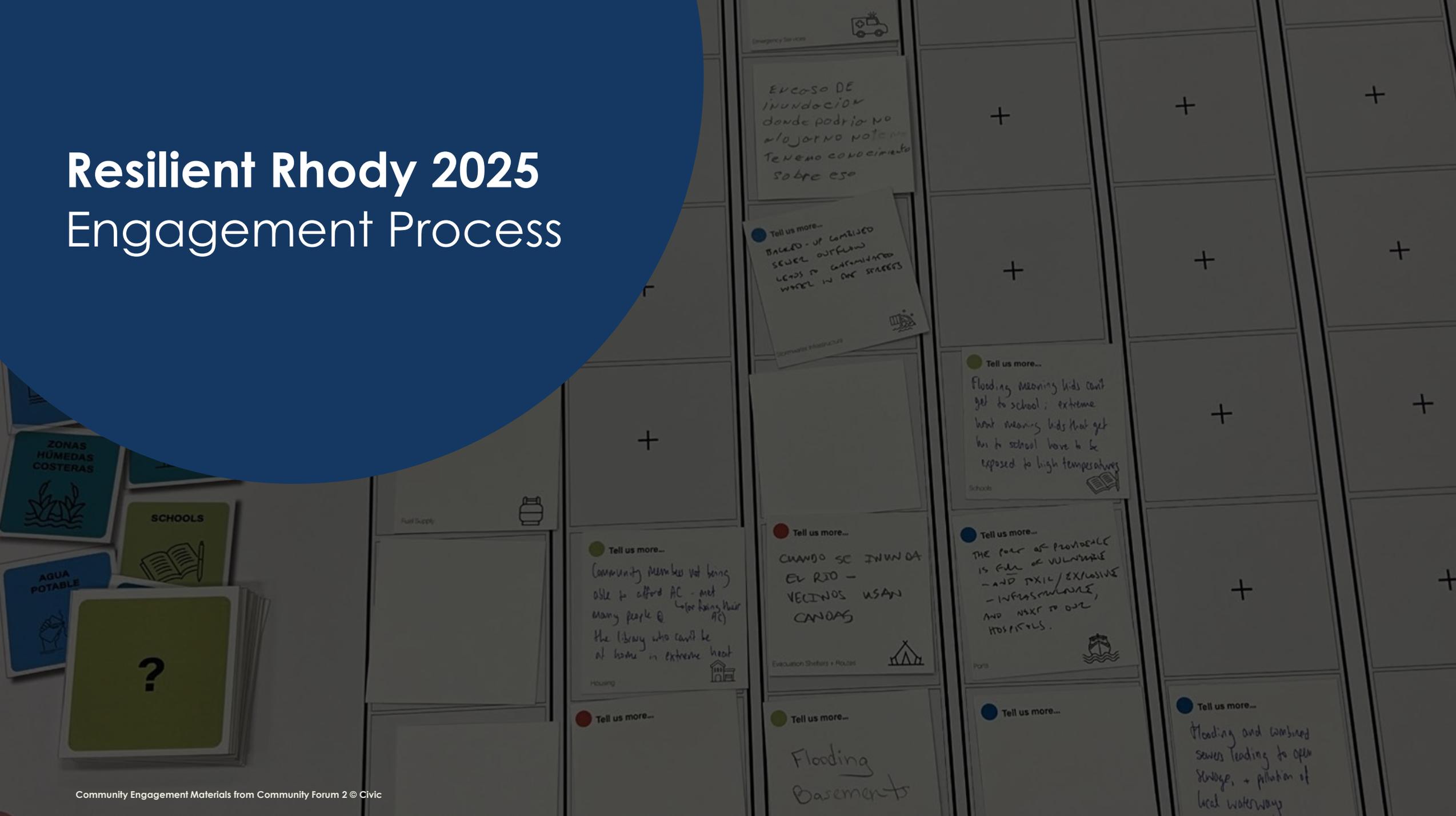
Additional State Programs

- RI Green Economy and Clean Water Bonds (State of RI)
- RI Department of Transportation Capital Improvement Program (RIDOT)
- Energy Resilience & Emergency Planning (RI Office of Energy Resources – OER)

Non-Traditional Funding Mechanisms

- Tax Increment Financing (TIF)
- Special Assessment Districts
- Developer Impact Fees / Resilience Exactions
- Transfer of Development Rights (TDR)
- Catastrophe / Resilience Bonds
- Blue Bonds
- Environmental Impact Bonds
- Dedicated Utility Fees
- Community-Based Public-Private Partnerships (CBP3)
- Parametric Insurance
- Insurance Premium Discounts

Resilient Rhody 2025 Engagement Process



Emergency Services 

EXCESO DE INUNDACION donde podria no alojarnos nosotros. Tenemos conocimiento sobre eso

Tell us more...
BACKED-UP COMBINED SEWER OUTFLOW LEADS TO GARMENTED WATER IN OUR STREETS 

+

+

+

+

+

+

Tell us more...
Flooding meaning kids can't get to school; extreme heat meaning kids that get bus to school have to be exposed to high temperatures 

+

+

Fuel Supply 

+

Tell us more...
Community members not being able to afford AC - met many people @ ^{for having their AC} the library who can't be at home in extreme heat 

Tell us more...
CUANDO SE INUNDA EL RIO - VECINOS USAN CANOAS 

Tell us more...
THE PORT OF PROVIDENCE IS FULL OF VULNERABLE - AND TOXIC/EXCLUSIVE - INFRASTRUCTURE, AND NEXT TO OUR HOSPITALS. 

+

+

Tell us more...

Tell us more...
Flooding Basements

Tell us more...

Tell us more...
Flooding and combined sewers leading to open sewage, + pollution of local waterways

ZONAS HUMEDAS COSTERAS 

SCHOOLS 

AGUA POTABLE 

?

Resilient Rhody 2025 Engaged Partners

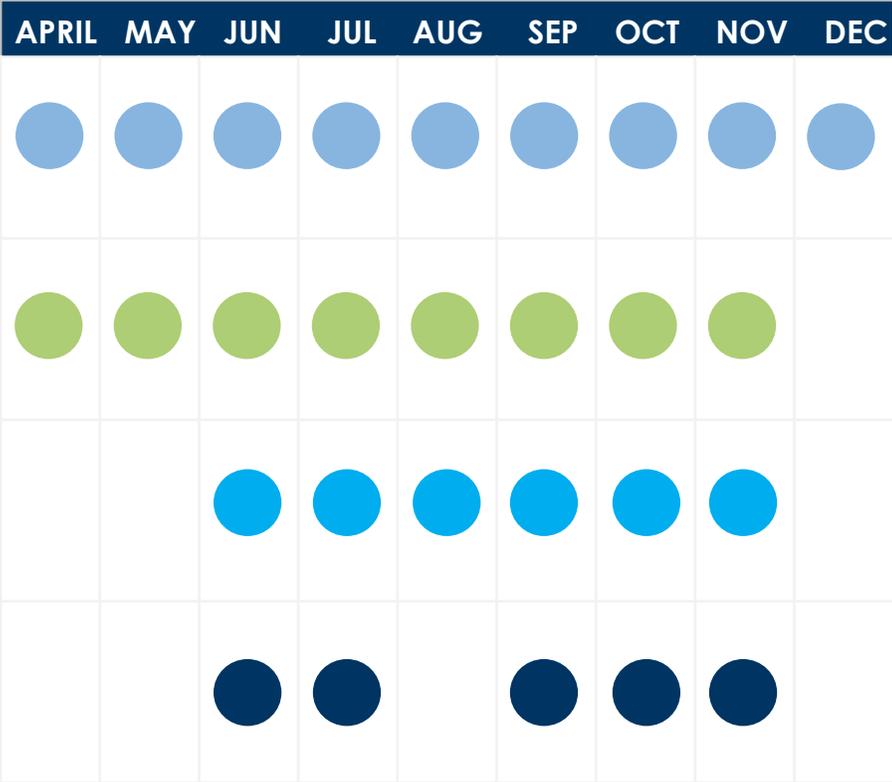
In total, **Resilient Rhody 2025** hosted **11 engagement sessions** with more than **280 participants** representing municipalities and residents, complemented by **17 meetings** with the Resilience EC4 Subgroup and Rhode Island Resilience Partner Group representatives.

Resilience EC4 Subgroup: Monthly meetings with 14 State Agencies

Rhode Island Resilience Partner Group: Monthly meetings with over 40 entities including non-profit organizations, institutions, and subject matter experts

Municipal Stakeholders: Over 130 people in attendance at six working sessions

Community Forums: Over 150 attendees at five community forums



Resilient Rhody 2025 Community & Municipal Forums

Resilient Rhody 2025 Engagement Goals

- 1 **Build** trust and interest.
- 2 **Learn** about community priorities and concerns.
- 3 **Gather** local knowledge and insights.
- 4 **Grow** communities' awareness of the Plan.



Participants at HEZ Frontline Community Forum in Olneyville, Providence, RI © CIVIC

Resilient Rhody 2025 Community & Municipal Forums



Resilient Rhody 2025 Community & Municipal Forums

Community Forum 4: Build Your Own Project

BUILD YOUR OWN PROJECT

Work with your neighbor to explore which actions you think the State should - and shouldn't - fund for Rhode Island's resilience projects.

01 Choose your project. Pick a project card and place it in the Project box below.

02 Choose your solutions. Pick two solutions you'd like the State to fund for this one you wouldn't. Place them in the boxes below and talk with your neighbor about why.

PROJECT

+

Your names: _____

Why did you choose this project? _____

SOLUTION 01

+

This is **the solution you think would work best** for this project.

Why would this be the best choice?

SOLUTION 02

+

This is another **solution that could help or complement** your main idea.

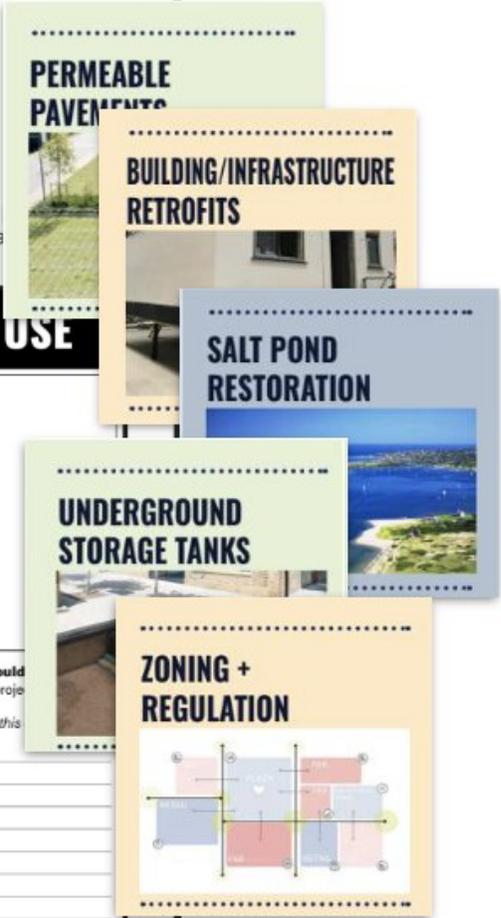
How would it strengthen your project?

DON'T USE

+

This is a **solution you would not** like the State to fund for this project.

Why wouldn't you choose this solution?



Resilient Rhody 2025

Key Takeaways



Resilient Rhody 2025 Key Takeaways

Key Take-Aways

How Resilient Rhody 2025 Responds

Growing Climate Risks Will Require Proactive Solutions
Today, **13% of all assessed assets are considered high or very high risk to coastal flooding**. By late century, this could grow to **18%** under the most extreme scenario. **That is nearly one in five assets.**

Key actions emphasize proactive climate solutions, including:

Action 14.05 State Resilience Standards

Action 11.03 Develop Retreat & Voluntary Buyout Programming

Need for Systems-Based Approaches that Prioritize Community and Natural Resource Health

Stormwater flooding emerged as the top concern expressed by community members during the development of this Plan, largely due to its **cascading effects** on daily life and emergency response.

Actions prioritize **regional collaboration** particularly regarding natural systems that span jurisdictional boundaries. In addition, Actions aimed at strengthening **local community resilience** include:

Action 13.01 Water Resources Coordination & Monitoring

Action 18.03 Resilience Hubs

Evolving Risks Call for Flexible Funding and Technical Assistance

The estimated funding required to realize the *Resilient Rhody 2025* Actions ranges from \$119 million to \$298 million. This excludes implementation and construction costs.

Resilient Rhody 2025 outlines funding strategies for each Action and Solution identified herein. The Plan also includes multiple actions to expand available funding. Key actions related to technical assistance and funding include:

Action 18.01 Resilience Technical Assistance

Action 19.03 Resilience Loans

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Resilient Rhody 2025

Open Discussion

