RHODE ISLAND STATEWIDE COASTAL RESILIENCE PLAN

RIEC4 Council Meeting

September 15, 2025

ARUP FUSS & O'NEILL civic camoin associates

2025 Statewide Coastal Resilience Plan

This initiative seeks to:

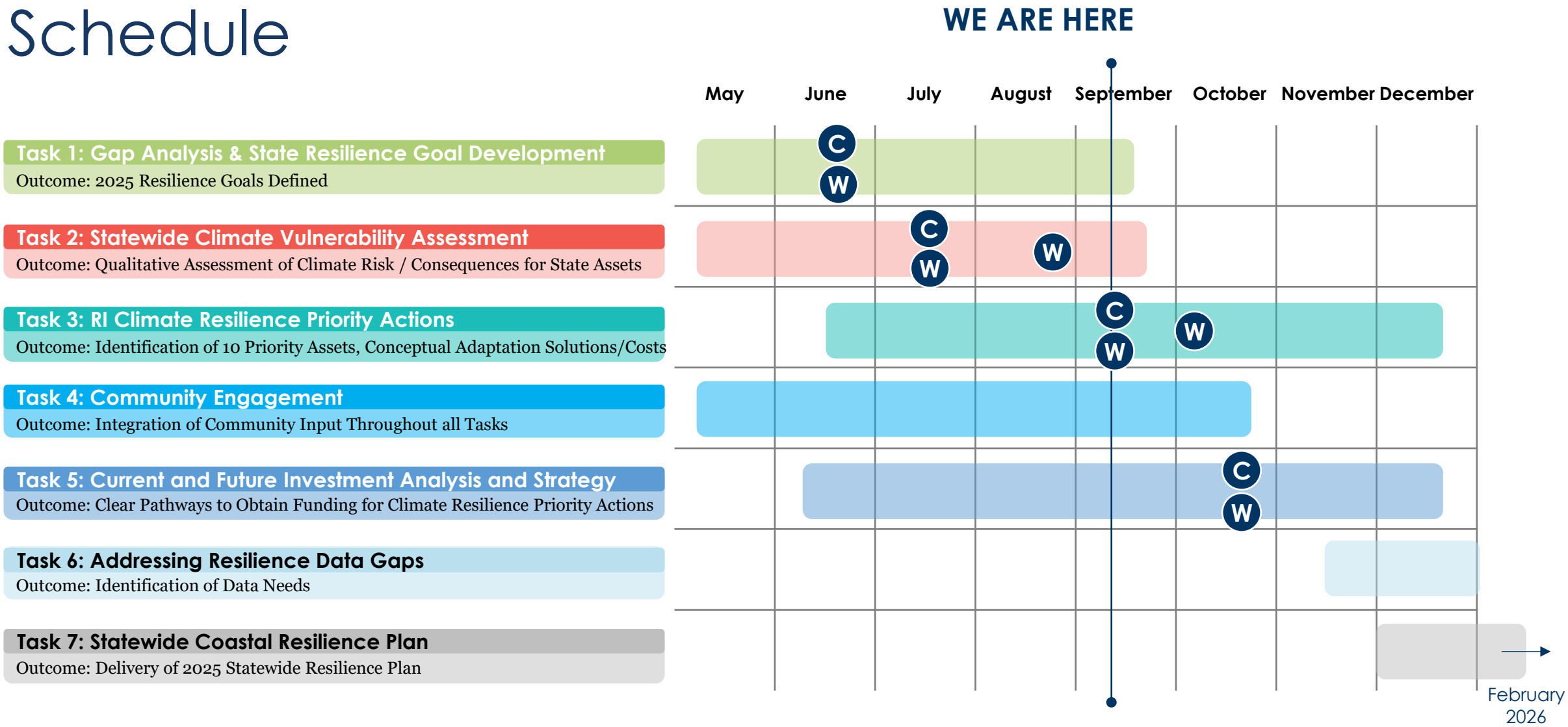
Develop a targeted, feasible, and implementable coastal resilience plan that:

- Helps secure Rhode Island's communities and economy
- Develops a rigorous vulnerability assessment for state assets
- Identifies priority assets for investment
- Engages across state and municipal government to build consensus and capacity
- Includes robust community and stakeholder engagement
- Provides funding and investment strategies to advance identified projects

Project Scope

Task 1: Gap Analysis & State Resilience Goal Development	**Outcome:** 2025 Resilience Goals Defined
Task 2: Statewide Climate Vulnerability Assessment	**Outcome**: Qualitative Assessment of Climate Risk and Consequences for State Assets
Task 3: RI Climate Resilience Priority Actions	**Outcome**: Identification of 10 Priority Assets, Conceptual Adaptation Solutions & Costs
Task 4: Community Engagement	**Outcome**: Integration of Community Input Throughout all Tasks
Task 5: Current and Future Investment Analysis and Strategy	**Outcome**: Clear Pathways to Obtain Funding for Climate Resilience Priority Actions
Task 6: Addressing Resilience Data Gaps	**Outcome**: Identification of Data Needs
Task 7: Statewide Coastal Resilience Plan	**Outcome**: Delivery of 2025 Statewide Resilience Plan

Schedule


WE ARE HERE
May
June
July
August
September
October
November
December
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Outcome: 2025 Resilience Goals Defined
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Outcome: Delivery of 2025 Statewide Resilience Plan
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February 2026
COMMUNITY FORUM C
WORKING SESSION W

Accomplished to Date

Task 1: Gap Analysis & State Resilience Goal Development	**Defined 73 Actions** based on a Gap Analysis, Stakeholder Engagement, and Adaptive Capacity Study.
Task 2: Statewide Climate Vulnerability Assessment	Completed a comprehensive Exposure Assessment and are halfway through the Vulnerability Assessment covering **20 asset types** amounting to **132,978 assets**!
Task 3: RI Climate Resilience Priority Actions	Developed a **3-step Prioritization Approach** focused on identifying assets that support communities that may be most impacted by climate hazards.
Task 4: Community Engagement	Completed **2 community forums** and **2 municipal stakeholder working sessions** with over **80 community members** in attendance.
Task 5: Current and Future Investment Analysis and Strategy	Completed a **Funding and Legislative Needs Assessment** for the proposed 2025 Actions including a comprehensive **inventory of funding and financing mechanisms.**
Task 6: Addressing Resilience Data Gaps	Forthcoming!
Task 7: Statewide Coastal Resilience Plan	Forthcoming!

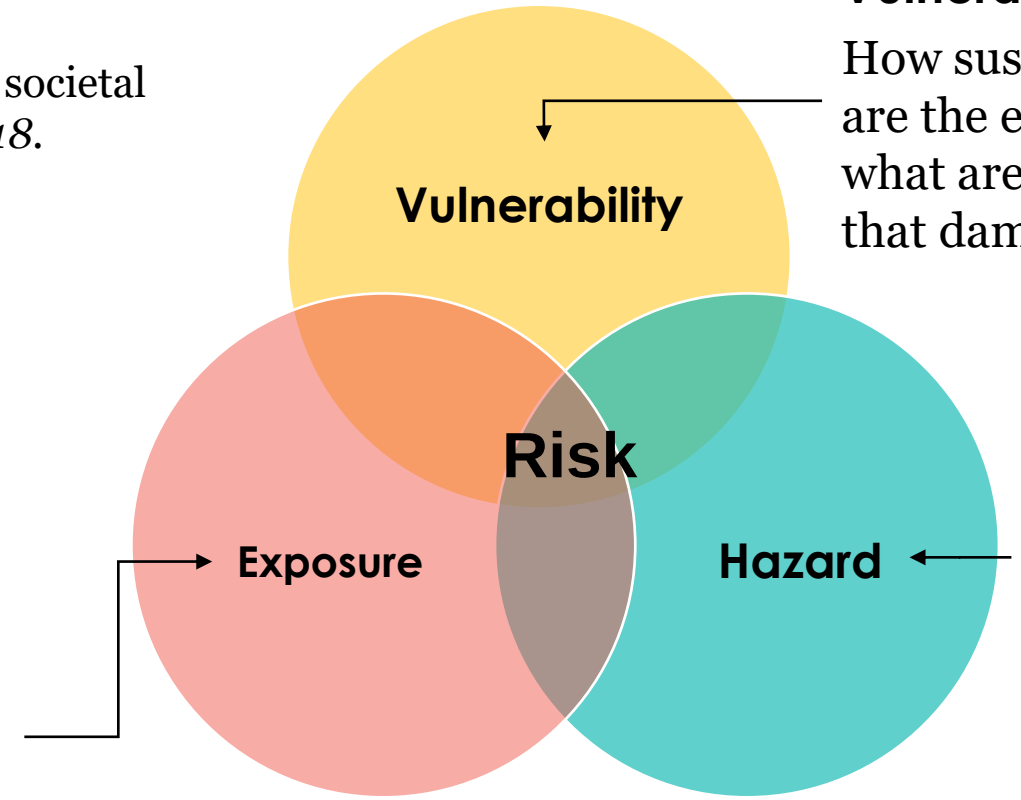
Task 2: Vulnerability Assessment

Statewide Climate Vulnerability Assessment Purpose

Compare climate hazard risks across RI's infrastructural, economic, environmental, and societal asset types as identified in *Resilient Rhody 2018*.

Vulnerability

How susceptible to damage are the exposed assets and what are the consequences of that damage?



Components of Climate Risk

Hazard

Occurrence of climate-related events

Exposure

How likely is a hazard event to occur and what is the intensity?

Hazards Assessed

In the hazard assessment, we 1) identified relevant climate hazards based on the six manifestations of climate change outlined in Resilient Rhody (2018), 2) determined present and future climate conditions, and collected statewide geospatial hazard data.

5 Hazards

- Coastal Flooding
- Stormwater Flooding
- Riverine Flooding
- Extreme Heat
- Extreme Wind

4 Time Horizons

- Present: Current Conditions
- Future: 2035, 2050, 2100

2 Climate Scenarios

- **SSP2-4.5:** Intermediate emissions scenario
- **SSP2-8.5:** Very High emissions scenario

Assets Assessed

Climate hazard exposure and vulnerability were assessed for priority asset types as determined in *2018 Resilient Rhody*. The four asset groups and twenty-one priority asset types are outlined below.

4 Groups

Critical Infrastructure and Facilities

Natural Systems

Community Resilience Structures

Emergency Preparedness Structures

21 Asset Types

- Drinking Water Systems, Wastewater Treatment Facilities, Dams, Seawalls and Tidal Gates, Stormwater Infrastructure, Ports, Electric Grid, Fuel Supply, Roads, Bridges, and Culverts, Historic Resources, and Public Transportation
- Coastal Wetlands, Beaches and Barriers, Forests, and Water Resources
- Public Housing, Municipal Buildings, Schools, and Food Markets
- Evacuation Shelters & Routes and Emergency Services

Consequences Assessed

Consequences	Description
Damage	Physical damage experienced by an asset resulting in financial loss and/or inability to function as required. (example: $)
Disruption	Disruption of critical functionality resulting from hazard demand on infrastructure systems exceeding their capacity or leading to deterioration of natural systems. (example: downtime of roadways)
Life Safety	Negative human health outcomes that are not attached to physical damage of other assets but pose a direct risk to life safety of asset occupants. (example: hospitalization)

Vulnerability Assessment Findings

Critical Infrastructure and Facilities

Flood hazards pose the greatest risk to Critical Infrastructure and Facilities

Over **7,300** high or very high risk assets (not including roads)

- 12% of assets at high or very high risk to coastal flooding
- 1 in 10 (10%) assets at high or very high risk to riverine flooding

Natural Systems

Heat and coastal flooding pose the greatest risk to Natural Systems

Over **1,250** high or very high risk assets

- 57% of assets at high or very high risk to extreme heat
- 44% of assets at high or very high risk to coastal flooding

Community Resilience Structures

Stormwater flooding and heat pose the greatest risk to Community Resilience Structures

Over **1,200** high or very high risk assets

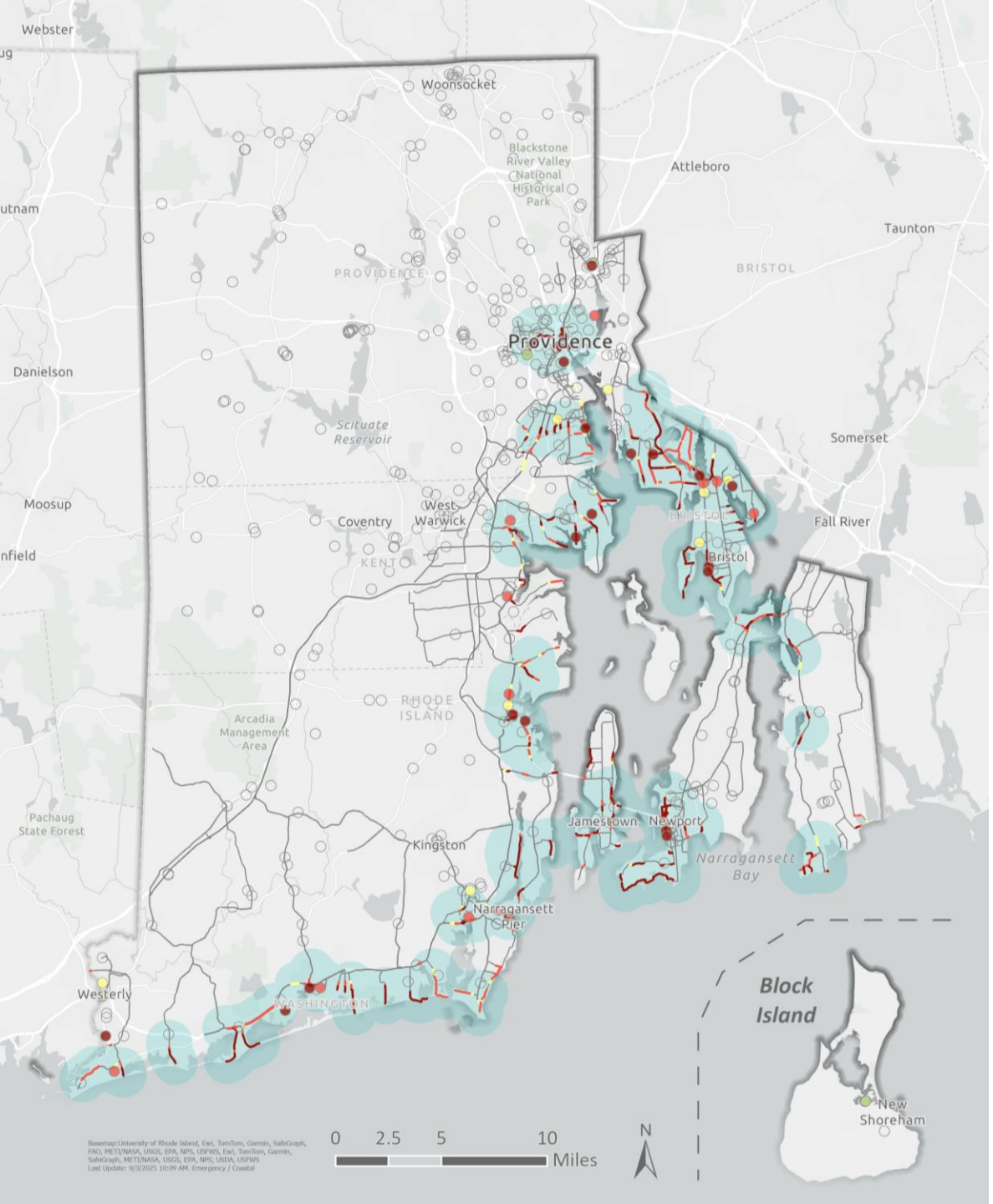
- 74% of assets at high or very high risk to extreme heat
- 41% of assets at high or very high risk to extreme wind, especially public housing

Emergency Preparedness Structures

Stormwater flooding and heat pose the greatest risk to Emergency Preparedness Structures

Over **230** high or very high risk assets (not including evac routes)

- 48% of assets at high or very high risk to extreme heat
- 17% of assets at high or very high risk to coastal flooding and 15% of assets to riverine flooding



Coastal Flooding

Coastal Flooding Risk for Emergency Preparedness Structures

The adjacent map demonstrates clusters of high and very high risk ratings across assessed Emergency Preparedness Structures. Concentrated areas of coastal flooding risk are highlighted in blue.

Emergency Preparedness Structures

Asset	Risk Results (High or Very High Rating, 2100, High SLR*)
Hospitals	**3**/17 **hospitals**
Fire Stations	**15**/173 **fire stations**
Police Facilities	**6**/68 **police facilities**
Evacuation Routes	**18%** of **half-mile evacuation route segments**
Evacuation Shelters	**14**/192 **evacuation shelters**

Coastal Risk Rating

Hotspot

- **Low Rating**
- **Medium Rating**
- **High Rating**
- **Very High Rating**

*University of Rhode Island's (URI) Coastal STORMTOOLS data was used to map coastal flooding through the State.

Task 3: Prioritization Criteria Approach

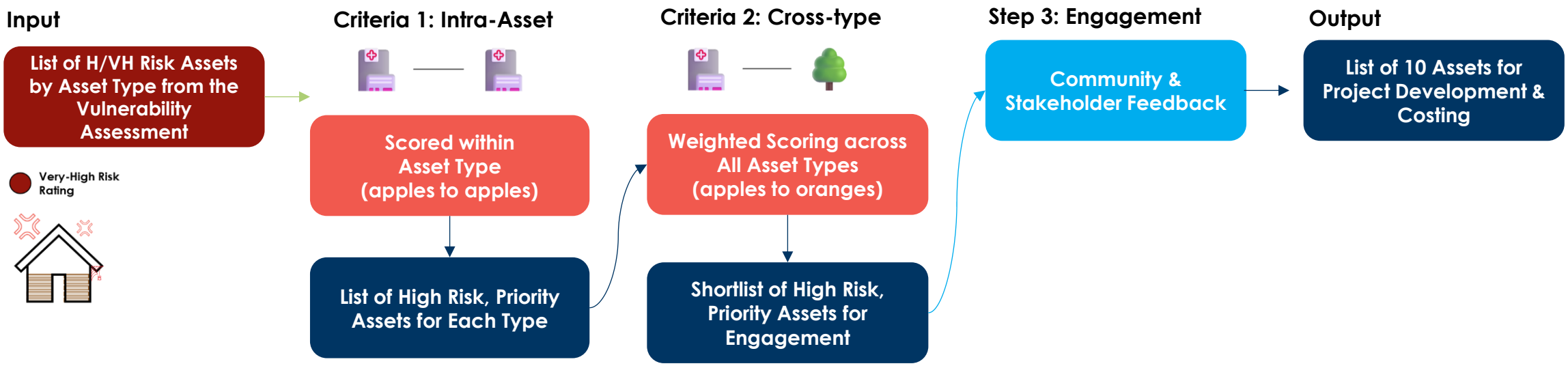
Asset Prioritization Criteria Approach

Goal: Establish a transparent and structured framework to prioritize complex and diverse asset types that enables the identification of projects that are highly critical, deeply impactful, and representative.

Why this order?

1. There are thousands of high-risk assets. Criteria 1 will help us focus on those that are most critical within each type.
2. Looking at Criteria 1 first will help reduce bias towards traditionally prioritized asset types and allows for a more holistic evaluation of criticality across all asset categories.

Approach: Three-step scoring-based approach



Criteria 1: Intra-Asset

Assets will first be evaluated against others of the same type using tailored criteria.
Not all criteria will apply to every asset type; only those that are meaningful and appropriate for that type. Below are examples of the criteria that will be assessed.

Criticality & Service Delivery

- Service Capacity
- Surge Capacity
- Number of Units
- Treatment Capacity
- Generation Capacity

Equity & Social Vulnerability

- Social Vulnerability Index
- Health Equity Zone
- Linguistic Isolation

Attribute Information

- Lacking Back-up Power
- Use in Emergency Response

Surrounding Area Characteristics

- Adjacent to a Population Center
- Adjacent to a Sensitive Natural System
- Services a Rural or Isolated Area
- Corridor for Emergency Response Services (Evacuation Route)

Ecological Significance

- Area of Recognized Biodiversity
- Within or Adjacent to Identified Conservation Lands
- Adjacent to Migration Space For Tidal Habitat

Criteria 2: Cross-Type

Assets will then be compared across different types using a shared, weighted set of criteria.
This step enables comparison of the most critical assets across different types. The outcome is a refined list of high risk; priority assets selected for stakeholder engagement.

Need

- Urgency (Time-based)
- Life Safety / Health + Wellness
- Criticality (Cross-Sector Interdependency)
- Redundancy
- Number of People Impacted

Equity & Community Support

- Supports Vulnerable Populations (SVI, HEZ)
- Community - Supported
- Advances Environmental Justice
- Protects Economic Resources (Economic Opportunity Zone, etc.)

Feasibility

- Asset Complexity
- Adaptability

Strategic Alignment

- Alignment with Local/Municipal Goals (Comp Plans, CAPs, etc.)
- Identified in Multiple Resilience Planning Initiatives (HMP)

Holistic Resilience

- Advances or Protects Biodiversity
- Supports Sustainability Goals or Initiatives
- Provides Ecosystem Services & Co-benefits
- Carries Cultural or Historical Value

Task 4: Community Engagement

Community Forums

Community Forum 1: Resilience Priorities & Actions

June 2025

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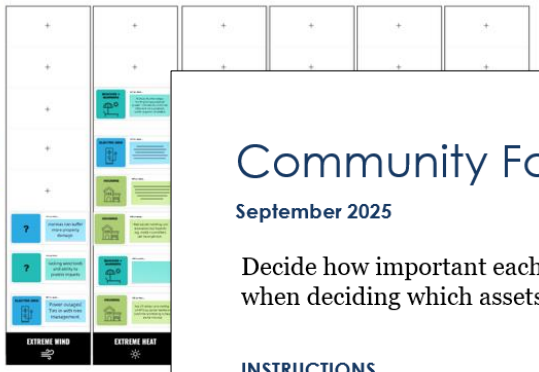
Community Forum 2: Asset-Hazard Mapping

July 2025



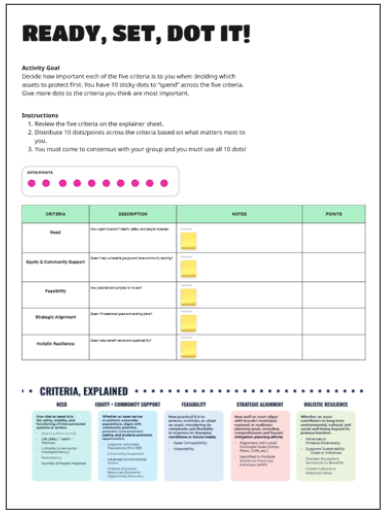
Community Forum 3: Asset Prioritization

September 2025

Decide how important each of the five criteria is to you when deciding which assets to protect first.

INSTRUCTIONS

1. Review the five criteria on the explainer sheet.
2. Distribute 10 dots/points across the criteria based on what matters most to you.
3. Your total must add up to 10 dots/points.



Thank you!

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