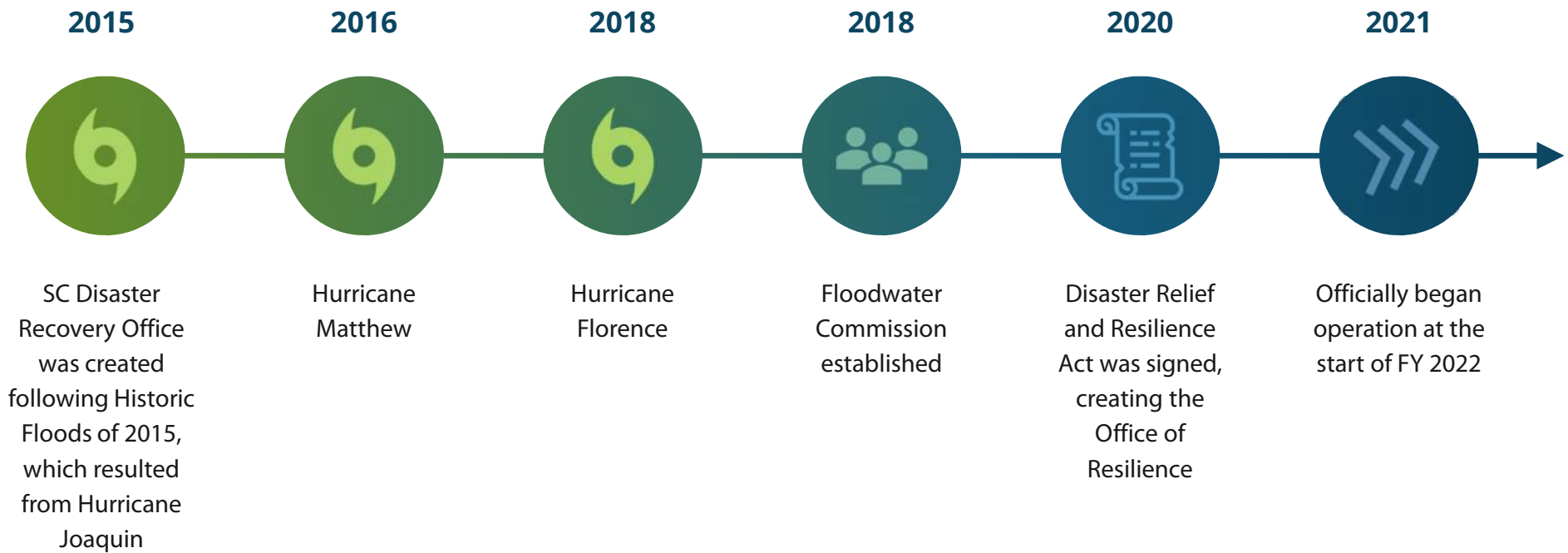


South Carolina Office of Resilience

April 2024



History



What is Resilience?

The ability of communities, economies, and ecosystems to anticipate, absorb, recover, and thrive when presented with environmental change and natural hazards.

What We Do

RESILIENCE

- Development and management of the Strategic Statewide Resilience & Risk Reduction Plan
- Management of the Disaster Relief and Resilience Reserve Fund and the SC Resilience Revolving Fund

MITIGATION

- **Buyouts:** Voluntary acquisitions of repetitively flooded land and property in order to return it to green space
- **Infrastructure:** Traditional “Gray” and Nature-based “Green” Infrastructure
- **Plans & Studies:** Funding for local governments and state agencies to develop and/or update hazard mitigation plans, stormwater plans, and more
- **Matching Grants:** Provide the local cost share for other federal flood mitigation programs

DISASTER RECOVERY

Long-term recovery: rebuild and replace homes damaged by hurricanes and flooding in FEMA-declared counties; funded by HUD CDBG-DR

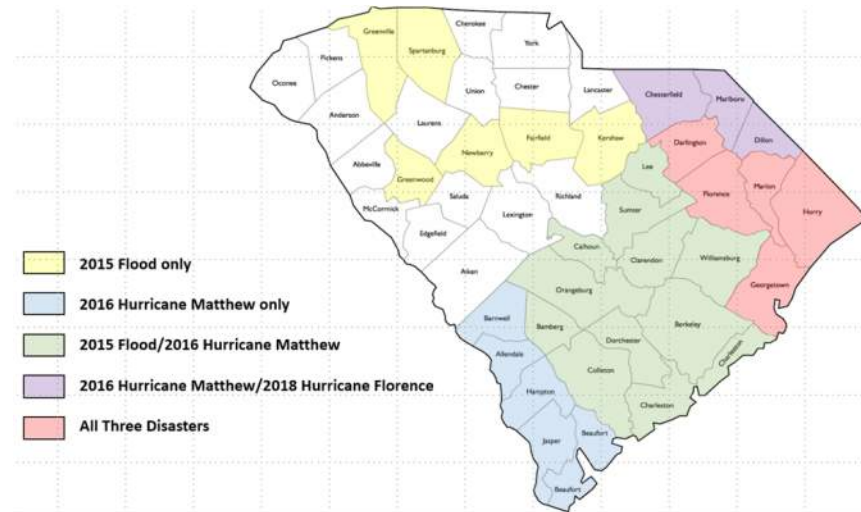


Disaster Recovery

- Using HUD funds through a Community Development Block Grant-Disaster Recovery (CDBG-DR) grant, SCOR repairs, replaces or rebuilds homes impacted by hurricanes



- \$293M total federal HUD funding + \$10.5M from SC Housing Authority
- **3,407 homes total**
- CDBG-DR Grants are for 6 years
 - 2015 completed on time
 - 2016 scheduled to close on time
 - 2018 ahead of schedule to close



Disaster Recovery: HUD CDBG-DR

\$293 million | 3,418 homes complete

2015 SEVERE STORM
\$126 million | 100% complete



1,829
/ 1,829 homes

Completion date: September 2021

Within 6-year allotment

- | | | | |
|----------------------|-----------------------|------------------|-------------------------|
| 1. Bamberg | 7. Darlington | 13. Greenwood | 19. Orangeburg |
| 2. Berkeley | 8. Dorchester | 14. Horry | 20. Spartanburg |
| 3. Calhoun | 9. Fairfield | 15. Kershaw | 21. Sumter |
| 4. Charleston | 10. Florence | 16. Lee | 22. Williamsburg |
| 5. Clarendon | 11. Georgetown | 17. Marion | |
| 6. Colleton | 12. Greenville | 18. Newberry | |

2016 HURRICANE MATTHEW
\$95 million | 100% complete



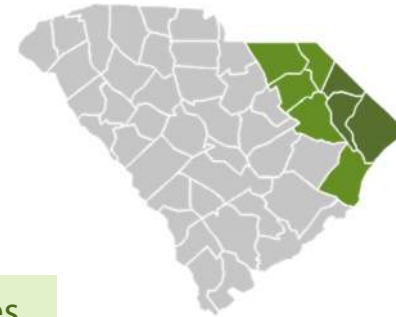
1,142
/ 1,142 homes

Completion date: December 2022

Within 6-year allotment

- | | | | |
|--------------|-----------------|-----------------------|-------------------------|
| 1. Allendale | 7. Charleston | 13. Dorchester | 19. Lee |
| 2. Bamberg | 8. Chesterfield | 14. Florence | 20. Marion |
| 3. Barnwell | 9. Clarendon | 15. Georgetown | 21. Marlboro |
| 4. Beaufort | 10. Colleton | 16. Hampton | 22. Orangeburg |
| 5. Berkeley | 11. Darlington | 17. Horry | 23. Sumter |
| 6. Calhoun | 12. Dillon | 18. Jasper | 24. Williamsburg |

2018 HURRICANE FLORENCE
\$72 million | 92% complete



447
/ 475 homes

Expected completion date: 2024

Within 6-year allotment

- | | |
|------------------|------------------|
| 1. Chesterfield | 5. Georgetown |
| 2. Darlington | 6. Horry |
| 3. Dillon | 7. Marion |
| 4. Florence | 8. Marlboro |

*Note: Richland & Lexington counties received CDBG-DR grants for the 2015 Severe Storm and therefore were not served by our programs.

Mitigation: HUD CDBG-MIT

MITIGATION

\$162 million | 63% obligated

Expected completion NLT 2032



Available to 17 counties in SC:

Infrastructure

\$100 million allocated / \$62 million awarded
20 projects

Projects to reduce flooding – stormwater improvements, drainage tunnels, etc.

Phase I	Phase II
<ul style="list-style-type: none"> \$50M available Received \$113M in requests Awarded \$55M 	<ul style="list-style-type: none"> \$40M available Received \$91M in requests Award determination & notification: late 2023 or early 2024

55%

Plans & Studies

\$14 million allocated / \$6 million awarded
19 projects

Studies to assist communities in determining the cause of flooding in their area; assistance with or completion of various types of plans relating to flood mitigation. Plans and studies are meant to produce shovel-ready projects which can be submitted for funding under SCOR's Infrastructure program.

46%

Buyouts

\$37.5 million allocated / \$34 million awarded
6 projects

Acquisition of properties in the floodplain that have been repetitively flooded. The purpose of this program is to move citizens out of harm's way and return the land to green space so that the natural function of the floodplain is restored.

97%

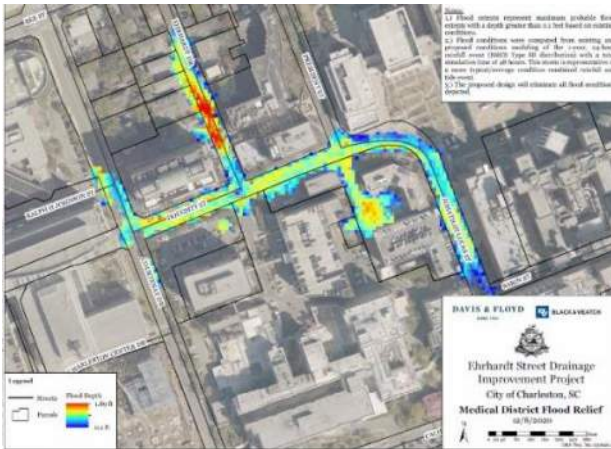
Matching Grants

\$2.5 million allocated / \$2.5 million awarded
8 projects

Provides the local cost-share portion for various federal flood mitigation grants

100%

Charleston Medical District: Ehrhardt Tunnel



The proposed design will eliminate the flood conditions depicted in the bottom left image. The map depicts a typical/average combined rainfall and tide event.

Charleston Medical District: Ehrhardt Tunnel



Horry County Buyout

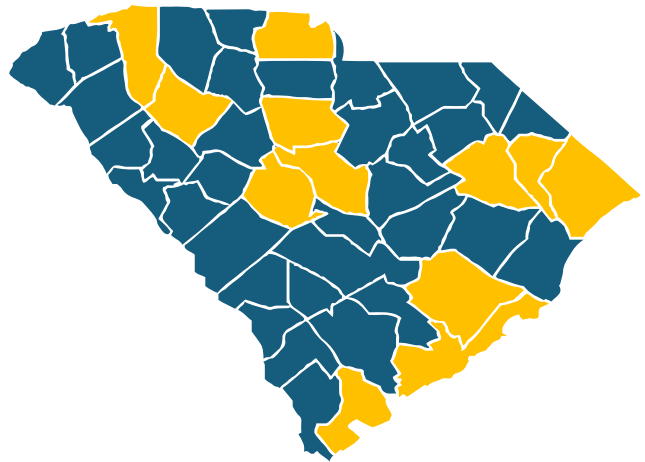


The proposed project will buyout and demolish 61 homes and their associated non-porous surfaces from the community.

Mitigation: American Rescue Plan Act Programs (ARPA) \$100M Designated

ARPA Stormwater Infrastructure (ASIP)

- Available statewide – application period held Fall 2022
- \$55M Allocated
- 17 projects awarded



USS Yorktown Remediation

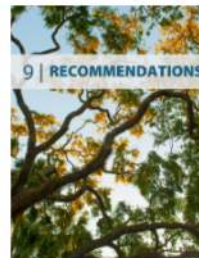
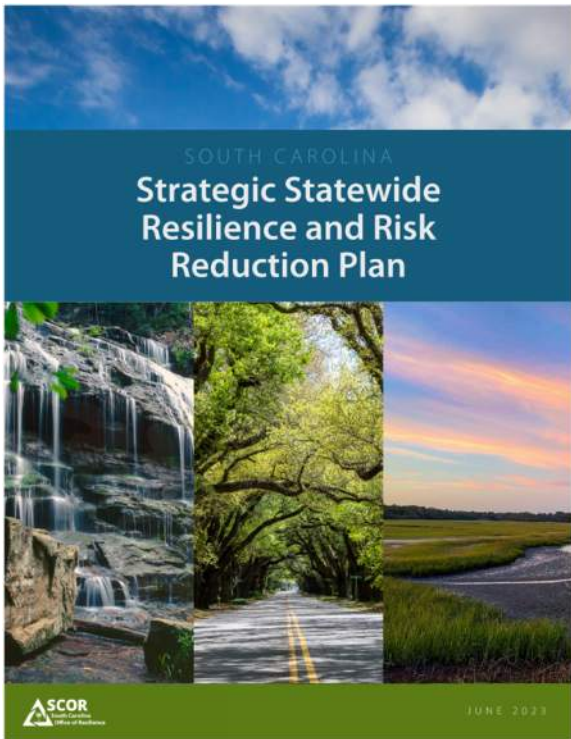
- Phase II Pending JBRC
- \$40M available
- Estimated cost: \$29M

Phase I	Phase II
<ul style="list-style-type: none">• Estimated \$10,710,016• Environmental Study• Immediate hull repair and tank cleanup, necessary for environment remediation• Immediate repair contingency	<ul style="list-style-type: none">• Estimated \$18M• Cleanup of hazardous materials (fuel, PCBs, etc.)• Cleanup engineering oversight• Additional hull repair related to environmental remediation• Hull repair contingency



Resilience Planning

The South Carolina Office of Resilience recently released the **Strategic Statewide Resilience and Risk Reduction Plan** (Resilience Plan). The Plan identifies major flood risks around the state and potential losses that could occur as a result of extreme weather events. The Plan provides strategies for local governments to implement resilience into their communities in order to mitigate potential flood risks.





SOUTH CAROLINA
**Strategic Statewide
Resilience and Risk
Reduction Plan**



Legislative Guidance

- The Act stated that the plan should be developed with the principles recommended in the South Carolina Floodwater Commission Report.
- Intended to serve as a framework to guide state investment in flood mitigation projects. Adopts programs and policies to protect the people and property of South Carolina from damage and destruction of extreme weather events.
- The Act directed that the initial version of the plan be completed by July 1, 2022. *
(Extended to July 1, 2023)

Floodwater Commission Principles

- Flood management plans and actions should be based on watershed boundaries
- Decisions and actions should be based on high-quality, shared and integrated hydrologic and hydrographic models
- Building the capacity of local governments to develop science-based and actionable flood management plans and hazard mitigation plans should be a priority

Floodwater Commission Principles

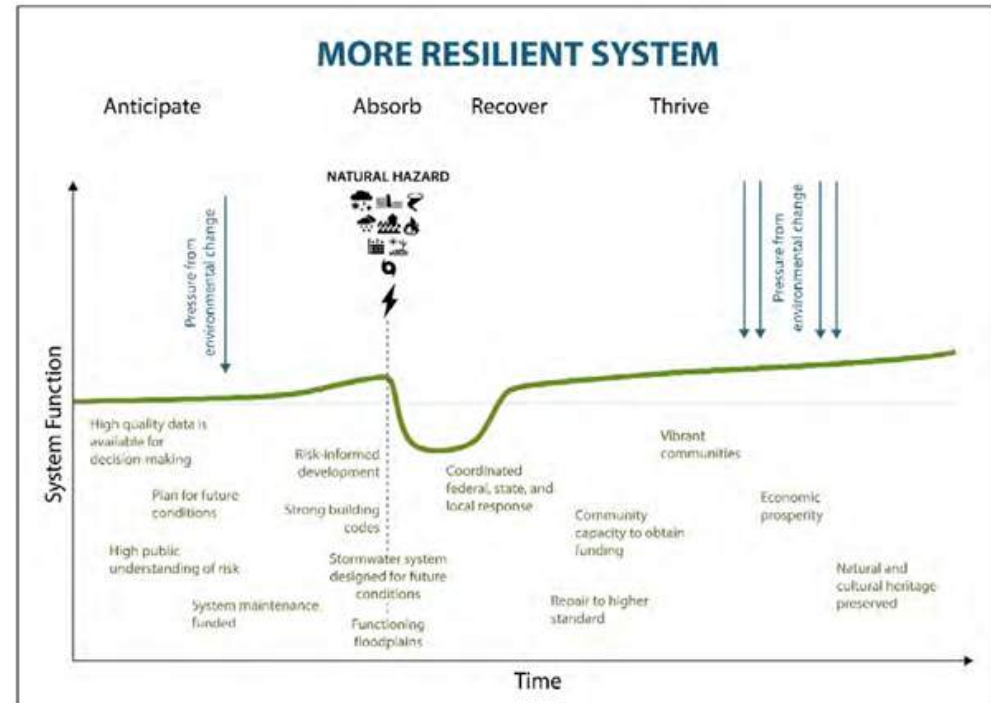
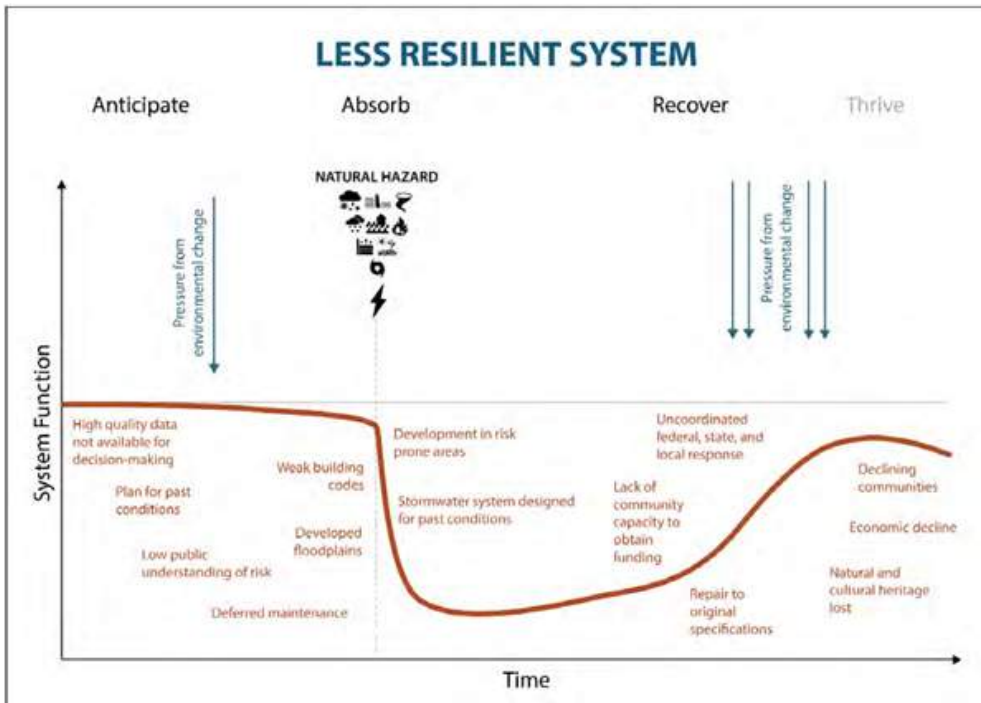
- Success will depend on collaboration. Collaboration must take place between state agencies to bridge boundaries, as well as between the state and local governments
- Flood management programs should recognize the beneficial functions of natural floodplains, salt marshes, beach dunes, forests, living shorelines and other natural features to reduce flood risk, as well as the co-benefits they deliver
- Post-disaster funding coming to South Carolina from congressional appropriations should be managed in a unified state plan as much as federal rules and guidelines will permit, and coordinated across the multiple sources (i.e. FEMA, HUD).

Resilience Planning Assumptions

- The plan will not try to provide solutions to prevent changes to the climate but will offer recommendations for how the state may minimize the impacts that are expected to occur.
- Resilience Planning utilizes an adaptive management approach so that it can adjust to changing conditions and integrate new data sources as they become available.
- Initial Plan recommendations focuses flooding.
 - Other extreme weather events /disasters to be addressed in more detail in subsequent versions of the plan

Resilience Definition

The ability of communities, economies, and ecosystems within South Carolina to anticipate, absorb, recover, and thrive when presented with environmental change and natural hazards.



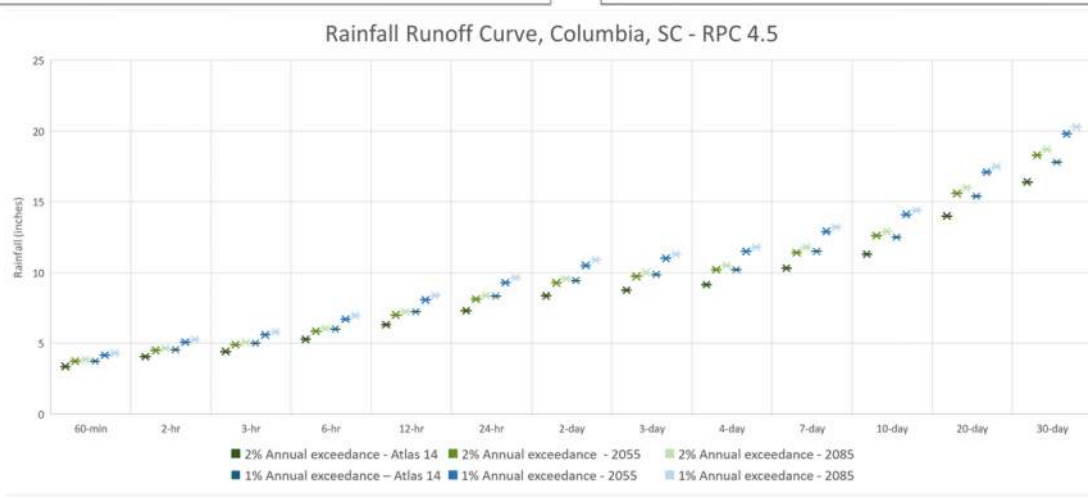
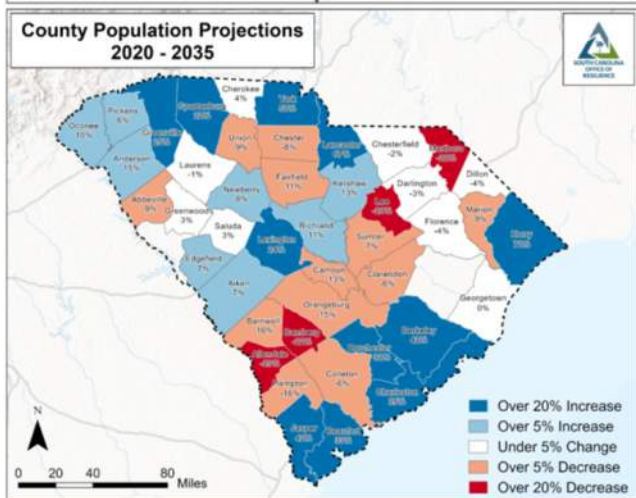
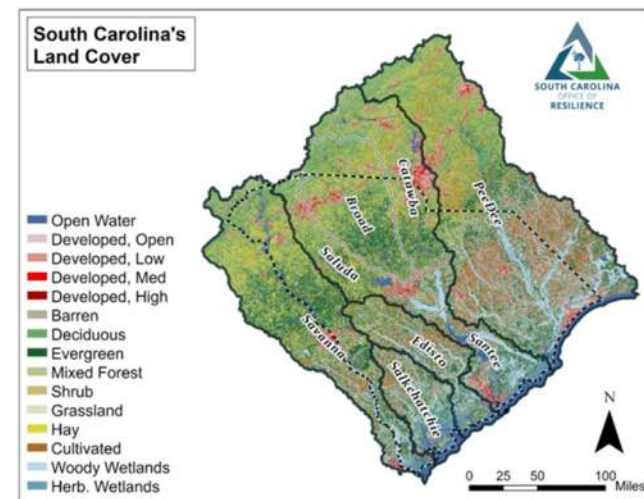
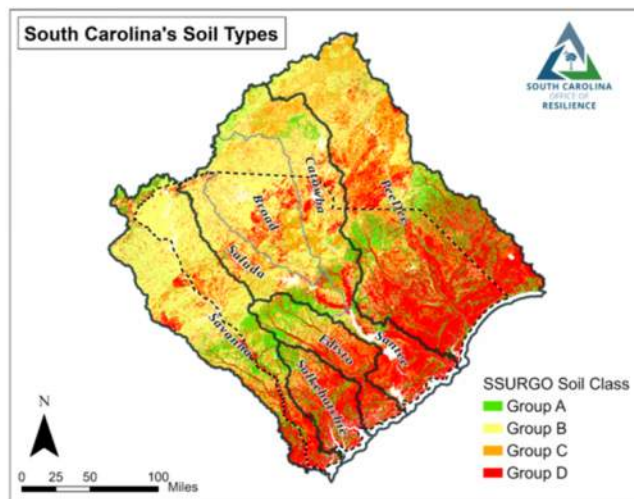
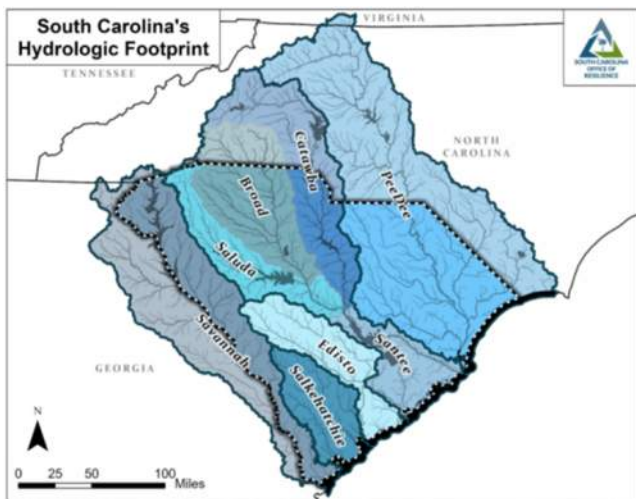
Strategic Statewide Resilience and Risk Reduction Plan

3 | PLANNING CONDITIONS



SOUTH CAROLINA STRATEGIC STATEWIDE RESILIENCE AND RISK REDUCTION PLAN

Planning Conditions

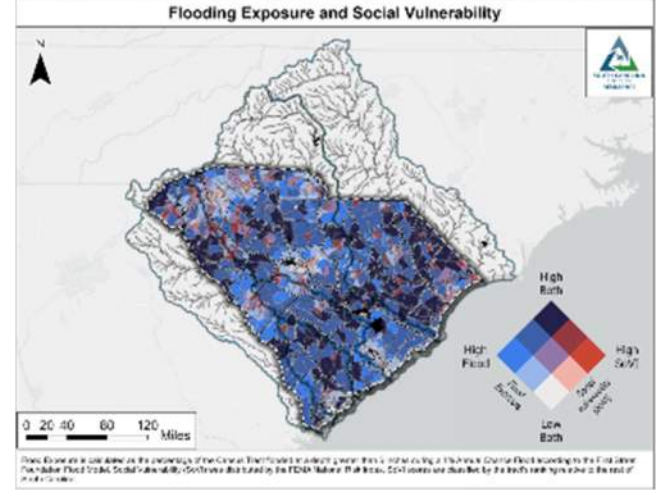
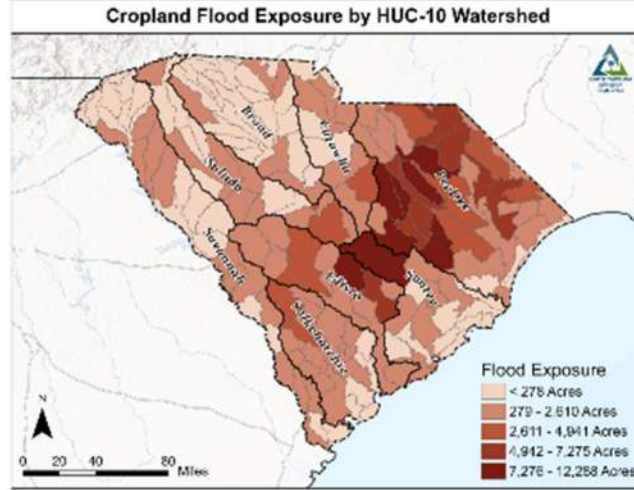
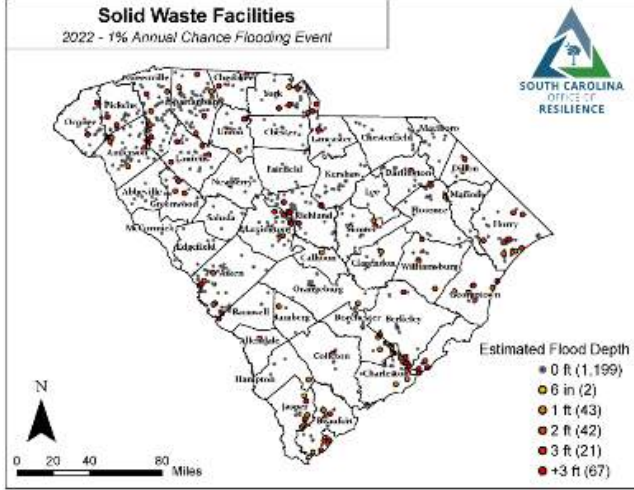
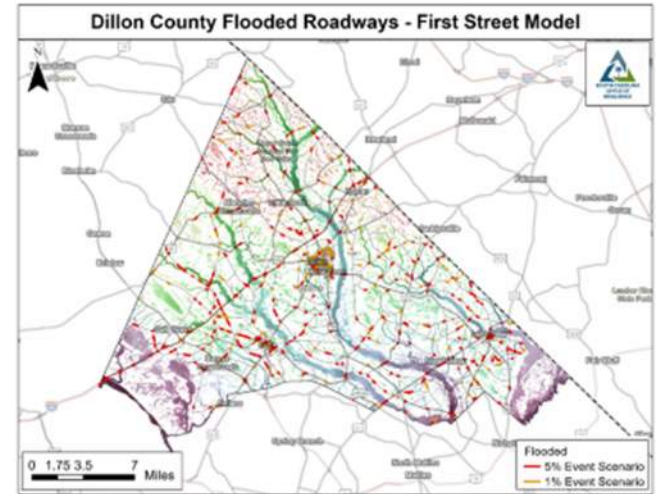
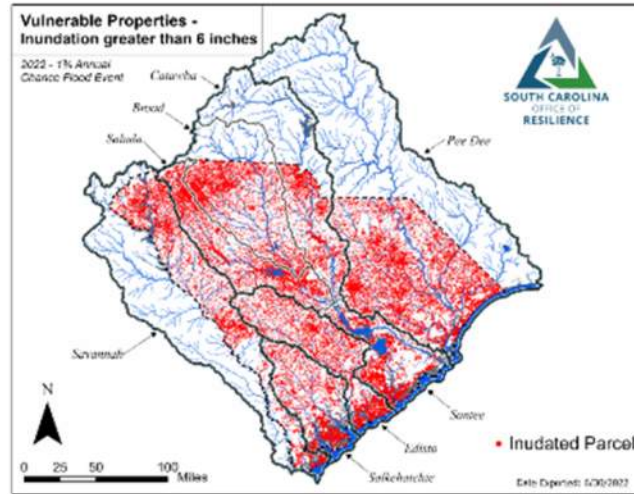
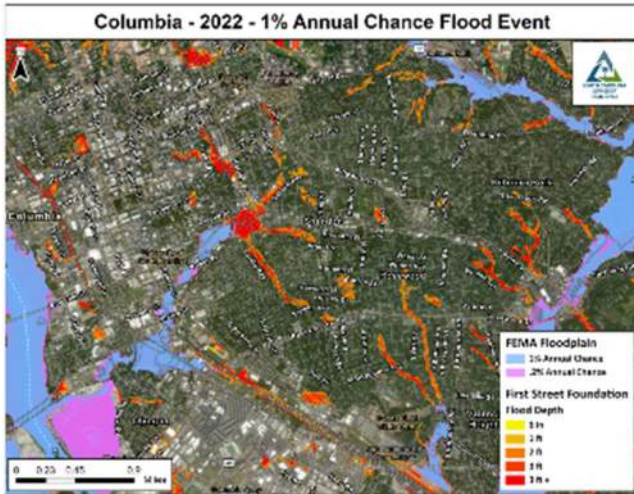


Strategic Statewide Resilience and Risk Reduction Plan

5 | FLOOD RISK AND VULNERABILITY ASSESSMENT

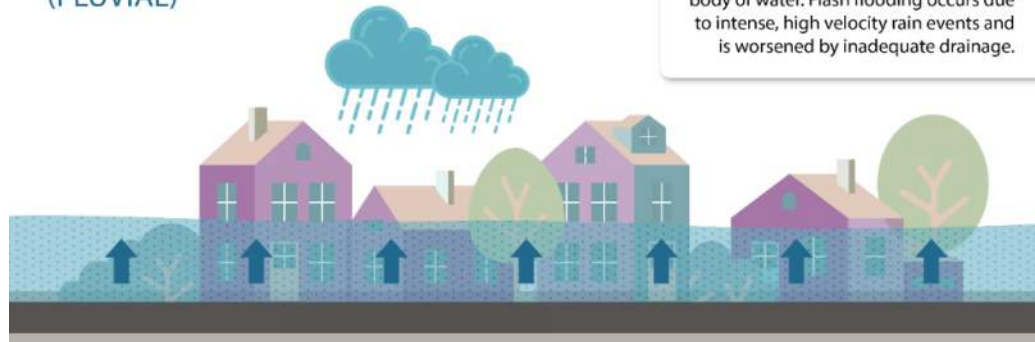


Risk and Vulnerability Assessment



Surface Water & Flash Flooding (PLUVIAL)

Pluvial flooding occurs when an extreme rainfall event takes place in an area where there is inadequate drainage for that particular amount of rainfall. This type of flooding is not associated with a body of water. Flash flooding occurs due to intense, high velocity rain events and is worsened by inadequate drainage.

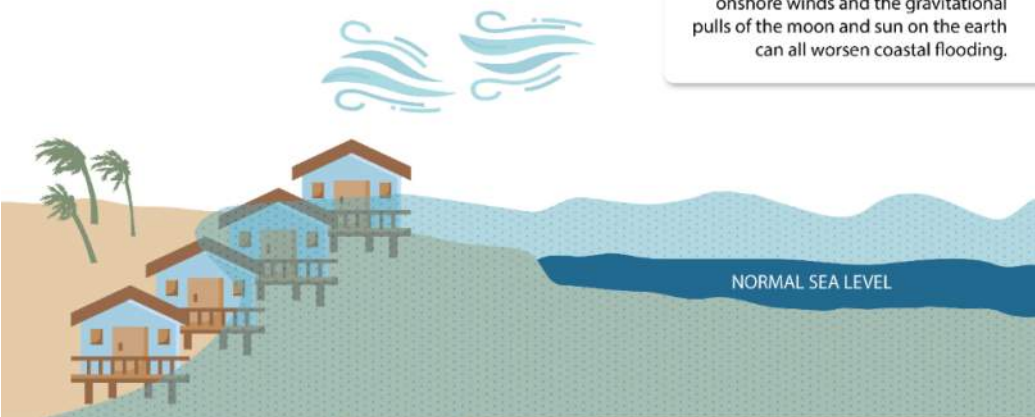


River Flooding (FLUVIAL)

Fluvial flooding, or river flooding, occurs when the water level of the river overtops its banks or natural levees due to excess precipitation. This type of flooding can be devastating because it can occur in a different location than where the precipitation occurred.

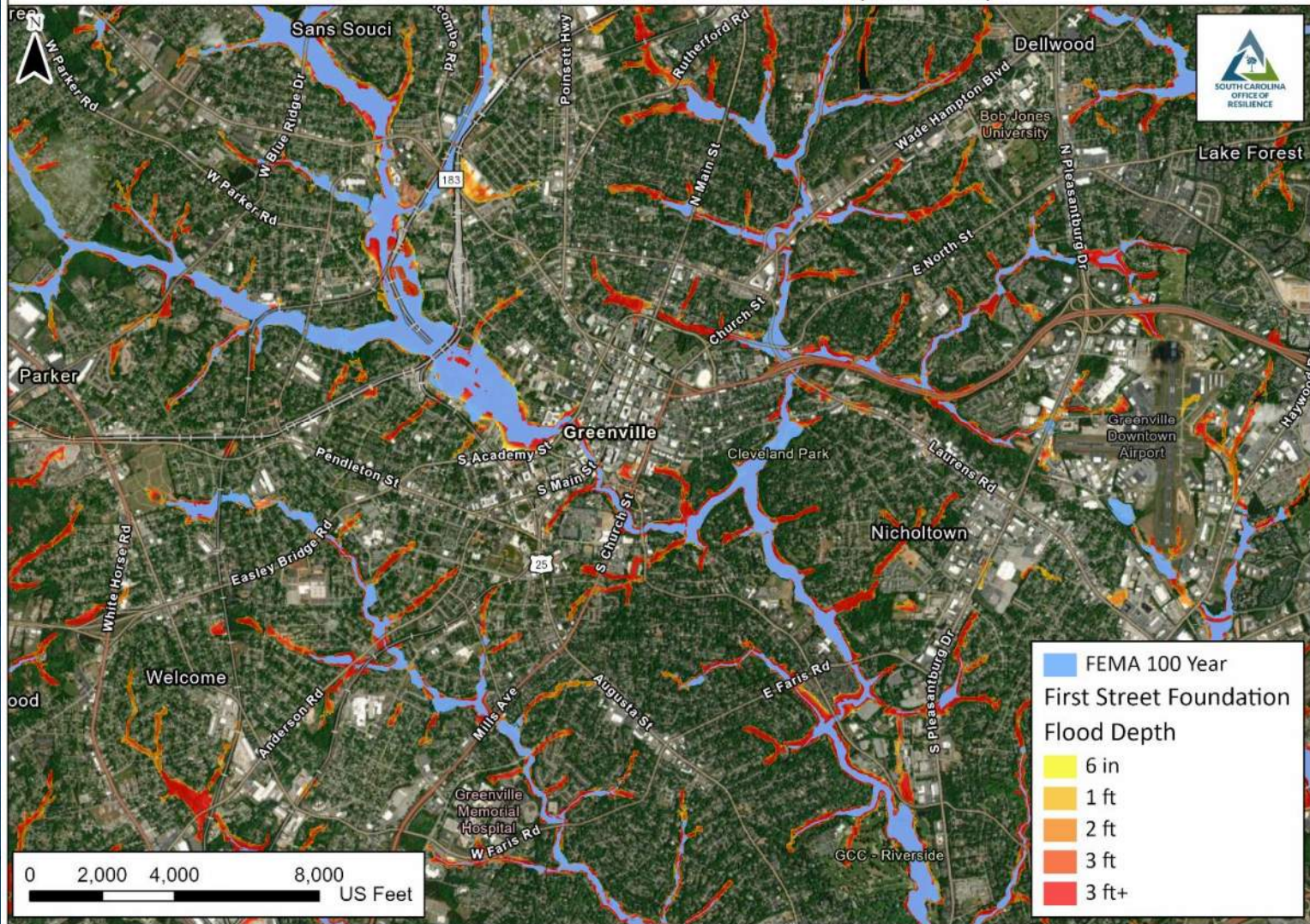
Coastal Flooding DUE TO STORM SURGE OR TIDES

Coastal flooding can be caused by storm surge, high tides, and sea level rise. Compound riverine flooding, onshore winds and the gravitational pulls of the moon and sun on the earth can all worsen coastal flooding.



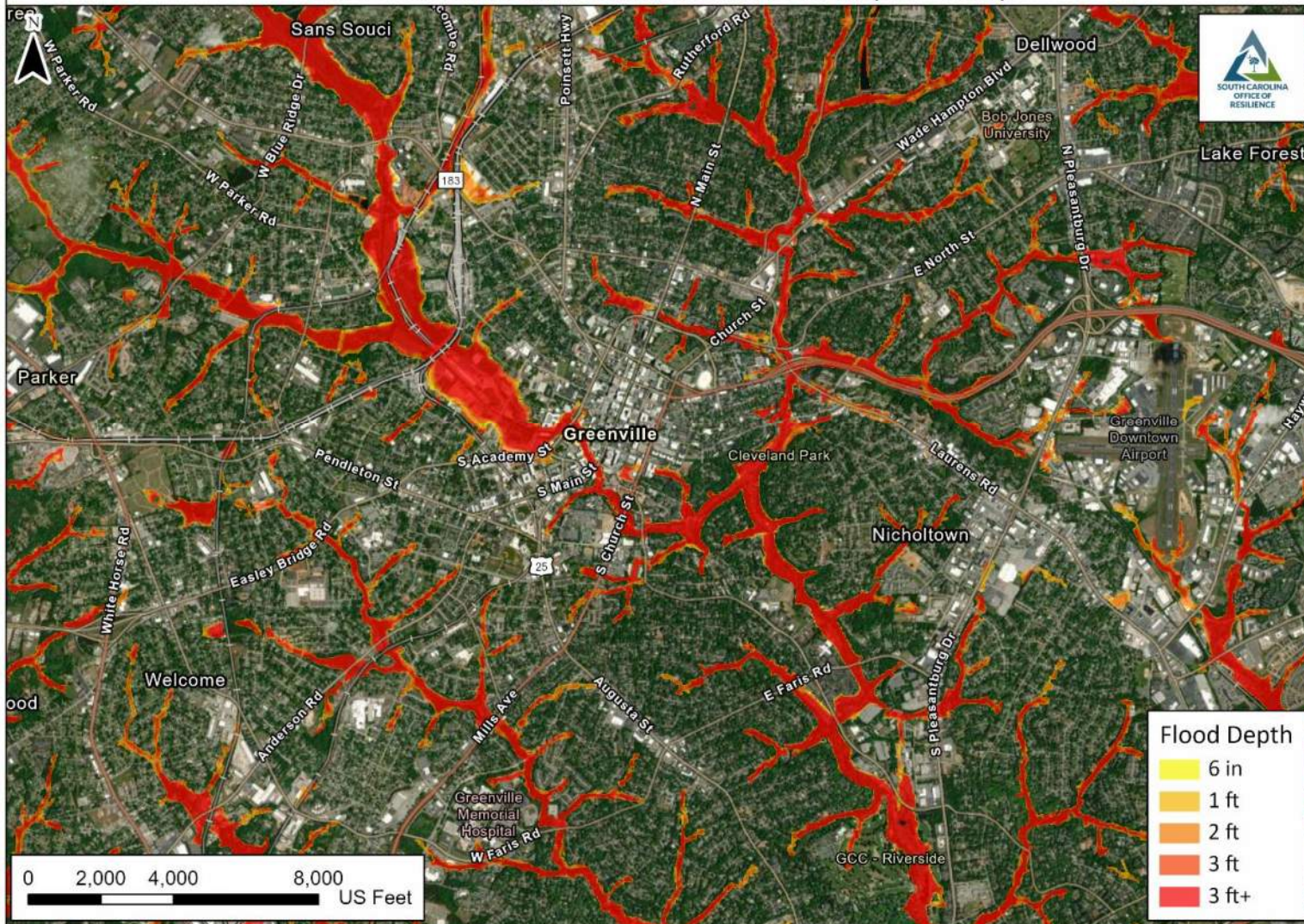
First Street Foundation Flood Model

2022 - 1% Annual Chance Flood Event (100 Year)

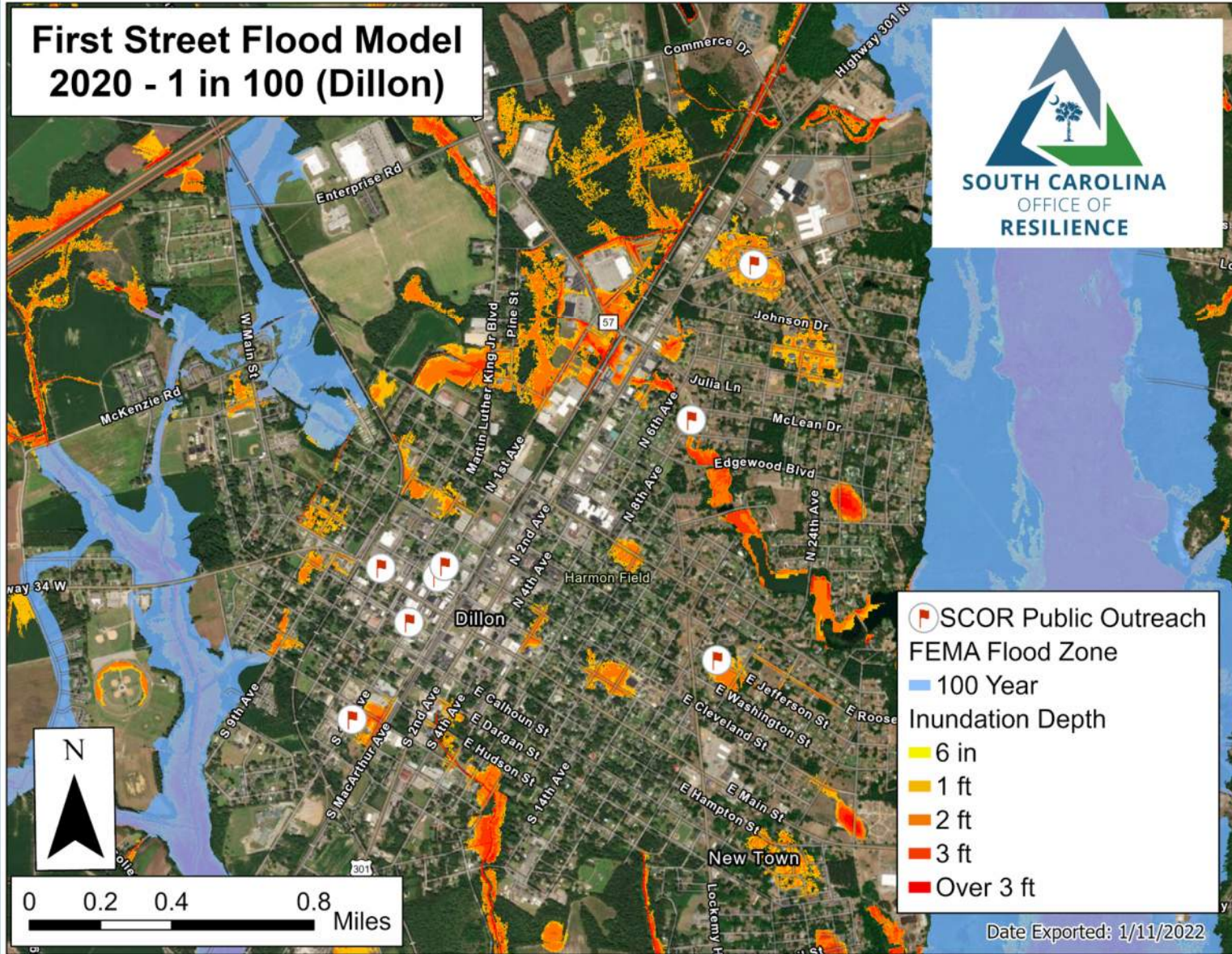


First Street Foundation Flood Model

2022 - 0.2% Annual Chance Flood Event (500 Year)



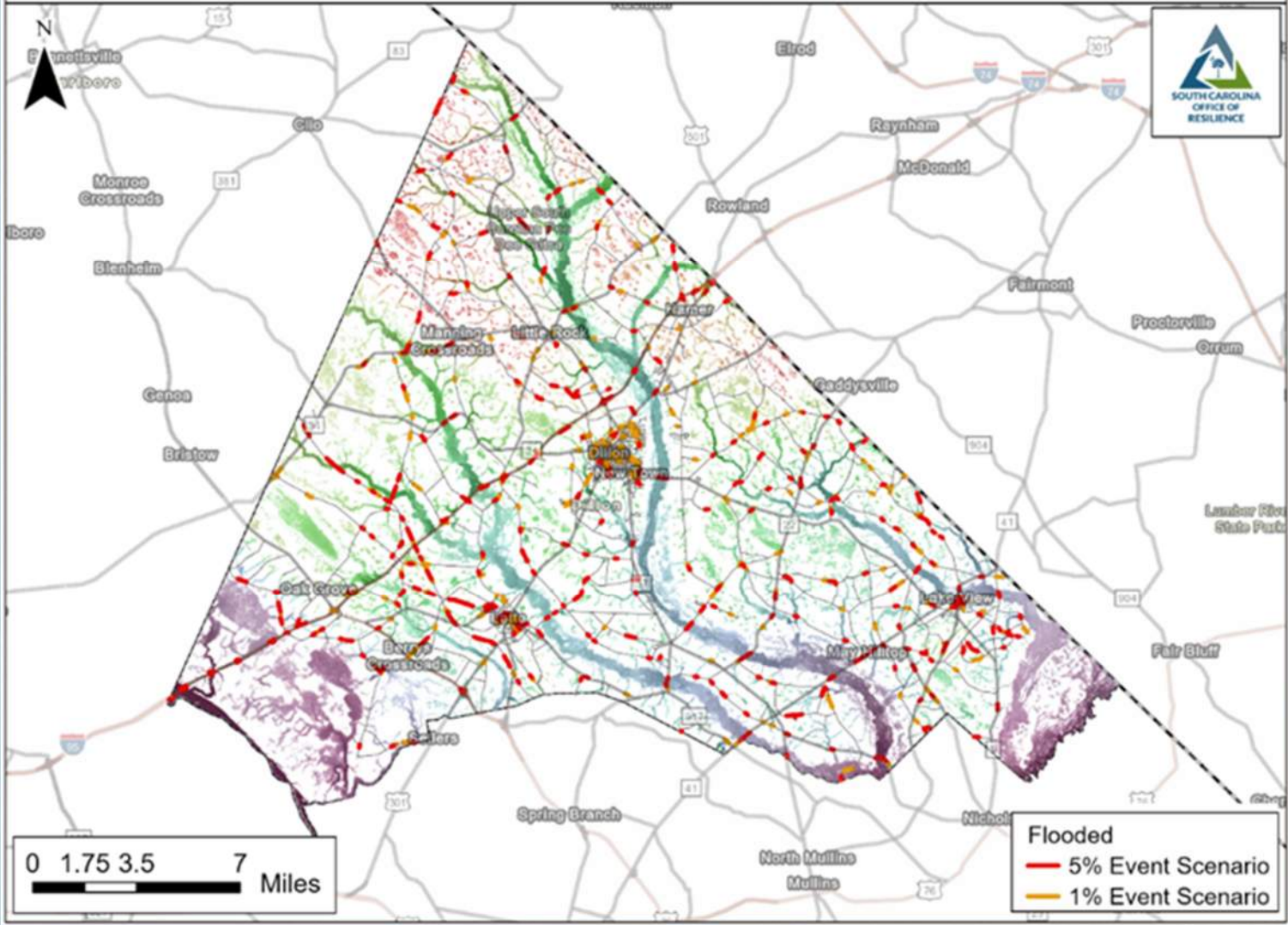
First Street Flood Model 2020 - 1 in 100 (Dillon)



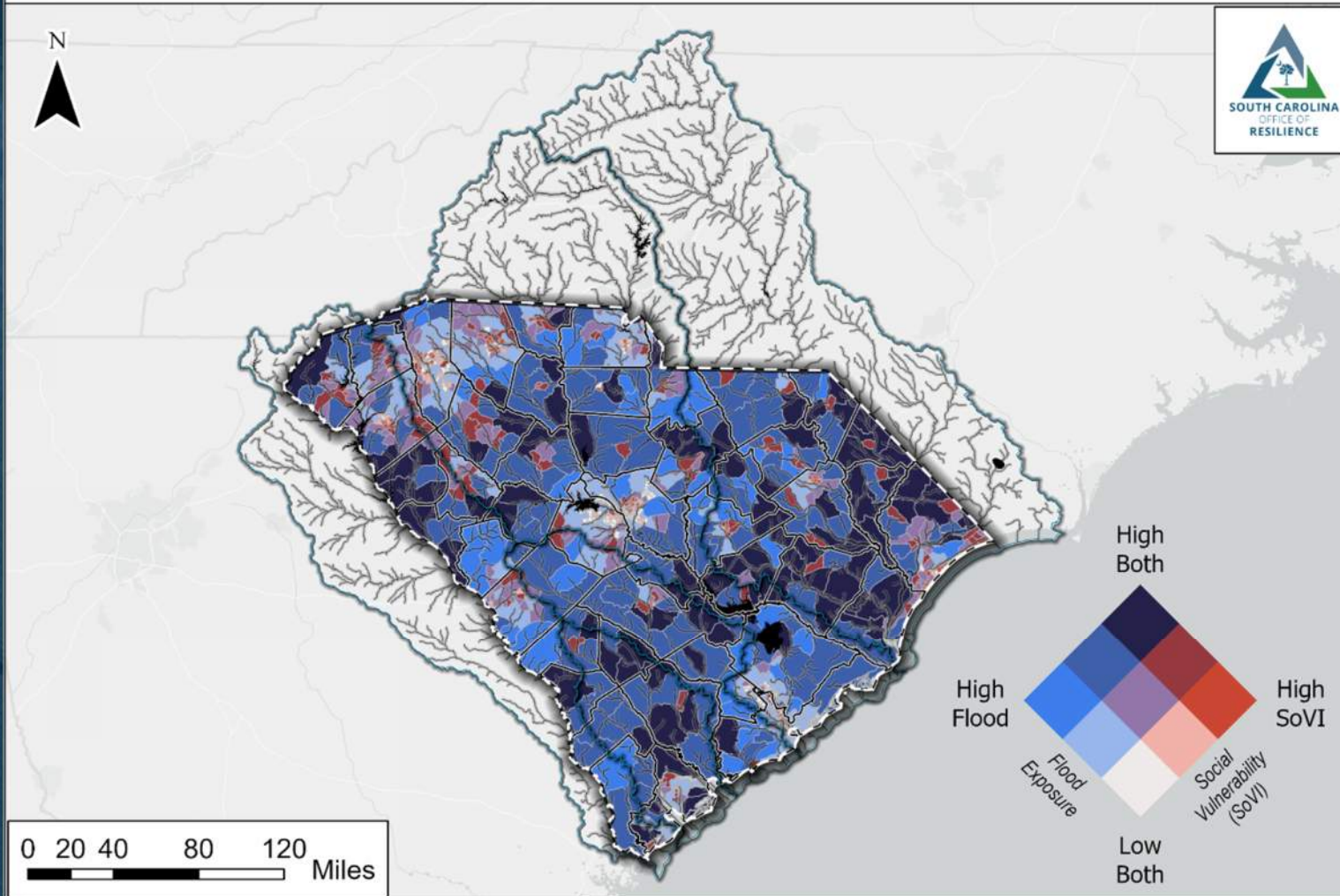
- SCOR Public Outreach
- FEMA Flood Zone
- 100 Year Inundation Depth
 - 6 in
 - 1 ft
 - 2 ft
 - 3 ft
 - Over 3 ft

Date Exported: 1/11/2022

Dillon County Flooded Roadways - First Street Model



Flooding Exposure and Social Vulnerability



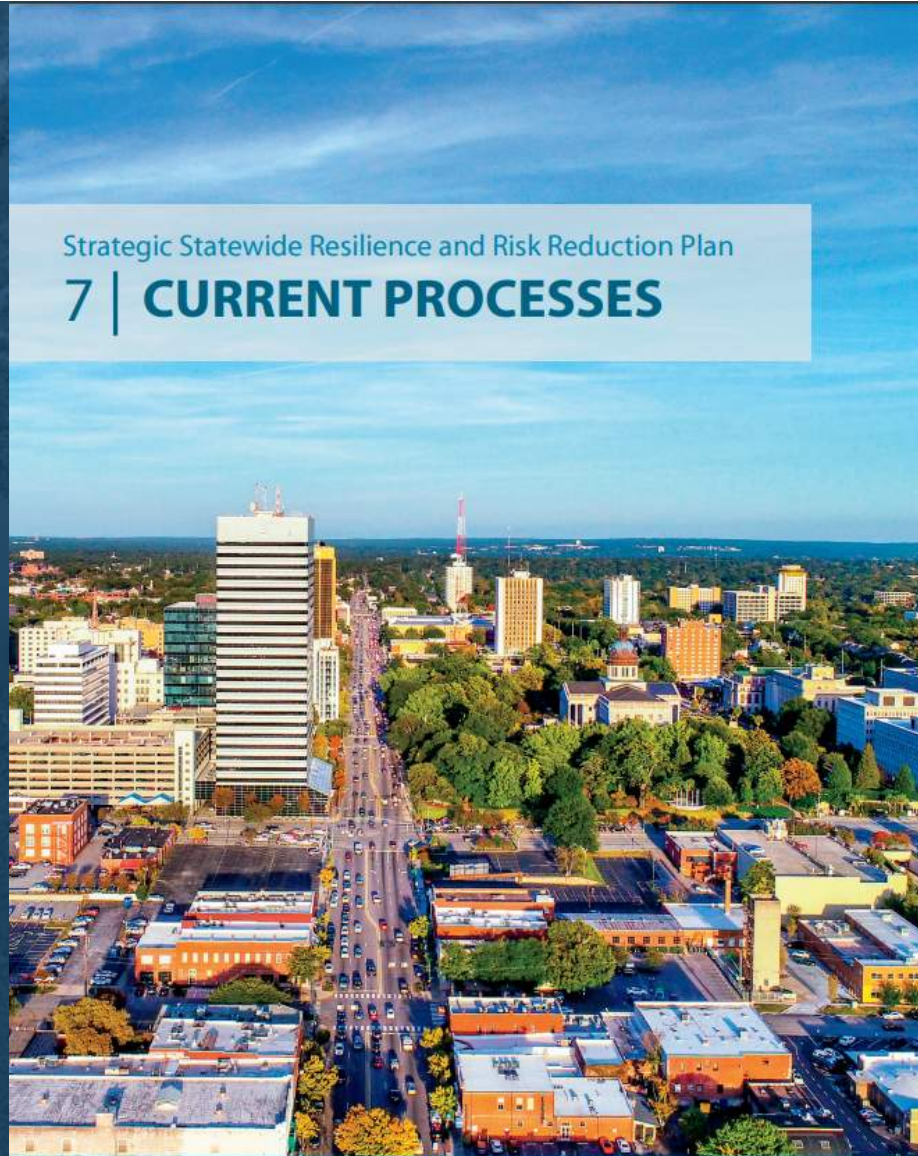
Flood Exposure is calculated as the percentage of the Census Tract flooded at a depth greater than 6 inches during a 1% Annual Chance Flood according to the First Street Foundation Flood Model. Social Vulnerability (SoVI) was distributed by the FEMA National Risk Index. SoVI scores are classified by the tract's ranking relative to the rest of South Carolina.

First Street Data Now Available

- SCOR has partnered with First Street to share hazard data with government entities within the State
 - Request form & use agreement required
- First Street has expanded analysis to multiple hazards (V3.2)
 - These are available at multiple intervals
 - 2023 and 2053
 - Available as raster hazard layers and as Tabular property-specific layers
- This data intended for planning purposes only



Strategic Statewide Resilience and Risk Reduction Plan
7 | CURRENT PROCESSES



Current Process Contents

Anticipate

- Land Use Planning & Regulations
- Hazard Mitigation Planning
- State Water Planning
- Other Statewide Planning Efforts Related to Resilience
- Floodplain Management Regulations
- Community Rating System
- Real Estate Disclosure
- Data

Absorb

- Stormwater Management Regulations
- Stormwater Infrastructure Design
- Green Stormwater Infrastructure Design
- Building Codes
- Coastal Zone Management
- Protection of Wetlands

Recover

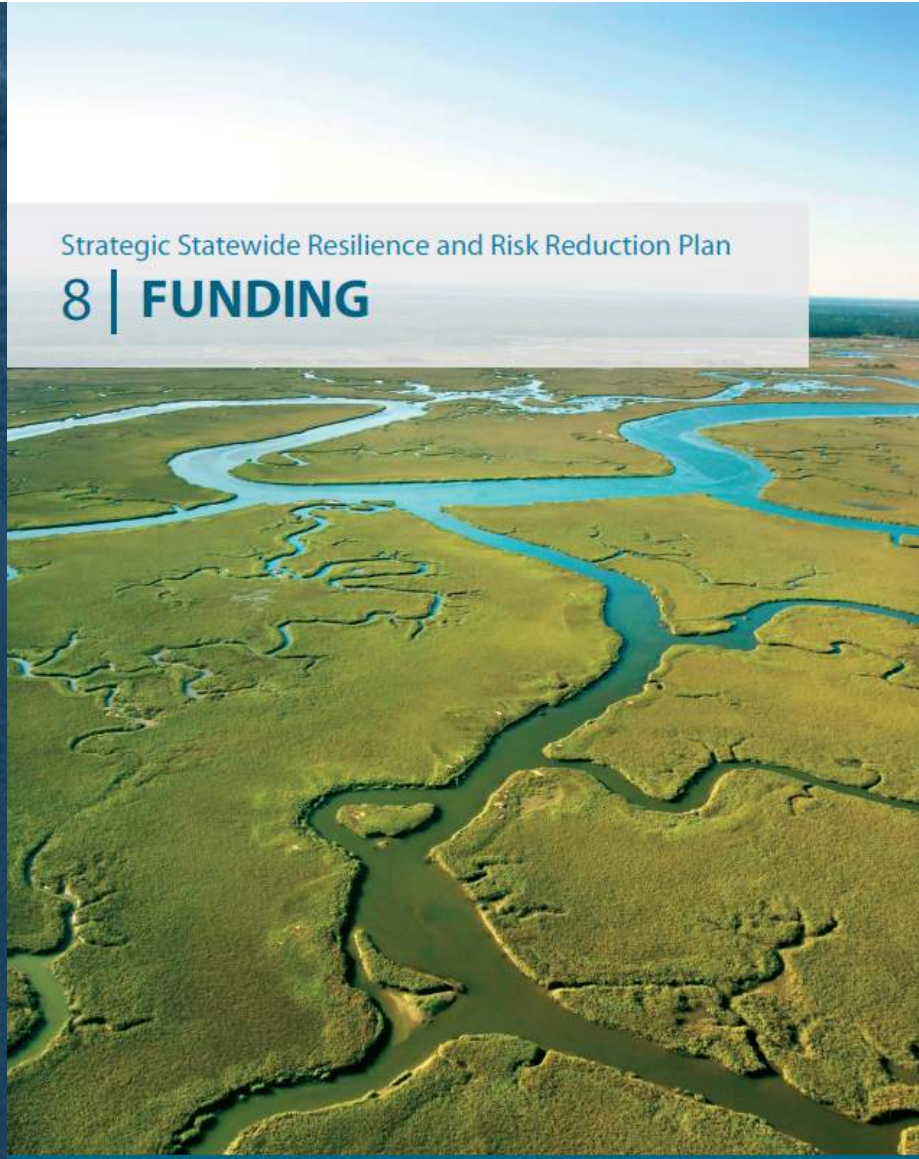
- National Disaster Response & Recovery Framework
- State Coordination of Recovery
- Complicating Factors for Recovery
- Non-Profit Partners in Recovery

Thrive

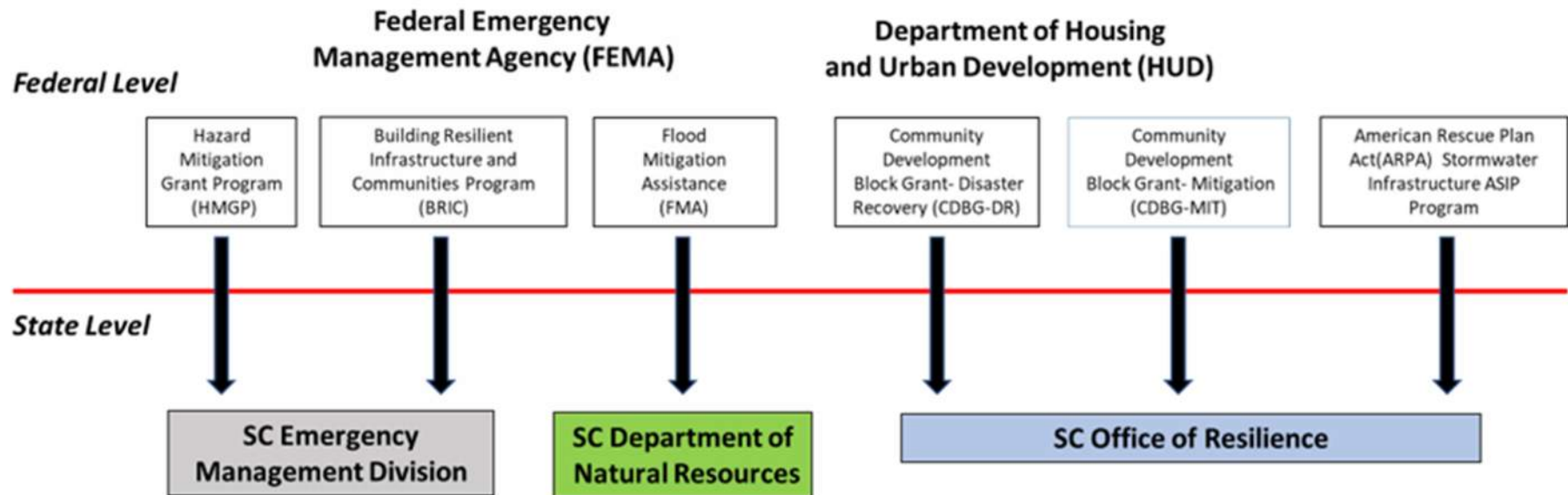
- Community Co-Benefits
- Economic Co-Benefits
- Ecosystem Co-Benefits

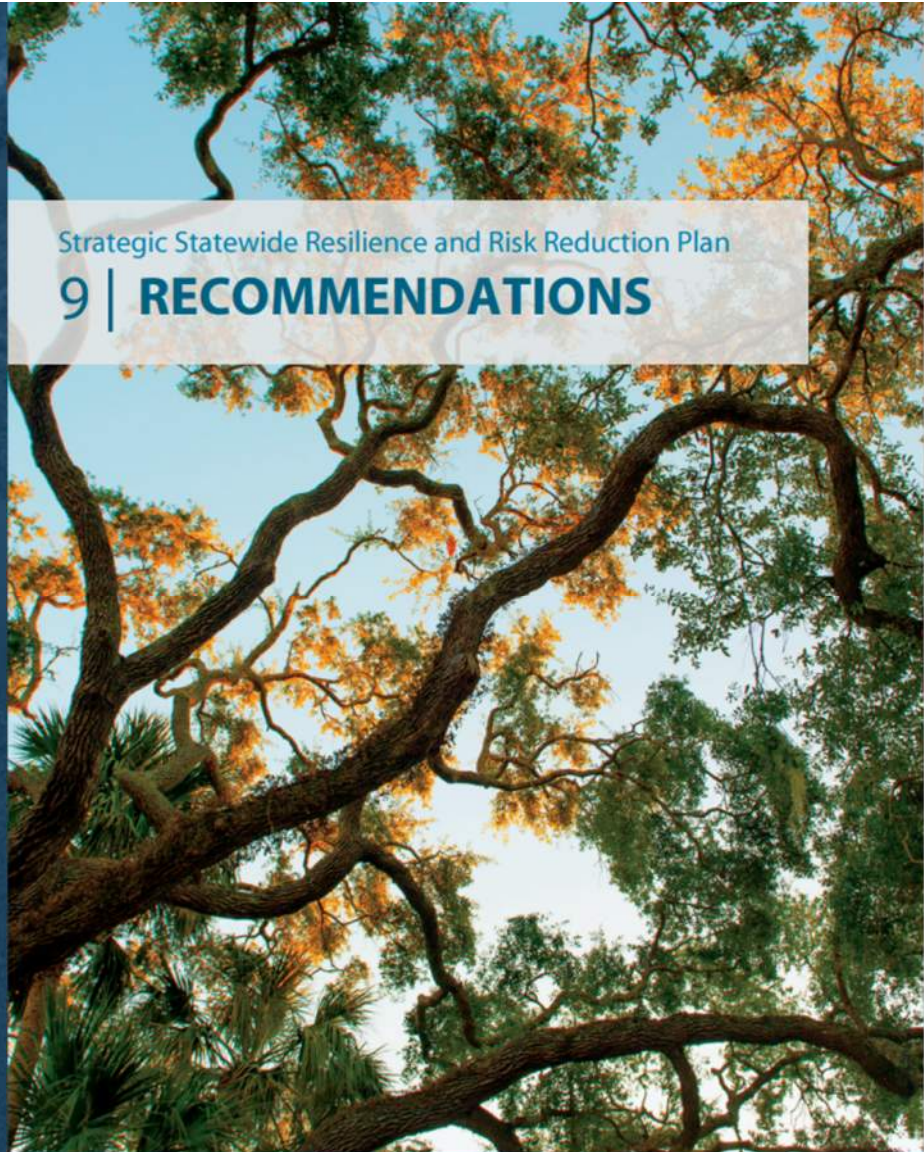
Strategic Statewide Resilience and Risk Reduction Plan

8 | FUNDING



Federal Funding





Strategic Statewide Resilience and Risk Reduction Plan

9 | RECOMMENDATIONS

Recommendation Themes

Improve Data Collection and Coordination

Increase Education, Outreach, and Disclosure

Coordinate Watershed-Based Resilience Planning and Projects

Incorporate Resilience into Planning, Land Use and Other Regulatory Processes

Maintain and Strengthen Building Codes

Incorporate Resilience into Infrastructure Design

Maintain Natural Flood Protection Through Conservation

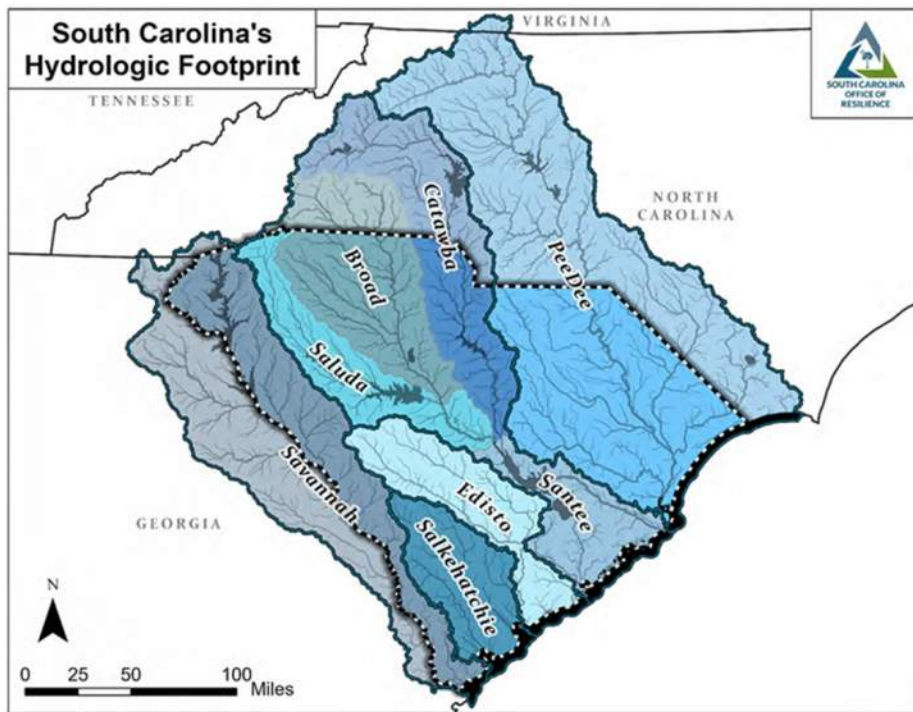
Incorporate Resilience into Housing Recovery

Establish a Voluntary Pre-Disaster Buyout Program

Identify and Maximize All Available Funding Sources For Resilience Activities

South Carolina Office of Resilience

Statewide Watershed-Based Resilience Planning Process



- Strategic Statewide Resilience Risk Reduction Plan Recommendation:
 - Coordinate with communities at the watershed level to identify risks and vulnerabilities, develop actionable flood mitigation and resilience solutions, and build community capacity by leveraging local, regional, state, and federal partnerships.
- Technical planning assistance for state and local government entities
- Strategy for providing resources, technical assistance, and other support to local governments
- Comprehensive Plan Resiliency Requirement

From Need to Plan to Implementation Projects, Programs, Policies

Community Capacity
Building & Planning



Regional (Watershed)
Coordination of Efforts



State and Federal
Partnerships

Address

- Address barriers to resilience at the local level

Assist

- Assist communities with risk and vulnerability assessments

Help

- Help communities develop a portfolio of well-planned and prioritized solutions

Advance

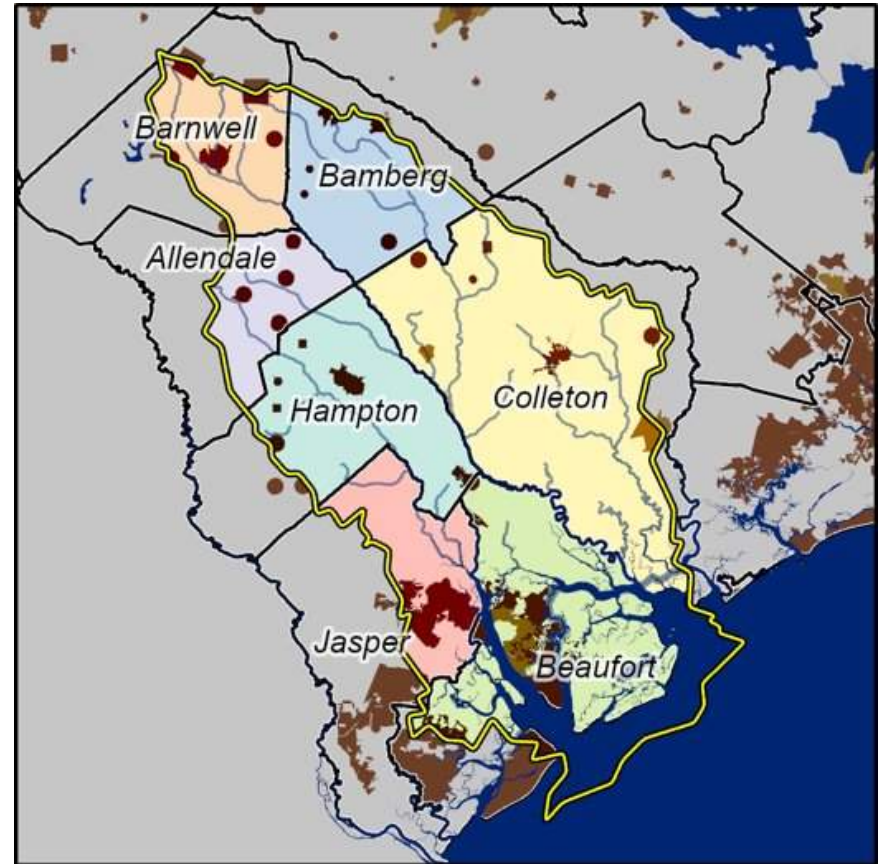
- Advance regional resilience by bringing communities together to coordinate and implement solutions

Link

- Link communities with funding streams for implementation

South Carolina Resilient Coastal Communities Collaborative Program

- Watershed-based planning process in the Salkehatchie River basin, as a pilot program for future watershed-based resilience planning efforts.
- Working with partners at S.C. Sea Grant Consortium and S.C. Beach Advocates.
- Will provide technical assistance to 10 underserved communities to complete community risk assessments, grounded in local engagement, leading to a portfolio of resilience projects.
- Creation of a comprehensive Salkehatchie Watershed Resilience Plan.
- Continued coordination between other proposals/projects.



Information Gathering, Planning & Community Engagement

- Compile existing data, plans, and studies
- Fill data gaps
- Community engagement

Community Risk, Vulnerability, and Resilience Reports

- Individual community reports completed with technical assistance
- Focus on local needs and priorities
- Includes a portfolio of resilience projects

Watershed Resilience Plan

- Integrates community reports into a comprehensive, cross-jurisdictional, watershed-based resilience plan
- Includes a combined vision and goals for the watershed, a review of existing efforts, summary of current and future risk and vulnerability
- Results in a prioritized list of resilience projects, programs, and policies that increase the resilience of the watershed as a whole

Watershed Resilience Planning Handbook

- Refine and document process
- Allow for transferability to other communities in basin and statewide
- Improve the ability of communities to access funding through NFWF or other programs for design and implementation of projects through regional coordination

Grant Administration

Awarded Grants with SCOR involvement

- EPA- Climate Pollution Reduction Grant -\$3M (DHEC/SC Ports Authority)
- National Fish & Wildlife Foundation- National Coastal Resilience Fund \$896,675 (S.C. Sea Grant, S.C. Beach Advocates)
- EPA Office of Community Revitalization- \$100,000
- SC Commission on National & Community Service (AmeriCorps Planning Grant) - \$83,000
- NOAA- Coastal Resilience-\$6.2M (The Nature Conservancy, lead)
- Robert Wood Johnson Foundation- \$250,000 (Departmentt of Insurance, lead)

Grant Applications Submitted/In Development

- FHWA PROTECT Grant
- EPA Solar For All
- HUD PRO Housing
- FEMA BRIC
- EPA CPRG

Questions?

