

Strategic Statewide Resilience and Risk Reduction Plan

7 | CURRENT PROCESSES



OVERVIEW

The Disaster Relief and Resilience Act (2020) directs that this plan serve as a framework to guide not only investment in flood mitigation projects, but also for the adoption of program and policies to protect people and property from the damage and destruction of extreme weather events. This chapter serves to provide background on the current programs and policies related to resilience at the state and local level.

This chapter is organized into four sections corresponding to SCOR's definition of resilience: The ability of community economies and ecosystems to **anticipate**, **absorb**, **recover**, and **thrive** when faced with environmental change and natural hazards (Figure 7.1).

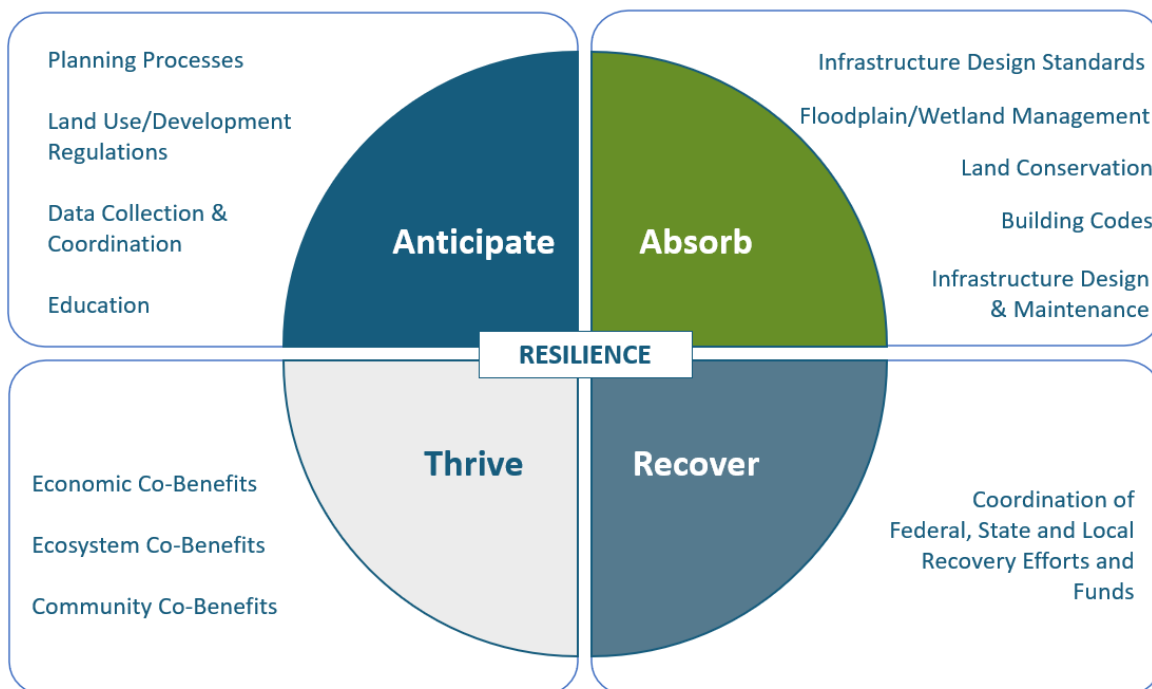


Figure 7.1: Components of Resilience

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KEY FINDINGS

- **Anticipate:** A variety of federal, state, and local plans and regulations impact the ability of communities, economies, and ecosystems to be resilient to natural hazards.
- **Absorb:** State, federal, and local regulations impact how well our systems are able to handle both environmental changes and natural hazards, particularly the standards to which we design our infrastructure and buildings and protect our wetlands and coastal zones.
- **Recover:** The ability of communities, economies, and ecosystems to recover is impacted by agencies, processes, and resources available at the federal, state, and non-profit level.
- **Thrive:** The investments and actions taken to improve the ability of communities, economies, and ecosystems to anticipate, absorb and recover from environment change and natural hazards will also allow the systems to work better every day and provide multiple co-benefits.

ANTICIPATE

This section focuses on the framework for state and local planning and regulations related to planning for environmental change and natural hazards and how these plans may affect the vulnerability or resilience of the state’s communities, economies, and ecosystems.

LAND USE PLANNING & REGULATIONS

COMPREHENSIVE PLANS

The South Carolina Local Government Comprehensive Planning Enabling Act of 1994 (S.C. Code Ann. § 6-29-310 *et seq.*) gave local governments the authority to adopt and update comprehensive plans, create planning commission and zoning ordinances to guide development and redevelopment of the local government’s area of jurisdiction. Plans developed by communities serve as a roadmap to decision making regarding growth and development, public facility investments, regulation of land uses, and economic development initiatives. Because comprehensive plans involve regulating development and design, it is an excellent place to incorporate local mitigation strategies and actions (SC Hazard Mitigation Plan, 2018).

All local government comprehensive plans, zoning and land development ordinances must conform to the Act. A planning commission is given the authorization to prepare and implement the comprehensive plan through zoning ordinances, land development and subdivision regulations, landscape ordinances, a capital improvements program, and policies and procedures.

The Act also requires the systematic preparation and re-evaluation and updating of a community's comprehensive plan, with review no less than once every five years, and an update at least every ten years. The plan must include the following elements: population, economic development, natural resources, cultural resources, community facilities, housing, land use, transportation, priority investment and resiliency.

The Act was amended by the Disaster Relief and Resilience Act to require that plans include a resiliency element that considers the impacts of flooding, high water, and natural hazards on individuals, communities, institutions, businesses, economic development, public infrastructure and facilities, and public health, safety, and welfare (S.C. Code Ann. § 6-29-510(D)(10) et seq.). This element includes an inventory of existing resiliency conditions, promotes resilient planning, design and development, and is coordinated with adjacent and relevant jurisdictions and agencies. For the purposes of this element, "adjacent and relevant jurisdictions and agencies" means those counties, municipalities, public service districts, school districts, public and private utilities, transportation agencies, and other public entities that are affected by or have planning authority over the public project. "Coordination" means written notification by the local planning commission or its staff to adjacent and relevant jurisdictions and agencies of the proposed projects and the opportunity for adjacent and relevant jurisdictions and agencies to provide comment to the planning commission or its staff concerning the proposed projects. Failure of the planning commission or its staff to identify or notify an adjacent or relevant jurisdiction or agency does not invalidate the local comprehensive plan and does not give rise to a civil cause of action. This element shall be developed in coordination with all preceding elements and integrated into the goals and strategies of each of the other plan elements.

While the recent addition to the enabling legislation requiring a resilience element will help ensure comprehensive plans address resilience related issues, the comprehensive planning process is complicated. It requires considerable coordination with adjacent and relevant jurisdictions and agencies, however, the recommendations made in these plans do not always translate into action through local regulations. This may be due to the language of the enabling legislation, which leaves room for local interpretation by not providing clear guidance on how to incorporate resilience into the comprehensive plan. Additionally, recommendations of the comprehensive plan may not reach implementation due to limited staff capacity when dealing with the administrative burden of development and zoning applications that many planning offices face. Finally, planners may not have the data they need to take broad goals found in the comprehensive plan and implement them. This could include GIS data to identify parcels for protection, as well as population and land use change projections that allow the community to consider its future needs.

LAND DEVELOPMENT REGULATIONS

Land development regulations, including subdivision regulations, establish the right of a property owner to create multiple parcels for sale or development from a larger parcel. This ability to subdivide parcels can have important implications for the resilience of communities. Subdivision regulations can be used to limit development in flood hazard areas and minimize flood risk to particular parcels proposed in a subdivision plat. The State Planning and Zoning Enabling Act of 1994 provides the authority for local government regulation of land development, including the subdivision of land. When a local government has adopted the community facilities element, the housing element, and the priority investment elements of the comprehensive plan, it may adopt land development regulations that govern subdivision and development of land, including infrastructure standards. Generally, these regulations are intended to “provide for the harmonious development” of the community to support the “health, safety, convenience, appearance, prosperity, or the general welfare” (S.C. Code Ann. § 6-29-1130(A) *et seq.*).

Land development regulations are explicitly intended to limit the risk of flooding and other natural hazards to people and property: “the regulations shall prescribe that no land development plan, including subdivision plats, will be approved unless all land intended for use as building sites can be used safely for building purposes, without danger from flood or other inundation or from other menaces to health, safety, or public welfare” (S.C. Code Ann. § 6-29-1130(A) *et seq.*).

It is important for subdivision regulations to consider both the on-site and off-site impacts of the development. Prevention or mitigation of on-site impacts will protect people and property on the subdivision site from flooding, and prevention or mitigation of off-site impacts will protect people and property downstream from the development site from increased risks of flooding.

Specific strategies for land development regulations that reduce or minimize the on-site and off-site impacts of stormwater or flooding include:

- Preservation of open space
- Preservation of wetlands and riparian areas
- Preservation of forested areas
- Infrastructure requirements for stormwater infrastructure or low impact development (LID) practices to manage stormwater
- Limiting or prohibiting the subdivision of parcels that include floodplains or flood prone areas, including cluster subdivision design to avoid development in floodplains

- Establishing a large minimum lot size for subdivisions of parcels that include floodplains or flood prone areas to ensure minimal development occurs in these areas
- Prohibiting the creation of new parcels that do not conform with other development standards, including lot dimensions and setbacks from lot lines, riparian buffers, and floodplains that may be incorporated into zoning regulations, to ensure that nonconforming or undevelopable lots are not created in floodplains or flood prone areas

ZONING REGULATIONS

Zoning regulations are an important tool for local governments to control the risks their communities face from hazards, especially exposure to flood risk. Zoning regulations can limit the types and intensity of land uses in flood hazard areas to minimize flood risk. When a local government has adopted the land use element of a comprehensive plan, the governing body may adopt a zoning ordinance. The general purpose of the zoning ordinance is to “help implement the comprehensive plan” (S.C. Code Ann. § 6-29-720, *et seq.*). The primary tools of zoning include regulation of land use, lot size, setbacks, height of structures, and density. These regulations are generally uniform across districts and apply equally to all parcels in the district. Each district is also defined on a map, so geographical distinctions can be made to regulate land use in only a particular area of the jurisdiction.

Public safety is one of the essential purposes of zoning regulations, and the Enabling Act specifically requires that “zoning ordinances must be made with reasonable consideration of the following purposes, where applicable: ...to secure safety from fire, flood, and other dangers” (S.C. Code Ann. § 6-29-710(A)(7), *et seq.*). In order to protect the community from hazards, the zoning ordinance must be based on an evaluation of the risk of particular hazards in the jurisdiction generally.

Parcel level risk assessment is also necessary for effective zoning regulations. The most common geospatial dataset for evaluating flood risk in zoning ordinances is FEMA’s Flood Insurance Rate Maps (FIRMs). Some zoning ordinances create an overlay district that provides special or additional standards for parcels located in the “100 year” floodplain and frequently reference the Base Flood Elevation, which is the estimated elevation of inundation during a “100 year” flood event. It should be noted that FIRMs do not completely capture an area’s flood risk and additional information should be considered. Specific strategies currently found in some zoning ordinances that reduce or minimize the risk for flood hazard exposure include:

- Prohibition of certain uses in the flood hazard overlay, such as schools, daycare centers, retirement homes, and residential use.
- Requiring increased setbacks and planted or natural buffers from riparian areas.

- Requiring structures to be elevated above the base flood elevation. The distance of elevation above the BFE is commonly referred to as “freeboard.”
- Prohibiting construction of new structures in the floodplain.
- Limiting the ability to perform construction on existing structures, such as renovations and additions.
- Including an amortization period that requires the removal of existing structures from the floodplain within a certain period of time.

HAZARD MITIGATION PLANNING

STATE HAZARD MITIGATION PLAN

The State Hazard Mitigation Plan serves as a guide to reducing the effects of hazards by engaging stakeholders, identifying and analyzing the state’s hazards and vulnerabilities, and developing a strategy for mitigation. The plan includes the following elements:

- **State Profile:** An overview of the State’s geography and environment, population and housing characteristics, employment and industry, land use, and historical disasters.
- **Hazard and Risk Analysis:** An analysis of 19 potential hazards: coastal, drought, earthquake, extreme cold, extreme heat, flood, hail, hazardous materials, infectious disease, landslide, lightning, nuclear facilities, severe thunderstorms, terrorism, tornado, tropical cyclones, wildfire, wind, winter weather.
- **State Capability Assessment:** Identifies state administrative, fiscal, and technical capacity as well as state agency programs that directly or indirectly relate to hazard mitigation.
- **Mitigation Strategy:** Includes goals and objectives of the state mitigation program and identifies mitigation measures and techniques based on the findings in the above sections.

Hazard mitigation plans must be updated every five years for state and local governments to be eligible for mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C. 5121 *et seq.* South Carolina Emergency Management Division has been working to update the 2023 State Hazard Mitigation Plan and will adopt the plan after is reviewed by FEMA. States with Enhanced Mitigation Plans are now eligible to receive more funds under the Hazard Mitigation Grant Program following a disaster declaration. The most recent version of the State Hazard Mitigation Plan is seeking this status.

Mitigation actions in the 2018 State Hazard Mitigation Plan were organized based on 8 goals.

1. Goal 1: Policies and programs to reduce or eliminate the impacts of hazards on people and property.
2. Goal 2: Obtain resources necessary to reduce the impact of hazards on people and property.

3. Goal 3: Enhance training, education, and outreach efforts focusing on the effects of hazards, importance of mitigation, and ways to increase resiliency.
4. Goal 4: Collect and utilize data, including conducting necessary studies and analyses, to improve policymaking and identify appropriate mitigation projects.
5. Goal 5: Improve interagency coordination and planning to reduce the impact of hazards on people and property.
6. Goal 6: Enhance compliance capabilities in order to reduce the impacts of hazards on people and property.
7. Goal 7: Enhance and encourage the use of natural resource protection measures as a means to reduce the impacts of hazards on people and property.
8. Goal 8: Pursue and prioritize mitigation actions that include and benefit multiple stakeholders and geographic areas to achieve broad, comprehensive results and leverage available resources.

LOCAL HAZARD MITIGATION PLANS

Local governments are responsible for preparing and adopting a jurisdiction wide natural hazard mitigation plan as a condition of receiving project grant funds under the Hazard Mitigation Grant Program (HMGP). They also are required to review and, if necessary, update the local mitigation plan every five years from date of plan approval to continue program eligibility. FEMA's [Hazard Mitigation Plan Status map](#) shows local jurisdictions with approved plans, approvable-pending-adoption plans, and expired plans. At the writing of this report, there are several counties with expired hazard mitigation plans, while several are in development or are pending adoption.

These plans are generally completed by local emergency managers and are multi-jurisdictional. The hazard identification, risk analyses, and vulnerability assessments in local hazard mitigation plans provide estimates of potential property losses and societal impacts on a county-by-county basis throughout the state. Based on the information in these assessments, each county identifies a list of hazard mitigation measures and provides an action plan for their implementation.

DISTINCTION BETWEEN A HAZARD MITIGATION PLAN AND RESILIENCE PLAN

A hazard mitigation plan is similar to a resilience plan in that they both seek to reduce the impacts of disasters, but the Resilience Plan and the State Hazard Mitigation Plan differ in scope. While the Hazard Mitigation Plan focuses primarily on potential hazard impacts to the existing system and how those impacts may be mitigated, the Resilience Plan considers how the system itself can be altered, focusing on how our communities, economies, and ecosystems can better anticipate, absorb, recover, and thrive when presented with both environmental changes and natural hazards. This adaptive systems approach also considers the benefits of these actions in the absence of hazard events.

STATE WATER PLANNING

The [South Carolina Water Resources Planning and Coordination Act](#) (S.C. Code Ann. § 49-3-10, *et seq.*) requires SCDNR to develop a comprehensive water resources policy or water plan for the State. The third edition of [SCDNR's Water Plan](#) is continuing the work of previous plans to evaluate water usage and demands and understand the impacts of drought on the water resources in the State. The [2004 Water Plan](#) highlighted the need for water resources to be managed at the regional level and starting in 2019, water plans are being developed in the Broad, Catawba, Edisto, Pee Dee, Saluda, and Santee watersheds, with the Savannah and Salkehatchie being split regionally into the Upper Savannah and Lower Savannah-Salkehatchie plans (South Carolina Department of Natural Resources (SCDNR), 2023).

The Edisto River Basin Plan was the first of the regional plans to be completed, and it describes the water usage, projected usage, drought management, and projected shortages. The SWAM model was used to calculate surface water usage and apply withdrawal scenarios within the basin. This allows for identification of the flow conditions in which the basin becomes water stressed.

The plan identifies that under a high demand scenario, the basin would have decreased water available at the Givhans river gage by:

- 10% under current conditions
- 40% under a proposed 2070 conditions
 - increased population, economic demand, and a hotter and drier climate (although climate projection used is not defined).

The current [South Carolina Surface Water Withdrawal, Permitting Use, and Reporting Act](#) of 2011, Title 49 Chapter 4, and SCDHEC Regulation 61-119, defines 3 types of surface water users: Existing, New, and Agricultural. The Existing users received a permit for a minimum of 30 years for the amount of water that the intake structure is designed to withdraw, not the historic nor needed withdraw amount. New withdrawlers receive a permit for a minimum of 20 years but do have to be evaluated by reasonableness and minimum instream flow requirements. Agricultural withdrawlers only have to register for water use. Agricultural withdrawlers are deemed registered if the legally available amount of water at the point of withdraw has not been exceeded. Registrations do not expire.

The Edisto River Basin Plan used the SWAM model to identify the demand under a use case in which all currently permitted and registered withdrawlers are allowed to withdraw the maximum allowed. This scenario identified that there would be insufficient water at 54% of the intakes and almost no water 5% of the time at the Givhans USGS river gage near the Charleston

Water Supply intake. This scenario is four times the water demand modeled under the 2070 High Demand scenario implicating that the historic water use does not align with the permitted and registered volumes. While changes to the demand side were examined, changes to future climate conditions and changing rainfall patterns were not explicitly considered.

OTHER STATEWIDE PLANNING EFFORTS RELATED TO RESILIENCE

The table below outlines various other statewide or state agency led planning processes that may have connections to resilience.

Table 7.1: South Carolina statewide planning efforts

Planning Name/Type	Lead(s)	Focus	Description of Purpose
DHEC Funded Watershed Plans	DHEC (EPA)	Water quality	<ul style="list-style-type: none"> Part of DHEC's Watershed Program that supports the goals of the Clean Water Act in the state's 8 major river basins. Identify pollutants in a watershed, determine the source of pollutants, and describe what needs to be done to address each source. Address surface water pollutants impacting source water for drinking water systems. Once a watershed plan is in place, it becomes the guidance and framework for any water quality improvement activities in that watershed. Having a watershed plan in place opens up additional funding opportunities for Section 319 grants to implement nonpoint source-reduction projects. Are developed for one or more 12-digit HUCs (hydrologic unit codes) and, occasionally, a 10-digit HUC.
State Wildlife Action Plan (2015)	South Carolina Department of Natural Resources	Conserving wildlife and habitats	<ul style="list-style-type: none"> Focusing on a proactive approach to conservation, the plan is a guide to address limiting factors that affect species persistence on the South Carolina landscape. Strategies and tools are discussed that can be implemented by SCDNR and its partners, with a cooperative, proactive approach. Required elements: (1) distribution and abundance of species, (2) location and relative condition of key habitats, (3) problems that affect species, (4) conservation actions, (5) plans for monitoring and adaptive management, (6) procedures to review the plan, (7) plans of coordinating with federal, state, and local agencies, and (8) public participation.
SC Green Infrastructure Plan (2023)	South Carolina Forestry Commission	Landscape Conservation focused on interconnected natural systems (cores and corridors)	<ul style="list-style-type: none"> A set of maps and strategies for South Carolina to conserve its highest value landscapes for both wildlife and people, creating a strategic green infrastructure network. For the purposes of this plan, green infrastructure includes all the interconnected natural systems in a landscape such as intact forests, wetlands, bays, dune systems, rivers and agricultural soils that provide clean water, air quality, wildlife habitat, and food.
State Energy Plan (2018)	State Energy Office (Office of Regulatory Staff)	Energy Efficiency	<ul style="list-style-type: none"> Established by SC Code 48-52-410 A comprehensive blueprint for a reliable, resilient, clean, and affordable energy system for South Carolina residents and businesses. Specifically, the State Energy Plan is designed to maximize (to the extent practical) reliability, environmental quality, energy conservation, and energy efficiency while minimizing the cost of energy throughout the state. Note: The SC Office of Regulatory Staff has also released a separate report on the resiliency of South Carolina's electric and natural gas infrastructure against extreme winter storm events.

FLOODPLAIN MANAGEMENT REGULATIONS

Floodplain management regulations provide a set of tools for protection from flood hazards and focuses particularly on non-structural management at the local level. Floodplain management regulations are not mandated by South Carolina law. Instead, the National Flood Insurance Program (NFIP) requires a community to adopt a floodplain management ordinance that meets federal standards in order to participate. FEMA has promulgated form floodplain management ordinances, and each state’s NFIP coordinator generally develops a state specific version. The Department of Natural Resources’ Flood Mitigation Program administers the NFIP for South Carolina. While the standards include many technical requirements, the minimum development standards for a compliant ordinance generally are:

- Permitting requirements to determine if a development is in a flood hazard area
- Requiring the lowest floor of a structure to be at or above the Base Flood Elevation
- Providing special standards for the foundation for manufactured housing
- Providing that the cumulative effect of a development cannot increase the base flood by more than one foot

Many features of floodplain management regulation overlap with or are integrated into a community’s zoning ordinance using the strategies discussed above. Community standards that exceed the minimum NFIP requirements qualify residents for discounted flood insurance premiums.

FEMA SPECIAL FLOOD HAZARD AREAS

FEMA uses the term “Special Flood Hazard Areas” (SFHA) to identify flood hazard areas on the Flood Insurance Rate Maps (FIRM). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or “100 year” flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded) (Federal Emergency Management Agency, 2020).

These FIRMs also show what is called the Base Flood Elevation (BFE). BFE is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–

A30, AR, AR/A, AR/AE, AR/A1– A30, AR/AH, AR/AO, V1–V30 and VE (Federal Emergency Management Agency, 2020).

COMMUNITY RATING SYSTEM

FEMA's Community Rating System (CRS) gives communities an incentive to adopt higher standards than the National Flood Insurance Program requires. Generally, communities adopting heightened standards will qualify for a discounted premium for flood insurance through the CRS process, providing a direct benefit to residents purchasing flood insurance that can be substantial.

In CRS participating communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the 3 goals of the program: (1) reduce and avoid damage to insurable property, (2) strengthen and support the insurance aspects of the National Flood Insurance Program, and (3) foster comprehensive floodplain management.

Flood insurance premium discounts in CRS communities range from 5% to 45% and are discounted in increments of 5%. A Class 10 community is not participating in the CRS and receives no discount. A Class 9 community receives a 5% discount for all policies, a Class 8 community receives a 10% discount, all the way to a Class 1 community, which receives a 45% premium discount.

Discount classifications are based on 19 credible activities, organized into four categories: (1) public information, (2) mapping and regulations, (3) flood damage reduction, and (4) warning and response. Specific activities within these categories are shown in Table 2.

Table 7.2: CRS Credible Activities (FEMA, 2021).

Public Information	Mapping & Regulations
<ul style="list-style-type: none"> ○ Activity 310 (Elevation Certificates) Maintaining construction certificates and making them available to the public ○ Activity 320 (Map Information Service) Providing Flood Insurance Rate Maps (FIRMS) and other map information and publicizing that service. ○ Activity 340 (Hazard Disclosure) Real estate agents' advising potential purchasers of flood-prone property about the flood hazard, and local regulations requiring disclosure of the hazard ○ Activity 350 (Flood Protection Information) Maintaining a community public library and/or website that contains flood-related information ○ Activity 360 (Flood Protection Assistance) Advising property owners and renters about how to protect buildings from flooding and publicizing that service ○ Activity 370 (Flood Insurance Promotion) Assessing flood insurance coverage in the community and implementing a plan to promote flood insurance 	<ul style="list-style-type: none"> ○ Activity 410 (Floodplain Mapping) Developing regulatory maps for areas not mapped by FEMA or flood mapping based on future conditions, detailed topography, or other standards ○ Activity 420 (Open Space Preservation) Keeping flood-prone land free of development ○ Activity 430 (Higher Regulatory Standards) Regulations that exceed the NFIP's minimum criteria for floodplain management ○ Activity 440 (Flood Data Maintenance) Gathering and/or maintaining more accessible, useful, and/or accurate floodplain data for regulation, insurance rating, hazard disclosure, and property appraisals ○ Activity 450 (Stormwater Management) Watershed planning and regulations that prevent future development from increasing flood hazards or diminishing water quality
Flood Damage Reduction	Warning & Response
<ul style="list-style-type: none"> ○ Activity 510 (Floodplain Management Planning) Adoption of flood hazard mitigation and/or natural functions plans using the CRS planning process, and/or conducting repetitive loss area analyses ○ Activity 520 (Acquisition and Relocation) Acquiring insurable buildings and relocating them out of the floodplain, and leaving the property as open space ○ Activity 530 (Flood Protection) Protecting buildings from flood damage by floodproofing, elevation, or minor structural projects ○ Activity 540 (Drainage System Maintenance) Annual inspections of channels and retention basins, and maintenance of the drainage system's flood-carrying and storage capacity 	<ul style="list-style-type: none"> ○ Activity 610 (Flood Warning and Response) Timely warning of flood threats and coordinating flood response activities. ○ Activity 620 (Levees) Annual levee inspection programs and plans to respond to floods caused by levee failure ○ Activity 630 (Dams) State dam safety programs and plans to respond to flooding caused by dam failure.

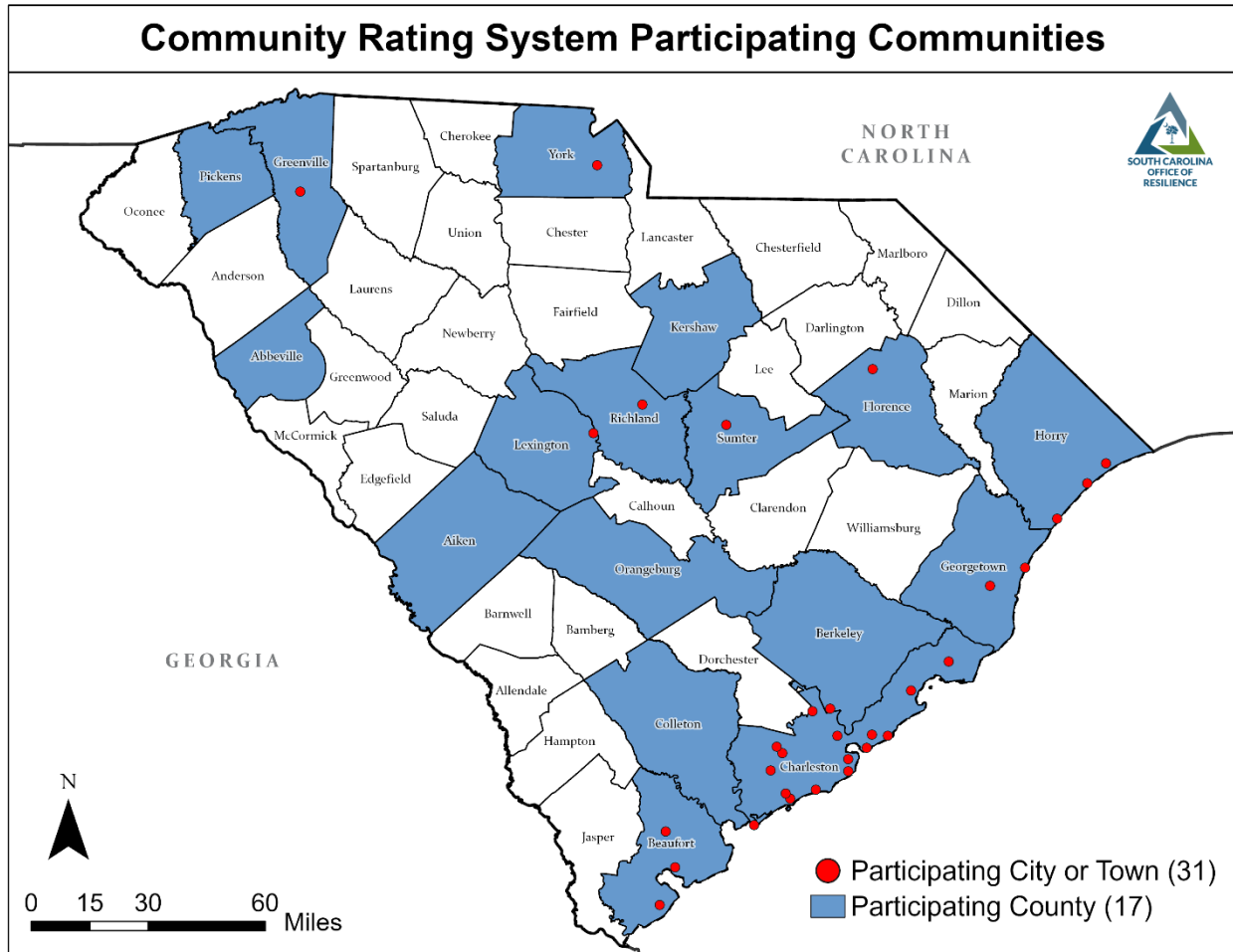


Figure 7.2 : Communities Participating in the Community Rating System (FEMA)

Table 7.3: Class and Discount Rate for CRS Participating Communities

Name	Class	% Discount
Abbeville County	9	5%
Aiken County	9	5%
Beaufort County	5	25%
<i>Beaufort</i>	6	20%
<i>Hilton Head Island</i>	5	25%
<i>Port Royal</i>	9	5%
Berkeley County	8	10%
<i>Hanahan</i>	7	15%
Charleston County	3	35%
<i>Awendaw</i>	6	20%
<i>Charleston</i>	6	20%
<i>Folly Beach</i>	3	35%
<i>Hollywood</i>	6	20%

<i>Isle of Palms</i>	5	25%
<i>James Island</i>	6	20%
<i>Kiawah Island</i>	5	25%
<i>McClellanville</i>	6	20%
<i>Meggett</i>	6	20%
<i>Mount Pleasant</i>	6	20%
<i>North Charleston</i>	7	15%
<i>Ravenel</i>	5	25%
<i>Rockville</i>	6	20%
<i>Seabrook Island</i>	5	25%
<i>Sullivan's Island</i>	5	25%
Colleton County	8	10%
<i>Edisto Beach</i>	6	20%
Florence County	9	5%
<i>Florence</i>	6	20%
Georgetown County	7	15%
<i>Georgetown</i>	7	15%
<i>Pawleys Island</i>	5	25%
Greenville County	7	15%
<i>Greenville</i>	5	25%
Horry County	7	15%
<i>Myrtle Beach</i>	5	25%
<i>North Myrtle Beach</i>	6	20%
<i>Surfside Beach</i>	5	25%
Kershaw County	9	5%
Lexington County	7	15%
<i>Cayce</i>	9	5%
Orangeburg County	9	5%
Pickens County	9	5%
Richland County	8	10%
<i>Columbia</i>	9	5%
Sumter County	7	15%
<i>Sumter</i>	7	15%
York County	8	10%
<i>Rock Hill</i>	7	15%

REAL ESTATE DISCLOSURE

THE RESIDENTIAL PROPERTY CONDITION DISCLOSURE ACT

The Residential Property Condition Disclosure Act (S.C. Code Ann. § 27-50-10 *et seq.*) requires that an owner of residential real property (single family dwelling unit or a single transaction involving transfer of four dwelling units or less) shall provide to the purchaser a completed and signed disclosure statement prior to forming a real estate contract. This disclosure must be provided in connection with any sale, exchange, installment land sale, or lease with an option to purchase contract. This disclosure statement is not required in connection with transactions listed and exempted by S.C. Code Ann. § 27-50-30 *et seq.*

The Act states the disclosure must contain the language and be in the form promulgated by the South Carolina Real Estate Commission and outlines minimum requirements that the statement must include about the following characteristics and conditions of the property:

1. The water supply and sanitary sewage disposal system
2. The roof, chimneys, floors, foundation, basement, and other structural components and modifications of these structural components
3. The plumbing, electrical, heating, cooling, and other mechanical systems
4. Present infestation of wood-destroying insects or organisms or past infestation, the damage from which has not been repaired
5. The zoning laws, restrictive covenants, building codes, and other land-use restrictions affecting the real property, any encroachment of the real property from or to adjacent real property, and notice from a governmental agency affecting this real property
6. Presence of lead-based paint, asbestos, radon gas, methane gas, underground storage tank, hazardous material or toxic material, buried or covered, and other environmental contamination
7. Existence of a rental, rental management, vacation rental, or other lease contract in place on the property at the time of closing, and, if known, any outstanding charges owed by the tenant for gas, electric, water, sewerage, or garbage services provided to the property the tenant leases
8. Existence of a meter conservation charge, as permitted by Section 58-37-50, that applies to electricity or natural gas service to the property
9. Whether the property is subject to governance of a homeowners association

The Act also states that this disclosure statement must give the owner the option to indicate that the owner has actual knowledge of the specified characteristics or conditions, or that the owner is making no representation as to any characteristic or condition.

STATE OF SOUTH CAROLINA RESIDENTIAL PROPERTY CONDITION DISCLOSURE STATEMENT

The South Carolina Real Estate Commission recently approved an update to the [Residential Property Condition Disclosure Statement](#) effective June 1, 2023. The new form added additional questions and details regarding past flood damage, receipt of disaster assistance, repairs covered and not covered by insurance to include private or public flood insurance, and beach renourishment projects.

The form contains a series of questions, many of which have the options of “Yes”, “No” or “No Representation.” Recognizing confusion over the use of the “No Representation” option, The Real Estate Commission added the following explanation of the above choices in the new disclosure form:

- Yes: If a question is answered “Yes” or asks for a description, then owner must explain or describe the issue or attach a descriptive report from an engineer, contractor, pest control operator, expert, or public agency.
- No: If a question is answered “No” for any question, the owner is stating that owner has no actual knowledge of any problem
- No Representation: By answering “No Representation” on this disclosure statement, the owner is acknowledging that they do not have the current knowledge necessary to answer the questions with either a “Yes” or “No” response. Owner still has a duty to disclose information that is known at the time of the disclosure statement. “No Representation” should not be selected if the owner simply wishes to not disclose information or answer the question. Selecting “No Representation” does not waive liability if owner is aware or subsequently becomes aware.

A 2010 report by DHEC OCRM’s Shoreline Change Advisory Committee, [Adapting to Shoreline Change](#), included a recommendation to update the form with a coastal hazard section which included the disclosure of: erosion control structures, shoreline change rates, dates of known emergency actions, special OCRM permits, and the presence of septic systems. Several of these recommendations were a part of the June 1, 2023, update of the form.

The report also noted that knowledge and disclosure may be limited by the availability of information. While some of this specific information is publicly available, it is not all inclusive or all in one place.

DATA

POPULATION & DEMOGRAPHIC DATA

The primary organization that provides statewide population and demographic data is the South Carolina Revenue and Fiscal Affairs Office (RFA). Their mission is to provide insightful research, analysis, and resources to facilitate informed policy decisions and administration of services. The Data Integration and Analysis Division receives, processes, distributes, and interprets health, demographic and Census data for planning, policy, and evaluation of programs.

The South Carolina Census State Data Center at RFA focuses on making U.S. Census Bureau data more accessible and provides guidance in the use of Census Bureau data products. This includes use of census socioeconomic, housing, and population data.

RFA's work with population data includes population projections out to the year 2035. This includes total population as well as population by sex and age at the county level.

GEOGRAPHIC INFORMATION

GEOGRAPHIC INFORMATION COUNCIL (GIC)

Affiliated with RFA is the State's Geographic Information Council (GIC), a collection of state agencies that voluntarily agree to share certain geographic information system (GIS) data (through Memorandums of Agreement), fund internal GIC-data management, and coordinate statewide aerial imagery collection. Participating agencies contribute \$20,000 per year to maintain their GIC status. The mission of the GIC is to promote a positive collaborative geospatial mapping community between local, state, and federal agencies.

PROPERTY LEVEL INFORMATION

Property, or parcel level, data is collected and maintained at the local level. Each municipality and county maintain their own system of collecting and managing information about properties related to tax classifications, property use, value, zoning, land development regulations, and structural information.

PALMETTO EOC EMERGENCY MANAGEMENT SYSTEM

SCEMD owns and maintains the State's emergency management Common Operating Picture. Palmetto EOC is used to facilitate common situational awareness during emergency operations, track resource requests to completion, and map hazard impacts. Palmetto EOC includes both a GIS mapping component and data entry fields in an intuitive platform. Emergency management

officials across the state have access to this system. This tool is available only to direct partners of SCEMD and is intended to enrich facility location data with the updated operational status of facilities, roadways, utilities, and services as an emergency event progresses. Familiarity with this system before an onset disaster allows emergency managers and responders to act efficiently.

ABSORB

This section focuses on those regulations that impact the ability of our communities, economies, and ecosystems to withstand environmental changes and natural hazards, to include the standards to which stormwater infrastructure is designed.

STORMWATER MANAGEMENT REGULATIONS

Stormwater management is essential to ensure that development does not temporarily or permanently increase the impact of precipitation on downstream owners and the overall watershed. The Stormwater Management and Sediment Reduction Act (SWMA), codified at S.C. Code Ann. § 48-14-10, *et seq.*, provides the basis for local regulations for stormwater management and site disturbance. The Stormwater Regulations adopted by DHEC recognize that stormwater runoff creates water quality and quantity problems because stormwater runoff is “a source of pollution” and “may add to existing flooding problems.” Therefore, the Stormwater Regulations seek to “prevent additional water quantity and quality problems and may reduce existing problems” (S.C. Code Ann. Regs. 72-300.A). The stormwater permitting program generally is intended to implement the requirements of the National Pollutant Discharge Elimination System (NPDES) permitting program of the federal Clean Water Act (33 U.S.C. §1251 *et seq.*). DHEC administers the NPDES permitting process for the state and regulates municipal separate storm sewer systems (MS4s).

The SWMA and regulations authorize an implementing agency to oversee a permitting system for land disturbing activities. The SWMA authorizes DHEC as the implementing agency if the local government or conservation district does not receive a delegation of authority to implement the program from DHEC (S.C. Code Ann. §48-14-60, *et seq.*). DHEC’s regulations include the standards that a local government must meet to receive a delegation of authority to administer the stormwater management program (S.C. Code Ann. Regs. 72-304).

The SWMA requires a permit to undertake all land disturbing activities unless the activity is exempt (S.C. Code Ann. § 48-14-30, *et seq.*). A land disturbing activity is “any use of the land by any person that results in a change in the natural cover or topography that may cause erosion and contribute to sediment and alter the quality and quantity of stormwater runoff” (S.C. Code Ann. § 48-14-20(8), *et seq.*). In the land development process, land disturbing activity commonly includes the clearing and grading of a site in preparation for the construction of infrastructure and buildings. However, the SWMA exempts several common land disturbing uses, such as agriculture and forestry (S.C. Code Ann. § 48-14-40, *et seq.*).

The SWMA and regulations and/or local government stormwater management ordinances generally seek to control the quality and quantity of stormwater runoff and prevent erosion

through best management practices (BMPs). BMPs are generally actions or practices “which have been demonstrated to effectively control the quality and/or quantity of stormwater runoff and which are compatible with the planned land use.” BMPs include common solutions for stormwater, such as gutters, catch basins, and detention ponds, as well as low impact development (LID) practices which seek to mimic the natural process of water infiltration. The permit review process evaluates construction activities as well as post construction BMPs. Therefore, stormwater management plays an important role in the temporary impacts of construction but also on the long term impacts of the development on the watershed.

STORMWATER INFRASTRUCTURE DESIGN

ATLAS 14

Currently the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation frequency estimates for the Mid-Atlantic Region, as discussed in Chapter 5, are used for infrastructure design, planning, and management. The Atlas is intended as the official documentation of precipitation frequency estimates and associated information in the United States. The most recent, Atlas 14, Volume 2 was updated in 2006, based on historical data up to 2000. These estimates are used in the design guidelines discussed below for DOT.

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

SCDOT is a major designer, owner, and maintainer of stormwater infrastructure.

The following are the hydrologic analyses used and recommended by SCDOT for calculating hydraulic designs for projects based on the size of the drainage area.

A. Drainage Areas Up to 100 Acres

For drainage areas up to 100 acres, SCDOT utilizes the Rational Method. This generally applies in the design of ditches, storm drain systems, spread calculations, and small culverts, and is used to evaluate existing drainage features.

B. Drainage Areas Greater than 100 Acres to 1 Square Mile

For drainage areas greater than 100 acres and up to 1 square mile, SCDOT utilizes the Natural Resources Conservation Service (NRCS) Method. This method also applies to any calculations where rainfall volumes and devices storage are involved. Currently, SCDOT uses the South Carolina Unit hydrograph to apply the NRCS method. This is a spreadsheet developed by the University of South Carolina in consultation with NRCS and with collaboration from SCDOT. This is

generally utilized in the design and evaluation of ditches, storm drain systems, erosion and sediment control devices, stormwater management basins, and small culverts.

C. Drainage Areas Greater than 1 Square Mile

For drainage areas greater than 1 square mile, SCDOT utilizes the USGS Regression Equations.

These equations are developed from the streamflow gages and do not depend on Atlas 14 rainfall depths and distribution. The regression equations are updated every 10 years by USGS in partnership with GDOT, NCDOT, and SCDOT and are utilized in the design and evaluation of bridges and large culverts.

While the above calculations are based on the size of the project drainage area, the capacity of draining facilities, determined by the design storm, is also determined by the project's structural classification and structure type. Below are the Design Storms for Various Drainage Facilities recommended by SCDOT.

Table 7.4: SCDOT Recommended Design Storms for Various Drainage Facilities

Recommended Design Storms for Various Drainage Facilities					
	Design AEP (Annual Exceedance Probability)				
Functional classification and structure type	50%	10%	4%	2%	1%
	(2-yr)	(10-yr)	(25-yr)	(50-yr)	(100-yr)
Primary Roads and Interstates					
Culverts				X	
Bridges				X	
Scour at Bridges					X
Secondary Roads					
Culverts			X		
Bridges			X		
Scour at Bridges					X
All Roads					
Inlets, storm drain pipes, roadside ditches, and outfalls		X *			
Sag Inlets for roadways				X	
Temporary Erosion and Sediment Control Devices		X**			

Permanent Stormwater Management	X*	X**			X***
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* AEP increases for watersheds > 40 acres

** SC State Regulations

*** For Emergency Spillway Design only.

REGIONAL/LOCAL STORMWATER DESIGN STANDARDS

Local governments can further regulate stormwater standards, and often do as a part of meeting Environmental Protection Agency (EPA) permitting requirements for Municipal Storm Sewer Systems, which require a look at community goals, implementation strategies and policies.

One innovative example of multi-jurisdictional stormwater design guidelines that consider the impacts of stormwater between multiple communities is the Southern Lowcountry [Stormwater Ordinance](#) and [Design Manual](#). This was developed by representatives from Beaufort County, Jasper County, the City of Beaufort, the Town of Bluffton, the City of Hardeeville, and the Town of Port Royal to address post-construction stormwater management in the Southern Lowcountry Region. A model stormwater ordinance provides common language and minimum management provisions for jurisdictions in this area, while the design manual provides for proper implementation of the ordinance. The manual provides a framework to 1) improve water quality through runoff reduction to the maximum extent practicable, 2) prevent downstream stream bank and channel erosion, 3) reduce downstream overbank flooding, and 4) safely pass or reduce runoff from extreme storm events. It outlines a design review and permitting process, minimum control requirements, stormwater best management practices, erosion and sediment control, enforcement, and violations (Beaufort County, South Carolina, 2020).

GREEN STORMWATER INFRASTRUCTURE DESIGN

Green stormwater infrastructure can be defined as stormwater management techniques and practices that mimic natural hydrologic functions and incorporate landscape features to store or treat runoff. Nature-based solutions incorporate the natural environment to provide multiple benefits and support resilient communities. Green infrastructure can include site specific management practices as well as watershed scale techniques such as land preservation

and the restoration of wetlands and floodplains that naturally store water and reduce runoff (NOAA, 2015). Nature-based solutions can be thought of as “the sum of all our natural resources,” made up of “a strategically planned and managed network of wilderness, parks, greenways, conservation easements, and working lands with conservation value that supports native species, maintains natural ecological processes, sustains air and water resources, and contributes to health and quality of life” (Firehock, 2015). Green infrastructure contributes to a more resilient ecosystem that is better able to maintain its core functions in the face of stressors and provide redundancy to the existing grey/hardened infrastructure system.

Nature-based solutions can be implemented through construction practices (such as permeable pavement), restoration projects (restoring or simulating natural hydrology), or through policy (land conservation). They can be done on a regional scale, such as the restoration of forests, floodplains, and wetlands, or on a local scale with site specific practices such as green roofs, permeable pavement, and cisterns. Examples of nature-based solutions are:

Living shorelines: A protected and stabilized shoreline that is made of natural materials such as plants, sand, or rock. Plants or other natural elements, sometimes in combination with harder shoreline structure, are used to stabilize estuarine coasts, bays, and tributaries. Additionally, they can improve water quality, promote biodiversity, reduce wave energy, and are more resilient against storms than bulkheads, which prevent natural marsh migration and may create seaward erosion (NOAA Fisheries, n.d.).

Restoration of floodplains and wetlands: The manipulation of a former or degraded wetland's physical, chemical, or biological characteristics to return its natural functions. Floodplains and wetlands can act as natural buffers and soak up and store a significant amount of stormwater. This may include “daylighting” urban creeks and streams that were previously piped to reduce stormwater run-off (American Planning Association, 2020).

Rain gardens: Small, shallow, sunken areas of plantings that collect stormwater runoff from roofs, streets, and sidewalks. Also known as bioretention cells, they are designed to mimic the natural ways water flows over and absorbs into land to reduce stormwater pollution.

Green roofs: Roofs covered with growing media and vegetation that enable rainfall infiltration and evapotranspiration of stored water and prevent ponding on the roof surface (EPA, 2017).

Green streets: Designing streets to capture and filter stormwater from impervious surfaces at its source. Permeable pavement, bioswales, planter boxes, and trees are all elements that can be woven into street design, while also contributing to an enjoyable transportation experience for drivers as well as pedestrians and may spur adjacent economic development (EPA, 2017). NOAA estimates that the average cost of creating a rain garden is \$5 to \$16 per square foot with a maintenance cost of 2 to 41 cents per square foot including everything from design to yearly inspections and maintenance (NOAA, 2020).

Bioswales: Landscape elements that remove silt and pollution from stormwater runoff. Filled with vegetation, compost, or riprap in a swaled drainage course with gently sloped sides. Usually used around parking lots or around streets where pollution is often collected and filtrated before flowing to surface water (EPA, 2017). NOAA estimates that the average cost of construction of a bioswale is \$5.50 to \$24 per square foot with a maintenance cost of 6 to 21 cents per square foot (NOAA, 2020).

Constructed wetlands: Treatment systems that use natural processes involving wetland vegetation, soils, and their associated microbial assemblages to improve water quality and established desired hydraulic flow patterns (EPA, 2017).

Permeable (Pervious) pavement: Pavements that infiltrate, treat, and/or store rainfall where it falls. Materials can include pervious concrete, porous asphalt, or permeable interlocking pavers (EPA, 2017).

Native planting (Xeriscape): Using drought resistant landscaping that is native to the location.

Grey water re-use systems: Systems that capture water used in showers, washing machines, and bathroom sinks for use (for landscape and/or indoor non-potable use) in order to save water and energy. (EPA, 2017).

Cisterns: Containers for the harvesting of rainwater; often runoff from rooftops. From this container, it can be used for non-potable water uses and onsite infiltration (EPA, 2017).

Infiltration trenches: Excavations typically filled with stone to create an underground reservoir for stormwater runoff. Runoff volume gradually exfiltrates through the bottom and sides of the trench into the subsoils and over a period of time.

Downspout disconnections: Reroutes rooftop drainage pipes from draining into the storm sewer to draining into rain barrels, cisterns, or permeable areas such as lawns (EPA, 2017).

Beneficial use of dredged material: The dredging of waterbodies, ways, and harbors produces a large amount of sediment that may be relocated and used for beneficial purposes such as beach restoration, shore protection, and habitat enhancement.

Vegetative/riparian buffer requirements: Protecting riparian and floodplain areas from being destroyed or negatively impacted by development by requiring a certain distance between the water body and the developed area or requiring the placement of vegetation between the water body and the development (EPA, 2017).

Land conservation: Protecting open spaces and sensitive areas within and adjacent to urban areas, focusing on riparian areas, wetlands, and steep hillsides (EPA, 2017).

Low-impact development: Sometimes used interchangeably with green infrastructure, these are systems and practices that use or mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater in order to protect water quality and associated aquatic habitat.

In addition to handling stormwater on site, green infrastructure techniques can have wide reaching benefits. Nature-based solutions provides redundancy in the existing gray stormwater system in the case of extreme weather events. The EPA has also compiled a report on “Healthy Benefits of Green Infrastructure in Communities,” which outlines co-benefits to green infrastructure including recreation, safety, reduced exposure to pollutants, and increases in adjacent property values. The EPA also notes that green infrastructure costs less than conventional gray infrastructure, provides green jobs, and reduces municipal water usage and cooling costs (EPA, 2017). Additionally, in times of rapid development, green infrastructure provides a way to increase stormwater system capacity while maintaining the quality of the landscape.

In many cases, nature-based strategies can be more cost effective than traditional alternatives. As with any solution intended to function for an extended period of time, nature-based strategies should be evaluated to ensure the maintenance and operations can be resourced for the life cycle of the solution. While the benefits can vary based on location and approach, a study from 2018 found that nature-based solutions compared favorably with traditional flood mitigation options and significantly reduced flood damages in coastal environments, with average benefit-cost ratios over 3.5 (Reguero, Beck, Bresch, Calil, & Meliane, 2018). A 2017

study on Superstorm Sandy estimates that coastal wetlands reduced flood damages in the total of \$625 million (Narayan, et al., 2017).

While there is a continued need for traditional gray infrastructure and protections for communities, nature-based solutions have been found to be cost effective and low maintenance, especially on small property scales. For example, a study after Hurricanes Irene and Arthur found that waterfront property owners protected by bulkheads experienced, on average, twice the property damage costs compared to those who had implemented natural features to safeguard their shorelines (Smith, et al., 2017).

BUILDING CODES

Building codes are the primary regulatory tool to ensure that all structures are safe. Building codes ensure structural integrity, fire resistant construction, and, of course, disaster resistant construction. The South Carolina Building Codes Council adopts and modifies model building codes for South Carolina in accordance with S.C. Code Ann. § 6-9-5, *et seq.*

There are many specific codes, including the International Building Code for commercial structures and the International Residential Code for residential structures. The South Carolina Legislature has mandated that communities adopt the International Codes Council (ICC) Codes and has created the Building Codes Council to regularly review and adopt specific components, in addition to overseeing implementation and training for Building Officials (See S.C. Code Ann. § 6-8-10, *et seq.* & S.C. Code Ann. Regs. 8-100, *et seq.*).

The Council can also grant local or statewide modifications sought by local jurisdictions or professional associations. Local modifications may be given when the Council determines that the changes are required to meet local needs due to physical or climatological conditions. Along with code adoptions, the South Carolina Building Codes Council updates and approves use of wind and seismic maps. [LLR's website](#) provides current map files for each county. To determine design loads for locations by address or coordinates, the [Applied TC Hazards by Location website](#) can be used. The Council adopted the 2021 SC Building Codes in 2021, with an effective date of January 1, 2023. As in previous years, the changes to both the residential and commercial codes are largely limited to reducing some of the requirements from the national code, as seen in the [2021 Modification Index](#).

Like other aspects of development regulation, the Building Codes base construction standards on FEMA's Flood Insurance Rate Maps. The Building Codes generally require that the lowest habitable floor of a structure constructed in a flood hazard area must be elevated to a design flood elevation, which is the higher of the Base Flood Elevation (BFE) or another design flood event adopted by the community. The BFE is the estimated elevation of inundation during a

100-year flood event. A design flood elevation is a higher standard adopted by a community. The Building Codes provide for many other flood resilient construction standards, but the design elevation is by far the most important.

While the BFE is intended to protect against the risk of flood hazard exposure, there are significant limitations to the protections it provides. It is important to note that BFE is only intended to ensure that a 100-year flood event will not reach the lowest floor of a structure. Therefore, any electrical, mechanical, insulation, foundation, or other construction materials below the lowest floor could be significantly damaged by a 100-year flood. In addition, the BFE only measures the estimated risk to a structure in one year. Over the life of a structure, the actual risk may be much higher. For example, the risk of a 100-year flood event at a particular location over an estimated 30-year lifespan of a building exceeds 25%. Finally, the flood risks change over time. Increases in upstream development and changes in climate patterns can increase the risk of a particular flood event above the original design flood elevation of a structure, placing it in harm's way long after it was constructed.

FEMA's 2023 Building Code Adoption Tracking Fact Sheet gives South Carolina a 50.9% score for adoption of hazard-resistant building codes, indicating "moderate resistance." The state adopts the most recent IBC and IRC, however the "state weakens hurricane resilience by using alternative hurricane maps with less conservative wind contour lines in seven counties (Figure 7.4), and less conservative seismic maps in eleven counties (Figure 7.5) (FEMA, 2023).

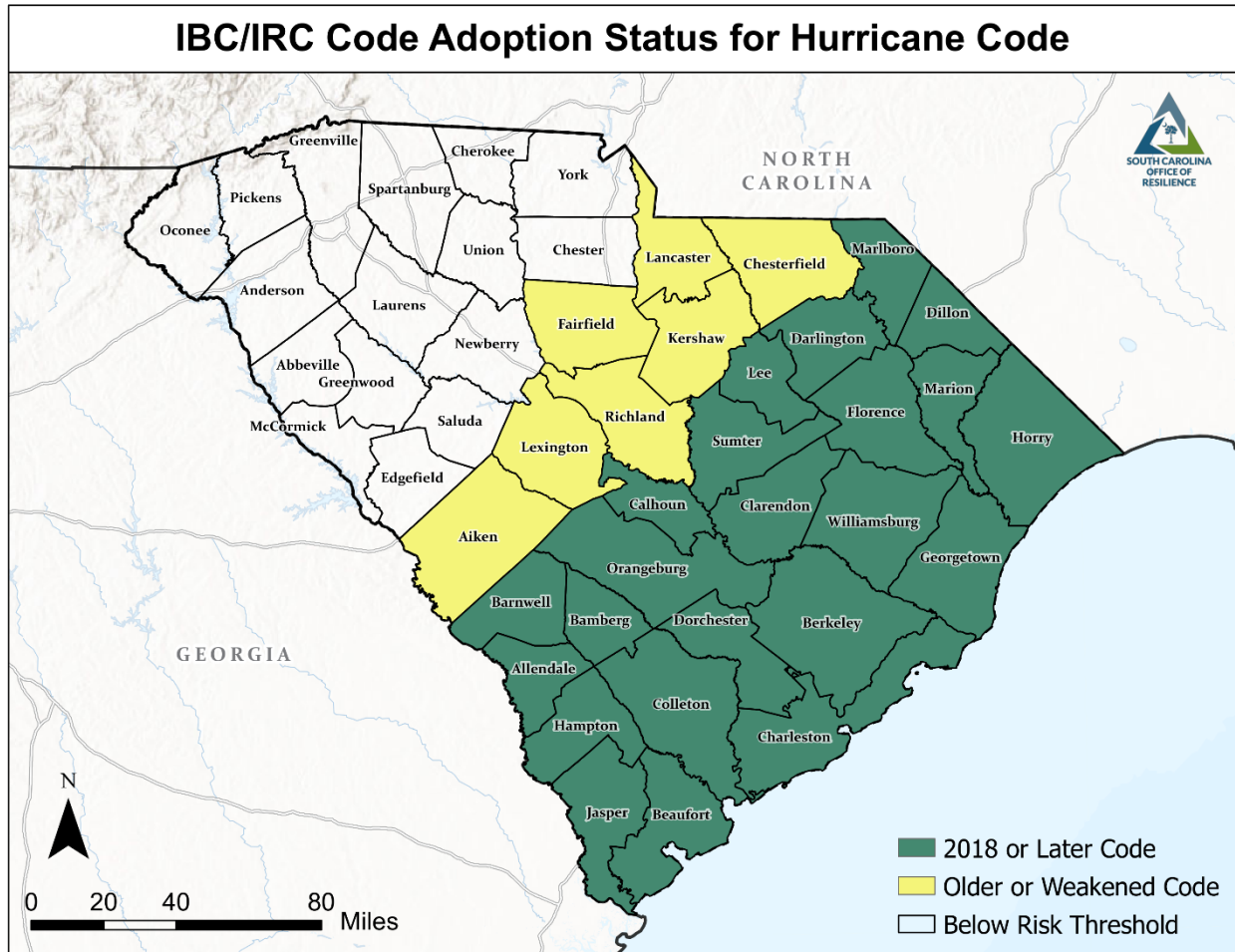


Figure 7.3: IBC/IRC Code adoption status for hurricane code

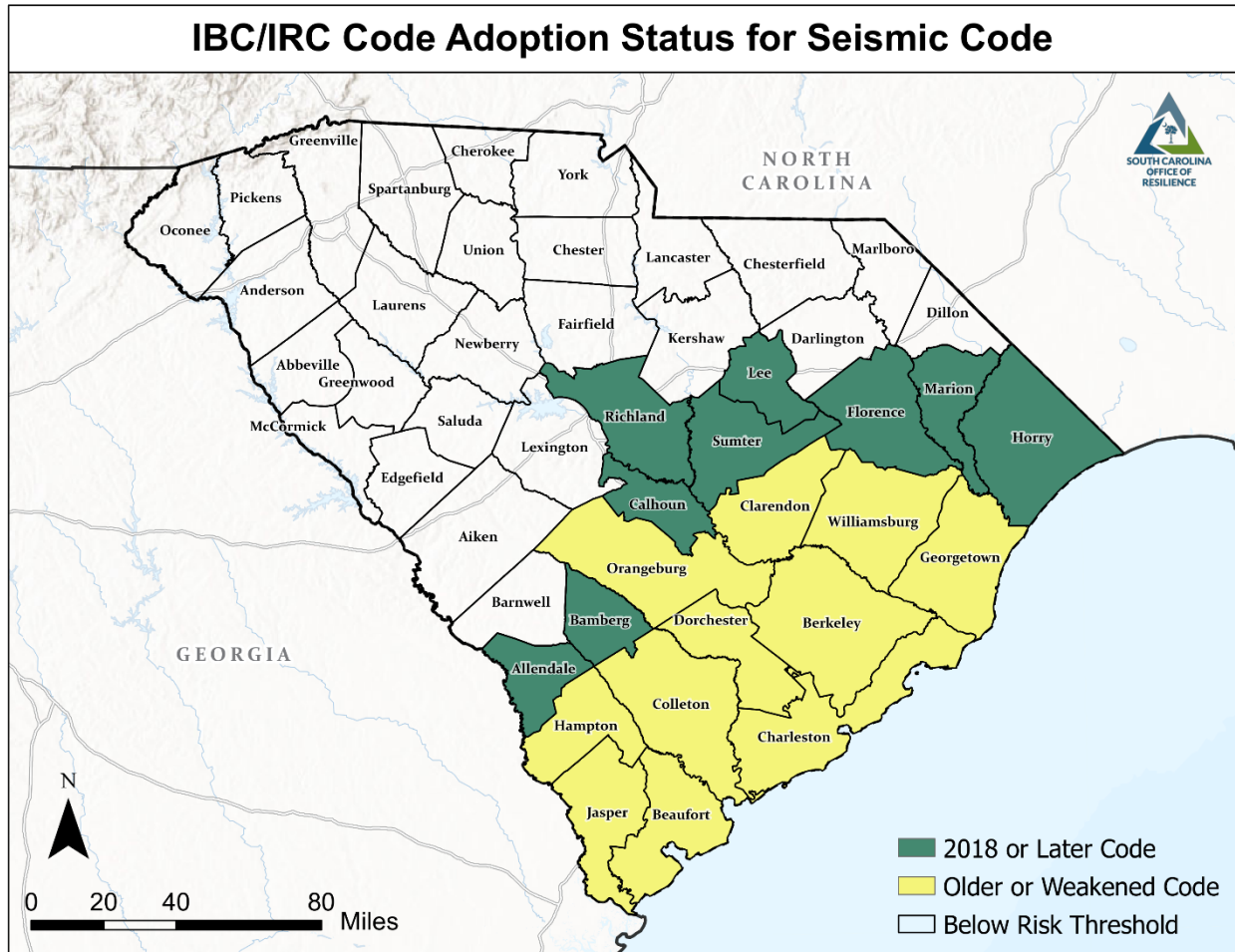


Figure 7.4: IBC/IRC Code adoption statute for seismic code

COASTAL ZONE MANAGEMENT

Due to its location along the Atlantic Coast, South Carolina faces a unique risk of coastal storms and exposure to changes in sea level. The State Legislature has adopted the Coastal Tidelands and Wetlands Act (CTWA) (S.C. Code Ann. § 6-8-10, *et seq.*) to balance the development and conservation of coastal resources and to implement the Federal Coastal Zone Management Act of 1972. The Act authorizes DHEC’s Office of Ocean and Coastal Resources Management (OCRM) to oversee the program in the State’s eight coastal counties. Therefore, additional development restrictions may apply in these locations, especially for sensitive areas such as tidal lands, dunes, beaches, and coastal waters. In particular, OCRM has adopted baseline and setback lines for beachfront development under the Act.

PROTECTION OF WETLANDS

Section 404 of the Federal Clean Water Act (CWA) (33 U.S.C. § 1344) requires a permit from the U.S. Army Corps of Engineers before engaging in development activity that affects a wetland. South Carolina's landscape includes many wetlands, especially in coastal areas. The Section 404 program seeks to avoid or minimize the impacts of development on wetlands because they are important in the natural process of stormwater infiltration and downstream discharge. While state and local governments do not have a significant role to play in wetlands permitting under Section 404, many local governments require setbacks from wetlands as part of their land use and development ordinances to support the goals of resilience and flood hazard mitigation.

The Clean Water Act identifies the navigable waters and adjacent wetlands within the environmental regulations. The 2023 Supreme Court decision in [Sackett v. Environmental Protection Agency](#) limits the CWA wetlands authority to include only wetlands that have a continuous surface water connection with a larger body of water. This decision clarifies that wetlands not continuously connected to a surface body of water, such as isolated wetlands, are not covered under the CWA regulatory authority. In South Carolina, there are many such isolated wetlands that provide many important ecological functions, such as providing habitat, filtering pollutants, and mitigating flood risks. The types of isolated wetlands across South Carolina include Carolina Bays, (which are unique to North Carolina and South Carolina), depression meadows, high ponds, limestone sinks, cypress wetlands, pond pine flatwoods, pocosins, and oxbow lakes. In 1999, SCDNR estimated that 28% of isolated wetlands have been lost to development and changes in the landscape (SC Department of Natural Resources (SCDNR), 1999).

The South Carolina Legislature created the [Isolated Wetlands and Carolina Bays Task Force](#) in 2012 as [Act No. 198](#). This task force identifies that there are approximately 400,000 acres of isolated wetlands in South Carolina with only 100,000 acres outside of the coastal counties. SCOR completed a preliminary mapping exercise using the National Wetlands Inventory and the National Hydrography Dataset's water flowlines to visualize the distribution of these isolated wetlands in Figure 7.7.

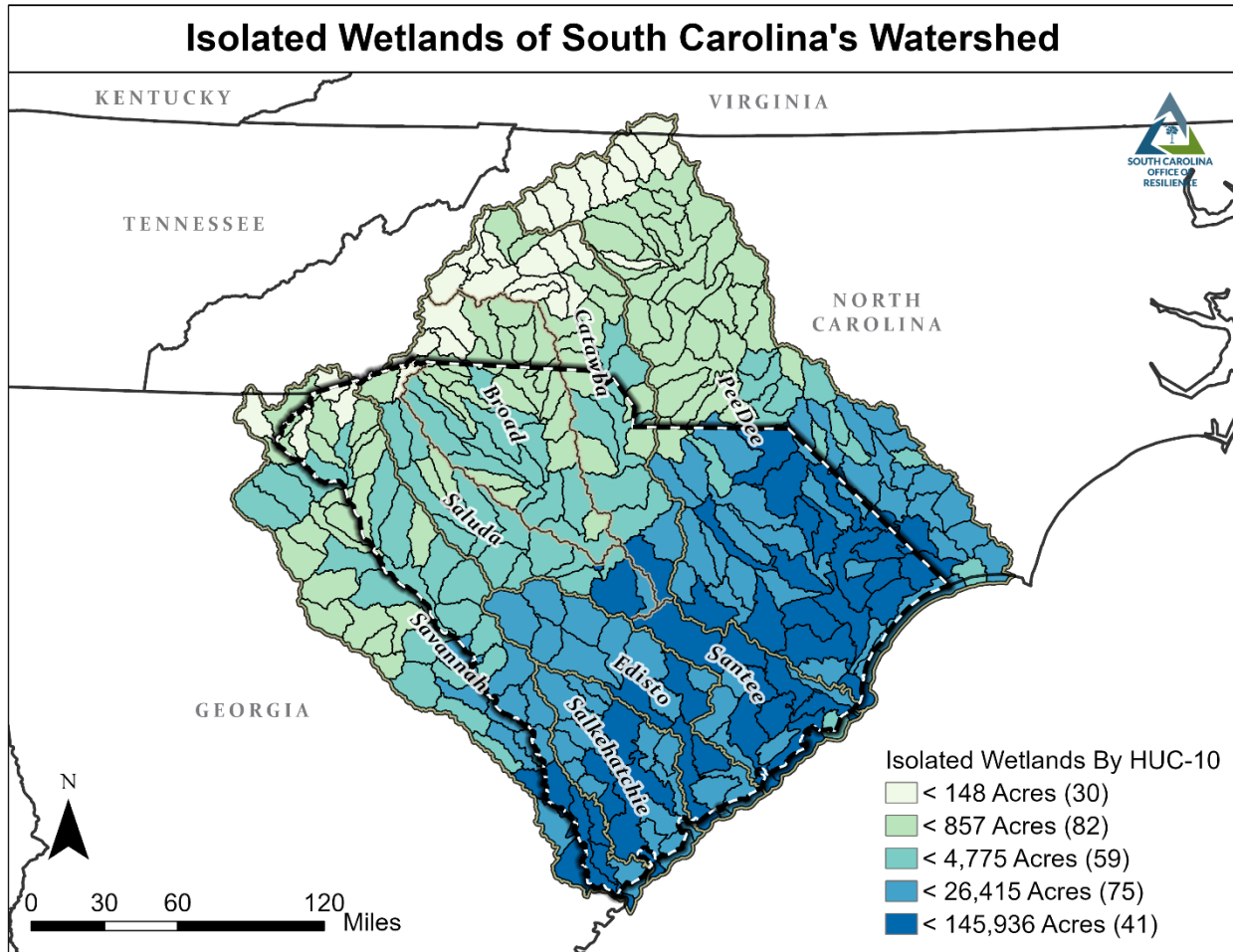


Figure 5.7 Preliminary Visualization of Isolated Wetlands in South Carolina

The task force highlights the uniqueness of Carolina Bays and their ecological and historical importance to the State. The loss of Carolina Bays will negatively impact the habitat for rare plant species and other organisms, relief from flooding, and water quality. Recommendations from the Task Force include the preservation and restoration of Carolina Bays, along with mapping and inventorying the bays.

Due to the recognized importance of isolated wetlands, continued efforts should prioritize the inventorying, mapping, and protection of these wetlands for the economic, ecosystem, water quality, and flood mitigation purposes for the citizens of South Carolina.

RECOVER

The Recover section focuses on how disaster recovery is currently managed, considering the role of federal agencies as well as the role of state agencies such as SCEMD and SCOR.

NATIONAL DISASTER RESPONSE & RECOVERY FRAMEWORK

RECOVERY CONTINUUM

The recovery process can be described as a continuum, or sequence of interdependent and often concurrent activities that progressively advance a community toward its planned recovery outcome. Figure 7.6 illustrates FEMA's Recovery Continuum, from pre-incident preparedness, or planning for recovery, through short-term, intermediate, and long-term recovery (U.S. Department of Homeland Security, 2016).

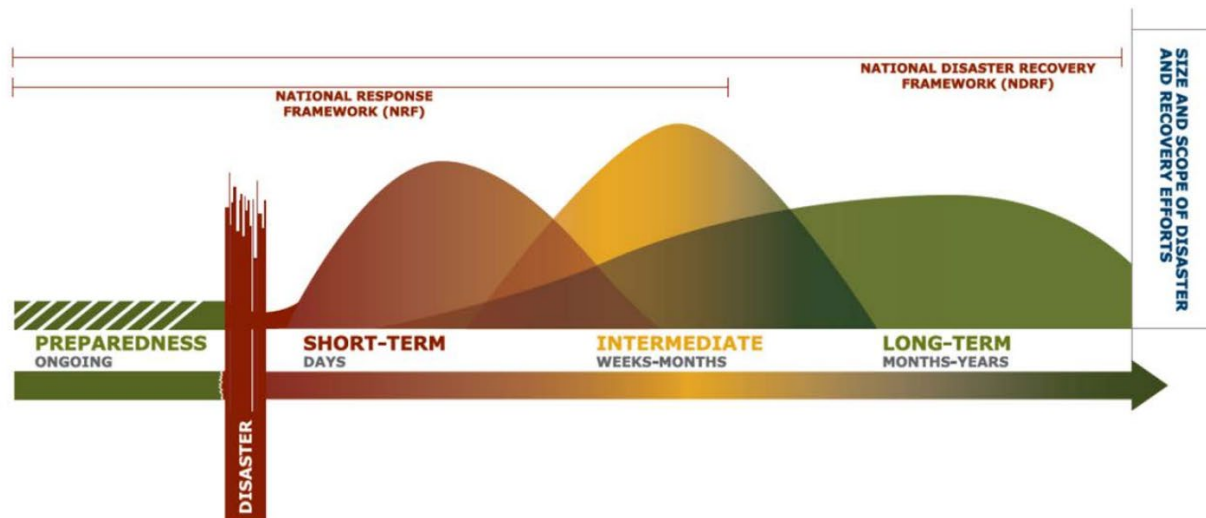


Figure 7.6: Recovery Continuum

NATIONAL RESPONSE FRAMEWORK

The National Response Framework focuses on recovery from disasters, as opposed to short term response activities such as life sustaining, property protection, and other measures intended to neutralize an immediate threat. It is important to note that these activities influence recovery activities (U.S. Department of Homeland Security, 2016).

The [National Incident Management System](#) guides all levels of government and the non-profit and private sectors in managing and responding to events, covering three main components: (1) resource management, (2) command and coordination, and (3) communications and information management.

NATIONAL DISASTER RECOVERY FRAMEWORK

The “Resilience and Sustainability” section of the National Disaster Recovery Framework addresses the role of recovery in resilience in the following ways:

- Pre- and post-disaster recovery activities offer unique opportunities to reduce current and future risk and contribute to a more sustainable community.
- Disaster Recovery efforts can be leveraged to implement solutions that will increase community resilience in the economic, housing, natural and cultural resources, infrastructure, health and social services, and government sectors.
- Communities can capitalize on opportunities during rebuilding to support their sustainability and livability goals such as laying foundations for future growth; making smart energy choices; improving economic competitiveness; expanding energy efficient and accessible housing choices; and enhancing healthy, safe, and walkable neighborhoods (rural, urban, or suburban). The process of pre-disaster planning can help build capacity and increase resilience and sustainability by taking a deliberate look at physical, continuity of operations, environmental, and societal risks, and opportunities prior to an incident (U.S. Department of Homeland Security, 2016).

RECOVERY SUPPORT FUNCTIONS (RSF)

The purpose of the Federal Recovery Support Functions is to support local, regional/metropolitan, state, tribal, and territorial governments in recovery. FEMA facilitates inter-RSF coordination at the national level. Each RSF member agency contributes subject matter expertise, authority, and resources. Federal RSFs provide a forum for interagency coordination, information sharing, exchange of efficient and effective practices, and support of improved recovery outcomes for communities. RSFs develop guidance and standard operating procedures for rapid activation of their capabilities to support community recovery. Each RSF identifies relevant statutory and/or regulatory programs, potential capabilities, and/or limiting factors pertaining to recovery support for their functional area of assistance. Each RSF has a designated coordinating agency. The six RSFs and their primary agencies are listed below (U.S. Department of Homeland Security, 2016).

1. Community Planning and Capacity Building (Department of Homeland Security/FEMA)
2. Economic Recovery (Department of Commerce)
3. Health and Social Services (Department of Health and Human Services)
4. Housing (Department of Housing and Urban Development)
5. Infrastructure Systems (U.S. Army Corps of Engineers)
6. Natural and Cultural Resources (Department of the Interior)

STATE COORDINATION OF RECOVERY

State governments are the tie between the national framework and resources above and communities in recovery, providing essential leadership, support, and additional capacity.

SCEMD'S ROLE IN RESPONSE AND RECOVERY

SCEMD's South Carolina Emergency Operations Plan establishes a framework for how state agencies should conduct all-hazards emergency response and recovery and coordinate with other governmental entities across the state.

The State has established Emergency Support Functions with State agencies and other organizations to support recovery and response operations in conjunction with the National Response Framework described above (SC Emergency Management Division).

Table 7.5: Emergency Support Functions & Coordinating State Agencies

ESF	Title	Coordinating State Agency
1	Transportation	Department of Transportation
2	Communications	Department of Administration, Division of Technology Operations
3	Public Works and Engineering	SC National Guard
4	Firefighting	Forestry Commission (wildland fires) Department of Labor, Licensing and Regulation; Division of Fire and Life Safety (structural fires)
5	Emergency Management	Emergency Management Division
6	Mass Care	Department of Social Services
7	Finance and Administration	Emergency Management Division
8	Health and Medical Services	Department of Health and Environment Control
9	Search and Rescue	Department of Labor, Licensing, and Regulation; Division of Fire and Life Safety
10	Environmental and Hazardous Material Operations	Department of Health and Environmental Control
11	Food Services	Department of Social Services

12	Energy	Office of Regulatory Staff
13	Law Enforcement	Law Enforcement Division
14	Initial Recovery and Mitigation	Emergency Management Division
15	Public Information	Emergency Management Division
16	Emergency Traffic Management	Department of Public Safety
17	Agriculture and Animals	Clemson University Livestock Poultry Health
18	Donated Goods and Volunteer Services	Department of Administration, General Services Division
19	Military Support	SC National Guard
24	Business and Industry	Department of Commerce

The South Carolina Emergency Management Division operates on a system of Operational Condition Levels, also known as OPCONS. This numerical scale is how SCEMD, the State Emergency Response Team, and counties coordinate, prepare, and respond to major emergencies. The levels are designed to simplify the steps agencies take in order to fully activate emergency resources. The three OPCONS and their definitions are compatible with the majority of state and federal emergency management organizations nationwide, making the State's processes and procedures easier to understand for teams deploying into South Carolina during a disaster (South Carolina Emergency Management Division, n.d.).

SCOR'S ROLE IN RECOVERY

While SCEMD is responsible for disaster response and initial recovery, SCOR began as the Disaster Recovery Office, with a focus on long-term housing recovery, managing CDBG-DR funds while EMD coordinates FEMA Individual and Public Assistance programs. To date, the Disaster Recovery program has rebuilt or repaired more than 3,300 homes for citizens whose homes were damaged by the 2015 Flood, Hurricane Matthew, or Hurricane Florence. On September 24, 2021, the office completed construction projects in the 2015 Flood program, which repaired or replaced a total of 1,829 homes, with 98% of the citizens served earning 30% or below the area median income. The last home in the 2016 Hurricane Matthew program was completed in December 2022. Both programs have exclusively served low-to-moderate income citizens. More programmatic details may be found by viewing the [2015 Severe Storm, Hurricane Matthew](#), and [Hurricane Florence](#) CDBG-DR Action Plans.

DISASTER CASE MANAGEMENT (PALMETTO DISASTER RECOVERY)

[Palmetto Disaster Recovery](#) (PDR) is a disaster case management effort that identifies applicants and monitors cases as they progress through the residential recovery (CDBG-DR)

program. Disaster Case Management (DCM) is a process that involves a partnership between a disaster case manager and a citizen to develop and carry out an Individualized Recovery Plan that assists eligible citizens with their disaster-caused unmet needs. Case managers connect citizens with available resources and support services and follow up to monitor progress throughout the recovery process. Case managers average 300 client contacts per week. To date, PDR has served over 2,000 cases.

DISASTER RECOVERY RESERVE CORPS

In 2022, SCOR initiated the Disaster Recovery Reserve Corps (DRRC) to increase South Carolina's readiness and greatly reduce the time it takes to provide post-disaster assistance to residents impacted by disasters. The DRRC is comprised of a trained team on standby to fill positions in the Disaster Case Management department in various areas including case management, construction, operations, development, outreach, eligibility, and advocacy. A Reserve Corps team will be identified in each of the 46 counties in South Carolina. Corps members will be activated based on the location of the disaster and the specific disaster response and recovery activities the State decides to deploy.

During Hurricane Ian (2022), reservists were called upon to work in a temporary status for three weeks at Federal Emergency Management Agency (FEMA) Disaster Recovery Centers in Horry, Georgetown, and Charleston counties. The DRRC was able to be deployed rapidly to connect with survivors, linking them to available resources. Unlike in previous disasters, this new initiative accelerated the placement of trained recovery specialists in the field to deliver immediate disaster recovery services.

COMPLICATING FACTORS FOR RECOVERY

HEIRS' PROPERTY

Heirs' property is family owned land that is jointly owned by descendants of the deceased person, whose estate did not clear probate (U.S. Department of Agriculture, 2023). When all heirs cannot be identified and/or contacted, or if all heirs do not agree with a disaster recovery housing solution offered, it is unlikely that the project can proceed. SCOR has developed a process to assist these owners with the disaster recovery process.

South Carolina's CDBG-DR housing recovery program policy, as dictated by federal law and regulations, requires at least one resident applicant to demonstrate an ownership interest in part or in whole in the property, and to have resided in the property at the time of the storm. Applicants submit a deed to the property demonstrating ownership along with county property tax receipts and/or tax bills to satisfy the proof of ownership requirement. The program

searches county online tax documents to confirm the county identified owner. Where the applicant is not listed on a deed or listed as group owner (et al.) and/or the county records reflect the property is a deceased owner's estate (John Doe, EST), the applicant will be asked to provide further information regarding his/her ownership interest.

A SCOR developed heirs' property questionnaire is then prepared by the intake office to assist the applicant with identifying all heirs of the deceased property owner. A family tree is constructed, and all living heirs determined. Additional information identifying heirs is also requested. Information includes obituaries, funeral programs, family bibles listing familial ties, and any other document with identifying family information. The applicant must sign an affidavit attesting to the validity of the heirs' property questionnaire. A third-party, who is not an heir, is also asked to review the questionnaire and attest to its validity. Once identified, all heirs are contacted and asked to voluntarily sign the contract for the disaster recovery reconstruction of the home, or the family is referred to a free or reduced cost legal resource to execute quit-claim deeds conveying the property to applicant.

If all heirs cannot be identified and/or contacted, or if all heirs do not agree with the disaster recovery housing solution offered, it is unlikely that the project can proceed. A referral to [South Carolina Legal Services](#) or the [Center for Heirs' Property Preservation](#) will be made to assist the family in resolving legal ownership. However, where deplorable housing conditions exist, thereby creating a threat to the health and safety of the applicant and his/her family, the case is immediately reviewed, and the housing recovery solution may be authorized to proceed by the Chief Resilience Officer. All efforts to identify and contact the heirs are documented in the SCOR system of record. All locatable heirs are required to sign off on the recovery project and the house is reconstructed/replaced based upon applicant's ownership interest in the property.

If the property is heirs' property and the disaster recovery housing solution is a rehabilitation of the structure, the damage assessment will be reviewed to determine if the project is in jeopardy of changing from a rehabilitation to a reconstruction project. SCOR will proceed with a rehabilitation project using the applicant's ownership interest in the property, because under this project process, the asset/home is not demolished but improved. If based upon the damage assessment, the project is likely to change from a rehabilitation to reconstruction, then the above heirs' property questionnaire process is followed prior to any rehabilitation of the home.

PROOF OF OWNERSHIP FOR MANUFACTURED HOUSING UNITS (MHU)

In South Carolina, Mobile Housing Units (MHU) are treated as personal property and subject to titling requirements from the Department of Motor Vehicles (DMV). If an applicant cannot produce a title to the MHU, then SCOR conducts a search of the DMV title records to determine

who holds title. If the applicant cannot demonstrate title ownership or show a valid ownership interest that can be “cured”, then the applicant is ineligible.

In cases in which the applicant has an ownership in MHU, but not the land upon which it sits, a SCOR produced MHU Land Ownership Authorization Form is used to authorize a MHU rehabilitation/replacement on the property.

NON-PROFIT PARTNERS IN RECOVERY

VOLUNTARY ORGANIZATIONS ACTIVE IN DISASTER (VOADS)

South Carolina Voluntary Organizations Active in Disaster or SCVOAD is an affiliate of National Voluntary Organizations Active in Disaster (NVOAD). A VOAD is an association of organizations that promote cooperation, communication, coordination, and collaboration and work to foster more effective delivery of services to communities affected by disaster.

The membership of South Carolina VOAD consists of both locally based organizations and local representatives of national organizations. The mission of VOAD is to strengthen the capabilities of organizations by working together to respond to communities affected by disaster in South Carolina.

SCVOAD member organizations cover a broad range of missions and technical expertise and include several active regional Long Term Recovery Groups (South Carolina Voluntary Organizations Active in Disaster (SCVOAD), n.d.).

UNITED WAY'S SC 211 SERVICES

The United Way Association of South Carolina facilitates [SC 211 Services](#), which is an FCC regulated phone number similar to 911 or 411. However, instead of connecting to appropriate emergency services, SC 211 Services provides information and referrals to callers regarding a multitude of health and human services across the state. This free and confidential resource uses a rich network of over 3,000 local, state, regional, and national resources to guide callers to appropriate agencies or programs for food resources, housing and utilities, clothing needs, transportation, legal aid, education, employment, income support, mental health and substance abuse, health care, and disaster services.

THRIVE

The investments and actions taken to improve the ability of communities, economies, and ecosystems to anticipate, absorb, and recover from environment change and natural hazards will also allow systems to function better every day and provide multiple co-benefits.

COMMUNITY CO-BENEFITS

Disaster resilience efforts can provide a wide range of benefits to the community beyond the risk reduction. A few examples include the following:

- Green infrastructure projects often result in community green spaces and recreational areas that improve quality of life for the communities around these projects.
- Better data collection and coordination at the local and state level can improve the quality of services these government provide to citizens on a daily basis and improve community decision making.
- Improved infrastructure function not only helps communities in time of large events and disasters, but also in the day-to-day activities.

ECONOMIC CO-BENEFITS

It is easy to see that increasing resilience will result in reduced disaster damages. Likewise, there are additional economic co-benefits for increasing resilience, including the following:

- Job creation
- Building resilience into economic systems and sectors will build resilience to financial highs and lows.

ECOSYSTEM CO-BENEFITS

Ecosystem function and services can also be improved through resilience efforts. Resilience programs, policies, and projects can lead to:

- Habitat protection
- Improved water quality
- Improved soil quality
- Carbon sequestration

This can be most clearly seen through conservation efforts. There are many existing conservation efforts underway, from state organizations such as the Department of Natural Resources, South Carolina Conservation Bank, South Carolina Forestry Commission, and South Carolina Department of Parks, Recreation and Tourism, as well as a large number of non-profits. Each of these conservation programs have different goals, but many share priority

conservation areas. For example, the South Carolina Office of Resilience has identified priority flood mitigation areas for conservation that overlap with priority areas identified by other conservation groups for species and habitat protection.

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