

SOUTH CAROLINA CDBG-MIT ACTION PLAN

Further Additional Supplemental Appropriations
for Disaster Relief Act of 2018
Public Law 115-123



South Carolina Office of Resilience, Disaster Recovery
Division

AMENDMENT 2

STATE OF SOUTH CAROLINA: CDBG-MIT ACTION PLAN

Table of Contents

Introduction	4
MITIGATION NEEDS ASSESSMENT	7
Mitigation Needs Background	8
Community Profile: Summary of Impact Areas	8
Most Impacted and Distressed Counties	10
Hazard Profile Updates	11
County Hazard Risk Scores	11
Identified Hazards in County Mitigation Plans.....	12
Social Vulnerability.....	14
Mapping Hazard Zones and Vulnerability.....	16
Major Hazards of Concern	16
Other Hazards Affecting South Carolina	24
Residential Recovery Impact and Unmet Needs Profiles	36
The Unmet Household Mitigation Deficit	47
Assessment of Critical Community Lifelines	51
Lifeline Impacts from 2015 and 2016 Events.....	51
Potential Community Lifeline Impacts.....	55
Summary of Existing Mitigation Projects.....	61
Mitigation Needs Assessment Summary	65
ACTION PLAN	71
Funding Priorities	72
Counties Eligible for Assistance	72
Method of Distribution	73
CDBG-MIT Program National Objectives	73
Program Budget	73
Infrastructure Program	74
Operating and Maintenance Plans	75
Cost Verification.....	75

Project Prioritization	75
Covered Projects	83
Housing Buyout Program	84
Basis for Calculating Housing Assistance Awards	85
Anti-displacement	87
FEMA-Funded Mitigation Match	87
Planning	88
Program Administration	88
Program Administration	89
Citizen Participation Plan	89
Public Hearings.....	89
Public Notice and Comment Period	90
Action Plan	90
Performance Reporting.....	91
Limited English Proficiency	91
Technical Assistance	91
Citizen Complaint Procedures.....	91
State Outreach	92
Targeting Vulnerable Populations	93
Program Income.....	96
Pre-agreement Activities	96
Mitigation Pre-award Implementation Plan	98
Financial Controls.....	99
Single Audit	99
Financial Management Systems	99
Internal Controls	100
Procurement	100
Duplication of Benefits.....	103
Timely Expenditure	103
Management of Funds	105
Comprehensive Mitigation Website	107
Timely Information on Application Status	108

Capacity Assessment & Staffing.....	109
South Carolina DRO: Administrative Structure.....	109
Additional Capacity	115
Internal and Interagency Coordination.....	115
Technical Assistance	116
Accountability	116
Certification of Accuracy of Risk Analysis Documentation	117
Certifications	118
APPENDICES	121
Response to Public Comment	122
Williamsburg Public Hearing (November 26, 2019).....	122
Horry Public Hearing (December 16, 2019)	122
Charleston Public Hearing (January 7, 2020)	123
Other Comments Received	124
2019 Area Median Income Limits by Family Size and County	152
Financial Projections	154

Amendment 1 Update

Previous Page #	New Page #	Section	Change/Addition/Deletion
9	10	Most Impacted and Distressed Counties	Amended MID to account for additions of Florence MID's identified in 86 FR 569
69	70	Mitigation Needs Assessment Summary	Added language to specify that the 2018 impact area was considered during the original needs assessment and no additional update is available.
71	72	Counties Eligible for Assistance	Added language specifying that 80% of the new allocation will be spent in the Florence MID counties.
72	73	Program Budget	Updated budget to incorporate the additional \$4.5M allocated in 86 FR 569.
86	87	Federal-Funded Mitigation Match	Amended match program to allow for providing the local match for funds offered by other federal agencies.
87	88	Planning	Updated planning section to allow for statewide planning activities and clarify that planning dollars may also be provided to the SC Department of Natural Resources for flood reduction planning.

Amendment 1 is a substantial amendment. It is posted for public comment at <https://admin.sc.gov/SCDRO> from May 3, 2021 until June 4, 2021. Comments may be emailed to DR0Mitigation@scor.sc.gov or mailed to 632 Rosewood Drive, Columbia, SC 29201.

Amendment 2 Update

Previous Page #	New Page #	Section	Change/Addition/Deletion
73	73	Program Budget	Transferred \$2,318,892.59 from the Federal-Funded Mitigation Match Program to the Housing Buyout Program
84	84	Housing Buyout	Increased Housing Buyout Program budget
87	87	Federal-Funded Match	Decreased Federal-Funded Match budget

Amendment 2 is a non-substantial amendment. It was posted to the SC Office of Resilience website on December 12, 2022. It was submitted to HUD on December 12, 2022.

Introduction

Within 4 years, 3 major storms have impacted the State of South Carolina, causing immense damage and several casualties. In October 2015, the state was devastated by over 20 inches of rainfall from an extratropical storm worsened by nearby Hurricane Joaquin, which caused significant flooding and storm damage throughout the state. A year later, Hurricane Matthew entered the state near McClellanville, South Carolina as a Category 1 Hurricane, unleashing strong winds and torrential rainfall throughout the eastern part of the state. Most recently, in September 2018, Hurricane Florence made landfall just north of South Carolina in Wrightsville Beach, North Carolina. While North Carolina experienced the worst of the storm, South Carolina suffered from heavy rainfall and flooding from the downriver watersheds shared with North Carolina. The effects of these storms will be felt for decades.

In addition to the three major storms, South Carolina has experienced several close calls over the past years: Hurricane Irma in 2017, Hurricane Michael in 2018, and most recently, Hurricane Dorian in 2019. These storms resulted in major damages to neighboring states, as well as significant expense to South Carolina for evacuation efforts and debris removal operations.

The greatest impact of these declared storms, in many ways, were their destabilizing effects and unpredictability. Despite advances in meteorology, it's impossible to know where a storm and its accompanying damage will exactly hit until it's often too late. Some counties of South Carolina received mild rain, while others were severely impacted multiple times. Even after the storm, several communities faced uncertainty of whether they would experience severe flooding as the ~~deluge~~ surge of water made its way to the Atlantic Ocean.

The storms caused debilitating damage throughout South Carolina. Water and wind-damaged homes became unlivable. Those without the means to repair their homes were either forced to live in unsafe structures, relocate with relatives, or flee the disaster area. This strained the fabric of impacted communities – some of which had experienced damage from all 3 storms. The damage continued to be felt by the local economy as businesses lost customers and local government tax revenues diminished. One storm can cause all this destabilizing damage, three storms in four years have left many communities on the brink of collapse. Actions to mitigate future damages need to be made now, before the next storm strikes.



October 6, 2015: Continuing effects of flooding caused by Hurricane Joaquin in the area of the Black River in Sumter County

Stability can be given to these people through mitigating future storm damage. While the State might not know where a storm will hit, it does know which areas are likely to experience the most damage. With the appropriate funds, the State can target these areas for mitigation projects that will improve resiliency for individual households, neighborhoods, and communities.

Congress, through Public Law 115-123, seeks to address resiliency by enabling the Department of Housing and Urban Development (HUD) to administer and award \$12 billion in mitigation grants to previous CDBG-DR grant recipients impacted by disasters from 2015 to 2017. South Carolina is designated to receive \$157,590,000 in mitigation funds for the Most Impacted and Distressed counties from the 2015 Severe Storm disaster (Public Law 114-113) and the Most Impacted and Distressed counties from the 2016 Hurricane Matthew disaster (Public Law 114-254). Additionally, Richland County will receive \$21,864,000, Lexington County will receive \$15,185,000, and the City of Columbia will receive \$18,585,000 in mitigation funds as a result of the 2015 Severe Storm (Public Law 114-113). In total, the people of South Carolina will be awarded \$213,224,000, with the State being responsible for \$157,590,000 of the awarded grants.



NASA imagery captures Hurricane Matthew as it passes over SC

The South Carolina Department of Administration and its South Carolina Disaster Recovery Office (SCDRO) was designated by Governor McMaster in Executive Order 2018-59 as the responsible entity for administering the CDBG-MIT funds allocated to the State. Using the planning guidance and direction provided by the governor-appointed CDBG-DR Steering Committee, the SCDRO will faithfully execute the CDBG-MIT program in South Carolina.

As required by HUD, South Carolina submits this Action Plan to establish how the State will allocate its funds through its mitigation programs. This includes the proposed use of funds, criteria for eligibility, and

how funds will address long-term mitigation throughout the state. The Mitigation Needs Assessment, which evaluates the risk profiles of the South Carolina and HUD-defined Most Impacted and Distressed areas, the critical lifelines potentially at risk in those areas, and the social vulnerability of the target area, forms the basis for the decisions outlined in the Method of Distribution. This Action Plan was developed with the help of many state and local stakeholders as well as the public to target the greatest mitigation needs that can be addressed by these limited federal funds.



October 18, 2016: Flood waters continued to impact homes in Marion County 10 days after Hurricane Matthew made landfall

MITIGATION NEEDS ASSESSMENT

Mitigation Needs Background

Community Profile: Summary of Impact Areas

Since 2015, South Carolina has been impacted by three presidentially declared disasters: Hurricane Joaquin in 2015, Hurricane Matthew in 2016, and Hurricane Florence in 2018. These three storms led to the availability of FEMA individual assistance for impacted citizens, FEMA public assistance for local communities, and, eventually, Community Development Block Grant – Disaster Recovery funding to recover from the storms. The bulk of the damage from all three of these storms was not the wind and storm surge, but the eventual flooding from the rain falling over the state for an extended period.

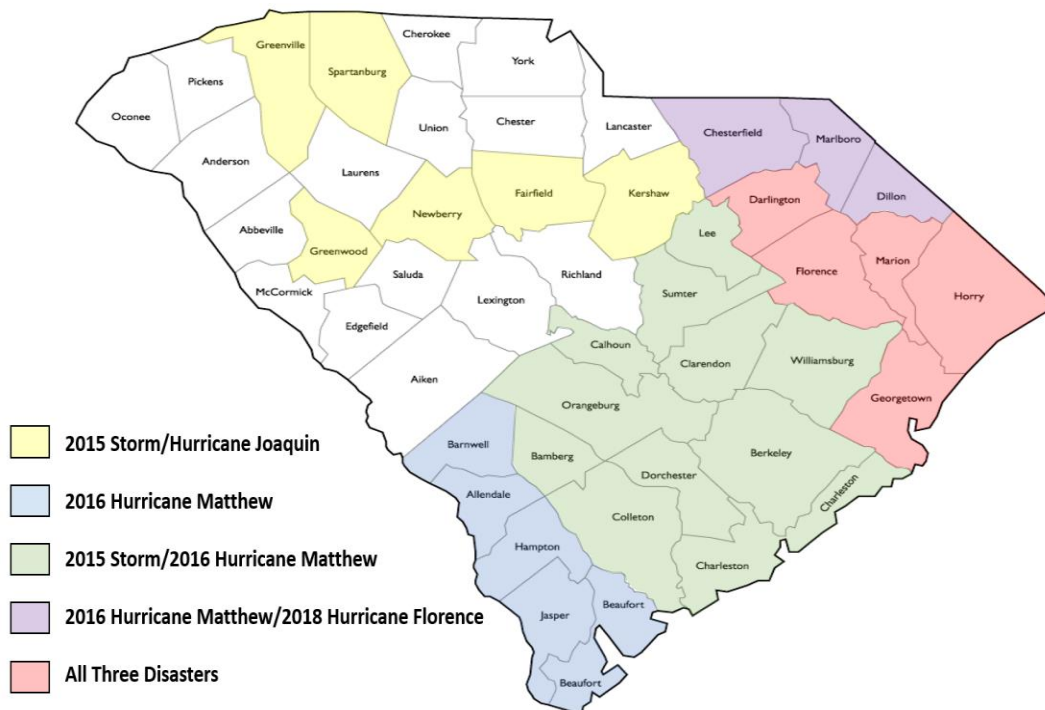


Figure 1: Individual Assistance Declared Counties by Disaster

While thirty of the state's forty-six counties have been impacted by at least one of the three major disasters in recent history, the damage distribution has not been equal across the impacted areas. Given the limited funding available for mitigation, the South Carolina CDBG-DR Steering Committee has directed the SCDRO to focus mitigation efforts on two major areas which have been impacted the most: The Pee Dee and Santee watersheds.



Figure 2: South Carolina Watersheds

Most Impacted and Distressed Counties

As specified by the *Federal Register Notice* published on August 30, 2019 which outlines the requirements for accessing the mitigation funds, South Carolina hereby defines the area in which the SCDRO will conduct mitigation activities. These areas are the HUD-identified most impacted and distressed (MID) counties of Charleston, Clarendon, Dorchester, Florence, Georgetown, Horry, Marion, Sumter, and Williamsburg. Additionally, the state has identified additional MID counties of Chesterfield, Marlboro, Dillon, Darlington and Lee in the Pee Dee watershed, and Calhoun, Orangeburg, and Berkeley in the Santee watershed. These counties together comprise the Santee and Pee Dee watersheds.

Additionally, *Federal Register Notice* published on January 6, 2021 Dillon, Horry, and Marion counties were identified by HUD as MID areas and would receive Community Development Block Grant Mitigation (CDBG–MIT) funds to grantees recovering from qualifying 2018 disasters.

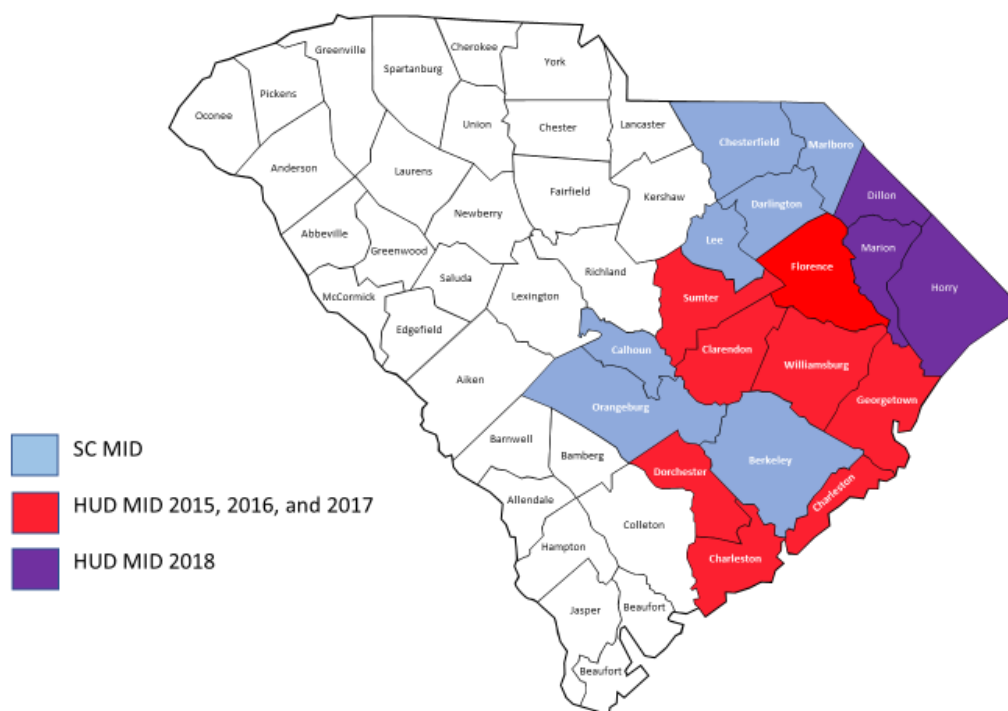


Figure 3: Most Impacted and Distressed Counties (MID) in South Carolina

The State partnered with the University of South Carolina Hazards & Vulnerability Research Institute (HVRI) to assess the risks in the MID, potential lifeline impacts, social vulnerability, and the mitigation needs. HVRI worked with the South Carolina Emergency Management Division to develop the state's FEMA-approved Hazard Mitigation Plan (HMP). The state HMP can be found at: <https://www.scemd.org/em-professionals/plans/hazard-mitigation-plan/>

HVRI's analysis will focus solely on the HUD and SC-identified MID counties.

Hazard Profile Updates

South Carolina is vulnerable to a wide range of both natural and non-natural hazards of varying likelihoods and consequences. Among the hazards that affect South Carolina, wildfire is the most frequently experienced natural hazard in the state and landslides the least.¹ The regional and county variability in social, economic, and infrastructural conditions means that given the same event magnitude, some areas may experience greater risks and vulnerability than others. Historically, Charleston, Horry, and Georgetown counties incurred the greatest losses due to Hurricanes Hugo (1989), Fran (1996), and Floyd (1999).² From 2000-2017 South Carolina accumulated more than \$1.7 billion in hazard event losses primarily from hurricanes and flooding, followed by tornados and wildfires.³ During this same period, hazard event losses in Horry, Georgetown, and Florence accounted for 23% of the state's overall losses, and these are directly attributable to the 2015 flooding, Hurricane Matthew in 2016, and Hurricane Irma in 2017. On a per capita basis, property losses since 2000 are highest in Georgetown (\$1,716), Dillon (\$803), and Horry (\$769) Counties.⁴

County Hazard Risk Scores

The county hazard risk scores are from the annual probabilities for each hazard for each county as identified in the South Carolina Hazard Mitigation Plan 2018⁵. For each hazard, the county with the highest annual likelihood for that hazard received a score of 1.00 and the county with the lowest received a score of 0.00. The remaining counties scaled accordingly depending on where their values were relative to the highest and lowest counties.

Based on the SCEMD's risk assessment the five most hazardous counties are Berkeley, Orangeburg, Aiken, Lexington, and Greenville. However, when enhancing the scoring to include flooding, flash flooding, and liquefaction potential and reducing the impact of hazardous materials spills, a differing order is produced with Charleston, Dorchester, Berkeley, Orangeburg, and Aiken making up the top five (Table 1). The shift

¹ State of South Carolina, 2018. *South Carolina Hazard Mitigation Plan, October 2018 Update*. Accessed on November 1, 2019. <https://www.scemd.org/media/1391/sc-hazard-mitigation-plan-2018-update.pdf>

² Ibid.

³ Hazards & Vulnerability Research Institute, 2019. Computed property and crop losses from 2000-2017 from Spatial Hazard Events and Loss Database (SHELDUS) v. 17. Accessed on November 1, 2019, <https://sheldus.org>

⁴ Ibid.

⁵ Op. cit. Note 1, Table 4.T.4 on page 201.

is reflective of the comparative importance of the flood hazard in Charleston, Berkeley, Georgetown, and Marion, and the severe weather risk in Aiken and Orangeburg.

Identified Hazards in County Mitigation Plans

All the counties in the assessment region identified six significant hazards in their hazard mitigation plans (Table 2). The most common include floods, hurricanes and coastal storms, severe storms including tornadoes and lightning, drought/extreme heat, winter storms and freezes, and earthquakes. With the exception of Horry County, all counties identified hail as a hazard in their plans while Charleston County was the only one to identify erosion as a hazard for their area.

Table 1 Hazard Risk Scores from South Carolina Hazard Mitigation Plan, 2018*

HAZARD SCORE BASED ON FUTURE ANNUAL PROBABILITY OF HAZARD BY COUNTY (Values Min-Max Normalized)																	
County	Hazard Risk Score	Drought	Earthquake	Extreme Cold	Extreme Heat	Flash Flood	Flood	Fog	Hail	Lightning	Liquefaction	Severe Storm	Tornado	Tropical Cyclones	Wildfire	Wind	Winter Weather
BERKELEY	9.61	0.26	0.20	0.14	0.48	0.70	0.29	1.00	0.85	1.00	0.50	0.90	0.87	0.70	0.89	0.50	0.43
CALHOUN	5.05	0.65	0.00	0.22	0.86	0.24	0.10	0.82	0.11	0.13	0.16	0.57	0.22	0.30	0.09	0.50	0.09
CHARLESTON	8.86	0.19	0.07	0.00	0.13	0.99	0.93	1.00	0.64	0.62	0.98	0.77	0.70	0.80	0.23	0.46	0.35
CHESTERFIELD	6.17	0.50	0.00	0.51	0.68	0.35	0.10	0.81	0.18	0.41	0.12	0.63	0.26	0.25	0.38	0.78	0.21
CLARENDON	6.83	0.32	0.00	0.30	0.72	0.21	0.26	0.91	0.23	0.44	0.15	0.70	0.61	0.35	0.54	0.67	0.43
DARLINGTON	6.29	0.38	0.02	0.43	0.65	0.58	0.10	0.81	0.20	0.28	0.27	0.43	0.48	0.35	0.35	0.89	0.06
DILLON	4.92	0.20	0.02	0.36	0.31	0.54	0.25	0.72	0.10	0.10	0.26	0.00	0.22	0.50	0.15	1.00	0.18
DORCHESTER	7.85	0.45	1.00	0.05	0.47	0.62	0.26	0.91	0.37	0.36	0.55	1.00	0.30	0.45	0.31	0.43	0.32
FLORENCE	7.18	0.26	0.00	0.27	0.51	0.66	0.16	0.78	0.32	0.47	0.21	0.47	0.52	0.60	0.64	0.89	0.41
GEORGETOWN	7.13	0.00	0.00	0.15	0.23	0.00	0.61	0.98	0.16	0.62	1.00	0.65	0.43	0.95	0.33	0.72	0.29
HORRY	7.77	0.08	0.00	0.17	0.03	0.56	0.29	0.92	0.86	0.84	0.96	0.04	0.39	1.00	0.48	0.96	0.21
LEE	4.70	0.38	0.00	0.28	0.66	0.26	0.13	0.86	0.07	0.13	0.17	0.43	0.09	0.25	0.20	0.76	0.05
MARION	5.15	0.16	0.00	0.19	0.21	0.39	0.47	0.92	0.10	0.20	0.52	0.10	0.00	0.70	0.06	0.93	0.20
MARLBORO	5.84	0.34	0.05	0.52	0.65	0.51	0.22	0.77	0.08	0.19	0.26	0.45	0.13	0.45	0.19	0.98	0.10
ORANGEBURG	8.81	0.69	0.02	0.25	0.79	0.51	0.16	0.92	0.42	0.82	0.20	1.00	1.00	0.35	0.74	0.50	0.43
SUMTER	6.55	0.46	0.00	0.30	0.84	0.63	0.21	0.87	0.24	0.37	0.19	0.56	0.43	0.30	0.39	0.70	0.05
WILLIAMSBURG	6.90	0.11	0.00	0.31	0.53	0.20	0.21	0.96	0.15	0.63	0.23	0.69	0.17	0.55	1.00	0.72	0.44

*The scores were adjusted from the State Hazard Mitigation Plan 2018 by excluding hazmat scores from the calculation and including the likelihood of flooding, flash flooding, and liquefaction potential.

County	Flood	Hurricanes and Coastal Storms	Severe Storms, Tornadoes and Lightning	Wildfire	Drought/Extreme Heat	Winter Storms and Freezes	Hail	Erosion	Dam/Levee Failure	Earthquakes, Sinkholes, Landslides	Tsunami	Other Hazards
BERKELEY	X	X	X	X	X	X	X		X	X		
CALHOUN	X	X	X	X	X	X	X			X		
CHARLESTON	X	X	X	X	X	X	X	X	X	X	X	X
CHESTERFIELD	X	X	X	X	X	X	X			X		X
CLARENDON	X	X	X	X	X	X	X		X	X		
DARLINGTON	X	X	X	X	X	X	X		X	X		X
DILLON	X	X	X	X	X	X	X			X		X
DORCHESTER	X	X	X	X	X	X	X		X	X		X
FLORENCE	X	X	X	X	X	X	X		X	X		X
GEORGETOWN	X	X	X	X	X	X	X		X	X		
HORRY	X	X	X	X	X	X				X	X	X
LEE	X	X	X	X	X	X	X		X	X		
MARION	X	X	X	X	X	X	X			X		X
MARLBORO	X	X	X	X	X	X	X			X		X
ORANGEBURG	X	X	X	X	X	X	X			X		
SUMTER	X	X	X	X	X	X	X		X	X		
WILLIAMSBURG	X	X	X	X	X	X	X		X	X		

Table

Hazards Identified by South Carolina Counties in their County Hazard Mitigation Plans

Source: South Carolina Hazards Mitigation Plan, October 2018 Update.

Social Vulnerability

Following the South Carolina's Hazard Mitigation Plan as well as South Carolina's Recovery Action Plan, we used the Social Vulnerability Index (or SoVI) to define the most vulnerable populations within the two watersheds. SoVI is a well-established and oft-cited metric used to highlight the geographic differences in relative vulnerability to environmental hazards at census tract to county scales.⁶ SoVI synthesizes 29 socioeconomic variables that decades of research suggest contribute to a community's ability (or uneven capacity) to prepare for, respond to, and recover from hazards. When examined in conjunction with specific hazards, it helps to identify those areas with the greatest physical impact from the hazard that contain the most vulnerable populations.

The SoVI was updated from the 2010-14 version used in the State Mitigation Plan. The SoVI 2017 produced for the HUD CDBG-MIT plan includes the most recent five-year data from the U.S. Census American Community Survey customized for comparisons within the two assessment watersheds, not the entire state of South Carolina as shown in Figure 4 (left). The panel on the right shows the changes in social vulnerability from 2010-14 to 2017 highlighting areas along the coast (especially in Horry, Georgetown, and Charleston Counties) that have become more vulnerable.

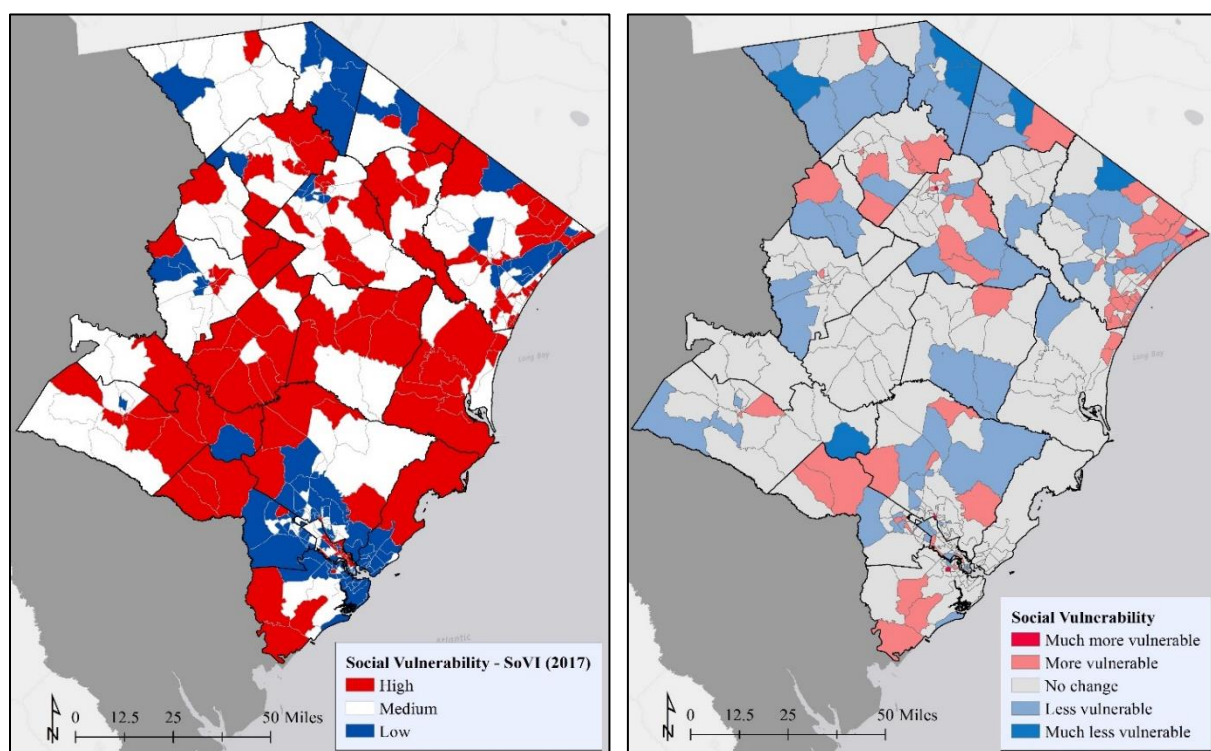


Figure 4 Social Vulnerability for the seventeen South Carolina counties (by Census Tracts) (left) and changes in vulnerability from the 2010-14 to the 2017 SoVI (right)

⁶ See <http://sovi.us.org> for information about the construction of SoVI and its use in practice and in research.

Another indicator of vulnerable populations in these two watersheds beyond their social vulnerability is the at-risk electricity-dependent population among Medicare beneficiaries who require life-dependent medical and durable medical equipment such as ventilators and oxygen concentrators. Such populations are severely at risk during prolonged power outages caused by severe weather, flooding, and tropical storms and hurricanes as recent studies and disasters have shown.⁷ The emPower Program of the Assistant Secretary for Preparedness and Response (ASPR) at Health and Human Services (HHS) provides geospatial data on such beneficiaries to assist in preparedness, response, and recovery in emergencies at the local level.⁸ More than one-third of South Carolina's Medicare beneficiaries live in MID counties, and a third of these are electricity dependent. The largest percentage are in Dillon County (7.3%), followed by Marion (6.6%), and Chesterfield (6.5%).⁹ Within the counties, many of these populations overlap with the most socially vulnerable census tracts especially in Dillon and Marlboro counties (Figure 5) providing an additional justification for mitigation needs.

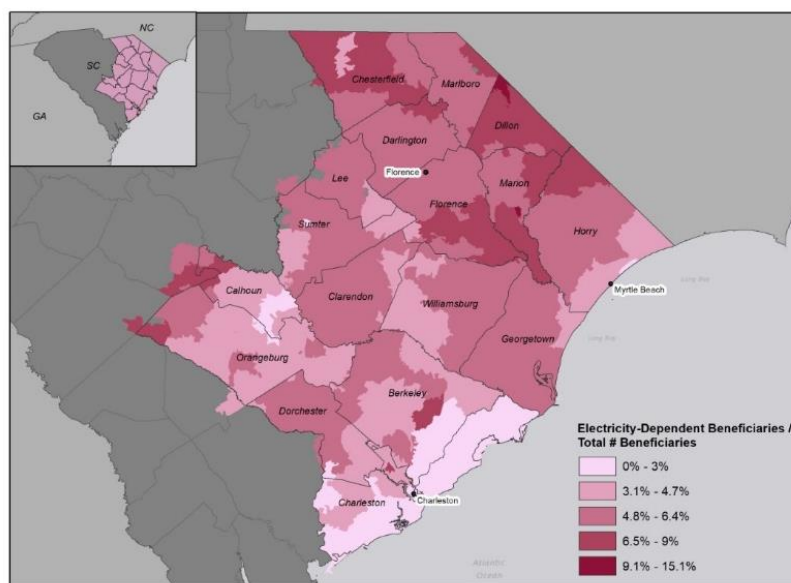


Figure 5 At risk Medicare beneficiaries based on electricity-dependent medical equipment need

⁷ C. Dominianni et al., 2018. Power outage preparedness and concern among vulnerable New York City residents, *J. Urban Health* 95(5): 716-726; A. Issa, 2018. Deaths related to Hurricane Irma-Florida, Georgia, and North Carolina, September 4-October 10, 2017, *Morbidity and Mortality Weekly Report (MMWR)* 67(30): 829-832 (<https://www.cdc.gov/mmwr/volumes/67/wr/mm6730a5.htm>)

⁸ See <https://empowermap.hhs.gov/>

⁹ Ibid. Computed for the MID counties from the emPower data. Accessed on November 11, 2019.

Mapping Hazard Zones and Vulnerability

The hazard zones for the South Carolina MID areas depicted in the map series below, also includes a short summary for each. The hazards data are from the South Carolina's Hazard Mitigation Plan 2018. Where appropriate, and depending on the hazard type, the geographic variability in the hazard exposure is shown by hexagon grids of equal size to reduce the visual impact of the different sized census block groups and tracts as shown in the State's Hazard Mitigation Plan. However, in order to merge the vulnerability data and calculate risk scores for each census tract (the unit of analysis for CDBG-MIT), hazards were summarized taking the average of hexagon grid values that fall within each census tract. In order to compare across diverse hazards using the same data classification values, we defined our mapping categories using standard deviations from the mean so that we could preserve the underlying distribution of the data.¹⁰ The color shading from light to darker hues represents low, medium, and high risk for each of the hazards.

The bi-variate maps illustrate where the hazard risk scores intersect with the social vulnerability. Those areas with high social vulnerability and high-risk scores are shaded red. Areas with low risk scores and low social vulnerability are shaded in light blue.

Major Hazards of Concern

Given the recent disaster experience within South Carolina and in the MID defined areas, we highlight the climate-sensitive hazards related to flooding, severe storms, and hurricane/tropical storms systems, beginning with flood risk.

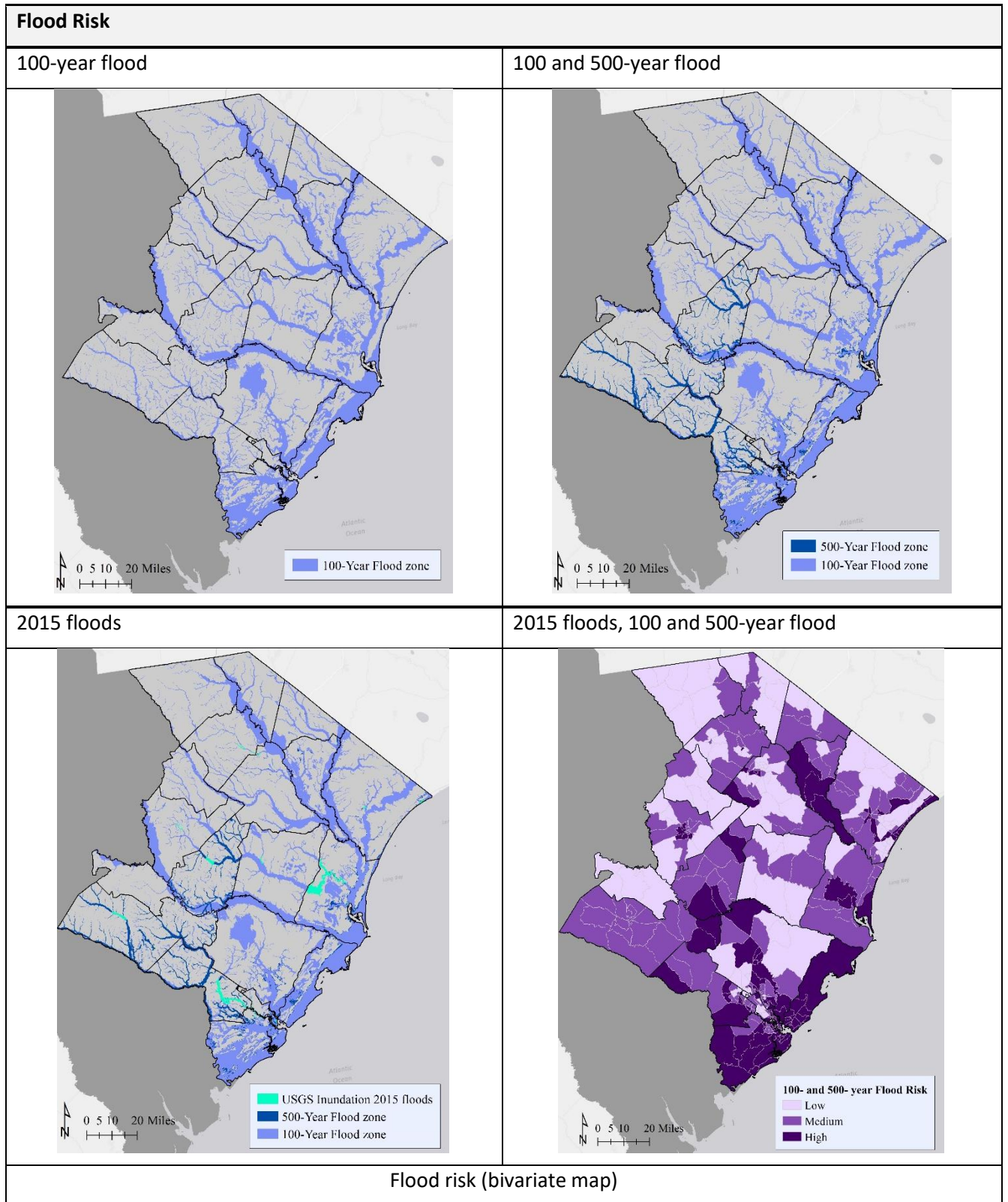
Flood Risk

According to the South Carolina State Hazard Mitigation Plan 2018¹¹, about 75% of presidential disaster declarations relate to flooding. Riverine or coastal flooding is described in this section. Flash floods and storm surge are discussed separately in the following sections (due to the difference in the nature of the flooding hazard itself). The flooding events typically occur in floodplains, which are delineated by the frequency of the flood that would cover the area. The delineations for the 100-year and 500-year flood define the exposure to the flooding risk. The inundation from the 2015 floods was added to the as a layer as it exceeded the 500-year flood delineation in many areas.¹²

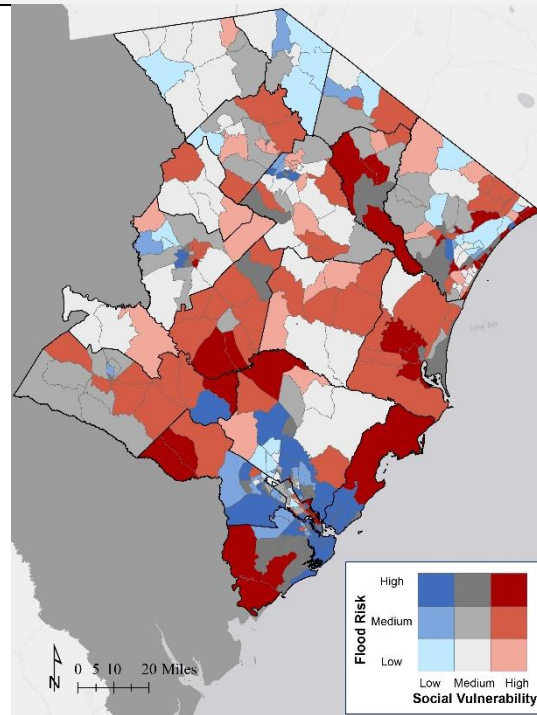
¹⁰ The hazard risk was classified using 0.5 standard deviations from the mean (the mid-point in the distribution). The lighter shading represents cases that are less than the average (<0.5 std. dev or 33% of the cases), while the darker shading on the map represents cases greater than the average (>0.5 std. dev or 33% of the cases). Approximately 34% of the cases are between the mean and 0.5 std. dev on either side of it (-0.5 to +0.5 std. dev).

¹¹ State of South Carolina, 2018. *South Carolina Hazard Mitigation Plan, October 2018 Update*. Accessed on November 1, 2019. <https://www.scmd.org/media/1391/sc-hazard-mitigation-plan-2018-update.pdf>

¹² Musser, J.W., Watson, K.M., Painter, J.A., and Gotvald, A.J., 2016, Flood-inundation maps of selected areas affected by the flood of October 2015 in central and coastal South Carolina: U.S. Geological Survey Open-File Report 2016–1019, 81 p., <http://dx.doi.org/10.3133/ofr20161019>.

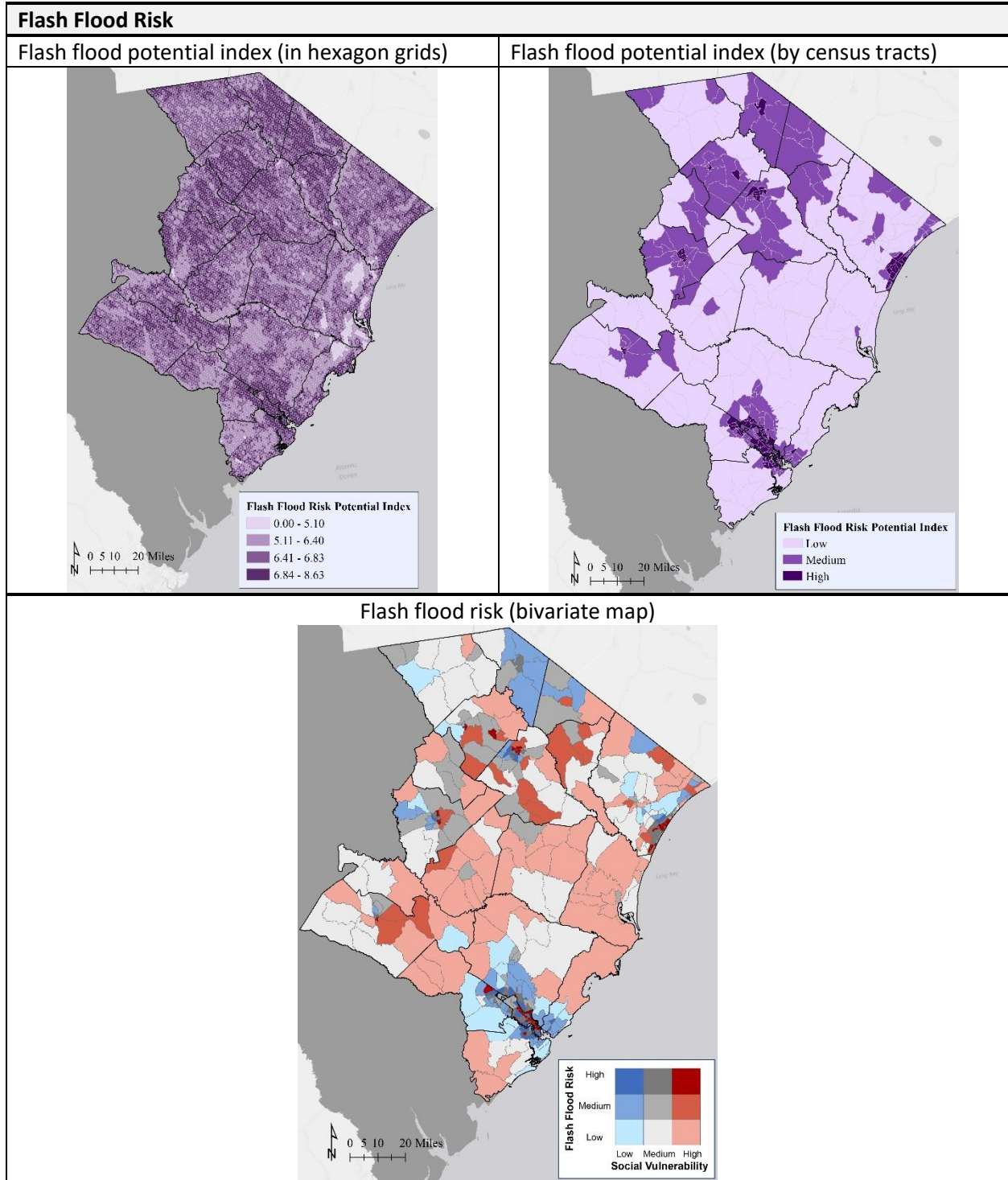


Flood Risk



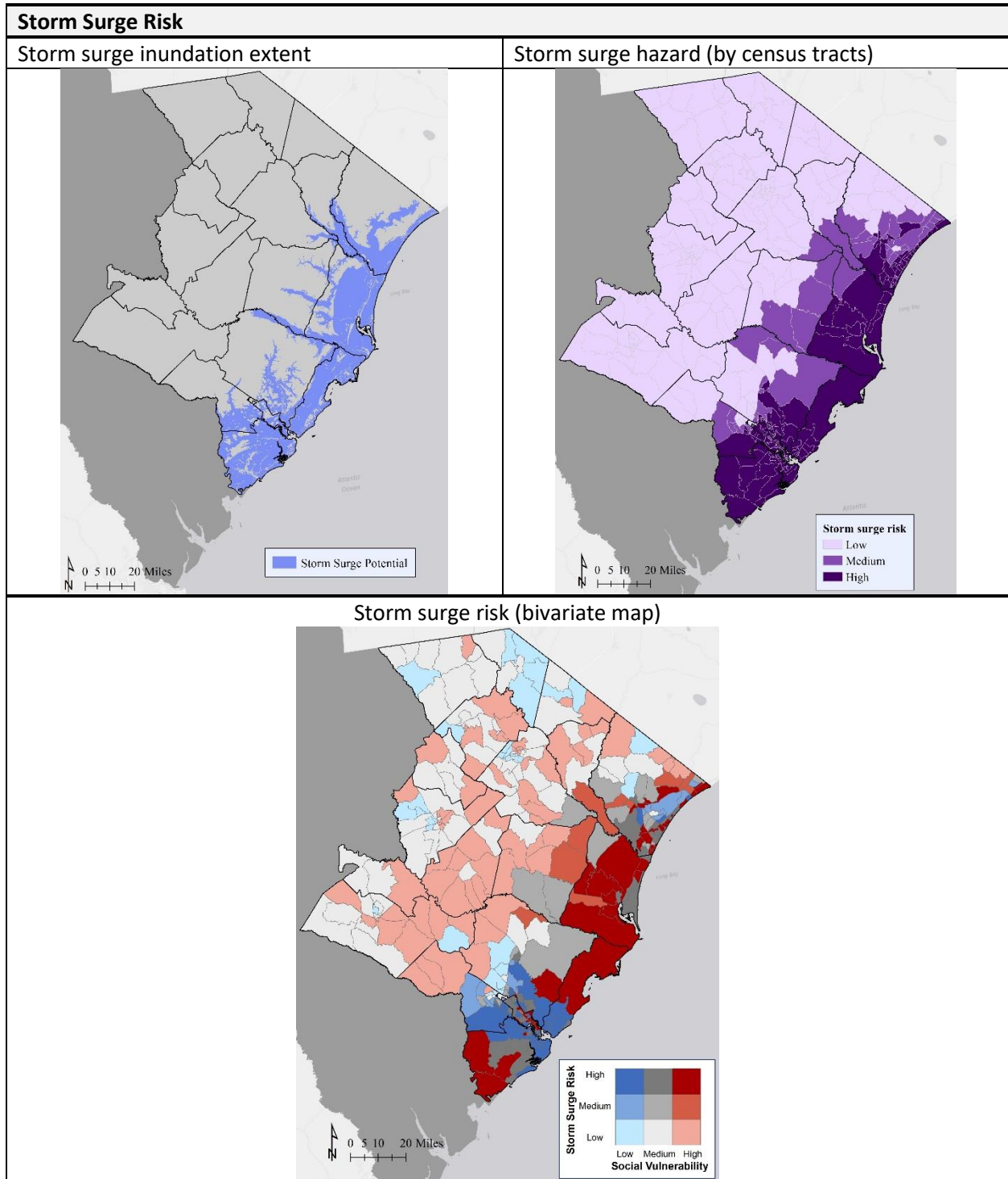
Flash Flood Risk

Flash floods that are caused by locally heavy rains in areas with quick water run-off are described here by using the flash flood potential index. As expected, the flash flooding hazard is higher in urban areas because of impervious surfaces that causes rapid run-off.



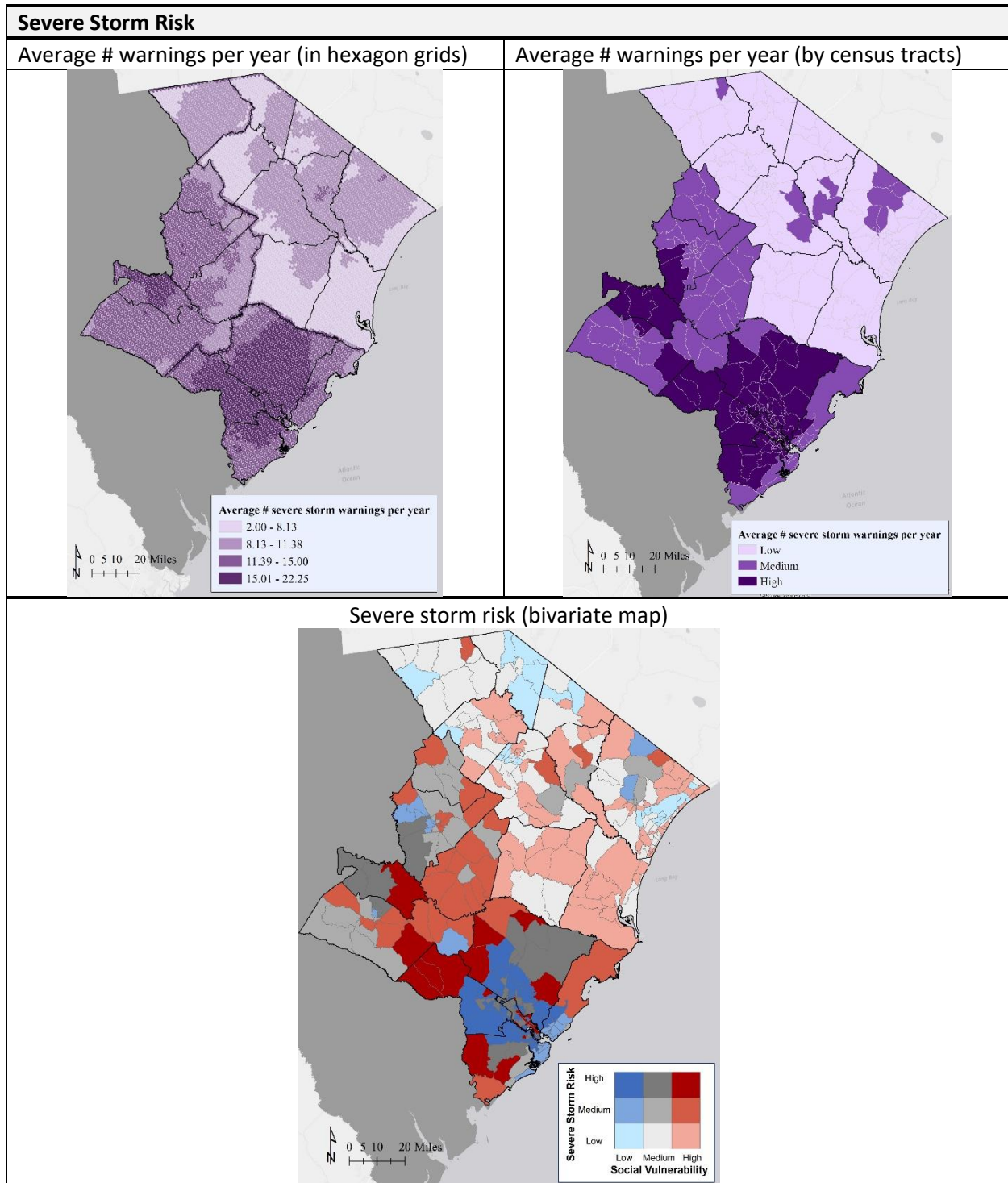
Storm Surge Risk

Storm surge is one of the hazards associated with tropical storms and hurricanes. The storm surge hazard is defined as the elevated water level that is pushed towards the shore by the force of strong wind. The Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model is used to estimate storm surge heights and delineate the potential exposure to storm surge.



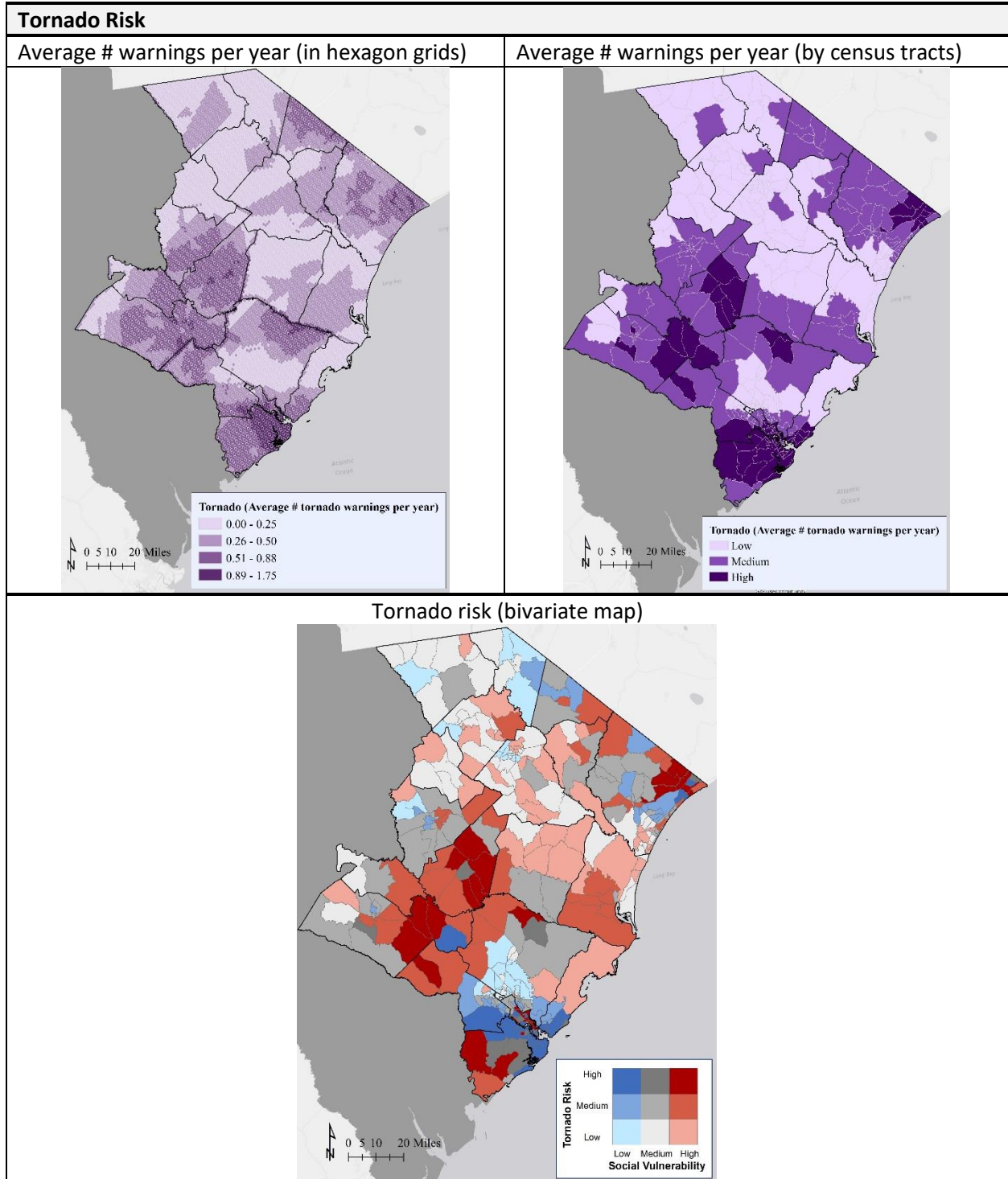
Severe Storm Risk

The hazard classification for severe storm exposure is defined based on the average number of severe storm warnings issued per year.



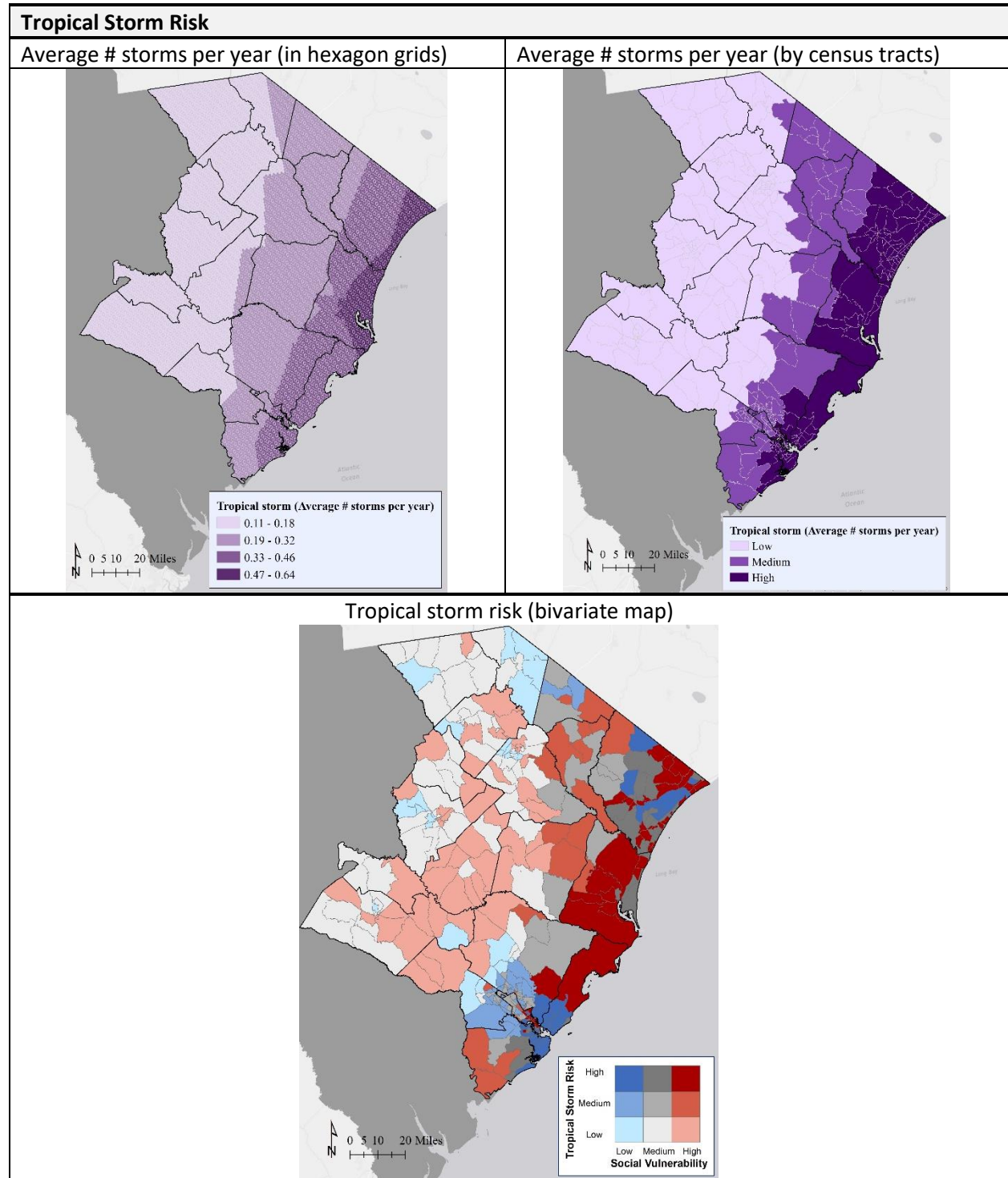
Tornado Risk

A tornado is often generated by thunderstorm activity and is characterized as a violent windstorm with twisting, funnel-shaped cloud extending to the ground. Tornadoes are also associated with landfalling tropical storms and hurricanes. The hazard classification for tornado exposure is defined based on the average number of warnings per year that the tornado warning has been issued.



Tropical Storm (Wind Risk)

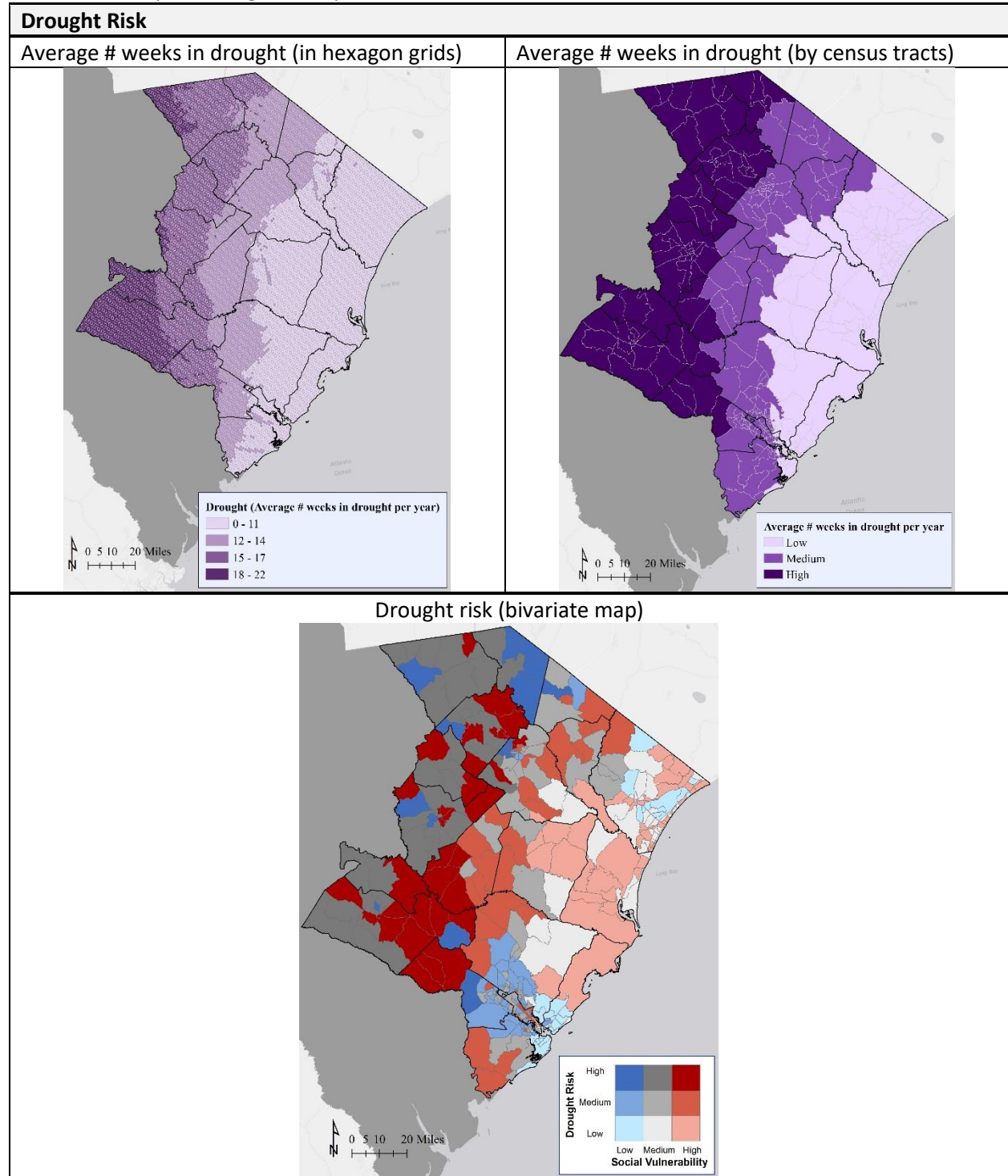
In the Atlantic Ocean tropical cyclones are known as tropical storms or hurricanes based on their wind speeds. The hazard classification for tropical storm exposure is defined based on the average number of days per year that tropical force winds (39-74 mph) were recorded from known hurricane/tropical storm tracks crossing the state.



Other Hazards Affecting South Carolina

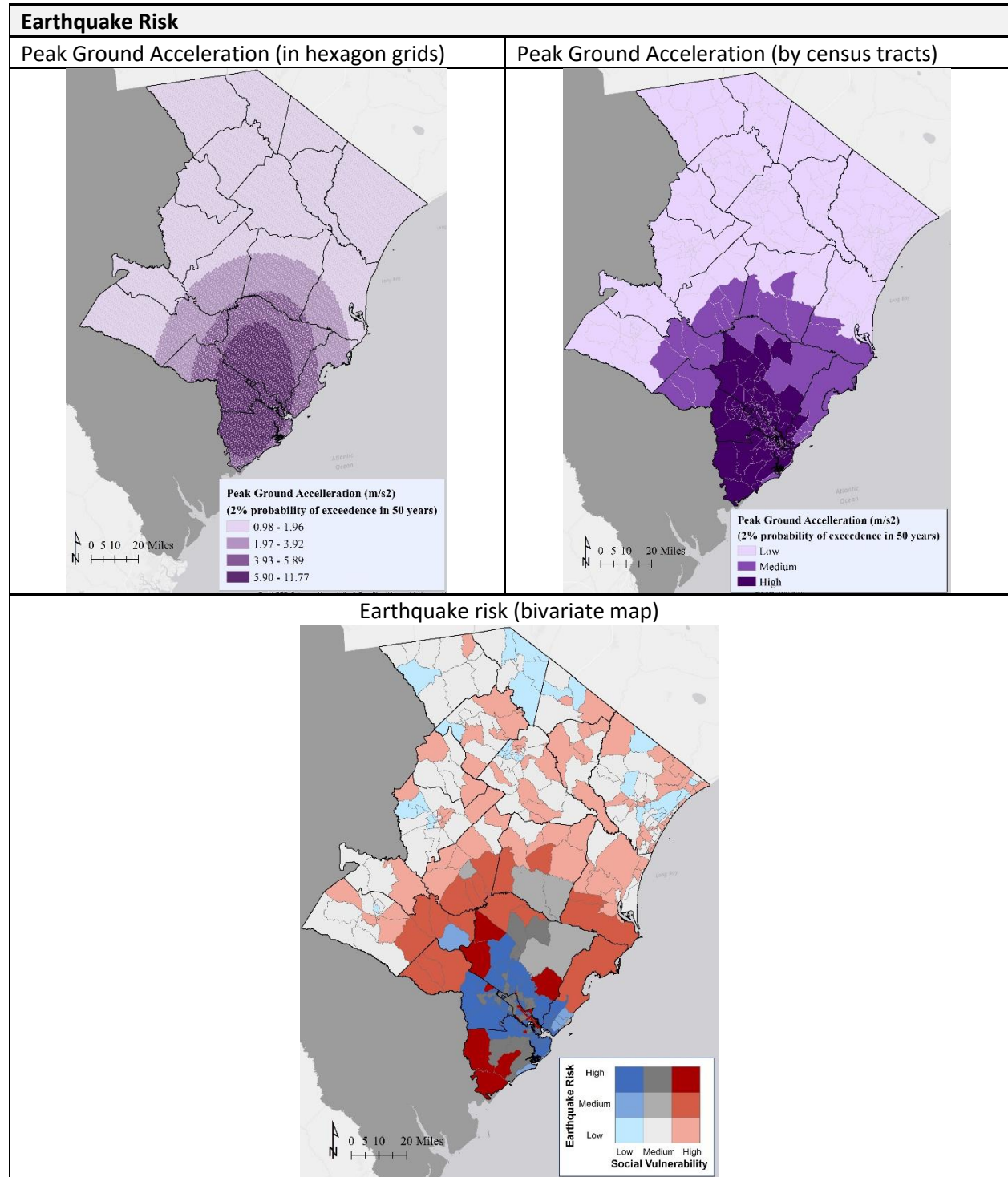
Drought Risk

Droughts are slow onset events compared to some other hazards and develop over longer periods of time. The classification of drought hazard used here is defined as the average number of weeks in drought (severity of D1 or greater on the U.S. Drought Monitor) per year, since year 2000. This is based on historical occurrences of past droughts and probabilities of future occurrences.



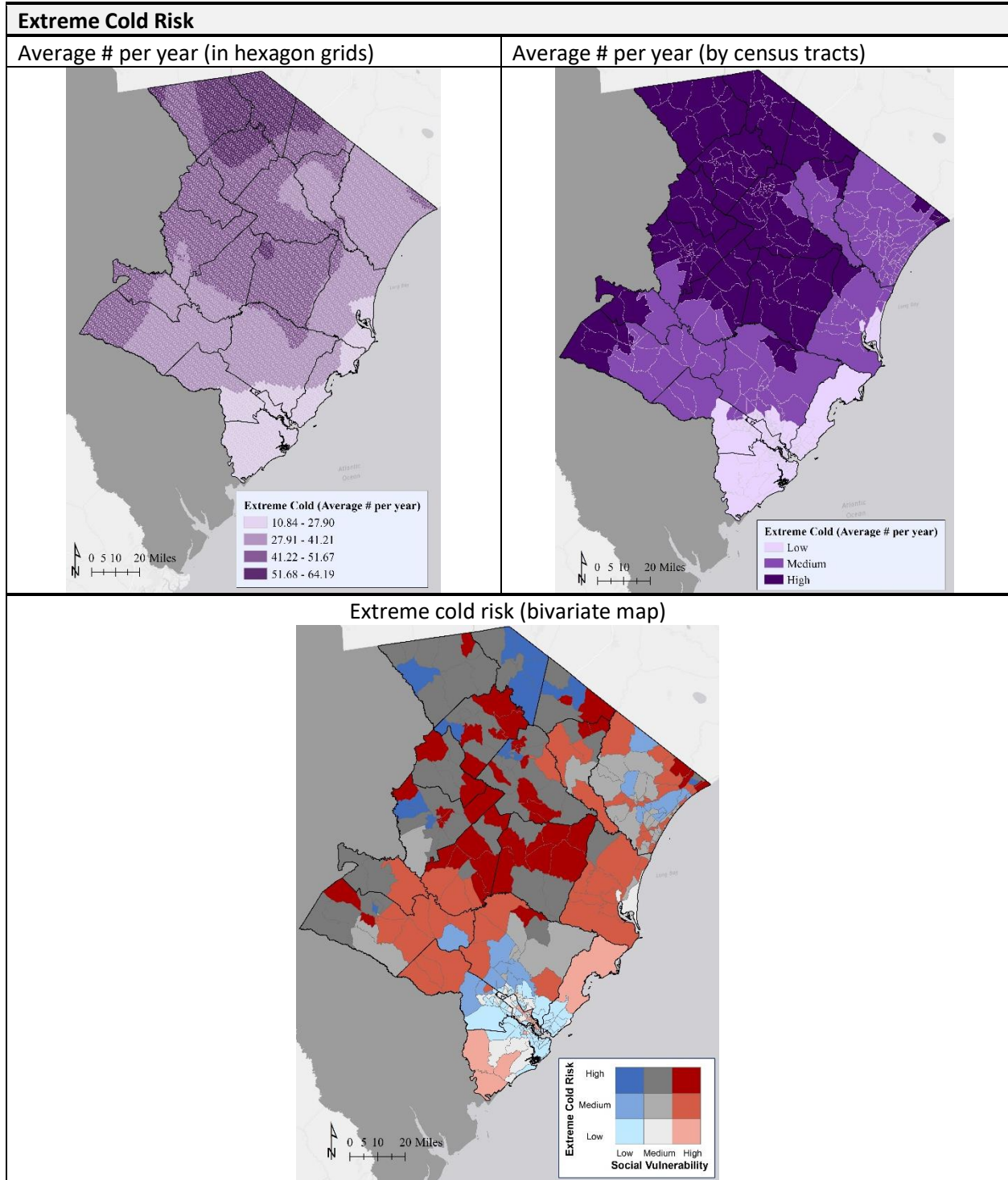
Earthquake Risk

There are about 10 to 15 earthquakes recorded annually recorded in South Carolina (Hazard Mitigation Plan 2018). Earthquakes are low probability- high hazard events and the nine counties in this assessment are susceptible to this hazard. The peak ground acceleration (PGA) with 2% probability of exceedance in 50 years is used to depict the exposure to the earthquake hazard.



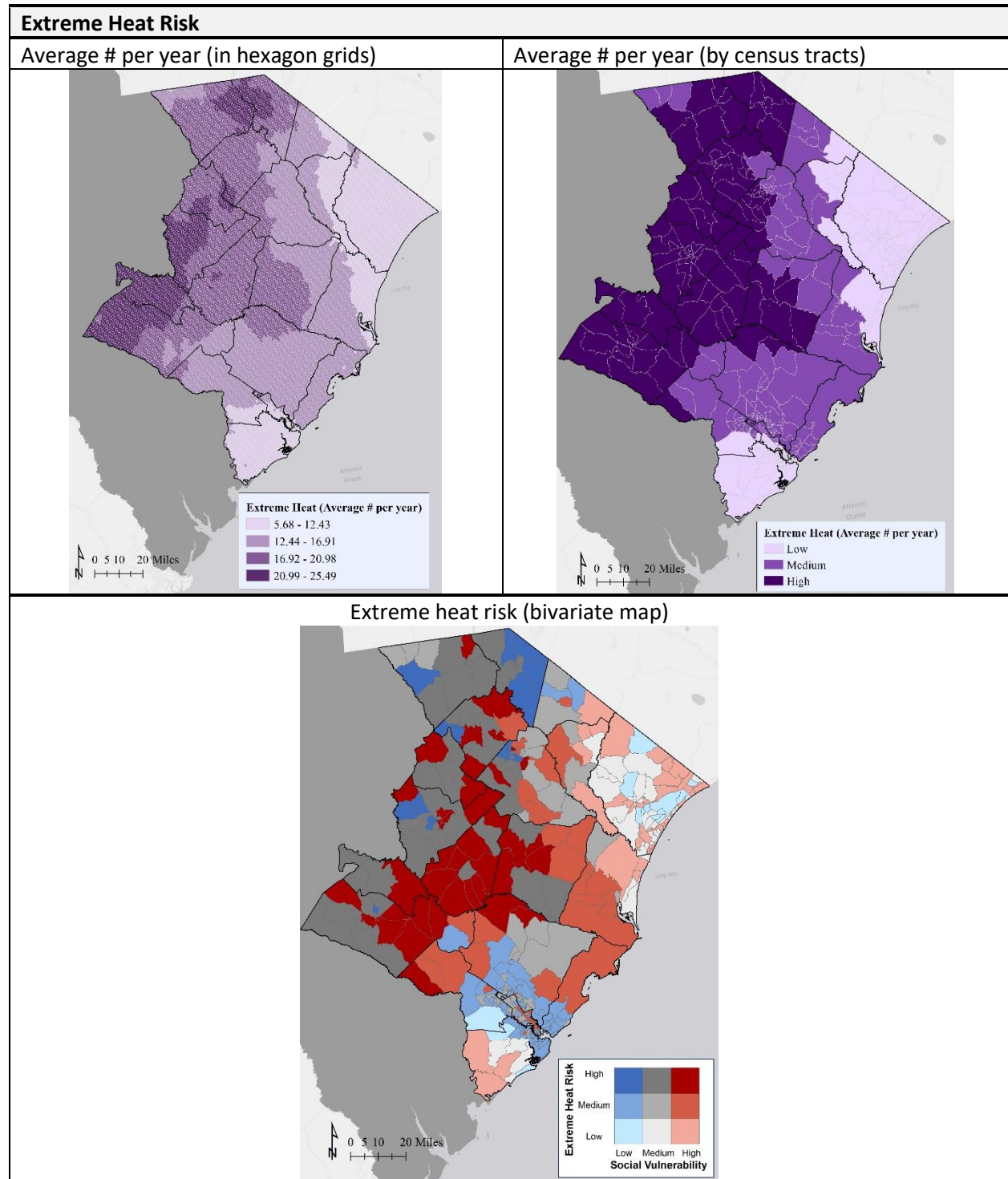
Extreme Cold Risk

The hazard classification for extreme cold exposure is defined based on the average number of days per year that the temperature is below freezing (lower than 32 degrees Fahrenheit).



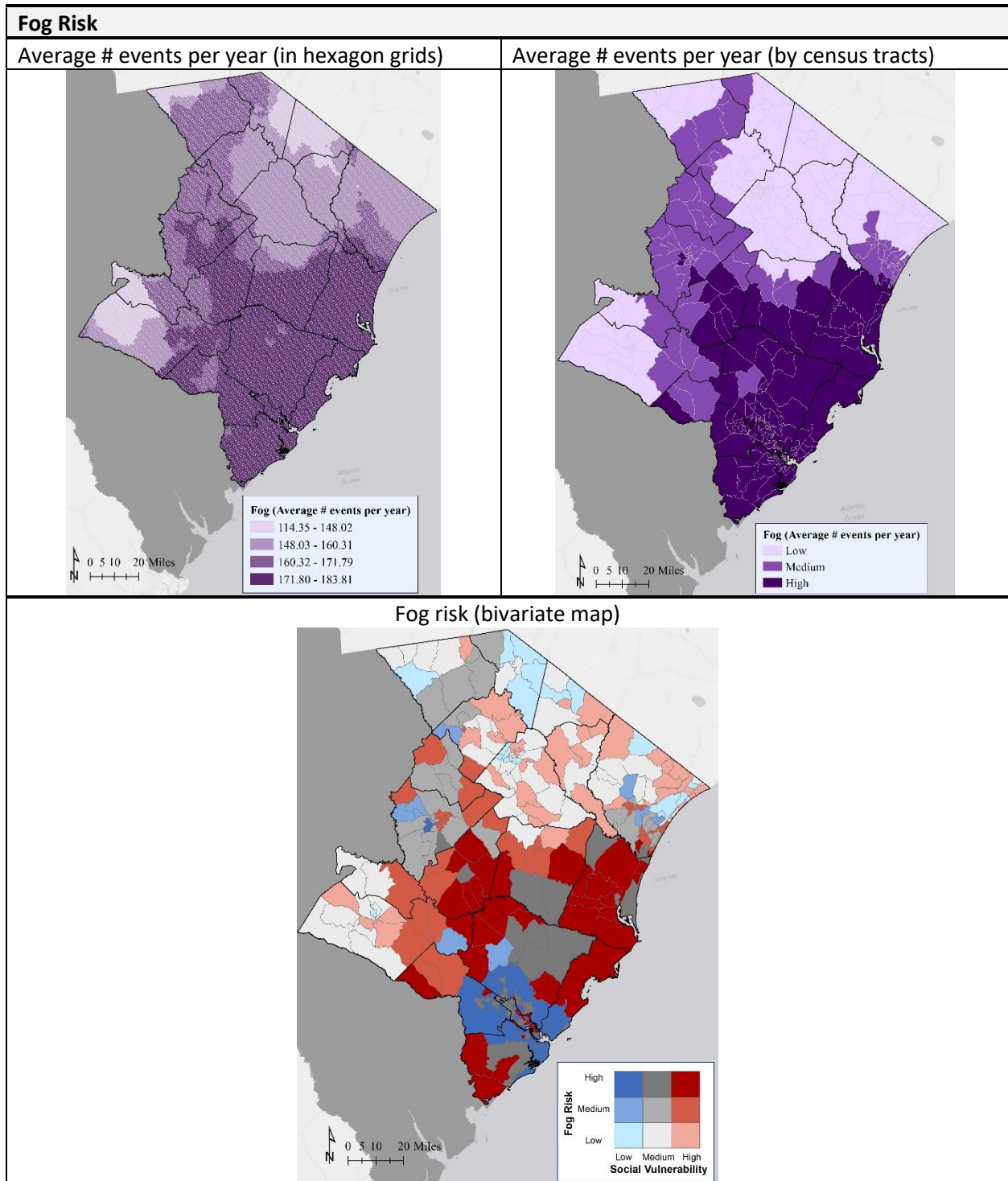
Extreme Heat Risk

The hazard classification for extreme heat exposure is defined based on the average number of days per year that the temperature is above 95 degrees Fahrenheit.



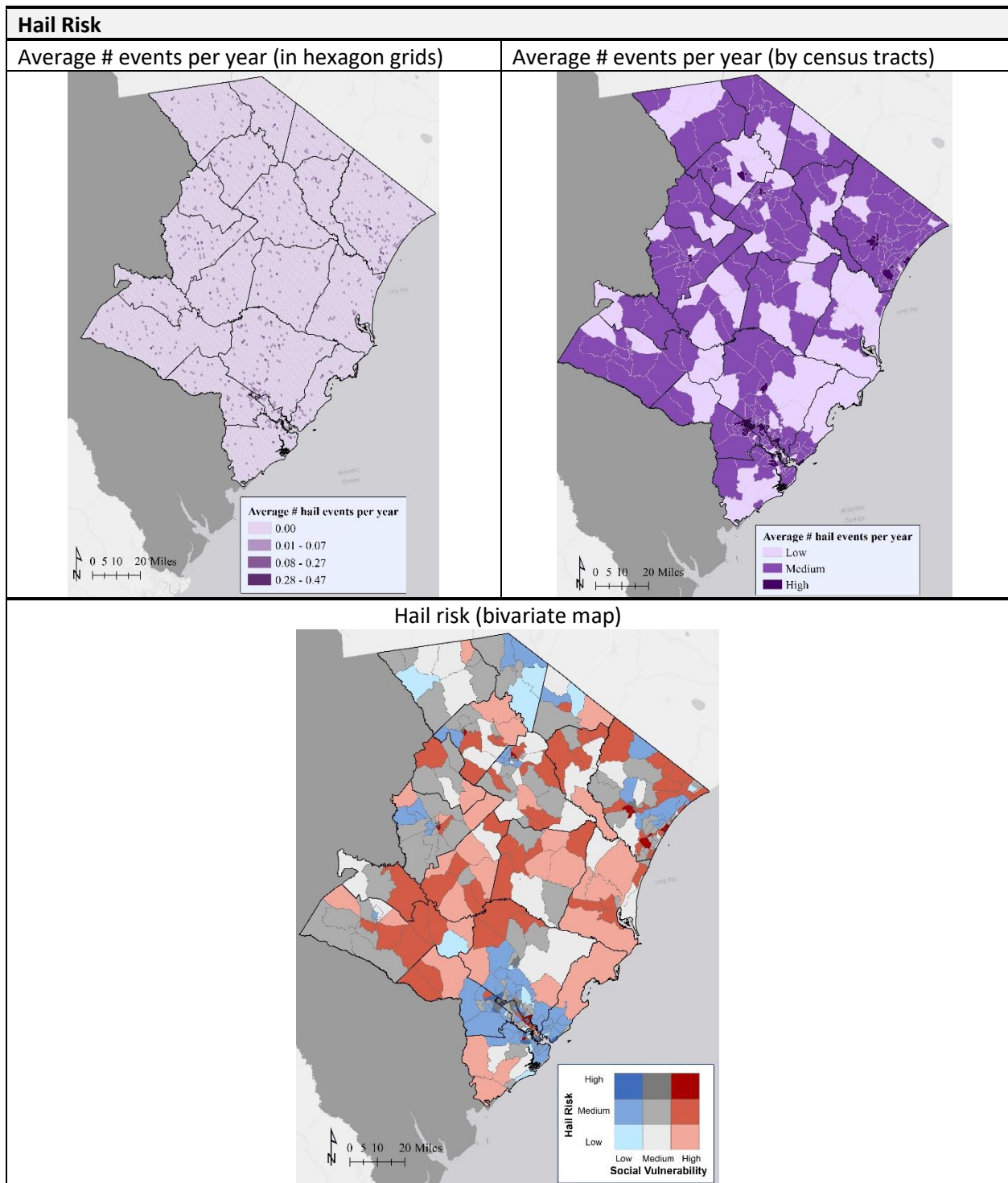
Fog Risk

The hazard classification for fog exposure is defined based on the average number of days per year that the fog event has been recorded.



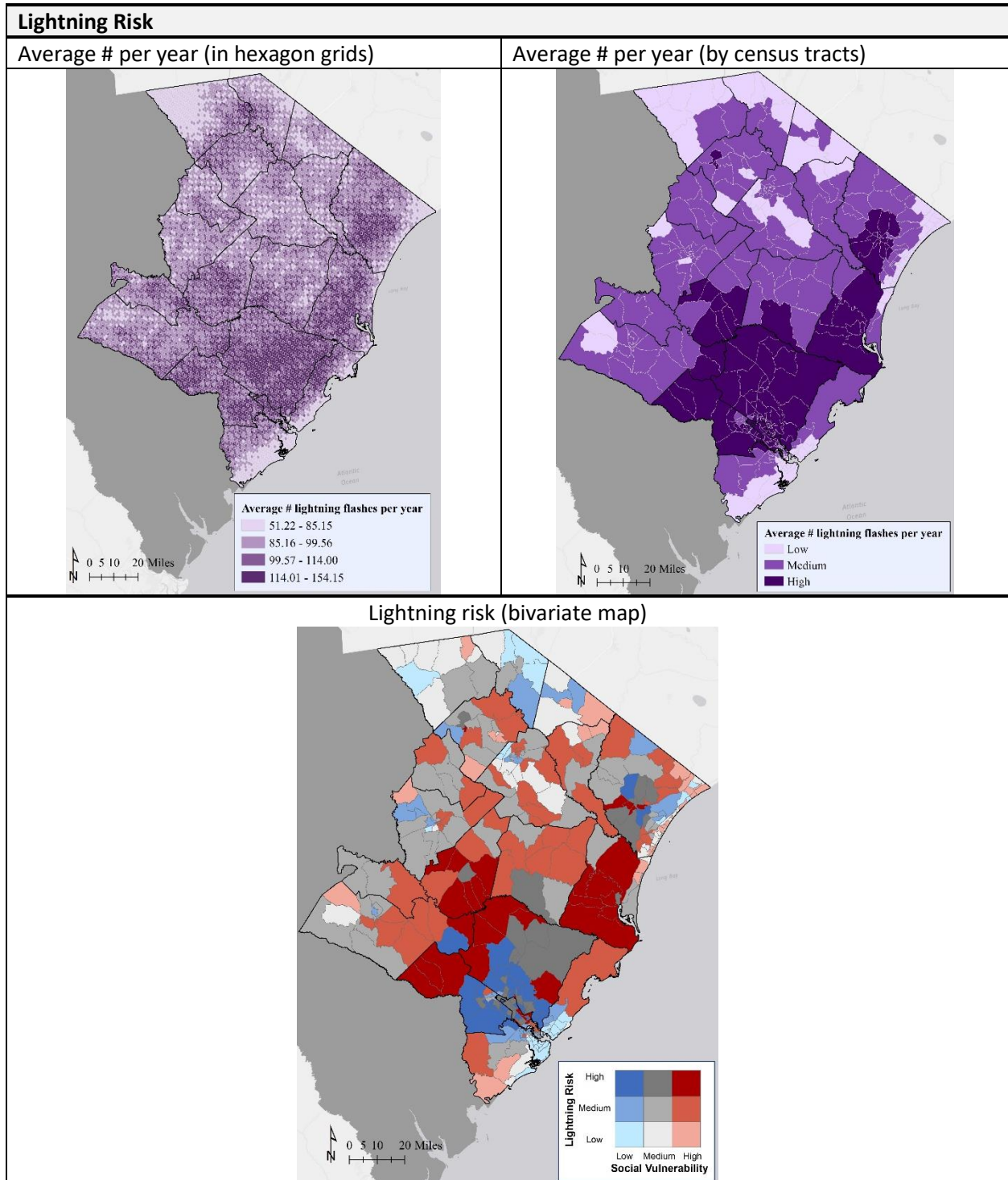
Hail Risk

The hazard classification for hail exposure is defined based on the average number of days per year that the hail event has been recorded.



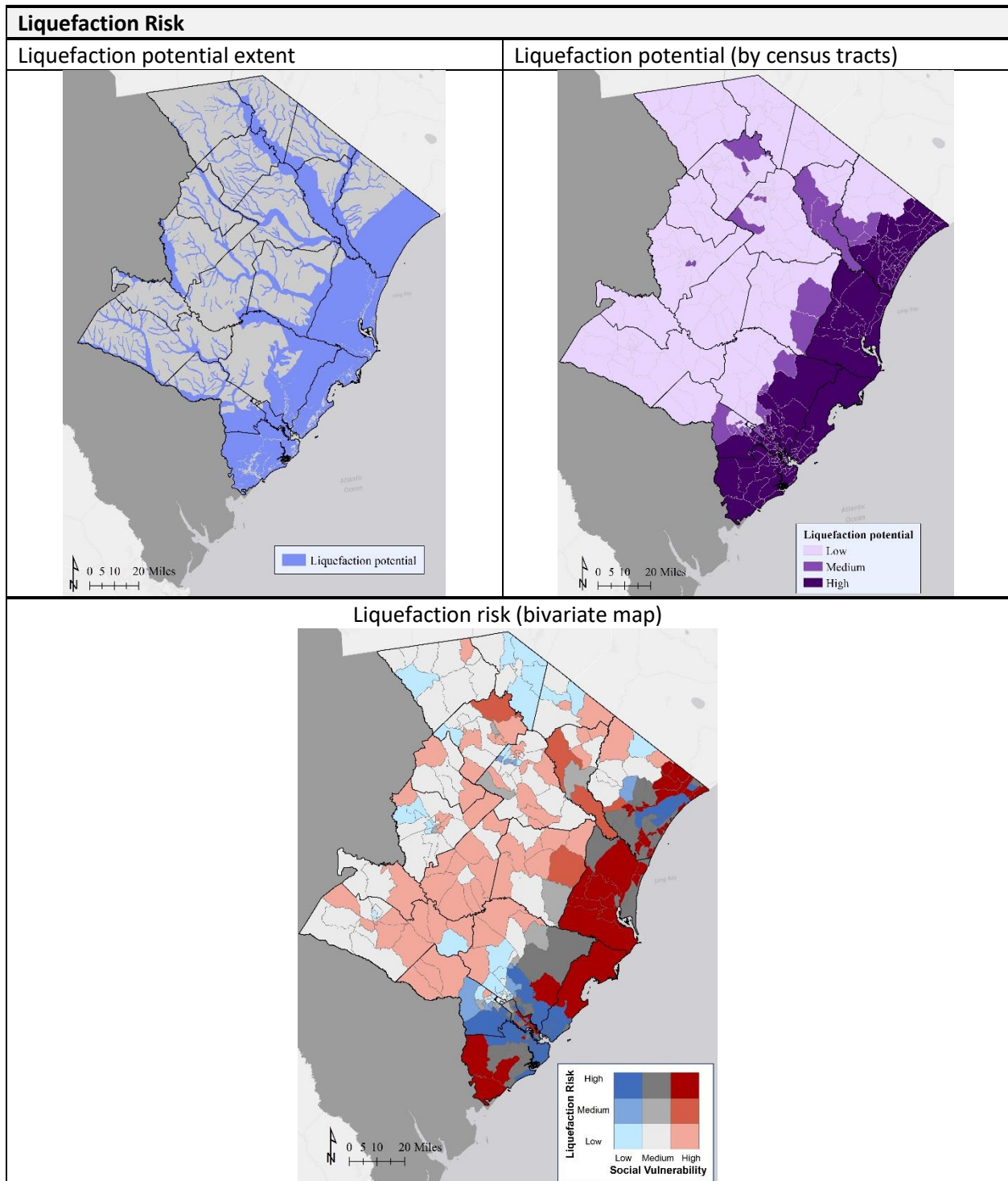
Lightning Risk

The average number of lightning flashes per year (total 27 years) is used to measure the lightning risk. In order to combine all hazards at the census tract level, the average for each tract is measured and assigned as the lightning risk score of 1, 2, or 3, based on the standard deviation from the mean.



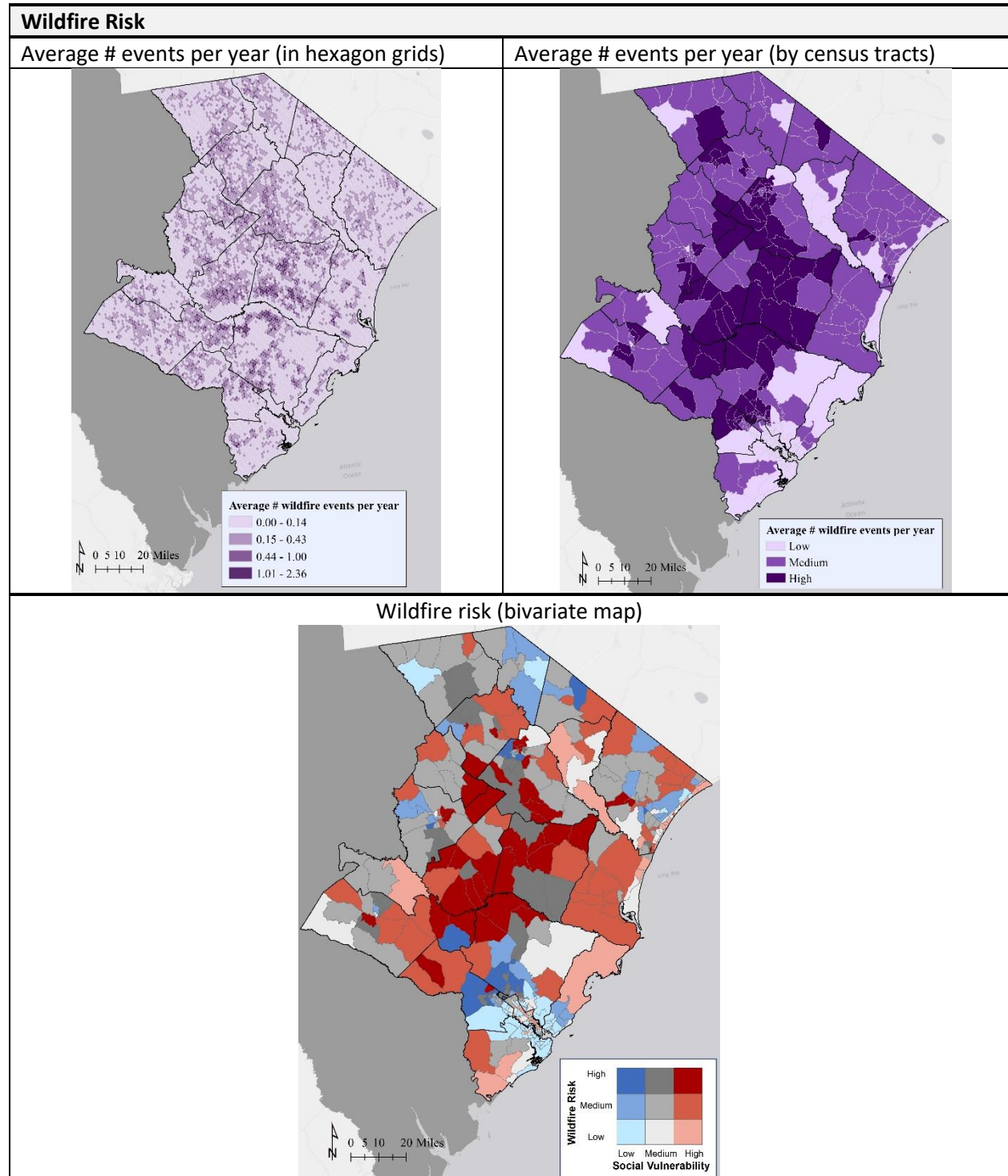
Liquefaction Risk

Liquefaction is the process whereby saturated soils lose strength and the ability to resist shear or the stress from ground shaking during an earthquake. The solid soil behaves like a liquid (e.g. quicksand) and unable to support buildings built on it. The liquefaction potential extent is delineated based on the earthquake hazard and soil conditions and type (sandy, silty, gravelly soils).



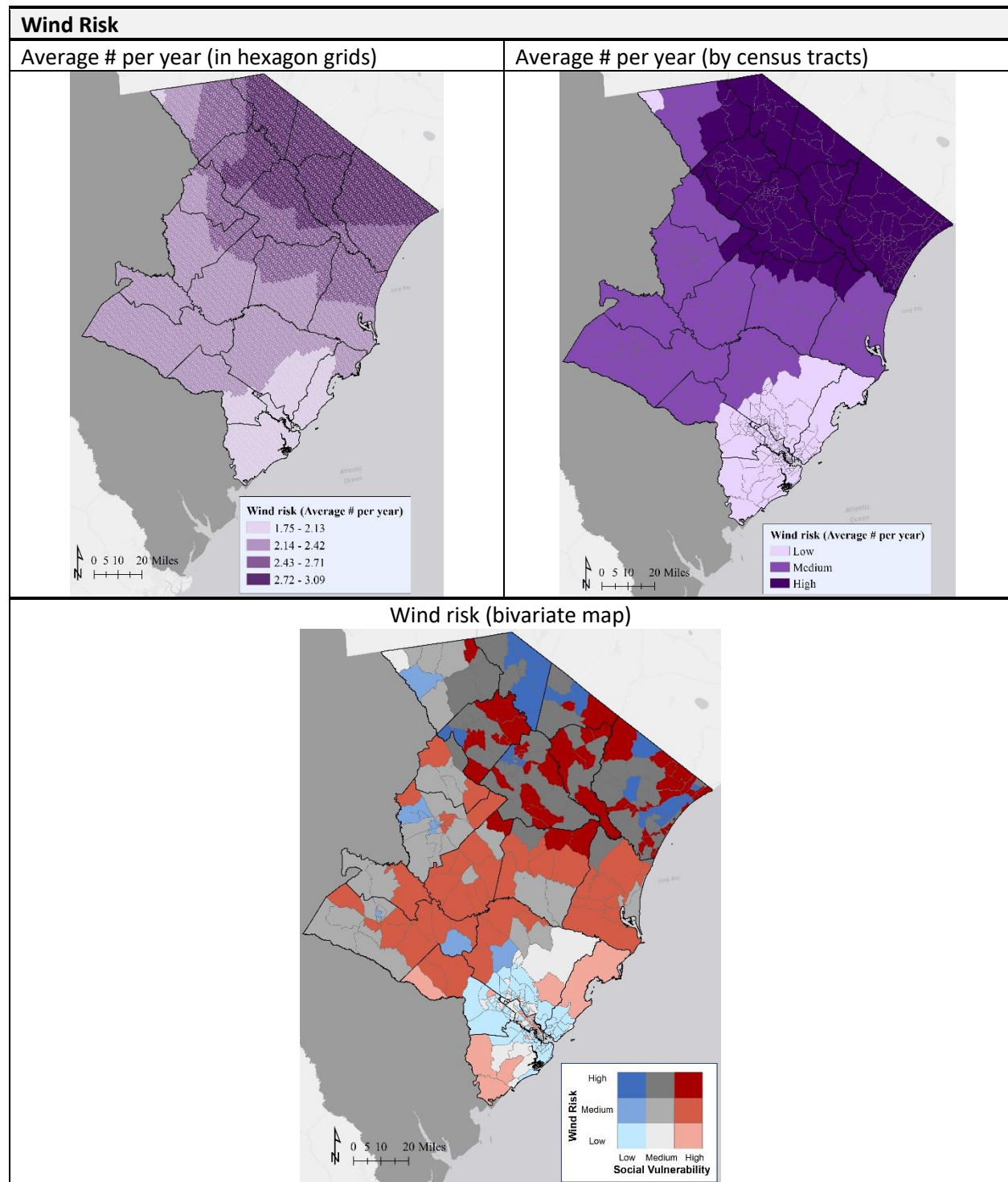
Wildfire Risk

Wildfires are a natural process for the environment to clear dead vegetation, and they can be human-cause or from lightning strikes. Fire danger is highest in late winter and early spring. The hazard classification for wildfire exposure is defined based on the average number of recorded wildfire events per year, since year 1988.



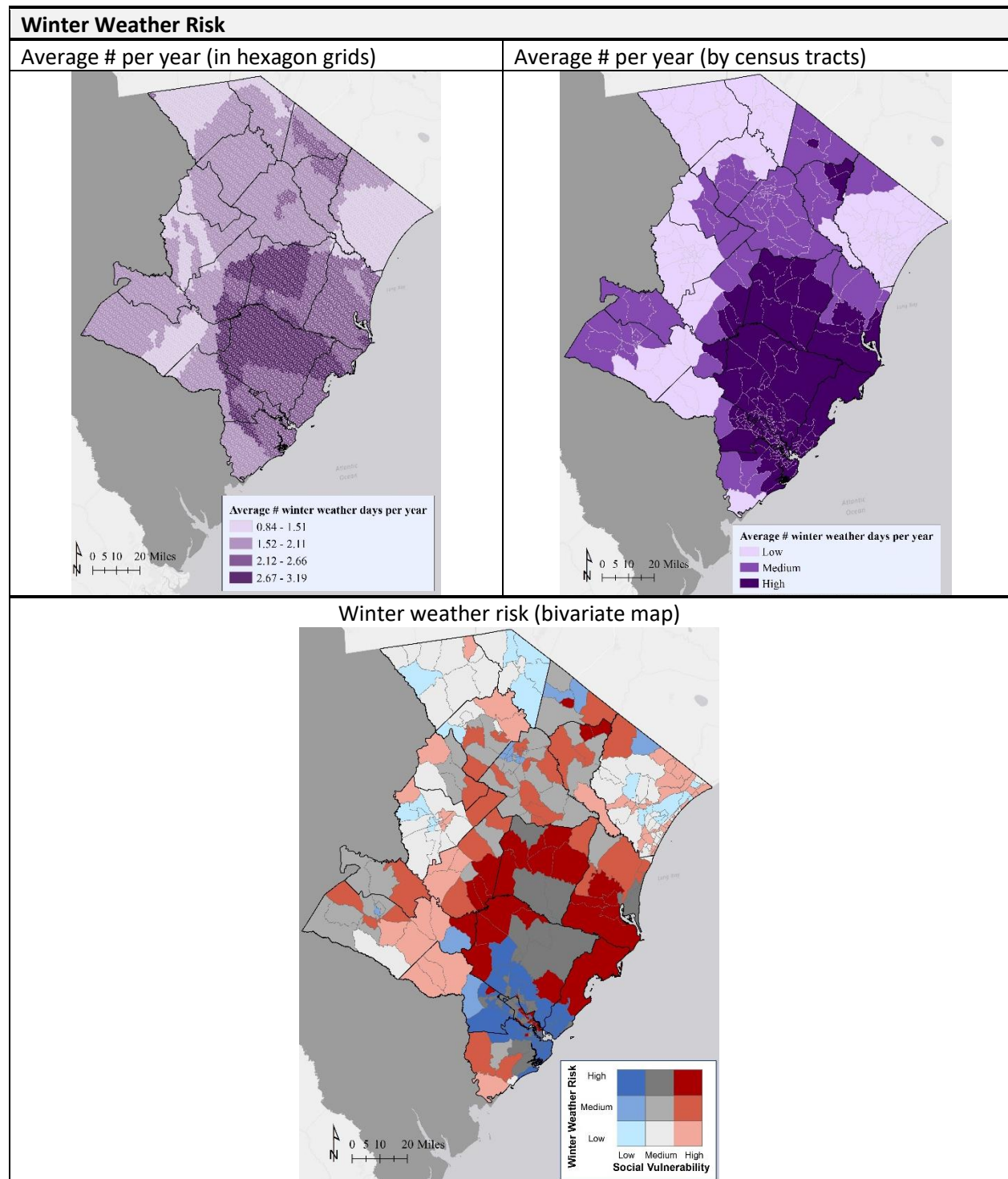
Wind Risk

The hazard classification for wind risk is based on the average number of days per year with recorded high winds (> 58 mph gusts excluding hurricane and tornadic winds).



Winter Weather Risk

The hazard classification for winter weather exposure is defined based on the average number of days per year that the winter weather (snow, ice, sleet, freezing rain) conditions were recorded.



Total Hazard Risk

The total hazard risk combines all the hazards described above into a comprehensive view of risk for the CDBG-MIT assessment region, by census tracts. This risk map was overlaid with social vulnerability to determine the intersection of the highest risk census tracts with those having higher levels of social vulnerability (Figure 6).

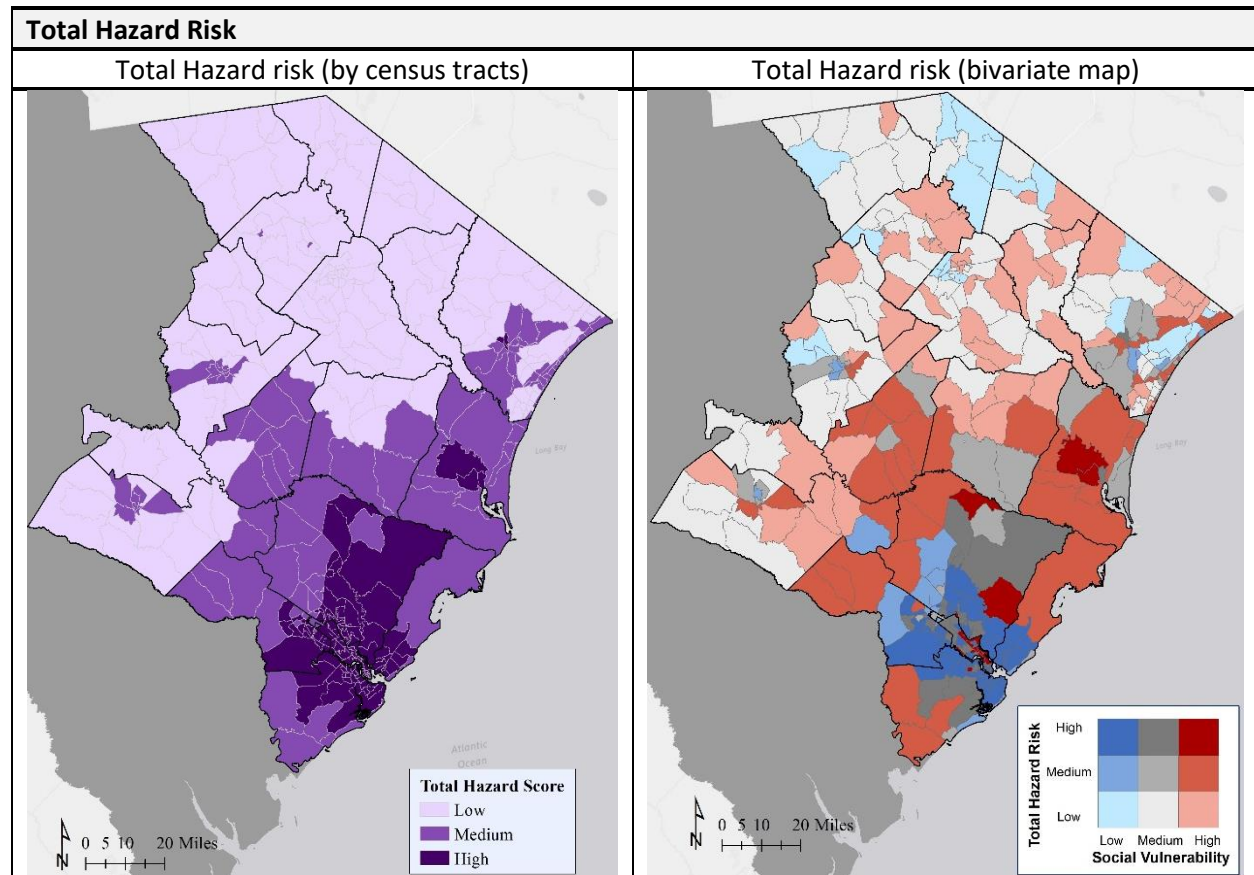


Figure 6 Total hazard risk and social vulnerability

The highest risk and most vulnerable census tracts (shown in dark red) are found in four primary areas. These include the Georgetown region bordering the Santee River, in the St. Stephens area in Berkeley County, in the Tarry Town and Pimlico communities near the Cooper River in Berkeley County, and in the Charleston neck and North Charleston region in Charleston and Berkeley Counties.

The Impact of Flood Hazards on the Region

From 2000-2018 in this 17-county region, property and crop losses totaled over \$625 million, of which 70% were due to flooding or flood-related events (e.g. severe thunderstorms, tropical storms/hurricanes).¹³ The repeated episodes of catastrophic flooding not only affected the region in 2015 but in subsequent years as well. The repeat and devastated effects of flooding along the coast, rivers, and

¹³ Data compiled from SHEL DUS Hazards & Vulnerability Research Institute, 2019. Computed property and crop losses from 2000-2018 from Spatial Hazard Events and Loss Database (SHEL DUS) v. 18. Accessed on December 1, 2019, <https://sheldus.org>

inland low-lying interior areas prompted Governor McMaster to create the South Carolina Floodwater Commission on October 15, 2018. According to the Executive Order 2018-50, “The Commission shall identify short-term and long-term recommendations to alleviate and mitigate flood impacts to this State, with special emphasis on cities, communities and enterprises located on or near the coast and rivers.”¹⁴

As shown in the summary map below (Figure 7) the highest risk of flooding is along the coast and in the inland waterways (left). More significant is the geographic relationship between high to moderate flood risk areas and higher levels of social vulnerability (right). Together both parameters illustrate the need for longer-term mitigation resources, especially for these vulnerable populations that are most affected.

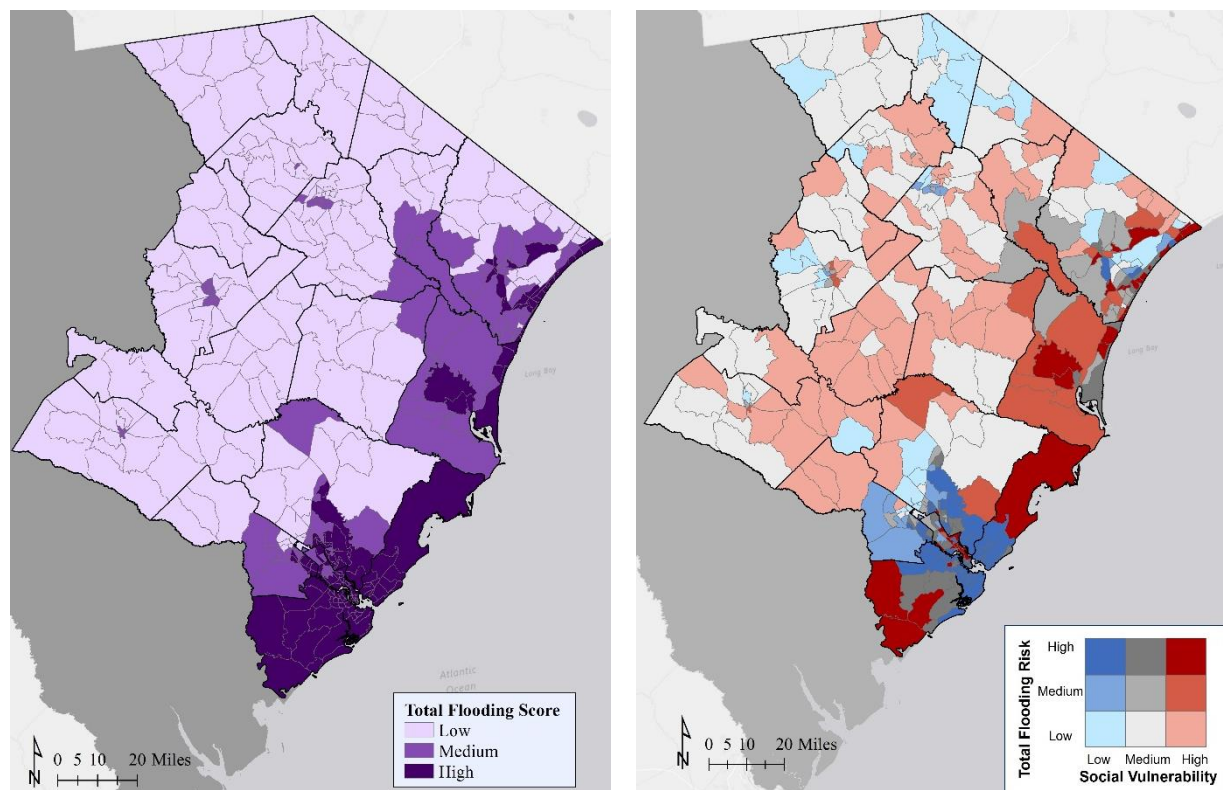


Figure 7 Total flood risk (riverine, flash flooding, storm surge) (left) and then in comparison with social vulnerability (right) at the census tract level

Residential Recovery Impact and Unmet Needs Profiles

Immediately after a hazard event, the primary resources for the initial recovery of affected residents are FEMA’s Individual Assistance (IA) through the Individuals and Households Program (IHP), the National Flood Insurance (NFIP) program, low-interest loans from the Small Business Administration (SBA), and

¹⁴ Executive Order 2018-50, Authorizing of the South Carolina Floodwater Commission, <https://governor.sc.gov/sites/default/files/Documents/Executive-Orders/EO-2018-50.pdf>, Accessed December 1, 2019. See also the Commission’s web site <https://governor.sc.gov/executive-branch/south-carolina-floodwater-commission>

over the longer term, HUD CDBG-DR funding. During the 2015 Flood Event, the State of South Carolina created a Housing Trust Fund (HTF) Flood Initiative.¹⁵ The HTF secured funding from the state, non-profit, and private donors to assist low-income homeowners in the declared counties with immediate repairs to damage that would worsen without such prompt financial assistance. Determining the success of federal and state recovery efforts and delineating the additional unmet individual homeowner mitigation needs is a crucial part of HUD CDBG-MIT analysis.

This section examines the federal and state resources (or recovery safety nets)¹⁶ available to affected residents. We used a county-level scale in measuring success in repairing or replacing homes. A more detailed examination using census tract analyses appears at the end of this section, showing the relationship between the availability of the recovery and short-term mitigation resources and the residual unmet mitigation needs.

FEMA Individual Assistance for Homeowners

Following the 2015 flood, around 75,510 residents applied for FEMA individual assistance, but only 24% of the applicants received housing assistance to bring their home to a safe, sanitary, functional condition.¹⁷ After Hurricane Matthew affected roughly the same area, 46,686 residents applied for IA statewide, with only 19% receiving assistance.¹⁸ Within the seventeen county region, the proportions are better: for the 2015 floods there were 52,621 applicants, with 29% receiving housing assistance, and after Hurricane Matthew, there were 27,198 applicants, 28% receiving housing assistance. The applicants were concentrated in the Pee Dee and Santee watersheds (Figure 8).¹⁹

There are many reasons for denying claims (clerical errors, inconsistent information on owner's name and address, proof of occupancy, identity verification), but one significant reason is a claim may be denied based on the results from attributing damage to a specific event. In other words, FEMA damage inspectors may judge that a dwelling had a pre-existing deteriorated condition due to deferred maintenance or other pre-storm conditions and therefore not damaged by the present flood/storm. The 2015 and 2016 HUD CDBG-DR Action Plans for Recovery suggest that such eligibility determinations and claim denials often disproportionately affect low to moderate income (LMI) households.²⁰

¹⁵ South Carolina Disaster Recovery Office, 2016. South Carolina Action Plan for Disaster Recovery Amendment 8. Accessed November 22, 2019. <https://scstormrecovery.com/wp-content/uploads/2019/07/SC-Severe-Storm-Amendment-8-6-26-19.pdf>

¹⁶ Emrich, C.T., E. Tate, S.E. Larson, and Y. Zhou, 2019. Measuring social equity in flood recovery funding, *Environmental Hazards* <https://doi.org/10.1080/17477891.2019.1675578>.

¹⁷ Op. cit., Note 15.

¹⁸ South Carolina Disaster Recovery Office, 2017. *South Carolina Hurricane Matthew Action Plan*. Accessed November 22, 2019. <https://scstormrecovery.com/wp-content/uploads/2017/07/SC-Hurricane-Matthew-Action-Plan-Revised-HUD-Submittal-5-31-17-1-1.pdf>

¹⁹ Differences in the figures between the reporting in approved HUD Disaster Recovery Plans for the 2015 floods and 2016 Hurricane Matthew and the numbers here are due to the lag in identifying and qualifying applicants for assistance.

²⁰ Op.cit., Note 15 and Note 18.

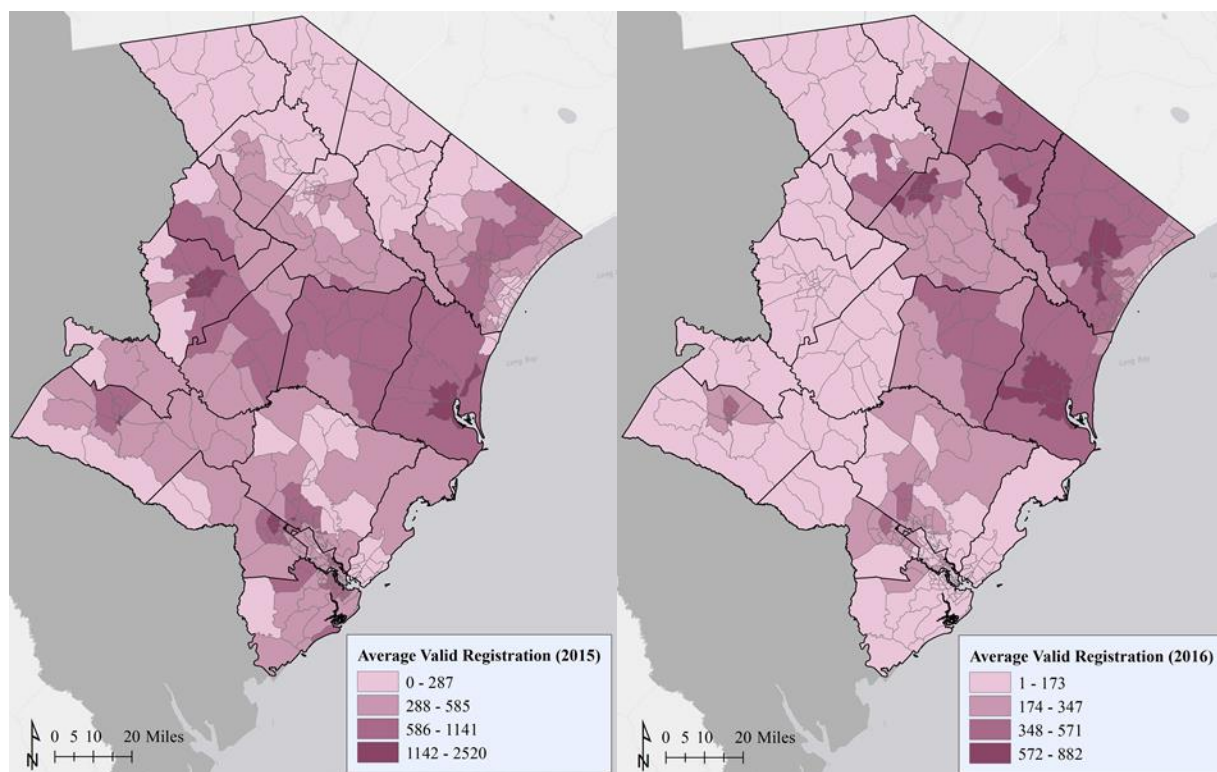


Figure 8 Number of valid FEMA IA registrants by census tract

As of March 2017, 19,446 homeowners statewide received FEMA IHP flood damage funding for home repairs (15,628 for DR-4241, 3,818 for DR-4286).²¹ Updated information (November 2019) shows that for the Pee Dee and Santee watersheds, 15,509 homeowners received FEMA housing assistance for DR-4241, and 7,589 for DR-4286.²² Chesterfield County had the lowest percentage rate of success in receiving IHP funding but also had the lowest damage amount based on inspections (Table 3). The highest rate of success was in Williamsburg County.

Table 3 FEMA Housing Assistance Program Support for PDD-4241 and PDD 4286 by County

PDD 4241 Severe Storms and Floods 2015						
County	#Registrant	#Inspected	Total Damage (\$)	#Approved for FEMA Assistance	Total Approved IHP (\$)	#Not Approved
Berkeley	3807	3253	\$2,790,796	1095	\$2,982,183	2712
Calhoun	679	584	\$359,285	162	\$314,747	517
Charleston	7879	6525	\$7,880,394	1846	\$6,040,991	6033
Chesterfield	7	7	\$9,125	3	\$9,731	4
Clarendon	3014	2594	\$1,934,068	919	\$2,275,394	2095

²¹ FEMA, 2017. Individuals and Households Program (IHP) Flood Damage, Accessed 11/27/19. Data reflect counts as of 3/10/2017. <https://www.fema.gov/media-library/assets/documents/130225>.

²² FEMA, 2019. Housing Assistance Data, Accessed 11/27/19. Data reflect counts as of 11/25/2019 <https://www.fema.gov/media-library/assets/documents/34758>

Darlington	2178	1915	\$1,202,508	668	\$1,408,421	1510
Dillon	29	29	\$12,695	6	\$19,712	23
Dorchester	2992	2523	\$3,264,494	830	\$2,709,962	2162
Florence	5248	4526	\$5,034,102	1718	\$4,982,543	3530
Georgetown	3509	3014	\$8,141,573	1071	\$6,251,590	2438
Horry	4495	3724	\$4,118,081	1255	\$3,885,350	3240
Lee	949	843	\$435,257	244	\$541,015	705
Marion	823	723	\$289,280	164	\$338,373	659
Orangeburg	5193	4503	\$2,698,477	1326	\$2,521,110	3867
Sumter	7319	6195	\$10,740,457	2591	\$11,539,535	4728
Williamsburg	4500	3925	\$6,014,928	1611	\$6,331,885	2889
Total	52621	44883	\$54,925,520	15509	\$52,152,542	37112

PDD 4286 Hurricane Matthew 2016						
County	#Registrant	#Inspected	Total Damage (\$)	#Approved for FEMA Assistance	Total Approved IHP (\$)	#Not Approved
Berkeley	1364	1011	\$751,691	242	\$763,150	1122
Calhoun	103	80	\$75,210	25	\$73,625	78
Charleston	2224	1567	\$2,568,503	492	\$1,628,588	1732
Chesterfield	216	153	\$105,387	41	\$107,022	175
Clarendon	559	465	\$350,920	150	\$325,978	409
Darlington	1313	968	\$746,107	225	\$534,963	1088
Dillon	1820	1489	\$2,239,273	570	\$2,007,019	1250
Dorchester	1263	790	\$1,112,580	217	\$821,555	1046
Florence	4079	3030	\$4,143,270	1156	\$3,334,938	2923
Georgetown	1782	1463	\$1,695,473	574	\$1,469,018	1208
Horry	4693	3369	\$8,040,238	1337	\$5,657,053	3356
Lee	222	172	\$53,225	32	\$41,926	190
Marion	3175	2516	\$10,947,553	1243	\$8,914,256	1932
Marlboro	409	322	\$345,886	90	\$305,297	319
Orangeburg	1601	1174	\$1,073,721	348	\$949,689	1253
Sumter	617	476	\$493,362	166	\$525,438	451
Williamsburg	1758	1509	\$1,923,017	681	\$1,935,950	1077
Total	27198	20554	\$36,665,416	7589	\$29,395,464	19609

Source: FEMA Housing Assistance Program, Updated November 25, 2019, footnote 31.²³

The success ratio in receiving FEMA IHP resources only tells part of the story of the mitigation and resilience needs assessment. Another consideration is the actual dollar amount of the resources relative to the damage assessment by FEMA. Table 4 highlights an estimated unmet financial need in excess of \$10 million for immediate repairs per the IHP program based on the difference between the approved amounts minus the total damage.

²³ Note that Marlboro County did not receive an Individual Assistance declaration for PD 4241.

Table 4 Difference between Total Damages and Approved FEMA IHP for DR-4241 and DR-4286

County	Total Damages (\$)	Total (\$) Approved IHP	Unmet FEMA Need (\$)
Berkeley	\$ 3,542,487	\$ 3,745,333	\$ 202,846
Calhoun	\$ 434,495	\$ 388,372	\$ -46,123
Charleston	\$ 10,448,897	\$ 7,669,579	\$ -2,779,318
Chesterfield	\$ 114,512	\$ 116,753	\$ 2,241
Clarendon	\$ 2,284,988	\$ 2,601,372	\$ 316,384
Darlington	\$ 1,948,615	\$ 1,943,384	\$ -5,231
Dillon	\$ 2,251,968	\$ 2,026,731	\$ -225,237
Dorchester	\$ 4,377,074	\$ 3,531,517	\$ -845,557
Florence	\$ 9,177,372	\$ 8,317,481	\$ -859,891
Georgetown	\$ 9,837,046	\$ 7,720,608	\$ -2,116,438
Horry	\$ 12,158,319	\$ 9,542,403	\$ -2,615,916
Lee	\$ 488,482	\$ 582,941	\$ 94,459
Marion	\$ 11,236,833	\$ 9,252,629	\$ -1,984,204
Marlboro	\$ 345,886	\$ 305,297	\$ -40,589
Orangeburg	\$ 3,772,198	\$ 3,470,799	\$ -301,399
Sumter	\$ 11,233,819	\$ 12,064,973	\$ 831,154
Williamsburg	\$ 7,937,945	\$ 8,267,835	\$ 329,890
Total	\$ 91,590,936	\$ 81,548,006	\$ -10,042,930)

Source: Computed from Table 6.

National Flood Insurance Policy Coverage

Historically, South Carolina has relatively little uptake of NFIP flood policies despite the flood-prone nature of both coastal and riverine environments. In the Pee Dee and Santee watersheds, there are 455,615 owner-occupied housing units, and 323,544 NFIP policies as of July 2019. In other words, roughly 71% of all owner-occupied housing units have NFIP policies in the assessment area.²⁴ The majority of these policies are in Horry and Charleston Counties. For the 2015 and 2016 flood events, there were 9,263 claims (2.9% of the policies in effect in the watersheds) totaling nearly \$109 million in building and contents claims, or roughly an average of \$11,763 per claim. Charleston, Horry, and Georgetown counties recorded the highest payouts (Table 5).

Table 5 NFIP Claims for 2015-2016 for Pee Dee and Santee Watershed Counties

County	Policy count	Amount paid on building claim	Amount paid on contents claim
Berkeley	150	\$2,597,623.59	\$407,999.49
Charleston	2349	\$30,367,631.47	\$2,720,883.90

²⁴ Data downloaded from OpenFEMA claims and policy data, published July 2019, <http://https://www.fema.gov/data-feeds>

County	Policy count	Amount paid on building claim	Amount paid on contents claim
Clarendon	11	\$178,014.30	\$13,468.30
Darlington	15	\$256,904.03	\$25,731.59
Dillon	25	\$768,398.65	\$94,566.86
Dorchester	335	\$4,857,812.88	\$967,569.63
Florence	113	\$1,781,710.76	\$308,326.77
Georgetown	1046	\$15,667,205.97	\$2,658,440.04
Horry	4910	\$26,060,973.56	\$4,636,055.53
Lee	5	\$36,734.70	\$12,984.67
Marion	102	\$6,410,833.91	\$895,669.46
Marlboro	1	\$9,564.22	-
Orangeburg	38	\$664,480.22	\$156,237.69
Sumter	123	\$4,162,841.04	\$295,135.49
Williamsburg	40	\$1,664,026.73	\$283,388.41
Total	9263	\$95,484,756.03	\$13,476,457.83

Source: OpenFEMA Claims and Policy Data (see footnote 23).

As shown in Figure 9, the majority of NFIP claims were from the coastal census tracts in Horry, Georgetown, and Charleston Counties.

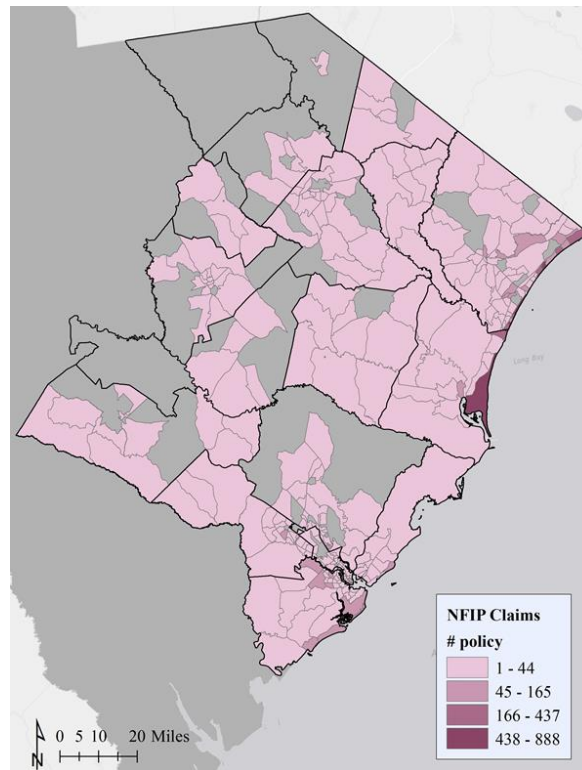


Figure 9 Distribution of NFIP Claims by Census Tract

Small Business Administration (SBA) Loans

After the 2015 floods, there were 3,090 SBA loans statewide totaling over \$76 million, with an additional 1,434 loans after Hurricane Matthew (\$33.6 million).²⁵ In the Pee Dee and Santee watersheds, there were significantly fewer SBA loans (376) for both events.²⁶ The majority of the loans were in Charleston, Horry, Berkeley, and Orangeburg Counties (Table 6).

Table 6 Number of SBA Loans for Selected South Carolina Counties by Event

County	# SBA Home Loans DR-4241	# SBA Home Loans DR-4286
Berkeley	19	15
Calhoun	6	3
Charleston	45	24
Chesterfield	0	3
Clarendon	10	5
Darlington	12	7
Dillon	0	8
Dorchester	13	11
Florence	15	13
Georgetown	7	5
Horry	19	21
Lee	11	5
Marion	5	10
Marlboro	0	4
Orangeburg	19	14
Sumter	15	9
Williamsburg	13	10
Total	209	167

HUD CDBG-DR Funding

The CDBG-DR funding assistance is specifically designed to benefit low and moderate income (LMI) persons. The South Carolina Disaster Recovery Office (SCDRO) engaged in an expeditious effort to identify applicants and monitor cases as they progressed through the residential recovery program through a disaster case-management effort called Palmetto Disaster Recovery.

As of September 2019, there were 3,820 active construction projects statewide, with 2,372 already completed (62%). Within the 17-county region, there were 3,670 active projects with 2,332 projects completed (63.5%, see Table 7).

²⁵ Op. cit. Note 15, Note, 18.

²⁶ SBA, 2019. Open Data Sources, SBA Disaster Loan Data FY 2016 and 2017. Accessed 11/27/19.
<https://www.sba.gov/about-sba/sba-performance/open-government/digital-sba/open-data/open-data-sources>

Table 7 CDBG-DR Status of All Active and Approved Projects in South Carolina

County	Active Projects (counts)	Completed Projects (counts)	% Completed
Berkeley	229	149	65.1
Calhoun	23	12	52.2
Charleston	141	61	43.3
Chesterfield	4	1	25.0
Clarendon	270	193	71.5
Darlington	122	73	59.8
Dillon	60	16	26.7
Dorchester	103	60	58.3
Florence	162	103	63.6
Georgetown	305	191	62.6
Horry	429	287	66.9
Lee	95	47	49.5
Marion	596	358	60.1
Marlboro	5	2	40.0
Orangeburg	105	63	60.0
Sumter	221	156	70.6
Williamsburg	800	560	70.0
Total	3670	2332	63.5

Source: South Carolina Disaster Recovery Office

Mobile homes constitute most of the reconstructed housing (53.1%) likely due to the rural nature of the 17-county region, the affordability of housing stock, and the focus on LMI homeowners. Site-built houses make up the remaining reconstructed housing type (46.9%). There are significant differences in housing construction projects, with Horry and Clarendon having more mobile homes in the program (64% and 63% respectively), while Chesterfield has the highest percentage of houses (Figure 10). Of the 2,332 active projects in the 17-county region (including those completed), the majority involved rehabilitation (50.3%), followed by replacement (41.3%), and reconstruction (8.4%).²⁷

²⁷ Data from South Carolina Disaster Recovery Office.

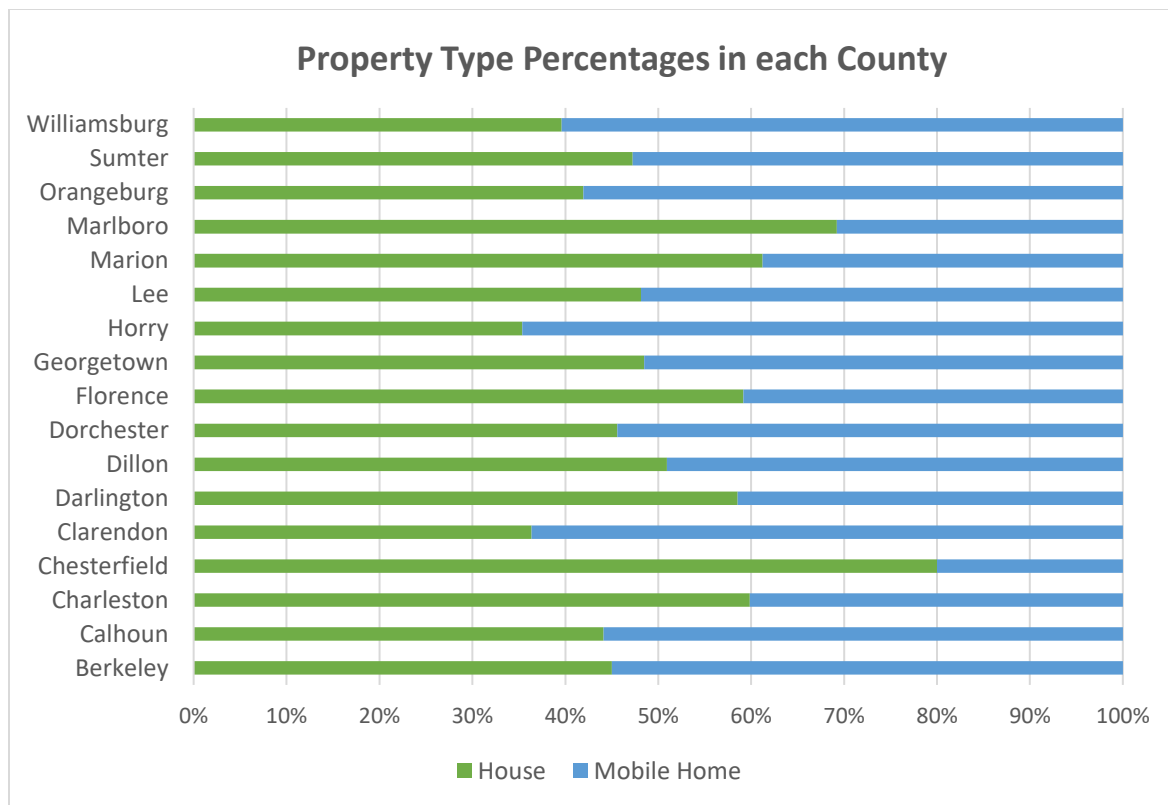


Figure 10 Housing types in the CDBG-DR reconstruction program by county

While county-level data provide useful comparisons, a more detailed picture of the active residential recovery projects shows the unique characteristics of the 17-county region in its affordable housing stock, especially the concentration of mobile homes (Figure 11). It is important to note the concentration of mobile homes in the region. For example, in the region there are approximately 805,000 housing units, of which 154,000 are mobile homes or 19.1% of the housing stock (Table 8). This varies by county from a low of 7% in Charleston County to a high of 40% in Clarendon County. Reducing the flood risk impacts on these properties poses some unique challenges for the state requiring a regional approach for more effective mitigation activities that will enhance the disaster resilience of these communities.

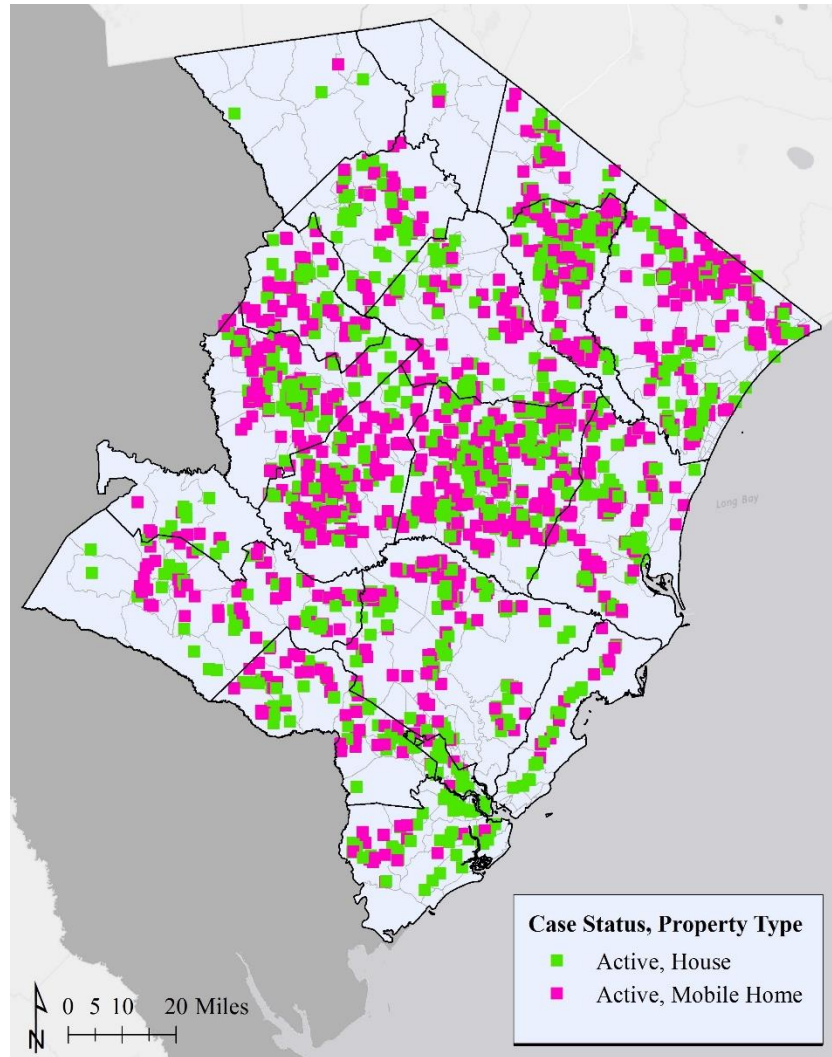


Figure 11 Active rehabilitation, replacement, and reconstruction cases by property type

Table 8 The Nature of County Housing Stock and Type of Post-Disaster Reconstruction

County	Housing Units (Count)	Mobile Home (Counts)	% Mobile Homes	Dominant Form of Repair
Berkeley	73,303	14,730	20.1	Rehabilitate
Calhoun	7,342	2,398	32.7	Rehabilitate
Charleston	17,0401	12,057	7.1	Rehabilitate
Chesterfield	21,380	7,324	34.3	Rehabilitate
Clarendon	17,396	7,026	40.4	Replace
Darlington	30,303	9,088	30.0	Rehabilitate
Dillon	13,687	5,027	36.7	Rehabilitate
Dorchester	54,912	7,817	14.2	Rehabilitate
Florence	58,489	11,631	19.9	Rehabilitate

County	Housing Units (Count)	Mobile Home (Counts)	% Mobile Homes	Dominant Form of Repair
Georgetown	33,681	6,085	18.1	Replace/Rehabilitate
Horry	185,438	28829	15.5	Replace
Lee	7,786	2,681	34.4	Rehabilitate
Marion	14,969	4,371	29.2	Rehabilitate
Marlboro	12,039	3,287	27.3	Rehabilitate
Orangeburg	42,386	13,874	32.7	Rehabilitate
Sumter	46,079	11,417	24.8	Rehabilitate
Williamsburg	15,371	5,915	38.5	Rehabilitate

Safe Home Funding

The South Carolina Safe Home Program provides matching and non-matching grant funds to help coastal property owners mitigate the impacts of hurricane and high-wind damage. The program, administered by the SC Department of Insurance, receives an annual allocation from the state legislature under the Omnibus Coastal Property Insurance Reform Act of 2007.²⁸ Grants are based on family size and adjusted gross household income when compared to county and/or state median family income whichever is higher. However, the maximum grant is \$5000. The program supports retrofitting owner-occupied, single family homes with improvements such as upgraded roof covering, repair or replacement of manufactured home piers, anchors, or tie-down straps, or opening protection such as window replacement or hurricane shutters. The application period normally begins on July 1st of a given year with rolling applications and awards until the depletion of all the allocated funds for the year (\$1.1 million in 2019).

Most Safe Home grants are in Horry County, followed by Charleston and Berkeley Counties (Table 9, Figure 12). Within the Pee Dee and Santee watersheds, 5,561 grants have been awarded representing 97% of the total number of awards. Within this region, approximately 86% of the grants were for site-built homes, not mobile homes.

Table 9 Safe Home Grants in the 17 counties

County	Number of Safe Home Funding projects
Berkeley	740
Charleston	758
Dorchester	345
Florence	8
Georgetown	622
Horry	2774
Marion	165
Williamsburg	149
Total	5561

²⁸ See SC Safe Home, <https://www.doi.sc.gov/605/SC-Safe-Home>

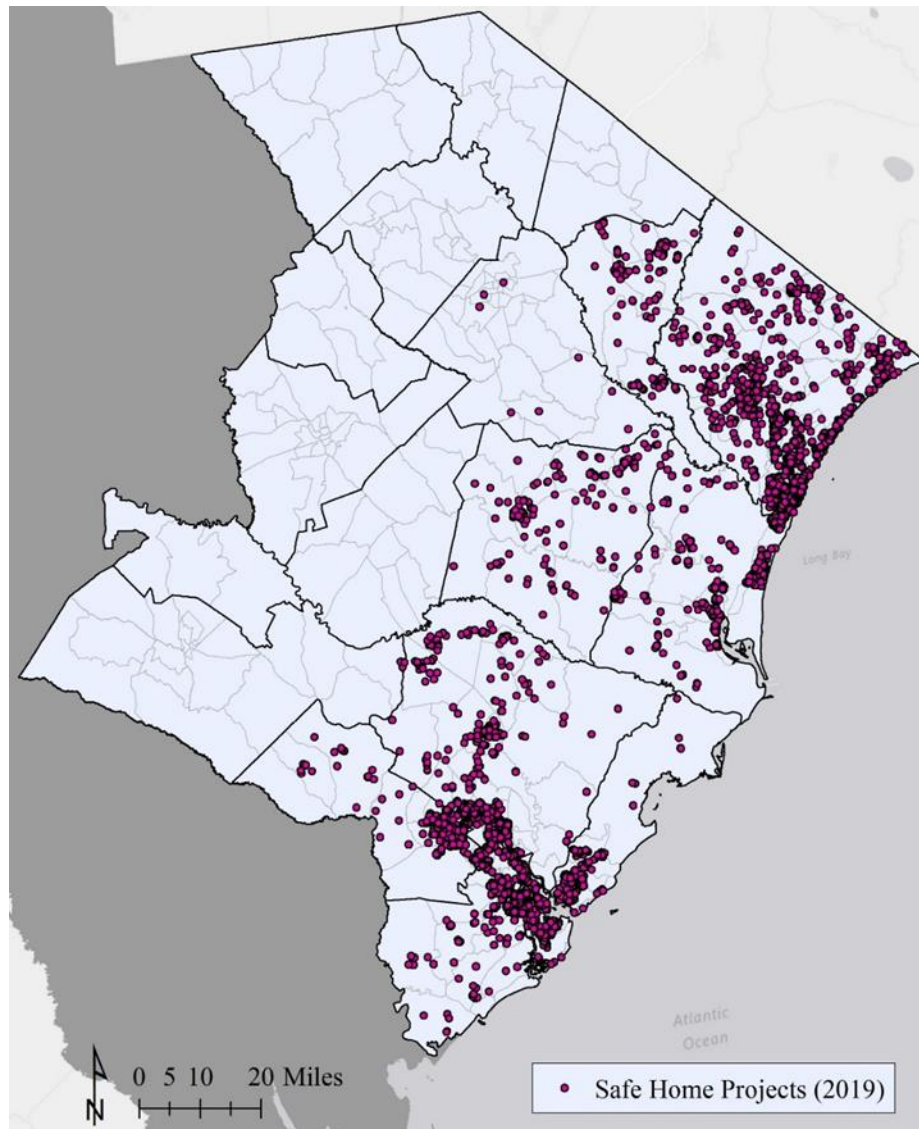


Figure 12 Total Safe Home mitigation projects since the program’s inception through June 2019

The Unmet Household Mitigation Deficit

To determine the unmet household mitigation needs all of the applicants to any of the federal or state recovery and mitigation programs (FEMA IHP, NFIP claims, SBA loans, HUD CDBG-DR, and Safe Home grants) were tallied for the 17 counties as well as the census tracts within them to create a total mitigation safety net score (Table 10). To calculate the unmet mitigation needs or the household mitigation deficit, the total number of successful mitigation and safety applicants was subtracted from the total number of FEMA housing assistance applicants for the combined disaster declarations (DR-4241 and DR-4286). The difference represents those with potential need based on their applications for assistance. This

computation is similar to the one used in the approved HUD CDBG-DR Action Plan for Hurricane Matthew in determining unmet needs.²⁹ As stated in that plan,

“For this event, just as in the Oct. 2015 flooding disaster, an overwhelming majority of ineligible FEMA IA applicants are of low-to-moderate income (36%-Under 30% LMI and 9% more under 50% LMI, **with 20,223 applicants below 50% of the Area Median Family Income (AMFI)...**It **should be noted, that the average distance between ineligible and eligible applicants is only ½ mile for 75% of applicants, ¼ mile for 55%, and less than 1/10 mile for nearly 30% of applicants.** These results indicate that ineligible recipients saw the same impacts as those found eligible and will likely have a slower recovery because they likely experienced very similar impacts as those felt by FEMA eligible folks. For this reason, ineligible applicants must be considered in any overall housing unmet need calculation.”³⁰

Table 10 Determination of Number of Unmet Mitigation Needs Properties

County	FEMA Total Registrants	# FEMA IHP Approvals	# NFIP Claims	Total # SBA Loans	# SCDRO Properties	# Safe Home Grants	TOTAL (#) Mitigation	Mitigation Deficit (#)
Berkeley	5171	1337	150	34	229	740	2490	2681
Calhoun	782	187	0	9	23	0	219	563
Charleston	10103	2338	2349	69	141	758	5655	4448
Chesterfield	223	44	0	3	4	0	51	172
Clarendon	3573	1069	11	15	270	0	1365	2208
Darlington	3491	893	15	19	122	0	1049	2442
Dillon	1849	576	25	8	60	0	669	1180
Dorchester	4255	1047	335	24	103	345	1854	2401
Florence	9327	2874	113	28	162	8	3185	6142
Georgetown	5291	1645	1046	12	305	622	3630	1661
Horry	9188	2592	4910	40	429	2774	10745	-1557
Lee	1171	276	5	16	95	0	392	779
Marion	3998	1407	102	15	596	165	2285	1713
Marlboro	409	90	1	4	5	0	100	309
Orangeburg	6794	1674	38	33	105	0	1850	4944
Sumter	7936	2757	123	24	221	0	3125	4811
Williamsburg	6258	2292	40	23	800	149	3304	2954
Total	79819	23098	9263	376	3670	5561	41968	37851

Based on this analysis, 37,851 homeowners registered for assistance with slightly more than half (53%) receiving help to repair and/or mitigate future damage to their homes. The mitigation deficit appears greatest (by number count) in Florence County, followed by Orangeburg and Sumter Counties. The ratio

²⁹ Op. cit., Note 18.

³⁰ Ibid., page 51-52.

of mitigation to total registrants for Horry County shows a higher mitigation count than FEMA registrants because of the localized success of South Carolina's Safe Home wind mitigation program. Initially, it might appear that Horry County has sufficient mitigation funding, but there are regions within the county that are lacking (see below). The counties with the highest percentage of unmet needs and are the most underserved by household mitigation resources are: Chesterfield, Marlboro, Orangeburg, Calhoun, and Darlington.

A more detailed picture at the census tract level shows areas with a high concentration of applicants with unmet needs (Figure 13 left). These areas include the inland riverine portion of Horry and Georgetown Counties in the Waccamaw River area, Williamsburg County and southern Sumter County (Black River basin), central Orangeburg County, and areas where Berkeley, Dorchester, and Charleston counties meet. When compared to the Social Vulnerability Index (Figure 13 right), the highest unmet needs (or household mitigation deficits) are co-located in the most vulnerable census tracts in Georgetown and Williamsburg Counties along the Black River and Pee Dee Rivers and in Horry County along the Waccamaw River. This is in addition to smaller tracts in Charleston, Orangeburg, Sumter, and Florence Counties that show higher levels of social vulnerability and unmet mitigation needs.

Flooding and the Household Mitigation Deficit

Those census tracts with the largest household mitigation deficit appear in those inland riverine areas that had significant flood damage during the 2015 Floods and Hurricane Matthew in 2016 (Figure 13 bottom). Reducing the impact of flooding in these MID counties through enhanced household flood mitigation is an important element of this plan, especially in those low-lying areas with repetitive flood losses.

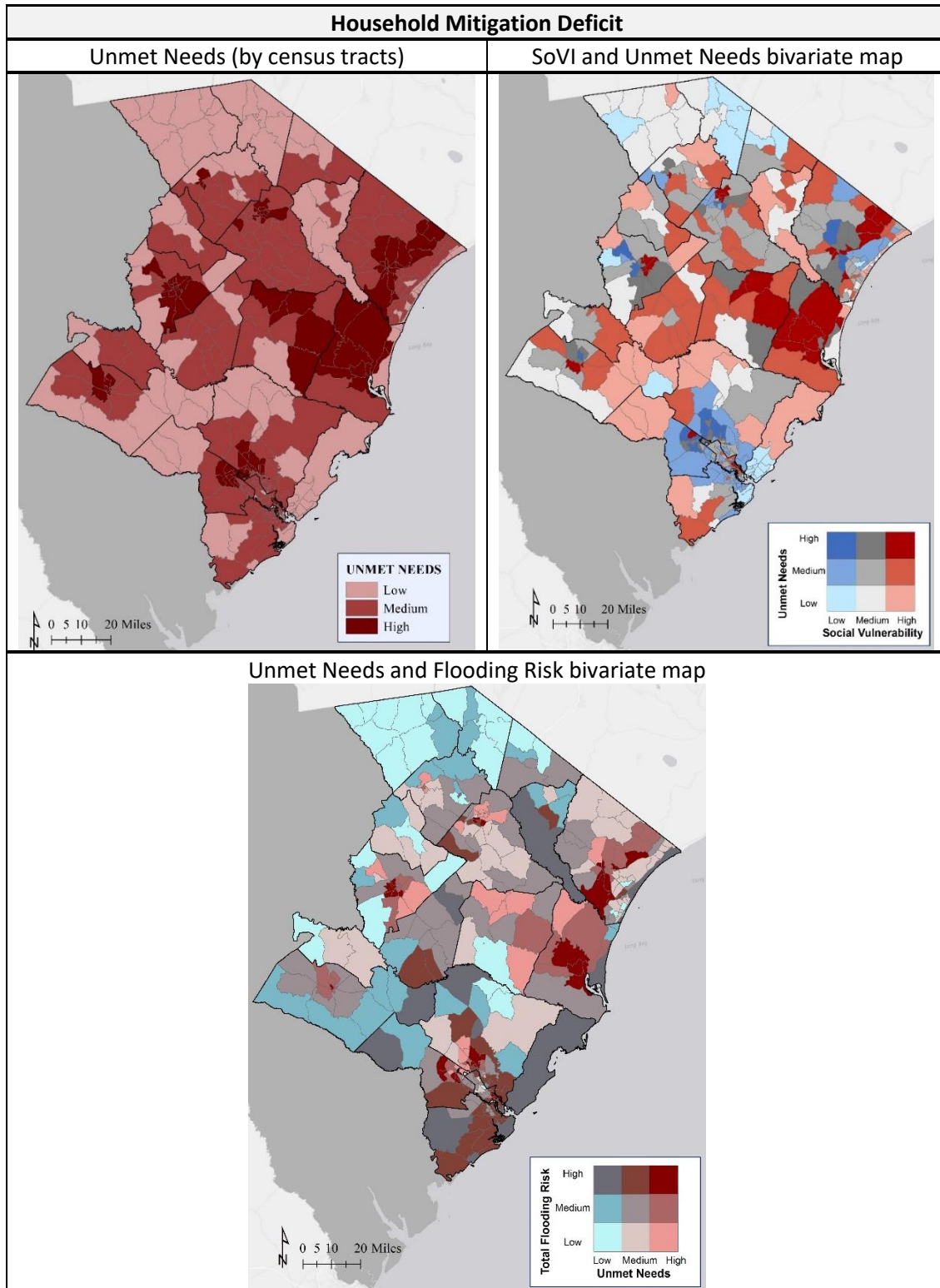


Figure 13 Unmet household recovery and mitigation needs (left) and its relationship to social vulnerability (right). The bivariate map shows census tracts with high social vulnerability, but moderate (orange) to high (red) levels of a mitigation deficit. In contrast, areas with higher mitigation deficits but low social vulnerability are in dark blue. The relationship between the mitigation deficit and flooding is shown on the bottom panel, dark red showing higher flood risk and household mitigation deficits.

Assessment of Critical Community Lifelines

The South Carolina Hazard Mitigation Plan describes seven overall goals in its plan but in implementing hazard mitigation the state considers hazards, risk, vulnerability, and capabilities in establishing priorities.³¹ Flood buyouts (especially severe repetitive loss properties) and other flood mitigation projects, along with structural measures to permanently protect essential infrastructure (or critical lifelines), assume the highest priority for the state's mitigation resources according to the plan. At present, the funding resources for state and local mitigation actions include the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM), and Flood Mitigation Assistance (FMA), all administered by FEMA.³² These are resources awarded to state agencies, local governments, and local communities to further risk reduction, not directly to individual households. The Flood Mitigation Assistance program is specifically designed to reduce or eliminate flood insurance claims under the NFIP program.³³ Direct household-level recovery and short-term mitigation resources and deficits were detailed in the previous section.

The potential impacts of hazards on community lifelines and the vital services they provide is an important consideration for communities, before, during, and after a damaging event as the destruction or disruption of such lifelines can hinder longer-term recovery. The following are characteristics of community lifelines:

- 1) provide necessary services and goods to all households and businesses in the community
- 2) disruption in the service can lead to life-threatening situations
- 3) involve complex and interdependent networks within and across sectors
- 4) a disruption in one lifeline can affect and/or disrupt another leading to cascading failures³⁴

Lifeline Impacts from 2015 and 2016 Events

The most significant impact from the October 2015 flooding event occurred to the transportation system (roads and bridges). Statewide, 541 roads, including portions of Interstate 95 (which transects our region) were closed and/or damaged. In addition, 221 bridges were affected, 25 of which needed replacing. There were issues with public safety as 52 dams failed (out of the 2,370 regulated dams in the state), in addition

³¹ Op. cit. Note 1, p. 254.

³² Federal Insurance and Mitigation Administration, FY 2019 Pre-Disaster Mitigation (PDM) Grant Program, Fact Sheet. Accessed December 3, 2019. <https://www.fema.gov/media-library-data/1566838030892-2ce88be44262b32999aecba3e383aa05/PDMFactSheetFY19Aug2019.pdf>; FEMA, The Hazard Mitigation Grant Program Guide for State/Local Governments, Accessed December 3, 2019. <https://www.fema.gov/hazard-mitigation-grant-program-guide-state/local-governments>.

³³ Federal Insurance and Mitigation Administration, FY 2019 Flood Mitigation Assistance (FMA) Grant Program, Fact Sheet. Accessed December 3, 2019. <https://www.fema.gov/media-library-data/1566838228911-f228284e94d43af0d6b16214dcf07f63/FMAFactSheetFY19Aug2019.pdf>

³⁴ National Association of Counties, 2014. *Improving Lifelines: Protecting Critical Infrastructure for Resilient Counties*. Accessed November 19, 2019. https://www.naco.org/sites/default/files/documents/NACo_ResilientCounties_Lifelines_Nov2014.pdf

to many failures of unregulated dams.³⁵ These failures not only affected homes and businesses downstream, but also damaged roads and bridges, forcing closures for months afterward.

The flooding also affected utilities, wastewater treatment, and drinking water supply, collection, and treatment facilities. An estimated 16 water systems required boil-water advisories for 400,000 residents in the flooded region. The agricultural sector suffered extensive impacts from the 2015 floods with floods destroying the fall harvest, and saturated fields and unbalanced pH levels in the soil restricting planting in the spring, totaling an estimated \$76 million in losses.³⁶

Hurricane Matthew, with its coastal storm surge, high winds, and inland flooding hit a year later. The resulting swollen rivers in 2016 flooded many of the same communities as the previous year. Rainfall amounts ranged from 10-15 inches.³⁷ Just as in the prior year, many of the agricultural areas were flooded again, this time causing an estimated \$29 million in losses.³⁸

Assessing Lifeline Impacts: Index Construction

Lifelines include specific types of infrastructure that provide and facilitate the delivery of services (such as power) and are indicators of resilience assets and capacities. Monitoring community lifelines becomes an important element in enhancing community resilience to future hazards or high-impact events. Rather than describe in qualitative terms the potential effect of flooding on lifelines in our region, the Hazards and Vulnerability Research Institute (HVRI) at the University of South Carolina developed a quantitative index of the potential hazard impacts to lifelines specifically for the CDBG-MIT plan. The spatial representation of the index shows where mitigation efforts to reduce hazard impacts are most needed.

The Potential Community Lifeline Impact Index (PCLII) uses components from FEMA's Community Lifelines Implementation Toolkit³⁹ as the basis for its input data. Data on each of the seven components and subcomponents (Table 11) were collected from publicly available sources and used as proxies to represent selected aspects of the subcomponents. For example, the number of fire stations represents fire services, while the number of pharmacies is the proxy for medical supply chain. An assumption was that the data were the "best available" and therefore no quality control and/or quality assurance of the public data was done by HVRI. FEMA's Community Lifelines Toolkit focuses on response, so not all of the sub-components were amenable or appropriate for inclusion into the PCLII for assessing mitigation need.

The proxy variables had different measurement units (raw number, miles, acreages), so in order to compare them, the data were standardized using a statistical scaling procedure called min-max. This procedure transforms the original value of the variable into a ranked ordering ranging from zero (the lowest value) to one (the highest value) for that variable for all of counties or census tracts. The re-ranking of the variables was done for all the input variables identified in Table 11. Within each of the seven

³⁵ Op. cit., Note 15.

³⁶ Ibid.; Cutter, S.L., 2017. "The perilous nature of food supplies: natural hazards, social vulnerability, and disaster resilience, *Environment: Science and Policy for Sustainable Development* 59(1), p. 4-15.
<http://dx.doi.org/10.1080/00139157.2017.1252603>

³⁷ Op. cit., Note 18.

³⁸ Ibid.

³⁹ FEMA, 2019. *Community Lifelines Implementation Toolkit V 2.0*. Accessed November 19, 2019.
[https://www.fema.gov/media-library-data/1573854342974-a94cb00eb44b245d61d88fdf66e74bd6/Final_Tlkt2.0_RspnsTlkt20191114\(508\)v1845.pdf](https://www.fema.gov/media-library-data/1573854342974-a94cb00eb44b245d61d88fdf66e74bd6/Final_Tlkt2.0_RspnsTlkt20191114(508)v1845.pdf)

components, the input variables were averaged to produce a single value for the main component. The component averages were then summed to create the PCLII for each county (or census tract), which theoretically ranges from 0-7. Each of the seven components were then mapped based on the underlying data into five classes using natural breaks⁴⁰ to illustrate the variability between counties. Counties with higher scores indicate more potential for lifeline impact, and those with lower scores, less potential lifeline impact. The overall impact scores were mapped into 3-categories using the standard deviation method in order to develop a bi-variate association with SoVI following the preceding displays in the hazards analysis.

Table 11 Variables included in the computation of the Potential Community Lifeline Impact Index (PCLII)

Lifeline	Component	Variable	Source
Safety & Security	Law Enforcement/Security	# Local law enforcement locations	HIFLD ¹
		# Correctional facilities	HIFLD ¹
		Evacuation routes (listed in transportation)	
	Fire Services	# Fire stations	HIFLD ¹
	Search & Rescue	EMS stations (reclassified under health)	
	Government Services	# Childcare centers	HIFLD ¹
		# College and universities	HIFLD ¹
		# Public schools	HIFLD ¹
	Community Safety	# Local EOC	HIFLD ¹
		# State regulated dams	SCDHEC ²
Food, Water, & Shelter	Food	# Supermarkets, neighborhood markets, grocery stores	ESRI ³
		# Restaurants	ESRI ³
		# Food/banks/pantries	Foodpantries.org ⁴
	Water	# Wastewater systems/private septic systems	USEPA ⁵
		# Public and private water supply systems	SCDHEC ⁶
	Shelter	# Designated emergency shelters	HIFLD ¹
		# Hotels	ESRI ³
Health & Medical	Medical Care	Acreage in current production	USDA ⁷
		# Hospitals (acute medical care)	HIFLD ¹
		# Nursing homes (chronic care/long term care centers)	HIFLD ¹
	Public Health	# Urgent care facilities	HIFLD ¹
		Not applicable	
		# EMS stations and/or ambulances	HIFLD ¹
	Medical Supply Chain	# Pharmacies	ESRI ³
	Fatality Management	# Mortuaries and post-mortuary facilities (crematoriums)	ESRI ³
		# Cemeteries	ESRI ³
Energy	Power Grid	# Non-nuclear power plants (power generation)	HIFLD ¹
		Power lines/transformers (power distribution), miles	HIFLD ¹
		Land area in 10-mile Emergency Planning Zone (EPZ) from nuclear power plant (square miles)	HVRI ⁸
		# Electric power substations	HIFLD ¹
	Fuel	# Commercial fuel stations	ESRI ³
		Natural gas/fuel pipelines, miles	HIFLD ¹
Communications	Infrastructure	# Cell phone towers	HIFLD ¹
		# Broadcast towers	HIFLD ¹

⁴⁰ The categorization into five classes used the Jenks natural breaks method. This method preserves the natural groupings in the data where big differences appear between each group. Given that such groups may differ from one variable to another, the values in each of the groupings are not comparable from one map to another.

		# AM transmission towers	HIFLD ¹
		# FM transmission towers	HIFLD ¹
	Responder Communications	EOCs (listed in public safety)	
	Alerts, Warnings, Messages	Sirens	Google ⁹
	Finance	# FDIC banks	HIFLD ¹
		# NCUA credit unions	HILFD ¹
	911 and Dispatch	Not applicable	
Transportation	Highway/Roadway/Motor Vehicle	Major road/highway miles	US Census ¹⁰
		# Bridges	HIFLD ¹
		# Formal rest areas/truck stops	USDOT ¹¹
		# Registered motor vehicles	USCensus ¹²
	Mass Transit	# Public transit bus depots	SCDOT ¹³
	Railway	# Rail stations (Amtrak)	USDOT ¹⁴
		# Rail miles	SCGIS ¹⁵
	Aviation	# Airports/aircraft landing facilities	HIFLD ¹
	Maritime	# Ports/port facilities	HIFLD ¹
# Coast guard stations		SCDHEC ²	
# Marinas		SCDHEC ²	
Hazardous Materials	Facilities	# Solid waste landfills	HIFLD ¹
		# Superfund/NPL sites	USEPA ⁵
		# Toxic release sites (TRI)	USEPA ⁵
		# Facilities with risk management plans	RTK ¹⁶
	HAZMAT, Pollutants, Contaminants (Incidents)	Not applicable	

Sources:

¹ Homeland Infrastructure Foundation-Level Data (HIFLD), <https://hifld-geoplatfrom.opendata.arcgis.com/>

² SCDHEC, GIS Data Clearinghouse, <https://apps.dhec.sc.gov/GIS/ClearingHouse>

³ ESRI ArcGIS Business Analyst Data

⁴ South Carolina Food Pantries, https://www.foodpantries.org/st/south_carolina

⁵ USEPA, Envirofacts, Federal Registry Service (FRS), <https://www.epa.gov/frs/frs-query>

⁶ SCDHEC, Enhanced Watershed Atlas, <https://gis.dhec.sc.gov/watersheds/>

⁷ USDA, National Agricultural Statistics Service, Cropland Data Layer (CDL), https://www.nass.usda.gov/Research_and_Science/Cropland/SARS1a.php

⁸ Hazards and Vulnerability Research Institute (HVRI), University of South Carolina, computed area in square miles within the 10-mile Emergency Planning Zone around nuclear power plants.

⁹ South Carolina Statewide Siren Map, Google, Available at <https://www.google.com/maps/d/viewer?mid=1TCmTY-semJsIreJyhSTFoTXGXS0&msa=0&ll=33.662210360757086,-80.98949400000004&z=8>. Accessed November 24, 2019.

¹⁰ Derived from US Census TIGER/Line shapefiles

¹¹ US Department of Transportation, Geospatial at the Bureau of Transportation Statistics, Truck Stop Parking, http://osav-usdot.opendata.arcgis.com/datasets/96e35a64968348e89b7840e67fc72e71_0

¹² US Census Bureau, American Community Survey 2013-2017 5-year estimates, Aggregate number of vehicles (car, truck, or van) used in commuting by workers 16 years and over.

¹³ SCDOT, Public Transit Providers, <https://www.scdot.org/travel/travel-transitproviders.aspx>

¹⁴ US Department of Transportation, Geospatial at the Bureau of Transportation Statistics, Amtrak Stations, http://osav-usdot.opendata.arcgis.com/datasets/3e9daf681b154fb19372044f4d52941a_0?geometry=-89.509%2C32.152%2C-71.118%2C34.899

¹⁵ South Carolina Geographic Information Systems (SCGIS), <http://www.gis.sc.gov/data.html>

¹⁶ Right-to-Know Network (RTK), <https://rtk.rjifuture.org/rmp/>

Potential Community Lifeline Impacts

The region includes a mix of very rural counties such as Calhoun (38.3 people/square mile) to more urbanized counties such as Charleston (269.3 people/square mile).⁴¹ Four of the state's seven metropolitan areas are located in the assessment region: Charleston (787,643), Myrtle Beach (480,891), Florence (204,961), and Sumter (106,512).⁴² The coastal metropolitan areas have seen rapid population growth between 2010-2018, with Charleston-North Charleston recording an 18% increase, while the Myrtle Beach-Conway-North Myrtle Beach increased by 28% during the same period. The overall lifeline impact is greatest in Charleston County, the most densely populated and urbanized county in this assessment (Figure 14). Charleston County is followed by Horry, Florence, Orangeburg, and Berkeley counties.

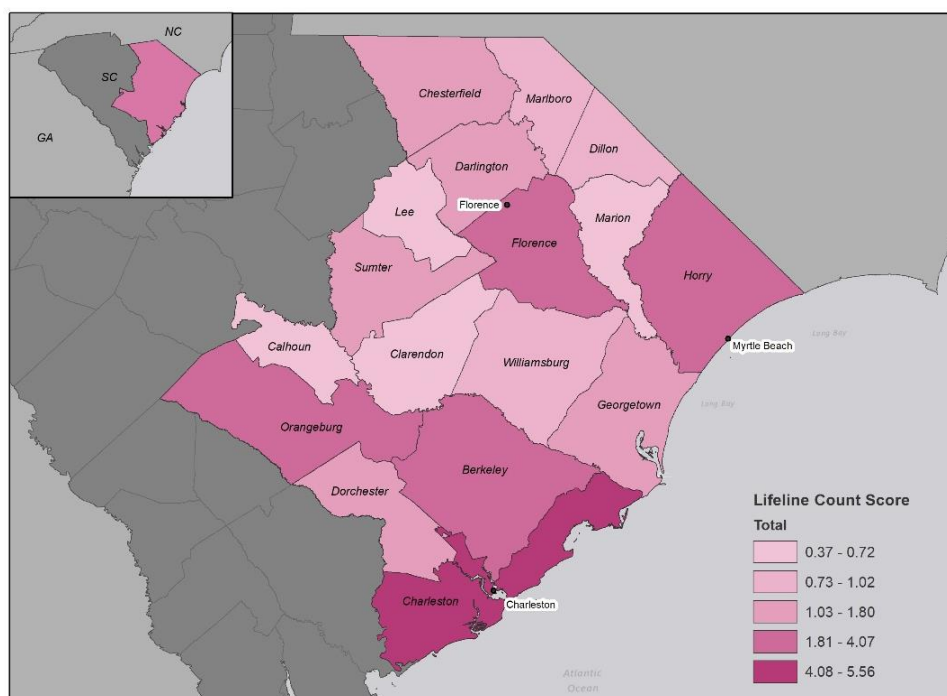


Figure 14 Potential Community Lifeline Impact Index (PCLII).

While each of these counties have combinations of urban and rural attributes, it is the concentration of urban and suburban residents and the lifelines that support them which drives the geographic distribution of lifeline impacts. The primary components driving the lifeline impacts are hazardous materials (Charleston, Berkeley, and Orangeburg), food, water, and shelter (Horry), and health and medical (Florence). For the remaining counties, energy, safety and security, and transportation lifelines were the main components of their total lifeline impact score.

⁴¹ USA.com, South Carolina Population Density County Rank, <http://www.usa.com/rank/south-carolina-state--population-density--county-rank.htm>

⁴² US Census, American FactFinder <https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

The following figures illustrate the variability in the potential impacts based on each of the seven components from FEMA. Note that in all cases, (except for the energy component), Charleston County has the highest scores on all of them.

The communications lifelines (radio transmission lines, cell towers, access to financial resources) reflects a concentration around the most urban centers (Myrtle Beach area in Horry County, and the Charleston metro area in Charleston County, and Florence in Florence County) (Figure 15 top). The same pattern is shown in the food, water, and shelter lifelines, again related to the population size of the county (Figure 15 bottom).

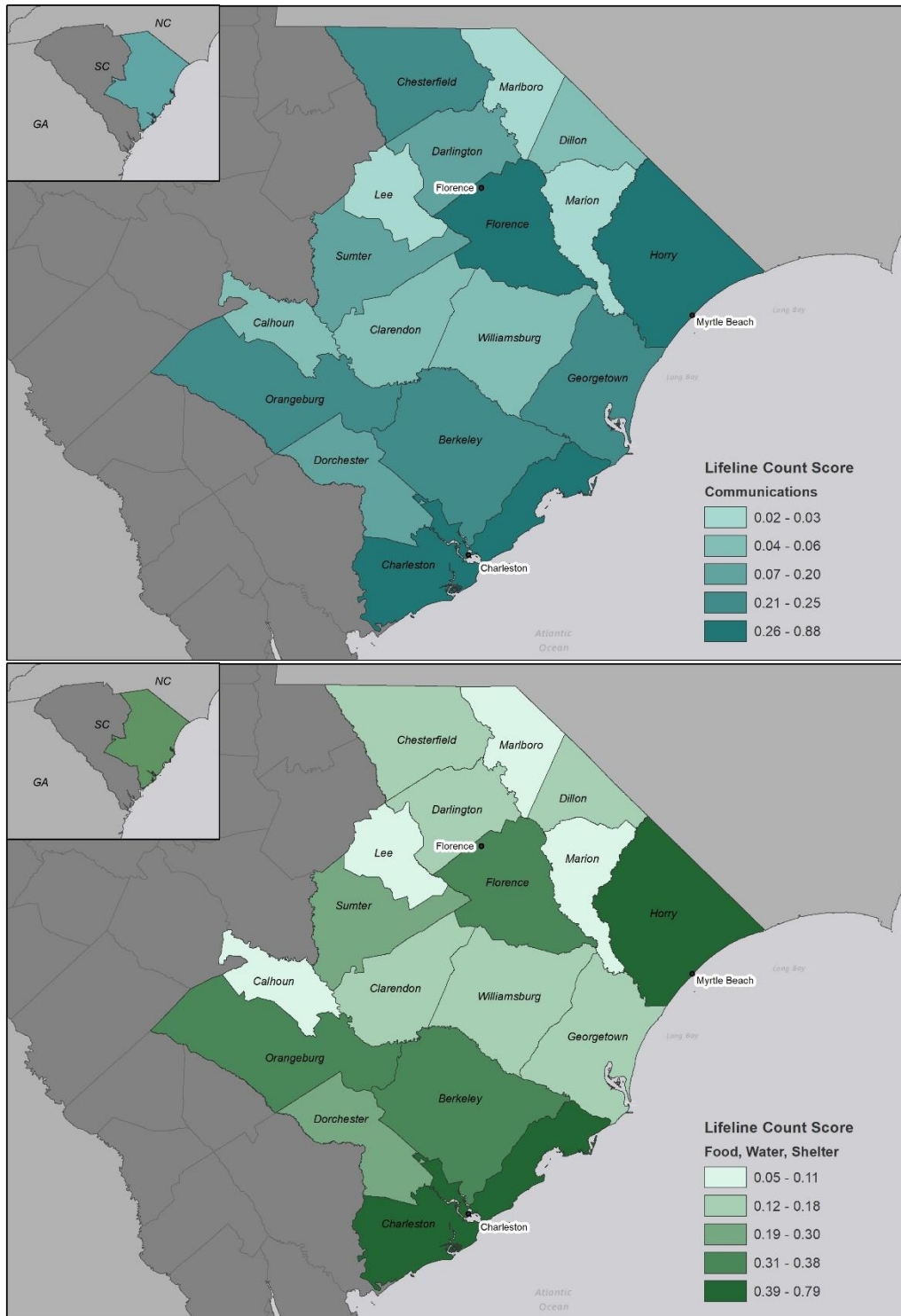


Figure 15 Communications Lifelines (top), and Food, Water, & Shelter Lifelines (Bottom).

The health and medical lifelines reflect medical facilities and pharmacies which are concentrated in Charleston County (Figure 16 top). Similarly, the geographic pattern of safety and security lifelines (e.g. law enforcement locations, fire stations) is also concentrated in Charleston (Figure 16, bottom).

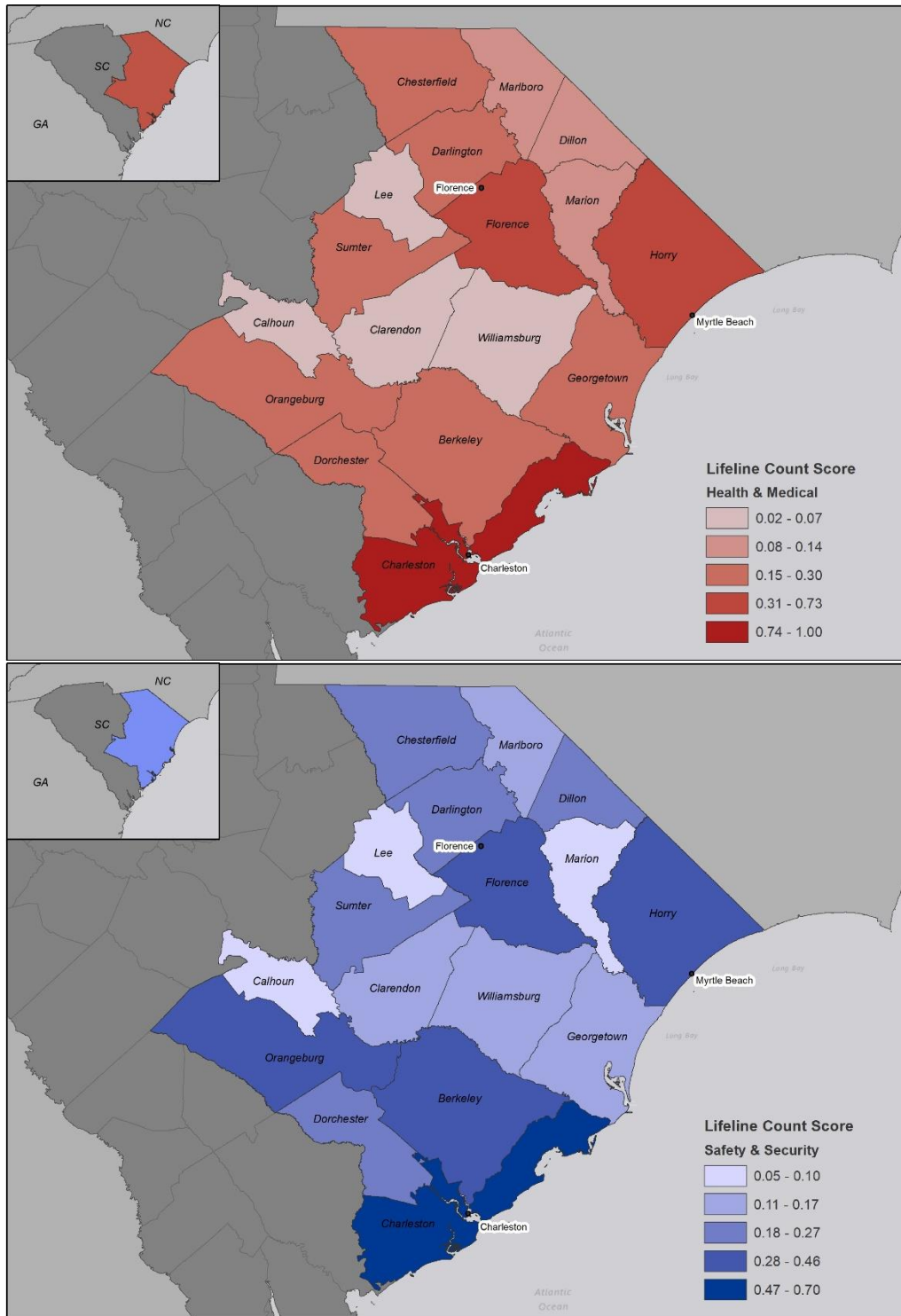


Figure 16 Health & Medical Lifelines (top) and Safety & Security Lifelines (bottom)

Energy lifelines represent a different geographic distribution (Figure 17 top). The energy lifelines power grid represents non-nuclear power plants, high voltage transmission lines, natural gas/fuel pipelines all of which are located outside of densely populated areas. Further, the H. B. Robinson nuclear power

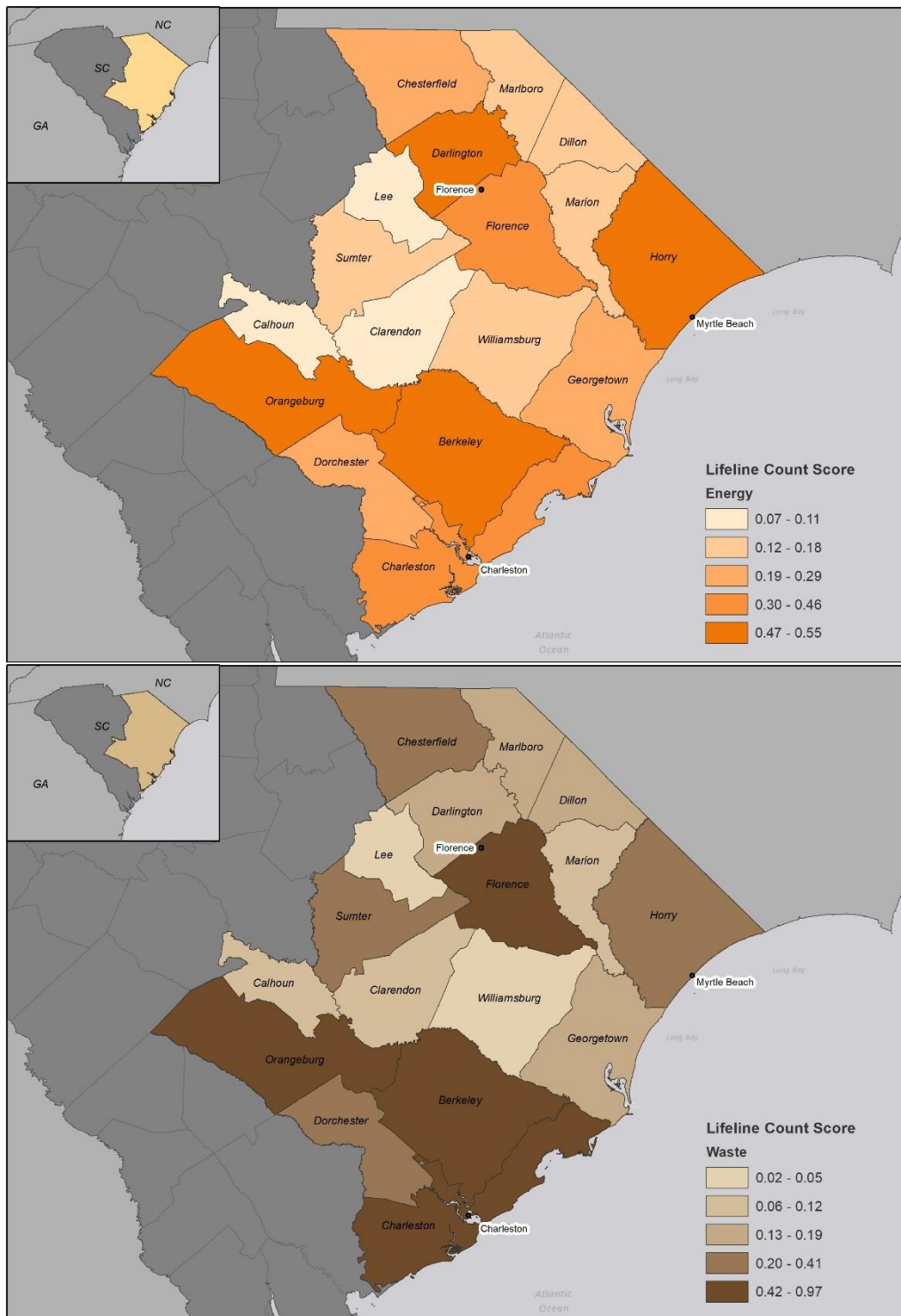


Figure 17 Energy Lifelines (top) and Waste Lifelines (bottom)

station is located in Hartsville, in Darlington County. The 10-mile emergency planning zone (EPZ) for the reactor covers most of Darlington County. The fuel component of the energy lifelines (number of fuel stations) reflects more of an urban or population bias. The waste lifelines are not really lifelines per se but reflect sources of additional dangers as a consequence of flooding or some other natural event. These

waste facilities include toxic waste, hazardous waste, and solid waste. Any of these are located in older industrial areas in Charleston, Berkeley, Orangeburg, and Florence counties (Figure 17 bottom).

The transportation lifeline includes highway, mass transit, railway, aviation, and maritime elements such as rail and road miles, bridges, landing facilities, and port facilities. There is a concentration of transportation lifelines in Charleston County (Figure 18), as expected, given its centrality as a major port and trans-shipment facility.

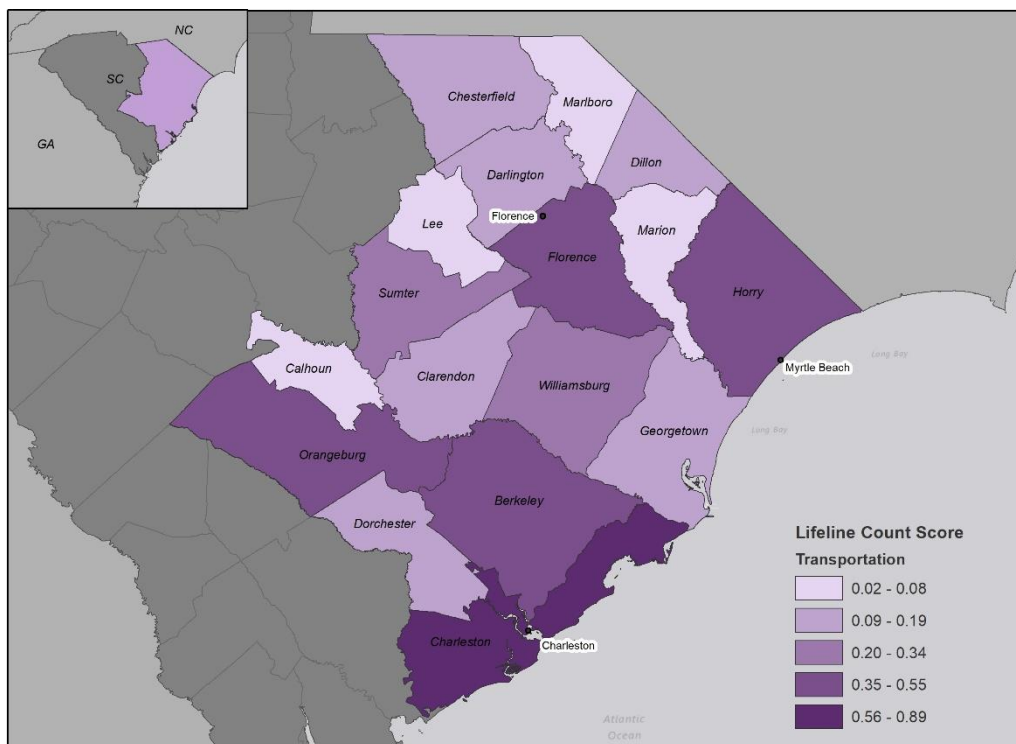


Figure 18 Transportation Lifelines

The PCLII provides a geospatial view of the cumulative density of lifelines in the watersheds and is clearly a function of population density and the need for and location of services. However, it is instructive to examine two additional elements of lifeline impacts. The first is the assessment of within-county variability of the lifelines using a smaller unit of analysis than the county, such as a census tract. The second key feature is how the distribution of potential lifeline impacts correspond to the most socially vulnerable areas within the assessment area. To that end, the PCLII was overlain with SoVI in a bi-variate map to illustrate the relationship between them. As illustrated in Figure 19, there is a positive relationship between social vulnerability and lifeline impacts. In particular, the less populated rural counties may be disproportionately affected. Given their relative level of vulnerability and higher lifeline impact scores, situations where there are outages and interruptions in lifeline services may have more severe

consequences and affect both resilience and recovery simply because there are fewer lifelines covering larger areas, a lack of redundancy, and less institutional capacity as noted in the literature.⁴³

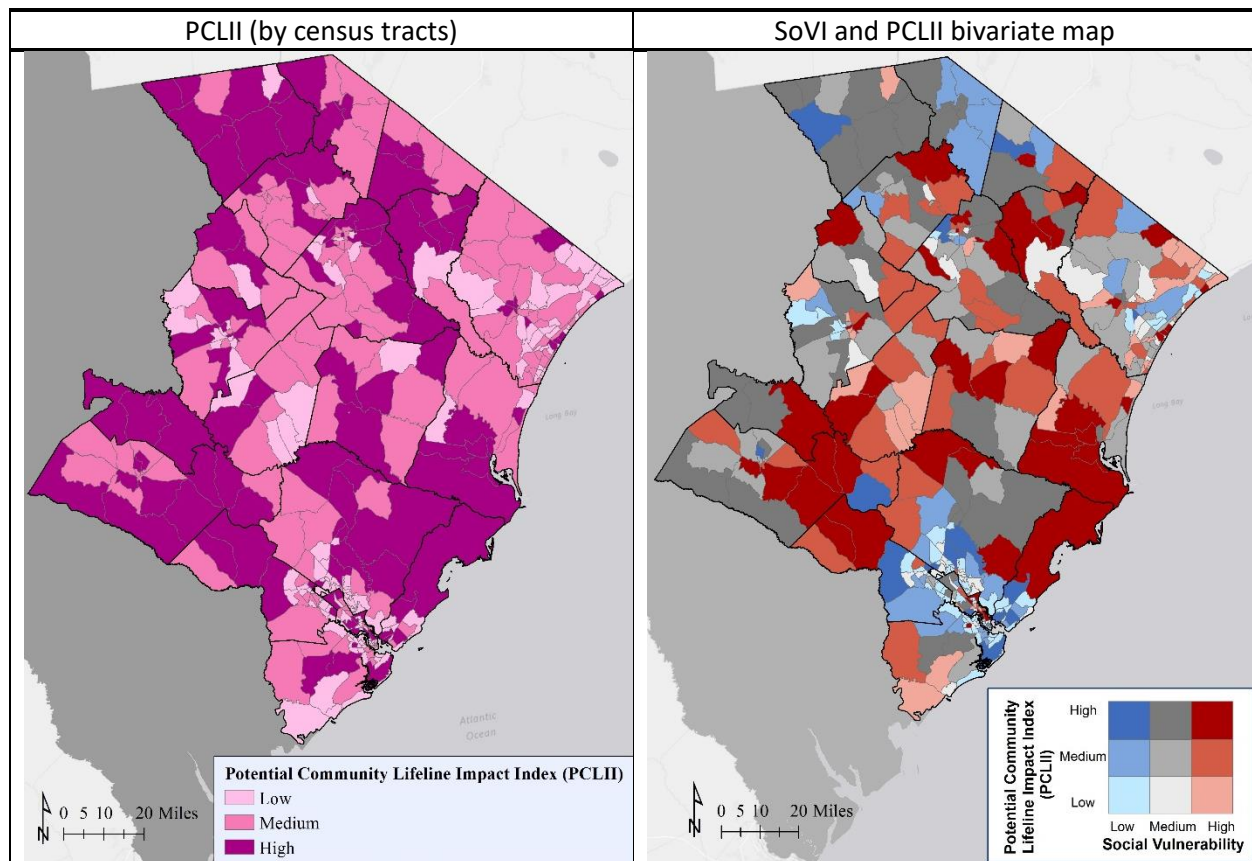


Figure 19 Potential Community Lifeline Impact Index (PCLII) total by census tract (left) and compared with the Social Vulnerability Index (SoVI) right.

Summary of Existing Mitigation Projects

A total of roughly \$38 million in FEMA Hazard Mitigation Grant Program (HMGP) funding has been allocated to counties in our study area for PDD-4241 (2015 Severe storms and floods) and PDD-4286 (2016 Hurricane Matthew) (Table 12). Charleston County, with more than \$22 million in awarded projects, has received the most HMGP funding, followed by Horry County (\$6.47 million) and Sumter County (\$3.48 million). Several counties in the study region did not obtain any HMGP grant monies. However, they may have received some mitigation benefits through statewide projects including precipitation gauges, alert system location, or back-up generators for special needs shelters.

⁴³ Cutter, S.L., C.G. Burton, and C.T. Emrich, 2010. "Disaster resilience indicators for benchmarking baseline conditions," *J. Homeland Security and Emergency Management* 7(1): Article 51, doi: <https://doi.org/10.2202/1547-7355.1732>, Cutter, S.L., K.D. Ash, and C.T. Emrich, 2016. "Urban-rural differences in disaster resilience," *Annals of the American Association of Geographers* 106(6), p. 1236-1252, doi: <http://dx.doi.org/10.1080/24694452.2016.1194740>.

Table 12 South Carolina Hazard Mitigation Grant Programs (HMGP) awards for PDD-4241 and PDD-4286

County	PDD 4241 - Severe Storms and Floods 2015	PDD 4286 -Hurricane Matthew 2016	Total
Berkeley	-	-	-
Calhoun	-	-	-
Charleston	\$21,089,186	\$984,602	\$22,073,788
Chesterfield	-	-	-
Clarendon	\$142,358	-	\$142,358
Darlington	-	\$477,795	\$477,795
Dillon	-	-	-
Dorchester	-	-	-
Florence	\$159,844	-	\$159,844
Georgetown	\$167,898	\$29,529	\$197,427
Horry	\$968,448	\$5,506,826	\$6,475,274
Lee	-	-	-
Marion	-	\$1,200,000	\$1,200,000
Marlboro	-	-	-
Orangeburg	-	-	-
Sumter	\$3,416,670	\$63,892	\$3,480,562
Williamsburg	-	\$69,965	\$69,965
Statewide	\$1,661,175	\$2,000,000	\$3,661,175
Total	\$27,605,579	\$10,332,609	\$37,938,188

The majority of HMGP projects fell into the categories of providing generators (GEN) and public outreach under the 5 percent initiative (5IP) (Table 13). Most of these mitigation funding has been dedicated to structure elevation, property acquisition and structure demolition (DEM), primarily in Charleston and Horry Counties (Table 14, Figure 20). It should be noted that each of the point locations on Figure 20 represent the awarded projects and might include several buildings in that neighborhood.

Table 13 Types of Hazard Mitigation Grant (HMGP) projects (DR-4241 and DR-4286)

Type Codes	Description	DR-4286	DR-4241
5IP	5 Percent Initiative Projects	38.46%	24.00%
OTH	Miscellaneous/Other	-	24.00%
LFR	Localized Flood Risk Reduction Projects	7.69%	24.00%
PLN	Hazard Mitigation Planning	15.38%	-
GEN	Generators	30.77%	-
DEM	Property Acquisition and Structure Demolition	7.69%	28.00%
Total		100.00%	100.00%

Table 14 County Amount and type of Hazard Mitigation Grant Program (HMGP) awards for DR-4241 and DR-4286

DR 4241-Project Type*	DR 4286-Project Type*
-----------------------	-----------------------

County	SIP	DEM	LFR	OTH	SIP	DEM	GEN	LFR	PLN
Charleston	-	\$11,009,947	\$4,934,411	\$5,144,828	\$449,000	-	\$460,602	-	\$75,000
Clarendon	-	-	-	\$142,358					
Darlington	-	-	-	-	-	-	\$477,795	-	-
Florence	-	-	\$159,844	-					
Georgetown	-	\$167,898	-	-	-	-	-	-	\$29,529
Horry	\$746,223	\$222,225	-	-	\$313,769	\$5,193,057	-	-	-
Marion	-	-	-	-	-	-	-	\$1,200,000	-
Sumter	\$52,700	\$3,183,970	\$180,000	-	\$63,892	-	-	-	-
Williamsburg	-	-	-	-	\$69,965	-	-	-	-
Statewide	\$1,661,175	-	-	-	-	-	\$2,000,000	-	-
Total	\$2,460,098	\$14,584,040	\$5,274,255	\$5,287,186	\$896,626	\$5,193,057	\$2,938,397	\$1,200,000	\$104,529

*See descriptions of codes in Table 12

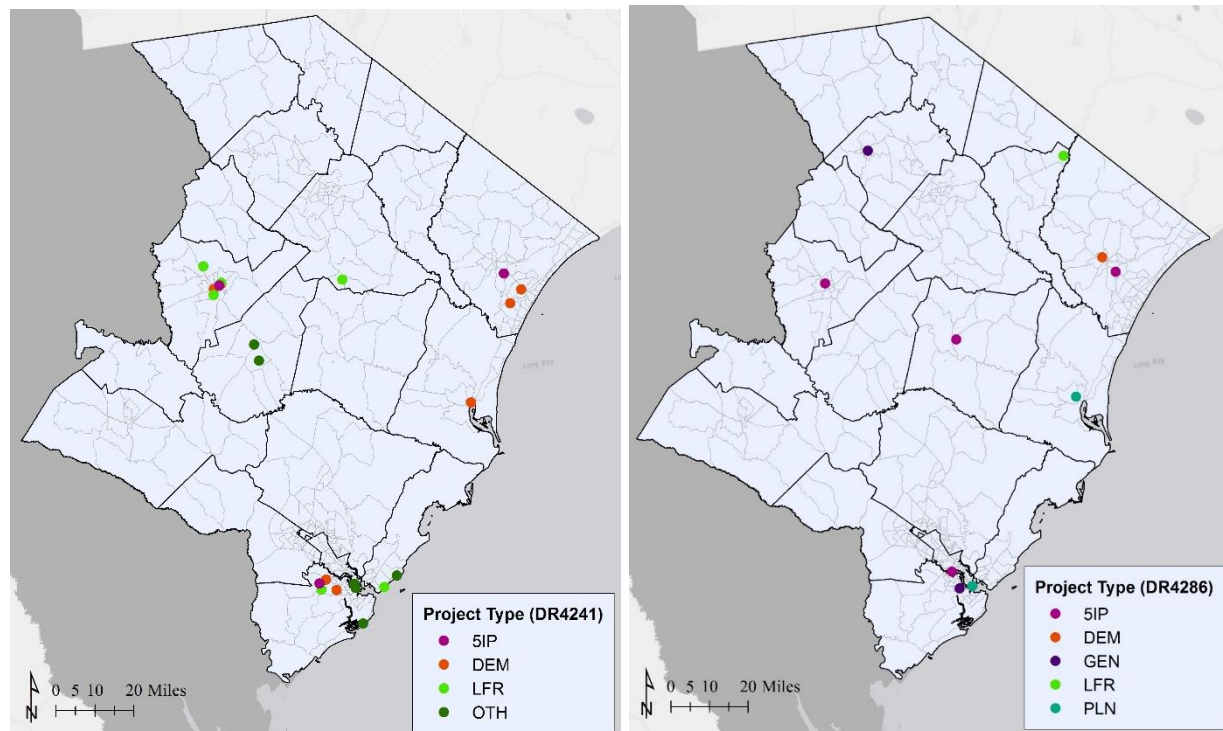


Figure 20 Distribution of FEMA HMGP mitigation project types for DR-4241(left) and DR-4286 (right). The project types include the 5 percent initiative (SIP), property acquisition and/or demolition (DEM), local flood reduction projects (LFR), generators (GEN), planning (PLN), and other (OTH).

The mapping of projects in relation to the flood hazard (100-year and 500-year) zones and simulations of the inundation areas for the 2015 floods and 2016 Hurricane Matthew show all are located in flooded areas (Figure 21). More importantly, however, the majority of projects are located in census tracts with lower levels of social vulnerability, especially in Charleston County (Figure 22). In other words, many of

the existing HMGP projects are not serving socially vulnerable census tracts, again empirically highlighted unmet needs for low to moderate-income residents in terms of disaster mitigation.

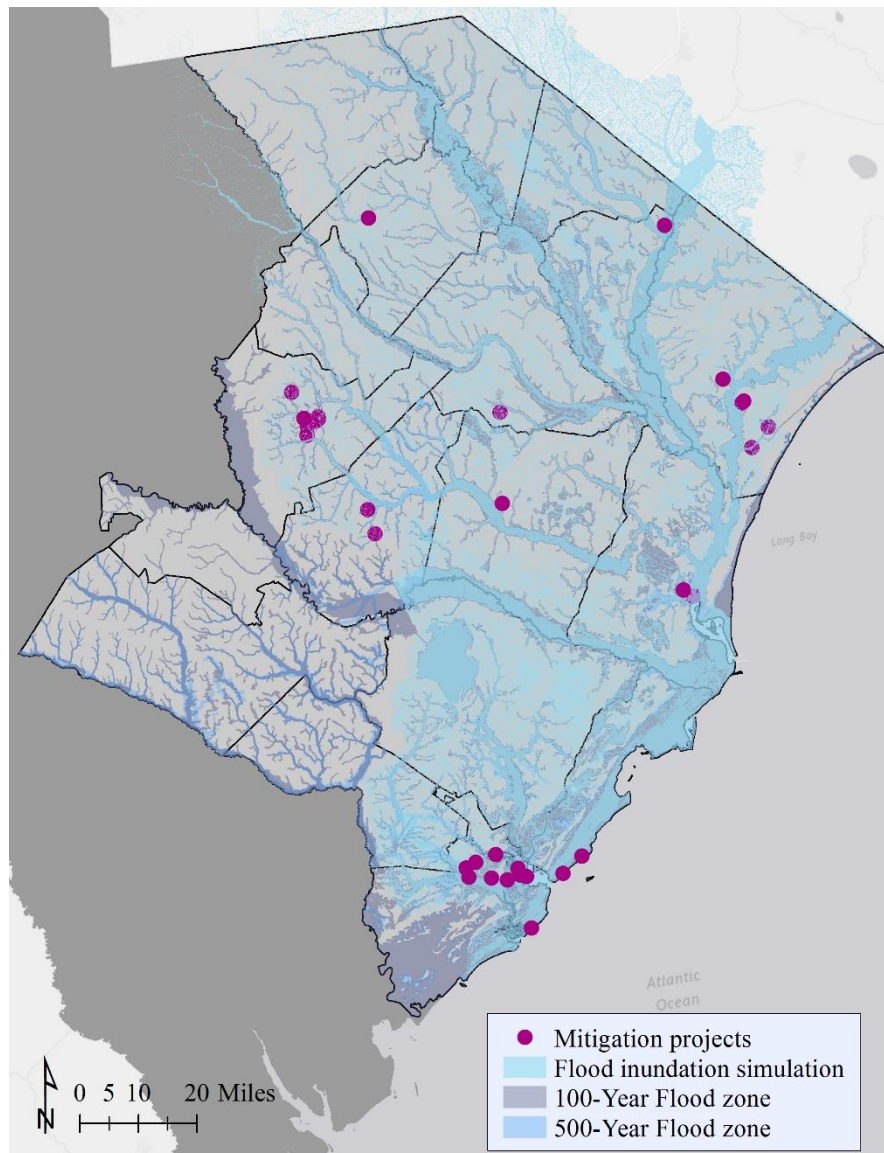


Figure 21 Flood zones and Mitigation projects for DR-4241 and DR-4286

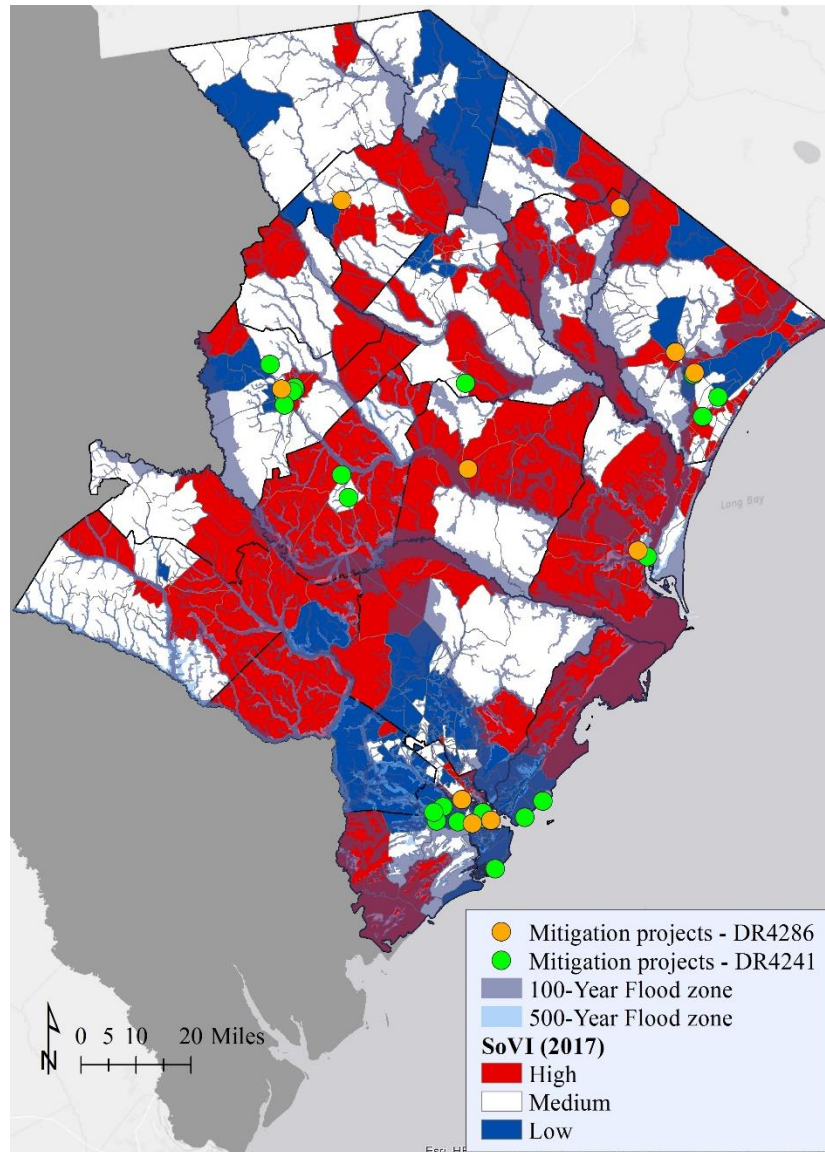


Figure 22 Social Vulnerability, Flood zones and Mitigation projects for DR-4241 and DR-4286

Mitigation Needs Assessment Summary

This assessment of mitigation needs used an empirical geospatial approach to define the most vulnerable areas within the assessment area of interest in three broad areas—hazard risk (especially flooding), household mitigation deficits post initial recovery, and potential impacts on lifelines. In each instance these were examined in relation to the social vulnerability of the region. The overall hazards assessment for the region based on the 2018 South Carolina Hazard Mitigation Plan Update served as the foundation. Through a series of maps of individual hazards, a risk profile for the 17-counties showed the relative level of hazardousness in the region. These hazard maps facilitate comparing the relative social vulnerability of census tracts (using bi-variate mapping) to illustrate who is most affected by different hazards and where.

Given the recent disaster experiences with tropical storms and flooding, and the significance of the flood hazard in this region, this CDBG-MIT plan focuses on the flood hazard including riverine, coastal, and flash flooding.

Examination of the recovery profiles for households showed unmet household mitigation needs (or mitigation deficits) especially among the most socially vulnerable populations. Such deficits are most pronounced in the MID counties, especially Georgetown, Horry, and Williamsburg Counties.

The potential lifeline impacts based on the Potential Community Lifeline Impact Index (PCLII), showed an overall concentration of potential lifeline impacts in the less populated census tracts in the assessment area. In addition, higher levels of potential lifeline impact appear in census tracts with higher levels of social vulnerability, as in Orangeburg County, along the coast in rural Charleston County to Georgetown County, inland in Williamsburg County, and in Marion County. All of these areas contain census tracts of higher social vulnerability and higher potential lifeline impacts.

To highlight the significance of the flood hazard in the 17-county region and to solidify the mitigation needs for households and community lifelines/infrastructure to reduce the flood risk and enhance resilience, three additional maps illustrate the regional nature of the flood hazard and its overall impact on South Carolina. For this assessment region, many of the most socially vulnerable census tracts are adjacent to FEMA-designated 100-year and 500-year flood zones (Figure 20). Given the lack of systematic mapping of the entire flood inundation areas for the 17 counties for either the 2015 floods or 2016's Hurricane Matthew at the regional scale, the choice of the flood zone maps seemed prudent. There is a clear pattern of higher levels of social vulnerability near the flood-prone areas, with the exceptions of large sections of Berkeley and Dorchester Counties that have similar flood risk levels, but less socially vulnerable populations.

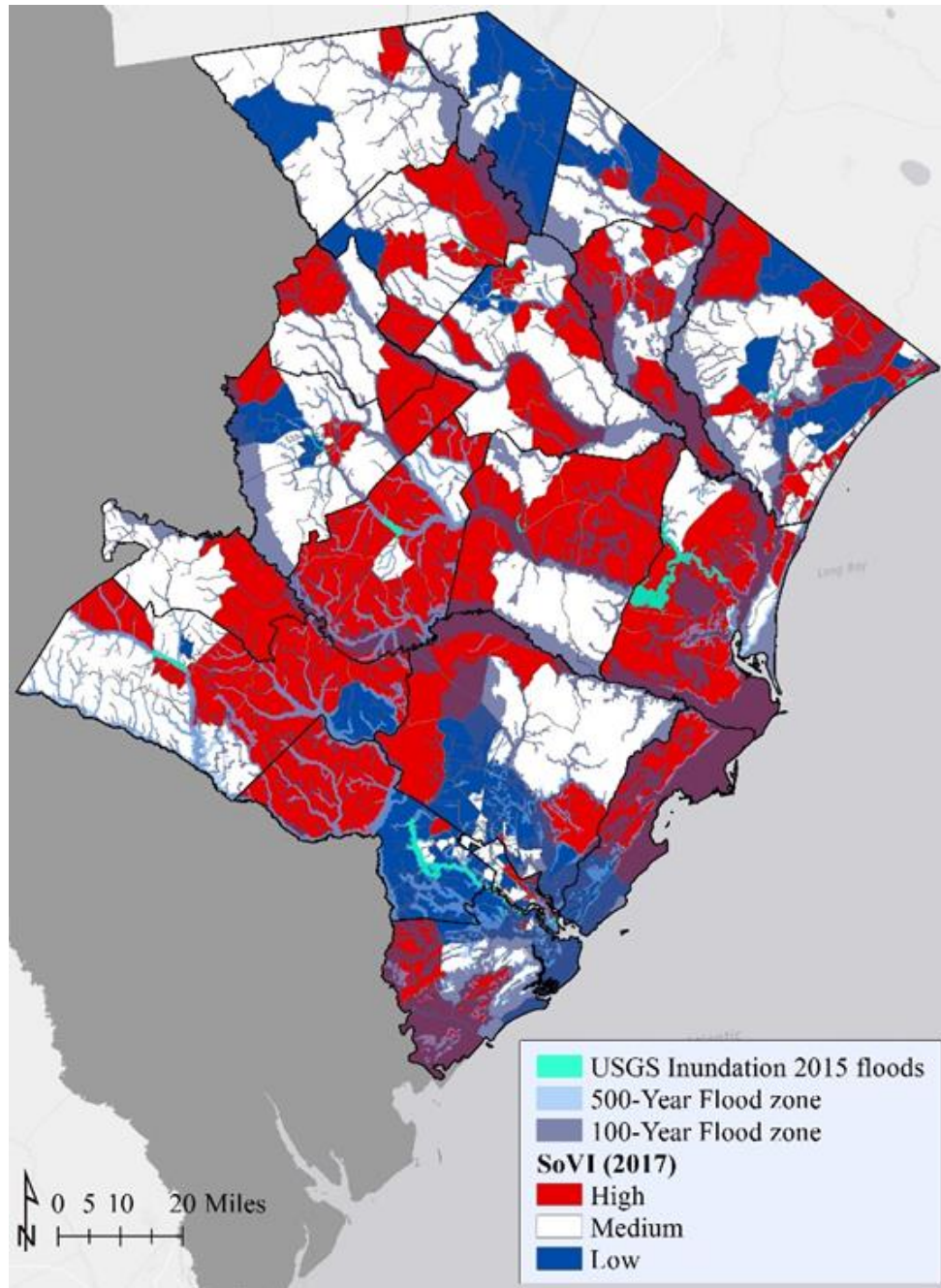


Figure 23 Flood zones in relation to socially vulnerable populations

At the household level, the deficit in mitigation needs shows a slightly different geographic pattern where Marion County (which experienced major damages from both events) has had most of the individual household/property needs met based on the recovery data presented here (Figure 23). However, other areas such as homeowners in census tracts in Horry County, along the Waccamaw River, and those in some of the rural inland counties continue to show household mitigation deficits, which have slowed full recovery in those areas, and potentially reduced their resilience to the next flood event.

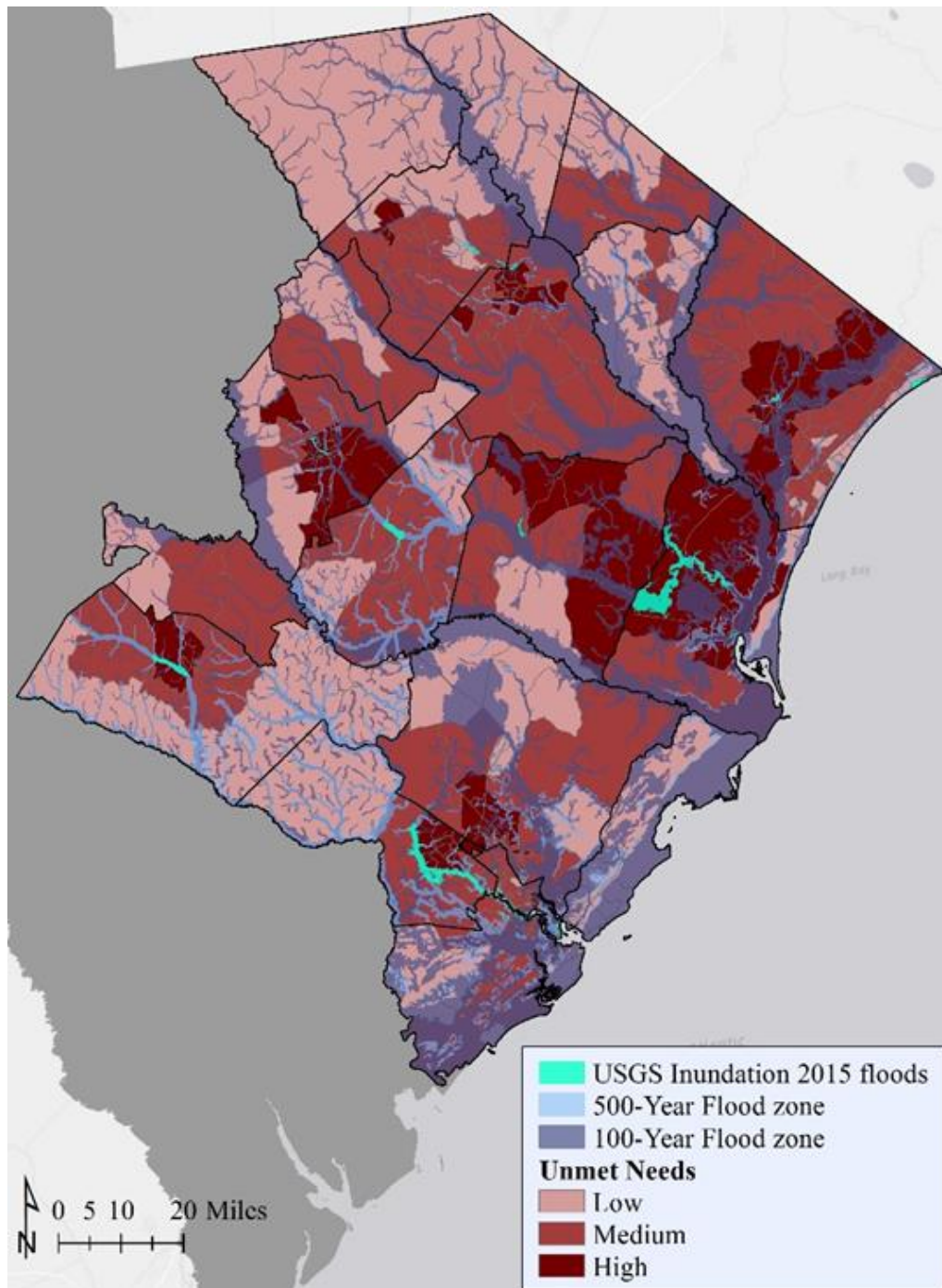


Figure 24 Homeowner unmet recovery and mitigation needs and flood zones

The generalized pattern for community lifelines shows a similar concentration (Figure 24) especially when the inundation from the 2015 floods is examined closely for tracts in Georgetown and Dorchester Counties. Coastal flood zones are visible in Charleston and Georgetown Counties, but higher levels of potential lifeline impacts are visible in Florence, Marion, Dillon, and Darlington Counties in the northern part of the assessment area, and in Orangeburg County, in the southwestern corner of the assessment area.

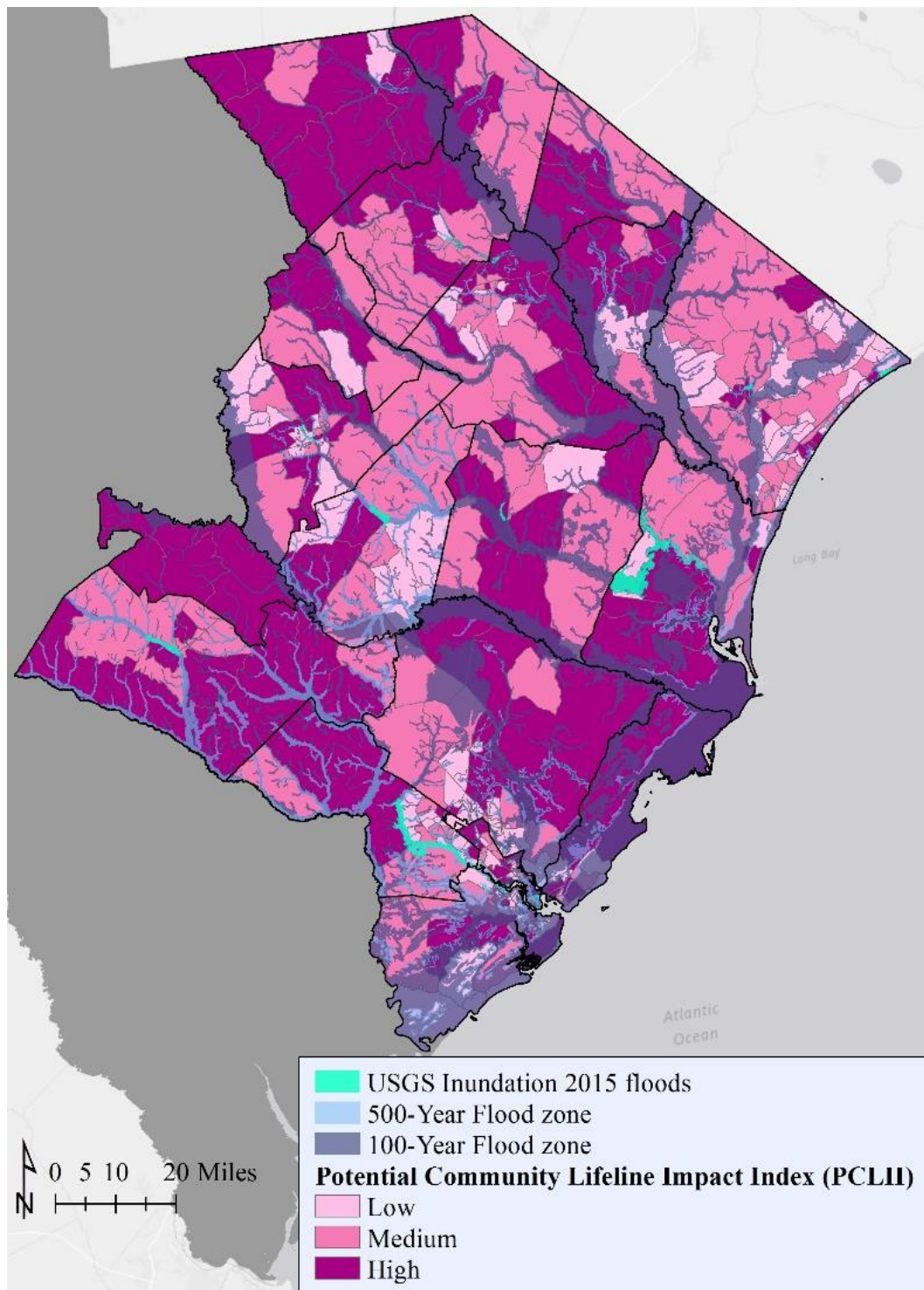


Figure 25 Potential Community Lifeline Impact Index (PCLII) and flood zones

It is no surprise that there is an extensive flood issue within the state, given the topography of the coastal Pee Dee and Santee watersheds. Meandering rivers make their way to the Atlantic Ocean in a region with little vertical relief, creating wetlands and bogs outside of the main channels. Bays and estuaries dot the state's coastal landscape. Tropical storm rainfall extends well beyond South Carolina's borders. The Pee

Dee watershed extends into North Carolina, and significant rainfall amounts in the upper drainage basin produce riverine flooding downstream as the rivers make their way to the coast, long after the tropical storm has passed through the region. Not only do the Pee Dee and Santee watersheds have a significant flood risk, but they also contain HUD-identified most impacted and distressed (MID) counties, and state-identified MID counties. The Pee Dee region (Marion, Dillon Marlboro, Darlington, Lee, Florence, and Williamsburg) contains some of the most socially and economically disadvantaged counties in the state. Not only do they have a higher flood risk, but they are the least able to afford flood mitigation. This addresses the core need for the HUD CDBG-MIT funding—to support the most vulnerable and most in need communities with additional resources to mitigate against future impacts of flooding households and the lifelines that support them.

86 FR 569 has a requirement to update the mitigation needs assessment to account for the area impacted by Hurricane Florence in September of 2018. This area was also impacted by the 2015 and 2016 disasters, therefore the mitigation needs for this newly added area are in the prior needs assessment with no additional updates available.

ACTION PLAN

Funding Priorities

Based on the findings of the mitigation needs assessment, the SCDRO will focus CDBG-MIT funding on reducing potential flood impacts in the Pee Dee and Santee watersheds. This will be accomplished through four broad categories of activities: flood-reduction infrastructure projects, housing buyouts, providing the local match funds for FEMA-funded mitigation programs, and planning activities to assist units of general local government (UGLGs) with updating hazard mitigation plans and developing flood-reduction studies for their communities. SCDRO flood reduction efforts will only address riverine and surface flooding, not storm surge or sea-level rise issues.

Counties Eligible for Assistance

The South Carolina Disaster Recovery Office (SCDRO) will provide assistance to eligible applicants in the following counties only:

HUD MID	SC MID	Florence MID
Charleston	Berkeley	Dillon
Clarendon	Calhoun	Horry
Dorchester	Chesterfield	Marion
Florence	Darlington	
Georgetown	Dillon*	
Horry*	Lee	
Marion*	Marlboro	
Sumter	Orangeburg	
Williamsburg		

No less than \$50,978,000 will be expended in the HUD-identified Most Impacted and Distressed (HUD MID) counties. For the additional funds allocated in 86 FR 569, no less than \$3,678,400 will be spent in the Florence MID counties.

Method of Distribution

CDBG-MIT Program National Objectives

South Carolina has designed this CDBG-MIT program in compliance with the national objectives and will ensure that assistance is prioritized toward the most disadvantaged populations. South Carolina will spend a minimum of 50% of program funds on activities that benefit the Low-and-Moderate Income (LMI) population. LMI status is determined by evaluating income as a percentage of the Area Median Income (AMI) in the county in which the applicant lives.

As stewards of federal CDBG funds, the State of South Carolina complies with the Department of Housing and Urban Development's (HUD) mission to develop viable communities by the provision of decent housing, a suitable living environment and expanding economic opportunities, principally for LMI persons. To this end, all funded activities administered by the State of South Carolina will meet one of two named HUD national objectives:

- 1) Benefitting LMI Persons;
- 2) Meeting Urgent Mitigation Needs.

CDBG-MIT programs will begin after the executed grant agreement and be completed by May 2032.

All activities (except planning and program administration) funded through the CDBG-MIT grant must meet the following definition of a mitigation activity: activities that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters.

Program Budget

The following is a table of budgeted activities:

Program	Allocation	Amendment 1	Amendment 2
Infrastructure	\$100,000,000	\$100,000,000	\$100,000,000
Housing	\$35,000,000	\$35,000,000	\$37,318,892.59
Federal-Funded Mitigation Match	\$5,000,000	\$5,000,000	\$2,681,107.41
Planning	\$9,710,500	\$14,078,600	\$14,078,600
Program Administration	\$7,879,500	\$8,109,400	\$8,109,400
TOTAL	\$157,590,000	\$162,188,000	\$162,188,000

Note: SCDRO does not anticipate conducting any public service activities with the CDBG-MIT funding.

Avoiding a Duplication of Benefits

The State has worked with HUD, FEMA, SBA, other federal agencies and State-funded agencies to identify and catalog available sources of assistance for recovery from recent disasters. The State will ensure that CDBG-MIT funds are only used to address funding needs not satisfied by other funding sources, many of which are already providing disaster relief and mitigation funding, including, but not limited to:

- FEMA Individual Assistance grants
- FEMA Hazard Mitigation Grant Program
- SBA Disaster Loans
- National Flood Insurance Program payments
- Private insurance
- Natural Resources Conservation Service Emergency Watershed programs
- Water Conservation District funds
- Drinking Water and Water Pollution Control funds, and
- Private foundations

In accordance with the Robert T. Stafford Act, as amended, the State will implement policies and procedures to ensure no individual receives duplication of benefit for the same purpose and/or effect. Federal law prohibits any person, business concern, or other entity from receiving Federal funds for any part of such loss for which the person has received financial assistance under any other program, from private insurance, charitable assistance or any other source.

Infrastructure Program

SCDRO will complete infrastructure projects that will mitigate future flood damage in the Pee Dee and Santee watersheds.

Eligible Applicants: Units of General Local Government (UGLGs), State agencies

Eligible National Objectives: LMI Area Benefit, Mitigation Urgent Need

Eligible Activities: Infrastructure projects that increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future flood disasters

Executing Jurisdiction(s): SCDRO and/or UGLG subrecipients with capacity to execute

Total Budget: \$100 million

The Infrastructure Program will be executed in three phases. Phase 1 is designed for projects that are “shovel-ready.” \$50 million will be available in Phase 1. SCDRO will solicit applications for projects from eligible applicants in the Pee Dee and Santee watersheds. Each project will be prioritized based on the methodology detailed in the “Project Prioritization” section. Phase 1 is anticipated to last until year 3 of the Mitigation Program. The CDBG-DR Steering Committee will select projects based on the rankings from the prioritization with additional consideration to ensuring that funding is applied in an equitable manner on a geographic basis with an emphasis placed on the counties identified by HUD as most impacted and distressed.

During Phase 1, SCDRO will use planning funds to assist jurisdictions without “shovel-ready” projects in the development of flood-reduction studies with the intent of identifying appropriate projects for execution during Phase 2. Phase 2 will commence at the start of year 3. \$40 million and any remaining

unobligated funding from Phase 1 will be made available in Phase 2. SCDRO will solicit applications for projects for Phase 2. Projects will be ranked using the same prioritization methodology as Phase 1.

Phase 3 will commence no later than the start of year 5. All remaining unobligated funds will be made available to fund projects submitted for Phase 3. SCDRO will utilize the same application and prioritization methodology as the earlier phases for Phase 3.

Operating and Maintenance Plans

SCDRO will require the identification of a responsible entity as a condition of consideration for infrastructure funding during the application phase. The responsible entity will be required to identify its plan for funding operating and maintenance costs (if applicable) for any infrastructure project within its jurisdiction funded through the CDBG-MIT infrastructure program.

Cost Verification

SCDRO will utilize licensed engineers to verify costs and determine cost reasonableness on a project-by-project basis, ensuring that construction costs are reasonable and consistent with market costs at the time and place of construction.

Project Prioritization

SCDRO commissioned a flood-reduction study in the Pee Dee and Santee watersheds, with the final product being a methodology for prioritizing feasible projects, and hydrological modeling to quantify the effectiveness of proposed projects. The feasibility prioritization is based on a 100-point scale with a higher point total indicating a more feasible project.

<i>Prioritization Category</i>	<i>Maximum Points</i>
LMI % Served	20
Level of Flood Risk Reduction	10
Quantity of Flood Risk Reduction	10
Benefit-Cost Ratio	20
Leveraged Funding	10
Permitting/Scheduling	10
Mobility Improvement	5
Phasing Considerations	5
Project Synergies	5
Environmental Impact	5

Low-to-Moderate Income (LMI) % Served

The first major criterion of this study was to determine the benefit towards the LMI population. LMI is important to establish because a maximum of 50% of mitigation funds can go towards non-LMI communities; however, there is no limit to the maximum of funds towards LMI communities. The final split of funding towards LMI and non-LMI projects is up to the discretion of the CDBG-DR Steering Committee. In summary, LMI projects are more favorable. For this reason, LMI can be regarded as the most important category to be judged on.

The LMI data used in this study was developed by the U.S. Department of Housing and Urban Development (HUD) covering 2011 to 2015. This time period was chosen as it was the most recently published data available.

An area will be drawn for each project to represent both the service area as well as the extent of the mitigation impact. This area, called “service area”, will be overlaid with the LMI data to calculate a weighted average LMI percentage. This calculated percentage is multiplied by 20 points to produce the final LMI points awarded. An example calculation is shown below:

Service Area LMI = 65% X 20 points = 13 LMI Points

Defining Service Areas

While the LMI formula is straightforward, the more difficult task is defining the service area.

Service projects, such as a hospital, have a boundary drawn around the urbanized communities immediate surrounding the hospital. However, it can be argued that the hospital serves a larger extent such as people from rural parts or even people from neighboring cities or states. The line will be drawn at rural areas because LMI should be based on people and income and not land. Rural areas have an unfair weight that skews LMI percentage due to land size. Other cities or any extent further also was not reasonable as the LMI percentage would be skewed as few people from further away cities attend the hospital.

Infrastructure, such as a storm water network in a neighborhood, will be drawn primarily based on the infrastructure’s watershed boundary. A watershed is defined by topology, or in other words, how the ground slopes to drain water. Any area where rain runs off into the storm water network is included as part of the watershed area. At times, the watershed boundary will be shortened, as many watersheds can elongate hundreds of miles downstream or upstream. In other cases, a watershed boundary may be extended as storm drain networks often connect multiple watersheds conveying runoff through pipes underground which cannot be obtained from the topology. The judgement to define appropriate service areas will be performed based on the best available data, modeling, and by engineers with experience in hydrologic and hydraulic studies.

Using a service area is not only required by grant fund requirements but also an industry standard. As stated by HUD, the LMI data does contain a Margin of Error (HUD, NOTICE: CPD-19-02) and is not a perfect representation of LMI due to privacy rights and several other factors. Caution and consideration will be shown towards communities that can otherwise demonstrate a more representative LMI.

The LMI for numerous areas has significantly changed over time. To validate this claim, LMI data from 2006-2010 and data from 2011-2015 data were compared at several potential project locations. It was not unusual for extremely high LMI areas to switch to extremely low LMI areas or vice versa. It is important to note that the LMI data changing over time may not always correlate to communities' expectations and assumptions.

Flood Risk Reduction

Another major criterion was the issue of flood risk reduction. This will be two-fold counting the improved level of service of flood protection together with quantity of structures benefited by/protected from flooding by proposed improvements. The points will be divided into these two subcategories with each worth a maximum of 10 points. How points are awarded is summarized in Table 1 and Table 3 below.

The first step is to identify if the cause of flooding is only local rainfall, only riverine, or both. Riverine flooding can only occur in stream water features defined by USGS. Methods such as particle tracing, illuminates a better understanding of the conveyance of water and cause of flooding.

The second step is to quantify the improvement from existing conditions to the proposed mitigation. This will be initially estimated for all projects using the existing model and later corrected upon results from models of existing and proposed conditions during the BCA phase. If the project description does not state the level of protection, the following will be assumed: minor storm water improvements such as a storm drain have a 25-year storm event protection, and major infrastructure such as culverts, bridges, railroads, water treatment plants have protection greater than the 25-year storm event.

<i>Level of Protection Category</i>	<i>Points</i>
Minimal increase	0
Local or Riverine 25-year, 24-hour storm event level of protection	4
Local and Riverine 25-year, 24-hour storm event level of protection	7
Above a 25-year, 24-hour storm event level of protection	10

Table 2: Level of Flood Risk Reduction Points

The 25-year, 24-hour event is the industry standard for stormwater infrastructure projects. Projects' protection performance can vary as storms occur at different durations, intensities, and prior conditions. The BCA phase will consider some of the variations for larger storm events; however, accounting for all variations is not always foreseeable.

The third step is to quantify the amount of structures benefiting from flood risk reduction as shown in **Table 3**. A structure is defined as benefitting from flood risk reduction if the flood levels were reduced by at least a foot of depth. A foot of depth was chosen because it is assumed that no damage would occur before six inches to account for the slab foundation, and an additional six inches would cause significant

damage. Other flood risk measures such as extent, duration, and velocity are related to depth, and therefore the process can be streamlined to depth. This difference in depth is measured from the BCA models using the proposed mitigation model minus the existing condition model.

<i>Quantity of Protection Category</i>	<i>Points</i>
0-10 Structures	0
10-25 Structures	4
25-50 Structures	7
50+ Structures	10

Table 3: Quantity of Flood Risk Reduction Points

Structures will be counted individually regardless of size and function. For example, a school and a single-family home would each be counted as one structure.

Benefit-Cost Ratio

A max of 20 points will be assigned based on the quartile ranking of the projects after the close of the application period for each phase. There are four major steps to be able to award points: Modeling Baseline Condition, Cost Estimate, Modeling Mitigation Condition, and the Benefit-Cost Ratio.

Modeling Baseline Condition

SCDRO conducted Hydrologic and Hydraulic (H&H) modeling for the Pee Dee watershed to establish baseline conditions from Hurricane Matthew in October 2016 and the severe storm event in October 2015 for the Santee watershed. These models not only were necessary to compare mitigation, but also assisted in various aspects such as discovering potential projects, formulating assumptions, and awarding points in other categories. All models are calibrated to USGS gages, photos, and any other documented evidence to match the stage, or water surface elevation of the historical flooding.

To summarize the modeling efforts, data was gathered and processed for precipitation, oceanic tides, dam releases, land use, soil type, and digital elevation maps. The hydrology methodology used is NRCS TR-55. The hydrology produces parameters used as inputs into a software program, HEC-HMS version 4.2, which produces a parameter to input into a software program, HEC-RAS version 5.0.6, used to 2D model. In addition, many more technical parameters to input into the model and methods were added to the model. It should be also noted that the model is 15 sub-models refined for accuracy and computing power. After the model was stabilized and running, calibration of the model was accomplished by adjusting several parameters to mimic the historic events.

Cost Estimate

Anticipated construction costs will be applied consistently to all projects, without regard for geographic location, ease or difficulty of construction, or other factors that will usually affect actual construction costs. Only major costs will be estimated as to eliminate the potential hundreds of various minor costs. The cost estimates will be conservative including a 25% contingency to account for minor costs and uncertainty. This standard pricing provides a streamlined approach for developing the ballpark cost estimates needed for evaluation.

Modeling Mitigation Condition

SCDRO will conduct H&H mitigation modeling for each of the projects to determine the potential cost benefits of the proposed mitigation project. A second model shows the condition after a proposed project is implemented. This second model is compared to the baseline model to determine the benefit of the project. The modeling will have increased resolution and accuracy by limiting the model domain to each project's service area. This will be done for both the baseline and mitigation models of the projects. Many projects' service areas may overlap or be dependent on one another. In this circumstance one model will account for multiple projects having a shared benefit and therefore combined cost estimate.

After modeling, results will be extracted and processed into a benefit. The benefits will be measured using the Flood Module or the Damage Frequency Assessment Module from the FEMA Benefit-Cost Analysis (BCA) methodology utilizing a USACE DDF to convert flood depth to dollars of damage. The following should be noted:

- 1.) Only one storm event was modeled. The other storm events needed for the analysis were generated from the FEMA A05 PELV curve.
- 2.) Each project typically impacts hundreds of structures. Without the information on each individual structure, assumptions will be made such as to value, slab height, and size.
- 3.) Most projects will be measured on the benefit of no prior protection being increased to a 25-year storm event protection. Highway culverts will be expanded to a 50% increase in capacity. Repetitive-Loss Structures projects will consider the FEMA Flood Insurance Program's (NFIP) last three (3) most recent claims to perform an unknown frequency calculation.
- 4.) Models are independent of each other and do not measure the impact of one project on another or the effect downstream. Without knowing which projects come to fruition, it would not be fair to assume the impact of other projects to merit a project's benefit.
- 5.) It is also assumed that the mitigation is always fully functioning and the impact downstream is not an issue.

Benefit-Cost Ratio

The final step is to simplify all these analyses from the first 3 steps and award points. This will be done by first calculating the benefit-cost ratio as the benefit divided by the estimated cost. This ratio is an expression of the money saved by implementing a project as opposed to the costs occurred by not implementing the project. A ratio less than one means the project will cost more to implement than it will save. Any ratio equal to 1 or higher justifies the project from a pure financial viewpoint.

Next, the ratios will be sorted by quartile to award points as shown in Table 4. This will be done to weaken the cost-benefit ratio defined by a single value to account for the larger picture of the project, account for error from assumptions and methodologies, and be appropriate for the stage of most projects.

<i>Benefit-Cost Ratio Quartile</i>	<i>Points</i>
0-25%	0
25-50%	7
50-75%	13
75-100%	20

Table 4: Benefit-Cost Ratio Points

Leveraged Funding

Cost share opportunities such as funding from FEMA, Federal Highway Administration (FHWA), South Carolina Department of Transportation (SCDOT), HUD, etc. are a beneficial factor to the desirability of a project. How points are awarded is summarized in Table 5 below.

<i>Leverage Funding Category</i>	<i>Points</i>
No potential cost share identified	0
Limited potential cost share identified	5
Significant potential cost share identified	10

Table 5: Leverage Funding Points

From the table above, 0, 5, or 10 points will be assigned based on the project's identified level of potential cost share opportunities. If the project description mentions a specified source and a quantifiable amount of funding, it will be classified as either limited or significant potential. To qualify for significant potential, the funding must cover at least half the estimated cost or be a HMGP project (which has a 75% leverage funding potential). All other projects will be classified as having no potential cost share identified.

It should be noted that leveraged funding will be accounted for in this category and not in the benefit-cost ratio analysis to prevent a double-counting scenario.

Permitting Requirements / Schedule

The acquisition of necessary permits and overall schedule issues affect the efficiency and compliance of a project. Challenges to permitting and schedule will influence the desirability of a project. How points are awarded is summarized in Table 6 below.

<i>Permitting / Schedule Category</i>	<i>Points</i>
Significant challenges	0
Potential challenges	5
Little-to-no challenges	10

Table 6: Permitting / Schedule Points

From the table above, 0, 5, or 10 points were assigned based on the project's identified level of possible permitting/schedule challenges. The level of challenges depended on the following characteristics from the description of the project: amount and type of approvals required and pushback from various groups, capability of the municipality, location of the project, scope of the project, status of the project, timeline schedule and planning. Most projects will be assumed to have potential challenges unless proven otherwise.

Mobility Improvement

During every day weather conditions or disasters (such as storm event flooding), it is important to have safe and efficient mobility/transportation corridors and stations for first responders, other emergency personnel, and the general public. Projects which have an attribute of improving this mobility will factor in positively. How points are awarded is summarized in Table 7 below.

<i>Mobility Improvement Category</i>	<i>Points</i>
Minimal mobility improvements	0
Limited mobility improvements	3
Significant mobility improvements	5

Table 7: Mobility Improvement Points

From the table above, 0, 3, or 5 points will be assigned based on how a project improves mobility towards the public and first responders. A definitive line can be drawn by categorizing roads as major or minor per

SCDOT. Generally, a major road is an airport, evacuation route, highway, or railroad, and even a main route used by multiple neighborhoods. Since major roads are assumed to be used by first responders and a significant portion of the public, they receive 5 points. Minor roads will be awarded 3 points as it is assumed that a limited portion of the public and first responders would use them (neighborhood road, rural road, or low-use road). If the flooding does not occur or improve on a road, zero points will be awarded.

Phasing Considerations

Projects supporting phased approach to implementation of larger projects to support effectiveness or future regional projects beyond current funding will be given up to a max of 5 points. This is outlined in Table 8.

<i>Phasing Consideration Category</i>	<i>Points</i>
No connection to larger scale project	0
Limited Contribution	3
Significant Contribution	5

Table 8: Phasing Consideration Points

To qualify for 5 points, a significant contribution is defined as a project with identified phases and a multi-county or multi-city area scope. To qualify for 3 points, a limited contribution would be projects that could be phased itself or with other projects but within the same city area. Otherwise, projects would have no connection and receive zero points.

Project Synergies

Project synergy is defined as two or more projects that interact or cooperate with one another to reduce cost and to produce a combined effect that is greater than the sum of its separate parts. Projects with companion projects that were completed simultaneously to reduce cost and are more effective are awarded up to a max of 5 points. This is outlined in Table 9.

<i>Synergy Category</i>	<i>Points</i>
No relations to other projects	0
Limited cost savings	3
Significant cost savings	5

Table 9: Synergy Points

To qualify for 5 points and be considered a significant cost savings project, the project has to be either 1.) closely related or identical to 3 or more projects, or 2.) located directly next to 3 or more similar projects.

To qualify for 3 points, the project must be similar to another project within the same county. Otherwise, no relations will be inferred, and 0 points will be awarded.

Environmental Impact / Benefit

A project's impact on the environment was given up to a max of 5 points. This is outlined in Table 10.

<i>Environmental Impact Category</i>	<i>Points</i>
Negative Impact	0
Neutral Impact	3
Green Infrastructure or Improved Impact	5

Table 10: Environmental Impact Points

Projects will be assumed to have a neutral impact. A project would receive the maximum points if it specifically mentions a quantifiable environmental improvement, green infrastructure, includes a pond/reservoir, or restores an urbanized area to a natural state. On the contrary if the urban footprint increased or alters the environmental by more than 20% then the project would have a negative impact. At times, projects would have both positive and negative impacts which were assumed to be neutral when combined.

Covered Projects

SCDRO will not fund any projects which meet the definition of a covered project as specified in the Federal Register Notice.

Housing Buyout Program

SCDRO and/or UGLG subrecipients will conduct voluntary buyouts strategically as a means of acquiring contiguous parcels of land for uses compatible with open space, recreational, natural floodplain functions, wetlands management practices, or ecosystem restoration. The acquired property will be subject to a permanent covenant on its continued use to preserve the floodplain. The term “buyout” refers to the acquisition of properties with the intent to reduce risk from future flooding. SCDRO will utilize pre-disaster fair market valuation (FMV) to determine property value, unless the property owner did not own the property prior to the disaster event. If property ownership changed after the disaster, SCDRO will use the current FMV. Any CDBG–MIT funds in excess of the FMV are considered assistance to the seller, thus making the seller a beneficiary of CDBG–MIT assistance. If the seller receives assistance as part of the purchase price, this may have implications for duplication of benefits calculations or for demonstrating national objective criteria.

SCDRO will solicit applications from Units of General Local Government (UGLGs) located in the seventeen counties eligible for assistance. The application phase will assist in determining an UGLG's willingness and capability to execute the buyout program as a subrecipient. At a minimum, the UGLG must identify the responsible entity that will take ownership of the parcels once the buyout activity is complete. Buyout applications will be screened using a modified prioritization process like the infrastructure program, with the focus being LMI population served, quantifiable flood reduction, and benefit-cost analysis. The CDBG–DR Steering Committee will have the final authority for the approval of UGLG applications for buyouts.

Eligible Applicants: Units of General Local Government located in SC MID or HUD MID counties

Eligible National Objectives: LMI Direct Benefit, LM-Buyout, LM-Housing Incentive, LMI Area Benefit, Mitigation Urgent Need

Eligible Activities: Buyouts

Executing Jurisdiction(s): SCDRO and/or UGLG subrecipients

Total Budget: ~~\$35 million~~ \$37,318,892.59

Buyout Program Eligibility Criteria

All beneficiaries will be held to the following criteria as condition of eligibility:

- Property must be a residential parcel located within the 17 counties identified as the SC MID or HUD MID;
- One person with an ownership interest in part or in whole on the property must be able to demonstrate U.S. Citizenship or Lawful Permanent Residence; and
- Property must be in the Special Flood Hazard Area or floodway as identified on the Flood Insurance Rate Map (FIRM), or pre-FIRM, or in a Disaster Risk Reduction Area as defined by the SCDRO in the buyout program policies and procedures manual.

Basis for Calculating Housing Assistance Awards

If eligible and awarded, housing assistance award calculations are based on the following factors:

1. Pre-disaster housing unit value (unless property changed ownership after the disaster);
2. Any applicable housing incentives;
3. A review of funding from all sources to ensure no Duplication of Benefits (DOB); and
4. DOB funds, if any, for use in the project.

Housing assistance awards will be determined after factoring in the inputs listed above, subtracting any unaccounted-for DOB, and then factoring in the pre-determined program assistance maximums that apply to the housing assistance activities to be used. Funds qualified as DOB may be required to be placed in escrow while assistance is provided.

If a determination is made during the process that the Assistance Awardee has a duplication of benefits, and the duplicative funds are still on hand, the Assistance Awardee will be required to sign an escrow agreement with the SCDRO. This agreement will require the Assistance Awardee to transfer all duplication of benefits funds to the SCDRO. The SCDRO will hold those funds until the construction is complete. Once construction is satisfactorily completed, the SCDRO will roll the funds back into the program, if DOB funds exceed demolition and site stabilization costs.

The award maximum for a beneficiary of the buyout program is \$250,000 (inclusive of any incentives).

All construction work will be performed by contractors licensed by the State of South Carolina. All work must be completed to standards that meet applicable building codes.

In cases of severe demonstrable hardship, the State may consider funding difficult or unexpected projects above and beyond the maximum awards. The State will use a Special Case Panel with members appointed by the SCDRO Program Management Director to evaluate and authorize projects that exceed the stated assistance limits.

Awards may include expenses for additional related costs such as ADA modifications or emergency repair of water or sewer connections. The State will address the access and functional needs of individual citizens in all phases of the process. Consideration will be made for citizens with communication limitations, disabilities, are elderly, or have chronic medical disorders.

The State of South Carolina will allow any household to appeal its property valuation and provide rationale for why the valuation should be changed, should that household have reason to believe the valuation is incorrectly calculated because of historical inequity and/or other grounds.

Housing Construction Standards

South Carolina will implement construction methods that emphasize quality, durability, energy efficiency, sustainability, and mold resistance. All new construction will be designed to incorporate principles of sustainability, including water and energy efficiency, resilience, and mitigation against the impact of

future disasters. **As of the publication of this plan, South Carolina does not anticipate any housing construction activities except for demolition of existing structures and subsequent site stabilization. In the event that changes, or a special case requires construction activity, the following standards will apply.**

In South Carolina, all counties and some localities require permits. All counties and the localities with such requirements have standing offices to process the required permits. There are currently no known local capacity issues which would prevent the needed permits from being processed and issued.

For all new construction, the State will require construction to meet one of the following industry recognized standards:

- ENERGY STAR (Certified Homes);
- Enterprise Green Communities;
- LEED;
- ICC-700 National Green Building Standard;
- EPA Indoor AirPlus (ENERGY STAR a prerequisite); or
- any other equivalent comprehensive green building program acceptable to HUD.

South Carolina will monitor construction activities to ensure the safety of residents and the quality of homes assisted through the program.

Flood Insurance & Elevation

South Carolina will follow HUD guidance to ensure all structures, defined at 44 CFR 59.1, designed principally for residential use and located in the 1 percent annual (or 100-year) floodplain that receive assistance for new construction, repair of substantial damage, or substantial improvement, as defined at 24 CFR 55.2(b)(10), must be elevated with the lowest floor, including the basement, at least two feet above the 1 percent annual floodplain elevation. Residential structures with no dwelling units and no residents below two feet above the 1 percent annual floodplain, must be elevated or flood-proofed, in accordance with FEMA flood-proofing standards at 44 CFR 60.3(c)(3)(ii) or successor standard, up to at least two feet above the 1 percent annual floodplain.

Property owners assisted through the mitigation program will be required to acquire and maintain flood insurance if their properties remain in a FEMA-designated Special Flood Hazard Area. This requirement is mandated to protect safety of residents and their property and the investment of federal dollars. The elevation height of a house can significantly reduce the cost of flood insurance. South Carolina will implement procedures and mechanisms to ensure that assisted property owners comply with all flood insurance requirements, including the purchase and notification requirements described below, prior to providing assistance.

South Carolina will ensure adherence to Section 582 regarding the responsibility to inform property owners receiving disaster assistance that triggers the flood insurance purchase requirement that they have a statutory responsibility to notify any transferee of the requirement to obtain and maintain flood insurance, and that the transferring owner may be liable if he or she fails to do so.

As a rule, the State will not aid with flood insurance costs. In cases of hardship, the State may provide limited, temporary assistance for the provision of flood insurance in order to properly secure the federal investment in the property.

Anti-displacement

The State plans to minimize displacement of persons or entities and assist persons or entities displaced as a result of implementing a project with CDBG-MIT funds. This is not intended to limit the ability of the State to conduct buyouts or acquisitions of residential property in a floodplain or Disaster Risk Reduction Area.

The State will ensure that the assistance and protections afforded to persons or entities under the Uniform Relocation Assistance and Real Property Acquisition Policies Act (URA), and Section 104(d) of the Housing and Community Development Act of 1974 are available. The URA provides that a displaced person is eligible to receive a rental assistance payment that covers a period of 42 months. The State accepts the HUD waiver of the Section 104(d) requirements which assures uniform and equitable treatment by setting the URA and its implementing regulations as the sole standard for relocation assistance.

The SCDRO Legal Department has the responsibility of ensuring compliance with the URA.

Federal-Funded Mitigation Match

The State will designate ~~\$5 million dollars~~ \$2,681,107.41 to match ~~FEMA~~ federally-funded mitigation grant programs to include the Hazard Mitigation Grant Program, Pre-Disaster Mitigation Grant Program (and subsequent Building Resilient Infrastructure and Communities Program), ~~and~~ Flood Mitigation Assistance Program, and any other federal grant opportunities that focus on flood reduction such as programs administered by the Army Corps of Engineers and the U.S. Department of Commerce. Any match funding activities must meet CDBG-MIT and FEMA eligibility requirements. Activities may include but are not limited to buyouts, structural elevation, localized flood risk reduction, infrastructure retrofit, and post-disaster code enforcement. Applicants are required to submit applications to the South Carolina Emergency Management Division for the HMGP and PDM programs and submit applications to the South Carolina Department of Natural Resources for the Flood Mitigation Assistance program. Projects must meet both FEMA and HUD requirements to be eligible for funding. For funding sources other than FEMA, applicants must have an approved application from the federal agency and meet the agency's requirements in addition to the CDBG-MIT requirements.

Eligible Applicants: Units of General Local Government located in SC MID or HUD MID counties and state agencies

Eligible National Objectives: LMI Direct Benefit, LM-Buyout, LMI Area Benefit, Mitigation Urgent Need

Eligible Activities: All activities allowed under CDBG-MIT including but not limited to flood control and drainage improvements, including the construction or rehabilitation of stormwater management systems; infrastructure improvements (such as water and sewer facilities, streets, provision of generators, removal of debris, bridges, etc.); natural or green infrastructure; communications infrastructure; buyouts or acquisition with or without relocation assistance, down payment assistance, housing incentives, and

demolition; activities designed to relocate families outside of floodplains; and Hazard Mitigation Plan updates

Executing Jurisdiction(s): UGLG subrecipients

Total Budget: ~~\$5 million~~ \$2,681,107.41

Planning

SCDRO will use planning funds for the development and amendment of the mitigation action plan. Planning dollars may be used for statewide planning activities. Additionally, the SCDRO will provide funding to the South Carolina Emergency Management Division, Councils of Government (COGs), the Department of Natural Resources, and units of general local government for the development or updating of hazard mitigation plans, and the development of flood-reduction studies to identify potential projects that could be funded through phase 2 or phase 3 of the infrastructure program, or studies to identify the potential impacts of sea level rise. SCDRO will solicit applications from UGLGs located in the SC and HUD-defined MID counties to disperse planning funds. The planning activity will not exceed fifteen percent of the total grant.

Total Budget: ~~\$9,710,500~~ \$14,078,600

Program Administration

State administrative costs will not exceed 5 percent of the total grant. Planning and administrative costs combined will not exceed 20 percent. The provisions outlined under 42 U.S.C. 5306(d) and 24 CFR 570.489(a)(1)(i) and (iii) will not apply to the extent that they cap state administration expenditures and require a dollar-for-dollar match of state funds for administrative costs exceeding \$100,000. Additionally, the provisions outlined under 42 U.S.C. 5306(d)(5) and (6) will not apply; instead, the aggregate total for administrative and technical assistance expenditures will not exceed 5 percent of the grant amount plus 5 percent of program income generated by the grant.

The SCDRO will retain the full 5 percent allocated for administrative costs associated with the CDBG-MIT allocation for purposes of oversight, management, and reporting. Any subrecipients that receive funds will not be entitled to administrative costs given the design of the SCDRO mitigation programs, wherein all grant administration is executed by the SCDRO, and subrecipients will implement programs based on the SCDRO program guidelines. Thus, all activities conducted by subrecipients are considered activity delivery costs.

Total Budget: ~~\$7,879,500~~ \$8,109,400

Program Administration

Citizen Participation Plan

The State values citizen and stakeholder engagement. South Carolina has developed a Citizen Participation Plan in compliance with § 24 CFR 91.115 and applicable HUD requirements to set forth the policies and procedures applicable to citizen participation. This plan is intended to maximize the opportunity for citizen involvement in the planning, development, and execution of the South Carolina CDBG-MIT program.

In order to facilitate citizen involvement, South Carolina has identified target actions to encourage participation and allow equal access to information about the program by all citizens. South Carolina intends to focus outreach efforts to facilitate participation from individuals of low and moderate income, non-English speaking persons, and other disadvantaged populations. The State will publish its Action Plan in Spanish as well as English. In addition to citizen involvement, South Carolina encourages the participation of regional and State-wide institutions.

South Carolina will consider any comments received in writing, via email, or expressed in-person at official public hearing events. Additionally, to permit public examination and public accountability, South Carolina will make the above information available to citizens, public agencies, and other interested parties upon request.

Public Hearings

South Carolina will hold three public hearings during Action Plan development to collect input from citizens and other stakeholders. Notice of public hearings will be announced on the South Carolina Disaster Recovery Office (SCDRO) website, in the local newspapers, and on social media. Public hearings will be held at a time and location convenient to potential and actual beneficiaries. SCDRO will have the capability to take questions and comments in English and Spanish at each of the public hearings. South Carolina will consider any comments or views of citizens received in writing or orally at the public hearing and the responses to those comments are in the Appendix.

Individuals who require auxiliary aids or special assistance at public hearings must make a request at least forty-eight hours in advance of the event to the SCDRO by contacting (803) 896-4068 or DRMitigation@admin.sc.gov. Citizens with hearing impairment can call Relay South Carolina at 7-1-1 for assistance.

Public Hearings schedule is as follows:

Tuesday, November 26, 2019: **Williamsburg County – 6PM to 7PM**
Williamsburg County Complex Auditorium
147 West Main Street, Kingstree, SC 29556

Monday, December 16, 2019: **Horry County – 6PM to 7PM**
Burroughs & Chapin Auditorium, Building 1100
2050 Hwy 501 E., Conway, SC 29526

Tuesday, January 7, 2020:

Charleston County – 6PM to 7PM

Trident Technical College, Palmer Amphitheater
66 Columbus Street, Charleston, SC 29406

Public Notice and Comment Period

Notice of public comment period will be provided by publication on the South Carolina Disaster Recovery Office website. South Carolina will open the citizen comment period for the following timeframes:

- Comment period for the original Action Plan will take place for forty-five (45) days after the publication of the Action Plan to the SCDRO website.
- Comment period for Substantial Amendments will take place for thirty (30) days after the publication of the Substantial Amendment to the SCDRO website.

Action Plan

The Action Plan defines how South Carolina will effectively use all available funding to support a data-driven mitigation effort based on the calculation of need across South Carolina. The Action Plan describes the State's proposed allocation by activity and lays out program design for each area of assistance, as well as identifying the beginning and end dates for each mitigation activity, and performance and expenditure schedules.

Before South Carolina adopts the Mitigation Action Plan, the State will seek public input on program design issues including the amount of assistance South Carolina expects to receive, the range of activities that may be undertaken, the estimated amount that will benefit persons of low-to-moderate income and plans to mitigate displacement.

A summary of all comments received will be included in the final Action Plan submitted to HUD for approval. The final Action Plan approved by HUD will be posted to the SCDRO website.

Amendments to the Action Plan

South Carolina will engage citizens throughout the program lifecycle to maximize the opportunity for input on proposed program changes that result in a Substantial Amendment. Program changes result in a Substantial Amendment when there is:

- An addition or deletion of any allowable activity described in the approved application;
- The addition of a covered project;
- An allocation or re-allocation of more than \$5 million; or
- A change in planned beneficiaries.

Citizens will be provided with no less than thirty days to review and provide comment on proposed substantial changes. A summary of all comments received will be included in the final Substantial Amendment submitted to HUD for approval. Final Substantial Amendments approved by HUD will be posted to the Disaster Recovery website.

For other non-substantial amendments, the State shall notify HUD, but public comment is not required. Every amendment, substantial or not, shall be numbered sequentially and posted on the SCDRO website, not replacing, but in addition to all previous versions of the plan.

Performance Reporting

In accordance with HUD requirements, South Carolina will submit a Quarterly Performance Report (QPR) through the HUD Disaster Recovery Grant Reporting (DRGR) system no later than thirty days following the end of each calendar quarter. No later than three days after submission to HUD, South Carolina will post each QPR on the SC Disaster Recovery Office website. Program QPRs will be posted on a quarterly basis until all funds have been expended and all expenditures have been reported.

Limited English Proficiency

South Carolina is committed to providing all citizens with equal access to information about the recovery program, including persons with disabilities and limited English proficiency (LEP). The State follows HUD's regulation, 24 CFR Part 1, "Nondiscrimination in Federally Assisted Programs of the Department of Housing and Urban Development—Effectuation of Title VI of the Civil Rights Act of 1964," which requires all recipients of federal financial assistance from HUD to provide meaningful access to LEP persons.

Persons who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English may be entitled to language assistance with respect to a service, benefit, or encounter. Where a significant number of non-English speaking residents can be reasonably expected to participate in public hearings or open comment periods, materials to be handed out will be translated into the appropriate language, citizen comments in a language other than English will be translated, and translators will be present.

As a result of initial population analysis, the Action Plan, any ensuing amendments, outreach materials and the application and related guidance materials will be published in both English and Spanish. When needed, the State will use an "I speak" visual chart containing a wide range of language samples for applicants to point to in request for specialized translation services.

Technical Assistance

Upon request, limited technical assistance will be provided by SCDRO program staff. Requests should be made in a timely manner and within the time parameters of the appropriate program design. The State may contract with a Technical Assistance Provider(s) should enough demand for technical assistance warrant.

Citizen Complaint Procedures

The State of South Carolina will handle citizen complaints through a Constituent Services Team, which will act as the program's "Ombudsman." All complaints received by the State, its CDBG-MIT Contractor(s), and/or other program sources, will be reviewed by the Constituent Services Team for investigation as necessary. The Constituent Services Team will ensure complaints are resolved, escalated to appropriate personnel if needed, and any necessary follow-up actions are completed. All complaints will be forwarded to HUD.

The aim of the State will be to always attempt to resolve complaints in a manner that is both sensitive to the complainant's concerns and that achieves a fair result.

The goal of the State and its Constituent Services Team is to provide an opportunity to resolve complaints in a timely manner, usually within 15 business days, as expected by HUD, if practicable, and to provide the right to participate in the process and appeal a decision when there is reason for an applicant to believe their application was not handled according to program policies. All applications, guidelines, and websites will include details on the right to file a complaint or appeal, and the process for filing a complaint or beginning an appeal.

During the program's operations, decisions will be made on housing assistance applications and/or projects to be completed. These decisions will be made based on applicable statutes, codes of federal regulation, State and local codes and ordinances, and program operational procedures, as each is interpreted by the State of South Carolina. During these activities, it is possible that citizens may decide they have a legitimate reason to appeal a decision. Applicants and/or beneficiaries can appeal program decisions related to one of the following activities:

1. A program eligibility determination
2. A program assistance award calculation

Citizens may file a written complaint or appeal through the Disaster Recovery email at ContactSCDR@scdcr.sc.gov or submit by postal mail to the following address:

Attention: Constituent Services
South Carolina Disaster Recovery Office, 632 Rosewood Drive, Columbia, SC 29201

South Carolina will make every effort to provide a timely written response within 15 working days of the receipt of complaint, where practicable. If the complainant is not satisfied by the Constituent Services' response, the complainant may file a written appeal by following the instructions issued in the letter of response. If at the conclusion of the appeals process the complainant has not been satisfied with the response, a formal complaint may then be addressed directly to the regional Department of Housing and Urban Development (HUD) at:

Department of Housing & Urban Development
1835 Assembly Street, 13th Floor, Columbia, SC 29201

State Outreach

During the development of this Action Plan, the State will conduct in-person meetings with key regional stakeholders as well as the general public. The State has conducted meetings with Councils of Government (COGs), county administrators, legislators, public representatives, academic institutions, and other state agencies throughout the development of the mitigation needs assessment, projected budget, activities and program administration as set forth in this Action Plan.

SCDRO began this outreach effort in conjunction with the development of the watershed study that informed the flood-reduction infrastructure activity. Outreach efforts thus far included meeting with approximately 155 people in eight sessions over a one-month period (mid-January 2019 to mid-February

2019) to solicit ideas and input for the Santee and Pee Dee Watershed Study. The meetings were coordinated with and through five of the COGs:

Waccamaw
Santee Lynches

Pee Dee
Lower Savannah

Berkeley-Charleston-Dorchester

At the request of local jurisdictions, SCDRO met separately with Williamsburg County, Horry County, and the City of Sumter.

Ultimately, there were a total of 196 project ideas collected in the meetings, submitted via a drop site, and developed by the watershed study contractor.

SCDRO staff met with the SC Association of Counties, SC Municipal Association and made a presentation to the SC Association for Hazard Mitigation on the status of the planning efforts.

SCDRO staff met with Horry County government officials and citizens at the request of Congressman Rice on October 2, 2019. SCDRO presents information on the mitigation plan development at the SCDRO monthly Stakeholder Briefings.

SCDRO has partnered with and met monthly with the SC Department of Natural Resources and the University of South Carolina Hazard & Vulnerability Research Institute. SCDRO has also been engaged with the SC Emergency Management Division and the State Hazard Mitigation Officer in the development of the CDBG-MIT program.

Targeting Vulnerable Populations

A major priority for the SCDRO is the fair and equitable treatment of the vulnerable populations which are historically neglected during disaster recovery and disaster mitigation activities. To that end, SCDRO has devised a strategy to ensure that CDBG-MIT funds positively impact members of protected classes under fair housing and civil rights laws, racially and ethnically concentrated areas, as well as concentrated areas of poverty. SCDRO has partnered with The South Carolina Hazard & Vulnerability Research Institute to target outreach efforts to maximize the benefit to protected classes. Additionally, SCDRO is coordinating with the South Carolina Commission for Minority Affairs for the purpose of using data-driven outreach efforts to identify areas where concentrations of protected classes exist. The South Carolina Commission for Minority Affairs exists to maintain a comprehensive database of statistics regarding minority populations throughout South Carolina and they utilize this data to inform policy decisions for decision makers in the state.

Of significant concern is long term resiliency and mitigation which may serve vulnerable populations, such as minorities and low-income individuals and households who have historically been discriminated and marginalized by housing policies, lack of public investment, forced into outer, more rural areas due to lack of affordable housing units. Vulnerable populations are also areas that have high concentrations of poverty and minorities, transitional housing, permanent supportive housing, permanent housing serving individuals and families (including subpopulations) that are homeless and at-risk of homelessness, persons with accessibility issues, including transportation and access to healthcare and services that have been

cut off due to poor infrastructure such as roads, those persons with Limited English Proficiency and public transportation, and public housing development areas.

Since the majority of funds will be utilized for the infrastructure and buyout activities, SCDRO has prioritized LMI population served in the scoring mechanisms for these two activities. This LMI prioritization will help to ensure that protected classes will be served through the programs since there is significant overlap between high LMI areas and the locations in which protected classes live. These activities will also serve the rental community in the areas, since infrastructure activities will protect all properties in a given area, and the buyout activity will allow for the purchase of rental housing. For those citizens living in rental housing, SCDRO will comply with the URA to ensure that the citizens are relocated into suitable affordable housing.

SC Counties	1990 Census	2000 Census	2010 Census	Most Recent Data (2018 Census Data)
Berkeley County	12.3%	11.8%	15%	12.8%
Calhoun County	20.1%	16.2%	18.5%	18.4%
Charleston County	17.3%	16.4%	18.7%	14.2%
Chesterfield County	19.3%	20.3%	23.7%	20.9%
Clarendon County	29%	23.1%	27.8%	26.4%
Darlington County	19.1%	20.3%	23.2%	23.5%
Dillon County	28.1%	24.2%	26.2%	32.1%
Dorchester County	11.5%	9.7%	11.7%	11%
Florence County	20.1%	16.4%	21.7%	18%
Georgetown County	20.2%	17.1%	20.3%	19.6%
Horry County	15.2%	12%	19.5%	14.3%
Lee County	29.6%	21.8%	27.1%	28.1%
Marion County	28.6%	23.2%	29.5%	25.5%
Marlboro County	26.6%	21.7%	33.1%	30%
Orangeburg County	24.9%	21.4%	26.7%	25.9%
Sumter County	20.6%	16.2%	20.9%	18.7%
Williamsburg County	28.7%	27.9%	32.2%	26%

Poverty Rates in South Carolina for Program Counties

Counties	LMI Population	Total Population	%LMI (2005-2015 data)	Minority	Hispanic	LEP
Berkeley County	75,420	209,065	36.7%	36.2%	6.5%	1.9%
Calhoun County	7,070	14,713	47.8%	46.2%	3.7%	0.7%
Charleston County	146,130	394,708	40.5%	35.8%	5.1%	1.6%
Chesterfield County	20,975	46,024	46.2%	39.4%	4.2%	1.7%
Clarendon County	14,485	34,017	44.5%	52.5%	3.0%	0.3%
Darlington County	27,615	67,253	41.4%	45.1%	2.0%	0.6%
Dillon County	16,585	30,871	53.5%	54.2%	2.7%	1.7%
Dorchester County	54,175	155,474	37.7%	35.6%	5.2%	0.8%
Florence County	56,040	138,561	41.5%	47.8%	2.5%	0.8%
Georgetown County	25,210	61,605	42%	36.3%	3.1%	0.7%
Horry County	117,495	320,915	40.8%	94.0%	6.0%	1.5%
Lee County	7,885	17,606	47%	67.7%	2.4%	0.3%
Marion County	15,665	31,562	49%	61.4%	2.8%	0.4%
Marlboro County	11,855	27,131	47.6%	60.8%	3.3%	0.2%
Orangeburg County	37,820	88,454	43.1%	66.8%	2.2%	0.3%
Sumter County	39,870	106,995	37.9%	54.6%	3.9%	0.8%
Williamsburg County	14,810	31,794	47.3%	68.8%	2.3%	0.1%

Protected Class Percentages for Program Counties

SCDRO mitigation activities will be coordinated through the local governments in the seventeen eligible counties. Using the data collected by the USC Hazard & Vulnerability Research Institute and the South Carolina Commission for Minority Affairs, SCDRO will target outreach efforts to areas with concentrations of protected classes to encourage those jurisdictions to submit projects for consideration.

SCDRO has a history of serving the most vulnerable citizens in the ongoing 2015 and 2016 CDBG-DR housing programs as evidenced by the table below.

Summary of Construction Complete Applicants		
Demographics	2015 Flood	2016 Hurricane
Race- White	4.55%	6.65%
Race- African-American	92.92%	92.12%
Race- Other	2.54%	1.23%
Female-Led Households	78.97%	83.50%
Households Containing Disabled Members	93.06%	56.65%
Average Applicant Age	69 years	63 years
Average Household Size	1.97	2.12

Program Income

The State does not intend to implement any programs that generate income as described in 24 CFR 570.489. If program income is generated, the State of South Carolina will utilize program income as follows: Income received prior to the grant closeout will be utilized as additional CDBG-MIT funds in the same manner as other CDBG-MIT funds referenced; any income received after the grant closeout, will be transferred to South Carolina's annual CDBG award.

Pre-agreement Activities

The provisions of 24 CFR 570.489(b) and 570.200(h) permits a State to reimburse itself for otherwise allowable costs incurred by itself or its recipients, subgrantees, or subrecipients prior to the release of the CDBG-MIT funding. The provisions at 24 CFR 570.200(h) and 570.489(b) apply to grantees reimbursing costs incurred by itself or its recipients or subrecipients prior to the execution of a grant agreement with HUD. This includes but is not limited to activities supporting program development, action plan

development and stakeholder involvement support and other qualifying eligible costs incurred in response to the activities covered under Public Law 115-123.

The South Carolina Department of Administration incurred pre-award costs and will seek reimbursement for these costs that are reasonable and allowable under this regulation. The Department of Administration intends to recover the pre award costs consistent with the authority cited in this section. These costs include the cost for salary, employer fringe benefits, and direct operating cost for each employee based on their individual percentage of time spent on the planning of the CDBG-MIT program. The total pre-award costs accumulated by the SCDRO were \$239,300 as of December 1, 2019.

Mitigation Pre-award Implementation Plan

The South Carolina Department of Administration is the administrator and fiscal agent for the CDBG-MIT grant. The Department has prior experience in managing HUD funds through the CDBG-DR allocations which preceded the CDBG-MIT award.

The Department of Administration, through the South Carolina Disaster Recovery Office, has existing systems and procedures, as well as formally established monitoring strategies that meet or exceed regulatory requirements including those related to HUD program rules and regulations, civil rights, environmental, labor standards, fair housing, citizen participation and recordkeeping.

South Carolina will manage grant funds responsibly, efficiently and transparently. The State has the financial management systems, policies, procedures and practices necessary to uphold fiscal responsibility as detailed in this Implementation Plan.

Financial Controls

The State of South Carolina certifies proficiency in financial management using established financial systems and internal controls. The sections below provide further description of existing risk management measures.

Additional information can be found in the HUD Financial Management Guide, completed by the State, which answers specific questions about financial standards and which personnel, or unit are responsible for each item. The completed guide and accompanying procedures will be submitted to HUD in addition to the Action Plan and Implementation Plan.

Single Audit

The State of South Carolina is in full compliance with Single Audit requirements. The State's annual expenditures are consistently reviewed every year by the Office of the State Auditor to evaluate whether the State's major federal programs follow laws, regulations, contracts and grant rules as applicable to each program. The State maintains reports and working papers for each annual report for a minimum of three years from the date of submission to the Federal Audit Clearinghouse.

South Carolina will monitor subrecipients for compliance with financial administration requirements in accordance with Single Audit requirements previously stipulated in OMB Circular A-133, now codified in 2 CFR 200, Subpart F. The Department requires all program subrecipients who expend more than \$750,000 in federal funds during the fiscal year to submit their Single Audit review through the State's Federal Audit Clearinghouse or directly to the State for review for material weaknesses and findings or concerns. Subrecipient compliance with audit requirements has been and will continue to be maintained through an internal monitoring tracking system updated on a routine basis. This system was designed as part of a corrective action plan to a Single Audit Finding in the South Carolina Statewide Single Audit for the Year Ended June 30, 2015. The audit identified that one of the programs subrecipients failed to provide the State with a copy of their Single Audit by the deadline.

The State's Single Audit is available at: <https://osa.sc.gov/wp-content/uploads/2019/03/18-Single-Audit-Report.pdf>

Financial Management Systems

South Carolina Department of Administration maintains accounting and grants management systems to support a multi-functional grants management program. These systems provide accurate, current and complete disclosure of the financial status of each CDBG-DR and CDBG-MIT supported activity, according to the terms and conditions of the Grant Award Agreement. These systems are audit-tested and confirmed to meet all Federal and State requirements.

Recipient accounting records are supported by source documentation stored in compliance with record-keeping requirements. South Carolina has financial record-keeping practices to retain source documentation for accounting records that will be applied to the CDBG-MIT program to ensure records adequately identify the source and application of CDBG-MIT funds provided and maintain source documentation to evidence the costs incurred and dates of expenditure.

Internal Controls

The Department has existing policies and procedures meeting financial management requirements including applicable regulations and requirements, financial accountability and records, authorized signatures for payments and checks, requests for payments, bank accounts and checks, escrow accounts, administrative costs, property management, and audit requirements. The department has cash management procedures in place that minimize the elapsed time between receipt and disbursement of CDBG funds.

The organizational structure encompasses risk management measures that establish clear lines of authority and approval, segregation of duties, separation of key processes and authorization and secure access to financial resources. The program financial division is overseen by the Chief Financial Officer with sub-divisions for Financial Monitoring & Compliance, and Financial Management. A full organizational chart can be found in the Capacity and Staffing section of this plan.

In summary, the Department's internal controls are set up for responsible management of CDBG-MIT funds and support the prevention of fraud, waste and abuse to ensure:

- No person involved in the program decision-making obtains financial benefit
- No single-point sign-off of significant transactions
- Separate recordkeeping for mitigation funds versus general accounting operations
- Reconciliation of accounts performed by employees not responsible for handling payroll preparation and issuance of paychecks
- Hiring procedures match required financial skill sets to position descriptions
- Policies and procedures are in place to maintain effective control and accountability for all cash, real and personal property and other assets
- Policies and procedures are in place for controlled access to assets and sensitive documents
- Reasonable measures are in place to safeguard protected personally identifiable information (PII)

Procurement

Procurements for CDBG-MIT programs are governed by those specific procurement requirements set forth under 24 CFR Part 570, Part 85, 2 CFR 200.318-200.326 and all applicable State laws and regulations. Aligned with the requirements of these federal regulations, when procuring property or services to be paid for in whole or in part with CDBG-DR or CDBG-MIT funds, South Carolina will follow its own procurement policies as those procedures are as stringent, or more so, than the federal procurement requirements. Furthermore, the State shall ensure that each procurement occurs with full and open competition.

South Carolina has a two-tiered procurement system for State agencies. Agencies have direct authority to make purchases below a certain dollar threshold. Above that amount (which differs for each agency), procurements are conducted under the authority of a central procurement office that serves all State

agencies covered by the South Carolina Consolidated Procurement Code. Known as Procurement Services, this office involves three subdivisions with purchasing authority: The Office of the State Engineer (OSE), the Information Technology Management Office (ITMO), and the State Procurement Office (SPO).

The policies and procedures shall also include ethical standards of conduct governing employees engaged in the award or administration of contracts. Recipient will maintain a written code of standards of conduct governing the performance of their employees engaged in the award and administration of contracts. Conflict of Interest provisions listed at 24 CFR Part 85.36 (3) and all other applicable federal regulations will be incorporated.

Generally, the governing statutes can be found at *Title 11, Chapter 35 of the South Carolina Code of Laws*. Procurements subject to the South Carolina Procurement Code (S.C. Code Ann. § 11-35-10 et. seq. 1976, as amended) are also governed by procurement regulations promulgated by the South Carolina Revenue and Fiscal Affairs Authority, which are available in Article 19 of the South Carolina Code of Regulations. (The Procurement Regulations begin at Regulation 19-445.2000.) Methods of procurement (e.g., small purchase, sealed bids/formal advertising, competitive proposals, and noncompetitive proposals) and their applicability shall be specified by the State.

As outlined in the following table and in the South Carolina Procurement Code and Regulations, the State uses a variety of competitive source selection processes, including three simplified "small purchase" procedures, five standard competitive procedures (competitive sealed bidding, competitive best value bidding, competitive fixed price bidding, competitive on-line bidding, and competitive sealed proposals), qualification based selection procedures for the acquisition of construction-related professional design services; and, indefinite delivery contracts for construction and related design services. A primary focus for the State is that opportunities be made available for small and minority businesses. Accordingly, the State maintains a robust Small & Minority Business Contracting and Certification Program.

South Carolina's procurement policies of the State align with the requirements set forth under 2 CFR 200.318-200.36 ensuring fair and open competition. Further ensuring consistency with federal requirements, South Carolina shall ensure that all purchase orders and contracts include any clauses required by Federal statutes, executive orders and implementing regulations. The full set of South Carolina procurement processes and the laws and regulations applicable thereto can be located at <http://procurement.sc.gov/legal/procurement-law>.

The following table provides a cross-reference between the federal regulatory requirement and its counterpart under South Carolina's procurement law:

<i>Federal Citation</i>	<i>Short Title</i>	<i>South Carolina Consolidated Procurement Code & South Carolina Budget and Control Board Regulations 19-45-445, et seq.</i>	<i>Short Title</i>
2 CFR 200.318	<i>General Procurement Standards</i>	§11-35-20	<i>Purposes and Policies</i>
2 CFR 200.319	<i>Competition</i>	§11-35-20(a)-(h)	<i>Purposes and Policies</i>
2 CFR 200.320	<i>Methods of Procurement to be followed</i>	§§11-35-1510-1580	<i>Methods of source selection; Methods of Procurement to be followed including, but not limited to, Micro Purchases (§11-35-1550(2)(a)), Small Purchases, Competitive Sealed Bidding, Competitive Proposals and Non-Competitive Proposals/Sole Source</i>
2 CFR 200.321	<i>Contracting with Small, Minority, Women Owned Bus.</i>	§§11-35-5010; 11-35-5210; 11-35-5230; 11-35-5240; 11-35-5260; 11-35-5270	<i>Article 21: Assistance to Minority Businesses; includes: Statement Policy/Implementation, Regulations for negotiations with State Minority Firms; MBE Utilization Plan; Reporting; Division of Small/MBE Certification</i>
2 CFR 200.322	<i>Procurement of Recovered Material</i>	§11-35-3810; 19-445.2150	<i>Surplus Property Management</i>
2 CFR 200.323	<i>Contract Cost and Price</i>	§§11-35-2010(1); 11-35-3510; 11-35-1830; 11-35-1210(2)(C); 11-35-1550(2)(a); 11-35-1830; 11-35-3040; 11-35-3050; 11-35-3410(2)(a); 11-35-5230(a)(5)	<i>Cost and/or Pricing Data; Contract Price Adjustments; Cost Principles; Fair and Reasonable Price Minority Firms</i>
2 CFR 200.324	<i>Federal Awarding or pass-through Entity review</i>	<i>(Compliance with this reg. to be achieved through execution of implementation of grant agreement with HUD)</i>	
2 CFR 200.325	<i>Bonding Requirements</i>	§11-35-3030; 19.445-2145(C)(M)	<i>Bond and Security</i>
2 CFR 200.326	<i>Contract Provision</i>	§11-35-3040	<i>Contract Clauses and their Administration</i>

Duplication of Benefits

In accordance with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act*, Public Law 93-288 as amended, 42 U.S.C. 5121-5207, the State will implement policies and procedures to ensure no individual receives duplication of benefits (DOB) for the same purpose and/or effect to recover from the disaster through the CDBG-MIT funds. Federal law prohibits any person, business concern, or other entity from receiving Federal funds for any part of such loss as to which he has received financial assistance under any other program, from private insurance, charitable assistance or any other source. The State has a program policy manual with guidance that funds determined to be a duplication of benefit will be deducted or otherwise offset from the amount of assistance available to the applicant through the CDBG-MIT programs.

To prevent DOB, the State will require that all sources (federal, State, local, private) and amounts of disaster assistance received or reasonably anticipated to be received are documented with submission of an application for CDBG-MIT funding. The State will procure a qualified vendor to implement DOB procedures in review of each application. The hired vendor will perform a basic calculation known as the Housing Assistance Award Calculation which is completed by: (1) Determining each applicant's mitigation need; and then (2) Reducing that remaining mitigation need by previously received funding for housing recovery if for the same purpose as the mitigation need, if any (less amounts expended on Allowable Activities). This activity will be monitored for accuracy and completeness by the State Monitoring and Compliance division.

The State will consider all amounts received/approved from alternate sources such as FEMA, insurance coverage, SBA and/or philanthropic organizations used to make repairs due to a declared disaster damage since the 2015 severe storms. Duplication of benefit for housing programs will only consider other sources of funding pertaining to structural damage caused by the disaster, assistance for contents and personal items will not be considered duplication. The State currently has secured data sharing agreements with FEMA and SBA to ensure the most recent assistance data is used in confirming other Federal assistance.

All applicants will be required to sign a Subrogation agreement upon application to the program. Applicant awardees must subrogate any additional funds received for the same purpose as the CDBG-MIT funding.

Timely Expenditure

Timeliness of expenditure for the grant funds under Public Law 113-123 is defined as 6 years from the time of HUD's execution of the grant agreement for the first 50% of funds and all funds expended within 12 years of the grant agreement. South Carolina will comply with this timeline by implementing effective budgeting and maintenance of expenditure projections. Within the 12-year grant timeline, there are also requirements for prompt payment as part of the general financial management process. The State will reconcile these projects with actual transactions as tracked in the general ledger on a regular and frequent basis.

The State will track expenditure projections monthly over the life of the award utilizing the HUD-provided Projection of Expenditures and Outcome Template, in conjunction with the Disaster Recovery Grant

Reporting (DRGR) system. South Carolina will submit a complete projection of expenditures within 120 days after the initial Action Plan has been submitted through the DRGR system. Revised projections will be sent to HUD when program changes impact projected outcomes, funding levels, and recovery timelines.

The State of South Carolina has adequate databases and procedures in place to monitor program expenditures, track timeliness of expenditures, evaluate grant recipient performance, and monitor overall financial and programmatic compliance status of HUD grant funds. The State has existing, mature systems in place to administer HUD CDBG grants, which have been audit-tested and received no findings from HUD regional or OIG audit teams.

The State will manage financial transactions through the SCEIS record system and will use either its existing grants management system or an alternative file or record system operated by the Implementation Contractor who may undertake implementation of the State's CDBG-MIT grant, provided that the alternative system can provide comparable utility with respect to financial and programmatic grant management. The grants management system contains extensive detail about grant-funded projects and is used to generate award documents, financial reports, voucher summaries, fiscal and program year HUD grant financial status reports. It is also used to generate payment vouchers when pay requests are received from grant recipients. For HUD CDBG grants, these vouchers are entered into the State's SCEIS financial database and then into the HUD database.

With respect to timely expenditures, the State will track expenditure projections based on the date the HUD CDBG-MIT grant is signed, award dates for all subrecipients of CDBG-MIT funds, payment request dates and amounts, and date funds are received from HUD. Other data elements will be added as necessary to provide information sufficient to monitor timeliness of recipient expenditures, time elapsed since last recipient draw, time elapsed since recipient grant award, percent of recipient grant drawn compared with progress on the funded project, as indicated by recipient status reports, etc. Grants which appear to be lagging will be evaluated and, consistent with the State's CDBG-MIT Action Plan, either: a) provided technical assistance to remediate their slow progress state, b) terminated if the project appears to be stalled at startup and the Action Plan allows for re-award to other eligible recipients, or c) the project scope will be reduced and the recipient award reduced as necessary and recaptured funds re-obligated to other eligible projects and recipients. As with the State's existing CDBG Program, the focus will be on identifying fast-moving projects and recipients that have already demonstrated competence in expeditiously moving projects forward, drawing funds and moving projects toward completion.

Consistent with the State's CDBG-MIT Action Plan, the goal will be to obligate funds that will be available for recipients (i.e., excluding funds set-aside for program administration) as soon as possible in order to maximize the amount of time new recipients have to implement projects and expend available funds. Recipients will be required, as they are for the State CDBG Program, to identify under-budget contracts, changes in beneficiary eligibility, project scope changes, etc. as soon as possible. This will allow the State to identify funds recipients are not expected to draw, permitting the State to identify recipients with on-track projects where recaptured funds can be redirected, and reduce funds awarded to non-performing recipients or recipients at risk of non-performing. Where necessary, the State will identify additional

eligible recipients and projects (per the State's CDBG-MIT Action Plan) that have existing funded projects and require additional funding for new/expanded project activities, or that have projects that can move forward immediately. This will allow for the State to expeditiously expend funds to accomplish program goals while complying with all applicable requirements.

Management of Funds

Monitoring will be conducted by the Department of Administration and the SCDRO based on a pre-defined risk analysis and will be conducted on a frequency as determined by the analysis which will include frequent desk review and periodic on-site visits. SCDRO will monitor funds using the HUD Disaster Recovery Grant Reporting (DRGR) system and meetings hosted by the Director of Support and Reporting Manager (DRGR Specialist). Audit functions will be conducted by the designated Department of Administration auditors as outlined in the Financial Roles section of this document. The risk analysis will consider criteria consistent with HUD guidance and individualized risk mitigation strategies will be prepared for each funding recipient. The State will follow steps for identifying risks that include the following:

- Identify what CDBG-MIT projects and performance areas are to be assessed;
- Ensure that risk is identified and analyzed;
- Assign weight to risk factors;
- Develop rating criteria and methods to assessing risk;
- Determine rating by factor;
- Establish criteria for risk "profiles" for each Funding Recipient;
- Compile scores and rank organizations; and
- Utilize resources for monitoring and risk mitigation.

The State may initiate additional, unscheduled monitoring efforts at any time based on analysis of risk indicators. The State will utilize existing processes for the annual CDBG program for conducting on-site reviews that include written monitoring and technical assistance guidelines, checklists, and policies and procedures. Project files will be reviewed for compliance with HUD requirements.

In July 2015, the HUD field office reviewed monitoring procedures, execution of those procedures and adherence to guidance and timelines for the state's annual CDBG program administered by the South Carolina Department of Commerce. The final audit report determined the State's oversight and monitoring program to-be in compliance with HUD standards. In the HUD On-Site Monitoring Report conducted July 2015, HUD determined "that the State's oversight/monitoring of its recipients meets the standards found at 24 CFR 570.492 and the Housing and Community Development Act (HCDA) Section 104(e)(2) to conduct reviews and audits of its recipients to determine compliance with applicable laws and Title 1 regulation." A copy of the report can be found attached to this plan in appendix format. SCDRO will continue to use similar procedures and processes to manage and audit funds for this grant.

Contractor compliance will be maintained through the review and approval of monthly project performance reports, financial status reports, and documented requests for reimbursement throughout the contract period. The State will utilize the HUD- provided contract reporting template for upload to the DRGR on a quarterly basis: <https://www.hudexchange.info/resource/3898/public-law-113-2-contract-reporting-template/>.

Beginning shortly after commencement of contracted activities, risk-based on-site monitoring will occur as appropriate to contracted activities and award amounts. At least one on-site monitoring visit will occur prior to project completion, to verify funds were expended appropriately.

All program activities will meet HUD requirements for national objectives, which will be supported by documentation in the program file system of record. South Carolina will not undertake activities other than those activities authorized by the CDBG program CFR 570.201-206. Examples of ineligible activities include:

- Buildings for the general conduct of government,
- General government expenses,
- Financing for partisan political activities,
- Purchases of equipment,
- Purchases of personal property, and
- Operating and maintenance expenses for public facilities except as permitted by the waiver in Section V.A.9, 84 FR 45838, at 45855.

South Carolina is dedicated to prioritizing assistance toward residents that face the most financial barriers to recovery and fully intends to comply with the HUD Low-to-Moderate Income (LMI) national objective requirement of 50% of the total grant. Residents will be required to provide household income information and supporting documentation at the time of application for processing and verification. South Carolina will apply a methodical approach to applicant assistance that assigns priority to program applicants based on household income and other social vulnerability factors. Mitigation funds will be accounted for in order of ranked priority to allow program staff to consistently budget funds toward the most feasible beneficiaries, in as fluid a manner as possible.

The State has a Director of Internal Audit on staff. The audit staff overseen by the Director of Audit will perform a full compliance and financial audit review. The auditor will review files and test for compliance with financial standards and procedures including procurement practices and adherence to cost reasonableness for all operating costs and grant-funded activities. All program expenditures will be evaluated to ensure they are:

- Necessary and reasonable;
- Allocable according to the CDBG contract;
- Authorized or not prohibited under State/local laws and regulations;
- Conform to limitations or exclusions (laws, terms, conditions of award, etc.);
- Consistent with policies, regulations and procedures;
- In accordance with appropriate professional accounting standards;

- Adequately documented; and
- Treated consistently (with non-CDBG costs).

The State of South Carolina is dedicated to the prevention of fraud, waste and abuse. All suspected cases of fraud will be taken seriously and reported to the South Carolina Office of the Inspector General for further investigation: <http://oig.sc.gov/Pages/default.aspx>.

Comprehensive Mitigation Website

In accordance with HUD requirements, South Carolina will maintain a public-facing website with program information pertaining to applicants and stakeholders posted on an ongoing basis. Website information will be updated on an as needed basis, and at a minimum monthly. The initial website will reside on the South Carolina Disaster Recovery Office website at <http://www.scdr.sc.gov> during action plan development and program setup. The State plans to design, launch and maintain a customized program website shortly after execution of the Grant Agreement and program implementation begins. The public website serves as a central source for program information and transparency in the management of federal dollars. It is a powerful tool for public participation and engagement.

The State of South Carolina follows ADA-compliant standards for website accessibility and readability. Content and webpage layout is designed with best practices for adaptive aids use in mind. The State also supports accommodation for citizens with limited English proficiency and will publish program documents to the public website in languages other than English based on the need of non-English speaking communities.

The Department of Administration maintains ownership of the Department's current website and is involved in publishing all content to the page in cooperation with SCDRO staff. Content for the site will be generated from all aspects of the program and will be drafted by operational staff with purview over the subject matter. All content will undergo draft review before final approval prior to posting. The following program information that will reside on the website includes but is not limited to:

- Announcement of Public Hearings will be posted to the website as well as local newspapers.
- Action Plan for Mitigation will be posted to the SCDRO website for no less than 45 calendar days to solicit public comment before being submitted to HUD. The final approved Action Plan will then be posted to a permanent section on the website designated for Action Plans and Amendments.
- The DRGR Action Plan will be posted to the program website once established.
- Substantial Action Plan Amendments will be posted on the SCDRO website for no less than 30 calendar days to solicit public comment before being submitted to HUD. The final approved Action Plan Amendment will then be posted to a permanent section on the website designated for Action Plans and Amendments.
- Non-substantial Action Plan Amendments will not be posted for public comment. These Amendments will be posted to a permanent page designated for Action Plans and Amendments.
- Each Quarterly Progress Report (QPR) will be posted to the program website within 3 days of being submitted to HUD.
- The Citizen Participation Plan will reside permanently on the program website.

- An electronic portal for citizen complaints and concerns will be located on the program website.
- Program announcements will be posted to the program website on a rolling basis as approved by the Program Director.
- Executed contracts.

Timely Information on Application Status

South Carolina will implement a centralized application management system with real-time access to application status. Applicants can obtain timely communication about their application status at any time during operational hours by contacting a case manager via telephone, leaving an after-hours voicemail message to be returned the following business day, or by submitting an email inquiry.

Case managers will be available for face-to-face intake meetings as requested by the applicant. Accommodations can be made ahead of time for applicants with physical disabilities and/or a need for translation services.

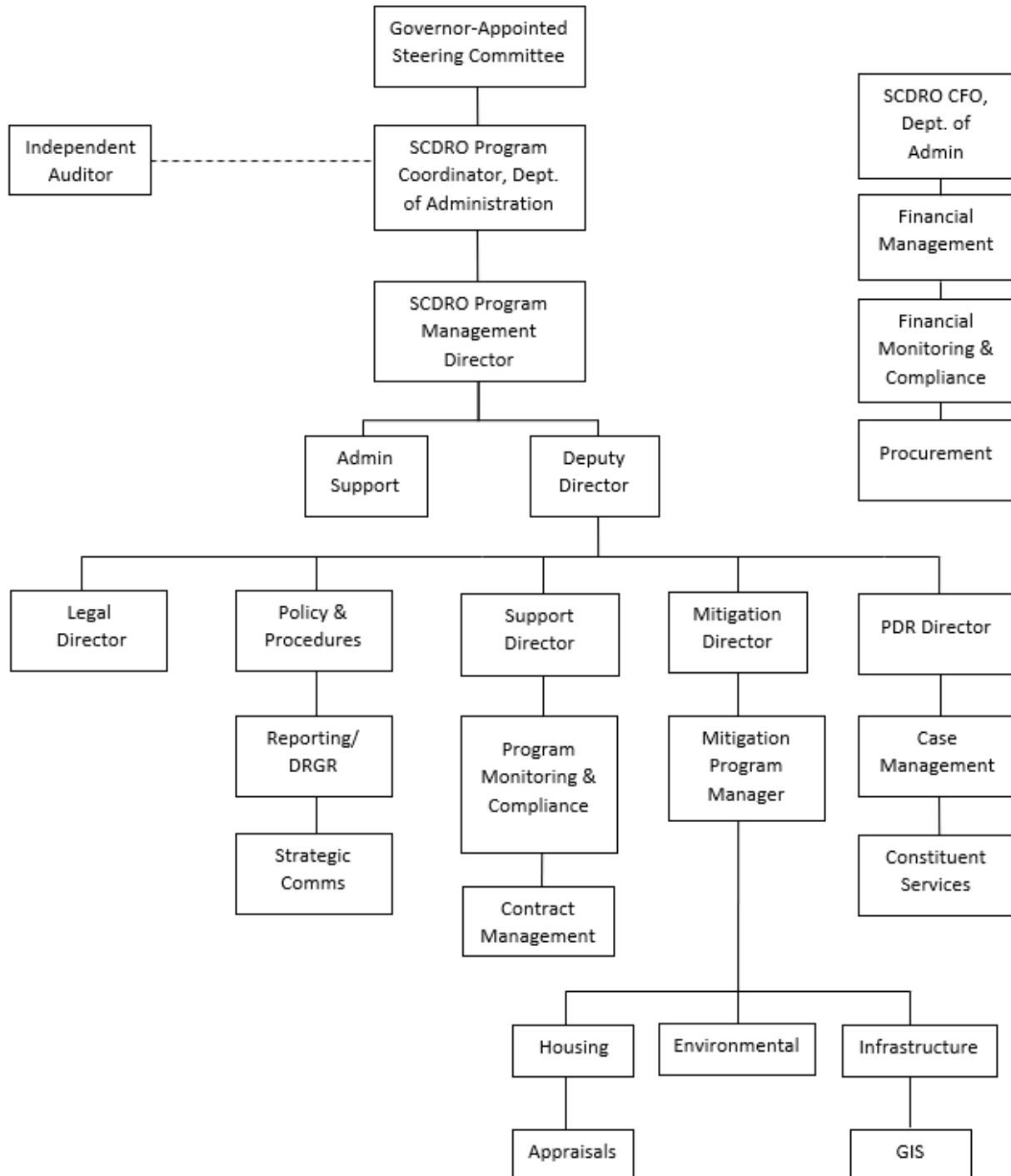
Proactive communication from the program regarding application status will occur on a frequent basis during initial intake. At which time, program staff will proactively contact applicants to request missing eligibility documentation and verify information entered on the application form. Once all documentation is received, verbal communication may subside until the applicant is contacted through an official letter with information regarding eligibility.

The State will also institute a Constituent Services Team focused on resolving complaints in a timely manner, usually within fifteen (15) business days, as expected by HUD, if practicable. The Constituent Services Team protects the applicant's ability to participate in the process and appeal a decision when there is reason for an applicant to believe their application was not handled according to program policies. All applications, guidelines, and websites will include details on the right to file a complaint or appeal, and the process for filing a complaint or beginning an appeal. As required, SCDRO will forward all complaints received to HUD.

Capacity Assessment & Staffing

South Carolina has conducted a thorough capacity assessment and developed the current administrative structure (as shown below) for positions to support critical management, oversight and implementation.

South Carolina DRO: Administrative Structure



Key staff members, particularly those in the financial management section, have prior experience with the October 2015 and 2016 CDBG-DR programs. The position descriptions outlined below align with the functional areas identified in the organizational chart and may include technical SCDRO titles not detailed in the organizational chart. SCDRO intends to fill all vacant Mitigation positions within 30 days of the Action Plan approval from HUD. SCDRO positions are as follows⁴⁴:

The South Carolina Disaster Recovery Steering Committee - In Place

The State Disaster Recovery Steering Committee advises the South Carolina Disaster Recovery Office (SCDRO) regarding general directives, strategic policy decisions and prioritization of the State's recovery and HUD-funded mitigation efforts. SCDRO represents diverse interests across the State, communicates and coordinates services and events, and provides strategic planning for the recovery response.

The State Disaster Recovery Steering Committee members are selected by the Governor. Members of the Committee elect the chairperson.

SCDRO Program Coordinator – Filled

The State Disaster Recovery Program Coordinator ensures that the program activities align to the State Disaster Recovery Steering Committee's general directives, strategic policy decisions and prioritization. The SCDRO Coordinator also ensures proper and adequate evaluations of programs, provides for financial solvency and security; preserves independence and enhances the public image among all constituencies. The SCDRO Coordinator functions in the accountable role of Chief Executive Officer and signatory.

SCDRO Program Management Director - Filled

The SCDRO Program Management Director directs, implements, coordinates, and advocates disaster recovery goals, objectives, and outcomes set by the State. The SCDRO Program Management Director takes a holistic view of implementation as sets of project activities, linking internal local government activities with those of the community's stakeholders to ensure progress and completion of outcomes identified in State plans, strategies, or other recovery objectives. This position reports to the SCDRO Program Coordinator, who serves as Executive Officer of the program.

SCDRO Deputy Program Management Director- Filled

The SCDRO Deputy Director directs, implements, coordinates, and advocates disaster recovery goals, objectives, and outcomes set by the State. The Deputy Director provides overall management, strategic operations, administrative support, and communication for the recovery effort. The Director provides executive direction to ensure efficient administrative and operational oversight of readiness and field operations. Leads the conceptualization, development, coordination, and evaluations of policies to ensure program coordination guidance and policies are in alignment with State Action Plan.

⁴⁴ The organizational chart and corresponding positions outlined in this plan may be modified as needed throughout the implementation process as warranted by the needs of program.

Administrative Assistant - Filled

This position provides administrative support for the Disaster Recovery Management Director and Disaster Recovery Office. In addition to typing, filing and scheduling, performs duties such as financial record keeping, coordination of meetings and conferences, recording and transcribing steering committee minutes, obtaining supplies, coordinating mailings, and working on special projects. Also, answers non-routine correspondence and assembles highly confidential and sensitive information. Deals with a diverse group of important external callers and visitors as well as internal contacts at all levels of the organization.

Mitigation Director - Filled

The SCDRO Mitigation Program Management Director directs, implements, coordinates, and advocates mitigation and resiliency goals, objectives, and outcomes set by the State. The SCDRO Mitigation Program Management Director takes a holistic view of implementation as sets of project activities, linking internal local government activities with those of the community's stakeholders to ensure progress and completion of outcomes identified in State plans, strategies, or other recovery objectives. This position reports to the SCDRO Program Management Director.

Mitigation Program Manager - Filled

The SCDRO Mitigation Program Manager directs, implements, coordinates, and advocates mitigation and resiliency goals, objectives, and outcomes set by the State. The Mitigation Program Manager serves as the Deputy Mitigation Director focusing on engaging State, County, Municipal and Community leaders to educate, inform and gain assistance in the disaster recovery process. Links internal government activities with those of the community's stakeholders to ensure progress and completion of outcomes identified in State plans, strategies, or other recovery objectives. Directly oversees the execution of the SCDRO Mitigation Program Delivery.

Administrative Coordinator I - Vacant

This position provides administrative support for the Disaster Recovery Management Director and Disaster Recovery Office. In addition to typing, filing and scheduling, performs duties such as data input, financial record keeping, coordination of meetings and conferences, recording and transcribing board minutes, obtaining supplies, coordinating mailings, and working on special projects. Also, answers non-routine correspondence and assembles highly confidential and sensitive information. Deals with a diverse group of important external callers and visitors as well as internal contacts at all levels of the organization.

Infrastructure Program Manager (Engineering Associate II) - Vacant

The Infrastructure PM provides overall management, strategic operations, administrative support, and communication for the infrastructure mitigation effort. The Infrastructure PM provides recommendations on complex projects. Prepares and reviews designs, drawings, plans and specifications for construction projects. Supervises field studies or surveys to collect technical data. Writes environmental permits. Leads the conceptualization, development, coordination, and evaluations of policies to ensure program coordination guidance and policies are in alignment with State Action Plan.

State Appraiser I - Vacant

The State Appraiser will determine the fair value for county or state tax for the Mitigation Buyout program. This individual will work closely with the staff attorney to develop and execute the buyout strategy for the project counties. Completes forms and records. Researches legal records to determine current ownership and land areas for appraisal. Appraises selected properties and prepares reports pertaining to appraisals.

Engineering Associate I (Housing) - Vacant

The Engineering Associate I (Housing) is responsible for basic SC Disaster Recovery Office (SCDRO) work products and project management techniques. The Coordinator manages various complicated projects under the direction of a higher-level management for the Mitigation Housing Projects.

Engineering Associate I (Infrastructure) - Vacant

The Engineering Associate I (Infrastructure) is responsible for basic SC Disaster Recovery Office (SCDRO) work products and project management techniques. The Coordinator manages various complicated projects under the direction of a higher-level management for the Mitigation Infrastructure Projects.

GIS Analyst – Vacant

The GIS Analyst collects, analyzes and interprets geographic information provided by geodetic surveys, aerial photographs, and satellite data. Researches and prepares maps and other spatial data in digital or graphic form. Performs data acquisition, entry, update and quality checking for the overall SCDRO Mitigation Program.

Engineering Associate I (Environmental Coordinator) – Vacant

The Environmental Coordinator will review, assess and prepare required records for the execution of the Mitigation Operations and associated construction management projects relative to environmental requirements (i.e., State Historical Preservation Office). Conducts field studies or surveys to collect data. Leads field inspection of construction projects. Prepares technical reports.

Program Coordinator II – Filled

Overall facilities coordinator. Has in-depth knowledge of headquarters and remote facilities infrastructure to maintain continuity of operations for employees. Responsible for coordinating and implementing headquarters and remote location network connectivity. Responsible for troubleshooting and resolving moderate complex IT issues. Assists with evaluating technologies and makes recommendations for adoption.

Project Coordinator - Vacant

The Project Coordinator is responsible for basic SC Disaster Recovery Office (SCDRO) work products and project management techniques. The Coordinator manages various complicated projects under the direction of a higher-level management.

Operations Specialist – 2 Filled

The Operations Specialist provides technical support and leadership to other managers within the Disaster Recovery Coordination Office; ensures that the highest quality of customer service is provided at all of the delivery systems within the Office; provides administrative support in areas of compliance, project management, training and development, regulations, policies and procedures.

Director of Support - Filled

The Director of Support works with vendors, suppliers of goods and services through every phase of vendor contract performance. From negotiation to termination, job duties include reviewing proposals, evaluating compliance with requirements and regulations, maintaining communication to ensure timely execution, and analyzing contract documents. The Director of Support also provides guidance to and supervises team members on contracts administration, compliance monitoring, concepts and regulations.

Policy and Procedure Manager - Filled

This position is responsible for developing manual practices, policy and procedures that interpret applicable Federal and State statutes, Action Plans, rules and regulations governing Community Development Block Grant-Disaster Recovery Program (CDBG-DR) and CDBG-MIT eligibility, case maintenance and management.

Research Manager - Filled

The Research Manager performs highly specialized work in complex data management and statistical systems such as the Disaster Recovery and Grant Reporting Systems (DRGR Systems) and other data management systems and projects for the SC Disaster Recovery Office. The Analyst assists in the preparation of databases which provides current information regarding the program activities underway including funding data and must be able to develop and analyze complex reports.

Legal Director - Filled

The Legal Director provides legal counsel and guidance to the Disaster Recovery Office on the development of disaster recovery plans and the implementation of activities. The Legal Director represents the Disaster Recovery Office in any litigation matters and supervises the legal staff.

Attorney III - Filled

The Legal Advisor provides legal counsel and guidance to the Disaster Recovery Office on the development of disaster recovery plans and the implementation of activities. The Legal Advisor assists in the completion of closing packets for buyouts and real estate transactions conducted by the SCDRO.

Paralegal – Filled

The Assistant Legal Advisor assists in providing and researching legal counsel and guidance to the Disaster Recovery Office on the development of disaster recovery plans and the implementation of activities. The Assistant Legal Advisor represents the Disaster Recovery Office in the absence of the Legal Advisor.

Legal Specialist – Filled

The Legal Specialist assists in drafting memos and documents for the legal department. The Legal Specialist is responsible for filing deeds and covenants.

Case Management Director - Filled

The Case Management Director provides supervision and general guidance to the Constituent Services Team and the Case Management Team.

Constituent Services Lead - Filled

The Constituent Services Lead serves as Ombudsman for the Disaster Recovery Office (DRO). This position manages the process for providing accurate and timely interaction/response to constituents. Communicates and facilitates processes in support of effective interaction between the DRO and the public. The Lead develops and implements comprehensive communications plans relating to researching, managing and resolving constituent complaints and concerns.

Constituent Services Assistant – 2 Filled

Constituent Services Assistant receives complaints from the public by phone, mail and in person, makes referrals to other agencies and assists in informal resolution of complaints. Investigate complaints concerning disaster recovery operations. Performs research, formulates objective opinions, and makes recommendations for corrective action, preventative measures and the promotion of competency, efficiency, and equity in mitigation efforts. Performs various administrative functions in the office of the ombudsman.

Case Management Supervisor – Filled

The Case Management Supervisor provides general supervision to the Case Managers, providing planning and coordination to ensure that the Case Managers successfully execute their mission.

Case Managers – 6 Filled

The Case Manager coordinates the communication with housing clients being served by the State's Housing Programs from intake to project closeout. The Case Manager notifies applicants about important timeline events such as contract signings, move out dates, and move in dates. The Case Manager forwards complaints concerning operations to Constituent Services for review.

Compliance Manager – Filled

Compliance Manager schedules work products for the Compliance Monitors and provides general supervision for the compliance staff. The Compliance Manager reports to the Director of Support.

Compliance Monitor – 6 Filled

Compliance Monitors conduct desktop reviews and field inspections through every phase of vendor contract performance. Compliance monitors' job duties include reviewing job sites, evaluating compliance

with requirements and regulations, and maintaining communication to ensure timely correction of noted deficiencies.

Financial Management Roles

Chief Financial Officer – Filled

The Chief Financial Officer Directs and oversees all aspects of the Finance, [Procurement](#) and Accounting functions of the program. This position is responsible for directing the development and establishment of policies and procedures as it pertains to finance and accounting.

Finance Manager – Filled

The Finance Manager is responsible for managing both grants and contracts for agency services; monitors compliance with contractual provisions. Performs managerial professional duties in accounting, budgeting or finance.

Fiscal Analyst II – 2 Filled and 2 Vacant

The Fiscal Analyst performs professional duties in the creation and maintenance of accounting records the verification and documentation of financial transactions or the preparation and management of program budget.

Director of Internal Audit – Filled

The Director of Internal Audit will direct and manage a professional staff in conducting audits, investigations and evaluations of the administrative, financial and operational activities of the program.

Internal Auditor 3 Filled

The Internal Auditor will perform audits or oversees audits of financial records, electronic data processing systems and program activities and operations to ascertain financial status, accuracy of data, efficiency or compliance with laws and regulations.

Additional Capacity

Given the potential complex nature of some of the projects undertaken with CDBG-MIT funding, the state may procure technical expertise to fill any knowledge gaps identified during the execution of the CDBG-MIT program.

SCDRO has partnered with the South Carolina Department of Natural Resources (SCDNR) to provide guidance and technical expertise on issues involving floodplain management.

Internal and Interagency Coordination

The SCDRO will utilize its current Interagency and Stakeholder Recovery Coordination Group to continue a multi-stakeholder approach. The monthly Interagency and Stakeholder Recovery Coordination Group consists of Long-Term Recovery Group members, VOADs, Charitable and Non-Profit groups, Disaster Case Managers, the SC DHEC, SCEMD, SCDNR, and representatives from county emergency management offices. This multi-agency formation has been key to considering recovery and mitigation from a holistic perspective. Their feedback has generated changes and improvement in SCDRO's policies and procedures.

Additionally, SCDRO will coordinate with the SCEMD and the State Hazard Mitigation Officer (SHMO) as it pertains to the development of the state Hazard Mitigation Plan, and the implementation of the CDBG-MIT Grant Program. SCDRO will coordinate with subrecipients responsible for implementing the grantee's action plan, and local and regional planning departments to ensure consistency and integration of CDBG-MIT activities with their respective planning efforts.

Technical Assistance

Technical assistance to program participants and sub-recipients will be provided by SCDRO program staff as needed. Requests should be made in a timely manner and within the time parameters of the appropriate program design. The State has developed some technical capacity through the implementation of its current CDBG-DR program; however the State may contract with other technical assistance providers should sufficient demand for technical assistance warrant.

Depending on the nature of assistance required, the State will coordinate with HUD to obtain an available provider, or engage in a formal procurement to hire a vendor with the expertise required to provide technical assistance in regulatory compliance, construction management, environmental procedures, etc.

To ensure orderly and effective compliance with the National Historic Preservation Act (NHPA) during mitigation undertakings, the SCDRO, has met with representatives of the South Carolina Historic Preservation Office (SHPO). SCDRO is currently operating under a FEMA/HUD approved Programmatic Agreement (PA) (Unified Federal Review Memorandum of Agreement) provided by HUD. SCDRO and SC SHPO have discussed the processes that will be utilized ensure review and compliance with Section 106 of the NHPA where required to so. The State's Disaster Recovery Office will also consult with the State Fish and Wildlife Service (South Carolina Department of Natural Resources) and the National Marine Fisheries Service concerning section 7 of the Endangered Species Act prior to program implementation.

Accountability

The Governor of South Carolina has designated the South Carolina Department of Administration as the administrative and fiscal agent responsible to HUD for program oversight, reporting and compliance. Program administration will be led under the direction of the Disaster Recovery Program Management Director of the South Carolina Department of Administration with oversight from a Governor-Appointed Oversight Steering Committee of three members. The Governor-appointed Committee will provide executive level oversight of the Mitigation Program. The South Carolina Disaster Recovery Office Program Coordinator, housed in the Department of Administration, is an executive-level appointee who will serve at the direct guidance of the Steering Committee. The Program Coordinator will serve as authorized signatory of the legally binding grant agreement (contract) between HUD and the State, will authorize major contracts and change orders, certify to financial reporting, and serve as the lead point of contact for HUD, including for monitoring and compliance and issue resolution.

The Program Management Director will oversee daily operations of the program, including applicant intake and eligibility, construction and contract management, policy and procedure, public information,

reporting, management of the Disaster Recovery Grant Reporting (DRGR) system and timely expenditures. The Chief Financial Officer at the Department of Administration will oversee financial compliance, financial monitoring, financial management, and oversight of the HUD line of credit.

SCDRO will initially rely on the CDBG expertise of the team that is in place and is currently monitoring the 2015 and 2016 grants. This expertise will be used to conduct the SCDRO's monitoring plan and to train any additionally hired SCDRO personnel in CDBG regulations, policies and procedures. The State currently has six people actively working on monitoring. Between auditing and monitoring activities, the State expects to examine/review over 25% of activities.

Certification of Accuracy of Risk Analysis Documentation

The State of South Carolina hereby certifies that it currently has the capacity to carry out mitigation activities in a timely manner and that the State has reviewed the requirements of this notice and requirements of Pub. L. 115-123 applicable to funds allocated by FR-6109-N-02, and certifies to the accuracy of Risk Analysis Documentation submitted to demonstrate that it has in place proficient financial controls and procurement processes; that it has adequate procedures to prevent any duplication of benefits as defined by section 312 of the Stafford Act, to ensure timely expenditure of funds; that it has to maintain a comprehensive mitigation website to ensure timely communication of application status to applicants for assistance, and that its implementation plan accurately describes its current capacity and how it will address any capacity gaps.

Certifications

- a. The grantee certifies that it has in effect and is following a residential anti-displacement and relocation assistance plan in connection with any activity assisted with CDBG-MIT funding.
- b. The grantee certifies its compliance with restrictions on lobbying required by [24 CFR part 87](#), together with disclosure forms, if required by part 87.
- c. The grantee certifies that the action plan is authorized under State and local law (as applicable) and that the grantee, and any entity or entities designated by the grantee, and any contractor, subrecipient, or designated public agency carrying out an activity with CDBG-MIT funds, possess(es) the legal authority to carry out the program for which it is seeking funding, in accordance with applicable HUD regulations and this notice. The grantee certifies that activities to be undertaken with CDBG-MIT funds are consistent with its action plan.
- d. The grantee certifies that it will comply with the acquisition and relocation requirements of the URA, as amended, and implementing regulations at [49 CFR part 24](#), except where waivers or alternative requirements are provided for CDBG-MIT funds.
- e. The grantee certifies that it will comply with section 3 of the Housing and Urban Development Act of 1968 ([12 U.S.C. 1701u](#)) and implementing regulations at [24 CFR part 135](#).
- f. The grantee certifies that it is following a detailed citizen participation plan that satisfies the requirements of [24 CFR 91.115](#) or 91.105 (except as provided for in notices providing waivers and alternative requirements for this grant). Also, each local government receiving assistance from a State grantee must follow a detailed citizen participation plan that satisfies the requirements of [24 CFR 570.486](#) (except as provided for in notices providing waivers and alternative requirements for this grant).
- g. State grantee certifies that it has consulted with affected local governments in counties designated in covered major disaster declarations in the non-entitlement, entitlement, and tribal areas of the State in determining the uses of funds, including the method of distribution of funding, or activities carried out directly by the State.
- h. The grantee certifies that it is complying with each of the following criteria:
 - (1) Funds will be used solely for necessary expenses related to mitigation activities, as applicable, in the most impacted and distressed areas for which the President declared a major disaster in 2015, 2016, or 2017 pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1974 ([42 U.S.C. 5121 et seq.](#)).
 - (2) With respect to activities expected to be assisted with CDBG-MIT funds, the relevant action plan has been developed to give priority to activities that will benefit low- and moderate-income families.
 - (3) The aggregate use of CDBG-MIT funds shall principally benefit low- and moderate-income families in a manner that ensures that at least 50 percent (or another percentage permitted by HUD in a waiver

published in an applicable **Federal Register** notice) of the CDBG-MIT grant amount is expended for activities that benefit such persons.

(4) The grantee will not attempt to recover any capital costs of public improvements assisted with CDBG-MIT funds by assessing any amount against properties owned and occupied by persons of low- and moderate-income, including any fee charged or assessment made as a condition of obtaining access to such public improvements, unless: (a) CDBG-MIT funds are used to pay the proportion of such fee or assessment that relates to the capital costs of such public improvements that are financed from revenue sources other than under this title; or (b) for purposes of assessing any amount against properties owned and occupied by persons of moderate income, the grantee certifies to the Secretary that it lacks sufficient CDBG funds (in any form) to comply with the requirements of clause (a).

i. The grantee certifies that the grant will be conducted and administered in conformity with title VI of the Civil Rights Act of 1964 ([42 U.S.C. 2000d](#)), the Fair Housing Act ([42 U.S.C. 3601-3619](#)), and implementing regulations, and that it will affirmatively further fair housing.

j. The grantee certifies that it has adopted and is enforcing the following policies, and, in addition, must certify that they will require local governments that receive grant funds to certify that they have adopted and are enforcing:

(1) A policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in nonviolent civil rights demonstrations; and

(2) A policy of enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location that is the subject of such nonviolent civil rights demonstrations within its jurisdiction.

k. The grantee certifies that it (and any subrecipient or administering entity) currently has or will develop and maintain the capacity to carry out mitigation activities, as applicable, in a timely manner and that the grantee has reviewed the respective requirements of this notice. The grantee certifies to the accuracy of its [Public Law 115-56](#) Financial Management and Grant Compliance certification checklist, or other recent certification submission, if approved by HUD, and related supporting documentation referenced at section V.A.1.a of FR-6109-N-02 and its implementation plan and capacity assessment and related submissions to HUD referenced at section V.A.1.b of FR-6109-N-02.

l. The grantee certifies that it considered the following resources in the preparation of its action plan, as appropriate: FEMA Local Mitigation Planning Handbook: https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf; DHS Office of Infrastructure Protection: <https://www.dhs.gov/sites/default/files/publications/ip-fact-sheet-508.pdf>; National Association of Counties, Improving Lifelines (2014): https://www.naco.org/sites/default/files/documents/NACo_ResilientCounties_Lifelines_Nov2014.pdf; the National Interagency Coordination Center (NICC) for coordinating the mobilization of resources for wildland fire: <https://www.nifc.gov/nicc/>; the U.S. Forest Service's resources around wildland fire (<https://www.fs.fed.us/managing-land/fire/>); and HUD's CPD Mapping tool: <https://egis.hud.gov/cpdmaps/>.

- m. The grantee certifies that it will not use CDBG-MIT funds for any activity in an area identified as flood prone for land use or hazard mitigation planning purposes by the State, local, or tribal government or delineated as a Special Flood Hazard Area (or 100-year floodplain) in FEMA's most current flood advisory maps, unless it also ensures that the action is designed or modified to minimize harm to or within the floodplain, in accordance with Executive Order 11988 and [24 CFR part 55](#). The relevant data source for this provision is the State, local, and tribal government land use regulations and hazard mitigation plans and the latest-issued FEMA data or guidance, which includes advisory data (such as Advisory Base Flood Elevations) or preliminary and final Flood Insurance Rate Maps.
- n. The grantee certifies that its activities concerning lead-based paint will comply with the requirements of [24 CFR part 35](#), subparts A, B, J, K, and R.
- o. The grantee certifies that it will comply with environmental requirements at [24 CFR part 58](#).
- p. The grantee certifies that it will comply with applicable laws.

APPENDICES

Response to Public Comment

Williamsburg Public Hearing (November 26, 2019)

Comment: Georgetown has experienced continuous flooding over the past 5-6 years. Front Street in the downtown area floods on a monthly basis. The area is both commercial and residential. We may need approximately 200 feet of wall to keep the water out of that area. There are no formulated projects or solutions as of yet – still in the concept phase. We have not applied for any other funding from EMD or DNR. Are there any possible infrastructure projects that may be covered with this funding for this problem? How and where do I apply?

Response: Once a project or solution has been identified, it may meet SCDRO eligibility criteria. There should be a study conducted to determine what the issue is and identify a solution. SCDRO must have data to support a mitigation need. The programs will assist eligible counties and municipalities in conducting studies to determine mitigation solutions and feasibility. SCDRO will have an application process. The program will only consider projects from counties and municipalities that submit applications. SCDRO will be accepting applications no sooner than May 2020.

Horry Public Hearing (December 16, 2019)

Comment: What is the process for applying for funds?

Response: SCDRO will host a meeting with eligible Units of General Local Government (UGLG) in March 2020 to provide information regarding the application process. The application period will open no sooner than May 2020.

Comment: Which disasters are you serving?

Response: The Severe Storms and Flooding of 2015 and Hurricane Matthew (2016) serve as the basis for the allocation of CDBG-MIT funds; however, unlike CDBG-DR funds, CDBG-MIT funds do not require “tie-back” to a specific qualified disaster that has served as the basis for funds allocation.

Comment: Which counties are you working in?

Response: The US Department of Housing and Urban Development (HUD) identified nine Most Impacted and Distressed (MID) counties: Charleston, Clarendon, Dorchester, Florence, Georgetown, Horry, Marion, Sumter, and Williamsburg counties as eligible counties. Berkeley, Calhoun, Chesterfield, Darlington, Dillon, Lee, Marlboro, and Orangeburg counties are eligible as State identified MIDs.

Comment: How can I apply to have my home elevated?

Response: The Mitigation Program will not include elevations as an activity. Further, SCDRO will only accept applications for eligible activities from local governments (counties and municipalities), not individual citizens.

Comment: In the Action Plan there is no mention of performing elevations, on existing structures or new structures, will your program do elevations? If not, where can I apply or receive funding for elevating my

home? Does a home have to be damaged by the 2015 flood or 2016 Hurricane Matthew to be included in a buyout program? In Horry County, in the Rosewood area there are 30 structures that were damaged by Hurricane Matthew, but an additional 30 that have repetitive flooding. Would all of these be eligible for a buyout program? Would the pre-disaster fair market value of my home be higher than the current value?

Response: SCDRO do not intend on performing elevations on existing or new structures with this CDBG-MIT funding. For mitigation funding, funds do not have to tie back to specific disasters. The program will only consider projects from counties and municipalities that submit applications. If your local government submits this project as a buyout project, then it will be justly prioritized, and the final decision will be up to the CDBG-DR Steering Committee. SCDRO will hire an appraiser to determine the pre-disaster fair market value of all eligible homes considered in the buyout program.

Comment: For infrastructure projects, will you be purchasing the equipment to perform the various projects?

Response: No.

Comment: If FEMA Funds were received, can an application be submitted for HUD/MIT funds?

Response: SCDRO will only accept applications for eligible activities from local governments (counties and municipalities), not individual citizens. Home repair is not an eligible activity in the Mitigation Program.

Comment: Does the funding cover stream gages – implementation and managing – especially in rural communities? Does the plan include Cost-Benefit Analysis? Are there allocations for sub-recipients? Does “shovel ready” require an environmental review?

Response: The management of stream gages requires maintenance. Maintenance is not an eligible activity for the Mitigation program. All mitigation projects must undergo a Cost-Benefit Analysis. SCDRO will evaluate applications/requests for sub-recipients to determine if the local government has the capacity, policies, etc. in place to participate as a sub-recipient. “Shovel ready” does not require the completion of an environmental review. SCDRO will evaluate all projects submitted then determine which projects are at an appropriate stage to move forward in phase 1 relative to all projects submitted.

Comment: If a project application does not work out, will SCDRO give feedback before they deny the application? Are Councilmen aware when Mobile Intakes/Hearings are taking place?

Response: SCDRO will communicate the status of all applications throughout the program. SCDRO will only accept applications for eligible activities from local governments (counties and municipalities), not individual citizens. The Mitigation program will not have mobile intake sites.

Charleston Public Hearing (January 7, 2020)

Comment: Since the application process doesn’t begin until May, can municipalities be reimbursed for property that was recently purchased due to flooding issues?

Response: No, SCDRO will not reimburse anyone for property purchased or sold.

Comment: Are we to submit our project suggestions through the county or as an individual entity (city, town, municipality)?

Response: Municipalities are encouraged to coordinate with counties to identify possible projects and maximize the impact of potential projects. Counties and municipalities are eligible to apply individually or collectively.

Comment: Is there a specific cap on the amount of funds an individual county can receive?

Response: No, there is not a predetermined cap. The funding amount will be based on the cost of the approved mitigation project.

Other Comments Received

Comment:

January 17, 2020

Via email

South Carolina Disaster Recovery Office
632 Rosewood Drive
Columbia, SC 29201

Comments submitted to DROMitigation@admin.sc.gov.

The South Carolina Coastal Conservation League, National Resources Defense Council, and Southern Environmental Law Center submit the following comments on the draft Community Development Block Grant – Mitigation (“CDBG-MIT”) Action Plan (“Draft Action Plan”) released in December 2019. We appreciate the opportunity to provide input to the South Carolina Disaster Recovery Office (“SCDRO”) regarding the draft plan.

1. General Comments

South Carolina is one of nine states and several local jurisdictions receiving funds under the CDBG-MIT program. In total, the Department of Housing and Urban Development (“HUD”) has allocated \$6.87 billion for this program, which is unlike most other federal disaster funds that are typically directed to rebuilding in place without regard to climate risk or vulnerability to future flooding. As discussed in more detail below, the CDBG-MIT funding from HUD presents a unique opportunity for the State to invest in data-driven and long-term mitigation planning, capacity building, and risk assessment. SCDRO has prepared the Draft Action Plan and created programs to administer the \$157 million the State will receive from this disbursement. We are pleased to see that the State’s Draft Action Plan supports nature-based solutions and housing buyouts, and that social vulnerability and flood risk reduction is central to the proposed Actions. As a whole, this Draft Action Plan helps pave the way for data-proven, high-impact projects as encouraged by the CDBG-MIT Notice of Funding.

In general, our organizations urge the state to improve the Draft Action Plan in five important ways:

1. Complete a meaningful assessment of future conditions, including sea level rise, as required by HUD. As proposed, projects funded by CDBG-MIT will be undertaken without consideration of future risks, which contradicts the intent of these funds.
2. Ensure that the projects funded through the proposed infrastructure program will create the greatest benefits to the State, and that any projects which cause significant damage to the natural environment are not approved.
3. Create a state program to conduct buyouts of flood-prone homes, in order to more effectively use the State's CDBG-MIT funding and better fulfill HUD's goals for the program. A buyout program coordinated at the state level lays a comprehensive path forward for utilizing other disaster assistance while also generating more flood reduction benefits for communities.
4. Address long-term policy changes. CDBG-MIT funding presents an opportunity to address not just physical risks but also the regulatory frameworks that enabled those risks in the first place, yet the Draft Action Plan does not achieve HUD's goal to create these policy changes for long-term mitigation. The State should not miss the opportunity to reduce future risks by improving policy, in addition to reducing current risks through the planned drainage improvements and flooded-home buyouts.
5. Disclose the membership of the Community Development Block Grant – Disaster Recovery ("CDBG-DR") Steering Committee and committee decisions on the SCDRO website.

This Draft Action Plan follows closely on the heels of Governor McMaster's Floodwater Commission's work and presents the opportunity to coordinate implementation efforts. In 2019, the state's first Floodwater Commission set initial goals to mitigate flooding, lessen the negative impacts flooding poses to the state economy, and help people affected by repeated flooding across the State. The Floodwater Commission's final report focuses on strategies such as preserving and restoring natural floodplains, aiding homeowners who want to get out of repetitively flooded homes, conserving open space to store and absorb floodwaters, and implementing green infrastructure for stormwater management. Supporting nature-based solutions, recognizing the valuable protections natural solutions can provide, is central to the report. We recommend that SCDRO coordinate efforts to implement CDBG-MIT projects with the State's implementation of the nature-based solutions suggested by the Floodwater Commission.

These funds are flowing to the State at a time when our communities are facing increasing threats as a result of climate change. Data from federal agencies show that sea level has risen over a foot in the past century along the South Carolina coast and is continuing to rise.⁴⁵ Accelerating sea level rise will continue to increase erosion rates along the coast.⁴⁶ High tides are more commonly flooding coastal communities

⁴⁵ NOAA, "Global and regional sea level rise scenarios for the United States," NOAA Technical Report NOS CO-OPS 083, January 2017, https://tidesandcurrents.noaa.gov/publications/techrpt83_Global_and_Regional_SLR_Scenarios_for_the_US_final.pdf.

⁴⁶ Stephen P. Leatherman, Keqi Zhang, and Bruce C. Douglas, "Sea level rise shown to drive coastal erosion" *EOS* 81, no. 6 (February 2000): 55-57, <https://agupubs.onlinelibrary.wiley.com/doi/pdf/10.1029/00EO00034>. Roshanka Ranasinghe, Trang Minh Duong, Stefan Uhlenbrook, Dano Roelvink, and Marcel Stive, "Climate change impact assessment for inlet-interrupted coastlines," *Nature Climate Change* 3, no. 1 (September 2013): 83-87, <https://www.nature.com/articles/nclimate1664>.

as a result.^{47,48} Climate change makes it easier for storms to grow stronger and hold more water,⁴⁹ and the state is already too familiar with the damages this extreme rainfall brings. Severe storms such as the 2015 floods and Hurricanes Matthew, Irma, and Florence that have flooded our cities and towns and devastated our communities are only the plainest manifestation of our changing climate. The best available science predicts that the extreme storm trend South Carolina has experienced over the last several years will continue to worsen.⁵⁰ As these storms intensify, so too will the risk to communities located in flood-prone areas of our state. The damages South Carolina has experienced in five consecutive years of extreme storms and flooding underscore the need to identify comprehensive actions that improve the resilience of communities across the state. These CDBG-MIT funds present the opportunity to empower such long-term mitigation efforts and bolster community resilience. Below are our full comments.

2. Mitigation Needs Assessment

Our organizations want to acknowledge South Carolina's use of social vulnerability data and analysis that was factored into the assessment and the resulting bi-variate maps of how natural hazard risks and social vulnerability risks relate to one another. This was an important inclusion in the State's Draft Action Plan.

The CDBG-MIT program is meant to foster a culture of preparedness and long-term resilience to future extreme events. Such an objective requires grantees to achieve more than the implementation of projects aimed at addressing past events, but instead, requires grantees to consider how broad changes to governmental policies, practices, and programs can attain enduring adaptation and resilience benefits.

This is very different than typical CDBG-DR funds that provide assistance to states to cope with the aftermath of extraordinary disaster events. CDBG-DR funds are normally used exclusively to address vulnerabilities that were made evident by the qualifying disaster. CDBG-MIT is intended to be used differently and in a much more proactive and future-oriented way, a perspective that is not currently reflected in South Carolina's Draft Action Plan, the included Mitigation Needs Assessment, or in its proposed activities.

HUD requires that each applicant for CDBG-MIT funds "assess the characteristics and impacts of current and *future hazards* [emphasis added] identified through its recovery from the qualified disaster and any other Presidentially-declared disaster."⁵¹ HUD also states that "[t]he action plan must include a risk-based Mitigation Needs Assessment that identifies and analyzes all significant current and future disaster risk,

⁴⁷ Bo Petersen and Mikaela Porter, "Charleston and the South Carolina coast flooded a record 89 times in 2019," *The Post and Courier*, January 3, 2020, https://www.postandcourier.com/news/charleston-and-the-south-carolina-coast-flooded-record-times-in/article_7c18ee5e-2e3b-11ea-8784-23ddbc8d4e0c.html.

⁴⁸ NOAA, "The 2018 State of High Tide Flooding and 2019 Outlook," https://tidesandcurrents.noaa.gov/HighTideFlooding_AnnualOutlook.html.

⁴⁹ David R. Easterling, et al., "Precipitation change in the United States," in: Donald J. Wuebbles, et al. (Eds.), *Climate Science Special Report: Fourth National Climate Assessment, Vol. I*, 2017, U.S. Global Change Research Program, <https://science2017.globalchange.gov/chapter/7/>.

⁵⁰ Intergovernmental Panel on Climate Change, "Global Warming of 1.5°C: Summary for Policymakers," October 6, 2018, <https://www.ipcc.ch/sr15/>.

⁵¹ 84 FR 45847.

and provides a substantive basis for the activities proposed.”⁵² Further, HUD states that “[m]itigation solutions designed to be resilient only for threats and hazards related to a prior disaster can leave a community vulnerable to negative effects from future extreme events related to other threats or hazards.”⁵³

In contrast, South Carolina’s Draft Action Plan does not include the type of future-oriented analysis that HUD has established as the bar for receiving CDBG-MIT funding. South Carolina’s Draft Action Plan does not look to the future but is informed by an analysis that only looks backwards to past events and experiences. While we acknowledge that the State’s assessment of past natural hazard recurrence intervals is useful and informative, it only tells us what to expect based exclusively on past experiences. Such an analysis fails to acknowledge or consider how changing future conditions, like those brought about by climate change, will affect the likelihood or magnitude of future disasters. The failure to consider and assess future hazards will negatively impact the effectiveness of the Draft Action Plan’s proposed mitigation actions or narrow the scope of actions the state proposes for the use of CDBG-MIT funds.

In particular, the omission of sea level rise from the Draft Action Plan’s Mitigation Needs Assessment is difficult to understand, as the state assessed sea level rise risks and vulnerabilities as part of its 2018 State Hazard Mitigation Plan (“2018 SHMP”).⁵⁴ Given that such an assessment has already been completed by the State, it should be included in the Draft Action Plan and be updated with additional information, including the National Oceanic and Atmospheric Administration (“NOAA”) 2017 document *Global and Regional Sea Level Rise Scenarios for the United States*.⁵⁵

The Draft Action Plan states that “SCDRO flood reduction efforts will only address riverine and surface flooding, not storm surge or sea-level rise issues.”⁵⁶ But as the 2018 SHMP clearly shows, sea level rise will increase the potential for flooding far upstream in the Pee Dee and Santee watersheds, along with most of the state’s other coastal rivers. As sea levels rise, the potential for flooding along low-gradient streams will certainly increase. That is not accounted for in the Mitigation Needs Assessment or the proposed actions.

The 2018 SHMP examined projected inundation of land in coastal areas that would result from 0.6 m, 1.0 m, and 2.0 m of sea level rise. The results of that analysis found that between 268 sq. miles and 895 sq. miles of land could be inundated by sea level rise of between 0.6 m and 2.0 m along the state’s coastlines with maximum water depths as high as 12.1 feet in some areas.⁵⁷ The analysis further looked at where high sea level rise risk coincided with high social vulnerability and found that the lower Pee Dee and Santee River watersheds, the project areas described in Draft Action Plan, are among the most vulnerable areas of the state (see Exhibit 1).

⁵² 84 FR 45840.

⁵³ 84 FR 45847.

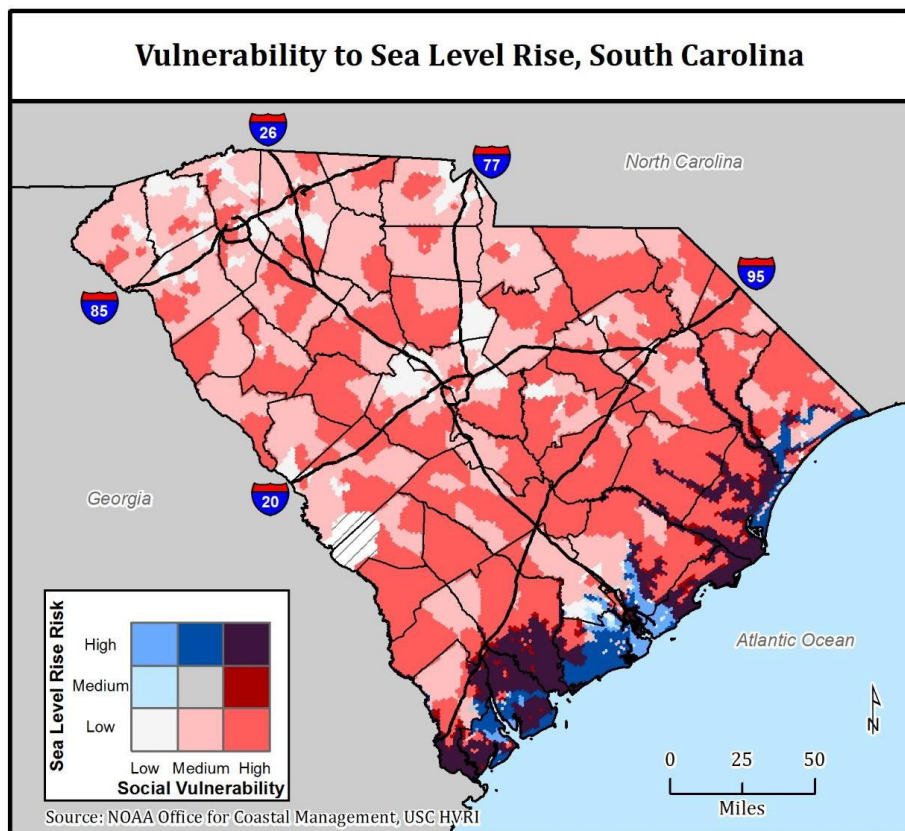
⁵⁴ South Carolina Emergency Management Division (“SCEMD”), “South Carolina Hazard Mitigation Plan: October 2018 Update,” p. 184-191, <https://www.scmd.org/media/1391/sc-hazard-mitigation-plan-2018-update.pdf>.

⁵⁵ NOAA, 2017, p. 23.

⁵⁶ Draft Action Plan, p. 66.

⁵⁷ SCEMD, 2018, Table 4.Q.1, p. 186.

Exhibit 1: Vulnerability to Sea Level Rise in South Carolina. Source: 2018 SHMP, Figure 95, p. 190.



Sea level rise will only compound the existing risk of riverine flooding in these areas.⁵⁸ These findings must be included in the Mitigation Needs Assessment as well as the proposed actions and project sub-applications that will be submitted to South Carolina for CDBG-MIT funding. We further recommend that the Draft Action Plan include an inventory of the number of properties potentially at risk from sea level rise in these areas and how many at-risk properties may be low- and moderate-income (“LMI”) residences.

In addition, the Mitigation Needs Assessment should consider how extreme precipitation events will impact future flooding in the state. Since 2015, South Carolina has experienced widespread flooding in multiple parts of the state, particularly in the Most Impacted and Distressed (“MID”) areas identified in the Draft Action Plan. There was no historical precedent for many of these flood events, particularly the 2015 floods, however, these extreme flooding events will be more likely in the future due to climate change. As such, the Mitigation Needs Assessment should look at the potential for similar or worse events.

By not assessing future sea level rise and extreme rain events, as well as other hazards that are influenced by climate change, South Carolina is missing the opportunity to make fully informed decisions about the projects it proposes to undertake with CDBG-MIT funds and actions the state will need to take in the future.

⁵⁸ SCEMD, 2018, Figure 41, p. 108.

3. Action Plan

The Draft Action Plan proposes four types of mitigation activities in addition to program administration. Our understanding of these activities is as follows:

Program	Total Allocation	Eligible Applicants
Infrastructure Program	\$100,000,000	Units of General Local Government (“UGLGs”), state agencies
Housing Buyout Program	\$35,000,000 (up to \$250,000 per property)	UGLGs located in SC- or HUD-defined MID counties
FEMA-Funded Mitigation Match	\$5,000,000	UGLGs who are subrecipients of FEMA programs
Planning	\$9,710,500	UGLGs located in SC- or HUD-defined MID counties, state agencies

HUD states in its rules for developing the Mitigation Needs Assessment that “[m]itigation solutions designed to be resilient only for threats and hazards related to a prior disaster can leave a community vulnerable to negative effects from future extreme events related to other threats or hazards.”⁵⁹ Moreover, HUD requires that, “[f]or each proposed program or project in the action plan, the grantee must address how the program or project mitigates specific *current and future risks* [emphasis added] identified in the Mitigation Needs Assessment.”⁶⁰ HUD explicitly requires future hazards be considered in its Mitigation Needs Assessment, something South Carolina has not done.

As stated in our comments on the Mitigation Needs Assessment, South Carolina should incorporate an assessment of future conditions and climate impacts into its Draft Action Plan. Moreover, we recommend that the State add an additional requirement that projects seeking CDBG-MIT funding should incorporate future conditions into their design.

3.1 Leveraging of Funds

South Carolina’s Draft Action Plan is committed to leveraging these dollars and has said that CDBG-MIT funds will “only be used to address funding needs not satisfied by other funding sources.” The Draft Action Plan then identifies several sources of funding that SCDRO intends to leverage, most of which are federal funds for disaster recovery and rebuilding efforts. In addition, the state is explicitly setting aside CDBG-MIT dollars for the purpose of providing the non-federal match for the Federal Emergency Management Agency (“FEMA”) Hazard Mitigation Grant Program (“HMGP”).

We encourage SCDRO to identify the possible South Carolina Resilience Revolving Fund as another potential source of leverage. Legislation establishing the fund is pending in the South Carolina Statehouse. The program would finance flooded home buyouts and floodplain restoration, and the concept was recently endorsed by the Floodwater Commission. The Resilience Revolving Fund could serve as an

⁵⁹ 84 FR 45847.

⁶⁰ Ibid.

excellent new source of funding to leverage CDBG-MIT or provide funding to areas of the state where CDBG-MIT will not be made available.

3.2 Infrastructure Program

The Draft Action Plan allocates a majority of South Carolina's CDBG-MIT disbursement toward an infrastructure program to address flood damages in the Pee Dee and Santee watersheds. Example projects noted in SCDRO materials include storm drainage system upgrades, detention and spillway maintenance, culvert upgrades, stream restoration, and critical infrastructure protection.⁶¹ The proposed program will be informed by hydrologic modeling from SCDRO's commissioned Pee Dee-Santee Watershed Study, and meets the HUD CDBG-MIT goal to "support data-driven investments in high-impact projects that will reduce risks attributable to natural disasters, with particular focus on repetitive loss of property and critical infrastructure."⁶²

SCDRO has outlined a multi-component prioritization process that will be used to evaluate projects submitted by local governments. We are pleased to see that the prioritization process is thoroughly outlined and includes LMI service, flood risk reduction, standardized benefit-cost analysis, and leveraged funding criteria. Below are our suggestions for implementation.

1. *Ensure that this program will not fund damaging projects.*

In order to help channel this funding toward solution-based projects in high-need areas, we urge SCDRO to ensure that projects which cause significant damage to natural systems or that indirectly increase vulnerability are not funded through this program. Some projects that use "resilience" as a buzzword may not actually provide the touted benefits or may even exacerbate problems. Roads, for example, may be eligible for funding from this program, yet a road project claiming evacuation route benefits could induce sprawl in floodplains. To prevent this situation, we encourage SCDRO to consider indirect impacts of a project, such as a potential to open up floodplains to development, in the prioritization process. It appears that several of the prioritization factors would help weed out damaging projects, but another layer of consideration would be useful. It would also signal SCDRO's commitment to funding the most greatly needed and beneficial projects. There are so many data-backed projects that are needed to reduce flooding risk in these watersheds; we want to ensure that a damaging or unnecessary project does not divert limited funding away from more beneficial projects.

In particular, we recommend that SCDRO consider wetland impacts when assessing project applications. Multiple task forces in the Governor's Floodwater Commission recommended preserving wetlands to the greatest extent possible, out of recognition for the role wetlands provide in flood retention. Among other ecosystem services wetland systems provide,⁶³ wetlands

⁶¹ SCDRO, "Community Development Block Grant Mitigation (CDBG-MIT)," December 2019, <https://www.scdr.sc.gov/wp-content/uploads/2019/12/CDBGMIT-Public-Hearing.pdf>.

⁶² 84 FR 45838.

⁶³ William J. Mitsch, Blanca Bernal, and Maria E. Hernandez, "Ecosystem services of wetlands," *International Journal of Biodiversity Science, Ecosystem Services & Management*, 11 no. 1 (2015): 1-4, <https://www.tandfonline.com/doi/full/10.1080/21513732.2015.1006250?scroll=top&needAccess=true>. U.S.

have the ability to reduce, delay, and retain floodwater.⁶⁴ Protecting floodplain wetlands has been proven to reduce flood damages.⁶⁵ Maintaining existing wetlands so that they continue to provide natural flood storage and storm buffering helps minimize the need for costly flood control and armoring projects in the future. While some infrastructure program prioritization categories, such as phasing consideration, may help to weed out projects that would have significant wetland impacts, we recommend explicitly weighing wetland impacts in the Environmental Impacts criterion or layering it as another criterion for consideration. A project created with long-term mitigation in mind should not require the destruction of significant wetland acreage.

Additionally, we suggest that SCDRO does not assume “positive and negative environmental impacts will be neutral when combined” in the Environmental Impacts criterion, as negative impacts can significantly outweigh positive impacts, and vice versa. For example, filling or excavating significant wetland acreage should not be cancelled out in project scoring by a plan to plant grass post-construction.

2. *Consider extreme flooding in project design.*

The Flood Risk Reduction criterion outlines a robust analysis to determine a project’s level of flood protection and the number of structures the project would protect from flooding. We support SCDRO’s use of modeling from the Pee Dee-Santee Watershed Study to run these analyses, as this helps satisfy HUD’s emphasis on CDBG-MIT funding going toward data-supported projects.⁶⁶

However, the criterion currently applies the 25-year, 24-hour design standard storm event as a baseline for ranking projects. While we recognize that using the design storm is a common engineering practice, this level of precipitation and flooding does not nearly address the level of flooding that triggered this disaster assistance disbursement. Planning with the design storm event in mind did not mitigate flooding during recent natural disasters and does not address flooding from more regular extreme rainfall that affects the coastal plain between major disasters. Using a small storm size as a baseline does not prepare infrastructure for long-term impacts or even the level of rainfall the State already experiences.

Furthermore, the statistics used to determine the precipitation and flooding associated with the design storm are out of date across the State. The NOAA Atlas 14 assessment, which provides these statistics, has not been updated for South Carolina in over 15 years and only includes one year of data from this century.⁶⁷ When Texas updated their outdated NOAA Atlas 14 storm

Environmental Protection Agency, “Functions and Values of Wetlands,” EPA 843-F-01-002c, March 2002, <https://nepis.epa.gov/Exe/ZyPDF.cgi/200053Q1.PDF?Dockey=200053Q1.PDF>.

⁶⁴ A. Bullock and M. Acreman, “The role of wetlands in the hydrological cycle,” *Hydrology and Earth System Sciences* 7 no. 3 (2003), 358-389, <https://hal.archives-ouvertes.fr/hal-00304786/document>.

⁶⁵ M. Acreman and J. Holden, “How wetlands affect floods,” *Wetlands* 33, no. 5 (October 2013), 773-786, <https://link.springer.com/article/10.1007/s13157-013-0473-2>.

⁶⁶ We also request that the modeling used in the Flood Risk Reduction criterion consider land use changes, such as wetlands loss, if these are not already factors.

⁶⁷ NOAA, “NOAA Atlas 14: Precipitation-Frequency Atlas of the United States, Volume 2 Version 3.0” revised 2006, https://www.nws.noaa.gov/oh/hdsc/PF_documents/Atlas14_Volume2.pdf.

recurrence interval calculations, Houston's former 100-year storm became the new 25-year storm.⁶⁸ Given the existing data gap and recent observations of extreme rainfall, such as the storms that created the need for this funding, choosing a larger design storm would encourage local governments to design projects that are better equipped to handle the increasingly intense storms the State is already experiencing. Accurately accounting for current and future risk is a crucial step to aid community adaptation to climate change impacts.

3. *Ensure that approved projects meet HUD design standards for sea level rise.*

In the CDBG-MIT Notice of Funding, HUD included elevation requirements for certain projects built with CDBG-MIT funding in the 500-year floodplain. Specifically, the Notice of Funding requires that "[a]ll Critical Actions, as defined at 24 CFR 55.2(b)(3), within the 500-year (0.2 percent annual chance) floodplain must be elevated or floodproofed (in accordance with the FEMA standards) to the higher of the 500-year floodplain elevation or three feet above the 100-year floodplain elevation."⁶⁹ Critical Actions can include structures such as hospitals or water treatment plants, as well as critical infrastructure such as principal utility lines. These requirements are meant to mitigate against impacts from sea level rise and increasingly extreme rainfall. While the Draft Action Plan states that it does not address sea level rise, there is significant vulnerability to sea level rise in the Santee and Pee Dee watersheds, where this funding is focused.⁷⁰ Ensuring that projects comply with HUD's elevation requirement will build sea level rise resilience into new projects.

3.3 Housing Buyout Program

SCDRO has budgeted \$35 million for a voluntary buyout program. Prioritizing buyouts is consistent with the 2018 SHMP, which states that "[f]lood buyout projects (especially for repetitive loss properties), other flood mitigation and structural projects to permanently protect essential infrastructure are the State's highest priority."⁷¹ Our organizations strongly support residential buyouts as a hazard mitigation activity, and we agree with the Draft Action Plan on the benefits of strategically "acquiring contiguous parcels of land for uses compatible with open space, recreational, natural floodplain functions, wetlands management practices, or ecosystem restoration." We also support permanent redevelopment restrictions on acquired properties and providing housing incentives, particularly when assisting LMI participants.

However, instead of only funding local buyout projects, we recommend that SCDRO use some or all of this \$35 million to establish a permanent statewide buyout program. HUD clearly intends that CDBG-MIT funds should not only be deployed for a series of one-time projects, but also to strategically reinforce ongoing statewide planning efforts and to creatively leverage existing local, state, and federal capital and other

⁶⁸ NOAA, "NOAA updates Texas rainfall frequency values," September 27, 2018, <https://www.noaa.gov/media-release/noaa-updates-texas-rainfall-frequency-values>.

⁶⁹ 84 FR 45930.

⁷⁰ SCEMD, 2018, Figure 95, p. 190.

⁷¹ SCEMD, 2018, p. 254.

resources. We believe that creating a statewide program will be a more effective use of the State's CDBG-MIT funding and better fulfill HUD's goals for the program, for several reasons:

1. *Creating a buyout program, rather than just funding buyout projects, will help SCDRO better achieve the broader goals of CDBG-MIT.*

SCDRO has budgeted \$35 million for the home buyout program, with a maximum award of \$250,000 (including any applicable housing incentives) per participant. Based on home value estimates and assuming that incentives will be provided, this \$35 million would pay for perhaps 150 to 200 buyouts.⁷² There is no question that assisting the residents of these homes is important, but it would make a relatively small contribution to improving the State's overall preparedness and resilience in line with HUD's goals for CDBG-MIT (especially when spread across 17 potential counties). On the other hand, using even a portion of this funding to build the state's capacity for implementing buyouts and establishing the framework for an ongoing program would have enduring benefits into the future.

2. *CDBG-MIT represents a unique opportunity to build state buyout policies and programs, while other funding can support buyout projects.*

The CDBG-MIT funding is one of several aid packages coming to South Carolina from federal agencies in response to recent storms. For example, HUD will allocate over \$47 million in CDBG-DR funding to South Carolina in response to Hurricane Florence; South Carolina is also receiving FEMA HMGP funding associated with Hurricane Florence.^{73,74} Both HMGP and CDBG-DR funding may be used for voluntary home buyouts. Meanwhile, the CDBG-MIT notice states that "CDBG-MIT funds are to be used for distinctly different purposes than CDBG-DR funds."⁷⁵ Establishing forward-looking, statewide buyout infrastructure can help the State use these other funds more effectively while also fulfilling HUD's directives for CDBG-MIT funding.

3. *Implementing buyouts at the state level can reduce the burden on localities and improve outcomes for participants.*

The Draft Action Plan states that "SCDRO and/or UGLG subrecipients will conduct voluntary buyouts" and that SCDRO may be an "implementing jurisdiction" for this program.⁷⁶ However, the rest of the program description suggests that UGLGs are expected to implement the projects; at a minimum, UGLGs will need to apply for funding for their communities, and SCDRO will assess their "willingness and capability to execute the buyout program as a subrecipient."

We recognize the importance of local responsibility and control when conducting such projects. However, South Carolina state and local agencies generally do not have extensive experience

⁷² As of January 6, 2020, Zillow's estimated median home values (<https://www.zillow.com/sc/home-values/>) for the 17 eligible counties range from \$44,534 to \$337,713; the median value statewide is \$185,749.

⁷³ HUD, "HUD Awards \$1.5 Billion to Support Seven States in Their Recovery From 2018 Disasters," HUD Exchange, May 21, 2019, <https://www.hudexchange.info/news/hud-awards-1-5-billion-to-support-seven-states-in-their-recovery-from-2018-disasters/>.

⁷⁴ SCEMD, "Open Grants," SCRecoveryGrants.org, <https://screcoverygrants.org/site/opengrants.cfm>.

⁷⁵ 84 FR 45839.

⁷⁶ Draft Action Plan, p. 78.

conducting buyouts, and we are concerned that some UGLs do not have the capacity to implement a buyout program or restore/maintain the resulting public land. As a result, they may apply for funding to do other types of mitigation work, even when residents may prefer buyouts and when helping people move out of harm's way would be a more effective approach to reduce the risk from future disasters.

State-level programs are also more likely to have the capacity for participant support beyond just the property acquisition transaction. New Jersey's Blue Acres Program, which provides participants with real estate, legal, and other services, could serve as a model. Providing such support, whether financial or otherwise, should increase participation, reduce attrition, and help the State meet its hazard mitigation goals while increasing participant satisfaction. Helping participating households find suitable replacement housing should also help to address displacement, even if the residents do not meet the Uniform Relocation Assistance Act's definition of "displaced persons."

With this funding, SCDRO has an opportunity to establish buyout/acquisition practices that explicitly incorporate considerations of equity, social cohesion, neighborhood character, and long-term community goals—reflecting not just the hazards that people are moving away from, but the vision of what they are moving toward. Recent analyses of FEMA data show that buyouts are generally implemented by whiter, wealthier communities (those with the capacity to take on a resource-intensive buyout project), with the acquired properties concentrated in areas of greater social vulnerability within those communities.^{77,78} This may reflect the fact that the most flood-prone homes in the nation tend to be owned and occupied by lower-income households; particularly in inland locations and cities with a legacy of redlining, low-income communities and communities of color are likely to experience higher flood risk due to lower-lying elevations and/or underinvestment in flood mitigation infrastructure.^{79, 80, 81, 82} At the same time, it also highlights a disproportionate risk of displacement for these communities. Given that these vulnerable communities are also often civically marginalized, SCDRO should ensure that these

⁷⁷ Robert Benincasa, "Search the Thousands of Disaster Buyouts FEMA Didn't Want You to See," NPR.org, March 5, 2019, <https://www.npr.org/2019/03/05/696995788/search-the-thousands-of-disaster-buyouts-fema-didnt-want-you-to-see>.

⁷⁸ Katharine J. Mach, Caroline M. Kraan, Miyuki Hino, A. R. Siders, Erica M. Johnston, and Christopher B. Field, "Managed retreat through voluntary buyouts of flood-prone properties," *Science Advances* 5, no. 10 (October 2019): eaax8995, <https://doi.org/10.1126/sciadv.aax8995>.

⁷⁹ Rob Moore, "Seeking Higher Ground: How to Break the Cycle of Repeated Flooding with Climate-Smart Flood Insurance Reforms," NRDC, July 2017, <https://www.nrdc.org/sites/default/files/climate-smart-flood-insurance-ib.pdf>.

⁸⁰ Marilyn C. Montgomery and Jayajit Chakraborty, "Assessing the Environmental Justice Consequences of Flood Risk: A Case Study in Miami, Florida," *Environmental Research Letters* 10, no. 9 (September 1, 2015): 095010, <https://doi.org/10.1088/1748-9326/10/9/095010>.

⁸¹ Jeremy Deaton, "Hurricane Harvey Hit Low-Income Communities Hardest," Nexus Media, September 1, 2017, <https://nexusmedianews.com/hurricane-harveyhit-low-income-communities-hardest-6966d859e61f>.

⁸² Brentin Mock, "Zoned for Displacement," CityLab, September 13, 2017, <https://www.citylab.com/equity/2017/09/climate-changes-inevitable-displacement-of-most-vulnerable/539232/>.

communities are sufficiently involved in the creation of buyout projects by creating a coordinated state program for flood-prone home buyouts.

Regardless of whether SCDRO chooses to establish a permanent program, we believe that SCDRO should describe the planned buyout activities in more detail to ensure it will successfully meet the goals of the grant. As stated in the Federal Register notice, “[t]he Administration cannot emphasize strongly enough the need for grantees to fully and carefully evaluate the projects that will be assisted with CDBG-MIT funds.”⁸³ In addition, because SCDRO may serve as an implementing jurisdiction for buyouts, it must describe “all criteria used to select applications for funding, including the relative importance of each criterion.”⁸⁴

The Draft Action Plan states that “[b]uyout applications will be screened using a modified prioritization process like the infrastructure program, with the focus being LMI population served, quantifiable flood reduction, and benefit-cost analysis.”⁸⁵ However, it does not include a full list of scoring criteria and values. Because the budgeted funding will support a limited number of buyouts, SCDRO should establish and publish more specific criteria for selecting the funded projects. We recommend that SCDRO prioritize projects in communities that have updated building codes, land use plans, etc. to reflect climate hazards and reduce the risk of future flood damage. We also encourage SCDRO to consider unintended consequences of post-buyout land use, so that newly acquired public space does not lead to housing pressure and displacement of residents who remain in the neighborhood. All members of a community should have access to resulting green space or other public amenities.

SCDRO should also consider projected sea level rise when assessing and prioritizing buyout locations. As noted above, the 2018 SHMP found nearly 900 sq. miles of land could be inundated with 2.0 m of sea level rise, with the lower Pee Dee and Santee River watersheds among the most vulnerable areas in the state.^{86,87} As sea levels rise, higher tides are likely to increase flooding along these rivers and have a serious impact on local communities. While we understand SCDRO’s focus on riverine flood mitigation, the funded projects and any buyout program implemented by SCDRO must look to the future and acknowledge the contribution of sea level rise to such flooding.

Finally, our organizations recommend that SCDRO partner with researchers to follow up with participants and local governments. Existing buyout literature is mostly composed of single case studies; there is little cross-study comparison, discussion of broad themes, and connection between process and outcome. CDBG-MIT buyouts provide a rich opportunity to add to the nation’s understanding of how such programs affect residents and communities in the long term. NRDC recently convened an expert workshop on home buyouts and can connect SCDRO with interested researchers.

3.4 Planning and Policy Improvements

⁸³ 84 FR 45839.

⁸⁴ 84 FR 45849.

⁸⁵ Draft Action Plan, p. 78.

⁸⁶ SCEMD, 2018, Table 4.Q.1, p. 186.

⁸⁷ SCEMD, 2018, Figure 95, p. 190.

The CDBG-MIT program was created through a special congressional appropriation and offers a “unique and significant opportunity” to achieve policy changes and planning improvements that are typically outside the scope of disaster assistance.⁸⁸ Through this funding, HUD seeks to “support the adoption of policies that reflect local and regional priorities that will have long-lasting effects on community risk reduction,” while also providing “the opportunity to transform state and local planning.”⁸⁹ HUD’s Notice of Funding requires the State to “describe how it plans to: promote long-term and regional planning and implementation informed by its Mitigation Needs Assessment,” which includes the development and enforcement of building codes, vertical flood protections, and land use and zoning policies.⁹⁰ There is a significant need to shift policy and planning in South Carolina in this way to account for climate change impacts and address resilience needs.

Beyond a short description about supporting some limited planning activities, the Draft Action Plan does not contemplate supporting proactive policy and planning improvements, thereby falling short of one of HUD’s stated goals for the CDBG-MIT program. A well-coordinated buyout program and drainage infrastructure improvements will remove people and structures from flooding risk exposure, but only policy change can prevent more structures and infrastructure from being placed in vulnerable areas or built in vulnerable ways. This funding presents an opportunity to address not just physical risks but also the regulatory frameworks that enabled the risk in the first place. Recognizing this, “HUD concurrently expects that grantees will take steps to set in place substantial governmental policies and infrastructure to enhance the impact of HUD-funded investments.”⁹¹ Our organizations therefore urge the State to dedicate CDBG-MIT dollars to support policy updates such as those listed below:

- *Updating hazard mitigation plans to incorporate future risks.* We are pleased that the state intends to use a portion of the CDBG-MIT funds to update the state and local hazard mitigation plans. New plans should direct funds to support enhanced long-term, data-driven mitigation planning and incorporate future risks posed by climate change impacts. All planning efforts receiving the \$9,710,500 which the State plans to dedicate to support planning activities should require an assessment of future risks, including climate change, to comply with the Mitigation Needs Assessment requirement of HUD’s regulations.
- *Improving land use policies.* Land use policies can be used to discourage placing even more residences and infrastructure in vulnerable areas. Specific land use policy updates could include rezoning floodplain land, increasing protections and mitigation for flood-storing wetlands, incentivizing increased floodplain protection through tax credits, and establishing or incentivizing Transfer of Development Rights pilot programs that remove development rights from the floodplain and direct development to higher ground.
- *Improving building codes.* The State can encourage the adoption of updated codes to apply more stringent standards to new construction within the 500-year floodplain. Code updates could include increasing the required freeboard above the base flood elevation. The Notice of Funding

⁸⁸ 84 FR 45838.

⁸⁹ Ibid.

⁹⁰ 84 FR 45847.

⁹¹ 84 FR 45842.

suggests the use of ASCE-24 codes, where applicable, to alleviate flooding damages, and FEMA provides resources for hazard-mitigating building codes on their website.⁹²

- *Improving real estate disclosure policy.* Update real estate disclosure law to include information of flood damages, flood insurance requirements, and floodplain risk so that home buyers can better understand risk when purchasing a home and prepare accordingly. The State could also explore creating a program to disclose flood risk to renters so that they can prepare for hazards.
- *Adopting and implementing cumulative substantial damage standards.* This policy helps prevent disaster assistance from being spent on the same vulnerable structures over and over. If a structure is damaged beyond half of its pre-disaster value, the structure must be brought into compliance with current floodplain management and building code requirements.
- *Providing risk data to inform local planning and decision-making.* This funding could be used to expand the Pee Dee-Santee Watershed Study or make the data available for local governments to utilize to make decisions informed by hazard exposure.
- *Removing regulatory barriers to natural infrastructure solutions.* Natural infrastructure projects, including wetland and floodplain protection, can bring multiple benefits and actually perform better than traditional drainage infrastructure. Natural infrastructure projects often have to go through more permitting steps simply because it is not the traditional way; putting these projects on an even playing field with grey infrastructure would help encourage natural infrastructure implementation. Additionally, an incentive program could be created to incorporate green infrastructure into planned infrastructure updates, such as transportation projects, to increase the cumulative water-storage capacity in a watershed.
- *Incentivizing flood insurance.* Support actions to increase participation in the National Flood Insurance Program and other hazard insurance, including through the Community Rating System.
- *Updating the design storm and/or storm recurrence intervals.* It is impossible for the State to guard against future damages without an understanding of the size and probability of storms today. Given that the storm size statistics the State relies on are outdated, we suggest adopting a larger design storm for new construction and infrastructure updates. The State could also explore updating the return interval calculations in the NOAA Atlas 14 and incorporate projections of increased storm intensity into this analysis. NOAA Atlas 14 affects a wide range of policy tools, including the lines drawn on the FEMA flood maps, the base flood elevation in a neighborhood, community planning, and where flood insurance policies are required. If this tool does not account for the frequency of the extreme rainfall observed within the past 19 years, then the policy decisions that follow will not account for the real risk in an area.⁹³

Many of these policy and planning updates were specifically recommended in the CDBG-MIT Notice of Funding.⁹⁴ This list was also informed by the recommendations from the Governor's Floodwater Commission. Expanding the Draft Action Plan to include some of these activities would be a positive step

⁹² FEMA, "Building Code Resources," <https://www.fema.gov/building-code-resources>.

⁹³ As noted above, the NOAA Atlas 14 assessment for South Carolina has not been updated in over 15 years and only includes one year of data from this century. When Texas updated their outdated NOAA Atlas 14 storm recurrence interval calculations (<https://www.noaa.gov/media-release/noaa-updates-texas-rainfall-frequency-values>), the old 100-year storm in Houston became the new 25-year storm.

⁹⁴ 84 FR 45842.

for long-term resilience and would guide better decision-making. These can be included in the Draft Action Plan outside of the 15% cap on planning activities.

All planning efforts receiving funding should be required to assess future conditions, including the impacts of climate change. The Notice of Funding stresses the need to consider long-term impacts and specifically states, “[f]or flood mitigation efforts: grantees must consider high wind and continued sea level rise and ensure responsible floodplain and wetland management based on the history of flood mitigation efforts and the frequency and intensity of precipitation events.”⁹⁵

4. Conclusion

In conclusion, the undersigned generally support the Draft Action Plan, however it falls short of achieving the CDBG-MIT program’s stated objectives and lacks an assessment of future risk conditions. South Carolina should take advantage of this new and unique funding source to mitigate known risks while investing in expanded and ongoing capacity to plan for the future sustainability of the State’s communities.

Thank you for attention to these comments. We hope SCDRO will update its Draft Action Plan to reflect the recommendations discussed above. Should you have any questions or wish to discuss these comments further, please do not hesitate to reach out to Jenny Brennan at jbrennan@selcsc.org or (843) 720-5270.

Sincerely,

Jenny Brennan
Science & Policy Associate
Southern Environmental Law Center

Rob Moore
Water & Climate Team Director
National Resources Defense Council

Jason Crowley
Communities & Transportation Director
South Carolina Coastal Conservation League

Response: Thank you for the thorough review of the action plan. SCDRO made the decision to focus infrastructure efforts on the impacts of riverine and surface flooding for two reasons: that was the major historic impact, and the cost to address storm surge impact far exceeds the \$157 million available. For the purposes of sea level rise, the plan has been updated to specify that local governments may apply for planning funds to study the potential impacts of sea level rise. As it pertains to the local government’s capacity to execute the buyout program, SCDRO will not require local governments to execute the program. SCDRO will manage buyout activities for local governments without sufficient capacity. SCDRO

⁹⁵ 84 FR 45869.

will not maintain ownership of acquired property though. It will be up to the local government to identify a responsible entity for property management during the application process.

Comment:

January 23, 2020

South Carolina Disaster Recovery Office
South Carolina Department of Administration
Attn: CDGB-Mitigation Program
632 Rosewood Drive
Columbia, SC 29201

Via email: DROMitigation@admin.sc.gov

To Whom it May Concern,

I am a resident of Greenville, South Carolina and, as the regional representative for the International Code Council (the “Code Council”), I am writing to provide comments on the South Carolina Disaster Recovery Office (SCDRO), South Carolina CDBG-MIT Action Plan (CDBG-MIT Plan).

The Code Council is a member-focused non-profit association dedicated to building safety and sustainability and we are proud to count South Carolina and many of its local jurisdictions as our Governmental Members. The Code Council develops the model building codes, the I-Codes, used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures. The I-Codes, including the International Residential Code (IRC) and the International Building Code (IBC), are the most widely used and adopted set of building codes in the U.S. and around the world. Developed through a consensus-based process, the I-Codes incorporate the latest technology and provide the safest, most resilient structures for our families and communities.

We would like to commend the SCDRO for the CBDG-MIT Plan’s emphasis on the importance of the adoption, implementation and enforcement of green building standards; however, the plan is silent about the importance of adopting and applying modern, resilient, building codes as the first and most impactful step. For that reason, our comments focus on the importance of incorporating code adoption and enforcement info South Carolina’s CDBG-MIT implementation. South Carolina and our local communities should take steps to advance long-term resilience and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property by adopting and applying the most recent editions of the national model codes that address existing natural hazards.

STUDIES SHOW BENEFITS OF MODERN BUILDING CODES AGAINST DISASTERS

Numerous studies confirm that the adoption and implementation of current model building codes is one of the nation’s best defenses against hurricanes, tornadoes, earthquakes, flooding, wildfires and other natural disasters. For example:

- The National Institute for Building Sciences’ Natural Hazard Mitigation Saves 2018 Interim Report found that designs meeting the 2018 IRC and IBC result in a national benefit of \$11 for every \$1 invested. In southern South Carolina, the benefit cost ratio can be as much as 32:1 for “hurricane

wind mitigation by increasing roof strength in new buildings that meet the 2018 IRC and IBC (by wind band).⁹⁶ In wildfire prone counties in the state, meeting the International Wildland Urban Interface Code (IWUIC), which addresses ignition resistant construction, defensible space, water supply and access for emergency responders, could generate \$4 in benefits for every \$1 invested.⁹⁷

- The benefits of a wildland urban interface (WUI) code have been further demonstrated in the field. A McClatchy analysis following the California Camp Fire in October of 2018 found that 51 percent of the houses built after a WUI fire code was implemented escaped damage compared to only 18 percent of the 12,100 houses built prior.⁹⁸
- Although building code adoption alone generates enormous mitigation benefits, code enforcement is equally important. FEMA quantified the cost of Dade County's inadequate code enforcement as a quarter of the \$16 billion in insured losses from Hurricane Andrew.⁹⁹ Researchers found similar results about 15 years later: that implementing building codes at the local level by ensuring proper staffing, training, and certification provides an additional loss reduction value on the order of 15 to 25 percent.¹⁰⁰

Recognizing the life safety and mitigation benefits that current building codes provide for communities, the U.S. Department of Housing and Urban Development' (HUD) has both required applicants for disaster recovery funding commit to adopt resilient codes and made available significant sums for codes' adoption and implementation. For the past seven years, and across multiple allocations, HUD has required Community Development Block Grants for Disaster Recovery (CDBG-DR) applicants demonstrate in their action plans how they will support the adoption of resilient building codes.¹⁰¹

HUD's first round of CDBG-MIT funding issued last year states that "through this allocation for mitigation," HUD seeks to "support the adoption" of the "latest edition of the published disaster-resistant building codes and standards (to include wildland urban interface, flood and all hazards, ASCE-24, and ASCE-7 respectively)." As such, "[g]rantees are encouraged to propose an allocation of CDBG-MIT funds for building code development and implementation, land use planning and/or hazard mitigation planning activities that may include but need not be limited to: (a) The development and implementation of modern and resilient building codes consistent with an identified model or standard, such as ASCE 24 and ASCE 7 as may be applicable, in order to mitigate against current and future hazards."¹⁰²

⁹⁶ National Institute for Building Sciences, Natural Hazard Mitigation Saves: 2018 Interim Report.

⁹⁷ *Id.*

⁹⁸ Lauren Gustus Destined to Burn collaboration: Why we did it, The Sacramento Bee (Apr. 11, 2019). The IWUIC generally meets or exceeds California's structural wildfire code, which is contained within California's Code of Regulations Title 24 Chapter 7a.

⁹⁹ Burby, R., *Hurricane Katrina and the paradoxes of government disaster policy: Bringing about wise governmental decisions for hazardous areas* (2006) citing FEMA Building Performance Assessment Team, *Preliminary Report in Response to Hurricane Andrew, Dade County, Florida* (1992).

¹⁰⁰ Czajkowski, J. et. al., *Demonstrating the Intensive Benefit to the Local Implementation of a Statewide Building Code* (2017).

¹⁰¹ HUD, Allocations, Common Application, Waivers, and Alternative Requirements for 2017 Disaster Community Development Block Grant Disaster Recovery Grantees, 83 Fed. Reg. 5844, (Feb. 9, 2018); Notice of National Disaster Resilience Competition Grant Requirements, 81 Fed. Reg. 36,557 (June 7, 2016); Allocations, Common Application, Waivers, and Alternative Requirements for Grantees Receiving Community Development Block Grant (CDBG) Disaster Recovery Funds in Response to Hurricane Sandy, 78 Fed. Reg. 14,329 (Mar. 5, 2013).

¹⁰² HUD, Allocations, Common Application, Waivers, and Alternative Requirements for Community Development Block Grant Mitigation Grantees, 84 Fed. Reg. 45,838 (Aug. 30, 2019).

FEMA has similarly prioritized code adoption and enforcement, concluding in its most recent five-year strategic plan that current building code adoption and enforcement are two of the most effective mitigation measures a jurisdiction can undertake by stating: “[d]isaster resilience starts with building codes, because they enhance public safety and property protection.”¹⁰³ In the Plan’s very first objective, FEMA highlighted the importance of the Agency’s “advocate[ing] for the adoption and enforcement of modern building and property codes.”¹⁰⁴

In August of this year, the Mitigation Framework Leadership Group (MitFLG)—chaired by FEMA and made up of another 13 federal agencies and departments as well as state, tribal, and local officials— released the National Mitigation Investment Strategy (NMIS). The Strategy makes several recommendations concerning the use, enforcement, and adoption of building codes: “[a]rchitects, engineers, builders, and regulators should use the latest building codes for the most up-to-date requirements for structural integrity, mechanical integrity, fire prevention, and energy conservation,” “trained, certified professionals [should] handle building inspections and code administration,” and “[u]p-to-date building codes and standard criteria should be required in federal and state grants and programs.”¹⁰⁵

Lastly, FEMA’s “Required Minimum Standards” for all FEMA funded construction require the latest I-Codes.¹⁰⁶ For post-disaster recovery, FEMA requires construction meet the latest editions of the IBC, IRC, International Existing Building Code (IEBC), International Energy Conservation Code (IECC); International Wildland-Urban Interface Code (IWUIC); International Plumbing Code (IPC); International Mechanical Code (IMC); International Fuel Gas Code (IFGC); International Fire Code (IFC); ICC 500-14, ICC/NSSA Standard on the Design and Construction of Storm Shelters; ICC 600-14, Standard for Residential Construction in High-wind Regions.¹⁰⁷ The Agency has deemed adherence to the current versions of these codes to be so important that it will not fund rebuilding of public facilities post-disaster if that construction deviates.

CODE ADOPTION AND ENFORCEMENT IN SOUTH CAROLINA

Unfortunate events like Hurricanes Joaquin, Matthew, Irma, Florence and most recently Dorian, have shown the need for South Carolina to become better prepared to take mitigating steps to build stronger for the future.

Current South Carolina statute adopts the 2018 South Carolina Codes (SCC), as the municipal building code for residential and commercial construction. The SCC are based on the 2018 updates to the International Codes, except that South Carolina has not adopted the International Wildland-Urban Interface Code (IWUIC). Currently, South Carolina requires the use and enforcement of the provisions from the 2018 IBC and the 2018 IRC, among other building codes, throughout the state, as well as the certification and training of code enforcement officials and licensing for building contractors. As a result, code enforcement in South Carolina tends to be consistent.¹⁰⁸

¹⁰³ FEMA’s 2018-2022 Strategic Plan (2018)

¹⁰⁴ *Id.*

¹⁰⁵ Mitigation Framework Leadership Group, *National Mitigation Investment Strategy* (Aug. 2019).

¹⁰⁶ FEMA Policy 204-078-2.

¹⁰⁷ FEMA Recovery Interim Policy FP- 104-009-11 Version 2.

¹⁰⁸ IBHS, *Rating the States: 2018* (Mar. 2018).

Building code application is most commonly measured through a community's Building Code Effectiveness Grading Schedule (BCEGS) score, an evaluation conducted by ISO, an analytics provider for the property/casualty insurance industry. BCEGS scores evaluate communities on staffing to permitting load, training, continuing education, and certification. Better BCEGS scores (i.e., lower scores out of 10) typically translate into lower insurance premiums for communities.¹⁰⁹ In 2019, ISO gave South Carolina an overall average of a 4/10 for commercial buildings and a 5/10 for residential buildings. While these scores reflect South Carolina's record of strong code adoption and enforcement, the state has room to improve.

STATE PLAN RECOMMENDATIONS

The following recommendations urge SCDRO to recognize as eligible for funding within the CDBG-MIT Action Plan, the adoption of building codes that supplement the SCC and improved code enforcement. These recommendations also encourage SCDRO to require FEMA's Minimum Standards as construction standards for SCDRO mitigation projects and to require appropriate training and certifications for officials supporting those projects. Finally, our recommendations suggest funding for post-disaster damage assessment training.

The State Plan Should Specify Available funds for Codes Exceeding the South Carolina's Codes

The CDBG-MIT Plan provides no explicit resources to address wildfire risk despite the CDBG-MIT Plan's recognition that "wildfire is the most frequently experienced natural hazard in the state." To address wildfire risks, we encourage SCDRO to include activities associated with the local adoption of the IWUIC—including code review, materials, and training—as eligible for funding under the CDBG-MIT Plan, specifically through the FEMA-Funded Mitigation Match and Planning funding categories. Code adoption is a recognized planning activity under HUD's CDBG-MIT allocation notice and is an activity of emphasis under HMGP (for which the "FEMA-Funded Mitigation Match category can serve as a match).

The International Wildland Urban Interface Code (IWUIC) addresses ignition resistant construction, noncombustible roof coverings, screens to prevent burning embers from penetrating into eaves and under foundations, combustible decking, fencing and related exterior components, creating and maintaining defensible spaces around the building, fire service access to structures and to water supplies, and fire protection planning. FEMA guidelines generally require federal buildings within the WUI adhere to the latest IWUIC¹¹⁰ and, as stated above, FEMA's Minimum Standards for public assistance funding require adherence to the latest IWUIC.

We also urge the SCDRO to clarify that communities can seek funding for code adoptions FEMA has recognized in its Minimum Standards, which includes codes beyond the IWUIC, including, for example, the ICC 600-14, Standard for Residential Construction in High-wind Regions, which provides additional protection for residential structures faced with high wind risk. Finally, we encourage the SCDRO to treat the proposed allocation planning as a discretionary floor, rather than a ceiling, in the case that additional state or local planning resources are required. The state plan should specify and encourage the adoption and enforcement of codes and standards that exceed the required minimum standards for areas subject to enhanced exposure and risk.

¹⁰⁹ ISO, *National Building Code Assessment Report* (2019).

¹¹⁰ United States Fire Administration, *Implementation Guidelines for Executive Order 13728 Wildland-Urban Interface Federal Risk Management* (2017).

The State Plan Should Specify the Availability of Funds for Improved Code Enforcement

The Code Council encourages SCDRO to expressly permit funding, for code enforcement activities, including training and staffing, both of which are permitted under CDBG-MIT, which have been proven to increase loss avoidance in South Carolina, and which, per ISO, are areas where improvement is possible across the state. For these reasons, ICC would recommend and support the South Carolina Disaster Recovery Office's CDBG-MIT use of funding for enforcement resources to jurisdictions in the eastern part of our state as identified in their report.

SCDRO Should Require FEMA's Minimum Standards and Appropriate Training for SCDRO Mitigation Projects and Encourage Code Adoptions through These Projects

The CDBG-MIT Plan allocates \$135 million of the \$157 million total allocation to housing and infrastructure investments. Per the plan, [a]ll work must be completed to standards that meet applicable building codes." The SCC present a strong minimum construction standard. However, as discussed above, the SCC do not address wildfire risk. Consistent with FEMA's Minimum Standards for public assistance funding, the Code Council recommends South Carolina require adherence to the latest IWUIC code in areas with wildfire risk for SCDRO construction projects. Given the importance of proper code implementation, the Code Council also recommends that, consistent with the National Mitigation Investment Strategy, the SCDRO require appropriate certification and training of plan reviewers and code enforcement officials on the SCDRO construction projects. We also recommend that third party, non-public entity training resources should be utilized to facilitate the highest possible level of compliance with the relevant codes.

Finally, the Code Council recommends the SCDRO incentivize communities in which SCDRO construction projects are to be constructed to update to the most recent editions I-Codes and Standards that go beyond the SCC' requirements, but which are required through FEMA's Minimum Standards (e.g., the current IWUIC and ICC 600-14, Standard for Residential Construction in High-wind Regions), as they address additional disaster hazards with the safest and latest hazard-resistant designs.¹¹¹

The State Plan Should Provide Funding for Post-Disaster Damage Assessment Training

We recommend the SCDRO partner with the Code Council, the Building Officials Association of South Carolina (BOASC) and the other Code Council Chapters throughout the state to promote and alert communities about post disaster damage assessment training programs and to provide funding for these programs under the FEMA-Funded Mitigation Match, Planning, and other funding categories. After a disaster, an affected community is often left on its own to struggle with assessing its damage and determining whether structures can be re-inhabited. Local government officials may not be instructed on how to perform rapid safety evaluations or what data to collect. When assessments are not conducted quickly, a community's residents may potentially reoccupy unsafe structures. Effective post-disaster building damage assessment can minimize the possibility for additional bodily injury by advising residents and aiding providers of eminent hazards at specific locations.

To this end, we recommend the SCDRO promote participation in existing post-disaster damage assessment training programs like the "When Disaster Strikes Institute."¹¹² This institute provides hands-

¹¹¹ FEMA Policy 204-078-2

¹¹² See https://learn.iccsafe.org/ihml/application/student/interface.icc/index.htm?course_id=34141; See also https://learn.iccsafe.org/ihml/application/student/interface.icc/index.htm?course_id=34141

on instruction on assessing damage through activities, case studies and interactive simulations that walk participants through various disaster scenarios. The institute stimulates discussion between participants and describes how paperwork should be completed. Participants learn techniques on how to become a properly trained second responder and, on completion, can be relied on to assist with performing post-disaster building assessments.¹¹³

SUMMARY

We believe it is crucial for the CBDG-MIT plan and associated South Carolina programs to support efforts to enhance South Carolina's building codes and their enforcement at both the State and local level. Studies prove that the adoption and enforcement of up-to-date building codes increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property.

The Code Council is happy to serve as a resource to the South Carolina Disaster Recovery Office and to follow-up with additional materials or data to aid in the SCDRO's work. Through our more than 1100 South Carolina members and 11 active South Carolina Chapters, the International Code Council thanks the Office of Disaster Recovery for the opportunity to comment on the South Carolina CDBG-MIT Action Plan. As the local representative for South Carolina, I offer my knowledge and expertise to you as an asset. Please feel free to contact me with any questions or concerns.

Sincerely,

Stephen D. Jones, CBO, MCP, MS, NJCEM
Sr. Government Relations Regional Manager
International Code Council
sjones@iccsafe.org
(973)-296-5210

Response: The CDBG-MIT action plan is designed to allow the state to utilize these limited funds to have the maximum benefit in both delivery speed and flood-reduction impact. While code enhancement is certainly important, it is outside the purview of the Disaster Recovery Office. All projects will be required to meet all state and local codes.

Comment:

South Carolina Disaster Recovery Office
632 Rosewood Drive, Columbia, SC 29201.
Comments submitted via email to: DROMitigation@admin.sc.gov

January 23, 2020

To Whom It May Concern:

¹¹³ See https://learn.iccsafe.org/ihtml/application/student/interface.icc/index.htm?course_id=34141

On behalf of Audubon South Carolina's 20,000 plus members, we are writing to comment on the State of South Carolina's Community Development Block Grant-Mitigation (CDBG-MIT) Action Plan (South Carolina action plan), dated December 9, 2019, to allocate \$157 million in funding from the U.S. Department of Housing and Urban Development (HUD). Audubon South Carolina strongly encourages the South Carolina Disaster Recovery Office (SCDRO) to better integrate consideration of future sea level rise and to prioritize coastal restoration and natural infrastructure projects that can provide multiple benefits including reduced flood risk and enhanced habitat for birds and other species. As you know, South Carolina is especially vulnerable to the impacts of sea level rise and it is critically important that the State maximize this unique funding opportunity to begin to build the State's long-term resilience to future climate-related challenges.

We applaud the State's focus on infrastructure projects and buyouts as strategies for mitigating flood risk. However, these efforts could be further enhanced by prioritizing natural infrastructure and restoration projects that can provide cost-effective solutions for building the resilience for both coastal communities and ecosystems. By prioritizing natural infrastructure projects in coastal communities, the State can advance innovative flood resilience approaches that deliver flood-risk-reduction, environmental, and economic benefits.

As a low-lying state, South Carolina coastal communities face significant threats from rising seas and more frequent and intense coastal storms. Many South Carolina communities are already seeing a significant increase in both episodic flooding from extreme storms, as well as chronic nuisance flooding during high tide events. According to the U.S. Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration (NOAA), coastal communities in South Carolina could see more than 2 feet of sea level rise by 2050 and more than 8 feet of sea level rise by 2100 under a high emissions scenario.¹¹⁴ In addition to flooding during extreme storm events, it is estimated that coastal communities in the Carolinas will see a 350 percent increase in chronic nuisance flooding during high tide events.¹¹⁵ A recent study published by the Union of Concerned Scientists estimates that in Charleston County alone, 8,000 homes could flood at least 26 times per year with two feet of additional sea level rise.¹¹⁶

These threats will be magnified as sea level rise inundates and drowns valuable coastal ecosystems—such as marshes, beaches, and barrier islands—that serve as a first line of defense for communities facing more frequent and extreme coastal storms. Unfortunately, these ecosystems are already being lost at an alarming rate. Without intervention, it is estimated that South Carolina could lose 20 to 45 percent of its saltmarsh by 2100.¹¹⁷ These ecosystems provide valuable flood protection for upland communities, vital

¹¹⁴ USACE Sea Level Change Curve Calculator, NOAA et al. 2017 Relative Sea Level Change Scenarios for Wilmington, Charleston, and Springmaid Pier, S.C.

http://corpsmapu.usace.army.mil/rccinfo/slc/slcc_calc.html

¹¹⁵ "Audubon's Coastal Carolinas Conservation Strategy" at 5. Jul. 2018.

¹¹⁶ Abigail Darling. "Sea level rise study shows Charleston area one of the riskiest places to live in the Southeast," The Post and Courier. Jul. 18, 2018. https://www.postandcourier.com/news/sea-level-risestudy-shows-charleston-area-one-of-the/article_c4b499d4-6ff5-11e8-abee-b32f453c638c.html citing Union of Concerned Scientists. "Underwater: Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate." Jul. 18, 2018, <https://www.ucsusa.org/resources/underwater>.

¹¹⁷ "Audubon's Coastal Carolinas Conservation Strategy" at 5. Jul. 2018.

habitats for birds, fish, and other wildlife, and are economically important resources for the State's commercial fisheries and tourism. Investing in natural infrastructure projects to restore and enhance these ecosystems is one of the most cost-effective ways that the State can build resilience to future flooding, while also delivering other environmental, economic, and recreational benefits to South Carolina residents.

Specifically, Audubon South Carolina suggests four ways to improve the South Carolina action plan:

- (1) Include more robust consideration of future threats to South Carolina communities and ecosystems from climate change and sea level rise;
- (2) Require implementation of best practices when administering floodplain buyouts;
- (3) Prioritize ecosystem restoration and natural infrastructure projects; and
- (4) Leverage partnerships with Audubon and other environmental organizations.

Better Account for Climate Risk

Accelerating sea level rise, more intense coastal storms, and increasingly heavy rainfall events are all contributing to increasing flood and erosion risks that affect both communities and ecosystems. The State action plan fails to account for increasing threats from sea level rise and climate change and, therefore, may fund mitigation projects that fail to meaningfully account for increasing flood risks, particularly in coastal communities. In fact, the plan specifically notes that “flood reduction efforts will only address riverine and surface flooding, not storm surge or sealevel rise issues.”¹¹⁸ By failing to account for future sea level rise and other climate impacts, the plan falls short of the long-term risk reduction goals outlined in HUD's guidance for the CDBG-MIT program.

To better account for future risk, CDBG-MIT funding could be used to support climate risk assessments and planning to inform mitigation efforts at the state, regional, and local levels. South Carolina is one of only a few states in the Southeastern United States that has not meaningfully assessed long-term risks posed by sea level rise. CDBG-MIT funding could be used to assess climate risks to people, property, and natural resources and to develop plans to help government agencies implement approaches for increasing community resilience and protecting and preserving important natural flood buffers, like wetlands, marshes, and beaches. By leveraging CDBG-MIT funding to support robust mitigation planning the state can also increase its competitiveness for federal grants focused on resilience—such as funding from FEMA's Pre-Disaster Mitigation and forthcoming Building Resilient Infrastructure and Communities, among other programs—and bring much needed financial resources to the State.

While we support the state's proposed use of CDBG-MIT funding to support local hazard mitigation planning, we encourage the state to consider a broader array of activities including updates to land use plans, zoning ordinances, and floodplain ordinances. Because current floodplain maps do not account for increasing flood risk, they are dramatically under predicting flooding events that many communities are already experiencing. According to the South Carolina Department of Natural Resources, approximately

¹¹⁸ “South Carolina Draft CDBG-MIT Action Plan” at 66.

25 percent of flood damages occur outside of designated flood hazard areas.¹¹⁹ With climate change and sea level rise, communities will see even greater flood heights and increasing flooding outside of designated special flood hazard areas. Legal and policy changes to land use codes can help local governments better manage changing flood risks and development pressures. Land use provisions encouraging preservation of natural floodplains and requiring new development to be elevated and sited outside of flood hazard areas have helped communities substantially reduce flood risks. These types of measures also help communities earn points under the Community Rating System (CRS)—a subprogram of the National Flood Insurance Program, which provides discounted flood insurance in communities that adopt higher floodplain management standards. The State could leverage the CDBG-MIT funding to more broadly affect state and local practices for managing development in floodplains. By continuing to rely on outdated, retrospective floodplain maps and building elevation requirements alone, the state is missing an opportunity to ensure that development is “future-ready” for increasing flood risk and balanced with the need to preserve and enhance coastal and riverine habitats.

Adopt Best Practices for Implementing a Floodplain Buyout Program

The State should also develop a more robust plan and adopt specific criteria to implement best practices for conducting a comprehensive buyout program with CDBG-MIT funding. We support SCDRO’s intention to fund strategic buyouts that can facilitate large-scale rather than piece-meal buyouts that enable restoration of natural flood buffers to maximize the flood risk reduction and ecological benefits of the buyouts. However, the buyout program in the action plan could be improved in a number of ways to encourage better practices at the local and regional level.

First, the state should establish specific criteria requiring that buyout programs focus on acquiring multiple contiguous parcels rather than single parcel buyouts to facilitate restoration of acquired sites. To facilitate comprehensive buyout projects, eligibility should include rental and multifamily properties, as necessary, and allow for relocation and other assistance for tenants affected by buyouts. Additionally, the state should provide technical assistance and guidance to subrecipients to help them offer incentives that can be used to encourage communities to opt to be bought out together and that are consistent with the funding source. For example, after Hurricane Sandy, New York state administered a buyout program where in addition to paying pre-storm value, homeowners were offered a 10 percent increase in the purchase price if a number of neighboring parcels opted to be bought out together, so that the land could be restored to a natural floodplain. Through the Sandy buyout program, 180 households in Oakwood Beach in Staten Island opted for a community-wide buyout and were persuaded to participate in the buyout because the land would be “restored to nature,” including restoration of natural marshland and tidal wetlands and the construction of recreational trails.

Second, the State should allow for buyouts to address coastal flood risks and also provide funding to support restoration projects that can maximize the flood risk reduction benefits provided to neighboring

¹¹⁹ South Carolina Department of Natural Resources Flood Mitigation Programs. “Quick Guide: Floodplain Management in South Carolina.” 2008.
<https://www.orangeburgcounty.org/depts/commDev/floodplain/floodplainDownloads/FloodplainManagementQuickGuide.pdf>

communities. In addition to funding buyouts, funding should also be made available to support restoration efforts on bought out lands. Specific funding criteria should be adopted and applicants should be encouraged to describe how they will incorporate ecological restoration to help the State prioritize buyout projects that deliver both flood-risk-reduction and ecological benefits. Applicants should be also be encouraged to consider and account for and describe the full range of ecological benefits that will be delivered through restoration of buyout sites, including reduced ambient air temperatures, improved water quality, and improved habitats for birds, fish, and other wildlife, among other benefits.

In adopting program criteria for the buyout program, SCDRO should consider criteria included in pending legislation to create a South Carolina Resilience Revolving Fund (S. 259),¹²⁰ which could provide useful best practices for implementing a floodplain buyout and restoration program with CDBG-MIT funding. The Resilience Revolving Fund allows for both low-interest loans as well as grants to local governments and other private partners, such as land trusts, to support buyouts and restoration efforts. The program allows for buyouts of both single-family homes as well as multifamily properties. The program also includes specific criteria for prioritizing buyouts, including buyouts of “blocks or groups of homes rather than individual homes” and areas larger than 10 acres. Additionally, the program requires that a certain percentage of the funds be used to execute “beneficial flood mitigation practices,” including providing relocation assistance to affected residents and supporting floodplain restoration. By adopting similar criteria, the State can facilitate buyouts and restoration projects that deliver multiple benefits to residents.

Additionally, South Carolina could learn from an existing buyout program administered by the Charlotte-Mecklenburg Storm Water Services (CMSS) in neighboring North Carolina. The City of Charlotte and Mecklenburg County joined together to create a floodplain buyout program in 1999 that is administered by the Stormwater Services agency. The program has enabled over 700 families and businesses to relocate out of flood hazard areas. CMSS combines stormwater fees and hazard mitigation funding to buy out flood-prone properties and convert bought out lands to natural floodplains and other recreational uses. To ensure comprehensive buyouts, CMSS uses local funds to operate an “orphan buyout program” that provides the financial resources to help the last homeowner living in a high-risk neighborhood move so that the site can be restored to its natural floodplain function, even when that property is not eligible for federal buyout funding. CMSS also offers leasebacks to enable people opting for buyouts to stay in their homes for a set period of time to ease their relocation. Since 1999, CMSS has spent \$67 million to acquire flood-prone properties and estimates that these buyouts have avoided an estimated \$25 million in property damage and prevented \$300 million in future losses.¹²¹ The Charlotte-Mecklenburg program can serve as an example of an effective local buyout program that has significantly reduced flood losses, minimized the social and economic consequences of buyouts, and delivered environmentally beneficial restoration projects.

¹²⁰ S. 259, Session 123 (2019-2020),

https://www.scstatehouse.gov/query.php?search=DOC&searchtext=S%20259&category=LEGISLATION&session=123&conid=27658197&result_pos=0&keyval=1230259&numrows=10.

¹²¹ City of Charlotte. “Floodplain Buyout (Acquisition) Program.”

<https://charlottenc.gov/StormWater/Flooding/Pages/FloodplainBuyoutProgram.aspx>.

Prioritize Ecosystem Restoration and Natural Infrastructure to Reduce Flood Risks

Within the infrastructure program, the action plan also misses an opportunity to prioritize ecosystem restoration and natural infrastructure projects. Although the action plan rewards environmentally beneficial projects with five points out of 100, specific criteria or additional points should be awarded to give priority to projects that deliver multiple benefits—including ecological, social, and economic benefits—in addition to enhancing flood resilience. Natural and green infrastructure approaches—including restoring wetlands and installing living shorelines like oyster reefs—often cost less to build and maintain than gray infrastructure projects, and can provide substantial environmental benefits like habitat for birds and other wildlife and clean drinking water, and recreational opportunities with associated economic benefits and societal values.¹²² NOAA estimates that natural infrastructure, such as coastal wetlands, provide more than \$23 billion annually in storm protection services alone;¹²³ and during Hurricane Sandy, it was estimated that coastal wetlands prevented \$625 million in direct property damages.¹²⁴ To facilitate natural infrastructure approaches, the State should require applicants to evaluate natural infrastructure approaches that can reduce long-term costs, protect and restore fish and wildlife habitat, improve water quality, or deliver other environmental and economic benefits. A portion of the CDBG-MIT funds could be set aside to specifically support natural infrastructure projects as well as data collection and monitoring of those projects to enable the State to evaluate the effectiveness of natural infrastructure projects. Natural infrastructure provides a unique opportunity for the State to maximize the economic and environmental benefits delivered by these mitigation projects for both communities and birds and other wildlife.

Leverage Partnerships with Audubon and Other Environmental Organizations

Finally, Audubon and other environmental organizations are partners that can help the State facilitate beneficial ecosystem restoration and natural infrastructure projects. Audubon has a long history of supporting coastal conservation in the Carolinas, including working with partners to protect, restore, and steward coastal ecosystems that provide important habitats for birds. Our powerful, bipartisan network of almost 24,000 members has mobilized hundreds of volunteers at dozens of sites across the Carolinas to support community engagement, education, and ecosystem restoration and long-term stewardship initiatives.

Audubon is also supporting important place-based work in South Carolina that could be leveraged to advance innovative ecosystem restoration projects that enhance coastal resilience. For example, Audubon South Carolina is leading efforts to restore and enhance Crab Bank Seabird Sanctuary in Charleston Harbor. The project will result in renourishment of the island using dredge materials from

¹²² Sutton-Grier, Ariana E. et al., “Future of our coasts: The potential for natural and hybrid infrastructure to enhance the resilience of our coastal communities, economies and ecosystems.” *Environmental Science & Policy* 51, pp 137-148. April 2015. <https://www.sciencedirect.com/science/article/pii/S1462901115000799>.

¹²³ National Oceanic and Atmospheric Administration, “Fast Facts: Natural Infrastructure.” Undated. <https://coast.noaa.gov/states/fast-facts/natural-infrastructure.html>.

¹²⁴ Weeks, Jennifer. “Nature's Coast Guards.” 2017. Science News for Students. www.sciencenewsforstudents.org/article/natures-coast-guards

Charleston Harbor, which will provide natural infrastructure that will dampen wave energy and reduce flood and erosion risks for adjacent communities while also restoring approximately 28-acres of prime habitat for birds and other wildlife.¹²⁵ This project will leverage federal funding from USACE and demonstrate how natural infrastructure solutions provide multiple benefits to both communities and birds, which can inform similar projects for CDBG-MIT funding.

Audubon has also supported the development of a Geographic Information System (GIS) tool for the Carolinas that can help the State identify flood-prone properties in ecologically important areas where targeted buyouts can reduce flood risks while also improving habitats for birds and other species. This tool can help the State ensure that it is getting the biggest “bang for its buck” by supporting mitigation projects that benefit both communities and wildlife. Audubon South Carolina and other environmental organizations could support the State’s efforts to enhance flood resilience in coastal communities and could help the State leverage CDBG-MIT funding to support ecosystem restoration projects that both reduce the State’s risks from future disasters, while also delivering numerous other everyday benefits to the State’s economy and environment.

We ask for your consideration of these recommendation as you work to develop a plan and implement guidance on how to invest the state’s CDBG-MIT funding. Coupling buyouts of flood-prone properties with restoration projects provides community-wide flood and storm resiliency benefits that are adaptive, long-term, and cost-effective. Projects that protect and restore coastal and riverine ecosystems will deliver the broadest benefits to communities as well as birds and other wildlife. Please consider Audubon South Carolina as a resource and partner moving forward on this and other issues where healthy coastal communities and wildlife coexist.

Sincerely,

Justin Stokes

Executive Director, Audubon South Carolina

Response: SCDRO will allow for the use of planning funds to investigate sea level rise. As it pertains to buyouts, SCDRO intends to incorporate best practices to ensure the buyout program achieves the maximum benefit possible. For infrastructure projects, local governments may submit projects that focus on ecosystem restoration and natural infrastructure projects to reduce future flood risk. Those projects should receive additional points under the prioritization outlined in this plan based on the positive environmental impact. Finally, SCDRO will continue to leverage partnerships to the benefit of South

¹²⁵ Audubon. “Natural Infrastructure Report: How Natural Infrastructure Can Shape a More Resilient Coast for Birds and For People.” Jan. 2018.
https://www.audubon.org/sites/default/files/audubon_infrastructure_jan192018.pdf; see also “Return of nesting birds to Crab Bank Seabird Sanctuary one step closer.” Moultrie News. Nov. 15, 2019.
https://www.moultrienews.com/community-news/return-of-nesting-birds-to-crab-bank-seabird-sanctuaryone/article_0c35ba10-0706-11ea-95c3-1b4f9e8e5466.html.

Carolínians, and the office looks forward to expanding those partnerships to include environmental organizations as the CDBG-MIT programs get underway.

2019 Area Median Income Limits by Family Size and County

2019 HUD Area Median Income Limits for South Carolina										
County Name	County AMI	% of AMI	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
Berkeley County	77,900	30% AMI	16,350	18,700	21,330	25,750	30,170	34,590	39,010	43,430
		50% AMI	27,300	31,200	35,100	38,950	42,100	45,200	48,300	51,450
		80% AMI	43,650	49,850	56,100	62,300	67,300	72,300	77,300	82,250
		120% AMI	65,475	74,775	84,150	93,450	100,950	108,450	115,950	123,375
Calhoun County	68,900	30% AMI	14,500	16,910	21,330	25,750	30,170	34,590	39,010	43,430
		50% AMI	24,150	27,600	31,050	34,450	37,250	40,000	42,750	45,500
		80% AMI	38,600	44,100	49,600	55,100	59,550	63,950	68,350	72,750
		120% AMI	57,900	66,150	74,400	82,650	89,325	95,925	102,525	109,125
Charleston County	77,900	30% AMI	16,350	18,700	21,330	25,750	30,170	34,590	39,010	43,430
		50% AMI	27,300	31,200	35,100	38,950	42,100	45,200	48,300	51,450
		80% AMI	43,650	49,850	56,100	62,300	67,300	72,300	77,300	82,250
		120% AMI	65,475	74,775	84,150	93,450	100,950	108,450	115,950	123,375
Chesterfield County	46,700	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Clarendon County	45,400	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Darlington County	54,600	30% AMI	12,490	16,910	21,330	25,750	29,200	31,350	33,500	35,650
		50% AMI	18,900	21,600	24,300	27,000	29,200	31,350	33,500	35,650
		80% AMI	30,250	34,600	38,900	43,200	46,700	50,150	53,600	57,050
		120% AMI	45,375	51,900	58,350	64,800	70,050	75,225	80,400	85,575
Dillon County	41,500	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Dorchester County	77,900	30% AMI	16,350	18,700	21,330	25,750	30,170	34,590	39,010	43,430
		50% AMI	27,300	31,200	35,100	38,950	42,100	45,200	48,300	51,450
		80% AMI	43,650	49,850	56,100	62,300	67,300	72,300	77,300	82,250
		120% AMI	65,475	74,775	84,150	93,450	100,950	108,450	115,950	123,375
Florence County	62,000	30% AMI	12,750	16,910	21,330	25,750	30,170	34,590	37,650	40,100
		50% AMI	21,250	24,300	27,350	30,350	32,800	35,250	37,650	40,100
		80% AMI	34,000	38,850	43,700	48,550	52,450	56,350	60,250	64,100
		120% AMI	51,000	58,275	65,550	72,825	78,675	84,525	90,375	96,150

County Name	County AMI	% of AMI	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
Georgetown County	59,400	30% AMI	12,500	16,910	21,330	25,750	30,170	34,500	36,850	39,250
		50% AMI	20,800	23,800	26,750	29,700	32,100	34,500	36,850	39,250
		80% AMI	33,250	38,000	42,750	47,500	51,300	55,100	58,900	62,700
		120% AMI	49,875	57,000	64,125	71,250	76,950	82,650	88,350	94,050
Horry County	61,200	30% AMI	12,850	16,910	21,330	25,750	30,170	34,590	37,950	40,400
		50% AMI	21,450	24,500	27,550	30,600	33,050	35,500	37,950	40,400
		80% AMI	34,300	39,200	44,100	48,950	52,900	56,800	60,700	64,650
		120% AMI	51,450	58,800	66,150	73,425	79,350	85,200	91,050	96,975
Lee County	41,200	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Marion County	41,600	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Marlboro County	41,600	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Orangeburg County	46,900	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Sumter County	50,300	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875
Williamsburg County	43,100	30% AMI	12,490	16,910	21,330	25,750	28,250	30,350	32,450	34,550
		50% AMI	18,350	20,950	23,550	26,150	28,250	30,350	32,450	34,550
		80% AMI	29,300	33,500	37,700	41,850	45,200	48,550	51,900	55,250
		120% AMI	43,950	50,250	56,550	62,775	67,800	72,825	77,850	82,875

Financial Projections

Month	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2019-2020			2020-2021											
QPR QTR	Qtr 2			Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration															
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>															
Planning															
<i>Projected</i>	\$500,000			\$500,000			\$500,000			\$500,000			\$500,000		
<i>Actual</i>															
Housing															
<i>Projected</i>	\$0			\$500,000			\$4,500,000			\$4,500,000			\$4,500,000		
<i>Actual</i>															
Infrastructure															
<i>Projected</i>	\$761,227			\$2,061,227			\$1,961,227			\$1,961,227			\$1,861,227		
<i>Actual</i>															
FEMA-Funded Match															
<i>Projected</i>	\$0			\$0			\$500,000			\$500,000			\$500,000		
<i>Actual</i>															
Quarterly Total															
<i>Projected</i>	\$1,500,000			\$3,300,000			\$7,700,000			\$7,700,000			\$7,600,000		
<i>Actual</i>	\$0			\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2021-2022											
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration												
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>												
Planning												
<i>Projected</i>	\$500,000			\$500,000			\$500,000			\$500,000		
<i>Actual</i>												
Housing												
<i>Projected</i>	\$5,000,000			\$5,000,000			\$5,000,000			\$4,000,000		
<i>Actual</i>												
Infrastructure												
<i>Projected</i>	\$1,961,227			\$1,761,227			\$1,761,227			\$1,761,227		
<i>Actual</i>												
FEMA-Funded Match												
<i>Projected</i>	\$500,000			\$500,000			\$500,000			\$500,000		
<i>Actual</i>												
Quarterly Total												
<i>Projected</i>	\$8,200,000			\$8,000,000			\$8,000,000			\$7,000,000		
<i>Actual</i>	\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2022-2023											
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration												
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>												
Planning												
<i>Projected</i>	\$500,000			\$500,000			\$500,000			\$500,000		
<i>Actual</i>												
Housing												
<i>Projected</i>	\$2,000,000											
<i>Actual</i>												
Infrastructure												
<i>Projected</i>	\$2,261,227			\$2,261,227			\$2,261,227			\$4,261,227		
<i>Actual</i>												
FEMA-Funded Match												
<i>Projected</i>	\$500,000			\$500,000			\$500,000					
<i>Actual</i>												
Quarterly Total												
<i>Projected</i>	\$5,500,000			\$3,500,000			\$3,500,000			\$5,000,000		
<i>Actual</i>	\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2023-2024											
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration												
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>												
Planning												
<i>Projected</i>	\$500,000			\$500,000			\$500,000			\$500,000		
<i>Actual</i>												
Housing												
<i>Projected</i>												
<i>Actual</i>												
Infrastructure												
<i>Projected</i>	\$4,261,227			\$4,261,227			\$4,261,227			\$4,261,227		
<i>Actual</i>												
FEMA-Funded Match												
<i>Projected</i>												
<i>Actual</i>												
Quarterly Total												
<i>Projected</i>	\$5,000,000			\$5,000,000			\$5,000,000			\$5,000,000		
<i>Actual</i>	\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2024-2025											
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration												
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>												
Planning												
<i>Projected</i>	\$500,000			\$500,000			\$210,500					
<i>Actual</i>												
Housing												
<i>Projected</i>												
<i>Actual</i>												
Infrastructure												
<i>Projected</i>	\$4,261,227			\$4,261,227			\$4,550,727			\$4,761,227		
<i>Actual</i>												
FEMA-Funded Match												
<i>Projected</i>												
<i>Actual</i>												
Quarterly Total												
<i>Projected</i>	\$5,000,000			\$5,000,000			\$5,000,000			\$5,000,000		
<i>Actual</i>	\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M		A	M	J
State Fiscal Year	2025-2026												
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Year 6 >50% Expended Requirement	Qtr 2		
Administration													
Projected	\$238,773			\$238,773			\$238,773				\$238,773		
Actual													
Planning										Required Amount			
Projected										\$78,795,000			
Actual													
Housing										Projected Amount			
Projected										\$131,500,000			
Actual													
Infrastructure													
Projected	\$4,761,227			\$4,761,227			\$4,761,227				\$4,761,227		
Actual													
FEMA-Funded Match										Actual Amount			
Projected										\$0			
Actual													
Quarterly Total													
Projected	\$5,000,000			\$5,000,000			\$5,000,000				\$5,000,000		
Actual	\$0			\$0			\$0				\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J
State Fiscal Year	2026-2027											
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2		
Administration												
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,773		
<i>Actual</i>												
Planning												
<i>Projected</i>												
<i>Actual</i>												
Housing												
<i>Projected</i>												
<i>Actual</i>												
Infrastructure												
<i>Projected</i>	\$4,761,227			\$4,761,227			\$4,761,227			\$4,761,227		
<i>Actual</i>												
FEMA-Funded Match												
<i>Projected</i>												
<i>Actual</i>												
Quarterly Total												
<i>Projected</i>	\$5,000,000			\$5,000,000			\$5,000,000			\$5,000,000		
<i>Actual</i>	\$0			\$0			\$0			\$0		

Month	J	A	S	O	N	D	J	F	M	A	M	J	
State Fiscal Year	2027-2028												
QPR QTR	Qtr 3			Qtr 4			Qtr 1			Qtr 2			TOTAL
Administration													
<i>Projected</i>	\$238,773			\$238,773			\$238,773			\$238,764			\$7,879,500
<i>Actual</i>													\$0
Planning													
<i>Projected</i>													\$9,710,500
<i>Actual</i>													\$0
Housing													
<i>Projected</i>													\$35,000,000
<i>Actual</i>													\$0
Infrastructure													
<i>Projected</i>	\$134,917												\$100,000,000
<i>Actual</i>													\$0
FEMA-Funded Match													
<i>Projected</i>													\$5,000,000
<i>Actual</i>													\$0
Quarterly Total													
<i>Projected</i>	\$373,690			\$238,773			\$238,773			\$238,764			\$157,590,000
<i>Actual</i>	\$0			\$0			\$0			\$0			\$0