An All Natural Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

2016 Update

For use by Municipalities and Jurisdictions of Fairfield, Lexington, Newberry and Richland Counties

HVRI
HAZARDS & VULNERABILITY RESEARCH INSTITUTE
UNIVERSITY OF SOUTH CAROLINA

CENTRAL MIDLANDS
Council of Governments

Participating Jurisdictions & Agencies

Fairfield County
Town of Winnsboro
Town of Ridgeway
Fairfield Memorial Hospital
Mid-County Water Company
Lexington County
City of West Columbia
City of Cayce
Town of Lexington
Town of Irmo
Town of Chapin
Town of Gilbert
Town of Springdale
Town of Batesburg-Leesville
Midlands Technical College
Gilbert-Summit Rural Water District
Newberry County
City of Newberry
Town of Whitmire
Richland County
City of Columbia
City of Forest Acres
Town of Arcadia Lakes
Town of Eastover
Town of Blythewood
Richland County School District 2

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List of Acronyms

CMCOG	Central Midlands Council of Governments
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
NFIP	National Flood Insurance Program
NWS	National Weather Service
SCEMD	South Carolina Emergency Management Agency

Executive Summary

Various types of natural hazards, such as flooding, tornadoes and winter weather, threaten the four counties comprising the Central Midlands Region of South Carolina. They endanger the health and safety of residents, jeopardize the economic vitality of the region, and imperil environmental quality. To increase resilience or minimize vulnerabilities to natural hazards the Central Midlands Council of Governments (CMCOG), in close collaboration with local stakeholders, initiated a hazard mitigation planning process in 2004. This plan represents an update of the 2011 "*An All Natural Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina"* and includes new hazard and vulnerability assessments as well as a status update of past hazard mitigation actions and integration of new strategies.

This Hazard Mitigation Plan is structured so that the general public can easily follow the process used to:

A) Describe the natural hazards that most affect and concern each county
B) Assess vulnerable populations and assets in each county
C) Assess risks varying from one county to another in the region
D) Identify and evaluate goals, actions and projects that reduce the effects of identified hazards
E) Devise an action plan for prioritizing, implementing, and administering recommended mitigation actions and projects
F) Monitor, evaluate, and update the HMP within a five-year period
G) Devise the process that participating jurisdictions could use to incorporate plan recommendations into local plans and capital improvements programs
H) Ensure continued public involvement in the ongoing mitigation planning process

1. Introduction and Purpose

1.1 Introduction

As part of the Disaster Mitigation Act of 2000, the Federal Emergency Management Agency (FEMA) requires all counties to create and maintain a Hazard Mitigation Plan (from now on referred as the HMP). Every HMP includes an assessment of the historical impacts of natural hazards to determine high risk areas and identify vulnerabilities. Based on this assessment, jurisdictions identify and prioritize mitigation actions for reducing risk and protecting their citizens from the impacts of natural hazards. Comprehensive planning, demographic and economic information is tied to these mitigation strategies so as to make the most effective decisions.

A FEMA approved and locally adopted HMP is a requirement to solicit funds under the Hazard Mitigation Grant Program (HMGP). Only mitigation actions listed in this HMP are eligible for HMGP funding. Having an HMP is typically a requisite for obtaining other federal grants such as the Pre-Disaster Mitigation (PDM) and Flood Mitigation Assistance (FMA) grants. Therefore, it is crucial for counties and municipalities to participate in the hazard mitigation planning process not only as an organizational and planning exercise, but as an important instrument for securing financial resources to safeguard the lives and properties of their citizens.

This document presents the required five-year update of the 2011 *All Natural Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina*. It reflects a comprehensive update of the previous plan. Formatting changes were made throughout the document to streamline information and facilitate the use of this planning tool. The HMP now provides distinct hazard, vulnerability, and mitigation information for each county and its jurisdictions and incorporates new data sources and analyses across the entire planning time period, going beyond the addition of new information for the period between plan updates. In addition, the catastrophic October 2015 flash flood and dam failures prompted changes in goals and priorities that are reflected in the HMP.

The Central Midlands Council of Governments (CMCOG) is the designated lead agency to coordinate jurisdictions, compile information, and develop the HMP for the region. The CMCOG is a South Carolina state agency that provides a regional forum for local governments in the Central Midlands region of Fairfield, Lexington, Newberry, Richland counties and offers technical assistance and planning services in the area. This HMP covers the Central Midlands region of South Carolina, which comprises the counties of Fairfield, Lexington, Newberry and Richland along with their constituent municipalities (Figure 1).

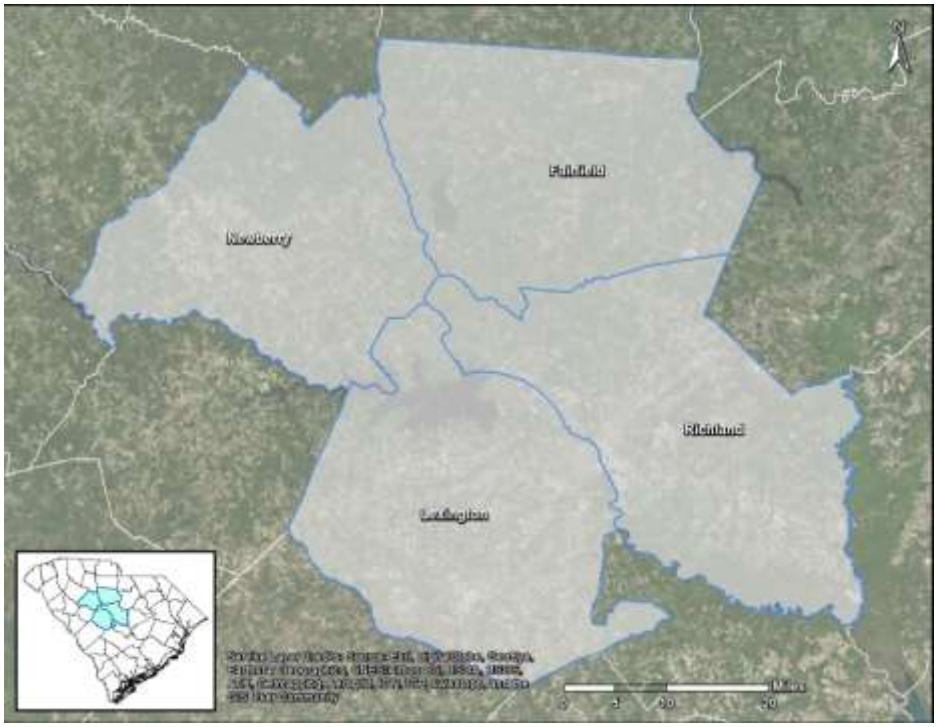

Figure 1 - Central Midlands Region Assessed in the HMP.

1.2 Plan Objectives

This HMP is intended for use by city planners and emergency management officials. It consolidates disparate information sources into a single document and provides an extensive list of mitigation activities and identifies at-risk areas, infrastructure and vulnerabilities to support the reduction or elimination of risk and safeguard life and property.

The objectives of the HMP are as follows:

1) Coordinate regional resources and personnel to collate the most up-to-date information on natural hazard impacts and mitigation strategies.
2) Utilize state-of-the-art scientific techniques to analyze natural hazard risk and impacts.
3) Provide an easy to read document that supports evidence-based planning and decision making.

1.3 Reading this Plan

The HMP underwent design and formatting changes, along with updates to data and analysis techniques. The initial chapters of the HMP are applicable to all four counties. Section 2 outlines the planning process. Section 3 details the physical and socioeconomic characteristics of the region and section 4 describes the hazards covered in the HMP. All subsequent sections are county-specific, containing the local hazard, vulnerability and capability assessments and mitigation strategies. Non-public information and supplemental information is found in the Appendix.

Users can pare down content by simply deleting non-applicable sections, essentially creating a local rather than a multi-jurisdictional hazard mitigation plan. The digital version of the HMP is hyperlinked, allowing readers to skip to sections of interest and/or delete irrelevant content.

2. Planning Process

2.1 Planning Methodology

This section addresses FEMA HMP requirement 201.6(c)(1) and 201.6(d)(3)

The CMCOG assembled local planning committees for each of the four participating counties (i.e. Fairfield, Lexington, Newberry, and Richland). Each committee consisted of jurisdictional representatives, county emergency managers, local college representatives, and other institutions that represented substantial portions of the population. These planning committees were essential in coordinating and communicating with local stakeholders.

The CMCOG worked with each planning committee to discuss hazard priorities and identify mitigation strategies. There were a total of twelve committee meetings; three for every county (see Appendix VI for meeting attendance documents). When stakeholders were unable to attend meetings, CMCOG staff reached out with individual visits, phone calls or e-mail correspondence. Mitigation strategies and other stakeholder requirements were finalized through individual correspondence, with a final meeting held for each county to discuss strategies between stakeholders.

Table 1 - Stakeholder meetings and outreach efforts by CMCOG staff for plan update.

Meeting or Presentation	Dates
Batesburg-Leesville	17/February/2016
CMCOG Council	25/February/2016, 25/August/2016
Town of Chapin	5/February/2016
Town of Eastover	21/March/2016
Environmental Planning Advisory Committee	16/March/2016
Gills Creek Watershed Association	9/March/2016
Fairfield County Stakeholders	18/February/2016, 10/March/2016
Lexington County Stakeholders	3/February/2016, 2/March/2016
Irmo Planning Commission	1/February/2016
Newberry County Stakeholders	5/February/2016, 4/March/2016
Richland County Stakeholders	2/February/2016, 1/March/2016
Richland County Blue Ribbon Committee	18/February/2016, 10/March/2016

This section addresses FEMA HMP requirements 201.6(b)(1) & 201.6(c)(4)

Public opinion was integrated into the HMP through a public opinion survey and a public comment period. The survey was deployed from December 17th, 2015 through February 26th, 2016. The CMCOG hosted the survey on its website with links to it by other stakeholders (Figure 2). The online survey asked respondents for what natural hazards they perceived counties should mitigate against and their preferred mitigation actions. Respondents were recruited via word of mouth (through the planning committees) and the survey was publicized through agency home pages and social media. A total of 218 Central Midland residents completed the survey, the results of which were shared with the county committees and incorporated into decision-making. A copy of the survey, along with results, is found in Appendix I of this document.

Figure 2 - Screenshot of HMP Public Survey Announcement posted on CMCOG Website.

A public comment period was established for the final draft of the HMP from August 12th, 2016 to August 31st, 2016. This period was advertised on local newspapers, agency websites and social media. Hazard assessment findings and mitigation strategies were shared and open for comment on August 30th, 2016 during a public meeting. A digital copy of the HMP was shared on the CMCOG website, while a physical copy of the HMP was available in the CMCOG building. Copies of the advertisements are included in Appendix V. Comments received were integrated into the final draft of the plan.

2.2 Stakeholders Involved

This section addresses FEMA HMP requirement 201.6(b)(2)

Table 2 presents the county committees, their jurisdictions and their participating members, along with their employment titles. In addition to emergency management-related agencies, the CMCOG reached out to private entities and other stakeholders with a mission-critical interest in hazard mitigation planning (e.g. colleges, medical facilities). There are jurisdictions that did not send representatives but have mitigation strategies present in the plan. These jurisdictions were informed of the plan update, and opted to maintain the same mitigation strategies from the 2011 Central Midlands HMP.

Table 2 - Stakeholders Involved in the Planning Process.

State and Federal Agencies	
Agency	***Name & Title***
SCEMD	Andrew Phillips (*Hazard Mitigation Specialist*), Bethany Morton (*Region 3 Emergency Manager*), Pat Patterson (*Region 3 Area Coordinator*)
SCDOT	Bryan Jones (*Administrator – District 1*), Kevin McLaughlin (*Administrator – District 2*)
CMCOG	Gregory Sprouse (*Director of Research, Planning, and Development*), Guillermo Espinosa (*Senior Planner*)
Fairfield County	
Agency	***Name & Title***
Fairfield County Emergency Management Department	Phyllis Watkins (*Director*)
Fairfield Memorial Hospital	Natalie Thorne–Forrest (*Emergency Management Coordinator*)
Mid – County Water Company	Herb Rentz (*Manager*)
Town of Winnsboro	Don Wood (*Town Manager*)
Lexington County	
Agency	***Name & Title***
Lexington County Emergency Preparedness Division	Bo Davenport (*Director of Emergency Management*), Rodney Watson (*Assistant Emergency Manager*)
City of West Columbia	Wayne Shuler (*Director of Planning & Zoning*)
City of Cayce	Tara Greenwood (*Special Projects Grants Coordinator*)
Town of Batesburg – Leesville	Jay Hendrix (*Fire Chief*)
Town of Gilbert	Fred Taylor (*Zoning Administrator*)
Town of Chapin	Chris Clauson (*Zoning Administrator*)
Irmo Fire Department	Clyde Thomas (*Assistant Fire Chief*)
Town of Springdale	Jeff Stilwell (*Town Administrator*), John Rabon (*Licensing & Permitting*)
Town of Irmo	Whitt Cline (*Public Services Director*)
Irmo Fire Department	Clyde Thomas (*Assistant Fire Chief*)
Midlands Technical College	Craig Hess (*Director of Operations*)
Gilbert – Summit Rural Water District	Mark Forrester (*Manager*)
Newberry County	
Agency	***Name & Title***
Newberry County Emergency Preparedness Agency	Tommy Long (*Director*)
Newberry County	Anne Peters (*Floodplain Administrator & Manager*)
City of Newberry	Roy McClurkin (*Chief of Police*), Don Hurst (*Chief Inspector*), Matt Dewitt (*Assistant City Manager*), Mac Bartley (*Director of Public Works*)
Town of Whitmire	Gene Whelchel (*Town Supervisor*)
Piedmont Technical College	Chad Teague (*Director Facilities Management*)
Richland County	
Agency	***Name & Title***
Richland County Emergency Services Department	Michael Kalec (*Emergency Manager*), Miranda Spivey (*Fire Marshall Office Division Manager*)
Richland County	Andrea Bolling (*Floodplain Coordinator*)
City of Columbia	Missy Caughman (Budget Director), Dana Higgins (City Engineer)
City of Forest Acres	Mark Williams (*City Administrator*)
Town of Arcadia Lakes	Mark Huguley (*Mayor*)
Town of Irmo	Whitt Cline (*Public Services Director*)
Town of Blythewood	Malcolm Gordge (*Town Council*)
Town of Eastover	Geraldene Robinson (*Mayor*)
Richland County School District Two	Chuck Earles (*Emergency Services*)

2.3 Procedure for Stakeholder Input

Stakeholders have multiple opportunities and methods to provide input in the HMP:

This section addresses FEMA HMP requirement 201.6(b)(2)

- Stakeholders will share their mitigation goals and strategies as part of the HMP participation requirements. These goals are meant to reflect their hazard mitigation priorities by utilizing a Benefit Cost Analysis (BCA) methodology to determine project effectiveness and plausibility. A template for providing mitigation goals is provided in Appendix VII – A.
- Stakeholders provide a "Capabilities Assessments", which are reports of their available facilities and personnel resources dedicated to hazard mitigation and disaster relief. These reports include mitigation plans and actions currently in effect for a particular jurisdiction.
- As part of a county committee, stakeholders may share their recommendations at different meetings held as part of the planning process. Changes requested to their provided information will be reflected in the final draft. Requested changes to other parts of the document will be taken under consideration and discussed with planning committees where appropriate.
- Stakeholders have opportunities to comment on plan drafts before submittal for approval by FEMA and before approval by their jurisdiction. Changes requested during these phases will be reflected in the planning timeline.

2.4 Plan Adoption Procedure

The HMP was submitted to participating counties and local jurisdictions for adoption by formal resolution. Copies of plan adoption resolutions for each jurisdiction are located in Appendix III. A template letter to be utilized by local governments to adopt this plan may be found in Appendix VII – B of this document.

This section addresses FEMA HMP requirement 201.6(c)(5)

2.5 Plan Update Procedure

According to the Disaster Mitigation Act of 2000, regional planning for hazard mitigation must incorporate a method and schedule of monitoring, evaluating, and updating hazard mitigation processes and results within a five-year cycle. In short, the HMP shall be a working document and reflect changes to demographics, economy and progress on mitigation goals on an ongoing basis. The CMCOG's regional planning team will coordinate mostly with, but not restricted to, established committees to monitor local efforts and achievements in hazard mitigation. Procedures for yearly monitoring and evaluation, citizen participation and updating the HMP are as follows:

This section addresses FEMA HMP requirement 201.6(c)(4)(iii)

A. Monitoring

On an annual basis, CMCOG will coordinate with county emergency managers and communicate update requests regarding the status of mitigation actions to every participating jurisdiction. Reporting periods will track changes to mitigation actions on a fiscal year basis. A sample form to be used by a regional planning team and county risk assessment and hazard mitigation committees to undertake the annual evaluation process is provided in Appendix VII – C.

B. Evaluation

The CMCOG will compile action updates and revise the HMP accordingly. In addition, the CMCOG will highlight mitigation success stories on its website, through social media, and other outreach efforts. The updates will also address the following points:

- Evaluate the goals and objectives to ensure they address current and expected conditions.
- Determine if the nature or magnitude of risk has changed.
- Evaluate whether the current resources are adequate for implementing action plans.
- Document any implementation problems such as technical, political, legal or coordination issues with other agencies.
- Document agency and other partner participation in reacting to hazard events.
- Document progress toward involving new local governments in the regional plan as participating jurisdictions.

A digital copy of the annually revised HMP will be made available to each of the implementing agencies, the SCEMD, the South Carolina Adjutant General, and FEMA. Moreover, a notice of availability for the revised HMP was published in a newspaper of general circulation in each county in the region.

C. Citizen Participation

To ensure that the public has an opportunity to make meaningful input in the planning process, the following procedure is recommended for all participating jurisdictions:

- After preparation of a draft annual revision, a notice of review shall be published in a newspaper of general circulation either as a legal or a display ad. The CMCOG will utilize social media to further publicize the revision. Every jurisdiction is encouraged to also utilize their social media capabilities.
- The general public will be able to review the annual revision for a period of not less than 14 working days prior to its adoption by resolution of a participating local jurisdiction. The time, date and place of the governing body as well as the proposed action on the adoption shall be advertised either in the measures specified in this paragraph or in an optional additional article or legal notice.
- During the preparation of the comprehensive five-year revision of the HMP, the public shall be offered an opportunity to attend the meetings of the county committee to give input and also to comment on the action plan of each local jurisdiction prior to its inclusion in the regional plan. A digital copy of the draft plan shall be made available on the CMCOG website.
- Notices of the time, date, and place of meeting for adopting the HMP by resolution shall be published as an article of general interest news or as a legal notice in a newspaper of general circulation not less than 14 working days prior to passage of the adopting resolution.

Local jurisdictions are encouraged to take additional measures to involve the public in the planning and evaluation process but should consider the above listed measures as minimum steps to afford the public an opportunity to be involved in the document preparation process.

D. The Comprehensive Update

The HMP will be updated every five years. For the Central Midlands Region, this means that the next comprehensive revision will be started in 2019 and completed by mid-2021. The update shall reflect changes in data and analysis techniques critical to making hazard mitigation decisions and evaluated according to items listed under section 2.7 B (Evaluation). CMCOG will initiate the process and help in the identification of a lead agency that can facilitate the formation of committees, coordinate data collection and analysis, develop the HMP document, and involve the public.

2.6 Incorporating this Plan into Local Jurisdiction Plans

This section addresses FEMA HMP requirement 201.6(c)(4)(ii)

Much of the information in the HMP may be used by participating jurisdictions when updating their comprehensive plans. State law identifies a minimum of nine elements for inclusion in a comprehensive plan. Below are examples of those different elements present in this plan and how that information could be integrated into other plans:

- Population: information such as population estimates and the location of vulnerable populations within jurisdictions can help emergency services agencies plan for potential needs.
- Natural Resources: accurately depicting flood hazard areas is critical information for land use planners, as it helps guide future development out of flood prone areas.
- Housing: having an understanding of the number of structures and property values is important to determine vulnerability in the event of a natural hazard. This information could be combined with the location of flood prone areas to determine potential risk to those structures.
- Community Facilities: the critical facilities identified in this document provide a list of infrastructure in place important for disaster relief efforts.
- Transportation: the transportation system information plays an important role in planning evacuations prior to natural hazard events and in providing access to emergency services before and after an event.
- Land use: analyzing the location of the hazard events, particularly the flood prone zones, can help jurisdictions identify areas of higher risk.

All units of local government adopted comprehensive plans pursuant to the procedures outlined in state planning legislation. If they wish to add elements from this plan to their comprehensive plans, either through amendments or during updates required by state law every five years after adoption, then they must abide the process outlined by state law:

- The planning commission duly established, appointed and elected must undertake a comprehensive revision of the HMP that should from this time forward include a natural hazards assessment and mitigation element. This All Natural Hazards Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina should serve as the basis for the mitigation element and any subsequent mitigation implementation documents for the comprehensive plan.
- After preparation, the revision must be advertised to the public by legal notice at least 15 days before the public hearing. The planning commission shall adopt the HMP revision by resolution and then submit the document to the governing council, which must hold two readings before

adopting by ordinance. The procedure for preparation and revision of comprehensive plans is the same for counties, except that three readings must be held prior to county council adoption by ordinance.

- Zoning and land development ordinances are the principal tools for implementing a comprehensive plan. Zoning ordinances implement land use policies by guiding the location of development. The land development ordinances set standards for how that development occurs, particularly the installation of facilities such as water, sewer and roads. Zoning and land development ordinances must be prepared by the appropriate planning commission and then submitted to the public for a 15 day review and comment period prior to the recommendation of the planning commission to the governing council. Amendments are processed in the same manner. It bears repeating, county councils must have three readings to implement an ordinance or ordinance change.
- Many of the action items in this document require capital improvements to facilities. Capital improvement plans are prepared by planning commissions working with government staffs. Upon preparation of a draft, the document is submitted to the governing council as a working document. It is usually not formally adopted but is a reference tool for budgeting and prioritizing.
- Taxation and spending issues are usually incorporated into the budget cycle. These vary annually by jurisdiction, but usually involve a suggestion of spending priorities by municipal and county departments. These items are reviewed with the administrator, who then works with the finance director regarding revenue sources and budget estimates for the coming year(s). A budget is then fashioned and presented to the council finance committee for reworking prior to presentation to the entire council. This budget is advertised for a 15 day public comment period and then adopted after two readings, if a municipality, or three readings if a county. The inclusion of hazard related items would arise from department input and from the government's capital improvements budget and program, if one has been developed and properly updated.

3. Regional Physical, Demographic and Economic Characteristics for the Central Midlands

3.1 Physical Setting and Location

The Central Midlands region, located near the geographical center of the State, is comprised of the four-county area of Fairfield, Lexington, Newberry, and Richland. The region is 76 miles wide and 64 miles long, covering an approximate area of 2,885 square miles and accounting for nine percent of the State's total area (Table 3).

Table 3 - Area extent of the four counties comprising the Central Midlands region.

County	Area – in Acres	Area – in Square Miles
Fairfield	453,996	709.37
Lexington	484,672	757.30
Newberry	413,966	646.82
Richland	493,513	771.11
Total	**1,846,147**	**2884.60**

The Central Midlands region is located approximately equidistant between the Blue Ridge Mountains and the Atlantic Coast. It boasts a diverse geomorphological regime, falling within two broad physiographic provinces: the Southern Piedmont and the Atlantic Coastal Plain. In the Midlands, the Coastal Plain can be further divided into the Carolina-Georgia Sandhills and the Southern Coastal Plain.

The Southern Piedmont has gently undulating to rolling land surfaces that are bisected by numerous streams, typically with dendritic drainage patterns. The Piedmont terrain in the Midlands has gently to moderately steep slopes. The elevations range from 300 feet (91 meters) above mean sea level (MSL) near the Coastal Plain to 810 feet (247 meters) at the top of Little Mountain in Newberry County. The uppermost portions of Lexington and Richland Counties and all of Fairfield and Newberry Counties are within the Southern Piedmont area.

The remainder of the region, with the exception of the southernmost portion of Richland County, is considered Carolina-Georgia Sandhills. This area is characterized by excessively drained sand with gentle to moderate slopes. The elevations range from approximately 250 to 300 feet (76 to 91 meters) above sea level. The lowest portion of Richland County is considered Southern Coastal Plain. Elevations normally occur in the 100 to 270 foot range (30 to 82 meters); the lowest occurring in the Congaree Swamp with an elevation of 80 feet (24 meters) above MSL. The topography is gently sloping.

Climate in the Central Midlands is humid and subtropical, with long, hot summers and short, mild winters. On average, temperatures range in Columbia from 32°F to 55°F degrees in January and from 70°F to 92°F in July. The state receives, on average, 49 inches of precipitation annually, mostly as rain.

3.2 Hydrologic Features

The region is bisected in a north-south direction by the Broad and Congaree Rivers (Figure 3). The rivers, which meet west of the capitol city of Columbia, run for approximately 103 miles and delineate much of the county boundaries. They are also important drivers of economic development and tourism.

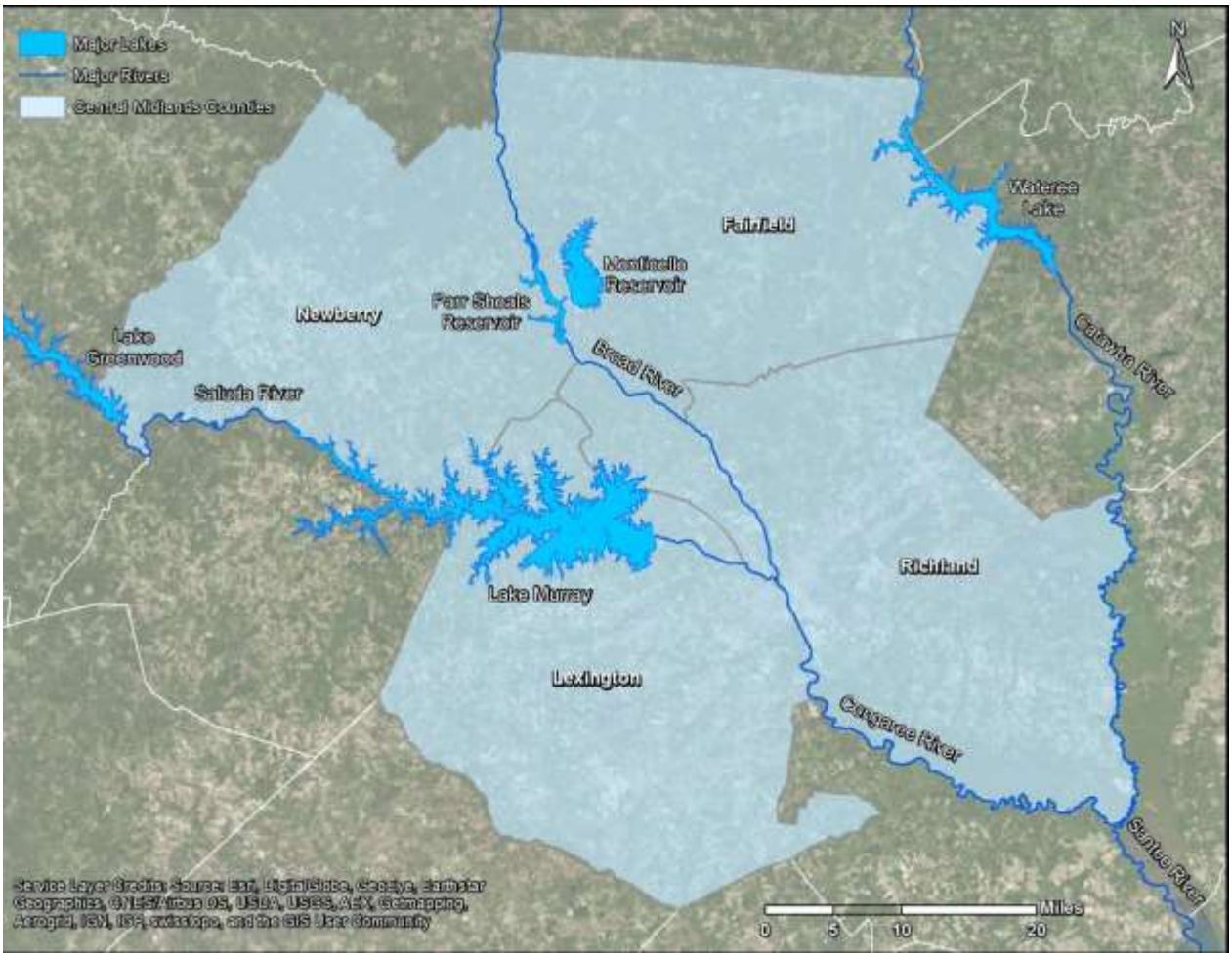

Figure 3 - Major rivers in the Central Midlands region.

Other rivers running through or on the edge of the region are the Saluda, Enoree, Wateree, and North Fork of the Edisto Rivers. The Saluda River feeds Lake Murray, a man-made freshwater reservoir that covers approximately 50,000 acres of land. Located on the northwest fringe of the Columbia urban area, it provides up to 207 MW of hydroelectric power to the region.

Additional lakes include Lake Greenwood, the southeastern tip of which touches the western extremity of Newberry County. Lake Wateree, another reservoir, was created on the eastern edge of Fairfield County by damming the Wateree River. Lake Monticello has been constructed on a tributary to the Broad River in western Fairfield County, serving as a reservoir to the V.C. Summer Nuclear Power Plant.

3.3 Land Use and Land Cover

Land Use and Land Cover (LULC) is the typical term utilized to bundle landscape classifications. Land cover refers to the natural physiographic and ecological features present in a landscape. It is typically defined as the unaltered biophysical cover on the earth's surface[1]. Land use, in contrast, refers to the utilization and possible alteration of land cover for various socioeconomic purposes[2]. Land cover guides the kind of land use in an area, but socio-economic and political factors tend to determine what kind of land use takes place[3].

LULC classifications, such as forest land cover or urban land use, can have significant impacts on hazard mitigation planning. For example, large areas of impervious surfaces, typically related with urban land use, can increase flooding risk by decreasing the rate of water infiltration[4]. On the other hand, forest land cover can help with reducing flooding risk by serving as a buffer between urbanized areas[5]. Certain LULC classifications, along with other geographical features, may help or hinder the implementation of hazard mitigation actions.

Table 4 shows the distribution of LULC classes for each county, utilizing the U.S. Department of Agriculture National Land Cover Database (NLCD) classification system[6]. According to this 2011 dataset, the Central Midlands region is mostly forested (50.2%). Fairfield County is the single most heavily forested county in the state, with approximately 615.1 mi^2 or 86.6% of the county area forested or some type of vegetative cover. A relatively small proportion of the region is dedicated to urban land use (13.6%); with Lexington and Richland counties more urbanized than Fairfield and Newberry counties. Please refer to the US EPA for more information on the NLCD classification system definitions[7].

There are also extensive federal land holdings in the region. Ft. Jackson (82 mi^2) lies within the City of Columbia. The Enoree Division of the Sumter National Forest in Newberry and Fairfield Counties comprising 88.4 mi^2 in Newberry County and 17.3 mi^2 in Fairfield County. Important state owned recreational areas in the region are the half mi^2 Dreher Island Recreational Area on Lake Murray in Newberry County, the 2.2 mi^2 Sesquicentennial State Park, the 34.6 mi^2 Congaree Swamp National Park, and the 3.4 mi^2 Harbison State Forest.

[1] (Gregorio & Jansen, 1998)
[2] (Eurostat, 2001)
[3] (Turner et al., 1995)
[4] (Alberti et al., 2007)
[5] (Zhang & Schilling, 2006).
[6] (Homer, Fry, & Barnes, 2012)
[7] (US EPA, 2007)

Table 4 - Land Use and Land Cover Distribution in the Region. Source: NLCD 2011.

Land Use and Land Cover Type	County Land Use and Land Cover Area (Square Miles/Percentage)				
	Fairfield	*Lexington*	*Newberry*	*Richland*	*Region Totals*
Open Water	25.8(3.6%)	60.0(7.9%)	17.3(2.7%)	15.8(2.1%)	118.9(4.1%)
Urban; Open Space	22.1(3.1%)	72.2(9.5%)	36.1(5.6%)	72.2(9.4%)	202.5(7.0%)
Urban; Low Intensity	4.1(0.6%)	51.2(6.8%)	7.5(1.2%)	60.9(7.9%)	123.7(4.3%)
Urban; Med. Intensity	1.1(0.2%)	18.9(2.5%)	2.0(0.3%)	28.0(3.6%)	50.0(1.7%)
Urban; High Intensity	0.5(0.1%)	5.7(0.8%)	0.6(0.1%)	8.4(1.1%)	15.1(0.5%)
Barren Land	8.2(1.2%)	6.4(0.8%)	5.1(0.8%)	2.2(0.3%)	21.9(0.8%)
Deciduous Forest	156.7(22.1%)	76.2(10.1%)	140.1(21.6%)	111.1(14.4%)	484.1(16.8%)
Evergreen Forest	346.5(48.8%)	146.3(19.3%)	265.5(41.0%)	161.0(20.9%)	919.3(31.9%)
Mixed Forest	4.6(0.6%)	17.9(2.4%)	6.8(1.1%)	17.3(2.2%)	46.5(1.6%)
Shrub/Scrub	19.5(2.8%)	63.5(8.4%)	15.1(2.3%)	11.9(1.5%)	109.9(3.8%)
Grassland/Herbaceous	71.5(10.1%)	71.4(9.4%)	45.6(7.0%)	86.1(11.2%)	274.6(9.5%)
Pasture/Hay	32.6(4.6%)	50.7(6.7%)	83.9(12.9%)	27.7(3.6%)	194.9(6.8%)
Cultivated Crops	0.5(0.1%)	58.4(7.7%)	1.3(0.2%)	30.9(4.0%)	91.1(3.2%)
Woody Wetlands	16.0(2.3%)	55.9(7.4%)	19.9(3.1%)	131.0(16.9%)	222.9(7.7%)
Emergent Herbaceous Wetlands	0.4(0.1%)	3.4(0.5%)	0.4(0.1%)	7.1(0.9%)	11.3(0.4%)

The spatial distribution of LULC classes has a significant impact on ecosystem and human behavior (Figure 4). For example, urban settlements in the region tend to congregate near water sources. The negative impacts of urban land use on water sources (e.g. increased sedimentation and pollution) increase the closer a development is to water. Roads and highways fragment forest ecosystems, which have been shown to be significant factor in habitat disruption.

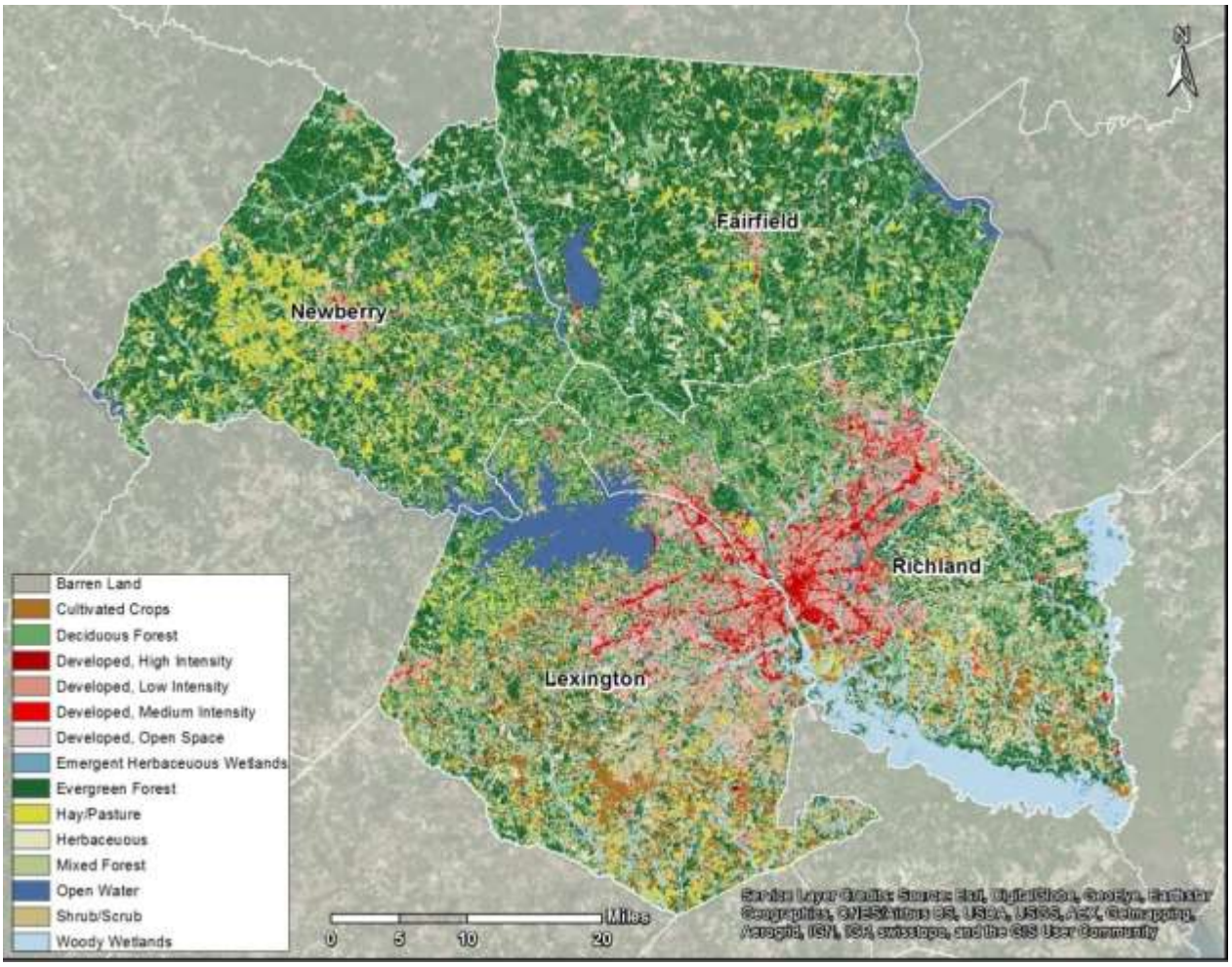

Figure 4 – Land Use and Land Cover Distribution Map for the Central Midlands Region. Source: NLCD 2011.

3.4 Demographic and Economic Trends[8]

A) Population Distribution Estimates

The Central Midlands region represents a mayor population center within the state. The U.S. Census Bureau estimates the regional population at 724,945, a 2.3% increase from the 2010 population census. Current estimates are that the region maintains 15.4% of the state-wide population, up from 15.3% from the 2010 population census.

The population distribution tends to be similar to the state-wide distribution. As seen from the population pyramid (Figure 5), which illustrates age and gender distributions, the region has higher teenage and young adult population (from the 15 to 34 year old cohorts), which makes up 30.4% in the region's population (compared to 26.8% state-wide). The region has a slightly lower elderly population (65 years old and over cohorts) of 12.0% (compared to 14.7% for the state).

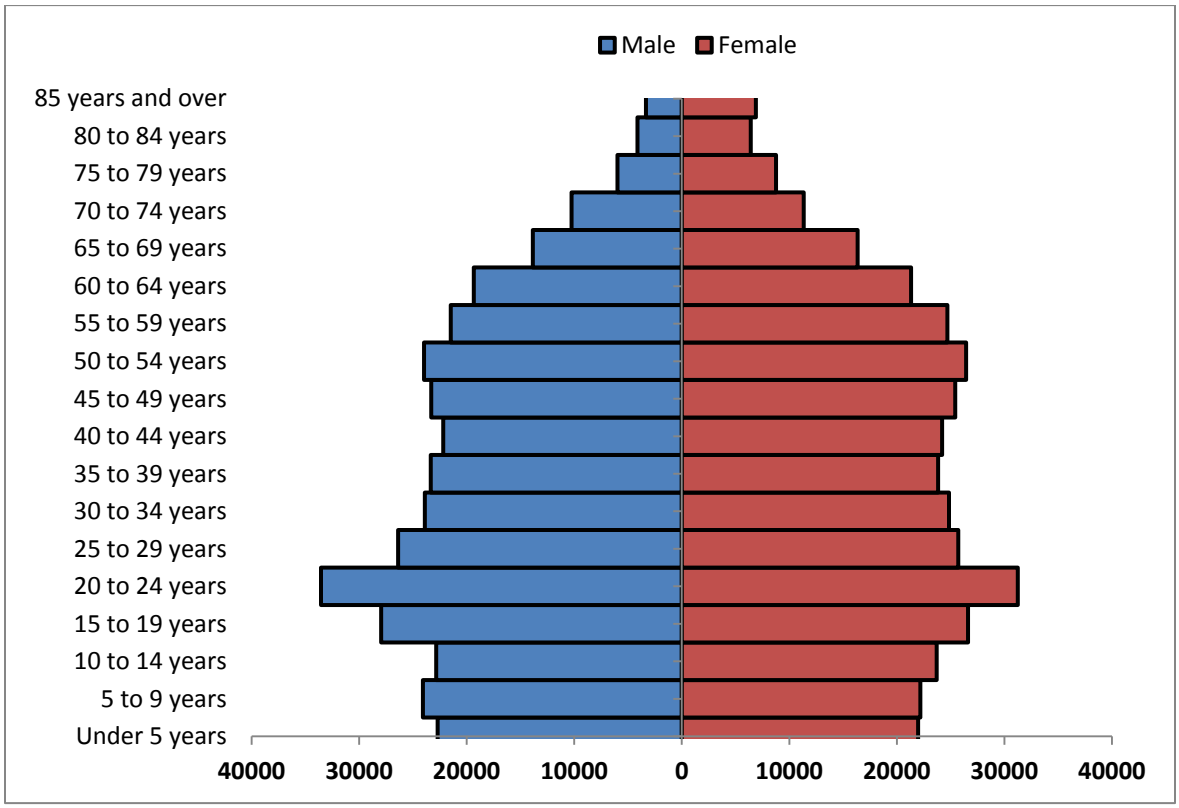

Figure 5 - 2014 Population Estimates for the Central Midlands Region. Source: Census ACS10-14 estimates.

[8] This section portrays demographic, housing and economic information for the Central Midlands region. Unless otherwise noted, these data were acquired from the U.S. Census Bureau American Community Survey (ACS). In contrast with the decennial census, the ACS is a rolling survey that samples 5% of the population every year. While the margin of error for the yearly ACS is higher than in a decennial census, the Census Bureau utilizes these data to generate five year estimates. The most recent population data for the region comes from the 2010 – 2014 ACS five year estimates, and this dataset is the one utilized in this document.

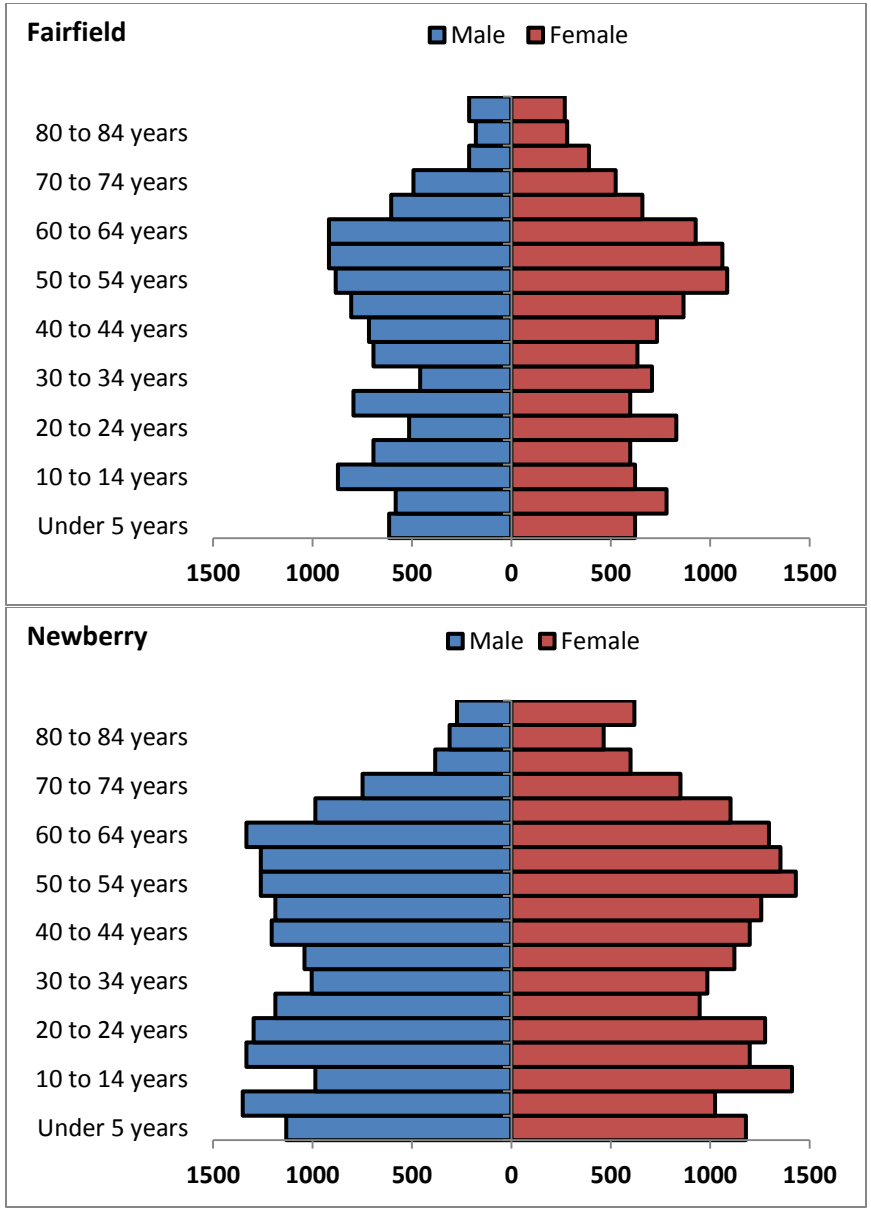

Figure 6 - Population Estimates for Fairfield and Newberry Counties. Source: Census ACS10-14 estimates.

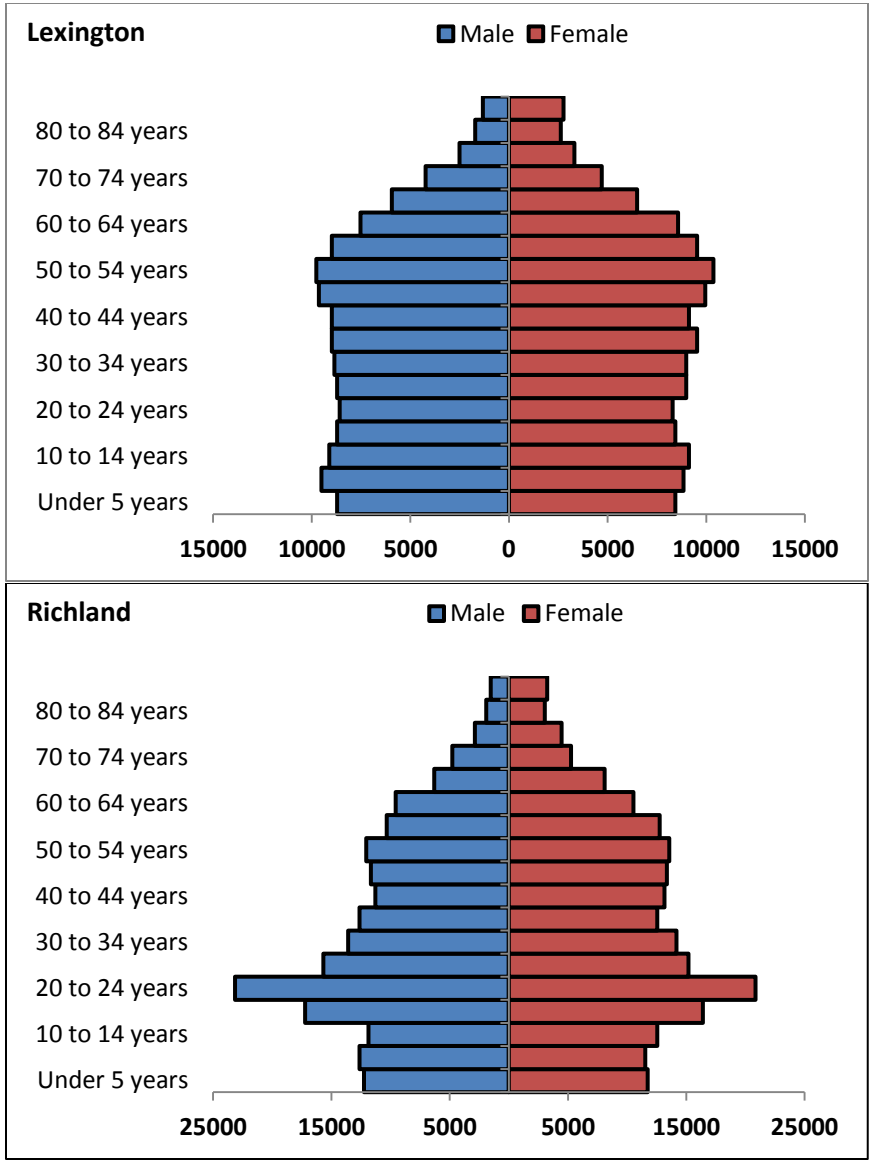

Figure 7 - Population Estimates for Lexington and Richland Counties. Source: Census ACS10-14 estimates.

County specific distributions and trends are fairly similar (Figure 6 and Figure 7). Richland County is the most populous county in the region. The estimated population for the county is 393,707, or 8.3% of State population. Lexington County has experienced a steady increase in population growth during the past decades. At an estimated population of 270,263 residents, Lexington County currently has 5.7% of the State population, or 270,263 residents. Populations in Lexington and Richland counties showed a net population increase of 2.9% and 2.3%, respectively, during the time period of 2010 to 2014.

Newberry County, with 37,593 residents, had a slight population increase of 0.2%, giving it a slight increase in population share, based on ACS 2014 5 year estimates. In contrast, with 23,382 residents, Fairfield County showed a population decrease of 2.5% on the same time period. Fairfield County currently hosts 0.5% of the State population.

The racial make-up of the Central Midlands region is estimated at 57% white, 34% black, 5% Hispanic or Latino and 2% Asian, with other groups such as American Indians making up less than 2% of the total regional population. County-specific distributions display varied trends. As seen in Table 5, Lexington and Newberry Counties have primarily white populations. These two counties also have proportionally higher Hispanic populations than the rest of the region. Richland and Fairfield Counties have majority black populations. Asian populations are currently concentrated between Lexington and Richland Counties. Other minorities are evenly spread out throughout all counties, in proportion to their population sizes.

Table 5 - Central Midlands region estimated population demographic distribution. Source: Census ACS10-14 estimates.

Race	Fairfield County	Lexington County	Newberry County	Richland County
Hispanic or Latino	425 (1.8%)	15,417 (5.7%)	2,742 (7.3%)	19,412 (4.9%)
White alone	8,842 (37.8%)	206,189 (76.3%)	22,698 (60.4%)	175,637 (44.6%)
Black or African American	13,481 (57.7%)	38,516 (14.3%)	11,391 (30.3%)	179,336 (45.6%)
American Indian and Alaska Native	0 (0%)	709 (0.3%)	37 (0.1%)	620 (0.2%)
Asian	56 (0.2%)	3,883 (1.4%)	207 (0.6%)	10,035 (2.6%)
Native Hawaiian and Other Pacific Islander	0 (0%)	134 (0.1%)	17 (0.1%)	315 (0.1%)
Some other race	50 (0.2%)	340 (0.1%)	0 (0%)	419 (0.1%)
Two or more races	528 (2.3%)	5,075 (1.9%)	501 (1.3%)	7,933 (2.0%)
Total Population	**23,382**	**270,263**	**37,593**	**393,707**

B) Education

The region has several public and private higher education institutions, such as Piedmont Technical College (with over 700 students in Newberry County), Midlands Technical College (over 10,000 students in the region) and Benedict College (over 16,000 students). The University of South Carolina system is a significant influence in the Columbia metro area, and has over 30,000 students throughout the state.

The educational attainment of residents in the region has been steadily increasing in the past decades. The percentage of residents with less than 9th grade education has decreased from 9.1% to 4.0%. About 84% of residents have a high school degree or higher (State average: 85.0%, Table 6). Females in the region tend to have a higher proportion of graduate or professional degrees than males.

County-specific distributions, though, show differences in education attainment. Fairfield and Newberry Counties have a higher proportion of residents with less than a high school degree (15.5% and 17.4%, respectively), compared to Lexington and Richland Counties (9.1% and 7.9%, respectively). Lexington and Richland Counties also have a larger proportion of higher education attainment (bachelor's degree or higher) than Fairfield and Newberry Counties, as shown in Table 6.

Table 6 - Central Midlands Region Education Attainment Estimates. Source: Census ACS10-14 estimates.

Education Attainment	Fairfield County	Lexington County	Newberry County	Richland County	South Carolina
High School Graduate or Higher	80.8%	88.5%	77.7%	89.6%	85.0%
Bachelor's Degree or Higher	15.2%	28.7%	17.8%	36.2%	23.3%

C) Economic and Employment Information

According to latest estimates by the U.S. Census Bureau, per capita income in the region averages $24,003, which is slightly below the State average of $24,222. The regional income declined since 1999 (from $26,796). The highest per capita income occurs in Lexington ($27,026) and Richland ($25,920) Counties, while the lowest are found in Newberry ($22,073) and Fairfield ($20,993) Counties.

The Columbia metro area is the largest urban complex in the region, and the state capital, which contributes to the higher socioeconomic status in Richland and Lexington Counties. In 2014, Richland County had a labor force of 200,412 people, followed by Lexington County with 141,932, Newberry County at 17,962 and Fairfield County at 10,426. Fairfield County had the highest unemployment rate (14.8%), followed by Newberry and Richland Counties, with 10.5% and 10.4% unemployment, respectively. Lexington County experienced the lowest unemployment rate in the State, with 8.6% compared to the statewide 10.6% unemployment rate.

The Central Midlands region has an estimated 11.9% of its population living in poverty. Lexington County's poverty rate was 10.6%, while Fairfield County had the highest rate at 19%. Newberry and Richland Counties fall in between these extremes, at 14.3% and 12.2%, respectively.

In the past decades, manufacturing employment fell from 21.9% of the work force to 11.2% in the region. The largest relative gains occurred in service employment, up from 29.3% to 41.6% and in finance, insurance and real estate up from 5.6% to 8.2% (Table 7). These shifts in employment followed state-wide trends. Agriculture, forestry and fisheries, mining and construction and wholesale trade and retail trade showed a marginal decrease while transportation, communication and other public utilities, and Public administration marginally increased at the regional level. The latest estimates show a total of 334,367 individuals employed in civilian occupations throughout the region.

Table 7 - Civilian Employed Population Over 16 years of Age for the Region. Source: Census ACS10-14 estimates.

Occupations	Fairfield County	Lexington County	Newberry County	Richland County
Management, business, science, and arts	2,313 (26.0%)	46,629 (35.9%)	4,275 (26.6%)	70,081 (39.0%)
Service	1,697 (19.1%)	20,153 (15.5%)	2,594 (16.1%)	34,745 (19.3%)
Sales and office	1,690 (19.0%)	34,366 (26.5%)	3,600 (22.4%)	47,196 (26.3%)
Natural resources, construction, and maintenance	1,162 (13.1%)	14,280 (11.0%)	2,305 (14.3%)	10,564 (5.9%)
Production, transportation, and material moving	2,024 (22.8%)	14,301 (11.0%)	3,310 (20.6%)	17,082 (9.5%)
Total	**8,886**	**129,729**	**16,084**	**179,668**

D) Population Projections

Population projections provide stakeholders with demographic trends in their particular jurisdictions, guiding planning and policy decisions. Values in this section were provided by CMCOG, which created its own set of population projections for the region. Information on the methodology of this dataset can be found in the "*2010 – 2040 Population Projections for the Central Midlands Region*"[9].

While some of the Census Bureau ACS data is presented in this section, the actual population projection calculations were made with data from the decennial Census. As the decennial Census is meant to be a population wide survey, and not an estimate like the ACS, it more accurately reflects actual population values and projections. These projections are still "best guess" assumptions, and their accuracy depends on how future events unfold and reflect past observations from the previous decennial Census surveys.

According to this report, Lexington County is expected to experience the greatest percentage of growth (81.6%) over the next 30 years. This is followed by Richland County (61.1%), Newberry County (13.5%) and Fairfield County (6.75%). The Central Midlands region is projected to have a population increase of 64.3%, adding around 455,000 people to the region, totaling nearly 1,164,000 residents by the year 2040. The following pages contain population projections for all counties up to the year 2040.

[9] (CMCOG, 2010)

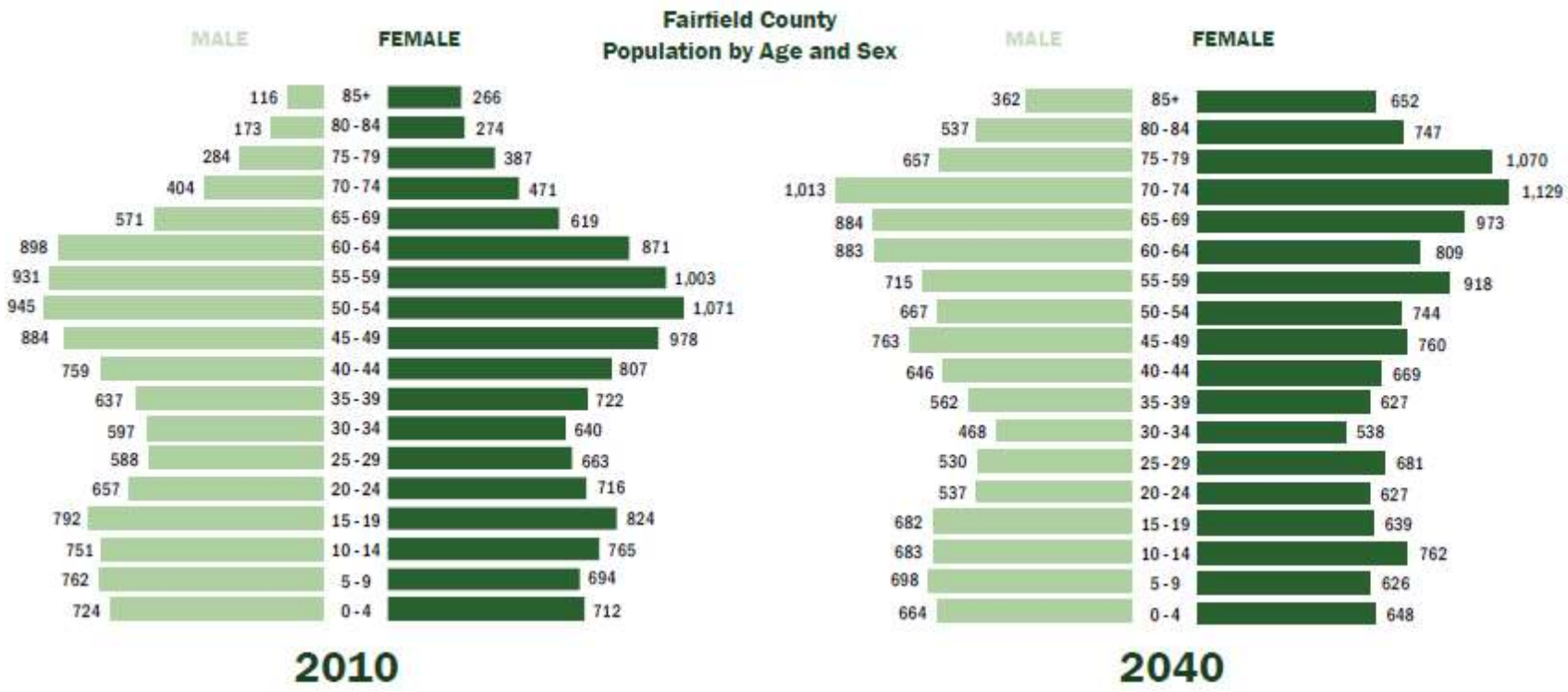

Figure 8 - Fairfield County Population Projection Pyramid. Source: CMCOG.

Table 8 - Fairfield County Population Projection Age Distribution. Source: CMCOG.

Age	2010	2015 (ACS Estimates)	2020	2025	2030	2035	2040
0 – 14	4,408	4,093	4,238	4,096	4,007	4,034	4,082
15 – 25	2,989	2,635	2,496	2,409	2,439	2,501	2,486
25 – 39	3,847	3,886	3,717	3,684	3,598	3,373	3,407
40 – 64	9,147	8,910	8,620	7,999	7,696	7,522	7,573
65 & older	3,565	3,823	5,425	6,594	7,207	7,854	8,025
Total	**23,956**	**23,382**	**24,497**	**24,783**	**24,948**	**25,285**	**25,571**

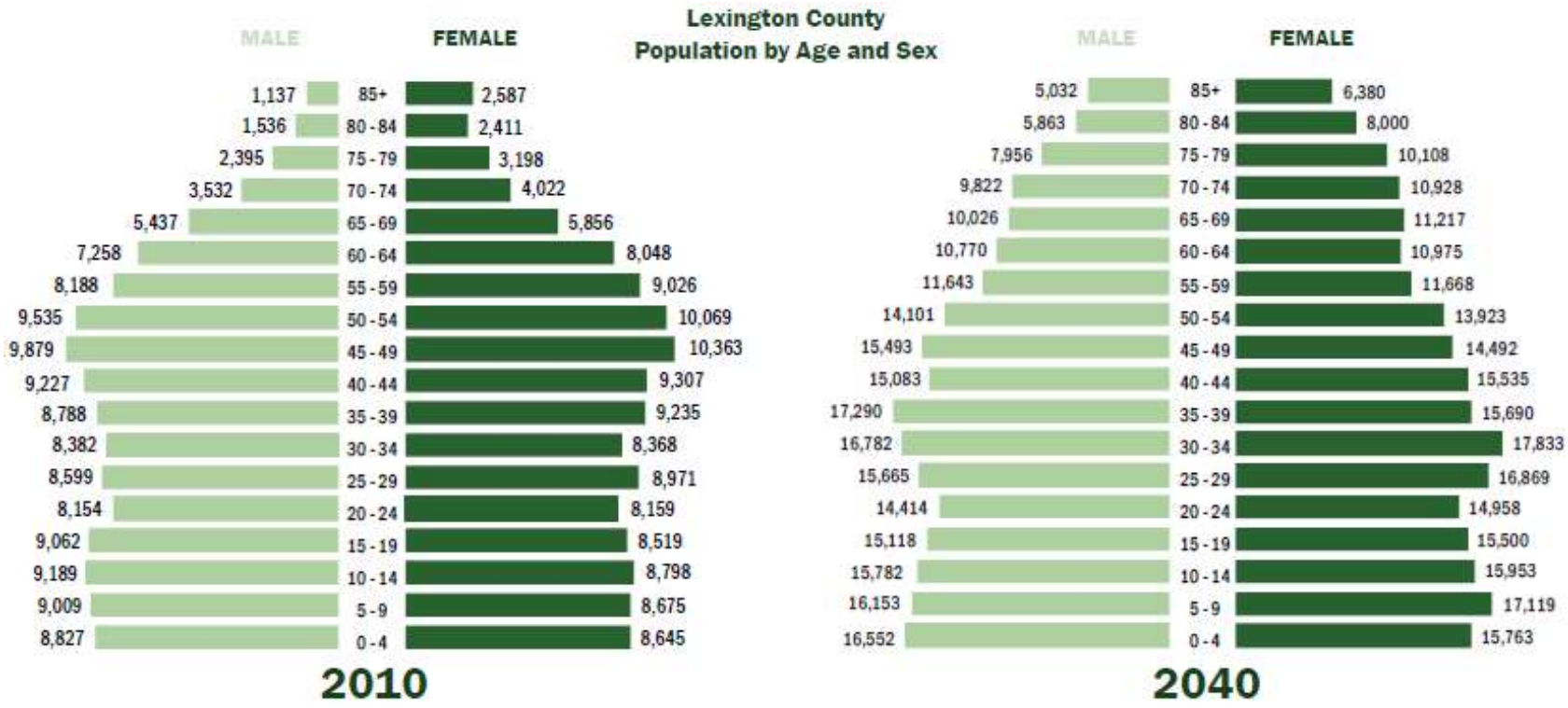

Figure 9 - Lexington County Population Projection Pyramid. Source: CMCOG.

Table 9 - Lexington County Population Projection Age Distribution. Source: CMCOG.

Age	2010	2015 (ACS Estimates)	2020	2025	2030	2035	2040
0 – 14	53,143	53,732	62,312	68,214	76,580	86,143	97,323
15 – 25	33,894	34,022	39,008	43,038	47,533	52,207	59,990
25 – 39	52,343	54,046	66,441	74,700	81,678	90,848	100,128
40 – 64	90,900	92,442	98,890	102,706	108,832	119,116	133,681
65 & older	32,111	35,617	52,032	63,228	73,920	81,337	85,333
Total	**262,391**	**270,263**	**318,683**	**351,887**	**388,543**	**429,650**	**476,455**

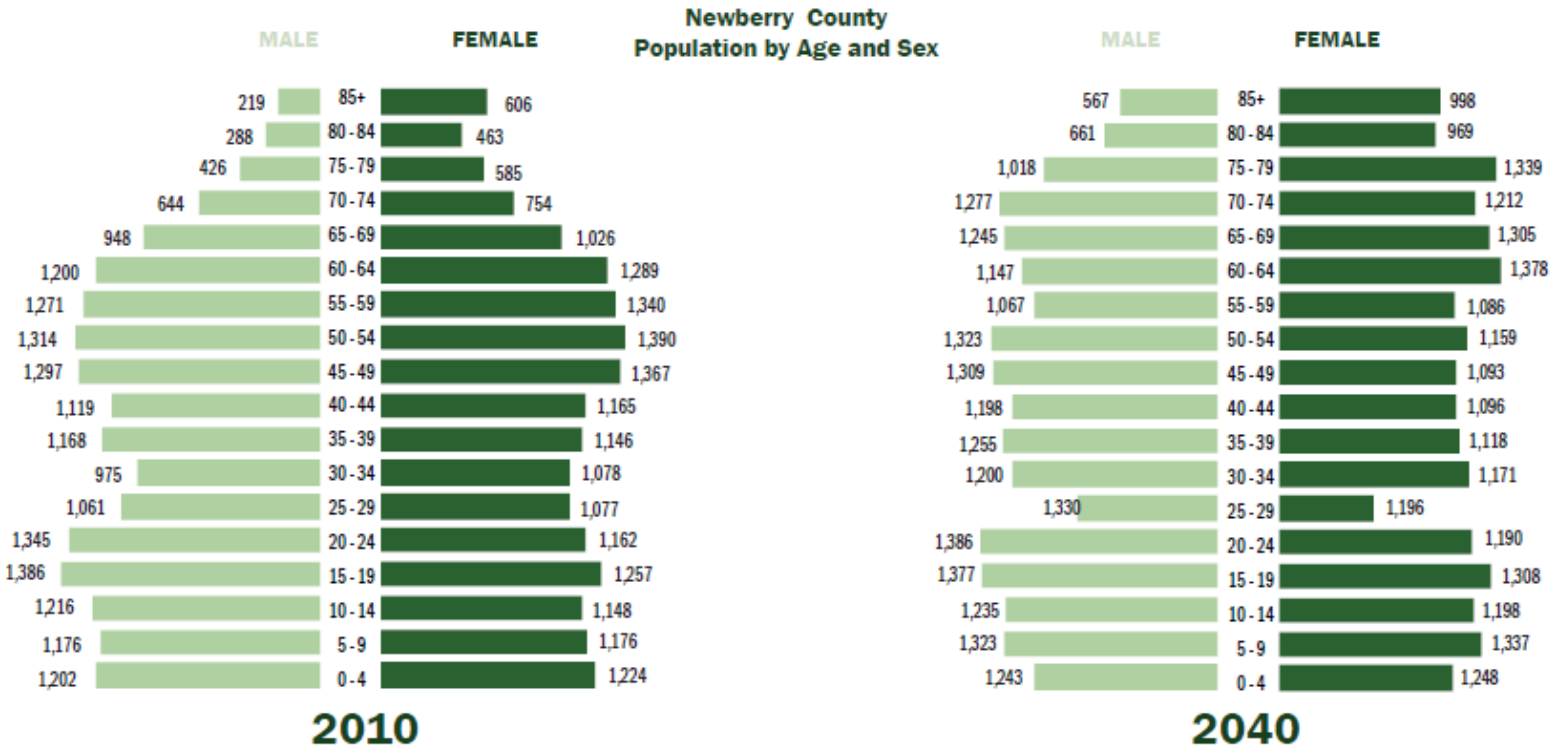

Figure 10 - Newberry County Population Projection Pyramid. Source: CMCOG.

Table 10 - Newberry County Population Projection Age Distribution. Source: CMCOG.

Age	2010	2015 (ACS Estimates)	2020	2025	2030	2035	2040
0 – 14	7,142	7,084	7,439	7,364	7,356	7,435	7,585
15 – 25	5,150	5,104	4,996	5,149	5,339	5,282	5,260
25 – 39	6,505	6,286	6,910	7,201	7,045	7,197	7,270
40 – 64	12,752	12,780	12,544	11,972	11,615	11,621	11,855
65 & older	5,959	6,337	8,327	9,542	10,419	10,727	10,591
Total	**37,508**	**37,593**	**40,216**	**41,229**	**41,775**	**42,261**	**42,561**

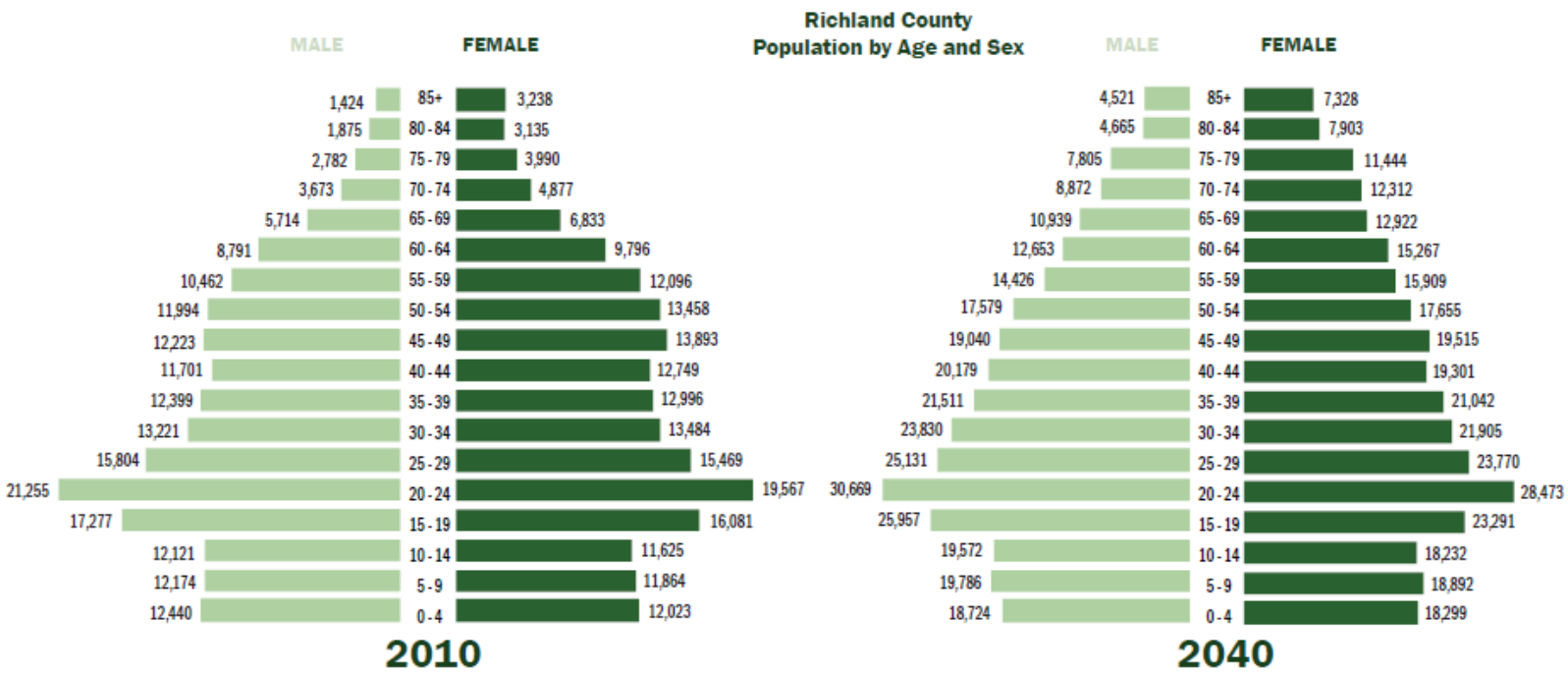

Figure 11 - Richland County Population Projection Pyramid. Source: CMCOG.

Table 11 - Richland County Population Projection Age Distribution. Source: CMCOG.

Age	2010	2015 (ACS Estimates)	2020	2025	2030	2035	2040
0 – 14	72,247	72,556	85,006	91,431	99,100	106,251	113,505
15 – 25	74,180	77,607	78,910	85,958	92,933	99,093	108,390
25 – 39	83,373	83,793	107,308	115,432	120,757	127,912	137,189
40 – 64	117,163	118,256	127,588	132,654	142,191	157,051	171,524
65 & older	37,541	41,494	57,732	70,144	80,017	85,401	88,710
Total	**384,504**	**393,707**	**456,544**	**495,619**	**534,998**	**575,709**	**619,317**

4. Risk Assessment Methodology

4.1 Conducting a Risk Assessment

This section provides definitions of frequently used terms, describes data sources and hazards analyzed, and outlines the analytical steps of the risk assessment. A risk assessment forms the empirical basis for the identification and justification of mitigation actions by highlighting the most significant risks and overall vulnerability of an area (i.e., its capabilities to mitigate, prepare for, respond to, and recover from events).

The steps of a risk assessment include:

1. A description of past, and future, hazards affecting a county (e.g., location, date of occurrence, magnitude, losses).
2. Identification of community assets (e.g., population, critical infrastructure).
3. Determination of exposure (e.g., at risk infrastructure and population).
4. Estimation of possible adverse impacts (Figure 12).

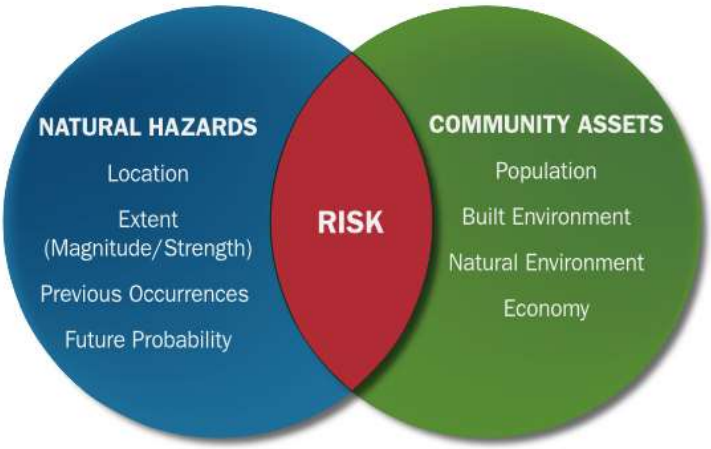

Figure 12 - Elements of a risk assessment (FEMA 2013).

4.2 Definitions

According to FEMA (2013, pp. 5-1)[10], a **hazard** is a "source of harm or difficulty created by a meteorological, environmental, or geological event." **Community assets** include the "people, structures, facilities, and systems that have value to the community." **Impacts** are "consequences or effects of a hazard on the community and its assets." **Vulnerability** comprises the "characteristics of community assets that make them susceptible to impacts from a given hazard." **Risk** is the "potential for damage, loss, or other impacts created by the interaction of natural hazards with community assets".

In this Plan, the likelihood of a hazard is measured in two ways: (1) The **frequency of occurrence** is based on the historical record. It is measured in percentage and expresses how likely a hazard is to occur in any given year (or day for high frequency hazards). For example, if two tornadoes occurred in the past 20 years then the likelihood of a tornado to happen in any given year is 10% (2 events divided by 20 years). (2) A **recurrence interval** (or return period) also draws on the historic record. It is expressed in years and identifies when a hazard is likely to repeat. It is measured by dividing the time period of

[10] FEMA, "*Local Mitigation Planning Handbook*", 2013

interest by the number of events. For the tornado example, this would mean that tornadoes are likely to occur every 10 years. The recurrence interval for frequently occurring hazards (e.g., lighting) is measured in days. Statistical probabilities are only available for floods (i.e. 100- and 500-year floods).

4.3 Hazards Affecting the Region

The Central Midlands region faces a multitude of natural hazards, mostly meteorological and hydrological hazard. These include:

- Flooding
- Thunderstorms
- Winter Storms
- Earthquakes
- Hurricanes & Tropical Storms
- Lightning
- Hail
- Fog
- Tornadoes
- Cold Hazards
- Wind
- Wildfires
- Heat Hazards
- Droughts

Some of these hazards are interrelated (e.g., hurricanes may cause flooding and tornadoes), and some consist of hazardous elements that are not listed separately (e.g., winter storms cause snow). Natural hazards such as landslides, volcanic activity, tsunamis and sinkholes are excluded from any jurisdictional risk assessment because those hazards are not encountered or experienced in the region. The following provides general descriptions for each of the above listed hazards.

A) Flooding

A flood is the overflow of water onto land that is normally dry. The National Flood Insurance Program (NFIP) defines a flood as a "general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from overflow of inland or tidal waves, unusual and rapid accumulation or runoff of surface waters from any source, mudflow, or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above" (Figure 13)[11].

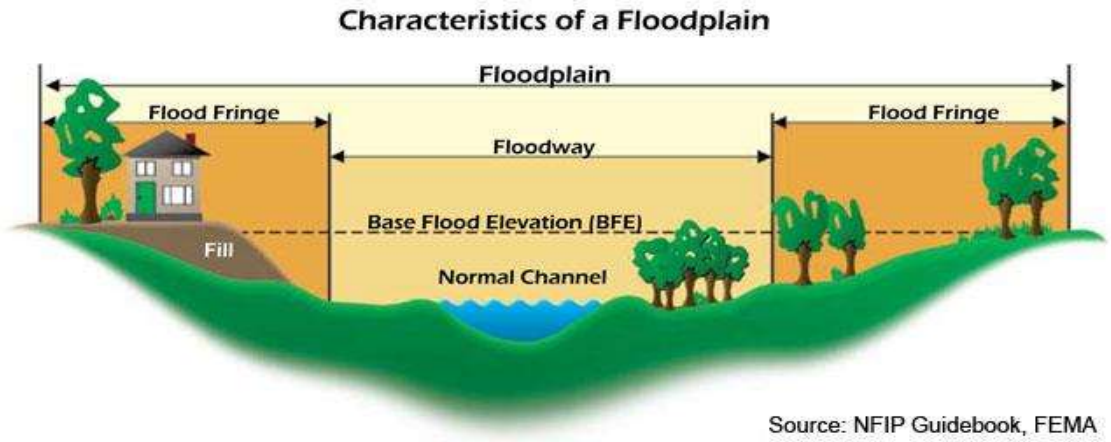

Figure 13 - Schematic of a floodplain.

[11] P1, FEMA. "National Flood Insurance Program Summary of Coverage for Commerical Property." Federal Emergency Management Agency, http://www.fema.gov/media-library/assets/documents/34505

There are four distinctive types of flooding that affect the region:

- **Flash flooding**: occurs from heavy rainfall that accumulates faster than the ground can absorb.
- **Urban flooding**: occurs because impervious surfaces (streets, roads, parking lots, residential and business areas) inhibit ground water absorption causing surface runoff
- **Riverine flooding**: occurs when an increase in water volume within a river channel overflows onto the surrounding floodplain. A floodplain is the lowland area adjacent to a river, lake or ocean.
- **Local drainage problems**: occur anywhere where the ground is flat, drainage patterns haven been disrupted, or where channels or culverts have not been maintained.
- **Dam/levee failure**: occurs when a dam/levee fails releases the impounded water, flooding the land downstream.

The severity of flooding depends on the flood water volume, water depth, duration of flooding, and the velocity of flood waters. These variables are influenced by stream and river basin physiography, precipitation and weather patterns, recent soil moisture conditions and the degree of vegetative clearing. As a result, floods may be highly localized. An event that led to severe flooding in one area may have low to no impacts on nearby locations. The National Weather Service (NWS) distinguishes four flood categories[12]:

- **Minor Flooding**: minimal or no property damage, but possibly some public threat.
- **Moderate Flooding**: some inundation of structures and roads near stream. Some evacuations of people and/or transfer of property to higher elevations.
- **Major Flooding**: extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.
- **Record Flooding**: flooding which equals or exceeds the highest stage or discharge at a given site during the period of record keeping.

The 100-year flood serves as regulatory standard and is determined by engineering studies. The 100-year flood has a 1% chance to occur in <u>any given year</u>—it can occur every year, not just once in 100 years. A 10-year flood event is an event of smaller magnitude than the 100-year flood but with a higher annual probability (10% annual chance). A 500-year flood, on the other hand, is significantly larger than a 100-year event but has a lower probability to occur in any given year (0.2% annual chance).

Given that statistical probability terms are difficult to grasp, the Association of State Floodplain Managers (ASFPM) promotes the use of more tangible expressions of flood probability. As such, the ASFPM expresses the 100-year flood event as having a 1 in 4 chance of occurring over the life of a 30-year mortgage[13]. More frequent flood events tend to be less severe (e.g., 10-year flood) whereas rare events tend to be catastrophic (e.g., 500-year flood).

The definition of what constitutes a 100-year flood event is specific to every location, river, and point in time – because floodplain and river characteristics are not static and change over time. For example, two 100-year flood events have the same likelihood to occur but they do not necessarily have the same magnitude. In other words, a 100-year event for the Saluda River means something completely different

[12] NWS, "National Weather Service Glossary".
[13] ASFPM. "Reducing Flood Losses: Is the 1% Chance (100-Year) Flood Standard Sufficient?", 156pp. Washington D.C.: Assocation of State Floodplain Managers, 2004.

in terms of discharge values (cubic feet per second) than, for example, the Mississippi River. Not only are 100-year events different between rivers, they are also different along a river. A 100-year event upstream of the river is different than downstream since river characteristics (volume, discharge, and topography) change. Defining the size of a specific flood event (e.g. 100-year) depends largely on historic data on flow and discharge rates. The 100-year event is of significance since it is the regulatory standard that determines the obligation, or lack thereof, to purchase flood insurance. Flood insurance premiums are set depending on the flood zone as modeled by National Flood Insurance Rate Maps.

The Central Midlands suffer mostly damage from flash flooding. The Saluda Dam, completed in 1930 and 10 miles west of Columbia, has nearly eliminated riverine flooding along the Congaree River. A record catastrophic flash flood event in the Central Midlands region occurred in October of 2015 (Presidential Disaster Declaration DR-4241). The event was triggered by record rainfall amounts that led to wide spread flash flooding with cascading infrastructure and dam failures.

Based on stream gage levels and precipitation forecasts, the NWS posts flood statements watches and warnings[14]. These are defined as:

- **Flood Warning:** This is issued along larger streams when there is a serious threat to life or property.
- **Flood Watch:** This is issued when current and developing hydro-meteorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.
- **Flash Flood Watch:** This is issued generally when there is the possibility of flash flooding or urban flooding over an area within the next 36 hours.
- **Flash Flood Warning:** This is issued when flash flooding is imminent, generally within the next 1 to 3 hours. Usually issued based on observed heavy rainfall (measured or radar estimated), but may also be issued for significant dam breaks that have occurred or are imminent.

B) Dam and Levee Failure

Dams are artificial barriers which impound or divert water usually constructed of concrete, steal, timber, rock, earth or a combination thereof. Dams have spillway systems to safely convey normal stream and flood flows over, around, or through the dam. Spillways are commonly constructed of non-erosive materials such as concrete. Dams often have drain or other water-withdrawal facilities to control the pool or lake level and to lower or drain the lake for normal maintenance and emergency purposes.

The likelihood for dam failure increases with inadequately maintained and/or aging dams, and when additional dams are built for retention basins or amenity ponds in new developments. Many dams exist on smaller streams that are not mapped as floodplains or subject to floodplain regulation, leaving downstream residents unaware of potential risks. The National Inventory of Dams (NID) includes only dams of more than 25’ in height or storing more than 50 acres-ft., or classified as high or significant hazard potential.

Dam risk and failure consequences are defined as following:

- **Low** (L): A dam where failure or misoperation results in no probable loss of human life and low economic and/or environmental loss. Losses are principally limited to the owner's property.

[14] Information is accessible at http://www.spc.noaa.gov/products/wwa/.

- **Significant** (S): Potential hazard is significant. A dam where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. These dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
- **High** (H): Potential hazard is high. A dam failure or misoperation will probably cause loss of human life.

As of 2012, there were 2,380 state-regulated dams in South Carolina of which 7% (162) were classified as a high hazard level (high probability of loss of human life), 19% (463) are significant (significant economic loss, but lower human loss), and 74% (1,755) are low hazards (Figure 14)[15]. The South Carolina Department of Health Environmental Control (DHEC) regulates dams in the State. DHEC classifies dams into Class 1, 2, and 3 dams. A C1 dam (high hazard) may cause loss of life or serious damage to infrastructure. A C2 dam (significant hazard) will likely not cause loss of life but may damage infrastructure. A C3 dam (low hazard) causes limited property damage. There is currently no assistance program in South Carolina that would aid dam owners with removal, repair, or abandonment.

During the 2015 catastrophic flash flood events 32 dams failed statewide of which 19 dam failures occurred in the Central Midlands Region. Out of the 32 failed dams, 7 dams were C3 (low hazard) dams, 17 dams belonged to the C2 (significant hazard) category, 7 dams classified as C1 or high hazard dams, and one federal dam failed. These dam failures added to and compounded the devastation from the heavy rainfall and led to cascading failures of flood control infrastructure.

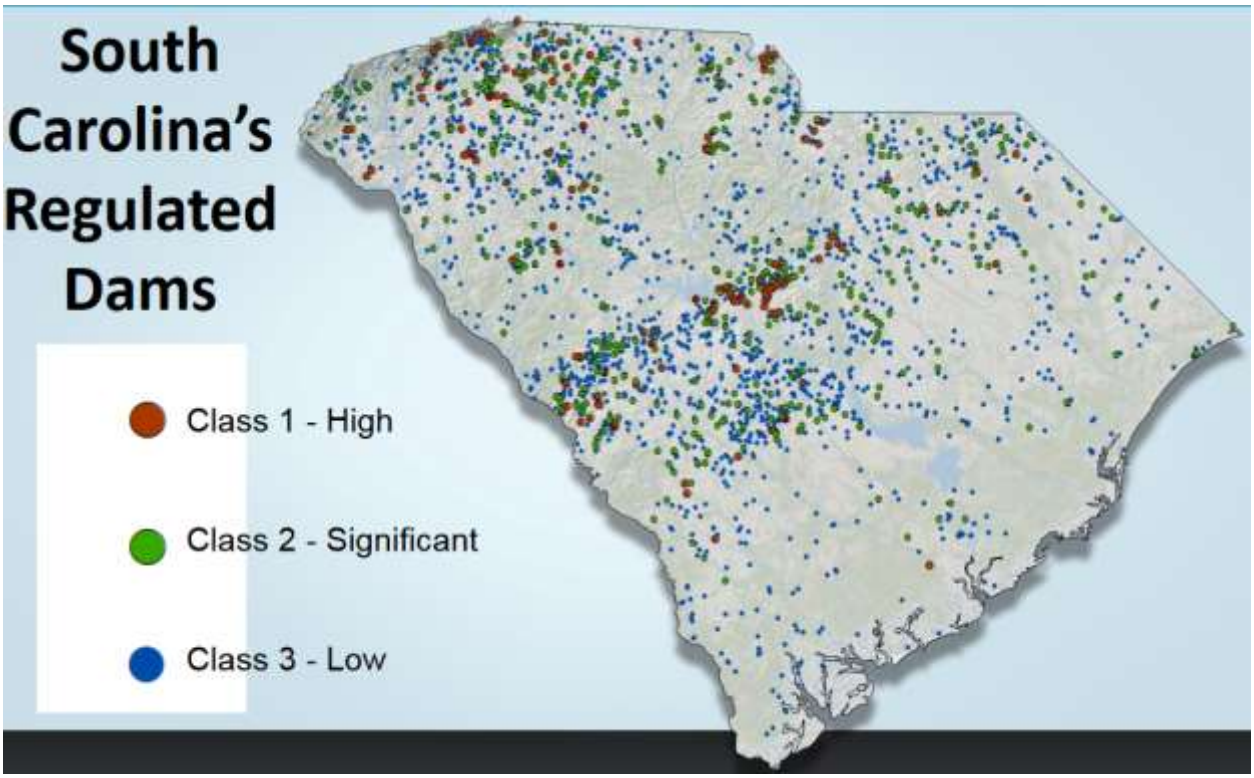

Figure 14 - 2013 National Inventory of Dams. Source: Damsafety.org.

[15] http://www.damsafety.org/map/state.aspx?s=41

C) Thunderstorms

Severe thunderstorms are defined by the NWS as storms that have wind speeds of 58 miles per hour or higher, produce hail at least three quarters of an inch in diameter, or produce tornadoes. In order to form, thunderstorms simply require moisture to form clouds and rain, coupled with an unstable mass of warm air that can rise rapidly. They more frequently occur in the spring and summer months and during the afternoon and evening hours, but may happen year-round and at all hours. On average, the Central Midlands region experiences between 50 and 60 thunderstorm days per year (Figure 15).

Similar to tropical cyclones, severe thunderstorms can bring an array of hazards such as high winds (e.g., downbursts, derechos), flash flooding, riverine flooding, dam/levee failures, lightning, hail, dust storms and in the winter time blizzards and ice storms. All thunderstorms contain lightning.

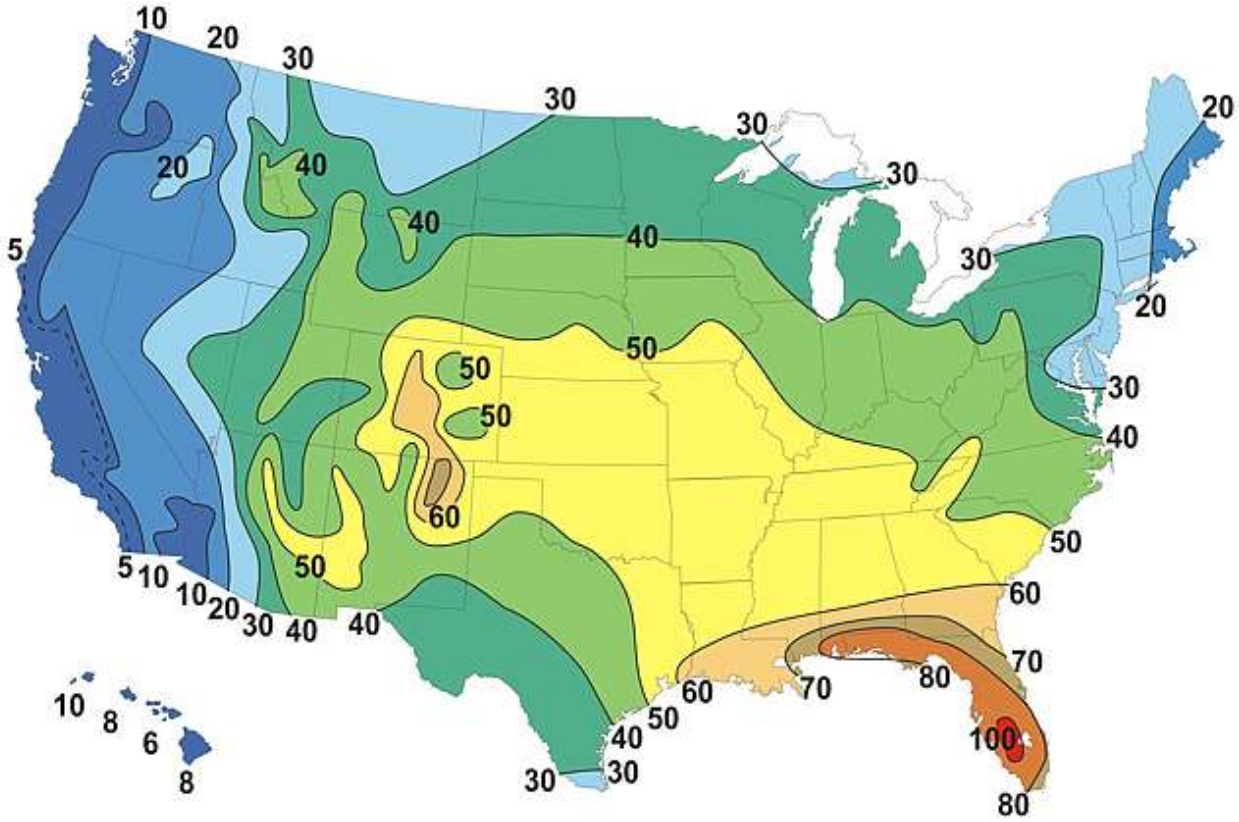

Figure 15 - Average number of thunderstorm days per year. Source NOAA.

Based on Doppler radar and storm spotters, the NWS posts severe thunderstorm watches and warnings[16], along with the following statements:

- **Severe Thunderstorm Warning[17]:** Issued when a severe thunderstorm (thunderstorm producing hail 3/4 inch or larger in diameter and/or winds equal or exceed 58 mph) occurs. Lightning frequency is not a criterion for issuing a severe thunderstorm warning. Severe thunderstorm watches are usually issued for 1-hour duration.

[16] Information is accessible at http://www.spc.noaa.gov/products/wwa/
[17] National Weather Service Glossary, http://www.spc.noaa.gov/products/wwa/

- **Severe Thunderstorm Watch:** Issued when conditions are favorable for the development of severe thunderstorms in and close to the watch area. The size of the watch can vary depending on the weather situation. They are usually issued well in advance of the actual occurrence of severe weather and tend to last 4 to 8 hours.

D) Hurricanes & Tropical Storms

Hurricanes and tropical storms (more generically called tropical cyclones) are low-pressure systems that originate over warm ocean waters and are capable of causing immense destruction. The primary damaging forces are high winds, storm surge, heavy precipitation and tornadoes.

The lifecycle of a hurricane starts as a tropical disturbance and as wind speed and system organization increase evolves into a tropical depression, tropical storm (wind speed > 39mph) and then a hurricane. Once a storm reaches the stage of tropical storm it is given a name and closely monitored by the National Hurricane Center in Miami, Florida. Hurricane intensity is classified by the Saffir-Simpson Hurricane Wind Scale (Table 12). Hurricane categories 3, 4, and 5 are considered *major* hurricanes.

Table 12 - Saffir-Simpson Hurricane Wind Scale of Hurricane Intensity.

Category	Wind Speed	Damage Potential
1	74 – 95 mph	Minimal
2	96 – 110 mph	Moderate
3	111 – 129 mph	Extensive
4	130 – 156 mph	Extreme
5	157 ≥ mph	Catastrophic

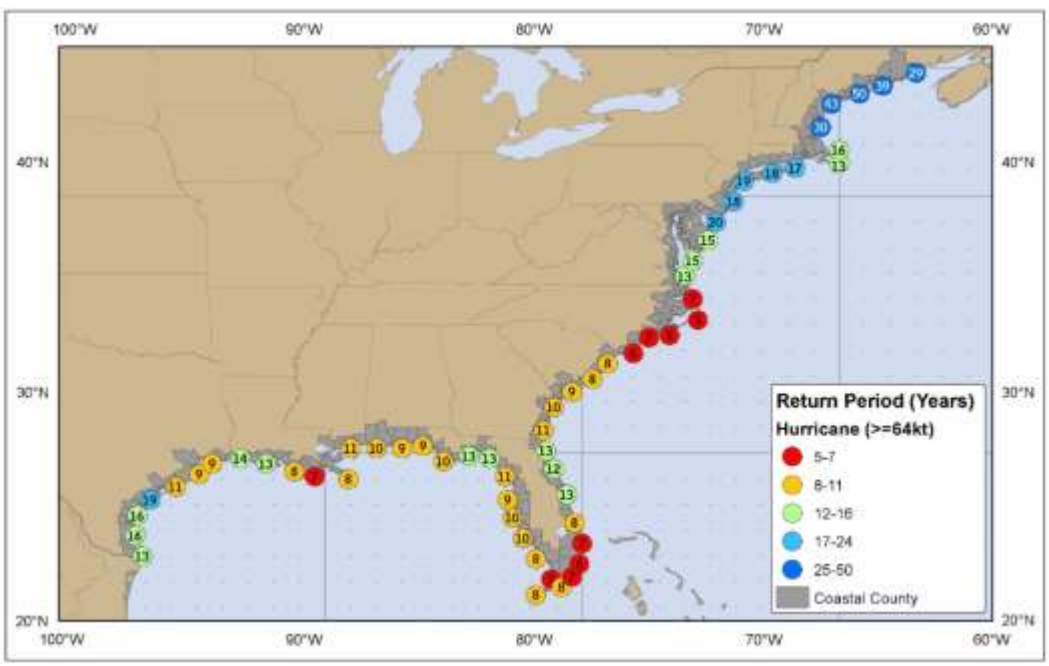

Figure 16 - Estimated return period in years for hurricanes passing within 50 nautical miles of the U.S. coast. Source: NOAA.

The key energy source for a tropical cyclone is the release of latent heat from the condensation of warm water. Their formation requires a low-pressure disturbance, sufficiently warm sea surface temperature, rotational force from the spinning of the earth and the absence of wind shear in the lowest 50,000 feet of the atmosphere. Hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea and Gulf of Mexico largely during the months of June to November. The peak of the Atlantic hurricane season is early to mid-September. On average, every eight to nine years, the South Carolina coast is impacted by a hurricane—though not necessarily by a hurricane making landfall (Figure 16).

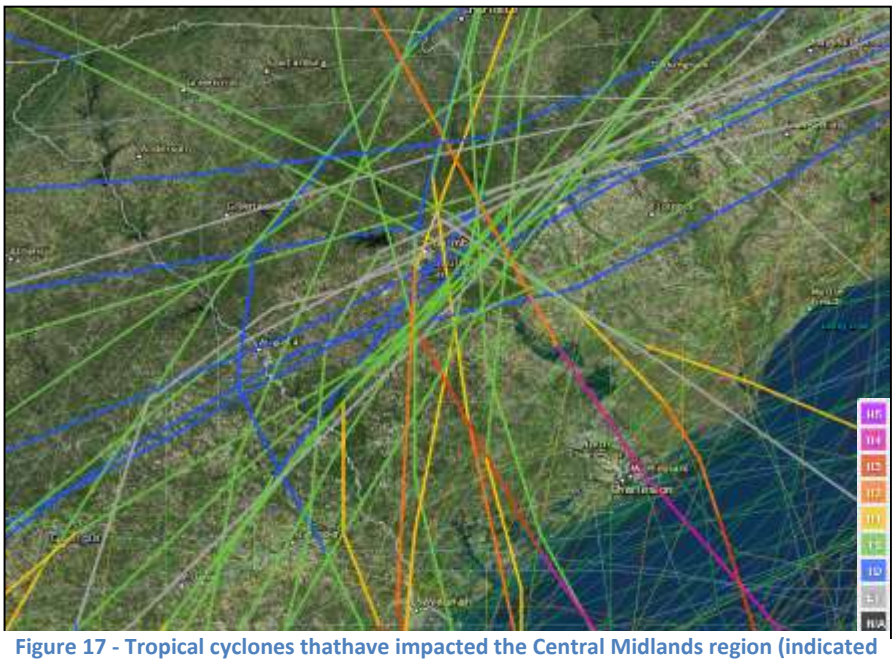

Figure 17 - Tropical cyclones thathave impacted the Central Midlands region (indicated by thicker track lines).

Since 1851 nearly 90 tropical cyclones have affected South Carolina, of which 34 impacted the Central Midlands region (Figure 17). The most catastrophic hurricane in recent history was Hurricane Hugo (1989), which devastated large parts of South Carolina's coast. Due to its size and high forward speed, hurricane-forced winds reached far inland causing extensive devastation.

Based on aircraft reconnaissance and computer models, the National Hurricane Center (NHC) generates hurricane advisories every three hours including information on wind speed, projected track, storm surge, etc.[18]. The NHC issues the following weather statements in regard to tropical cyclones:

- **Tropical Storm Warning[19]:** An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are *expected* somewhere within the specified coastal area within 36 hours.
- **Tropical Storm Watch:** An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are *possible* within the specified coastal area within 48 hours.
- **Hurricane Warning:** An announcement that hurricane conditions (sustained winds of 74 mph or higher) are *expected* somewhere within the specified coastal area. Because hurricane preparedness

[18] Information is accessible at http://www.nhc.noaa.gov/gtwo_atl.shtml
[19] NWS. "National Weather Service Glossary." National Weather Service, http://www.weather.gov/glossary/

activities become difficult once winds reach tropical storm force, the hurricane warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds.

- **Hurricane Watch:** An announcement that hurricane conditions (sustained winds of 74 mph or higher) are *possible* within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.

E) Tornadoes

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. It is most often generated by a thunderstorm and produced when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage from a tornado is a result of high wind velocity and wind-blown debris, although they are commonly accompanied by large hail as well. On average, the Central Midlands region experiences 2 tornado days and about 6 tornado watches per year (Figure 18)[20].

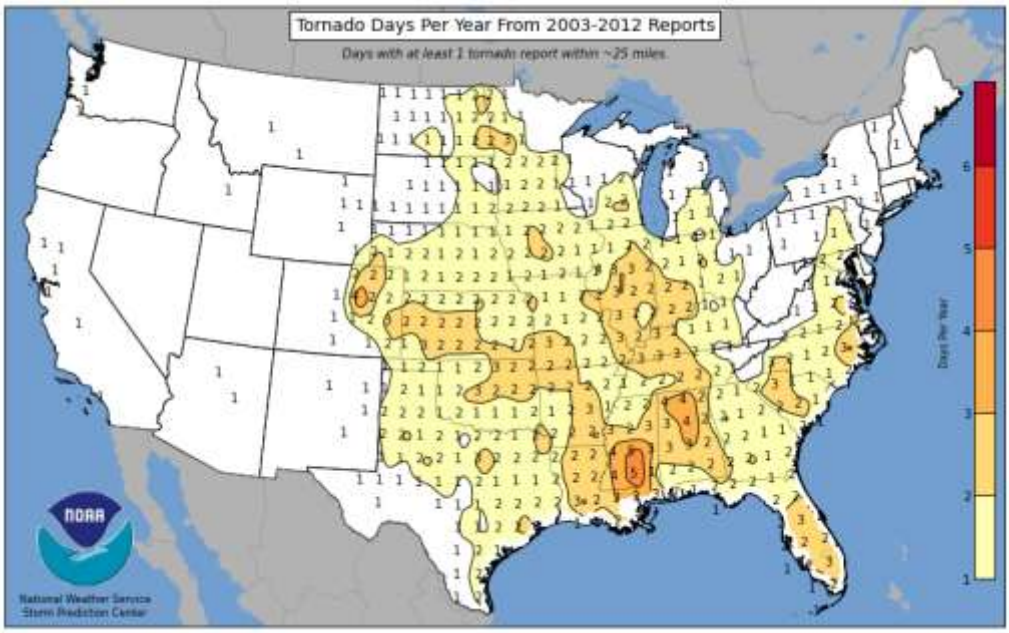

Figure 18 - Annual number of tornado days (1993-2012), Source: NOAA.

Since 2007, the intensity of tornadoes is measured by the Enhanced Fujita-Pearson Scale (Table 13). The most violent tornados have rotating winds of 200 miles per hour or more and are capable of causing extreme destruction, including uprooting trees and well-made structures, and turning normally harmless objects into deadly missiles.

[20] NOAA, 2016. Average number of tornado watches per year (1993-2012). http://www.spc.noaa.gov/wcm/

Table 13 - Enhanced Fujita Scale for Tornadoes. Source: NOAA

F-SCALE NUMBER	WIND SPEED (mph)	TYPE OF DAMAGE DONE
EF0	65 - 85	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees push over.
EF1	86 – 110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111 – 135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame houses shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136 – 165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166 – 200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	>200	Extreme damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m; steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.

The Central Midlands region experiences mostly weak tornadoes though EF3s and EF4s have occurred in the past. There has not been a recorded EF5 tornado thus far. According to FEMA[21], the Central Midlands region wind rating is Zone III (Figure 19), where winds can reach 200 miles per hour. Parts of the region are also susceptible to the impacts of hurricanes.

Figure 19 - Wind zone map showing the magnitude of extreme windstorms across the United States. Source: FEMA.

[21] http://patapsco.nist.gov/imagegallery/details.cfm?imageid=972

Based on Doppler radar and storm spotters, the NWS issues the following tornado watches and warnings[22]:

- **Tornado Warning[23]:** Issued when a tornado has been sighted either on radar or by a storm spotter. Thus, during a tornado warning the threat is imminent and people in the affected area should seek safe shelter immediately. They can be issued without a Tornado Watch being already in effect. They are usually issued for a duration of around 30 minutes.
- **Tornado Watch:** Issued when conditions are favorable for the development of tornadoes in and close to the watch area. Tornado watches are usually issued for a duration of 4 to 8 hours. During the watch, people should review tornado safety rules and be prepared to move a place of safety if threatening weather approaches.

F) Lightning

All thunderstorms produce lighting. Lightning is a spark of static electricity and results from the buildup of electrical energy between positively and negatively charged areas. It is not well understood why charge separation occurs in clouds. Whenever thunder is audible, there is the risk of a lightning strike. The only safe place during a thunderstorm is inside. Lightning has also occurred in volcanic eruptions, intense forest fires, surface nuclear detonations, heavy snowstorms, and in large hurricanes.

There are four types of lightning: *cloud to ground*, *intra-cloud*, *cloud-to-cloud*, and *cloud to air*. The term "heat lightning" is a misnomer and is not related to high temperatures. Heat lightning is lightning that is simply too far away for the thunder to be audible.

Between 1997 and 2012, South Carolina experienced on average 447,014 cloud-to-ground flashes per year[24]. The Central Midlands region sees on average of 12 to 18 flashes per mi^2 and year (Figure 20).

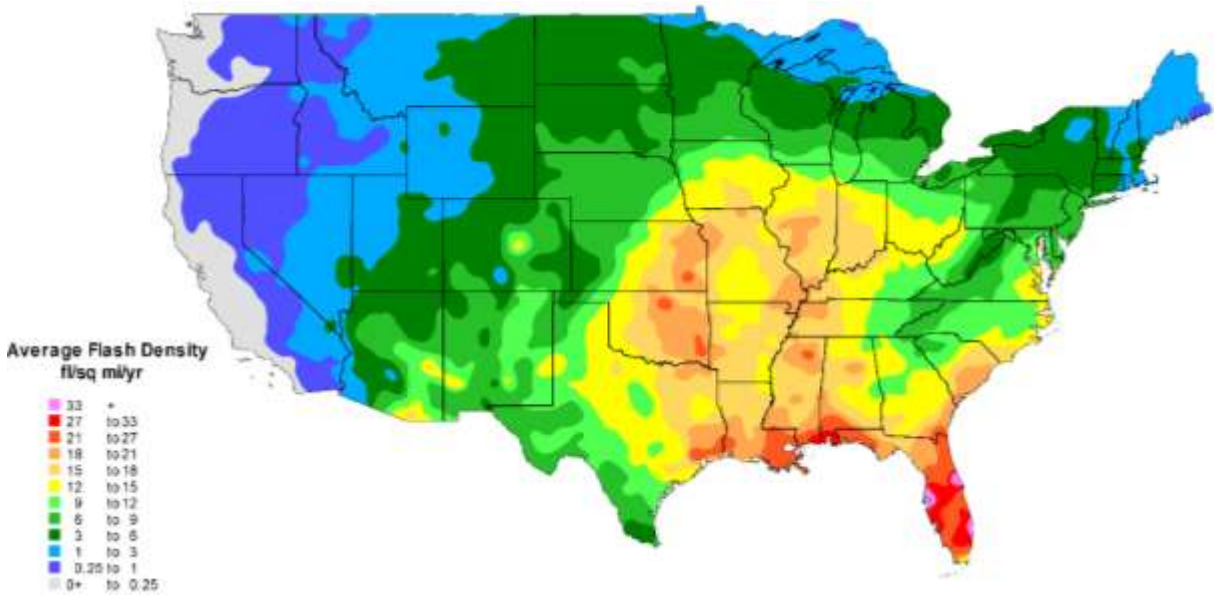

Figure 20 - Cloud-to-ground lightning incidences in the U.S. (1997-2012). Source: National Lightning Detection Network.

[22] Information is accessible at http://www.spc.noaa.gov/products/wwa/.
[23] Ibid.,
[24] http://www.lightningsafety.noaa.gov/stats/97-12Flash_DensitybyState.pdf

G) Fog

Fog is a hazard to drivers, mariners, and aviators. On average, fog contributes to 12 accidents per year in South Carolina (or 0.76% of motor vehicle accidents)[25].There are several different conditions under which fog forms. In the Central Midlands region, *radiation fog* is the most common type of fog.

- **Radiation fog** mostly forms during the fall and winter months as air near to the ground cools. When the air reaches saturation, fog will form. Initially, fog will form near or at the surface and will thicken as the air continues to cool (e.g., overnight) and also extend upward. Radiation fog mostly occurs in sheltered valleys and near bodies of water. Its appearance is usually patchy and localized since wind disrupts the development of radiation fog.
- **Advection fog** forms as warmer, moist air moves over a cold ground. Ground cools the air to saturation, forming clouds. Advection fog can form under cloudy skies with moderate winds and can last for several days. Sea or lake fog (i.e., warm most air flowing over colder bodies of water) is a type of advection fog.
- **Mountain/Valley fog** is common in areas of variable terrain. It forms when overnight denser cooler air from higher elevations sinks into valleys causing the valley to fill from the bottom with cold air (also called cold air drainage). As a result, surrounding air temperatures drop closer to the dew point and saturation. Fog formation will continue over night given a sufficient amount of moisture is in the air. Mountain/valley fog is densest around sunrise and occurs mostly during fall and spring.
- **Freezing fog** occurs when tiny, supercooled water droplets come in contact with surfaces (e.g., trees, sidewalks, roads, and vehicle) that have a temperature at or below freezing. Water droplets will freeze instantly. Black ice formation on roadways is common.
- **Super fog** is a combination of smoke released from smoldering organic material (e.g., brush, leaves) mixed with cooler, nearly saturated air. Visibility is generally less than 10 feet. Super fog moves under light wind conditions through low terrain, such as creeks and drainage ditches. Due to its low visibility, super fog is extremely dangerous to motorists.

The NWS issues the following weather statements in regard to fog:

- **Dense Fog Advisory:** This is issued when widespread dense fog develops, frequently with visibilities below one-quarter of a mile or less for an extended period of time (2 or more hours) - or with visibility of one mile or less when fog is over water.
- **Freezing Fog Advisory:** This is issued when fog develops and surface temperatures are at or below freezing. Water droplets can freeze instantly to any surface including vehicles and road surfaces. Visibilities are typically at or below 1 mile.

H) Wind

Wind is "the horizontal motion of the air past a given point"[26]. Winds occur when there are differences in air pressure, always moving from a location with high pressure to one with relatively lower pressure. Wind speed depends on two factors: (a) the pressure difference between two areas, and (b) and the distance between those two areas. Stronger winds occur the higher the pressure difference and/or the closer the areas of high/low pressure. Wind speed is usually expressed in miles per hour or knots.

[25] https://www.aaafoundation.org/sites/default/files/2014FogAndCrashesReport.pdf
[26] National Weather Service, Glossary, http://w1.weather.gov/glossary/

The direction from which the wind is blowing is used to describe the wind. For example, "westerly winds" mean winds are blowing from the west. The wind events discussed in the HMP are non-hurricane, and non-tornadic wind events (i.e., mostly thunderstorm winds).

It is estimated that about 85 extreme wind events occur in the Central Midlands region annually (Figure 21). These events are generally winds associated with (severe) thunderstorms.

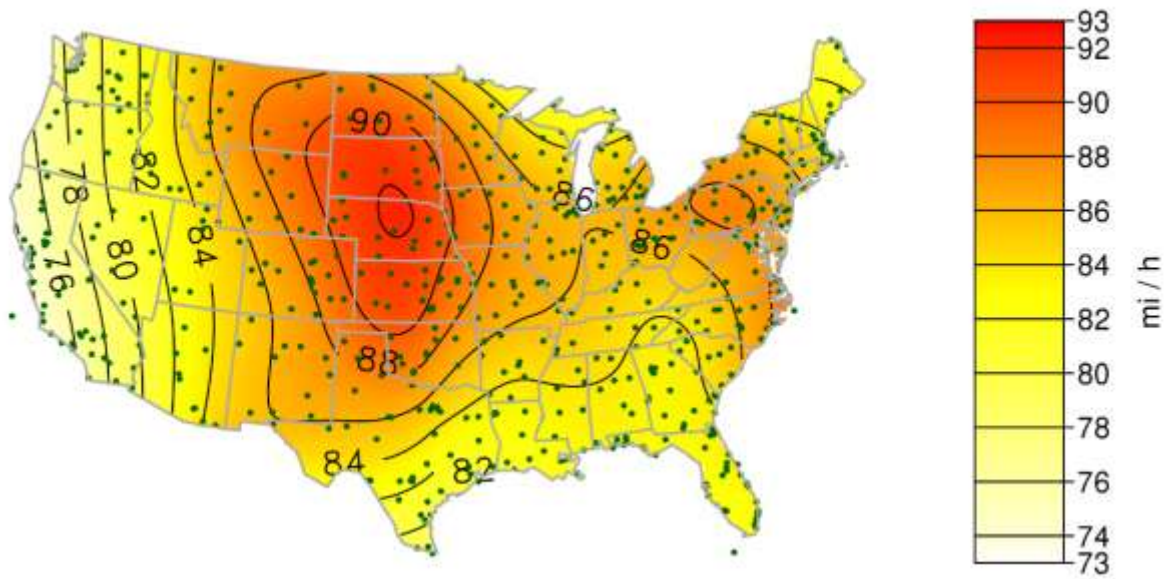

Figure 21 – Annual non-hurricane and non-tornadic extreme wind events in the U.S. The dots indicate weather station locations. Source: NIST.

Based on Doppler radar and storm spotters, the NWS posts wind advisories, watches and warnings[27]. The NWS issues the following weather statements in regard to wind:

- **Wind Advisory:** Issued when either sustained winds of 30 to 39 mph *or* winds gusts of 46 to 57 mph are expected for one hour or longer.
- **Lake Wind Advisory:** Issued when windy conditions on area lakes are expected to be hazardous for boaters and other recreational events on or around lakes.
- **High Wind Watch:** Issued when either sustained winds of 40 mph or higher for one hour or more *or* when wind gusts of 58 mph or higher for one hour or more are possible.
- **High Wind Warning:** Issued when either sustained winds of 40 mph or higher for one hour or more *or* when wind gusts of 58 mph or higher for one hour or more are occurring or imminent.
- **Extreme Wind Warning**: Issued when surface winds of 115 mph or greater associated with non-convective, downslope, derecho (not tornado), or sustained hurricane winds are expected to occur within one hour.

[27] Information is accessible at http://www.spc.noaa.gov/products/wwa/.

I) Winter Storms

Many hazards are associated with winter storms and weather including strong winds, coastal flooding, heavy snow and ice. There is no generally accepted classification of winter storms or destruction, but winter storm types include: *blizzard*, *lake effect*, *ice storm*, and *nor'easter*[28]. Due to South Carolina's geography and southern location, lake effect snow is not considered.

- **Blizzard:** A blizzard is a winter storm with wind speeds at least 35 miles per hour and low visibility that is reduced to 1/4 mile or less for a period of 3 hours or more.
- **Ice Storm:** When freezing rain accumulates to at least 1/4 inch or more, it is considered an ice storm. Freezing rain occurs when rain falls onto surfaces with temperatures that are below freezing, thus the rain freezes as ice on contact.
- **Nor'easter:** Nor'easters are very strong winter storms. Strong northeasterly winds blow from the ocean, either formed in the Gulf of Mexico or off the eastern coast in the Atlantic Ocean. Heavy snow, rain, wind, and great waves accompany these storms, often causing beach erosion and structural damage.

There are three components for winter storm formation: cold air, moisture, and lift. Cold temperatures below freezing at ground level allow for snow and ice formation; moisture from bodies of water allows for the precipitation that eventually freezes to snow and ice; lift allows moisture to rise for cloud and precipitation formation.

The severity of winter weather depends on a community's ability to manage and cope with the event, such as the rapid mobilization of snow removal equipment or road salt. Due to the rare occurrence of severe winter weather in central South Carolina, coupled with the expensive costs to acquire and maintain the necessary resources to combat their effects, many communities are not prepared for such events. Winter storms, though infrequent, are not unusual occurrences in the Central Midlands region of South Carolina. The most recent winter weather event in March 2014, while affecting all of the Central Midlands, triggered a Presidential Disaster Declaration (DR-4166) solely for Lexington County.

Winter storms cause extensive property damage as well as indirect threats associated with vehicle accidents and the loss of power/heat. Telecommunications and power can be disrupted for days during these events. Depending on ice thickness, the size of the area covered, and the duration of the ice storm, the impact can be crippling: roadways become impassible, power is disrupted, communication is severed, and travel by vehicle or by foot may become treacherous, causing injuries and fatalities. Homes and buildings are damaged by ice accumulation, either directly by the weight of the ice on roofs or by trees and/or branches falling on buildings.

There are several winter season warning products issues by the NWS[29]:

- **Winter Weather Advisory:** Issued when a low pressure system produces a combination of winter weather (snow, freezing rain, etc.) that present a hazard, but does not meet warning criteria.
- **Winter Storm Watch:** Issued when there is a potential for heavy snow or ice accumulations, usually at least 24 to 36 hours in advance. The criteria for this warning vary by location.

[28] http://www.weather.com/encyclopedia/winter/types.html
[29] Information is accessible at http://www.spc.noaa.gov/products/wwa/

- **Winter Storm Warning:** Issued when a winter storm is producing or is forecast to produce heavy snow or significant ice accumulations. The criteria for this warning vary by location.
- **Snow Advisory:** Issued when snow accumulations of 2 to 4 inches are expected. An advisory may still be warranted if lesser accumulations will produce travel difficulties, especially early in the winter season.
- **Blowing Snow Advisory:** Issued when blowing snow is expected to occasionally reduce visibilities to 1/4 mile or less with winds generally 25 to 34 mph. The event should last at least 3 hours.
- **Snow and Blowing Snow Advisory:** Issued when winds of 25 to 34 mph are expected to be accompanied by falling and blowing snow, occasionally reducing the visibility to 1/4 mile or less. The event should last at least 3 hours.
- **Heavy Snow Warning:** Issued when snow is expected to accumulate 4 inches or more in 12 hours, or 6 inches or more in 24 hours.
- **Freezing Rain/Drizzle Advisory:** Issued for freezing rain when ice accumulations are expected to cause travel problems, but not exceed 1/4".
- **Sleet Advisory:** Issued for accumulating sleet of 1/4" to 1". Because sleet usually occurs with other precipitation types, a winter weather advisory will almost always be used in such cases.
- **Heavy Sleet Warning:** Issued when a period of sleet is expected to produce ice accumulations of 1" or greater, or cause significant disruptions to travel or utilities.
- **Ice Storm Warning:** Issued when a period of freezing rain is expected to produce ice accumulations of 1/4" or greater, or cause significant disruptions to travel or utilities.
- **Blizzard Watch:** Issued when these conditions may be met 12 to 48 hours in the future.
- **Blizzard Warning:** Issued for sustained wind or frequent gusts greater than or equal to 35 mph accompanied by falling and/or blowing snow, frequently reducing visibility to less than 1/4 mile for three hours or more.

J) Hail

Hail can occur year-round and happen anywhere because it derives from severe thunderstorms. It is a precipitation type, consisting of ice pellets that form when water droplets bounce above and below the freezing level of the atmosphere (Figure 22). Initially, water droplets are propelled by updrafts from thunderstorms into the atmosphere, where they freeze. As the droplets collide and combine with other (super-cooled) droplets in the atmosphere, it falls and gets propelled up again to the freezing level, and another layer of ice can form around the original. Eventually, when the hailstone develops sufficient weight to overcome the updraft, it falls towards the ground. The size of hail is a function of the intensity of the updraft and hence, the severity of the storm. Strong vertical motion can keep lifting hailstones so that they continue to accumulate in size.

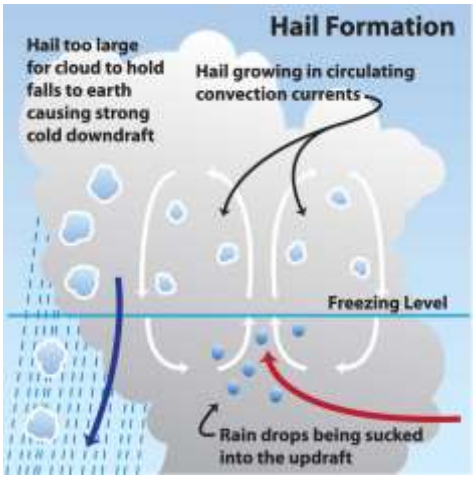

Figure 22 - How hail forms in severe thunderstorm clouds. Source: JPL.

The speed when hail reaches the ground, or its terminal velocity, is a function of its size and weight. However, very rarely does hail reach its maximum terminal velocity due to friction and drag, collision with other droplets, and the hailstones irregular shape.

Hail can be small, generally pea-sized. But it may be larger, capable of damaging property and killing livestock and people. Hail size is estimated by descriptive comparison to a known object (Table 14).

Table 14 - Classification of hail size. Source: NOAA.

Known Object	Estimated Hail Diameter (Inch)
Pea	0.2
Marble	1/2
Dime/Penny	3/4
Nickel	7/8
Quarter	1
Ping-Pong Ball	1 1/2
Golf Ball	1 3/4
Tennis Ball	2 1/2
Baseball	2 3/4
Tea Cup	3
Grapefruit	4
Softball	4 1/2

The Central Midlands region experiences, on average, 8 severe hail days per year (Figure 23). While rarely deadly, it damages property and causes significant damage to agricultural operations.

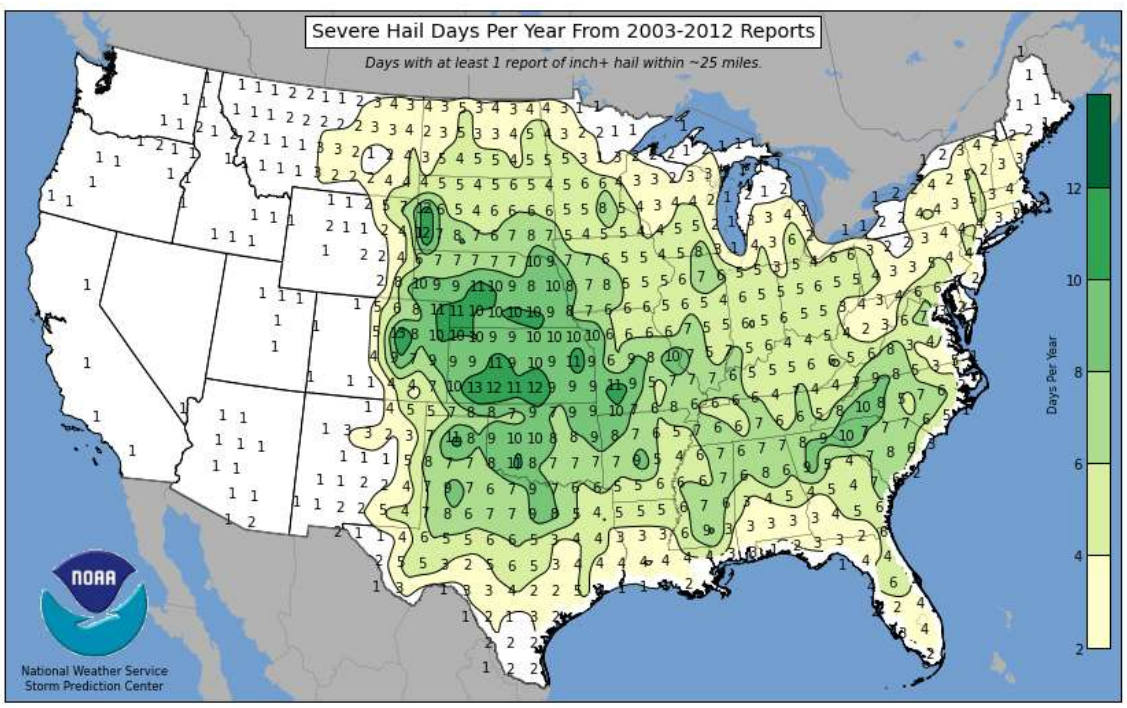

Figure 23 - Severe hail days per year (2003-2012). Source: NOAA.

K) Cold Hazards

Extreme cold temperatures occur occasionally in South Carolina during the winter months. Frigid temperatures are largely a danger to humans and livestock, with impacts such as hypothermia or frostbite. Many fatalities may occur from carbon monoxide poisoning when utilizing faulty heating equipment or outdoor heating equipment indoors. Property damage is largely limited to unprotected (water) pipes. Disruption in water service and decreases in water pressure, however, cause a cascading problem for emergency responders (e.g., firefighting).
The NWS Windchill Temperature (WCT) index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from winter winds and freezing temperatures. The index:

- Is based on a human face model
- Calculates wind speed at a height of 5 feet (average height of an adult human face) based on readings from the national standard height of 33 feet (typical height of an anemometer)
- Incorporates heat transfer theory: heat loss from the body to its surroundings, during cold and breezy/windy days
- Lowers the calm wind threshold to 3 mph
- Uses a consistent standard for skin tissue resistance
- Assumes no impact from the sun (i.e., clear night sky)

Wind (mph) \ Temperature (°F)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes, 10 minutes, 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph) *Effective 11/01/01*

Figure 24 - National Weather Service windchill chart. Source: NOAA.

NWS posts the following cold weather advisories based on Doppler radar and storm spotters[30]:

- **Wind Chill Advisory:** Issued when wind chill values reach -5°F to -19°F, with winds speeds around 10 mph or more.

[30] Information is accessible at http://www.spc.noaa.gov/products/wwa/

- **Wind Chill Watch:** Issued when conditions are favorable within the next 12 to 24 hours that wind chill values will reach -20°F or colder, with winds speeds around 10 mph or more.
- **Wind Chill Warning:** Issued when wind chill values reach -20°F or colder, with winds speeds around 10 mph or more.
- **Frost Advisory:** Issued when nighttime minimum temperatures are expected to range from 33°F to 36°F in the growing season.
- **Freeze Warning:** Issued in the growing season when nighttime minimum temperatures are expected to reach 32°F or lower. Usually issued to highlight the first few freezes of the fall, or unusually late freezes in the spring. A Freeze Watch is issued when these conditions may be met 12 to 48 hours in the future.

L) Wildfires

According to the South Carolina Forestry Commission, a wildfire is any type of forest, grass, brush, or outdoor fire that is not controlled or supervised[31]. In South Carolina, the average number of fires per year is 3,000 and the yearly average acreage burned is 18,000. Accounting for the size and population of the state, this is one of the highest rates in the United States. Only 2% of wildfires in South Carolina are started by natural causes (e.g. lightning). Most wildfires (35-45%) are started by debris burning such as trash, crop stubble, etc. Woods arson (burning someone else's property without the owner's consent)[32], is the second leading cause of wildfires (25-30%). As a result, wildfires can occur anywhere in the state of South Carolina and are not limited to the urban-wildland-interface.

Fire season generally lasts from late winter to early spring. For South Carolina, the highest danger of fire is during the winter because of dead or dormant vegetation acting as fuel. The potential for wildfire depends upon fuel characteristics, weather conditions, recent climate conditions, topography and fire behavior. Fuels are anything that fire can and will burn, and are the combustible materials that sustain a wildfire. Typically, this is the most prevalent vegetation in a given area.

Weather is one of the most significant factors in determining the severity of wildfires. The intensity of fires and the rate with which they spread is directly related to the wind speed, temperature and relative humidity. Climatic conditions such as long-term drought also play a major role in the number and intensity of wildfires, and topography is important because the slope and shape of the terrain can change the rate of speed at which fire travels. Wildfire-specific terminology is visualized in Figure 25.

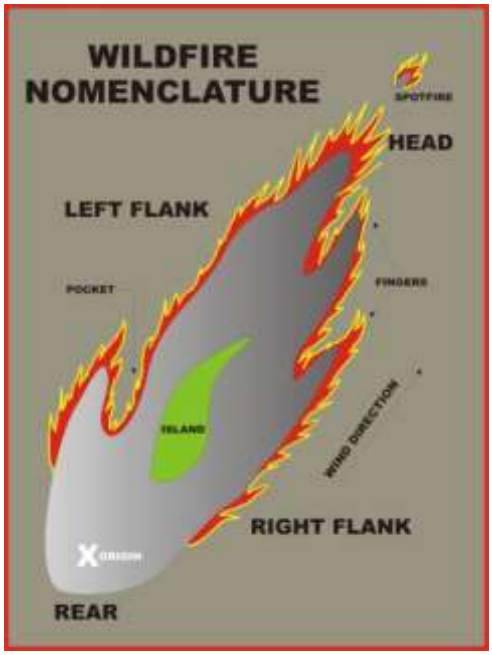

Figure 25 - Nomenclature of a forest fire. The fastest-moving, hottest, and most dangerous part of a wildfire is called the head. Source: SC Forestry Commission.

[31] South Carolina Forestry Commission, http://www.state.sc.us/forest/refwild.htm
[32] Ibid.

There are four major types of wildfires:

- **Ground fires** burn in natural litter, duff, roots or sometimes-high organic soils. Once started they are very difficult to control, and some ground fires may even rekindle after being extinguished.
- **Surface fires** burn in grasses and low shrubs (up to 4' tall) or in the lower branches of trees. They have the potential to spread rapidly, and the ease of their control depends upon the fuel involved.
- **Crown fires** burn in the tops of trees, and the ease of their control depends greatly upon wind conditions.
- **Spotting fires** occur when burning embers are thrown ahead of the main fire, and can be produced by crown fires as well as wind and topographic conditions. Once spotting begins, the fire will be very difficult to control.

Two agencies issue fire warnings in the region, The South Carolina Forestry Commission and NWS:

- **Red Flag Fire Alert** (SC Forestry Commission): The Red Flag cautions that wildfire danger is increasing and that outdoor burning could become difficult to control.
- **Burning Ban** (SC Forestry Commission)**:** A burning ban legally prohibits outdoor burning and is declared only when there is a significant threat to public safety.
- **Dense Smoke Advisory (NWS)**: Dense smoke advisories are issued when smoke is expected to reduce visibility to 1/4 mile or less.
- **Fire Weather Watch (NWS):** Issued when dry vegetation and conditions favoring extreme fire danger are expected 12 to 72 hours in the future.
- **Red Flag Warning (NWS):** Issued when dry vegetation and conditions favoring extreme fire danger are expected, generally within 24 hours. Red Flag Warnings are issued when any two of the following conditions are met: sustained wind speeds in excess of 20 mph, frequent wind gusts of 25 mph or greater, significant wind shifts, relative humidity of 25% or lower, and high lightning potential.

M) Droughts

In the most general sense, drought originates from a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector. Drought has a natural and human component; therefore it is defined in both conceptual and operational terms. Droughts are generally classified as *meteorological*, *agricultural*, *hydrological*, or *socioeconomic*[33].

- **Meteorological** drought is based on the degree of dryness for a given period.
- **Agricultural** drought is based on the impact to agricultural activity from a deficit in precipitation, soil moisture, ground water supply, or reservoir levels.
- **Hydrological** drought is from a precipitation deficit that affects the surface and subsurface water supply (stream flow, lake levels, ground water).
- **Socioeconomic** drought reflects the adverse supply and demand relationship between economic goods that are dependent on precipitation and water supply.

Drought occurs in a broad geographic area and can occur anywhere in the state of South Carolina. The severity of a drought is measured by several drought indices—each with a different focus and purpose

[33] NWS, 2012. Drought Fact sheet.
http://www.nws.noaa.gov/om/csd/graphics/content/outreach/brochures/FactSheet_Drought.pdf

(e.g., crop moisture index, surface water supply index, etc.). The most commonly used index is the Palmer Drought Severity Index (PDSI), although it may lag emerging droughts by several months. The PDSI ranges from -4 to +4 with an index of -4 or less represents extreme drought, -3 to -3.9, severe drought, -2.0 to -2.9, moderate drought, and -1.0 to -1.9, incipient drought. Values between -1 and +1 are considered normal. Larger positive values indicate anomalously wet conditions.

N) Heat Hazards

A heat wave is an extended period of above normal temperatures over a given period of time. The World Meteorological Organization recommends the declaration of a heat wave when the daily maximum temperatures exceeds the average maximum temperatures by 9 degrees Fahrenheit and lasts for a period of at least five days.

Temperature alone is insufficient to describe the stress placed on humans as well as flora and fauna in hot weather. It is crucial to consider the effect of relative humidity since it is essential to the body's ability to perspire and cool off. Once air temperature reaches 95°F (35°C), perspiration becomes the most important manner of heat loss. Perspiration does not work if the water cannot evaporate (i.e. sweating in high relative humidity is less effective than in dry climate). To communicate this relationship between temperature and humidity, the NWS developed the Heat Index (Figure 26). For example, if the air temperature is 94°F and the relative humidity is 80%, the heat index—how hot it feels—is 129°F.

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

Figure 26 - The Heat Index expresses the temperature the body feels based on relative humidity and air temperature. Source: NOAA.

Most heat disorders (e.g., sunburn, heat cramps, heat exhaustion, and heat stroke) occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition. Other conditions that can induce heat-related illnesses include stagnant atmospheric conditions and poor air quality. Seniors and children are most at risk from adverse heat effects. Although heat represents the biggest threat to human health, it can also cause damage to roads, bridges, pipelines, utilities, and railroads. High temperatures can be partially responsible for deflection of rails and related railroad accidents.

The NWS Columbia Forecast Office posts the following weather advisories for hot temperatures[34]:

- **Heat Advisory:** Issued when maximum daytime heat index values are expected to reach or exceed 105°F on at least 2 consecutive days, with intermediate low temperatures of 75°F or higher.
- **Excessive Heat Watch:** Issued when conditions are favorable within the next 12 to 48 hours to reach maximum daytime heat index values of 110°F or more on at least two consecutive days, with intermediate low temperatures of 75°F or higher.
- **Excessive Heat Warning:** Issued when maximum daytime heat index values are expected to reach or exceed 110°F on at least two consecutive days, with intermediate low temperatures of 75°F or higher. *An Excessive Heat Watch* is issued when these conditions may be met 12 to 48 hours in the future.

O) Earthquakes

An earthquake is the motion or trembling of the ground produced by sudden displacement of rock in the Earth's crust. Earthquakes result from crustal strain, waste water disposal from fracking, volcanism, and landslides. An earthquake occurs when stress built up in the Earth's crust causes rocks to break and slip. This region along which the slip occurs is called a fault.

There are several faults dissecting the Midlands region, especially Lexington and Richland County (Figure 28). Some of these faults are only presumed to exist (so-called inferred faults) because there is no surface evidence for their existence. In general, there are three types of faults (Figure 27): *strike-slip* (rock blocks move horizontally), *normal* (rock moves down relative to the other side), and *thrust* (rock moves up relative to the other side). Earthquakes occur along faults, tectonic plate boundaries, and mid-oceanic ridges (underwater mountain ranges). The majority of earthquakes occur along tectonic plate boundaries, known as *interplate earthquakes*. The point within the Earth's crust where an earthquake begins is called the focus, and the point directly above this depth on the Earth's surface is the epicenter. *Aftershocks* are smaller earthquakes which may occur after the initial main shock and can also cause considerable damage.

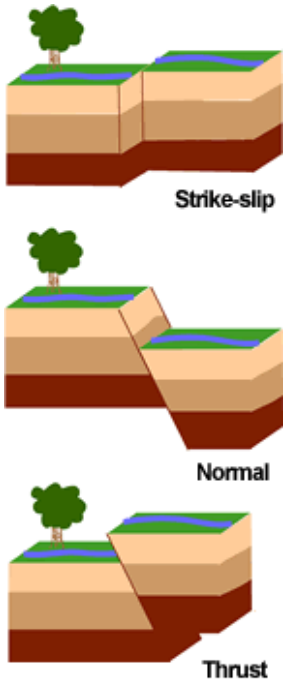

Figure 27 - Types of earthquake faults. Source: USGS.

The severity of an earthquake is determined based on magnitude (i.e. the amount of energy release) and intensity (i.e. the amount of damage caused). Magnitude is measured using the Moment Magnitude Scale (denoted as Mw or M). The Richter Scale is no longer in use. Intensity is measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects (Table 15).

[34] Information is accessible at http://www.weather.gov/cae/

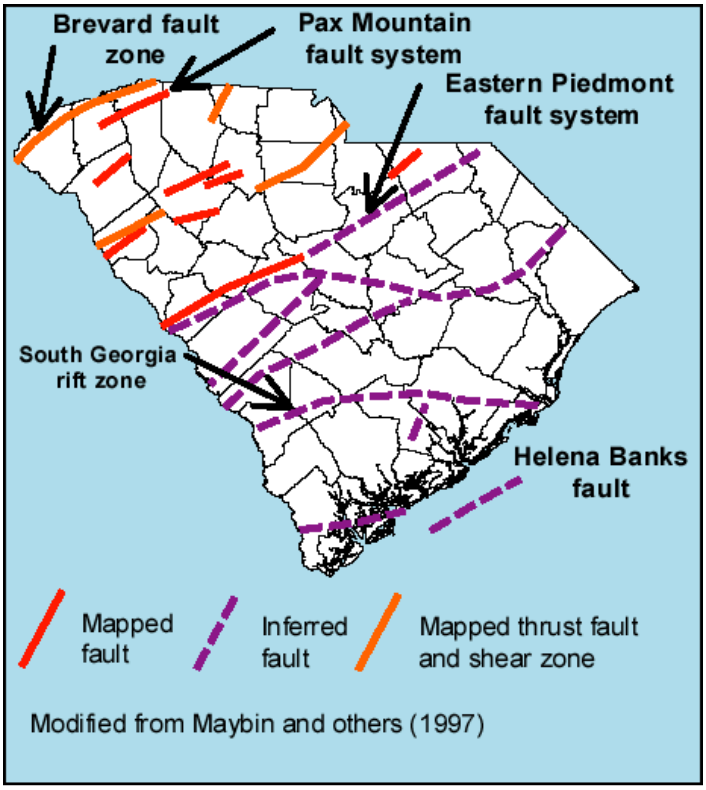

Figure 28 - Fault map of South Carolina. Source: DNR.

Table 15 - Modified Mercalli Intensity Scale capturing the impacts from earthquakes. Source: USGS.

Scale	Description Of Effects
I	Only detectable by instruments
II	Felt by some people, especially if on higher floors, some objects may swing
III	Felt indoors, feels like a truck rumbling by
IV	Felt indoors by many people, felt by some outdoors, dishes and doors may move
V	Felt by most people, some dishes and windows break, objects fall
VI	Felt by everyone, may move heavy furniture, slight damage
VII	Slight to moderate damage in ordinary-built structures, great damage in poorly built structures
VIII	Considerable damage in ordinary-built structures, chimneys, columns, walls fall
IX	Great damage, buildings may shift from foundation
X	Most masonry and frame structures collapse, rails bent
XI	Few buildings remain, bridges collapse and rails damaged
XII	Total destruction, lines of sight distorted

The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, time of occurrence (greater fatalities tend to occur during weekday work hours when more people are in large office buildings or schools), site and soil type. Strength of shock waves diminish from the focus, thus greater distance from the earthquake origin will decrease likelihood or extent of damage. A measure called Peak Ground Acceleration (PGA) captures the probabilistic risk of shaking (measured in meters per second; m/s) at a given location. For the purpose of this plan, PGA is expressed as the 2% chance of exceeding a certain amount of shaking

over a 50 year period. Again, PGA is not equivalent to the magnitude of an earthquake but indicates how hard the ground can shake at a given location. Other damaging earthquake effects include landslides and liquefaction (in which ground soil loses the ability to resist shear and flows, much like quick sand). In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture, or collapse. In urban areas, damage to electric and gas lines may lead to the common occurrence of local fires. Earthquakes that trigger movement of the seafloor may also generate tsunamis.

In South Carolina there are about 10 to 15 earthquakes recorded annually, with only 3-5 events actually noticed by people[35]. Because of the low frequency of noticeable events, many people are unaware of the earthquake risk in South Carolina. However, all 46 counties in the state are susceptible to effects of earthquakes. According to the U. S. Geological Survey (USGS), the Central Midlands region faces only minimal to moderate risk from earthquakes in a given year, generally less than 10% probability of exceedance in 50 years.

The most recent earthquake in the region occurred in 1971 and caused no major damage. The last catastrophic earthquake occurred in 1886 near Charleston and was felt in the Central Midlands region with only minor damage. Similarly, the great earthquake of 1811 near New Madrid, MO and the 1916 earthquake near Asheville, NC were both felt in the region but caused only minor damage (MMI scale level V effects).

4.4 Data Sources and Methodological Approach

This section addresses FEMA HMP requirement 201.6(b)(3)

Natural hazards used in this plan are of two types: those that have distinct spatial footprints (e.g., earthquakes, hail, tornados, and flooding) and other hazards that are widespread in their effects and cannot be mapped as distinct geographic occurrences (e.g., winter storms and drought).

It must be emphasized that in many cases detailed information is not available regarding the areas potentially impacted by a specific hazard, as well as its potential health, safety, property, environmental and economic impacts.

CMCOG staff has chosen to use hazard and vulnerability assessment data provided by HVRI at USC. Where the absence of data at the sub-county level, or the nature of the hazard itself (such as with droughts, hurricane wind zones, and flood events) hinders sub-county analysis, CMCOG staff has relied on the knowledge of participating jurisdictions.

Loss data (direct property and crop damage as well as fatalities and injuries) originated from SHELDUS Version 14.1 and covered the time period 1960 through 2014. Information on event magnitude came from the National Centers for Environmental Information (formerly NCDC). For a spatial representation of risk, additional observational data sources such as NWS warnings or weather station data or data models such as the Flash Flood Potential Index were utilized. The Flash Flood Potential Index (FFPI) is a computed product and follows the approach developed by the NWS[36]. The FFPI is a construct based on key drivers of surface run-off: slope, land use/land cover, soil type and texture, as well as vegetation

[35] SCEMD, http://www.scemd.org/planandprepare/disasters/earthquakes
[36] Zogg, J. and K. Deitsch, 2013. "The Flash Flood Potential Index at WFO Des Moines, Iowa," Available at http://www.crh.noaa.gov/Image/dmx/hydro/FFPI/FFPI_WriteUp.pdf

cover or forest density[37]. The values of the FFPI range from 1 to 10 with 10 representing the highest potential for flash flooding.

To generate a county's overall, comprehensive risk profile, all historic hazard occurrences were summed with each hazard classified into low, medium, and high risk categories (equal to scores from 1 to 3). The range of each hazard risk category can be found in the vulnerability assessment section. The maximum score is 45 given the inclusion of 15 hazards. The total hazard risk also includes flash flood risk, for which FFPI values were averaged across a hexagon. The risk of riverine flooding was expressed as the percentage of floodplain area within a hexagon and then scaled from low (1) to high (3) risk.

Table 16 shows data source origins for hazard occurrences and physical observations (e.g., latitude/longitude) utilized in the hazard and vulnerability analyses of the Plan.

Table 16 - Data Utilized in Hazard Identification and Assessment Sections of HMP. Source: HVRI.

Hazard	Years of Record	Observations	Source
Drought	2000-2015	Weekly U.S. Drought Monitor	National Drought Mitigation Center
Earthquake	1900-2015	Epicenter; PGA w/ 2% exceedance in 50 years	USGS
Flood	2011/2016	100- and 500-year flood zones	FEMA
Flash Flood		Land use/land cover, soil type, slope	USGS
Fog	1986-2015	NWS Weather Stations	NCEI (formerly NCDC)
Hail	1986-2015	Location	NOAA Storm Prediction Center
Hurricanes	1988-2014	Track location	Colorado State University
Lightning	1986-2012	Cloud-to-ground flash location	NCEI
Temperature Extremes	1986-2015	NWS Weather Stations	NCEI (formerly NCDC)
Tornado	1950-2015	Location	NOAA Storm Prediction Center
Severe Thunderstorm	2008-2015	Warning Polygons	Iowa State University IEM Cow
Wildfire	1988-2015	Location; acreage burnt	South Carolina Forestry Commission
Wind	1986-2015	NWS Weather Stations	NCEI (formerly NCDC)
Winter Weather	1986-2015	NWS Weather Stations	NCEI (formerly NCDC)

For the **vulnerability assessment**, this plan draws largely on two products: HAZUS-MH 2.2 and the Social Vulnerability Index (SoVI®). HAZUS-MH 2.2 is a GIS-based software developed by FEMA to model impacts and losses from flood, earthquake and hurricanes impacts. All building replacement values (or so-called general building stock) for each county, as well as modelled economic losses, originate from HAZUS-MH 2.2. For all other hazards, simple overlays of potential impact areas and assets at risk were conducted using ArcGIS v10.x.

To capture the socioeconomic complexities of each county, this plan uses the SoVI®[38]. Social vulnerability is a well-established concept that explains why some places better prepare, respond to,

[37] For this plan, the FFPI equation #4 was employed, which was developed by Ceru (2012).
[38] Cutter, S.L., B.J. Boruff, and W.L. Shirley, 2003. "Social Vulnerability to Environmental Hazards," Social Science Quarterly, 84(1): 242-261.

and recover from a hazardous event. Social vulnerability captures the underlying characteristics of a population that either attenuate or exacerbate the effects of a hazard event.

The SoVI®, a peer reviewed methodology, is a standardized, comparative metric that builds upon this concept by measuring the socio-economic and demographic differences between places. SoVI® includes those population characteristics known to influence the ability of social groups and communities to prepare for, respond to, and recover from disasters[39].

Key social indicators that consistently appear in the literature as influencing pre-impact preparedness and post-event response and recovery include attributes such as socioeconomic status (e.g., wealth, education, occupation), age (e.g., elderly populations and young children are more vulnerable to hazards), gender, race and ethnicity, employment and employment sector, and special needs populations. However, it is not just the proportion of residents in these broad categories that is important, but instead how race, socioeconomic status, and gender interact to produce socially vulnerable populations. As such, SoVI® allows planners and emergency managers to: 1) quickly identify broad differences within a county, 2) understand the characteristics of their populations at the tract level that either increase or decrease vulnerability, and 3) identify where resources and attention should be directed for planning and mitigation.

Table 17 - Data inputs to the Social Vulnerability Index (SoVI).

VARIABLE	DESCRIPTION
QASIAN	Percent Asian
QBLACK	Percent Black
QHISP	Percent Hispanic
QNATAM	Percent Native American
QAGEDEP†	Percent of Population Under 5 Years or 65 and Over
QFAM†	Percent of Children Living in Married Couple Families
MEDAGE	Median Age
QSSBEN	Percent of Households Receiving Social Security
QPOVTY	Percent Poverty
QRICH200K	Percent of Households Earning Greater Than $200,000 Annually
PERCAP	Per Capita Income
QESL†	Percent Speaking English as a Second Language with Limited English Proficiency
QFEMALE	Percent Female
QFHH	Percent Female Headed Households
QNRRES	Percent of Population Living in Nursing and Skilled-Nursing Facilities
HOSPTPC	Hospitals Per Capita (County Level ONLY)
QNOHLTH†	Percent of Population Without Health Insurance (County Level ONLY)
QED12LES	Percent with Less Than 12th Grade Education
QCVLUN	Percent Civilian Unemployment
PPUNIT	People Per Unit
QRENTER	Percent Renters
MDHSEVAL†	Median House Value
MDGRENT†	Median Gross Rent
QMOHO	Percent Mobile Homes
QEXTRCT	Percent Employment in Extractive Industries
QSERV	Percent Employment in Service Industry
QFEMLBR	Percent Female Participation in Labor Force
QNOAUTO†	Percent of Housing Units with No Car
QUNOCCHU	Percent Unoccupied Housing Units

[39] Heinz Center. 2002. *Human Links to Coastal Disasters.* Washington, DC: The H. John Heinz III Center for Science, Economics and the Environment.

SoVI® synthesizes 29 socioeconomic variables (Table 17) into multiple dimensions using principal component analysis. These dimensions are then summed to produce an overall score (index) for a spatial unit. This plan uses the census tract as the spatial unit (e.g., census tract). For more information such as the dimension results, please see a county-specific vulnerability assessment. Since SoVI® is a comparative metric that identifies differences between places, SoVIs® were calculated for all four counties separately to ensure that only census tracts within a county are compared to each other.

The SoVI® scores are mapped using a three-class standard deviation[40] model:

- High social vulnerability (standard deviation greater than 0.5)
- Medium social vulnerability (standard deviations between 0.5 to -0.5)
- Low social vulnerability (standard deviation lower than -0.5)

To investigate the relationship between social vulnerability and hazard risk, the SoVI® map for each county is converted from administrative boundaries to hexagon units identical to the hexagons maps developed in the hazard assessment of the HMP. Furthermore, hazard risk maps are categorized into three risk classes: low, medium, and high risk. By overlaying social vulnerability and hazard risk, the intersection of both elements can be visualized and communicated through color using a bivariate color scheme: the bivariate color scheme consists of hazard risk (y-axis, bluish colors) and social vulnerability (x-axis, redish colors) (Figure 29). For example, the color white represents areas of low social vulnerability and low hazard risk whereas purple hexagons have both high social vulnerability and high hazard risk.

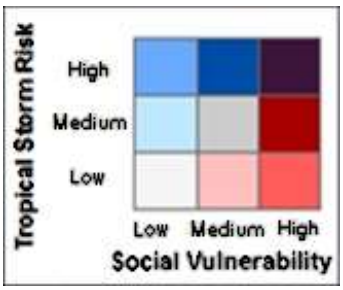

Figure 29 - Bivariate color scheme of hazard risk and social vulnerability.

[40] Standard deviation is a measure of variability within a data set. It measures the distance to the mean. A large standard deviation means that the observation is further away from the mean of the data set. For normally distributed data, 68.2% of observations fall within 1 and -1 standard deviations.

5. Fairfield County

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

5.1 Historical Hazard Assessment for Fairfield County

Summary of Historic Impacts

Fairfield County experiences an array of natural hazards. Prior to the 2015 flash flood disaster, tornadoes posed the highest risk to Fairfield County. Flood damage used to rank fairly low. Heat and drought pose serious threats to the county that are difficult to capture in loss figures or maps since their impacts tend to be vastly underreported (lack of data, secondary and/or prolonged effects on agriculture, public health, etc.). The most frequent hazard in Fairfield County is thunderstorms (incl. lightning, hail, and wind). While thunderstorm, lightning, wind and hail damage is non-catastrophic, their cumulative impact and high frequency is still significant (around $15 million, 12 people injured/killed). When overlaying the risk from all hazards, western Fairfield County exhibits the highest level of risk (Figure 30).

In the future, the frequency and possible damage from thunderstorms and other meteorological and hydrological hazards is very likely to increase. Based on climate projections, it is anticipated that the number of cold days and perhaps also winter storms will decrease (Table 18).

Table 18 - Summary of natural hazards and their impacts on Fairfield County since 1960.

	Direct Losses (Property and Crop)	Direct Injuries and Fatalities	# of Loss-Causing Events (# of Events)	Frequency	Recurrence Interval (in years)	Future Changes
Flooding	$1,590,669*	0*	24(25)*	45%*	2.2*	▲
Hurricane	$11,582,424	0	8(8)	15%	6.9	▲
Tornadoes	$64,252,113	78	10(25)	45%	2.2	▲
Thunderstorm	$551,420	0	22(22)	40%	2.5	▲
Lightning	$59,992	10	22(194,550)	1,974%**	0.05 days	▲
Wind	$702,734	2	86(194)	353%	0.3	▲
Hail	$13,881,326	0	54(112)	204%	0.5	▲
Fog	n/av	n/av	n/av	>2%**	<52 days	◀▶
Winter Storm	$9,744,028***	4	51(51)	93%	1.1	▼
Cold	$10,488,475	3	38(38)	69%	1.4	▼
Heat	$21,263,066	1	8(8)	15%	6.9	▲
Drought	$24,345,640	0	17(17)	31%	3.2	▲
Wildfire	$380,926	0	4(1,519)	17%**	5.8 days	▲
Earthquake	0	0	0(0)	<2%	>50	◀▶
TOTAL	**$158,842,813**	**98**				

* excludes 2015 flood losses
**daily frequency/recurrence calculations instead of years
***excludes 2004 ice storm losses
▲ indicates that future increase in occurrence and/or impacts is likely
▼ indicates that future decrease in occurrence and/or impacts is likely
◀▶ indicates that either no change in future occurrence or impacts is expected or that a determination of future changes cannot be made.

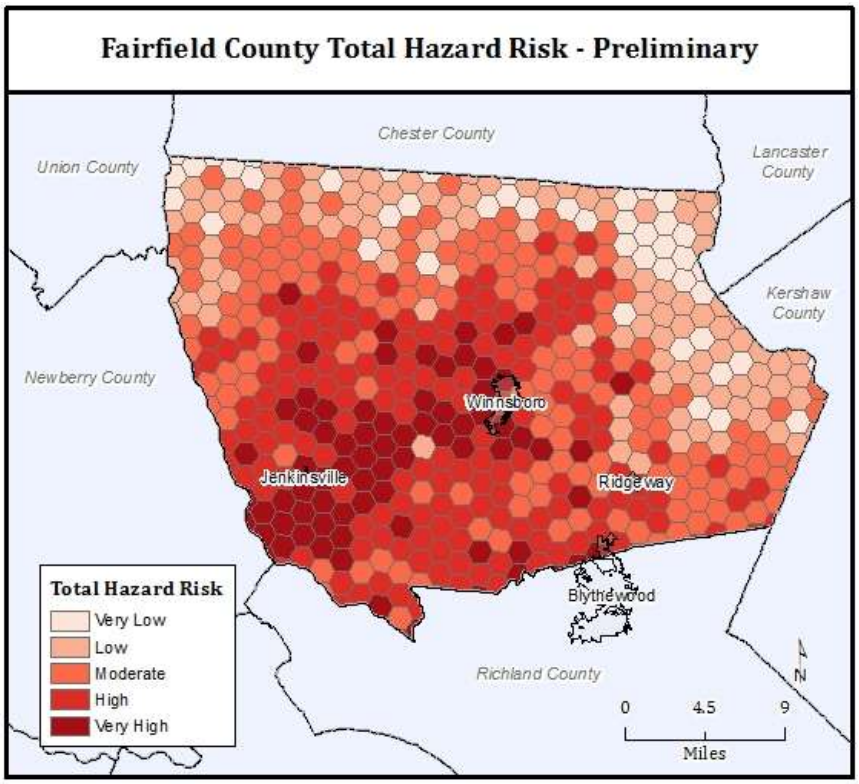

Figure 30 - Comprehensive risk profile of Fairfield County.

A) Flooding

What to expect: Flood damage in Fairfield County is mostly the result of localized heavy precipitation leading to flooding along smaller creeks and tributaries to the Broad and Catawba Rivers as well as flash flooding due ponding and/or inadequate drainage (Table 19). Virtually every building in Fairfield County is at some risk from flash flooding due to drainage issues and ponding. While most buildings are not at risk from flood waters reaching first floor levels, many homes may, however, experience flooded crawl spaces, drive ways, etc. or experience secondary problems such as mold issues. In addition, the 2015 floods revealed a high risk from small pond dam failures—particularly when simultaneous and cascading dam failures occur in the same watershed.

Geographic Extent: Flooding in Fairfield County is not restricted to the 100-year and 500-year floodplains (Figure 32). Based on past occurrences, Fairfield County is very susceptible to flash flooding in low-lying areas and areas downstream from small dams. The Flash Flood Potential Index identifies areas south of Jenkinsville, south of Winnsboro and east of Ridgeway as having a higher risk of flash flooding (Figure 33).

Prior to the record-breaking event of October 2015, statistics for Fairfield County were as following:

Number of Events:	25
Number of Loss-Causing Events:	24
Frequency of Occurrence:	45%
Recurrence Interval:	2.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods

Events on Record:	1960-2014
Flood-related Presidential Disaster Declarations:	DR-4241 (2015)
Total Losses:*	$1,590,669
Total Fatalities:*	0
Deadliest Event:*	n/a
Most Property Damage:*	$45,000 (October 9, 1976)
Most Crop Damage:*	$920,000 (June 8, 1973)

October 1-5, 2015 (DR-4241)*:

Over a five day period, an upper low pressure system combined with the remnants of Hurricane Joaquin streamed tropical moisture into South Carolina (Figure 31). Fairfield County experienced a record-setting 5-day rainfall total of up to 14.5 inches in Longtown[41]. This record rainfall caused catastrophic flash flooding and countless road and bridge closures. Fairfield County received both individual and public assistance funding through FEMA. Overall damage estimates range from $1 billion[42] to $12 billion[43] for the entire impact area in South Carolina. Richland County received both individual and public assistance funding through FEMA.

Figure 31 - Total rainfall amounts for the 2015 flood event. Source: NWS.

* Note: The historic record for all hazards in this plan covers the time period from 1960 through 2014. An exception is flooding. Given the catastrophic, and record-setting devastation from the 2015 floods, an event narrative was included since many of the proposed flood mitigation actions in this plan are an outgrowth of this recent disaster.

[41] NWS, 2015. Historic rainfall and flooding, October 2015. Available at http://www.weather.gov/cae/HistoricFloodingOct2015.html

[42] NOAA National Centers for Environmental Information, 2016. Billion-Dollar Weather and Climate Disasters. Available at http://www.ncdc.noaa.gov/billions/events

[43] Burris, Roddie. SC Floods' Damage: $12 billion, Economists say. *The State* [Online], Columbia, SC, December 1, 2015 Available at http://www.thestate.com/news/local/article47471060.html

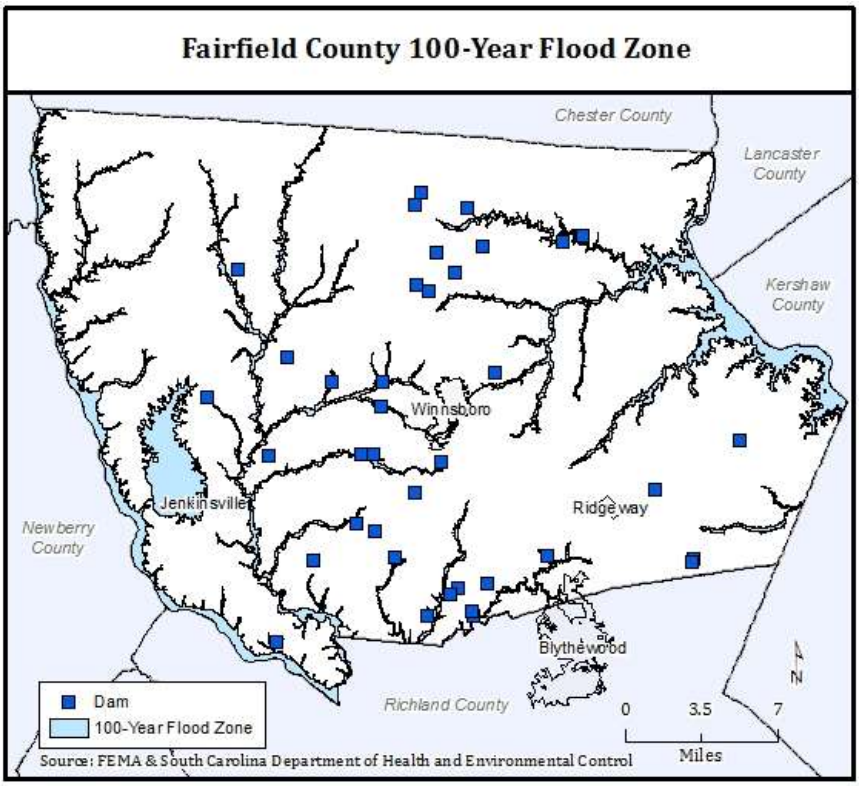

Figure 32 - Flood risk in Fairfield County.

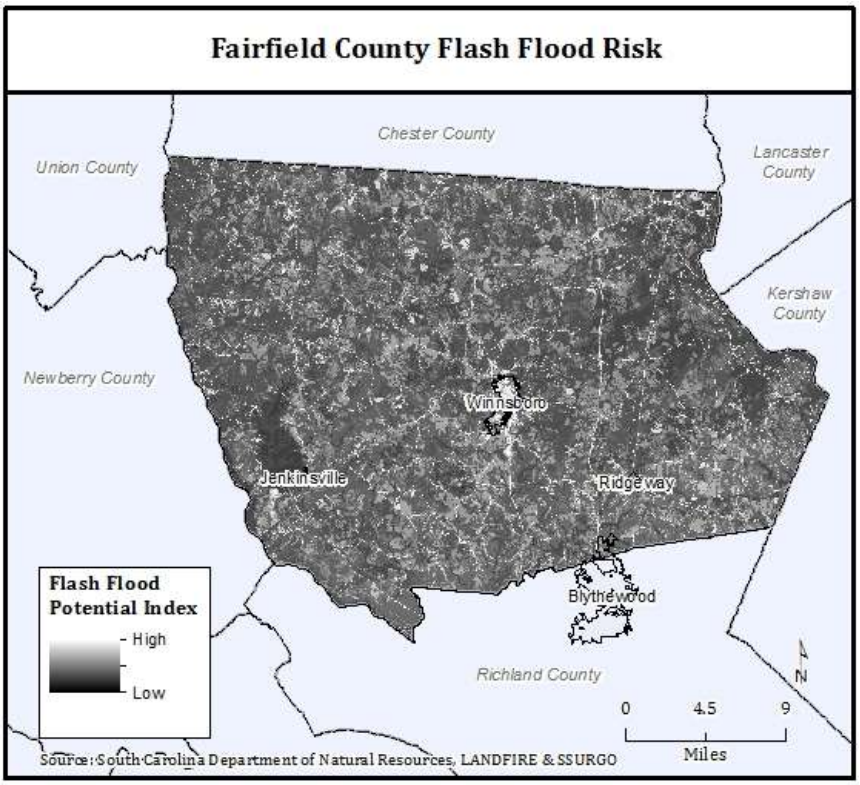

Figure 33 - Flash flood risk in Fairfield County.

Table 19 - Record of loss-causing flood events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.* (in.)	Location	Description
3/1/1964	3/31/1964	0	0	$830	$830		Statewide	Flooding
3/1/1966	3/5/1966	0	0	$7,942	$7,942		Statewide	Flooding
12/14/1972	12/17/1972	0	0	$1,287	$1,287		Northern two-thirds	Heavy rains, flooding
2/3/1973	2/3/1973	0	0	$5,795	$5		Statewide	Flooding
6/8/1973	6/25/1973	0	0	$9,192	$919,291		Southern and central SC	Heavy rain, flooding
6/16/1973	6/22/1973	0	0	$919	$91		Central, northern and eastern SC	Heavy rain, flash flooding
3/12/1975	3/18/1975	0	0	$4,782	$478		Statewide	Heavy rains, flooding
7/13/1975	7/18/1975	0	0	$611	$61,115		Eastern and central SC	Rain and flooding
10/17/1975	10/17/1975	0	0	$1,692	$0		Northwest SC	Rain and flash flooding
10/9/1976	10/19/1976	0	0	$45,223	$45,223		Statewide	Flood
1/25/1978	1/26/1978	0	0	$39,466	$3		Statewide	Wind, flash flood
1/26/1978	1/31/1978	0	0	$3,946	$0		Statewide	Flooding
3/15/1980	3/31/1980	0	0	$3,122	$3,122		Statewide	Flood
8/8/1980	8/8/1980	0	0	$3,122	$312		Statewide	Wind, flood
1/1/1982	1/14/1982	0	0	$557	$55		Along Saluda, Broad, Congaree, Wateree, Lynches, and PeeDee Rivers	Flooding
4/27/1982	4/27/1982	0	0	$645	$0		Central, northeast, eastern SC	Lightning, flooding
3/17/1983	3/17/1983	0	0	$25,835	$2,583		Statewide	Flooding, severe storm, wind
12/6/1983	12/6/1983	0	0	$3,047	$30		Western, northern, central SC	Flood, wind
2/27/1984	2/27/1984	0	0	$2,476	$24		Statewide	Rain, wind, flood
7/26/1984	7/26/1984	0	0	$2,476	$24		Statewide	Wind, rain, flood
11/22/1985	11/22/1985	0	0	$183	$0		SCZ003	Flash flooding
8/7/1988	8/7/1988	0	0	$100	$0		Winnsboro	Urban flooding
1/1/1993	1/31/1993	0	0	$17,807	$356,164		Statewide	Flooding
8/26/2008	8/26/2008	0	0	$0			Winnsboro	The remnants of Tropical Storm Fay moved through the area and produced severe weather and flooding.
12/25/2009	12/25/2009	0	0	$11,035	$0	2-5"	Mitford	Heavy rain from a Gulf Flow across the Midlands and Pee Dee region causing considerable areal flooding and some flash flooding.
TOTAL		**0**	**0**	**$192,090**	**$1,398,579**			

*No magnitude information indicates flood height or rainfall amounts were unavailable.

B) Hurricanes & Tropical Storms

What to expect: Every property and person is at risk from hurricane-force winds and associated heavy rainfall and tornadoes in Fairfield County. Hurricane and tropical storms affect Fairfield County every 7 years. The county is at risk from hurricane-force winds as experienced during Hurricane Hugo as well as associated heavy rainfall, flash flooding, and tornadoes (Figure 34, Table 20). While direct wind damage to property is unlikely, property and infrastructure damage due to falling trees as well as power outages are highly likely.

Geographic Extent: Based on past occurrences, the entire county is susceptible to the impacts of tropical cyclones. It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and tornadoes because they are reported separately.

Tropical cyclone statistics for Fairfield County are as following:

Number of Events:	8
Number of Loss-Causing Events:	8
Frequency of Occurrence:	15%
Recurrence Interval:	6.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Hurricane-related Presidential Disaster Declarations:	DR-843 (1989) DR-1566 (2004)
Total Losses:	$11,582,424
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$955,000 (September 22, 1989)
Most Crop Damage:	$9,545,000 (September 22, 1989)

Hurricane Hugo (September 22, 1989; DR-843): Hurricane Hugo was the most damaging hurricane in South Carolina's history. It made landfall north of the Charleston Harbor as a Category 4 storm with a storm surge of 15-20 feet. Due to its rapid forward motion, relatively large size, hurricane force winds affected inland counties including Fairfield County. The county experienced high winds and excessive rain that led to widespread damage to properties and infrastructure due to falling trees. Many areas lost power for several days.

Tropical Storm Frances (September 7, 2004; DR-1566): The storm system caused high winds and caused a widespread tornado outbreak. The high winds uprooted trees and caused power outages and damaged properties—particularly mobile homes.

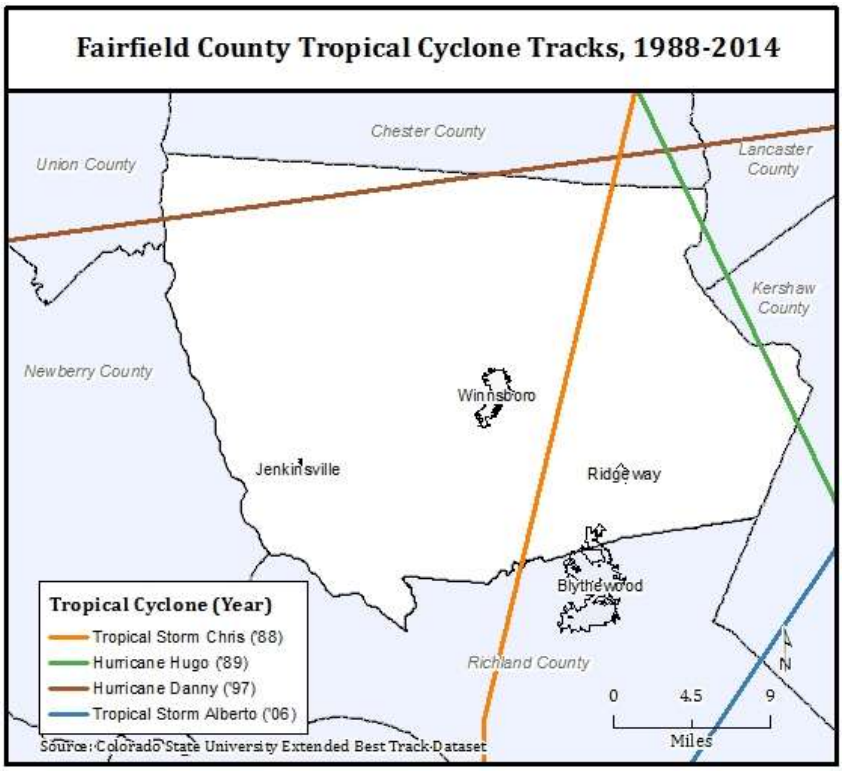

Figure 34 - Tropical cyclone risk in Fairfield County.

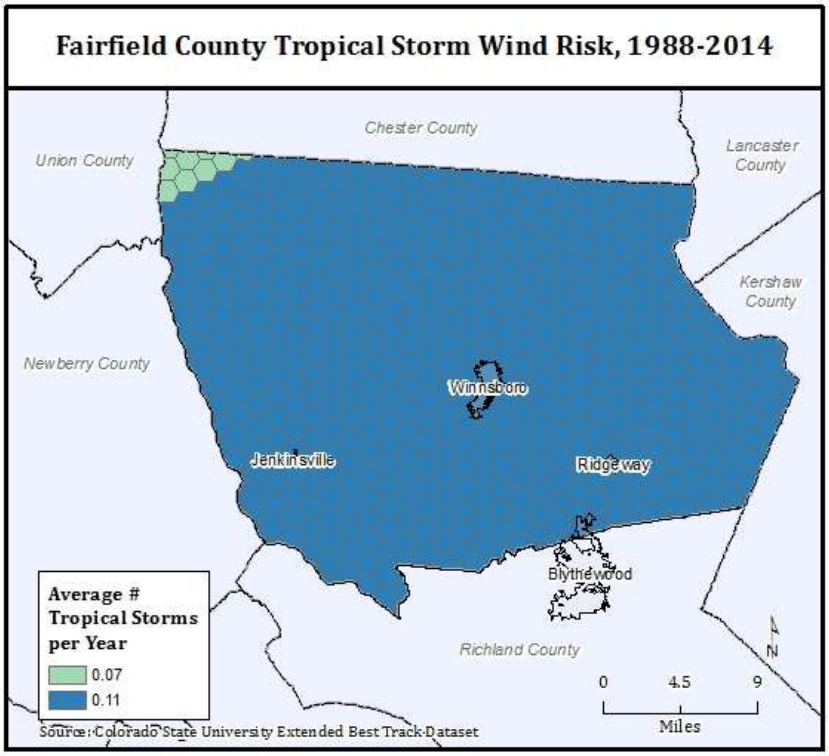

Figure 35 - Risk from tropical storms in Fairfield County.

Table 20 - Record of loss-causing tropical cyclone events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
8/29/1964	8/31/1964	0	0	$8,300	$8,300	TS	Statewide	Tropical Storm Cleo
9/12/1964	9/13/1964	0	0	$830	$830	TS	Statewide	Tropical Storm Dora
6/7/1968	6/8/1968	0	0	$739	$73	TS	Statewide	Tropical Storm Abby
6/20/1972	6/21/1972	0	0	$615	$6,156	TD	Statewide	Tropical Depression Agnes
9/4/1979	9/5/1979	0	0	$708,875	$0	TS	East and Central SC	Hurricane David
8/28/1988	8/28/1988	0	0	$3,126	$3,126	TS	SCZ003-005-006-007-008 Eastern and Central SC	Tropical Storm Chris
9/22/1989	9/22/1989	0	0	$954,580	$9,545,806	Cat. 1	Eastern Portions	Hurricane Hugo
8/24/1995	8/28/1995	0	0	$337,692	$3,376	TS	Statewide	Tropical Storm Jerry
TOTAL		**0**	**0**	**$2,014,757**	**$9,567,667**			

C) Tornadoes

What to expect: Every property and person is at risk from tornadoes in Fairfield County though the western-most area of the county has traditional experienced more tornado warnings (Figure 37). Low magnitude tornadoes are not uncommon in Fairfield County with twisters occurring every other year. The area has experienced intense (EF3 and higher) tornadoes affecting densely populated areas (Figure 36). Fairfield County is not only at risk from tornadoes spawned by severe thunderstorms but also from outbreaks associated with tropical systems as seen during Tropical Storm Frances.

Geographic Extent: Based on past occurrences, the entire county is susceptible to tornadoes.

Tornado statistics for Fairfield County are as following:

Number of Events:	25
Number of Loss-Causing Events:	10
Frequency of Occurrence:	45%
Recurrence Interval:	2.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Severe weather-related Presidential Disaster Declarations:	DR-700 (1984)
Total Losses:	$64,252,113
Total Fatalities:	6
Deadliest Event:	5 fatalities (March 28, 1984)
Most Property Damage:	$57 million (March 28, 1984)
Most Crop Damage:	$11,000 (May 3, 2010)

March 28-29, 1984 (DR-700): The Carolinas Outbreak of March 28, 1984 was one of the deadliest, most destructive tornado outbreaks in the history of the two Carolinas. The weather situation that produced this outbreak had strong parallels to the 1925 Tri-State Tornado Outbreak in that the tornadoes tracked along with the center of a strong low pressure system. The statistics of this outbreak were staggering and perhaps unprecedented in the history of North or South Carolina. The final count showed 24 individual tornadoes touched down: 11 in North Carolina, 11 in South Carolina, and 2 in Georgia. The human impact included 57 fatalities, (42 in North Carolina, 15 in South Carolina, none in Georgia) and 1,248 injuries (799 in North Carolina, 448 in South Carolina, and 1 in Georgia)[44].

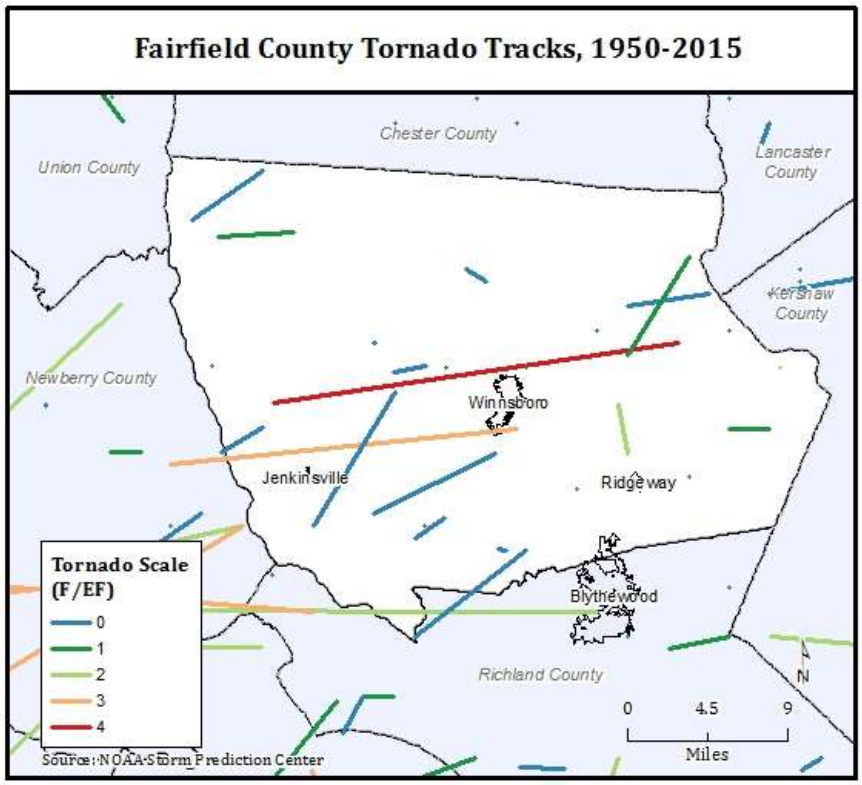

Figure 36 - Tornado risk in Fairfield County.

[44] NWS Wilmington, 2014. Carolinas Tornado Outbreak: March 28, 1984. Available at http://www.weather.gov/ilm/CarolinasOutbreak

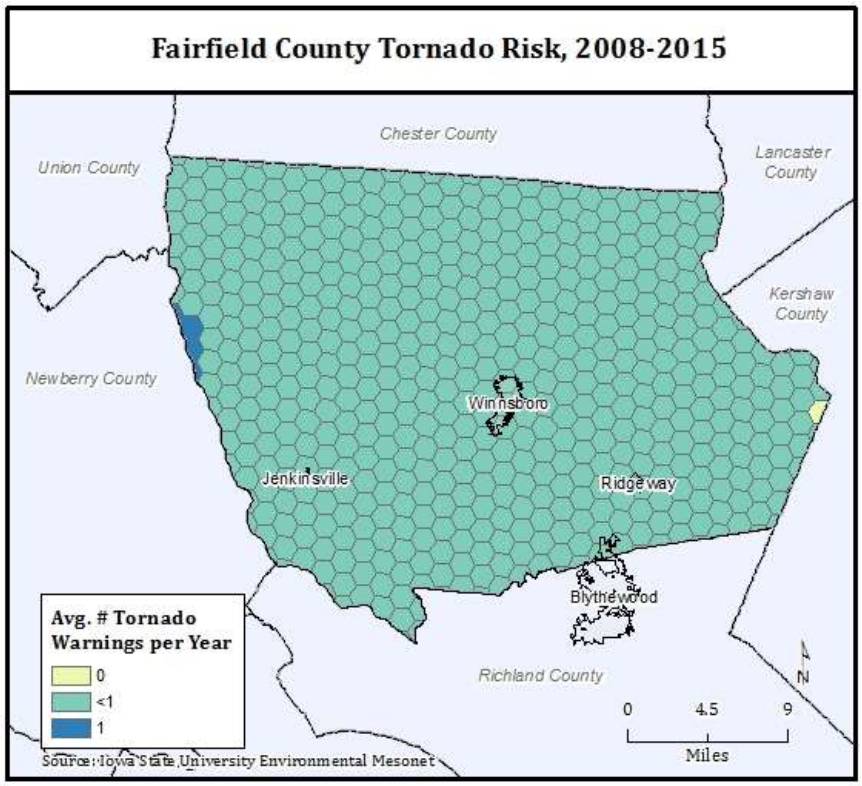

Figure 37 - Tornado risk in Fairfield County.

Table 21 - Record of loss-causing tornado events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
3/28/1984	3/28/1984	10	0	$6,835,496	$0	F3	Null	
3/28/1984	3/28/1984	49	5	$56,962,464	$0	F4	Null	
3/16/1996	3/16/1996	0	0	$3,018	$0	F0	Ridgeway	An F0 tornado touched down near I-77 and Hwy 34 causing damage to a roof on a home and taking down trees.
8/12/2004	8/12/2004	0	0	$375,970	$0	F1	Longtown	
9/27/2004	9/27/2004	13	1	$0		F2	Ridgeway	
6/11/2007	6/11/2007	0	0	$39,962	$0	EF0	White oak	Pulse storms produced penny to golf ball size hail across much of the CWA and covered the ground in portions of Lancaster County. Downburst winds also took down some trees and power lines. An EF0 tornado touched down in the White Oak area of Fairfield County with one large tree crushing two vehicles.
5/4/2009	5/4/2009	0	0	$4,414	$0	EF0	Lebanon	Cluster thunderstorms produced large hail and strong winds over portions of the Midlands. A supercell moved in from the foothills across the north Midlands and produced a couple of small tornadoes.
3/28/2010	3/28/2010	0	0	$0	$4,343	EF0	Rion	Several supercell thunderstorms moved through the CSRA and Midlands and spawned several tornadoes. Many homes were damaged in Lexington county with several others in Edgefield

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
								county. Numerous trees were also taken down.
5/3/2010	5/3/2010	0	0	$5,428	$10,857	EF1	Shelton	An isolated storm produced an EF1 tornado in northwest Fairfield county. Many trees were taken down and minor damage was done to a home.
4/28/2013	4/28/2013	0	0	$10,162	$0	EF0	Ridgeway	A small tornado briefly touched down in Fairfield County just northeast of Ridgeway taking down trees and damaging a few homes and cars.
TOTAL		**72**	**6**	**$64,236,914**	**$15,199**			

D) Thunderstorms

What to expect: Every property and person is at risk from severe thunderstorms in Fairfield County. Severe thunderstorms are a common occurrence in Fairfield County with 4 to 15 severe thunderstorm warnings issued annually by the local NWS forecast office (Figure 38). The Midlands see on average up to 12 days per year with rainfall amounts of 1 inch or more, 30 days per year with rainfall between ½ inch and 1 inch, and about 70 days per year with rainfall amounts of less than ½ inch[45]. Prior to the 2015 flash flood disaster, the daily rainfall record stood at 7.77 inches (July 10, 1959). Thunderstorms are complex and associated with different hazards: lightning, wind, rain, and/or hail. To understand the full impact of severe thunderstorms, the impacts of thunderstorms, wind, hail, and lightning should be considered jointly (Table 22).

Geographic Extent: Based on past occurrences, the entire county is susceptible to thunderstorms. There is a distinct north-south gradient with the southern half of Fairfield County experiencing significantly more thunderstorm warnings.

It is important to note that the frequency and impact calculations below exclude damage from wind, lightning, and hail since they are reported separately—although in a meteorological sense they are tied together. Thunderstorm statistics for Fairfield County are as following:

Number of Events:	22
Number of Loss-Causing Events:	22
Frequency of Occurrence:	40%
Recurrence Interval:	2.5 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$551,420
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$100,000 (August 6, 1988)
Most Crop Damage:	$83,000 (October 4, 1964)

<u>March 28-29, 1984 (DR-700):</u> see Tornado section

[45] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

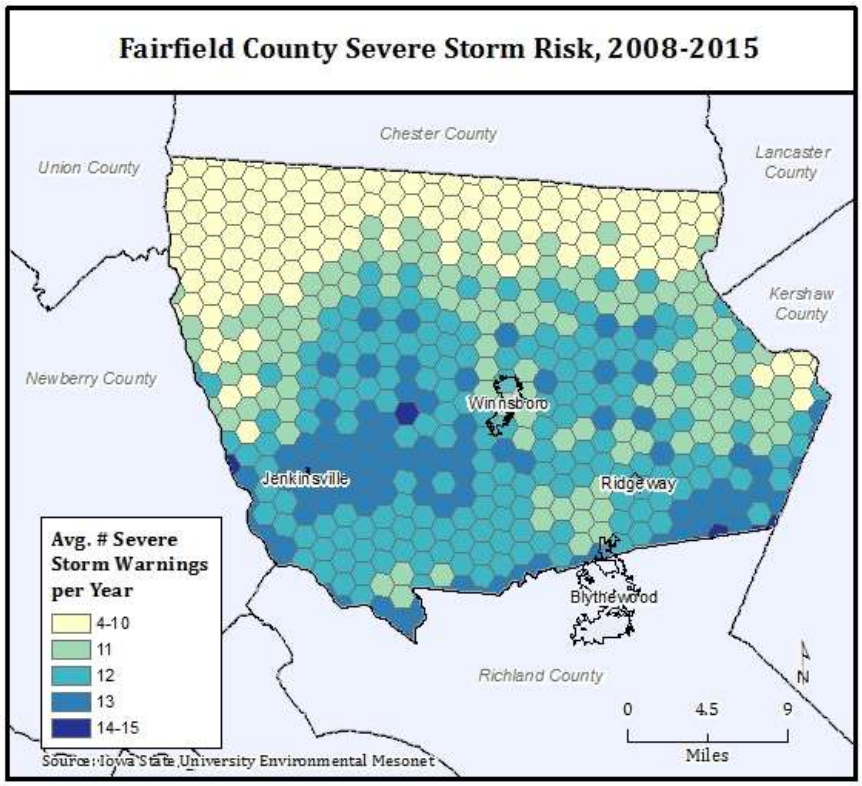

Figure 38 - Severe storm risk in Fairfield County.

Table 22 - Record of loss-causing thunderstorm events in Fairfield County since 1960.

Begin Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
7/30/2002	7/30/2002	0	0	$10,527	$0	-	Blair	Severe Storm, thunderstorm, wind
9/30/1964	10/1/1964	0	0	$15,273	$15,273	0.46”	Midlands and central plains	Rainstorm
10/15/1964	10/16/1964	0	0	$0	$8,300	4.85”	Statewide	Rainstorm
10/4/1964	10/6/1964	0	0	$83,007	$83,007	3.56”	Statewide	Rainstorm
8/20/1967	8/25/1967	0	0	$77,042	$770	3.69”	Statewide	Rain
8/6/1988	8/6/1988	0	0	$100,057	$0	0.05”	Winnsboro	Severe storm, wind
12/3/1983	12/4/1983	0	0	$4,570	$457	1.11”	Western and central SC	Wind, heavy rain
12/28/1983	12/28/1983	0	0	$7,427	$0	0.65”	Central	Severe storm, wind
2/24/1961	2/24/1961	0	0	$1,131	$0	0.08”	Western and central SC	Wind and rain
6/8/1965	6/16/1965	0	0	$0	$81,689	4.95”	Statewide	Locally heavy rains
2/13/1966	2/13/1966	0	0	$794	$0	0.87”	Statewide	Wind and rain
7/18/1964	7/19/1964	0	0	$38,183	$0	4.18”	Winnsboro	Rainstorm
3/15/1971	3/15/1971	0	0	$635	$0	0.42”	Statewide	Thunderstorms, high winds
1/25/1975	1/25/1975	0	0	$478	$0	2.54”	Statewide	Squall line
7/14/1975	7/14/1975	0	0	$64	$6	3.35”	Western and central SC	Wind, rain

Begin Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
3/31/1977	3/31/1977	0	0	$42	$0	0.38”	Statewide	High winds, heavy rains
10/1/1977	10/1/1977	0	0	$150	$0	-	Northwestern SC	Thunderstorm, high winds
12/5/1977	12/5/1977	0	0	$42	$0	0.19”	Statewide	Thunderstorm
9/7/1977	9/7/1977	0	0	$1,627	$16	0.02”	Mountains of north-west SC	Heavy rain
9/7/1977	9/7/1977	0	0	$424	$42	0.02”	Statewide	Thunderstorms, high winds, heavy rain
4/13/1978	4/13/1978	0	0	$1,296	$0	1.06”	Northeast SC	Severe thunderstorm
2/21/1989	2/21/1989	0	0	$19,091	$0	1.26”	SCZ003-004-005-006-007-008 Central and eastern SC	Thunderstorm
TOTAL		**0**	**0**	**$361,860**	**$189,560**			

Note: Hail, lightning, and wind damage are listed in their respective sections. Post 1989, only hail, wind, and lightning were reported by the NCEI (formerly NCDC).

E) Lightning

What to expect: Every property and person is at risk from lightning in Fairfield County. Lightning occurs very frequently in Fairfield County averaging several strikes per day. While Fairfield County does not experience a thunderstorm every day, the fact that a single thunderstorm produces hundreds of lightning strikes—each of which is counted in the statistic below—results in high frequency and recurrence figures. Similar to the pattern of thunderstorm risk, most lightning strikes (cloud-to-ground) occur in the central and eastern parts of the county (Figure 39). House fires and personal harm are common with lightning.

Geographic Extent: Based on past occurrences, the entire county is susceptible to lightning strikes. There appears to be a higher propensity for severe weather and therefore lightning strikes in the central and eastern part of the county.

Lightning statistics for Fairfield County are as following:

Number of Events:	194,550
Number of Loss-Causing Events:	22 (1960-2014)
Frequency of Occurrence:	1,974%
Daily Recurrence Interval:	0.1 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1986-2012
Total Losses:	$59,992
Total Fatalities:	2
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$12,000 (June 29, 1976)
Most Crop Damage:	$500 (March 21, 1974)

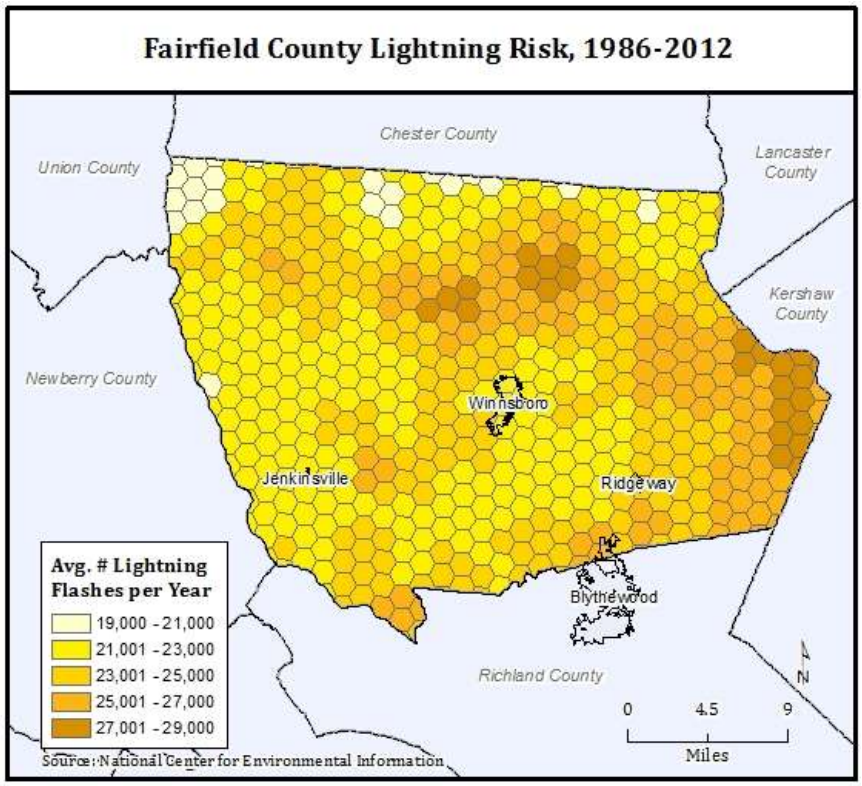

Figure 39 - Lightning risk in Fairfield County.

Table 23 - Record of loss-causing lightning events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
7/12/62	7/12/62	2	1	$0	$0	Winnsboro	Electrical
8/27/65	8/27/65	0	0	$816	$0	Statewide	Severe lightning
8/4/73	8/4/73	0	0	$148	$14	Midlands and southern SC	Rain, wind, electrical
8/29/73	8/29/73	0	0	$133	$13	Northwest and Midlands	Wind, rain, electrical
3/21/74	3/21/74	0	0	$5,219	$521	Statewide	High winds & electrical
4/8/74	4/8/74	0	0	$6,669	$6	Central, western & northern SC	Wind, electrical
4/8/74	4/8/74	0	0	$96	$0	Central SC	Wind, electrical
8/4/74	8/4/74	0	0	$0	$171	Northeast	Rain, lightning
8/13/74	8/13/74	0	0	$1,091	$109	Central	Wind, lightning
5/15/75	5/15/75	0	0	$4,782	$47	Statewide	Wind, lightning
7/24/75	7/24/75	0	0	$628	$0	Western central and northern SC	Lightning
8/27/75	8/27/75	0	0	$5,789	$57	North, northeast, and central SC	Lightning, high winds, thunderstorms
6/29/76	6/29/76	0	0	$11,557	$11	Northwest and northern SC	Lightning
7/26/76	7/27/76	0	0	$1,600	$160	Northwest SC	Lightning, wind, rain
7/29/76	7/29/76	0	0	$1,600	$16	Northwest SC	Lightning, wind, rain
10/9/76	10/9/76	0	0	$5,778	$57	Central and eastern SC	Wind, lightning

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
7/14/77	7/14/77	0	0	$4,246	$42	Statewide	Wind, lightning
5/12/79	5/12/79	2	1	$0	$0	Monticello	Lightning
7/25/83	7/25/83	0	0	$2,583	$25	Statewide	Wind, lightning
8/21/83	8/21/83	0	0	$2,376	$237	Northern half of SC	Lightning, wind
8/23/83	8/23/83	0	0	$3,395	$0	North and central SC	Wind, lightning
7/19/93	7/19/93	4	0	$0	$0	1.5 SSW Winnsboro	Lightning
TOTAL		**8**	**2**	**$58,506**	**$1,486**		

Note: No lighting damage has been reported by NCEI (formerly NCDC) since 1993.

F) Wind

What to expect: Every property and person is at risk from wind in Fairfield County. The county frequently experiences high wind events with gust of 50 knots (58mph) or more (Table 24). Wind gust of 65 knots (75 mph) have been recorded. On average, severe winds occur every 4 months. Due to concurrence of high wind with severe thunderstorms, the spatial distribution of wind events within the county is similar to the thunderstorm risk. High winds cause largely property damage and power outages due to falling tree or tree limbs.

Geographic Extent: Based on past occurrences, the entire county is susceptible to wind damage. There appears to be a higher propensity for severe weather and therefore wind damage in the central and southern part of the county.

Wind statistics for Fairfield County are as following:

Number of Events:	194
Number of Loss-Causing Events:	86
Frequency of Occurrence:	353%
Recurrence Interval:	0.3 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$702,734
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$110,000 (October 24, 2008)
Most Crop Damage:	$11,000 (October 24, 2008)

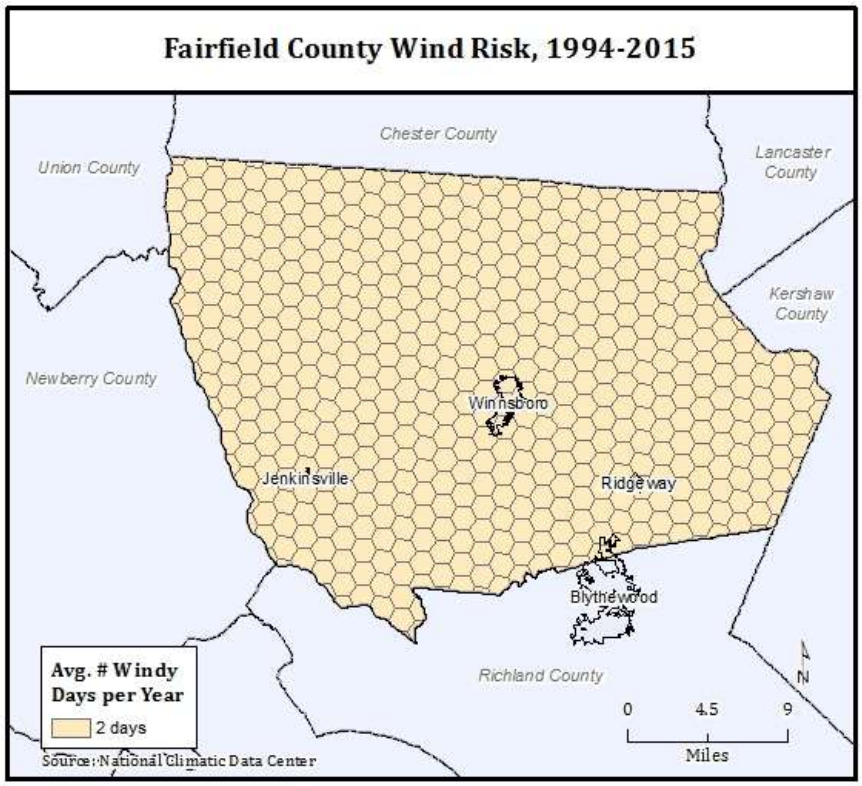

Figure 40 - Wind risk in Fairfield County.

Table 24 - Record of loss-causing wind events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
2/25/1961	2/25/1961	0	0	$860	$0		Statewide	
11/23/1961	11/23/1961	0	0	$860	$0		Statewide	
1/20/1964	1/20/1964	0	0	$830	$0		Most of SC	
11/21/1973	11/21/1973	0	0	$784	$0			
11/20/1974	11/20/1974	0	0	$1,143	$0		Western SC	
12/31/1975	12/31/1975	0	0	$478	$0		Statewide	
2/18/1976	2/18/1976	0	0	$1,600	$160		Northwestern SC	
3/18/1977	3/18/1977	0	0	$42	$42		Statewide	
4/4/1977	4/4/1977	0	0	$424	$42		Statewide	
2/25/1980	2/25/1980	0	0	$3,122	$0		Statewide	
3/16/1981	3/16/1981	0	0	$2,830	$2		Statewide	
3/8/1984	3/8/1984	0	0	$247	$24		Statewide	
7/27/1986	7/27/1986	0	0	$1,080	$0	0	Winnsboro	
2/27/1988	2/27/1988	0	0	$21	$0		Statewide	
5/16/1988	5/16/1988	0	0	$100	$100	0	Winnsboro	
5/23/1988	5/23/1988	1	0	$1,000	$0	0	Mitford	

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
5/23/1988	5/23/1988	1	0	$0	$0	0		
8/6/1988	8/6/1988	0	0	$1,000	$0	0	1N Winnsboro	
11/5/1988	11/5/1988	0	0	$322	$0			
1/3/1989	1/3/1989	0	0	$2,075	$2		Statewide	
4/4/1989	4/4/1989	0	0	$9,545	$0	0	Fairfield County	
5/5/1989	5/5/1989	0	0	$9,545	$0		Fairfield County	
6/16/1989	6/16/1989	0	0	$954	$0	0	Winnsboro	
6/16/1989	6/16/1989	0	0	$95,458	$0	0	Fairfield County	
1/29/1990	1/29/1990	0	0	$90,564	$0		Blair	
1/6/1995	1/6/1995	0	0	$15,534	$0	0		
6/9/1995	6/9/1995	0	0	$7,767	$0	0	Fairfield	
5/26/1997	5/26/1997	0	0	$4,425	$0	50	Winnsboro	Sheriff reports a severe thunderstorm knocked down trees and powerlines in Longtown.
7/30/2002	7/30/2002	0	0	$10,527	$0	55	Blair	Highway Patrol reported a tree fell onto a tractor trailer.
8/7/2008	8/7/2008	0	0	$13,195	$0	55	Mitford	Fairfield Electric Company reported many trees and several powerlines down with outages from southeast of Blackstock to Mitford.
8/7/2008	8/7/2008	0	0	$10,995	$0	55	Longtown	Fairfield Electric Company reported several trees and a few powerlines down with outages from the Lake Wateree area to near Lugoff.
10/24/2008	10/24/2008	0	0	$109,562	$10,995			
12/11/2008	12/11/2008	0	0	$1,100	$0	50	Shelton	DOT reported a couple of trees down on Hwy 51.
1/7/2009	1/7/2009	0	0	$19,617	$0			
6/10/2009	6/10/2009	0	0	$2,207	$0	50	Salem	Electric company reported a couple of trees down on Pearson road near Blair.
7/22/2009	7/22/2009	0	0	$1,103	$0	50	Stover	County Official reported a tree down on Hwy 901 at the count line.
12/9/2009	12/9/2009	0	0	$7,724	$0	55	Winnsboro	Sheriff reported trees down around the county, especially in the northern portions.
1/25/2010	1/25/2010	0	0	$3,257	$0	55	Winnsboro	Sheriff reported trees down along Hwy 321S and Old River Rd.
6/29/2010	6/29/2010	0	0	$10,857	$0	50	Woodward	DOT reported trees down on Highways 32 and 52.
7/11/2010	7/11/2010	0	0	$10,857	$0	65	Salem	Sheriff reported numerous trees down at the intersection of Hwys 215 and 34.
7/13/2010	7/13/2010	0	0	$2,171	$0	50	Mitford	Sheriff reported a couple of trees down near Wateree road and US 21.
7/23/2010	7/23/2010	0	0			50	Jenkinsville	Isolated severe thunderstorms took down trees in near the tri- county line area of Fairfield, Richland, and Lexington counties. Sheriff reported a couple trees down near the intersection of Hwys 213 and 215.
7/26/2010	7/26/2010	0	0	$2,171	$0	55	Ft Wagener	Public reported a couple of trees down on Ashford Ferry rd.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
8/6/2010	8/6/2010	0	0	$6,514	$0	55	Monticello	Fairfield Electric reported power outages on Hwy 213 from trees down on powerlines.
8/12/2010	8/12/2010	0	0	$1,086	$0	50	Ft Wagener	Mr. Coleman reported a couple of trees down on Fort Wagner Rd.
11/30/2010	11/30/2010	0	0	$2,171	$0	50	Adger	Sheriff reported a couple of trees down just north of Winnsboro on Hwy 321.
11/30/2010	11/30/2010	0	0	$5,428	$0	50	Adger	Sheriff reported trees down along Smallstown Rd and Old Chester Rd.
2/28/2011	2/28/2011	0	0	$3,157	$0	55	Mitford	Sheriff and Emergency Manager reported several trees down in the Mitford area.
2/28/2011	2/28/2011	0	0	$3,157	$0	55	Winnsboro	Sheriff and Emergency Manager reported several trees down in Winnsboro.
4/5/2011	4/5/2011	0	0	$18,944	$0	60	Mt Rehovah	Highway Patrol reported trees down southeast of Ridgeway at Centerville Rd and Hwy 34 on up to Longtown and Lake Wateree.
5/3/2011	5/3/2011	0	0	$2,105	$0	55	Woodward	DOT reported trees down in northwest Fairfield county on several county roads.
5/3/2011	5/3/2011	0	0	$2,105	$0	55	Jenkinsville	DOT reported several trees down in the Jenkinsville area.
5/27/2011	5/27/2011	0	0	$2,105	$0	55	Ridgeway	Sheriff reported trees down along Macedonia Church road.
6/2/2011	6/2/2011	0	0	$4,210	$0	55	Rock Hill	Sheriff reported several trees down near Hwy 215 and Glenns Bridge Rd.
6/15/2011	6/15/2011	0	0	$10,524	$0	60	Monticello	EM reported many trees down in the western part of Fairfield county.
6/21/2011	6/21/2011	0	0	$3,157	$0	55	Gaydens	Highway Patrol reported trees down on I-77 near mile marker 48.
6/21/2011	6/21/2011	0	0	$4,210	$0	55	Simpson	Sheriff reported trees down at the intersection of US 321 and Broom Mill Rd.
6/21/2011	6/21/2011	0	0	$12,629	$0	55	Rock Hill	Dispatch center reported numerous trees down in the southwest corner of the county.
6/21/2011	6/21/2011	0	0	$12,629	$0	60	Ridgeway	State official reported numerous trees down across southeastern Fairfield County.
7/13/2011	7/13/2011	0	0	$2,105	$0	55	Winnsboro	Highway Patrol reported trees down near Winnsboro along Hwy 200.
8/14/2011	8/14/2011	0	0	$8,420	$0	55	Jenkinsville	SCE&G and DOT reported a few trees and powerlines down with power outages near Lake Monticello and Hwy 215.
3/2/2012	3/2/2012	0	0	$20,622	$0	50	Blackjack	Dispatch reported several trees and powerlines down from just west of Winnsboro, in Winnsboro, and areas east of Winnsboro.
3/3/2012	3/3/2012	0	0	$6,187	$0	55	Rock Hill	Dispatch reported trees down around the Jenkinsville area.
3/3/2012	3/3/2012	0	0	$4,124	$0	55	Ridgeway	Dispatch reported a several trees down on Hwy 34 and Hwy 69.
7/1/2012	7/1/2012	0	0	$4,124	$0	55	Ridgeway	Police reported trees in the roadway at West Ruff St and South Means St.
7/10/2012	7/10/2012	0	0	$4,124	$0	55	Simpson	Highway Patrol reported powerlines down at the intersection of Syrup Mill Rd and Peach Rd.
7/24/2012	7/24/2012	0	0	$2,062	$0	55	White Oak	Highway Patrol reported trees down near White Oak.
7/24/2012	7/24/2012	0	0	$4,124	$0	50	Winnsboro	Public reported large limbs down and power

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
								outages in Winnsboro.
8/3/2012	8/3/2012	0	0	$2,062	$0	55	Bucklick	EM reported trees down on River Rd at Taylor Creek Bridge.
8/3/2012	8/3/2012	0	0	$30,933	$0	55	Winnsboro	County dispatch reported numerous trees down in Winnsboro and a tree on a home.
1/30/2013	1/30/2013	0	0	$4,065	$0	50	Monticello	DOT reported several trees down along Hwy SC215 in western Fairfield County.
5/21/2013	5/21/2013	0	0	$1,016	$0	50	Crosbyville	DOT reported a couple of trees down on Hwy 215 near Coal Branch Rd.
6/13/2013	6/13/2013	0	0	$6,097	$0	60	Bucklick	Sheriff reported trees and powerlines down at the intersection of Wateree Rd and Shangri-la Dr.
6/26/2013	6/26/2013	0	0	$2,032	$0	55	Stover	SC Highway Patrol reported trees down on Heritage Rd near Hwy 901.
6/26/2013	6/26/2013	0	0	$2,032	$0	55	Mitford	SC Highway Patrol reported trees down on Wateree Rd between Debutary Rd and Woodside Dr.
8/1/2013	8/1/2013	0	0	$3,049	$0	50	Bucklick	Fairfield Electric COOP reported large limbs down on powerlines along Timberlane Circle causing power outages.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Camp Welfare	Sheriff reported a couple of trees down near I-77 and Hwy 200.
4/30/2014	4/30/2014	0	0	$0	$50			
4/30/2014	4/30/2014	0	0	$0	$50			
5/23/2014	5/23/2014	0	0	$12,000	$0	60	Winnsboro	Sheriff reported numerous trees and powerlines down in the Winnsboro area.
6/5/2014	6/5/2014	0	0	$8,000	$0	50	Longtown	Public reported a portable car port was blown 50 feet. They also reported half inch hail.
6/8/2014	6/8/2014	0	0	$1,000	$0	50	Mitford	Highway Patrol reported a tree down at the intersection of State Route 200 and Edward Circle.
6/8/2014	6/8/2014	0	0	$1,000	$0	50	Longtown	Public reported several large branches down along with numerous small branches. Dime to nickle size hail was also observed along Bird Island Road on Lake Wateree.
6/17/2014	6/17/2014	0	0	$4,000	$0	50	Stover	Public reported trees and large branches down on Heritage Road.
7/9/2014	7/9/2014	0	0	$4,000	$0	50	Woodward	DOT reported several trees down on secondary roads south of Blackstock.
9/3/2014	9/3/2014	0	0	$1,000	$0	50	Rion	Winnsboro Police Dept. reported a tree down on a powerline near Jackson Creek Road and Hwy 269.
TOTAL		**2**	**0**	**$691,267**	**$11,467**			

*No magnitude information indicates wind speed data were unavailable.

G) Hail

What to expect: Every property and person is at risk from hail in Fairfield County. Hail occurs at least every six months in Fairfield County. Hail events occur mostly during spring thunderstorms from March through May. Thus far no damage has been reported for hailstones larger than 1.75" (Figure 42). It appears that crop damage from hail events is severely underreported.

Geographic Extent: Based on past occurrences, the entire county is susceptible to hail damage.

Hail statistics for Fairfield County are as following:

Number of Events:	112
Number of Loss-Causing Events:	54
Frequency of Occurrence:	204%
Recurrence Interval:	0.5 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$13,881,326
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$5.7 million (March 28, 1984)
Most Crop Damage:	$5.7 million (March 28, 1984)

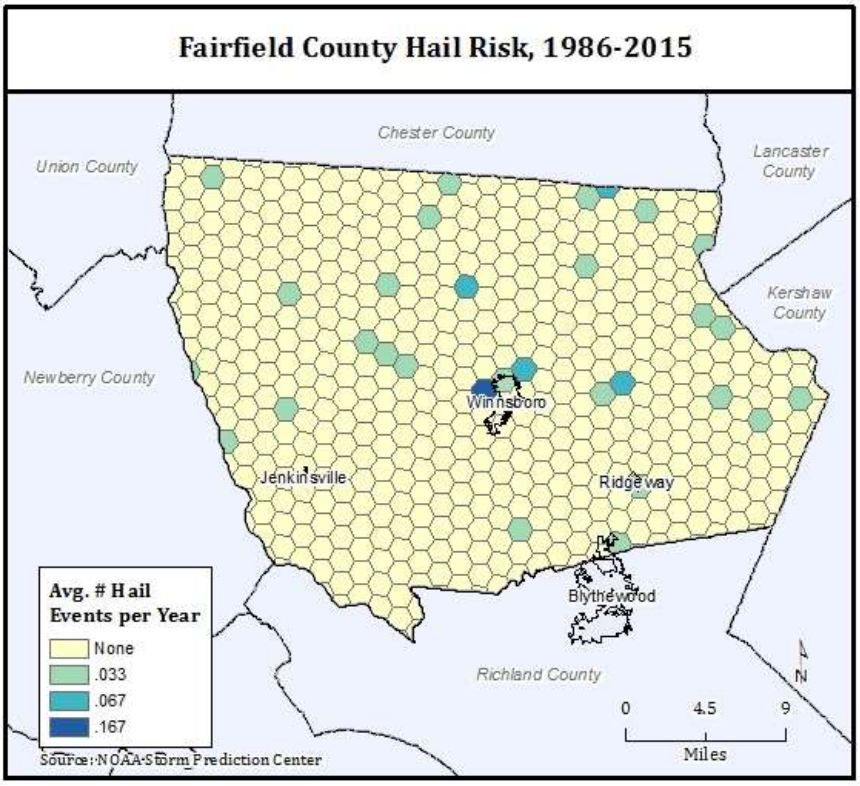

Figure 41 - Hail risk (occurrence) in Fairfield County.

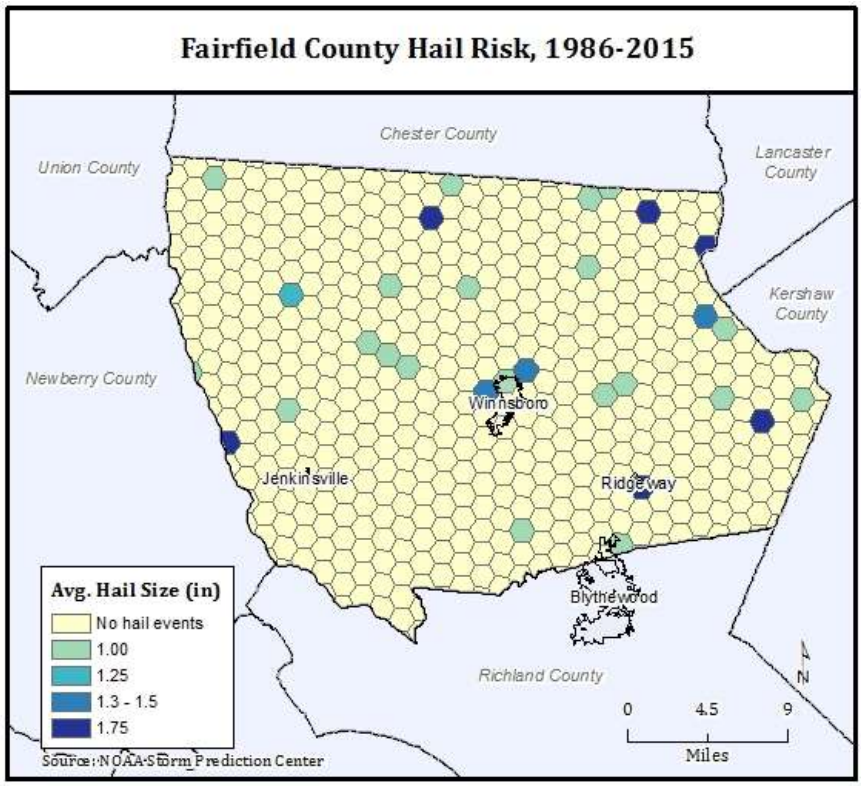

Figure 42 - Risk of large hail events in Fairfield County.

Table 25 - Record of loss-causing hail events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/18/1960	2/18/1960	0	0	$1,142	$0		Central, northern SC	Hail, wind
4/12/1962	4/12/1962	0	0	$1,567	$0	0.75	Central SC	Hail, wind
5/16/1963	5/16/1963	0	0	$0	$21,490		Northern SC	Hail, wind
6/11/1963	6/11/1963	0	0	$0	$84,092		Statewide	Hail
4/7/1965	4/7/1965	0	0	$4,175	$0		Owensville, Greenville to St. Matthews, Calhoun counties	Hail
7/1/1965	7/31/1965	0	0	$816	$0		Statewide	Hail, severe storm, thunderstorm, wind
7/19/1965	7/19/1965	0	0	$816	$81		Statewide	Hail, lightning, wind
5/11/1973	5/11/1973	0	0	$1,666	$1,666		Northern SC from Spartanburg eastward to Horry counties	Hail, lightning, severe storm, thunderstorm, wind
5/20/1973	5/20/1973	0	0	$1,269	$12,694		Northern & northeast SC	Hail, lightning, severe storm, thunderstorm, wind
5/28/1973	5/29/1973	0	0	$987	$987		Western and northern SC	Hail, lightning, wind
12/13/1973	12/13/1973	0	0	$9	$98		Northern and western SC	Hail, lightning
3/29/1974	3/29/1974	0	0	$5,716	$5,716		Northern, eastern, central SC	Hail, lightning, wind

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/30/1974	3/30/1974	0	0	$0	$184		Northwestern SC	Hail, wind
7/16/1974	7/16/1974	0	0	$923	$923		Central and southern SC	Hail, wind
3/7/1975	3/7/1975	0	0	$628	$0		Northwest, central and northeast SC	Hail, lightning, wind
3/24/1975	3/24/1975	0	0	$4,782	$47			Hail, lightning, wind
5/10/1975	5/10/1975	0	0	$12,223	$122,230	1	York to Bamberg and Spartanburg to Oconee and Anderson	
6/5/1975	6/5/1975	0	0	$1,692	$169		Northwest SC	Hail, wind
6/15/1975	6/15/1975	0	0	$647	$647		Northern and central SC	Hail, lightning, wind
6/18/1975	6/18/1975	0	0	$47	$4,782		Statewide	Hail, lightning, wind
6/19/1975	6/19/1975	0	0	$814	$814		Northern and western SC	Hail, lightning, wind
7/4/1975	7/4/1975	0	0	$6,286	$62,861		Northern and central SC	Hail, lightning, wind
6/6/1977	6/6/1977	0	0	$424	$4,246		Statewide	Hail, lightning, wind
4/18/1978	4/18/1978	0	0	$1,296	$12,967		Northeast SC	Hail
5/24/1978	5/24/1978	0	0	$12	$1,296		Northwest and northeast SC	Hail, severe storm, thunderstorm
4/26/1982	4/27/1982	0	0	$26	$26		Statewide	Hail, lightning, severe storm, thunderstorm, wind
5/16/1982	5/16/1982	0	0	$490	$49		Northern and eastern SC	Hail, severe storm, thunderstorm
5/17/1982	5/17/1982	0	0	$34	$340		North, central, southern SC	Hail, severe storm, thunderstorm, wind
6/10/1982	6/10/1982	0	0	$299,173	$299,173		Western, northern, central, & eastern SC	Hail, lightning, severe storm, thunderstorm, wind
3/28/1984	3/28/1984	0	0	$569,624	$569,624		New Hope Eastward	Hail, tornado
3/28/1984	3/28/1984	0	0	$5,696,246	$5,696,246		Winsboro to Kershaw County	Hail, tornado, wind
4/14/1984	4/14/1984	0	0	$406	$406		Northern and central SC	Hail, wind
6/20/1984	6/20/1984	0	0	$2,476	$247		Statewide	Hail, lightning, severe storm, thunderstorm, wind
7/25/1984	7/25/1984	0	0	$113,924	$1,139		Central SC	Hail, lightning, severe storm, thunderstorm, wind
2/11/1985	2/12/1985	0	0	$2,391	$2		Statewide	Hail, severe storm, thunderstorm, wind, winter weather
6/4/1985	6/4/1985	0	0	$578	$578		North central, central SC	Hail
6/6/1985	6/6/1985	0	0	$1,375	$1,375		Central, northeast SC	Hail, wind
6/7/1985	6/7/1985	0	0	$2,391	$239		Statewide	Hail, wind
6/24/1986	6/24/1986	0	0	$0	$1,080	0.75	Winnsboro	Hail
6/24/1986	6/24/1986	0	0	$0	$1,080	0.75	Fairfield County	Hail
7/8/1986	7/8/1986	0	0	$108	$10,800	0.75	Winnsboro	Hail

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
4/11/1988	4/11/1988	0	0	$3	$0		SCZ003-004-005-006 East and Lower Piedmont, Midland	Hail
5/16/1988	5/16/1988	0	0	$100	$100		Winnsboro	Hail
5/10/1995	5/10/1995	0	0	$1,553	$0	0.75	Winnsboro	Hail
5/15/1995	5/15/1995	0	0	$1,553	$0	1	SW part	Hail
4/9/2011	4/9/2011	0	0	$31,573	$10,524	1.75	Bucklick	Supercell thunderstorms rolled across the upper Midlands and Pee Dee region and produced large hail up to the size of baseballs. The insurance industry estimates $45 million in damage across the state.
4/9/2011	4/9/2011	0	0	$42,098	$10,524	1.75	Longtown	Supercell thunderstorms rolled across the upper Midlands and Pee Dee region and produced large hail up to the size of baseballs. The insurance industry estimates $45 million in damages across the state.
4/9/2011	4/9/2011	0	0	$5,262	$0	1	Bucklick	Supercell thunderstorms rolled across the upper Midlands and Pee Dee region and produced large hail up to the size of baseballs. The insurance industry estimates $45 million in damages across the state.
3/2/2012	3/2/2012	0	0	$5,156	$0	1	Monticello	A squll line pushed through the Midlands, CSRA, and Pee Dee region taking down trees and powerlines. An EF0 also occurred in Northern Richland County.
7/1/2012	7/1/2012	0	0	$30,933	$0	1	Camp Welfare	Many severe thunderstorms developed over the Midlands and CSRA producing large hail and wind damage. Hail sizes were mostly golf ball to tennis ball size. The SC Insurance News Service reported home and auto claims of around 7 million dollars.
7/1/2012	7/1/2012	0	0	$5,156	$5,156	1	Stover	Many severe thunderstorms developed over the Midlands and CSRA producing large hail and wind damage. Hail sizes were mostly golf ball to tennis ball size. The SC Insurance News Service reported home and auto claims of around 7 million dollars.
7/1/2012	7/1/2012	0	0	$41,244	$0	1	Flint Hill	Many severe thunderstorms developed over the Midlands and CSRA producing large hail and wind damage. Hail sizes were mostly golf ball to tennis ball size. The SC Insurance News Service reported home and auto claims of around 7 million dollars.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
7/1/2012	7/1/2012	0	0	$10,311	$10,311	1	Winnsboro	Many severe thunderstorms developed over the Midlands and CSRA producing large hail and wind damage. Hail sizes were mostly golf ball to tennis ball size. The SC Insurance News Service reported home and auto claims of around 7 million dollars.
4/11/2013	4/11/2013	0	0	$12,195	$0	1	Crosbyville	Severe Pulse Thunderstorms developed ahead of a cold front and produced some wind damage and 1 inch hail over areas of the Midlands, CSRA, and Pee Dee.
TOTAL		**0**	**0**	**$6,924,316**	**$6,957,010**			

*No magnitude information indicates hailstone sizes were unavailable.

H) Fog

What to expect: Fog does not cause direct property damage or injuries. But indirectly, the personal safety of boaters, motorists, and other travelers is at risk due to poor visibility during fog conditions. Fog is common in Fairfield County and occurs most frequently during the fall and spring months. On average, the county experiences at least 7 days[46] with some periods of fog (or haze). The number of fogs days varies considerably ranging from an average of 7 days of fog per year in the northern half of the county up to 47 days in the southern portion of the country (Figure 43). There is no explicit record of property damage or fatalities associated with fog as reported by SHELDUS™ or NCDC's Storm Data. This is likely due to the fact that most damage from fog is indirect (e.g., traffic accidents).

Geographic Extent: Based on past occurrences, the entire county is susceptible to fog. Southern Fairfield County experiences significantly larger number of days with reduced visibility.

Fog statistics for Fairfield County are as following:

Number of Events:	7-47 days of fog per year
Number of Loss-Causing Events:	n/av (largely motorist accidents)
Frequency of Occurrence:	>2%
Recurrence Interval:	<52 days
Expected changes to frequency and recurrence interval in the future:	Not enough information available to make assumptions about future changes
Events on Record:	1986-2015
Total Losses:	n/av
Total Fatalities:	n/av
Deadliest Event:*	n/av
Most Property Damage:	n/av
Most Crop Damage:*	n/av

[46] A "fog day" has reduced visibility due to fog, haze, or smoke at any time of the day as indicated by NWS station data.

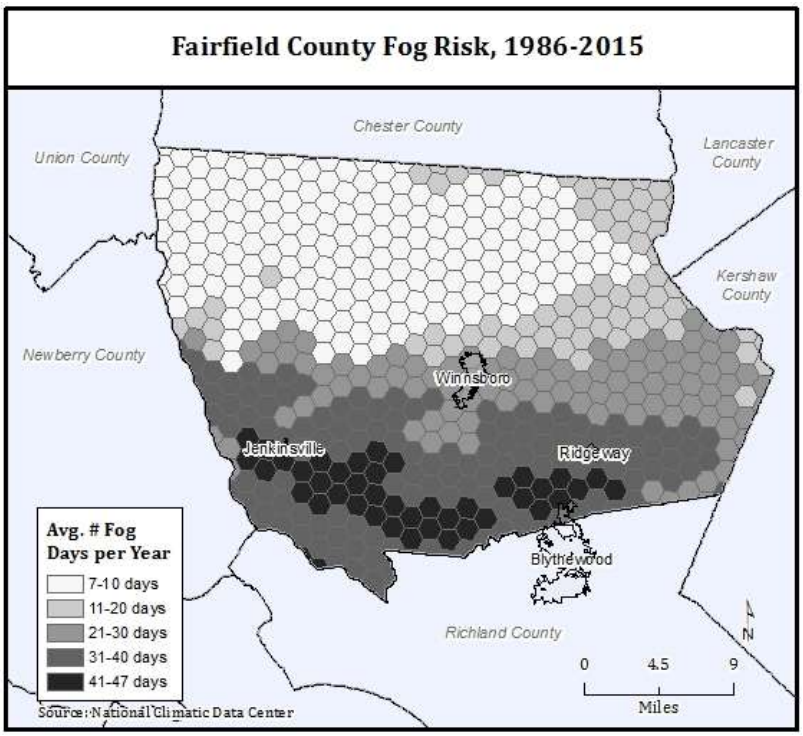

Figure 43 - Fog risk in Fairfield County.

I) Winter & Ice Storms

What to expect: Every property and person is at risk from winter weather in Fairfield County.
Ice storms and winter weather occur every year—on average at least 1 to 2 days per year (Figure 44). Snow accumulations of 2 inches and more are rare, though the area has seen significant snow accumulations in the past (Table 26). The highest daily snowfall amount was 14 inches (February 10, 1973)[47].

More damaging than snow events are ice storms, which tend to occur frequently in this area. Ice accumulations of an inch or more are possible but even thin coatings of ice cause havoc. Falling trees lead to power outages, road closures, and damage to homes and other properties. In addition, winter weather tends to adversely affect agriculture more than any other hazard. It appears that crop damage from winter weather events is severely underreported.

Geographic Extent: The entire county is susceptible to damage from winter weather.

Winter weather statistics for Fairfield County are as following:

Number of Events:	51
Number of Loss-Causing Events:	51
Frequency of Occurrence:	93%
Recurrence Interval:	1.1 years

[47] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Winter weather-related Presidential Disaster Declarations:	DR-1313 (2000) DR-1509 (2004)
Total Losses:	$9,744,028
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$580,000 (February 9, 1973)
Most Crop Damage:	$6.8 million (February 17, 1969)

January 22, 2000 (DR-1313): A severe winter storm resulted in widespread power outages. Thirty-eight counties in South Carolina were designated for federal assistance including Fairfield County.

January 26-30, 2004 (DR-1509): An ice storm began over the North Midlands of South Carolina on Sunday night and gradually spread south into the Central Midlands on Monday. The storm continued into Tuesday, but was mainly freezing drizzle during that time. Ice accumulations of 1/2 to 3/4 of an inch occurred which brought numerous trees and powerlines down. The heaviest ice accumulations occurred in Lancaster, Chesterfield, Fairfield, Newberry, Saluda, McCormick, Orangeburg, and Clarendon counties. Over 250,000 homes, businesses, and schools were without power for several days. Sleet also fell in Lancaster and Chesterfield counties and accumulated up to 2 inches. Six people were injured in traffic related accidents and there were no deaths. Damage estimates from SCEMD were $28.5 million.

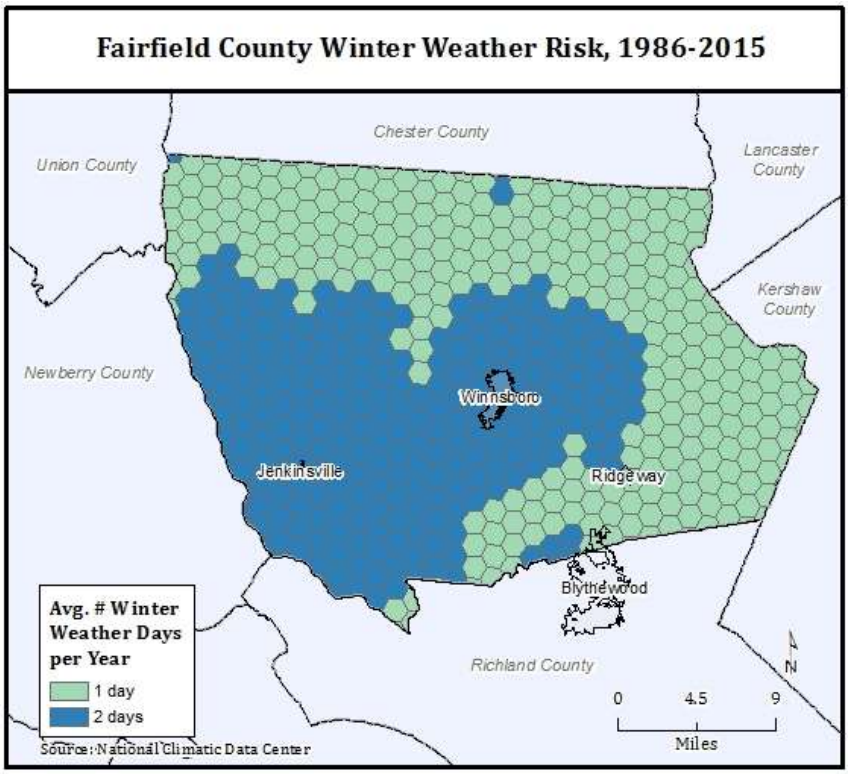

Figure 44 - Risk of winter weather in Fairfield County.

Table 26 - Record of loss-causing winter weather events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/2/1960	3/2/1960	0	0	$22,216	$0	Trace	Northern SC	Snow, ice
3/9/1960	3/11/1960	0	0	$11,425	$0	3.3”	Northern and central SC	Snow, sleet, ice
1/25/1961	1/26/1961	0	0	$8,606	$860	0.5:	Statewide	Ice storm
2/3/1961	2/4/1961	0	0	$860	$0	0.5”	Statewide	Glaze
1/1/1962	1/1/1962	0	0	$2,177	$0	-	Northern counties from Anderson to York	Ice and Snow
12/31/1963	1/1/1964	0	0	$84,092	$8,409	-	Statewide	Ice
1/12/1964	1/13/1964	0	0	$1,818	$0	-	Northern and western SC	Ice
1/26/1966	1/27/1966	0	0	$104,380	$0	1.0”	Central and northern SC	Ice, snow
1/29/1966	1/30/1966	0	0	$0	$79,420	-	Statewide	Severe cold, ice and snow
1/9/1968	1/13/1968	0	0	$106,293	$10	1.3”	Northern 2/3 of state	Rain, sleet, snow, and freezing rain
2/15/1969	2/17/1969	0	0	$68,623	$6,862,310	0.8”	Statewide	Snow, sleet and freezing rain
11/1/1969	11/1/1969	0	0	$12,901	$12	-	Central SC	Wind, snow
1/8/1971	1/9/1971	0	0	$2,248	$2,248	-	Northwest SC	Freezing rain
3/25/1971	3/25/1971	0	0	$162,370	$162	1.7”	Northern half of state	Snowstorm
12/3/1971	12/3/1971	0	0	$63,536	$63,536	2”	Statewide	Snow, sleet, freezing rain, rain, winds
1/7/1973	1/8/1973	0	0	$57,955	$579,553	3”	Statewide	Snow & ice
2/9/1973	2/10/1973	0	0	$579,553	$579	12”	Statewide	Snowstorm
12/17/1973	12/17/1973	0	0	$3,332	$33	0.5”	North central SC	Heavy snow
12/20/1973	12/20/1973	0	0	$205	$0	0.62”	Northwestern SC	Freezing rain
2/3/1975	2/4/1975	0	0	$12,223	$1,222	1”	Northwest and north SC	Ice storm
1/13/1978	1/13/1978	0	0	$1,512	$0	1.47”	Northwest SC	Snow, sleet, freezing rain
3/2/1978	3/3/1978	0	0	$1,396	$0	0.5”	Northwest SC	Snow, freezing rain
2/6/1979	2/6/1979	0	0	$543,471	$543	Trace	Northwest and central SC	Snow, sleet, ice
2/17/1979	2/18/1979	0	0	$35,443	$354	5.5”	Statewide	Snow, sleet, freezing rain
1/30/1980	1/31/1980	0	0	$756	$756	0.22”	Northern half of state	Freezing rain
2/5/1980	2/6/1980	0	0	$31,228	$312	3”	All of SC except south coastal	Snowstorm over most of state except ice storm near beaches north coastal area
3/1/1980	3/2/1980	0	0	$3,122	$3,122	Trace	Statewide	Snow, freezing rain, drizzle and sleet
12/23/1980	12/23/1980	0	0	$65	$0	0.12”	Northwest and central SC	Freezing rain
2/1/1981	2/1/1981	0	0	$72	$0	-	Northern SC	Freezing rain and sleet
1/12/1982	1/12/1982	0	0	$4,381	$431	-	All but coastal plain	Snow, sleet, freezing rain
2/26/1982	2/27/1982	0	0	$2,666	$0	1.41”	statewide	Snow, sleet, glaze
1/21/1983	1/21/1983	0	0	$2,583	$25	0.2”	Statewide	Freezing rain, sleet, snow

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/24/1983	3/24/1983	0	0	$258	$2	0.4”	Statewide	Winter storm, wind, snow
12/22/1983	12/22/1983	0	0	$990	$0	0.1”	Northwest and northcentral SC	Freezing rain
1/13/1984	1/13/1984	0	0	$4,068	$406	0.03”	Northern half of SC	Freezing rain, glaze
2/6/1984	2/6/1984	0	0	$632	$0	0.8”	Northern SC	Snow
1/17/1985	1/17/1985	0	0	$61	$0	0.6”	Northern SC	Freezing rain
1/20/1985	1/24/1985	0	0	$23,914	$2,391	Trace	Statewide	Extreme cold, snow
1/28/1985	1/28/1985	0	0	$611	$0	Trace	Northern SC	Snow ,sleet
1/22/1987	1/22/1987	0	0	$548	$54	Trace	SCZ01-002-003-004 Northwest SC	Heavy snow and sleet
1/26/1987	1/26/1987	0	0	$4,736	$473	0.5”	SCZ003-004-005 Central, Northern, Northeast SC	Ice storm
2/16/1987	2/16/1987	0	0	$5,484	$548	0.62”	SCZ001-002-003-004-005-006-007, Northwest, North-Central, and Northeast SC	Ice storm
1/7/1988	1/11/1988	0	0	$21,751	$0	8”	Statewide	Snow, ice, sleet
1/14/1989	1/14/1989	0	0	$7	$0	0.29”	Northwest SC	Freezing drizzle
2/17/1989	2/19/1989	0	0	$20,751	$0	0.25”	SCZ001-002 Northwest SC	Severe storm, ice, sleet
2/23/1989	2/23/1989	0	0	$2,075	$0	-	Statewide	Severe storm, snow
12/27/1992	12/28/1992	0	0	$30,131	$30,131	1.25”	Foothills, East and Lower Piedmont, North Midlands	Ice storm
2/11/1994	2/11/1994	0	0	$42,037	$0	0.72”	SCZ001>022	Ice storm
2/16/2003	2/17/2003	4	0	$0	$0	1.22”		Winter weather
1/18/2007	1/18/2007	0	0	$5,708	$0	0.02”	SC015-020>021	Ice storm
1/30/2010	1/30/2010	0	0	$10,856	$0	0.57”		Ice storm
TOTAL		**4**	**0**	**$2,106,126**	**$7,637,902**			

*No magnitude information indicates snowfall amounts or ice thickness were unavailable.

Note: Note that damage from cold temperatures is reported in the section on temperature extremes. No winter weather damage has been reported by NCEI (formerly NCDC) since 2010.

J) Temperature Extremes

What to expect: Fairfield County experiences between 49 and 67 days per year when temperatures fall below freezing at any given time of the day, which is generally during nighttime hours in the winter months (Figure 45). Of these cold days, about 13 to 16 days have periods of time with extremely cold temperature (Figure 46). The record minimum temperature for Fairfield County was set on February 14, 1899 with -3 degrees Fahrenheit[48]. Most record minimum temperatures in South Carolina date back to 1985 or 1899. The record minimum temperature for the state is -19 degrees, set in Greenville County in 1985. Property damage tends to be restricted to busted water pipes and motor vehicle accidents. However, periods of frost and freeze cause significant damage to agricultural production.

[48] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

Geographic Extent: Based on past occurrences, the entire county is susceptible to cold weather temperatures. While there is a north-south gradient in regards to the number of days with below freezing temperatures with more cold days in northern Fairfield County (Figure 45), it is the areas around Jenkinsville and Winnsboro that are at risk from experiencing more extreme cold weather days (Figure 46)—meaning the number of days when cold temperatures are above the 95th percentile[49].

Cold weather statistics for Fairfield County are as following:

Number of Events:	38
Number of Loss-Causing Events:	38
Frequency of Occurrence:	69%
Recurrence Interval:	1.4 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Total Losses:	$10,488,475
Total Fatalities:	3
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$207,000 (December 22, 1989)
Most Crop Damage:	$3.1 million (April 7, 1982)

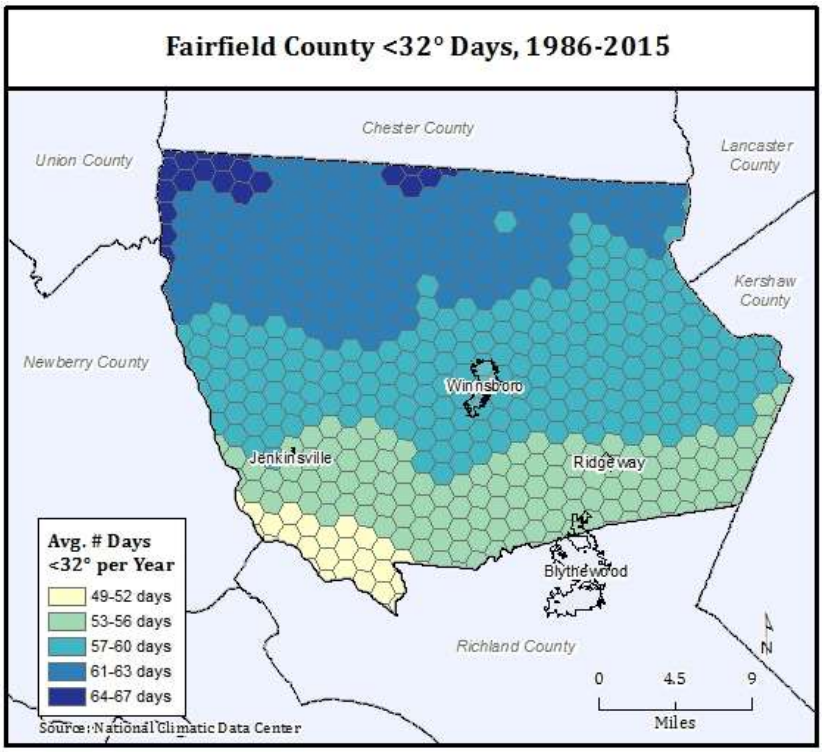

Figure 45 - Cold weather risk in Fairfield County.

[49] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County

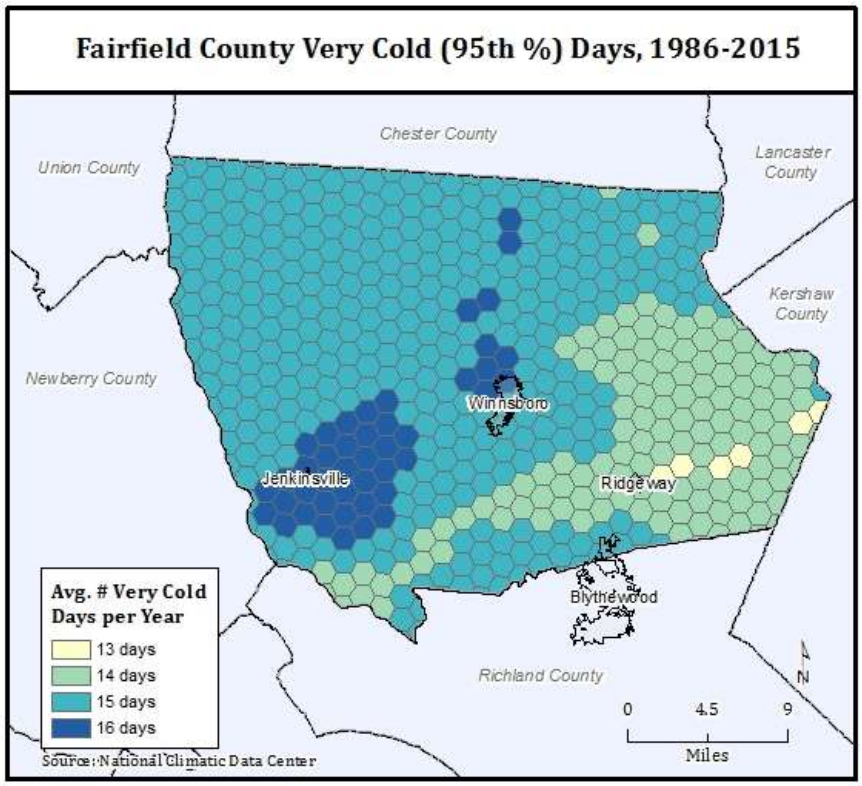

Figure 46 - Risk of cold temperature anomalies in Fairfield County.

Table 27 - Record of loss-causing cold weather events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/30/1964	3/31/1964	0	0	$0	$830,070	Statewide	Killing freeze
3/29/1966	3/29/1966	0	0	$15,884	$0	Inland SC	Frost
3/17/1967	3/19/1967	0	0	$0	$1,968,862	Northern part of State	Cold wave
1/8/1970	1/9/1970	0	0	$663	$6	Statewide	Severe freeze
11/24/1970	11/25/1970	0	0	$6	$6	Statewide	Severe freeze
4/1/1972	4/30/1972	0	0	$0	$321,792	Statewide	Cold spell
4/11/1973	4/12/1973	0	0	$0	$148,108	Northwest & northern SC	Frost, freeze
10/3/1974	10/4/1974	0	0	$6,156	$0	Western, northern, central SC	Frost, freeze
3/2/1975	3/3/1975	0	0	$0	$4,782	Statewide	Low temperatures
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
1/11/1982	1/11/1982	0	0	$266	$266	Statewide	Hard freeze
3/27/1982	3/27/1982	0	0	$0	$266,655	Statewide	Extreme cold
4/7/1982	4/7/1982	0	0	$0	$3,066,528	Statewide except southern	Frost, freeze
4/23/1982	4/24/1982	0	0	$0	$26	Statewide	Frost, freeze
4/17/1983	4/18/1983	0	0	$0	$2,583,551	Statewide	Extreme cold

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
12/25/1983	12/25/1983	0	0	$25,835	$25,835	Statewide	Extreme cold
12/30/1983	12/31/1983	0	0	$2,583	$258	Statewide	Extreme cold
3/19/1985	3/19/1985	0	0	$0	$2,391	Statewide	Frost, freeze
12/26/1985	12/26/1985	0	0	$239	$23	Statewide	Cold
1/27/1986	1/28/1986	0	0	$2,347	$23	Statewide	Cold
3/22/1986	3/23/1986	0	0	$0	$2,347	Statewide	Cold
4/23/1986	4/24/1986	0	0	$0	$2,347	Statewide	Frost, freeze
4/1/1987	4/1/1987	0	0	$0	$2,604	SCZ001-002-003-004-005-006-007 All of SC except immediate coast	Freeze
10/1/1987	10/31/1987	0	0	$0	$226	Statewide	Cold weather
3/14/1988	3/17/1988	0	0	$217	$0	Statewide	Low temperature
4/20/1988	4/20/1988	0	0	$0	$52	SCZ002-003-004 Foothills/ East Piedmont/ Lower Piedmont	Frost
4/12/1989	4/12/1989	0	0	$5,024	$0	Northwest SC (zones 1 thru 4)	Freeze
5/8/1989	5/8/1989	0	0	$0	$7,954	Northwest (Zones 1-3)	Frost
12/20/1989	12/20/1989	0	1	$0	$0	Fairfield County	Extreme cold
12/22/1989	12/22/1989	0	0	$20,751	$0		Extreme cold
12/22/1989	12/22/1989	0	0	$207,517	$0		Extreme cold
12/22/1989	12/25/1989	0	1	$26,516	$0	SCZ001-002-003-004-005-006 Mountains/ Foothills/ Piedmont and Midlands	Extreme cold
3/21/1990	3/21/1990	0	0	$0	$196,879	Statewide	Freeze
2/25/1991	2/25/1991	0	1	$0	$0	Fairfield County	Cold
4/3/1992	4/3/1992	0	0	$0	$64,898	Piedmont	Freeze
4/3/1992	4/3/1992	0	0	$0	$648,982	SCZ003-004 Piedmont	Freeze
3/13/1993	3/13/1993	0	0	$13,652	$13,652	SCZ003	High winds, cold
TOTAL		**0**	**3**	**$328,504**	**$10,159,971**		

What to expect: Hot weather is common in Fairfield County during the late spring, summer and early fall months. On average, there are 16 to 23 days above 95 degrees any given year (Figure 47). Fairfield County experiences periods of above 100 degree temperatures in the months of May, June, July, August, September, and October. The hottest temperature recorded in Fairfield County was 108°F (July 22, 1926). Hot weather is a high risk event to public health due to the possibility of heat exhaustion and heat stroke. The number of high temperature days and duration of heat waves are expected to increase.

Geographic Extent: The entire county is susceptible to hot temperatures. While southwestern Fairfield County experiences more days of above 95 degrees (Figure 47), it is the central region around Winnsboro that is at most risk from hot temperature anomalies meaning this area spends an additional day in extreme temperatures compared to the rest of the county (Figure 48)[50].

[50] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot

According to South Carolina's State Climatology Office, summer maximum temperatures in Fairfield County have increased from 72.8°F (1971-2000) to 73.4°F (1981-2010) and the mean temperature has increased from 61.4°F (1971-2000) to 62.1°F (1981-2010)[51].

Hot weather statistics for Fairfield County are as following:

Number of Events:	8
Number of Loss-Causing Events:	8
Frequency of Occurrence:	15%
Recurrence Interval:	6.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$21,263,066
Total Fatalities:	1
Deadliest Event:	1 fatality (June 22, 1996)
Most Property Damage:	$9.4 million (June 1, 1993)
Most Crop Damage:	$9.4 million (August 1, 1993)

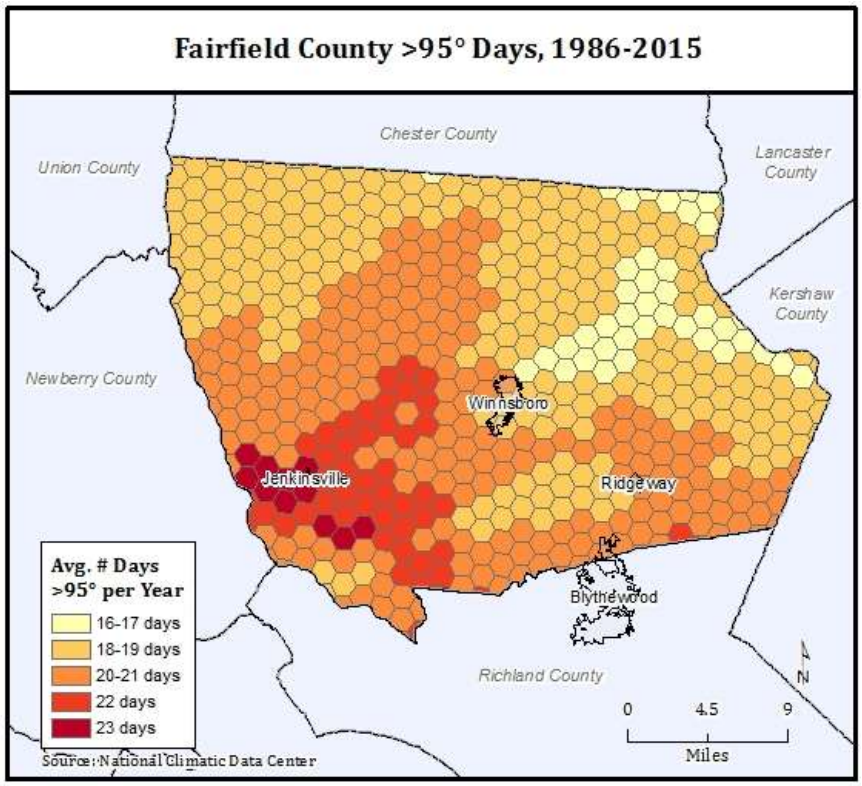

Figure 47 - Hot weather risk in Fairfield County.

for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

[51] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php

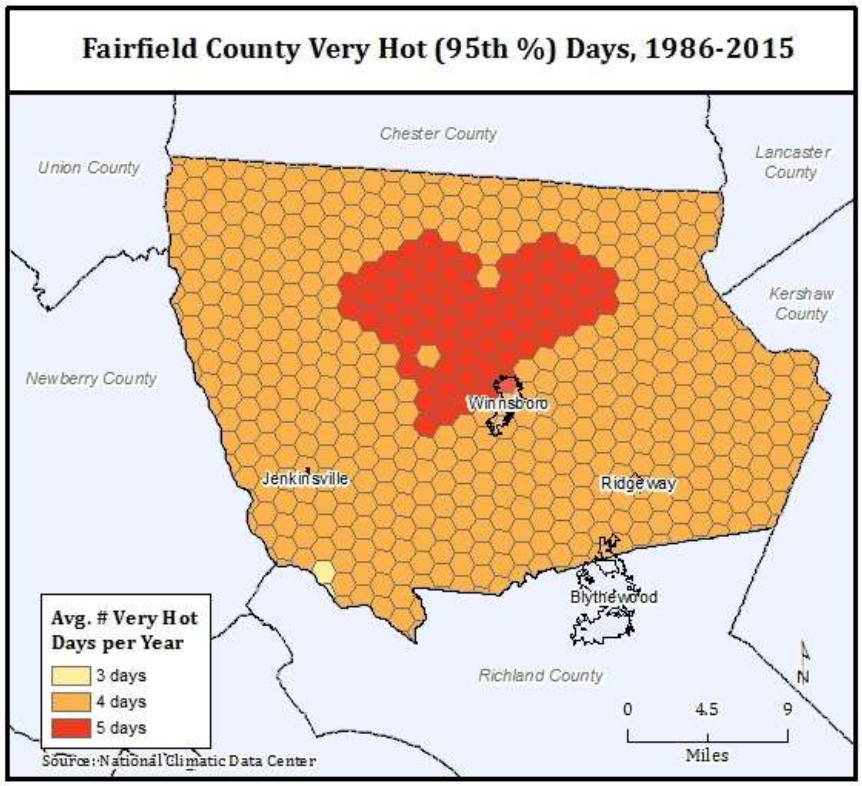

Figure 48 - Risk of hot temperature anomalies in Fairfield County.

Table 28 - Record of loss-causing hot weather events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
2/1/1976	2/29/1976	0	0	$452	$4,522	Statewide	Heat
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Statewide	Drought, Heat
10/1/1978	10/31/1978	0	0	$394	$3,946	Statewide	Drought, Heat
6/1/1985	6/7/1985	0	0	$0	$239,146	Statewide	Heat
6/1/1993	6/30/1993	0	0	$0	$1,780,773	Statewide	Heat
7/1/1993	7/31/1993	0	0	$9,402,482	$0	SCZ001>007 All SC	Drought, Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Statewide	Drought, Heat
6/22/1996	6/22/1996	0	1	$0	$0		Heat
TOTAL		**0**	**1**	**$9,407,574**	**$11,855,492**		

K) Wildfires

What to expect: On average, wildfires occur frequently—every 6 days—in Fairfield County with most of the wildfires occurring in the northern half of the county (Figure 49). Instances of recorded property and crop damage are rare (Table 29). The largest wildfire was about 141 acres.

Geographic Extent: The entire county is susceptible to wildfire. The risk of wildfire including the propensity for large wildfires is spread fairly randomly across the county with a somewhat higher occurrence rater in northern Fairfield County (Figure 49 & 17). The number of wildfire events and the size of wildfires are expected to increase.

Wildfire statistics for Lexington County are as following:

Number of Events:	1,519
Number of Loss-Causing Events:	4 (1960-2014)
Daily Frequency of Occurrence:	17%
Recurrence Interval:	5.8 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1988-2015
Total Losses:	$380,926
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$80,000 (March 15, 1966)
Most Crop Damage:	$239,000 (March 1, 1985)

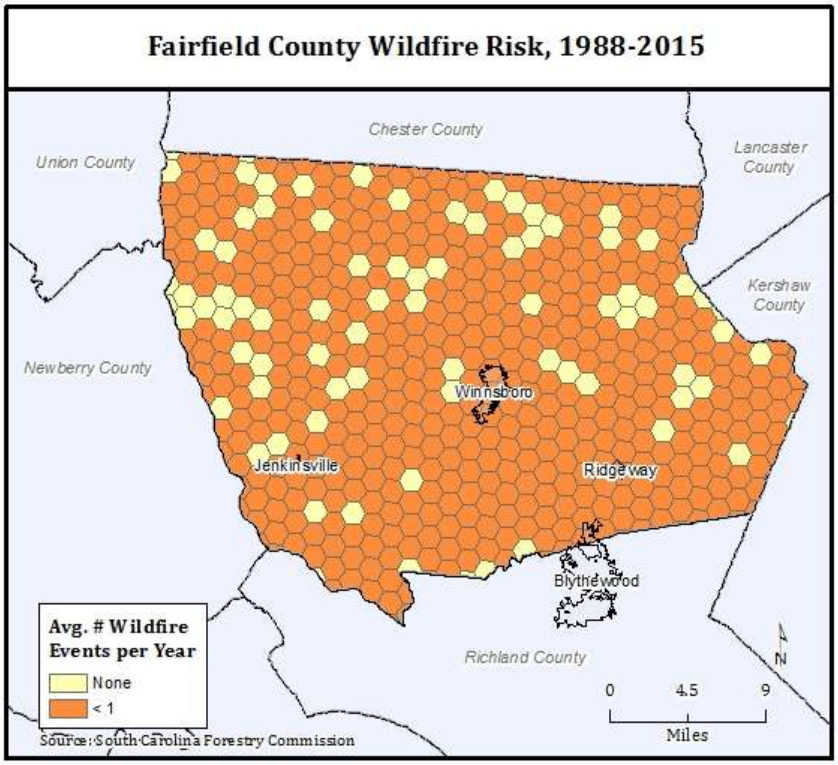

Figure 49 - Wildfire risk in Fairfield County based on average number of wildfires per year.

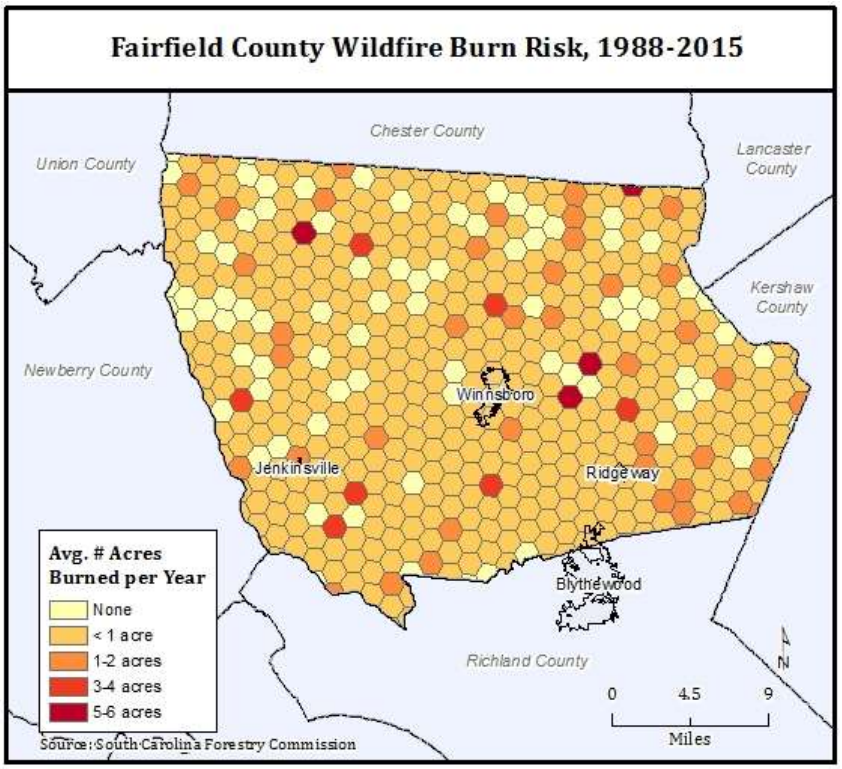

Figure 50 - Risk of large wildfires in Fairfield County.

Table 29 - Record of loss-causing wildfire events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/15/1966	3/31/1966	0	0	$79,420	$0	Statewide	Forest Fires
3/1/1985	3/21/1985	0	0	$23,914	$239,146	Statewide	Fire
4/1/1985	4/30/1985	0	0	$239	$23,914	Statewide	Fire
12/28/1988	12/28/1988	0	0	$0	$14,293	Piedmont	Fire
TOTAL		**0**	**0**	**$103,573**	**$277,353**		

L) Droughts

What to expect: Fairfield County sees drought conditions (i.e., weeks of moderate to extreme drought according to the Palmer Drought Severity Index) on average of 5 to 6 months every year (Figure 51). Multi-year, severe droughts are possible in Fairfield County as seen from 1998 through 2002. The County experienced its driest year in 1954 with only 25.53 inches of rainfall (annual average: 45.16 inches)[52]. Droughts are detrimental to agricultural production (incl. forestry and water supply). Agricultural crops (especially corn, cotton, and soybean) are stressed by drought conditions and irrigation systems are not common in South Carolina. Droughts may also affect tourism and fresh water fisheries. The number of droughts days and the duration of drought events are expected to increase.

Geographic Extent: The entire county is susceptible to drought but the western half of Fairfield County tends to experience more weeks in drought conditions. It is important to note that southwestern Fairfield County has on average more hot weather days than the rest of the county (Figure 47).

The most damaging droughts occurred in 1954, 1986, and 1998-2002. The latest severely impacted economic sectors such as agriculture, forestry, tourism, power generation, public water supplies, and fresh water fisheries[53]. Less severe droughts were reported in 1988, 1990, 1993, and 1995. Unfortunately, the record on losses, particularly agricultural losses is sparse—not because of a lack of losses but because of shortcomings in tracking drought losses. The current tally of more than $24 million in direct losses is most likely a vast underestimation and possibly exceeds $100 million.

Drought statistics for Fairfield County are as following:

Number of Events:	17
Number of Loss-Causing Events:	17
Frequency of Occurrence:	31%
Recurrence Interval:	3.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$24,345,640
Total Fatalities:	0`
Deadliest Event:	n/a
Most Property Damage:	$9.4 million (July 1, 1993)
Most Crop Damage:	$9.4 million (August 1, 1993)

[52] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php
[53] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

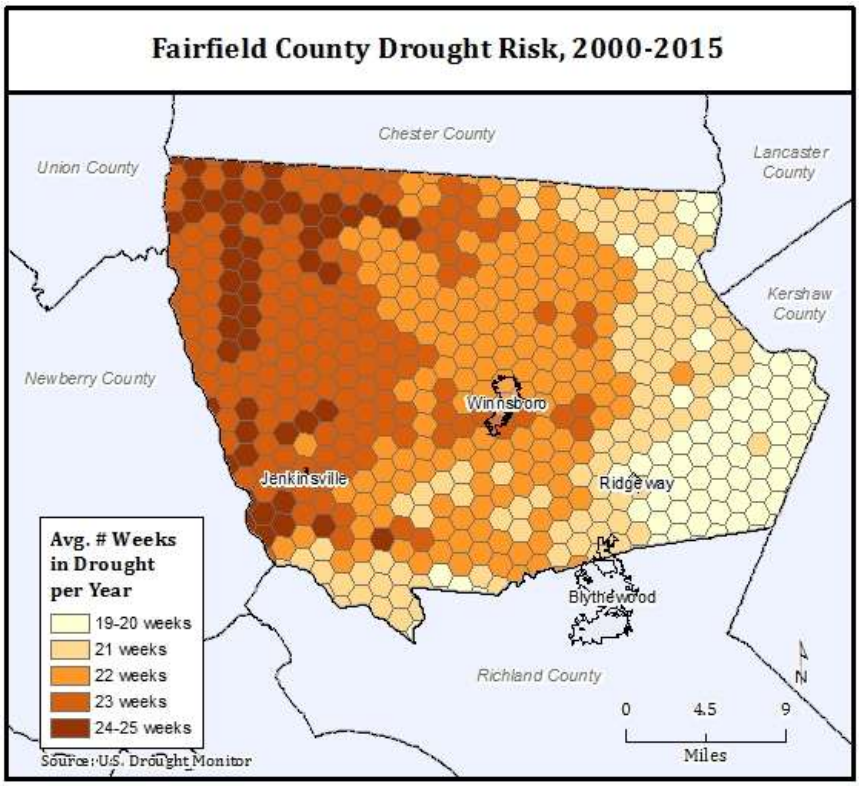

Figure 51 - Drought risk in Fairfield County.

Table 30 - Record of loss-causing drought events in Fairfield County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location	Description
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Moderate	Statewide	Drought, Heat
4/1/1978	4/13/1978	0	0	$39	$3,946	Mild	Statewide	Drought
10/1/1978	10/31/1978	0	0	$394	$3,946	Mild	Statewide	Drought, Heat
6/1/1984	6/20/1984	0	0	$0	$2,476	Moderate	Statewide	Drought
4/1/1986	4/30/1986	0	0	$0	$276	Moderate	SCZ001-002-003-004-005-006-007	Drought
5/1/1986	5/31/1986	0	0	$0	$23,478	Severe	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
7/1/1986	7/31/1986	0	0	$234,782	$2,347,826	Extreme	Statewide	Drought
2/1/1988	2/28/1988	0	0	$21	$2,175	Mild	Statewide	Drought
6/1/1988	6/30/1988	0	0	$2,175	$21,751	Mild	Statewide	Drought
7/1/1988	7/31/1988	0	0	$217	$2,175	Moderate	Statewide	Drought
8/1/1988	8/31/1988	0	0	$2	$2,779	Moderate	SCZ001-002-003-004-006-008	Drought
7/1/1993	7/31/1993	0	0	$9,402,482	$0	Moderate	SCZ001>007 All SC	Drought, Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Severe	Statewide	Drought, Heat

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location	Description
5/1/1994	5/31/1994	0	0	$0	$1,736,314	Moderate	Statewide SC01>50	Drought
5/1/1995	5/31/1995	0	0	$0	$675,385	Mild	SCZ001>050	Drought
TOTAL		**0**	**0**	**$9,649,052**	**$14,696,588**			

*Based on historic Palmer Drought Severity Index categories.

Note: While droughts occurred since 1995, the NCEI (formerly NCDC) did not report any losses. The occurrence of drought is reflected in Figure 51.

M) Earthquakes

What to expect: Fairfield County has a much lower earthquake risk than coastal counties in South Carolina and experiences only low magnitude earthquakes. Since 1900, the strongest earthquake had a magnitude of 2.6 (Figure 52). There is only a 2% chance that Newberry County could experience shaking of up to 2m/s with a higher shaking potential in the southwestern of the county (Figure 53).

Geographic Extent: The entire county is susceptible to earthquakes.

Number of Events:	3
Number of Loss-Causing Events:	0 (1960-2014)
Frequency of Occurrence:	<1%
Recurrence Interval:	>50 years
Expected changes to frequency and recurrence interval in the future:	No changes
Events on Record:	1900-2015
Total Losses:	$0
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	n/a
Most Crop Damage:	n/a

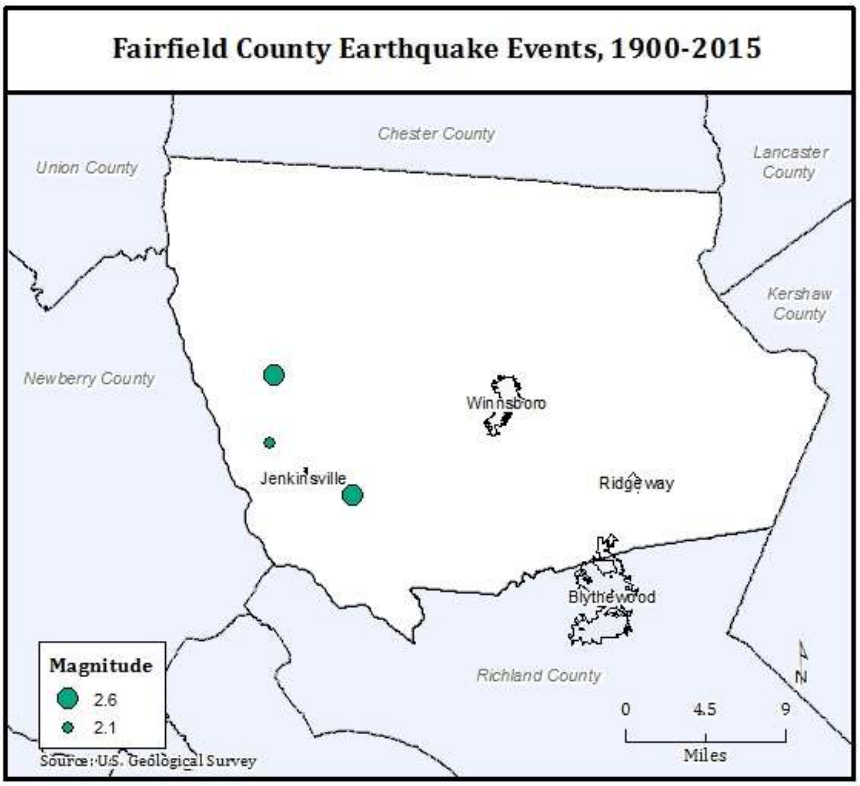

Figure 52 - Earthquake risk in Fairfield County.

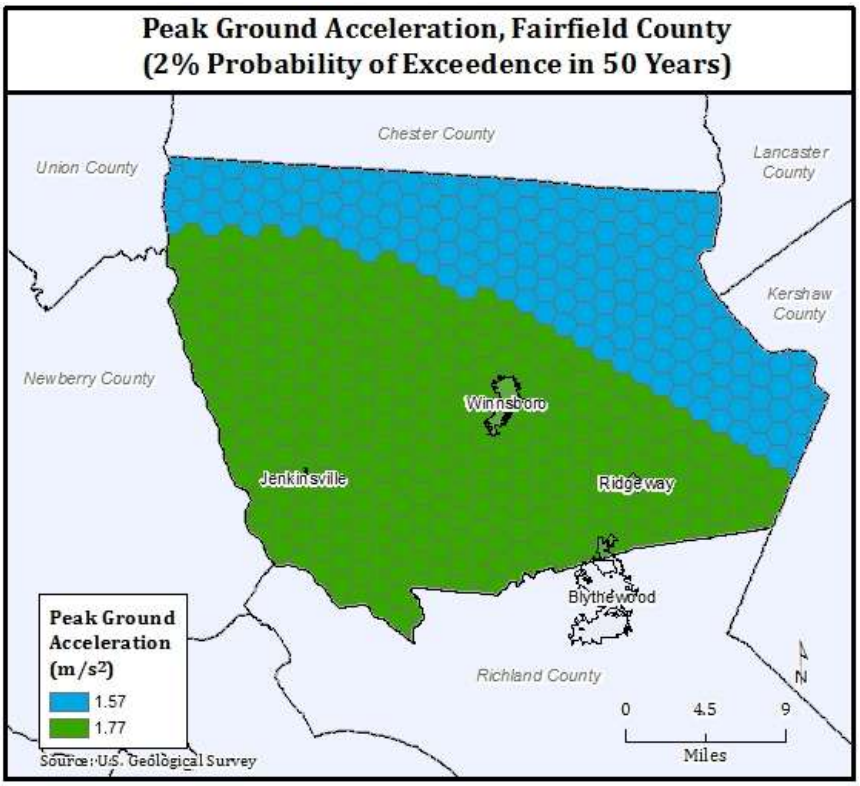

Figure 53 - Risk of shaking due to earthquakes in Fairfield County.

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

5.2 Hazard Vulnerability Assessment for Fairfield County

Vulnerability is generally defined as the potential for loss. The vulnerability assessment identifies assets at risk (e.g., people, critical infrastructure, etc.) and estimates potential losses from the hazards previously identified in the hazard assessment. Vulnerability is best expressed in qualitative terms (high, medium, and low). To arrive at such a classification, the information generated in the hazard assessment is parsed into low, medium, and high categories and then overlaid with information on social vulnerability, critical infrastructure, population, and building stock.

Please note that the sections on floods, earthquakes, and hurricanes include probabilistic hazard and damage estimates alongside the historic risk information provided for all other hazards. Such probabilistic information is unavailable for any other hazard type.

When combining vulnerability information across all 15 hazard types, the comprehensive vulnerability of Fairfield County looks as following:

- High vulnerability areas (in terms of hazard occurrence and social vulnerability) are present in western and central Fairfield County, with clusters around Winnsboro and Jenkinsville.
- More than 50% of the county's critical infrastructure is located in high risk areas.
- Only 20% of the building stock and 16% of the population are located in low risk areas.

For a comparison of vulnerability statistics for high risk zones only, see Table 31.

Summary of Fairfield County's Vulnerabilities	**Risk Zones**		
	Low	**Medium**	**High**
Critical Infrastructure	1 (5%)	8 (38%)	12 (57%)
Building Stock	$0.7 billion (20%)	$1.4 billion (38%)	$1.5 billion (42%)
Population	3,808 (16%)	10,191 (44%)	9,352 (40%)

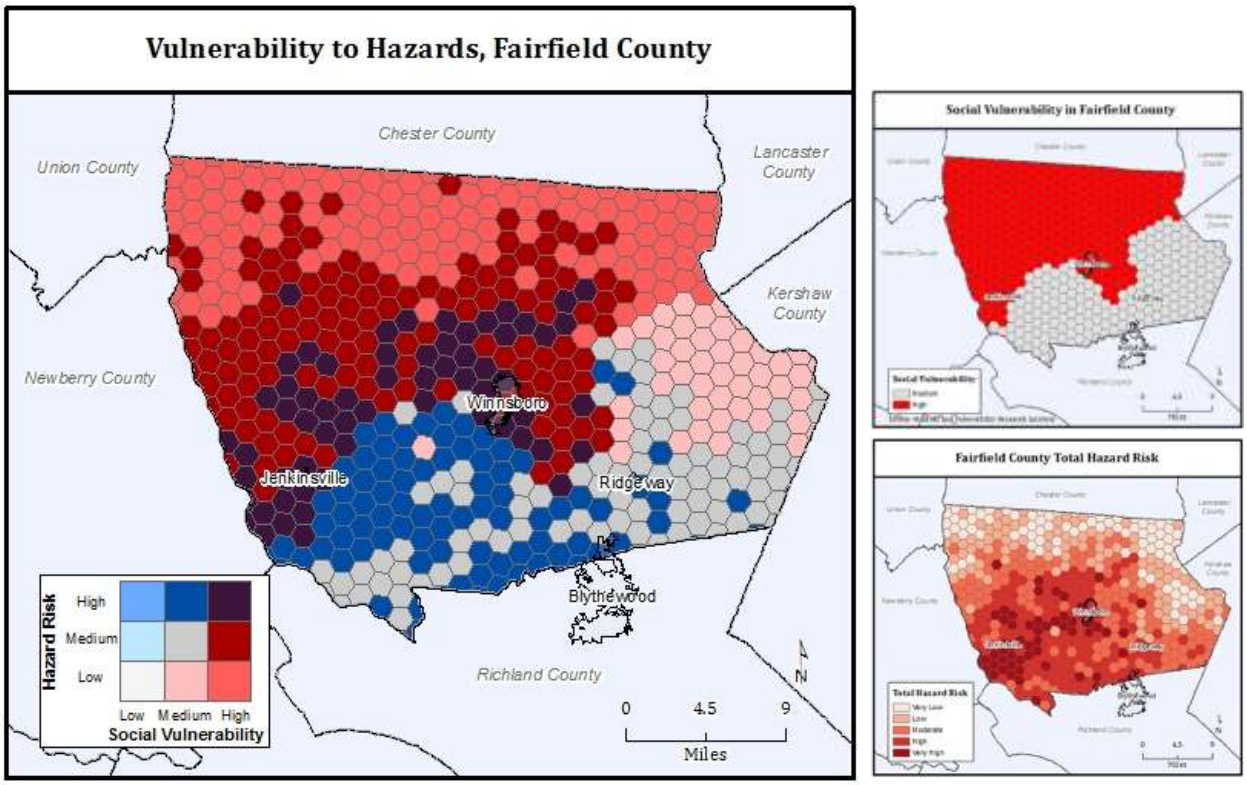

Figure 54 - Vulnerability to all natural hazards in Fairfield County.

Note: The hazard risk map (bottom right) is identical to the comprehensive map developed in the hazard assessment section. Detail on the social vulnerability map (top right) are provided below.

Table 31 - Vulnerability overview by hazard for high risk areas in Fairfield County.

	Critical Infrastructure	Building Stock	Population	Population with high social vulnerability
Flooding*	1 (5%)	$0.3 billion (7%)	1,390 (6%)	2 (<1%)
Hurricane	n/a	n/a	n/a	n/a
Tornadoes	1 (5%)	$0.3 billion (7%)	2,465 (10%)	1.638 (13%)
Thunderstorm	7 (33%)	$1.1 billion (32%)	9,578 (41%)	3,456 (28%)
Lightning	2 (10%)	$1.1 billion (29%)	5,516 (24%)	1,567 (13%)
Wind	6 (29%)	$1.3 billion (35%)	9,594 (41%)	888 (7%)
Hail	0	$0.06 billion (2%)	379 (2%)	342 (3%)
Fog	6 (28%)	$1.2 billion (33%)	9,260 (40%)	1,343 (11%)
Winter Storm	16 (76%)	$1.6 billion (46%)	10,826 (46%)	7,287 (59%)
Cold**	16 (76%)	$1.7 billion (47%)	10,229 (44%)	7,670 (62%)
Heat**	8 (38%)	$1.3 billion (37%)	8,204 (35%)	3,858 (31%)
Drought	3 (19%)	$0.5 billion (15%)	4,069 (18%)	3,381 (28%)
Wildfire	14 (74%)	$2.2 billion (60%)	12,534 (54%)	7,107 (58%)
Earthquake	n/a	n/a	n/a	n/a
Overall Vulnerability	12 (57%)	$1.5 billion (42%)	9,352 (40%)	4,336 (35%)

* High risk defined as being inside the 100-yr flood zone
** Data shown here using the 95% percentile

A) Assets at Risk

Fairfield County is home to nearly 24,000 residents and has an approximate building stock of 11,141 buildings with a replacement value of about $2.3 billion (in 2015 according to HAZUS-MH 2.2) (Table 32). Since 2010, Fairfield County lost 2.5% of its population which has reduced the exposure to natural hazards compared to the previous plan. See Section 3.4 for more information on development changes in the county.

Table 32 - Building stock values by occupancy type in Fairfield County. Source: HAZUS 2.2.

Building Type	Total Replacement Value (in $2015 Billion)
Residential	$1.9
Commercial	$0.2
Industrial	$0.06
Agricultural	$0.003
Religious	$0.08
Government	$0.01
Education	$0.03
Total	**$2.3**

Since the aforementioned values represent the total replacement cost by property type, they may greatly differ from county assessment and appraisal values. The following values provided by the county (Table 33) are capped based on the maximum taxable amount according to the county tax code.

Table 33 - Fairfield County Appraised and Assessed Values of Buildings Only for the year 2015.

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Unincorporated Fairfield County			
Residential	9,052	$29,172,605	$635,343,125
Commercial	320	$2,745,184	$45,752,974
Other	2,151	$2,982,024	$63,829,685
Total	**11,523**	**$34,899,813**	**$744,925,784**
Town of Winnsboro			
Residential	464	$1,374,464	$31,241,421
Commercial	29	$136,995	$2,283,227
Other	5	$13,764	$238,659
Total	**498**	**$1,525,223**	**$33,763,307**
Town of Ridgeway			
Residential	197	$476,410	$10,943,449
Commercial	26	$241,693	$4,028,194
Other	1	$3,770	$65,591
Total	**223**	**$721,873**	**$15,037,234**

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Town of Blythewood			
Residential	35	$170,516	$3,995,900
Other	9	$8,478	$185,431
Total	**44**	**$178,994**	**$4,181,331**
County Total	**12,288**	**$37,325,903**	**$797,907,656**

There are 21 critical facilities in Fairfield County such as an Emergency Operation Center, hospital, administrative buildings as well as numerous law enforcement, fire/EMS and school facilities (Table 34). Most of the critical infrastructure is located in the City of Winnsboro and surrounding areas (Figure 55). More information on the vulnerability assessment for each critical facility can be found in Appendix II.

Table 34 - Critical facilities in Fairfield County.

	Count
Fire-EMS Facilities	5
Law Enforcement Facilities	2
Medical Facilities	1
Schools and School Administration	13
TOTAL	21

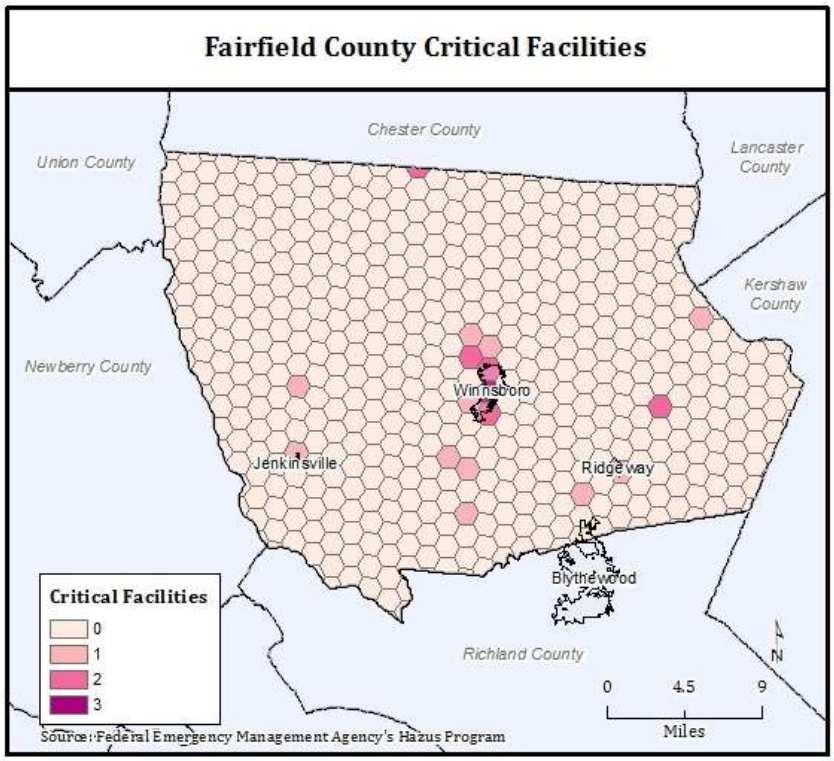

Figure 55 - Distribution of critical facilities in Fairfield County.

The following sections discuss hazard-specific vulnerabilities in Fairfield County. Vulnerability is assessed by overlaying the county's social vulnerability with the risk of being exposed to a hazard of either a certain magnitude (i.e. probabilistic scenarios) or historic occurrences/warnings. In addition, the location

and number of critical infrastructure within an area (hexagon) are incorporated into the vulnerability maps by extruding or raising a hexagon relative to the number of critical infrastructure located in the hexagon area.

B) Social Vulnerability

The SoVI® is a measure of the sociodemographic make-up of Fairfield County that influences how well populations within a census tract can prepare for, respond to, or recover from a hazard. About 11,500 of the county's residents of live in highly vulnerable census tracts (Table 35), mostly in the northern half of the county (Figure 56).

Table 35 - Distribution of socially vulnerable census tracts in Fairfield County.

SoVI Category	Number of Tracts	Number of Housing Units	Population
Low	0	0	0
Medium	2	5,984	12,525
High	3	5,697	11,431

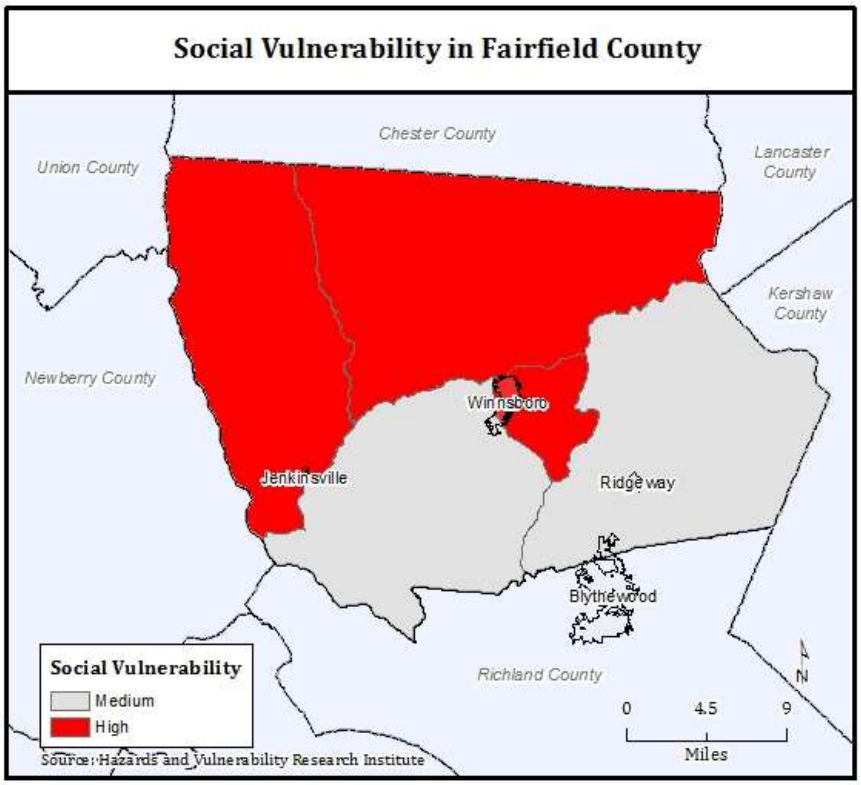

Figure 56 - Socially vulnerable tracts in Fairfield County.

Fairfield County's SoVI® is derived from a dynamic combination of seven main vulnerability components (Table 36). Overall, SoVI® scores range from 0.16 to 2.26 with a majority of census tracts falling in the high in the high SoVI® category (Figure 56). It is important to note that what makes a census tract socially vulnerable varies from census tract to census tract within the county.

The SoVI® scores (Table 36) are mapped using a three-class standard deviation[54] model:

- High social vulnerability (standard deviation greater than 0.5)
- Medium social vulnerability (standard deviations between 0.5 to -0.5)
- Low social vulnerability (standard deviation lower than -0.5)

Table 36 - SoVI dimensions and importance of input variables for Fairfield County (tract level, 2010-2014).

Component	Cardinality	Name	% Variance Explained	Dominant Variables	Component Loading
1	-	Poverty and Class	18.969	MDGRENT	0.715
				PPUNIT	0.706
				QFEMALE	0.650
				PERCAP	0.536
				QSERV	-0.656
				QED12LES	-0.752
				QCVLUN	-0.813
				QPOVTY	-0.865
2	+	Race (Black) and Lack of Wealth	18.069	QFHH	0.819
				QBLACK	0.787
				QNOAUTO	0.626
				QRENTER	0.612
				MEDAGE	-0.576
				MHSEVAL	-0.647
				PERCAP	-0.652
				QRICH200K	-0.674
				QFAM	-0.705
3	+	Age (Old)	12.223	QAGEDEP	0.878
				QSSBEN	0.814
				QUNOCCHU	0.631
				QFEMALE	0.511
4	+	Mobile Homes and Primary Sector Employment	9.92	QMOHO	0.846
				QEXTRACT	0.718
5	+	Ethnicity (Hispanic)	8.288	QESL	0.924
				QHISP	0.861
6	+	Special Needs	5.708	QFEMLBR	0.828
				QNHRES	0.782
7	-	Race (Native American)	4.399	QNATAM	-0.894
		Cumulative Variance Explained	**77.576**		

To investigate the relationship between social vulnerability and hazard risk, the SoVI® map for Fairfield County (Figure 56) is converted from administrative boundaries to hexagon units (Figure 57) identical to the hexagons maps developed in the preceding hazard assessment of the HMP. Furthermore, hazard risk maps are categorized into three risk classes: low, medium, and high risk. By overlaying social vulnerability and hazard risk, the intersection of both elements can be visualized and communicated through color using a bivariate color scheme: the bivariate color scheme consists of hazard risk (y-axis, bluish colors) and social vulnerability (x-axis, redish colors). For example, the color white represents areas of low social vulnerability and low hazard risk whereas purple hexagons have both high social vulnerability and high hazard risk.

[54] Standard deviation is a measure of variability within a data set. It measures the distance to the mean. A large standard deviation means that the observation is further away from the mean of the data set. For normally distributed data, 68.2% of observations fall within 1 and -1 standard deviations.

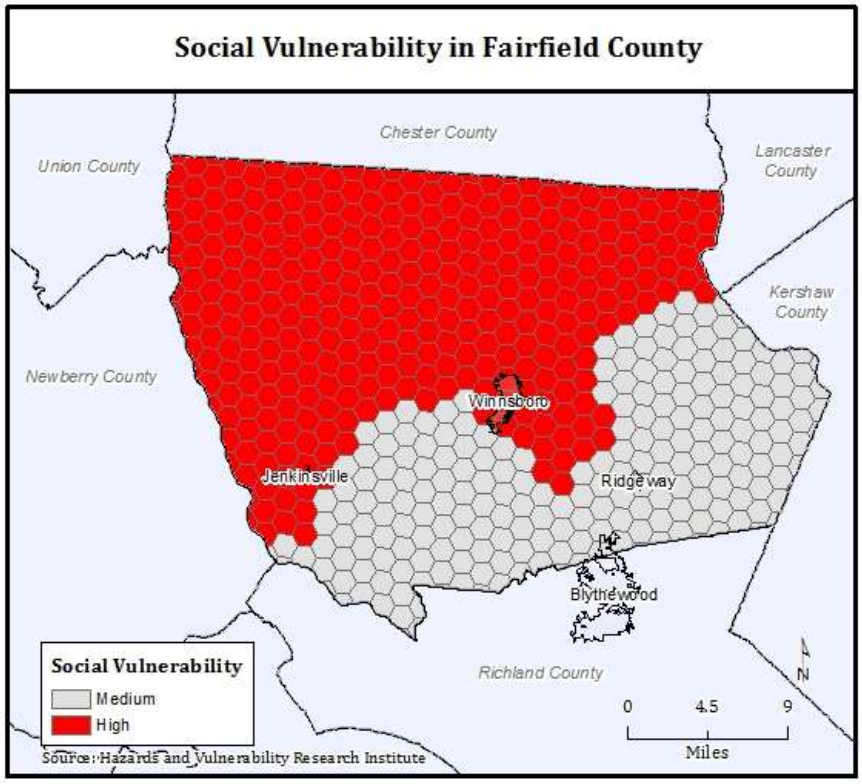

Figure 57 - Hexagon map of social vulnerability in Fairfield County.

C) Flooding

The vulnerability to riverine flooding is most pronounced in 100-year floodplains (1% annual chance of occurrence) in northern Fairfield County due to the presence of socially vulnerable populations (Figure 58). Exposure in the 100-year floodplain is largely limited to residential buildings with only one critical facility located inside the 100-year floodplain (Figure 59). It is important to note that the determination of infrastructure inside or outside the 100-year floodplain was solely based on location and did not take elevation into account. Therefore being located inside the 100-year floodplain does not carry an implication regarding requirements for the National Flood Insurance Program.

Vulnerability statistics for 100-year floods in Fairfield County	**Risk Zones**	
	Outside of 100-year Floodplain	**Inside of 100-year Floodplain**
Critical Infrastructure	20 (95%)	1 (5%)
Building Stock	$3.3 billion (93%)	$0.3 billion (7%)
Population	21,961 (94%)	1,390 (6%)
Population w/high social vulnerability	12,271 (99%)	2 (less than 1%)
Scenario	1000-year Flood Event	

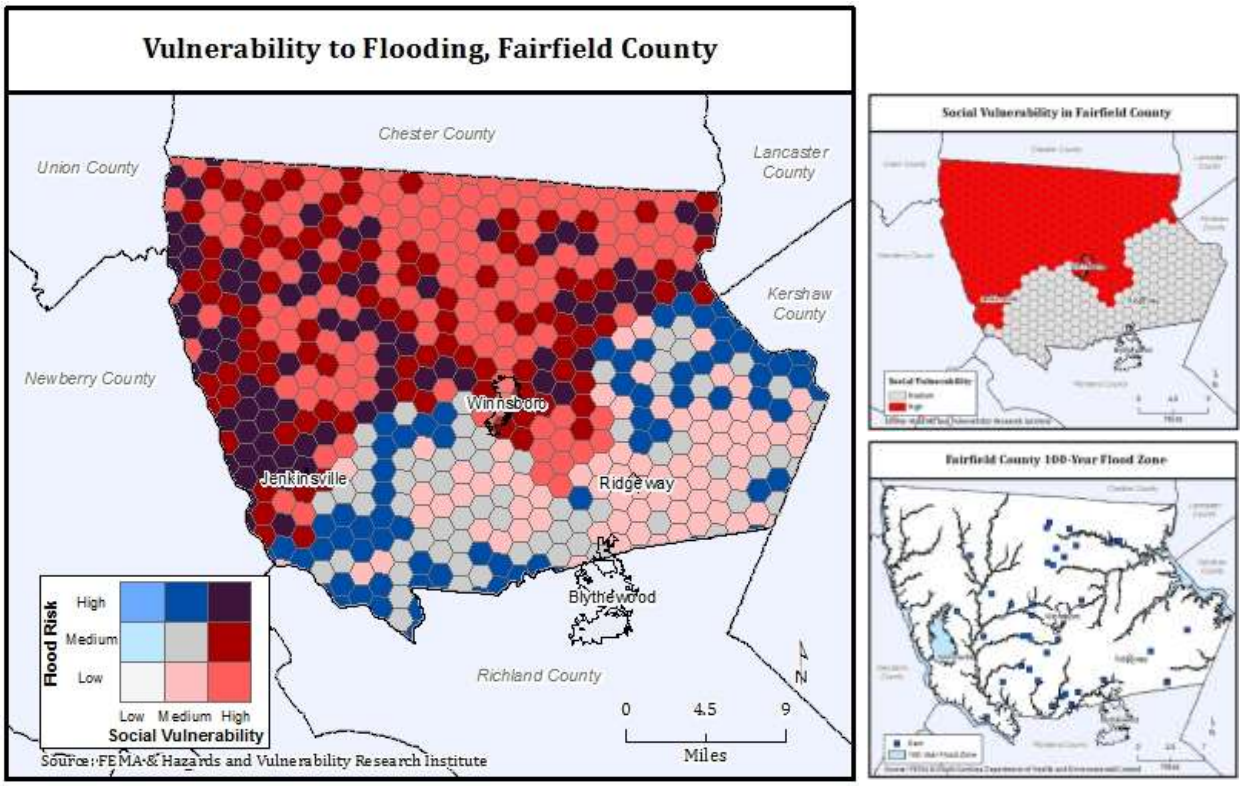

Figure 58 - Vulnerability to floods in Fairfield County.

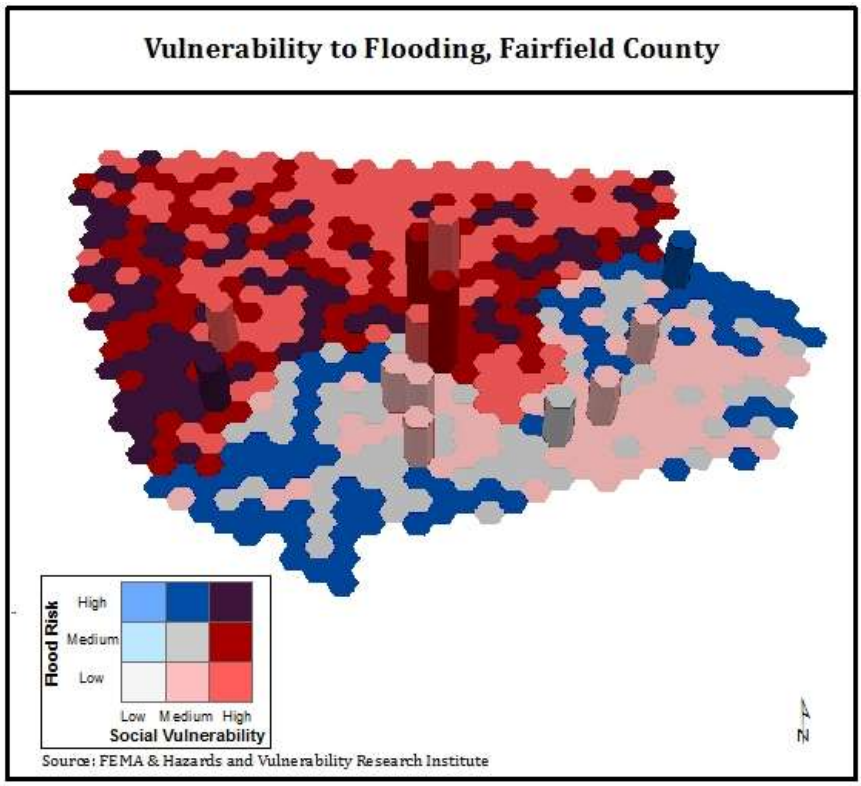

Figure 59 - Vulnerability of critical infrastructure to flooding in Fairfield County.

For a 1,000-year flood event (0.1% annual chance of occurrence) (Figure 60), about 8 buildings (18% of buildings within modelled 1000-year floodplain) would be at least moderately damaged with an estimated property damage of $26 million (nearly all of it residential) with most of the damage occurring east and south of Winnsboro (Figure 61). It is expected that none of the critical infrastructure would receive any damage. The modelled flood's impact area overlaps only around Winnsboro the county's most vulnerable populations. All estimates were derived using HAZUS-MH 2.2.

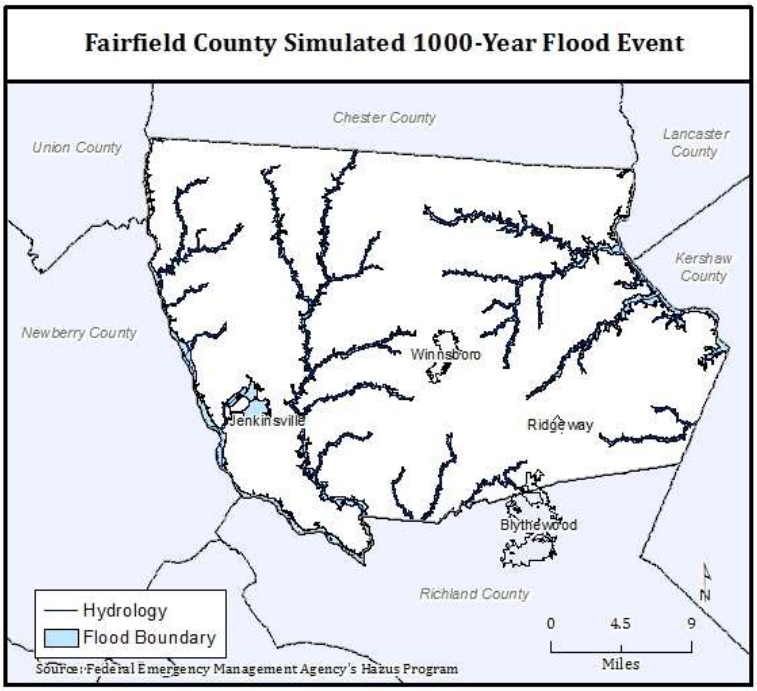

Figure 60 - Modelled 1,000-year flood event in Fairfield County.

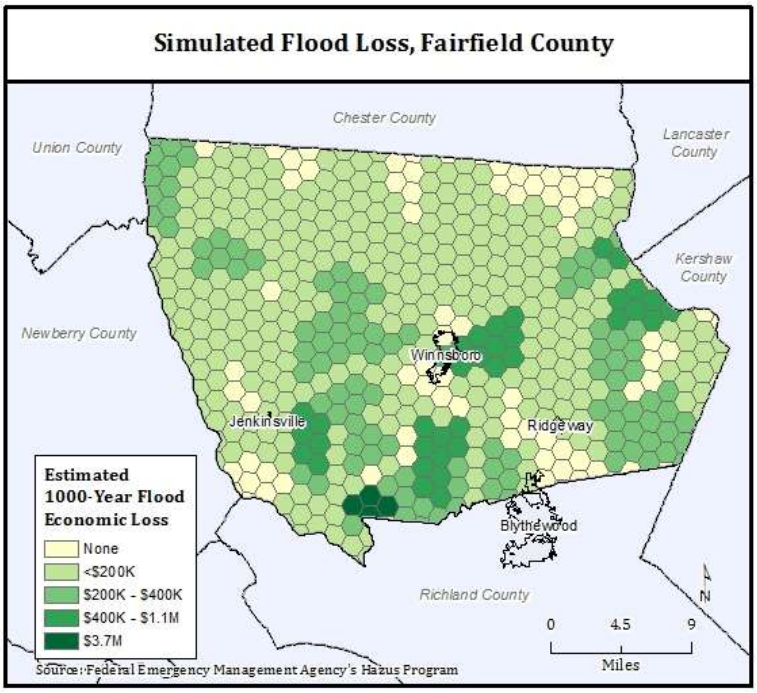

Figure 61 - Damage from a modelled 1,000-year flood event in Fairfield County.

D) Hurricanes & Tropical Storms

The northern part of Fairfield County exhibits a higher vulnerability to tropical storms than the southern region (Figure 62). These areas are characterized by high social vulnerability and an annual average occurrence of 0.11 tropical storms per year. Much of the county's critical infrastructure is located in areas of higher vulnerability (Figure 63).

Vulnerability statistics tropical storms in Fairfield County	**Risk Zones**		
	Low (0.074 tropical storms/year)	**Medium (0.111 tropical storms/year)**	**High**
Critical Infrastructure	0	21 (100%)	n/a
Building Stock	$0.01 billion (<1%)	$3.6 billion (100%)	n/a
Population	105 (<1%)	23,246 (100%)	n/a
Population w/high social vulnerability	105 (1%)	12,168 (99%)	n/a
Scenario	1000-year probabilistic storm		

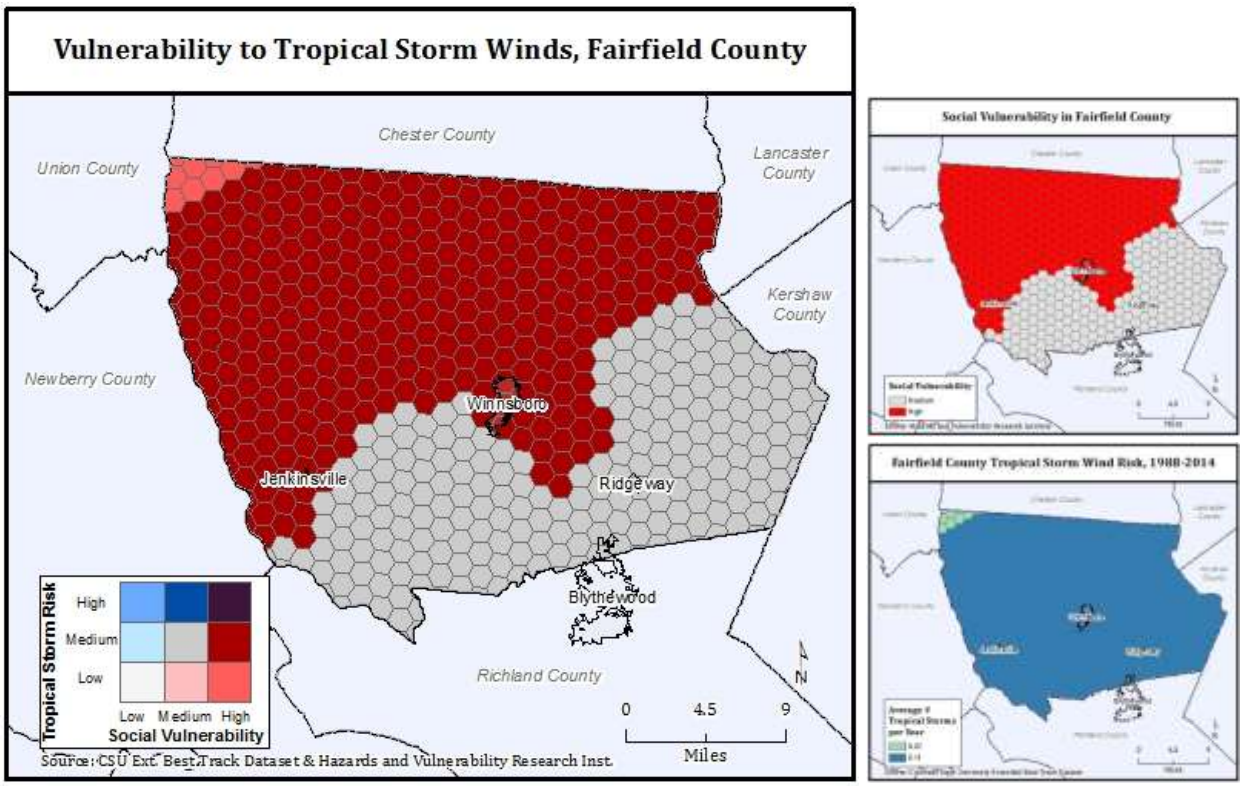

Figure 62 - Vulnerability to tropical storms in Fairfield County.

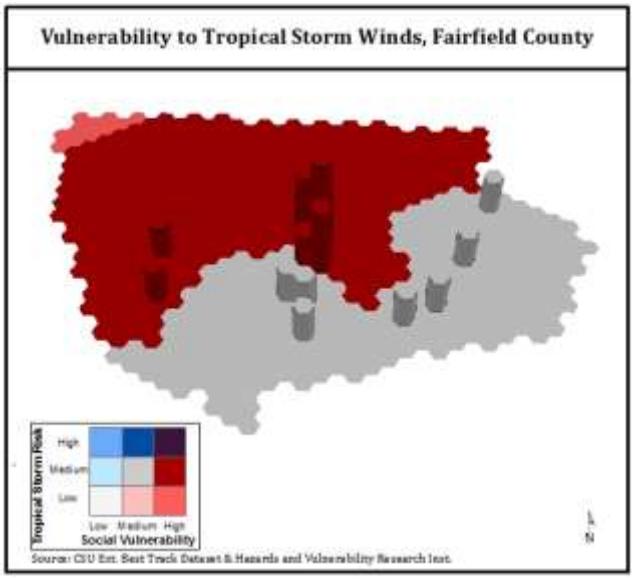

Figure 63 - Vulnerability of critical infrastructure to tropical storms in Fairfield County.

For a 1,000-year hurricane event, Fairfield County is expected to see wind speeds between 96 and 110 miles per hour (Category 2). Such wind speeds are probable with a fast-moving, major hurricane that has a similar track to Hurricane Hugo. About 80% of the county's infrastructure would not experience any damage. About 320 buildings (or 3% of the building stock) would be at least moderately damaged with an estimated property damage of $55 million (nearly all of it residential) with most of the damage occurring south of Winnsboro and Ridgeway as well as along the county border with Kershaw County (Figure 64). It is expected that none of the critical infrastructure will receive any significant damage and all critical infrastructure should be operable within a day. The modelled storm's most catastrophic impact area does not overlap with the county's most vulnerable populations. All estimates were derived using HAZUS-MH 2.2.

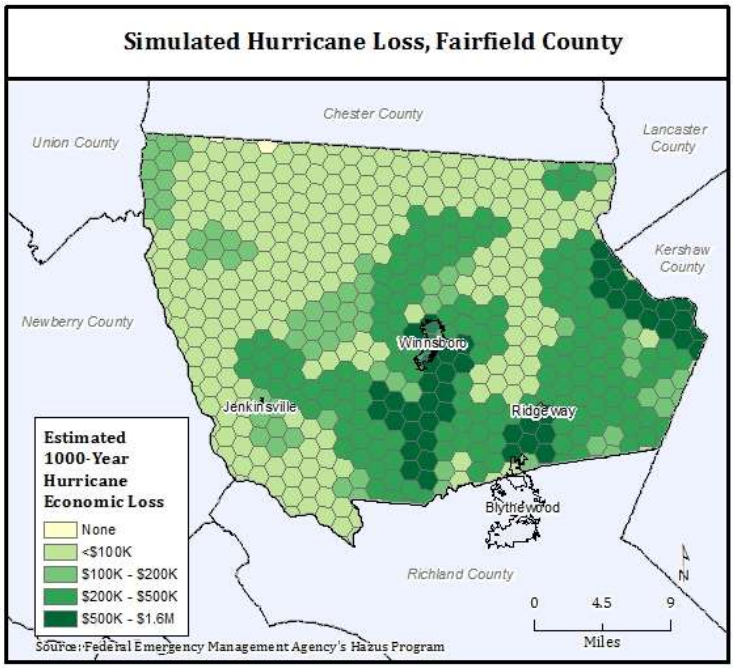

Figure 64 - Damage from a modelled 1,000-year hurricane event in Fairfield County.

E) Tornadoes

The northwestern part of Fairfield County exhibits high vulnerability to tornadoes (Figure 65). In these areas, high social vulnerability coincides with more than 0.625 tornado warning per year. Most of the county's critical infrastructure is located outside of high risk or high vulnerability areas (Figure 66).

Vulnerability statistics for tornadoes in Fairfield County	**Risk Zones**		
	Low (<0.375 warnings/year)	**Medium (0.375-0.625 warnings/year)**	**High (>0.625 warnings/year)**
Critical Infrastructure	4 (19%)	16 (76%)	1 (5%)
Building Stock	$0.8 billion (22%)	$2.6 billion (71%)	$0.3 billion (7%)
Population	4,591 (20%)	16,294 (70%)	2,465 (10%
Population w/high social vulnerability	557 (5%)	10,078 (82%)	1,638 (13%)

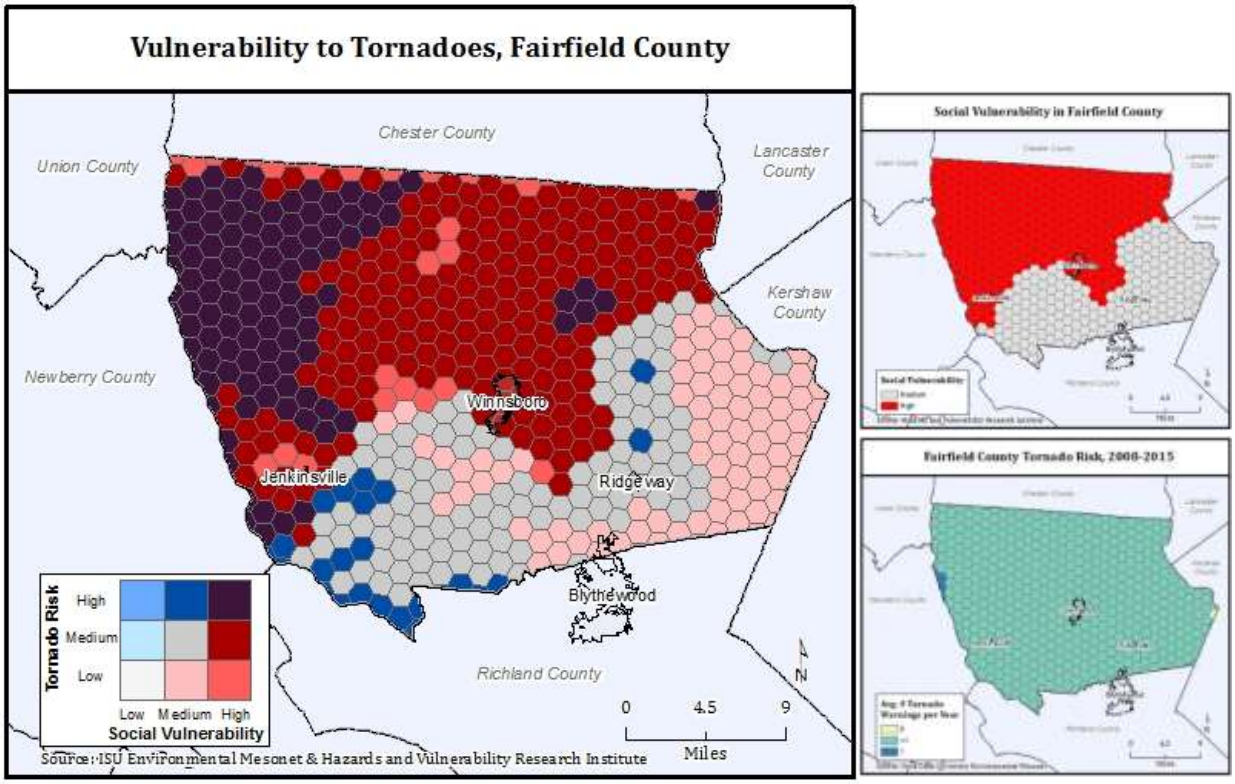

Figure 65 - Vulnerability to tornadoes in Fairfield County.

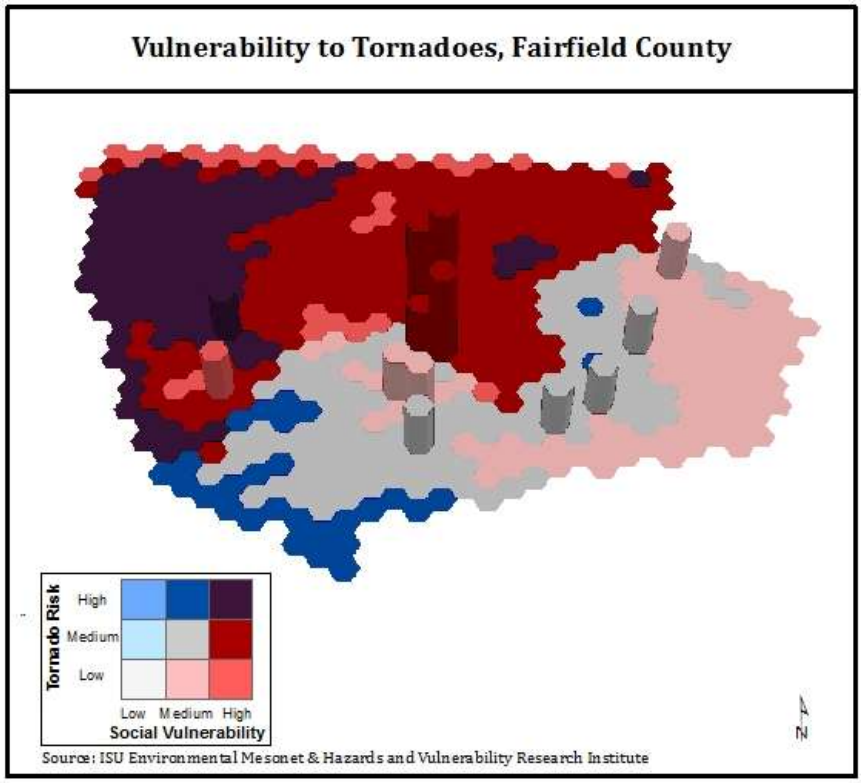

Figure 66 - Vulnerability of critical infrastructure to tornadoes in Fairfield County.

F) Thunderstorms

There central portions of Fairfield County exhibit higher vulnerability to severe thunderstorms particularly around the Towns of Jenkinsville and Winnsboro (Figure 67). In these areas, higher social vulnerability coincides with more than 12 severe tornado warnings per year. A significant amount of the county's critical infrastructure is located in high risk or high vulnerability areas (Figure 68).

Vulnerability statistics for severe thunderstorms in Fairfield County	**Risk Zones**		
	Low (<11 warnings/year)	**Medium (11-12 warnings/year)**	**High (>12 warning/year)**
Critical Infrastructure	0	14 (67%)	7 (33%)
Building Stock	$0.6 billion (16%)	$1.9 billion (52%)	$1.1 billion (32%)
Population	3,258 (14%)	10,515 (45%)	9,578 (41%)
Population w/high social vulnerability	2,799 (23%)	6,018 (49%)	3,456 (28%)

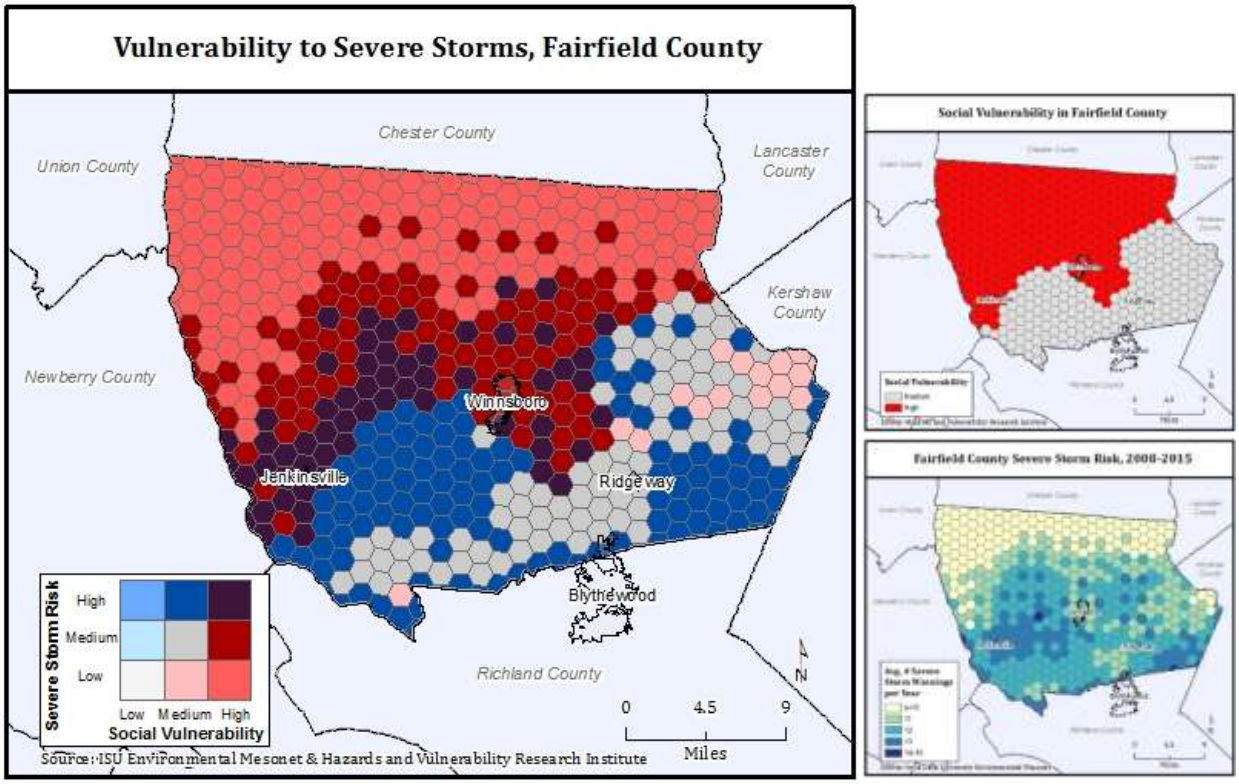

Figure 67 Vulnerability to severe thunderstorms in Fairfield County.

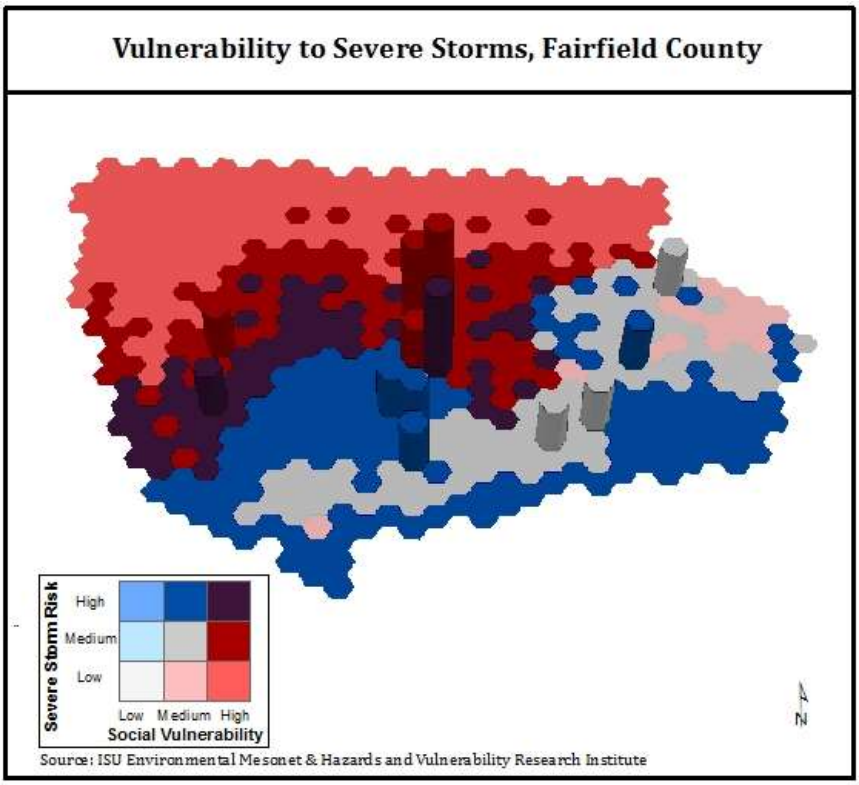

Figure 68 - Vulnerability of critical infrastructure to severe storms in Fairfield County.

G) Lightning

The highest vulnerability to lightning exists in northern Fairfield County where high incidents of cloud-to-ground lightning strikes (on average more than 24,100 strikes per year) occur along with high social vulnerability (Figure 69). Most critical infrastructure is located outside high risk or high vulnerability areas (Figure 70).

Vulnerability statistics for lighting in Fairfield County	**Risk Zones**		
	Low (<22,600 strikes/year)	**Medium (22,600-24,100 strikes/year)**	**High (>24,100 strikes/year)**
Critical Infrastructure	8 (38%)	11 (52%)	(2 (10%)
Building Stock	$1.2 billion (37%)	$1.3 billion (37%)	$1.1 billion (29%)
Population	7,876 (34%)	9,759 (42%)	5,516 (24%)
Population w/high social vulnerability	6,007 (49%)	4,699 (38%)	1,567 (13%)

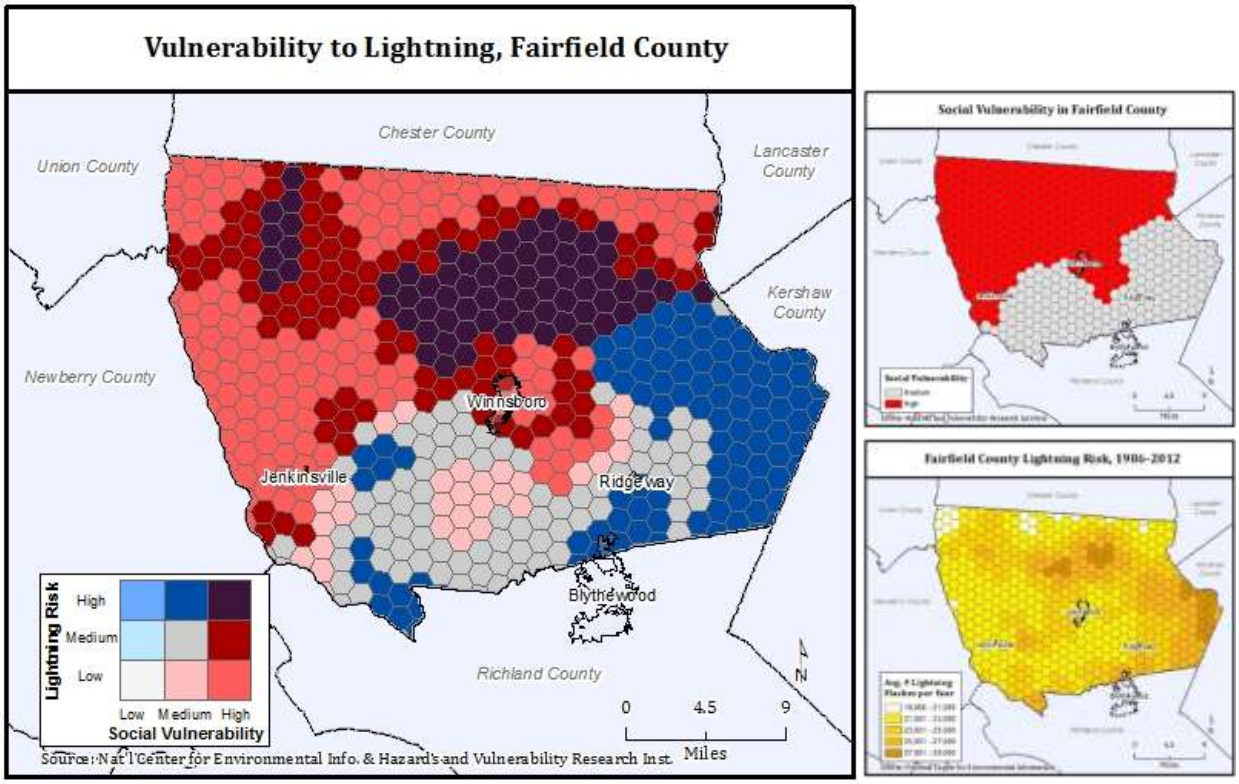

Figure 69 - Vulnerability to lighting in Fairfield County.

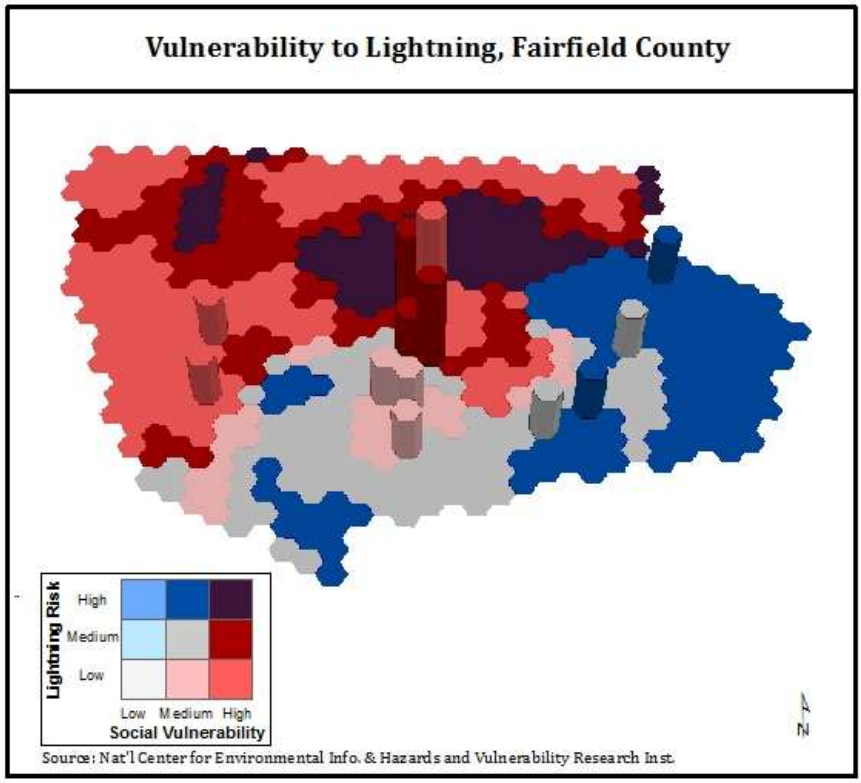

Figure 70 - Vulnerability of critical infrastructure to lightning in Fairfield County.

H) Wind

The highest vulnerability to winds exceeding 30 knots (34.5 mph) exists southwest of Jenkinsville and southeast of Winnsboro where incidents of high winds (more than 1.7 days per year) occur along with high social vulnerability (Figure 71). About a third of critical infrastructure is located in high risk areas, i.e. in southern Fairfield County (Figure 72).

Vulnerability statistics for winds exceeding 30 knots in Fairfield County	**Risk Zones**		
	Low (<1.6 days/year)	**Medium (1.6-1.7 days/year)**	**High (>1.7 days/year)**
Critical Infrastructure	0	15 (71%)	6 (29%)
Building Stock	$0.4 billion (10%)	$2 billion (55%)	$1.3 billion (35%)
Population	2,788 (12%)	10,969 (47%)	9,594 (41%)
Population w/high social vulnerability	2,788 (23%)	8,597 (70%)	888 (7%)

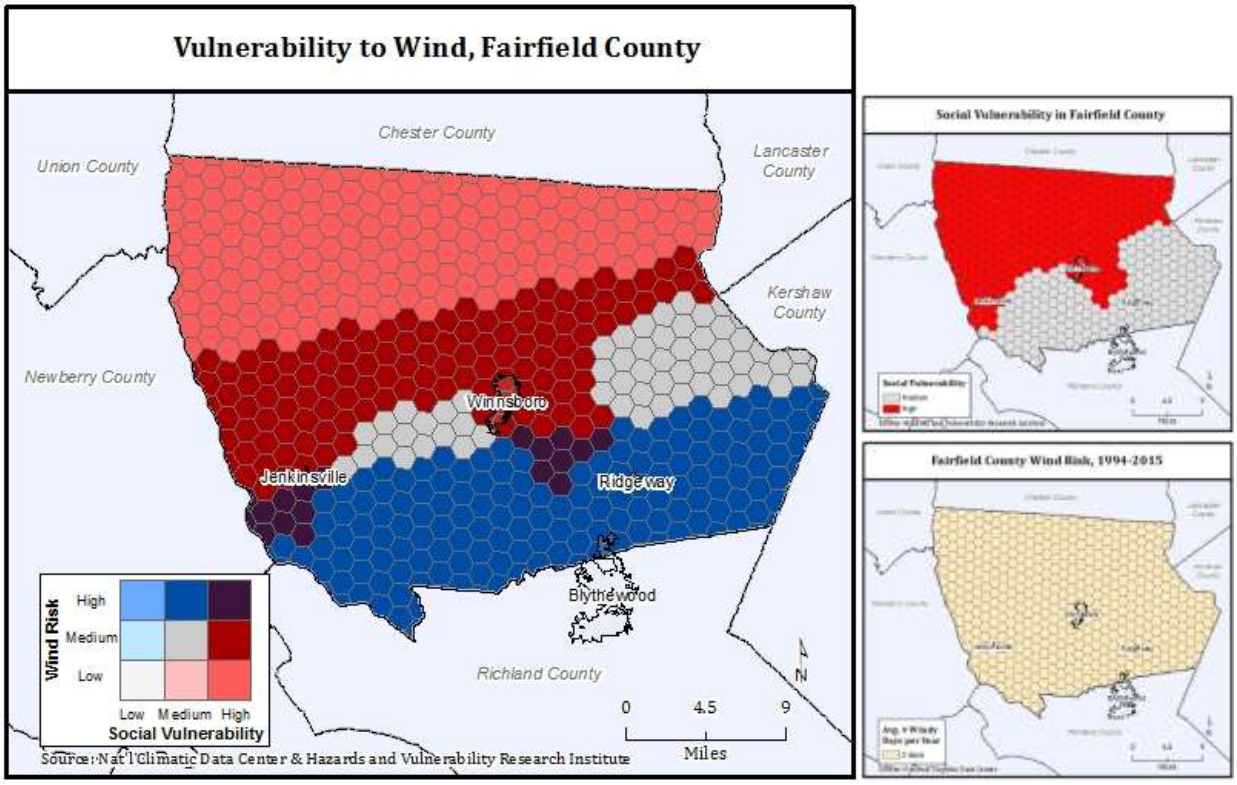

Figure 71 - Vulnerability to high wind in Fairfield County.

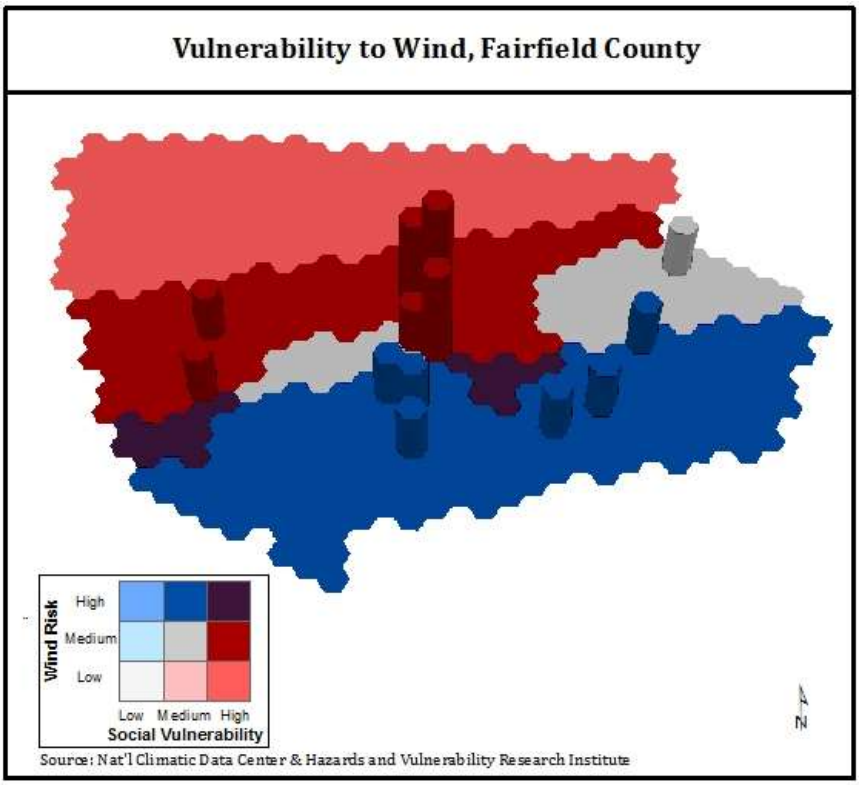

Figure 72 - Vulnerability of critical infrastructure to high wind in Fairfield County.

I) Hail

Areas of high vulnerability to hail exist near Winnsboro where areas of high social vulnerability overlap with frequent hail events (Figure 73). No critical infrastructure is located in high risk or high vulnerability areas (Figure 74).

Vulnerability statistics for hail in Fairfield County	***Risk Zones***		
	Low (no hail events)	***Medium (0.033 events/year)***	***High (>0.067 events/year)***
Critical Infrastructure	17 (92%)	4 (19%)	0
Building Stock	$3 billion (84%)	$0.5 billion (14%)	$0.06 billion (2%)
Population	21,533 (92%)	1,439 (6%)	379 (2%)
Population w/high social vulnerability			

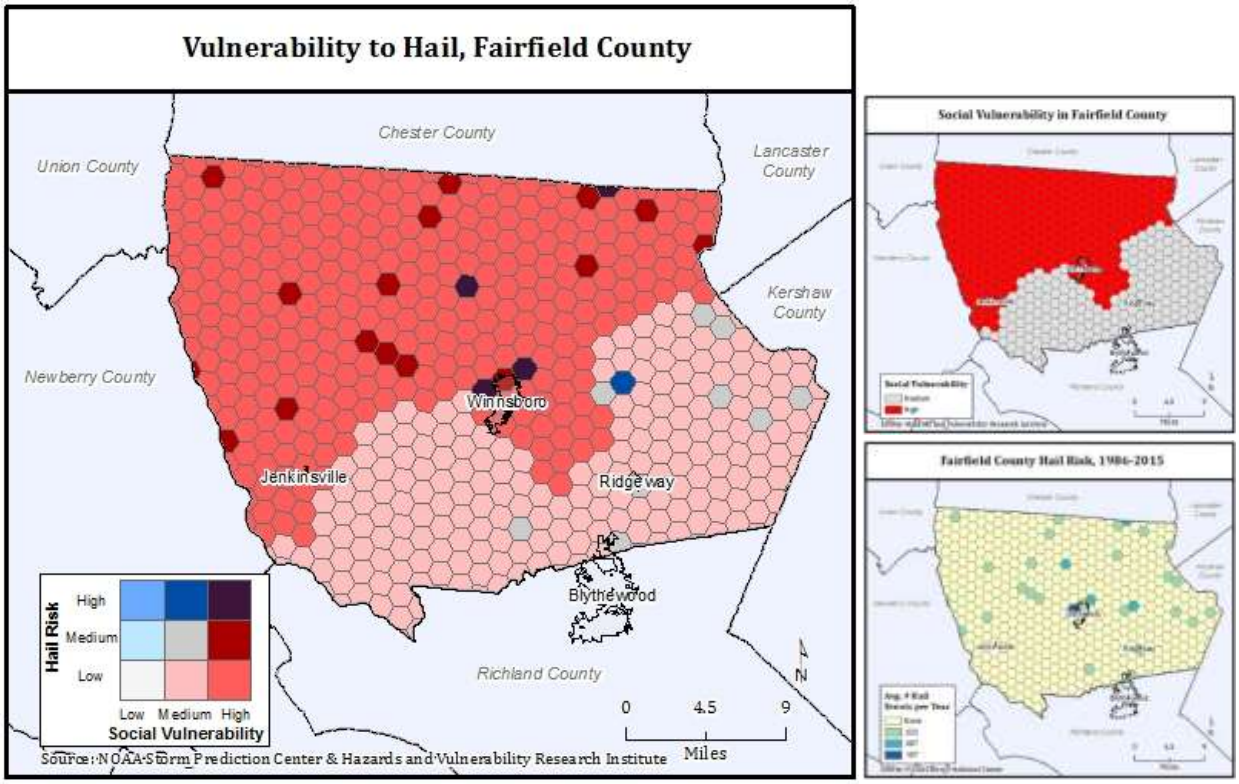

Figure 73 - Vulnerability to hail in Fairfield County.

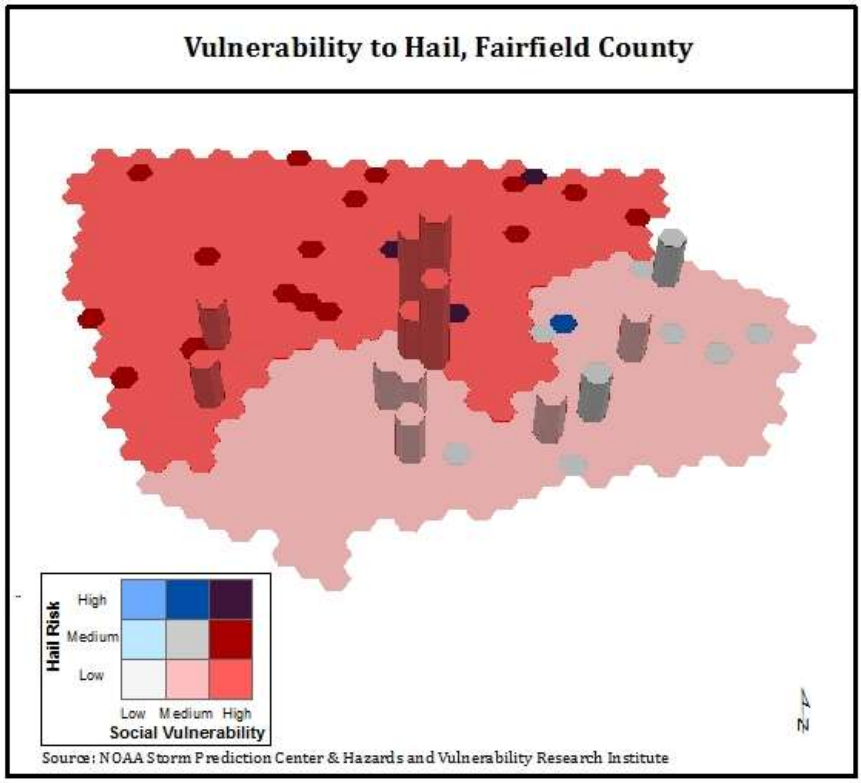

Figure 74 - Vulnerability of critical infrastructure to hail in Fairfield County.

J) Fog

The highest vulnerability to fog exists around Jenkinsville and southeast of Winnsboro. Particularly in the Jenkinsville area, high social vulnerability coincides with more than 30.3 fog days per year (Figure 75). About one third of the county's critical infrastructure is located in areas with a high number of fog days (Figure 76).

Vulnerability statistics for fog in Fairfield County	**Risk Zones**		
	Low (<10.4 days/year)	**Medium (10.4-30.3 days/year)**	**High (>30.3 days/year)**
Critical Infrastructure	1 (5%)	14 (67%)	6 (28%)
Building Stock	$0.4 billion (10%)	$2.1 billion (57%)	$1.2 billion (33%)
Population	3,171 (13%)	10,920 (47%)	9,260 (40%)
Population w/high social vulnerability	3,171 (26%)	7,759 (63%)	1,343 (11%)

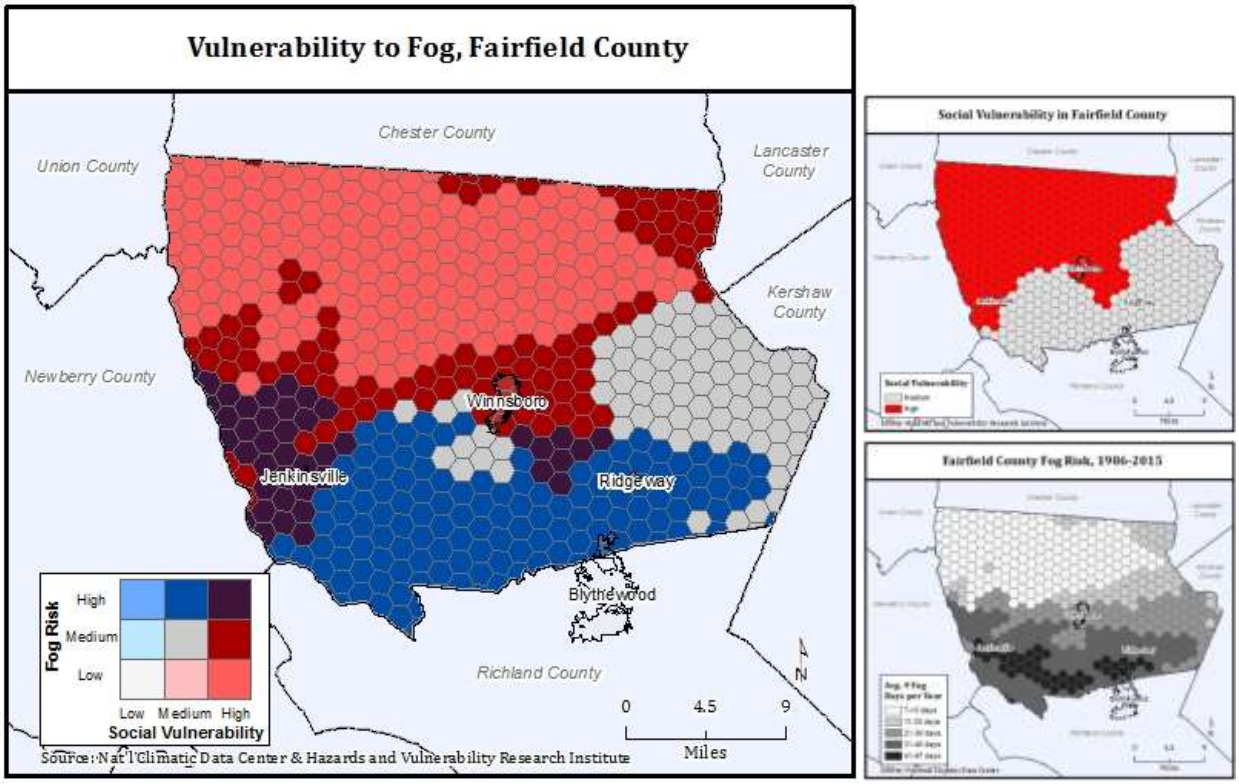

Figure 75 - Vulnerability to fog in Fairfield County.

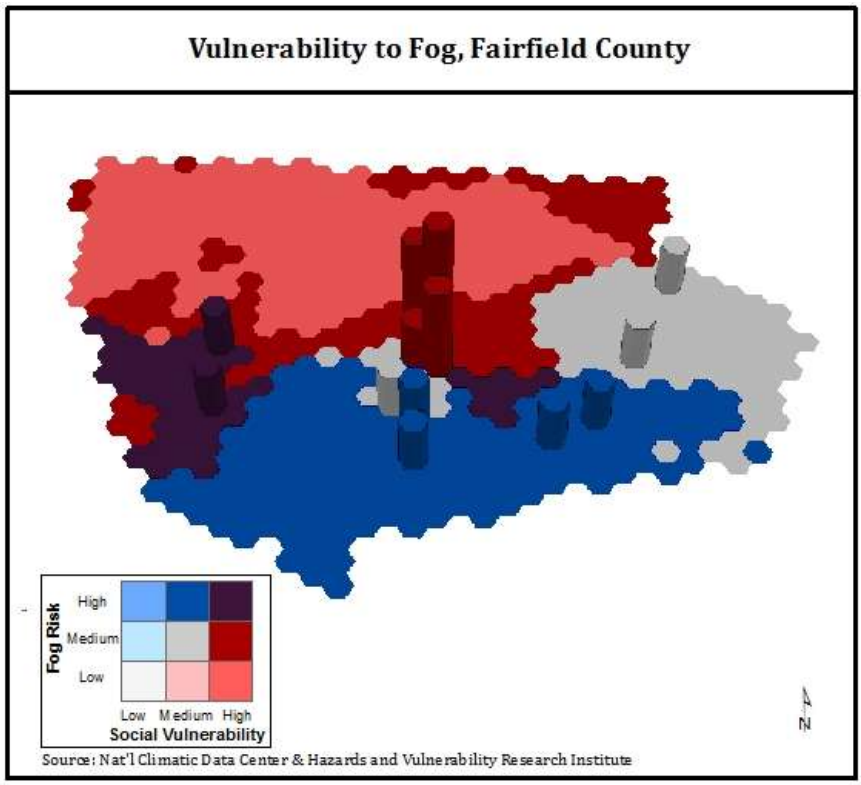

Figure 76 - Vulnerability of critical infrastructure to fog in Fairfield County.

K) Winter Weather & Ice Storms

Large clusters of high vulnerability, i.e. high social vulnerability along with frequent days of winter weather, exist in central Fairfield County around Winnsboro as well as in the western-central part of the county (Figure 77). More than 75% of the county's critical infrastructure is located in these high vulnerability or high risk areas (Figure 78).

Vulnerability statistics for winter weather in Fairfield County	***Risk Zones***		
	Low (<1.4 days/year)	***Medium (1.4-1.6 days/year)***	***High (>1.6 days/year)***
Critical Infrastructure	2 (10%)	3 (14%)	16 (76%)
Building Stock	$0.9 billion (26%)	$1 billion (28%)	$1.6 billion (46%)
Population	4,947 (21%)	7,578 (33%)	10,826 (46%)
Population w/high social vulnerability	2,032 (17%)	2,954 (24%)	7,287 (59%)

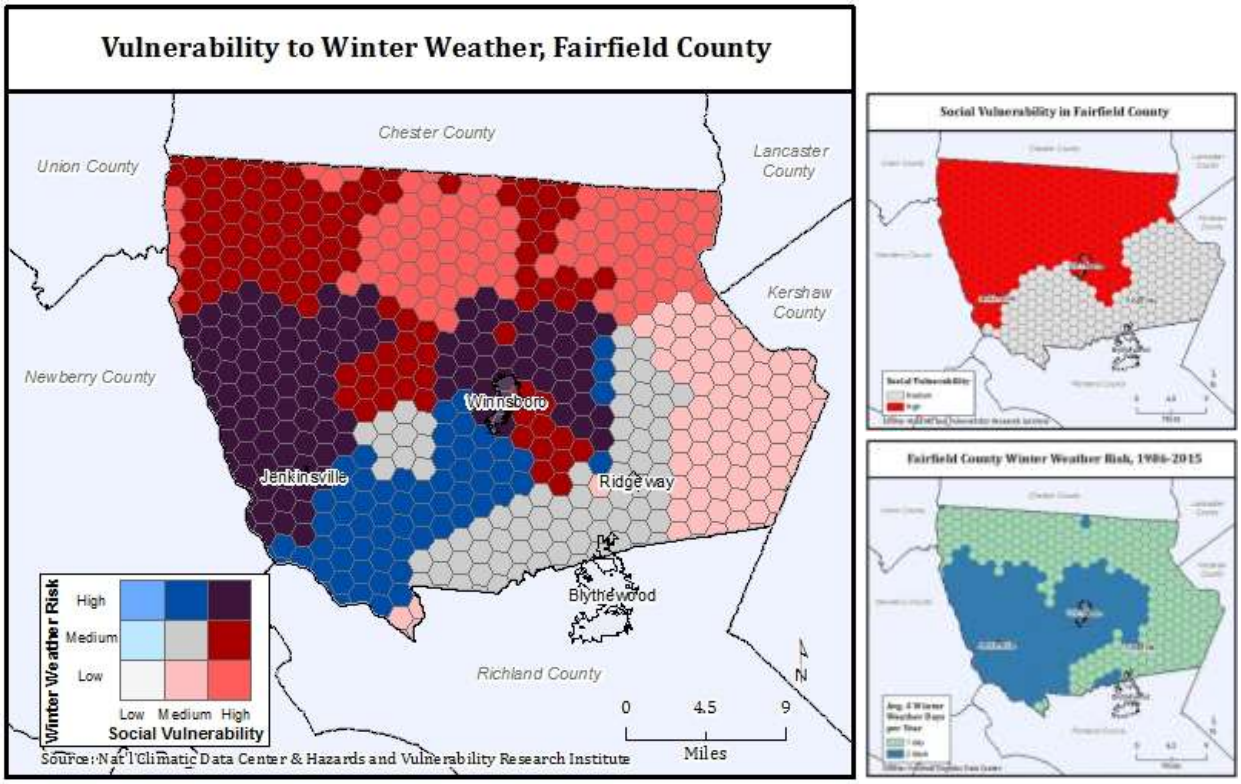

Figure 77 - Vulnerability to winter weather in Fairfield County.

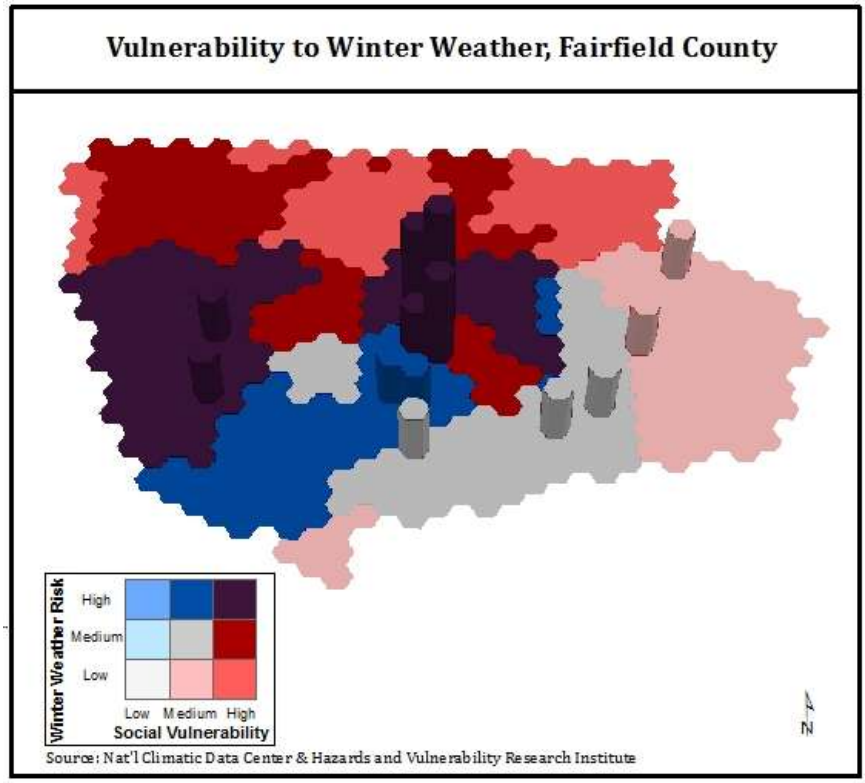

Figure 78 - Vulnerability of critical infrastructure to winter weather in Fairfield County.

L) Temperature Extremes

The northern half of Fairfield County is most vulnerable to temperatures below 32°F (Figure 79). This region not only experiences more than 60.5 days below 32°F but also exhibits high levels of social vulnerability. None of the critical infrastructure is located in high vulnerability or risk areas (Figure 80).

Vulnerability statistics for cold temperatures in Fairfield County	**Risk Zones**		
	Low (<57.4 days/year)	**Medium (57.4-60.5 days/year)**	**High (>60.5 days/year)**
Critical Infrastructure	6 (29%)	15 (71%)	0
Building Stock	$1.2 billion (35%)	$2 billion (54%)	$0.4 billion (11%)
Population	9,535 (41%)	11,041 (47%)	2,775 (12%)
Population w/high social vulnerability	675 (5%)	8,823 (72%)	2,775 (23%)

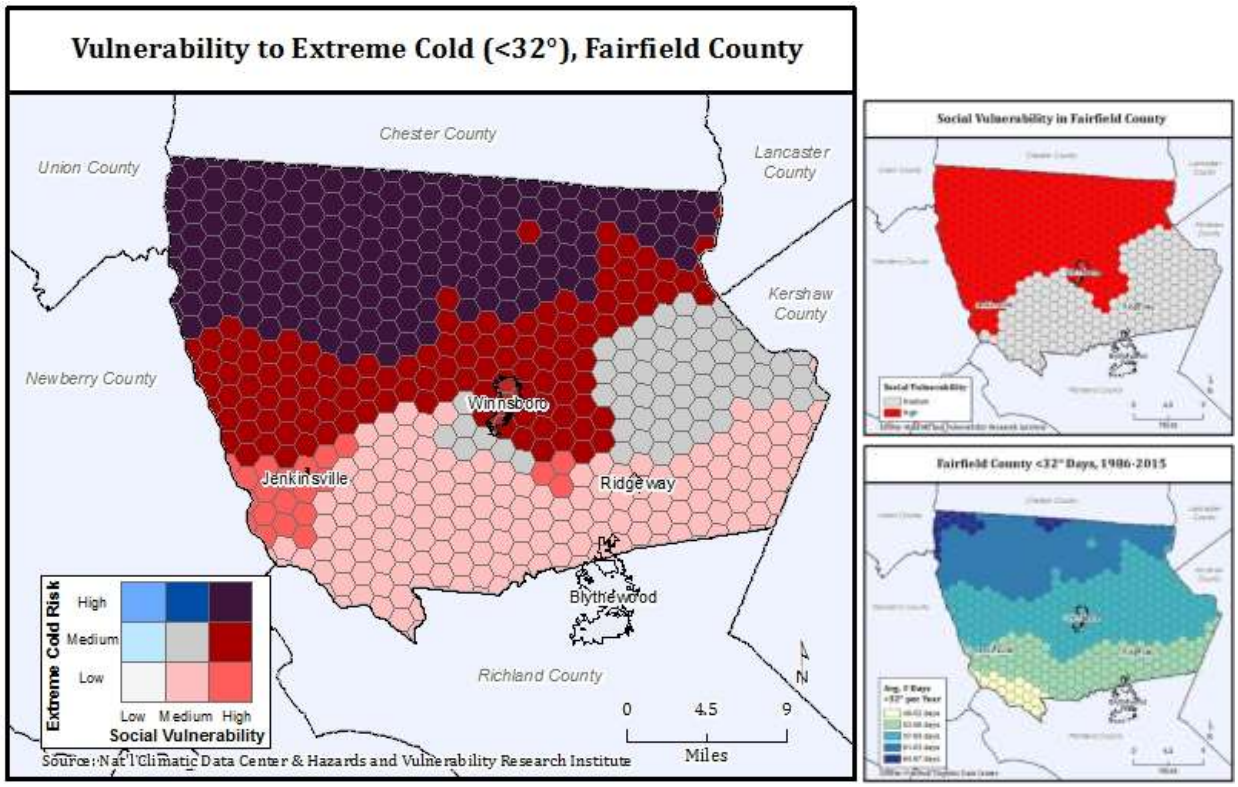

Figure 79 - Vulnerability to cold weather in Fairfield County.

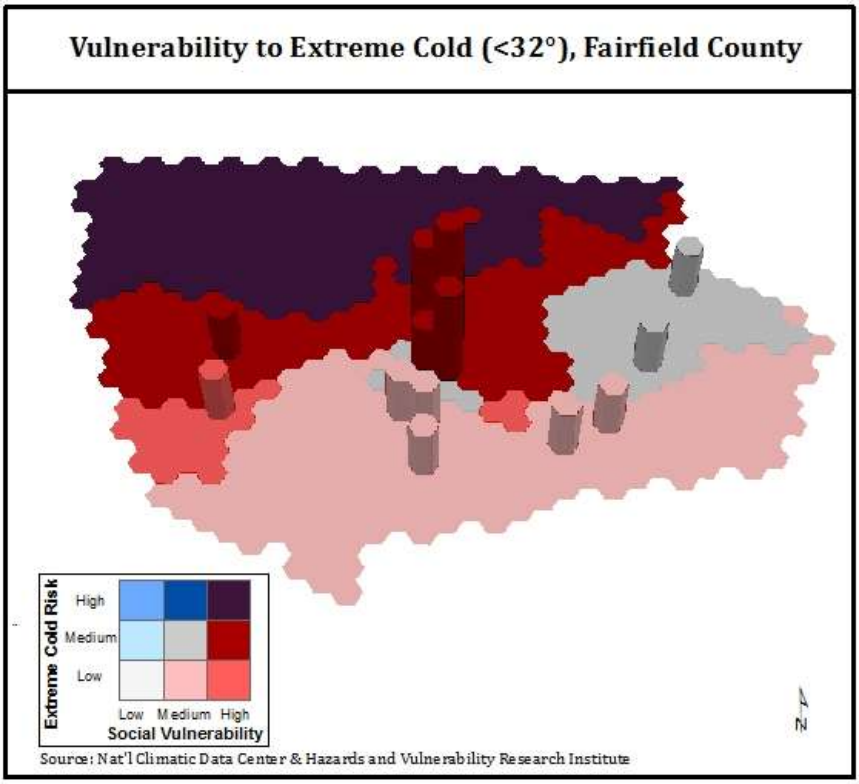

Figure 80 - Vulnerability of critical infrastructure to cold weather in Fairfield County.

While some areas in the far north of Fairfield County are also vulnerable to extreme cold temperatures, it is also portions of central Fairfield County that are most vulnerable to extreme cold temperatures, i.e. areas where high social vulnerability coincides with more than 15 days per year of cold temperatures in the 95th percentile[55] (Figure 81). More than three quarters of the county's critical infrastructure is located in these highly vulnerable areas (Figure 82).

Vulnerability statistics for extreme cold temperatures in Fairfield County[56]	**Risk Zones**		
	Low (<14.7 days/year)	**Medium (14.7-15.0 days/year)**	**High (>15.0 days/year)**
Critical Infrastructure	5 (24%)	0	16 (76%)
Building Stock	$1.4 billion (38%)	$0.5 billion (15%)	$1.7 billion (47%)
Population	8,394 (36%)	4,728 (20%)	10,229 (44%)
Population w/high social vulnerability	1,517 (12%)	3,086 (25%)	7,670 (63%)

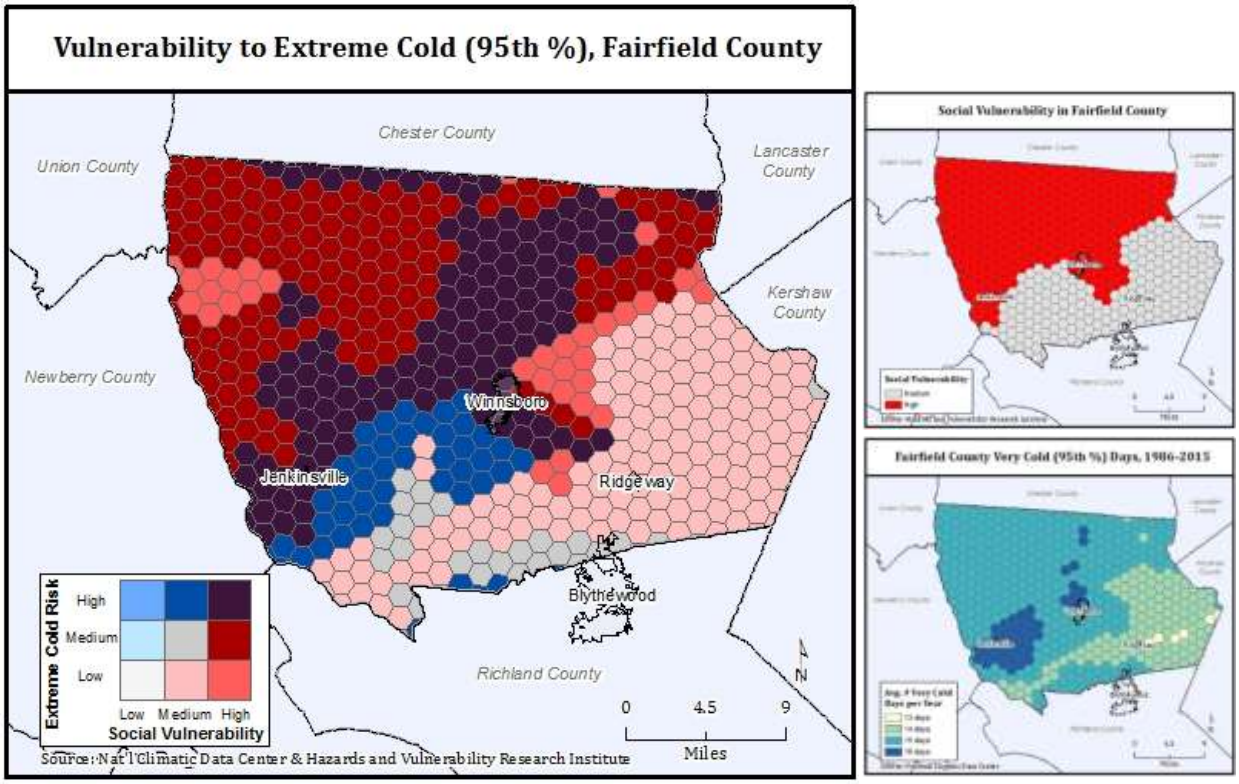

Figure 81 - Vulnerability to extreme cold temperatures in Fairfield County.

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[55] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Fairfield County.

[56] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County

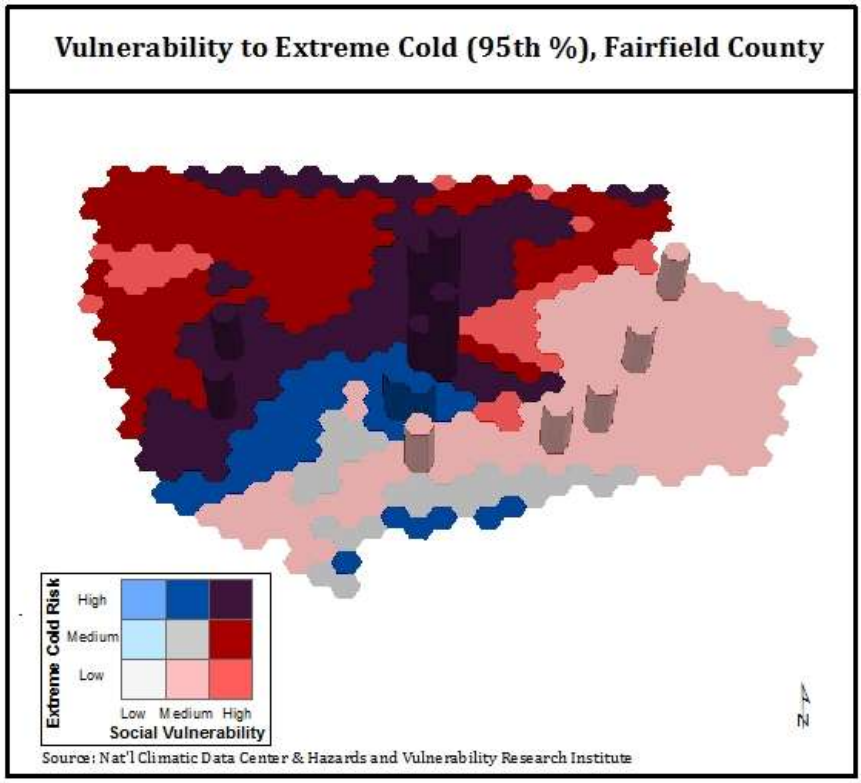


Figure 82 - Vulnerability of critical infrastructure to cold weather extremes in Fairfield County.

Central and western-central Fairfield County are the most vulnerable areas to temperatures above 95°F (Figure 83). These regions not only experience more than 20.2 days per year above 95°F but also exhibit high levels of social vulnerability. About 20% of the county's critical infrastructure is located in these high vulnerability areas (Figure 84).

Vulnerability statistics for hot temperatures in Fairfield County	**Risk Zones**		
	Low (<18..7 days/year)	**Medium (18.7-20.2 days/year)**	**High (>20.2 days/year)**
Critical Infrastructure	4 (19%)	13 (62%)	4 (19%)
Building Stock	$1.3 billion (36%)	$1.4 billion (39%)	$0.9 billion (25%)
Population	7,424 (32%)	8,674 (37%)	7,252 (31%)
Population w/high social vulnerability	5,739 (47%)	4,445 (36%)	2,088 (17%)

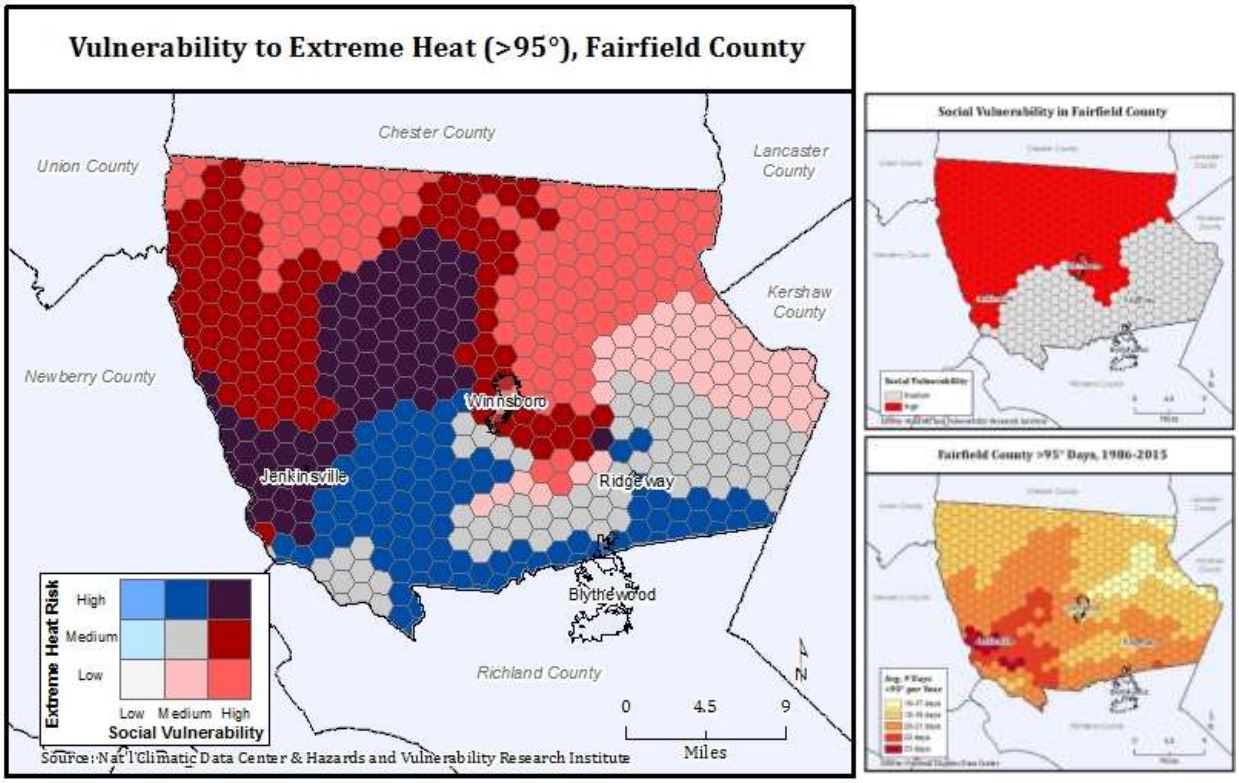


Figure 83 - Vulnerability to hot weather in Fairfield County.

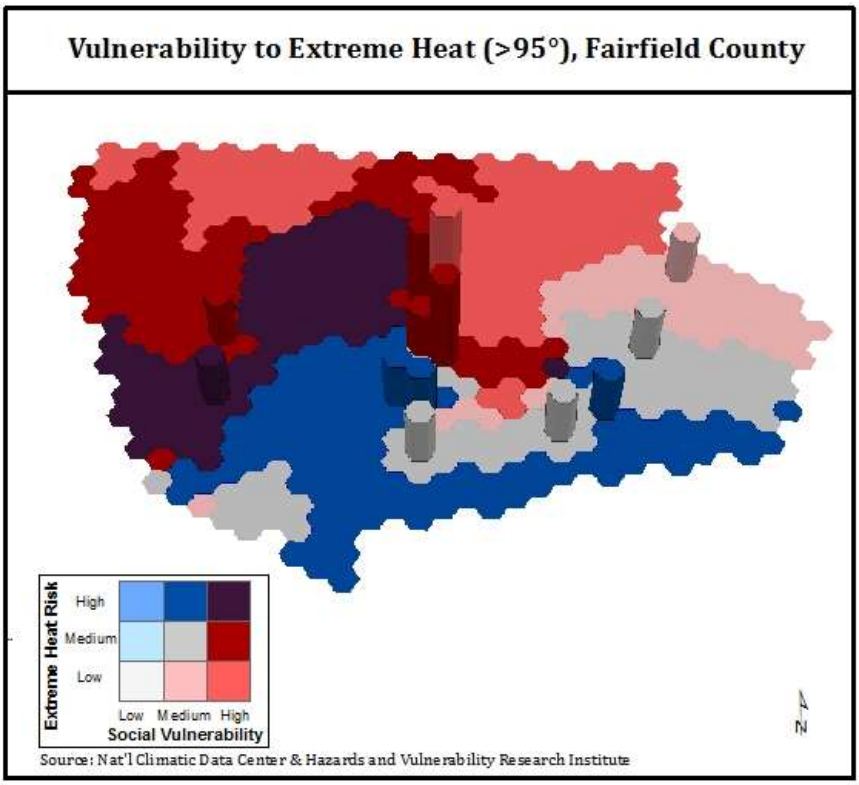


Figure 84 - Vulnerability of critical infrastructure to hot weather in Fairfield County.

Central Fairfield County is not only vulnerable to hot weather in general but also to hot temperature extremes, i.e. areas where high social vulnerability coincides with more than 4.2 days per year of hot temperatures in the 95th percentile[57] (Figure 85). About one third of the county's critical infrastructure, building stock, and population are located in these highly vulnerable areas (Figure 86).

Vulnerability statistics for extreme hot temperatures in Fairfield County[58]	**Risk Zones**		
	Low (<4.0 days/year)	**Medium (4.0-4.2 days/year)**	**High (>4.2 days/year)**
Critical Infrastructure	0	13 (62%)	8 (38%)
Building Stock	$0.5 billion (15%)	$1.7 billion (48%)	$1.3 billion (37%)
Population	4,456 (19%)	10,691 (46%)	8,204 (35%)
Population w/high social vulnerability	2,739 (22%)	5,675 (46%)	3,858 (31%)

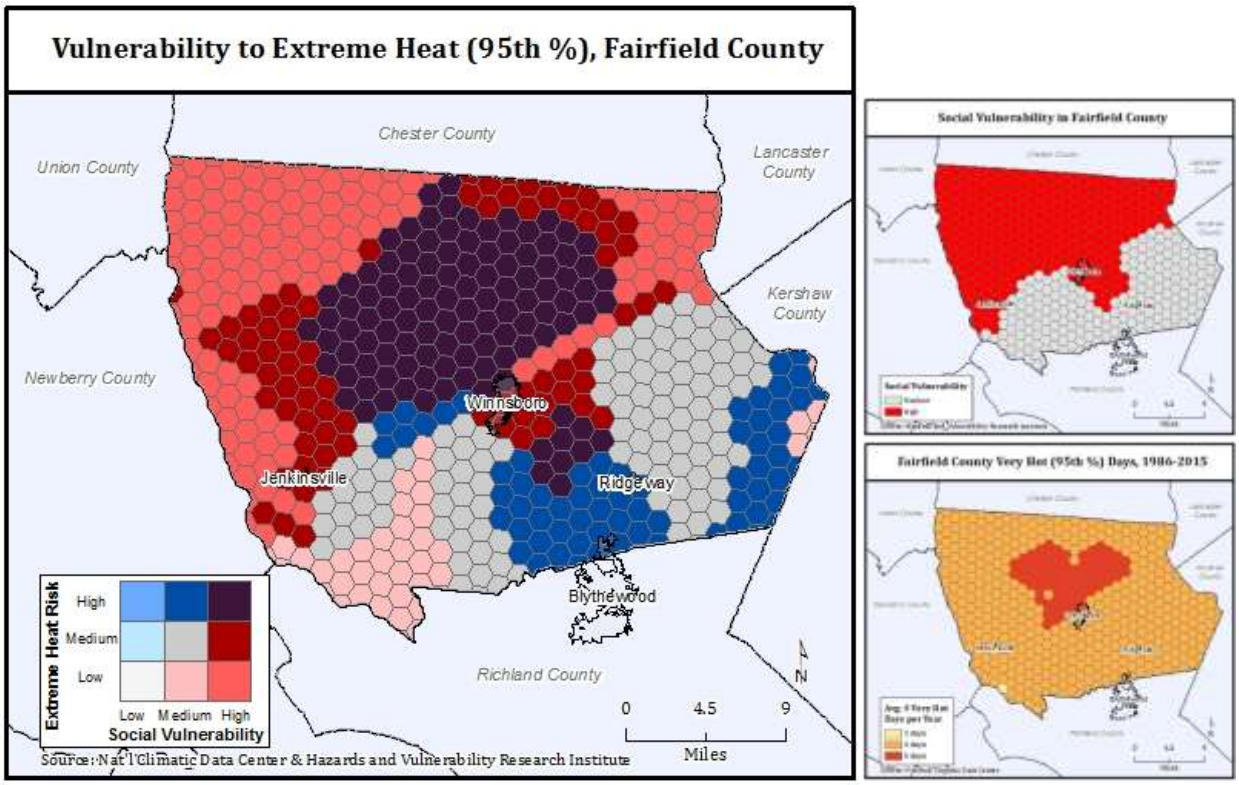


Figure 85 - Vulnerability to extreme hot temperatures in Fairfield County.

[57] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Fairfield County.

[58] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

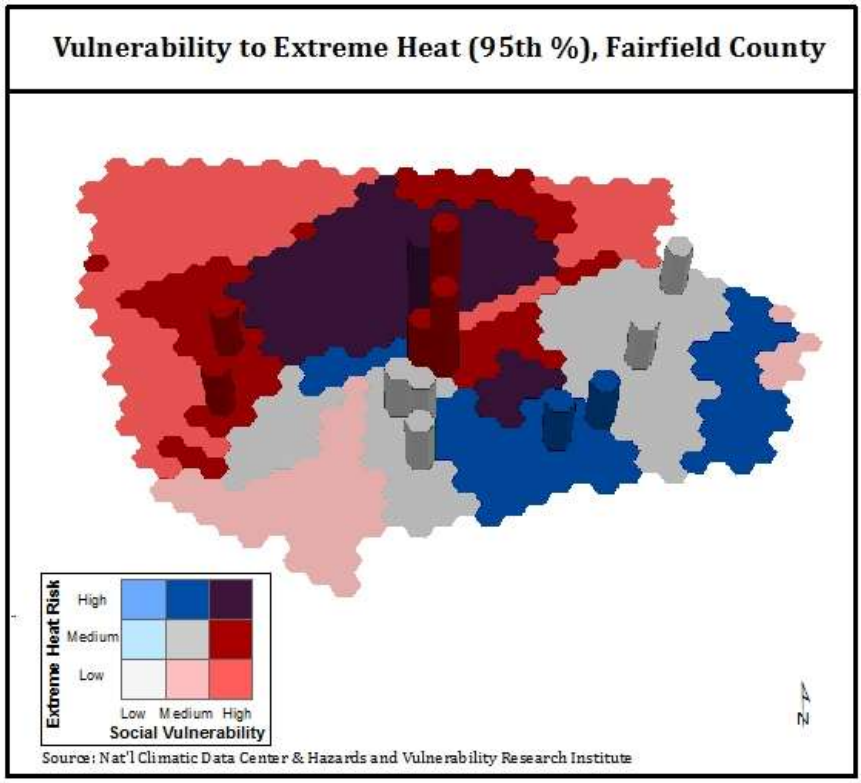


Figure 86 - Vulnerability of critical infrastructure to extreme hot temperatures in Fairfield County.

M) Wildfires

The highest vulnerability to wildfires occurs in northern Fairfield County where high social vulnerability overlaps with more than 0.1 wildfire events per year (Figure 87). A significant amount of critical infrastructure, building stock, and population are located in this high vulnerability area (Figure 88).

Vulnerability statistics for wildfires in Fairfield County	**Risk Zones**		
	Low (<0.04 events/years)	**Medium (0.04-0.1 events/year)**	**High (>0.1 events/year)**
Critical Infrastructure	0	5 (26%)	14 (74%)
Building Stock	$0.6 billion (15%)	$0.9 billion (25%)	$2.2 billion (60%)
Population	5,071 (22%)	5,746 (24%)	12,534 (54%)
Population w/high social vulnerability	2,636 (21%)	2,529 (21%)	7,107 (58%)

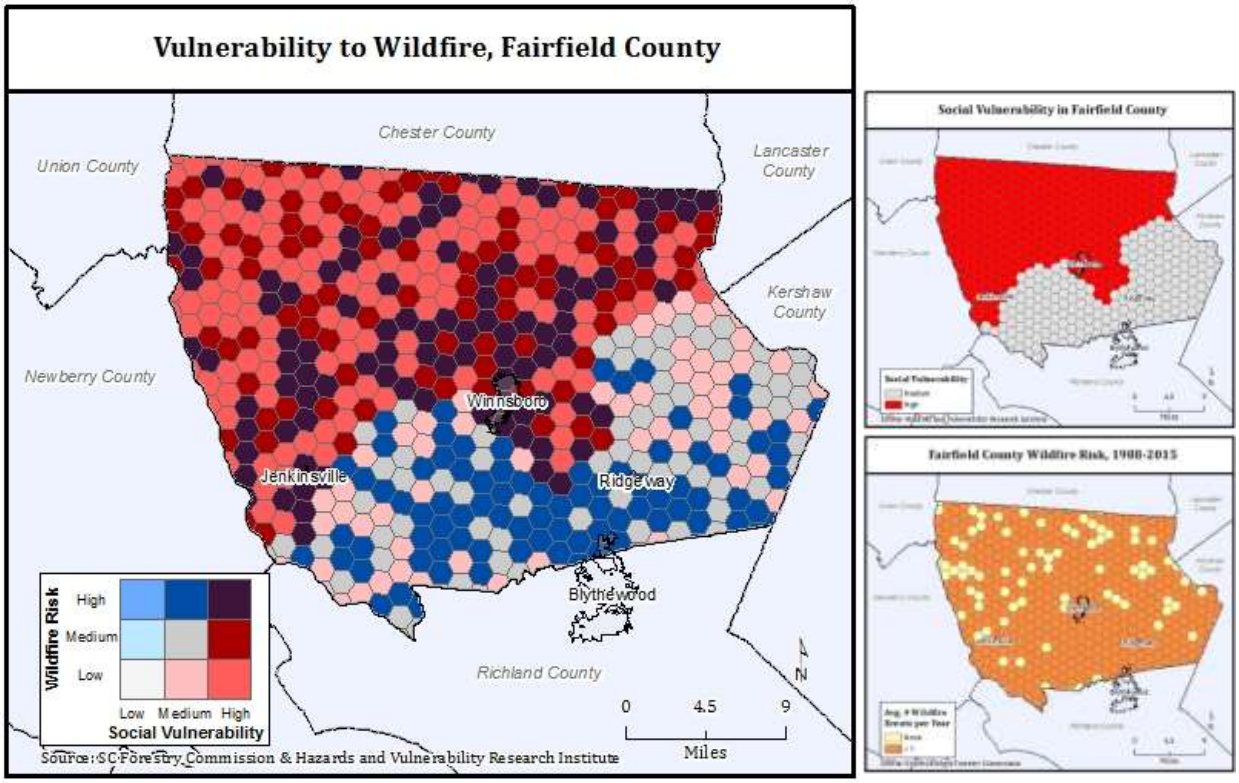


Figure 87 - Vulnerability to wildfires in Fairfield County.

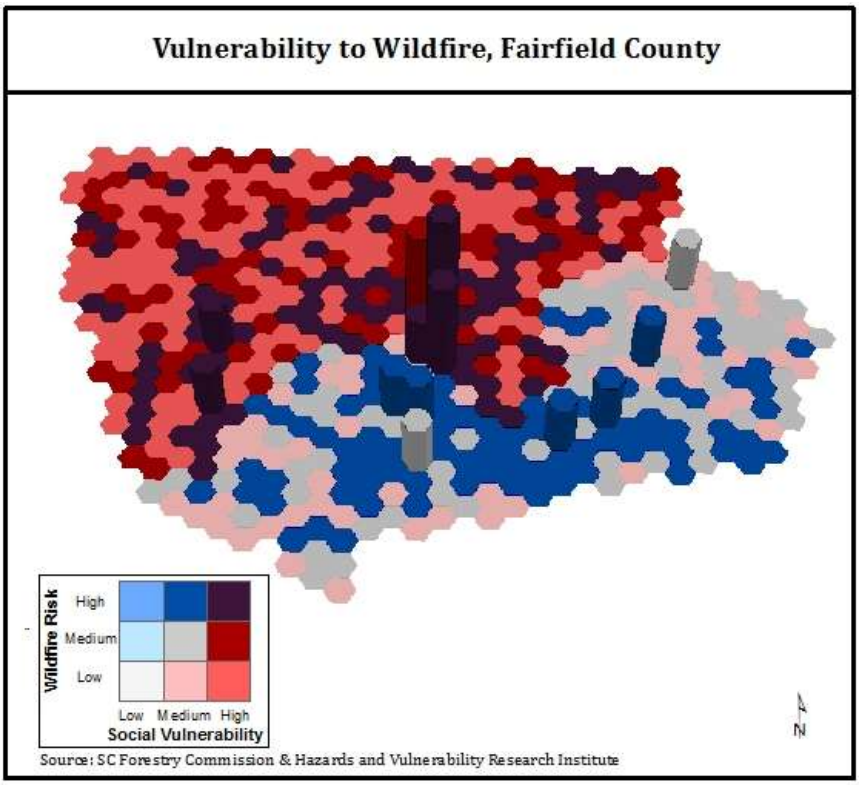


Figure 88 - Vulnerability of critical infrastructure to wildfires in Fairfield County.

N) Droughts

Northwestern Fairfield County is highly vulnerable to droughts because high social vulnerability coincides with more than 22.6 weeks of drought per year (Figure 89). Less than 20% of the county's assets such as critical infrastructure, building stock, or population are located in this area (Figure 90).

Vulnerability statistics for droughts in Fairfield County	**Risk Zones**		
	Low (<21.4 weeks/year)	**Medium (21.4-22.6 weeks/year)**	**High (>22.6 weeks/year)**
Critical Infrastructure	4 (14%)	14 (67%)	3 (19%)
Building Stock	$1.3 billion (36%)	$1.8 billion (49%)	$0.5 billion (15%)
Population	7,510 (32%)	11,772 (50%)	4,069 (18%)
Population w/high social vulnerability	1,410 (11%)	7,481 (61%)	3,381 (28%)

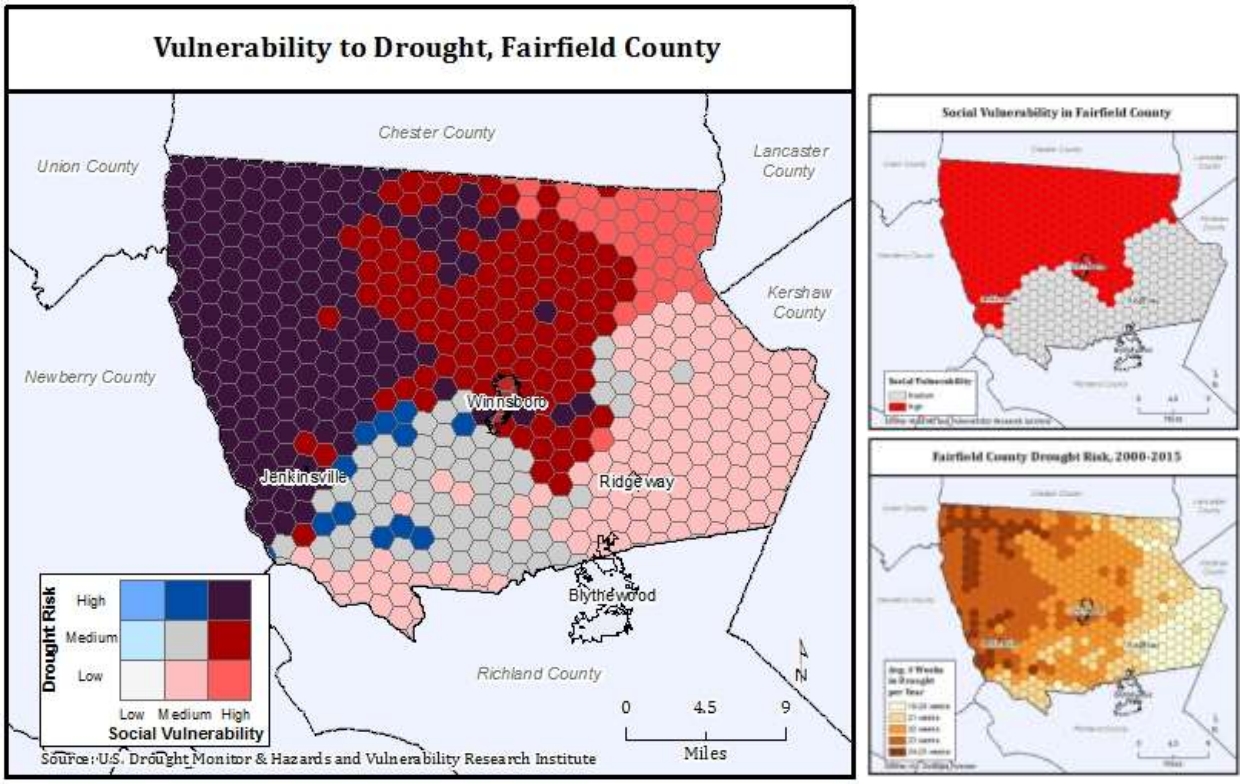


Figure 89 - Vulnerability to droughts in Fairfield County.

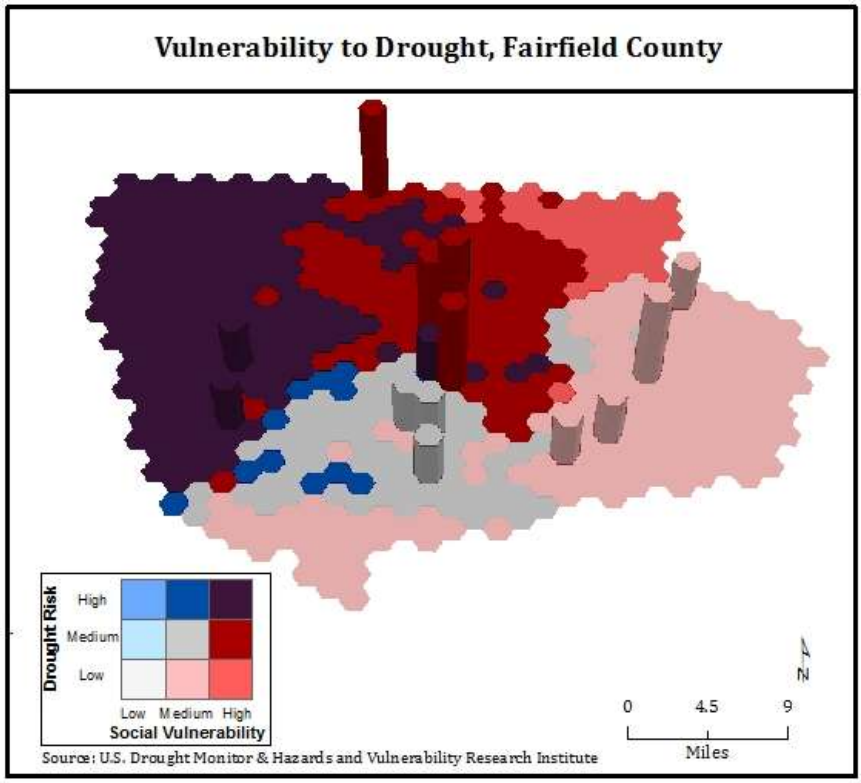


Figure 90 - Vulnerability of critical infrastructure to droughts in Fairfield County.

O) Earthquakes

Western Fairfield County is most vulnerable to earthquakes since both high social vulnerability as well as a higher risk from earthquake shaking coincide (Figure 91). Nearly all of Fairfield County's assets are located in the medium risk zone where a peak ground acceleration of 1.77 m/s^2 is possible (Figure 92).

Vulnerability statistics for a deterministic earthquake in Fairfield County	**Risk Zones**		
	Low (1.57 m/s^2)	**Medium (1.77 m/s^2)**	**High**
Critical Infrastructure	1 (5%)	20 (95%)	n/a
Building Stock	$0.8 billion (22%)	$2.8 billion (78%)	n/a
Population	4,217 (18%)	19,134 (82%)	n/a
Population w/high social vulnerability	2,662 (22%)	9,611 (78%)	n/a
Scenario	1886 Charleston Earthquake (6.8)		

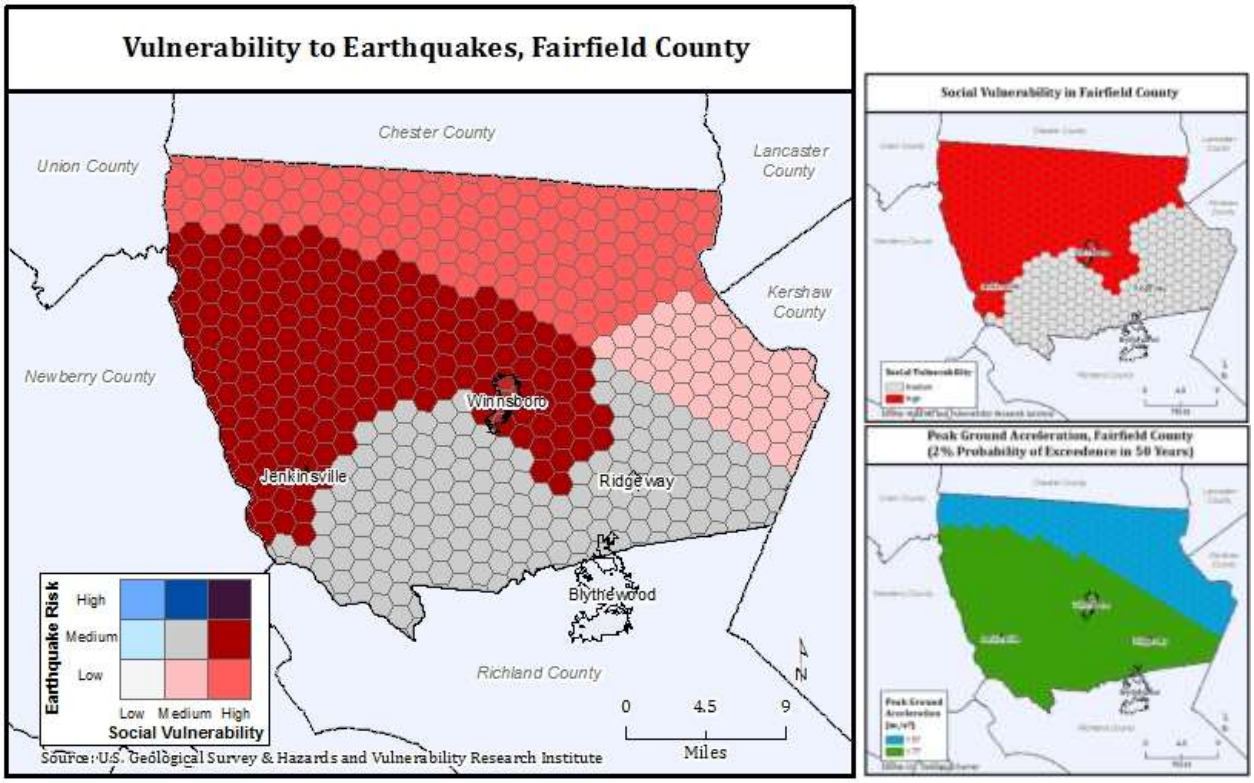


Figure 91 - Vulnerability to earthquakes in Fairfield County.

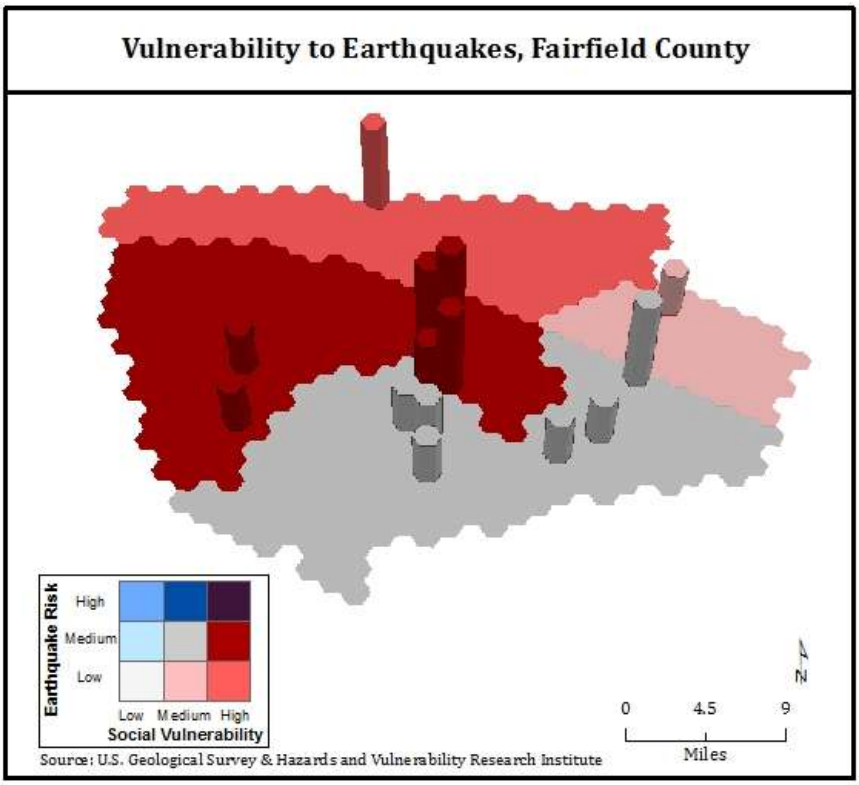


Figure 92 - Vulnerability of critical infrastructure to earthquakes in Fairfield County.

According to the South Carolina Geological Survey, the worst case scenario for Fairfield County is a combination of the 1886 Charleston and the 1913 Union earthquake, which would equate to an intensity category VIII (severe)[59]. If the 1886 Charleston earthquake were to occur today (Figure 93), about 90% of buildings would survive undamaged in Fairfield County. Nearly 600 buildings would be damaged moderately (5% of the county's building stock) with an estimated property damage of $51 million (nearly all of it residential). Most of the damage would occur in western Fairfield County (Figure 94). Nearly all of the critical infrastructure would be operational within a day. The modelled earthquake's most devastating impact area encompasses large segments of Fairfield County's most vulnerable population. All estimates were derived using HAZUS-MH 2.2.

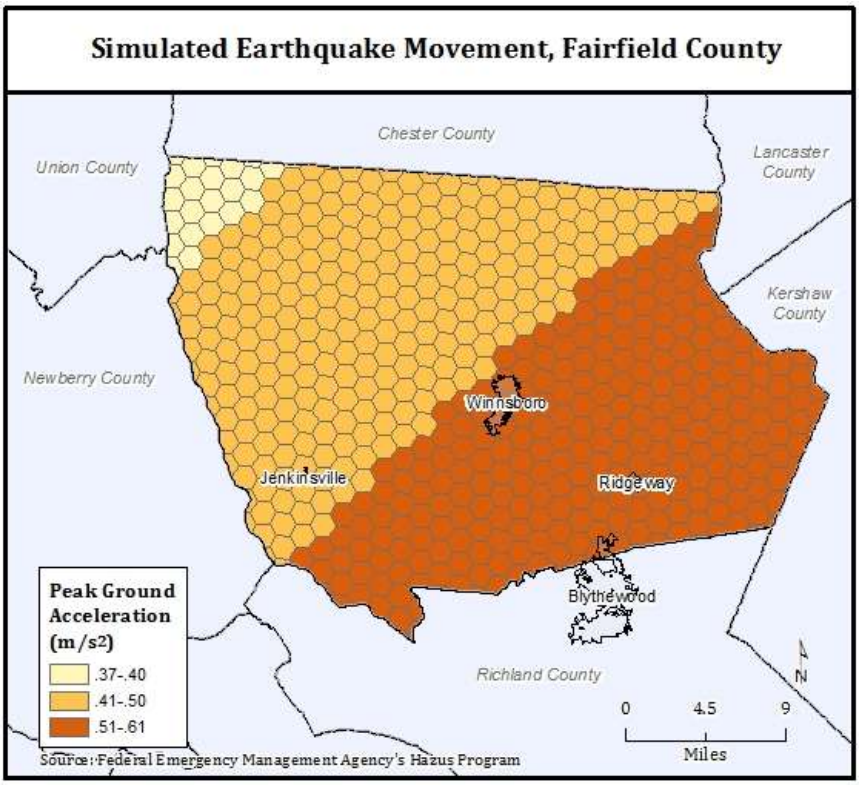


Figure 93 - Peak ground acceleration in Fairfield County from a modelled 6.8 earthquake.

[59] SCGS, Projected Earthquake Intensities for South Carolina, Educational Series #7a. Available at http://www.dnr.sc.gov/geology/images/Equake%20intens1-pg.pdf

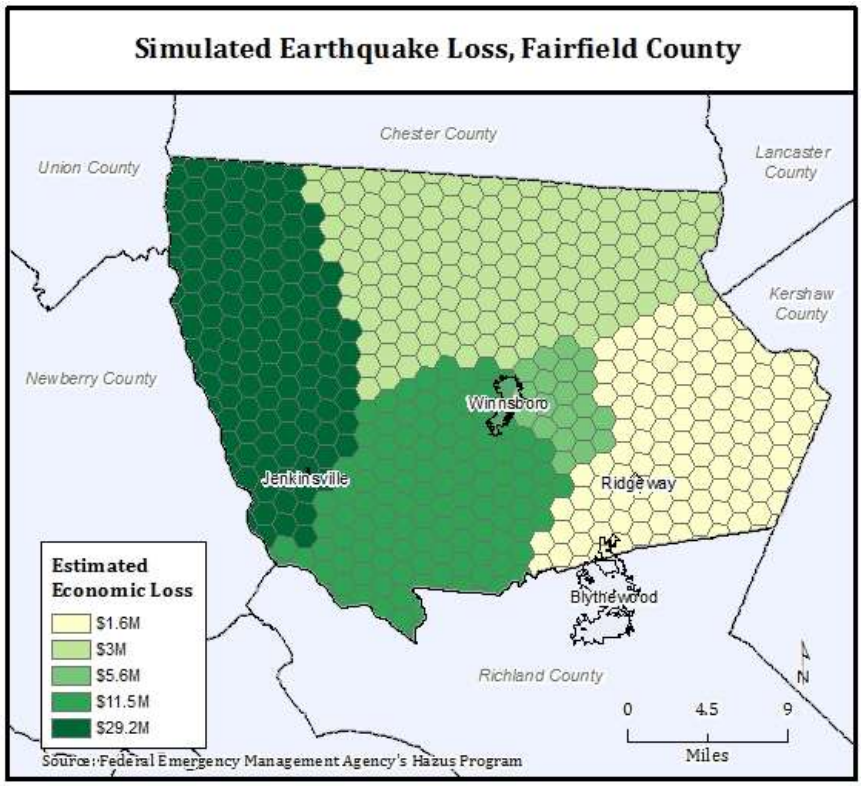


Figure 94 - Damage in Fairfield County from a modelled 6.8 earthquake.

5.3 Risk Assessment

This section addresses FEMA HMP requirement 201.6(c)(2)(ii)

The risk assessment is the final summary of hazard threat, vulnerabilities and potential consequences. The combined information of vulnerabilities, hazards, and consequences creates the risk potential for Fairfield County. The information generated by the vulnerability assessment and hazard assessment provide the input for the overall risk assessment. Table 37 shows the assessment criteria and rating values (in brackets) and

Categories of Risk

Low: Minimal potential impact. The recurrence and potential cost of damage to life and property is minimal.

Medium: Moderate potential impact. The potential damage is more isolated and less costly than a more widespread disaster. There is a moderate threat level to people, critical infrastructure, and/or built environment.

High: Widespread potential impact. The potential for damage is widespread. Hazards have a high recurrence interval and/or pose a high threat to residents, critical infrastructure, and/or built environment.

Table 37 - Risk assessment criteria and values.

Geographical Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk Rating
Isolated	Infrequent	Limited	Low	Low
Limited	Occasional	Moderate	Medium	Medium
Widespread	Likely	Extensive	High	High

Table 38 shows the overall risk for each hazard assessed in this plan. The risk assessment forms the basis for the development of mitigation strategies and prioritization (see Fairfield County Mitigation Strategies in Section 5.5). The effectiveness and acceptance of hazard mitigation strategies depends on a community's risk awareness and risk perception. Therefore we are including the survey results conducted by the CMCOG in December 2015 revealing the perceived mitigation priorities by residents of the Central Midlands region.

Table 38 - Overall risk assessment for Fairfield County.

Perceived Risk	Hazard	Geographic Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk
Most Important	***Winter Weather***	Widespread	Likely	Extensive	High	High (3)
Somewhat Important	***Extreme Heat***	Widespread	Occasional	Extensive	High	High (2.75)
Somewhat Important	***Droughts***	Widespread	Occasional	Extensive	High	High (2.75)
Very Important	***Tornadoes***	Isolated	Likely	Extensive	High	High (2.5)
Most Important	***Tropical Storms***	Widespread	Occasional	Moderate	Medium	Medium (2.25)
Most Important	***Wind***	Limited	Likely	Moderate	Medium	Medium (2.25)
Somewhat Important	***Extreme Cold***	Widespread	Likely	Limited	Medium	Medium (2.25)
Least Important	***Earthquakes***	Widespread	Infrequent	Moderate	Medium	Medium (2)
Very Important	***Flash Floods***	Isolated	Occasional	Moderate	Medium	Low (1.75)
Very Important	***Lightning***	Isolated	Likely	Moderate	Low	Low (1.75)
N/A	***Hail***	Isolated	Occasional	Moderate	Medium	Low (1.75)
Most Important	***Thunderstorms***	Isolated	Likely	Limited	Low	Low (1.5)
Least Important	***Fog***	Isolated	Likely	Limited	Low	Low (1.5)
Least Important	***Wildfires***	Isolated	Likely	Limited	Low	Low (1.5)
Very Important	***Riverine Floods***	Isolated	Occasional	Limited	Low	Low (1.25)

The survey gauged hazard awareness, preparedness and impacts of residents in the Central Midlands region (see Appendix I for more information). The perceived risk highlights the overlaps and/or discrepancies between the objective risk (as developed in the hazard and vulnerability assessments) and subjective risk (as expressed by Central Midlands' residents).

Another important aspect of the risk assessment is identifying currently available resources that a jurisdiction has to respond to and mitigate natural hazard events. Table 39 identifies emergency services and adopted ordinances available to each municipality in Fairfield County.

This section addresses FEMA HMP requirement 201.6(c)(3)

Table 39 - Services and Development Related Ordinances in Fairfield County

Name of Jurisdiction	Fire Service	Police Service	Emergency Medical Service	Adopted Zoning Ordinance	Adopted Comprehen. Land Development Regulations	Adopted Building Codes	Participates in National Flood Insurance Program
Fairfield County	Volunteers serve Unincorpor. County	Sheriff's Department	County Provides Countywide Service	Yes	Yes	Yes	Yes
Winnsboro	Provides own fire service	Provides own Police serv.	Provided by County	Yes	Yes	Yes	No
Ridgeway	Provided by County system	Provides own Police serv.	Provided by County	Yes	Yes	Yes	No

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures (FEMA, 2016). Actions taken towards reducing flood hazard risk provide a compounding discount on flood insurance to residents in flood prone areas. The program tracks Repetitive Loss Properties (RLP) and Severe Repetitive Loss Properties (SRLP), which are properties that have made multiple flood insurance claims. This information is valuable to planners as it aids in allocating flood mitigation strategies.

Fairfield County participates in the NFIP but not the Community Rating System (CRS), and therefore residents do not receive a discount in flood insurance premiums. There are no RLP or SRLP claims in the area. The County reduces flood hazard risk with a combination of public outreach efforts, flood mitigation planning, enforcing zoning and building codes, and requiring buildings to be elevated in flood zones. The County also has a designated Special Flood Hazard Area (SFHA).

5.4 Fairfield County Mitigation Goals and Objectives

This section addresses FEMA HMP requirement 201.6(c)(3)(i)

The following are general hazard mitigation goals and objectives utilized by stakeholders. These serve as broad mission statements and help guide planners in making decisions that safeguard the life and property of Fairfield County citizens.

1. Develop better data for the community relating to type, impact, location and cost of the natural disaster mitigation strategies occurring in the area.
2. Increase the community's capacity to initiate and sustain emergency response operations during and after a natural disaster, thereby mitigating effects of hazardous events.
3. Enhance existing, or design new, policies and/or programs in the community to reduce the potential damaging effects of hazards without hindering other community goals or impeding hazard mitigation programming in the county.
4. Protect the most vulnerable populations, buildings and critical facilities in the town through the implementation of cost-effective, environmentally sound, and technically feasible mitigation projects.
5. Protect the public health, safety and welfare by increasing public awareness and understanding of hazards and by fostering both individual and public responsibility in the mitigation of risks through available techniques that minimize vulnerability to those hazards.
6. Increase understanding of all residents in the community about the natural hazards threatening local areas and techniques available to minimize vulnerability to those hazards.
7. Maintain the economic vitality of the community in the face of natural disasters.
8. Ensure the security of homes, institutions and places of employment throughout the community that are considered vulnerable to natural disasters.
9. Ensure that the availability and function of community infrastructure will not be significantly disrupted by a natural disaster.
10. Inventory, map and assess all flood plain structures and properties that are or may be repetitive loss properties.

5.5 Fairfield County Mitigation Strategies

This section addresses FEMA HMP requirements 201.6(c)(3)(ii), 201.6(c)(3)(iii), and 201.6(c)(3)(iv)

Table 40 - Unincorporated Fairfield County Mitigation Strategies.

Unincorporated Fairfield County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Clear public lands as needed near critical facilities	Forest Fires/ Wild Fire	Fairfield County/school districts/towns	1	2, 4, 5 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Conduct detailed assessments of wild fire risk for critical facilities	Forest Fires/ Wild Fire	Fairfield County/school district/ towns.	1	2, 4, 5 & 7	Emer. Manage. Services Operating Budget	<$250,000	Ongoing	Ongoing
Maintain cleared fire breaks to protect critical facilities	Forest Fires/ Wild Fire	Fairfield County Public Works	1	2, 4, 5 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Use GIS capacity to map, record all hazards	Forest Fires/ Wild Fire	Fairfield County Planning Dept./ assessor	1	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Replace vulnerable exterior building surfaces with hail resistant surfaces	Thunder-storms (Hail, Wind, Lightning)	Fairfield County/school district/ towns	2	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Fairfield County/ school district/ towns	1	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Adopt procedures for suspension of operations	Thunder-storms (Hail, Wind, Lightning)	Fairfield County/School District/ towns	3	2, 4, 5 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing
Clear power and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	Fairfield County/ towns/ water comp.	1	2, 4, 5 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Enforce zoning to restrict development in flood-plains	Flooding	Fairfield County/ towns in county	1	2, 4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each	Flooding	Fairfield County	2	2, 4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing

Unincorporated Fairfield County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
year to be Flood Awareness Month		Council						
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	Fairfield County/ towns in county	3	2, 3 & 4	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	Fairfield County/SCDOT	2	2, 4, 5 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred
Identify & contact all repetitive loss properties	Flooding	Fairfield County/ towns in county	1	5	Operating Budgets	<$250,000		
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Fairfield County/ towns in county	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Fairfield County/ towns in county	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	Fairfield County	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Use bus transit system for emergency shelter, evacuation & communication capacity	Winter Snow & Ice Storms	Fairfield County Transit System	1	2 & 4	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Establish mutual aid agreements with Winnsboro Ridgeway	Winter Snow & Ice Storms	Fairfield County/ towns in county	1	2 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing
Install standby elec. power for sewer & water plants &	Winter Snow & Ice Storms	Town of Winnsboro/ Water company.	1	2, 4 & 5	Capital Improve. Budget	$750,000>	Deferred due to funding	Deferred

Unincorporated Fairfield County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
pumps (portable generators & pumps)		in county						
"Harden" utility services to critical facilities	Tornados	Fairfield County	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Conduct engineering strength studies of critical facilities	Tornados	Fairfield County/ towns in county	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities especially those in areas of vulnerable populations	Tornados	Fairfield County/ school district/ towns in county	1	2, 4 & 7	Operating Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornadoes	Fairfield County/SCANA Coops/ water company	1	2, 4 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing
Develop Portable Water Treatment Facilities	Hurricanes	Rural Water Companies in Fairfield County	2	2, 4, 5 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Replace water storage tanks and pumps as needed	Hurricanes	Rural Water Companies in Fairfield County	2	2, 4, 5 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Provide mobile backup generators for critical facilities	Hurricanes	Fairfield County/ towns in county	1	2, 4, 5 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Publicize National Hurricane Awareness Week annually	Hurricanes	Fairfield County/ towns in county	1	4	Operating Budgets	<$250,000	Removed due to goals being removed	
Conduct earthquake impact analysis on critical facilities in southwestern Fairfield County	Earthquake	Fairfield County	1	2, 4 & 5	Operating Budget	<$250,000	Deferred due to funding	Deferred
Work with SCANA to ensure that the Summer Facility can	Earthquake	Fairfield County and SCANA	1	2, 4 & 5	Operating Budgets	<$250,000	Ongoing	Ongoing

Unincorporated Fairfield County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
withstand earthquakes								
Ensure that warning siren system is working to ensure rapid evacuation from the Summer Fac.	Earthquake	Fairfield County and SCANA	1	2, 4 & 5	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that evacuation routes are clearly marked and open	Earthquake	Fairfield County and SCANA	1	2, 4 & 5	Operating Budgets	<$250,000	Ongoing	Ongoing
Develop and publicize water conservation practices to respond to drought declarations	Drought	Fairfield County	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	1, 5 & 6	Operating Budget	<$250,000	Ongoing	Ongoing

Table 41 - Town of Winnsboro Mitigation Strategies.

Town of Winnsboro								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Provide portable pumps to keep utility systems in operating	Winter Snow & Ice Storms	Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Cover regulator stations	Winter Snow & Ice Storms	Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Install standby elec. power for sewer &	Winter Snow & Ice Storms	Town of Winnsboro	1	2, 4 & 5	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred

Town of Winnsboro								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
water plants & pumps (portable generators & pumps)								
Harden utility services to critical facilities	Tornados	Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Install barricades and fencing for all regulator stations	Tornados	Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities	Tornados	Town of Winnsboro /Fairfield County/ School District	2	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Construct drainage dikes around sewer pump stations	Hurricanes	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Construct cover for water reservoir	Hurricanes	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Construct holding pond at water treatment plant	Hurricanes	Town of Winnsboro	1	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Publicize National Hurricane Awareness Week	Hurricanes	Town of Winnsboro	2	6	Operating Budget	<$250,000	Removed due to goals being removed	
Provide a dry chemical standby fire suppression system	Hurricanes	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Replace storm damaged water storage tanks and pumps as needed	Hurricanes	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Install surge	Thunder-storms	Town of	1	2, 4, 5 & 7	Capital Improve.	<$250,000	Deferred due to	Deferred

Town of Winnsboro								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
protectors in critical facilities	(Hail, Wind, Lightning)	Winnsboro			Budget		funding	
Adopt procedure for suspension of operations during storms	Thunder-storms (Hail, Wind, Lightning)	Town of Winnsboro	2	2, 4, 5 & 7	Operating Budget	<$250,000	Deferred	Deferred
Clear power line and utility easements of debris	Thunder-storms (Hail and Wind)	Town of Winnsboro	1	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail and Wind)	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Acquire portable disinfection equipment	Thunder-storms (Hail and Wind)	Town of Winnsboro	2	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Acquire and install collapsible water pipes	Earthquake	Town of Winnsboro	1	2, 4 & 5	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Acquire tanker truck for water division	Earthquake	Town of Winnsboro	1	2, 4 & 5	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Ensure that evacuation routes are marked and open to ensure rapid evacuation from Summer Nuclear Facility	Earthquake	Town of Winnsboro/SCANA	1	2, 4 & 5	Operating Budgets	<$250,000	Ongoing	Ongoing
Enhance GIS capacity to map all parcels and structures in flood areas	Flooding	Town of Winnsboro/ Fairfield County	2	10	Operating Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Winnsboro	1	10	Operating Budgets	<$250,000	Ongoing	Ongoing

Town of Winnsboro								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Develop and publicize water conservation practices to respond to drought declarations	Drought	Town of Winnsboro	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Deferred	Deferred
Add to the town's surface water supply	Drought	Town of Winnsboro	2	2, 4 & 7	Capital Budgets of Public Works Programs	$250,000 to $750,000	Deferred due to funding	Deferred
Institute a drought water storage program for water emergencies	Drought	Town of Winnsboro	1	2, 4 & 7	Capital Budgets of Public Works Programs	<$250,000	Deferred due to funding	Deferred

Table 42 - Town of Ridgeway Mitigation Strategies.

Town of Ridgeway								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	Fairfield Elec. COOP/SCE&G	1	2, 4 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Ridgeway/ Fairfield Electric COOP/SCE&G	2	2, 4 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Enforce town zoning to restrict development in flood-plains	Flooding	Town of Ridgeway	1	2, 4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Ridgeway Town Council	2	6	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate. with	Flooding	Town of Ridgeway	2	10	Operating	<$250,000	Ongoing	Ongoing

Town of Ridgeway								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Fairfield County's GIS system to track all structures and demolition permits in flood area					Budget			
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	Town of Ridgeway/ Fairfield County/SCE&G	3	2, 4 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Identify & contact all repetitive loss properties	Flooding	Town of Ridgeway	1	10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Ridgeway	1	2, 4 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Ridgeway	1	10	Operating Budgets	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	Fairfield County/SCDOT	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred
Power line and utility R-O-W easement clearance	Winter Snow & Ice Storms	Fairfield Electric COOP/Town of Winnsboro/SCE&G	1	2, 4 & 7	Electric utility providers	<$250,000	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Fairfield Electric COOP/ S. C. DOT/Fairfield County/SCE&G	1	2, 4 & 7	Town A. Lakes/ County Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Procure and use elec. generators for vulnerable citizens of Ridgeway	Winter Snow & Ice Storms	Town of Ridgeway	1	2, 4 & 7	Capital Improve Budgets	$250,000 to $750,000	Deferred due to funding	Deferred

Town of Ridgeway								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Increased generating capacity at water plants and key pump stations	Hurricanes	Town of Winnsboro	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Continue to enforce International Building and Fire Codes with Fairfield County	Hurricanes	Town Ridgeway/Fairfield County	2	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Cooperate with the County's Emergency Response Plans for Severe Weather	Hurricane	Town of Ridgeway/ Fairfield County	2	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Harden utility services identified as critical	Tornados	Town of Ridgeway/ Fairfield County/Town of Winnsboro	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Town Ridgeway/ Fairfield Electric COOP SCE&G	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Town of Ridgeway/ Fairfield County	3	10	Operating Budgets of town and county	$250,000 to $750,000	Ongoing	Ongoing
Work with S.C. DHEC to ensure that the major lakes & ponds in town may withstand future earthquakes	Earthquake	Town of Ridgeway / S.C. DHEC	1	4	Operating Budget	$250,000 to $750,000	Ongoing	Ongoing
Develop speakers bureau about earthquake and other natural disaster threats to the town	Earthquake	Town of Ridgeway/ Fairfield County	1	5	Operating Budgets	$250,000 to $750,000	Ongoing	Ongoing
Develop and publicize water conservation	Drought	Town of Ridgeway	1	5	Operating Budget	<$250,000	Ongoing	Ongoing

Town of Ridgeway								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
practices to respond to drought declarations								
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Ongoing	Ongoing

Table 43 - Mid-County Water Company Mitigation Strategies.

Mid-County Water Company								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install standby generators at each well on the system	Tornados	MCWC	2	2, 3 & 6	Capital improvement budget	$200,000	Ongoing: Two generators on hand w/ transfer station	2020
Improve and maintain road system to wells	Tornados	Fairfield County /SCDOT /MCWC	1	2, 3 & 6	Capital improvement budget	$5,000	Ongoing: Adding rock to road	2018
Develop back-up mobile water treatment facilities	Hurricanes	MCWC	2	2, 3 & 6	Capital improvement budget	$200,000	Deferred	2020
Replace water storage tanks and wells as needed	Hurricanes	MCWC	2	2, 3 & 6	Capital improvement budget	$250,000	Ongoing: Two tanks painted	2018
Clear powerline and utility easements of debris	Thunderstorms, hail, wind and lightning	SCE&G/ Electric Co-op/ SCDOT/ MCWC	1	2, 3 & 6	Public Works/ MCWC	$5,000	Ongoing	2018
Fire break, tree & brush thinning controlled burning by permit	Forest fire/ wild fires	Fairfield County/ MCWC	2	2, 3 & 6	Operating budgets	$5,000	Ongoing	2018
Fencing/	Forest fire/	MCWC		2, 3 & 6	Operating	$35,000	Ongoing	2018

Mid-County Water Company								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
security of wells and facilities	wild fires		2		budget			
Powerline and road R-O-W clearance to wells	Winter snow and ice storms	SCE&G/ Co-op/ SCDOT/ MCWC	1	2, 3 & 6	Operating budgets	$25,000	Ongoing	2018
Develop back-up pump facilities to move water through system	Winter snow and ice storms	MCWC	1	2, 3 & 6	Capital improvement budget	$50,000	Deferred	2020
Amend state drought plan to stiffen penalties for violators	Drought	SC General Assembly/ MCWC	3	4 & 5	Operating budgets	$1000	Ongoing	2018
Build new clear well with storage tanks	Drought	MCWC	2	2, 3 & 6	Capital improvement budget	$300,000	Ongoing	2025
Publicize water conservation practices	Drought	MCWC	1	4 & 5	Operating budgets	$5,000	Ongoing	2016
Replace main line at Little River and 213	Flooding	MCWC	1	2, 3 & 6	Capital improvement budget	$150,000	Deferred	2025
Replace water lines at bridges, over passes and creeks	Flooding	MCWC	1	2, 3 & 6	Capital improvement budget	$500,000	New	2025
Connect District 1 & 2	Drought	MCWC	1	2, 3 & 4	Capital improvement budget	$500,00	New	2025

Table 44 - Fairfield Memorial Hospital Mitigation Strategies.

Fairfield Memorial Hospital								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install backup generators in critical facilities	Tornado, Hurricane, Flooding	Maintenance	3	2, 3 & 9	Fairfield Memorial Hospital	$100,000.00	New	1 year
Install surge protectors in critical equipment	Tornado, Hurricane, Flooding, Lightning	IT	2	2, 3 & 9	Fairfield Memorial Hospital	$15,000.00	New	1 year
Design a Hospital evacuation plan	All natural hazards	Maintenance	1	3 & 4	Fairfield Memorial Hospital	$40,000.00	New	1 year
Harden structures against wind damage	Tornadoes, Hurricanes	Maintenance	2	2, 3 & 9	Fairfield Memorial Hospital	$50,000>	New	2 – 3 years

6. Lexington County

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

6.1 Historical Hazard Assessment for Lexington County

Summary of Historic Impacts

Lexington County experiences an array of natural hazards (Table 45). Prior to the 2015 flash flood disaster, heat and drought along with winter storms posed the highest risk to Lexington County. Flood damage used to rank fairly low—behind tornado damage and more alike to lightning--although flash flooding is a very frequent occurrence (every 1.2 years). Heat and drought pose serious threats to the county that are difficult to capture in loss figures or maps since their impacts tend to be vastly underreported (lack of data, secondary and/or prolonged effects on agriculture, public health, etc.). The most frequent hazard in Lexington County is thunderstorms (incl. lightning, hail, and wind) and wildfires. While thunderstorm, lightning, wind and hail damage is non-catastrophic, their cumulative impact and high frequency is still significant (nearly $7 million, 25 people injured/killed). When overlaying the risk from all hazards, southern Lexington County exhibits the highest level of risk (Figure 95).

In the future, the frequency and possible damage from thunderstorms and other meteorological and hydrological hazards is very likely to increase. Based on climate projections, it is anticipated that the number of cold days and perhaps also winter storms will decrease.

Table 45 - Summary of natural hazards and their impacts on Lexington County since 1960.

	Direct Losses (Property and Crop)	Direct Injuries and Fatalities	# of Loss-Causing Events (# of Events)	Frequency	Recurrence Interval (in years)	Future Changes
Flooding	$2,750,075*	8*	38(47)*	85%*	1.2*	▲
Hurricane	$1,187,041	4	8(8)	15%	6.9	▲
Tornadoes	$5,726,975	56	11(24)	44%	2.3	▲
Thunderstorm	$685,465	0	38(41)	75%	1.3	▲
Lightning	$2,178,330	10	39(149,258)	1,515%**	0.1 days	▲
Wind	$2,312,724	15	170(490)	891%	0.1	▲
Hail	$1,665,131	0	68(283)	515%	0.2	▲
Fog	n/av	n/av	n/av	>7%**	<14.6 days	◀▶
Winter Storm	$9,409,622***	0	32(32)	58%	1.7	▼
Cold	$7,732,324	1	31(31)	56%	1.8	▼
Heat	$21,263,066	0	7(7)	13%	7.9	▲
Drought	$24,345,640	0	17(17)	31%	3.2	▲
Wildfire	$366,633	0	3(4,703)	46%**	2.2 days	▲
Earthquake	0	0	0(0)	<2%	>50	◀▶
TOTAL	$79,623,026	94				

* excludes 2015 flood losses
**daily frequency/recurrence calculations instead of years
***excludes 2004 ice storm losses
▲ indicates that future increase in occurrence and/or impacts is likely
▼ indicates that future decrease in occurrence and/or impacts is likely
◀▶ indicates that either no change in future occurrence or impacts is expected or that a determination of future changes cannot be made.

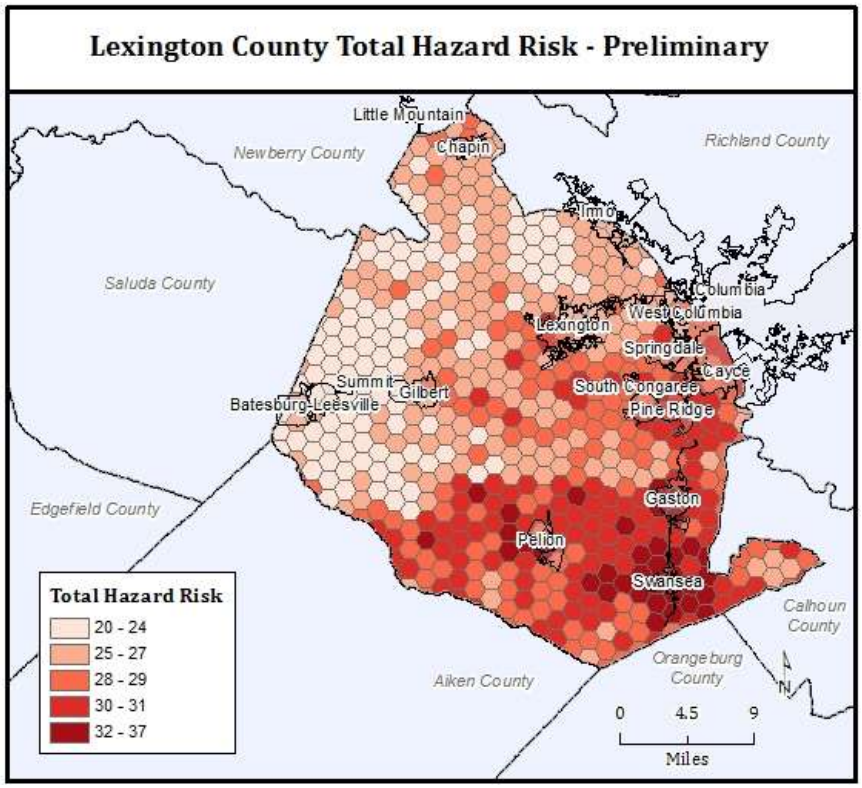


Figure 95 - Comprehensive risk profile of Lexington County.

A) Flooding

What to expect: Flood damage in Lexington County is mostly the result of localized heavy precipitation leading to flooding along smaller creeks and tributaries to the Broad, Congaree and Saluda Rivers as well as flash flooding due ponding and/or inadequate drainage (Table 46). Virtually every building in Lexington County is at some risk from flash flooding due to drainage issues and ponding. While most buildings are not at risk from flood waters reaching first floor levels, many homes may, however, experience flooded crawl spaces, drive ways, etc. or experience secondary problems such as mold issues. In addition, the 2015 floods revealed a high risk from small pond dam failures—particularly when simultaneous and cascading dam failures occur in the same watershed.

Geographic Extent: Flooding in Lexington County is not restricted to the 100-year and 500-year floodplains (Figure 97). Based on its history, Lexington County is very susceptible to flash flooding in low-lying areas and areas downstream from small dams. The Flash Flood Potential Index identifies areas in northeast Lexington County as at high risk from flash flooding (Figure 98). During the 2015 event, problems also arose from backwater flooding along Saluda River tributaries when water was released from the Lake Murray Dam.

Prior to the record-breaking floods of October 2015, statistics for Lexington County were as following:

Number of Events:	47
Number of Loss-Causing Events:	38
Frequency of Occurrence:	85%
Recurrence Interval:	1.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Flood-related Presidential Disaster Declarations:	DR-4241 (2015)
Total Losses:*	$2,750,075
Total Fatalities:*	2
Deadliest Event:*	1 fatality (several instances)
Most Property Damage:*	$800,000 (June 28, 1994)
Most Crop Damage:*	$920,000 (June 25, 1973)

October 1-5, 2015 (DR-4241)*:

Over a five day period, an upper low pressure system combined with the remnants of Hurricane Joaquin streamed tropical moisture into South Carolina (Figure 96). Lexington County experienced a record-setting 5-day rainfall total of up to 17.21 inches in some places[60]. This record rainfall caused catastrophic flash flooding, dam breaches and failures (see section on Dams Failures) along with backwater flooding along the Saluda River due to emergency water release from the Lake Murray Dam. The last time the dam's spillway was opened was in 1969. Large areas of the City of Columbia were without drinking water due a breach in a diversions supply canal shutting down schools and economic activities in the city. According to NCDC's Storm Data, direct damage to property are estimated at about $27 million and nearly $1 million in crop damage. Two fatalities occurred. Overall damage estimates range from $1 billion[61] to $12 billion[62] for the entire impact area in South Carolina. Lexington County received both individual and public assistance funding through FEMA.

* Note: The historic record for all hazards in this plan covers the time period from 1960 through 2014. An exception is flooding. Given the catastrophic, and record-setting devastation from the 2015 floods, an event narrative was included since many of the proposed flood mitigation actions in this plan are an outgrowth of this recent disaster.

[60] NWS, 2015. Historic rainfall and flooding, October 2015. Available at http://www.weather.gov/cae/HistoricFloodingOct2015.html

[61] NOAA National Centers for Environmental Information, 2016. Billion-Dollar Weather and Climate Disasters. Available at http://www.ncdc.noaa.gov/billions/events

[62] Burris, Roddie. SC Floods' Damage: $12 billion, Economists say. *The State* [Online], Columbia, SC, December 1, 2015 Available at http://www.thestate.com/news/local/article47471060.html

Figure 96 - Total rainfall amounts for the 2015 flood event. Source: NWS.

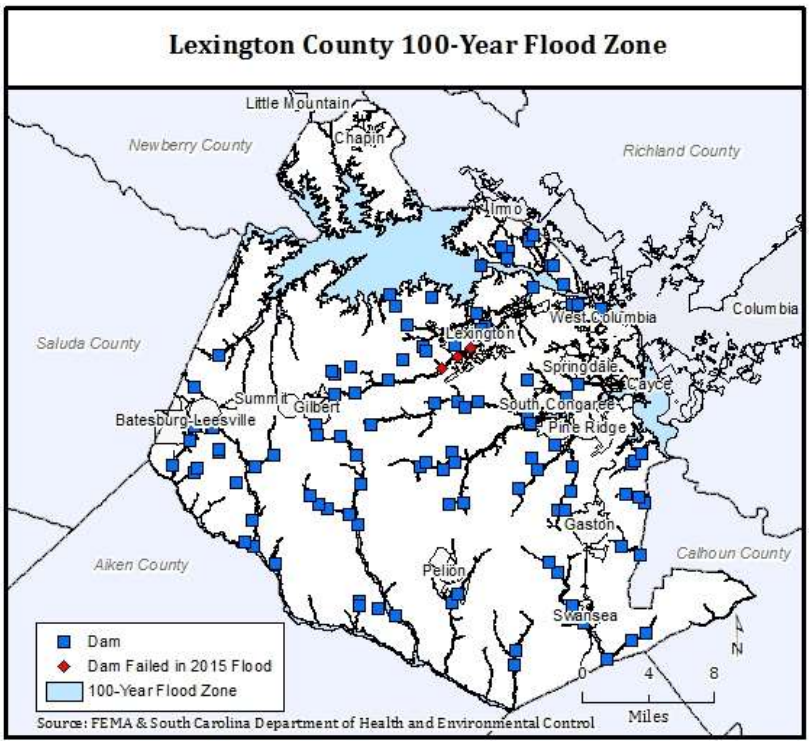


Figure 97 - Flood risk in Lexington County.

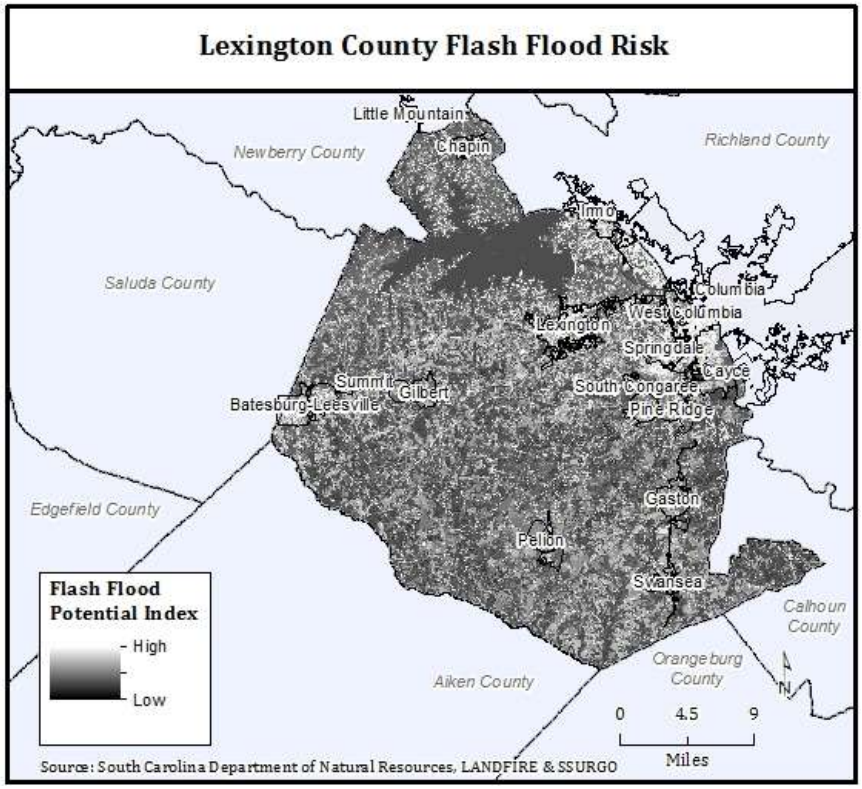


Figure 98 - Flash flood risk in Lexington County.

Table 46 - Record of loss-causing flood events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/1/1964	3/31/1964	0	0	$830	$830		South Carolina	Flooding
3/1/1966	3/5/1966	0	0	$7,942	$7,942		Statewide	Flooding
2/3/1973	2/3/1973	0	0	$5,795	$5		Statewide	Flooding
3/15/1973	3/31/1973	0	0	$1,666	$16		Pee Dee, Edisto, and Congaree River Basins	Flooding due to heavy rains
6/8/1973	6/25/1973	0	0	$9,192	$919,291		Southern and central South Carolina	Heavy rain, flooding
6/16/1973	6/22/1973	0	0	$919	$91		Central, northern and Eastern	Heavy rain, flash flooding
3/12/1975	3/18/1975	0	0	$4,782	$478		Statewide	Heavy rains, flooding
7/13/1975	7/18/1975	0	0	$611	$61,115		Eastern and central	Rains and flooding
7/4/1976	7/5/1976	0	0	$1,040	$10,401		Central SC, Lexington and Richland Counties	Flash flooding
10/9/1976	10/19/1976	0	0	$45,223	$45,223		Statewide	Flood
1/25/1978	1/26/1978	0	0	$39,466	$3		Statewide	Wind, flash flood
1/26/1978	1/31/1978	0	0	$3,946	$0		Statewide	Flooding
3/15/1980	3/31/1980	0	0	$3,122	$3,122		Statewide	Flood
8/8/1980	8/8/1980	0	0	$3,122	$312		Statewide	Wind, flood

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
1/1/1982	1/14/1982	0	0	$557	$55		Along Saluda, Broad, Congaree, Wateree, Lynches, and Peedee Rivers	Flooding
4/27/1982	4/27/1982	0	0	$645	$0		Central, northeast, eastern	Lightning, flooding
3/17/1983	3/17/1983	0	1	$25,835	$2,583		Statewide	
12/6/1983	12/6/1983	0	0	$3,047	$30		Western, northern & central	Flood, wind
2/27/1984	2/27/1984	0	0	$2,476	$24		Statewide	Rain, wind, flood
6/21/1984	6/21/1984	3	0	$56,962	$5,696		Columbia	Rain, flood, lightning
7/26/1984	7/26/1984	0	0	$2,476	$24		Statewide	Wind, rain, flood
8/2/1984	8/2/1984	0	0	$3,928	$0		Southern, central, and eastern SC	Lightning, rain, flood
8/18/1986	8/19/1986	0	1	$108,000	$108		Lexington and West Columbia	Flash flooding
9/7/1987	9/7/1987	1	0	$104,197	$0		Irmo and St. Andrews	Flood
6/19/1989	6/19/1989	0	0	$9,545	$0		Batesburg	Urban flood
6/19/1989	6/19/1989	0	0	$9,545	$0		Irmo	Flash flood
1/1/1993	1/31/1993	0	0	$17,807	$356,164		Statewide	Flooding
6/27/1994	6/28/1994	2	0	$798,704	$0		Lexington	Flash floods
3/7/1996	3/7/1996	0	0	$15,088	$0		Countywide	
8/30/2006	8/30/2006	0	0	$0	$0		Leesville	Highway Dept. reported water covering Hallman Wagon road near US 1 in the Gilbert area.
8/25/2008	8/25/2008	0	0	$21,990		2-4"	Irmo	Sheriff and public reported flash flooding across several roads with water up to 3 feet deep closing roadways. Some vehicles were stalled but no occupants were trapped. Spotters reported 2 to 4 inches of rain within a 1 to 2 hour period from the remnants of Tropical Storm Fay
12/25/2009	12/25/2009	0	0	$8,828	$0	2-5"	Irmo	Many road closures and widespread flooding along streams reported by Emergency Management and also a small earthen dam breach on Bush River Rd in the St. Andrews/Whitehall area.
5/7/2013	5/9/2013	0	0	$5,081	$0	2-4"	Green Hill	NWS survey found the amphitheater and Riverwalk flooding in West Columbia and Cayce along the Congaree River. The water level was almost 5 and a half feet above flood stage.
7/21/2013	7/21/2013	0	0	$2,032	$0	4.56”	Happy Town	Local TV station reported 4.56 inches of rain in West Columbia with urban and small stream flooding.
7/21/2013	7/21/2013	0	0	$2,032	$0	1.95"	Columbia metro	The National Weather Service ASOS at the Columbia Metro Airport measured 1.95 inches of rain in an hour. Urban

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
								and small stream flooding occurred around the airport.
8/1/2013	8/1/2013	0	0	$4,065	$0		Clubhouse	Highway Patrol reported flash flooding on Springhill Road near Hwy 1, and also Walter Taylor and Cannon Place roads were also closed due to flooding.
8/1/2013	8/1/2013	0	0	$4,065	$0		Gilbert	Highway Patrol reported Wire road closed between Juniper Springs and Taylor Street in Gilbert. Other rural roads that were closed included Martin Smith, Sarah Ann, and Neely Wingard due to high water covering the roads.
8/12/2014	8/12/2014	0	0	$2,000	$0		St Andrews	SCHP reported road flooding on Bush River road near I-26.
TOTAL		**6**	**2**	**$1,336,562**	**$1,413,513**			

*No magnitude information indicates flood height or rainfall amounts were unavailable.

Dam Failures

There are 113, largely privately owned, dams in Lexington County. The vast majority of these dams are small pond/recreational pond dams.

Lake Murray/Saluda Dam: The dam is located on the Saluda River, approximately 10 miles west of the City of Columbia, near the towns of Irmo, Lexington and Chapin. The Saluda River drains about 2,420 square miles above the dam and into Lake Murray to power the hydroelectric plant. State Highway, SC Route 6, runs atop of the dam. The dam is a 7,800 ft long earthen fill dam with additional steel sheet pile wall, a backup dam and emergency spillway with six Tainter gates. The backup dam was added during a seismic remediation project in 2005. The spillway gates are opened "when the reservoir level reaches or is predicted to exceed an elevation of 358.5'. At a flood elevation of 368.5', the spillway capacity is approximately 154,000 cfs. Under Probable Maximum Flood (PMF) conditions, the spillway is rated to pass 197,000 cfs with the reservoir at El. 374.4'"[63]. During normal operation times, the plant has a total discharge of 18,000 cfs at full load. The dam's operating range lies between an elevation of 352.5' and 356.5' with a maximum operation pool elevation of 358.5' (full pool).

What to expect: Lexington County is at risk from dam failures of all categories, i.e. low hazard to high hazard dams. There has been one recorded failure of a small pond dam in the past (Table 46) and 3 dam failures during the 2015 flood disaster alone (Table 47).

Geographic Extent: Based on past occurrences, areas downstream from small pond dams are very susceptible to the effects of dam failures, particularly if dams are poorly maintained, have been weakened and/or not repaired after the 2015 floods, or show structural deficiencies.

Likelihood of Future Occurrences: A return rate for dam failures cannot be calculated. Based on past occurrences though, it is highly likely to expect future failure of small pond dams. The Lake Murray dam is not at risk from failure caused by natural hazards.

[63] SCE&G, 2008. Saluda Hydro Project Relicense. Attachment 3b Finale Schedule A response. Available at http://www.thestate.com/news/local/article53937070.html

Table 47 - List of failed dams in Lexington County during the 2015 floods. Source: DHEC

Dam Name	Class
Old Mill Pond Dam	C1 (High Hazard)
Gibson's Pond Dam	C2 (Significant Hazard)
Barr Lake Dam	C2 (Significant Hazard)

B) Hurricanes & Tropical Storms

What to expect: Every property and person is at risk from hurricane-force winds and associated heavy rainfall and tornadoes in Lexington County with a slightly higher risk in southern Lexington County (Figure 100). Hurricane and tropical storms affect Lexington County every 7 years. The county is at risk from hurricane-force winds as experienced during Hurricane Hugo as well as associated heavy rainfall, flash flooding, and tornadoes (Figure 99, Table 48). While direct wind damage to property is unlikely, property and infrastructure damage due to falling trees as well as power outages are highly likely.

Geographic Extent: Based on past occurrences, the entire county is susceptible to the impacts of tropical cyclones.

It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and tornadoes because they are reported separately. Tropical cyclone statistics for Lexington County are as following:

Number of Events:	8
Number of Loss-Causing Events:	8
Frequency of Occurrence:	15%
Recurrence Interval:	6.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Hurricane-related Presidential Disaster Declarations:	DR-1299 (1999) DR-1566 (2004)
Total Losses:	$1,187,041
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$710,000 (September 5, 1979)
Most Crop Damage:	$95,000 (June 22, 1989)

Hurricane Floyd (September 9, 1999; DR-1299): Lexington County received no direct damage from the storm but hosted large number of evacuees from the coast. Hurricane Floyd revealed significant weaknesses in South Carolina's coastal evacuation plan caused by the "sudden" convergence of evacuees onto roads without a reversal of I-26 in place for many hours. This led to massive gridlock on the interstate and adjacent roads without adequate support for stranded motorists.

Tropical Storm Frances (September 7, 2004; DR-1566): The storm system caused high winds and caused a widespread tornado outbreak. The high winds uprooted trees and caused power outages and damaged properties—particularly mobile homes.

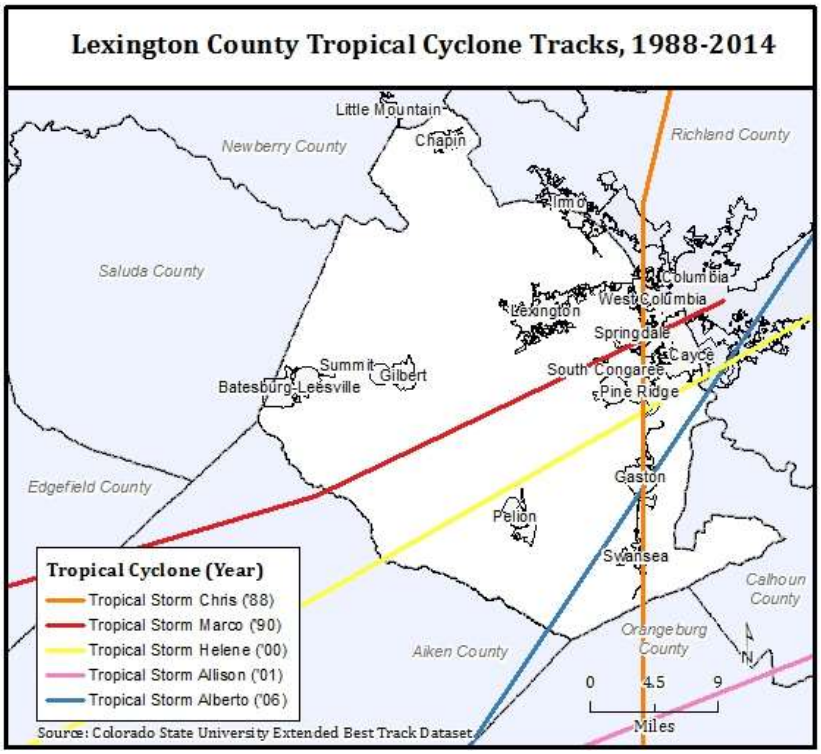


Figure 99 - Tropical cyclone risk in Lexington County.

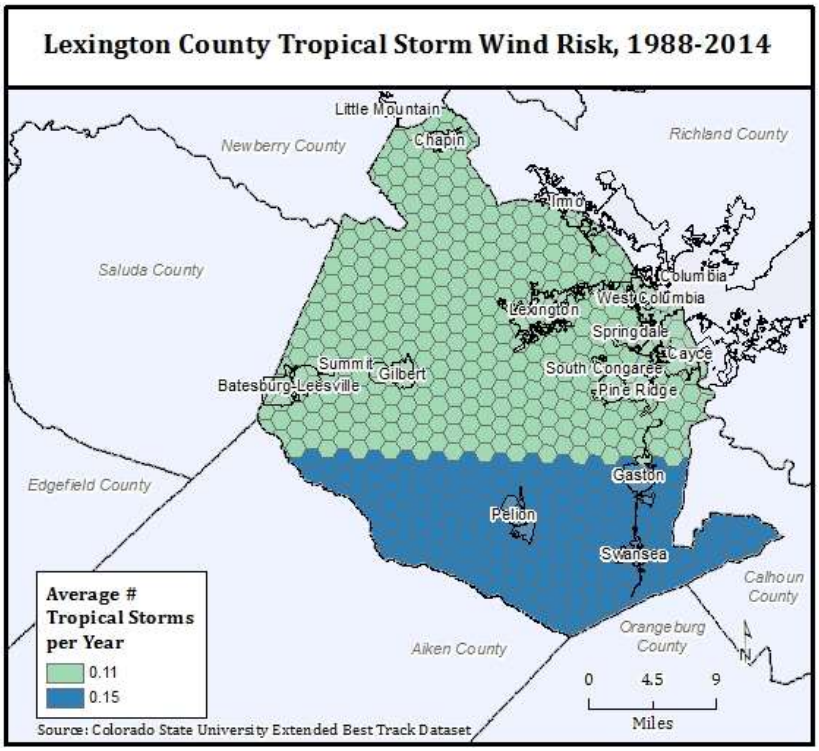


Figure 100 - Risk from tropical storms in Lexington County.

Table 48 - Record of loss-causing tropical cyclone events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
8/29/1964	8/31/1964	0	0	$8,300	$8,300	TS	Statewide	Tropical Storm Cleo
9/12/1964	9/13/1964	0	0	$830	$830	TS	South Carolina	Tropical Storm Dora
6/7/1968	6/8/1968	0	0	$739	$73	TS	Statewide	Tropical Storm Abby
6/20/1972	6/21/1972	0	0	$615	$6,156	TD	Statewide	Tropical Depression Agnes
9/4/1979	9/5/1979	0	0	$708,875	$0	Cat. 1	East and Central SC	Hurricane David
8/28/1988	8/28/1988	0	0	$3,126	$3,126	TS	SCZ003-005-006-007-008 Eastern and Central SC	Tropical Storm Chris
9/22/1989	9/22/1989	0	0	$9,545	$95,458	Cat. 4	Eastern Portions	Hurricane Hugo
8/24/1995	8/28/1995	0	0	$337,692	$3,376	TS	Statewide	Tropical Storm Jerry
TOTAL		**0**	**0**	**$1,069,722**	**$117,319**			

C) Tornadoes

What to expect: Every property and person is at risk from tornadoes in Lexington County, with a slightly higher risk in the northwest and southwest corners of the county based on past tornado warnings (Figure 102). Low magnitude tornadoes are not uncommon in Lexington County with twisters occurring every other year. The area has experienced more intense (EF3) tornadoes affecting densely populated areas (Figure 101). This does not mean that stronger tornadoes are impossible. Neighboring counties have experienced EF4s. Lexington County is at risk from tornadoes spawned by severe thunderstorms and from outbreaks associated with tropical systems (as seen during Tropical Storm Frances).

Geographic Extent: Based on past occurrences, the entire county is susceptible to tornadoes.

Tornado statistics for Lexington County are as following:

Number of Events:	24
Number of Loss-Causing Events:	11
Frequency of Occurrence:	44%
Recurrence Interval:	2.3 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$5,726,975
Total Fatalities:	1
Deadliest Event:	1 fatality (July 23, 1997)
Most Property Damage:	$1.4 million (January 10, 1972)
Most Crop Damage:	$36,000 (July 23, 1997)

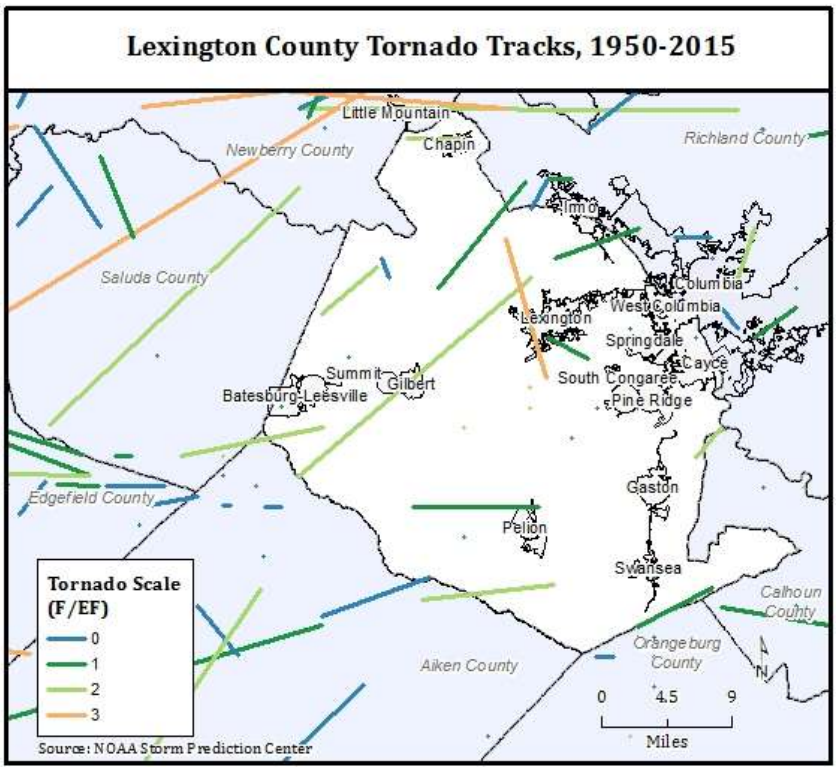


Figure 101 - Tornado risk in Lexington County.

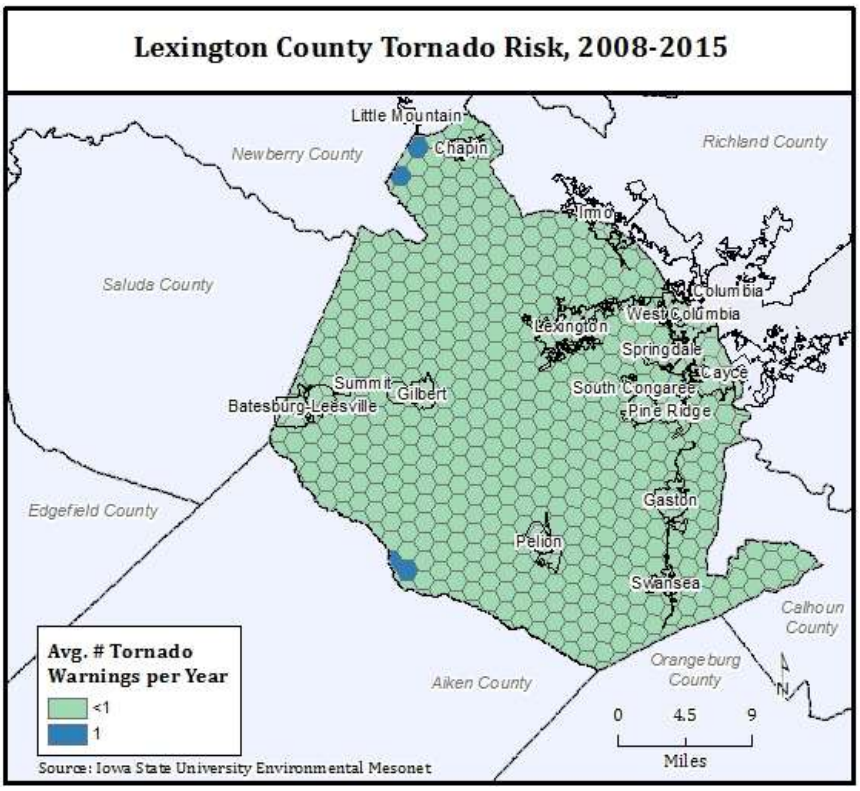


Figure 102 - Tornado risk in Lexington County.

Table 49 - Record of loss-causing tornado events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
1/10/1972	1/10/1972	2	0	$1,415,885	$0	F1		
2/22/1974	2/22/1974	0	0	$1,200,487	$0	F1		
2/11/1981	2/11/1981	0	0	$7,813	$0	F1		
2/21/1989	2/21/1989	0	0	$477,290	$0	F1		
2/22/1993	2/22/1993	2	0	$0	$0	F1		A tornado clipped off or uprooted numerous trees along a 0.5-mile-path. Roof of a house was lifted up and set back down a mobile home destroyed, another overturned, and severely damaged, roof blown off a garage, shed picked up and destroyed, and four chicken houses damaged.
8/16/1994	8/16/1994	4	0	$0	$0	F0	Edmund	Tornado observed as it touched down and damaged trees and home in southeast Edmund. It lifted and moved across Edmund Fire Station then touched down and damaged pine forest immediately north of Edmund.
8/16/1994	8/16/1994	40	0	$0	$0	F3	Lexington	Lake Murray tornado touched down near intersection of SC311 and SC244 3 miles south-southeast of Lexington. Major damage occurred to the Glassmaster factory at the intersection of SC6 and Interstate 20. The tornado from that point was mostly on the ground as it moved through east and north central Lexington. Outside of Lexington, the tornado passed near the Rikard Nursing home. The storm became more intense with another area of severe damage in the Secret Cove area along the south Lake Murray shore. The tornado apparently dissipated over Lake Murray although strong winds were noted in the Old Forbes Road area on the northern shore of Lake Murray. **Approximately 200 homes were damaged, many businesses, several churches and public buildings were also** damaged. Five electric substations were damaged in Lexington County with 15,000 customers without electrical power. Forty people were injured. The tornado was observed by many people from the time it first struck near SC602 until it dissipated over Lake Murray.
1/14/1995	1/14/1995	0	0	$77,669	$0	F1	Pelion	Tornado on ground continuously for one mile with several touchdowns over another mile. Damage included heavy timber damage.
7/23/1997	7/23/1997	6	1	$1,352,566	$36,875	F2	Gaston	An F2 tornado producing winds to 150 mph killed a 32-year old female and injured 6 others. Two homes were destroyed and 9 others had major damage. Two apartments were destroyed (duplex). Seven mobile homes were destroyed and 94 had minor damage. Numerous trees were down and two crop fields had areas of destroyed crops.
3/28/2010	3/28/2010	1	0	$1,085,666	$10,857	EF2	Ridge Rd	An EF2 with max winds of 125mph touched down near Ridge Road and continued northeast to Lake Murray. Around 40 homes had some form of

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
								damage with numerous trees and power lines down. Several vehicles were also damaged and there was one minor injury. One horse was killed when a portion of a barn collapsed.
2/24/2012	2/24/2012	0	0	$61,866	$0	EF1	Fairview	NWS storm survey found the tornado in Aiken County crossed into Lexington county and took down many trees and did minor damage to a couple of homes.
TOTAL		**55**	**1**	**$5,679,244**	**$47,731**			

D) Thunderstorms

What to expect: Every property and person is at risk from severe thunderstorms in Richland County. Severe thunderstorms are a common occurrence in Lexington County with 11 to 18 severe thunderstorm warnings issued annually by the local NWS forecast office (Figure 103). The Midlands see on average up to 12 days per year with rainfall amounts of 1 inch or more, 30 days per year with rainfall between 1/2 inch and 1 inch, and about 70 days per year with rainfall amounts of less than 1/2 inch[64]. Prior to the 2015 flash flood disaster, the daily rainfall record stood at 7.1 inches (September 4, 1998). During the October 2015 flood, 21.5 inches of rain fell over several days. Thunderstorms are complex and associated with different hazards: lightning, wind, rain, and/or hail. To understand the full impact of severe thunderstorms, the impacts of thunderstorms, wind, hail, and lightning should be considered jointly (Table 50).

Geographic Extent: Based on past occurrences, the entire county is susceptible to thunderstorms. There appears to be a higher propensity for severe weather in the eastern half of Lexington County.

It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and hail since they are reported separately—although in a meteorological sense they are tied together. Thunderstorm statistics for Lexington County are as following:

Number of Events:	41
Number of Loss-Causing Events:	38
Frequency of Occurrence:	75%
Recurrence Interval:	1.3 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$685,465
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$98,500 (July 29,2002)
Most Crop Damage:	$83,000 (October 4, 1964)

[64] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

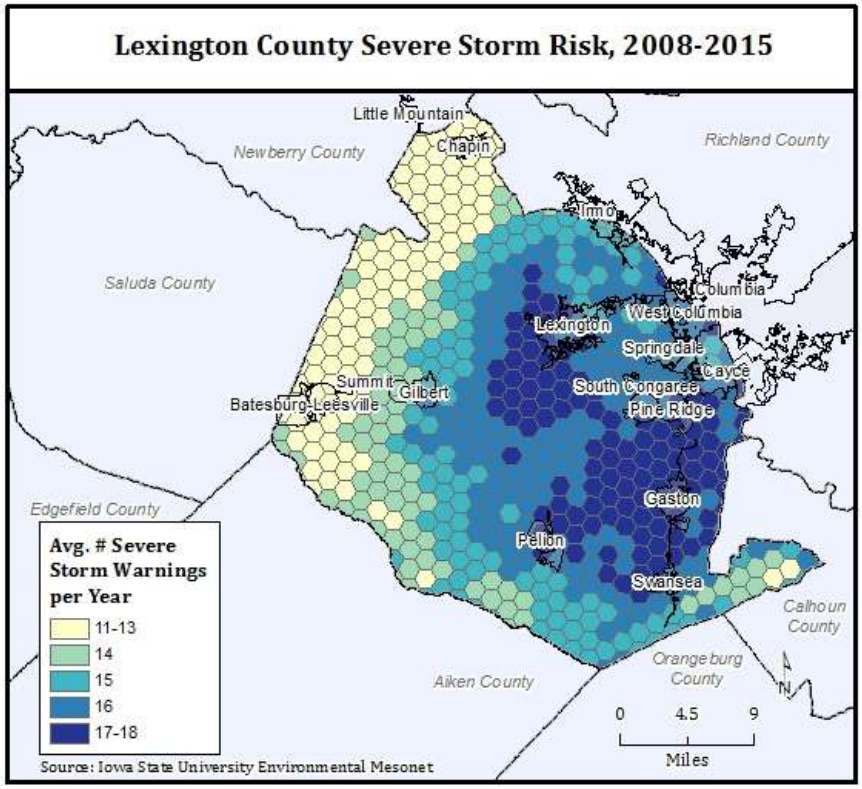


Figure 103 - Severe storm risk in Lexington County.

Table 50 - Record of loss-causing thunderstorm events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
7/14/1960	7/14/1960	0	0	$199	$0	0.13”	Columbia and vicinity	Thunderstorm
2/24/1961	2/24/1961	0	0	$1,131	$0	2.95”	Western and central	Wind and rain
9/30/1964	10/1/1964	0	0	$15,273	$15,273	2.93”	South Carolina Midlands and central plains	Rainstorm
10/4/1964	10/6/1964	0	0	$83,007	$83,007	3.27”	Statewide	Rainstorm
10/15/1964	10/16/1964	0	0	$0	$8,300	5.18”	Statewide	Rainstorm
6/8/1965	6/16/1965	0	0	$0	$81,689	10.70”	Statewide	Locally heavy rains
6/13/1965	6/13/1965	1	2	$0	$0	0.10”	Near Batesburg	Heavy rain
8/18/1965	8/18/1965	0	0	$18,788	$0		Columbia and vicinity, Richland and Lexington counties	Heavy thundershower, lightning
9/2/1965	9/2/1965	0	0	$1,878	$0	5.06”	Columbia and vicinity, Richland and Lexington counties	Heavy rain
2/13/1966	2/13/1966	0	0	$794	$0	0.51”	Statewide	Wind and rain
8/20/1967	8/25/1967	0	0	$77,042	$770	5.65”	Statewide	Rain
3/15/1971	3/15/1971	0	0	$635	$0	0.42”	Statewide	Thunderstorms, high winds
9/4/1972	9/4/1972	0	0	$28,317	$0	0.03”	Countywide	Thunderstorm, high winds

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
8/4/1973	8/4/1973	0	0	$148	$14		Midlands and southern SC	Rain, wind, electrical
8/29/1973	8/29/1973	0	0	$133	$13		Northwest and Midlands	Wind, rain, electrical
3/12/1974	3/12/1974	0	0	$184	$0	0.06”	Western and central SC	Thunderstorm
5/12/1974	5/12/1974	0	0	$12,636	$12,636		Central, southern, eastern SC	Lightning, heavy rain, high wind
1/25/1975	1/25/1975	0	0	$478	$0	0.50”	Statewide	Squall line
3/14/1975	3/14/1975	0	0	$2,200	$0		Newberry, Lexington county	Wind, rain, lightning
7/14/1975	7/14/1975	0	0	$64	$6	3.02”	Central and northern SC	Wind, rain
6/16/1976	6/16/1976	0	0	$1,040	$104	3.58”	Central SC, Lexington and Richland counties	Thunderstorm and heavy rains
6/16/1976	6/17/1976	0	0	$1,040	$104	4.06”	Central SC, Lexington and Richland counties	Thunderstorms and heavy rains
3/31/1977	3/31/1977	0	0	$42	$0	0.17”	Statewide	High winds, heavy rains
9/7/1977	9/7/1977	0	0	$424	$42	0.27”	Statewide	Thunderstorms, high winds, heavy rain
12/5/1977	12/5/1977	0	0	$42	$0	0.86”	Statewide	Thunderstorm
8/21/1979	8/21/1979	0	0	$8,152	$0	0.04”	St. Andrews area, Richland and Lexington counties	Severe thunderstorm
7/10/1980	7/10/1980	1	0	$47,883	$4,788	0.23”	Lexington, Richland, and Sumter counties	Severe storm, thunderstorm wind
7/16/1981	7/16/1981	0	0	$32,554	$0		Greenwood, Newberry, Lexington, and Richland counties	Lightning, wind, rain
4/17/1982	4/17/1982	0	0	$0	$613	0.65”	Columbia	High winds, thunderstorm
12/3/1983	12/4/1983	0	0	$4,570	$457	2.01”	Western & central	Wind, heavy rain
12/28/1983	12/28/1983	0	0	$7,427	$0	0.40”	Central	Severe storm, thunderstorm wind
2/21/1989	2/21/1989	0	0	$19,091	$0	0.20”	SCZ003-004-005-006-007-008, central and eastern SC	Thunderstorm
7/29/2002	7/29/2002	0	0	$98,694	$0	1.26”	Columbia Airport	Severe storm, thunderstorm wind
2/22/2003	2/22/2003	0	0	$2,573	$0	0.48”	Batesburg to Swansea	Severe storm, thunderstorm wind
7/30/2003	7/30/2003	0	0	$5,146	$0	0.13”	Pelion	Severe storm, thunderstorm wind
7/21/2013	7/21/2013	0	0	$4,064	$0	0.14”		Heavy rain
8/12/2014	8/12/2014	0	0	$2,000	$0	0.10”		Heavy rain
TOTAL		**2**	**2**	**$477,649**	**$207,816**			

*No magnitude information indicates rainfall amounts were unavailable.

E) Lightning

What to expect: Every property and person is at risk from lightning in Lexington County. Lightning occurs very frequently in Lexington County averaging several strikes per day. While the County does not experience a thunderstorm every day, the fact that a single thunderstorm produces hundreds of lightning strikes—each of which is counted in the statistic below—results in high frequency and recurrence figures. Similar to the pattern of thunderstorm risk, most lightning strikes (cloud-to-ground) occur in the southeastern part of the county (Figure 104). House fires and personal harm are common with lightning.

Geographic Extent: Based on past occurrences, the entire county is susceptible to lightning strikes. There appears to be a higher propensity for severe weather and therefore lightning strikes in the southeastern part of the county.

Lightning statistics for Lexington County are as following:

Number of Events:	149,258
Number of Loss-Causing Events:	39 (1960-2014)
Daily Frequency of Occurrence:	1,515%
Daily Recurrence Interval:	0.1 days (several times per day)
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1986-2012
Total Losses:	$2,178,330
Total Fatalities:	2
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$940,00 (June 27, 2004)
Most Crop Damage:	$12,500 (May 12, 1974)

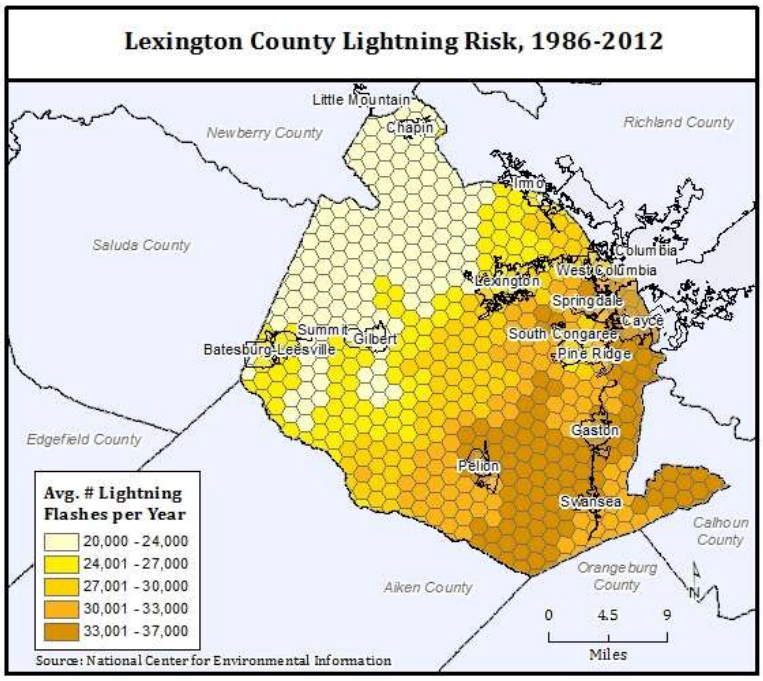


Figure 104 - Lightning risk in Lexington County.

Table 51 - Record of loss-causing lightning events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
9/5/1961	9/5/1961	2	0	$0	$0	Swansea	
8/18/1965	8/18/1965	0	0	$18,788	$0	Columbia and vicinity, Richland and Lexington counties	
8/27/1965	8/27/1965	0	0	$816	$0	Statewide	
7/15/1966	7/15/1966	0	0	$18,266	$0	Columbia, Richland and Lexington counties	
9/4/1966	9/4/1966	0	1	$365	$0	Gilbert	
8/19/1967	8/19/1967	0	0	$35,439	$0	Lexington County	
8/4/1973	8/4/1973	0	0	$148	$14	Midlands and southern SC	
8/29/1973	8/29/1973	0	0	$133	$13	Northwest and Midlands	
3/21/1974	3/21/1974	0	0	$5,219	$521	Statewide	
4/8/1974	4/8/1974	0	0	$6,669	$6	Central, western & northern SC	
4/8/1974	4/8/1974	0	0	$96	$0	Central SC	
5/12/1974	5/12/1974	0	0	$12,636	$12,636	Central, southern, eastern SC	
8/13/1974	8/13/1974	0	0	$1,091	$109	Central	
8/28/1974	8/28/1974	0	0	$24,009	$2,400	Lexington, Cayce, West Columbia	
3/14/1975	3/14/1975	0	0	$2,200	$0	Newberry and Lexington counties	
5/15/1975	5/15/1975	0	0	$4,782	$47	Statewide	
7/24/1975	7/24/1975	0	0	$628	$0	Western, central and northern SC	
8/27/1975	8/27/1975	0	0	$5,789	$57	North, northeast, and central	
10/9/1976	10/9/1976	0	0	$5,778	$57	Central and eastern	
7/14/1977	7/14/1977	0	0	$4,246	$42	Statewide	
5/31/1981	5/31/1981	0	0	$13,021	$0	Pelion	
7/16/1981	7/16/1981	0	0	$32,554	$0	Greenwood, Newberry, Lexington, Richland counties	
7/25/1983	7/25/1983	0	0	$2,583	$25	Statewide	
8/23/1983	8/23/1983	0	0	$3,395	$0	North and central SC	
7/13/1984	7/13/1984	0	0	$5,696	$0	Columbia, West Columbia, Cayce	
5/28/1986	5/28/1986	0	0	$5,400	$0	Lexington and Richland counties	
8/2/1986	8/2/1986	0	0	$10,800	$0	West Columbia	
8/6/1990	8/6/1990	1	0	$0	$0	Edmund	
7/19/1993	7/19/1993	4	0	$0	$0	Gaston	
6/10/1996	6/10/1996	0	0	$452,650	$0	Lexington	
5/27/2000	5/27/2000	0	0	$103,108	$0	Lexington	Lightning struck a home at 213 Chancery Lane and caused $75K in damage.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
6/18/2003	6/18/2003	0	0	$70,763	$0	West Columbia	Lightning struck a home setting on fire and destroying it.
6/8/2004	6/8/2004	1	1	$0	$0	Lexington	Lightning struck a tree and branched off to hit a man and a woman. The man was killed and the woman had a slight injury.
6/27/2004	6/27/2004	0	0	$939,926	$0	Irmo	Sheriff reported 4 homes on fire in Irmo from lightning strikes.
8/13/2005	8/13/2005	0	0	$193,947	$0	Columbia Airport	Lightning caused a home fire near Pine Ridge at 3994 Quarter Trail road in the Charwood subdivision.
7/26/2010	7/26/2010	0	0	$21,713	$0	Irmo	Home fire from lightning strike damages the upper portion of the structure.
7/26/2010	7/26/2010	0	0	$130,280	$0	Lexington	WIS TV reported a home had major damage from a lightning induced fire on Ball Park road.
7/13/2011	7/13/2011	0	0	$29,468	$0	Batesburg	Spotter reported a barn was completely destroyed be fire caused from a lightning strike.
TOTAL		**8**	**2**	**$2,162,403**	**$15,927**		

F) Wind

What to expect: Every property and person is at risk from wind in Lexington County. The county frequently experiences high wind events with gust of 50 knots (58mph) or more (Figure 105, Table 52). Wind gust of 80 knots (92 mph) have been recorded. On average, severe winds occur monthly. Due to concurrence of high wind with severe thunderstorms, the spatial distribution of wind events within the county is similar to the thunderstorm risk. High winds cause largely property damage and power outages due to falling tree or tree limbs.

Geographic Extent: Based on past occurrences, the entire county is susceptible to wind damage. There appears to be a higher propensity for severe weather and therefore wind damage in the central and southern part of the county.

Wind statistics for Lexington County are as following:

Number of Events:	490
Number of Loss-Causing Events:	170
Frequency of Occurrence:	891%
Recurrence Interval:	0.1 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$2,312,724
Total Fatalities:	1
Deadliest Event:	1 fatality (August 30, 1998)
Most Property Damage:	$310,000 (January 6, 1995)
Most Crop Damage:	$74,000 (July 16, 1997)

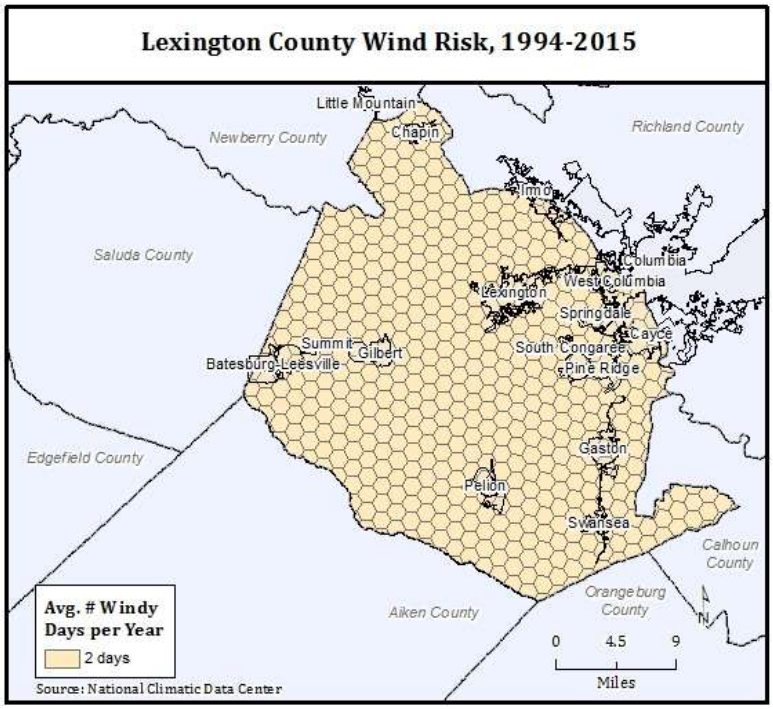


Figure 105 - Wind risk in Lexington County.

Table 52 - Record of loss-causing wind events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
10/13/1982	10/13/1982	0	0	$12,266	$0		Chapin	
7/2/1986	7/2/1986	1	0	$0	$0	0		Thunderstorm wind
10/13/1986	10/13/1986	0	0	$1,080	$0		South Congaree	
7/11/1987	7/11/1987	0	0	$0	$104		Columbia Airport	
7/29/1987	7/29/1987	0	0	$104	$0		Congaree	
7/29/1987	7/29/1987	0	0	$10,419	$0		Cayce	
4/6/1988	4/6/1988	0	0	$100	$100		20 miles NW of Columbia	
4/15/1988	4/15/1988	0	0	$100	$0			
5/23/1988	5/23/1988	0	0	$100	$0		Leesville-Batesburg	
5/23/1988	5/23/1988	0	0	$100	$0		Lexington	
5/23/1988	5/23/1988	0	0	$100	$0		4NE Lexington	
5/23/1988	5/23/1988	0	0	$1,000	$10,005		7W Lexington	
6/9/1988	6/9/1988	0	0	$1,000	$0		Batesburg	
6/9/1988	6/9/1988	0	0	$1,000	$0		Cayce	
7/16/1988	7/16/1988	0	0	$10,005	$0		West Columbia	
7/29/1988	7/29/1988	0	0	$1,000	$0		Swansea	
7/31/1988	7/31/1988	0	0	$10,005	$0		6NE	

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
							Lexington	
2/21/1989	2/21/1989	1	0	$9,545	$0		4W West Columbia	
2/21/1989	2/21/1989	0	0	$95,458	$0		Gilbert and Redbank	
2/21/1989	2/21/1989	1	0	$0	$0	0		Thunderstorm wind
4/4/1989	4/4/1989	0	0	$954	$0		Lexington	
5/5/1989	5/5/1989	0	0	$95,458	$0		Batesburg-Leesville	
5/5/1989	5/5/1989	0	0	$95,458	$0		5SW Chapin	
2/22/1993	2/22/1993	0	0	$8,191	$0		4 ENE Leesville to 1.8 NNW Gilbert	
5/15/1994	5/15/1994	0	0	$399	$0		Irmo	
7/19/1994	7/19/1994	0	0	$7,987	$0	0		Thunderstorm wind
6/12/1995	6/12/1995	0	0	$7,767	$0	0	Swansea	Thunderstorm wind
11/7/1995	11/7/1995	2	0	$0		0	Irmo	Thunderstorm wind
2/21/1997	2/21/1997	0	0			50	Chapin	Severe thunderstorms took down trees and power lines in Irmo, Chapin, and West Columbia as a squall line moved through the area. A **gustnado** briefly touched down at the Barnyard flee market and did minor damage to a building.
7/16/1997	7/16/1997	0	0	$7,375	$73,750	70	Pelion	Thunderstorm wind
5/8/1998	5/8/1998	2	0	$21,786	$0	50	Lexington	Thunderstorm wind
8/30/1998	8/30/1998	0	1	$17,428	$0	55	Swansea	Thunderstorm wind
5/6/1999	5/6/1999	6	0			60	Batesburg	The May 6th event caused widespread damage. According to the SC insurance industry **6.5 million** in damage occurred across the state most of it in the Midlands. Sheriff reported trees down throughout county and damage to homes and buildings, including Airport high school where several students and faculty were injured by flying debris.
6/22/2000	6/22/2000	1	0	$0	$0	60	Chapin	Sheriff reported trees down.
7/29/2002	7/29/2002	0	0	$98,695	$0	55	Columbia Airport	A microburst developed right over the Columbia and produced wind gusts of 60-70mph causing significant damage to several hangers and a few planes.
2/22/2003	2/22/2003	0	0	$2,573	$0	55	Batesburg	Sheriff and SKYWARN spotters AF4VN and KE4LHS reported a shed destroyed in Batesburg and trees down in eastern portions of the county from Swansea to Chapin.
7/30/2003	7/30/2003	0	0	$5,146	$0	50	Pelion	NWS COOP observer reported portions of roofs blown off utility buildings into nearby fields. Numerous large tree branches were strewn around.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
6/24/2007	6/24/2007	0	0	$3,425	$0	50	Lexington	Storm survey found a large tree down and a roof peeled off half of a mobile home. A funnel cloud was reported but damage was due to a microburst.
9/12/2007	9/12/2007	0	0	$22,835	$0	55	Gaston	A microburst moved across a field through a mobile home community and took down a couple of trees, did minor damage to the skirting around a dozen mobile homes, and lifted a carport off its foundation and rolled it about 40 yards. The carport was open in the front and closed on the sides and back.
7/9/2008	7/9/2008	0	0	$131,946	$0	80	Lexington	Sheriff dispatch reported numerous trees down and large limbs down across the town. Several homes were damaged. NWS survey reported that the damage was due to a wet microburst which produced winds estimated to be around 90 mph.
7/21/2008	7/21/2008	0	0	$164,932	$0	60	Batesburg	Reported large trees down in Batesburg and power poles down in Leesville. Significant damage also occurred at Wiz's southern convenience storm and Oswald Lumber company.
7/28/2008	7/28/2008	0	0	$5,498	$0	60	Lexington	Spotter reported trees down and shingles blown off a house near Platt Springs Rd and White Knoll High School.
8/2/2008	8/2/2008	0	0	$131,946	$0	60	Lexington	Two large trees fell on a home pretty much destroying it. One person was trapped inside but was not injured.
8/6/2008	8/6/2008	0	0	$2,199	$0	50	Swansea	Aiken Electric reported large branches and a couple of power lines down in the Swansea area which produced some minor power outages.
8/6/2008	8/6/2008	0	0	$6,597	$0	55	Gaston	WIS TV reported trees and power lines down in Gaston and the surrounding area.
12/11/2008	12/11/2008	0	0	$2,199	$0	50	Gaston	DOT reported several trees down in the Gaston area.
12/11/2008	12/11/2008	0	0	$3,299	$0	50	Barr	DOT reported several trees down on Longs Pond Rd.
12/11/2008	12/11/2008	0	0	$13,195	$0	60	Lexington	Emergency manager reported trees down and a mobile home overturned. There were no injuries.
6/10/2009	6/10/2009	0	0	$16,552	$0	50	Leesville	Public reported several trees down in Leesville with one through a home.
6/11/2009	6/11/2009	0	0	$2,207	$0	50	West Columbia	West Columbia police reported power lines down on several roads.
6/18/2009	6/18/2009	0	0	$4,414	$0	55	Chapin	NWS employee reported several trees down from Chapin to Ballentine to Irmo.
6/18/2009	6/18/2009	0	0	$13,242	$0	55	Lexington	EM reported scattered trees down throughout the county.
6/18/2009	6/18/2009	0	0	$8,828	$0	60	Gaston	Sheriff reported numerous trees down from Gaston to Swansea.
7/1/2009	7/1/2009	0	0	$66,208	$0	78	Lexington	NWS storm survey indicated a microburst affect 2 neighborhoods 1 to

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
								2 miles west northwest of Lexington. Winds were estimated to have ranged from 80 to 90 mph. The Westbrook and Martins Grove neighborhoods were hit the hardest. Several homes sustained damage.
7/30/2009	7/30/2009	0	0	$1,103	$0	55	Samaria	Hill View truck stop reported a couple of trees down at i-20 and Fairview Rd.
7/30/2009	7/30/2009	0	0	$1,103	$0	50	Pelion Corporate Airport	DOT reported a couple of trees down on old Charleston Hwy (sc32-625) near the Lexington County airport.
7/31/2009	7/31/2009	0	0	$3,310	$0	55	Batesburg	DOT reported several trees down in Batesburg.
7/31/2009	7/31/2009	0	0	$2,207	$0	55	Gilbert	Public reported several trees down just northeast of Gilbert on Hwy 604.
7/31/2009	7/31/2009	0	0	$1,103	$0	50	Swansea	DOT reported a couple of trees down on Hwy 321 near the Orangeburg County line.
7/31/2009	7/31/2009	0	0	$1,103	$0	50	Springdale	DOT reported a couple of trees down on Platt Springs Rd.
8/5/2009	8/5/2009	0	0	$1,103	$0	50	Gaston	Winds blew over an 80 pound sign at the country gas mart. Hail was also reported but the size was unknown.
8/11/2009	8/11/2009	0	0	$8,828	$0	55	Chapin	Sheriff reported trees and power lines down from Chapin to Irmo.
12/9/2009	12/9/2009	0	0	$2,207	$0	50	Lexington	Sheriff and off duty employee reported trees down at the intersection of Hwy 378 and mineral springs road.
1/25/2010	1/25/2010	0	0	$5,428	$0	55	Lexington	Sheriff reported power lines down near Beechwood and Old Cherokee Rds.
6/28/2010	6/28/2010	0	0	$6,514	$0	50	Lexington	Sheriff reported trees down around the 1500 block of Old Orangeburg Rd.
6/28/2010	6/28/2010	0	0	$6,514	$0	50	Red bank	Sheriff reported power lines down at the intersection of Old Orangeburg and Bluefield Rds.
6/29/2010	6/29/2010	0	0	$2,171	$0	55	Chapin	Police department reported power lines down on Chapin Rd.
6/29/2010	6/29/2010	0	0	$8,685	$0	60	Irmo	NWS employee reported trees down on the northeast side of Irmo.
6/29/2010	6/29/2010	0	0	$8,685	$0	60	Irmo	NWS employee reported trees down just east of Irmo east of i-20.
6/29/2010	6/29/2010	0	0	$28,227	$0	55	Red Bank	Sheriff reported trees down on a home soutwest of Red Bank.
7/11/2010	7/11/2010	0	0	$10,857	$0	65	Batesburg	EM reported numerous trees down at Hwy 178 and Fairview Rd and also at I-20 exit 39.
7/22/2010	7/22/2010	0	0	$3,257	$0	55	Irmo	NWS employee reported several trees down on Hollingshed Rd and Lykes Ln northeast of the Irmo area.
7/26/2010	7/26/2010	0	0	$8,685	$0	65	Irmo	Highway Patrol reported many trees down on Charing Rd and US76.
7/26/2010	7/26/2010	0	0	$26,056	$0	70	Irmo	NWS employee reported many trees down in Irmo from an intense wet microburst. Minor roof damage also occurred to several structures including homes and businesses.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
7/26/2010	7/26/2010	0	0	$13,028	$0	70	Irmo	Police reported many trees down in and east of the Irmo area into Richland county.
7/26/2010	7/26/2010	0	0	$4,343	$0	55	Lexington	Highway Patrol reported trees down near Barr and Rawl Rd.
7/26/2010	7/26/2010	0	0	$8,685	$0	60	Irmo	DOT reported several trees down subdivisions just south of Irmo.
7/26/2010	7/26/2010	0	0	$1,086	$0	55	Lexington	Public reported a tree and large limbs down.
7/26/2010	7/26/2010	0	0	$1,086	$0	50	Irmo	Sheriff reported a tree down at Bush River and Langsdale Rds.
7/27/2010	7/27/2010	0	0	$2,171	$0	50	Irmo	EM reported power lines down on Foxglove Rd.
8/17/2010	8/17/2010	0	0	$1,086	$0	50	Lexington	Tree down on Cherokee Tr near Northwood Dr.
8/17/2010	8/17/2010	0	0	$2,171	$0	55	Providence	Trees down on Beechwoods Dr near hallmark Dr.
10/14/2010	10/14/2010	0	0	$4,343	$0	50	Lexington	NWS employee reported two trees down and minor damage to a home.
10/14/2010	10/14/2010	0	0	$1,086	$0	50	Gaston	Public reported a tree down and nickel size hail.
11/16/2010	11/16/2010	0	0	$3,257	$0	55	Lexington	NWS employee reported trees down on Mineral Springs Rd.
11/30/2010	11/30/2010	0	0	$4,343	$0	50	Leesville	Highway Patrol reported several trees down.
11/30/2010	11/30/2010	0	0	$1,086	$0	50	Edmund	Highway Patrol reported a tree down near the intersection of Meadowfield and Fish Hatchery Rds.
2/28/2011	2/28/2011	0	0	$1,052	$0	50	Chapin	DOT found a couple of trees down near Gardenia and Archway Cts west of Chapin.
2/28/2011	2/28/2011	0	0	$14,734	$0	50	West Columbia	Public reported roof partially torn off a building and damage to a car.
3/19/2011	3/19/2011	0	0	$8,420	$0	50	Pelion	COOP reported the side of a building and part of the roof were torn off by strong winds and large branches were down.
3/19/2011	3/19/2011	0	0	$2,105	$0	50	Swansea	DOT reported a few trees down on US 321 from Swansea to Woodford.
4/5/2011	4/5/2011	0	0	$25,259	$0	60	Chapin	Highway Patrol reported numerous trees down from Chapin to Irmo.
4/5/2011	4/5/2011	0	0	$23,154	$0	65	Gaston	Sheriff reported numerous trees and power lines down from Gaston to Swansea.
4/6/2011	4/6/2011	0	0	$126,293	$0	65	Leesville	Local police reported several trees down on 4 homes and power lines down as well.
4/6/2011	4/6/2011	0	0	$63,147	$0	65	Lexington	EM reported many trees down around the city, some on a couple of homes.
5/10/2011	5/10/2011	0	0	$8,420	$0	55	Chapin	Public reported trees and power lines down at Chapin Elementary School.
5/13/2011	5/13/2011	0	0	$2,105	$0	55	Samaria	Sheriff reported trees down and across Quattlebaum Rd near i-20.
5/13/2011	5/13/2011	0	0	$4,210	$0	55	Arthur	NWS employee reported trees down off Mineral Springs Rd near Lexington.
5/27/2011	5/27/2011	0	0	$1,052	$0	55	Pelion	Sheriff dispatch reported one tree down

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
								on Tindall Rd in Pelion.
6/2/2011	6/2/2011	0	0	$6,315	$0	55	Providence	Highway Patrol reported several trees down at Pilgram Church and Cherokee Rds.
6/2/2011	6/2/2011	0	0	$39,993	$0	65	Providence	Public reported pontoon boats damaged, trees down, and a sea wall damaged along Power Point Ln at Lake Murray.
6/2/2011	6/2/2011	0	0	$5,262	$0	55	Arthur	Highway Patrol reported trees down on Old Barnwell Rd near US 1.
6/2/2011	6/2/2011	0	0	$12,629	$0	60	Happy Town	Highway Patrol reported trees down near I-26 and Hwy 378. Highway sign also destroyed.
6/2/2011	6/2/2011	0	0	$1,052	$0	50	Arthur	Highway Patrol reported a tree in the road near I-20 and Dooley Rd.
6/2/2011	6/2/2011	0	0	$1,052	$0	50	Dixiana	Highway Patrol reported a tree in the road near US 321 and Glenn Rd.
6/2/2011	6/2/2011	0	0	$1,052	$0	50	Edmund	Highway patrol reported a tree in the roadway near pleasant view road and sc 6.
6/2/2011	6/2/2011	0	0	$1,052	$0	50	Swansea	Highway Patrol reported a tree in the roadway near SC 6 and Sardis Church Rd.
6/5/2011	6/5/2011	0	0	$3,157	$0	55	Pelion Corporate Airport	Sheriff reported power lines down in the roadway along Pond Branch and Caulks Ferry Rds.
6/5/2011	6/5/2011	0	0	$3,157	$0	55	Pelion Corporate Airport	Sheriff reported trees in the roadway at Caulks Ferry and Water Tank Rds.
6/15/2011	6/15/2011	0	0	$2,105	$0	55	Chapin	Sheriff reported a few trees down around the Chapin community.
6/15/2011	6/15/2011	0	0	$6,315	$0	55	Lexington	Sheriff reported several trees and power lines down around Lexington.
6/18/2011	6/18/2011	0	0	$3,157	$0	55	Irmo	Sheriff reported trees down near Morningside Dr and Beatty Rd in West Columbia.
6/20/2011	6/20/2011	0	0	$5,262	$0	50	Clubhouse Rd	Public reported a roof partially torn off a barn and several large tree branches down in the yard.
6/21/2011	6/21/2011	0	0	$2,105	$0	55	Providence	Sheriff reported trees down at the intersection of Beechcreek Rd and County Lake Dr.
6/23/2011	6/23/2011	0	0	$2,105	$0	55	Cayce	NWS employee reported trees down along I-26 near mile marker 116.
7/13/2011	7/13/2011	0	0	$3,157	$0	55	Barr	Highway Patrol reported trees down on Kyzer Rd near Platt Springs Rd.
7/13/2011	7/13/2011	0	0	$2,105	$0	55	Batesburg	Highway Patrol reported several trees down near Batesburg.
8/9/2011	8/9/2011	0	0	$2,105	$0	55	Chapin	Highway Partrol reported trees down along I-26 near the 89 mile marker on the west bound side.
9/25/2011	9/25/2011	0	0	$18,944	$0	55	Lexington	Highway Patrol reported trees down in the greater Lexington and Red Bank areas.
10/13/2011	10/13/2011	0	0	$4,210	$0	55	Arthur	Highway Patrol reported trees down along Corley Mill Rd near Hwy 378.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
3/3/2012	3/3/2012	0	0	$8,249	$0	55	Lexington	Sheriff reported trees down along the 1500 block of Corley Mill Rd.
3/3/2012	3/3/2012	0	0	$3,093	$0	50	Barr	Sheriff reported trees down on Calks Ferry Rd near Pond Branch Rd.
3/3/2012	3/3/2012	0	0	$3,093	$0	50	Irmo	Sheriff reported trees down at Beatty Rd and Morningside Dr.
3/24/2012	3/24/2012	0	0	$1,031	$0	50	Providence	Highway Patrol reported a tree down in the road in the 300 block of Maxie rd.
3/24/2012	3/24/2012	0	0	$1,031	$0	50	Providence	Highway Patrol reported power lines down at the intersection of St. Peters Church Rd and Hwy 378.
4/3/2012	4/3/2012	0	0	$3,093	$0	50	Ridge Rd	Sheriff reported trees down at the intersection of Ansel Caughman Rd and Union Church Rd.
5/17/2012	5/17/2012	0	0	$5,156	$0	60	Pelion Corporate Airport	Pelion COOP observer reported shingles ripped off of her roof by strong winds.
6/12/2012	6/12/2012	0	0	$1,031	$0	50	Ridge Rd	Highway Patrol reported a couple of trees down near the intersection of Cedar Grove Rd and Hwy 378.
7/1/2012	7/1/2012	0	0	$2,062	$0	55	Lexington	Sheriff reported a couple of trees down on Old Chapin Rd in Governors Grant.
7/1/2012	7/1/2012	0	0	$1,031	$0	55	Lexington	Sheriff reported a tree in the road on Pilgrim Church Rd off of North Lake Rd.
7/1/2012	7/1/2012	0	0	$2,062	$0	55	Chapin	Highway Patrol reported trees down along I-26 near mile markers 98 and 99.
7/1/2012	7/1/2012	0	0	$3,093	$0	55	Chapin	Police reported trees down on St. Peter Church Rd.
7/3/2012	7/3/2012	0	0	$4,124	$0	60	Pelion	Power company reported trees down on power lines near Pelion.
7/5/2012	7/5/2012	0	0	$2,062	$0	50	Swansea	Post office reported a couple of trees down in Swansea.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	Batesburg Airport	Highway patrol reported trees in the road at SC-245 and US-178.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	Ella	Highway Patrol reported trees in the road at Lester Keisler Rd and Campground Rd.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	Syrup	Highway Patrol reported trees in the road at Island Trail Rd and Indian Fork Rd.
7/27/2012	7/27/2012	0	0	$2,062	$0	55	Pooles Rd	Highway Patrol reported trees down along Hwy 178 and Johnson King Rd and Mack Edisto Rd.
7/27/2012	7/27/2012	0	0	$1,031	$0	50	Arthur	Highway Patrol reported a tree down along I-26 in the westbound direction at mile marker 61.
8/9/2012	8/9/2012	0	0	$2,062	$0	55	Arthur	Sheriff reported trees down on Mineral Springs Rd at Shoal Creek Rd.
1/30/2013	1/30/2013	0	0	$6,097	$0	50	Ella	SCE&G reported several trees and power lines down along the south shore of Lake Murray.
1/30/2013	1/30/2013	0	0	$8,130	$0	50	Providence	SCE&G reported several trees and power lines down along the south shore of Lake Murray.
1/30/2013	1/30/2013	0	0	$3,049	$0	50	Irmo	Sheriff reported a few trees down along College St.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
3/18/2013	3/18/2013	0	0	$6,097	$0	55	Lexington	NWS employee reported several trees down around the Lexington area.
3/18/2013	3/18/2013	0	0	$10,162	$0	60	Springdale	Highway Patrol reported trees down on Kitty Hawk Dr.
4/19/2013	4/19/2013	0	0	$4,065	$0	50	Gilbert	Highway Patrol reported trees down at the intersection of Crout Pl and Old Charleston Rd.
4/19/2013	4/19/2013	0	0	$4,065	$0	50	Providence	DOT reported trees on Old Cherokee and Wise Ferry Rds.
6/13/2013	6/13/2013	0	0	$1,016	$0	50	Arthur	Sheriff reported a tree down near drthe intersection of Cromer Rd and Oak drive.
6/18/2013	6/18/2013	0	0	$4,065	$0	55	Ella	Public reported trees down on Smallwood Rd and on Dreher Island Rd.
6/25/2013	6/25/2013	0	0	$2,032	$0	55	Irmo	Highway Patrol reported power lines down on Mill Stream Rd at Corley Mill Rd.
6/25/2013	6/25/2013	0	0	$1,016	$0	55	Arthur	A social media report had a large tree down completely blocking the Millstream Rd half way between Hope Ferry Rd and Corley Mill Rd.
7/17/2013	7/17/2013	0	0	$2,032	$0	50	Kathwood	Sheriff reported trees down on Wilkinson at Poplar St.
7/17/2013	7/17/2013	0	0	$2,032	$0	50	Cayce	Sheriff reported trees down at Indigo Ave. and 9th St.
7/17/2013	7/17/2013	0	0	$3,049	$0	55	Springdale	Highway patrol reported trees down at the 2200 block of Durham Dr.
7/27/2013	7/27/2013	0	0	$2,032	$0	50	Chapin	Highway Patrol reported a couple of trees down on roads in the Chapin area.
8/1/2013	8/1/2013	0	0	$12,195	$0	55	Leesville	Electric company reported power outages near Leesville from large limbs and trees down on power lines.
8/1/2013	8/1/2013	0	0	$2,032	$0	55	Leesville	Highway Patrol reported a couple trees down near the intersection of Pond Rd and Lewis Waters Rd.
8/1/2013	8/1/2013	0	0	$3,049	$0	55	Samaria	Highway Patrol reported trees down at the intersection of Quattlebaum and Two Notch Rds.
8/1/2013	8/1/2013	0	0	$2,032	$0	55	Gilbert	Highway Patrol reported trees down at Exit 44 on I-20.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Swansea	Highway Patrol reported a couple of trees down along I-26 near the Lexington/Calhoun county line.
5/27/2014	5/27/2014	0	0	$18,000	$0	55	Cayce	TV station reported a large tree down on a car in the Edenwood neighborhood of Cayce.
5/27/2014	5/27/2014	0	0	$24,000	$0	55	Cayce	Several TV stations reported multiple trees down on Sandy Ln in Cayce. One fell on a home causing damage.
5/27/2014	5/27/2014	0	0	$6,000	$0	55	Cayce	Sheriff reported several trees down on Cayce Riverwalk closing the walk.
6/19/2014	6/19/2014	0	0	$4,000	$0	55	Ella	Sheriff reported power lines down on Lakeview Ln.
6/19/2014	6/19/2014	0	0	$6,000	$0	55	Syrup	Highway Patrol reported trees down on Hill Haven and Jake Meetze Rds.
8/8/2014	8/8/2014	0	0	$1,000	$0	56	Edmund	Public reported a 64mph wind gust, a

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.(kts)*	Location	Description
								tree down, and 3/4 inch hail.
8/12/2014	8/12/2014	0	0	$6,000	$0	55	Irmo	Sheriff reported trees and power lines down at the intersection of Coldstream Dr and Brent Ford Rd.
8/18/2014	8/18/2014	0	0	$6,000	$0	55	Batesburg Airport	DOT reported trees down at Brodie Rd and South Lee St, and at Hwy 178 and SC 245 just south of Batesburg-Leesville. Some trees were also on power lines.
11/24/2014	11/24/2014	0	0	$3,000	$0	55	Irmo	Public reported trees down in the Coatsworth subdivision off of St. Andrews Rd.
TOTAL		**14**	**1**	**$2,228,766**	**$83,959**			

*No magnitude information indicates wind speeds were unavailable.

G) Hail

What to expect: Every property and person is at risk from hail in Richland County. Hail is common in Lexington County and occurs at least every six months (Figure 106). Hail events occur mostly during spring thunderstorms from March through May. The county has seen hailstones of up to 2.5" in diameter (Figure 107) mostly in the central and southern parts of the county. It appears that crop damage from hail events is severely underreported.

Geographic Extent: Based on past occurrences, the entire county is susceptible to hail damage.

Hail statistics for Lexington County are as following:

Number of Events:	283
Number of Loss-Causing Events:	68
Frequency of Occurrence:	515%
Recurrence Interval:	0.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$1,665,131
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$300,000 (June 10, 1982)
Most Crop Damage:	$300,000 (June 10, 1982)

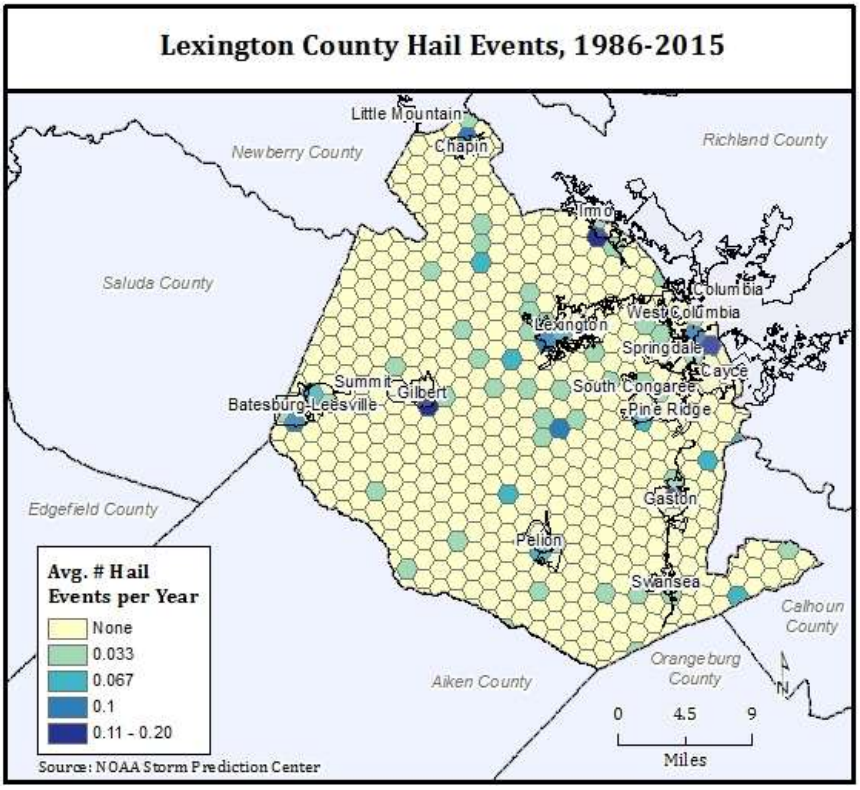


Figure 106 - Hail risk (occurrence) in Lexington County.

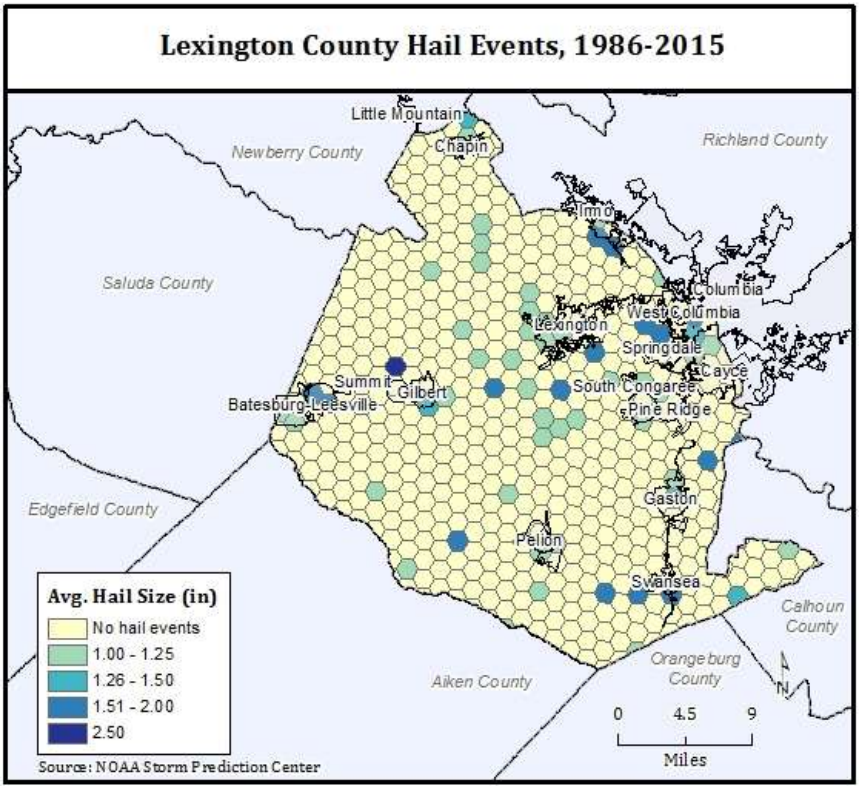


Figure 107 - Risk of large hail events in Lexington County.

Table 53 - Record of loss-causing hail events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/18/1960	2/18/1960	0	0	$1,142	$0		Central, northern SC	Windstorms, hail
7/1/1960	7/1/1960	0	0	$199	$0		Columbia area	Wind and gail
4/12/1962	4/12/1962	0	0	$1,567	$0		Central SC	Hail and wind
6/11/1963	6/11/1963	0	0	$0	$84,092		Statewide	Hailstorms
4/7/1965	4/7/1965	0	0	$4,175	$0	1	Owensville, Greenville County to St. Matthews, Calhoun County	Hail
7/1/1965	7/31/1965	0	0	$816	$0		Statewide	Wind, heavy rain, hail
7/19/1965	7/19/1965	0	0	$816	$81		Statewide	Hail, lightning, wind
5/28/1973	5/29/1973	0	0	$987	$987		Western and northern	Hail, wind, electrical
12/13/1973	12/13/1973	0	0	$9	$98		Northern and western SC	Hail, lightning
3/29/1974	3/29/1974	0	0	$5,716	$5,716		Northern, eastern, central SC	Wind, hail, electrical
5/19/1974	5/19/1974	0	0	$800	$80		Northwest and southern	Hail, high wind, lightning
7/16/1974	7/16/1974	0	0	$923	$923		Central and southern SC	Wind, hail
7/21/1974	7/21/1974	0	0	$48,019	$4,801		Charleston, Lexington, Richland, Georgetown, Horry counties	Wind, hail, rain
3/7/1975	3/7/1975	0	0	$628	$0		Northwest, central and northeast SC	Wind, lightning, and hail
3/24/1975	3/24/1975	0	0	$4,782	$47		Statewide	Wind, lightning, hail
5/10/1975	5/10/1975	0	0	$12,223	$122,230	1	York to Bamberg and Spartanburg to Oconee and Anderson	Hail, wind, lightning
6/15/1975	6/15/1975	0	0	$647	$647		Northern and central SC	Lightning, wind, hail
6/18/1975	6/18/1975	0	0	$47	$4,782		Statewide	Wind, lightning, hail
6/19/1975	6/19/1975	0	0	$814	$814		Northern and western SC	Lightning, wind, hail
7/4/1975	7/4/1975	0	0	$6,286	$62,861		Northern and central SC	Wind, hail, lightning
9/5/1975	9/5/1975	0	0	$2,000	$2,000		Northwest and central SC	Thunderstorm, wind, hail
6/6/1977	6/6/1977	0	0	$424	$4,246		Statewide	Wind, lightning, hail
4/20/1981	4/20/1981	0	0	$186	$18		Orangeburg, Union, Clarendon,	Thunderstorm wind, hail, lightning

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
							Calhoun, Lexington, Dorchester, Beaufort counties	
2/17/1982	2/17/1982	0	0	$61	$0		Lexington and Lee counties	Hail, strong winds
4/26/1982	4/27/1982	0	0	$26	$26		Statewide	Thunderstorm, wind, lightning, hail
5/17/1982	5/17/1982	0	0	$34	$340	1.75	North, central, southern SC	Thunderstorms, high winds, hail
6/10/1982	6/10/1982	0	0	$299,173	$299,173		Western, northern, central & eastern SC	Hail, lightning, rain, wind
8/31/1983	8/31/1983	0	0	$1,188	$0	0.75	Lake Murray area	Hail, wind, lightning
3/28/1984	3/28/1984	0	0	$56,962	$5,696		Cayce, Irmo, and Columbia	Hail
4/14/1984	4/14/1984	0	0	$406	$406		Northern and central SC	Hail, wind
5/2/1984	5/2/1984	0	0	$1,139	$0		Near Batesburg	Hail
5/6/1984	5/6/1984	0	0	$0	$569	1	Chapin and White Rock	Hail
6/20/1984	6/20/1984	0	0	$2,476	$247		Statewide	Rain, hail, lightning, wind
7/25/1984	7/25/1984	0	0	$113,924	$1,139	1.75	Central SC	Rain, hail, lightning, wind
10/30/1984	10/30/1984	0	0	$11,392	$0	0.75	6W of Columbia	Wind and hail
2/11/1985	2/12/1985	0	0	$2,391	$2		Statewide	Wind, snow, hail, thunderstorms
6/4/1985	6/4/1985	0	0	$578	$578		Northcentral, central SC	Hail
6/7/1985	6/7/1985	0	0	$2,391	$239	2	Statewide	Hail, wind
8/25/1985	8/25/1985	0	0	$110	$0	1	Pelion	Hail
10/3/1985	10/3/1985	0	0	$1,100	$0		Cayce	Hail, wind
7/2/1986	7/2/1986	0	0	$10,800	$10,800		Chapin	Hail
4/16/1987	4/16/1987	0	0	$10,419	$1,041		Lexington County	Hail
6/3/1987	6/3/1987	0	0	$104	$104		Lexington County	Hail
8/30/1987	8/30/1987	0	0	$10,419	$0	0.75	Cayce	Hail
4/11/1988	4/11/1988	0	0	$3	$0		SCZ003-004-005-006 East and Lower Piedmont, North and South Midland	Small hail
4/12/1988	4/12/1988	0	0	$6	$0		SCZ004-006 Lower Piedmont and South Midlands	Small hail
5/17/1988	5/17/1988	0	0	$100	$100	0.75	Gilbert	Hail

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
5/17/1988	5/17/1988	0	0	$100	$100	0.75	6 mile W Lexington	Hail
5/17/1988	5/17/1988	0	0	$100	$1,000	0.75	3n Columbia airport	Hail
5/23/1988	5/23/1988	0	0	$100	$0	0.75	Lexington	Hail
5/5/1989	5/5/1989	0	0	$9,545	$0	2.5	S Shore Lake Murray	Hail
7/27/1989	7/27/1989	0	0	$95	$0		Chapin	Thunderstorm wind and hail
3/13/1991	3/13/1991	0	0	$8,690	$0	2.5	Gaston	Hail
4/24/1995	4/24/1995	0	0	$3,107	$0	1	West Columbia	Hail
4/24/1995	4/24/1995	0	0	$3,107	$0	1	I-20 & SC378	Hail
6/12/1995	6/12/1995	0	0	$1,553	$0	0.75	West Columbia	Hail
4/28/2011	4/28/2011	0	0	$4,210	$2,105	1	Gilbert	Public reported quarter size hail in Gilbert.
8/9/2011	8/9/2011	0	0	$1,052	$0	1.5	Chapin	Hail the size of quarters mixed with hail the size of Ping Pong balls were reported. Also, trees were down in one yard.
7/1/2012	7/1/2012	0	0	$30,933	$10,311	2	Happy Town	Public reported hen egg size hail at Graydon Court.
7/1/2012	7/1/2012	0	0	$30,933	$20,622	1.75	Leesville	SKYWARN spotter reported golfball size hail in Leesville.
7/1/2012	7/1/2012	0	0	$20,622	$10,311	1.75	Red Bank	Public reported golfball size hail falling on Hwy 6 in Red Bank.
7/1/2012	7/1/2012	0	0	$5,156	$5,156	1	Gilbert	Public reported quarter size hail.
7/1/2012	7/1/2012	0	0	$20,622	$20,622	2	Gilbert	Public reported Hen egg size hail.
7/1/2012	7/1/2012	0	0	$15,467	$15,467	1.75	Gilbert	Public reported golfball size hail.
7/1/2012	7/1/2012	0	0	$5,156	$5,156	1	Edmund	Spotter reported 1 inch hail at Timber Chase Ln and McLee Rd.
7/1/2012	7/1/2012	0	0	$30,933	$30,933	1	Edmund	Numerous reports of 1 inch hail on Roland Dr, Emmanual Church Rd, Longs Pond Rd near I-20, and Lexington Hills Subdivision.
7/1/2012	7/1/2012	0	0	$20,622	$15,467	2	Arthur	Public reported hen egg size hail on Old Barnwell Rd.
7/1/2012	7/1/2012	0	0	$67,022	$15,467	1.75	Chapin	Public reported golfball size hail causing damage to roofs and vehicles and covering much of the ground.
TOTAL		**0**	**0**	**$897,533**	**$767,598**			

*No magnitude information indicates hailstone sizes were unavailable.

H) Fog

What to expect: Fog does not cause direct property damage or injuries. But indirectly, the personal safety of boaters, motorists, and other travelers is at risk due to poor visibility during fog conditions. Fog is very common in Lexington County and occurs most frequently during the fall and spring months. On average, the county experiences at least 25 days[65] with some periods of fog (or haze). The number of fogs days varies considerably ranging from an average of 25 days of fog per year in the western part of the county up to 107 days in the east central portion of the country, south of Pineridge (Figure 108). There is no explicit record of property damage or fatalities associated with fog as reported by SHELDUS™ or NCDC's Storm Data. This is likely due to the fact that most damage from fog is indirect (e.g., traffic accidents).

Geographic Extent: Based on past occurrences, the entire county is susceptible to fog. Eastern Lexington County, particularly eastern-central, experiences significantly larger number of days with reduced visibility compared to Batesburg or Chapin areas.

Fog statistics for Lexington County are as following:

Number of Events:	25-107 days of fog per year
Number of Loss-Causing Events:	n/av (largely motorist accidents)
Daily Frequency of Occurrence:	>7%
Daily Recurrence Interval:	<14.6 days
Expected changes to frequency and recurrence interval in the future:	Not enough information available to make assumptions about future changes
Events on Record:	1986-2015
Total Losses:	n/av
Total Fatalities:	n/av
Deadliest Event:	n/av
Most Property Damage:	n/av
Most Crop Damage:	n/av

[65] A "fog day" has reduced visibility due to fog, haze, or smoke at any time of the day as indicated by NWS station data.

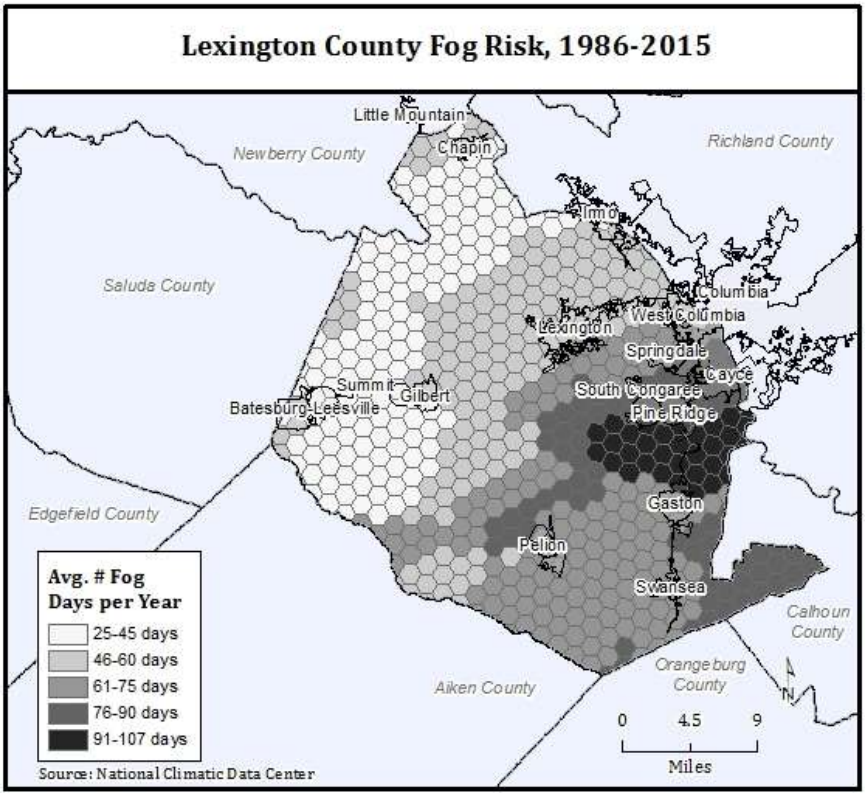


Figure 108 - Fog risk in Lexington County.

I) Winter Snow & Ice Storms

What to expect: Every property and person is at risk from winter weather in Lexington County. Ice storms and winter weather occur nearly every year—on average at least 1 to 3 days per year (Figure 109). Snow accumulations of 2 inches and more are rare, though the area has seen significant snow accumulations in the past (Table 54). Record snowfall of 16 inches occurred in 1973, and in 2010 8.6 inches were recorded in the City of Columbia[66]. The highest daily snowfall amount was 12.3 inches (February 10, 1973)[67].

More damaging than snow events are ice storms, which tend to occur frequently in this area. Ice accumulations of 3/4 of an inch or more are possible but even thin coatings of ice cause havoc. Falling trees lead to power outages, road closures, and damage to homes and other properties. In addition, winter weather tends to adversely affect agriculture more than any other hazard. It appears that crop damage from winter weather events is severely underreported.

Geographic Extent: The entire county is susceptible to damage from winter weather. The western half of Lexington County tends to experience one or two additional winter weather days (Figure 109).

[66] NWS Columbia Forecast Office, 2010. February snowfall and the record books. Available at http://www.weather.gov/cae/Snowfall_Total_Records_cor.html
[67] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

Winter weather statistics for Lexington County are as following:

Number of Events:	32
Number of Loss-Causing Events:	32
Frequency of Occurrence:	58%
Recurrence Interval:	1.7 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Winter weather-related Presidential Disaster Declarations:	DR-1313 (2000) DR-1509 (2004) DR-4166 (2014)
Total Losses:	$9,409,622
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$580,000 (February 10, 1973
Most Crop Damage:	$6.8 million (February 15, 1969)

January 22, 2000 (DR-1313): A severe winter storm resulted in widespread power outages. Thirty-eight counties in South Carolina were designated for federal assistance including Lexington County.

January 26-30, 2004 (DR-1509): An ice storm began over the North Midlands of South Carolina on Sunday night and gradually spread south into the Central Midlands on Monday. The storm continued into Tuesday, but was mainly freezing drizzle during that time. Ice accumulations of 1/2 to 3/4 of an inch occurred which brought numerous trees and powerlines down. The heaviest ice accumulations occurred in Lancaster, Chesterfield, Fairfield, Newberry, Saluda, McCormick, Orangeburg, and Clarendon counties. Over 250,000 homes, businesses, and schools were without power for several days. Sleet also fell in Lancaster and Chesterfield counties and accumulated up to 2 inches. Six people were injured in traffic related accidents and there were no deaths. Damage estimates from SCEMD were $28.5 million.

February 2014 (DR-4166): Two separate winter storm systems impacted the eastern half of the State including Lexington County from February 11th through February 13th. The first system brought snow and sleet to much of the Northern Midlands and the Pee Dee Regions. The second, and more severe system, impacted the entire Southeast. Areas across the Northern portions of South saw significant snowfall. Across the central portions of the State, there was a transition zone in which there was just enough warm air aloft to melt some of the snow, but also enough cold air near the surface to completely refreeze the melted snow into ice pellets. Many areas reported a few inches of ice pellets, with minimal amounts of freezing rain mixed in. The most significant impact was felt across the Central Savannah River Area of Eastern Georgia, and across the Southern and Eastern Midlands of South Carolina with all of the rain falling as Freezing Rain, with many areas receiving between one half of an inch to as much as an inch of ice on every surface. Significant tree and powerline damage occurred across this region. About $220 million were obligated as public assistance for this disaster.

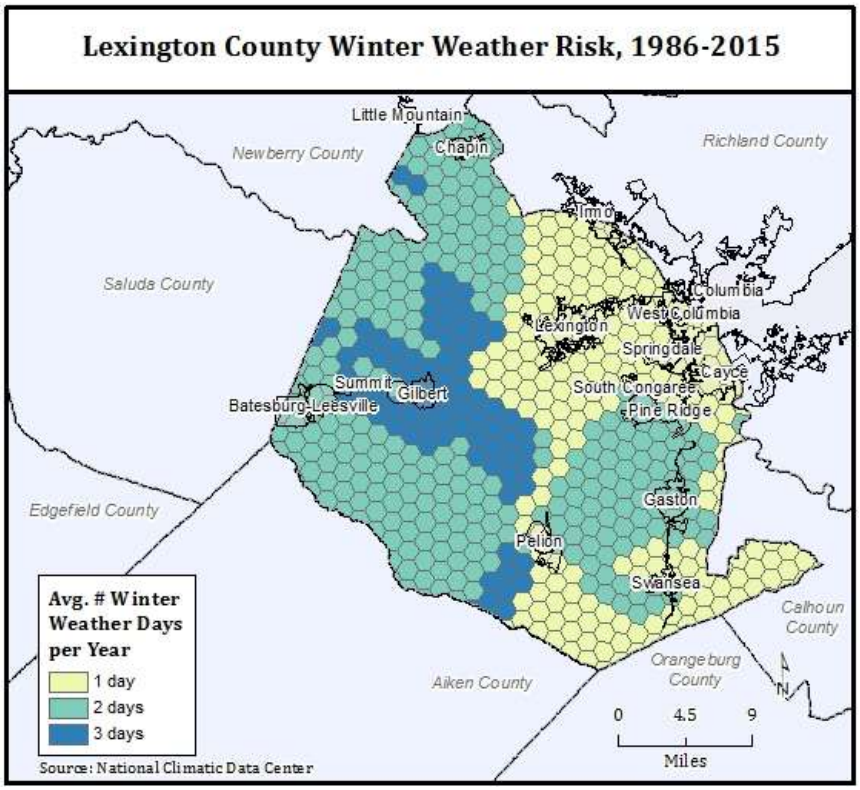


Figure 109 - Risk of winter weather in Lexington County.

Table 54 - Record of loss-causing winter storm events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/9/1960	3/11/1960	0	0	$11,425	$0	3.2”	Northern and central sections of SC	Snow, sleet, ice
1/25/1961	1/26/1961	0	0	$8,606	$860	1.4”	Statewide	Ice storm
2/3/1961	2/4/1961	0	0	$860	$0	0.9”	Statewide	Glaze
12/31/1963	1/1/1964	0	0	$84,092	$8,409	1.15”	Statewide	Ice
1/26/1966	1/27/1966	0	0	$104,380	$0	1.0”	Central and north sections of state	Ice, snow
1/29/1966	1/30/1966	0	0	$0	$79,420	0.4”	Statewide	Severe cold, ice and snow
1/9/1968	1/13/1968	0	0	106293	10	3.9”	Northern 2/3 of state	Rain, sleet, snow, and freezing rain
2/15/1969	2/17/1969	0	0	$68,623	$6,862,310	0.8”	Statewide	Snow, sleet and freezing rain
11/1/1969	11/1/1969	0	0	$12,901	$12	-	Central area	Wind, snow
12/3/1971	12/3/1971	0	0	63536	63536	2.16”	Statewide	Snow, sleet, freezing rain, rain, winds
1/7/1973	1/8/1973	0	0	$57,955	$579,553	2.2”	Statewide	Snow & ice
2/9/1973	2/10/1973	0	0	$579,553	$579	16”	Statewide	Snowstorm
2/6/1979	2/6/1979	0	0	$543,471	$543	Traces	Northwest and central	Snow, sleet, ice

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/17/1979	2/18/1979	0	0	$35,443	$354	5.5”	Statewide	Snow, sleet, freezing rain
2/5/1980	2/6/1980	0	0	$31,228	$312	3.0”	All of SC except South Coastal	Snowstorm over most of State except ice storm near beaches north coastal area
3/1/1980	3/2/1980	0	0	$3,122	$3,122	4.1”	Statewide	Snow, freezing rain, drizzle and sleet
12/23/1980	12/23/1980	0	0	$65	$0	0.4”	Northwest and central	Freezing rain
1/12/1982	1/12/1982	0	0	$4,381	$431	-	All but coastal plain	Snow, sleet, freezing rain
2/26/1982	2/27/1982	0	0	$2,666	$0	0.8”	Statewide	Snow, sleet, glaze
1/21/1983	1/21/1983	0	0	$2,583	$25	1.5”	Statewide	Freezing rain, sleet, snow
3/24/1983	3/24/1983	0	0	$258	$2	0.4”	Statewide	Winter storm, wind, snow
12/22/1983	12/22/1983	0	0	$990	$0	0.35”	Northwest and northcentral SC	Freezing rain
1/13/1984	1/13/1984	0	0	$4,068	$406	0.18”	Northern half of SC	Freezing rain, glaze
1/20/1985	1/24/1985	0	0	$23,914	$2,391	Traces	Statewide	Extreme cold, snow
1/7/1988	1/11/1988	0	0	$21,751	$0	4.3”	Statewide	Snow/ ice, sleet
1/15/1988	1/15/1988	0	0	$357	$0	-	SCZ005-006-007-008 Northeast SC	Heavy snow
2/17/1989	2/19/1989	0	0	$20,751	$0	0.2”	SCZ001-002 Northwest SC	Severe storm, ice, sleet
2/23/1989	2/23/1989	0	0	$2,075	$0	0.49”	Statewide	Severe storm, snow
11/1/2014	11/1/2014	0	0	$12,000	$0	4.5”		Heavy snow
TOTAL		**0**	**0**	**$1,807,347**	**$7,602,275**			

*No magnitude information indicates snowfall amounts or ice thickness were unavailable.

J) Temperature Extremes

What to expect: Lexington County experiences between 41 and 50 days per year when temperatures fall below freezing at any given time of the day, which is generally during nighttime hours in the winter months (Figure 110). Of these cold days, about 13 to 19 days have periods of time with extremely cold temperature (Figure 111). The record minimum temperature for Lexington County was set on February 14, 1899 with -4 degrees Fahrenheit[68]. Most record minimum temperatures in South Carolina date back to 1985 or 1899. The record minimum temperature for the state is -19 degrees, set in Greenville County in 1985. Property damage tends to be restricted to busted water pipes and motor vehicle accidents. However, periods of frost and freeze cause significant damage to agricultural production.

Geographic Extent: Based on past occurrences, the entire county is susceptible to cold weather temperatures. Southern Lexington County is at risk from experiencing more extreme cold weather days then other areas in the county (Figure 111)—meaning the number of days when cold temperatures are above the 95th percentile[69].

[68] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

[69] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely

Cold weather statistics for Lexington County are as following:

Number of Events:	31
Number of Loss-Causing Events:	31
Frequency of Occurrence:	56%
Recurrence Interval:	1.8 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Total Losses:	$7,732,324
Total Fatalities:	1
Deadliest Event:	1 fatality (February 19, 1989)
Most Property Damage:	$210,000 (December 22, 1989)
Most Crop Damage:	$3.1 million (April 7, 1982)

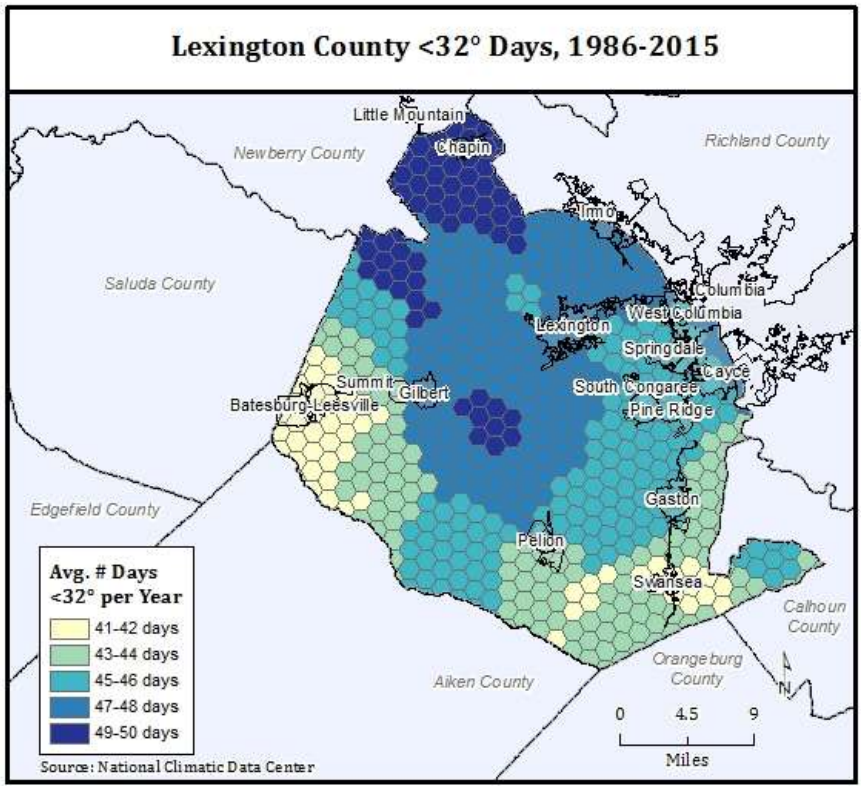


Figure 110 - Cold weather risk in Lexington County.

cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

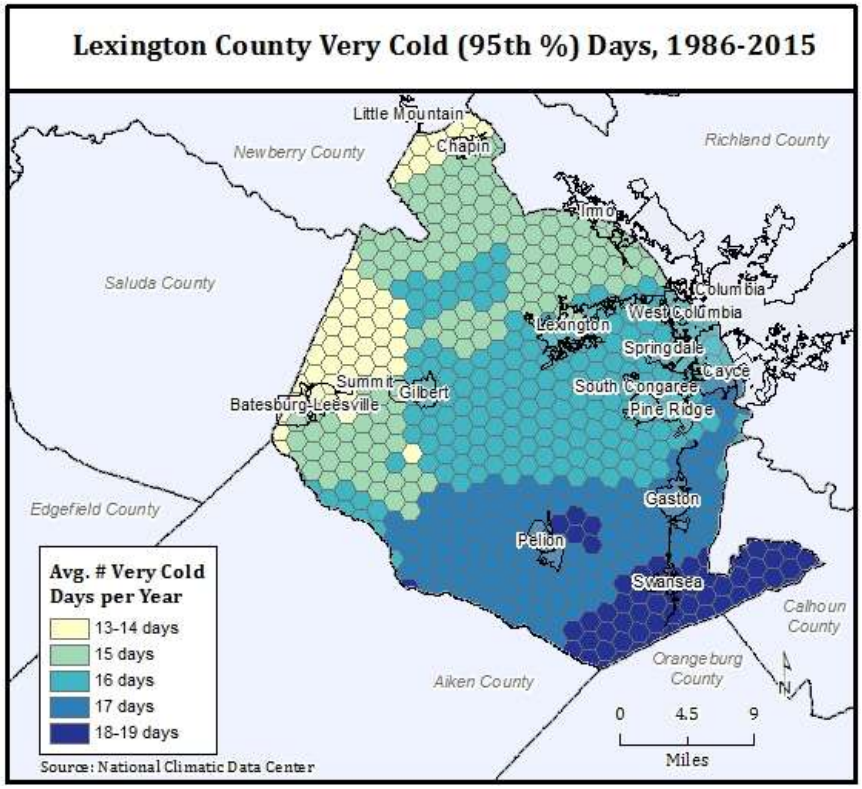


Figure 111 - Risk of cold temperature anomalies in Lexington County.

Table 55 - Record of loss-causing cold weather events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/30/1964	3/31/1964	0	0	$0	$830,070	Statewide	Killing freeze
3/29/1966	3/29/1966	0	0	$15,884	$0	Inland South Carolina	Frost
1/8/1970	1/9/1970	0	0	$663	$6	Statewide	Severe freeze
11/24/1970	11/25/1970	0	0	$6	$6	Statewide	Severe freeze
4/1/1972	4/30/1972	0	0	$0	$321,792	Statewide	Cold spell
2/26/1974	2/26/1974	0	0	$0	$2,400	Batesburg	Hard freeze
10/3/1974	10/4/1974	0	0	$6,156	$0	Western, northern, central SC	Frost, freeze
3/2/1975	3/3/1975	0	0	$0	$4,782	Statewide	Low temperatures
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
1/11/1982	1/11/1982	0	0	$266	$266	Statewide	Hard freeze
3/27/1982	3/27/1982	0	0	$0	$266,655	statewide	Extreme cold
4/7/1982	4/7/1982	0	0	$0	$3,066,528	statewide except southern	Frost, freeze
4/23/1982	4/24/1982	0	0	$0	$26	Statewide	Frost freeze
4/17/1983	4/18/1983	0	0	$0	$2,583,551	Statewide	Extreme cold
12/25/1983	12/25/1983	0	0	$25,835	$25,835	Statewide	Extreme cold
12/30/1983	12/31/1983	0	0	$2,583	$258	Statewide	Extreme cold

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/19/1985	3/19/1985	0	0	$0	$2,391	Statewide	Frost, freeze
12/26/1985	12/26/1985	0	0	$239	$23	Statewide	Cold
1/27/1986	1/28/1986	0	0	$2,347	$23	Statewide	Cold
3/22/1986	3/23/1986	0	0	$0	$2,347	Statewide	Cold
4/23/1986	4/24/1986	0	0	$0	$2,347	Statewide	Frost, freeze
4/1/1987	4/1/1987	0	0	$0	$2,604	SCZ001-002-003-004-005-006-007 All of SC except Immediate coast	Freeze
10/1/1987	10/31/1987	0	0	$0	$226	Statewide	Cold weather
3/14/1988	3/17/1988	0	0	$217	$0	Statewide	Low temperature
2/19/1989	2/19/1989	0	1	$0	$0	Lexington County	Extreme cold
12/22/1989	12/22/1989	0	0	$20,751	$0		Extreme cold
12/22/1989	12/22/1989	0	0	$207,517	$0		Extreme cold
12/22/1989	12/25/1989	0	0	$26,516	$0	SCZ001-002-003-004-005-006 Mountains, Foothills, Piedmont and Midlands	Extreme cold
3/21/1990	3/21/1990	0	0	$0	$196,879	Statewide	Freeze
3/13/1993	3/13/1993	0	0	$102,394	$10,239	SCZ006	High winds, cold
TOTAL		**0**	**1**	**$412,222**	**$7,320,102**		

What to expect: Hot weather is common in Lexington County during the late spring, summer and early fall months. On average, there are 18 to 27 days of above 95 degrees in any given year (Figure 112). Lexington County will experience periods of above 100 degree temperatures in the months of May, June, July, August, September, and October. The hottest temperature on record for Lexington County was measured at the Columbia Metro Airport at 109°F (June 28, 2012). Heat events are a high risk event to public health due to the possibility of heat exhaustion and heat stroke. The number of high temperature days and the duration of heat waves are expected to increase.

Geographic Extent: The entire county is susceptible to hot temperatures. While central and southern parts of the county experience more days above 95 degrees, it is the extreme eastern portions of the county that are at most risk from temperature anomalies meaning the eastern region may experience an additional day of extreme temperatures compared to the rest of the county (Figure 113)[70].

[70] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

Top 10 warmest average June temperature records on record (Columbia, SC)[71]

1) 83.7 degrees set in 2010
2) 83.7 degrees set in 1952
3) 83.3 degrees set in 2011
4) 82.6 degrees set in 2015
5) 82.3 degrees set in 1998
6) 82.3 degrees set in 1943
7) 82.0 degrees set in 2014
8) 82.0 degrees set in 1986
9) 81.9 degrees set in 1944
10) 81.9 degrees set in 1939

June years with the most days of 100 degrees or higher (Columbia, SC)

1) June 1952 - 10 days
2) June 2015 - 6 days
3) June 1956 - 6 days
4) June 2010 - 5 days
5) June 1998 - 5 days
6) June 1954 - 5 days
7) June 1950 - 5 days
8) June 1899 - 5 days

Hot weather statistics for Lexington County are as following:

Number of Events:	7
Number of Loss-Causing Events:	7
Frequency of Occurrence:	13%
Recurrence Interval:	7.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:*	$21,263,066
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$9.4 million (July 1993)
Most Crop Damage:	$9.4 million (August 1993)

[71] NWS Weather Forecast Office Columbia, SC, 2015. June 2015 climate summary. Available at http://www.weather.gov/cae/June2015Climate.html

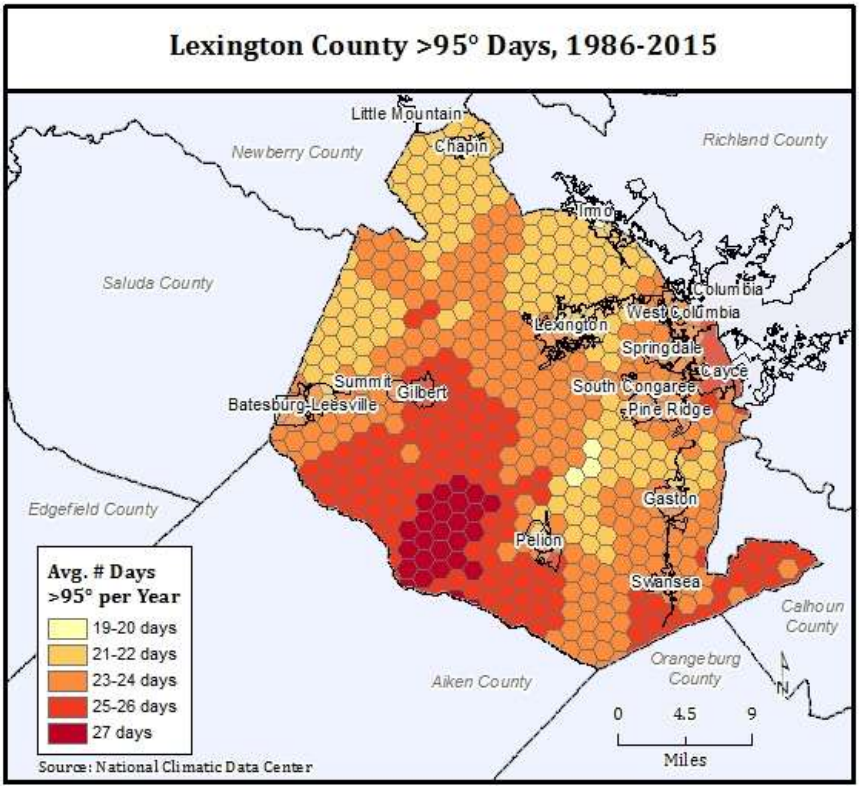


Figure 112 - Hot weather in Lexington County.

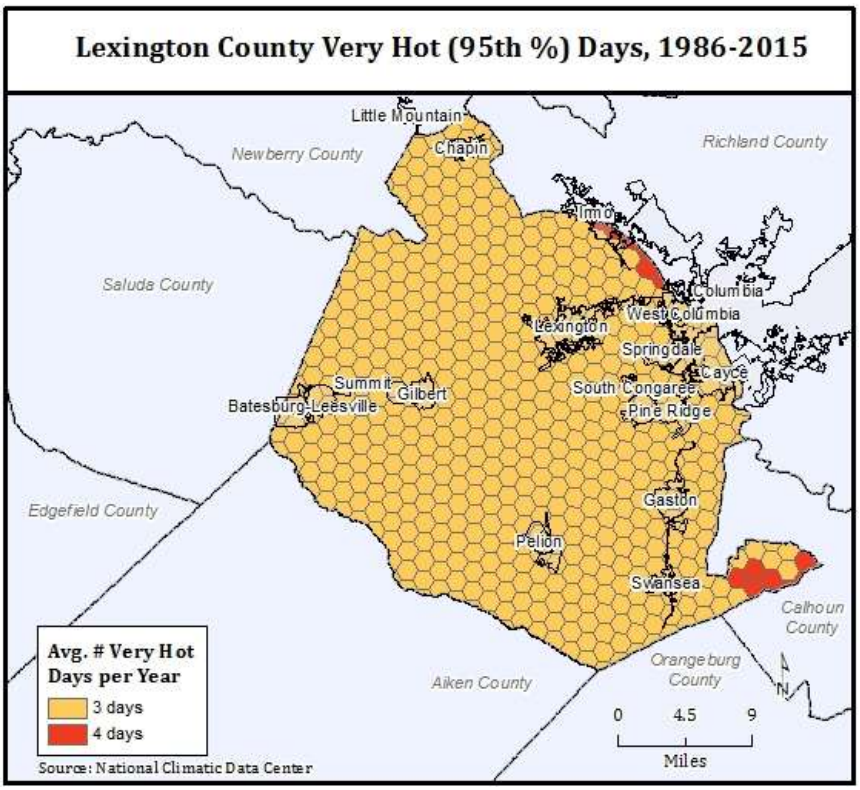


Figure 113 - Risk of hot temperature anomalies in Lexington County.

Table 56 - Record of loss-causing hot weather events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
2/1/1976	2/29/1976	0	0	$452	$4,522	Statewide	Heat
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Statewide	Drought, Heat
10/1/1978	10/31/1978	0	0	$394	$3,946	Statewide	Drought, Heat
6/1/1993	6/30/1993	0	0	$0	$1,780,773	Statewide	Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Statewide	Drought, Heat
6/1/1985	6/7/1985	0	0	$0	$239,146	Statewide	Heat
7/1/1993	7/31/1993	0	0	$9,402,482	$0	SCZ001>007 All SC	Drought, Heat
TOTAL		**0**	**0**	**$9,407,574**	**$11,855,492**		

K) Wildfires

What to expect: On average, wildfires occur frequently—every 2 days—in Lexington County with most of the wildfires occurring in central Lexington County, in and near population centers (Figure 114). Instances of recorded property and crop damage are rare (Table 57). However, the number of wildfire incidents has decreased significantly due to a change in the outdoor burning ordinance in 2007 (Figure 115). The largest wildfire was about 180 acres. The number of wildfire events and the size of wildfires are expected to increase.

Geographic Extent: The entire county is susceptible to wildfire. The risk of wildfire including the propensity for large wildfires is highest in southern Lexington County (Figure 116).

Wildfire statistics for Lexington County are as following:

Number of Events:	4,70.
Number of Loss-Causing Events:	3 (1960-2014)
Daily Frequency of Occurrence:	46%
Daily Recurrence Interval:	2.2 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1988-2015
Total Losses:	$366,633
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$80,000 (March 1966)
Most Crop Damage:	$240,000 (March 1985)

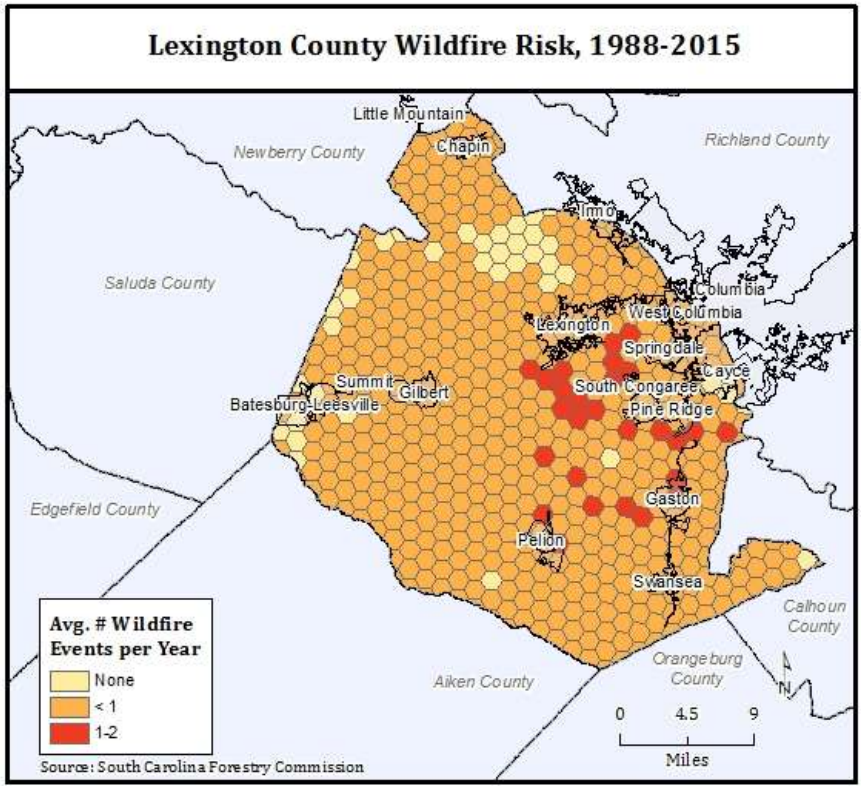


Figure 114 - Wildfire risk (occurrence) in Lexington County based on average number of wildfires per year.

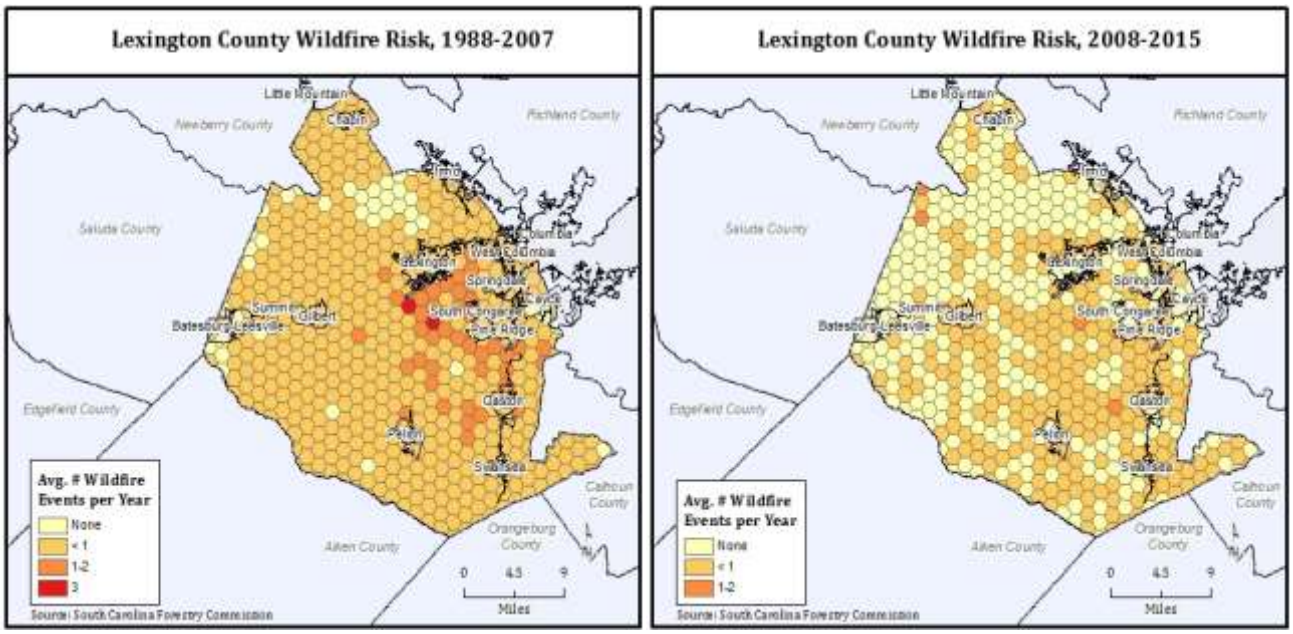


Figure 115 - Effect of changes in burn ordinance on wildfire occurrence in Lexington County.

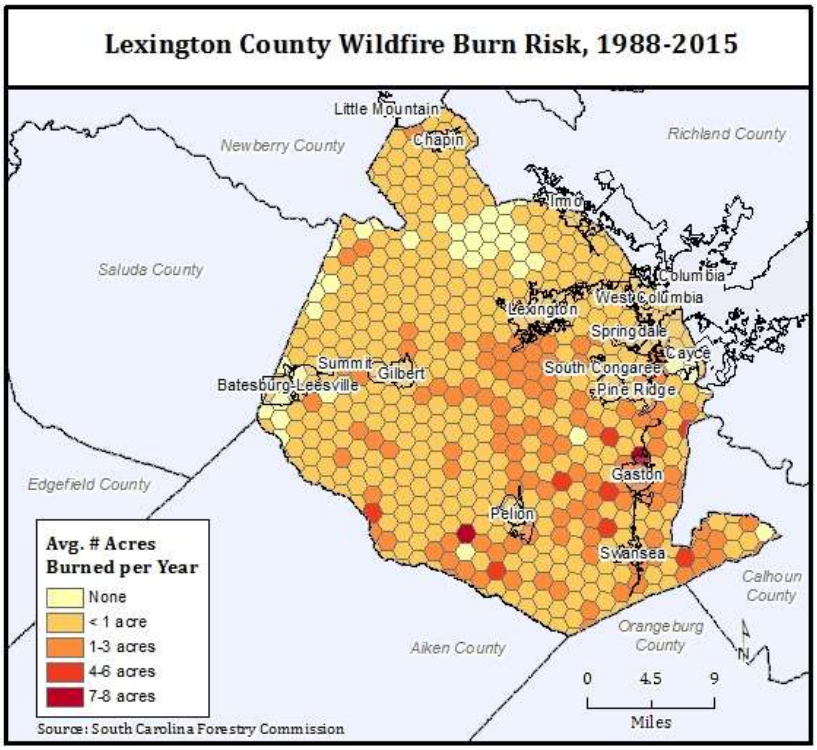


Figure 116 - Risk of large wildfires in Lexington County.

Table 57 - Record of loss-causing wildfire events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/15/1966	3/31/1966	0	0	$79,420	$0	Statewide	Forest fires
3/1/1985	3/21/1985	0	0	$23,914	$239,146	Statewide	Fire
4/1/1985	4/30/1985	0	0	$239	$23,914	Statewide	Fire
TOTAL		**0**	**0**	**$103,573**	**$263,060**		

L) Droughts

What to expect: Lexington County sees drought conditions, i.e. weeks of moderate to extreme drought according to the Palmer Drought Severity Index, on average for 5 to 6 months every year (Figure 117). Multi-year, severe droughts are possible in Lexington County as seen from 1998 through 2002. Lexington County experienced its driest year in 1954 with only 27.38 inches of rainfall (annual average: 48.21 inches)[72]. Droughts are detrimental to agricultural production (incl. forestry and water supply). Agricultural crops (especially corn, cotton, and soybean) are easily stressed by drought conditions and irrigation systems are not common in South Carolina. Droughts also affect tourism and fresh water fisheries. The number of droughts days and the duration of drought events are expected to increase.

Geographic Extent: The entire county is susceptible to drought but the western half of Lexington County tends to experience more weeks in drought conditions. It is important to note that southwestern Lexington County has on average more hot weather days than the rest of the county (Figure 113).

[72] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php

The most damaging droughts occurred in 1954, 1986, and 1998-2002. The latest severely impacted economic sectors such as agriculture, forestry, tourism, power generation, public water supplies, and fresh water fisheries[73]. Less severe droughts were reported in 1988, 1990, 1993, and 1995. Unfortunately, the record on losses, particularly agricultural losses is sparse—not because of a lack of losses but because of shortcomings in tracking drought losses. The current tally of more than $24 million in direct losses is most likely a vast underestimation and possibly exceeds $100 million.

Drought statistics for Lexington County are as following:

Number of Events:	17
Number of Loss-Causing Events:	17
Frequency of Occurrence:	31%
Recurrence Interval:	3.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$24,345,640
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$9.4 million (July 1993)
Most Crop Damage:	$9.4 million (August 1993)

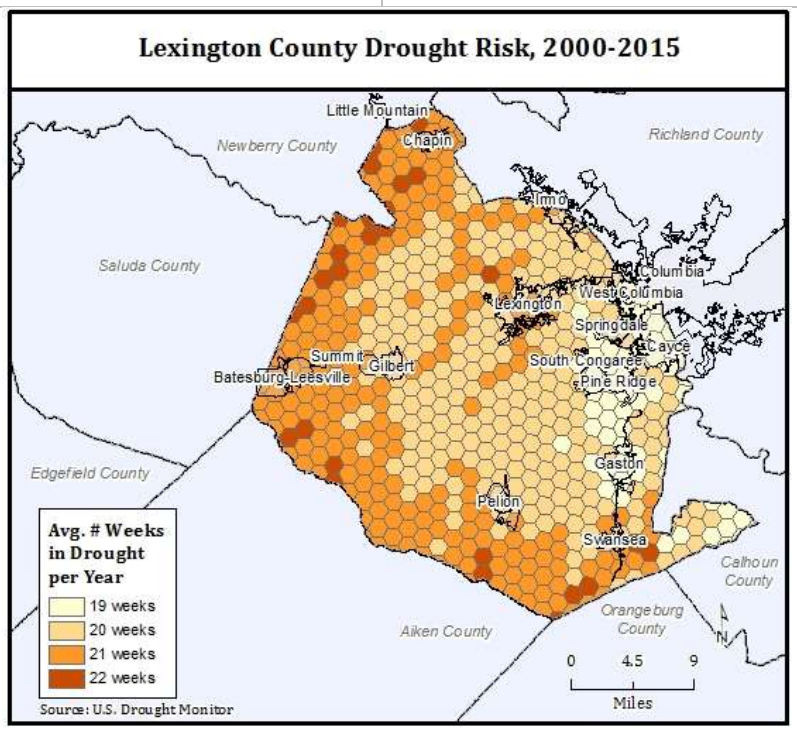


Figure 117 - Drought risk in Lexington County.

[73] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

Table 58 - Record of loss-causing drought events in Lexington County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location	Description
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Moderate	Statewide	Drought, Heat
4/1/1978	4/13/1978	0	0	$39	$3,946	Mild	Statewide	Drought
10/1/1978	10/31/1978	0	0	$394	$3,946	Moderate	Statewide	Drought, Heat
6/1/1984	6/20/1984	0	0	$0	$2,476	Moderate	Statewide	Drought
4/1/1986	4/30/1986	0	0	$0	$276	Mild	SCZ001-002-003-004-005-006-007	Drought
5/1/1986	5/31/1986	0	0	$0	$23,478	Moderate	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
7/1/1986	7/31/1986	0	0	$234,782	$2,347,826	Extreme	Statewide	Drought
2/1/1988	2/28/1988	0	0	$21	$2,175	Mild	Statewide	Drought
6/1/1988	6/30/1988	0	0	$2,175	$21,751	Mild	Statewide	Drought
7/1/1988	7/31/1988	0	0	$217	$2,175	Moderate	Statewide	Drought
8/1/1988	8/31/1988	0	0	$2	$2,779	Mild	SCZ001-002-003-004-006-008	Drought
7/1/1993	7/31/1993	0	0	$9,402,482	$0	Moderate	SCZ001>007 All SC	Drought, Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Moderate	Statewide	Drought, Heat
5/1/1994	5/31/1994	0	0	$0	$1,736,314	Moderate	Statewide SC01>50	Drought
5/1/1995	5/31/1995	0	0	$0	$675,385	Mild	SCZ001>050	Drought
TOTAL		**0**	**0**	**$9,649,052**	**$14,696,588**			

*Based on historic Palmer Drought Severity Index categories.
Note: While droughts occurred since 1995, the NCEI (formerly NCDC) did not report any losses. The occurrence of drought is reflected in Figure 117.

M) Earthquakes

What to expect: Lexington County has a much lower earthquake risk than coastal counties in South Carolina and no earthquakes have occurred since 1900. There is only a 2% chance that Lexington County could experience shaking between 1.5 m/s up to 2m/s with a slightly higher shaking potential in the southern parts of the county (Figure 118).

Geographic Extent: The entire county is susceptible to earthquakes.

Earthquake statistics for Lexington County are as following:

Number of Events:	0
Number of Loss-Causing Events:	0 (1960-2014)
Frequency of Occurrence:	<1%
Recurrence Interval:	>50 years
Expected changes to frequency and recurrence interval in the future:	No changes
Events on Record:	1900-2015
Total Losses:	$0
Total Fatalities:	0
Deadliest Event:	n/a

Most Property Damage:	n/a
Most Crop Damage:	n/a

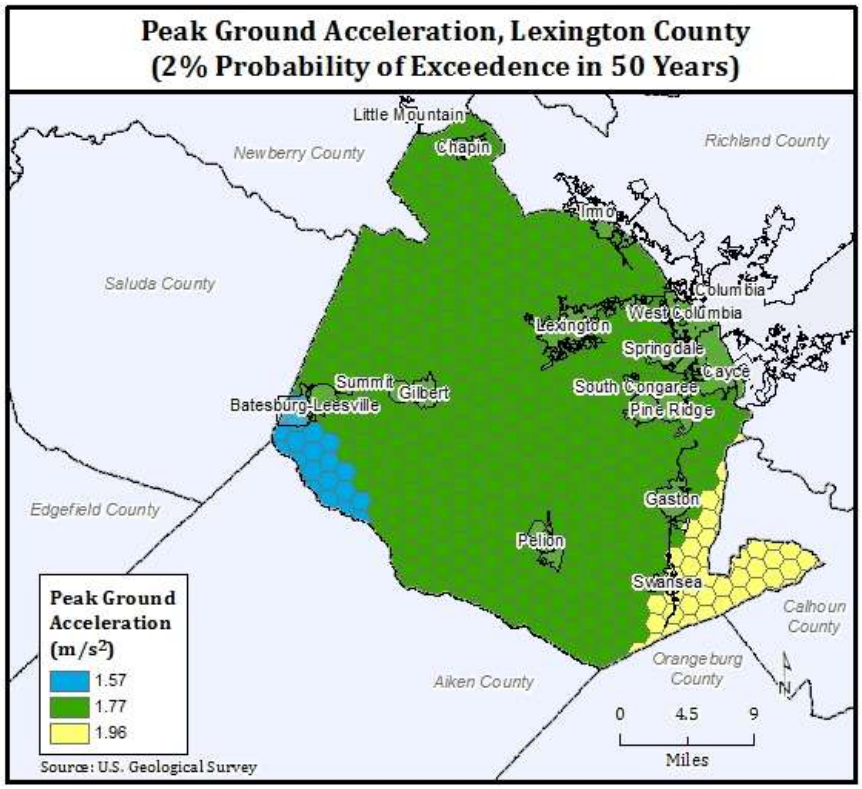


Figure 118 - Risk of shaking due to earthquakes in Lexington County.

6.2 Hazard Vulnerability Assessment for Lexington County

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

Vulnerability is generally defined as the potential for loss. The vulnerability assessment identifies assets at risk (people, critical infrastructure, etc.) and estimates potential losses from the hazards identified previously in the hazard assessment. Vulnerability is best expressed in qualitative terms (high, medium, and low). To arrive at such a classification, the information generated in the hazard assessment is parsed into low, medium, and high categories and then overlaid with information on social vulnerability, critical infrastructure, population, and building stock.

Please note that the sections on floods, earthquakes, and hurricanes include probabilistic hazard and damage estimates alongside the historic risk information provided for all other hazards. Such probabilistic information is unavailable for any other hazard type.

When combining vulnerability information across all 15 hazard types, the comprehensive vulnerability of Lexington County looks as following:

- High vulnerability areas (in terms of hazard occurrence and social vulnerability) are present in southern Lexington County with clusters around Pelion, Gaston, and Swansea.
- About 20% of less of critical infrastructure, building stock, and population are in high risk areas.
- Between 50 and 60% of critical infrastructure, building stock, and population are located in medium risk areas.

For a comparison of vulnerability statistics for high risk zones only, see Table 59.

Summary of Lexington County Vulnerabilities	**Risk Zones**		
	Low	**Medium**	**High**
Critical Infrastructure	16 (17%)	58 (63%)	18 (20%)
Building Stock	$17.2 billion (35%)	$24.2 billion (50%)	$7.2 billion (15%)
Population	81,153 (30%)	137,237 (51%)	51,445 (19%)

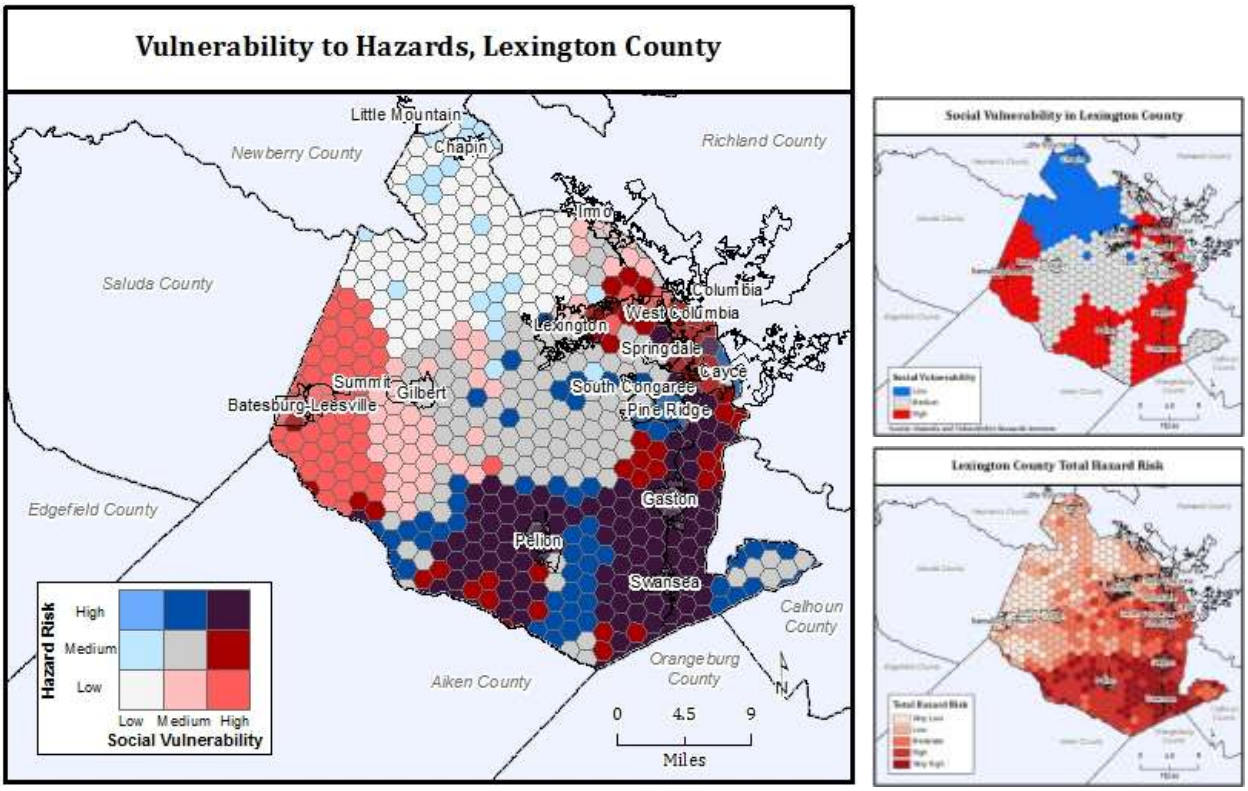


Figure 119 - Vulnerability to all natural hazards in Lexington County.

Note: The hazard risk map (bottom right) is identical to the comprehensive map developed in the hazard assessment section. Detail on the social vulnerability map (top right) are provided below.

Table 59 - Vulnerability overview by hazard for high risk areas in Lexington County.

	Critical Infrastructure	Building Stock	Population	Population with high social vulnerability
Flooding*	3 (3%)	$3 billion (6%)	19,474 (7%)	682 (1%)
Hurricane	10 (10%)	$2.8 billion (6%)	30,166 (11%)	22,328 (23%)
Tornadoes	6 (6%)	$3.4 billion (7%)	15,073 (6%)	2,376 (2%)
Thunderstorm	39 (41%)	$20.4 billion (42%)	121,277 (45%)	37,102 (39%)
Lightning	34 (35%)	$12.3 billion (25%)	80,795 (30%)	53,430 (55%)
Wind	11 (11%)	$2.9 billion (6%)	32,689 (12%)	25,476 (26%)
Hail	12 (12%)	$2.9 billion (6%)	13,773 (5%)	6,904 (7%)
Fog	25 (26%)	$8.7 billion (18%)	67,194 (25%)	34,547 (36%)
Winter Storm	14 (14%)	$6.8 billion (14%)	45,932 (17%)	13,631 (14%)
Cold**	12 (13%)	$3 billion (6%)	32,789 (12%)	25,694 (27%)
Heat**	58 (61%)	$25.3 billion (52%)	117,782 (44%)	46,927 (31%)
Drought	21 (22%)	$9.5 billion (20%)	45,167 (17%)	13,337 (14%)
Wildfire	36 (38%)	$18.3 billion (38%)	114,853 (42%)	36,537 (38%)
Earthquake	5 (5%)	$0.7 billion (1%)	5,834 (2%)	4,309 (4%)
Overall Vulnerability	18 (19%)	$7.2 billion (15%)	51,445 (19%)	31,808 (33%)

* High risk defined as being inside the 100-yr flood zone
** Data shown here using the 95% percentile

A) Assets at Risk

Lexington County houses nearly 265,000 residents and an approximate stock of 111,532 buildings with a replacement value of about $30.2 billion (in 2015 according to HAZUS-MH 2.2) (Table 60). Since 2010, Lexington County gained 2.9% more residents which has increased the exposure to natural hazards compared to the previous plan. See Section 3.4 for more information on development changes in the county.

Table 60 - Building stock values by occupancy type in Lexington County. Source: HAZUS 2.2.

Building Type	Total Replacement Value (in Billion)
Residential	$24.6
Commercial	$3.6
Industrial	$1.1
Agricultural	$0.07
Religious	$0.5
Government	$0.1
Education	$0.2
Total	**$30.2**

Since the aforementioned values represent the total replacement cost by property type, they may greatly differ from county assessment and appraisal values. The following values provided by the county (Table 61) are capped based on the maximum taxable amount according to the county tax code.

Table 61 - Lexington County Appraised and Assessed Values of Buildings Only for the year 2015.

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Unincorporated Lexington County			
Single Family	62214	$454,539,070	$11,412,771,844
Mobile Homes	18298	$10,069,420	$218,114,811
Multi Family	428	$16,827,240	$312,534,946
Commercial	2267	$77,991,440	$1,354,205,722
Industrial	155	$18,550,400	$255,146,247
Agricultural	3409	$7,678,660	$1,294,675,503
Institutional	78	$14,611,100	$284,559,263
Utilities	15	$3,198,590	$69,164,488
Total	**86864**	**$603,465,920**	**$15,201,172,824**
City of Cayce			
Single Family	4612	$21,016,560	$472,766,532
Mobile Homes	162	$56,680	$1,027,957
Multi Family	109	$4,464,140	$86,803,994
Commercial	328	$8,965,430	$159,779,302
Industrial	20	$2,040,150	$31,411,245
Agricultural	0	$110,830	$4,956,400
Institutional	8	$1,317,210	$37,431,471
Utilities	0	$259,140	$17,890,400
Total	**5239**	**$38,230,140**	**$812,067,301**
City of Columbia			
Single Family	54	$402,750	$8,675,539
Multi Family	7	$635,440	$11,281,214
Commercial	74	$11,560,420	$193,396,212
Industrial	0		
Agricultural	0		
Institutional	0	$116,130	$1,935,300
Utilities	0		
Total	**135**	**$12,714,740**	**$215,288,265**
City of West Columbia			
Single Family	5,126	$27,621,490	$627,965,055
Mobile Homes	396	$74,150	$1,554,480
Multi Family	303	$5,595,290	$99,003,456
Commercial	619	$13,602,990	$239,644,730
Industrial	27	$788,610	$9,677,126

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Agricultural	1	$42,450	$2,729,559
Institutional	17	$1,906,660	$35,688,277
Utilities	0	$234,510	$3,912,800
Total	**6,489**	**$49,866,150**	**$1,020,175,483**
Town of Batesburg-Leesville			
Single Family	1,840	$6,052,510	$138,166,996
Mobile Homes	48	$20,900	$497,800
Multi Family	72	$686,340	$11,506,589
Commercial	251	$3,472,200	$60,218,868
Industrial	7	$316,350	$3,312,698
Agricultural	17	$32,370	$7,288,340
Institutional	7	$328,360	$5,875,933
Utilities	1	$3,890	$78,202
Total	**2,243**	**$10,912,920**	**$226,945,426**
Town of Chapin			
Single Family	700	$4,037,470	$96,293,262
Mobile Homes	12	$5,670	$114,000
Multi Family	6	$322,460	$5,458,420
Commercial	129	$4,251,300	$78,608,417
Industrial	0		
Agricultural	1	$19,560	$1,794,560
Institutional	4	$658,080	$19,515,491
Utilities	0	$32,730	$825,000
Total	**852**	**$9,327,270**	**$202,609,150**
Town of Gaston			
Single Family	362	$1,183,080	$28,466,220
Mobile Homes	300	$160,260	$3,360,035
Multi Family	1	$4,010	$66,800
Commercial	49	$896,010	$15,662,450
Industrial	0		
Agricultural	27	$54,210	$5,941,594
Institutional	0	$42,060	$704,367
Utilities	0	$12,520	$209,000
Total	**739**	**$2,352,150**	**$54,410,466**
Town of Gilbert			
Single Family	147	$835,970	$21,312,115
Mobile Homes	61	$30,150	$631,900
Multi Family	3	$17,400	$289,976
Commercial	12	$107,860	$1,839,086
Industrial	1	$17,270	$199,200

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Agricultural	14	$10,520	$4,122,801
Institutional	1	$102,510	$2,031,820
Utilities	0	$2,500	$69,900
Total	**239**	**$1,124,180**	**$30,496,798**
Town of Irmo			
Single Family	1,499	$8,698,150	$204,801,174
Mobile Homes	6	$870	$21,300
Multi Family	60	$1,212,050	$20,822,168
Commercial	166	$5,535,990	$92,995,766
Industrial	0		
Agricultural	0	$1,000	$165,600
Institutional	5	$1,019,300	$17,382,429
Utilities	0	$7,430	$123,900
Total	**1,736**	**$16,474,790**	**$336,312,337**
Town of Lexington			
Single Family	6,091	$43,895,340	$1,046,070,850
Mobile Homes	274	$90,250	$1,788,000
Multi Family	131	$10,933,490	$202,588,728
Commercial	615	$27,469,200	$490,544,562
Industrial	29	$1,137,910	$15,720,603
Agricultural	1	$312,860	$11,369,293
Institutional	17	$6,488,570	$123,420,426
Utilities	6	$84,060	$1,800,949
Total	**7,164**	**$90,411,680**	**$1,893,303,411**
Town of Pelion			
Single Family	213	$1,040,230	$25,779,215
Mobile Homes	17	$14,580	$321,900
Multi Family	3	$24,540	$408,972
Commercial	21	$218,830	$4,049,008
Industrial	0		
Agricultural	4	$19,250	$7,091,266
Institutional	4	$140,280	$3,987,569
Utilities	0	$12,600	$208,800
Total	**262**	**$1,470,310**	**$41,846,730**
Town of Pine Ridge			
Single Family	792	$4,507,610	$107,434,051
Mobile Homes	94	$28,980	$684,700
Multi Family	2	$11,240	$187,258
Commercial	7	$108,660	$4,796,412
Industrial	0	$9,780	$221,900

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Agricultural	13	$146,330	$6,773,973
Institutional	0	$206,350	$4,929,525
Utilities	0	$30	$500
Total	**908**	**$5,018,980**	**$125,028,319**
Town of South Congaree			
Single Family	730	$3,477,600	$82,929,869
Mobile Homes	342	$65,980	$1,479,900
Multi Family	0		
Commercial	32	$672,720	$11,661,065
Industrial	0		
Agricultural	9	$47,890	$6,747,303
Institutional	2	$134,500	$2,371,923
Utilities	0	$3,590	$59,900
Total	**1,115**	**$4,402,280**	**$105,249,960**
Town of Springdale			
Single Family	1,065	$6,196,070	$147,664,861
Mobile Homes	6	$300	$9,400
Multi Family	1	$6,650	$110,769
Commercial	59	$1,859,020	$31,772,332
Industrial	1	$23,490	$232,500
Agricultural	5	$58,010	$5,248,000
Institutional	4	$494,930	$8,418,229
Utilities	0	$1,230	$20,500
Total	**1,141**	**$8,639,700**	**$193,476,591**
Town of Summit			
Single Family	110	$560,810	$14,930,795
Mobile Homes	54	$34,010	$786,300
Multi Family	1	$8,380	$139,600
Commercial	0		
Industrial	0		
Agricultural	6	$8,820	$4,642,551
Institutional	0	$15,140	$267,300
Utilities	0	$860	$15,500
Total	**171**	**$628,020**	**$20,782,046**
Town of Swansea			
Single Family	275	$738,820	$17,666,078
Mobile Homes	47	$19,220	$424,400
Multi Family	4	$77,250	$1,287,478
Commercial	67	$328,860	$5,591,955
Industrial	0		

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Agricultural	11	$11,250	$1,209,692
Institutional	1	$94,840	$1,585,743
Utilities	0	$5,270	$88,000
Total	**405**	**$1,275,510**	**$27,853,346**
County Total	**115,702**	**$856,314,740**	**$20,507,018,453**

There are 96 critical facilities in Lexington County such as an Emergency Operation Center, a 911 communications center, 8 major hospitals, several wastewater treatment plans, administrative buildings as well as numerous law enforcement, fire/EMS and school facilities (Table 62). Most of the critical infrastructure is located in the Cities of Lexington and West Columbia as well as the Town of Irmo (Figure 120). More information on the vulnerability assessment for each critical facility can be found in Appendix II.

Table 62 - Critical facilities in Lexington County.

	Count
Fire-EMS Facilities	12
Law Enforcement Facilities	5
Medical Facilities	2
Schools and daycare centers	72
TOTAL	**92**

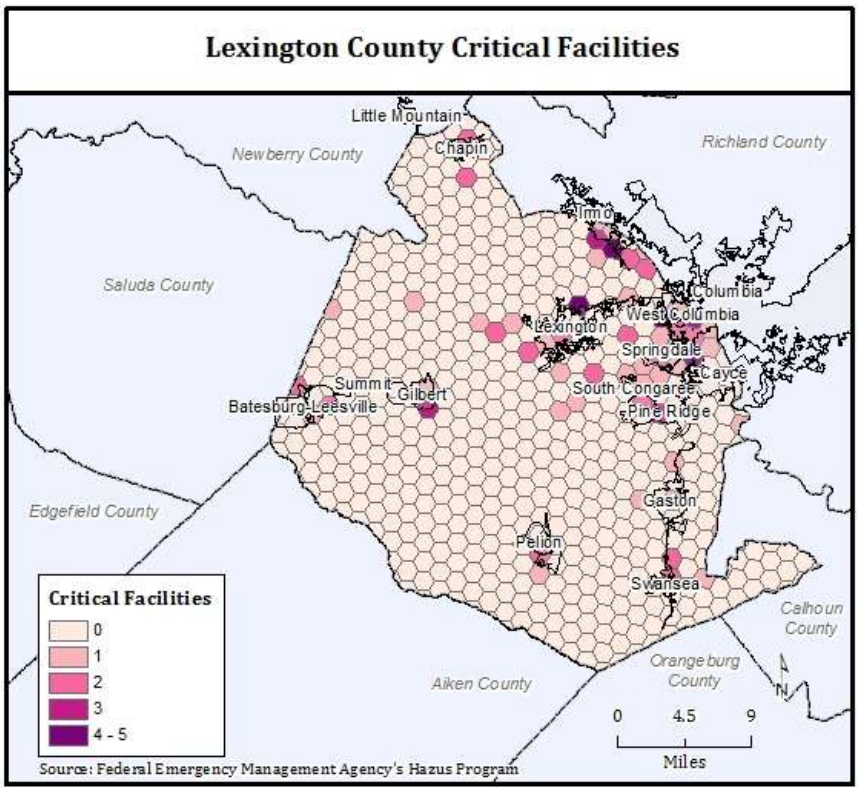


Figure 120 - Distribution of critical facilities in Lexington County.

The following sections discuss hazard-specific vulnerabilities in Lexington County. Vulnerability is assessed by overlaying the county's social vulnerability with the risk of being exposed to a hazard of either a certain magnitude (i.e. probabilistic scenarios) or historic occurrences/warnings. In addition, the location and number of critical infrastructure within an area (hexagon) are incorporated into the vulnerability maps by extruding or raising a hexagon relative to the number of critical infrastructure located in the hexagon area.

B) Social Vulnerability

The SoVI® is a measure of the sociodemographic make-up of Lexington County that influences how well populations within a census tract can prepare for, respond to, or recover from a hazard. Nearly 60,000 of the county's residents of live in highly vulnerable census tracts (Table 63), mostly in the southern and far eastern and western portions of the county (Figure 121).

Table 63 - Distribution of socially vulnerable census tracts in Lexington County

SoVI Category	Number of Tracts	Number of Housing Units	Population
Low	26	39,422	90,943
Medium	31	48,467	113,594
High	17	26,068	57,854

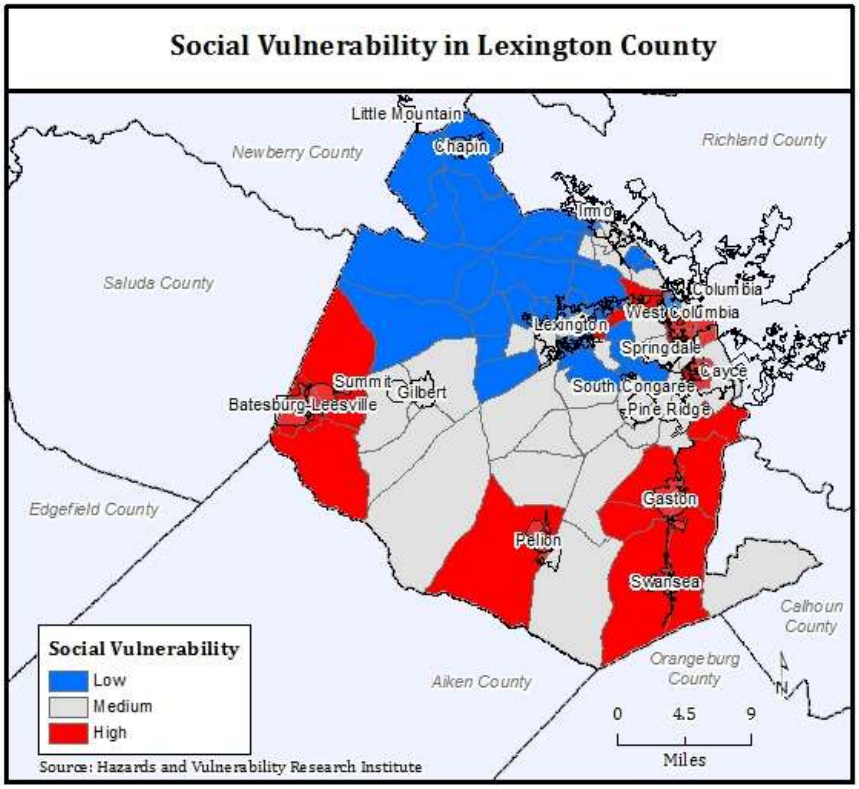


Figure 121 - Socially vulnerable tracts in Lexington County.

Lexington County's SoVI® is derived from a dynamic combination of eight main vulnerability components (Table 64). Overall, SoVI® scores range from -14.33 to 5.99 with about a quarter of census tracts falling in the high SoVI® category (Table 63). It is important to note that what makes a census tract socially vulnerable varies for each census tract within the county.

The SoVI® scores (Figure 121) are mapped using a three-class standard deviation[74] model:

- High social vulnerability (standard deviation greater than 0.5)
- Medium social vulnerability (standard deviations between 0.5 to -0.5)
- Low social vulnerability (standard deviation lower than -0.5)

Table 64 - SoVI dimensions and importance of input variables for Lexington County (tract level, 2010-2014).

Component	*Cardinality*	*Name*	*% Variance Explained*	*Dominant Variables*	*Component Loading*
1	-	Wealth	16.321	MHSEVAL	0.827
				QRICH200K	0.825
				PERCAP	0.800
				QFAM	0.695
				QBLACK	-0.627
				QFHH	-0.705
2	+	Female Headed Households	11.275	QFEMALE	0.883
				QFEMLBR	0.867
				PPUNIT	0.742
				MDGRENT	0.567
				QFHH	0.501
3	+	Age (Old)	10.986	QAGEDEP	0.917
				QSSBEN	0.872
				MEDAGE	0.800
4	+	Rural and Primary Sector Employment	10.809	QMOHO	0.835
				QEXTRACT	0.689
				QED12LES	0.544
				QASIAN	-0.514
5	+	Poverty and Unemployment	10.142	QSERV	0.843
				QPOVTY	0.767
				QCVLUN	0.755
6	+	Ethnicity (Hispanic)	8.302	QESL	0.897
				QHISP	0.889
7	+	No Automobile	7.156	QNOAUTO	0.712
				QUNOCCHU	0.657
				QRENTER	0.605
8	+	Race (Native American)	4.291	QNATAM	0.890
		Cumulative Variance Explained	**79.282**		

To investigate the relationship between social vulnerability and hazard risk, the SoVI® map for Lexington County (Figure 121) is converted from administrative boundaries to hexagon units (Figure 122) identical to the hexagons maps developed in the preceding hazard assessment of the HMP. Furthermore, hazard risk maps are categorized into three risk classes: low, medium, and high risk. By overlaying social vulnerability and hazard risk, the intersection of both elements can be visualized and communicated through color using a bivariate color scheme: the bivariate color scheme consists of hazard risk (y-axis,

[74] Standard deviation is a measure of variability within a data set. It measures the distance to the mean. A large standard deviation means that the observation is further away from the mean of the data set. For normally distributed data, 68.2% of observations fall within 1 and -1 standard deviations.

bluish colors) and social vulnerability (x-axis, redish colors). For example, the color white represents areas of low social vulnerability and low hazard risk whereas purple hexagons have both high social vulnerability and high hazard risk.

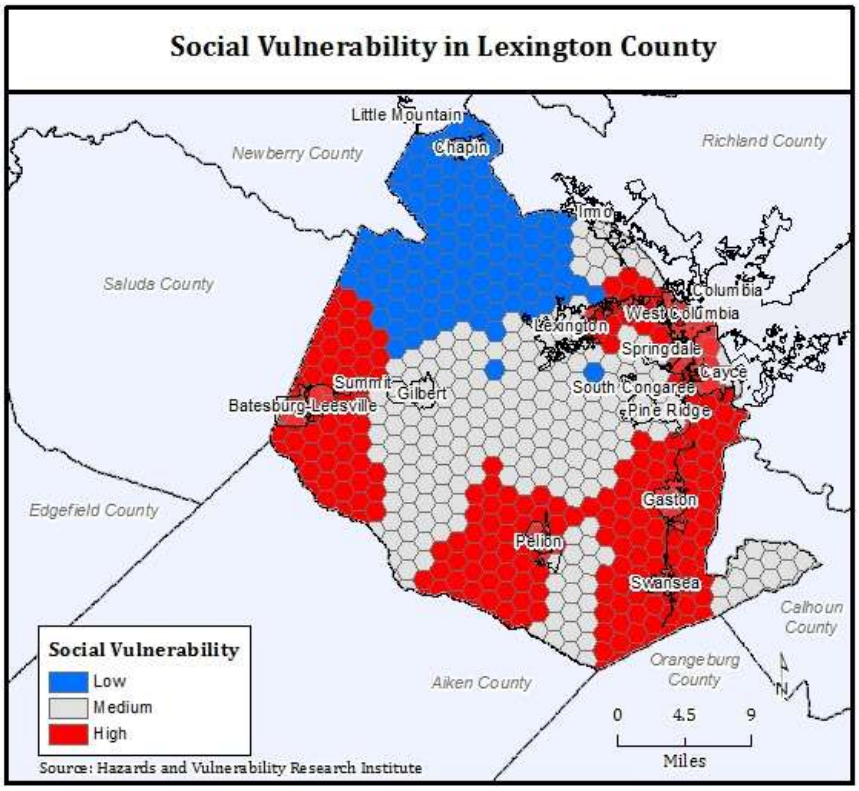


Figure 122 - Hexagon map of social vulnerability in Lexington County.

C) Flooding

The vulnerability to riverine flooding is most pronounced in 100-year floodplains (1% annual chance of occurrence), particularly in eastern Lexington County due to the presence of socially vulnerable populations (Figure 123). Exposure in the 100-year floodplain is largely limited to residential buildings with only three critical facilities located inside the 100-year floodplain (Figure 59). It is important to note that the determination of infrastructure inside or outside the 100-year floodplain was solely based on location and did not take elevation into account. Therefore being located inside the 100-year floodplain does not carry an implication regarding requirements for the National Flood Insurance Program.

Vulnerability statistics for 100-year floods in Lexington County	**Risk Zones**	
	Outside of 100-year Floodplain	**Inside of 100-year Floodplain**
Critical Infrastructure	93 (97%)	3 (3%)
Building Stock	$45.5 billion (94%)	$ 3 billion (6%)
Population	250,361 (93%)	19,474 (7%)
Population w/high social vulnerability	95,657 (99%)	682 (1%)
Scenario	1000-year Flood Event	

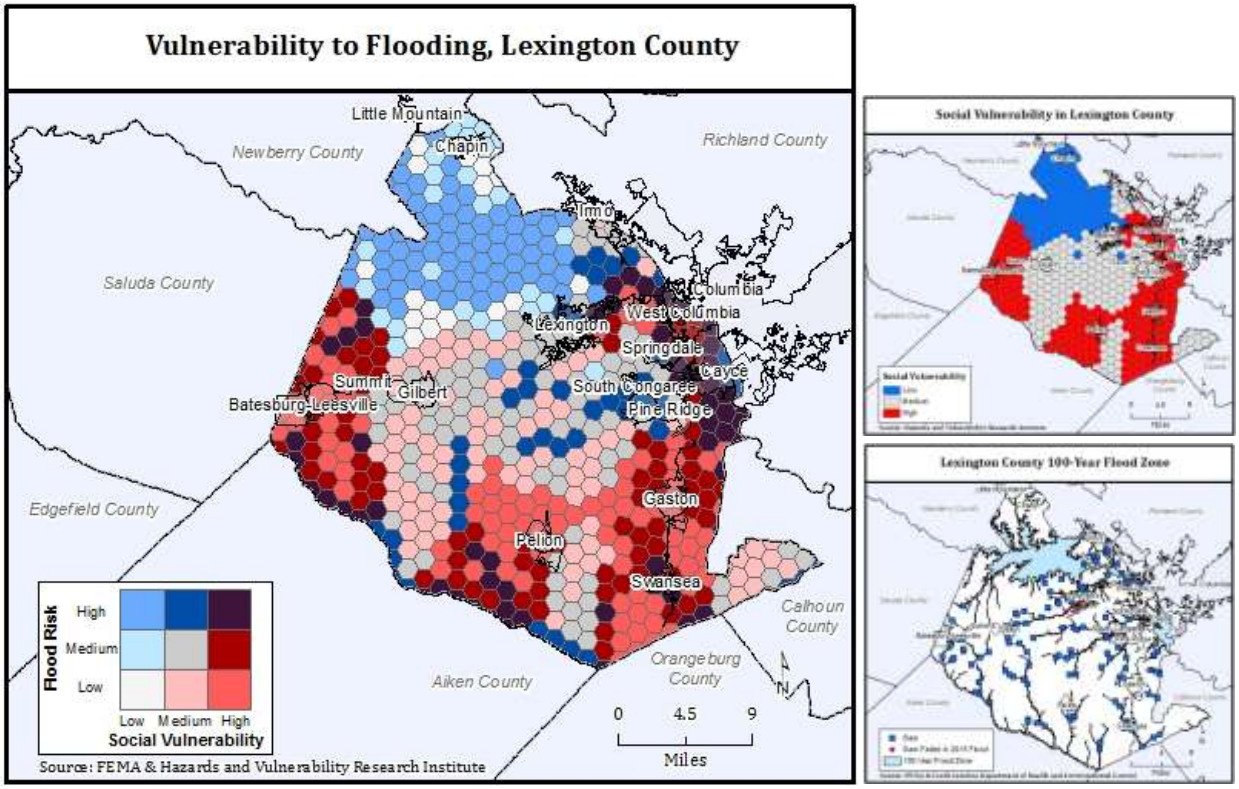


Figure 123 - Vulnerability to floods in Lexington County.

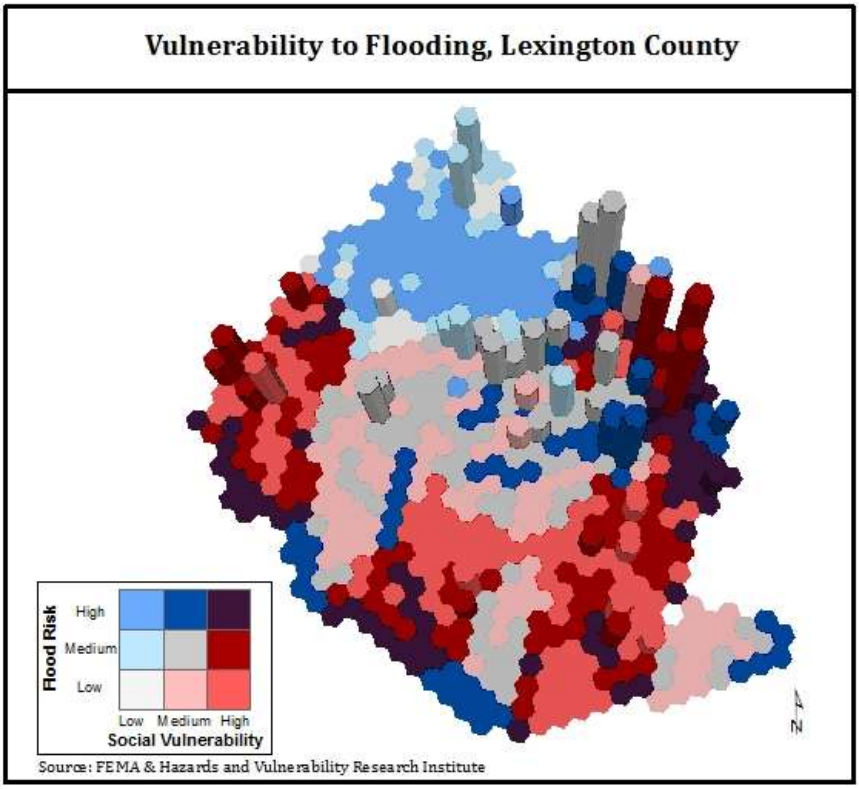


Figure 124 - Vulnerability of critical infrastructure to flooding in Lexington County.

For a 1,000-year flood event (0.1% annual chance of occurrence) (Figure 125), about 1,506 buildings (15% of buildings within modelled 1000-year floodplain) would be at least moderately damaged and 707 buildings would be completely destroyed. The total economic damage would come in at $710 million with most of the damage occurring in and around the Town of Lexington (Figure 126). It is expected that none of the critical infrastructure would receive any damage. The modelled flood's impact area overlaps with the county's most vulnerable populations. All estimates were derived using HAZUS-MH 2.2. Note that HAZUS-MH does not accurately model the outline of lakes incl. Lake Murray.

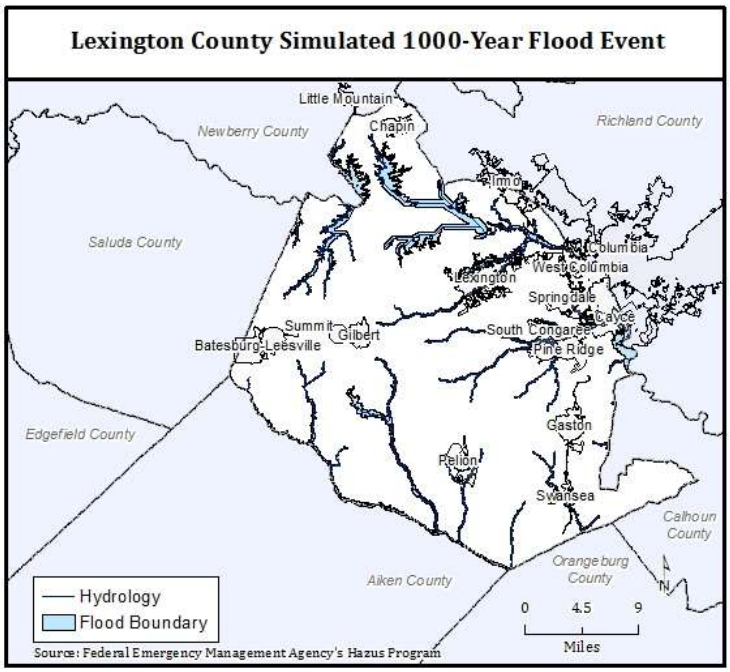


Figure 125 - Modelled 1,000-year flood event in Lexington County.

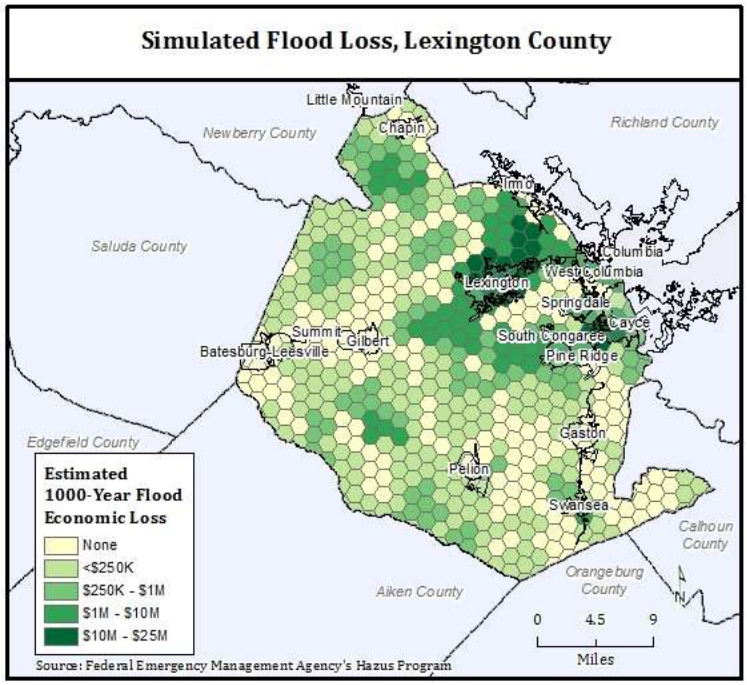


Figure 126 - Damage from a modelled 1,000-year flood event in Lexington County.

D) Hurricanes & Tropical Storms

Southern Lexington County exhibits a higher vulnerability to tropical storms due to higher levels of social vulnerability along with higher tropical storm risk (Figure 127). Only about 10% of critical infrastructure, building stock and population are located in this high vulnerability area (Figure 128).

Vulnerability statistics for a 1000-year hurricane in Lexington County	**Risk Zones**		
	Low	**Medium (0.111 tropical storms/year)**	**High (0.148 tropical storms/year)**
Critical Infrastructure	n/a	86 (90%)	10 (10%)
Building Stock	n/a	$45.8 billion (94%)	$2.8 billion (6%)
Population	n/a	239,670 (89%)	30,166 (11%)
Population w/high social vulnerability	n/a	74,011 (77%)	22,328 (23%)
Scenario	1000-year probabilistic storm		

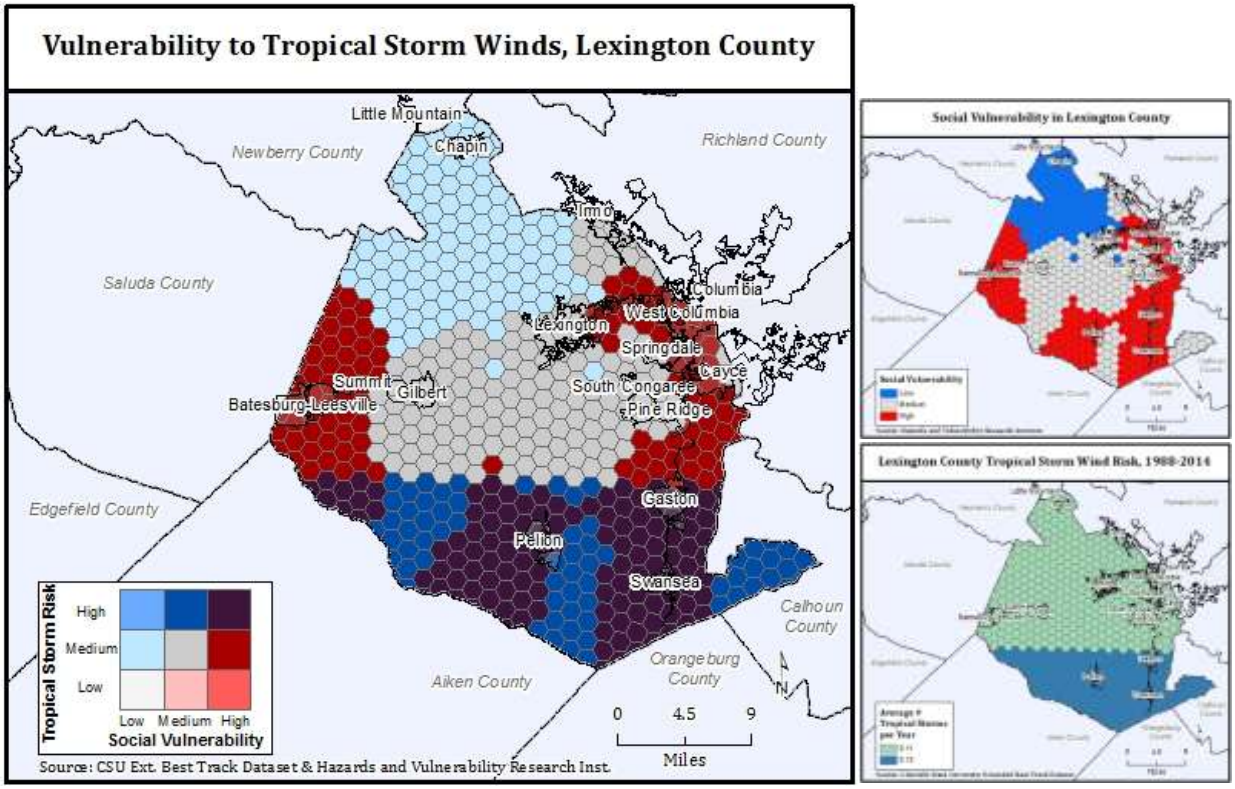


Figure 127 - Vulnerability to tropical storms in Lexington County.

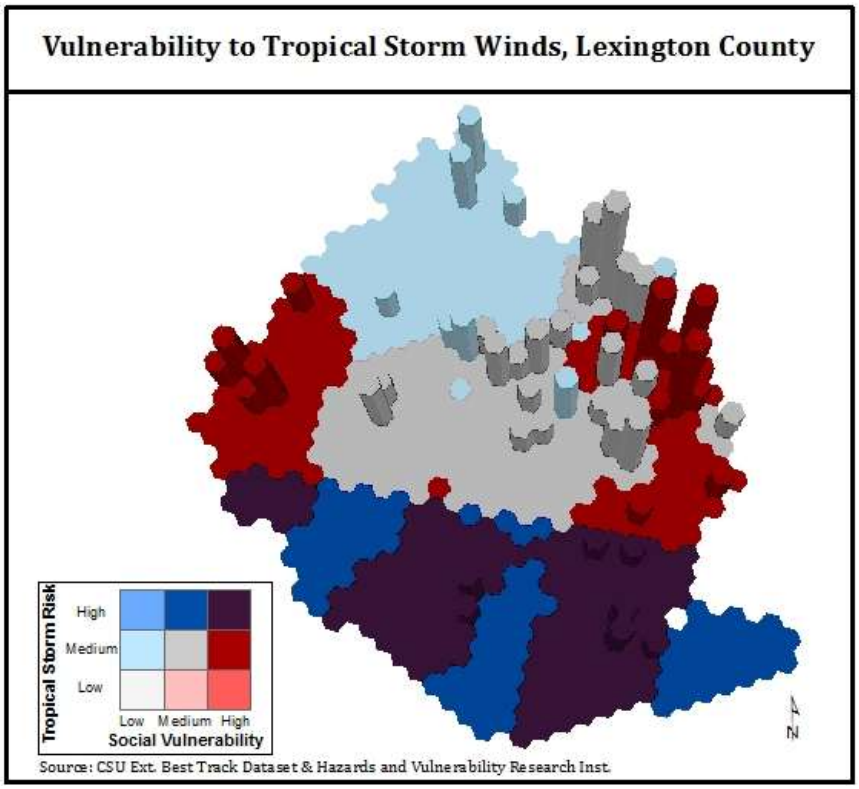


Figure 128 - Vulnerability of critical infrastructure to tropical storms in Lexington County.

For a 1,000-year hurricane event, Lexington County is expected to see wind speeds between 74 and up to 129 miles per hour (Category 3) (Figure 129). Such wind speeds are probable with a fast-moving, major hurricane that has a similar track to Hurricane Hugo. About 75% of the county's infrastructure would not experience any damage. Nearly 6,000 buildings (or 5% of the building stock) would be at least moderately damaged with an estimated property damage of $1.1 billion (nearly all of it residential) with most of the damage occurring in the northeastern and eastern regions of the county (Figure 130). It is expected that two hospitals could receive at least moderate damage. All other the critical infrastructure should be operable within a day. The modelled storm's most catastrophic impact area contains some of the county's most vulnerable populations. All estimates were derived using HAZUS-MH 2.2.

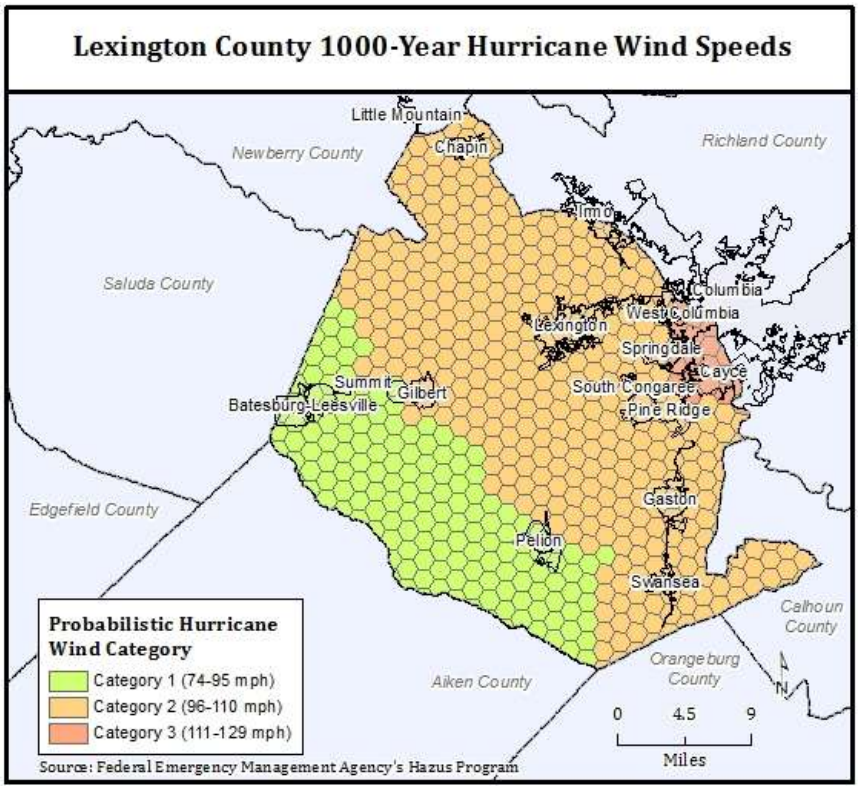


Figure 129 - Hurricane wind speeds using a 1,000-year storm event in Lexington County.

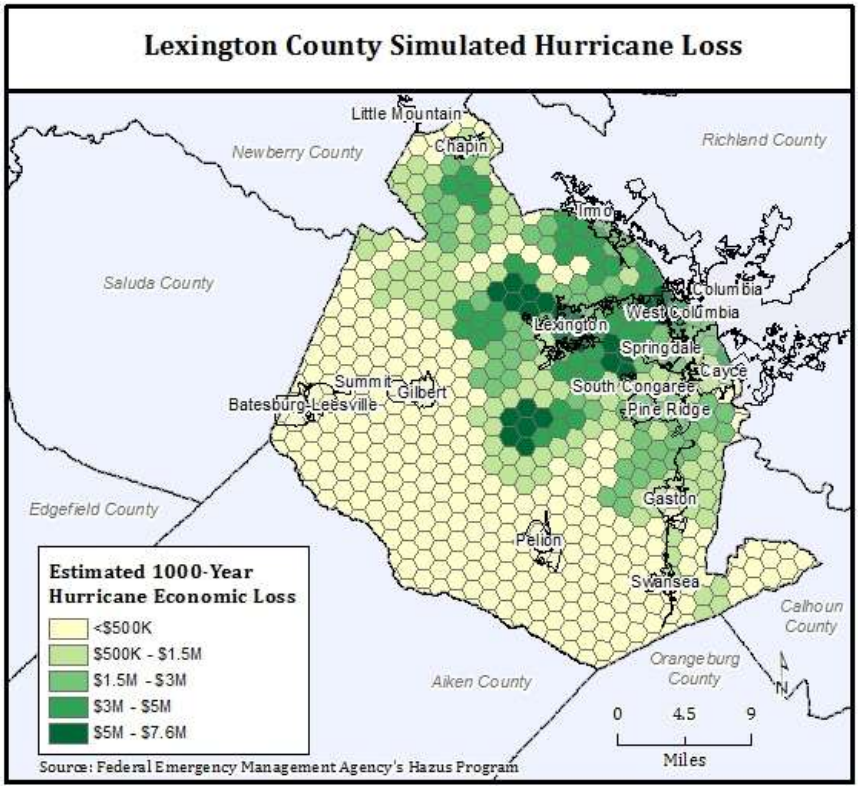


Figure 130 - Damage from a modelled 1,000-year hurricane event in Lexington County.

E) Tornadoes

Areas of high vulnerability to tornadoes, i.e. a high frequency of past tornado warnings (more than 0.625 warning per year) along with high social vulnerability, are limited in Lexington County with the exception of the Batesburg-Leesville area (Figure 131). About 6% of critical infrastructure, building stock and population are located in the high risk area (Figure 132).

Vulnerability statistics for tornadoes in Lexington County	**Risk Zones**		
	Low (<0.5 warnings/year)	**Medium (0.625 warnings/year)**	**High (>0.625 warnings/year)**
Critical Infrastructure	69 (72%)	21 (22%)	6 (6%)
Building Stock	$39.2 billion (74%)	$9 billion (19%)	$3.4 billion (7%)
Population	187,583 (69%)	67,179 (25%)	15,073 (6%)
Population w/high social vulnerability	61,415 (64%)	32,547 (34%)	2,376 (2%)

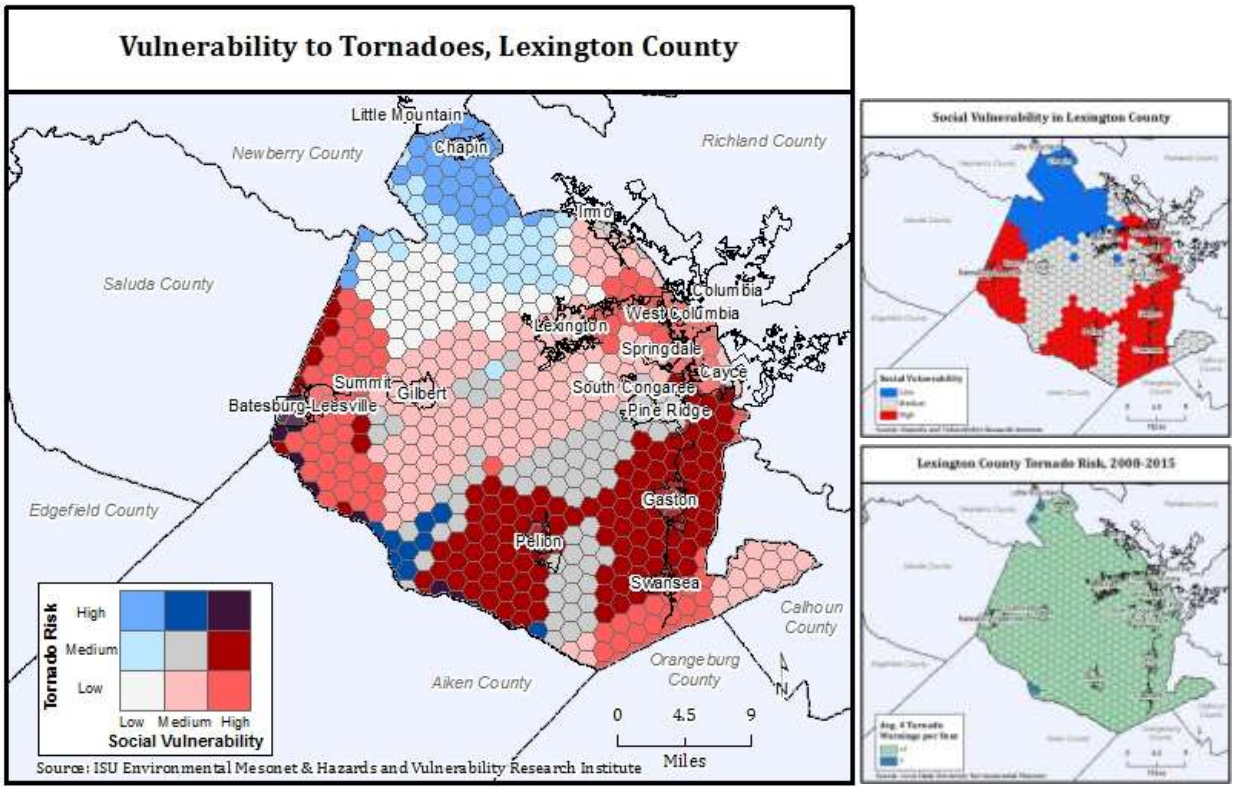


Figure 131 - Vulnerability to tornadoes in Lexington County.

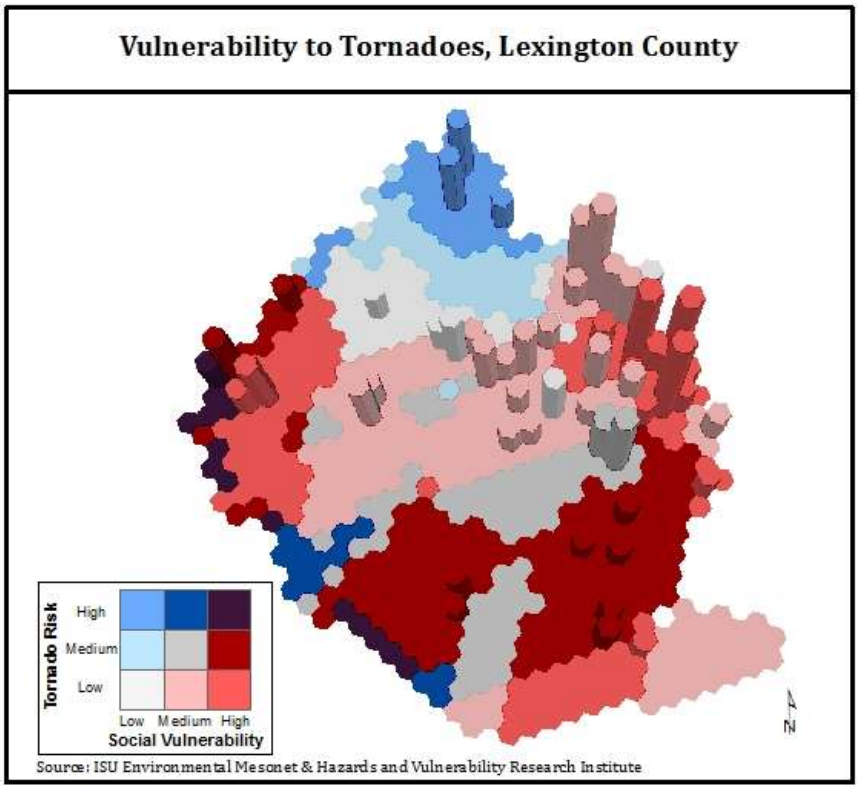


Figure 132 - Vulnerability of critical infrastructure to tornadoes in Lexington County.

F) Thunderstorms

There are large clusters of high thunderstorm vulnerability in Lexington County, particularly in the eastern and southeastern portions of the county (Figure 133). Areas of high vulnerability to thunderstorms have experienced a higher number of thunderstorm warnings in the past and overlap with areas of high social vulnerability. More than 40% of the county's critical infrastructure, building stock, and population live in a high risk area (i.e., areas that have received more than 16 severe thunderstorm warnings/year) (Figure 134).

Vulnerability statistics for severe thunderstorms in Lexington County	**Risk Zones**		
	Low (<14.5 warnings/year)	**Medium (14.5-16 warnings/year)**	**High (>16 warnings/year)**
Critical Infrastructure	9 (9%)	48 (50%)	39 (41%)
Building Stock	$7 billion (14%)	$21.2 billion (44%)	$20.4 billion (42%)
Population	37,256 (14%)	111,302 (41%)	121,277 (45%)
Population w/high social vulnerability	12,011 (12%)	47,226 (49%)	37,102 (39%)

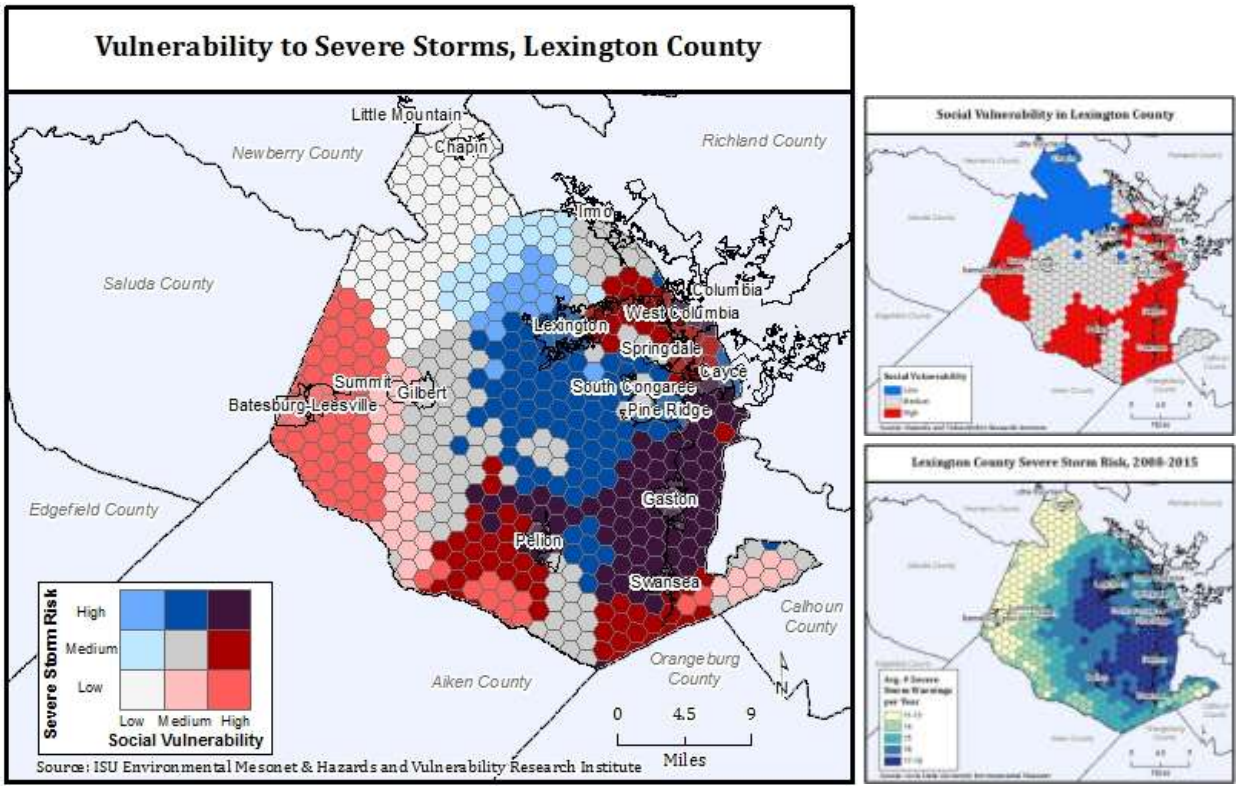


Figure 133 - Vulnerability to severe thunderstorms in Lexington County.

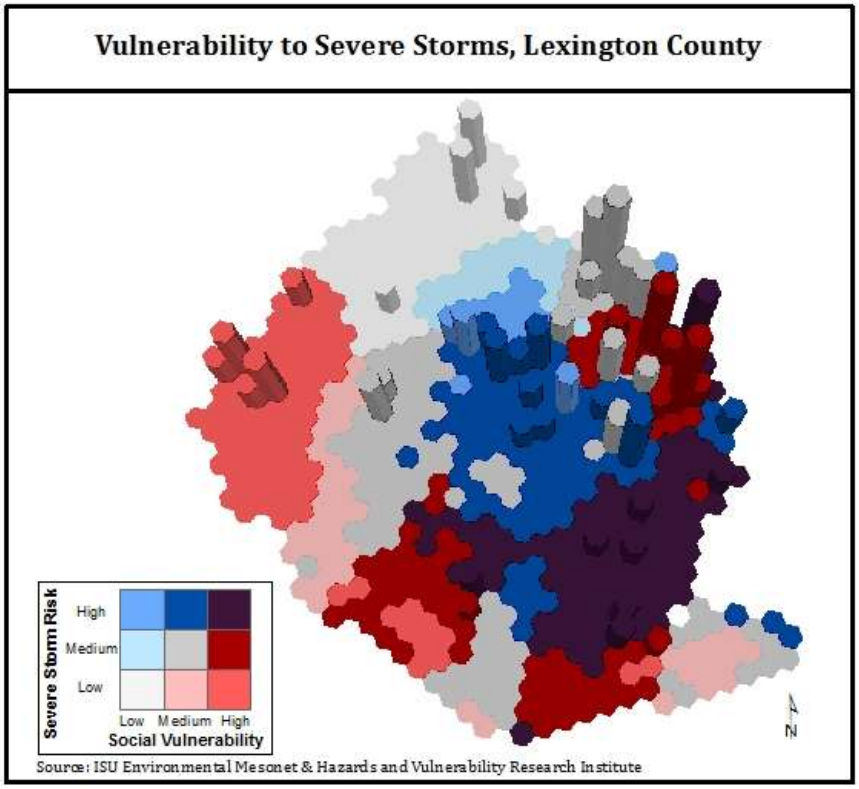


Figure 134 - Vulnerability of critical infrastructure to severe storms in Lexington County.

G) Lightning

The highest vulnerability to lightning occurs in eastern and southeast Lexington County, i.e. areas of high social vulnerability coincide with areas that experience more than 31,800 cloud-to-ground lightning strikes per year (Figure 135). About one third of the county's critical infrastructure, population, and building stock are located in a high lightning risk area (Figure 136).

Vulnerability statistics for lighting in Lexington County	**Risk Zones**		
	Low (<24,700 strikes/year)	**Medium (24,700-31,800 strikes/year)**	**High (>31,800 strikes/year)**
Critical Infrastructure	21 (22%)	41 (43%)	34 (35%)
Building Stock	$11.7 billion (24%)	$24.7 billion (51%)	$12.3 billion (25%)
Population	53,101 (21%)	132,939 (49%)	80,795 (30%)
Population w/high social vulnerability	7,777 (8%)	35,132 (37%)	53,430 (55%)

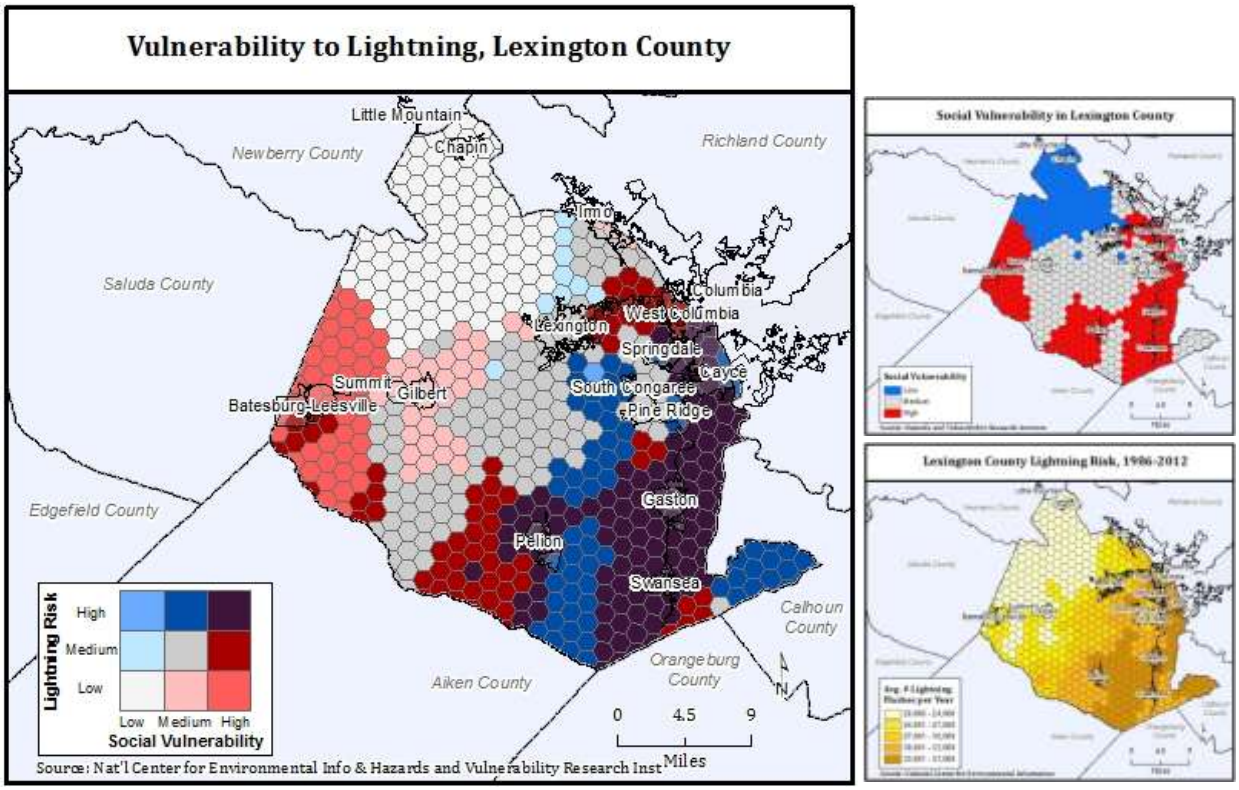


Figure 135 - Vulnerability to lighting in Lexington County.

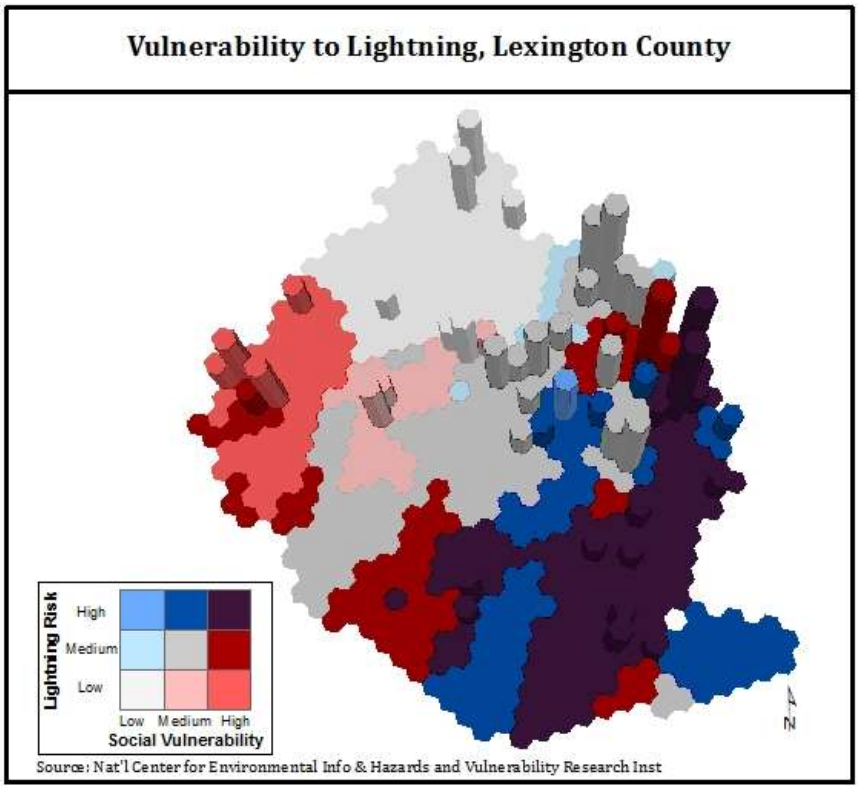


Figure 136 - Vulnerability of critical infrastructure to lightning in Lexington County.

H) Wind

The highest vulnerability to winds exceeding 30 knots (34.5 mph) exits in southern Lexington County with large clusters around Pelion as well as Gaston and Swansea (Figure 137). In these areas, high social vulnerability coincides with more than 2 days of high winds per year. About 10% of the county's assets are located in areas with more than 2 days of high winds (Figure 138).

Vulnerability statistics for wind in Lexington County	**Risk Zones**		
	Low (<1.9 days/year)	**Medium (1.9-2 days/year)**	**High (>2 days/year)**
Critical Infrastructure	40 (42%)	45 (47%)	11 (11%)
Building Stock	$25.5 billion (53%)	$20.2 billion (41%)	$2.9 billion (6%)
Population	114,844 (43%)	122,303 (45%)	32,689 (12%)
Population w/high social vulnerability	20,434 (21%)	50,429 (52%)	25,476 (26%)

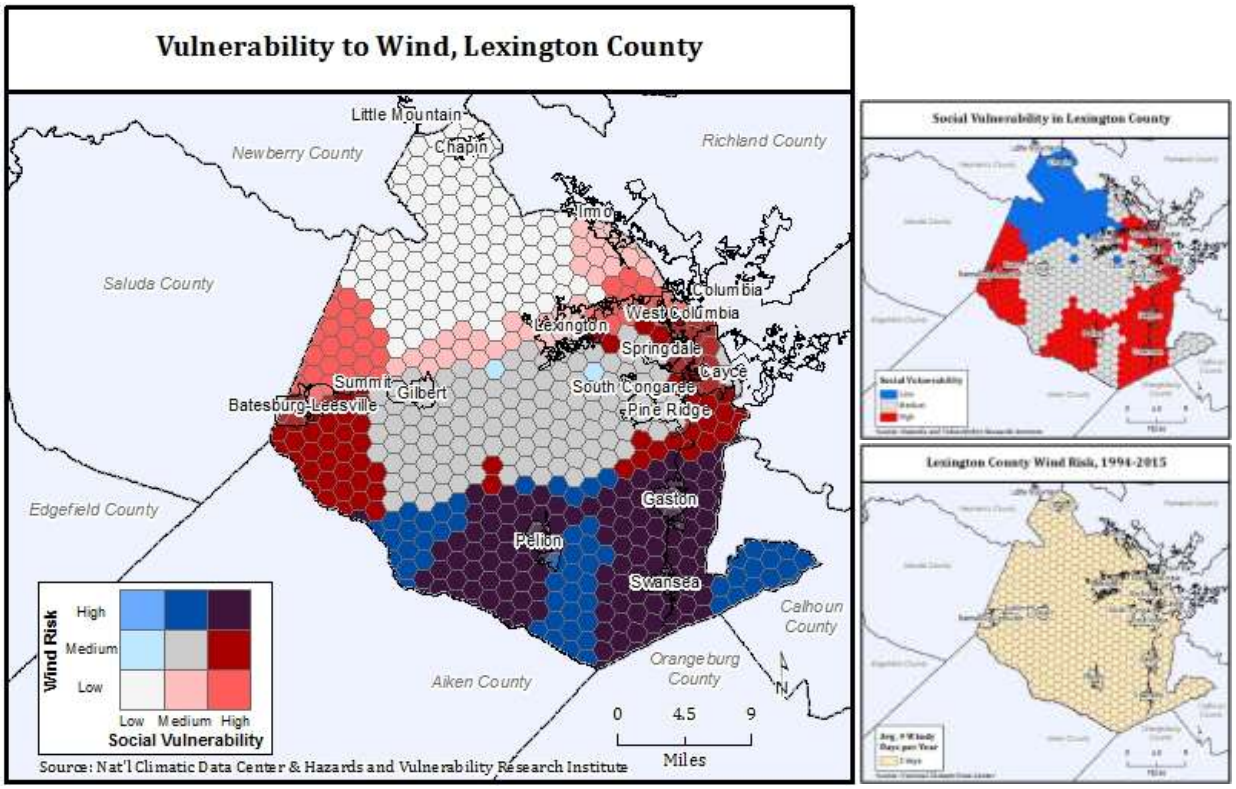


Figure 137 - Vulnerability to high winds in Lexington County.

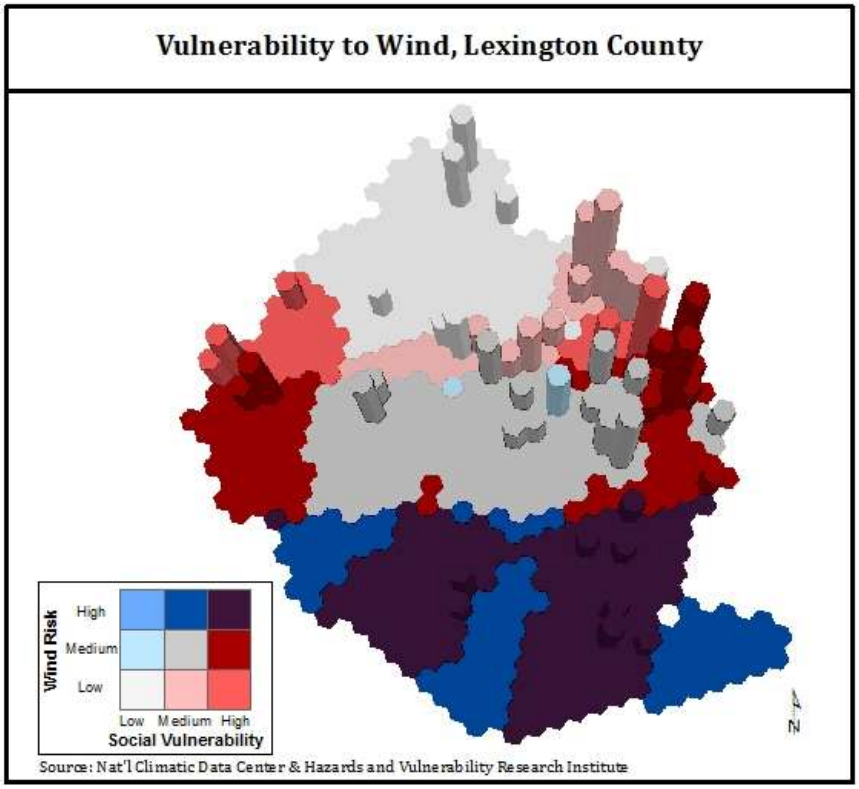


Figure 138 - Vulnerability of critical infrastructure to high winds in Lexington County.

I) Hail

There are small pockets of high vulnerability to hail that are distributed across the county such as near Batesburg-Leesville and in the Cayce area (Figure 139). These areas exhibit a high occurrence of hail events per year (more than 0.1. events) along with high social vulnerability. Between 5% and 12% of the county's assets are located in these areas (Figure 140).

Vulnerability statistics for hail in Lexington County	**Risk Zones**		
	Low (no hail events)	**Medium (0.033-0.067 events/year)**	**High (>0.1 events/year)**
Critical Infrastructure	63 (66%)	21 (22%)	12 (12%)
Building Stock	$37.3 billion (17%)	$8.4 billion (17%)	$2.9 billion (6%)
Population	213,878 (79%)	42,184 (16%)	13,773 (5%)
Population w/high social vulnerability	75,058 (78%)	14,376 (15%)	6,904 (7%)

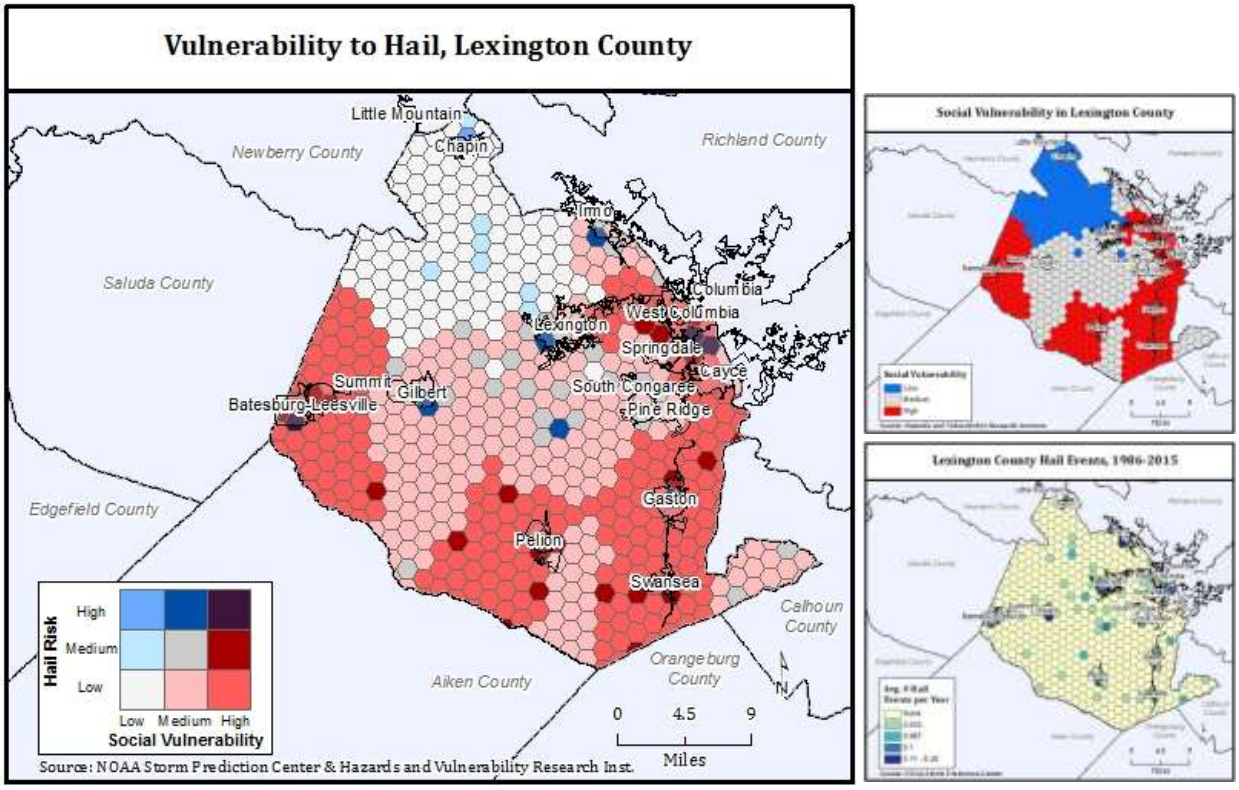


Figure 139 - Vulnerability to hail in Lexington County.

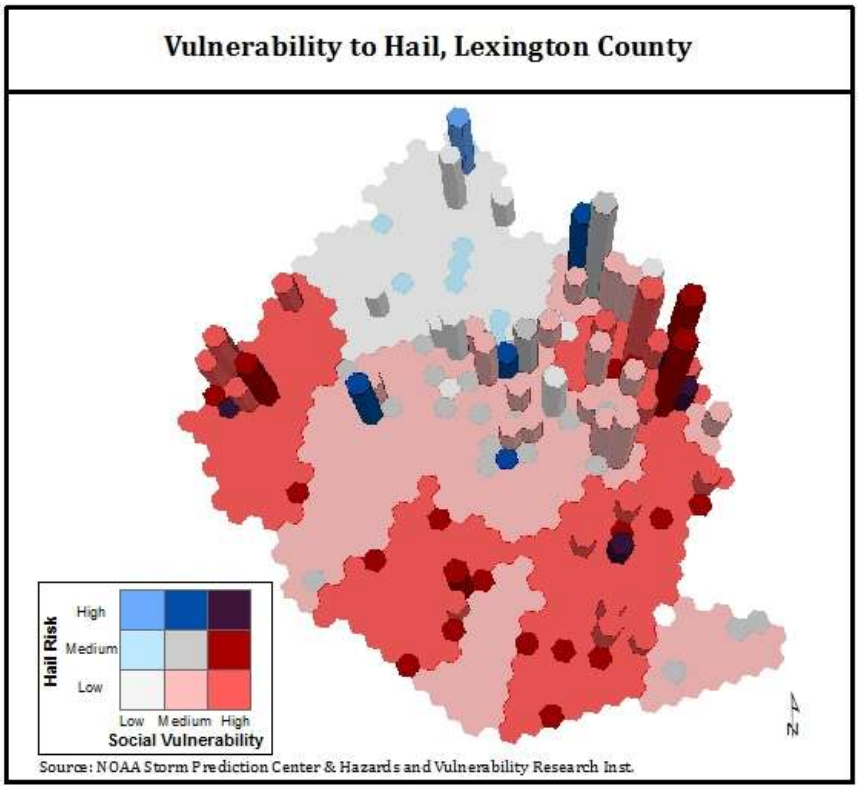


Figure 140 - Vulnerability of critical infrastructure to hail in Lexington County.

J) Fog

The highest vulnerability to fog occurs in southeastern Lexington County, especially south of the Town of Cayce as well as northwest of Pelion (Figure 141). These areas have more than 67.8 days of fog per year along with high social vulnerability. Around a quarter of the county's critical infrastructure and assets are located in this area (Figure 142).

Vulnerability statistics for fog in Lexington County	**Risk Zones**		
	Low (<48.2 days/year)	**Medium (48.2-67.8 days/year)**	**High (>67.8 days/year)**
Critical Infrastructure	19 (20%)	52 (54%)	25 (26%)
Building Stock	$10.7 billion (22%)	$29.2 billion (60%)	$8.7 billion (18%)
Population	52,075 (19%)	150,566 (56%)	67,194 (25%)
Population w/high social vulnerability	10,238 (11%)	51,554 (53%)	34,547 (36%)

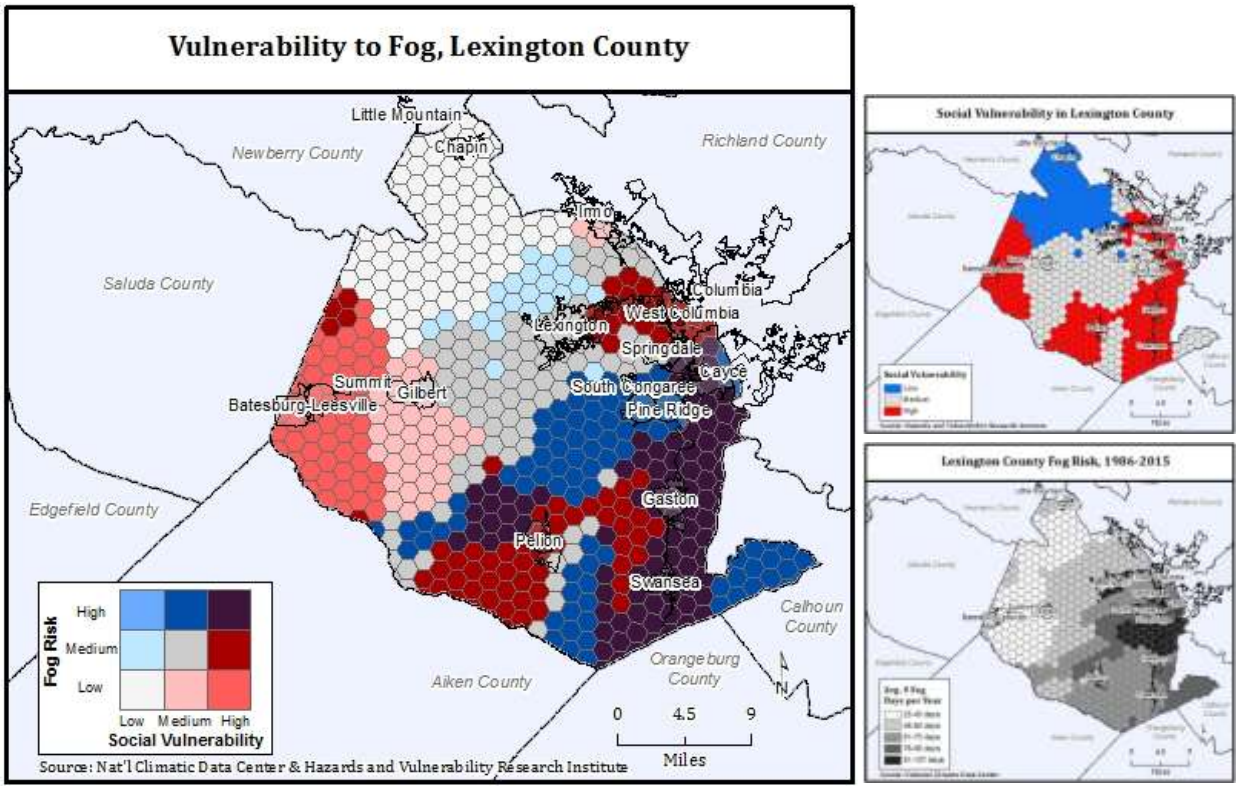


Figure 141 - Vulnerability to fog in Lexington County.

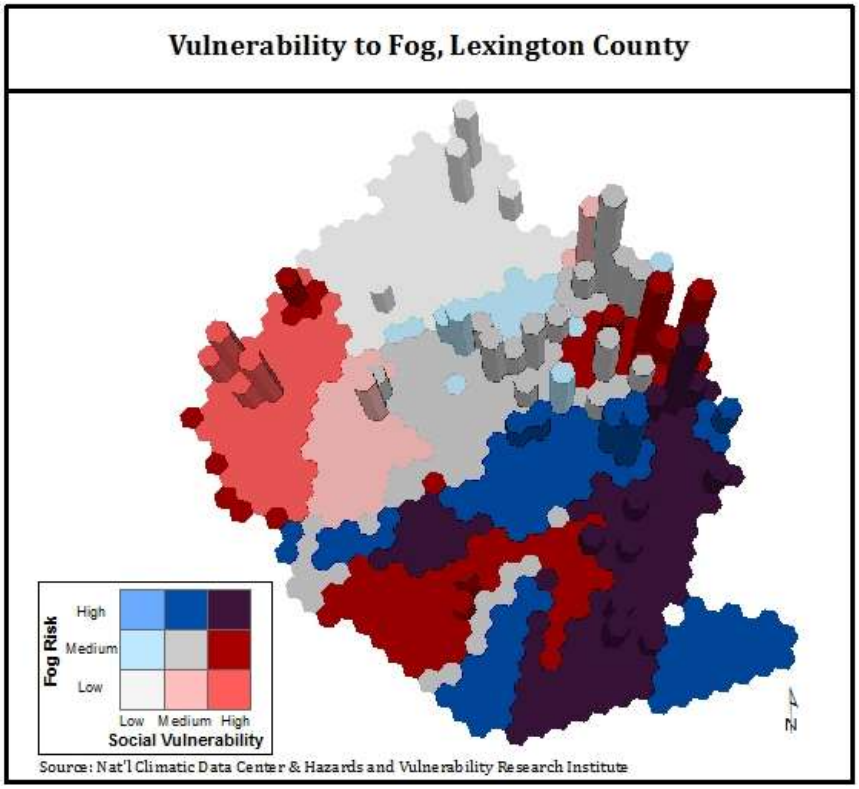


Figure 142 - Vulnerability of critical infrastructure to fog in Lexington County.

K) Winter Weather & Ice Storms

The highest vulnerability to winter weather occurs in western and southwestern Lexington County (Figure 143). In these areas, high social vulnerability coincides with more than 2.2 days of winter weather per year. About 15% of the county's assets are located in high risk areas (Figure 144).

Vulnerability statistics for winter weather in Lexington County	**Risk Zones**		
	Low (<1.5 days/year)	**Medium (1.5-2.2 days/year)**	**High (>2.2 days/year)**
Critical Infrastructure	65 (68%)	17 (18%)	14 (14%)
Building Stock	$33.2 billion (68%)	$8.6 billion (18%)	$6.8 billion (14%)
Population	164,618 (61%)	59,285 (22%)	45,932 (17%)
Population w/high social vulnerability	59,190 (62%)	23,518 (24%)	13,631 (14%)

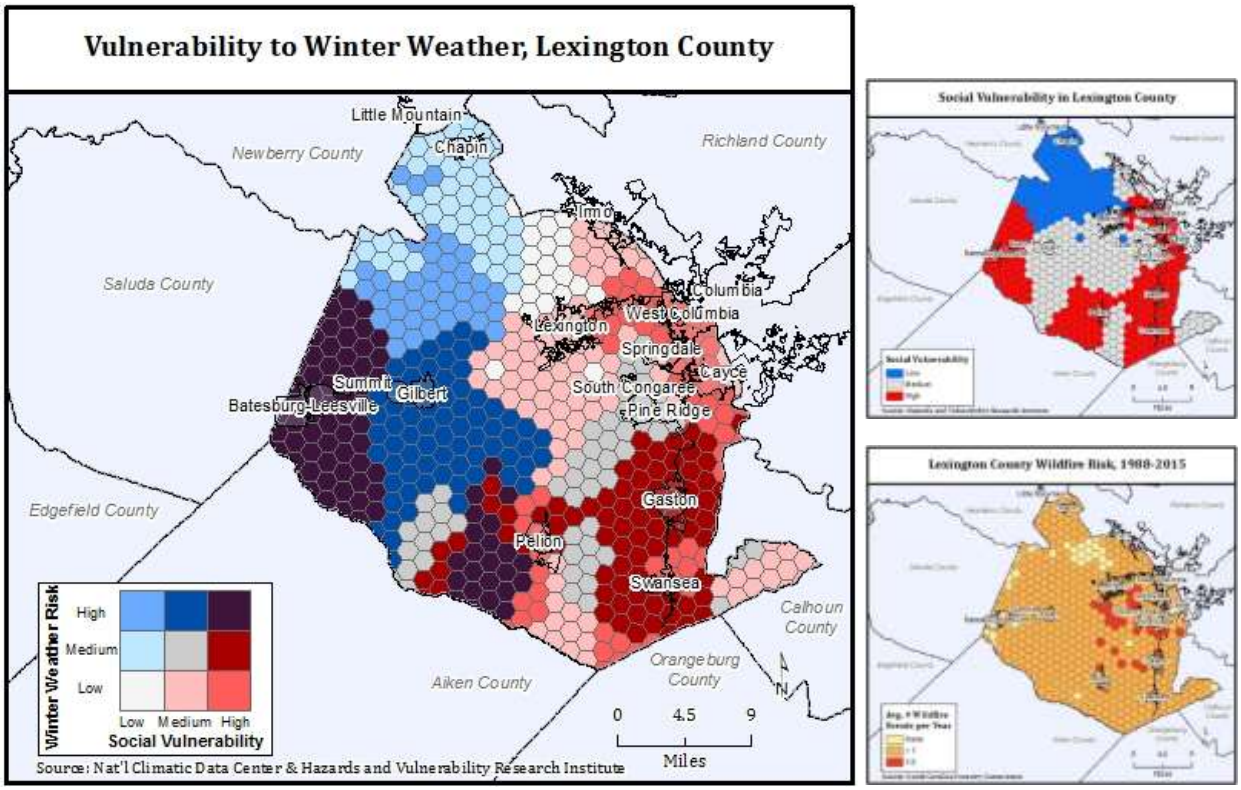


Figure 143 - Vulnerability to winter weather in Lexington County.

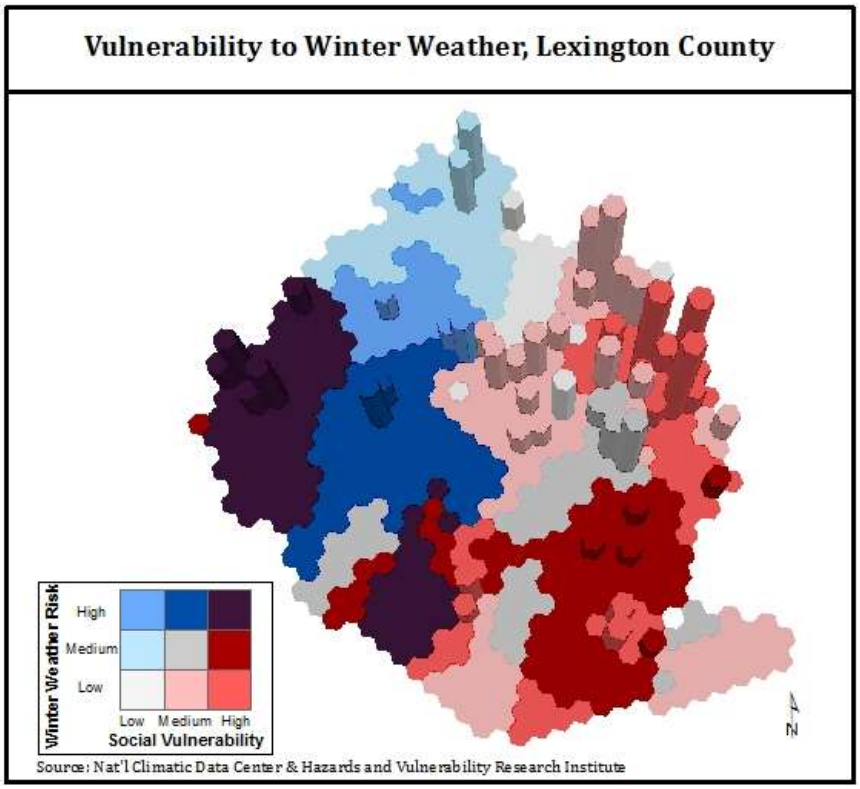


Figure 144 - Vulnerability of critical infrastructure to winter weather in Lexington County.

L) Temperature Extremes

There are not many areas where high social vulnerability and a high occurrence of cold weather overlap in Lexington County (Figure 145). While northern Lexington County experiences the most days per year below 32°F, it is the southern and most eastern and western portions of the county that have the highest social vulnerability. Nearly half of the county's critical infrastructure and population are located in northern Lexington County, the area most at risk from cold weather (Figure 146).

Vulnerability statistics for cold temperatures in Lexington County	**Risk Zones**		
	Low (<44.6 days/year)	**Medium (44.6-47.6 days/year)**	**High (>47.3 days/year)**
Critical Infrastructure	16 (17%)	35 (36%)	45 (47%)
Building Stock	$3.7 billion (10%)	$11.3 billion (30%)	$22.7 billion (60%)
Population	29,746 (11%)	126,099 (47%)	113,991 (42%)
Population w/high social vulnerability	23,580 (24%)	64,670 (67%)	8,088 (8%)

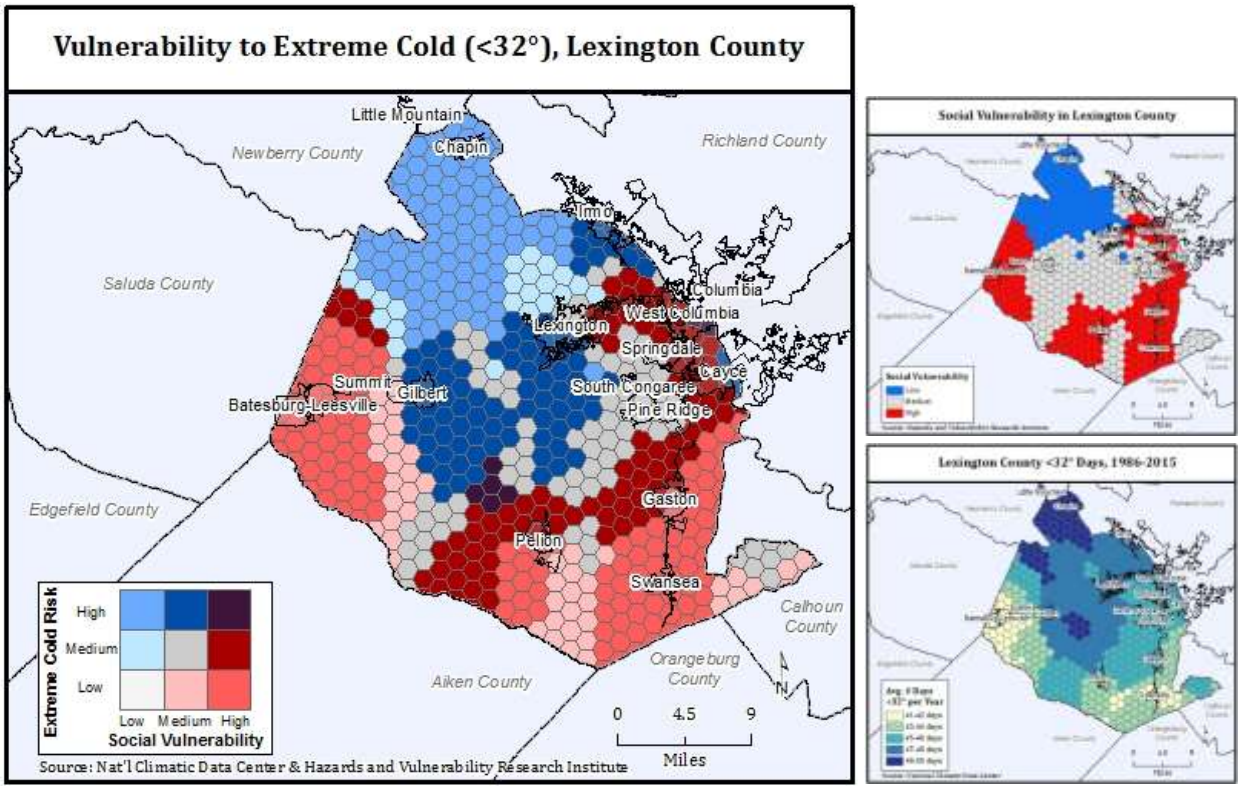


Figure 145 - Vulnerability to cold weather in Lexington County.

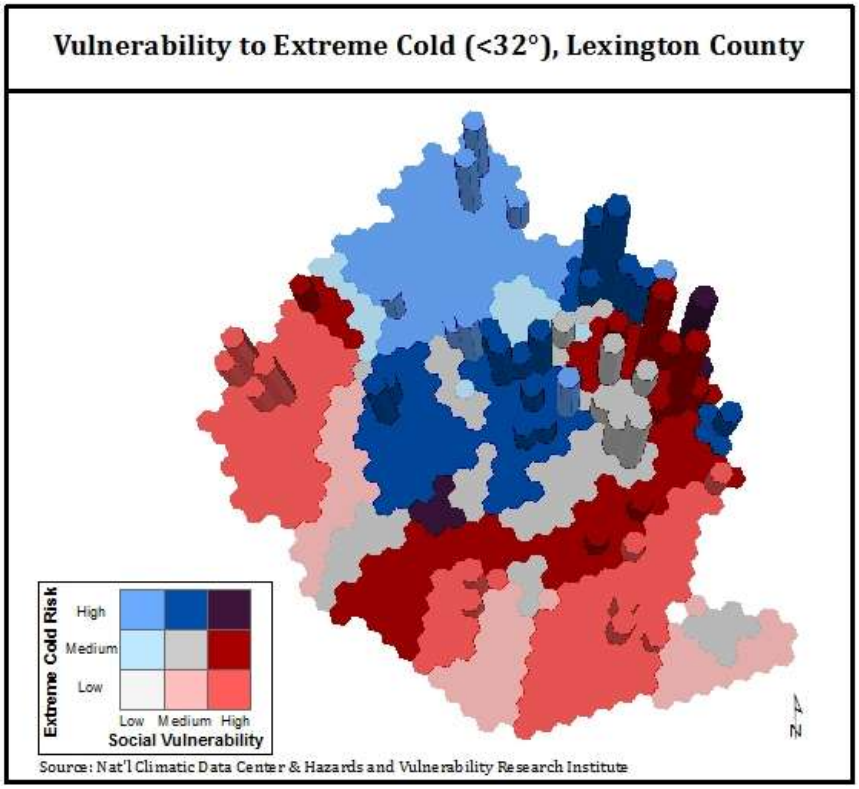


Figure 146 - Vulnerability of critical infrastructure to cold weather in Lexington County.

While northern Lexington County experiences the most cold weather days, it is southern Lexington County that is most vulnerable to extreme cold temperatures—here social vulnerability coincides with more than 16.6 days of extreme cold temperatures in the 95th percentile [75] (Figure 147).Less than 15% of the county's assets are located in areas with a high risk of cold temperature extremes (Figure 148).

Vulnerability statistics for extreme cold temperatures in Lexington County	**Risk Zones**		
	Low (<15.5 days/year)	**Medium (15.5-16.6 days/year)**	**High (>16.6 days/year)**
Critical Infrastructure	29 (30%)	55 (57%)	12 (13%)
Building Stock	$18.5 billion (38%)	$27.1 billion (56%)	$3 billion (6%)
Population	89,019 (33%)	148,028 (55%)	32,789 (12%)
Population w/high social vulnerability	12,212 (13%)	58,433 (60%)	25,694 (27%)

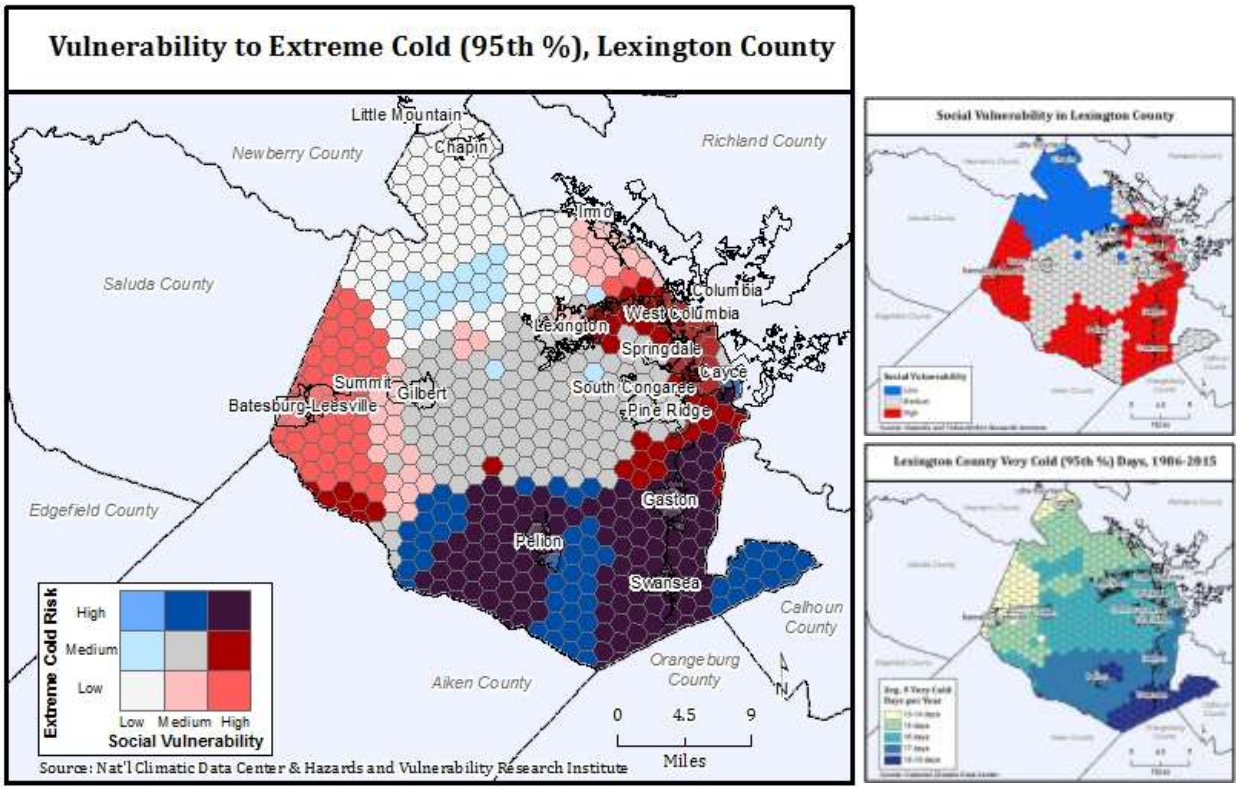


Figure 147 - Vulnerability to extreme cold temperatures in Lexington County.

[75] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Lexington County.

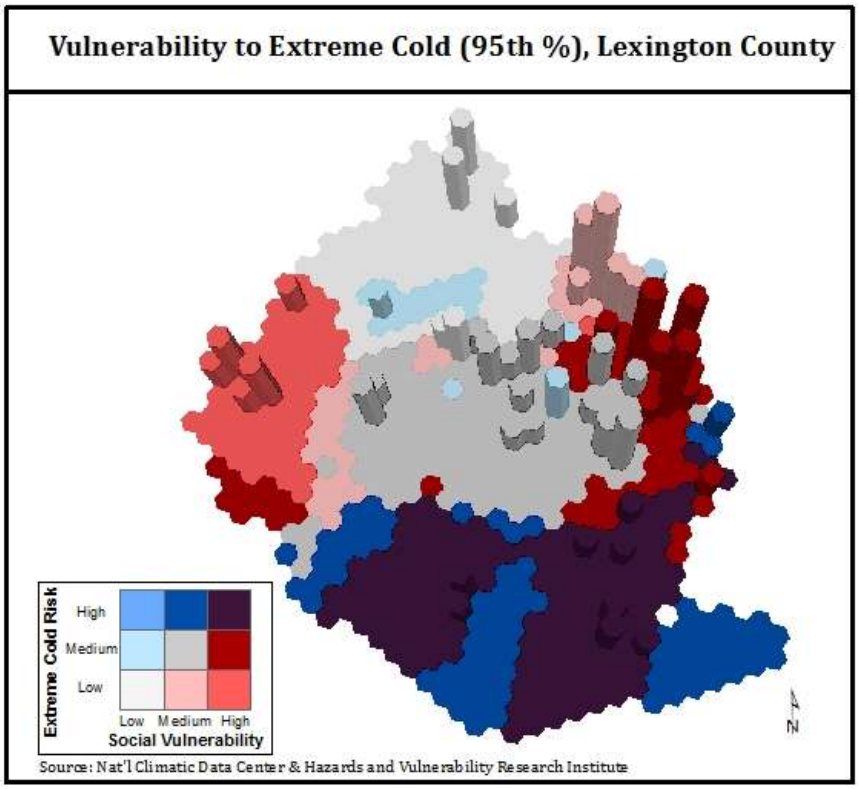


Figure 148 - Vulnerability of critical infrastructure to extreme cold temperatures in Lexington County.

Southern and southwestern Lexington County are the most vulnerable to temperatures above 95°F (Figure 149). These regions not only experience more than 24.3 days per year above 95°F but also exhibit high levels of social vulnerability. Less than 15% of the county's critical infrastructure is located in high risk areas (Figure 150).

Vulnerability statistics for hot temperatures in Lexington County	**Risk Zones**		
	Low (<22.8 days/year)	**Medium (22.8-24.3 days/year)**	**High (>24.3 days/year)**
Critical Infrastructure	30 (31%)	54 (56%)	12 (13%)
Building Stock	$22.2 billion (46%)	$20.5 billion (42%)	$5.9 billion (12%)
Population	116,930 (43%)	109,051 (41%)	43,855 (16%)
Population w/high social vulnerability	28,140 (29%)	46,403 (48%)	21,796 (23%)

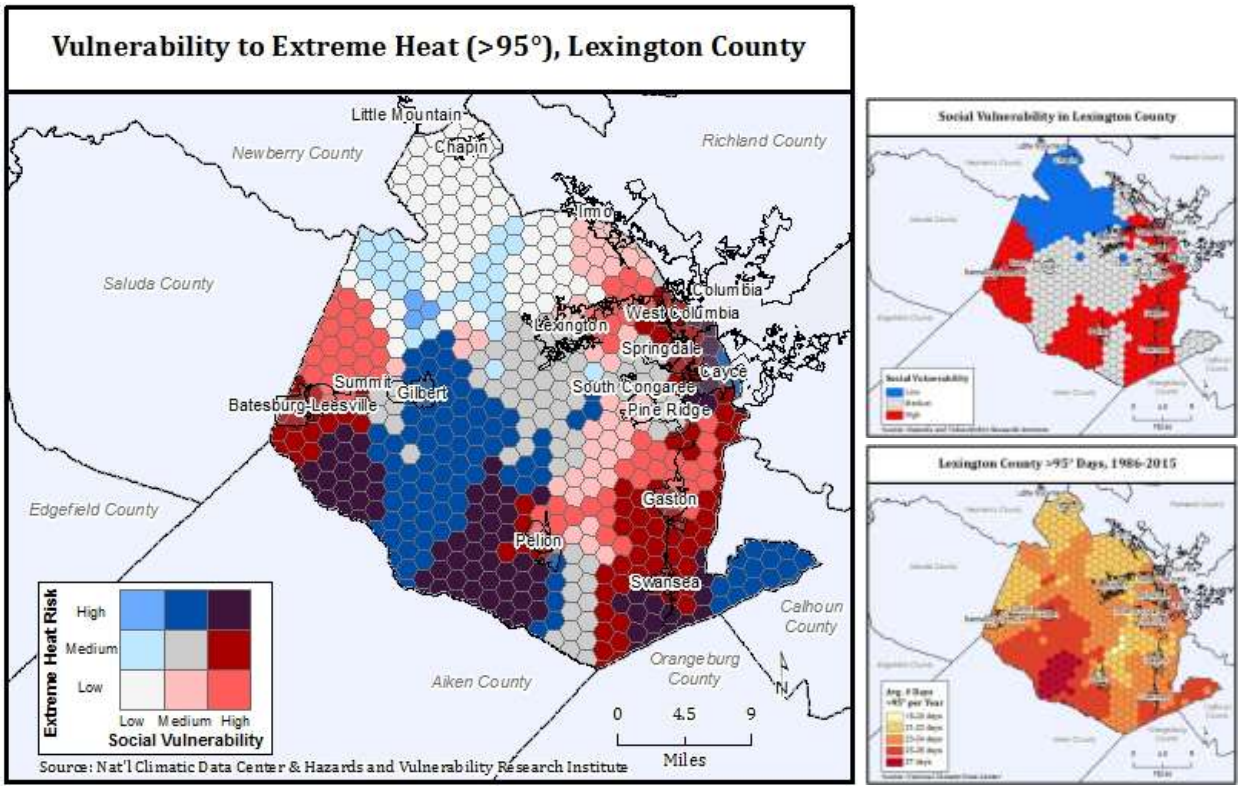


Figure 149 - Vulnerability to hot weather in Lexington County.

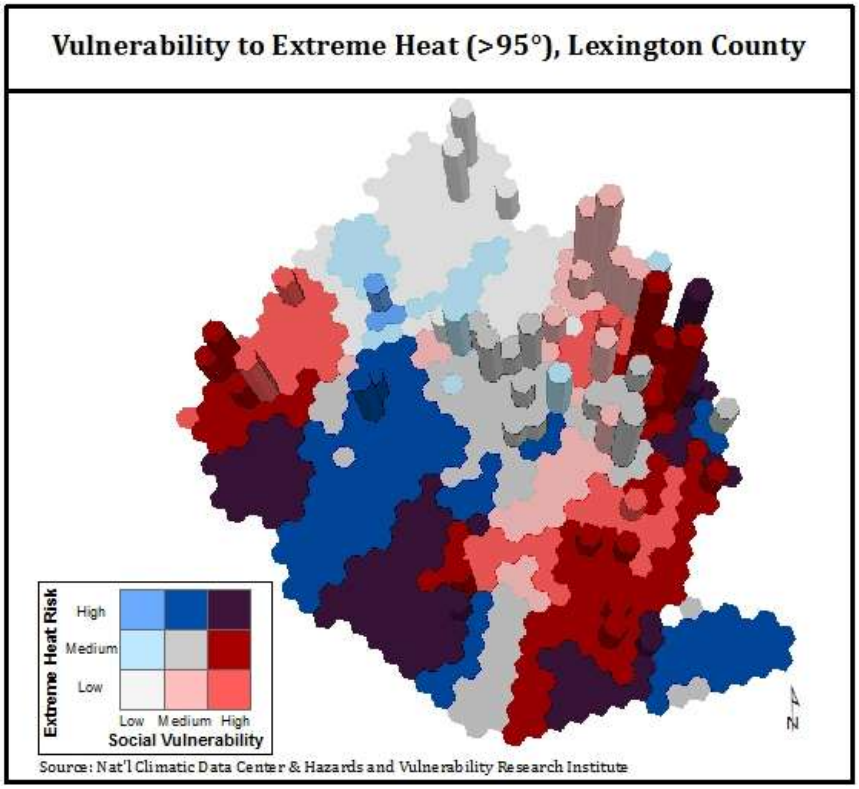


Figure 150 - Vulnerability of critical infrastructure to hot weather in Lexington County.

Some of the areas vulnerable to hot weather are also vulnerable to hot temperature extremes, i.e. areas where high social vulnerability coincides with more than 3.3 days per year of hot temperatures in the 95th percentile[76] (Figure 151). An additional vulnerability cluster emerges in the most populous area in Lexington County around West Columbia, Springdale, and Cayce. A significant amount of the county's critical infrastructure and other assets are located in high risk areas (Figure 152).

Vulnerability statistics for extreme hot temperatures in Lexington County	**Risk Zones**		
	Low (<3.1 days/year)	**Medium (3.1-3.3 days/year)**	**High (>3.3 days/year)**
Critical Infrastructure	8 (8%)	30 (31%)	58 (61%)
Building Stock	$8.7 billion (18%)	$14.6 billion (30%)	$25.3 billion (52%)
Population	63,436 (23%)	88,617 (33%)	117,782 (44%)
Population w/high social vulnerability	21,790 (22%)	27,622 (29%)	46,927 (49%)

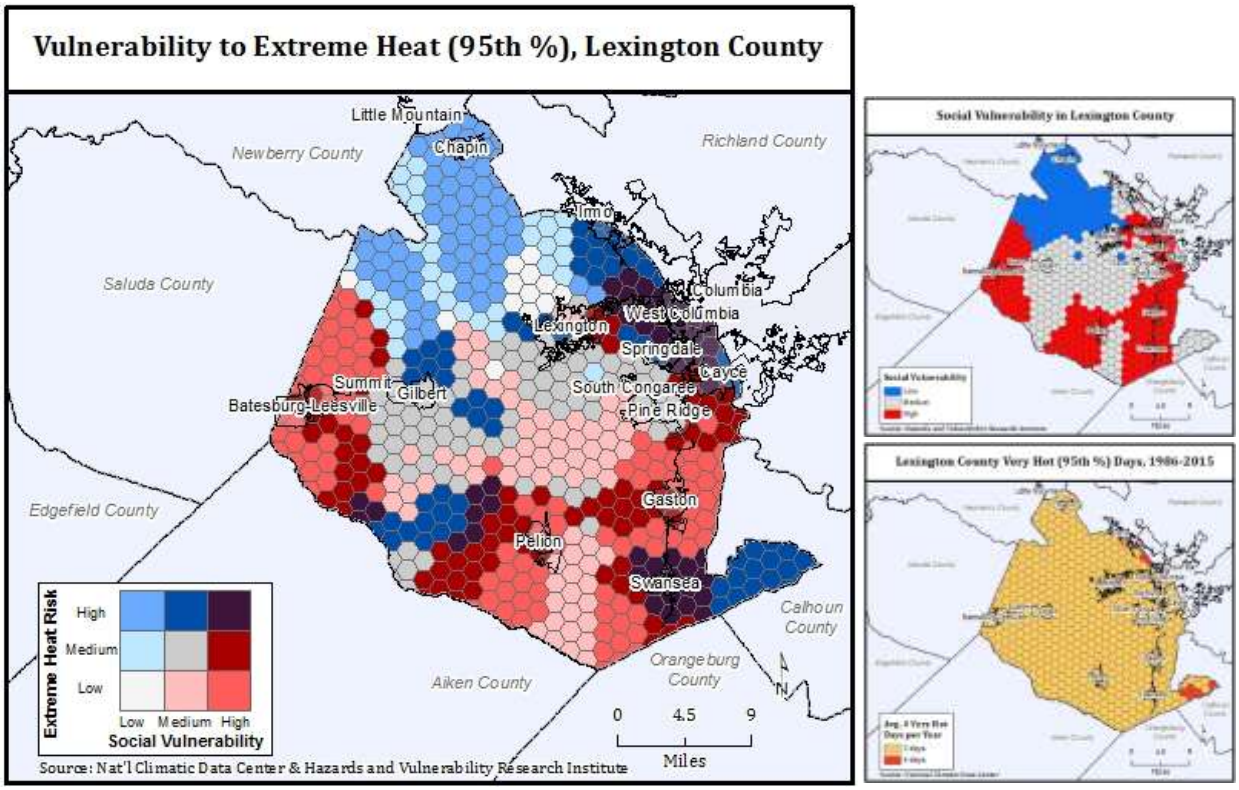


Figure 151 - Vulnerability to extreme hot temperatures in Lexington County.

[76] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Lexington County.

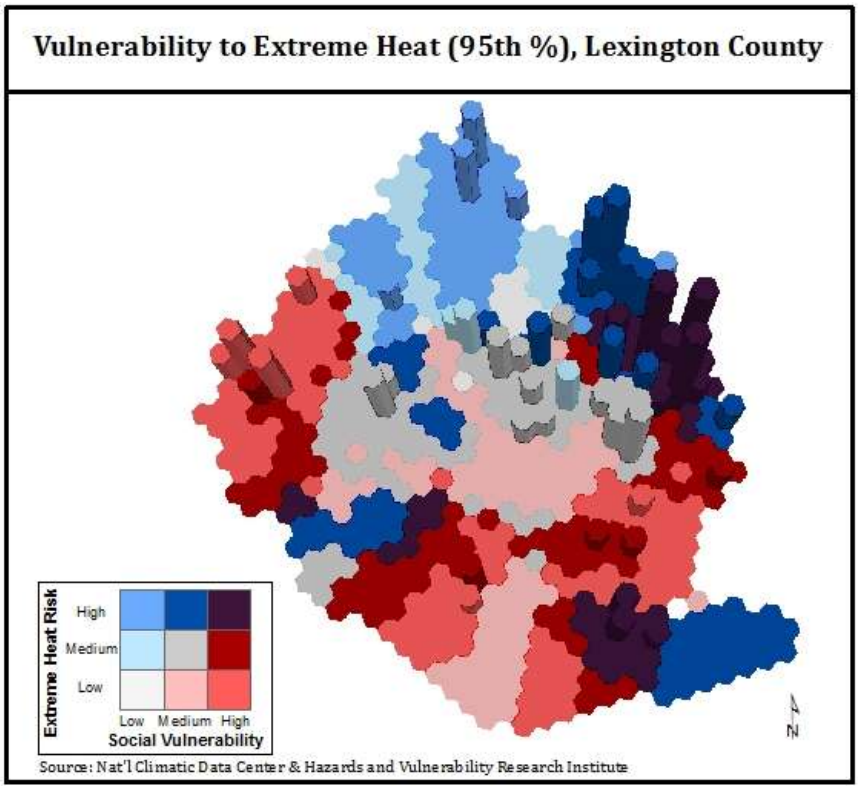


Figure 152 - Vulnerability of critical infrastructure to extreme hot temperatures in Lexington County.

M) Wildfires

The highest vulnerability to wildfires occurs in the eastern and southeastern portions of the County, particularly around Gaston (i.e., high social vulnerability overlaps with more than 0.3 wildfire events per year) (Figure 153). About a third of the county's assets are located in high risk areas (Figure 154).

Vulnerability statistics for wildfires in Lexington County	**Risk Zones**		
	Low (<0.1 events/year)	**Medium (0.1-0.3 events/year)**	**High (>0.3 events/year)**
Critical Infrastructure	30 (31%)	30 (31%)	36 (38%)
Building Stock	$10.9 billion (22%)	$19.4 billion (40%)	$18.3 billion (38%)
Population	55,935 (21%)	99,047 (37%)	114,853 (42%)
Population w/high social vulnerability	25,088 (26%)	34,714 (36%)	36,537 (38%)

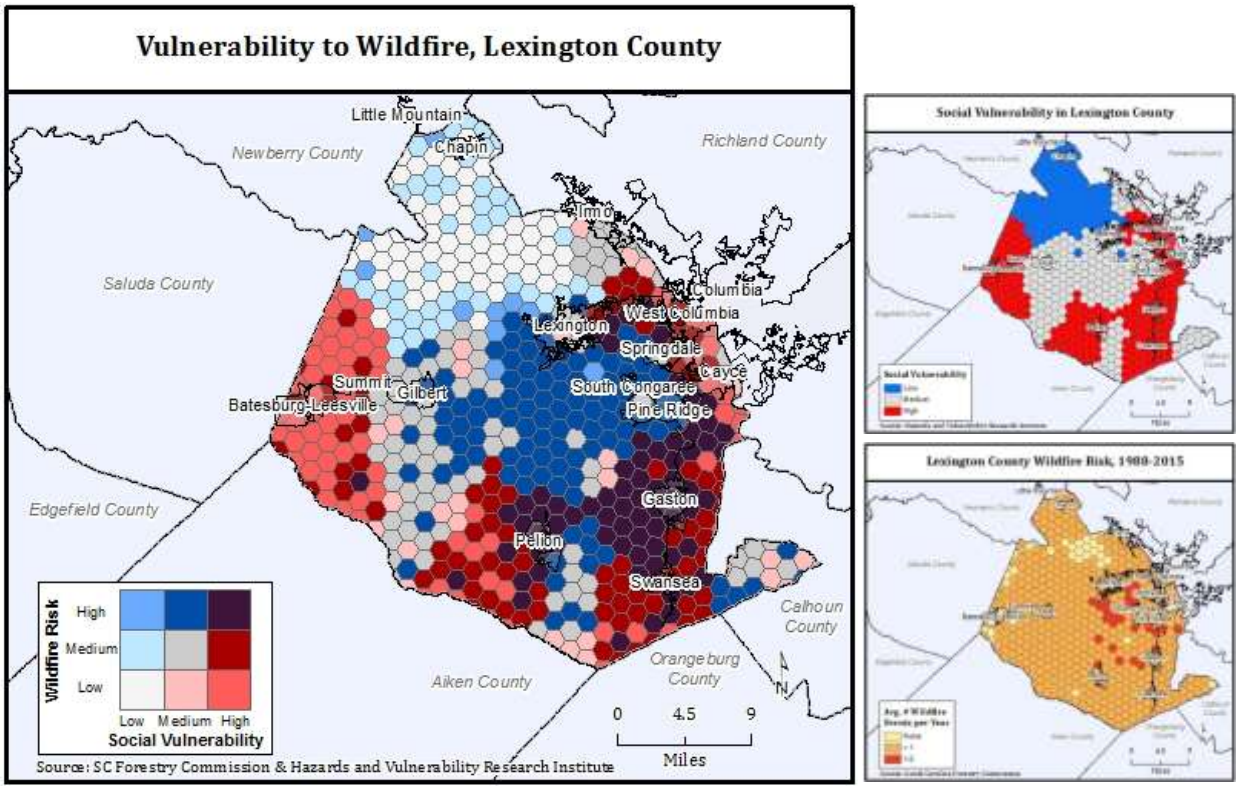


Figure 153 - Vulnerability to wildfires in Lexington County.

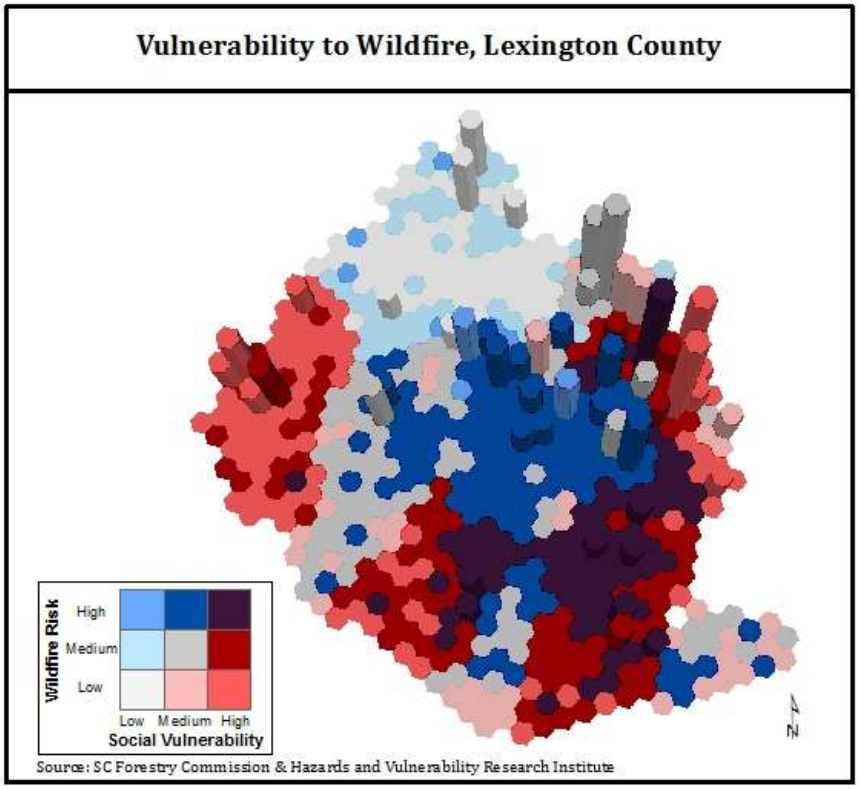


Figure 154 - Vulnerability of critical infrastructure to wildfire in Lexington County.

N) Droughts

The western and southern Lexington County are most vulnerable to droughts due to overlap of high social vulnerability with more than 20.7 weeks of drought per year (Figure 155). About one fifth of critical infrastructure and other assets are located in high risk areas (Figure 156).

Vulnerability statistics for droughts in Lexington County	**Risk Zones**		
	Low (<20.1 weeks/year)	**Medium (20.1-20.7 weeks/year)**	**High (>20.7 weeks/year)**
Critical Infrastructure	49 (51%)	26 (27%)	21 (22%)
Building Stock	$21.5 billion (44%)	$17.5 billion (36%)	$9.5 billion (20%)	
Population	126,273 (47%)	98,395 (36%)	45,167 (17%)
Population w/high social vulnerability	66,237 (69%)	16,765 (17%)	13,337 (14%)

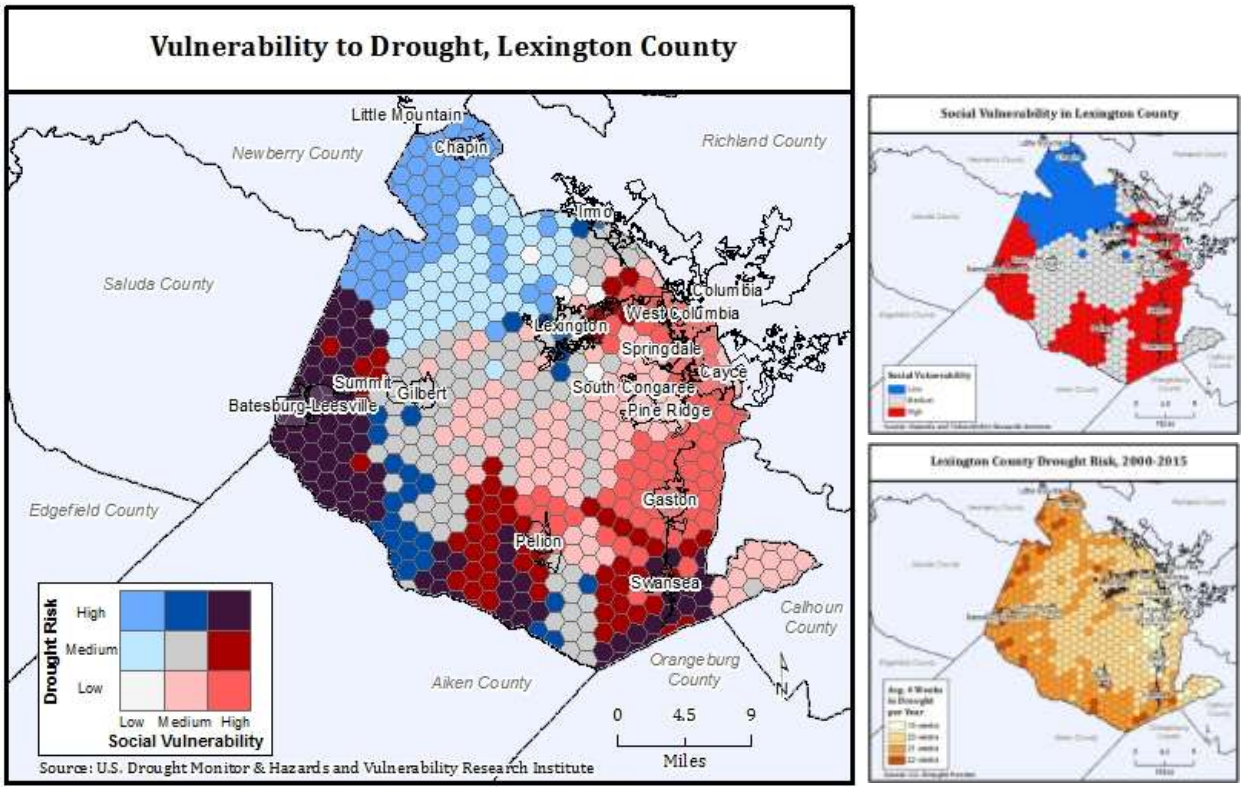


Figure 155 - Vulnerability to drought in Lexington County.

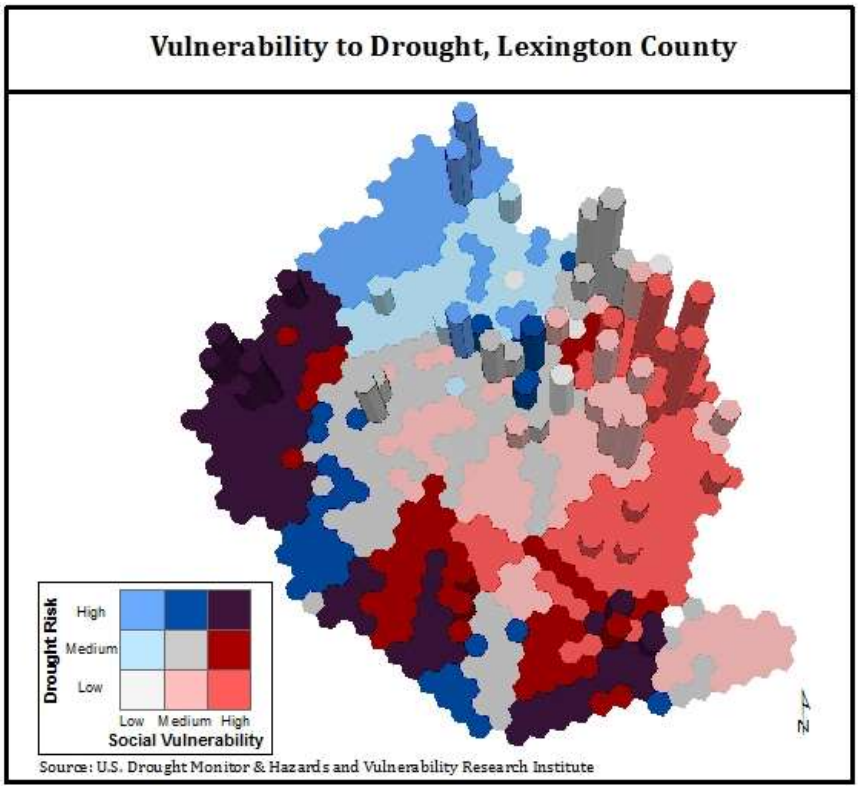


Figure 156 - Vulnerability of critical infrastructure to drought in Lexington County.

O) Earthquakes

Southeastern Lexington County exhibits both high social vulnerability as well as high risk from earthquake shaking (Figure 157). Only few of the county's assets are located in this highly vulnerable area (Figure 158).

Vulnerability statistics for a deterministic earthquake in Lexington County	**Risk Zones**		
	Low ($1.57\ m/s^2$)	**Medium ($1.77\ m/s^2$)**	**High ($1.96\ m/s^2$)**
Critical Infrastructure	1 (1%)	90 (94%)	5 (5%)
Building Stock	$0.8 billion (2%)	$47 billion (97%)	$0.7 billion (1%)
Population	3,898 (1%)	260,104 (96%)	5,834 (2%)
Population w/high social vulnerability	3,898 (4%)	88,132 (92%)	4,309 (4%)
Scenario	1886 Charleston Earthquake (6.8)		

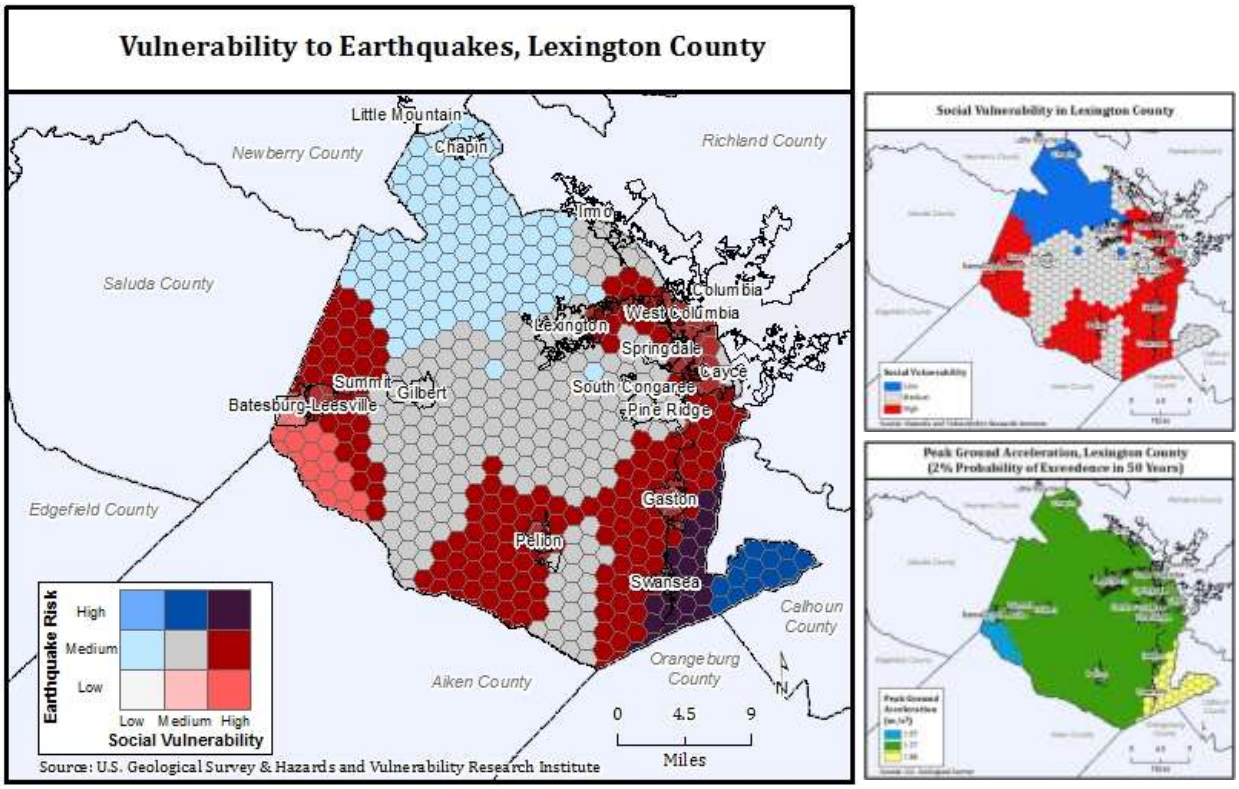


Figure 157 - Vulnerability to earthquakes in Lexington County.

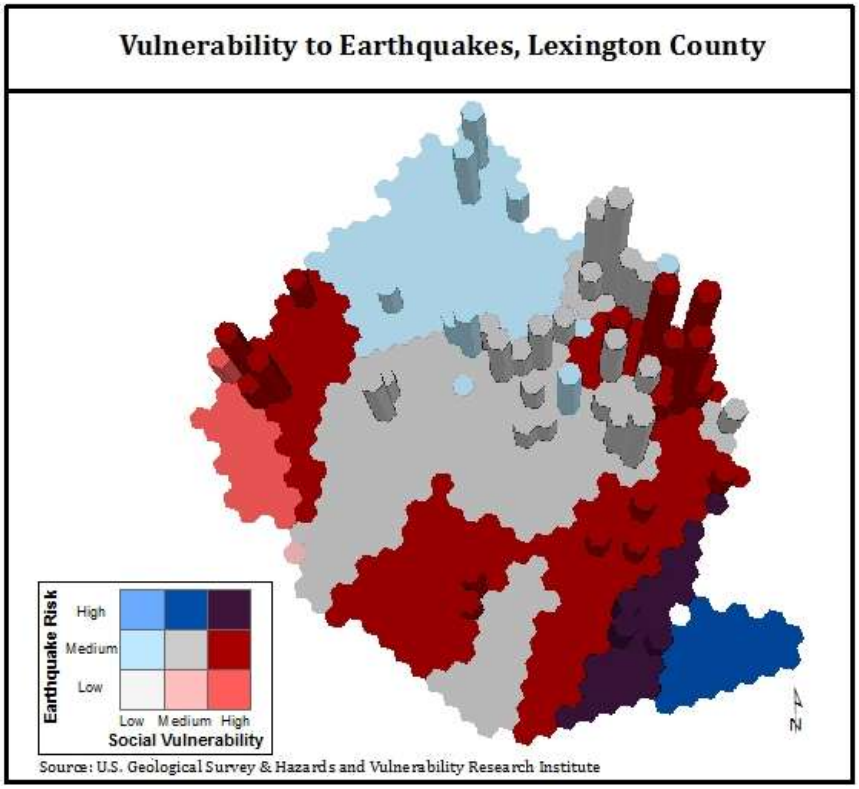


Figure 158 - Vulnerability of critical infrastructure to earthquakes in Lexington County.

According to the South Carolina Geological Survey, the worst case scenario for Lexington County is a combination of the 1886 Charleston and the 1913 Union earthquake, which would equate to an intensity category VIII (severe)[77]. If the 1886 Charleston earthquake were to occur today (Figure 159), about 90% of buildings would survive undamaged in Lexington County. About 3,100 buildings would be damaged moderately (3% of the county's building stock) with an estimated property damage of $226 million (nearly all of it residential). Most of the damage would occur in central and eastern Lexington County (Figure 160). All of the critical infrastructure would be operational within a day. The modelled earthquake's most devastating impact area would encompass some of Lexington County's most vulnerable population. All estimates were derived using HAZUS-MH 2.2.

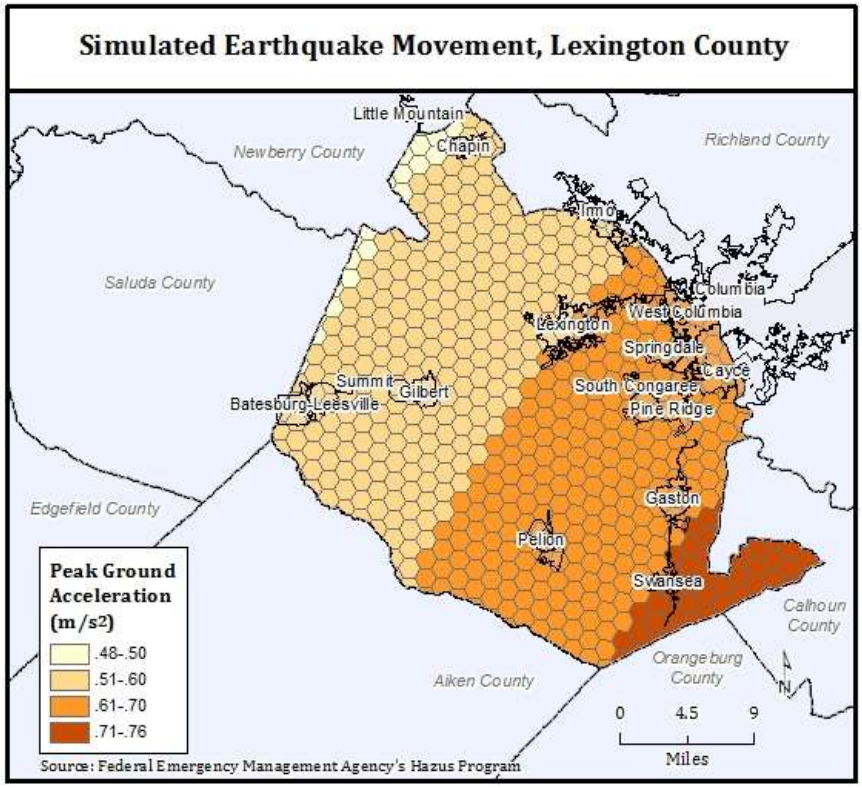


Figure 159 - Peak ground acceleration in Lexington County from a modelled 6.8 earthquake.

[77] SCGS, Projected Earthquake Intensities for South Carolina, Educational Series #7a. Available at http://www.dnr.sc.gov/geology/images/Equake%20intens1-pg.pdf

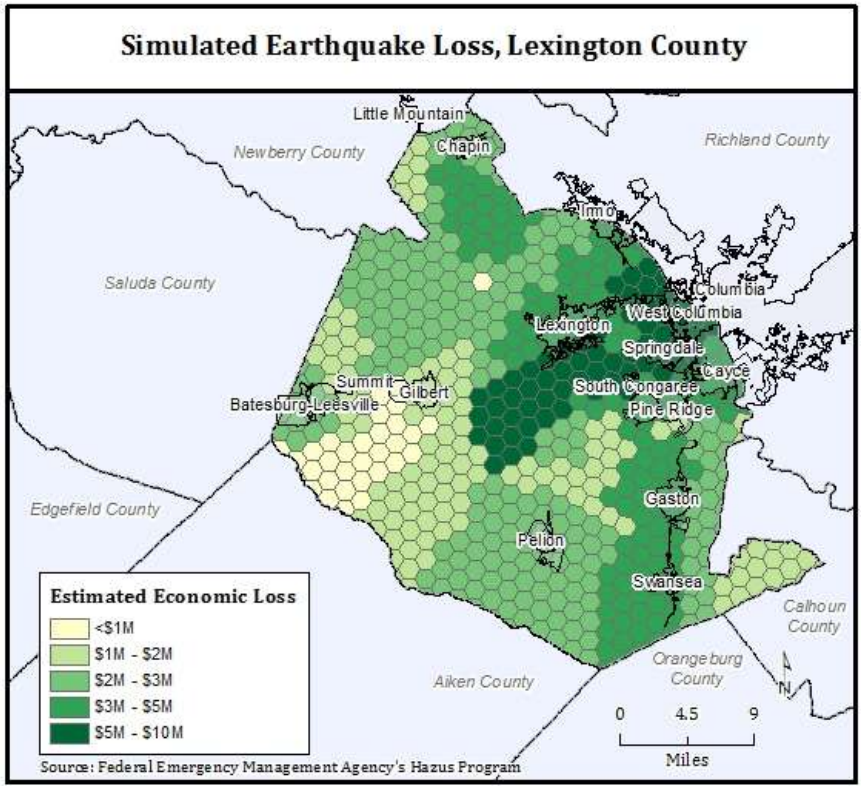


Figure 160 - Damage in Lexington County from a modelled 6.8 earthquake.

6.3 Risk Assessment

This section addresses FEMA HMP requirement 201.6(c)(2)(ii)

The risk assessment is the final summary of hazard threat, vulnerabilities and potential consequences. The combined information of vulnerabilities, hazards, and consequences creates the risk potential for Lexington County. The information generated by the vulnerability assessment and hazard assessment provide the input for the overall risk assessment. Table 65Table 37 shows the assessment criteria and rating values (in brackets) and Table 66 shows the overall risk for each hazard assessed in this plan.

Categories of Risk

Low: Minimal potential impact. The recurrence and potential cost of damage to life and property is minimal.

Medium: Moderate potential impact. The potential damage is more isolated and less costly than a more widespread disaster. There is a moderate threat level to people, critical infrastructure, and/or built environment.

High: Widespread potential impact. The potential for damage is widespread. Hazards have a high recurrence interval and/or pose a high threat to residents, critical infrastructure, and/or built environment.

Table 65 -Risk assessment criteria and values.

Geographical Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk Rating
Isolated	Infrequent	Limited	Low	Low
Limited	Occasional	Moderate	Medium	Medium
Widespread	Likely	Extensive	High	High

The risk assessment forms the basis for the development of mitigation strategies and prioritization (see Lexington County Mitigation Strategies in Section 6.5). The effectiveness and acceptance of hazard mitigation strategies depends on a community's risk awareness and risk perception. Therefore we are including the survey results conducted by the CMCOG in December 2015 revealing the perceived mitigation priorities by residents of the Central Midlands region.

Table 66 - Overall risk assessment for Lexington County.

Perceived Risk	Hazard	Geographic Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk
Most Important	***Winter Weather***	Widespread	Likely	Extensive	High	High (3)
Somewhat Important	***Extreme Heat***	Widespread	Occasional	Extensive	High	High (2.75)
Somewhat Important	***Droughts***	Widespread	Occasional	Extensive	High	High (2.75)
Very Important	***Tornadoes***	Isolated	Likely	Extensive	High	High (2.5)
Most Important	***Tropical Storms***	Widespread	Occasional	Moderate	Medium	Medium (2.25)
Most Important	***Wind***	Limited	Likely	Moderate	Medium	Medium (2.25)
Somewhat Important	***Extreme Cold***	Widespread	Likely	Limited	Medium	Medium (2.25)
Least Important	***Earthquakes***	Widespread	Infrequent	Moderate	Medium	Medium (2)
Very Important	***Flash Floods***	Isolated	Occasional	Moderate	Medium	Medium (1.75)
Very Important	***Riverine Floods***	Limited	Occasional	Moderate	Low	Medium (1.75)
Very Important	***Lightning***	Isolated	Likely	Moderate	Low	Medium (1.75)
N/A	***Hail***	Isolated	Occasional	Moderate	Medium	Medium (1.75)
Most Important	***Thunderstorms***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Fog***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Wildfires***	Isolated	Occasional	Limited	Low	Low (1.25)

The survey gauged hazard awareness, preparedness and impacts of residents in the Central Midlands region (see Appendix I for more information). The perceived risk highlights the overlaps and/or discrepancies between the objective risk (as developed in the hazard and vulnerability assessments) and subjective risk (as expressed by Central Midlands' residents).

An important aspect of risk assessment is identifying available resources that a jurisdiction has to respond to and mitigate natural hazard events. Table 67 identifies emergency services and adopted ordinances available to each municipality in Lexington County.

This section addresses FEMA HMP requirement 201.6(c)(3)

Table 67 - Services and Development Related Ordinances in Lexington County.

Name of Jurisdiction	Fire Service	Police Service	Emergency Medical Service	Adopted Zoning Ordinance	Adopted Comprehen. Land Development Regulations	Adopted Building Codes	Participates in National Flood Insurance Program
Lexington County	Provided by County Fire Service from stations throughout the county	Provided by County Sheriff's Department	EMS provided by Lex. County countywide	Yes	Yes	Yes	Yes
Lexington	Provided by County Fire Service	Provides own police protection	"	Yes	Yes	Yes	Yes
West Columbia	Provided by the city fire department	Provides own police protection	"	Yes	Yes	Yes	Yes
Cayce	Provided by the city fire department	Provides own police protection	"	Yes	Yes	Yes	Yes
Irmo	Provided by Irmo-Chapin Fire Distr.	Provides own police protection	"	Yes	Yes	Yes	Yes
Chapin	Provided by Irmo-Chapin Fire District	Provides own police protection	"	Yes	Yes	Yes	Yes
Gilbert	Provided by County Fire Service	Provided by County Sheriff's Department	"	Yes	Yes	Yes	Yes
Springdale	Provided by County Fire Service	Provides own police protection	"	Yes	Yes	Yes	Yes
Batesburg-Leesville	Provided by County Fire Service	Provides own police protection	"	Yes	Yes	Yes	Yes

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures (FEMA, 2016). Actions taken towards reducing flood hazard risk provide a compounding discount on flood insurance to residents in flood prone areas. The program tracks Repetitive Loss Properties (RLP) and Severe Repetitive Loss Properties (SRLP), which are properties that

have made multiple flood insurance claims. This information is valuable to planners as it aids in allocating flood mitigation strategies.

Table 68 - Number of Lexington County Repetitive Loss Properties.

Building Type	Number of Properties
Residential	10

Table 68 shows the number and building type of RLP and SRLP in Lexington County. The County participates in both the NFIP and Community Rating System (CRS). The County also has a designated Special Flood Hazard Area (SFHA). Through public outreach efforts, flood mitigation planning and enforcing zoning and building codes, Lexington County residents are provided with an automatic 10% discount on flood insurance premiums.

6.4 Lexington County Mitigation Goals and Objectives

This section addresses FEMA HMP requirement 201.6(c)(3)(i)

The following are general hazard mitigation goals and objectives utilized by stakeholders. These serve as broad mission statements and help guide planners in making decisions that safeguard the life and property of Lexington County citizens.

1. Develop better data for the community relating to type, impact, location and cost of the natural disaster mitigation strategies occurring in the area.
2. Increase the community's capacity to initiate and sustain emergency response operations during and after a natural disaster, thereby mitigating effects of hazardous events.
3. Enhance existing, or design new, policies and/or programs in the community to reduce the potential damaging effects of hazards without hindering other community goals or impeding hazard mitigation programming in the county.
4. Protect the most vulnerable populations, buildings and critical facilities in the town through the implementation of cost-effective, environmentally sound, and technically feasible mitigation projects.
5. Protect the public health, safety and welfare by increasing public awareness and understanding of hazards and by fostering both individual and public responsibility in the mitigation of risks through available techniques that minimize vulnerability to those hazards.
6. Increase understanding of all residents in the community about the natural hazards threatening local areas and techniques available to minimize vulnerability to those hazards.
7. Maintain the economic vitality of the community in the face of natural disasters.
8. Ensure the security of homes, institutions and places of employment throughout the community that are considered vulnerable to natural disasters.
9. Ensure that the availability and function of community infrastructure will not be significantly disrupted by a natural disaster.
10. Inventory, map and assess all flood plain structures and properties that are or may be repetitive loss properties.

This section addresses FEMA HMP requirement s201.6(c)(3)(ii), 201.6(c)(3)(iii), and 201.6(c)(3)(iv)

6.5 Lexington County Mitigation Strategies

Table 69 - Unincorporated Lexington County Mitigation Strategies.

Unincorporated Lexington County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improved suppression response (tankers, dry chemicals)	Forest Fire/Wild Fires	Lexington County	1	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Regulate open burning by permit (Red flag alerts)	Forest Fire/Wild Fires	Lexington County		3 & 8	Operating budget	<$250,000	Ongoing	Ongoing
Fire Code enforcement/inspections	Forest Fire/Wild Fires	Lexington County	1	2 & 5	Operating budgets	<$250,000	Ongoing	Ongoing
Construct dry hydrant program in rural areas of county	Forest Fire/Wild Fires	Lexington County	1	2, 3 & 7	Capital Improve. Budgets or Grants	$250,000 to $750,000	Ongoing	Ongoing
Use GIS capacity to map, record wild fires, all hazard events	Forest Fire/Wild Fires	Lexington County	1	10	Operating Budget	<$250,000	Duplicate Action	
Enforce county zoning & stormwater ordinances to restrict development in flood-plains	Flooding	Lexington County	1	2 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Lexington County	2	2 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate with other local gov'ts in county to make stream channel imp.	Flooding	Lexington County/ municipalities in county	3	2 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	Lexington County/ towns/ SCDOT	2	2 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Ongoing
Identify & contact all repetitive loss properties	Flooding	Lexington County/ towns in county	1	5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Lexington County/ towns in county	1	2, 5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to	Flooding	Lexington County/	1	2, 5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing

Unincorporated Lexington County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
improve Community Rating System Ranking		towns in county						
Maintain status in the NFIP	Flooding	Lexington County	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Power line easement clearance	Winter Snow & Ice Storms	Lexington County/ SCANA Elect. Coops.	1	2 & 7	Electric utility providers	<$250,000	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Lexington County Public Works and S. C. DOT	1	2 & 7	Lexington County Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	Ongoing
Use bus and van transit system for emergency shelters, evacuation & communication capacity	Winter Snow & Ice Storms	Central Midlands Transit System/ DART system, etc.	1	4 & 7	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Lexington County/ school dist. cities/ recreation comm.	1	2 & 7	Capital Improve. budgets or operating budget if rental	$250,000 to $750,000	Ongoing	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Lexington County & School Districts & cities	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Adopt procedure to suspend operations in elec. storms	Thunder-storms (Hail, Wind, Lightning)	Lexington County	2	2, 4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	SCANA/ Elec. Coops	1	2 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Lexington County & Coops SCANA	2	2 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Develop portable water treatment facilities	Hurricanes	Lexington Joint Municip./ City Utilities/Columbia	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing

Unincorporated Lexington County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Replace water storage tanks and pumps as needed	Hurricanes	Water providers in county	2	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Add capacity at solid waste disposal facilities serving the county to handle more debris	Hurricanes	Lexington County and solid waste contractors	2	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
"Harden" utility services especially in highly vulnerable areas	Tornados	Lexington County	1	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Conduct engineering strength studies of critical facilities	Tornados	Lexington County	1	2 & 4	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Lexington County/ SCANA/Elect. Coops SCDOT & towns in county	1	2 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Lexington County	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Lexington County, West Columbia/Cayce & other municip.	3	10	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Conduct earthquake impact analysis on critical facilities in Lexington County	Earthquake	Lexington County/ City of West Columbia/Cayce	1	2 & 4	Public Works Depts. Capital Budgets	<$250,000	Ongoing	Ongoing
Work with SCANA to ensure that the Lake Murray Dam withstands future events	Earthquake	Lexington County and SCANA	1	2 & 4	Operating Budget	<$250,000	Ongoing	Ongoing
Ensure that warning system works for rapid evacuation from lands downstream of Lake Dam	Earthquakes causing dam failure	SCANA	1	2 & 4	Operating Budget	<$250,000	Ongoing	Ongoing

Unincorporated Lexington County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Develop clearly marked and explained evacuation routes for dam failure	Earthquake causing dam failure	Lexington County/ City of West Columbia/Cayce & SCANA	1	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Develop speakers bureau about earthquake and other natural disaster threats to the county	Earthquake	Lexington County/ SCANA towns cities	1	2, 4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Implement Emergency Notification System to affected earthquake area	Earthquake	Lexington County	2	2 & 4	Capital Budget	<$250,000	Ongoing	Ongoing
Develop and publicize water conservation practices to respond to drought declarations	Drought	Lexington County/ Towns in County	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	S. C. General Assembly	3	5	Operating Budget	<$250,000	No action, this is not a local issue	
Develop and publicize water conservation practices to respond to drought declarations	Drought	Lexington County/ Towns in County	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Add to surface water reservoirs and resources in the county	Drought	Lexington County/ Towns in County	2	2 & 4	Capital Budgets	$750,000>	Ongoing	Ongoing

Table 70 - City of West Columbia Mitigation Strategies.

City of West Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improve early warning system in the city for wind events	Tornado	City of West Columbia	1	2 & 7	CIP		Remove, service is provided by others	Removed

City of West Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install safe rooms in critical facilities, especially those with vulnerable populations	Tornado	City of West Columbia	2	2 & 4	CIP		Deferred due to funding	2025
"Harden" utility services especially in highly vulnerable areas	Tornado	City of West Columbia, SCANA	1	2, 7 & 8	CIP		Deferred due to funding	2025
Conduct engineering strength studies of critical facilities	Tornado	City of West Columbia, Lexington County	1	2 & 9	Operating budget		Deferred due to funding	2025
Emergency response chainsaws and other efforts to remove debris	Tornado	City of West Columbia, Lexington County, SCANA, SCDOT	1	2 & 7	Operating budget	$1,500 per year	As needed	Ongoing
Identify and contact all repetitive loss properties	Flooding	City of West Columbia	2	4, 5, 6, 7, 8 & 10	Operating budget		Deferred due funding	2025
Ensure that FEMA elevation certificate is properly completed before issuance of permit on property in flood area	Flooding	City of West Columbia	1	5, 6 & 8	Operating budget		Ongoing	Ongoing
Undertake planning to participate in the Community Rating System	Flooding	City of West Columbia	3	5, 6 & 8	Operating budget		Deferred	2025
Maintain status in the NFIP	Flooding	City of West Columbia	1	2, 4, 5, 7 & 10	Operating budget		Ongoing	Ongoing
Power line easement clearance	Winter Snow and Ice Storms	SCANA	1	2 & 7	Operating budget		Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow and Ice Storms	City of West Columbia	2	2 & 7	Operating budget		As needed	Ongoing

City of West Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Procure and use electric generators at critical facilities	Winter Snow and Ice Storms	City of West Columbia, Lexington County, School District	3	2, 7 & 9	CIP		Completed	Completed
Remove taller trees near critical facilities	Thunderstorms (hail, wind, lightning)	City of West Columbia, SCANA	2	2, 7 & 9	Operating budget		Completed	Completed
Install surge protectors in critical facilities	Thunderstorms (hail, wind, lightning)	City of West Columbia, SCANA, School District	3	2,4,7 & 9	CIP		Partially completed	2025
Adopt procedures to suspend operations during lightning storms	Thunderstorms (hail, wind, lightning)	City of West Columbia	3	2,4,7 & 9	Operating budget		Deferred	2020
Replace water storage tanks and pumps as needed	Hurricane	City of West Columbia	1	2, 4, 5 & 7	CIP		Deferred due to funding	Ongoing
Provided mobile backup generators for critical facilities	Hurricane	City of West Columbia, Lexington County, School District	2	2, 4, 7 & 9	CIP or operating budget if rentals		Completed	Completed
Publicize National Hurricane Awareness week annually	Hurricane	City of West Columbia	3	4, 5 & 6	Operating budget		Ongoing	Ongoing

Table 71 - City of Cayce Mitigation Strategies.

City of Cayce								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Extend warning siren system for Lake Murray Dam to Cayce	Flooding	SCANA	1	4 & 5	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Enforce city zoning to restrict development in flood-plains	Flooding	City of Cayce	1	4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	City of Cayce	2	5	Operating Budget	<$250,000	Deferred due to funding	Deferred
Use Cayce's GIS system to track all structures and demolition permits in flood areas	Flooding	City of Cayce	2	10	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	Cayce/ W. Cola. Lexington County	3	2, 4 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Identify & contact all repetitive loss properties	Flooding	City of Cayce	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	City of Cayce	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	City of Cayce	1	5	Operating Budgets	<$250,000	Deferred due to funding	Ongoing
Procure and use elec. generators at designated critical facilities	Flooding	City of Cayce/ Lex. County. School District	3	2 & 9	Capital Improve. budgets or operating budgets if rentals	$250,000 to $750,000	Deferred due to funding	Ongoing
Conduct information meetings in flood prone areas informing citizens of the hazards or flooding and what they can do to prepare	Flooding	City of Cayce	2	2 & 7	Operating budget	<$250,000	Deferred due to funding	Ongoing

City of Cayce								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Maintain status in the NFIP	Flooding	City of Cayce	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Clear public lands as needed near critical facilities	Forest Fires/ Wild Fire	City of Cayce/ Lexington County/School districts	1	2, 4, 5 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Conduct detailed assessments of wild fire risks for critical facilities	Forest Fires/ Wild Fire	City of Cayce	1	2, 4, 5 & 7	Cayce Public Works Dept. Capital Budget	<$250,000	Deferred due to funding	Ongoing
Use GIS capacity to map, record all fire events	Forest Fires/ Wild Fire	City of Cayce	1	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Improve early warning system in Cayce for wind events	Tornados	City of Cayce	1	2 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Ongoing
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	City of Cayce	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
"Harden" utility services especially in highly vulnerable areas	Tornados	City of Cayce/ SCANA	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Conduct engineering strength studies of critical facilities	Tornados	Cayce/ Lexington County/ School district	1	2 & 4	Capital Improve. Budgets	<$250,000	Deferred due to funding	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Cayce/ Lexington County/ SCANA/Elect./ SCDOT	1	2 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Debris removal and road clearance work	Winter Snow & Ice Storms	City of Cayce Public Works and SCDOT	1	2 & 7	Cayce Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Cayce/ County/ School district	3	2 & 7	Capital Improve. budgets or operating budget if rental	$250,000 to $750,000	Deferred due to funding	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind,	City of Cayce & SCANA	2	2 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing

City of Cayce								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
	Lightning)							
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	City of Cayce & Lexington School Dist. 2/ Lexington County	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	City of Cayce	2	2 & 4	Operating Budget	<$250,000	Deferred due to funding	Deferred
Develop and publicize water conservation practices to respond to drought declarations	Drought	City of Cayce	1	5	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	1, 5 & 6	Operating Budget	<$250,000	Deferred	Deferred

Table 72 - Town of Lexington Mitigation Strategies.

Town of Lexington								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Plan to improve early warning notification system (sirens, etc.) =	Tornados	Town of Lexington/ Lexington County	1	2, 4, 5 & 7	Operating Budgets	<$250,000	Deferred due to funding	Deferred
Improve EMS, Fire, Police training for hazard resp.	Tornados	Town of Lexington/ Lexington County	1	2, 4, 5 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing
Conduct engineering strength studies of critical facilities	Tornados	Town of Lexington	1	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Lexington/ Lexington County	1	2, 4, 5 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred

Town of Lexington								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install safe rooms in critical facilities especially those serv. vulnerable populations	Tornados	Town of Lexington	1	2, 4, 5 & 7	Operating. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Use identified public buildings as emergency shelters	Hurricanes	Town of Lexington	2	2, 4, 5 & 7	Operating. Budget	<$250,000	Ongoing	Ongoing
Rebuild public buildings damaged by hurricane event	Hurricanes	Town of Lexington	2	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Power line easement clearance	Winter Snow & Ice Storms	Town of Lexington/ Lexington County/ SCANA	1	2, 4 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Town of Lexington/ Lexington County Public Works/ S. C. DOT	1	2, 4 & 7	Rich. County Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Town of Lexington	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Identify all critical facilities in 100-year floodplains & plan to lower flood insurance premiums	Flooding	Town of Lexington	2	2, 4 & 10	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Flood proof town critical facilities where needed	Flooding	Town of Lexington	2	2, 4 & 10	Capital Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Coordinate with local gov'ts in county to make critical stream channel improvement to lower flood levels	Flooding	Town of Lexington/ Lexington County Public Works/ S. C. DOT	3	2, 4 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	Town of Lexington	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Create clear zones near critical facilities to lessen	Forest Fire/Wild Fires	Town of Lexington/	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing

Town of Lexington								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
threat from forest/wild fires		Lexington County Public Works/ S. C. DOT						
Use GIS capacity to map, record wild fires, all hazard events	Forest Fire/Wild Fires	Town of Lexington/ Lexington County Public Works/ S. C. DOT	1	2, 4 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Develop and publicize water conservation practices to respond to drought declarations	Drought	Town of Lexington	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	S. C. General Assembly	3	5	Operating Budget	<$250,000	Deferred	Deferred

Table 73 - Town of Irmo Mitigation Strategies.

Town of Irmo								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Enforce town zoning & stormwater ordinances to restrict flood development	Flooding	Town of Irmo	1	2 & 5	Operating Budgets	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Town of Irmo Council	2	2 & 5	Operating Budget	<$250,000	Deferred due to funding	Deferred
Coordinate with other local gov'ts in counties to make stream channel imp.	Flooding	Town of Irmo/ Lexington & Rich. Counties	3	2 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Identify & contact any repetitive loss properties	Flooding	Town of Irmo	1	5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in	Flooding	Town of Irmo	1	2, 5 & 10	Operating Budget	<$250,000	Ongoing	Ongoing

Town of Irmo								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
flood areas								
Undertake Planning to improve Community Rating System Ranking	Flooding	Town of Irmo	1	2, 5 & 10	Operating Budget	<$250,000	Deferred due to funding	Deferred
Maintain status in the NFIP	Flooding	Town of Irmo	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Irmo/ Counties SCANA/Elect. Coops SCDOT	1	2 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Town of Irmo & Lexington & Rich. Counties	3	10	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Lexington/Rich. Counties & School Districts	1	2 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Adopt procedure to suspend operations in elec. storms	Thunder-storms (Hail, Wind, Lightning)	Town of Irmo/ Counties	2	2, 4 & 5	Operating Budget	<$250,000	Deferred	Deferred
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	SCANA/ Elec. Coops	1	2 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Irmo/ Lexington/Richland Counties & Coops SCANA	2	2 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities.	Winter Snow & Ice Storms	Lexington County/ school dist. cities/ recreation comm.	1	2 & 7	Capital Improve. budgets or operating budget if rental	$250,000 to $750,000	Deferred due to funding	Deferred
Continue to enforce International Building and Fire Codes	Hurricanes	Town of Irmo/ Lexington & Rich. Counties	2	2 & 4	Operating Budget	<$250,000	Ongoing	Ongoing
Cooperate with the two County's Emergency	Hurricanes	Town of Irmo/ Rich. & Lexington	2	2, 4 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing

Town of Irmo								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Response Plans for Severe Weather		Counties						
Develop and publicize water conservation practices to respond to drought declarations	Drought	Town of Irmo	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	S. C. General Assembly	3	5	Operating Budget	<$250,000	Deferred	Deferred

Table 74 - Town of Chapin Mitigation Strategies.

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Facility Owner	2	2, 4, 7, 8 & 9	Facility Owner	Unknown	Deferred due to funding	3 – 5 Years
Adopt procedure to suspend operations in elec. storms	Thunder-storms (Hail, Wind, Lightning)	Town Admin	1	2, 3, 5 & 6	Town Admin	None	Ongoing	1 Year
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	SCE&G and MCEC	1	4, 7, 8 & 9	SCE&G and MCEC	Unknown	Ongoing (Conducted Fall 2015)	3 – 5 Years
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Facility Owner	2	4, 7, 8 & 9	Facility Owner	Unknown	Ongoing	3 – 5 Years
Encourage elec. utilities to place new electric lines below ground	Thunder-storms (Hail, Wind, Lightning)	SCE&G and MCEC	3	4, 7, 8 & 9	SCE&G and MCEC	Unknown	Deferred due to funding	7 - 10 Years

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
"Harden" utility services especially in highly vulnerable areas	Tornados	SCE&G and MCEC	2	4, 7, 8 & 9	SCE&G and MCEC	Unknown	Deferred due to funding	7 - 10 Years
Conduct engineering strength studies of critical facilities	Tornados	Facility Owner	3	1, 3, 4, 5, 6 & 9	Facility Owner	Unknown	Deferred due to funding	7 - 10 Years
Emergency response chain saw project and other efforts to remove debris	Tornados	Town Admin	3	4, 7, 8 & 9	Town Admin	Unknown	Deferred due to funding	7 - 10 Years
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Facility Owner	2	4, 7, 8 & 9	Facility Owner	Unknown	Deferred due to funding	3 – 5 Years
Establish GIS mapping of all hazard events by location, effect, and time	All Hazards	CMCOG	2	1, 2, 3, 5, 6 & 10	HMGP Grant Funds	Unknown	Deferred due to funding	3 – 5 Years
Improved suppression response (tankers, dry chemicals)	Forest Fire/Wild Fires	Lexington County	2	4, 7, 8 & 9	Lexington County	Unknown	Deferred due to funding	3 – 5 Years
Fire Code enforcement/inspection	Forest Fire/Wild Fires	Lexington County	1	4, 7, 8 & 9	Lexington County	Unknown	Ongoing	1 Year
Ensure that Chapin's Drought Manage. Ordinance is up-to-date and enforced	Drought/ Heat Wave	Utilities	1	1, 2, 3, 5 & 6	Utilities	None	Ongoing	1 Year
Monitor water use and impose restrictions as needed	Drought/ Heat Wave	Utilities and City of Columbia	1	1, 2, 3, 5 & 6	Utilities and City of Columbia	None	Ongoing	1 Year
Develop portable water treatment facilities	Hurricanes	Utilities	3	4, 7, 8 & 9	Utilities	Unknown	Deferred due to funding	7 - 10 Years

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Replace water storage tanks and pumps as needed	Hurricanes	Utilities and City of Columbia	2	4, 7, 8 & 9	Utilities and City of Columbia	Unknown	Deferred due to funding	3 – 5 Years
Add capacity at solid waste disposal facilities serving the county to handle more debris	Hurricanes	Lexington County	2	4, 7, 8 & 9	Lexington County	Unknown	Deferred due to funding	3 – 5 Years
Prepare Emergency Operations Plan to Link with Lexington County's Plan	Hurricanes	Town Admin	2	1, 2, 3, 5 & 6	Town Admin	Unknown	Ongoing	3 – 5 Years
Debris removal and road clearance work	Winter Snow & Ice Storms	Lexington County and SCDOT	1	4, 7, 8 & 9	Lexington County and SCDOT	Unknown	Ongoing	1 Year
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Facility Owner	2	4, 7, 8 & 9	Facility Owner	Unknown	Deferred due to funding	3 – 5 Years
Conduct earthquake impact analysis on critical facilities in Lexington County	Earthquake	Lexington County	2	1, 2, 3 & 9	Lexington County	Unknown	Deferred due to funding	3 – 5 Years
Develop speakers bureau about earthquake and other natural disaster threats to the town	Earthquake	Town Admin	2	1, 2, 3, 5 & 6	Town Admin	Unknown	Deferred due to funding	3 – 5 Years
Implement "Reverse 911" Alert to affected earthquake areas	Earthquake	Lexington County	2	1, 2, 3, 5 & 6	Lexington County	Unknown	Deferred due to funding	3 – 5 Years
Maintain status in the NFIP	Flooding	Town Admin	1	1, 2, 3, 5 & 6	Town Admin	None	Ongoing	1 Year
Develop and publicize water conservation practices to respond to drought declarations	Drought	Utilities and City of Columbia	1	2, 3, 5 & 6	Utilities and City of Columbia	Unknown	Deferred due to funding	1 Year
Amend state drought legislation to stiffen	Drought	SC Legislators	2	2, 3, 5 & 6	SC Legislators	Unknown	Ongoing	3 – 5 Years

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
penalties & clarify laws								
Install alternate power supply at Priority 1 Pump Stations (13)	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$75,000/site (parts & labor)	New (8 of 13 installed)	1 – 2 Years
Install alternate power supply at Priority 2 Pump Stations (15)	Flooding, Tornadoes, Hurricane	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$50,000/site (parts & labor)	New	3-5 Years
Install alternate power supply at Priority 2 Pump Stations (36)	Flooding, Tornadoes, Hurricane	Utilities	3	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$25,000/site (parts & labor)	New	5-7 Years
Install bypass pump at Priority 1 Pump Stations (13)	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$75,000/site (parts & labor)	New	1 – 2 Years
Install bypass pump at Priority 2 Pump Stations (15)	Flooding, Tornadoes, Hurricane	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$50,000/site (parts & labor)	New	3-5 Years
Install bypass pump at Priority 3 Pump Stations (36)	Flooding, Tornadoes, Hurricane	Utilities	3	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$25,000/site (parts & labor)	New	5-7 Years
Purchase mobile vacuum pumping truck	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Operating Funds / Grant Opportunities	$150,000	New	1 – 2 Years
Implement CMOM	Flooding, Tornadoes, Hurricane	Utilities	2	1, 2, 3 & 9	Operating Funds / Grant Opportunities	$300,000	New	3-5 Years
Conduct Inflow and Infiltration (I/I) Study	Flooding, Tornadoes, Hurricane	Utilities	2	1, 2, 3, 8 & 9	Operating Funds / Grant Opportunities	$500,000	New	3-5 Years

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Relocate Pump Stations out of Hazard Zones (3 Sites)	Flooding	Utilities	1	2, 4, 5, 7, 8, 9 & 10	Capital Improvement Funds / Grant Opportunities	$600,000 ($200,000 per site)	New	3 – 5 Years
Install Perimeter Fencing Around Pump Stations (15 sites)	Tornadoes, Hurricane	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$30,000 ($2,000 per site)	New	3-5 Years
Geolocate All Utility Infrastructure	All Hazards	Utilities	3	1, 2, 3, 9 & 10	Operating Funds / Grant Opportunities	$150,000	New	2-3 Years
Install Telemetry Systems at Pump Stations (64 Units)	All Hazards	Utilities	1	1, 2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$82,000 Total ($2,000/unit with 41 Units Remaining)	New (29 Units Installed)	1 – 2 Years
Construct Additional Elevated Water Tank	All Hazards	Utilities	3	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$1,500,000	New	7-10 Years
Upgrade Wells (5 Wells)	All Hazards	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$100,000 ($20,000 each site)	New	3-5 Years
Install Generators at Wells (5 Wells)	All Hazards	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$100,000 ($20,000 each site)	New	3-5 Years
Lay Interconnecting Water Lines to Newbery County Water Supply	All Hazards	Utilities	3	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$1,250,000 (25,000 Lf at $50/Lf)	New	5-7 Years

Town of Chapin								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Construct a Water Treatment Plant	All Hazards	Utilities	3	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$5,000,000	New	7-10 Years
Upgrade Wastewater Treatment Plant(WWTP) to Handle Increase Flow	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$12,000,000	New	1 – 2 Years
Install Backup Generator at WWTP	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Capital Improvement Funds / Grant Opportunities	$150,000	New	1 – 2 Years
Install 18" Parallel Effluent Line to Handle Emergency Flow (~25,000 Linear Feet)	Flooding, Tornadoes, Hurricane	Utilities	2	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$1,250,000 (~25,000 Lf at $50/Lf)	New	3-5 Years
Install 18" Force Main Sewer Interceptor Line to Relieve Pressure During Emergency Events (~17,000 Lf)	Flooding, Tornadoes, Hurricane	Utilities	1	2, 4, 7, 8 & 9	Capital Improvement Funds/Grant Opportunities/Infra structure Loans	$850,000 (~17,000 Lf at $50/Lf	New	1 – 2 Years

Table 75 - Town of Gilbert Mitigation Strategies.

Town of Gilbert								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Conduct detailed map and inventory of flood potential in town	Flooding	Town of Gilbert	1	4 & 5	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Enforce town zoning to restrict development in flood-plains	Flooding	Town of Gilbert	1	4 & 5	Operating Budget	<$250,000	Completed	As needed

Town of Gilbert								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Declare May of each year to be Flood Awareness Month	Flooding	Town of Gilbert	2	5	Operating Budget	<$250,000	Ongoing	Ongoing
Use Lexington County's GIS system to track all structures and demolition permits in flood areas	Flooding	Town of Gilbert/Lexington County	2	10	Operating Budget	<$250,000	Ongoing	As needed
Identify & contact all repetitive loss properties	Flooding	Town of Gilbert	1	5	Operating Budget	<$250,000	Completed	As needed
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Gilbert	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Gilbert/ Lexington County	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at designated critical facilities	Flooding	Town of Gilbert / Lex. County School District 1	3	2 & 7	Capital Improve. budgets or operating budgets if rentals	$250,000 to $750,000	Deferred due to funding	Deferred
Use prescribed and monitored fires by private land- owners to reduce fire threat	Forest Fires/ Wild Fire	Town of Gilbert / Lexington County	1	2, 4, 5 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Conduct detailed assessments of wild fire risks for critical facilities	Forest Fires/ Wild Fire	Town of Gilbert	1	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	Ongoing	As needed
Use GIS capacity to map, record all fire events	Forest Fires/ Wild Fire	Town of Gilbert/ Lexington County	1	2, 4, 5 & 7	Capital Improve. Budget	<$250,000	No action	As needed
Improve early warning system in Gilbert for wind events	Tornados	Town of Gilbert	1	2 & 7	Capital Improve. Budget	<$250,000	Ongoing	Ongoing
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Town of Gilbert	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
"Harden" utility services especially in highly vulnerable areas	Tornados	Town of Gilbert / SCANA/ Coops.	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	As needed
Conduct engineering strength	Tornados	Gilbert/ Lexington	1	2 & 4	Capital Improve.	$250,000 to	No action	School

Town of Gilbert								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
studies of critical facilities		County/ School Dist. 1			Budgets	$750,000		District
Emergency response chain saw project and other efforts to remove debris	Tornados	Gilbert/ Lexington County/ SCANA/Elect./ SCDOT	1	2 & 7	Capital Improve. Budgets	<$250,000	Completed	As needed
Replace water storage tanks and pumps as needed	Hurricanes	Gilbert/Summit Water Dist. / Joint Municipal Comm.	2	2, 4, 5 & 7	Capital Improve. Budget	$250,000 to $750,000	No action	As needed
Provide mobile backup generators for critical facilities	Hurricanes	Town of Gilbert./ School Dist. 1	1	2, 4, 5 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Publicize National Hurricane Awareness Week annually	Hurricanes	Town of Gilbert Council	1	4	Operating Budget	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Gilbert/ SCANA/Coops.	2	2 & 7	Public Works Operating Budgets	<$250,000	Completed	As needed
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Gilbert/Lexington County/ LCSD 1	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	As needed
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Town of Gilbert	2	2 & 4	Operating Budget	<$250,000	No action	As needed
Reduce & control development of impervious surfaces and promote wetland preservation	Drought/ Heat Wave	Town of Gilbert/Lexington County	1	2 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Monitor water use and impose restrictions as needed	Drought/ Heat Wave	Gilbert-Summit Water Dist./Joint Municipal Water & Sewer Comm.	1	2 & 7	Operating Budgets	<$250,000	No action	As needed
Develop speakers bureau about earthquake and other natural disaster threats to the town	Earthquake	Town of Gilbert/ Lexington County	1	2, 4 & 5	Operating Budgets	<$250,000	No action	County Initiative
Implement "Reverse 911" Alert to affected earthquake areas	Earthquake	Town of Gilbert	2	2 & 4	Capital Improve. Budget	$250,000 to $750,000	Completed	2008

Table 76 - Town of Springdale Mitigation Strategies.

Town of Springdale								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Prepare & Implement a storm water management plan & ordinance	Flooding	City of West Columbia	1	5	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Improve stormwater & drainage systems	Flooding	Town of Springdale/Lex. County	1	2, 4, 5 & 7	Capital Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Identify & contact all repetitive loss properties	Flooding	Town of Springdale	2	2, 4, 5 & 7		<$250,000	Deferred due to funding	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Springdale	1	1, 5 & 8	Operating Budget	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Springdale	1	5 & 6	Operating Budget	<$250,000	Deferred	Ongoing
Use GIS capacity to map, record all flood and all hazard events	Flooding	Town of Springdale	1	2, 4, 5 & 7	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Maintain status in the NFIP	Flooding	Town of Springdale	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Springdale/SCANA	2	2 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Springdale/ Lex. County/School Dist.	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Town of Springdale	2	2 & 4	Operating Budget	<$250,000	Deferred due to funding	Deferred
Bury overhead utility lines located in the town	Thunder-storms (Hail, Wind, Lightning)	SCANA/Bell South/ Time Warner Cable	3	2, 4, 5 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred

Town of Springdale								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Place new reflector tape or paint along road edges and at the center line of all major streets	Thunder-storms (Hail, Wind, Lightning)	SCDOT/ Lex. County/ Springdale	2	2, 4, 5 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Continue enforcement of International Building Codes	Thunder-storms (Hail, Wind, Lightning)	Town of Springdale	1	2 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Purchase or lease snow/ice/ debris removal equipment	Winter Snow & Ice Storms	Town of Springdale	1	2 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Town of Springdale/ Lex. County/SCANA/ SCDOT	1	2, 3 & 7	W. Cola. Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Town of Springdale/ School District	3	2 & 7	Capital Improve. budgets or operating budget if rental	$250,000 to $750,000	Deferred due to funding	Ongoing
Amend state drought legislation to stiffen penalties for violators	Drought	SC General Assembly	3	4 & 5	Operating Budget	<$250,000	Deferred	Deferred
Publicize water conservation practices	Drought	Town of Springdale/ West Columbia	1	4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Monitor and identify dams/levees in town to ensure structural soundness to withstand flooding	Dam/ Levee Failure	Town of Springdale/ SC Dept. of Nat. Resources	1	2 & 7	Operating Budgets	$250,000 to $750,000	Ongoing	Ongoing
Publicize National Hurricane Awareness Week annually	Hurricanes	Town of Springdale	1	4 & 6	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Prepare Emergency Operations Plan identifying responsibilities of town depts. and contact list	Hurricanes	Town of Springdale	1	2 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Improve early warning system in town wind events	Tornados	Town of Springdale	1	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Install safe rooms in critical	Tornados	Town of	2	2 & 7	Capital Improve.	$250,000	Deferred due to	Ongoing

Town of Springdale								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
facilities especially those with vulnerable populations		Springdale/ School District			Budgets	to $750,000	funding	
"Harden" utility services especially in highly vulnerable areas	Tornados	Town of Springdale/ Utilities serving the town	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Conduct engineering strength studies of critical facilities	Tornados	Town of Springdale	1	2 & 4	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Springdale Public Works/ Lex. County/ SCANA/SCDOT	1	2 & 7	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred

Table 77 - Town of Batesburg-Leesville Mitigation Strategies.

Town of Batesburg-Leesville								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improve early warning system in city for wind events	Tornados	Town of Batesburg-Leesville	1	1, 2, 3, 7 & 8	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Town of Batesburg-Leesville / Lexington School Dist. 3	2	1, 2, 3, 7 & 8	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
"Harden" utility services especially in highly vulnerable areas	Tornados	Town of Batesburg-Leesville/Lexington County	1	1, 2, 3, 6, 7 & 8	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Batesburg-Leesville /Public Works/ Lex. County/ SCANA SCDOT	1	1, 2, 3, 6, 7 & 8	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Replace water storage tanks and pumps as needed	Hurricanes	Town of Batesburg-Leesville	2	1, 2, 3, 6, 7 & 8	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing

Town of Batesburg-Leesville								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Provide mobile backup generators for critical facilities	Hurricanes	Town of Batesburg-Leesville /School Dist. 3	1	1, 2, 3, 6, 7 & 8	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Publicize National Hurricane Awareness Week annually	Hurricanes	Batesburg-Leesville Town Council	1	2, 4, 6 & 8	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Power line easement clearance	Winter Snow & Ice Storms	Town of Batesburg-Leesville /SCANA	1	1, 2, 3, 6, 7 & 8	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Bates-Leesville Public Works/ SCDOT	1	1, 2, 3, 6, 7 & 8	Bates.-Lees. Town Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Town of Batesburg-Leesville /County/ School Dist. 3/ recreation comm.	3	1, 2, 3, 6, 7 & 8	Capital Improve. budgets or operating budget if rental	$250,000 to $750,000	Deferred due to funding	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Batesburg-Leesville/Lexington County/School Dist. 3	1	1, 2, 3, 4, & 8	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Town of Batesburg-Leesville	2	1, 2, 3, 6, 7 & 8	Operating Budget	<$250,000	Deferred due to funding	Deferred
Identify & contact all repetitive loss properties	Flooding	Town of Batesburg-Leesville	1	1, 2, 3, 6, 7, 8, 9 & 10	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Batesburg-Leesville	1	1, 2, 3, 6, 7, 8, 9 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Batesburg-Leesville	1	1, 2, 3, 6, 7, 8, 9 & 10	Operating Budget	<$250,000	Deferred due to funding	Ongoing

Town of Batesburg-Leesville								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Procure and use elec. generators at designated critical facilities	Flooding	Town of Batesburg-Leesville/Lexington County School Dist. 3	3	1, 2, 3, 7 & 8	Capital Improve. budgets or operating budgets if rentals	$250,000 to $750,000	Deferred due to funding	Ongoing
Maintain status in the NFIP	Flooding	Town of Batesburg-Leesville	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Ensure that Bates-Leesville has an up-to-date and enforced Drought Management Ordinance	Drought/ Heat Wave	Town of Batesburg-Leesville	1	1, 2, 3, 7, 8, 9 & 10	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Monitor water use and impose restrictions as needed	Drought/ Heat Wave	Town of Batesburg-Leesville	1	1, 2, 3, 4, 7 & 8	Operating Budget	<$250,000	Ongoing	Ongoing

Table 78 - Gilbert – Summit Rural Water District Strategies.

Gilbert – Summit Rural Water District								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Debris Removal and clearance work	Winter snow and ice storms,	GSRWD	1	2, 3, 7, 8 & 9	Grants, Operating Budget.	$15,000	Ongoing	As needed
Procure and use electrical generators at critical facilities	Winter snow and ice storms, hurricanes, tornadoes, etc.	GSRWD	1	2, 3, 7, 8 & 9	Grants, Operating Budget.	$120,000	Only 1 mobile generator available. Need min 3 more.	When funding is available
"Harden" utility services and facilities in highly vulnerable areas	Tornados	GSRWD	1	2, 3, 7, 8 & 9	Operating Budget	$50,000	No Action -Lack of funding	When funding is available
Emergency response chain saw project & other efforts to remove debris	Tornados	GSRWD	1	2, 3, 7, 8 & 9	Operating Budget	$7,000	Ongoing	Ongoing

Gilbert – Summit Rural Water District								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Publicize National Hurricane Awareness Week annually	Hurricanes	GSRWD	3	4, 6 & 8	Operating Budget	$5,000	No Action -Lack of funding	When funding is available
Prepare & Implement Emergency Operations Plan identifying responsibility of District Employees & contact list	Hurricanes	GSRWD	1	2, 3, 7, 8 & 9	Operating Budget	$4,000	Ongoing	Ongoing
Publicize water conservation practices	Drought	GSRWD	2	4 & 5	Operating Budget	$5,000	No Action – lack of funding	When funding is available
Conduct detailed assessment of wild fire risks for critical facilities	Forest Fires/ Wild Fires	GSRWD	2	2, 4, 5, 7, 8 & 9	Grant/ Operating Budget	$5,000	No Action – lack of funding	When funding is available
Make Emergency Plan to Restore Water System in a timely manner	Earthquake	GSRWD	1	2, 3, 7, & 9	Operating Budget	$15,000	New	Ongoing

Table 79 - Midlands Technical College Strategies.

Midlands Technical College								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Procure and Use elec. generators at critical facility	Winter Snow & Ice Storms	MTC	1	2, 4, 5, 6 & 7	Operations Budget	$3,325,000	New	2021
Conduct engineering strength studies of critical facilities	Tornados	MTC	1	2, 3, 4 & 7	Operations Budget	$30,000	New	2021
Install surge protectors in critical facilities	Thunderstorms (Hail, Wind, Lightning)	MTC	1	2, 4, 5, 6 & 7	Operations Budget	$76,000	New	2021
Remove taller trees near critical facilities	Thunderstorms (Hail, Wind, Lightning)	MTC, SCANA	2	2, 3, 4 & 7	Operations Budget	$20,000	New	Ongoing

Midlands Technical College								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Identify all school structures in 100-year floodplains & work with local government s to lower flood insurance premium	Flooding	MTC	2	2, 3, 4, 7 & 10	Operations Budget	$0	New	2021
Flood proof school buildings and critical facilities where needed	Flooding	MTC	2	2, 3, 4 & 7	Operations Budget	$50,000	New	2021
Coordinate with local gov'ts in county to make critical stream channel improvement to lower flood levels	Flooding	MTC/City of Columbia/ Richland County/Municip alities in county	3	2, 3, 4, 7 & 10	Operations Budget	$0	New	Ongoing
Use identified school buildings as emergency shelters	Hurricanes	MTC	2	2, 3, 4 & 7	Operations Budget	$0	New	Ongoing
Rebuild school buildings damaged by hurricane events	Hurricanes	MTC	2	2, 3, 4 & 7	Operations Budget	TBD	New	Ongoing
Conduct earthquake impact analysis on critical facilities in MTC	Earthquake	MTC/ Richland County/ Municipalities in county	1	2, 3, 4 & 7	Operations Budget	$30,000	New	2021

7. Newberry County

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

7.1 Historical Hazard Assessment for Newberry County

Summary of Historic Impacts

Newberry County experiences an array of natural hazards. Prior to the 2015 flash flood disaster, tornadoes posed the highest risk to Newberry County. Flood damage used to rank fairly low. Heat and drought pose serious threats to the county that are difficult to capture in loss figures or maps since their impacts tend to be vastly underreported (lack of data, secondary and/or prolonged effects on agriculture, public health, etc.). The most frequent hazard in Newberry County are thunderstorms (incl. lightning, hail, and wind). While thunderstorm, lightning, wind and hail damage is non-catastrophic, their cumulative impact and high frequency is still significant (around $19 million, 1 person injured/killed). When overlaying the risk from all hazards, eastern Newberry County exhibits the highest level of risk (Figure 161).

In the future, the frequency and possible damage from thunderstorms and other meteorological and hydrological hazards is very likely to increase. Based on climate projections, it is anticipated that the number of cold days and perhaps also winter storms will decrease.

Table 80 - Summary of natural hazards and their impacts on Newberry County since 1960.

	Direct Losses (Property and Crop)	Direct Injuries and Fatalities	# of Loss-Causing Events (# of Events)	Frequency	Recurrence Interval (in years)	Future Changes
Flooding	$2,709,522*	0*	26(27)*	49%*	2.0*	▲
Hurricane	$7,075,786	0	6(6)	11%	9.2	▲
Tornadoes	$117,879,494	47	19(33)	60%	1.7	▲
Thunderstorm	$402,837	0	20(20)	36%	2.8	▲
Lightning	$309,485	1	23(149,258)	1,515%**	0.1 days	▲
Wind	$953,933	0	86(219)	398%	0.3	▲
Hail	$17,545,703	5	48(131)	42%	0.4	▲
Fog	n/av	n/av	n/av	>2%**	>45 days	◀▶
Winter Storm	$10,776,622***	4	56(56)	102%	1.0	▼
Cold	$9,534,830	0	29(29)	53%	1.9	▼
Heat	$21,263,066	0	7(7)	13%	7.9	▲
Drought	$24,345,640	0	17(17)	31%	3.2	▲
Wildfire	$366,633	0	3(895)	10%**	9.8 days	▲
Earthquake	0	0	0(3)	<2%	>50	◀▶
TOTAL	$207,163,552	57				

* excludes 2015 flood losses
**daily frequency/recurrence calculations instead of years
***excludes 2004 ice storm losses
▲ indicates that future increase in occurrence and/or impacts is likely
▼ indicates that future decrease in occurrence and/or impacts is likely
◀▶ indicates that either no change in future occurrence or impacts is expected or that a determination of future changes cannot be made.

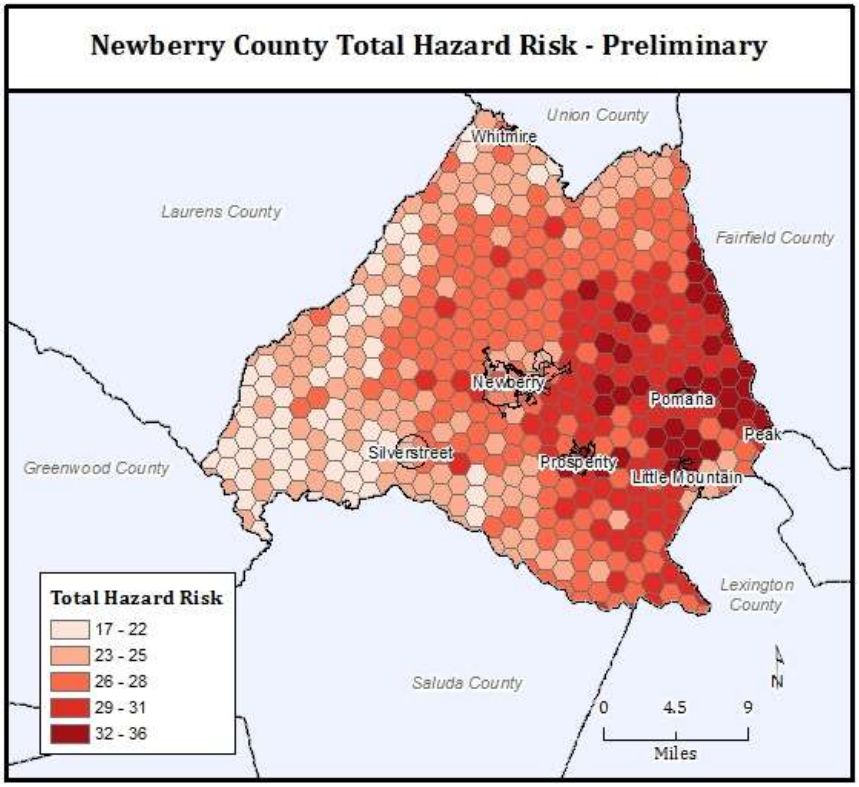


Figure 161 - Comprehensive risk profile of Newberry County.

A) Flooding

What to expect: Flood damage in Newberry County is mostly the result of localized heavy precipitation leading to flooding along smaller creeks and tributaries to the Broad and Saluda Rivers as well as flash flooding due ponding and/or inadequate drainage (Table 81). Virtually every building in Newberry County is at some risk from flash flooding due to drainage issues and ponding. While most buildings are not at risk from flood waters reaching first floor levels, many homes may, however, experience flooded crawl spaces, drive ways, etc. or experience secondary problems such as mold issues. In addition, the 2015 floods revealed a high risk from small pond dam failures—particularly when simultaneous and cascading dam failures occur in the same watershed.

Geographic Extent: Flooding in Newberry County is not restricted to the 100-year and 500-year floodplains (Figure 163). The Flash Flood Potential Index identifies areas in and around the City of Newberry as having a high potential for flash flooding (Figure 164). Based on past occurrences, the County is very susceptible to flash flooding in low-lying areas and areas downstream from small dams.

Prior to the record-breaking floods of October 2015, statistics for Newberry County were as following:

Number of Events:	27
Number of Loss-Causing Events:	26
Frequency of Occurrence:	49%
Recurrence Interval:	2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014

Flood-related Presidential Disaster Declarations:	DR-4241 (2015)
Total Losses:*	$2,709,522
Total Fatalities:*	0
Deadliest Event:*	n/a
Most Property Damage:*	$1.1 million (August 18, 1986)
Most Crop Damage:*	$920,000 (June 8, 1973)

October 1-5, 2015 (DR-4241)*:

Over a five day period, an upper low pressure system combined with the remnants of Hurricane Joaquin streamed tropical moisture into South Carolina (Figure 162) leading to countless road and bridge closures. Newberry County experienced a record-setting 5-day rainfall total of 12.76 inches in Little Mountain[78]. Overall damage estimates range from $1 billion[79] to $12 billion[80] for the entire impact area in South Carolina. The County received both individual and public assistance funding through FEMA.

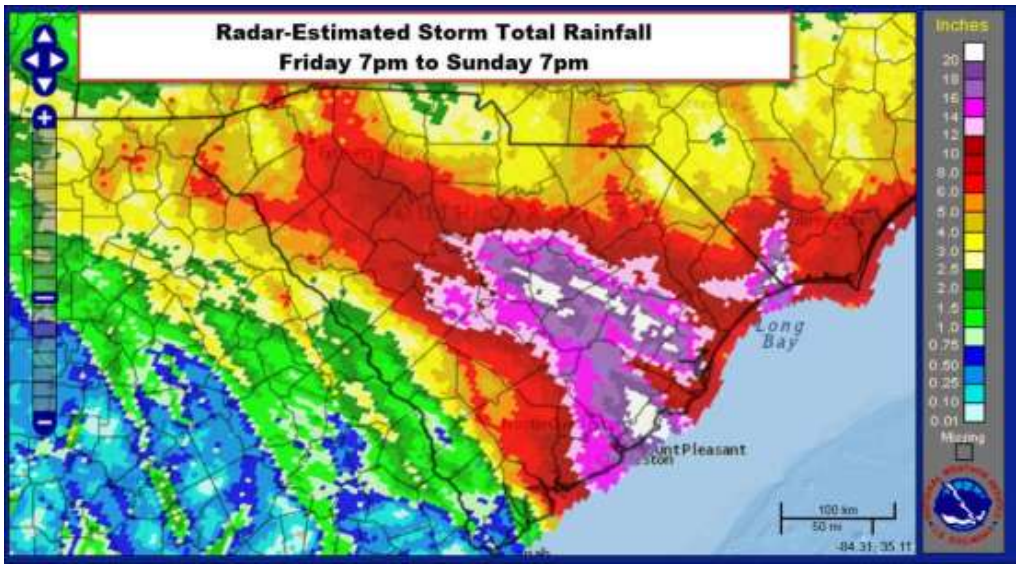


Figure 162 - Total rainfall amounts for the 2015 flood event. Source: NWS.

* Note: The historic record for all hazards in this plan covers the time period from 1960 through 2014. An exception is flooding. Given the catastrophic, and record-setting devastation from the 2015 floods, an event narrative was included since many of the proposed flood mitigation actions in this plan are an outgrowth of this recent disaster.

[78] NWS, 2015. Historic rainfall and flooding, October 2015. Available at http://www.weather.gov/cae/HistoricFloodingOct2015.html

[79] NOAA National Centers for Environmental Information, 2016. Billion-Dollar Weather and Climate Disasters. Available at http://www.ncdc.noaa.gov/billions/events

[80] Burris, Roddie. SC Floods' Damage: $12 billion, Economists say. *The State* [Online], Columbia, SC, December 1, 2015 Available at http://www.thestate.com/news/local/article47471060.html

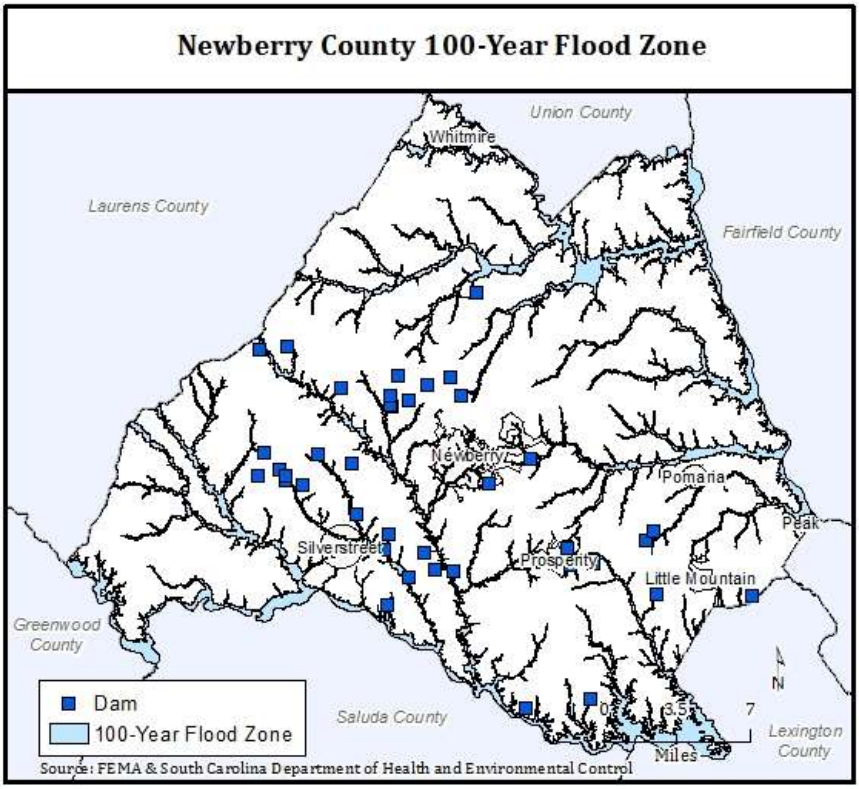


Figure 163 - Flood risk in Newberry County.

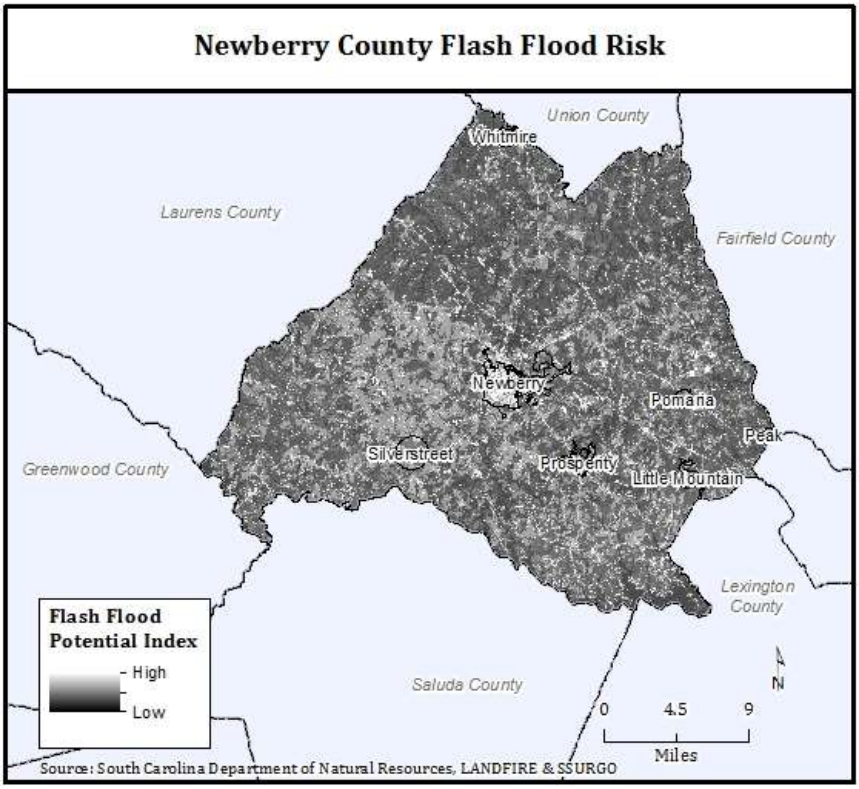


Figure 164 - Flash flood risk in Newberry County.

Table 81 - Record of loss-causing flood events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/1/1964	3/31/1964	0	0	$830	$830		Statewide	Flooding
3/1/1966	3/5/1966	0	0	$7,942	$7,942		Statewide	Flooding
12/14/1972	12/17/1972	0	0	$1,287	$1,287		Northern two-thirds	Heavy rains, flooding
2/3/1973	2/3/1973	0	0	$5,795	$5		Statewide	Flooding
6/8/1973	6/25/1973	0	0	$9,192	$919,291		Southern and central SC	Heavy rain, flooding
6/16/1973	6/22/1973	0	0	$919	$91		Central, northern, and eastern SC	Heavy rain, flash flooding
3/12/1975	3/18/1975	0	0	$4,782	$478		Statewide	Heavy rains, flooding
7/13/1975	7/18/1975	0	0	$611	$61,115		Eastern and central SC	Rains and flooding
10/17/1975	10/17/1975	0	0	$1,692	$0		Northwestern SC	Rain and flash flooding
10/9/1976	10/19/1976	0	0	$45,223	$45,223		Statewide	Flood
1/25/1978	1/26/1978	0	0	$39,466	$3		Statewide	Wind, flash flood
1/26/1978	1/31/1978	0	0	$3,946	$0		Statewide	Flooding
3/15/1980	3/31/1980	0	0	$3,122	$3,122		Statewide	Flood
8/8/1980	8/8/1980	0	0	$3,122	$312		Statewide	Wind, flood
1/1/1982	1/14/1982	0	0	$557	$55		Along Saluda, Broad, Congaree, Wateree, Lynches, and PeeDee Rivers	Flooding
12/6/1983	12/6/1983	0	0	$3,047	$30		Western, northern & central SC	Flood, wind
2/27/1984	2/27/1984	0	0	$2,476	$24		Statewide	Rain, wind, flood
7/26/1984	7/26/1984	0	0	$2,476	$24		Statewide	Wind, rain, flood
8/2/1984	8/2/1984	0	0	$3,928	$0		Southern, central, and eastern SC	Lightning/rain/flood
8/18/1986	8/18/1986	1	2	$1,080,000	$10,800		Newberry	Flash flooding
1/1/1993	1/31/1993	0	0	$17,807	$356,164		Statewide	Flooding
4/10/2003	4/10/2003	0	0	$0	$0		Prosperity	Small streams spilled over their banks flooding country roads and low lying areas in and around Prosperity.
8/26/2008	8/26/2008	0	0	$21,991	$0	2-3’	Newberry	Sheriff departments widespread flooding along secondary roads where streams overflowed. The fire department reported the Hwy 34 bridge closed from flooding at the county line. Columbia police reported several roads under 2 to 3 feet of water. Lexington reported a couple of secondary road closures from flooding. Newberry reported four roads closed due to flooding from Scotts Creek.
9/13/2014	9/13/2014	0	0	$8,000	$0	1-2'	Deadfall	Public reported flash flooding along the Saluda River on many secondary roads in

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
								the Silverstreet area with some roads closed due to 1 to 2 feet of water on them.
5/6/2013	5/8/2013	0	0	$3,049	$0	4’	Chappells	River Gage on Saluda River at Chappells went around 4 and a half feet above flood causing minor flooding of low lying areas along the river.
5/6/2013	5/8/2013	0	0	$3,049	$0	2’	Whitmire	Heavy rains caused the Enoree River to go about 2 feet above flood stage and cause minor flooding of low lying areas along the river.
3/17/1983	3/17/1983	0	0	$25,835	$2,583		Statewide	Flooding, severe storm, thunderstorm wind
TOTAL		**1**	**2**	**$1,274,308**	**$1,406,796**			

*No magnitude information indicates flood height or rainfall amounts were unavailable.

B) Hurricanes & Tropical Storms

What to expect: Every property and person is at risk from hurricane-force winds and associated heavy rainfall and tornadoes in Newberry County with a slight risk reduction from south to north (Figure 166). Hurricane and tropical storms affect Newberry County every 9 years. The county is at risk from hurricane-force winds as experienced during Hurricane Hugo as well as associated heavy rainfall, flash flooding, and tornadoes (Figure 165, Table 82). While direct wind damage to property is unlikely, property and infrastructure damage due to falling trees as well as power outages are highly likely.

Geographic Extent: Based on past occurrences, the entire county is susceptible to the impacts of tropical cyclones.

It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and tornadoes because they are reported separately.

Tropical cyclone statistics for Newberry County are as following:

Number of Events:	6
Number of Loss-Causing Events:	6
Frequency of Occurrence:	11%
Recurrence Interval:	9.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Hurricane-related Presidential Disaster Declarations:	DR-1566 (2004)
Total Losses:	$1,075,786
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$710,000 (September 4, 1979)
Most Crop Damage:	$8,300 (August 29, 1964)

Tropical Storm Frances (September 7, 2004; DR-1566): The storm system caused high winds and caused a widespread tornado outbreak. The high winds uprooted trees and caused power outages and damaged properties—particularly mobile homes.

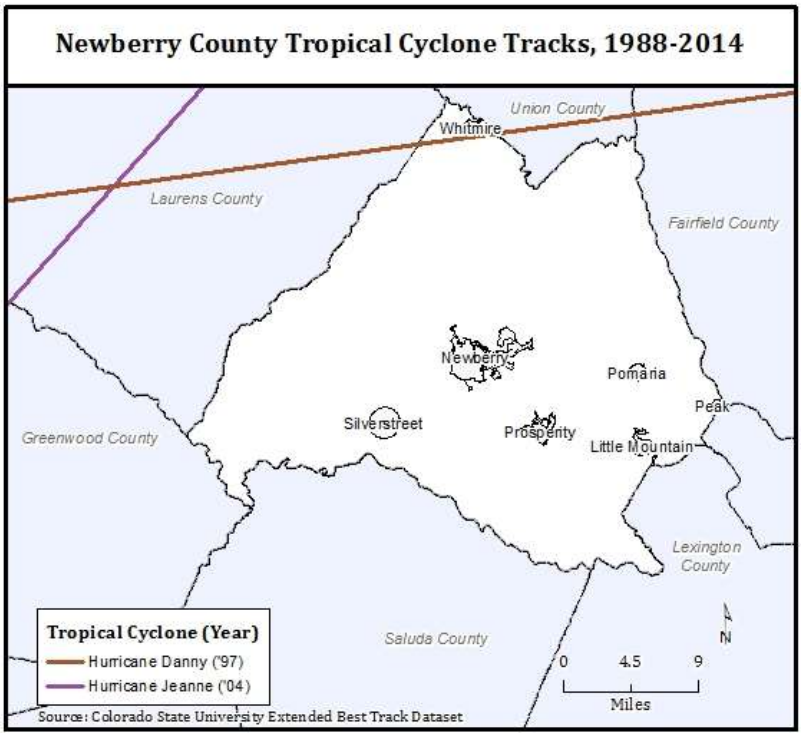


Figure 165 - Tropical cyclone risk in Newberry County.

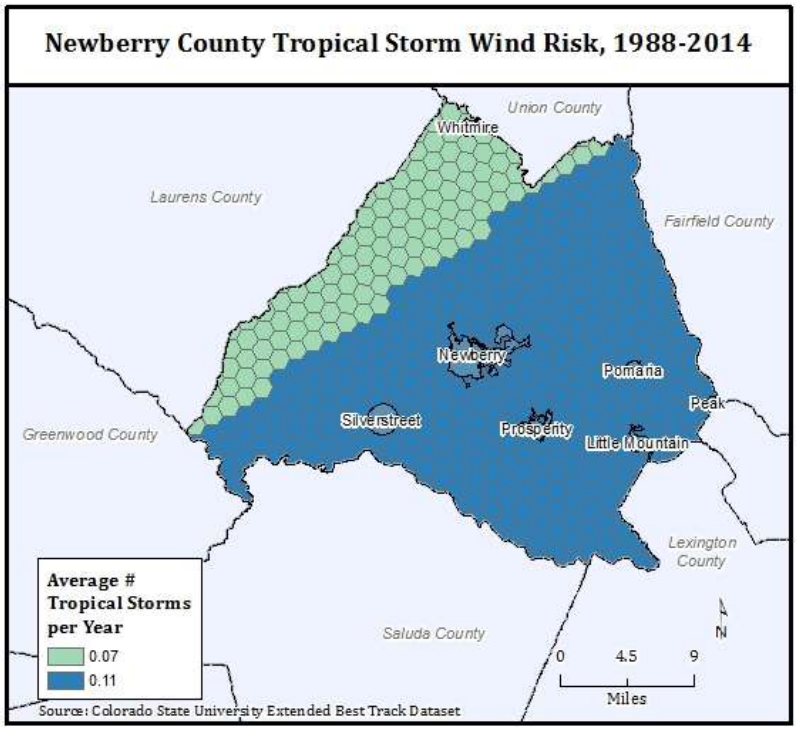


Figure 166 - Risk from tropical storms in Newberry County.

Table 82 - Record of loss-causing tropical cyclone events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
8/29/1964	8/31/1964	0	0	$8,300	$8,300	TS	Statewide	Tropical Storm Cleo
9/12/1964	9/13/1964	0	0	$830	$830	TS	Statewide	Tropical Storm Dora
6/7/1968	6/8/1968	0	0	$739	$73	TS	Statewide	Tropical Storm Abby
6/20/1972	6/21/1972	0	0	$615	$6,156	TD	Statewide	Tropical depression Agnes
9/4/1979	9/5/1979	0	0	$708,875	$0	Cat. 1	East and central SC	Hurricane David
8/24/1995	8/28/1995	0	0	$337,692	$3,376	TS	Statewide	Tropical Storm Jerry
TOTAL		**0**	**0**	**$1,057,051**	**$18,735**			

C) Tornadoes

What to expect: Every property and person is at risk from tornadoes in Newberry County. Low magnitude tornadoes are not uncommon in Newberry County, occurring every other year. The area has experienced several intense (EF3) tornadoes affecting densely populated areas (Figure 167). This does not mean that even stronger tornadoes are impossible. Neighboring counties have experienced EF4s. Newberry County is not only at risk from tornadoes spawned by severe thunderstorms but also from outbreaks associated with tropical systems as seen during Tropical Storm Frances.

Geographic Extent: Based on past occurrences, the entire county is susceptible to tornadoes.

Tornado statistics for Newberry County are as following:

Number of Events:	47
Number of Loss-Causing Events:	19
Frequency of Occurrence:	60%
Recurrence Interval:	1.7 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Severe weather-related Presidential Disaster Declarations:	DR-700 (1984)
Total Losses:	$117,879,494
Total Fatalities:	2
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$56.9 million (August 28, 1984)
Most Crop Damage:	$1,200 (July 2, 2005)

March 28-29, 1984 (DR-700): The Carolinas Outbreak of March 28, 1984 was one of the deadliest, most destructive tornado outbreaks in the history of the two Carolinas. The weather situation that produced this outbreak had strong parallels to the 1925 Tri-State Tornado Outbreak in that the tornadoes tracked along with the center of a strong low pressure system. The statistics of this outbreak were staggering and perhaps unprecedented in the history of North or South Carolina. The final count showed 24 individual tornadoes touched down: 11 in North Carolina, 11 in South Carolina, and 2 in Georgia. The human impact included 57 fatalities, (42 in North Carolina, 15 in South Carolina, none in Georgia) and 1,248 injuries (799 in North Carolina, 448 in South Carolina, and 1 in Georgia). In Newberry, F2 and F3 tornadoes between 5:00 and 5:40 p.m. Downtown Newberry, SC "looked like a war zone"[81].

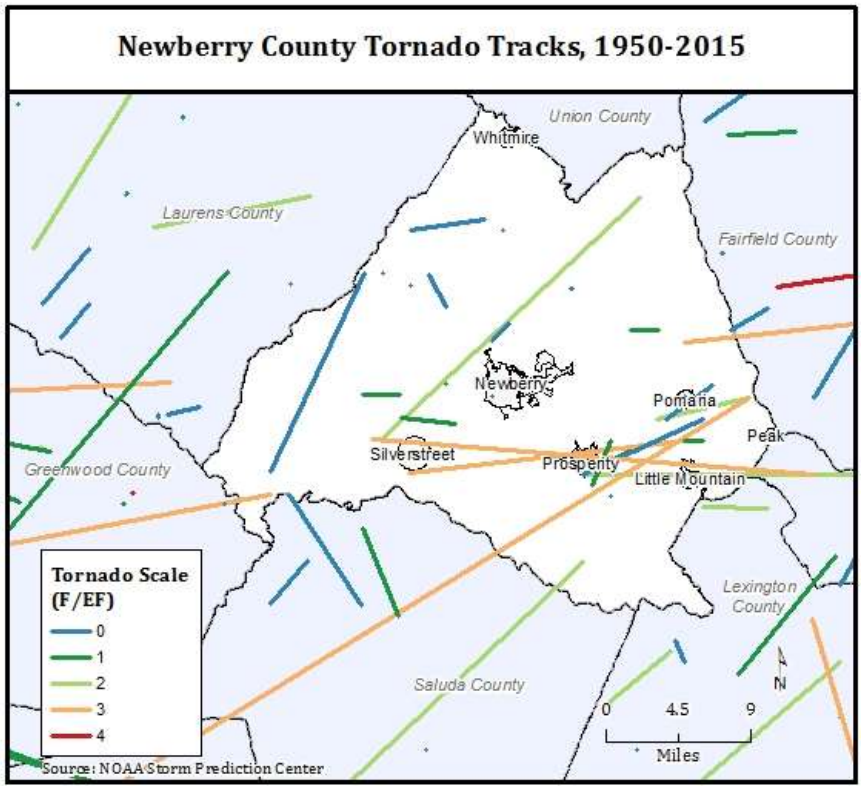


Figure 167 - Tornado risk in Newberry County.

[81] NWS Wilmington, 2014. Carolinas Tornado Outbreak: March 28, 1984. Available at http://www.weather.gov/ilm/CarolinasOutbreak

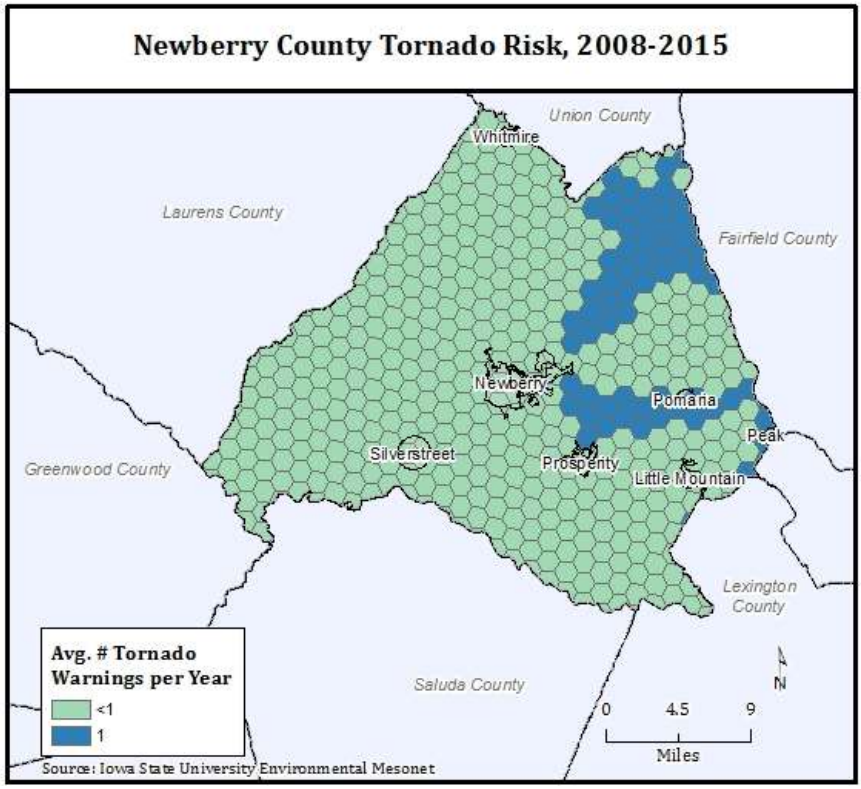


Figure 168 - Tornado risk in Newberry County.

Table 83 - Record of loss-causing tornado events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
4/5/1957	4/5/1957	0	0	$25,274	$0	F1		
3/30/1960	3/30/1960	0	0	$199,946	$0	F2		
4/18/1969	4/18/1969	0	0	$19,352	$0	F1		
12/13/1973	12/13/1973	0	0	$15,995,676	$0	F3		
12/13/1973	12/13/1973	5	0	$15,995,676	$0	F3		
12/13/1973	12/13/1973	0	0	$15,995,676	$0	F2		
12/13/1973	12/13/1973	0	0	$15,996	$0	F2		
5/15/1975	5/15/1975	0	0	$110,007	$0	F1		
3/28/1984	3/28/1984	38	1	$56,962,464	$0	F2		Large F2 tornado moved NE through downtown Newberry, which reportedly resembled a "war zone" after the tornado struck. 80 businesses were damaged or destroyed. A church lost its roof and a wall, and a dance academy building partially collapsed. The path of this storm was 3/4 of a mile in width in places. Fatality occurred when an automotive shop was destroyed.
3/28/1984	3/28/1984	0	0	$6,835,496	$0	F3		Intense tornado touched down just east of downtown Newberry, and moved to the east.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
5/23/1988	5/23/1988	0	0	$0	$0	F0		
11/22/1992	11/22/1992	0	0	$421,839	$0	F3		
11/22/1992	11/22/1992	0	0	$5,062,067	$0	F2		
8/16/1994	8/16/1994	0	0	$0	$0	F1		Tornado took down trees and power lines and damaged roofs to some homes.
1/14/1995	1/14/1995	0	0	$1,553	$0	F0	Prosperity	Tornado touched down in wooded area near Highways 202/434.
1/14/1995	1/14/1995	0	0	$0	$0	F0	Pomaria	Tornado touched down and sheared off two trees.
5/15/1995	5/15/1995	0	0	$0	$0	F0		
4/24/1999	4/24/1999	0	0	$0	$0	F0	Chappells	Storm survey confirmed an F0 touched down and took some trees down.
11/11/2002	11/11/2002	0	0	$0	$0	F1	Silverstreet	An F1 tornado took down many trees and power lines in rural Newberry County near Hwy 48. No damage was done to what few homes that are out there.
11/11/2002	11/11/2002	0	0	$0		F1	Pomaria	An F1 tornado blew down an 80 ft long farm shed took down many trees, and did minor damage to a couple of homes. The path ran from Central School Rd (Hwy 320), across Hwy 202 to Hwy 514.
9/27/2004	9/27/2004	0	0	$0	$0	F1	Newberry	Roof torn off home with 4 other homes damaged. Several outbuildings destroyed. Damage was on SC34 US 176, and Blg Pine Rd
9/27/2004	9/27/2004	0	0	$0	$0	F0	Jalapa	An F0 touched down on Jalapa road and Indian Creek road taking down trees and doing minor damage to a couple of mobile homes.
1/13/2005	1/13/2005	0	0	$0	$0	F0	Chappells	Storm survey found an F0 from a supercell intermittently touched down on SC Hwys 56 and 560 taking down trees and breaking others in half.
4/12/2005	4/12/2005	0	0	$0	$0	F0	Whitmire	FOX TV reported a tornado briefly touched down near Hwys 176 and 121. The twister only damaged some trees.
7/3/2005	7/3/2005	0	0	$18,182	$1,212	F1	Newberry	Storm Survey found an F! tornado completely destroyed a modular building and took down trees and power lines at SC121 and Belfast road. A wheat field was also laid flat by the tornado.
4/26/2006	4/26/2006	0	0	$82,200	$0	F0	Prosperity	A supercell produced an F0 tornado that fell trees on a home severely damaging it. The twister also took down other trees along its path, some across railroad tracks and others across Hwy 202 near I-20.
3/4/2008	3/4/2008	0	0	$0	$0	EF1	Prosperity	Storm survey found many trees down along a path from just southeast of

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
								Prosperity to a couple of miles northeast of Prosperity.
3/15/2008	3/15/2008	2	0			EF3	Trinity	NWS Storm Survey found an EF3 tornado touched down near Silverstreet and continued east through Prosperity then crossed into Richland county where it dissipated. Many homes in Prosperity were heavily damaged. Numerous trees and power lines were down.
4/4/2008	4/4/2008	0	0	$0		EF0	Cromer	Storm survey found trees down on roads on 1 home, and mobile home. Both the home and mobile home also had wind damage to the roof and exterior walls. The tornado originated in Laurens County and came out of Joanna.
12/11/2008	12/11/2008	0	0	$4,398	$0	EF0	Kibler	Storm survey found several trees down along the path of the tornado as it traveled along Berley Rd and Peak Rd. No damage occurred in the town of Pomeria as the twister moved just east of its location.
2/28/2011	2/28/2011	0	0	$126,293	$0	EF1	Trinity	Storm Survey with Sheriff found numerous trees down from a microburst and an EF1 tornado from the northwest to northeast side of Silverstreet. One mobile home was destroyed, one was severely damaged, and there were no injuries.
9/5/2011	9/5/2011	0	0	$0	$0	EF0	Browns	A NWS Survey concluded a brief EF0 tornado touched down near the intersection of Epps and Spur Rds. The track length was 100 yards and width 50 yards. Estimated winds were between 65 and 75 mph. Three trees were topped and several other smaller trees we
6/10/2012	6/10/2012	0	0	$6,187	$0	EF0	Newberry Airports	Sheriff conducted a damage survey of the trees down from just east of the airport to I-26.
TOTAL		**5**	**0**	**$117,878,282**	**$1,212**			

D) Thunderstorms

What to expect: Every property and person is at risk from severe thunderstorms in Newberry County. Severe thunderstorms are a common occurrence in Newberry County with 1 to 16 severe thunderstorm warnings issued annually by the local NWS forecast office (Figure 169). The Midlands see on average up to 12 days per year with rainfall amounts of 1 inch or more, 30 days per year with rainfall between 1/2 inch and 1 inch, and about 70 days per year with rainfall amounts of less than 1/2 inch[82]. Prior to the 2015 flash flood disaster, the daily rainfall record stood at 10.42 inches (August 18, 1986). Thunderstorms are complex and associated with different hazards: lightning, wind, rain, and/or hail. To understand the full impact of severe thunderstorms, the impacts of thunderstorms, wind, hail, and lightning should be considered jointly (Table 84).

Geographic Extent: Based on past occurrences, the entire county is susceptible to thunderstorms. There is a distinct east-west gradient with the eastern half of Newberry County experiencing significantly more thunderstorm warnings.

It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and hail since they are reported separately—although in a meteorological sense they are tied together.

Thunderstorm statistics for Newberry County are as following:

Number of Events:	20
Number of Loss-Causing Events:	20
Frequency of Occurrence:	36%
Recurrence Interval:	2.8 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Flood-related Presidential Disaster Declarations:	DR-4241 (2015)
Severe weather-related Presidential Disaster Declarations:	DR-700 (1984)
Total Losses:*	$402,837
Total Fatalities:*	0
Deadliest Event:*	n/a
Most Property Damage:*	$83,000 (October 4, 1964)
Most Crop Damage:*	$83,000 (October 4, 1964)

March 28-29, 1984 (DR-700): see Tornado section

[82] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

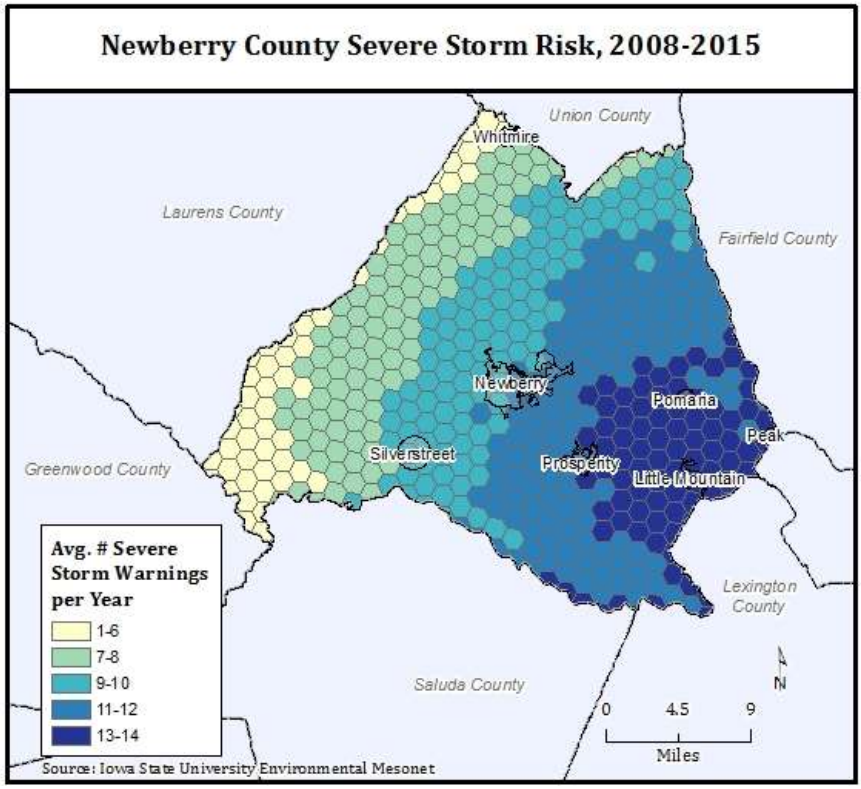


Figure 169 - Severe storm risk in Newberry County.

Table 84 - Record of loss-causing thunderstorm events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
2/24/1961	2/24/1961	0	0	$1,131	$0	0.97”	Western and central SC	Wind and rain
9/30/1964	10/1/1964	0	0	$15,273	$15,273	0.50”	Midlands and central plains	Rain storms
10/4/1964	10/6/1964	0	0	$83,007	$83,007	5.78”	Statewide	Rainstorm
10/15/1964	10/16/1964	0	0	$0	$8,300	5.17”	Statewide	Rainstorm
6/8/1965	6/16/1965	0	0	$0	$81,689	7.96”	Statewide	Locally heavy rains
2/13/1966	2/13/1966	0	0	$794	$0	1.18”	Statewide	Wind and rain
8/20/1967	8/25/1967	0	0	$77,042	$770	10.18”	Statewide	Rain
3/15/1971	3/15/1971	0	0	$635	$0	0.24”	Statewide	Thunderstorms, high winds
3/12/1974	3/12/1974	0	0	$184	$0	0.34”	Western and central SC	Thunderstorm
1/25/1975	1/25/1975	0	0	$478	$0	1.93”	Statewide	Squall line
7/14/1975	7/14/1975	0	0	$64	$6	0.58”	Central and northern SC	Wind, rain
3/31/1977	3/31/1977	0	0	$42	$0	0.43”	Statewide	High winds, heavy rains
9/7/1977	9/7/1977	0	0	$1,627	$16	0.27”	Mountains of Northwest SC	Heavy rain
9/7/1977	9/7/1977	0	0	$424	$42	0.27”	Statewide	Thunderstorms, high winds, heavy rain

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
10/1/1977	10/1/1977	0	0	$150	$0	-	Northwestern	Thunderstorm, high winds
12/5/1977	12/5/1977	0	0	$42	$0	0.25”	Statewide	Thunderstorm
4/13/1978	4/13/1978	0	0	$1,296	$0	0.82”	Northeast SC	Severe thunderstorm
12/3/1983	12/4/1983	0	0	$4,570	$457	2.82”	Western & central SC	Wind, heavy rain
12/28/1983	12/28/1983	0	0	$7,427	$0	0.76”	Central SC	Severe storm, wind
2/21/1989	2/21/1989	0	0	$19,091	$0	1.43”	SCZ003-004-005-006-007-008 central and eastern SC	Thunderstorm
Total		**0**	**0**	**$213,277**	**$189,560**			

E) Lightning

What to expect: Every property and person is at risk from lightning in Newberry County. Lightning occurs very frequently in the County, averaging several strikes per day. While the County does not experience a thunderstorm every day, a single thunderstorm produces hundreds of lightning strikes—each of which is counted in the statistic below—resulting in high frequency and recurrence figures. Similar to the pattern of thunderstorm risk, most lightning strikes (cloud-to-ground) occur in the eastern half of the county (Figure 170). House fires and personal harm are common with lightning.

Geographic Extent: Based on past occurrences, the entire county is susceptible to lightning strikes. There appears to be a higher propensity for severe weather and therefore lightning strikes in the eastern half of the county.

Lightning statistics for Newberry County are as following:

Number of Events:	149,258
Number of Loss-Causing Events:	23 (1960-2014)
Daily Frequency of Occurrence:	1,515%
Recurrence Interval:	0.06 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1986-2012
Total Losses:	$309,485
Total Fatalities:	1
Deadliest Event:	1 fatality (July 16, 1961)
Most Property Damage:	$104,000 (July 24, 1987)
Most Crop Damage:	$500 (March 21, 1974)

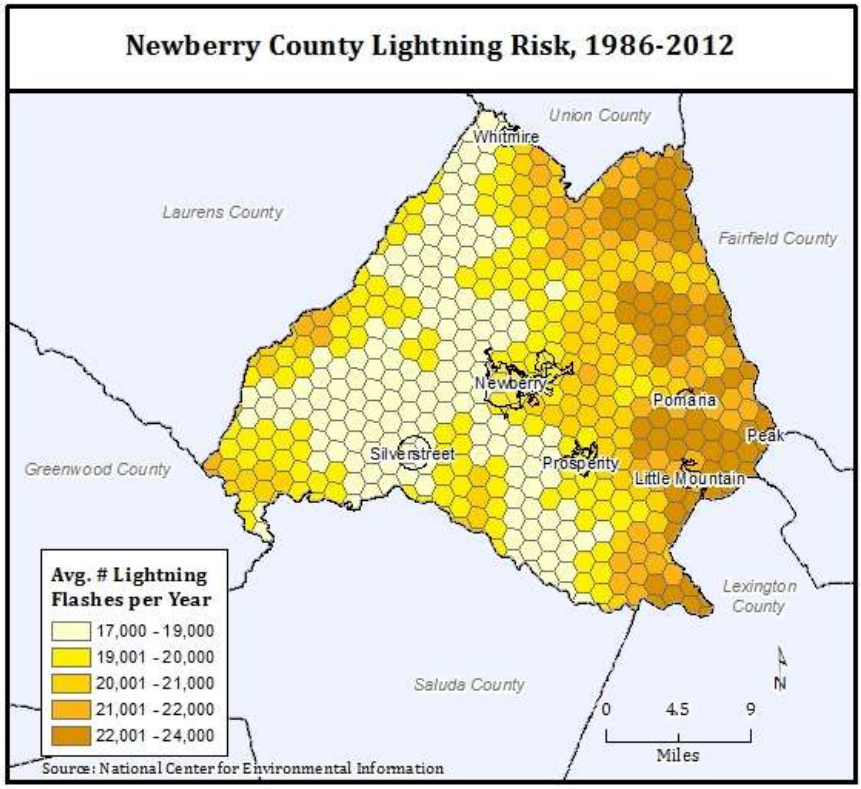


Figure 170 - Lightning risk in Newberry County.

Table 85 - Record of loss-causing lightning events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
7/16/1961	7/16/1961	1	0	$0	$0	Prosperity	Lightning
8/27/1965	8/27/1965	0	0	$816	$0	Statewide	Severe lightning
6/9/1969	6/9/1969	0	0	$10,750	$0	Oconee, Pickens, and Newberry counties	Thunderstorms, lightning, and wind
8/29/1973	8/29/1973	0	0	$133	$13	Northwest and Midlands	Wind, rain, electrical
3/21/1974	3/21/1974	0	0	$5,219	$521	Statewide	High winds & electrical
4/8/1974	4/8/1974	0	0	$6,669	$6	Central, western & northern SC	Wind, electrical
4/8/1974	4/8/1974	0	0	$96	$0	Central SC	Wind, electrical
8/4/1974	8/4/1974	0	0	$0	$171	Northeast SC	Rain, lightning
8/13/1974	8/13/1974	0	0	$1,091	$109	Central SC	Wind, lightning
5/15/1975	5/15/1975	0	0	$4,782	$47	Statewide	Wind, lightning
7/24/1975	7/24/1975	0	0	$628	$0	Western, central, and northern SC	Lightning
8/27/1975	8/27/1975	0	0	$5,789	$57	North, northeast, and central SC	Lightning, high wind, thunderstorms
6/29/1976	6/29/1976	0	0	$11,557	$11	Northwest and northern SC	Lightning
7/26/1976	7/27/1976	0	0	$1,600	$160	Northwest SC	Lightning, wind, rain
7/29/1976	7/29/1976	0	0	$1,600	$16	Northwest SC	Lightning, wind, rain

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
10/9/1976	10/9/1976	0	0	$5,778	$57	Central and eastern SC	Wind, lightning
7/14/1977	7/14/1977	0	0	$4,246	$42	Statewide	Wind, lightning
7/16/1981	7/16/1981	0	0	$32,554	$0	Greenwood, Newberry, Lexington, and Richland counties	Lightning, wind, rain
7/25/1983	7/25/1983	0	0	$2,583	$25	Statewide	Wind, lightning
8/23/1983	8/23/1983	0	0	$3,395	$0	North and central SC	Wind, lightning
9/3/1984	9/3/1984	0	0	$3,797	$0	Clinton, Greenwood, Newberry	Lightning and wind
7/24/1987	7/24/1987	0	0	$104,197	$0	Newberry	Lightning
8/18/1995	8/18/1995	0	0	$100,970	$0	Newberry	Lightning
Total		**1**	**0**	**$308,250**	**$1,235**		

F) Wind

What to expect: Every property and person is at risk from wind in Newberry County. The county frequently experiences high wind events with gust of 50 knots (58mph) or more (Figure 171, Table 86). Wind gust of 80 knots (92 mph) have been recorded. On average, severe winds occur monthly. Due to concurrence of high wind with severe thunderstorms, the spatial distribution of wind events within the county is similar to the thunderstorm risk. High winds cause largely property damage and power outages due to falling tree or tree limbs.

Geographic Extent: Based on past occurrences, the entire county is susceptible to wind damage. There appears to be a higher propensity for severe weather and therefore wind damage in the central and southern part of the county.

Wind statistics for Newberry County are as following:

Number of Events:	219
Number of Loss-Causing Events:	86
Frequency of Occurrence:	398%
Recurrence Interval:	0.25 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$953,933
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$95,500 (several instances)
Most Crop Damage:	n/a

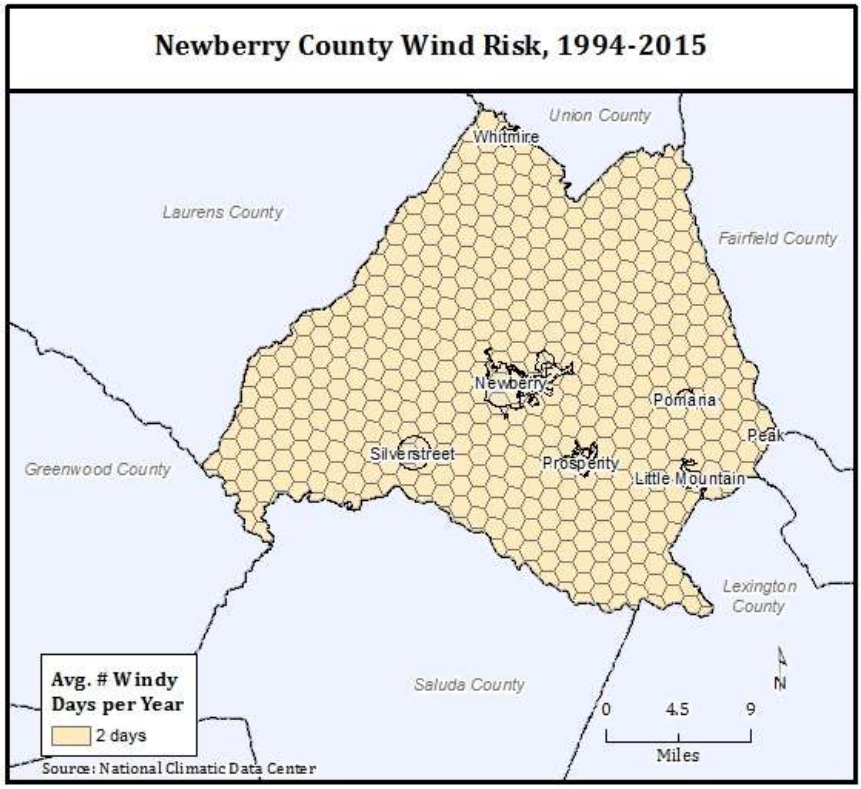


Figure 171 - Wind risk in Newberry County.

Table 86 - Record of loss-causing wind events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
6/1/1987	6/1/1987	0	0	$1,041	$0	0	Newberry County	
5/23/1988	5/23/1988	0	0	$1,000	$0	0	Jalapa	
5/23/1988	5/23/1988	0	0	$1,000	$0	0	Whitmire	
4/4/1989	4/4/1989	0	0	$95,458	$0	0	Newberry County	
5/5/1989	5/5/1989	0	0	$95,458	$0	0	Lake Murray area	
5/5/1989	5/5/1989	0	0	$9,545	$0	0	Newberry County	
6/16/1989	6/16/1989	0	0	$95,458	$0	0	Newberry County	
1/6/1995	1/6/1995	0	0	$1,553	$0	0	Eastern portion	
6/28/1995	6/28/1995	0	0	$7,767	$0	0	Belfort, Newberry	Trees and power lines down in Newberry and Belfort.
8/17/2005	8/17/2005	0	0	$90,912	$0	60	Newberry	Sheriff reported trees down on 3 homes.
8/26/2008	8/26/2008	0	0	$5,498	$0	50	Newberry	Sheriff reported power outages in Newberry with street flooding and some trees down in Prosperity.
6/10/2009	6/10/2009	0	0	$2,207	$0	50	Pomaria	Electric company reported a couple of trees down on New Hope road.
6/11/2009	6/11/2009	0	0	$4,414	$0	55	Browns	Sheriff reported trees and power lines down on Hwy 176.
6/11/2009	6/11/2009	0	0	$5,517	$0	50	Prosperity	Sheriff reported a shed destroyed and large limbs on the highway.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
6/18/2009	6/18/2009	0	0	$4,414	$0	55	Chappells	Sheriff reported trees down on Sumpit Rd and Milner Rd.
6/18/2009	6/18/2009	0	0	$4,414	$0	55	Pomaria	SKYWARN spotters reported trees down in Pomeria.
7/31/2009	7/31/2009	0	0	$1,103	$0	50	Prosperity	EM reported a tree down on power lines in Prosperity.
9/9/2009	9/9/2009	0	0	$15,449	$0	65	Boyds	Sheriff reported numerous trees and power lines down on Bush River Rd about 2 miles southeast of Newberry.
12/9/2009	12/9/2009	0	0	$5,517	$0	60	Mudlick	Surveyor reported numerous trees down at Hwy 56 and Little River. The damage extended northwest along the river for about a mile.
12/9/2009	12/9/2009	0	0	$5,517	$0	55	Whitmire	Sheriff reported trees and power lines down.
6/29/2010	6/29/2010	0	0	$8,685	$0	55	Little Mountain	Sheriff reported trees down I-26 near exit 82 and in the Prosperity area of Lake Murray.
11/16/2010	11/16/2010	0	0	$2,171	$0	50	Newberry	Sheriff reported trees down on Hwy 76 and Beaver Dam Creek Rd.
11/30/2010	11/30/2010	0	0	$4,343	$0	50	Prosperity	Public reported trees and power lines down in Prosperity.
2/28/2011	2/28/2011	0	0	$4,210	$0	60	Trinity	Sheriff reported trees down on Island Ford Rd and verified by storm survey as a microburst.
2/28/2011	2/28/2011	0	0	$78,933	$0	80	Silverstreet	An intense microburst ripped the roof off an industrial building, took many trees down, some on homes, and destroyed several outbuildings.
3/19/2011	3/19/2011	0	0	$16,839	$0	55	Silverstreet	Sheriff reported a couple of trees down, one on a vehicle.
4/5/2011	4/5/2011	0	0	$2,105	$0	55	Whitmire	Sheriff reported trees down on Clinton Hwy.
4/5/2011	4/5/2011	0	0	$4,210	$0	55	Newberry Airport	Sheriff reported trees down along Hwy 121.
5/26/2011	5/26/2011	0	0	$2,105	$0	55	Browns	Sheriff reported trees down along Dusty Rd off of HWY 219 blocking the roadway.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	Bush River	Highway Patrol reported a tree down on Bush River Rd.
6/5/2011	6/5/2011	0	0	$3,157	$0	55	Bush River	Sheriff reported trees down in the Bush River Road area.
6/15/2011	6/15/2011	0	0	$12,629	$0	60	Whitmire	Fire dept. reported trees and powerlines from Whitmire to I-26.
6/15/2011	6/15/2011	0	0	$39,993	$0	60	Newberry Airport	EM reported power lines and numerous trees down...some on vehicles...across the eastern half of the county including Whitmire...Newberry...and Prosperity.
6/18/2011	6/18/2011	0	0	$10,524	$0	60	Newberry	Dispatch reported numerous trees down countywide, including the city of Newberry.
6/18/2011	6/18/2011	0	0	$1,052	$0	50	Mudlick	Highway Patrol reported a tree down in the roadway near SC 56 and Brehmer Rd.
6/18/2011	6/18/2011	0	0	$1,052	$0	50	Macedonia	Highway Patrol reported a tree down in the road near the intersection of Seagull Lane and Osprey Point at Lake Murray.
6/21/2011	6/21/2011	0	0	$3,157	$0	55	Trinity	Sheriff reported trees down at the intersection of Island Ford and Bellfast roads.
6/21/2011	6/21/2011	0	0	$6,315	$0	60	Kibler	Sheriff reported numerous trees down on I-26 between mile markers 80 and 85.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
7/13/2011	7/13/2011	0	0	$34,731	$0	55	Chappells	Highway Patrol and SKYWARN spotter reported several trees down in Chappells, two on homes causing minor and moderate damage.
8/9/2011	8/9/2011	0	0	$4,210	$0	55	Peak	Sheriff reported trees down on Mayer Road off of Hwy 176.
8/11/2011	8/11/2011	0	0	$2,105	$0	55	Maybinton	SCEMD reported several trees down on Maybinton Road.
8/13/2011	8/13/2011	0	0	$12,629	$0	55	Spearman	Sheriff reported trees and power lines down near the intersection of Stoney Battery Rd and Spearman Rd.
8/20/2011	8/20/2011	0	0	$1,052	$0	50	Eison xrds	Highway Patrol reported a couple of trees down on Hwy 66 two miles west of the elementary school.
3/3/2012	3/3/2012	0	0	$10,311	$0	60	Helena	Disparch reported trees and powerlines down from Newberry to Pomeria.
5/15/2012	5/15/2012	0	0	$2,062	$0	50	Taylors	Highway Patrol reported trees down near the intersection of Bachman Chapel Rd and I-26.
5/15/2012	5/15/2012	0	0	$8,249	$0	55	Silverstreet	Highway Patrol reported trees down in Silverstreen and along Hwy 34, Werts Rd, and Deadfall Rd.
5/17/2012	5/17/2012	0	0	$20,622	$0	60	Browns	Sheriff dispatch reported many trees down along Mount Bethel Garmany Rd, one of which fell on a home.
5/17/2012	5/17/2012	0	0	$8,249	$0	55	Cromer	Sheriff dispatch reported trees down near Beth Eden and Seymore roads.
5/17/2012	5/17/2012	0	0	$6,187	$0	55	Newberry	Sheriff dispatch reported trees down near Smith and Radio roads.
6/10/2012	6/10/2012	0	0	$16,498	$0	60	Newberry	DOT reported a tree on a home in Newberry along with other trees down along Hillbrook Ln.
6/10/2012	6/10/2012	0	0	$1,031	$0	55	Newberry	Sheriff reported a tree down on Glenn St.
7/3/2012	7/3/2012	0	0	$5,156	$0	55	Macedonia	Sheriff reported tree on house along with small hail.
7/5/2012	7/5/2012	0	0	$3,093	$0	50	Silverstreet	Sheriff reported several trees down at SC121 and Elisha Church Rd.
7/5/2012	7/5/2012	0	0	$3,093	$0	50	Spearman	Sheriff reported several trees down at Greentree Rd and Trinith Church Rd.
7/5/2012	7/5/2012	0	0	$3,093	$0	50	Silverstreet	Sheriff reported several trees down at the intersection of SC121 and SC34.
7/10/2012	7/10/2012	0	0	$4,124	$0	55	Cromer	Highway Patrol and DOT reported a few trees down in the Jalapa area.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	Bush River	Highway Patrol reported trees in the road at Beaver Dam Creek Rd and Bush River Rd.
7/27/2012	7/27/2012	0	0	$1,031	$0	50	Helena	Highway Patrol reported a tree down at Brown Chapel Rd and Brown Chapel Dr.
7/27/2012	7/27/2012	0	0	$1,031	$0	50	Newberry	Sheriff Dispatch reported a tree down in the town of Newberry.
7/30/2012	7/30/2012	0	0	$3,093	$0	55	Prosperity	Sheriff reported trees dwon on McNeary St. near Arbor Knoll.
8/9/2012	8/9/2012	0	0	$41,244	$0	50	Chappells	Sheriff reported a tree down on a house in Chappells. Considerable roof damage occurred with no injuries.
8/9/2012	8/9/2012	0	0	$2,062	$0	55	Chappells	Sheriff reported trees and power lines down at SC Hwy 34 and Old Landfill Rd.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
1/30/2013	1/30/2013	0	0	$8,130	$0	50	Newberry	Dispatch reported trees down county wide with power outages in Newberry.
1/30/2013	1/30/2013	0	0	$4,065	$0	50	Pomaria	Sheriff reported several trees down in the Pomaria area.
4/11/2013	4/11/2013	0	0	$3,049	$0	55	Keitts	Public reported trees down near the intersection of Mt. Pleasant Rd and Hwy 34.
5/21/2013	5/21/2013	0	0	$35,568	$0	60	Prosperity	Sheriff reported numerous trees and power lines down in Prosperity. One tree fell on a car and another on a home causing significant damage.
5/21/2013	5/21/2013	0	0	$6,097	$0	55	New Hope	Newberry Electric reported a couple of trees down on power lines in the Rawl Rd area.
6/26/2013	6/26/2013	0	0	$2,032	$0	55	Newberry Airport	Sheriff reported power lines down on Bush River Rd.
6/26/2013	6/26/2013	0	0	$2,032	$0	50	Newberry	Sheriff reported a tree fell on power lines and a large limb caught fire.
6/26/2013	6/26/2013	0	0	$1,016	$0	50	Keitts	Sheriff reported a large tree down on Graham Cemetary Rd.
6/26/2013	6/26/2013	0	0	$2,032	$0	55	Newberry Airport	Sheriff reported trees down on Folk Rd near Old Whitmire Rd.
6/26/2013	6/26/2013	0	0	$3,049	$0	55	Newberry	COOP observer reported trees down on Belfast Rd and a roof partially torn off a shop behind a home.
8/1/2013	8/1/2013	0	0	$3,049	$0	55	Hope Station	Highway Patrol reported trees down on Parr Rd.
8/1/2013	8/1/2013	0	0	$1,016	$0	50	Macedonia	Sheriff reported a large tree down at the intersection of Hamms Landing Rd and Macedonia Church Rd.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Chappells	Sheriff Dispatch reported a couple of trees down near Chappells.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Whitmire	Sheriff reported a couple of trees down near Whitmire.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Little Mountain	Sheriff reported a couple of trees down in Little Mountain.
1/11/2014	1/11/2014	0	0	$1,000	$0	50	Southeast Newberry	Sheriff reported a couple of trees down between Newberry and Prosperity near Colony Church Rd.
6/19/2014	6/19/2014	0	0	$6,000	$0	55	Mudlick	Highway Patrol reported trees down on Davenport Farm Lane at SC 56 near Kinards.
6/19/2014	6/19/2014	0	0	$4,000	$0	55	Mudlick	Highway Patrol reported trees down at Belfast and Brehmer roads.
6/19/2014	6/19/2014	0	0	$3,000	$0	55	Trinity	Highway Patrol reported trees down on Green Tree Rd.
6/19/2014	6/19/2014	0	0	$4,000	$0	55	Southeast Nwwberry	Highway Patrol reported trees down on Hwy 395.
6/19/2014	6/19/2014	0	0	$3,000	$0	55	Stockman	Highway Patrol reported trees down on Morris Rd.
7/9/2014	7/9/2014	0	0	$6,000	$0	55	Newberry Airport	Newberry Electric COOP reported trees and power lines down near the Newberry Country Club.
Total		**0**	**0**	**$953,933**	**$0**			

*No magnitude information indicates wind speeds were unavailable.

G) Hail

What to expect: Every property and person is at risk from hail in Newberry County. Hail occurs at least every six months in Newberry County (Figure 172). Hail events occur mostly during spring thunderstorms from March through May. Thus far no damage has been reported for hailstones larger than 1.75" although the county has seen events with hailstones of 2.75" in size (Figure 173, Table 87). It appears that crop damage from hail events is severely underreported.

Geographic Extent: Based on past occurrences, the entire county is susceptible to hail damage.

Hail statistics for Newberry County are as following:

Number of Events:	131
Number of Loss-Causing Events:	48
Frequency of Occurrence:	42%
Recurrence Interval:	0.4 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$17,545,703
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$11.4 million (March 28, 1984)
Most Crop Damage:	$1.1 million (March 28, 1984)

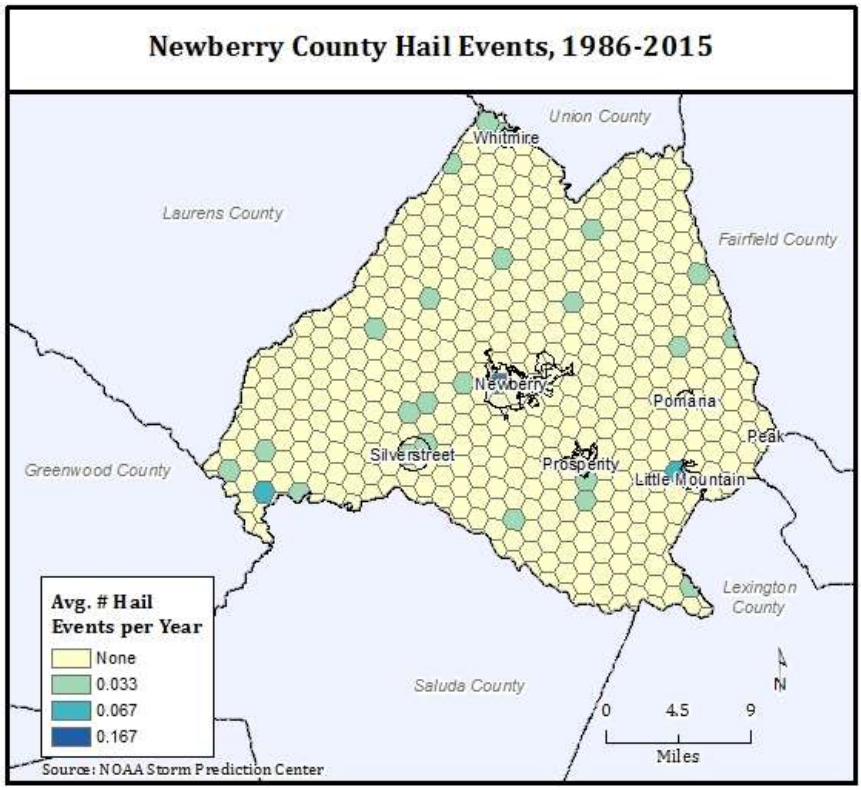


Figure 172 - Hail risk (occurrence) in Newberry County.

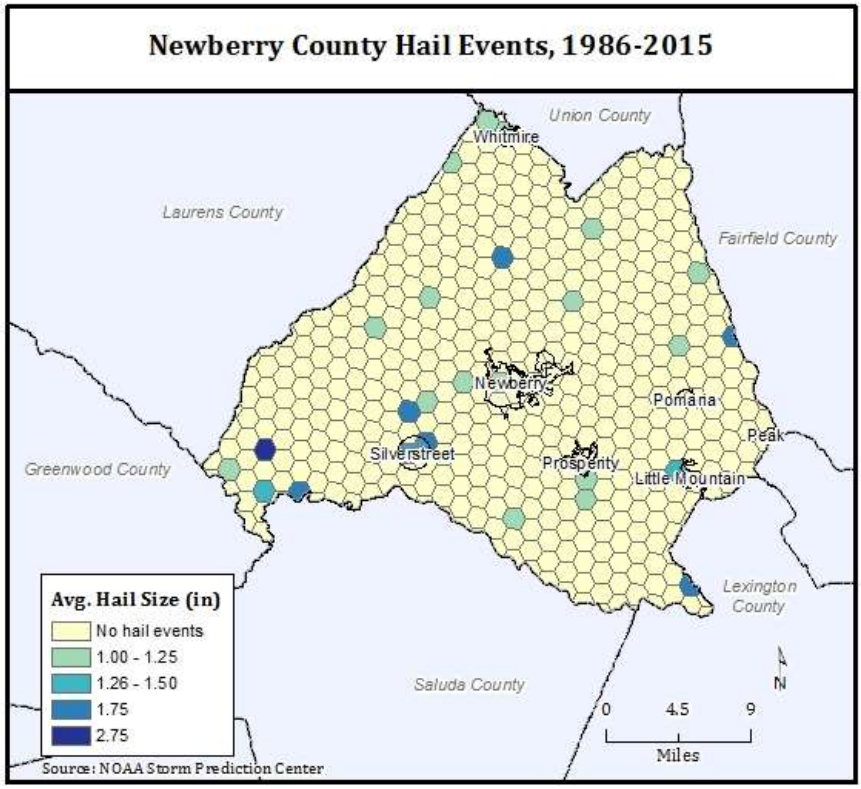


Figure 173 - Risk of large hail events in Newberry County.

Table 87 - Record of loss-causing hail events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/18/1960	2/18/1960	0	0	$1,142	$0		Central, northern SC	Windstorms, hail
3/30/1960	3/30/1960	0	0	$39,989	$0	1.75	Pomaria, 2 miles SW	Tornado and hail
8/8/1960	8/8/1960	0	0	$399	$0		Newberry County	Wind and Hail
4/12/1962	4/12/1962	0	0	$1,567	$0		Central SC	Hail and wind
5/16/1963	5/16/1963	0	0	$0	$21,490		Northern SC	Hail and windstorm
6/11/1963	6/11/1963	0	0	$0	$84,092		Statewide	Hailstorms
4/7/1965	4/7/1965	0	0	$4,175	$0		Owensville, Greenville County to St. Matthews, Calhoun County	Hail
7/1/1965	7/31/1965	0	0	$816	$0		Statewide	Wind/ heavy rain, hail
7/19/1965	7/19/1965	0	0	$816	$81		Statewide	Hail, lightning, wind
4/13/1966	4/13/1966	0	0	$3,653	$0		Newberry	Rain, hail, wind and electrical
7/16/1970	7/16/1970	0	0	$3,050	$305	1.5	Newberry County	Thunderstorm with high winds, hail
5/20/1973	5/20/1973	0	0	$1,269	$12,694		Northern & northeast SC	Hail, wind, rain, electrical
5/28/1973	5/29/1973	0	0	$987	$987		Western and northern SC	Hail, wind, electrical
12/13/1973	12/13/1973	0	0	$2,665,945	$26,659	1.75	1 mi S of Silverstreet	Tornado, hail

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
							eastward to Prosperity to N of Little Mountain	
12/13/1973	12/13/1973	0	0	$9	$98	1.75	Northern and western SC	Hail, lightning
3/29/1974	3/29/1974	0	0	$5,716	$5,716		Northern, eastern, central SC	Wind, hail, electrical
3/30/1974	3/30/1974	0	0	$0	$184		Northwestern SC	High winds and hail
5/19/1974	5/19/1974	0	0	$800	$80		Northwest and southern SC	Hail, high wind, lightning
7/16/1974	7/16/1974	0	0	$923	$923		Central and southern SC	Wind, hail
3/7/1975	3/7/1975	0	0	$628	$0		Northwest, central and northeast SC	Wind, lightning, and hail
3/24/1975	3/24/1975	0	0	$4,782	$47		Statewide	Wind, lightning, hail
5/10/1975	5/10/1975	0	0	$12,223	$122,230	1	York to Bamberg and Spartanburg to Oconee and Anderson	Hail, wind, lightning
6/5/1975	6/5/1975	0	0	$1,692	$169		Northwest SC	Wind, hail
6/15/1975	6/15/1975	0	0	$647	$647		Northern and central SC	Lightning, wind/,hail
6/18/1975	6/18/1975	0	0	$47	$4,782		Statewide	Wind, lightning, hail
6/19/1975	6/19/1975	0	0	$814	$814		Northern and western SC	Lightning, wind, hail
7/4/1975	7/4/1975	0	0	$6,286	$62,861		Northern and central SC	Wind, hail, lightning
6/6/1977	6/6/1977	0	0	$424	$4,246		Statewide	Wind, lightning, hail
7/8/1977	7/8/1977	0	0	$19,532	$1,953		Hartford and Silverstreet areas of Newberry County	Wind, hail, lightning
4/18/1978	4/18/1978	0	0	$1,296	$12,967		Northeast SC	Hail
5/24/1978	5/24/1978	0	0	$12	$1,296		Northwest and northeast SC	Thunderstorm, hail
4/26/1982	4/27/1982	0	0	$26	$26		Statewide	Thunderstorm, wind, lightning, hail
5/16/1982	5/16/1982	0	0	$490	$49		Northern and eastern SC	Heavy rain, hail, thunderstorms
5/17/1982	5/17/1982	0	0	$34	$340		North, central, southern SC	Thunderstorms, high winds, hail
6/10/1982	6/10/1982	0	0	$299,173	$299,173		Western, northern, central & eastern SC	Hail, lightning, rain, wind
7/24/1983	7/24/1983	0	0	$3,961	$396		Central and eastern SC	Thunderstorm, winds, hail, lightning
3/28/1984	3/28/1984	0	0	$11,392,492	$1,139,249	1	6SW Newberry, NE through Newberry	Tornado (F2), hail
3/28/1984	3/28/1984	5	0	$569,624	$569,624	1	New Hope eastward	Tornado (F3), hail
4/14/1984	4/14/1984	0	0	$406	$406		Northern and central SC	Hail, wind
6/20/1984	6/20/1984	0	0	$2,476	$247		Statewide	Rain, hail, lighting, wind
7/25/1984	7/25/1984	0	0	$113,924	$1,139		Central SC	Rain, hail, lighting, wind

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/11/1985	2/12/1985	0	0	$2,391	$2		Statewide	Wind, snow, hail, thunderstorms
6/4/1985	6/4/1985	0	0	$578	$578		Northcentral, central SC	Hail
6/7/1985	6/7/1985	0	0	$2,391	$239		Statewide	Hail, wind
4/11/1988	4/11/1988	0	0	$3	$0		SCZ003-004-005-006 East and Lower Piedmont/ North and South Midland	Small hail
4/12/1988	4/12/1988	0	0	$6	$0		SCZ004-006 Lower Piedmont and South Midlands	Small hail
5/17/1988	5/17/1988	0	0	$100	$100	0.75	Whitmire	Hail
5/23/1988	5/23/1988	0	0	$1,000	$100		Silverstreet	Hail
Total		**5**	**0**	**$15,168,714**	**$2,376,989**			

*No magnitude information indicates hailstone sizes were unavailable.

H) Fog

What to expect: Fog does not cause direct property damage or injuries. But indirectly, the personal safety of boaters, motorists, and other travelers is at risk due to poor visibility during fog conditions. Fog is common in Newberry County and occurs most frequently during the fall and spring months. On average, the county experiences at least 8 days[83] with some periods of fog (or haze). The number of fog days varies considerably ranging from an average of 8 days of fog per year in northern Newberry County up to 47 days in the southeastern portion of the country, around Little Mountain (Figure 174). There is no record of property damage or fatalities associated with fog as reported by SHELDUS™ or NCDC's Storm Data. This is likely due to the fact that most damage from fog is indirect (e.g., traffic accidents).

Geographic Extent: Based on past occurrences, the entire county is susceptible to fog. Southeastern Fairfield County experiences significantly larger number of days with reduced visibility compared to Whitmire or Silverstreet areas.

Fog statistics for Newberry County are as following:

Number of Events:	8-47 days of fog per year
Number of Loss-Causing Events:	n/av (largely motorist accidents)
Daily Frequency of Occurrence:	>2%
Daily Recurrence Interval:	<45.6 days
Expected changes to frequency and recurrence interval in the future:	Not enough information available to make assumptions about future changes
Events on Record:	1986-2015
Total Losses:	n/av
Total Fatalities:	n/av

[83] A "fog day" has reduced visibility due to fog, haze, or smoke at any time of the day as indicated by NWS station data.

Deadliest Event:	n/av
Most Property Damage:	n/av
Most Crop Damage:	n/av

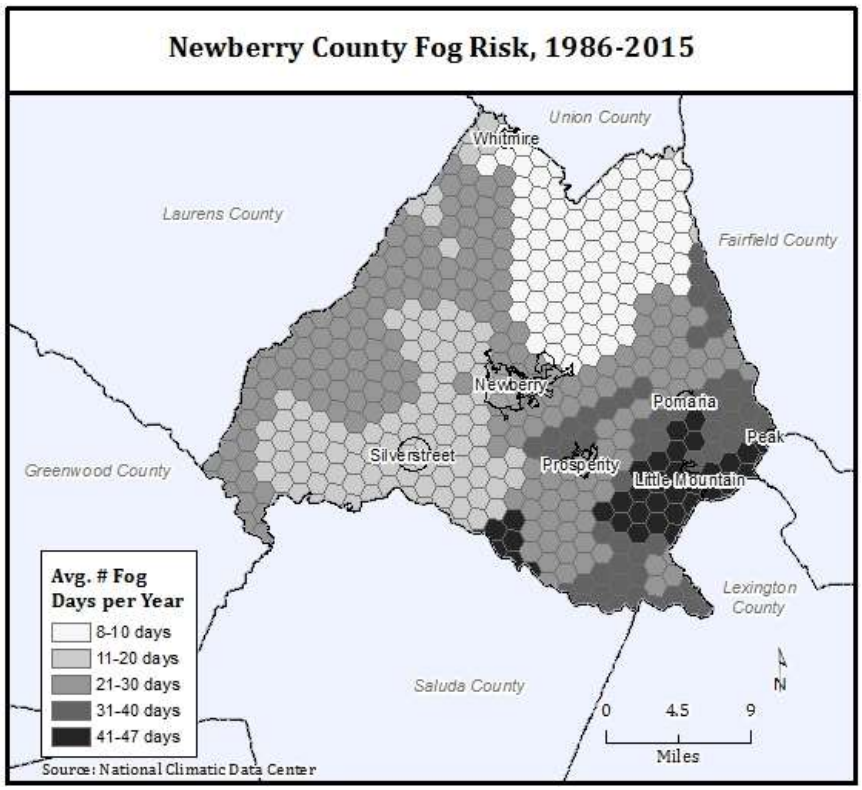


Figure 174 - Fog risk in Newberry County.

I) Winter Weather & Ice Storms

What to expect: Every property and person is at risk from winter weather in Newberry County. Ice storms and winter weather occur every year—on average at least 1 to 2 days per year (Figure 175). Snow accumulations of 2 inches and more are rare, though the area has seen significant snow accumulations in the past (Table 88). The highest daily snowfall amount was 11 inches (February 26, 1914)[84].

More damaging than snow events are ice storms, which tend to occur frequently in this area. Ice accumulations of 1.5 inches and more are possible but even thin coatings of ice cause havoc. Falling trees lead to power outages, road closures, and damage to homes and other properties. In addition, winter weather tends to adversely affect agriculture more than any other hazard. It appears that crop damage from winter weather events is severely underreported.

Geographic Extent: The entire county is susceptible to damage from winter weather.

[84] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

Winter weather statistics for Newberry County are as following:

Number of Events:	56
Number of Loss-Causing Events:	56
Frequency of Occurrence:	102%
Recurrence Interval:	1 year
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Winter weather-related Presidential Disaster Declarations:	DR-1313(2000) DR-1509 (2004)
Total Losses:	$10,776,622
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$580,000 (February 9, 1973)
Most Crop Damage:	$6.8 million (February 15, 1969)

January 22, 2000 (DR-1313): A severe winter storm resulted in widespread power outages. Thirty-eight counties in South Carolina were designated for federal assistance including Newberry County.

January 26-30, 2004 (DR-1509): An ice storm began over the North Midlands of South Carolina on Sunday night and gradually spread south into the Central Midlands on Monday. The storm continued into Tuesday, mainly freezing drizzle during that time. Ice accumulations of 1/2 to 3/4 inches occurred, bringing down numerous trees and powerlines. The heaviest ice accumulations occurred in Lancaster, Chesterfield, Fairfield, Newberry, Saluda, McCormick, Orangeburg, and Clarendon counties. Over 250,000 homes, businesses, and schools were without power for several days. Sleet fell in Lancaster and Chesterfield counties and accumulated up to 2 inches. Six people were injured in traffic related accidents and there were no deaths. Damage estimates from SCEMD were $28.5 million.

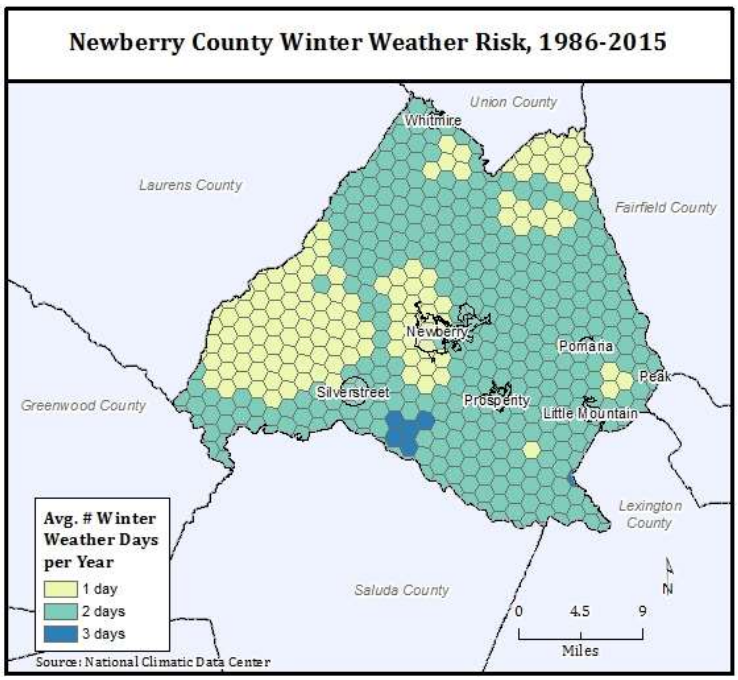


Figure 175 - Winter weather risk in Newberry County.

Table 88 - Record of loss-causing winter weather events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/2/1960	3/2/1960	0	0	$22,216	$0	Trace	Northern SC	Snow, ice
3/9/1960	3/11/1960	0	0	$11,425	$0	6.5”	Northern and central SC	Snow, sleet, ice
1/25/1961	1/26/1961	0	0	$8,606	$860	1.3”	Statewide	Ice storm
2/3/1961	2/4/1961	0	0	$860	$0	0.5”	Entire state	Glaze
1/1/1962	1/1/1962	0	0	$2,177	$0	0.5”	Northern counties from Anderson to York	Ice and Snow
12/31/1963	1/1/1964	0	0	$84,092	$8,409	0.89”	Statewide	Ice
1/26/1966	1/27/1966	0	0	$104,380	$0	2.5”	Central and northern SC	Ice, snow
1/29/1966	1/30/1966	0	0	$0	$79,420	2.2”	Statewide	Severe cold, ice and snow
1/9/1968	1/13/1968	0	0	$106,293	$10	0.5”	Northern 2/3 of state	Rain, sleet, snow, and freezing rain
2/15/1969	2/17/1969	0	0	$68,623	$6,862,310	4”	Statewide	Snow, sleet and freezing rain
11/1/1969	11/1/1969	0	0	$12,901	$12	-	Central SC	Wind, snow
1/8/1971	1/9/1971	0	0	$2,248	$2,248	0.98”	Northwest SC	Freezing rain
3/25/1971	3/25/1971	0	0	$162,370	$162	5”	Northern half of state	Snowstorm
12/3/1971	12/3/1971	0	0	$63,536	$63,536	2”	Statewide	Snow, sleet, freezing rain, rain, winds
1/7/1973	1/8/1973	0	0	$57,955	$579,553	2.4”	Statewide	Snow & ice
2/9/1973	2/10/1973	0	0	$579,553	$579	5.5”	Statewide	Snowstorm
12/17/1973	12/17/1973	0	0	$3,332	$33	Trace	Northcentral SC	Heavy snow
12/20/1973	12/20/1973	0	0	$205	$0	-	Northwestern SC	Freezing rain

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/3/1975	2/4/1975	0	0	$12,223	$1,222	1.95”	Northwest and north SC	Ice storm
1/13/1978	1/13/1978	0	0	$1,512	$0	1.35”	Northwestern	Snow, sleet, freezing rain
3/2/1978	3/3/1978	0	0	$1,396	$0	.69”	Northwest SC	Snow, freezing rain
2/6/1979	2/6/1979	0	0	$543,471	$543	0.5”	Northwest and central SC	Snow, sleet, ice
2/17/1979	2/18/1979	0	0	$35,443	$354	5.5”	Statewide	Snow, sleet, freezing rain
1/30/1980	1/31/1980	0	0	$756	$756	0.54”	Northern half of State	Freezing rain
2/5/1980	2/6/1980	0	0	$31,228	$312	2.8”	All of SC except south coastal	
3/1/1980	3/2/1980	0	0	$3,122	$3,122	4.5”	Statewide	Snow, freezing rain, drizzle and sleet
12/23/1980	12/23/1980	0	0	$65	$0	0.14”	Northwest and central SC	Freezing rain
2/1/1981	2/1/1981	0	0	$72	$0	Trace	Northern SC	Freezing rain and sleet
1/12/1982	1/12/1982	0	0	$4,381	$431	-	All of SC but coastal plain	Snow, sleet, freezing rain
2/26/1982	2/27/1982	0	0	$2,666	$0	0.8”	Statewide	Snow, sleet, glaze
1/21/1983	1/21/1983	0	0	$2,583	$25	1.12”	Statewide	Freezing rain, sleet, snow
3/24/1983	3/24/1983	0	0	$258	$2	4”	Statewide	Winter storm, wind, snow
1/13/1984	1/13/1984	0	0	$4,068	$406	0.12”	Northern half of SC	Freezing rain, glaze
2/6/1984	2/6/1984	0	0	$632	$0	2”	Northern SC	Snow
1/17/1985	1/17/1985	0	0	$61	$0	0.71”	Northern SC	Freezing rain
1/28/1985	1/28/1985	0	0	$611	$0	0.22”	Northern SC	Snow, sleet
1/22/1987	1/22/1987	0	0	$548	$54	1.3”	SCZ01-002-003-004 Northwest SC	Heavy snow and sleet
1/26/1987	1/26/1987	0	0	$4,736	$473	0.11”	SCZ003-004-005 central, northern, northeast SC	Ice storm
2/16/1987	2/16/1987	0	0	$5,484	$548	0.83”	SCZ001-002-003-004-005-006-007 Northwest, north-central, and northeast SC	Ice storm
4/1/1987	4/1/1987	0	0	$0	$2,604	-	SCZ001-002-003-004-005-006-007 All of SC except Immediate Coast	Freeze
1/7/1988	1/11/1988	0	0	$21,751	$0	8”	Statewide	Snow, ice, sleet
2/17/1989	2/19/1989	0	0	$20,751	$0	0.45”	SCZ001-002 Northwest SC	Severe storm, ice, sleet
2/23/1989	2/23/1989	0	0	$2,075	$0	1.2”	Statewide	Severe storm, snow
4/12/1989	4/12/1989	0	0	$5,024	$0	-	Northwest SC SCZ001 through SCZ004	Freeze
3/21/1990	3/21/1990	0	0	$0	$196,879	-	Statewide	Freeze
4/3/1992	4/3/1992	0	0	$0	$64,898	-	Piedmont	Freeze
4/3/1992	4/3/1992	0	0	$0	$648,982		SCZ003-004 Piedmont	Freeze
12/27/1992	12/28/1992	0	0	$30,131	$30,131	1.58”	Foothills, East and Lower Piedmont, North Midlands	Ice storm
3/13/1993	3/13/1993	0	0	$58,511	$58,511	1.2”	SCZ001-002-004	Heavy snow
2/11/1994	2/11/1994	0	0	$42,037	$0	0.75”	SCZ001>022	Ice storm

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/16/2003	2/17/2003	4	0	$0	$0	-		Winter weather
1/18/2007	1/18/2007	0	0	$5,708	$0	0.33”	SC015-020>021	Ice storm
1/30/2010	1/30/2010	0	0	$10,856	$0	1.5”		Winter storm
1/20/1985	1/24/1985	0	0	$23,914	$2,391	Trace	Statewide	
Total		**4**	**0**	**$2,166,846**	**$8,609,776**			

*No magnitude information indicates snowfall amounts or ice thickness were unavailable.

J) Temperature Extremes

What to expect: Newberry County experiences between 46 and 65 days per year when temperatures fall below freezing at any given time of the day, which is generally during nighttime hours in the winter months (Figure 176). Of these cold days, about 12 to 15 days have periods of time with extremely cold temperature (Figure 177). The record minimum temperature for Newberry County was set on February 14, 1899 with -8 degrees Fahrenheit[85]. Most record minimum temperatures in South Carolina date back to 1985 or 1899. Property damage tends to be restricted to busted water pipes and motor vehicle accidents. However, periods of frost and freeze cause significant damage to agricultural production. The southern portion of the county spends more days in cold weather extremes (Figure 176)—meaning the number of days when cold temperatures are above the 95th percentile[86].

Geographic Extent: Based on past occurrences, the entire county is susceptible to cold weather temperatures. There is a distinct north-south gradient in Newberry County with the southern areas experiences less days with freezing temperature as well as less cold weather extremes (Figure 177).

Cold weather statistics for Newberry County are as following:

Number of Events:	29
Number of Loss-Causing Events:	29
Frequency of Occurrence:	53%
Recurrence Interval:	1.9 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Total Losses:	$9,534,830
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$207,000 (December 22, 1989)
Most Crop Damage:	$3.1 million (April 7, 1982)

[85] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

[86] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County

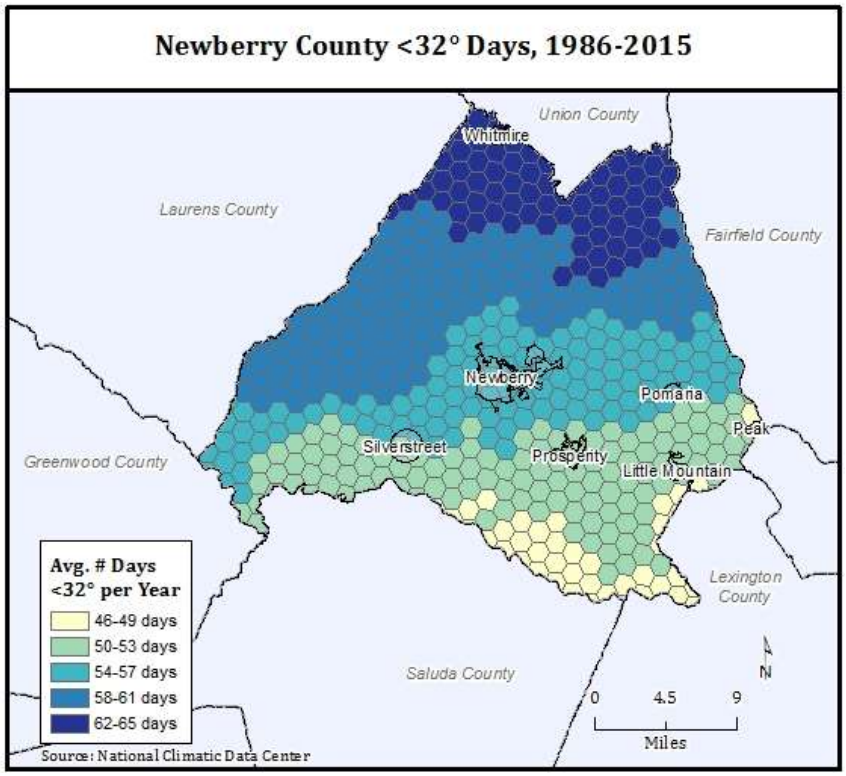


Figure 176 - Cold weather risk in Newberry County.

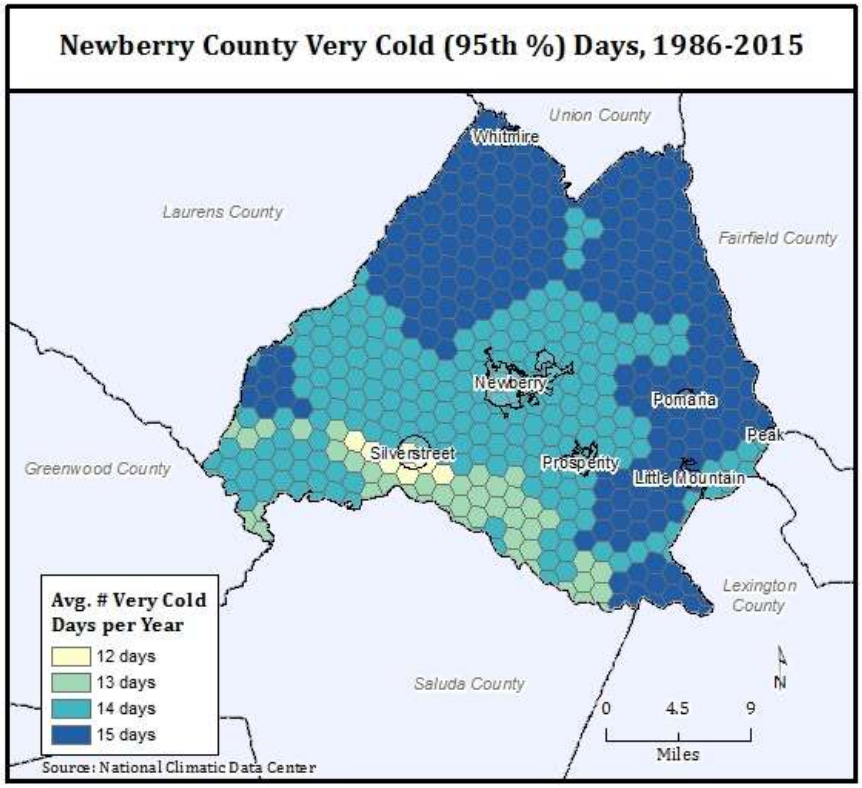


Figure 177 - Risk of cold temperature anomalies in Newberry County.

Table 89 - Record of loss-causing cold weather events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
4/1/1972	4/30/1972	0	0	$0	$321,792	Statewide	Cold spell
4/11/1973	4/12/1973	0	0	$0	$148,108	Northwest & northern SC	Frost, freeze
10/3/1974	10/4/1974	0	0	$6,156	$0	Western, northern, central SC	Frost, freeze
3/19/1985	3/19/1985	0	0	$0	$2,391	Statewide	Frost, freeze
1/27/1986	1/28/1986	0	0	$2,347	$23	Statewide	Cold
3/22/1986	3/23/1986	0	0	$0	$2,347	Statewide	Cold
4/23/1986	4/24/1986	0	0	$0	$2,347	Statewide	Frost, freeze
3/2/1975	3/3/1975	0	0	$0	$4,782	Statewide	Low temperatures
3/27/1982	3/27/1982	0	0	$0	$266,655	Statewide	Extreme cold
4/7/1982	4/7/1982	0	0	$0	$3,066,528	Statewide except southern	Frost, freeze
4/17/1983	4/18/1983	0	0	$0	$2,583,551	Statewide	Extreme cold
12/25/1983	12/25/1983	0	0	$25,835	$25,835	Statewide	Extreme cold
12/30/1983	12/31/1983	0	0	$2,583	$258	Statewide	Extreme cold
12/22/1989	12/22/1989	0	0	$20,751	$0		Extreme cold
12/22/1989	12/22/1989	0	0	$207,517	$0		Extreme cold
1/8/1970	1/9/1970	0	0	$663	$6	Statewide	Severe freeze
11/24/1970	11/25/1970	0	0	$6	$6	Statewide	Severe freeze
1/11/1982	1/11/1982	0	0	$266	$266	Statewide	Hard freeze
3/29/1966	3/29/1966	0	0	$15,884	$0	Inland SC	Frost
3/17/1967	3/19/1967	0	0	$0	$1,968,862	Northern part of State	Cold wave
3/30/1964	3/31/1964	0	0	$0	$830,070	Statewide	Killing freeze
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
1/1/1977	1/31/1977	0	0	$424	$424	Statewide	Unusual cold weather
4/23/1982	4/24/1982	0	0	$0	$26	Statewide	Frost, freeze
10/1/1987	10/31/1987	0	0	$0	$226	Statewide	Cold weather
3/14/1988	3/17/1988	0	0	$217	$0	Statewide	Low temperature
4/20/1988	4/20/1988	0	0	$0	$52	SCZ002-003-004 Foothills, East piedmont, Lower piedmont	Frost
12/26/1985	12/26/1985	0	0	$239	$23	Statewide	Cold
12/22/1989	12/25/1989	0	0	$26,516	$0	SCZ001-002-003-004-005-006 Mountains, Foothills, Piedmont and Midlands	Extreme cold
Total		**0**	**0**	**$309,828**	**$9,225,002**		

What to expect: Hot weather is common in Newberry County during the late spring, summer and early fall months. On average, there are 17 to 23 days of above 95 degrees in any given year (Figure 178). Newberry County will experience periods of above 100 degree temperatures in the months of May, June, July, August, September, and October. The hottest temperature recorded in Newberry County was 108°F (July 21, 1952). Heat events are a high risk event to public health due to the possibility of heat exhaustion and heat stroke. The number of high temperature days and the duration of heat waves are expected to increase.

Geographic Extent: The entire county is susceptible to hot temperatures. While the southeastern and southwestern parts of the county experience more days of above 95 degrees (Figure 178), it is the northern half of Fairfield County that are at most risk from hot temperature anomalies meaning northern Fairfield County spends an additional day in extreme temperatures compared to the rest of the county (Figure 179)[87].

According to South Carolina's State Climatology Office, summer maximum temperatures in Newberry County have slightly decreased from 74.1°F (1971-2000) to 73.8°F (1981-2010) but due to a warming climate, the mean temperature has increased from 61.4°F (1971-2000) to 62.1°F (1981-2010)[88].

Hot weather statistics for Newberry County are as following:

Number of Events:	7
Number of Loss-Causing Events:	7
Frequency of Occurrence:	13%
Recurrence Interval:	7.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$21,263,066
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$9.4 million (July 1, 1993)
Most Crop Damage:	$9.4 million (August 1, 1993)

[87] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

[88] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php

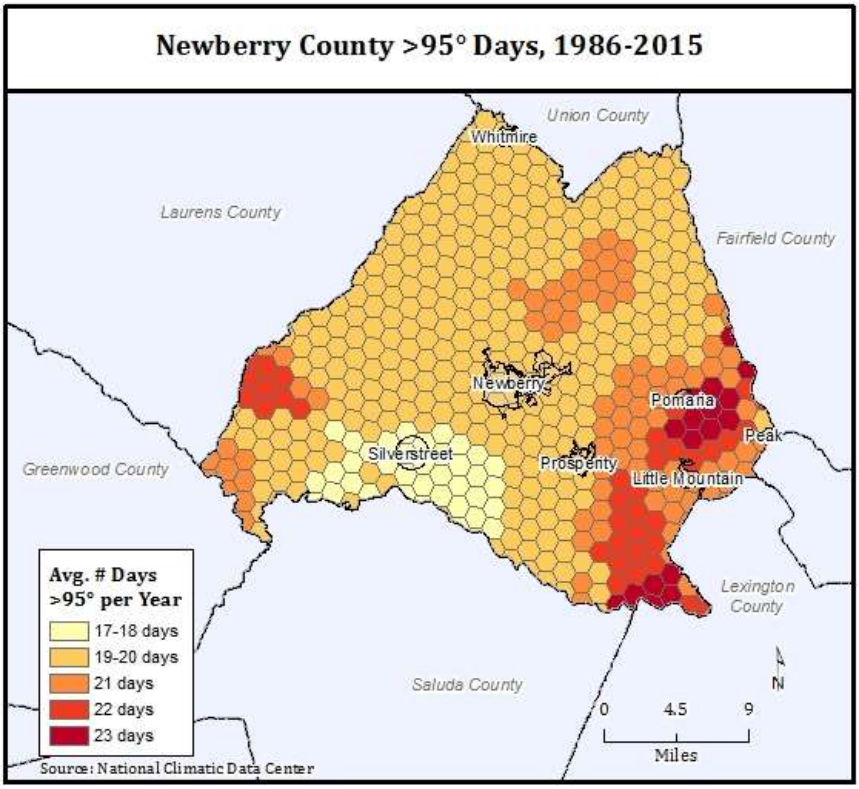


Figure 178 - Hot weather risk in Newberry County.

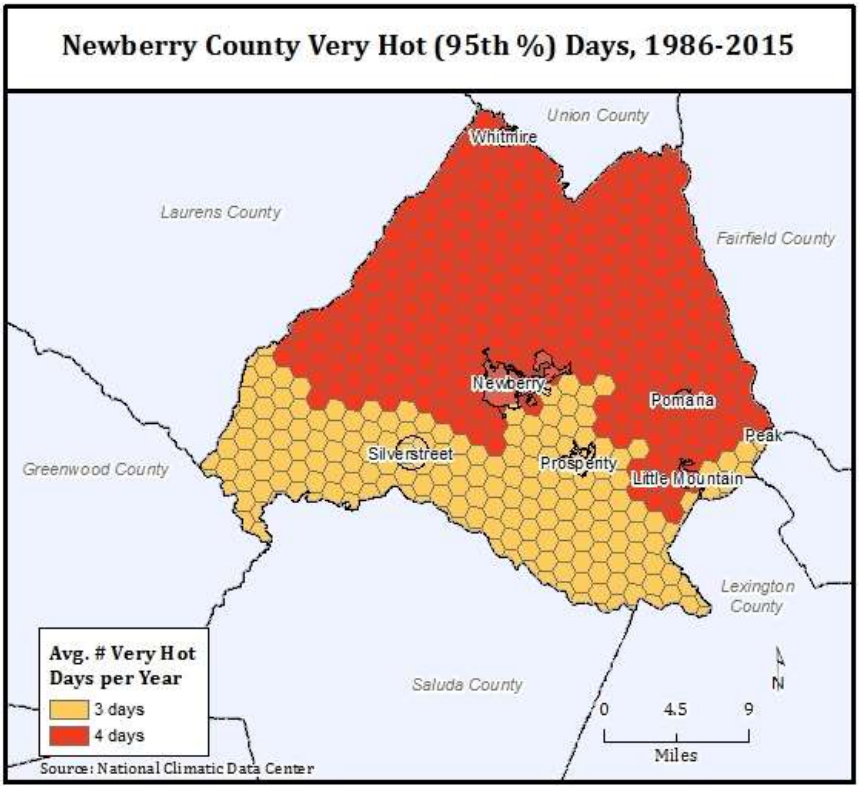


Figure 179 - Risk of hot temperature anomalies in Newberry County.

Table 90 - Record of loss-causing hot weather events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
2/1/1976	2/29/1976	0	0	$452	$4,522	Statewide	Heat
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Statewide	Drought, Heat
10/1/1978	10/31/1978	0	0	$394	$3,946	Statewide	Drought, Heat
6/1/1985	6/7/1985	0	0	$0	$239,146	Statewide	Heat
6/1/1993	6/30/1993	0	0	$0	$1,780,773	Statewide	Heat
7/1/1993	7/31/1993	0	0	$9,402,482	$0	SCZ001>007 All SC	Drought, Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Statewide	Drought, Heat
Total		**0**	**0**	**$9,407,574**	**$11,855,492**		

K) Wildfires

What to expect: On average, wildfires occur frequently—every 10 days—in Newberry County but damage to life and property is limited (Table 91). The largest wildfire was about 300 acres. The number of wildfire events and the size of wildfires are expected to increase.

Geographic Extent: The entire county is susceptible to wildfire. The risk of wildfire including the propensity for large wildfires is spread randomly across the county (Figure 180 & Figure 181) without any spatial concentration (e.g., near population centers).

Wildfire statistics for Newberry County are as following:

Number of Events:	895
Number of Loss-Causing Events:	3 (1960-2014)
Daily Frequency of Occurrence:	10%
Recurrence Interval:	9.8 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1988-2015
Total Losses:	$366,633
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$80,000 (March 15, 1966)
Most Crop Damage:	$239,000 (March 1, 1985)

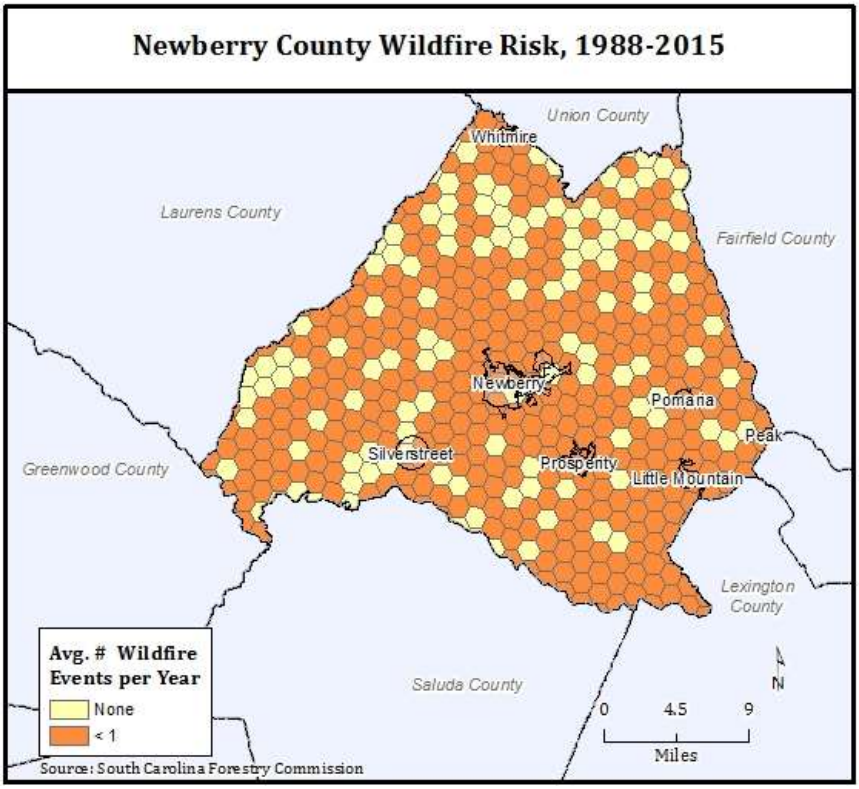


Figure 180 - Wildfire risk (occurrence) in Newberry County based on average number of wildfires per year.

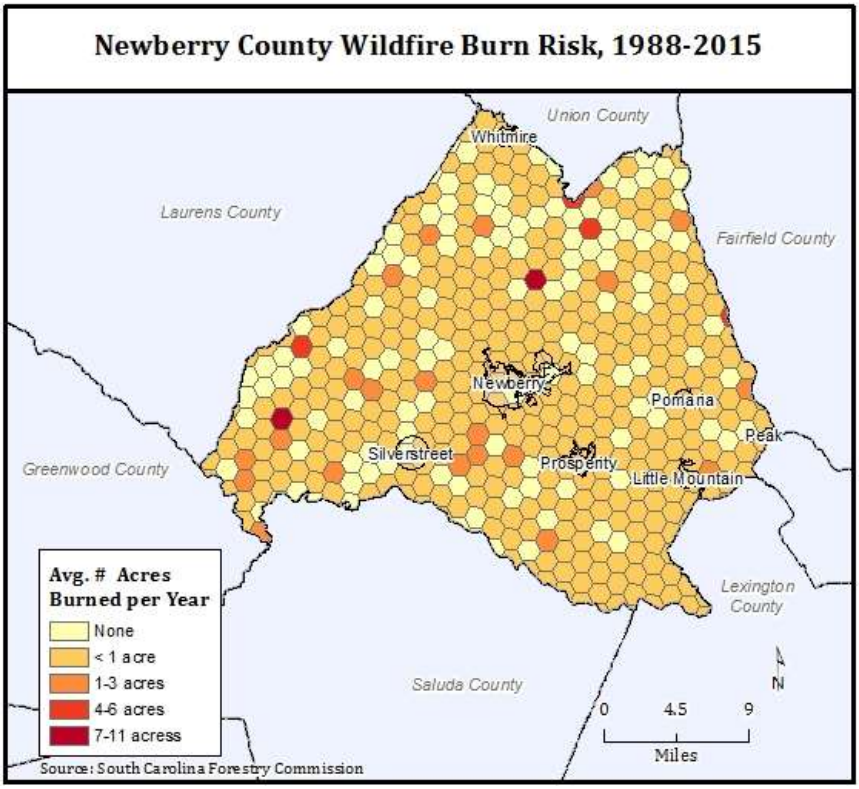


Figure 181 - Risk of large wildfires in Newberry County.

Table 91 - Record of loss-causing wildfire events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/15/1966	3/31/1966	0	0	$79,420	$0	Statewide	Forest Fires
3/1/1985	3/21/1985	0	0	$23,914	$239,146	Statewide	Fire
4/1/1985	4/30/1985	0	0	$239	$23,914	Statewide	Fire
Total		**0**	**0**	**$103,573**	**$263,060**		

L) Droughts

What to expect: Newberry County sees drought conditions, i.e. weeks of moderate to extreme drought according to the Palmer Drought Severity Index, on average for 5 to 6 months every year (Figure 182). Multi-year, severe droughts are possible in the County as seen from 1998 through 2002. The County experienced its driest year in 1925 with only 24.4 inches of rainfall (annual average: 47.34 inches)[89]. Droughts are detrimental to agricultural production incl. forestry and water supply. Agricultural crops, especially corn, cotton, and soybean are easily stressed by drought conditions and irrigation systems are not common in South Carolina. Severe droughts also affect tourism and fresh water fisheries. The number of droughts days and the duration of drought events are expected to increase.

Geographic Extent: The entire county is susceptible to drought but the central Newberry tends to experience more weeks in drought conditions. It is important to note that southeastern Newberry has on average more hot weather days than the rest of the county (Figure 178).

The most damaging droughts occurred in 1954, 1986, and 1998-2002. The latest severely impacted economic sectors such as agriculture, forestry, tourism, power generation, public water supplies, and fresh water fisheries[90] (Table 92). Less severe droughts were reported in 1988, 1990, 1993, and 1995. Unfortunately, the record on losses, particularly agricultural losses is sparse—not because of a lack of losses but because of shortcomings in tracking drought losses. The current tally of more than $24 million in direct losses is most likely a vast underestimation and possibly exceeds $100 million.

Drought statistics for Newberry County are as following:

Number of Events:	17
Number of Loss-Causing Events:	17
Frequency of Occurrence:	31%
Recurrence Interval:	3.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:*	$24,345,640
Total Fatalities:*	0
Deadliest Event:*	n/a

[89] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php
[90] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

Most Property Damage:*	$9.4 million (July 1, 1993)
Most Crop Damage:*	$9.4 million (August 1, 1993)

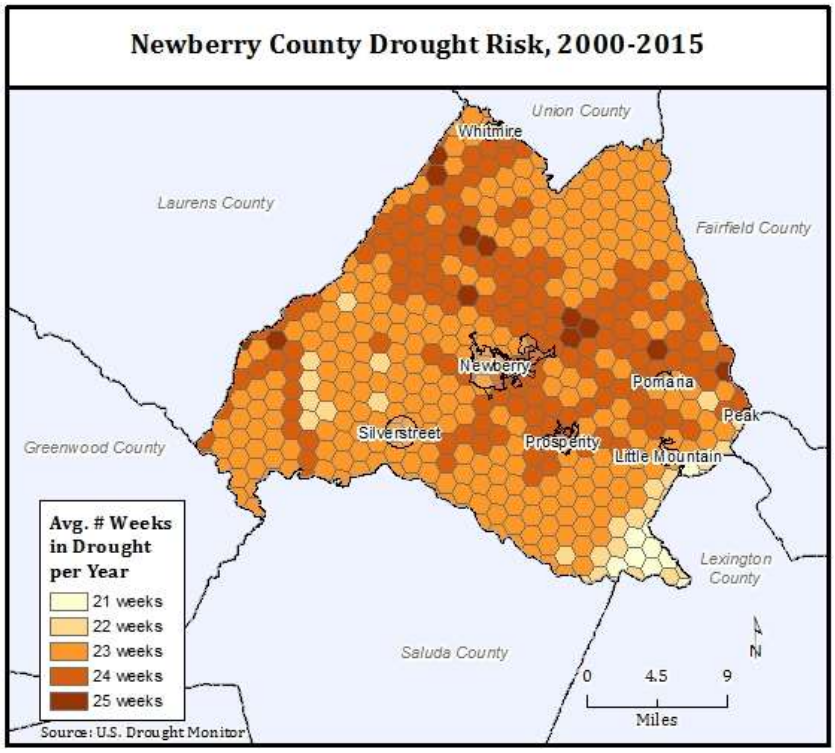


Figure 182 - Drought risk in Newberry County.

Table 92 - Record of loss-causing drought events in Newberry County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location	Description
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Moderate	Statewide	Drought, Heat
4/1/1978	4/13/1978	0	0	$39	$3,946	Mild	Statewide	Drought
10/1/1978	10/31/1978	0	0	$394	$3,946	Mild	Statewide	Drought, Heat
6/1/1984	6/20/1984	0	0	$0	$2,476	Moderate	Statewide	Drought
4/1/1986	4/30/1986	0	0	$0	$276	Moderate	SCZ001-002-003-004-005-006-007	Drought
5/1/1986	5/31/1986	0	0	$0	$23,478	Moderate	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide	Drought
7/1/1986	7/31/1986	0	0	$234,782	$2,347,826	Extreme	Statewide	Drought
2/1/1988	2/28/1988	0	0	$21	$2,175	Moderate	Statewide	Drought
6/1/1988	6/30/1988	0	0	$2,175	$21,751	Moderate	Statewide	Drought
7/1/1988	7/31/1988	0	0	$217	$2,175	Severe	Statewide	Drought
8/1/1988	8/31/1988	0	0	$2	$2,779	Moderate	SCZ001-002-003-004-006-008	Drought
7/1/1993	7/31/1993	0	0	$9,402,482	$0	Moderate	SCZ001>007 ALL SC	Drought, Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Severe	Statewide	Drought, Heat

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location	Description
5/1/1994	5/31/1994	0	0	$0	$1,736,314	Moderate	Statewide SC01>50	Drought
5/1/1995	5/31/1995	0	0	$0	$675,385	Mild	SCZ001>050	Drought
Total		**0**	**0**	**$9,649,052**	**$14,696,588**			

*Based on historic Palmer Drought Severity Index categories.
Note: While droughts occurred since 1995, the NCEI (formerly NCDC) did not report any losses. The occurrence of drought is reflected in Figure 182.

M) Earthquakes

What to expect: Newberry County has a much lower earthquake risk than coastal counties in South Carolina and experiences only low magnitude earthquakes. Since 1900, the strongest earthquake had a magnitude of 2.9 (Figure 183). There is only a 2% chance that Newberry County could experience shaking of up to 2m/s with a higher shaking potential in the eastern half of the county (Figure 184).

Geographic Extent: The entire county is susceptible to earthquakes.

Earthquake statistics for Newberry County are as following:

Number of Events:	3
Number of Loss-Causing Events:	0 (1960-2014)
Frequency of Occurrence:	3%
Recurrence Interval:	38.7 years
Expected changes to frequency and recurrence interval in the future:	No changes
Events on Record:	1900-2015
Total Losses:	$0
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	n/a
Most Crop Damage:	n/a

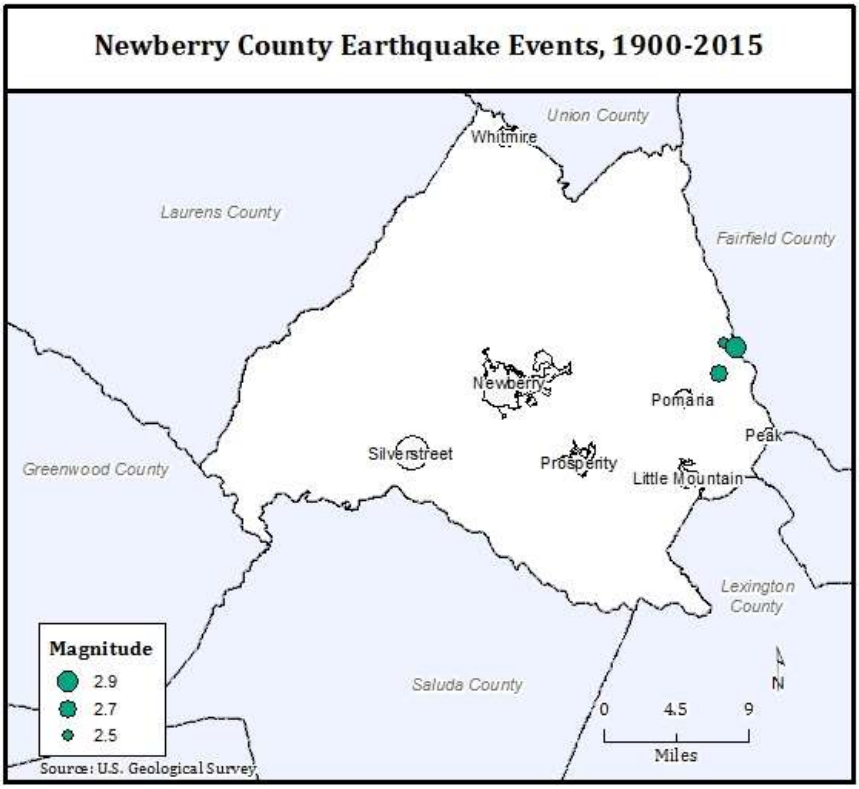


Figure 183 - Earthquake risk in Newberry County.

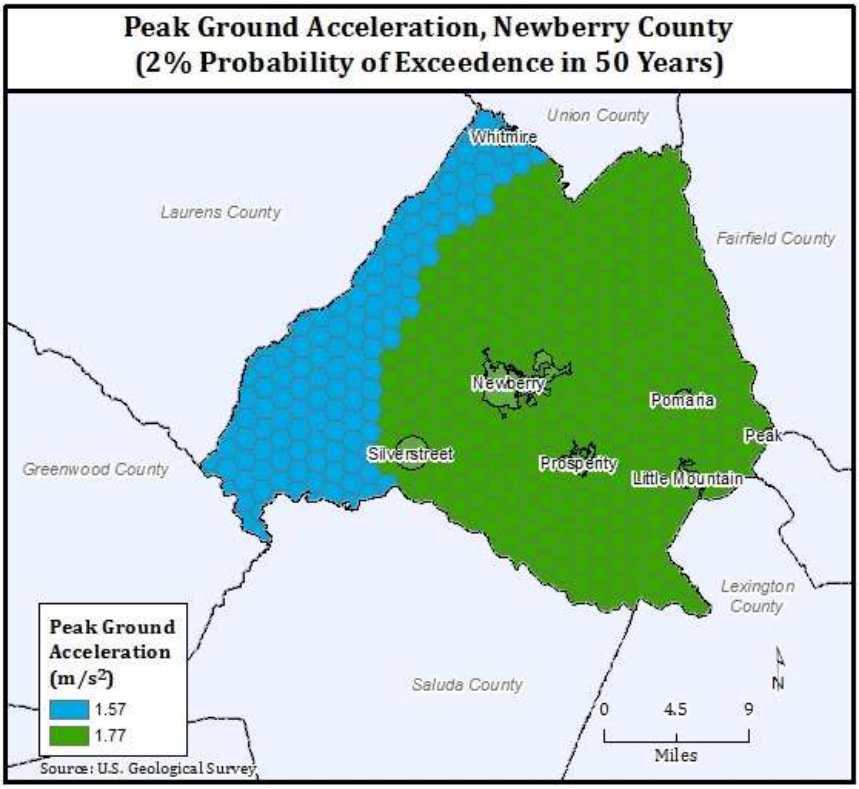


Figure 184 - Risk of shaking due to earthquakes in Newberry County.

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

7.2 Hazard Vulnerability Assessment for Newberry County

Vulnerability is generally defined as the potential for loss. The vulnerability assessment identifies assets at risk (people, critical infrastructure, etc.) and estimates potential losses from the hazards identified previously in the hazard assessment. Vulnerability is best expressed in qualitative terms (high, medium, and low). To arrive at such a classification, the information generated in the hazard assessment is parsed into low, medium, and high categories and then overlaid with information on social vulnerability, critical infrastructure, population, and building stock.

Please note that the sections on floods, earthquakes, and hurricanes include probabilistic hazard and damage estimates alongside the historic risk information provided for all other hazards. Such probabilistic information is unavailable for any other hazard type.

When combining vulnerability information across all 15 hazard types, the comprehensive vulnerability of Newberry County looks as following:

- High vulnerability areas (in terms of hazard occurrence and social vulnerability) are present in central Newberry County largely to the east of the Town of Newberry.
- About 40% of critical infrastructure, building stock, and population are in high risk areas.
- Between 40 and 50% of critical infrastructure, building stock, and population are located in medium risk areas.

For a comparison of vulnerability statistics for high risk zones only, see Table 93.

Summary of Newberry County's Vulnerabilities	**Risk Zones**		
	Low	**Medium**	**High**
Critical Infrastructure	4 (14%)	12 (43%)	12 (43%)
Building Stock	$0.6 billion (10%)	$3.1 billion (46%)	$2.9 billion (44%)
Population	5,619 (15%)	17,535 (47%)	14,415 (38%)

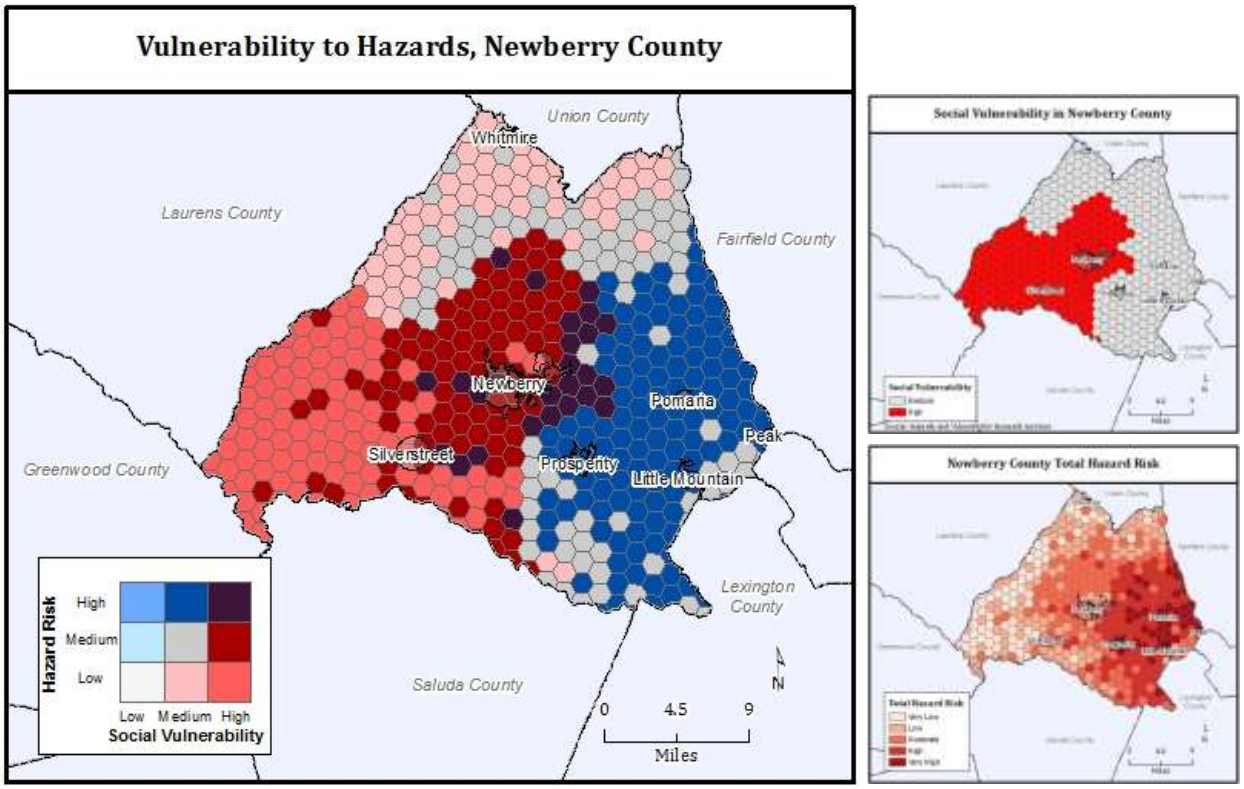


Figure 185 - Vulnerability to natural hazards in Newberry County

Note: The hazard risk map (bottom right) is identical to the comprehensive map developed in the hazard assessment section. Detail on the social vulnerability map (top right) are provided below.

Table 93 - Vulnerability overview by hazard for high risk areas in Newberry County.

	Critical Infrastructure	Building Stock	Population	Population with high social vulnerability
Flooding*	0	$0.4 billion (5%)	3,585 (10%)	202 (1%)
Hurricane	n/a	n/a	n/a	n/a
Tornadoes	7 (25%)	$1.4 billion (21%)	8,628 (23%)	2,901 (13%)
Thunderstorm	9 (32%)	$2.5 billion (38%)	13,123 (35%)	1,403 (7%)
Lightning	6 (22%)	$1.8 billion (28%)	10,351 (27%)	895 (6%)
Wind	8 (29%)	$2.4 billion (36%)	12,507 (33%)	2,125 (10%)
Hail	3 (11%)	$0.6 billion (9%)	2,920 (8%)	2,808 (13%)
Fog	10 (36%)	$2.4 billion (37%)	13,049 (35%)	1,910 (9%)
Winter Storm	5 (18%)	$1.7 billion (25%)	9,767 (26%)	3,416 (16%)
Cold**	8 (28%)	$1.4 billion (21%)	7,812 (21%)	366 (2%)
Heat**	5 (18%)	$0.9 billion (14%)	7,505 (20%)	2,606 (12%)
Drought	10 (36%)	$2 billion (30%)	13,456 (36%)	8,396 (39%)
Wildfire	18 (64%)	$3.9 billion (59%)	18,260 (49%)	12,696 (59%)
Earthquake	n/a	n/a	n/a	n/a
Overall Vulnerability	12 (43%)	$2.9 billion (44%)	14,415 (38%)	5,398 (25%)

* High risk defined as being inside the 100-yr flood zone
** Data shown here using the 95% percentile

A) Assets at Risk

Newberry County houses nearly 40,000 residents and has an approximate building stock of 17,477 buildings with a replacement value of about $4 billion (in 2015 according to HAZUS-MH 2.2) (Table 94). Since 2010, Newberry County's population remained steady which means there are no significant changes in regard to exposure to natural hazards compared to the previous plan. See Section 3.4 for more information on development changes in the county.

Table 94 - Building stock values by occupancy type in Newberry County. Source: HAZUS 2.2.

Building Type	Total Replacement Value (in Million)
Residential	$3.2
Commercial	$0.4
Industrial	$0.2
Agricultural	$0.02
Religious	$0.08
Government	$0.02
Education	$0.04
Total	**$4.0**

Since the aforementioned values represent the total replacement cost by property type, they may greatly differ from county assessment and appraisal values. The following values provided by the County (Table 95) are capped based on the maximum taxable amount according to the county tax code.

Table 95 - Newberry County Appraised and Assessed Values of Buildings Only as of 31/December/2015.

Town / Type Of Use	Number of buildings	Appraised value	Assessment
Unincorporated Newberry County			
Residential	14,825	$957,382,128	$41,181,782
Commercial	462	$43,681,262	$2,625,675
Public/ Institutional/Exempt	190	$40,390,800	$0
Total	**15,477**	**$1,041,454,190**	**$43,807,457**
City of Newberry			
Residential	3,440	$252,052,200	$11,440,676
Commercial	507	$119,105,200	$7,146,321
Public/ Institutional	209	$51,456,400	$0
Total	4,156	$422,613,800	$18,586,997
Town of Whitmire			
Residential	699	$55,398,900	$2,342,050
Commercial	18	$565,600	$33,936
Public/ Institutional	8	$618,600	$0
Total	**725**	**$56,583,100**	**$2,375,986**
Town of Pomaria			
Residential	93	$6,273,200	$286,374
Commercial	18	$293,200	$2,610
Public/ Institutional	4	$246,000	$0
Total	**115**	**$6,812,400**	**$288,984**

Town / Type Of Use	Number of buildings	Appraised value	Assessment
Town of Little Mountain			
Residential	129	$10,381,000	$437,340
Commercial	25	$1,982,700	$117,212
Public/ Institutional	2	$618,600	$0
Total	**156**	**$12,982,300**	**$554,552**
Town of Prosperity			
Residential	510	$34,797,725	$1,508,959
Commercial	76	$8,647,675	$518,861
Public/ Institutional	13	$1,512,500	0
Total	**599**	**$44,957,900**	**$2,027,820**
County Totals	**21,228**	**$1,585,403,690**	**$67,641,796**

There are 28 critical facilities in Newberry County such as an Emergency Operation Center, hospital, wastewater treatment plans, administrative buildings as well as numerous law enforcement, fire/EMS and school facilities (Table 96). Most of the critical infrastructure is located in the Town of Newberry and surrounding areas (Figure 186). More information on the vulnerability assessment for each critical facility can be found in Appendix II.

Table 96 - Critical facilities in Newberry County.

	Count
Fire-EMS Facilities	9
Law Enforcement Facilities	2
Medical Facilities	1
Schools and School Administration	16
TOTAL	28

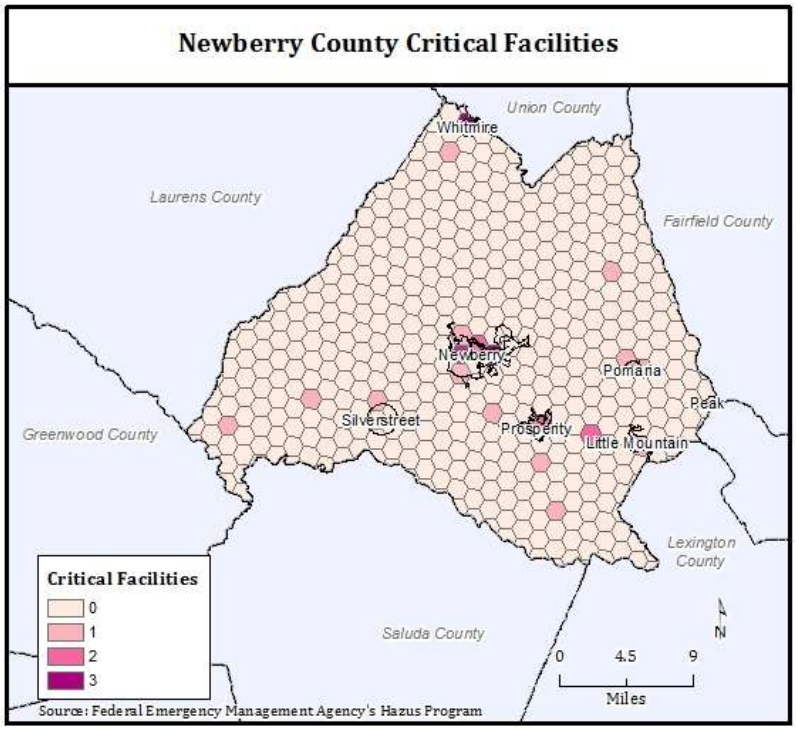


Figure 186 - Distribution of critical facilities in Newberry County.

The following sections discuss hazard-specific vulnerabilities in Newberry County. Vulnerability is assessed by overlaying the county's social vulnerability with the risk of being exposed to a hazard of either a certain magnitude (i.e. probabilistic scenarios) or historic occurrences/warnings. In addition, the location and number of critical infrastructure within an area (hexagon) are incorporated into the vulnerability maps by extruding or raising a hexagon relative to the number of critical infrastructure located in the hexagon area.

B) Social vulnerability

The SoVI® is a measure of the sociodemographic make-up of Newberry County that influences how well populations within a census tract can prepare for, respond to, or recover from a hazard. More than half (19,780) of the county's residents live in highly vulnerable census tracts (Table 97), mostly in the southwestern portion of the county (Figure 187).

Table 97 - Distribution of socially vulnerable census tracts in Newberry County.

SoVI Category	Number of Tracts	Number of Housing Units	Population
Low			
Medium	4	9,061	17,728
High	4	8,861	19,780

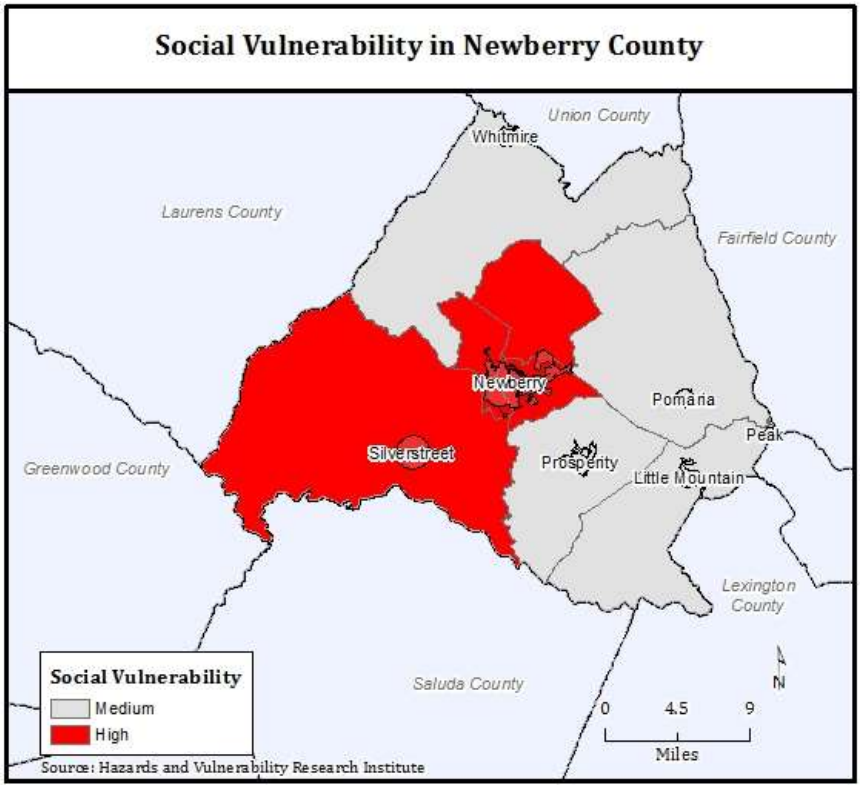


Figure 187 - Socially vulnerable tracts in Newberry County.

Newberry County's SoVI® is derived from a dynamic combination of seven main vulnerability components (Table 98). Overall, SoVI® scores range from 0.16 to 2.26 with half of the county's census tracts falling in the high SoVI® category (Table 97). It is important to note that what makes a census tract socially vulnerable varies from census tract to census tract within the county.

The SoVI® scores (Figure 187) are mapped using a three-class standard deviation[91] model:

- High social vulnerability (standard deviation greater than 0.5)
- Medium social vulnerability (standard deviations between 0.5 to -0.5)
- Low social vulnerability (standard deviation lower than -0.5)

Table 98 - SoVI dimensions and importance of input variables for Newberry County (tract level, 2010-2014).

Component	*Cardinality*	*Name*	*% Variance Explained*	*Dominant Variables*	*Component Loading*
1	**+**	Wealth and Poverty	21.171	QED12LES	0.665
				QFHH	0.612
				QMOHO	0.594
				QCVLUN	0.545
				QPOVTY	0.545
				QSERV	0.523
				MDGRENT	-0.584
				QRICH200K	-0.862
				MHSEVAL	-0.887
				PERCAP	-0.91
2	**+**	Age and Unemployment	14.19	QAGEDEP	0.736
				QSSBEN	0.773
				MEDAGE	0.746
				QUNOCHHO	0.695
				QCVLUN	0.526
				QASIAN	-0.524
				MDGRENT	-0.552
3	**+**	Class and Race (Black)	13.824	QNOAUTO	0.810
				QRENTER	0.781
				QBLACK	0.601
				QPOVTY	0.552
				QFHH	0.523
				PPUNIT	-0.539
				QFAM	-0.660
4	**+**	Ethnicity (Hispanic)	10.881	QHISP	0.867
				QESL	0.805
				QEXTRACT	0.624
				PPUNIT	0.525
5	**+**	Gender - Female	6.33	QFEMALE	0.845
				QFEMLBR	0.756
6	**+**	Special Needs	5.232	QNRRES	0.886
7	**+**	Race (Native American) and Service Sector Employment	4.515	QNATAM	-0.917
				QFHH	0.292
				QSERV	0.306
		Cumulative Variance Explained	**76.143**		

[91] Standard deviation is a measure of variability within a data set. It measures the distance to the mean. A large standard deviation means that the observation is further away from the mean of the data set. For normally distributed data, 68.2% of observations fall within 1 and -1 standard deviations.

To investigate the relationship between social vulnerability and hazard risk, the SoVI® map for Newberry County (Figure 187) is converted from administrative boundaries to hexagon units (Figure 188) identical to the hexagons maps developed in the preceding hazard assessment of the HMP. Furthermore, hazard risk maps are categorized into three risk classes: low, medium, and high risk. By overlaying social vulnerability and hazard risk, the intersection of both elements can be visualized and communicated through color using a bivariate color scheme: the bivariate color scheme consists of hazard risk (y-axis, bluish colors) and social vulnerability (x-axis, redish colors). For example, the color white represents areas of low social vulnerability and low hazard risk whereas purple hexagons have both high social vulnerability and high hazard risk.

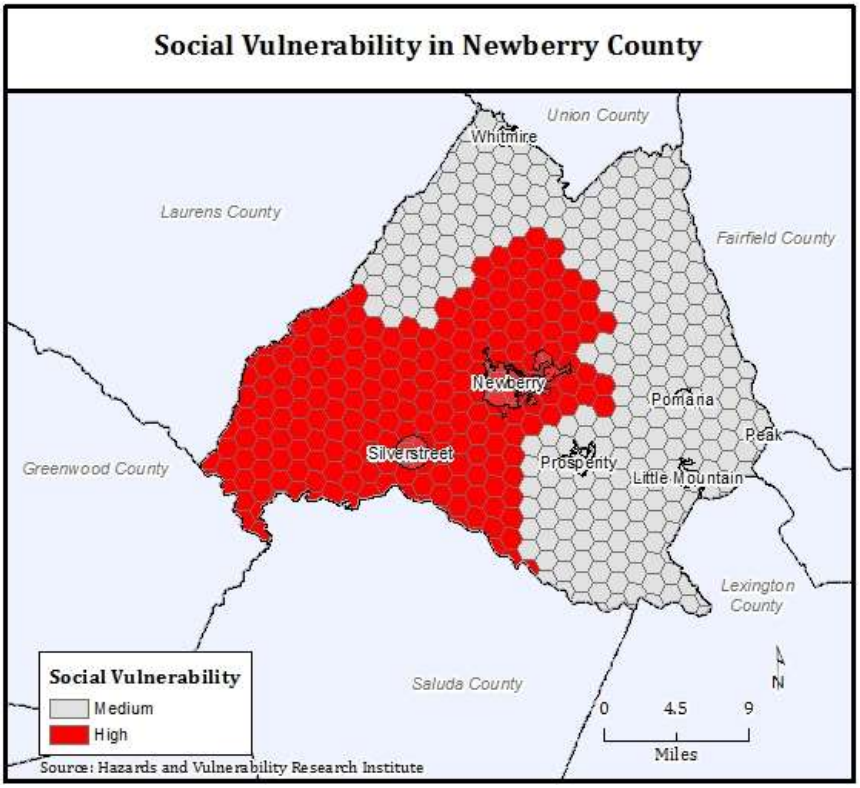


Figure 188 - Hexagon map of social vulnerability in Newberry County.

C) Flooding

The vulnerability to riverine flooding is most pronounced in 100-year floodplains (1% annual chance of occurrence) in southwestern Newberry County due to the presence of socially vulnerable populations (Figure 189). Exposure in the 100-year floodplain is largely limited to residential building with none of the critical infrastructure located inside the 100-year floodplain (Figure 190). It is important to note that the determination of infrastructure inside or outside the 100-year floodplain was solely based on location and did not take elevation into account. Therefore being located inside the 100-year floodplain does not carry an implication regarding requirements for the National Flood Insurance Program.

Vulnerability statistics for 100-year floods in Newberry County	**Risk Zones**	
	Outside of 100-year Floodplain	**Inside of 100-year Floodplain**
Critical Infrastructure	28 (100%)	0
Building Stock	$6.2 billion (95%)	$0.4 billion (5%)
Population	33,984 (90%)	3,585 (10%)
Population w/high social vulnerability	21,295 (99%)	202 (1%)
Scenario	1000-year Flood Event	

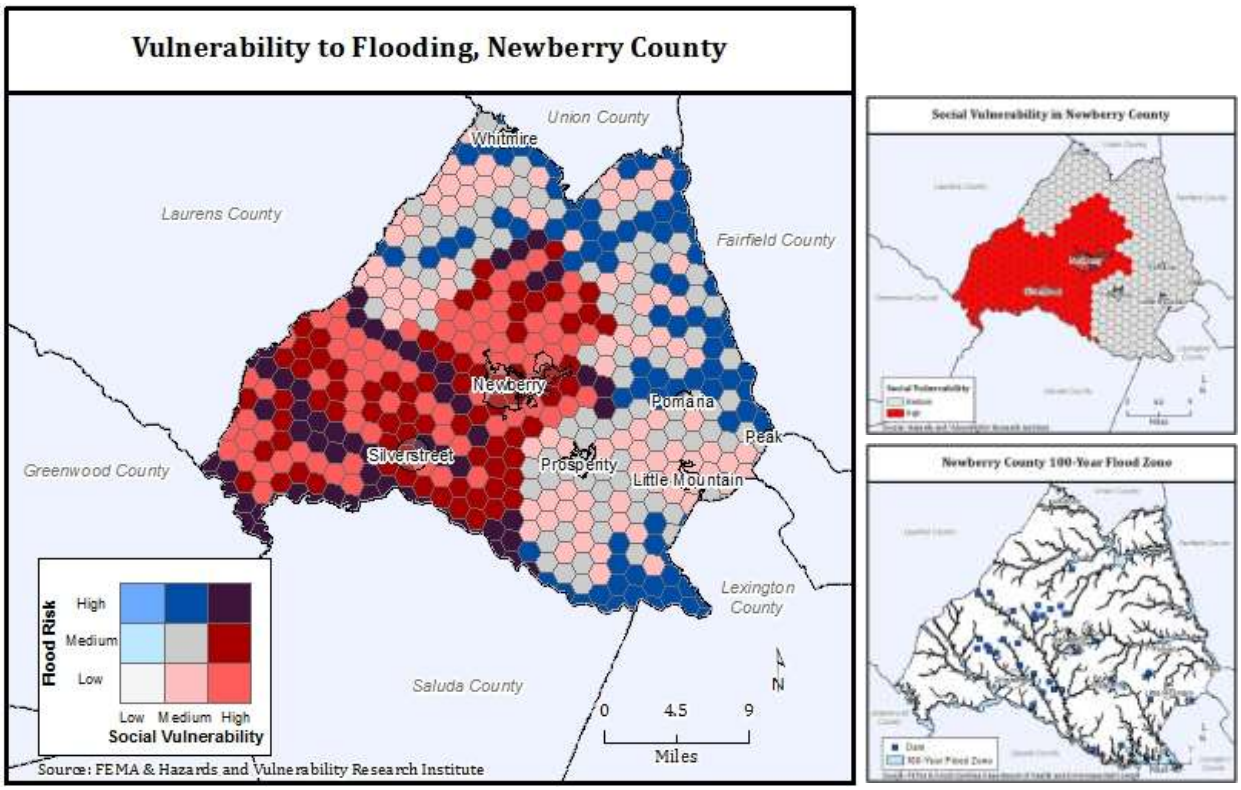


Figure 189 - Vulnerability to floods in Newberry County.

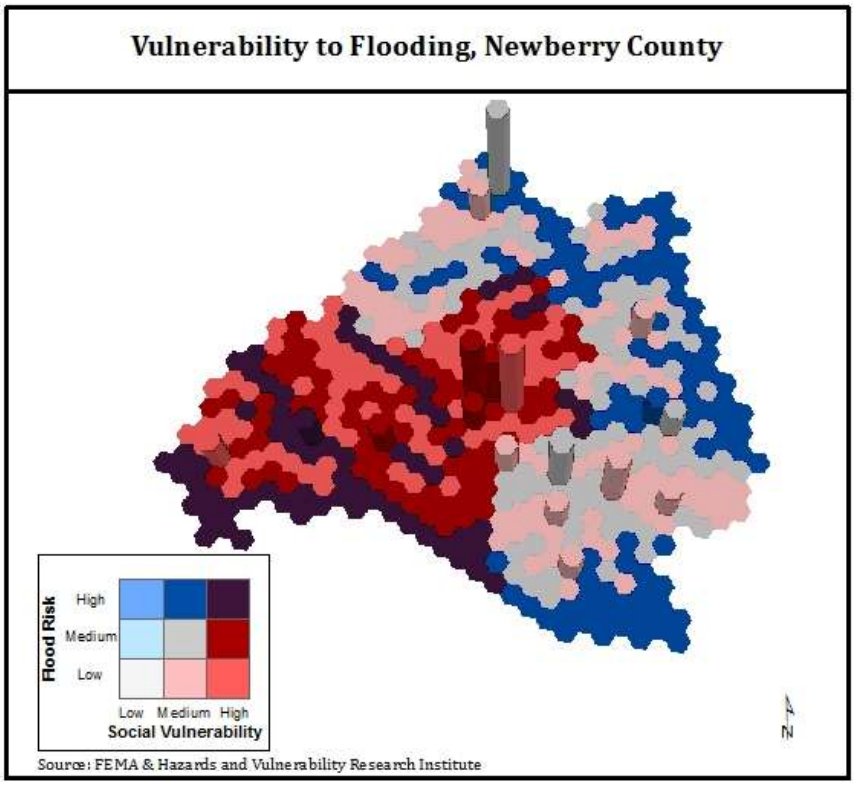


Figure 190 - Vulnerability of critical infrastructure to flooding in Newberry County.

For a 1,000-year flood event (0.1% annual chance of occurrence) (Figure 191), nearly 40 buildings (3% of buildings within modelled 1000-year floodplain) would be at least moderately damaged and 11 buildings would be completely destroyed. The economic damage is estimated at nearly $50 million (nearly all of it residential) with most of the damage occurring in around Whitmire, Newberry, and Silverstreet (Figure 192). It is expected that none of the critical infrastructure would receive any damage. In southeastern Newberry County, the modelled flood's impact area would affect highly vulnerable populations. All estimates were derived using HAZUS-MH 2.2. Note that HAZUS-MH does not accurately model the outline of lakes incl. Lake Murray.

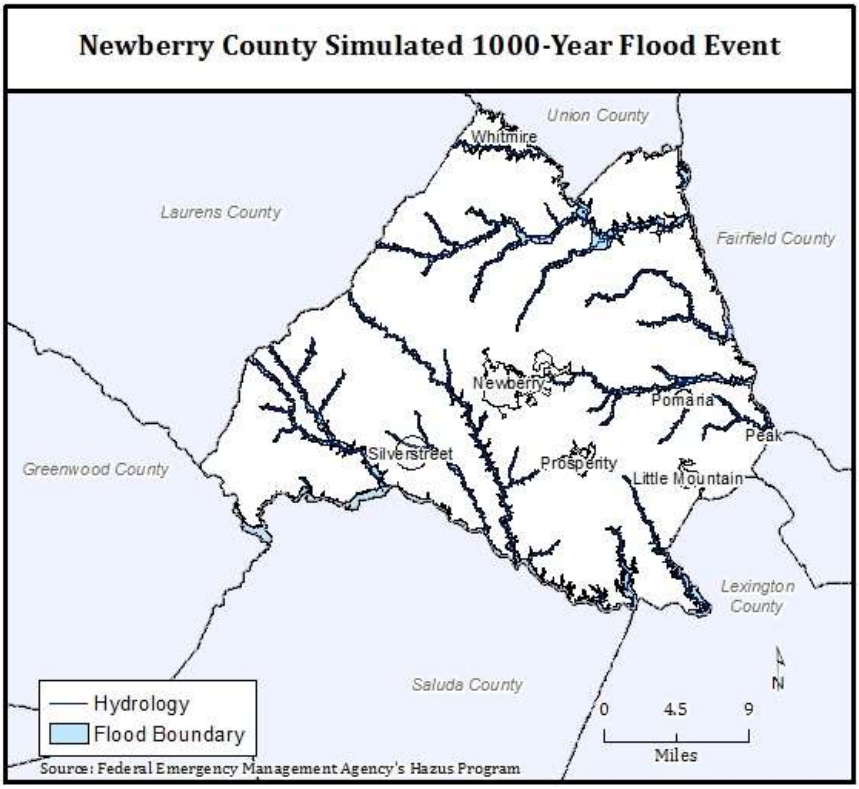


Figure 191 - Modelled 1,000-year flood event in Newberry County.

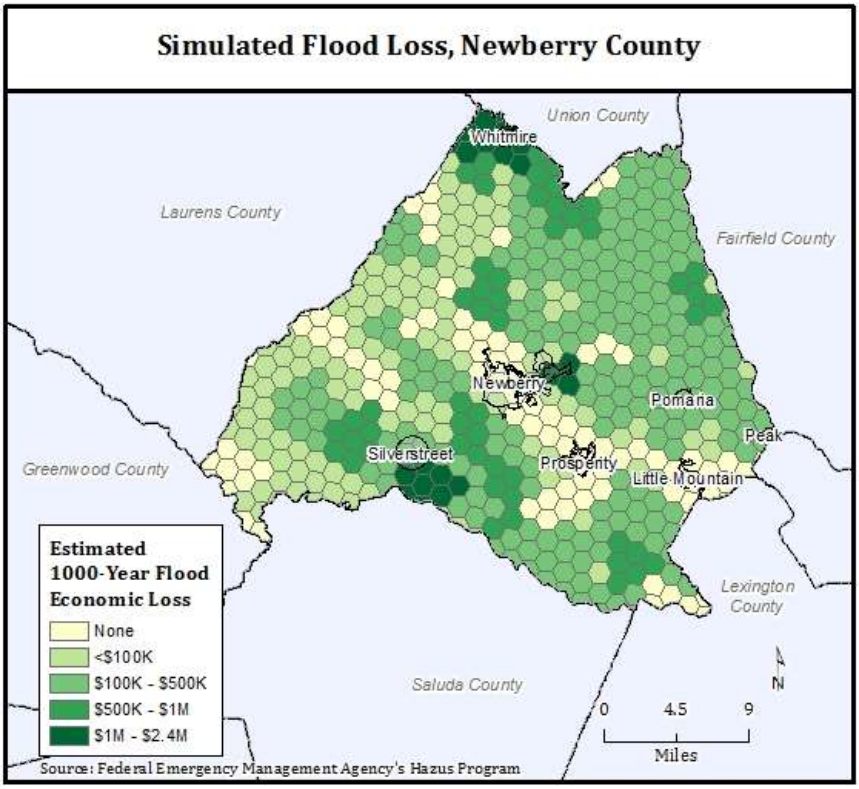


Figure 192 - Damage from a modelled 1,000-year flood event in Newberry County.

D) Hurricanes & Tropical Storms

The central and southwest portions of Newberry County exhibit a higher vulnerability to tropical storms (Figure 193). Nearly all of the county's high socially vulnerable population resides in areas that see frequent tropical storms. More than 85% of the county's critical infrastructure and nearly all of the building stock fall into areas of medium tropical storm risk (Figure 194).

Vulnerability statistics for a 1000-year hurricane in Newberry County	**Risk Zones**		
	Low (0.074 tropical storms/year)	**Medium (0.111 tropical storms/year)**	**High**
Critical Infrastructure	4 (14%)	24 (86%)	n/a
Building Stock	$0.5 billion (8%)	$6 billion (92%)	n/a
Population	3,529 (9%)	34,040 (91%)	n/a
Population w/high social vulnerability	908 (4%)	20,589 (96%)	n/a
Scenario	1000-year probabilistic storm		

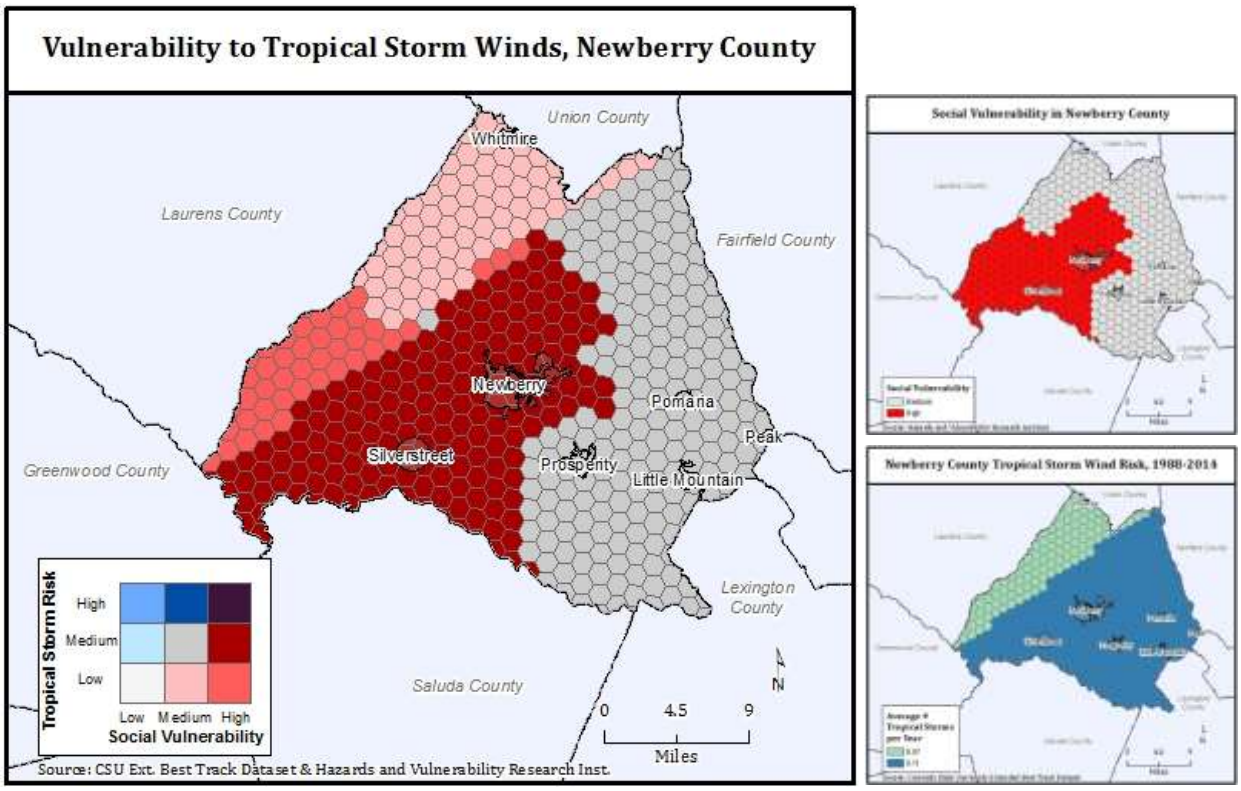


Figure 193 - Vulnerability to tropical storms in Newberry County.

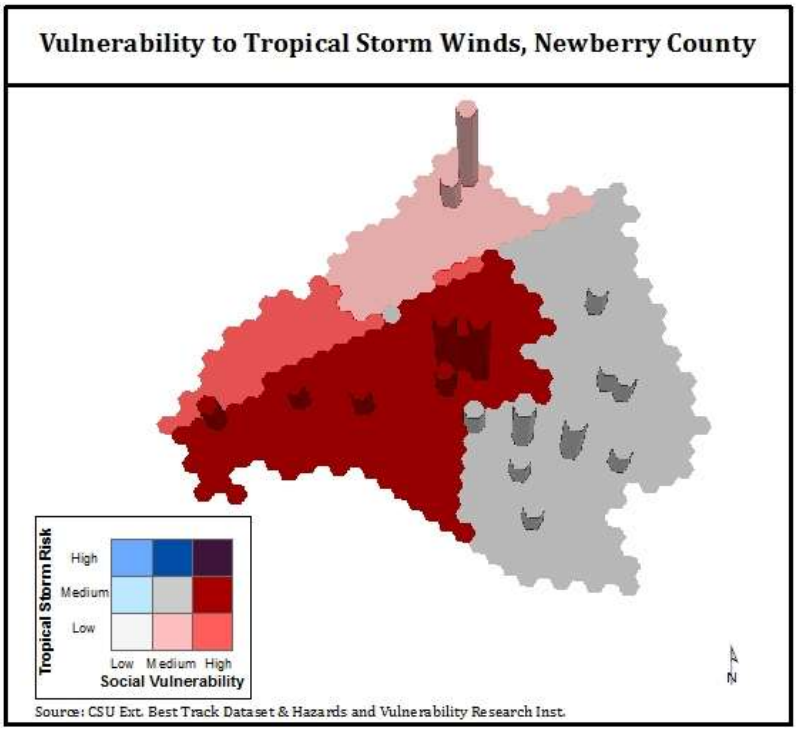


Figure 194 - Vulnerability of critical infrastructure to tropical storms in Newberry County.

When using a 1000-year storm, lower Richland County would see wind speeds between 111 to 130 miles per hour (Category 3) whereas upper Richland County experience wind speeds between 96-110 miles per hour (Category 2). Such wind speeds are probable with a fast-moving, major hurricane that has a similar track to Hurricane Hugo.

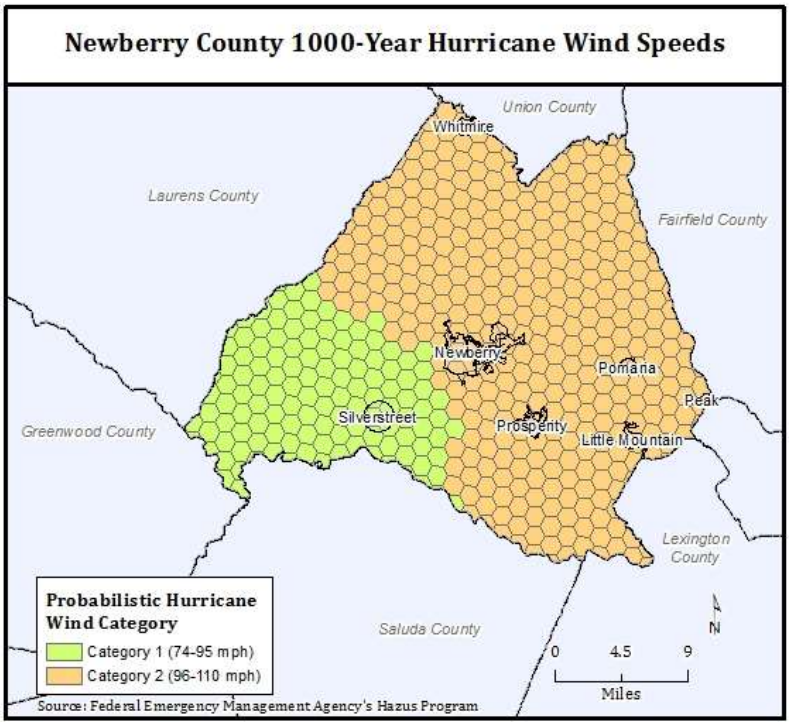


Figure 195 - Hurricane wind speeds using a 1,000-year storm event in Newberry County.

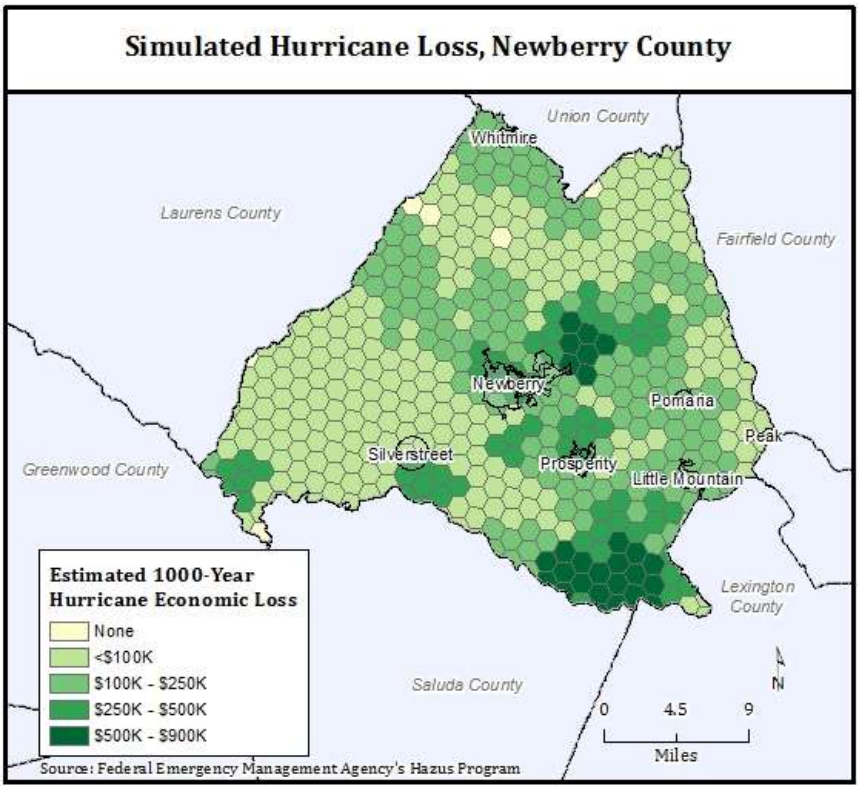


Figure 196 - Damage from a modelled 1,000-year hurricane event in Newberry County.

E) Tornadoes

Areas of high vulnerability to tornadoes, i.e. a high frequency of past tornado warnings (more than 0.75 warning per year) along with high social vulnerability, occur in central Newberry County around the City of Newberry (Figure 197). About one quarter of the county's critical infrastructure, building stock and population are located in this high vulnerability area (Figure 198).

Vulnerability statistics for tornadoes in Newberry County	**Risk Zones**		
	Low (<0.5 warnings/year)	**Medium (0.5-0.75 warnings/year)**	**High (>0.75 warnings/year)**
Critical Infrastructure	7 (25%)	14 (50%)	7 (25%)
Building Stock	$1.1 billion (17%)	$4 billion (62%)	$1.4 billion (21%)
Population	5,768 (15%)	23,173 (62%)	8,628 (23%)
Population w/high social vulnerability	1,811 (8%)	16,785 (78%)	2,901 (14%)

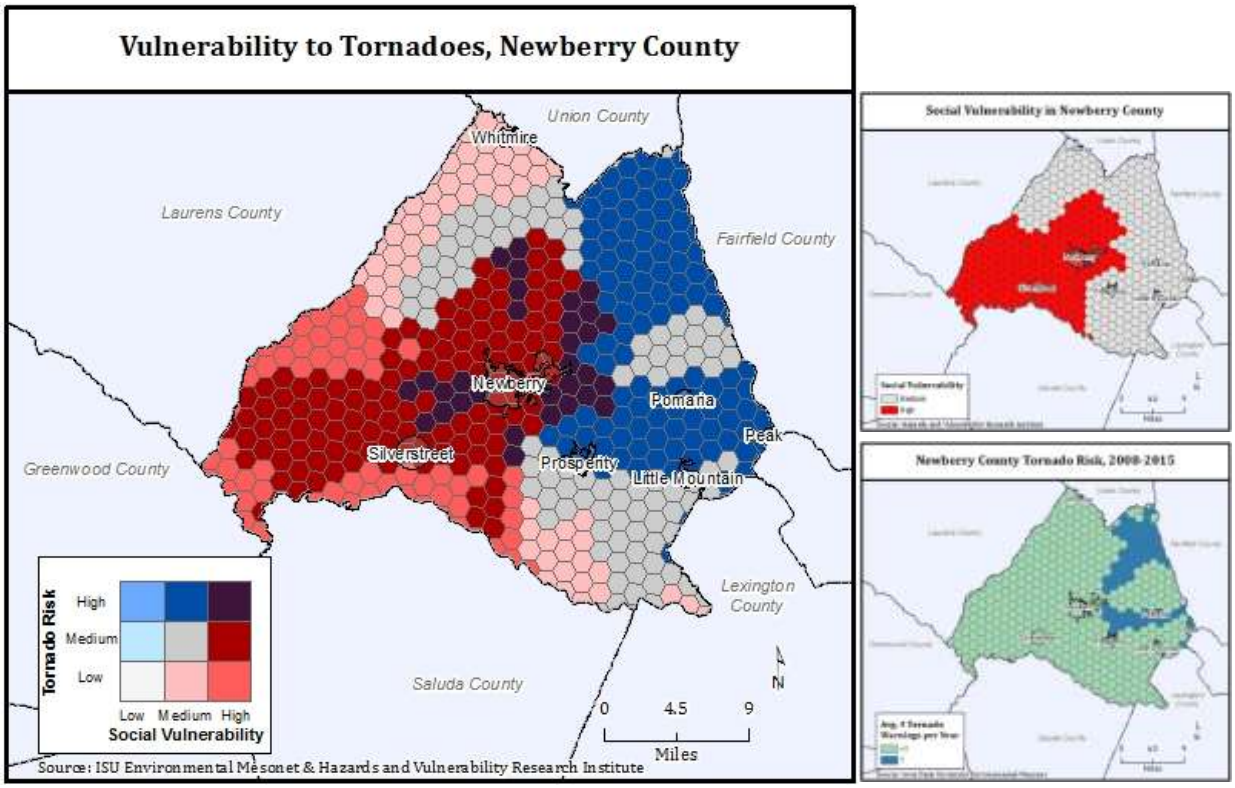


Figure 197 - Vulnerability to tornadoes in Newberry County.

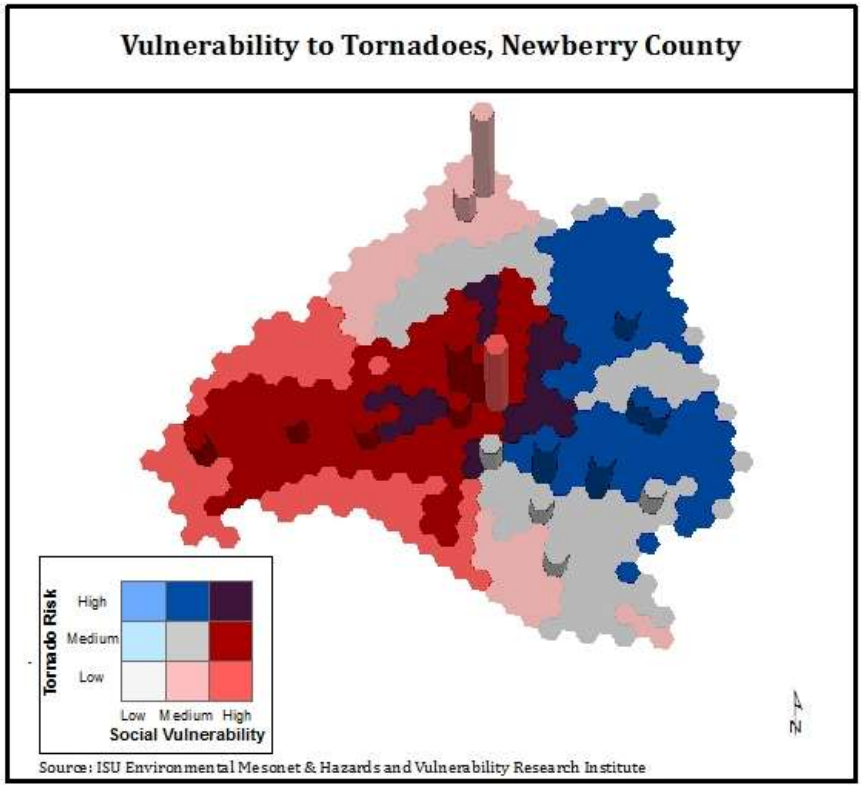


Figure 198 - Vulnerability of critical infrastructure to tornadoes in Newberry County.

F) Thunderstorms

The area east of the City of Newberry is highly vulnerable to severe thunderstorms since areas of high social vulnerability coincide with areas that have received more than 11.3 severe thunderstorm warnings per year (Figure 199). About one third of the county's critical infrastructure and assets such as population and buildings stock are located in high risk areas (Figure 200).

Vulnerability statistics for severe thunderstorms in Newberry County	**Risk Zones**		
	Low (<8.5 warnings/year)	**Medium (8.5-11.3 warnings/year)**	**High (>11.3 warnings/year)**
Critical Infrastructure	6 (21%)	13 (47%)	9 (32%)
Building Stock	$0.7 billion (11%)	$3.3 billion (51%)	$2.5 billion (38%)
Population	4,548 (12%)	19,899 (53%)	13,123 (35%)
Population w/high social vulnerability			

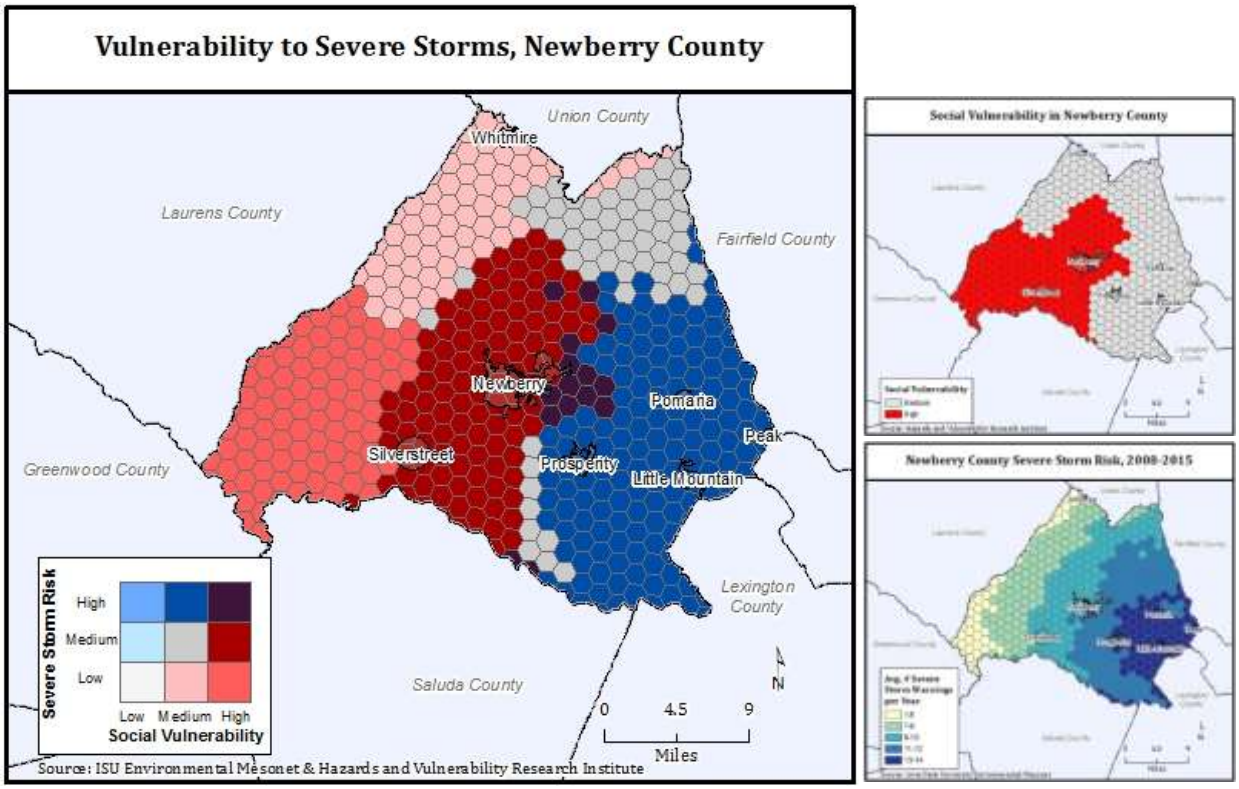


Figure 199 - Vulnerability to severe thunderstorms in Newberry County.

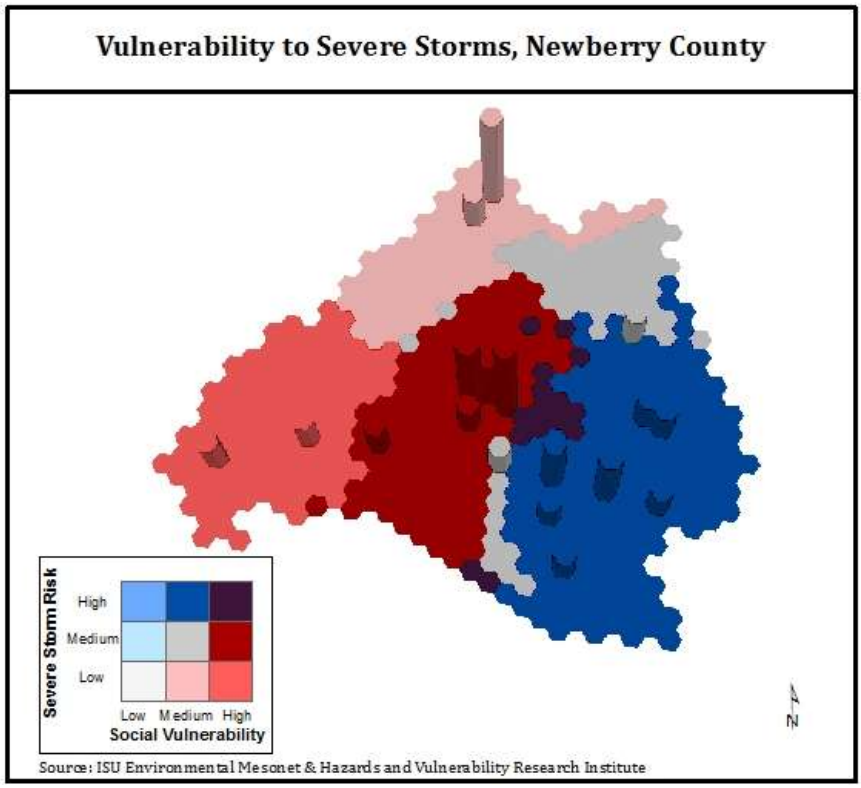


Figure 200 - Vulnerability of critical infrastructure to severe storms in Newberry County.

G) Lightning

Since eastern Newberry County experiences the most cloud-to-ground lightning strikes but most social vulnerable people live in the central and southwestern parts of the county, there are not many areas that are highly vulnerable to lightning (Figure 201). There are a high vulnerability clusters east and north of the City of Newberry as well as near the border to Laurens County. About one quarter of the county's assets are located in areas that experience more than 20,600 lightning strikes per year (Figure 202).

Vulnerability statistics for lighting in Newberry County	**Risk Zones**		
	Low (<19,100 strikes/year)	**Medium (19,100-20,600 strikes/year)**	**High (>20,600 strikes/year)**
Critical Infrastructure	11 (39%)	11 (39%)	6 (22%)
Building Stock	$2.8 billion (43%)	$1.9 billion (29%)	$1.8 billion (28%)
Population	16,089 (43%)	11,130 (30%)	10,351 (27%)
Population w/high social vulnerability	8,444 (52%)	6,770 (42%)	895 (6%)

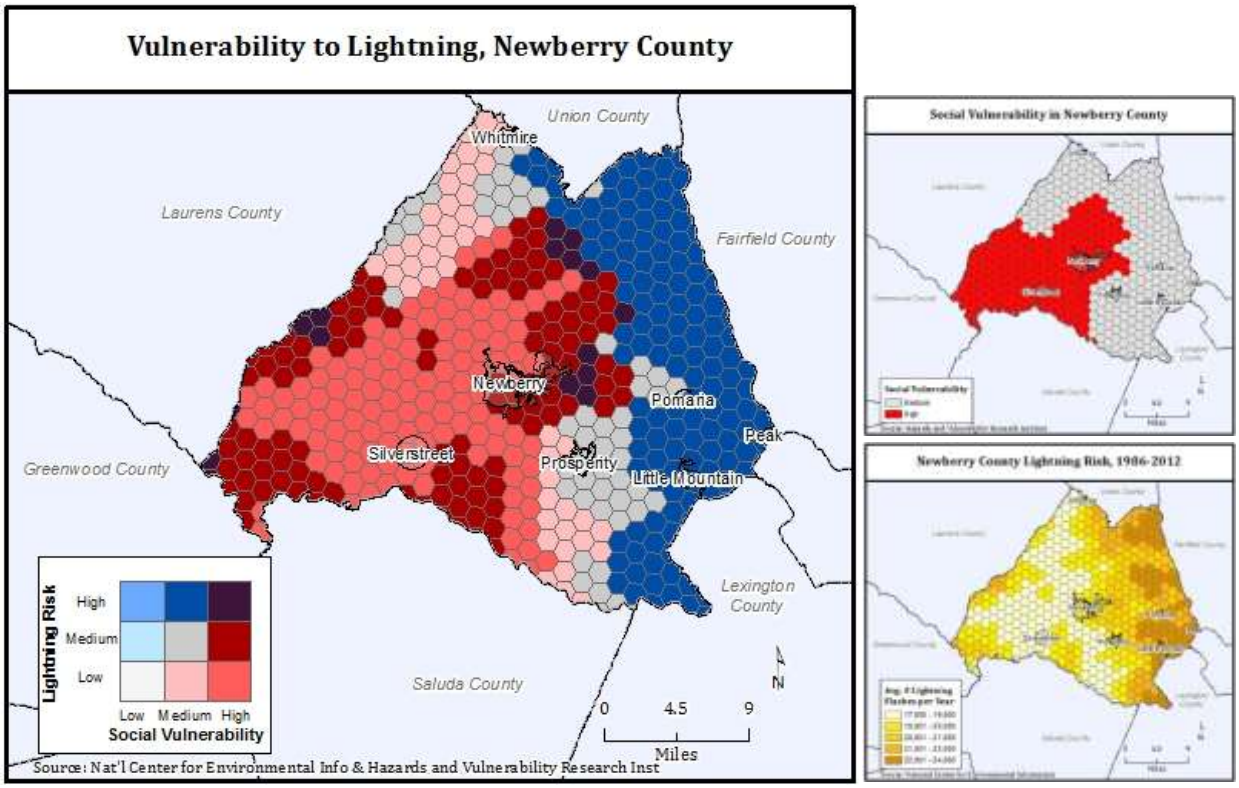


Figure 201 - Vulnerability to lighting in Newberry County.

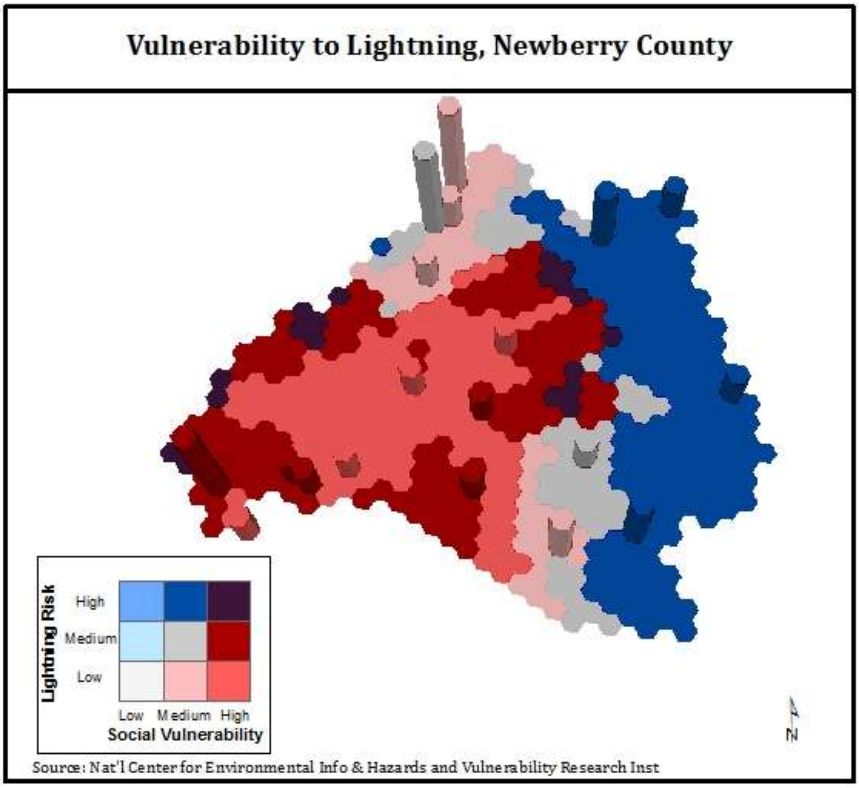


Figure 202 - Vulnerability of critical infrastructure to lightning in Newberry County.

H) Wind

The highest vulnerability to winds exceeding 30 knots (34.5 mph) exits in southwestern Newberry County (Figure 203). In this area, high social vulnerability coincides with more than 1.7 days of high winds per year. About one third of the county's assets are located in the county's highest risk area (Figure 204).

Vulnerability statistics for wind in Newberry County	**Risk Zones**		
	Low (<1.6 days/year)	**Medium (1.6-1.7 days/year)**	**High (>1.7 days/year)**
Critical Infrastructure	4 (14%)	16 (57%)	8 (29%)
Building Stock	$0.7 billion (10%)	$3.5 billion (54%)	$2.4 billion (36%)
Population	5,975 (16%)	19,087 (51%)	12,507 (33%)
Population w/high social vulnerability	2,476 (11%)	16,897 (79%)	2,125 (10%)

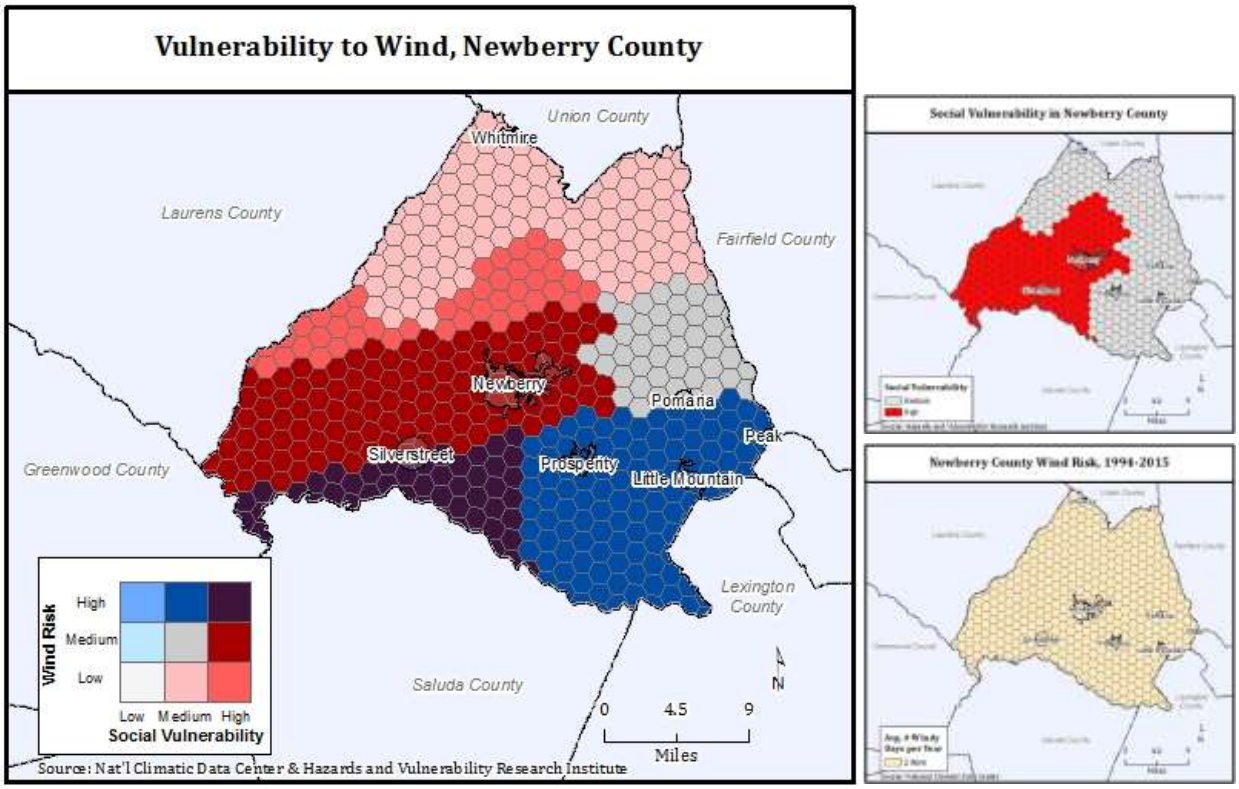


Figure 203 - Vulnerability to high winds in Newberry County.

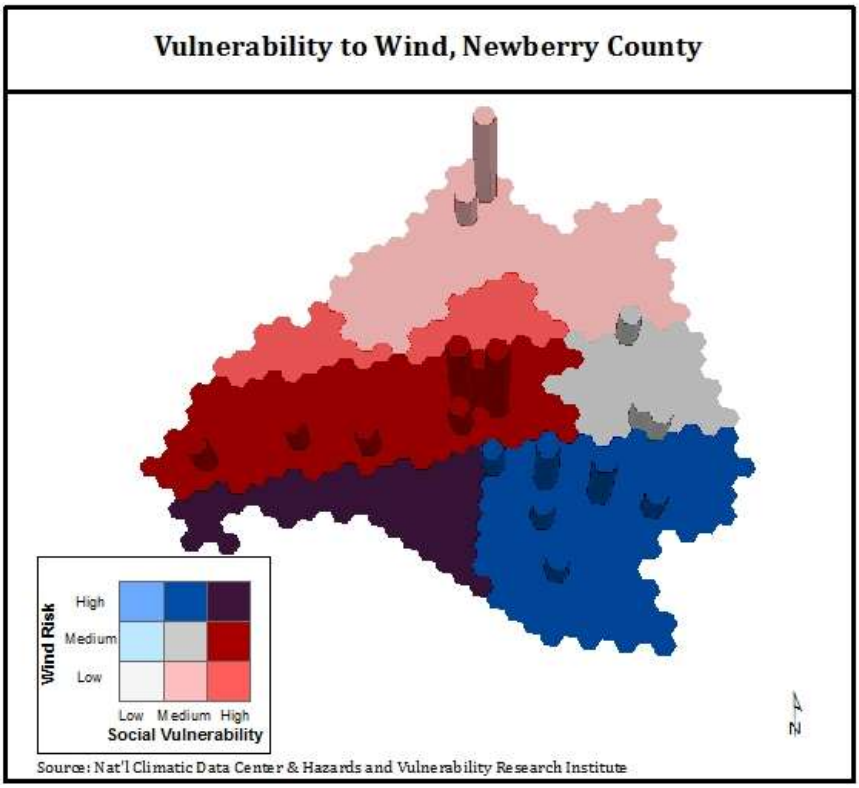


Figure 204 - Vulnerability of critical infrastructure to high winds in Newberry County.

I) Hail

There are only few areas where high social vulnerability and frequent hail events overlap such as in the southwestern corner of Newberry County (Figure 205). About 10% of the county's assets are located in areas with more than 0.67 hail events per year (Figure 206).

Vulnerability statistics for hail in Newberry County	**Risk Zones**		
	Low (no hail events)	**Medium (0.033 events/year)**	**High (>0.67 events/year)**
Critical Infrastructure	21 (75%)	4 (14%)	3 (11%)
Building Stock	$5.6 billion (85%)	$0.4 billion (6%)	$0.6 billion (9%)
Population	33,226 (88%)	1,426 (4%)	2,920 (8%)
Population w/high social vulnerability	18,178 (85%)	511 (2%)	2,808 (13%)

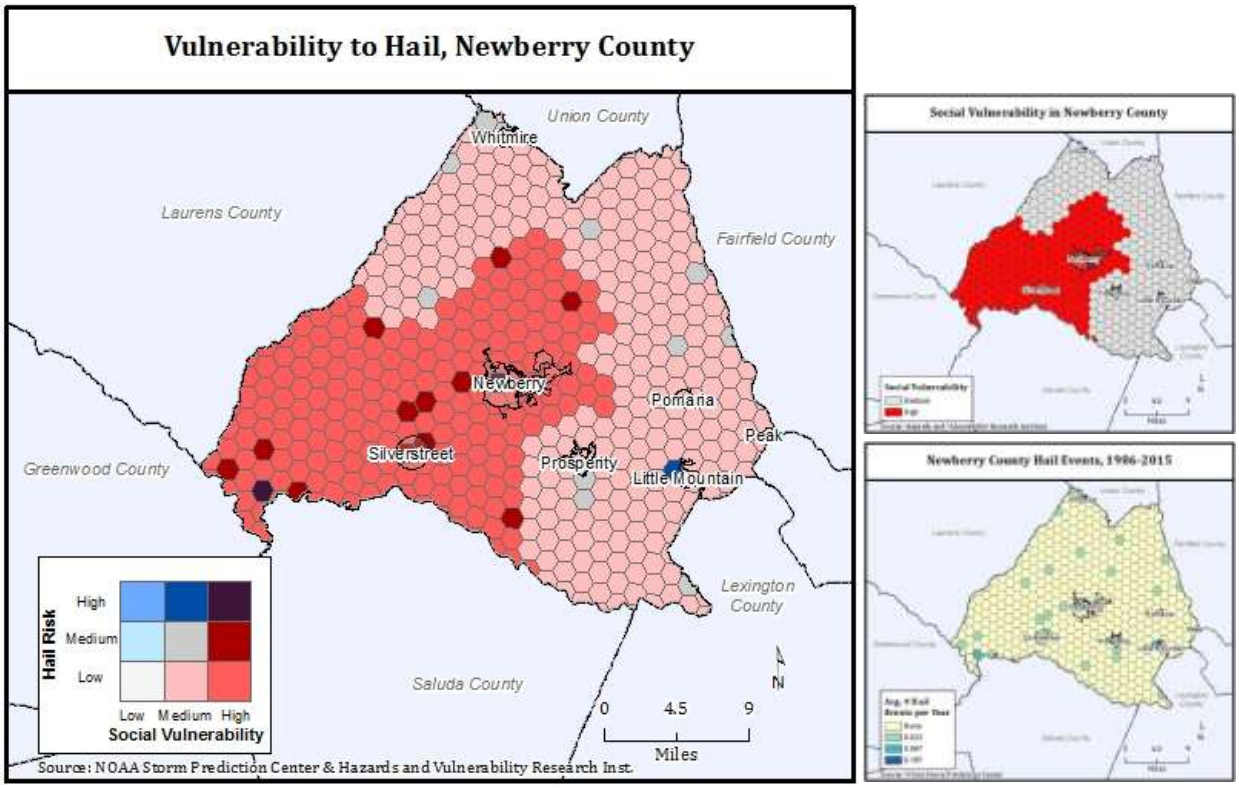


Figure 205 - Vulnerability to hail in Newberry County.

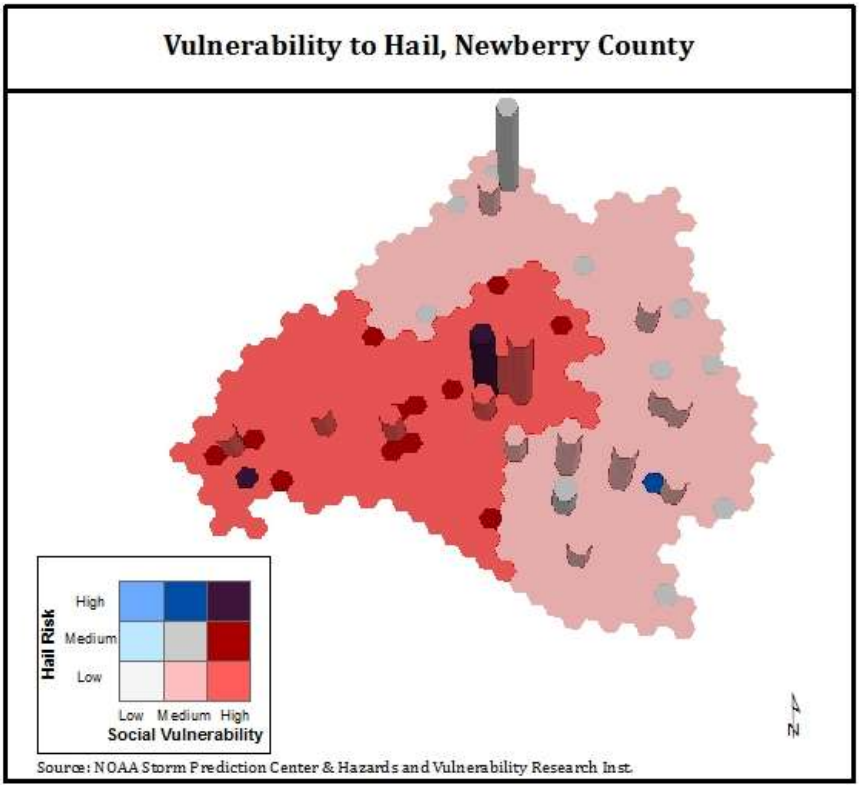


Figure 206 - Vulnerability of critical infrastructure to hail in Newberry County.

J) Fog

There are three cluster of high vulnerability to fog in Newberry County: east of the City of Newberry, southwest of Prosperity, and west along the border to Laurens County (Figure 207). These areas have more than 26.3 days of fog per year along with high social vulnerability. Around a third of the county's critical infrastructure and assets are located in this area (Figure 208).

Vulnerability statistics for fog in Newberry County	**Risk Zones**		
	Low (<19.7 days/year)	**Medium (19.7-26.3 days/year)**	**High (>26.3 days/year)**
Critical Infrastructure	5 (18%)	13 (46%)	10 (36%)
Building Stock	$1.1 billion (17%)	$3 billion (46%)	$2.4 billion (37%)
Population	8,297 (22%)	19,223 (43%)	13,049 (35%)
Population w/high social vulnerability	5,348 (25%)	14,239 (66%)	1,910 (9%)

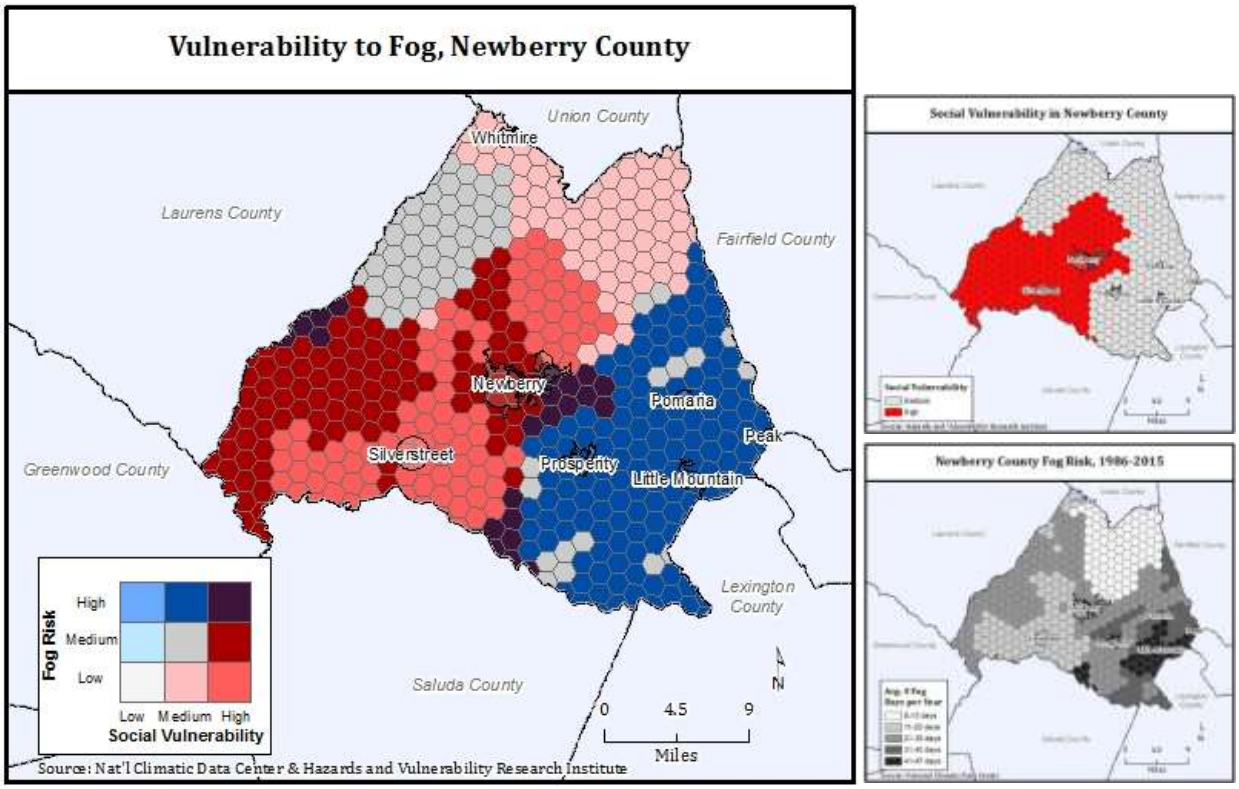


Figure 207 - Vulnerability to fog in Newberry County.

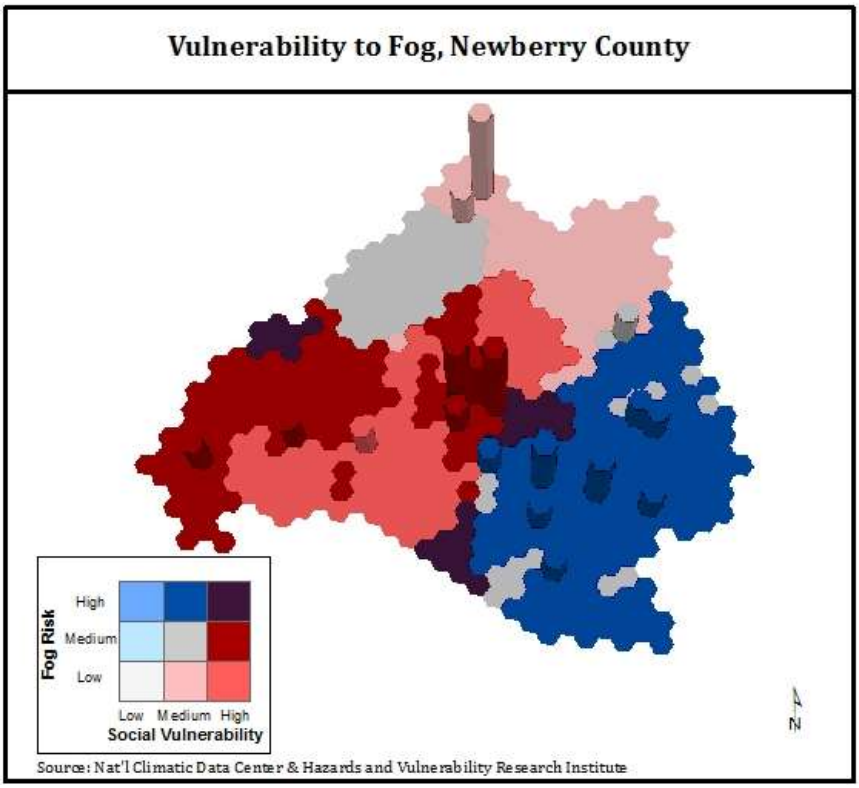


Figure 208 - Vulnerability of critical infrastructure fog in Newberry County.

K) Winter Weather & Ice Storms

The highest vulnerability to winter weather occurs in southwestern and central Lexington County (Figure 209). In these areas, high social vulnerability coincides with more than 1.7 days of winter weather per year. About 20% of the county's assets are located in these areas (Figure 210).

Vulnerability statistics for winter weather in Newberry County	**Risk Zones**		
	Low (<1.5 days/year)	**Medium (1.5-1.7 days/year)**	**High (>1.7 days/year)**
Critical Infrastructure	9 (32%)	14 (50%)	5 (18%)
Building Stock	$2.7 billion (41%)	$2.2 billion (34%)	$1.7 billion (25%)
Population	14,992 (40%)	12,810 (34%)	9,767 (26%)
Population w/high social vulnerability	12,473 (58%)	5,608 (26%)	3,416 (16%)

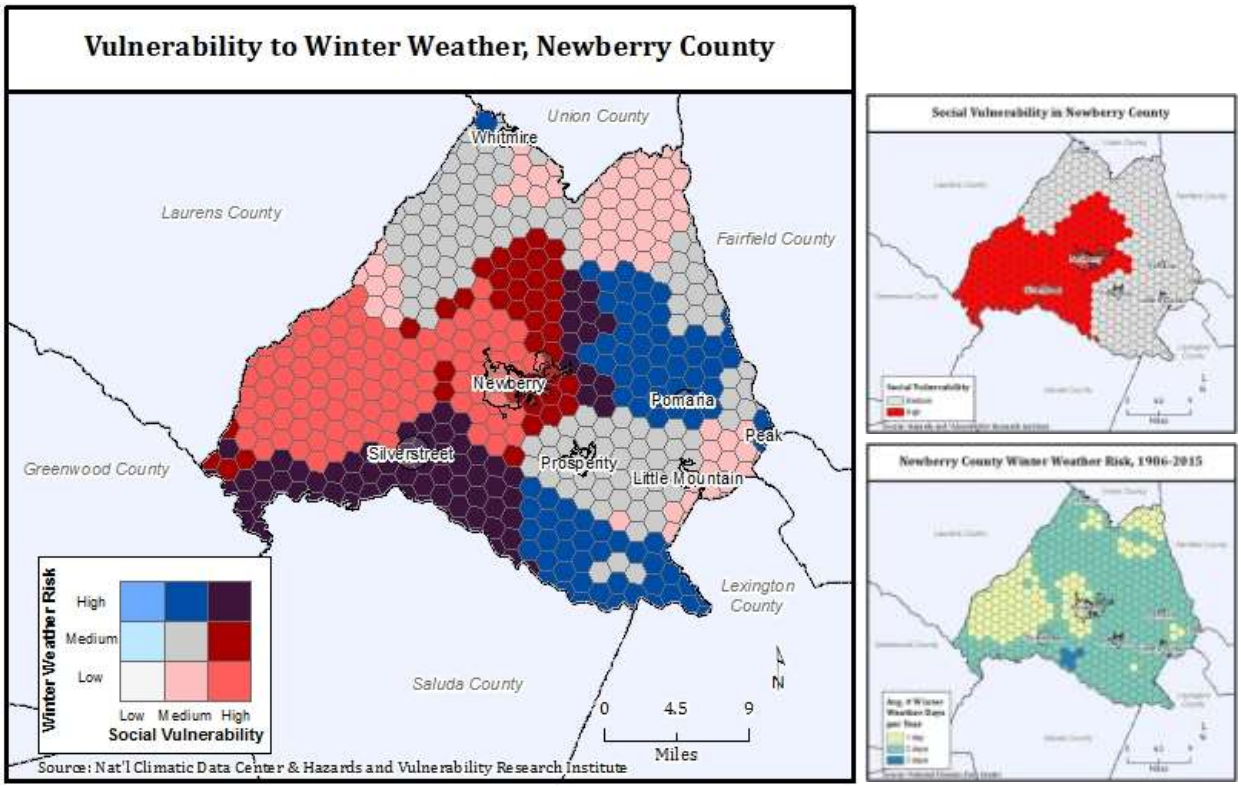


Figure 209 - Vulnerability to winter weather in Newberry County.

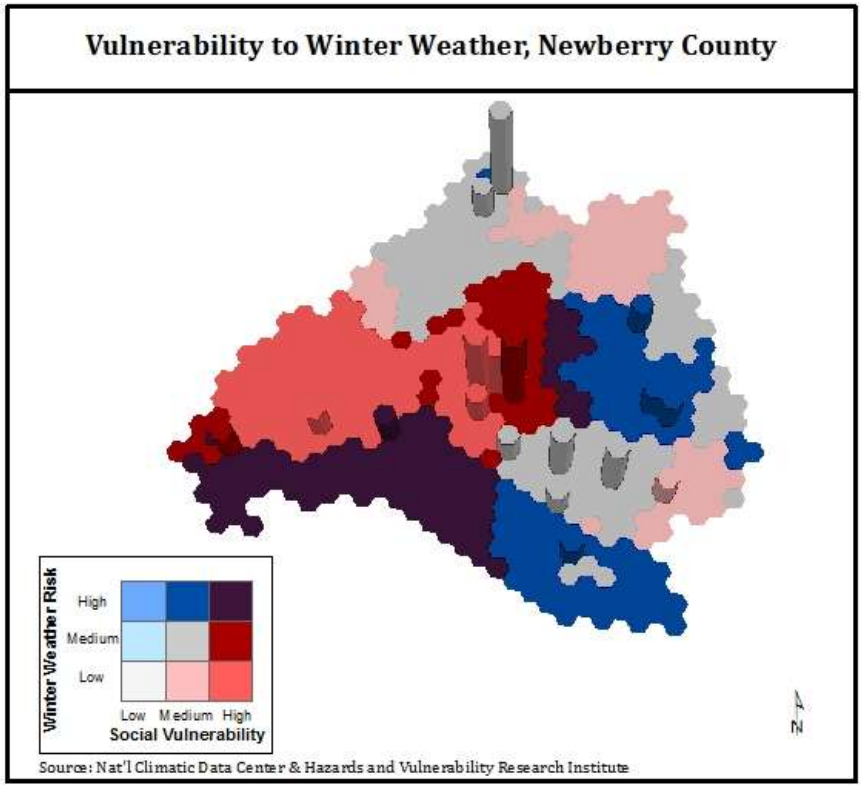


Figure 210 - Vulnerability of critical infrastructure to winter weather in Newberry County.

L) Temperature Extremes

There are two clusters where high social vulnerability and a high occurrence of cold weather (more than 53.9 days per year) overlap in Newberry County: north of the City of Newberry and west near Laurens County (Figure 211). About 15% of the county's critical infrastructure and population are located in areas most at risk from cold weather (Figure 212).

Vulnerability statistics for cold temperatures in Newberry County	***Risk Zones***		
	Low (<53.4 days/year)	***Medium (53.4-59.3 days/year)***	***High (>53.9 days/year)***
Critical Infrastructure	9 (32%)	15 (54%)	4 (14%)
Building Stock	$2.3 billion (35%)	$3.7 billion (56%)	$0.6 billion (9%)
Population	11,812 (31%)	20,672 (55%)	5,085 (14%)
Population w/high social vulnerability	2,077 (10%)	17,770 (82%)	1,650 (8%)

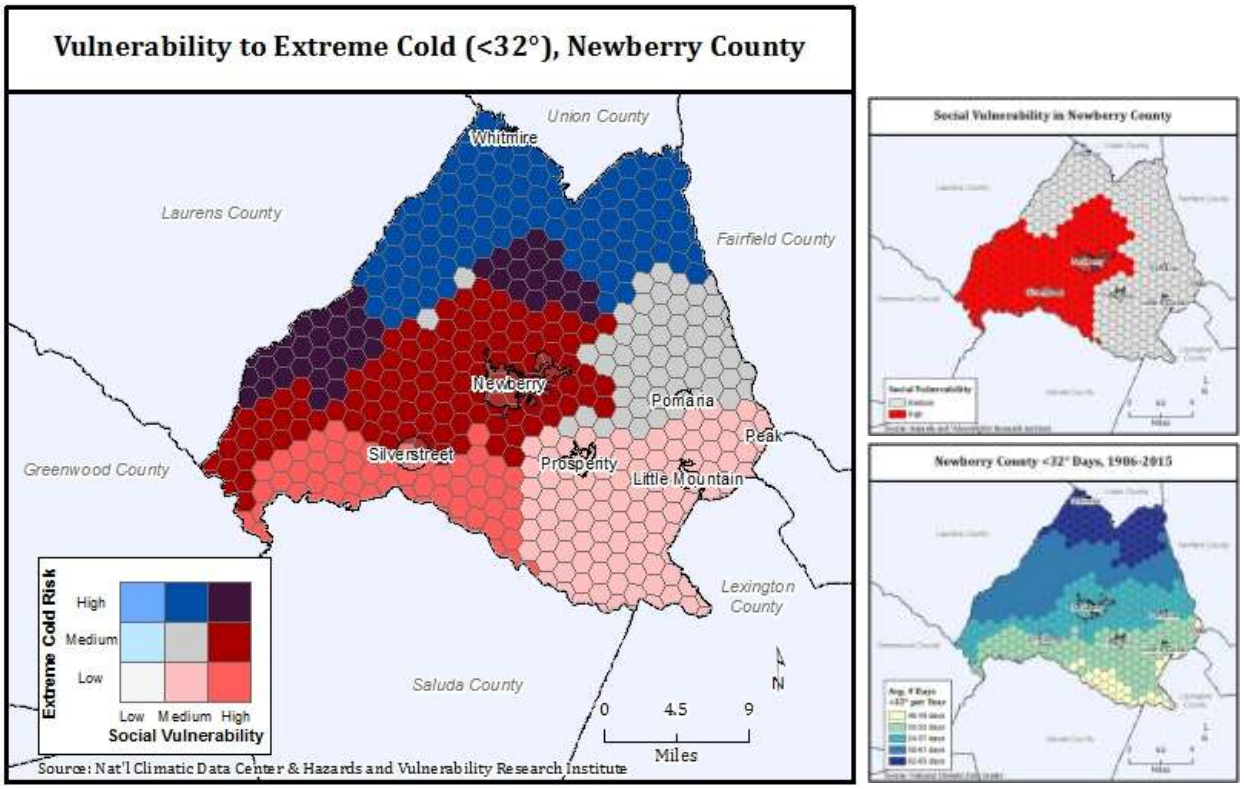


Figure 211 - Vulnerability to cold weather in Newberry County.

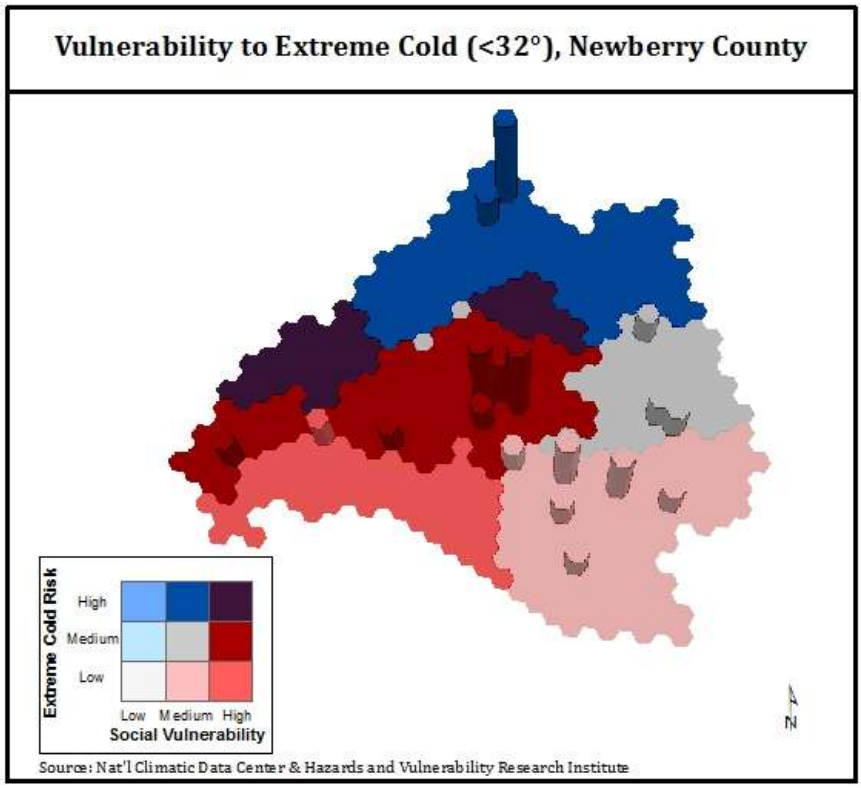


Figure 212 - Vulnerability of critical infrastructure to cold weather in Newberry County.

A smaller subset of the areas highly vulnerable to cold weather are also most vulnerable to extreme cold temperatures—here social vulnerability coincides with more than 14.6 days of extreme cold temperatures in the 95th percentile[92](Figure 213). Less than 15% of the county's assets are located in high risk areas (Figure 213).

Vulnerability statistics for extreme cold temperatures in Newberry County	**Risk Zones**		
	Low (<14.2 days/year)	**Medium (14.2-14.6 days/year)**	**High (>14.6 days/year)**
Critical Infrastructure	12 (44%)	8 (28%)	8 (28%)
Building Stock	$3 billion (46%)	$2.2 billion (33%)	$1.4 billion (21%)
Population	16,430 (44%)	13,327 (35%)	7,812 (21%)
Population w/high social vulnerability	12,385 (57%)	8,746 (41%)	366 (2%)

[92] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Newberry County.

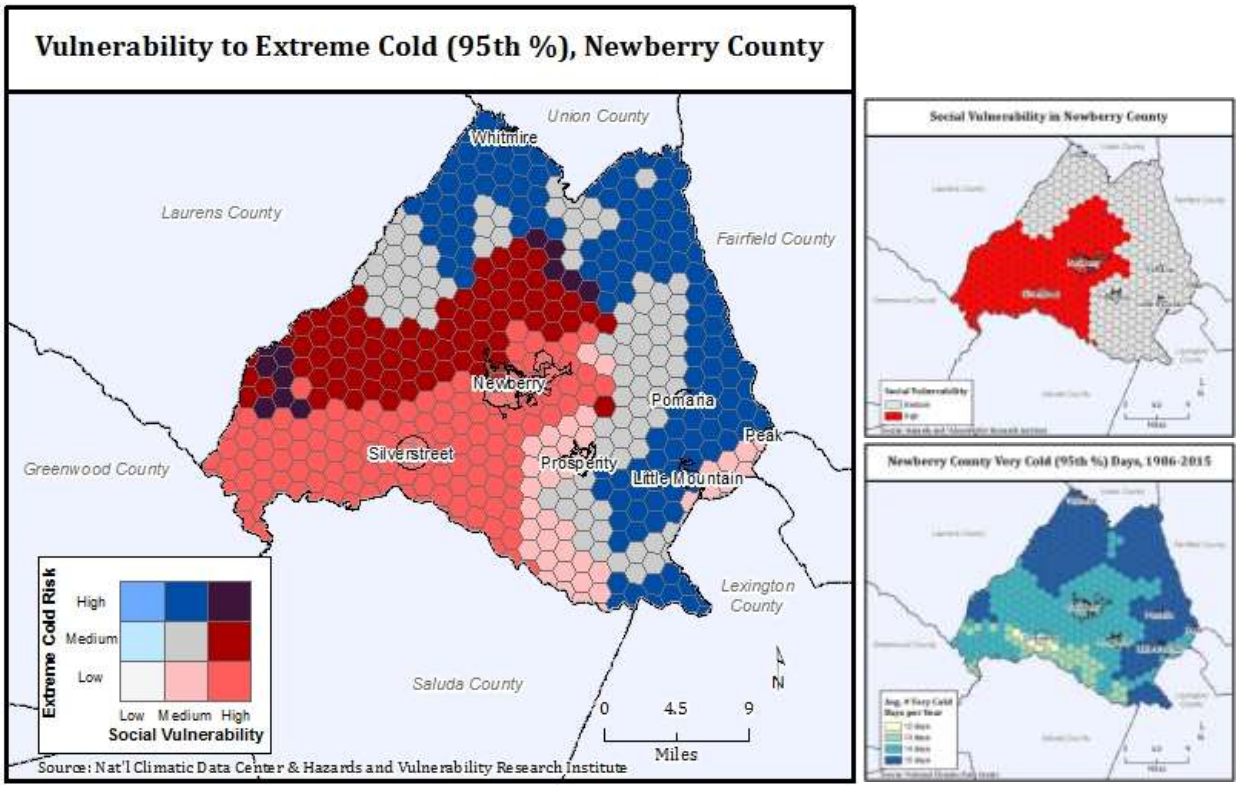


Figure 213 - Vulnerability to extreme cold temperatures in Newberry County.

Unlike most other counties in the Central Midlands, in Newberry County, the areas at risk from hot weather are largely a subset of the areas at risk from cold weather. As a result, vulnerabilities are distributed similarly. The areas most vulnerable to temperatures above 95°F are southwest Newberry County and north of the City of Newberry (Figure 214). About one quarter of the county's assets are located in areas with more than 20.4 days per year of hot weather (Figure 215).

Vulnerability statistics for hot weather in Newberry County	**Risk Zones**		
	Low (<19.5 days/year)	**Medium (19.5-20.4 days/year)**	**High (>20.4 days/year)**
Critical Infrastructure	18 (64%)	3 (11%)	7 (25%)
Building Stock	$3.8 billion (57%)	1 billion (15%)	$1.8 billion (28%)
Population	20,957 (56%)	6,275 (17%)	10,337 (27%)
Population w/high social vulnerability	17,205 (80%)	2,513 (12%)	1,780 (8%)

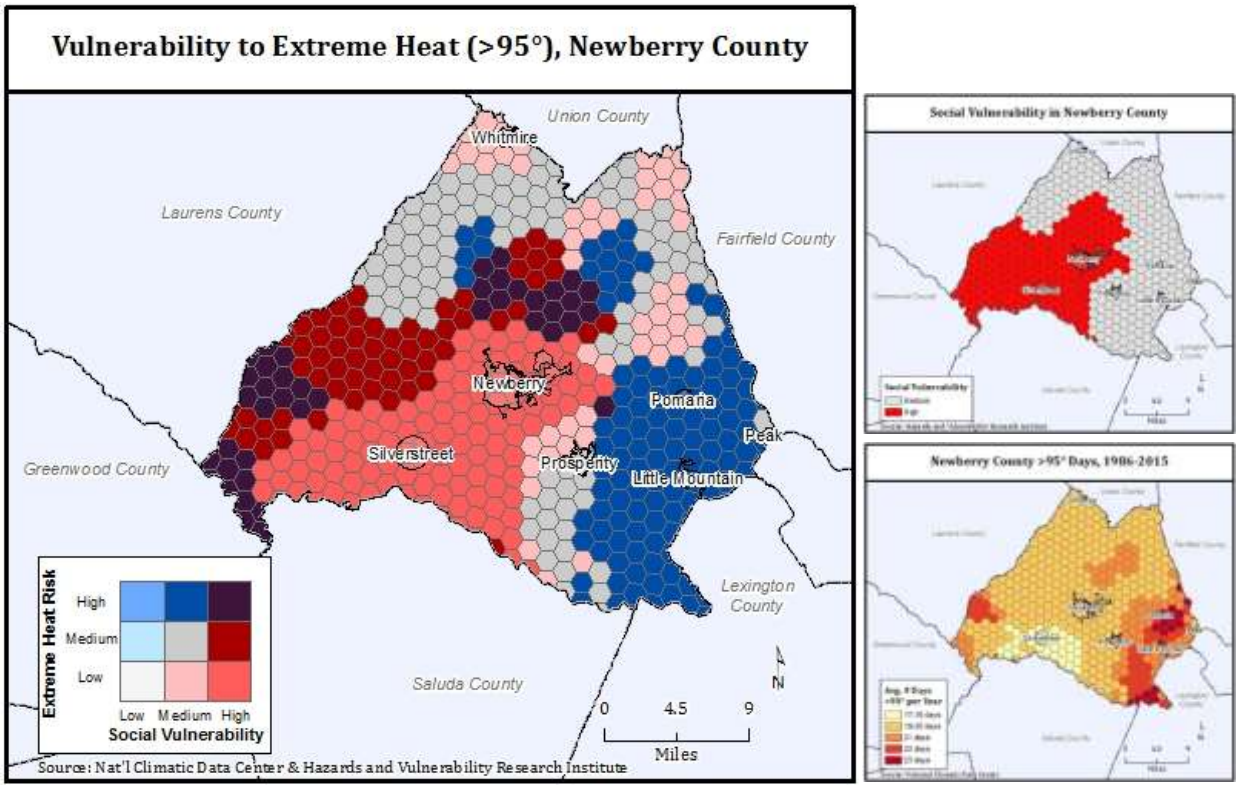


Figure 214 - Vulnerability to extreme hot temperatures in Newberry County.

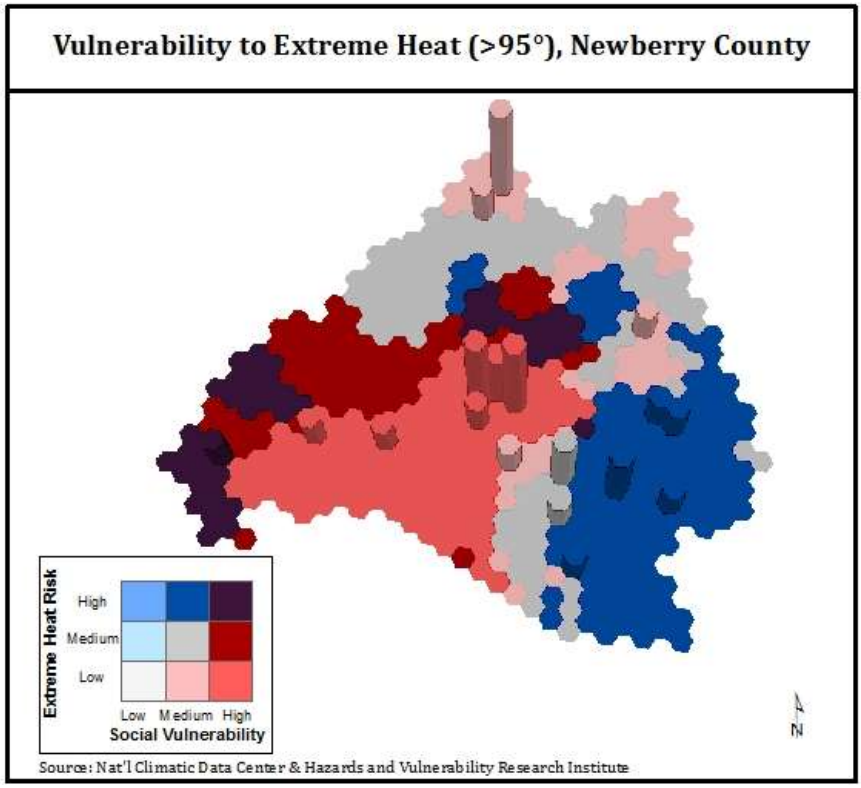


Figure 215 - Vulnerability of critical infrastructure to hot weather in Newberry County.

The area northwest of the City of Newberry is most vulnerable to hot temperature extremes, i.e. high social vulnerability coincides with more than 3.9 days per year of hot temperatures in the 95th percentile[93] (Figure 216). Less than 20% of county's critical infrastructure and other assets are located in high risk areas (Figure 217).

Vulnerability statistics for extreme hot temperatures in Newberry County	***Risk Zones***		
	Low (<3.5 days/year)	**Medium (3.5-3.9 days/year)**	**High (>3.9 days/year)**
Critical Infrastructure	6 (21%)	17 (61%)	5 (18%)
Building Stock	$1.7 billion (26%)	4 billion (60%)	$0.9 billion (14%)
Population	9,654 (26%)	20,411 (54%)	7,505 (20%)
Population w/high social vulnerability	3,189 (15%)	15,702 (73%)	2,606 (12%)

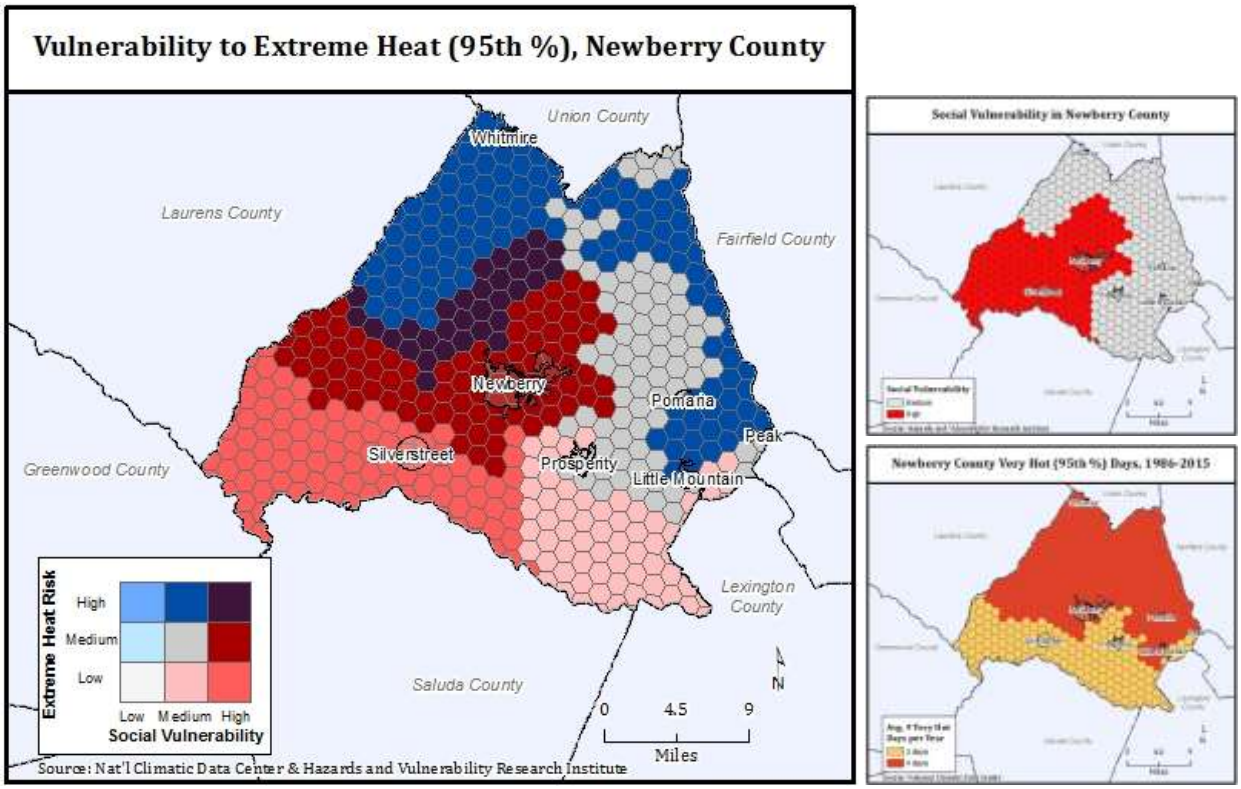


Figure 216 - Vulnerability to extreme hot temperatures in Newberry County.

[93] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Newberry County.

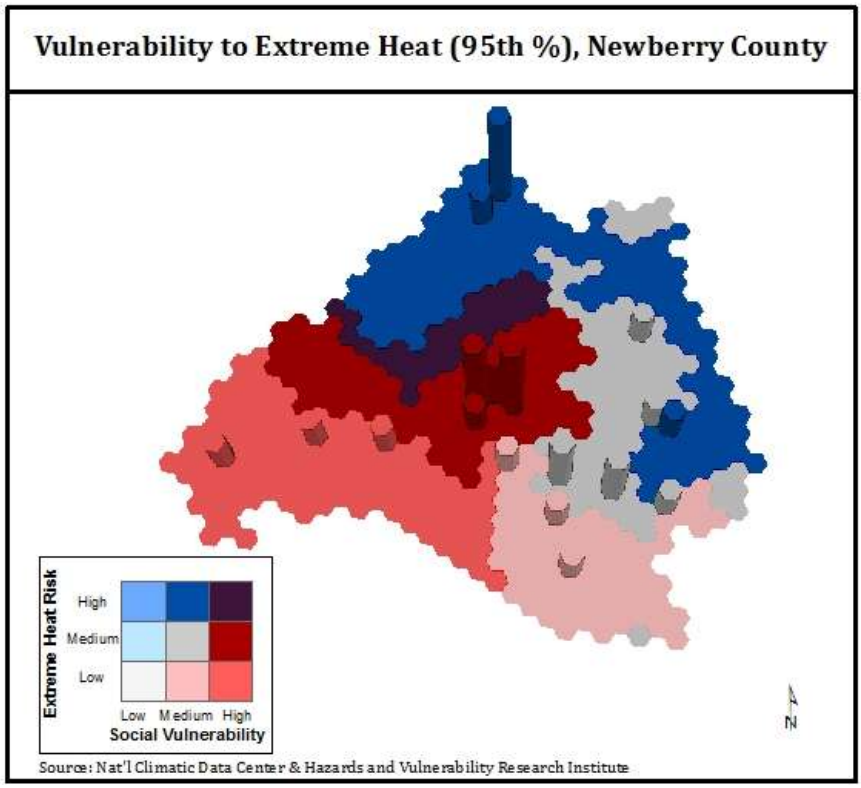


Figure 217 - Vulnerability of critical infrastructure to extreme hot temperatures in Newberry County.

M) Wildfires

Central Newberry county, clustering around the City of Newberry, has the highest vulnerability to wildfires—the result of high wildfire incidents (more than 0.07 events per year) and high social vulnerability (Figure 218). Nearly two third of the county's critical infrastructure is located in areas with high wildfire incidents (Figure 219).

Vulnerability statistics for wildfires in Newberry County	**Risk Zones**		
	Low (<0.04 events/year)	**Medium (0.04-0.07 events/year)**	**High (>0.07 events/year)**
Critical Infrastructure	7 (25%)	3 (11%)	18 (64%)
Building Stock	$1.8 billion (27%)	$0.9 billion (14%)	$3.9 billion (59%)
Population	12,931 (34%)	6,348 (17%)	18,260 (49%)
Population w/high social vulnerability	5,454 (25%)	3,347 (16%)	12,696 (59%)

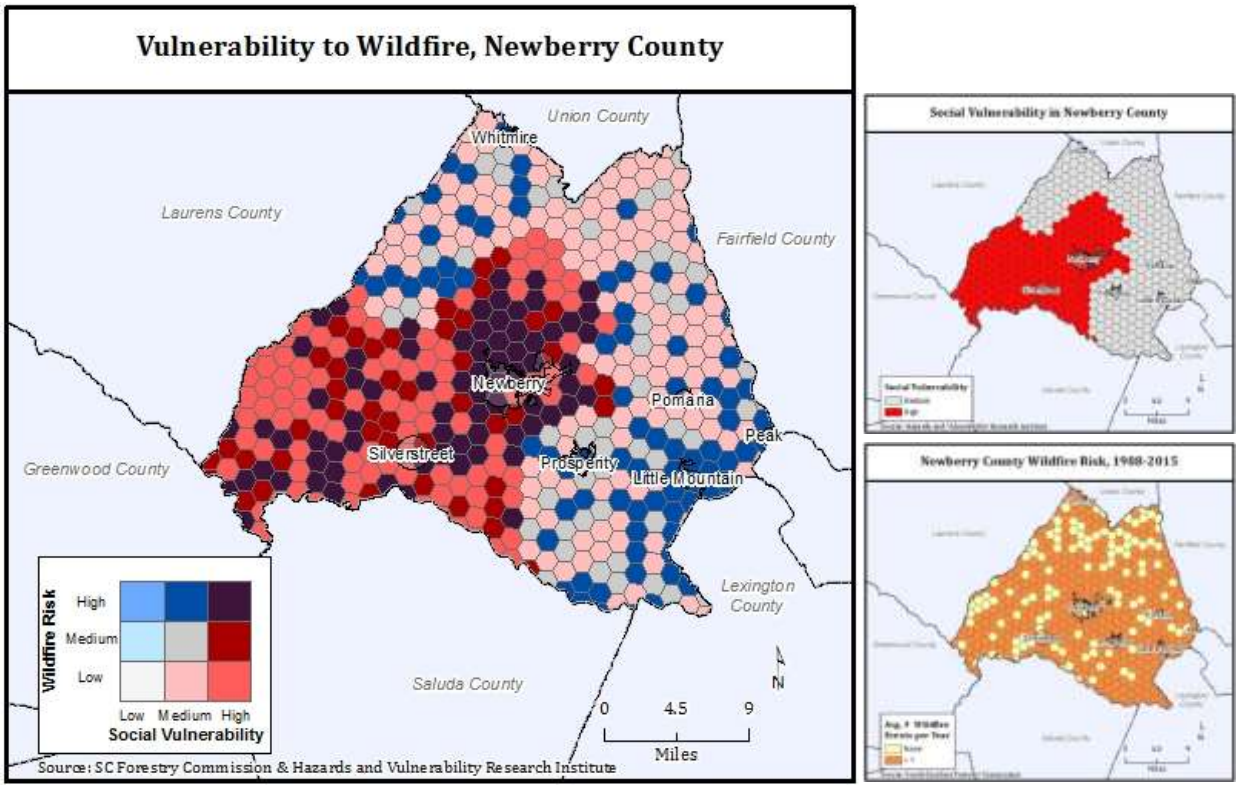


Figure 218 - Vulnerability to wildfires in Newberry County.

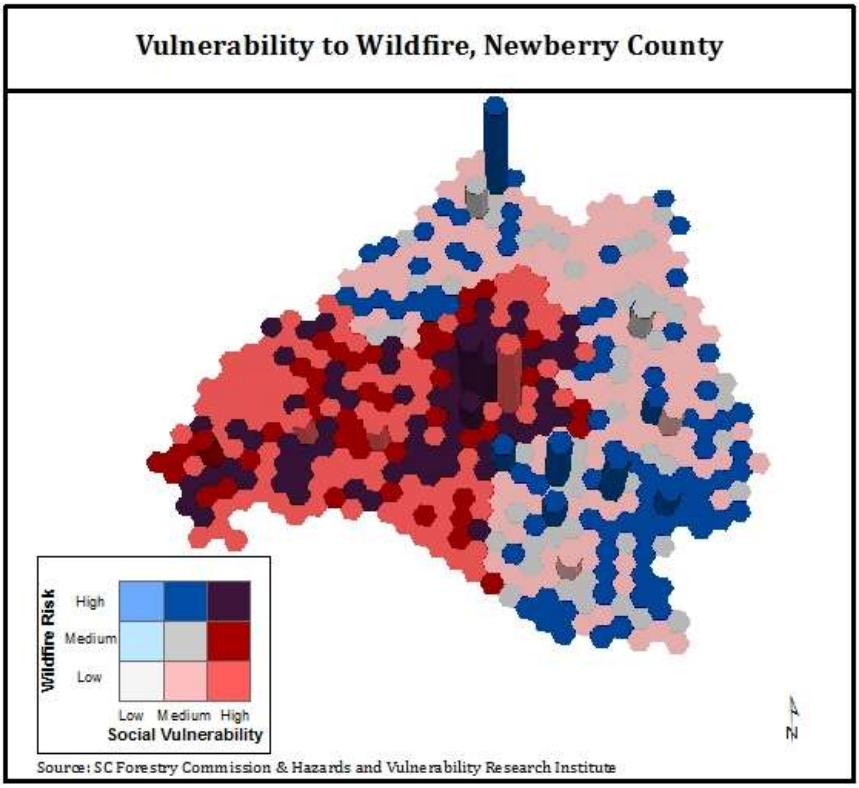


Figure 219 - Vulnerability of critical infrastructure to wildfire in Newberry County.

N) Droughts

The central and southwestern areas of Newberry County are most vulnerable to droughts, i.e. high social vulnerability and more than 23.5 weeks of drought per year coincide (Figure 220). About a third of the county's assets are located in areas with high drought risk (Figure 221).

Vulnerability statistics for droughts in Newberry County	**Risk Zones**		
	Low (<23 weeks/year)	**Medium (23-23.5 weeks/year)**	**High (>23.5 weeks/year)**
Critical Infrastructure	5 (18%)	13 (46%)	10 (36%)
Building Stock	$1.7 billion (26%)	$2.9 billion (44%)	$2 billion (30%)
Population	9,523 (25%)	14,590 (39%)	13,456 (36%)
Population w/high social vulnerability	3,310 (15%)	9,791 (46%)	8,396 (39%)

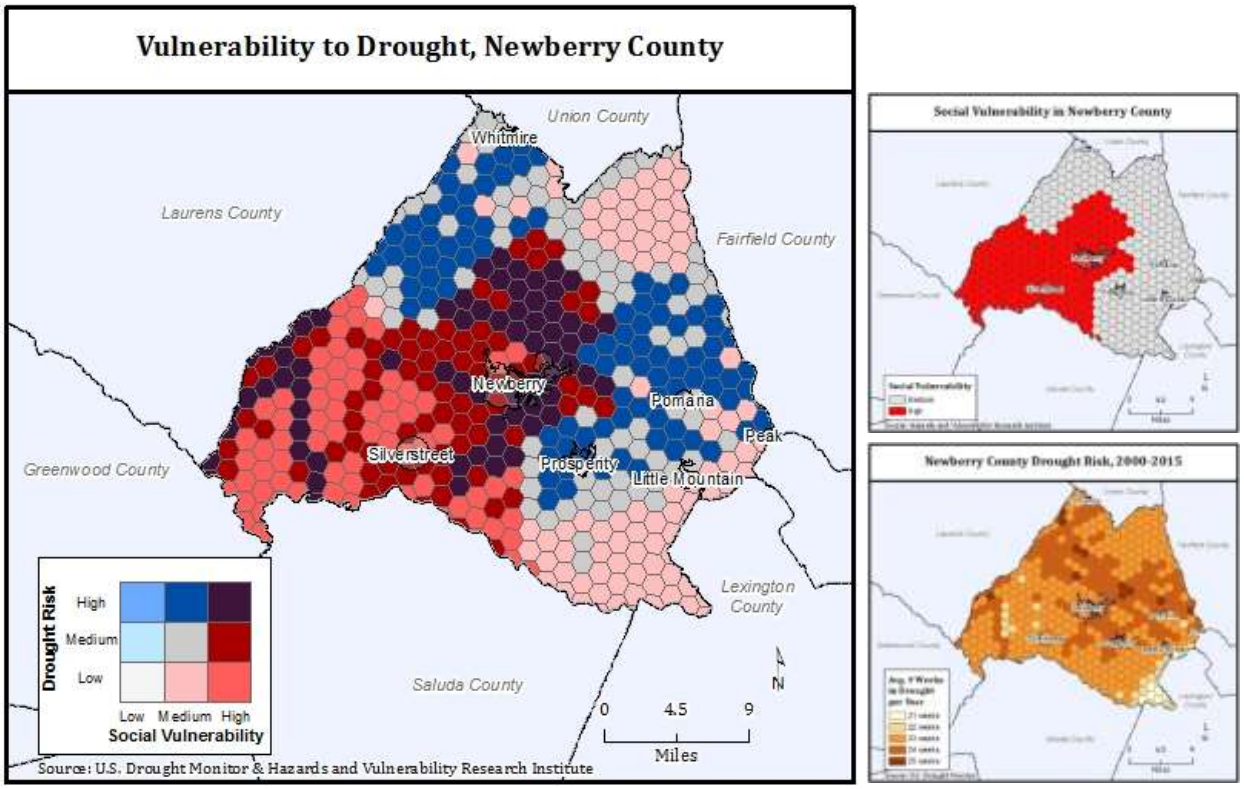


Figure 220 - Vulnerability to droughts in Newberry County.

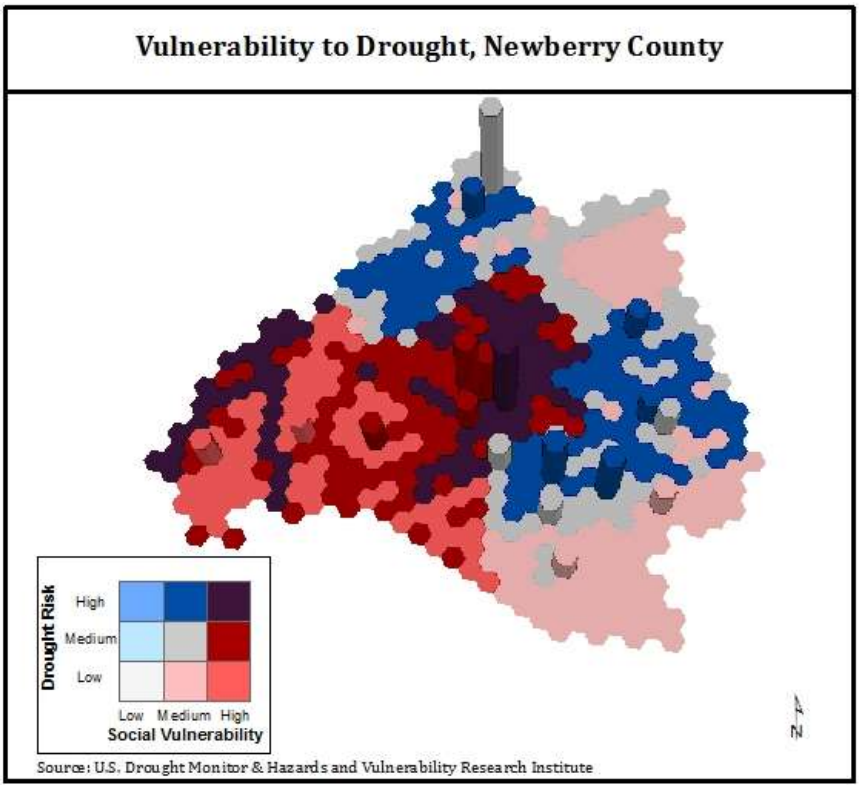


Figure 221 - Vulnerability of critical infrastructure to drought in Newberry County.

O) Earthquakes

The central part of Newberry County exhibits both high social vulnerability as well as high risk from earthquake shaking (Figure 222). According to the South Carolina Geological Survey, the worst case scenario for Newberry County is a combination of the 1886 Charleston and the 1913 Union earthquake, which would equate to an intensity category VIII (severe)[94]. About a third of the County critical infrastructure is located in areas of moderate earthquake risk (Figure 223).

Vulnerability statistics for a deterministic earthquake in Newberry County	**Risk Zones**		
	Low ($1.57\ m/s^2$)	**Medium ($1.77\ m/s^2$)**	**High ($1.96\ m/s^2$)**
Critical Infrastructure	6 (21%)	22 (79%)	n/a
Building Stock	$0.7 billion (10%)	$5.9 billion (90%)	n/a
Population	3,992 (11%)	33,577 (89%)	n/a
Population w/high social vulnerability	1,844 (9%)	19,653 (91%)	n/a
Scenario	1886 Charleston Earthquake (6.8)		

[94] SCGS, Projected Earthquake Intensities for South Carolina, Educational Series #7a. Available at http://www.dnr.sc.gov/geology/images/Equake%20intens1-pg.pdf

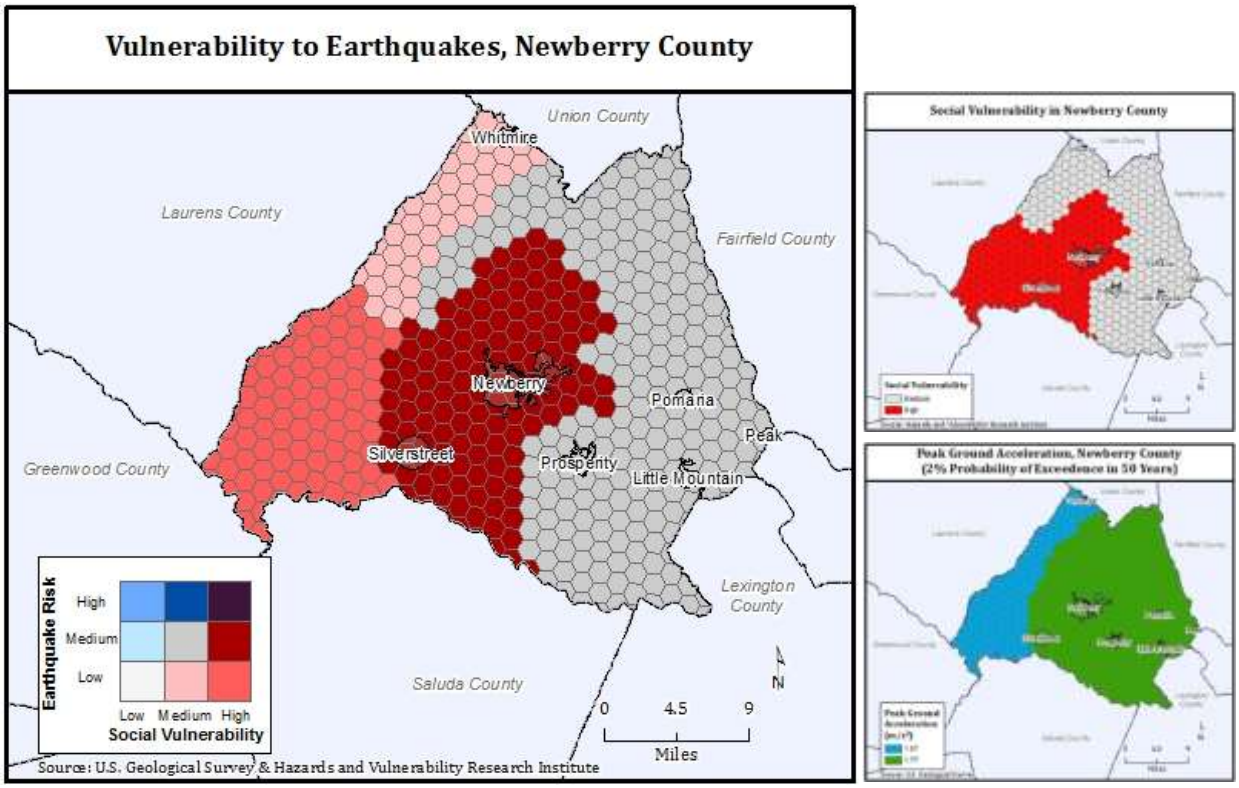


Figure 222 - Vulnerability to earthquakes in Newberry County.

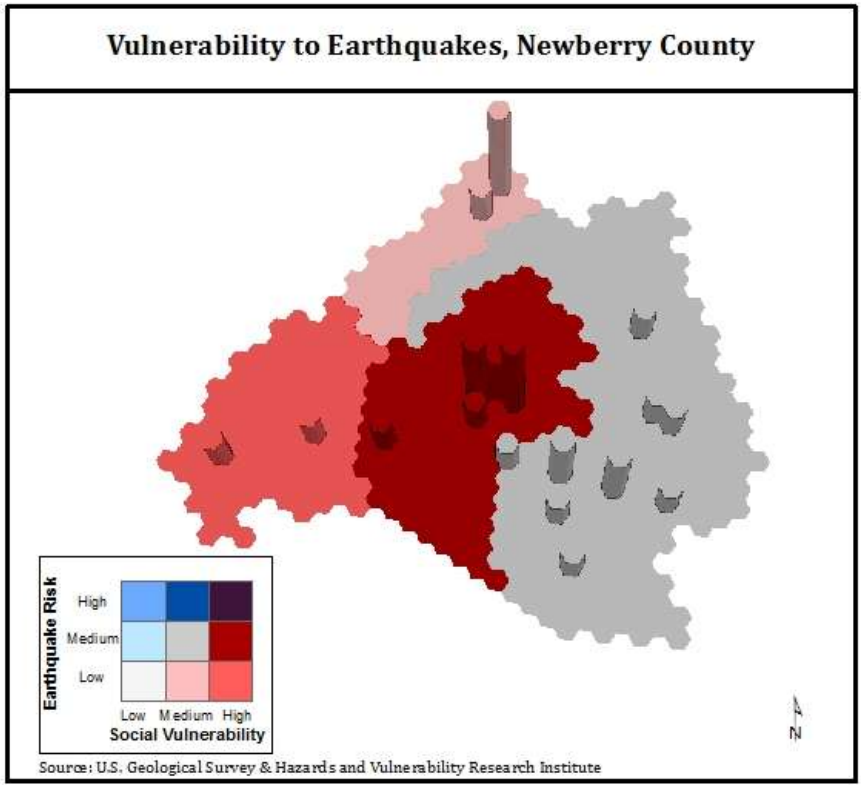


Figure 223 - Vulnerability of critical infrastructure to earthquakes in Newberry County.

If the 1886 Charleston earthquake were to occur today (Figure 224), about 95% of buildings would survive undamaged in Newberry County. About 250 buildings would be damaged moderately (1% of the county's building stock) with an estimated property damage of $13 million (nearly all of it residential). Most of the damage would occur in central and southeastern Newberry County (Figure 225). All of the critical infrastructure would be operable within a day. The modelled earthquake's most devastating impact area would encompass some of Newberry County's most vulnerable population. All estimates were derived using HAZUS-MH 2.2.

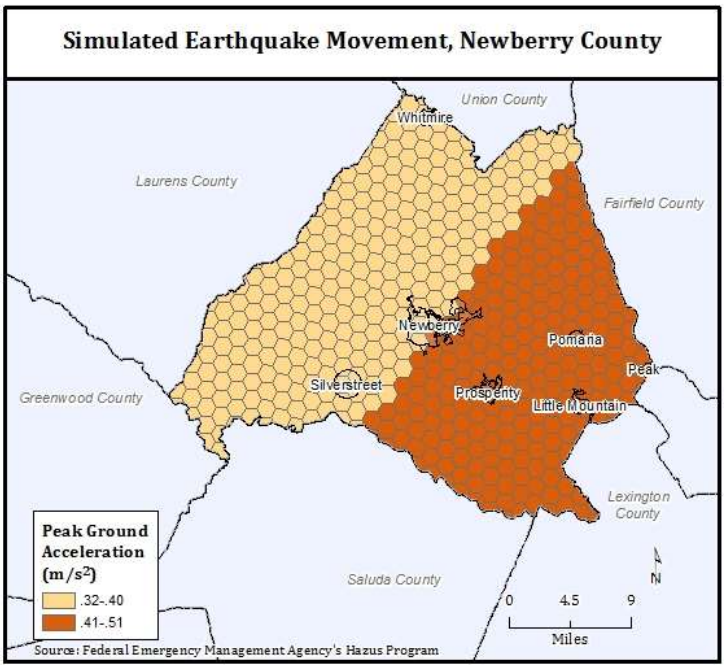


Figure 224 - Peak ground acceleration in Newberry County from a modelled 6.8 earthquake.

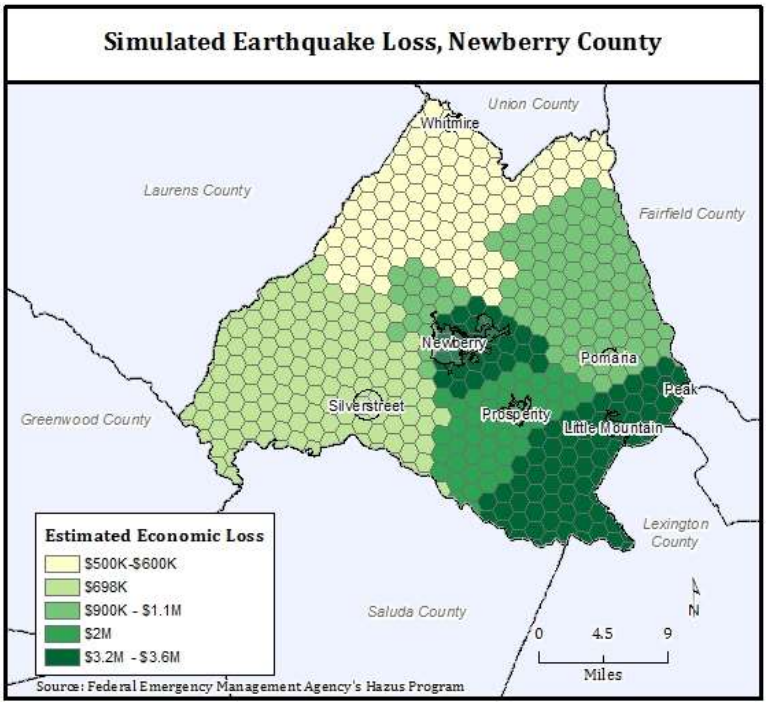


Figure 225 - Damage in Newberry County from a modelled 6.8 earthquake.

7.3 Risk Assessment

This section addresses FEMA HMP requirement 201.6(c)(2)(ii)

The risk assessment is the final summary of hazard threat, vulnerabilities and potential consequences. The combined information of vulnerabilities, hazards, and consequences creates the risk potential for Newberry County. The information generated by the vulnerability and hazard assessments provides the input for the overall risk assessment. Table 99 shows the assessment criteria and rating values (in brackets).

Categories of Risk

Low: Minimal potential impact. The recurrence and potential cost of damage to life and property is minimal.

Medium: Moderate potential impact. The potential damage is more isolated and less costly than a more widespread disaster. There is a moderate threat level to people, critical infrastructure, and/or built environment.

High: Widespread potential impact. The potential for damage is widespread. Hazards have a high recurrence interval and/or pose a high threat to residents, critical infrastructure, and/or built environment.

Table 99 - Risk assessment criteria and values.

Geographical Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk Rating
Isolated	Infrequent	Limited	Low	Low
Limited	Occasional	Moderate	Medium	Medium
Widespread	Likely	Extensive	High	High

Table 100 shows the overall risk for each hazard assessed in this plan. The risk assessment forms the basis for the development of mitigation strategies and prioritization (see Newberry County Mitigation Strategies in Section 7.5). The effectiveness and acceptance of hazard mitigation strategies depends on a community's risk awareness and risk perception. Therefore we are including the survey results conducted by the CMCOG in December 2015 revealing the perceived mitigation priorities by residents of the Central Midlands region.

The survey gauged hazard awareness, preparedness and impacts of residents in the Central Midlands region (see Appendix I for more information). The perceived risk highlights the overlaps and/or discrepancies between the objective risk (as developed in the hazard and vulnerability assessments) and subjective risk (as expressed by Central Midlands' residents).

Table 100 - Overall risk assessment for Newberry County.

Perceived Risk	Hazard	Geographic Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk
Most Important	***Winter Weather***	Widespread	Likely	Extensive	High	High (3)
Somewhat Important	***Extreme Heat***	Widespread	Occasional	Extensive	High	High (2.75)
Somewhat Important	***Droughts***	Widespread	Occasional	Extensive	High	High (2.75)
Very Important	***Tornadoes***	Isolated	Likely	Extensive	High	High (2.5)
Most Important	***Tropical Storms***	Widespread	Occasional	Moderate	Medium	Medium (2.25)
Most Important	***Wind***	Limited	Likely	Moderate	Medium	Medium (2.25)
Somewhat Important	***Extreme Cold***	Widespread	Likely	Limited	Medium	Medium (2.25)
Least Important	***Earthquakes***	Widespread	Infrequent	Moderate	Medium	Medium (2)
Very Important	***Riverine Floods***	Limited	Occasional	Moderate	Low	Medium (1.75)
Very Important	***Flash Floods***	Isolated	Occasional	Moderate	Medium	Medium (1.75)
Very Important	***Lightning***	Isolated	Likely	Moderate	Low	Medium (1.75)
N/A	***Hail***	Isolated	Occasional	Moderate	Medium	Medium (1.75)
Most Important	***Thunderstorms***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Fog***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Wildfires***	Isolated	Likely	Limited	Low	Medium (1.5)

Another important aspect of the risk assessment is identifying currently available resources that a jurisdiction has to respond to and mitigate natural hazard events. Table 101 identifies emergency services and adopted ordinances available to the County.

This section addresses FEMA HMP requirement 201.6(c)(3)

Table 101 - Services and Development Related Ordinances in Newberry County.

Name of Jurisdiction	Fire Service	Police Service	Emergency Medical Service	Adopted Zoning Ordinance	Adopted Comprehen. Land Development Regulations	Adopted Building Codes	Participates in National Flood Insurance Program
Newberry County	Provided by Newberry County Rural Fire Service	Provided by County Sheriff's Department	Provided by Countywide Emergency Medical Service	Yes	Yes	Yes	Yes
City of Newberry	Provides own fire service	Provides own police protection	"	Yes	Yes	Yes	Yes
Whitmire	Provides own fire service	Provides own police protection	"	No	Yes	Yes	Yes

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures (FEMA, 2016). Actions taken towards reducing flood hazard risk provide a compounding discount on flood insurance to residents in flood prone areas. The program tracks Repetitive Loss Properties (RLP) and Severe Repetitive Loss Properties (SRLP), which are properties that have made multiple flood insurance claims. This information is valuable to planners as it aids in allocating flood mitigation strategies.

Newberry County does not have insurance claims under the RLP and SRLP programs. The County participates in the NFIP, but not the Community Rating System (CRS) and therefore residents do not receive a discount in flood insurance premiums. The County reduces flood hazard risk with a combination of public outreach efforts, flood mitigation planning, enforcing zoning and building codes, and requiring buildings to be elevated in flood zones.

7.4 Newberry County Mitigation Goals and Objectives

This section addresses FEMA HMP requirement 201.6(c)(3)(i)

The following are general hazard mitigation goals and objectives utilized by stakeholders. These serve as broad mission statements and help guide planners in making decisions that safeguard the life and property of Newberry County citizens.

1. Develop better data for the community relating to type, impact, location and cost of the natural disaster mitigation strategies occurring in the area.
2. Increase the community's capacity to initiate and sustain emergency response operations during and after a natural disaster, thereby mitigating effects of hazardous events.
3. Enhance existing, or design new, policies and/or programs in the community to reduce the potential damaging effects of hazards without hindering other community goals or impeding hazard mitigation programming in the county.
4. Protect the most vulnerable populations, buildings and critical facilities in the town through the implementation of cost-effective, environmentally sound, and technically feasible mitigation projects.
5. Protect the public health, safety and welfare by increasing public awareness and understanding of hazards and by fostering both individual and public responsibility in the mitigation of risks through available techniques that minimize vulnerability to those hazards.
6. Increase understanding of all residents in the community about the natural hazards threatening local areas and techniques available to minimize vulnerability to those hazards.
7. Maintain the economic vitality of the community in the face of natural disasters.
8. Ensure the security of homes, institutions and places of employment throughout the community that are considered vulnerable to natural disasters.
9. Ensure that the availability and function of community infrastructure will not be significantly disrupted by a natural disaster.
10. Inventory, map and assess all flood plain structures and properties that are or may be repetitive loss properties.

The Newberry County Emergency Preparedness Agency assumed mitigation strategy responsibility for the towns of Little Mountain, Peak, Pomaria, and Prosperity. The aforementioned towns may apply for mitigation funding through Newberry County, utilizing the goals and strategies of Newberry County.

This section addresses FEMA HMP requirements 201.6(c)(3)(ii), 201.6(c)(3)(iii), and 201.6(c)(3)(iv)

7.5 Newberry County Mitigation Strategies

Table 102 - Unincorporated Newberry County Mitigation Strategies.

Newberry County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improved suppression response (tankers, dry chemicals)	Forest Fire/Wild Fires	US Forestry /State Forestry and Fire Departments	2	2 & 3	State and County Budget	$1,000,000.00	Ongoing	2021
Fire break tree & brush thinning Controlled open burning by permit (Red flag alerts)	Forest Fire/Wild Fires	State Forestry /US Forestry	3	2,3 & 6	State Budget	unknown	Ongoing	Continuous
Building & Fire Code enforcement/inspections	Forest Fire/Wild Fires	Building Department and Fire Departments	2	1,3,4 & 5	County Budget	$200,000.00	Ongoing	Continuous
Construct dry hydrant program in rural areas of county	Forest Fire/Wild Fires	Fire Board	3	1.2,4 & 8	County Budget / Grants	$10,000.00	Most completed looking for new sites	2020
Use GIS parcel-based GIS system to map, record wild fires, all hazards	Forest Fire/Wildfires	GIS Department	3	10	County Budget	$5,000.00 yearly	Ongoing	Ongoing
Develop and publish brochures & articles on techniques to reduce forest & wild fires	Forest Fire/Wild Fires	State Forestry / Emergency Management	3	1 & 5	State and County Budgets	$1,000.00 yearly	Ongoing	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	State, County, and City Government	3	5	State, County and City Government Budgets	$500,000.00	Ongoing	Ongoing
Adopt procedure for suspension of operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	County Government	3	5 & 6	County Budget	Unknown	Ongoing	Ongoing

Newberry County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Clear power line and utility easements of debris Thunder-storms (Hail, Wind, Lightning)	Thunder-storms (Hail, Wind, Lightning)	Electric Companies	2	3	Independent Companies	Unknown	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	County Government	3	3	County Budget	$50,000.00	Deferred	5 Years
Pwr./ Power line clearance with the Elec. Coop./ Duke SCE&G	Winter Snow & Ice Storms	Electric Companies	2	3	Private Companies	Unknown	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	County Public Works	1	3 & 4	County Budget	Dependent on Event	Ongoing	Ongoing
Employ van system for the elderly for emergency shelter, evacuation & communicate capacity	Winter Snow & Ice Storms	DSS	1	2	County and State Budget	Unknown	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	County Government	3	2 & 4	County Budget or Grants	$500,000.00	Ongoing	2020
Inspect dams at lakes and ponds to ensure their structural soundness	Flooding	DHEC	3	6	State Budget	Unknown	Ongoing	Ongoing
Enforce county zoning to restrict development in flood-plains	Flooding	Zoning Dept.	2	1 & 10	County Budget	$10,000.00	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Emergency Management	3	6	County Budget	NA	Ongoing	Ongoing
Develop a parcel based GIS system to track all structures & demolition permits in flood areas	Flooding	GIS	3	10	County Budget	$10,000.00	Ongoing	Ongoing
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	DHEC	3	10	State Budget	Unknown	Ongoing	Ongoing

Newberry County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Replace structurally obsolete bridges	Flooding	Public Works	3	1 & 10	County Budget / Grants	$300,000.00	Ongoing	Ongoing
Identify & contact all repetitive loss properties	Flooding	Zoning	3	1 & 10	County Budget	$10,000.00	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Zoning	3	10	County Budget	NA	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Zoning	3	1	County Budget	$5,000.00	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	Zoning	3	1,3 & 10	County Budget	NA	Ongoing	Ongoing
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	County	3	3,4 & 5	County Budget / Grants	$3,000,000.00	Deferred	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Public Works /Fire/Rescue	1	4 & 5	County Budget	$5,000.00	Completed Maintain Equipment	Ongoing
Harden utility services to facilities especially serving vulnerable populations	Tornados	County Buildings	3	3 & 9	County Budget	$3,000,000.00	Ongoing improvemen ts as building replaced or remodeled.	Ongoing
County Council declares International Building Safety Week to promote safety in built environment	Tornados	County Council	1	6	County Budget	NA	Ongoing	Ongoing
Develop Portable Water Treatment Facilities	Hurricane	Newberry County Water and Sewer Department	2	3	County Budget	$15,000,000.00	Ongoing/CPS T projects and Grants applied for as available	2025

Newberry County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Replace water storage tanks and pumps as needed	Hurricane	Newberry County Water and Sewer Department	3	3	County Budget	$3,000,000.00	Ongoing	2020
Add capacity at solid waste disposal facilities serving the county to handle more debris	Hurricane	Public Works	3	2 & 3	County Budget	$500,000.00	deferred	2021
Develop and publicize water conservation practices to respond to drought declarations	Drought	Newberry County Water and Sewer	3	6	County Budget	$1,000.00	Ongoing	2018
Add to dry hydrant program in rural areas of county	Drought	Newberry County Fire Board	2	3	County Budget	$1,000,000.00	Ongoing	2018

Table 103 - City of Newberry Mitigation Strategies

City of Newberry								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals addressed**	**Finance Source**	**Cost**	**Status**	**Time Frame**
Power line & road R-O-W clearance	Winter Snow & Ice Storms	Utilities	1	9	Utility Funds	$150k yearly	Ongoing	Ongoing
Creation of alternate debris disposal locations	Winter Snow & Ice Storms	Public Works	3	2	HMGP Funds	$100K +	Deferred	Deferred
Use van system for emergency shelter, evacuation, communication. capacity	Winter Snow & Ice Storms	N/A	3	2	HMGP Funds	$100K +	Deferred	Deferred
Procure and use mobile emergency generators at critical facilities including city hall	Winter Snow & Ice Storms	Utilities	1	2	Utility Funds	$1.5m	Completed	Completed
Primary and Secondary electric line hardening	Winter Snow & Ice Storms	Utilities	2	9	Utility Funds		Ongoing	Ongoing

City of Newberry								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals addressed**	**Finance Source**	**Cost**	**Status**	**Time Frame**
Battery operated emergency radio receivers in homes & businesses	Winter Snow & Ice Storms	Public Safety	2	2	HMGP Funds		Deferred	Deferred
Develop public information program (How to Protect Against & Respond to Natural Hazards)	Winter Snow & Ice Storms	Public Safety	3	6	HMGP Funds		Deferred	Deferred
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Utilities	1	2	Utility Funds	$250k	Completed	Completed
Adopt procedure for suspension of operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Utilities	3	3	Utility Funds		Ongoing	Ongoing
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	Utilities	1	2	Utility Funds		Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Utilities	1	2	Utility Funds	$150k yearly	Ongoing	Ongoing
Clear and clean Scotts Creek inside city limits	Flooding	Public Works	1	4	Public Works (GF)	$17,000 per	Ongoing	Every 2 yrs
Enforce city zoning to restrict development in flood-plains	Flooding	Planning, Zoning & Development	1	10	PZD (GF)		Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	City Council	3	6	City Council (GF)		Deferred	Deferred
Use city's parcel based GIS system to track all structures and demolition permits in flood areas	Flooding	Planning, Zoning & Development	3	10	County		Deferred	Deferred
Build storm water holding ponds on Scotts Creek	Flooding	Public Works	3	2	HMGP Funds		Deferred	Deferred
Extend hazardous structure buyout program	Flooding	Planning, Zoning & Development	3	4	HMGP Funds		Deferred	Deferred

City of Newberry								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals addressed**	**Finance Source**	**Cost**	**Status**	**Time Frame**
Identify & contact all repetitive loss properties	Flooding	Planning, Zoning & Development	3	10	HMGP Funds		Deferred	Deferred
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Planning, Zoning & Development	1	10	PZD (GF)		Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Planning, Zoning & Development	3	6	PZD (GF)		Deferred	Deferred
Maintain status in the NFIP	Flooding	Planning, Zoning & Development	1	2	City Council (GF)		Ongoing	Ongoing
Identify critical buildings needing hardening especially those serving vulnerable populations	Tornados	Planning, Zoning & Development	2	2	PZD (GF)		Deferred	Deferred
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Planning, Zoning & Development	3	2	PZD (GF)		Deferred	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Utilities & Public Works	1	2	Utilities & Public Works		Ongoing	Ongoing
City Council declares International Building Safety Week to promote safety in built environment	Tornados	City Council	3	6	City Council (GF)		Deferred	Deferred
Develop Back-up Mobile Water Treat. Facilities	Hurricanes	Utilities	3	2	Utility Funds		Deferred	Deferred
Replace water storage tanks and pumps as needed	Hurricanes	Utilities	1	2	Utility Funds	$5-6 m	Completed	Completed
Add capacity at solid waste disposal facilities serving the city	Hurricanes	Utilities	1	2	Utility Funds	$10.25m	Completed	Completed
Amend state drought legislation to stiffen penalties for violators	Drought	State	3	6				

City of Newberry								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals addressed**	**Finance Source**	**Cost**	**Status**	**Time Frame**
Build an additional clear well and elevated storage tank to add to the city's water supply	Drought	Utilities	1	2	Utility Funds	$5-6 m	Completed	Completed
Build ponds near city for raw water storage for fire suppression	Drought	Fire, Utilities, & Public Works	3	2	Fire Dept.		Deferred	Deferred
Explore new raw water sources for the water treatment plant	Drought	Utilities	3	2	Utility Funds		Deferred	Deferred
Publicize water conservation practices	Drought	Utilities	3	6	City Council (GF)		Deferred	Deferred
Identify critical facilities in city that need hardening to withstand earthquake	Earthquake	Planning, Zoning & Development	2	2	PZD (GF)		Deferred	Deferred
Develop speakers bureau about earthquake and other natural disaster threats to the city	Earthquake	Planning, Zoning & Development	3	6	City Council (GF)		Deferred	Deferred
Enforce construction codes to ensure that buildings can withstand earthquakes	Earthquake	Planning, Zoning & Development	1	2	PZD (GF)		Ongoing	Ongoing

Table 104 - Town of Whitmire Mitigation Strategies

Town of Whitmire								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install early warning system for major wind storms	Tornados	Town of Whitmire/ Newberry County Public Safety	1	4 & 5	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Training of Police, Fire, and EMS personnel for major storms	Tornados	Town of Whitmire/ Newberry County Public Safety	1	2, 4 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing

Town of Whitmire								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Create alternate non-land line communication with cell phones using new cell phone tower	Tornados	Town of Whitmire/Cellular phone provider	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Identify critical buildings needing hardening especially those serving vulnerable populations	Tornados	Town of Whitmire/Newberry County/ School District	2	2 & 4	Operating Budgets	<$250,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Town of Whitmire/ towns in county/ school district	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Whitmire/ Duke Power/ SCDOT	1	2, 4, 7 & 9	Capital Improve. Budgets	<$250,000	Deferred due to funding	Deferred
Town Council declares International Building Safety Week to promote safety in built environment	Tornados	Town of Whitmire.	3	5	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Power line & road R-O-W clearance	Winter Snow & Ice Storms	Town of Whitmire/Duke Power/ SCDOT	1	2, 4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Use van system for emergency shelters, evacuation and communication. capacity	Winter Snow & Ice Storms	Newberry. County Council on Aging.	1	2, 4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Procure and use mobile emergency generators at critical facilities including town hall	Winter Snow & Ice Storms	Town of Whitmire	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Primary and Secondary electric line hardening	Winter Snow & Ice Storms	Duke Power	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Battery operated emergency radio receivers in homes, businesses, police & fire	Winter Snow & Ice Storms	Town of Whitmire/ Newberry. County Public Safety	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing

Town of Whitmire								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Develop public information program (How to Protect Against & Respond to Natural Hazards)	Winter Snow & Ice Storms	Town of Whitmire/ Newberry. County Public Safety	1	5	Capital Improve. Budget	<$250,000	Deferred due to funding	Ongoing
Install surge protectors in identified critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Whitmire/Newberry. County/ School District	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Adopt procedure for suspension of operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Town of Whitmire/ School District/Newberry. County	2	2, 4 & 7	Operating Budgets	<$250,000	Deferred due to funding	Deferred
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	Town of Whitmire/ Duke Power	1	2, 4 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Whitmire/Duke Power	2	2, 4 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Clear and clean creeks inside town limits	Flooding	Town of Whitmire	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Ongoing
Adopt zoning ordinance to restrict development in flood-plains	Flooding	Town of Whitmire	1	2 & 4	Operating Budget	<$250,000	Deferred due to funding	Deferred
Declare May of each year to be Flood Awareness Month	Flooding	Whitmire Town Council	2	5	Operating Budget	<$250,000	Deferred due to funding	Deferred
Collaborate with county's parcel based GIS system to track all structures and demolition permits in flood areas	Flooding	Town of Whitmire	2	10	Operating Budget	<$250,000	Ongoing	Ongoing
Identify & contact all repetitive loss properties	Flooding	Newberry City	1	2, 4, 7 & 10	Operating Budgets	<$250,000	Deferred due to funding	Ongoing

Town of Whitmire								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Newberry City	1	4 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	Town of Whitmire	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Develop Back-up Mobile Water Treat. Facilities	Hurricanes	Town of Whitmire Public Works Dept.	2	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Replace water storage tanks and pumps as needed	Hurricanes	Town of Whitmire Public Works Dept.	2	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Add capacity at solid waste disposal facilities serving the town	Hurricanes	Town of Whitmire. and solid waste contractors	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Amend state drought legislation to stiffen penalties for violators	Drought	SC General Assembly	3	3 & 4	Operating Budget	<$250,000	Deferred due to funding	Deferred
Build an additional clear well and elevated storage tank to add to the town's water supply	Drought	Whitmire Town Public Works Dept.	2	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Build ponds near town for raw water storage for fire suppression	Drought	Whitmire Town Public Works Dept.	2	2, 3, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Publicize water conservation practices	Drought	Town of Whitmire	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Identify critical facilities in town that need hardening to withstand earthquake	Earthquake	Town of Whitmire Public Works	1	4 & 10	Operating Budget	<$250,000	Deferred due to funding	Deferred
Develop speakers bureau about earthquake and other natural disaster threats to the town	Earthquake	Newberry. County Public Safety Dept./ Whitmire Town Council	1	5	Operating Budgets	<$250,000	Deferred due to funding	Deferred
Adopt building and fire codes to ensure that buildings can withstand earthquakes	Earthquake	Town of Whitmire	1	2	Operating Budgets	<$250,000	Deferred due to funding	Deferred

8. Richland County

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

8.1 Historical Hazard Assessment for Richland County

Summary of Historic Impacts

Richland County experiences an array of natural hazards (Table 105). Prior to the 2015 flash flood disaster, hurricanes posed the highest risk to Richland County. Flood damage used to rank fairly low—even behind tornadoes--although flash flooding is a very frequent occurrence (every 6 months). Heat and drought pose serious threats to the county that are difficult to capture in loss figures or maps since their impacts tend to be vastly underreported (lack of data, secondary and/or prolonged effects on agriculture, public health, etc.). The most frequent hazard in Richland County is thunderstorms (incl. lightning, hail, and wind). While thunderstorm, lightning, wind and hail damage is non-catastrophic, their cumulative impact and high frequency is still significant (around $20 million, 88 people injured/killed). When overlaying the risk from all hazards, southern Richland County exhibits the highest level of risk (Figure 226).

In the future, the frequency and possible damage from thunderstorms and other meteorological and hydrological hazards is very likely to increase. Based on climate projections, it is anticipated that the number of cold days and perhaps also winter storms will decrease.

Table 105 - Summary of natural hazards and their impacts on Richland County since 1960.

	Direct Losses (Property and Crop)	Direct Injuries and Fatalities	# of Loss-Causing Events (# of Events)	Frequency	Recurrence Interval (in years)	Future Changes
Flooding	$3,611,182*	3*	89(103)*	191%*	0.5*	▲
Hurricane	$96,540,101	31	8(12)	22%	4.6	▲
Tornadoes	$25,402,320	21	15(34)	62%	1.6	▲
Thunderstorm	$1,685,500	9	48(62)	113%	0.9	▲
Lightning	$6,400,734	62	64(278,105)	1030019%**	several times/day	▲
Wind	$12,909,454	8	181(469)	853%	0.12	▲
Hail	$1,576,679	7	64(242)	440%	0.2	▲
Fog	n/av	n/av	n/av	>8%**	>12.6 days	◀▶
Winter Storm	$10,093,420***	1	28(45)	53%	1.9	▼
Cold	$16,925,275	4	31(31)	56%	1.7	▼
Heat	$21,263,066	6	13(13)	24%	4.2	▲
Drought	$24,345,640	0	17(17)	31%	3.2	▲
Wildfire	$366,633	0	3(1,996)	23%**	4.4 days	▲
Earthquake	0	0	0(3)	3%	39	◀▶
TOTAL	$221,057,697	149				

* excludes 2015 flood losses
**daily frequency/recurrence calculations instead of years
***excludes 2004 ice storm losses
▲ indicates that future increase in occurrence and/or impacts is likely
▼ indicates that future decrease in occurrence and/or impacts is likely
◀▶ indicates that either no change in future occurrence or impacts is expected or that a determination of future changes cannot be made.

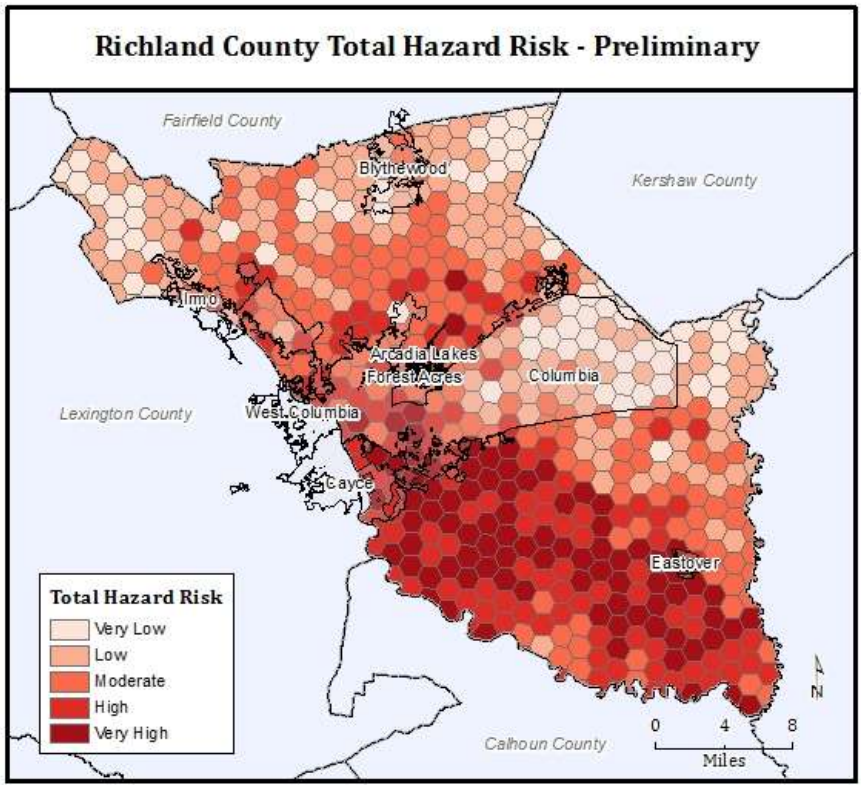


Figure 226 - Comprehensive risk profile of Richland County.

A) Flooding

What to expect: Flood damage in Richland County is mostly the result of localized heavy precipitation leading to flooding along smaller creeks and tributaries to the Broad, Congaree and Saluda Rivers as well as flash flooding due ponding and/or inadequate drainage (Table 106). Virtually every building in Richland County is at some risk from flash flooding due to drainage issues and ponding. While most buildings are not at risk from flood waters reaching first floor levels, many homes may, however, experience flooded crawl spaces, drive ways, etc. or experience secondary problems such as mold issues. In addition, the 2015 floods revealed a high risk from small pond dam failures—particularly when simultaneous and cascading dam failures occur in the same watershed.

Geographic Extent: Flooding in Richland County is not restricted to the 100-year and 500-year floodplains (Figure 228). Based on past occurrences, Richland County is very susceptible to flash flooding in low-lying areas, e.g., along Rocky Branch Creek near Main and Whaley Streets and in the Five Points area, and downstream from small dams. The Flash Flood Potential Index identifies the larger metropolitan area as having a high risk of flash flooding (Figure 229). During the 2015 event, problems also arose from backwater flooding along Saluda River tributaries when water was released from the Lake Murray Dam.

Prior to the record-breaking floods of October 2015, statistics for Richland County were as following:

Number of Events:	105
Number of Loss-Causing Events:	89
Frequency of Occurrence:	191%
Recurrence Interval:	0.5 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return period
Events on Record:	1960-2014
Flood-related Presidential Disaster Declarations:	DR-4241 (2015)
Total Losses:*	$3,611,182
Total Fatalities:*	3
Deadliest Event:*	3 fatalities (June 21, 1984)
Most Property Damage:*	$608,000 (May 5, 1991)
Most Crop Damage:*	$920,000 (June 25, 1973)

October 1-5, 2015 (DR-4241)*:

Over a five day period, an upper low pressure system combined with the remnants of Hurricane Joaquin streamed tropical moisture into South Carolina (Figure 227). The City of Columbia experienced its wettest day on record with 6.71 inches of rainfall on October 4th. Richland County experienced a record-setting 5-day rainfall total of up to 21.5 inches in some places (as reported by the Richland County Emergency Services Department's Mesonet station at Gills Creek)[95]. This record rainfall caused catastrophic flash flooding, dam breaches and failures (see section on Dams Failures) along with backwater flooding along the Saluda River due to emergency water release from the Lake Murray Dam. The last time the dam's spillway was opened was in 1969. Large areas of the City of Columbia were without drinking water due a breach in a diversions supply canal shutting down schools and economic activities in the city. According to NCDC's Storm Data, direct damage to property are estimated at about $27 million and nearly $1 million in crop damage. Two fatalities occurred. Overall damage estimates range from $1 billion[96] to $12 billion[97] for the entire impact area in South Carolina. Richland County received both individual and public assistance funding through FEMA.

* Note: The historic record for all hazards in this plan covers the time period from 1960 through 2014. An exception is flooding. Given the catastrophic, and record-setting devastation from the 2015 floods, an event narrative was included since many of the proposed flood mitigation actions in this plan are an outgrowth of this recent disaster.

[95] NWS, 2015. Historic rainfall and flooding, October 2015. Available at http://www.weather.gov/cae/HistoricFloodingOct2015.html

[96] NOAA National Centers for Environmental Information, 2016. Billion-Dollar Weather and Climate Disasters. Available at http://www.ncdc.noaa.gov/billions/events

[97] Burris, Roddie. SC Floods' Damage: $12 billion, Economists say. *The State* [Online], Columbia, SC, December 1, 2015 Available at http://www.thestate.com/news/local/article47471060.html

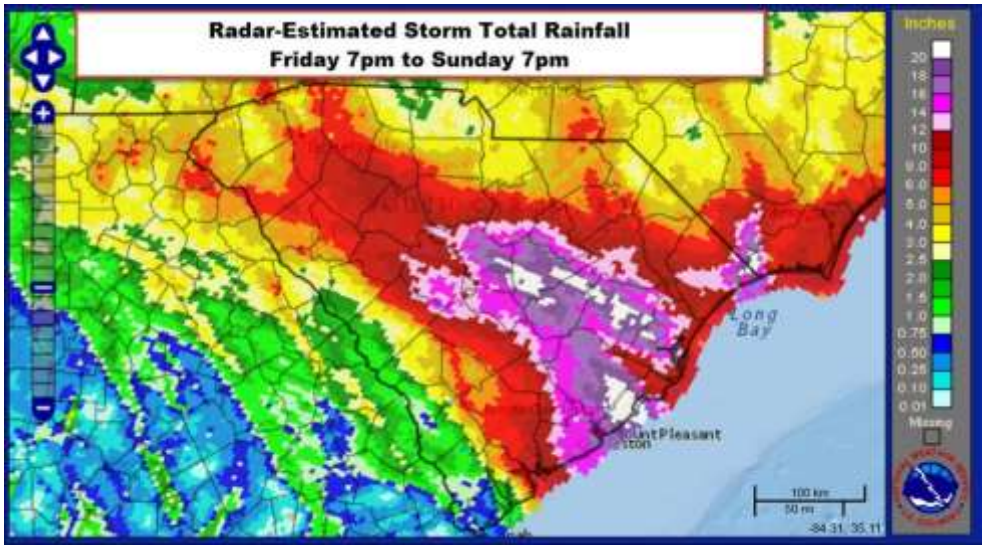
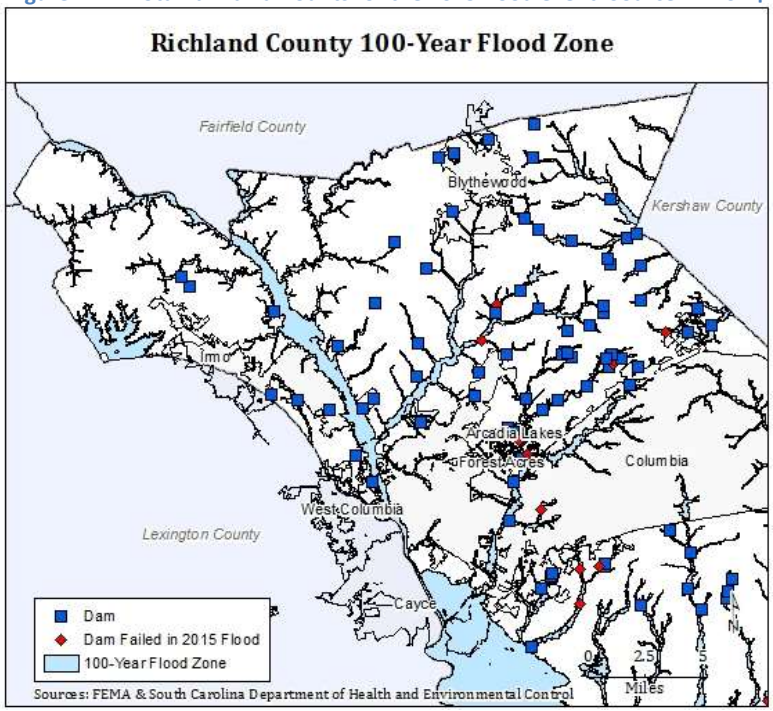
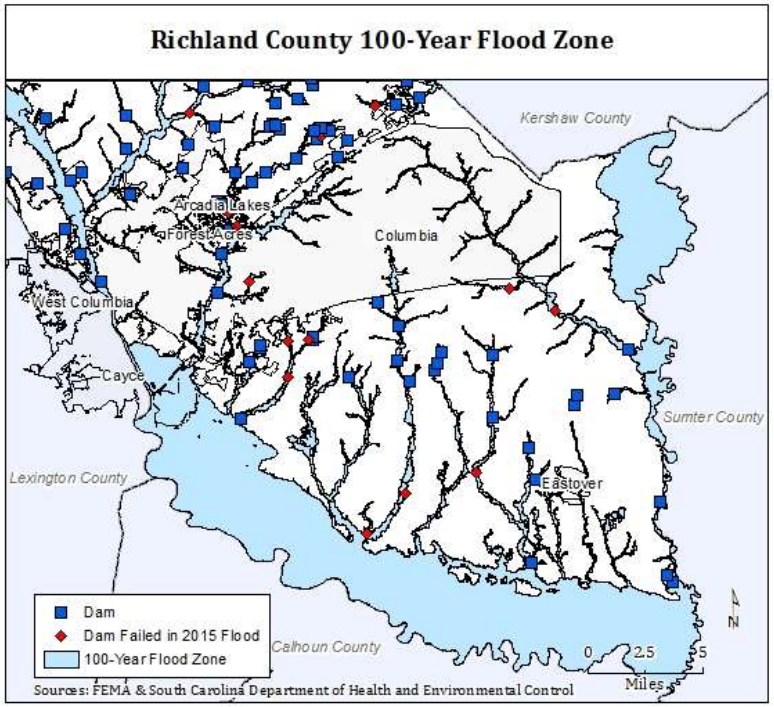


Figure 227 - Total rainfall amounts for the 2015 flood event. Source: NWS. ↑

Figure 228 – Flooding risk in Richland County. ↓





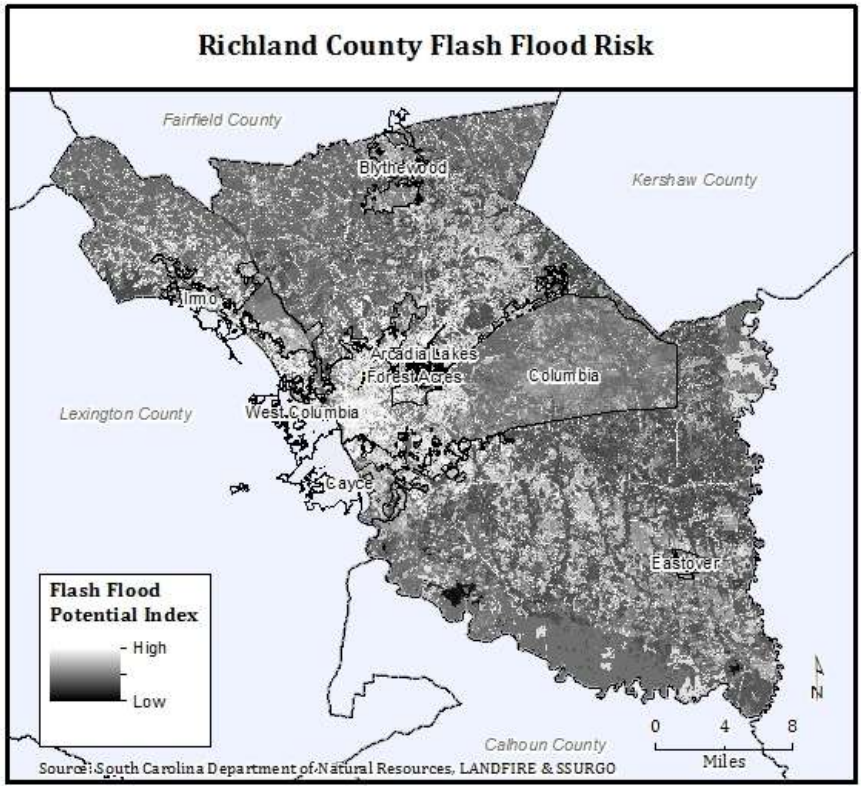


Figure 229 - Flash flood potential in Richland County.

Table 106 - Record of loss-causing flood events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/1/1964	3/31/1964	0	0	830	830		Statewide	Flooding
3/1/1966	3/5/1966	0	0	7,942	7,942		Statewide	Flooding
2/3/1973	2/3/1973	0	0	5,795	5		Statewide	Flooding
3/15/1973	3/31/1973	0	0	1,666	16		Pee Dee, Edisto, & Congaree River Basins	Flooding due to heavy rains
6/8/1973	6/25/1973	0	0	9,192	919,291		Southern & Central SC	Heavy rain, flooding
6/16/1973	6/22/1973	0	0	919	91		Central, Northern & Eastern SC	Heavy rain, flash flooding
3/12/1975	3/18/1975	0	0	4,782	478		Statewide	Heavy rains, flooding
7/13/1975	7/18/1975	0	0	611	61,115		Eastern and Central SC	Rains and flooding
7/4/1976	7/5/1976	0	0	1,040	10,401		Central SC, Lexington & Richland Counties	Flash flooding
10/9/1976	10/19/1976	0	0	45,223	45,223		Statewide	Flood
1/25/1978	1/26/1978	0	0	39,466	3		Statewide	Wind, flash flood
1/26/1978	1/31/1978	0	0	3,946	0		Statewide	Flooding
7/21/1979	7/21/1979	0	0	163,041	0		Columbia	Rain, flooding

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/15/1980	3/31/1980	0	0	3,122	3,122		Statewide	Flood
8/8/1980	8/8/1980	0	0	3,122	312		Statewide	Wind, flood
7/3/1981	7/3/1981	0	0	4,340	434		Columbia, Mayesville, & Ruby	Flash flood
1/1/1982	1/14/1982	0	0	557	55		Along Saluda, Broad, Congaree, Wateree, Lynches, & Peedee Rivers	Flooding
4/27/1982	4/27/1982	0	0	645	0		Central, Northeast, & Eastern SC	Lightning, flooding
3/17/1983	3/17/1983	0	0	25,835	2,583		Statewide	Flooding
12/6/1983	12/6/1983	0	0	3,047	30		Western, Northern & Central SC	Flood, wind
2/27/1984	2/27/1984	0	0	2,476	24		Statewide	Rain, wind, flood
6/21/1984	6/21/1984	3	0	56,962	5,696		Columbia	Rain, flood, lightning
7/26/1984	7/26/1984	0	0	2,476	24		Statewide	Wind, rain, flood
8/2/1984	8/2/1984	0	0	3,928	0		Southern, Central, & Eastern SC	Lightning, rain, flood
7/16/1986	7/16/1986	0	0	108	0		Columbia	Urban flooding
8/12/1986	8/12/1986	0	0	108,000	0		Columbia	Flash flooding
8/18/1986	8/19/1986	0	0	10,800	0		Columbia	Flash flooding
10/8/1986	10/8/1986	0	0	1,080	0		Columbia	Urban flooding
3/27/1987	3/27/1987	0	0	1,041	0		Countywide	Urban flood
5/5/1991	5/5/1991	0	0	608,352	0		Columbia	Flash flood
1/1/1993	1/31/1993	0	0	17,807	356,164		Statewide	Flooding
12/23/1994	12/23/1994	0	0	1,597	0		NE Richland	Flooding
3/7/1996	3/7/1996	0	0	7,544	0		Countywide	Flooding
6/29/2007	6/30/2007	0	0	57,088	0	>2"	Columbia	Several inches of rain fell in a two hour period that sent Rock Creek over its bank flooding the Five Points area and stranding several motorists in their vehicles. One had to be rescued that was trapped in his car.
8/7/2008	8/7/2008	0	0	2,199	0		Columbia	City police reported flooding in the Five Points area with roads closed due to several feet of water covering them.
8/25/2008	8/25/2008	0	0	21,990		2-4"	Columbia	Sheriff and public reported flash flooding across several roads with water up to **3 ft** deep closing roadways. Some vehicles were stalled but no occupants were trapped. Spotters reported 2 to 4 inches of rain within a 1 to 2 hour period from the remnants of Tropical Storm Fay.
9/9/2008	9/9/2008	0	0	5,498	0		Columbia	Police reported flooding in downtown Columbia near USC and in the Five Points area closing several roads. Water was **1 to 3 ft** deep.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
9/15/2008	9/15/2008	0	0	32,986		1-3"	Columbia	Police reported roads closed from flash flooding at Elmwood, Bull St, Olympia Ave., Bluff Rd, Whaley, and Main St with a couple of vehicles trapped in those location.
5/24/2009	5/24/2009	0	0	17,656	0	1-3"	Columbia	Police and city officials reported flash flooding in the Five Points area. Several vehicles were stranded in **2 to 4 ft** of water.
7/22/2009	7/23/2009	0	0	331,042	0	3-5"	Ft Jackson	Broadcast media and public reported torrential rains causing flash flooding in east central Lexington and west central Richland counties. Three to five inches of rain fell within a 1 to 3 hour period causing flash flooding in several areas.
12/9/2009	12/9/2009	0	0	2,207	0		Columbia	City PD reported flash flooding at Main and Whaley streets and also on Pickens street. Water levels rose to about **2 ft** causing several cars to stall when they tried to drive through the flooded areas.
12/25/2009	12/25/2009	0	0	4,414	0	2-5"	Columbia	Police reported several roads flooding in the Five Points Area with **7 ft** of water in the backyards of several homes in the Arborchase subdivision.
12/25/2009	12/25/2009	0	0	8,828	0	2-5"	State Park	Many road closures and widespread flooding along streams reported by emergency management and also a **small earthen dam breach** on Bush River Rd in the St. Andrews/Whitehall area.
5/31/2010	5/31/2010	0	0	5,428	0	1-2"	Columbia	Public reported flash flood along Rocky Branch Creek in the Whaley Mill Area of downtown Columbia. Water rose to the bottom of vehicles.
7/15/2010	7/15/2010	0	0	2,171	0	2"	Columbia	Columbia and West Columbia police reported a couple of roads temporarily closed due to flash flooding as water levels rose to **1 to 2 ft** in low lying areas.
7/26/2010	7/26/2010	0	0	13,028	0	2"	Columbia	USGS reported flash flooding in downtown Columbia along Rocky Creek where the gage was **3 ft over** flood stage. Around 2 inches of rain fell within an hour.
8/18/2010	8/18/2010	0	0	23,885	0		Columbia	USGS and city police reported flooding in downtown Columbia in the Five Points area and also the USC campus near Main and Whaley Sts. Water levels were up to **4 ft** deep in some areas and spilled over into some apartments and also Walgreens in Five Points. The Rocky Branch Creek gage crested at **10.7 ft** which is 3.5 ft above flood stage. Several vehicles became trapped when they tried to drive through the area.
8/5/2011	8/5/2011	0	0	21,049	0		Columbia	Columbia police reported multiple roads and intersections flooded and closed due to high water levels of **2 to 5 ft**. These included Main and Whaley, Gervais and Laurens, Santee and Harden, and Rosewood and Assembly. A vehicle was submerged at Key Rd
8/11/2011	8/11/2011	0	0	46,308	0	2-4"	Columbia	Heavy rains from training thunderstorms produced flash flooding in downtown in the Maxcy Park, Five Points, and USC areas. Water levels rose to as high as **4 to 6 ft** in some areas submerging a few vehicles.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
9/21/2011	9/21/2011	0	0	5,262	0	2-4"	Columbia	Flooding occurred along Rocky Branch Cr. The gauge at Pickens St. crested at 9.5 ft. and the gauge at Whaley St. crested at **10.5 ft**. Flooding occurred in the Five Points area especially in the vicinity of Walgreens. Flooding also occurred at the intersection
9/23/2011	9/23/2011	0	0	36,836	0	2-4"	Columbia	Reported multiple areas of flooding with several cars stuck in high water in downtown. Sewers were overflowing in the Rosewood community. Minor flooding was reported in the Five Points area. Flooding also occurred along Rocky Branch Creek especially.
9/25/2011	9/25/2011	0	0	25,259	0	1-3"	Columbia	River gage along the Rocky Branch Creek near Blossom and Pickens Sts crested at **12.2 ft**. Flood stage is 7.2 ft. Several cars were under water and a few people had to be rescued.
9/25/2011	9/25/2011	0	0	126,293	0	3.24"	Columbia	The observer at USC reported 3.24" of rain fell in just an hour at the USC rain gage.
9/25/2011	9/25/2011	0	0	84,196	0	1-3"	Columbia	Numerous reports of flooding and road closures throughout the city.
5/16/2012	5/16/2012	0	0	10,311	0		Columbia, Owens Airpt	Highway patrol reported flooding along Bluff Rd and South Beltline closing highways.
5/16/2012	5/16/2012	0	0	10,311	0		St Andrews	Highway patrol reported flooding along Hwy i-277 south bound and Sunset Dr.
5/16/2012	5/16/2012	0	0	2,062	0		Columbia	Police reported flooding at I-277 and Bull St.
6/11/2012	6/11/2012	0	0	1,031	0		Columbia	Kangaroo gas station reported road closed at the intersection of Whaley St and Main St in downtown Columbia.
7/1/2012	7/1/2012	0	0	4,124	0		Olympia Mills	Columbia PD reported flash flooding at Main and Whaley and in the Five Points area. Water **was 2 to 3 ft** deep at Main and Whaley.
7/10/2012	7/10/2012	0	0	2,062	0		Columbia	USGS webcam and river gages showed flash flooding at the intersection of Whaley and Main Sts. Water was **2 to 4 ft** deep.
7/10/2012	7/10/2012	0	0	4,124	0		Columbia	Rocky Branch Creek peaked at **9.4 ft** at Blossom and Pickens St during the flash flood event. Flood stage is 7.2 ft. Flash flooding occurred in the Five Points area and below the USC soccer stadium at Main and Whaley.
7/10/2012	7/10/2012	0	0	2,062	0		Columbia	Rocky Branch Creek peaked at **10.7 ft** during the flash flood event. Flood stage is 7.2 ft.
8/9/2012	8/9/2012	0	0	1,031	0		Olympia Mills	Flash flooding from heavy rains occurred below the USC soccer stadium at the intersection of Main and Whaley Sts. Water depths rose to **2-3 ft** at the intersection.
8/23/2012	8/23/2012	0	0	3,093	0		Columbia	The USGS gage near the intersection of Pickens and Blossom St reached **7.66 ft**. Flood stage is 7.2 ft. This produced flash flooding in the Five Points area.
8/23/2012	8/23/2012	0	0	1,031	0		Olympia Mills	Flooding occurred at the intersection of Main and Whaley St and along Main St. The USGS gage reached **7.55 ft**. Flood state is 7.2 ft.
5/6/2013	5/12/2013	0	0	1,016	0	2-4"	Hopkins	Gadsden River gage on the Congaree went **3 ft** above flood stage causing minor flooding of low lying areas along the river.
5/7/2013	5/9/2013	0	0	3,049	0	2-4"	Arthurtown	Congaree National Park reported flooding of

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
								several areas within the park closing areas to tourists. The lower boardwalk was covered with several feet of water and portions of the upper boardwalk near Lake Weston even became submerged with several inches of water. The upper boardwalk is on average 8 ft above the ground.
5/21/2013	5/21/2013	0	0	2,032	0		Olympia Mills	USGS camera showed flash flooding at Main and Whaley with **2 to 4 ft** of water flooding the area.
6/25/2013	6/25/2013	0	0	1,016	0		Woodfield	Columbia PD reported flooding in areas around Two Notch Rd around the 9000 block.
7/11/2013	7/11/2013	0	0	2,032	0		Columbia	Rocky Branch USGS gauge went above flood stage to **8.98 ft**. One to two feet of water flooded the area.
7/17/2013	7/17/2013	0	0	2,032	0		Columbia	Flood waters rapidly covered the roads near Main and Whaley and rose to about **2 ft** in depth. Flooding observed on the USGS webcam.
7/21/2013	7/21/2013	0	0	18,292	0	2-5"	Olympia Mills	Flash flooding from heavy rains produced 2" of rain in an hour over downtown Columbia closing several roads. Water levels rose to **4 ft** over some roads, especially at the intersection of Main and Whaley Sts.
7/21/2013	7/21/2013	0	0	2,032	0	2-5"	Columbia	USGS stream gauge along Rocky Branch Creek at Pickens St crested at **9.74 ft**. Flood stage is 7.2 ft. This is the fourth highest reading at the site. The record is 11.08 ft.
7/21/2013	7/21/2013	0	0	2,032	0	2-5"	Olympia Mills	The USGS gauge along Rocky Branch Creek at the intersection of Main and Whaley Sts rose to **11.02 ft**. Flood stage is 7.2 ft.
7/21/2013	7/21/2013	0	0	2,032	0	2-5"	Olympia Mills	The USGS stream gauge along the Rocky Branch Creek at the intersection of Main and Whaley Sts rose to **11.73 ft**. Flood stage is 7.2 ft. This is the 3rd highest flood level at this site. The record is 12.39 ft.
7/21/2013	7/21/2013	0	0	12,195	0	2-5"	Eau Claire	Local TV station reported flooding in Earlwood Park along Smith Branch Creek. The creek was out of its banks and the water was **3 to 4 ft** deep in the park.
7/21/2013	7/21/2013	0	0	2,032	0	3.48"	Forest Acres	SC climate office employee reported 3.48" of rain in approximately 2 hours in the Forest Acres community. Urban and small stream flooding occurred along with flash flooding in Columbia.
8/6/2013	8/6/2013	0	0	24,389	0		Blythewood	Received a social media report of a small pond **dam failure** causing flooding of roads southwest of Blythewood. Blythewood fire department confirmed that Hwy 21 along with several other roads were closed due to the failure.
1/10/2014	1/10/2014	0	0	1,000	0		Columbia	The USGS webcam showed **1 to 2 ft** of water flooding the intersection of Whaley and Main Sts from the Rocky Branch Creek flowing across the roadway. Other roads in the Five Points area also had **1 to 2 ft** of water for a short period of time.
5/31/2014	5/31/2014	0	0	2,000	0		Columbia	Flooding occurred at Rocky Branch Creek and Pickens St. The creek crested at **8 ft** at 345am EDT.
5/31/2014	5/31/2014	0	0	2,000	0		Columbia	Flooding occurred along the Rocky Branch Creek at Main and Whaley Sts. The creek crested at **7.8**

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
								ft around 4am EDT.
8/9/2014	8/9/2014	0	0	2,000	0		Olympia Mills	USGS river gage at the Rocky Branch Creek at Blossom and Pickens Sts reached **9.19 ft** at 930pm. Flood state is 7.2 ft.
8/9/2014	8/9/2014	0	0	2,000	0		Columbia	Rocky Branch Creek at Main and Whaley Sts peaked at **10.36 ft** at 945pm. Flood stage is 7.2 ft.
8/9/2014	8/9/2014	0	0	14,000	0		Columbia	Public reported a vehicle flooded at the intersection of Main and Whaley Sts with water **4 ft** above the road covering the hood of the vehicle. Four occupants had to be rescued with no injuries.
8/12/2014	8/12/2014	0	0	1,000	0		Denny Terrace	SCHP reported road flooding on Broad River Rd between St. Andrews and Irmo.
8/12/2014	8/12/2014	0	0	1,000	0		Pontiac	SCHP reported road flooding on Two Notch Rd east of Clemson Rd.
8/31/2014	8/31/2014	0	0	4,000	0	2'	Columbia	Riverine flooding occurred along Rocky Branch Creek from the intersection of Blossom St and Pickens St downstream to the intersection of Whaley St and Main St. The gauge near Pickens St crested at **9.07 ft** at 530 pm EDT. The gauge near Whaley St crested at **9.89 ft** at 546 pm EDT. Flood stage at both gauges is 7.2 ft.
9/7/2014	9/7/2014	0	0	32,000	0		Columbia	Heavy rains produced flash flooding at Main and Whaley St, around the Fairgrounds, and on Rosewood just east of Assembly St. Water levels rose to **4 ft** flooding several vehicles.
TOTAL		**3**	**0**	**$2,197,343**	**$1,413,839**			

*No magnitude information indicates flood height or rainfall amounts were unavailable.

Dam Failures

There are 113, largely privately own, dams in Richland County. The vast majority of these dams are small pond/recreational pond dams.

Lake Murray/Saluda Dam: The dam is located on the Saluda River, approximately 10 miles west of the City of Columbia, near the towns of Irmo, Lexington and Chapin. The Saluda River drains about 2,420 square miles above the dam and into Lake Murray to power the hydroelectric plant. State Highway, SC Route 6, runs atop of the dam. The dam is a 7,800 ft long earthen fill dam with additional steel sheet pile wall, a backup dam and emergency spillway with six Tainter gates. The backup dam was added during a seismic remediation project in 2005. The spillway gates are opened "when the reservoir level reaches or is predicted to exceed an elevation of 358.5'. At a flood elevation of 368.5', the spillway capacity is approximately 154,000 cfs. Under Probable Maximum Flood (PMF) conditions, the spillway is rated to pass 197,000 cfs with the reservoir at El. 374.4'"[98]. During normal operation times, the plant has a total discharge of 18,000 cfs at full load. The dam's operating range lies between an elevation of 352.5' and 356.5' with a maximum operation pool elevation of 358.5' (full pool).

What to expect: Richland County is at risk from dam failures of all categories, i.e. low hazard to high hazard dams. There have been two, recorded failures of small pond dams in the past (Table 106) and 16

[98] SCE&G, 2008. Saluda Hydro Project Relicense. Attachment 3b Finale Schedule A response. Available at http://www.thestate.com/news/local/article53937070.html

dam failures during the 2015 flood disaster alone (Table 107). Most failed dams were privately owned with the exception of the Semmes Lake Dam on Fort Jackson, which had received a serious hazard rating by the U.S. Army Corps of Engineers two years prior[99].

Geographic Extent: Based on past occurrences, areas downstream from small pond dams are very susceptible to the effects of dam failures, particularly if dams are poorly maintained, have been weakened and/or not repaired after the 2015 floods, or show structural deficiencies.

Likelihood of Future Occurrences: A return rate for dam failures cannot be calculated. Based on past occurrences though, it is highly likely to expect future failure of small pond dams. The Lake Murray dam is not at risk from failure caused by natural hazards.

Table 107 - List of failed dams in Richland County during the 2015 floods. Source: DHEC.

Dam Name	Class
Cary's Lake Dam	C1 (High Hazard)
Upper Rocky Creek/North Lake/Overcreek Rd	C1 (High Hazard)
Lower Rocky ford Dam/Rocky Ford Lake	C1 (High Hazard)
Semmes Lake Dam (Ft. Jackson)	Federal
Beaver Dam/Wildewood Pond #2/Boyd Pond Two (controlled release)	C2 (Significant Hazard)
Lake Elizabeth	C1 (High Hazard)
Ulmers Pond	C1 (High Hazard)
Sunview Lake Dam	C2 (Significant Hazard)
Walden Place Dam	C1 (High Hazard)
Pinewood Lake Dam	C2 (Significant Hazard)
Covington Lake Dam	C2 (Significant Hazard)
Murray Pond Dam	C2 (Significant Hazard)
Wilson Millpond Dam	C2 (Significant Hazard)
Weston Pond Dam	C3 (Low Hazard)
Clarkson Pond Dam	C3 (Low Hazard)
Duffies Pond Dam	C2 (Significant Hazard)

B) Hurricanes & Tropical Storms

What to expect: Every property and person is at risk from hurricane-force winds and associated heavy rainfall and tornadoes in Richland County. Hurricane and tropical storms affect Richland County every 4 to 5 years (Figure 230). The county is at risk from hurricane-force winds as experienced during Hurricane Hugo as well as associated heavy rainfall, flash flooding, and tornadoes (Figure 231, Table 108). While direct wind damage to property is unlikely, property and infrastructure damage due to falling trees as well as power outages are highly likely.

Geographic Extent: Based on past occurrences, the entire county is susceptible to the impacts of tropical cyclones.

[99] Fretwell, Sammy. Inspectors noted "serious hazard" at Fort Jackson dam before it failed. The State [online], January 06, 2016. Available at http://www.thestate.com/news/local/article53937070.html

It is important to note that the frequency and impact calculations below exclude the damage from wind, lightning, and tornadoes because they are reported separately.
Tropical cyclone statistics for Richland County are as following:

Number of Events:	13
Number of Loss-Causing Events:	8
Frequency of Occurrence:	22%
Recurrence Interval:	4.6 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Tropical cyclone-related Presidential Disaster Declarations:	DR-843 (1989) DR-1299 (1999) DR-1566 (2004)
Total Losses:	$96,540,101
Total Fatalities:	1
Deadliest Event:	1 (September 22, 1989)
Most Property Damage:	$51.5 million (September 22, 1989)
Most Crop Damage:	$44 million (September 22, 1989)

Hurricane Hugo (September 22, 1989; DR-843): Hurricane Hugo was the most damaging hurricane in South Carolina's history. It made landfall north of the Charleston Harbor as a Category 4 storm with a storm surge of 15-20 feet. Due to its rapid forward motion, relatively large size, hurricane force winds affected inland counties including Richland County. The county experienced high winds and excessive rain, leading to widespread property damage due to falling trees. Many areas lost power for several days and even weeks in some areas. One man was crushed in his car by a falling tree in Eastover.

Hurricane Floyd (September 9, 1999; DR-1299): Richland County received no direct damage from the storm but hosted large number of evacuees from the coast. Hurricane Floyd revealed significant weaknesses in South Carolina's coastal evacuation plan caused by the "sudden" convergence of evacuees onto roads without a reversal of I-26 in place for many hours. This led to massive gridlock on the interstate and adjacent roads without adequate support for stranded motorists.

Tropical Storm Frances (September 7, 2004; DR-1566): The storm system caused high winds and caused a widespread tornado outbreak. The high winds uprooted trees, caused power outages, and property damage—particularly mobile homes. Two tornadoes touched down in Richland County injuring 3 people. Losses for this event are reported and factored into the hazard statistics for tornadoes.

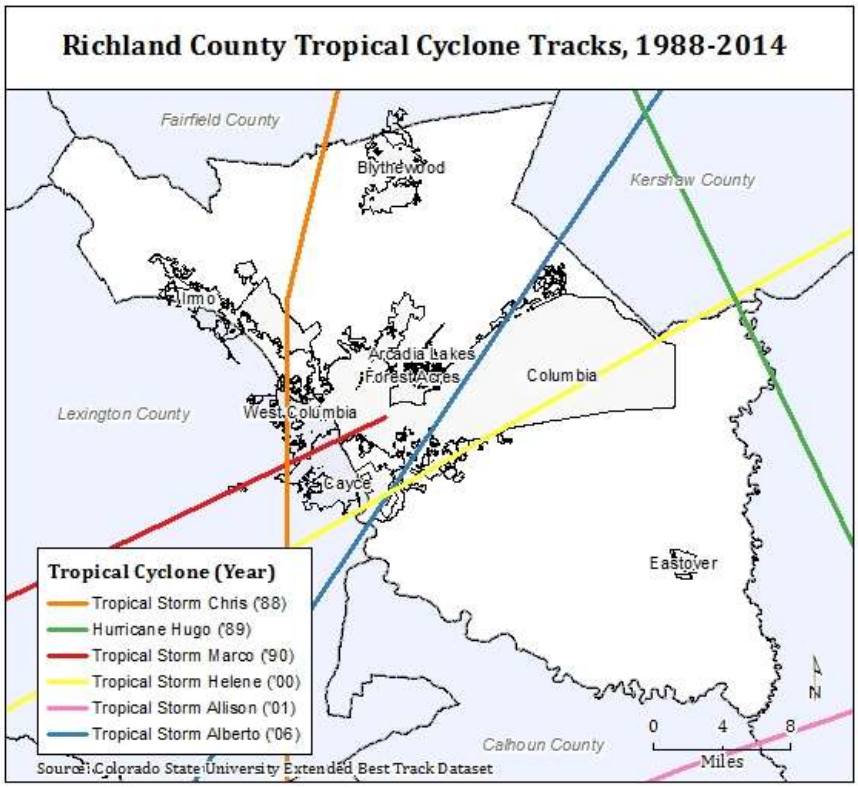


Figure 230 - Tropical cyclone risk in Richland County.

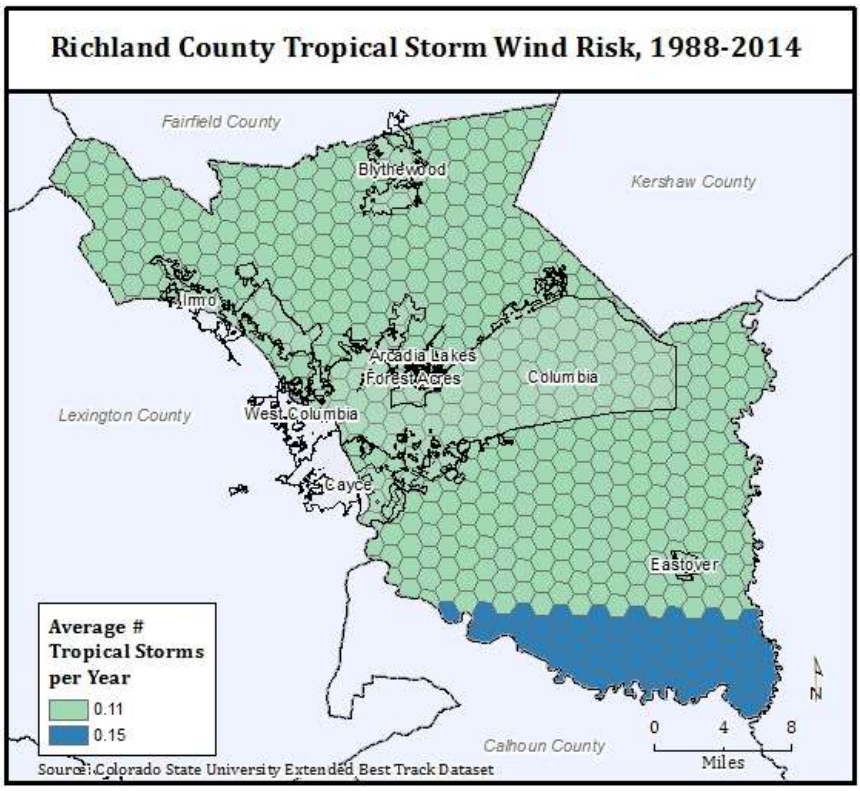


Figure 231 - Risk from tropical storms in Richland County.

Table 108 - Record of loss-causing tropical cyclone events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
8/29/1964	8/31/1964	0	0	8,300	8,300	TS	Statewide	Tropical Storm Cleo
9/12/1964	9/13/1964	0	0	830	830	TS	South Carolina	Tropical Storm Dora
6/7/1968	6/8/1968	0	0	739	73	TS	Statewide	Tropical Storm Abby
6/20/1972	6/21/1972	0	0	615	6,156	TD	Statewide	Tropical Depression Agnes
9/4/1979	9/5/1979	0	0	708,875	0	Cat 1	East and central SC	Hurricane David
8/28/1988	8/28/1988	0	0	3,126	3,126	TS	SCZ003-005-006-007-008 Eastern and central SC	Tropical Storm Chris
9/22/1989	9/22/1989	30	1	51,547,354	43,910,709	Cat 4	Countywide	Hurricane Hugo
8/24/1995	8/28/1995	0	0	337,692	3,376	TS	Statewide	Tropical Storm Jerry
TOTAL		**30**	**1**	**$52,607,531**	**$43,932,570**			

C) Tornadoes

What to expect: Every property and person is at risk from tornadoes in Richland County. Low magnitude tornadoes are not uncommon in Richland County with twisters occurring every other year. Thus far, Richland County has only experienced EF2's and lower (Figure 232). This does not mean that stronger tornadoes are impossible. Neighboring counties have experienced EF3s and even EF4s have occurred in South Carolina. The County is not only at risk from tornadoes spawned by severe thunderstorms but also from outbreaks associated with tropical systems as seen during Tropical Storm Frances (Figure 233).

Geographic Extent: Based on past occurrences, the entire county is susceptible to tornadoes.

Tornado statistics for Richland County are as following:

Number of Events:	34
Number of Loss-Causing Events:	16
Frequency of Occurrence:	62%
Recurrence Interval:	1.6 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Tornado-related Presidential Disaster Declarations:	0
Total Losses:	$96,540,101
Total Fatalities:	1
Deadliest Event:	1 (May 15, 1976)
Most Property Damage:	$15.5 million (January 6, 1995)
Most Crop Damage:	n/av

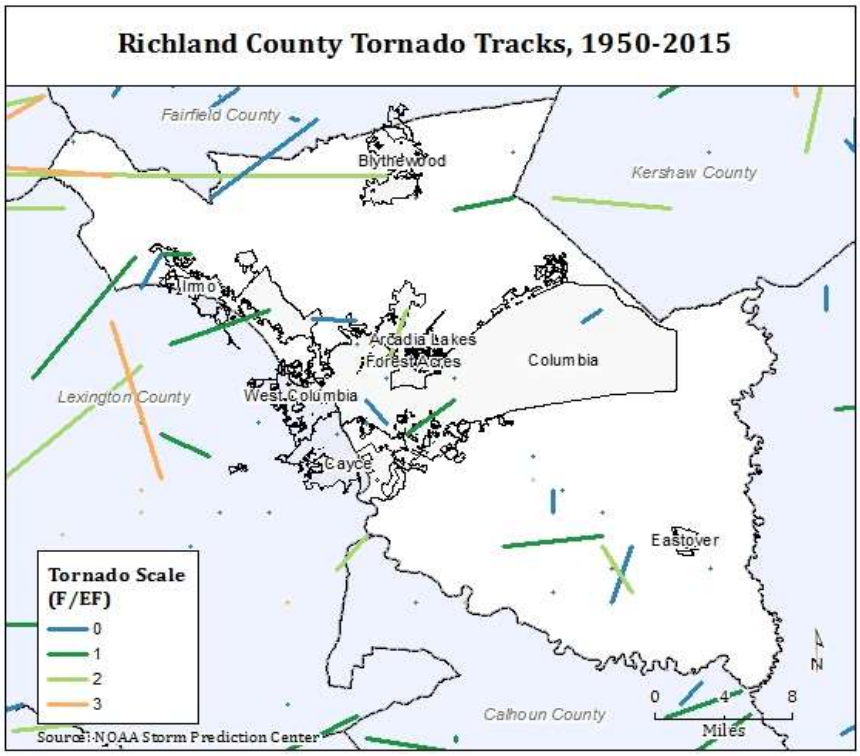


Figure 232 - Tornado risk in Richland County.

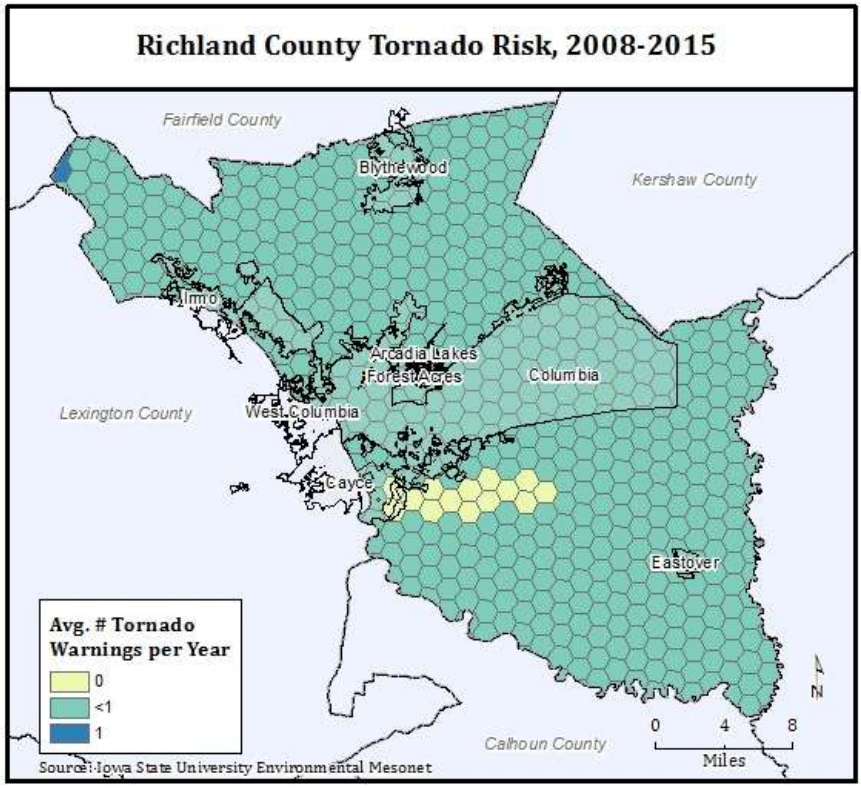


Figure 233 - Tornado risk in Richland County.

Table 109 - Record of loss-causing tornado events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
7/3/1964	7/3/1964	0	0	190,916	0	F2		
8/29/1964	8/29/1964	0	0	1,909,161	0	F2		
5/29/1967	5/29/1967	3	0	177,198	0	F2		
11/24/1967	11/24/1967	0	0	1,771,976	0	F1		
1/10/1972	1/10/1972	1	0	1,415,885	0	F1		
11/12/1975	11/12/1975	7	0	1,100,074	0	F2		
5/15/1976	5/15/1976	3	1	1,040,141	0	F2		
6/19/1977	6/19/1977	0	0	97,663	0	F1		
5/20/1980	5/20/1980	0	0	718,252	0	F1		
2/11/1981	2/11/1981	0	0	65,109	0	F1		
8/31/1987	8/31/1987	2	0	520,986	0	F2		
1/6/1995	1/6/1995	0	0	15,533,858	0	F1	near Ballentine	
7/23/1997	7/23/1997	1	0	302,373	0	F1	Columbia	An F1 tornado produced winds to 100 mph. Numerous trees were down and 35 homes had minor damage. Seventeen businesses also had minor damage. One person was injured.
9/7/2004	9/7/2004	3	0	125,323	0	F2	Gadsden	3 mobile homes destroyed and several others damaged along with a couple of businesses. Numerous trees and power lines down.
9/7/2004	9/7/2004	0	0	375,970	0	F1	Ft. Jackson	Ft. Jackson reported 22 homes with light to moderate damage from an F1 tornado.
3/3/2012	3/3/2012	0	0	30,933	0	EF0	Denny Terrace	An EF0 tornado touched down just west of Monticello road on the back end of Columbia International University then crossed the intersection of Houston Street and Bishopville Ave. Theo tornado continued with intermittent touchdown east to Patton Lane. Man
TOTAL		**20**	**1**	**$25,402,320**	**$0**			

D) Thunderstorms

What to expect: Every property and person is at risk from severe thunderstorms in Richland County. Severe thunderstorms are a common occurrence in Richland County with 10 to 20 severe thunderstorm warnings issued annually by the local NWS forecast office (Figure 234). Thunderstorms are complex and associated with different hazards: lightning, wind, rain, and/or hail. The Midlands see on average up to 12 days per year with rainfall amounts of 1 inch or more, 30 days per year with rainfall between 1/2 inch and 1 inch, and about 70 days per year with rainfall amounts of less than 1/2 inch[100]. Prior to the 2015 flash flood disaster, the daily rainfall record stood at 7.3 inches (July 9, 1959). During the October 2015

[100] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

flood, 21.5 inches of rain fell over several days. To understand the full impact of severe thunderstorms, the impacts of thunderstorms, wind, hail, and lightning should be considered jointly (Table 110).

Geographic Extent: Based on past occurrences, the entire county is susceptible to thunderstorms. There appears to be a higher propensity for severe weather in the central and southern part of the county.

It is important to note the frequency and impact calculations below exclude wind, lightning, and hail damage since they are reported separately—although in a meteorological sense they are tied together.

Thunderstorm statistics for Richland County are as following:

Number of Events:	62
Number of Loss-Causing Events:	48
Frequency of Occurrence:	113%
Recurrence Interval:	0.9 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Thunderstorm-related Presidential Disaster Declarations:	0
Total Losses:	$1,685,500
Total Fatalities:	3
Deadliest Event:	2 Fatalities (June 11, 1961)
Most Property Damage:	$340,000 (August 24, 1968)
Most Crop Damage:	$83,000 (October 4, 1964)

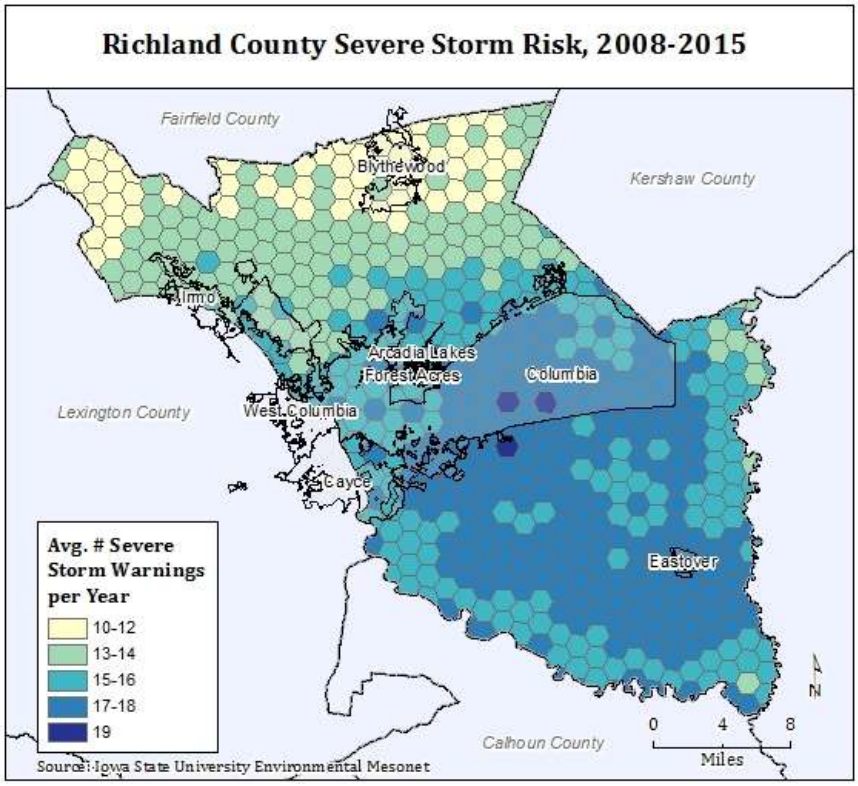


Figure 234 - Thunderstorm risk in Richland County.

Table 110 - Record of loss-causing thunderstorm events (excl. wind, hail, and lightning) in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
7/14/1960	7/14/1960	0	0	199	0	<1”	Columbia and vicinity	Thunderstorm
9/29/1960	9/29/1960	0	0	39,989	0	1-2”	Columbia	Heavy rain
2/24/1961	2/24/1961	0	0	1,131	0	3”	Western and central	Wind and rain
6/11/1961	6/11/1961	0	2	39,587	0	1-2”	Columbia	Heavy rain
7/18/1961	7/18/1961	2	0	3,958	0	1”	Columbia	Severe thunderstorm
9/30/1964	10/1/1964	0	0	15,273	15,273	3-4”	South Carolina Midlands and central Plains	Rain storms
10/4/1964	10/6/1964	0	0	83,007	83,007	3-4”	Statewide	Rainstorm
10/15/1964	10/16/1964	0	0	0	8,300	3-7”	Statewide	Rainstorm
6/8/1965	6/16/1965	0	0	0	81,689	6-9”	South Carolina	Locally heavy rains
7/15/1965	7/15/1965	2	0	37,577	0	1-2”	Columbia	Heavy rain
9/2/1965	9/2/1965	0	0	1,878	0	3-6”	Columbia and vicinity Richland and Lexington Counties	Heavy rain
2/13/1966	2/13/1966	0	0	794	0	<1”	Statewide	Wind and rain
8/20/1967	8/25/1967	0	0	77,042	770	5-6”	Statewide	Rain
1/9/1968	1/13/1968	0	0	106,293	10	3-4”	Northern 2/3 of state	Rain, sleet, snow, and freezing rain
8/24/1968	8/24/1968	0	0	340,137	0	<1”	Richland county	Thunderstorm, windstorm
3/15/1971	3/15/1971	0	0	635	0	<1”	Statewide	Thunderstorms, high winds
7/2/1971	7/2/1971	0	0	292,266	0	2”	Columbia	Thunderstorm, heavy rain
12/3/1971	12/3/1971	1	0	63,536	63,536	2-3”	South Carolina	Snow, sleet, freezing rain, rain, winds
7/27/1972	7/27/1972	0	0	28,317	0	<1”	Richland County	Thunderstorm, high winds
3/12/1974	3/12/1974	0	0	184	0	<1”	Western and central SC	Thunderstorm
1/25/1975	1/25/1975	0	0	478	0	<1”	Statewide	Squall line
7/14/1975	7/14/1975	0	0	64	6	2-3”	Central and northern SC	Wind, rain
6/16/1976	6/16/1976	0	0	1,040	104	1-4”	Lexington and Richland counties	Thunderstorm and heavy rains
6/16/1976	6/17/1976	0	0	1,040	104	2-4”	Lexington and Richland counties	Thunderstorms and heavy rains
10/20/1976	10/20/1976	0	0	904	9	2-3”	Central and eastern SC	Thunderstorm, high wind
2/24/1977	2/24/1977	0	0	887	8	<1”	Central and eastern SC	Wind and rain
3/4/1977	3/4/1977	0	0	849	84	<1”	Central and eastern SC	Thunderstorm, high winds
3/31/1977	3/31/1977	0	0	42	0	No measurable rainfall	Statewide	High winds, heavy rains
9/7/1977	9/7/1977	0	0	424	42	<1”	Statewide	Thunderstorms, high winds, heavy rain

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)	Location	Description
12/5/1977	12/5/1977	0	0	42	0	1”	Statewide South Carolina	Thunderstorm
6/24/1978	6/24/1978	0	0	18,154	0	2”	Richland County	Thunderstorm
8/21/1979	8/21/1979	0	0	8,152	0	<1”	St. Andrews area, Richland and Lexington Counties	Severe thunderstorm
7/10/1980	7/10/1980	1	0	47,883	4,788	<1”	Lexington, Richland, and Sumter Counties	Severe storm, wind
4/17/1982	4/17/1982	0	0	0	613	<1”	Columbia	High winds, thunderstorm
12/3/1983	12/4/1983	0	0	4,570	457	1-2”	Western and central	Wind, heavy rain
12/28/1983	12/28/1983	0	0	7,427	0	<1”	Central	Severe storm, wind
3/28/1984	3/28/1984	0	0	1,139	0	1-2”	5 NE Columbia	Wind, thunderstorm
2/21/1989	2/21/1989	0	0	19,091	0	<1”	SCZ003-004-005-006-007-008 Central and eastern SC	Thunderstorm
2/23/1989	2/23/1989	0	1	2,075	0	<1”	Statewide	Severe storm, snow
6/29/1995	6/29/1995	0	0	7,766	0	1-3”	Columbia	Heavy rains
11/11/2002	11/11/2002	0	0	3,947	0	1”	Columbia	Severe storm, thunderstorm, wind
6/11/2003	6/11/2003	0	0	38,598	0	<1”	Columbia	Severe storm, thunderstorm, wind
9/25/2011	9/25/2011	0	0	126,293	0	1-3”		Scattered thunderstorms around the Midlands produced significant wind damage with storms taking down trees and powerlines. Some of these storms produced heavy rain with 1 to 3 inches falling in several areas within an hour or two causing some flash flood.
7/21/2013	7/21/2013	0	0	2,032	0	2-3”		Heavy rain
8/12/2014	8/12/2014	0	0	1,000	0	1-3”		Areas of thunderstorms over the Midlands produced heavy rains that produced some street flooding. One storm also produced strong winds that took down trees and powerlines.
8/12/2014	8/12/2014	0	0	1,000	0	1-3”		Heavy rain
TOTAL		**6**	**3**	**$1,426,700**	**$258,800**			

E) Lightning

What to expect: Every property and person is at risk from lightning in Richland County. Lightning occurs very frequently in Richland County averaging several strikes per day. While Richland County does not experience a thunderstorm every day, the fact that a single thunderstorm produces hundreds of lightning strikes—each of which is counted in the statistic below—results in high frequency and recurrence figures. Similar to the pattern of thunderstorm risk, most lightning strikes (cloud-to-ground) occur in the central and southern part of the county (Figure 235, Table 111). House fires and personal harm are common with lightning.

Geographic Extent: Based on past occurrences, the entire county is susceptible to lightning strikes. There appears to be a higher propensity for severe weather and therefore lightning strikes in the central and southern part of the county.

Lightning statistics for Richland County are as following:

Number of Events:	278,105
Number of Loss-Causing Events:	64 (1960-2014)
Daily Frequency of Occurrence:	2,821%
Daily Recurrence Interval:	0.04 days (several times per day)
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1986-2012
Total Losses:	$6,400,734
Total Fatalities:	4
Deadliest Event:	1 (several instances)
Most Property Damage:	$2.3 million (June 12, 2006)
Most Crop Damage:	$12,636 (May 12, 1974)

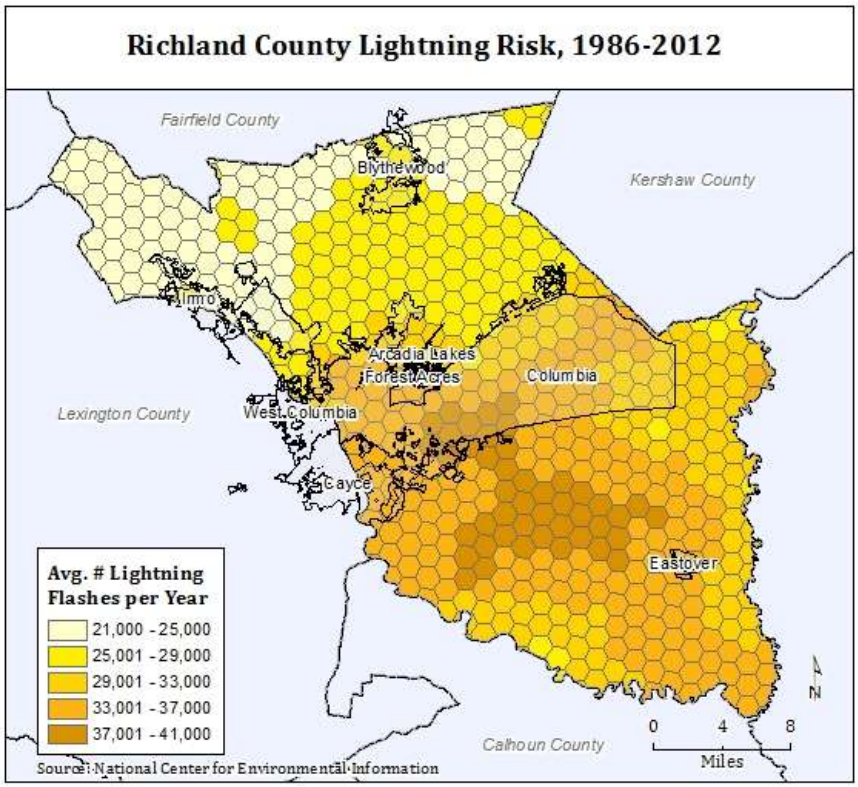


Figure 235 - Lightning risk in Richland County.

Table 111 - Record of loss-causing lightning events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
6/13/1961	6/13/1961	0	0	$39,587	$0	Congaree	Lightning
9/5/1961	9/5/1961	0	0	$1,885	$0	Eastern and Central South Carolina	High winds and excessive lightning
7/24/1964	7/24/1964	28	0	$0	$0	Fort Jackson	Electrical
4/12/1965	4/12/1965	0	0	$37,577	$0	Columbia	Lightning
5/28/1965	5/28/1965	3	0	$0	$0	Fort Jackson	Lightning
6/30/1965	6/30/1965	0	0	$37,577	$0	Columbia	Lightning
7/12/1965	7/12/1965	8	0	$0	$0	Fort Jackson	Lightning
8/10/1965	8/10/1965	0	0	$18,788	$0	Richland and Lee Counties	Lightning, wind
8/18/1965	8/18/1965	0	0	$18,788	$0	Columbia and vicinity, Richland and Lexington Counties	Heavy thundershower, lightning
8/27/1965	8/27/1965	0	0	$816	$0	Statewide	Severe lightning
7/15/1966	7/15/1966	0	0	$18,266	$0	Columbia, Richland and Lexington Counties	Wind, electrical
7/9/1973	7/9/1973	0	0	$26,659	$0	Columbia	Wind, lightning
7/15/1973	7/15/1973	0	1	$0	$0	Lakeview	Lightning
8/4/1973	8/4/1973	0	0	$148	$14	Midlands and southern SC	Rain, wind, electrical
8/29/1973	8/29/1973	0	0	$133	$13	Northwest and Midlands	Wind, rain, electrical
3/21/1974	3/21/1974	0	0	$5,219	$521	Statewide	High winds, electrical
4/8/1974	4/8/1974	0	0	$96	$0	Central SC	Wind, electrical
4/8/1974	4/8/1974	0	0	$6,669	$6	Central, western & northern SC	Wind, electrical
5/12/1974	5/12/1974	0	0	$12,636	$12,636	Central, southern, and eastern SC	Lightning, heavy rain, high wind
6/7/1974	6/7/1974	0	0	$2,400	$0	Columbia	Heavy rain, lightning
8/13/1974	8/13/1974	0	0	$1,091	$109	Central	Wind, lightning
5/15/1975	5/15/1975	0	0	$4,782	$47	Statewide	Wind, lightning
7/24/1975	7/24/1975	0	0	$628	$0	Western central and northern SC	Lightning
8/27/1975	8/27/1975	0	0	$5,789	$57	North, northeast, and central	Lightning, high wind, thunderstoms
10/9/1976	10/9/1976	0	0	$5,778	$57	Central and Eastern	Wind, lightning
7/14/1977	7/14/1977	0	0	$4,246	$42	Statewide	Wind, lightning
7/12/1981	7/12/1981	0	0	$6,510	$651	Abbeville	Thunderstorms, lightning, heavy rain
7/16/1981	7/16/1981	0	0	$32,554	$0	Greenwood, Newberry, Lexington, and Richland Counties	Lightning, wind, rain
6/3/1982	6/3/1982	0	0	$122,661	$12,266	Columbia	Lightning, rain, wind
7/3/1983	7/3/1983	2	0	$1,188	$0	Columbia	Lightning

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
7/25/1983	7/25/1983	0	0	$2,583	$25	Statewide	Wind, lightning
8/23/1983	8/23/1983	0	0	$3,395	$0	North and central SC	Wind, lightning
7/12/1984	7/12/1984	2	0	$1,139	$0	Columbia	Lightning
7/13/1984	7/13/1984	0	0	$5,696	$0	Columbia, West Columbia, Cayce	Lightning
8/21/1985	8/21/1985	0	0	$11,000	$0	Columbia	Lightning
5/28/1986	5/28/1986	0	0	$5,400	$0	Lexington and Richland Counties	Lightning
7/16/1986	7/16/1986	0	0	$108,000	$0	Columbia	Lightning
7/27/1986	7/27/1986	0	0	$1,080	$0	Eastern Columbia	Lightning
10/8/1986	10/8/1986	0	0	$1,080	$0	Columbia	Lightning
6/1/1987	6/1/1987	1	0	$1,041	$0	Countywide	Lightning
6/4/1987	6/4/1987	0	0	$1,041	$0	Countywide	Lightning
7/28/1987	7/28/1987	0	0	$1,041	$0	Columbia	Lightning
4/23/1988	4/23/1988	0	0	$10,005	$0	Countywide	Lightning
5/16/1988	5/16/1988	0	0	$10,005	$0	Eastover	Lightning
7/27/1988	7/27/1988	1	0	$0	$0	St. Andrews	Lightning
8/20/1989	8/20/1989	0	1	$0	$0	Columbia	Lightning
5/16/1991	5/16/1991	0	0	$7,821	$0	Columbia	Lightning
7/4/1991	7/4/1991	0	0	$608,352	$0	Columbia	Lightning
8/8/1991	8/8/1991	1	1	$0	$0	4 NNE McEntire Air National Guard Base (F60O)	Lightning
7/18/1994	7/18/1994	0	0	$7,987	$0	Columbia	Lightning
7/6/1995	7/6/1995	4	1	$0	$0	Fort Jackson	Lightning
8/23/1996	8/23/1996	0	0	$156,918	$0	White rock	Lightning
4/27/1999	4/27/1999	3	0	$0	$0	Columbia	Three people were hit by lightning at River Banks Zoo. The victims were taken to nearby hospitals and released the next day.
2/22/2003	2/22/2003	0	0	$90,062		Columbia	A home was struck by lightning that caused a fire.
6/11/2003	6/11/2003	0	0	$70,763	$0	Columbia	Lightning struck a home starting a fire.
7/21/2003	7/21/2003	0	0	$225,156		Columbia	Lightning struck a home in Spring Valley at 411 Bridgecrest Dr.
6/7/2005	6/7/2005	0	0	$824,273	$0	St. Andrews	A lightning strike started a fire at Pine Apartments that did major damage to the complex.
8/14/2005	8/14/2005	0	0	$363,650	$0	Columbia	Lightning caused a home fire at 204 Upland Trail.
6/12/2006	6/12/2006	0	0	$2,348,571	$0	Columbia	Lightning struck a tree and ran through the ground into the home starting a fire in the home in the Woodcreek Farms subdivision.
6/11/2009	6/11/2009	0	0	$242,764	$0	Columbia	Lightning struck a home and ignited a fire which destroyed it. The home was located at 150 Rivendale Dr.
6/11/2009	6/11/2009	0	0	$551,737	$0	Columbia	Lightning struck a home at 38 Shoreline Dr and ignited a fire which destroyed it.
7/26/2010	7/26/2010	0	0	$249,703	$0	St. Andrews	WISTV reported a home destroyed from a fire

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
							caused by lightning on Ripplerock Rd.
6/28/2011	6/28/2011	5	0	$0	$0	Columbia	A mid-afternoon thunderstorm produced lightning that struck an oak tree at Allen Benedict court on Harden St where 5 landscape and maintenance workers were sitting. One worker was taken to the hospital with non-life threatening injuries.
5/17/2012	5/17/2012	0	0	$51,555	$0	Blythewood	The state reported that a home on north Firetower Rd was struck by lightning.
TOTAL		**58**	**4**	**$6,374,290**	**$26,444**		

F) Wind

What to expect: Every property and person is at risk from wind in Richland County. The county frequently experiences high wind events with gust of 50 knots (58mph) or more. Wind gust of 85 knots (98 mph) have been recorded. On average, severe winds occur every other month. Due to concurrence of high wind with severe thunderstorms, the spatial distribution of wind events within the county is similar to the thunderstorm risk. High winds cause largely property damage and power outages due to falling tree or tree limbs.

Geographic Extent: Based on past occurrences, the entire county is susceptible to wind damage (Table 112). There appears to be a higher propensity for severe weather and therefore wind damage in the central and southern part of the county (Figure 236).

Wind statistics for Richland County are as following:

Number of Events:	469
Number of Loss-Causing Events:	181
Frequency of Occurrence:	853%
Recurrence Interval:	0.12 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$12,909,454
Total Fatalities:	1
Deadliest Event:	1 (June 16, 1989)
Most Property Damage:	$6.5 million (June 16, 1989)
Most Crop Damage:	$1,041 (July 29, 1987)

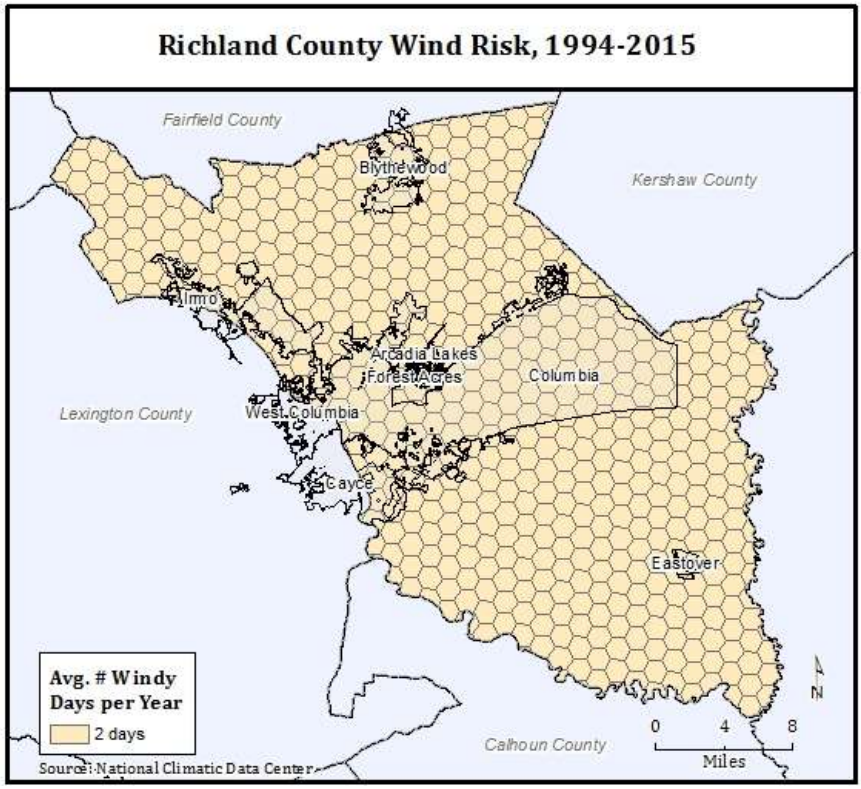


Figure 236 - Wind risk in Richland County.

Table 112 - Record of loss-causing high wind events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
3/13/1986	3/13/1986	0	0	$1,080,000	$0		Countywide	Thunderstorm Wind
6/25/1987	6/25/1987	0	0	$10,419	$0		Countywide	Thunderstorm Wind
7/2/1987	7/2/1987	0	0	$1,041	$0		2NW Eastover	Thunderstorm Wind
7/29/1987	7/29/1987	0	0	$1,041	$0		Columbia	Thunderstorm Wind
7/29/1987	7/29/1987	0	0	$1,041	$1,041		16N Columbia	Thunderstorm Wind
5/23/1988	5/23/1988	0	0	$100	$0		Cedar Creek	Thunderstorm Wind
6/23/1988	6/23/1988	0	0	$1,000	$0		Cedar Creek	Thunderstorm Wind
2/21/1989	2/21/1989	0	0	$954	$0		Shandon	Thunderstorm Wind
5/5/1989	5/5/1989	0	0	$954	$0		Irmo	Thunderstorm Wind
5/5/1989	5/5/1989	0	0	$9,545	$0		Columbia	Thunderstorm Wind
5/5/1989	5/5/1989	0	0	$9,545	$0		Forest Acres	Thunderstorm Wind
6/16/1989	6/16/1989	0	1	$9,545,806	$0		Countywide	Thunderstorm Wind
3/1/1991	3/1/1991	0	0	$8,690	$0		Forest Acres	Thunderstorm Wind
5/15/1994	5/15/1994	0	0	$399	$0		Irmo	Thunderstorm Wind
8/21/1994	8/21/1994	0	0	$7,987	$0		NE Columbia	Trees and large signs were blown down at Two Notch and Beltline Blvd.
5/19/1995	5/19/1995	0	0	$23,301	$0		East Columbia	Thunderstorm Wind

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
6/9/1995	6/9/1995	0	0	$77,669	$0	60	Columbia	Thunderstorm Wind
2/21/1997	2/21/1997	0	0	$7,375	$0	50	Pontiac	Thunderstorm Wind
5/9/1997	5/9/1997	1	0	$29,500	$0	65	Columbia	Thunderstorm Wind
7/29/1997	7/29/1997	0	0	$32,450	$0	50	Columbia	A severe thunderstorm blew down a couple of trees on homes on Murray St causing some damage.
11/22/1997	11/22/1997	0	0	$2,950	$0	50	Columbia	A severe thunderstorm produced damaging winds that took down billboard and other permanent signs along Garners Ferry Rd.
11/11/2002	11/11/2002	0	0	$3,948	$0	50	Columbia	SKYWARN spotter reported siding ripped from part of a home in the Summit subdivision
6/11/2003	6/11/2003	0	0	$38,598	$0	55	Columbia	Trees fell on a home in Columbia causing moderate damage to the roof. WOLO TV studio had part of the roof and side of the building torn off.
8/12/2004	8/12/2004	0	0	$7,519	$0	50	Blythewood	A microburst did minor damage to several service stations near the I-77 Blythewood exit.
8/12/2004	8/12/2004	3	0	$375,970	$0	80	Ft Jackson	An intense downburst associated with a squall line did moderate damage to several facilities on the base and warped aluminum bleachers around telephone poles. Three people reported minor injuries.
6/28/2008	6/28/2008	0	0	$5,498	$0	60	Columbia	Spotter reported a couple of trees down on a home on Chavis St. Only minor damage was reported.
12/11/2008	12/11/2008	0	0	$21,991	$0	60	Eastover	Sheriff reported trees down on trailers on Chalk Street with no injuries.
6/11/2009	6/11/2009	0	0	$2,207	$0	50	Eastover	SKYWARN spotter reported a couple of trees down near the intersection of Hwys 601 and 378.
6/11/2009	6/11/2009	0	0	$2,207	$0	50	Columbia	SKYWARN spotter reported a couple of trees down on Dan Boldan Rd.
6/18/2009	6/18/2009	0	0	$3,310	$0	55	Eastover	DOT reported trees down on Joe Collins and McCords Ferry roads.
7/16/2009	7/16/2009	0	0	$6,621	$0	60	Eastover	Public reported from Mr. Bunkys on US 378 that trees and powerlines were down on Congress Rd about 2 blocks from Mr. Bunkys.
7/22/2009	7/22/2009	0	0	$3,310	$0	55	Montgomery	Public reported 4 trees snapped off at I-26 and Broad River Rd at the Cracker Barrel.
7/22/2009	7/22/2009	0	0	$3,310	$0	60	Littleton	Sheriff reported trees down on Kennerly Rd.
8/5/2009	8/5/2009	0	0	$6,621	$0	60	Denny Terrace	DOT and public reported many trees down on Hwy 215, at the Oak Hills Golf Course, and Koon Store Rd.
8/5/2009	8/5/2009	0	0	$6,621	$0	60	Sharp	DOT reported trees down in the Blythewood area around Fulmer Rd, McNutty Rd, and Oak Hills Rd.
8/5/2009	8/5/2009	3	0	$17,656	$0	60	Forest Acres	Media reported trees down on Trenholm Rd near Forest Acres. One tree fell on a vehicle and 3 people were injured.
8/22/2009	8/22/2009	0	0	$4,414	$0	55	Lykesland	DOT reported a couple of trees and powerlines down on Old Hopkins Rd and Garners Ferry Rd.
8/22/2009	8/22/2009	0	0	$1,103	$0	50	Leesburg	DOT reported a tree down at Leesburg road and Congress Rd.
12/9/2009	12/9/2009	0	0	$2,207	$0	50	Columbia	Dispatch reported powerlines down on Broad River Rd.
1/25/2010	1/25/2010	0	0	$1,086	$0	50	Columbia	Sheriff reported large limbs down on Middle and Faust Sts.
1/25/2010	1/25/2010	0	0	$1,086	$0	50	Forest Acres	Sheriff reported large limbs down near Brandon Ave.
6/20/2010	6/20/2010	0	0	$8,685	$0	60	Ft Jackson	Ft. Jackson reported many trees down on the east end of the property from a downburst.
6/20/2010	6/20/2010	0	0	$4,343	$0	55	Forest Acres	DOT reported a few trees down in the Forest Acres area.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
6/20/2010	6/20/2010	0	0	$13,028	$0	60	Gadsden	Congaree National Park Services reported many trees down on the southeast end of the park.
6/26/2010	6/26/2010	0	0	$5,428	$0	50	Blythewood	Highway Patrol reported trees down on Longtown and Lee Rds.
6/27/2010	6/27/2010	0	0	$8,685	$0	55	Columbia	Sheriff reported trees down McGraw and McCords Ferry Rds.
6/27/2010	6/27/2010	0	0	$5,428	$0	50	Eastover	Sheriff reported trees down north of Eastover.
6/28/2010	6/28/2010	0	0	$15,199	$0	55	Columbia	WIS TV reported a couple of trees down on a home in the Shandon subdivision of Columbia.
6/28/2010	6/28/2010	0	0	$30,399	$0	55	Blythewood	WIS TV reported trees down on a home causing moderate damage.
6/29/2010	6/29/2010	0	0	$26,056	$0	50	Dentsville	WIS TV reported large limbs down and a tree on a home.
6/29/2010	6/29/2010	0	0	$4,343	$0	50	Eastover	Sheriff reported trees down on Hwy 378 near Hwy 601.
7/9/2010	7/9/2010	0	0	$4,343	$0	50	McEntire ANG	Fire Dept. reported several trees down in the Hopkins and McIntire ANG area.
7/26/2010	7/26/2010	0	0	$3,257	$0	55	Ballentine	Sheriff reported a trees down on Bush River road and Ashland road.
7/26/2010	7/26/2010	0	0	$4,343	$0	55	Columbia	Police reported trees down on Abella Street and Atlantic Drive.
7/26/2010	7/26/2010	0	0	$30,399	$0	60	Columbia	Sheriff reported trees down from Percival road at Smallwood Court to Screaming Eagle and Kelly Mill roads. A tree also fell on a car at Claremont and Kilbourne roads crushing it.
7/26/2010	7/26/2010	0	0	$3,257	$0	50	Pontiac	Sheriff reported a couple of trees down on Two Notch and Bookman roads.
7/26/2010	7/26/2010	0	0	$6,514	$0	55	Horrel Hill	Sheriff reported trees down on Rabbit Run and Lower Richland Blvd.
7/27/2010	7/27/2010	0	0	$6,514	$0	55	Eastover	EM reported trees and powerlines down on Richard Simons road.
7/27/2010	7/27/2010	0	0	$2,171	$0	55	Ballentine	Sheriff reported powlines down along Boulters Lock road.
7/27/2010	7/27/2010	0	0	$4,343	$0	55	Horrel Hill	Sheriff reported trees down on Harmon and Hill roads.
7/27/2010	7/27/2010	0	0	$4,343	$0	55	Dentsville	Sheriff reported trees down on Kelly Mill and Robin Hood roads.
7/27/2010	7/27/2010	0	0	$4,343	$0	55	Langfords	Sheriff reported trees down on Kelly Mill road near the county line.
7/27/2010	7/27/2010	0	0	$4,343	$0	55	McEntire ANG	Sheriff reported trees down at Old Eastover and Garners Ferry roads.
8/13/2010	8/13/2010	0	0	$8,685	$0	60	Oak Grove	Trained spotter reported numerous trees down in his yard...along with numerous pine tree topped off near the intersection of Winnsboro road and Sherrill road.
11/16/2010	11/16/2010	0	0	$3,257	$0	55	Dentsville	DOT reported trees down near I-20 and Alpine Road.
11/16/2010	11/16/2010	0	0	$2,171	$0	55	Columbia	Large tree uprooted at the intersection of Fernwood Rd and Satchelford Rd blocking both lanes and 2 driveways. Mailboxes and fences were also destroyed by the fallen tree.
4/5/2011	4/5/2011	0	0	$947,201	$0	85	Woodfield	Fire Dept. reported numerous trees on homes in the Greenview area of Columbia on over to Ft. Jackson.
4/5/2011	4/5/2011	0	0	$21,049	$0	80	Woodfield	Sheriff reported numerous trees and powerlines down in Columbia and Dentsville.
4/16/2011	4/16/2011	0	0	$12,629	$0	55	Weddell	Sheriff reported t and powerlines down at Hwy 76 and Hiller road.
4/28/2011	4/28/2011	0	0	$8,420	$0	55	Arthurtown	Highway Patrol reported trees and powerlines down in the Olympia area.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
4/28/2011	4/28/2011	0	0	$4,210	$0	55	Columbia	Highway Patrol reported trees down near Laurel and Waverly streets.
4/28/2011	4/28/2011	0	0	$8,420	$0	55	Sims	Highway Patrol reported trees down near Bluff and Avalon roads.
4/28/2011	4/28/2011	0	0	$5,262	$0	65	Killian	WXJ20 NOAA Weather Radio Transmitter Tower Antenna damaged by a strong wind gust as relayed by the ETV contractor.
5/13/2011	5/13/2011	0	0	$16,839	$0	55	Columbia	Sheriff reported trees down at Victoria and Wallace streets. One was on a vehicle. Time estimated from radar.
6/2/2011	6/2/2011	0	0	$1,052	$0	55	Montgomery	DOT reported a tree down on Dhreher Island road.
6/2/2011	6/2/2011	0	0	$3,157	$0	55	Oak Grove	DOT reported trees down on Monticello road.
6/2/2011	6/2/2011	0	0	$6,315	$0	55	Ballentine	Public reported trees down in Irmo.
6/2/2011	6/2/2011	0	0	$1,052	$0	55	Montgomery	Tree down on Kennerly road near US 76 reported by Highway patrol.
6/2/2011	6/2/2011	0	0	$1,052	$0	55	Blythewood	Sheriff reported tree down on Coon road.
6/2/2011	6/2/2011	0	0	$31,573	$0	55	Columbia	Trees diwb at the Governors Mansion. One tree fell and crushed a vehicle.
6/2/2011	6/2/2011	0	0	$6,315	$0	55	Ballentine	Trees down, estimated 50 kt wind by NWS employee.
6/2/2011	6/2/2011	0	0	$4,210	$0	55	White Rock	Highway Patrol reported trees in the roadway near I-26 and Julius Richardson road.
6/2/2011	6/2/2011	0	0	$5,262	$0	55	Ballentine	Public reported trees down.
6/2/2011	6/2/2011	0	0	$1,052	$0	50	Woodfield	Highway Patrol reoprted a tree in the road near SC 277 and Bull Street.
6/2/2011	6/2/2011	0	0	$3,157	$0	55	Langfords	Highway Patrol reported trees in the roadway near Hines road and Smyrna road.
6/5/2011	6/5/2011	0	0	$47,360	$0	75	Columbia	The State also reported that part of a roof was torn off a USC building and damage to other buildings and vehicles. This was also reported through Charleston NWS, a pilot reported part of a room torn off at a building along Huger Street.
6/5/2011	6/5/2011	0	0	$4,210	$0	55	Olympia Mills	Sheriff reported trees down at the intersection of Rosewood Drive and Assembly Street.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	Eau Claire	Highway Patrol reported a tree down at Glenn Ave. and Ryan Street.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	Columbia	Highway Patrol reported a tree down along Hwy 12 at the Congaree River Bridge.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	St. Andrews	Sheriff reported a tree down at Marley Drive.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	St. Andrews	Highway Patrol reported a tree down at I-26 and Greystone Blvd.
6/5/2011	6/5/2011	0	0	$4,210	$0	50	Olympia Mills	Sheriff reported a tree down on a house at Florida Street.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	Cedar Creek	Higheay Patrol reported a tree in the roadway at Cedar Creek and Monticello Roads.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	Oak Grove	Highway Patrol reported a tree down at Cedar Creek and Blume Roads.
6/5/2011	6/5/2011	0	0	$1,052	$0	50	St. Andrews	Dispatch reported a tree in the roadway at I-126 and Greystone Blvd.
6/12/2011	6/12/2011	0	0	$4,210	$0	55	Hopkins	Sheriff reported trees down on Airbase road and Congaree road near McEntire ANG Base.
6/13/2011	6/13/2011	0	0	$3,157	$0	55	Greenlawn	Public reported several trees down around the VA Hospital area.
6/15/2011	6/15/2011	0	0	$6,315	$0	60	Blythewood	Sheriff reported trees and powerlines down around the

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
								Blythewood area.
6/15/2011	6/15/2011	0	0	$6,315	$0	55	Ballentine	Sheriff reported trees and a few powerlines down in the Ballentine and Irmo areas.
6/15/2011	6/15/2011	0	0	$10,524	$0	60	Woodfield	Highway Patrol reported numerous trees down in the northeast Columbia area.
6/18/2011	6/18/2011	0	0	$2,105	$0	55	Hilton	Sheriff reported trees down near US 76 and Hiller road.
6/21/2011	6/21/2011	0	0	$4,210	$0	55	Littleton	Highway Patrol reported trees down on Screaming Eagle and Koon roads.
6/21/2011	6/21/2011	0	0	$2,105	$0	55	Hopkins	Sheriff reported several trees down in the Hopkins area.
6/21/2011	6/21/2011	0	0	$2,105	$0	55	Eastover	Sheriff reported several trees down in the Eastover area.
6/23/2011	6/23/2011	0	0	$3,157	$0	55	Ft Jackson	Multiple reports of trees down along Leesburg road.
7/31/2011	7/31/2011	0	0	$2,105	$0	50	Columbia	EM reported trees down near Heyward and Pickens streets.
7/31/2011	7/31/2011	0	0	$2,105	$0	50	Columbia	Highway Patrol reported trees in the roadway on Main Street and also on Monticello Road.
8/11/2011	8/11/2011	0	0	$3,157	$0	55	Columbia	The State newspaper reported several trees down in the city.
9/25/2011	9/25/2011	0	0	$12,629	$0	55	Myron Manor	Public reported trees and powerlines down off Kilbourne Rd. near Fort Jackson Blvd.
9/25/2011	9/25/2011	0	0	$21,049	$0	55	Columbia	Numerous reports of trees down throughout the City of Columbia.
9/25/2011	9/25/2011	0	0	$6,315	$0	55	Columbia	Police reported trees down on Saluda Rivers road and Leesburg road.
9/25/2011	9/25/2011	0	0	$6,315	$0	55	Dentsville	Highway Patrol reported trees down on Norwood road.
10/13/2011	10/13/2011	0	0	$1,052	$0	50	Littleton	Public reported a tree down on a powerline at Old Brickyard and Old Tamah roads.
10/13/2011	10/13/2011	0	0	$3,157	$0	55	Denny Terrace	Highway Patrol reported trees down on I-20 nar Mile Marker 68.
10/13/2011	10/13/2011	0	0	$5,262	$0	55	Eau Claire	Sheriff reported trees down on Monticello road near Eau Claire High School.
10/13/2011	10/13/2011	0	0	$4,210	$0	55	Weddell	Sheriff reported trees down near Two Notch road and Daulton road.
10/13/2011	10/13/2011	0	0	$4,210	$0	55	Pontiac Airstrip Arp	Highway Patrol reported trees down near Hardscrabble road at Sandhills Church.
3/3/2012	3/3/2012	0	0	$12,373	$0	60	Denny Terrace	SKYWARN Spotters reoprted antennas and trees down across northern Richland county from southeast of Irmo to the Kershaw county line.
3/3/2012	3/3/2012	0	0	$4,124	$0	55	Forest Acres	SKYWARN spotter reported some trees down in the Forest Acres area.
3/3/2012	3/3/2012	0	0	$2,062	$0	55	Eau Claire	Sheriff reported trees blocking the road on Burning tree road and near Bush River road.
3/3/2012	3/3/2012	0	0	$3,093	$0	55	Denny Terrace	Sheriff reoprted trees down at Broad River road and Haviland Circle.
4/3/2012	4/3/2012	0	0	$3,093	$0	50	Ballentine	Public reported trees down in Irmo.
5/15/2012	5/15/2012	0	0	$4,124	$0	55	Leesburg	Highway Patrol reported trees down near the intersection of Screaming Eagle Road and Koon Road.
5/15/2012	5/15/2012	0	0	$4,124	$0	55	Leesburg	Highway Patrol reported trees down at the intersection of Screaming Eagle Road and Hwy 601.
5/15/2012	5/15/2012	0	0	$8,249	$0	50	Columbia	The State newspaper reported several trees down in the city.
5/16/2012	5/16/2012	0	0	$3,093	$0	55	Forest Acres	Police reported trees down on Hutto Ct.
5/16/2012	5/16/2012	0	0	$4,124	$0	55	Forest Acres	Police reported trees down on Spring Lake Road.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
5/16/2012	5/16/2012	0	0	$2,062	$0	55	Columbia	Police reported flooding at I-277 and Bull Street.
6/1/2012	6/1/2012	0	0	$5,156	$0	55	Montgomery	Utility Company reported power outages and a couple of lines down just east of Irmo to near I-26.
6/1/2012	6/1/2012	0	0	$5,156	$0	55	Dentsville	Utility Company reported power outages and lines down on Arbor Drive and Lake Avenue.
6/1/2012	6/1/2012	0	0	$5,156	$0	55	Woodfield	Utility Company reported power outages and lines down on Grebeck Drive and Mokernut Ave.
6/13/2012	6/13/2012	0	0	$1,031	$0	50	McEntire ANG	Highway Patrol reported a couple of trees down on Congaree road below McEntire ANG Base.
7/1/2012	7/1/2012	0	0	$5,156	$0	55	Ballentine	NWS employee reported trees and powerlines down in Irmo on Lake Murray Blvd.
7/1/2012	7/1/2012	0	0	$20,622	$0	60	Woodfield	Trees down in the roadway on Bluff road, Pineview road, Montgomery road, Amicks Ferry road, 155 Newberry Drive, and Lynch road. A tree was also down on I-20 east bound at the 67 mile marker.
7/1/2012	7/1/2012	0	0	$10,311	$0	65	Eastover	A 40 Foot amateur radio antenna was blown over which was anchored in concrete.
7/1/2012	7/1/2012	0	0	$4,124	$0	60	Blythewood	Sheriff reported trees down at Longtown road and Farrow road.
7/1/2012	7/1/2012	0	0	$4,124	$0	55	Blythewood	Highway Patrol reported trees down near I-26 at exit 24.
7/5/2012	7/5/2012	0	0	$6,187	$0	55	Montgomery	Highway Patrol reported a few trees and powerlines down east of Irmo.
7/5/2012	7/5/2012	0	0	$2,062	$0	50	Ballentine	Sheriff reported a couple of trees down at Western Lane and Koon Road.
7/5/2012	7/5/2012	0	0	$3,093	$0	50	Spring Hill	Sheriff reported several trees down.
7/10/2012	7/10/2012	0	0	$2,062	$0	50	Langfords	Blythewood Fire Dept. reported a tree on a powerline at Branham Road and Claude Bundrick Road.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	Ballentine	Public reported several trees down.
7/10/2012	7/10/2012	0	0	$2,062	$0	55	White Rock	NWS employee reported trees down on I-26 at exit 97.
7/16/2012	7/16/2012	0	0	$2,062	$0	50	Pontiac	Public reported trees down along I-20 near the Richland and Kershaw County line.
8/2/2012	8/2/2012	0	0	$2,062	$0	55	Killian	Highway Patrol reported trees down on Brickyard Road.
1/30/2013	1/30/2013	0	0	$3,049	$0	50	Columbia	Dispatch reported a few trees down in Columbia.
1/30/2013	1/30/2013	0	0	$3,049	$0	50	Columbia	Columbia City Official reported a few trees down in Columbia.
1/30/2013	1/30/2013	0	0	$8,130	$0	50	Capitol View	SCE&G reported trees and powerlines down with outages.
3/18/2013	3/18/2013	0	0	$10,162	$0	65	Capitol View	Sheriff reported many trees down along Leesburg and Ulmer Roads.
3/18/2013	3/18/2013	0	0	$8,130	$0	60	Pontiac	Sheriff reported trees down on Screaming Eagle Road near Melton Road.
3/18/2013	3/18/2013	0	0	$10,162	$0	65	Olympia Mills	Sheriff reported many trees down along Bulff and Heyward Roads.
3/18/2013	3/18/2013	0	0	$10,162	$0	65	Capitol View	Sheriff reported many trees down along Leesburg and Trotter Roads.
3/18/2013	3/18/2013	0	0	$10,162	$0	65	Horrel Hill	Sheriff reported many trees down along Leesburg and Harmon Roads.
3/18/2013	3/18/2013	0	0	$10,162	$0	65	Leesburg	Sheriff reported many trees down along McCords Ferry and McGraw Roads.
4/19/2013	4/19/2013	0	0	$4,065	$0	55	Oak Grove	Highway Patrol reported trees down on Blythewood Road at US 321.
5/6/2013	5/12/2013	0	0	$1,016	$0		Hopkins	Gadsden River Gage on the Congaree went 3 feet above flood stage causing minor flooding of low lying areas along

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (kts)*	Location	Description
								the river.
5/7/2013	5/9/2013	0	0	$3,049	$0		Arthurtown	Congaree National Park reported flooding of several areas within the park closing areas to tourists. The lower boardwalk was covered with several feet of water and portions of the upper boardwalk near Lake Weston even became submerged with several inches of water. The upper boardwalk is on average 8 feet above the ground.
6/10/2013	6/10/2013	0	0	$1,016	$0	50	Gadsden	Forestry Service reported a tree down on South Cedar Creek Road in Congaree National Park.
6/13/2013	6/13/2013	0	0	$2,032	$0	55	Weddell	Highway Patrol reported trees down on I-20 close to mile marker 80.
6/25/2013	6/25/2013	0	0	$1,016	$0	55	Woodfield	Columbia Police Dept. reported flooding in areas around Two Notch Road around the 9000 block.
6/25/2013	6/25/2013	0	0	$2,032	$0	55	Pontiac	SC Highway Patrol reported trees down on Bookman Road past Kelly Mill Road.
7/8/2013	7/8/2013	0	0	$2,032	$0	50	Myron Manor	Dispatch reported a couple of trees down on Kilbourne Road.
TOTAL		**7**	**1**	**$12,908,413**	**$1,041**			

*No magnitude information indicates wind speeds were unavailable.

G) Hail

What to expect: Every property and person is at risk from hail in Richland County. Hail occurs at least every six months in Richland County (Figure 237). Hail events occur mostly during spring thunderstorms from March through May. Thus far no damage has been reported for hailstones larger than 1.75 inches, although the county has seen hailstones of 3 inches in diameter (Figure 238). It appears that crop damage from hail events is severely underreported.

Geographic Extent: Based on past occurrences, the entire county is susceptible to hail damage.

Hail statistics for Richland County are as following:

Number of Events:	242
Number of Loss-Causing Events:	64
Frequency of Occurrence:	440%
Recurrence Interval:	0.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$929,496
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$299,173 (June 10, 1982)
Most Crop Damage:	$299,173 (June 10, 1982)

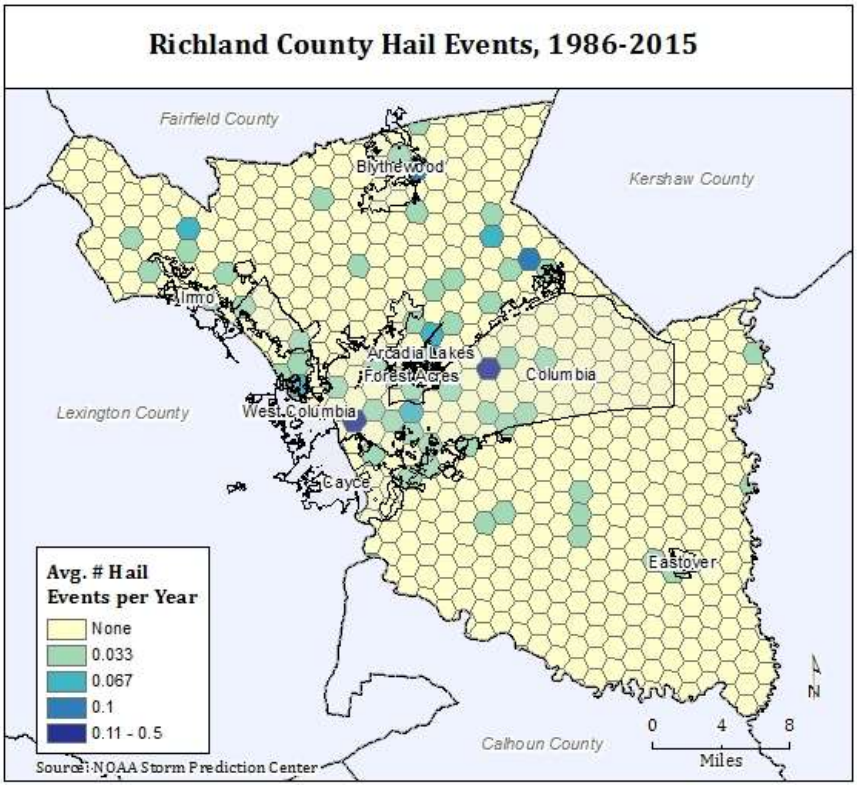


Figure 237 - Hail risk (occurrence) in Richland County.

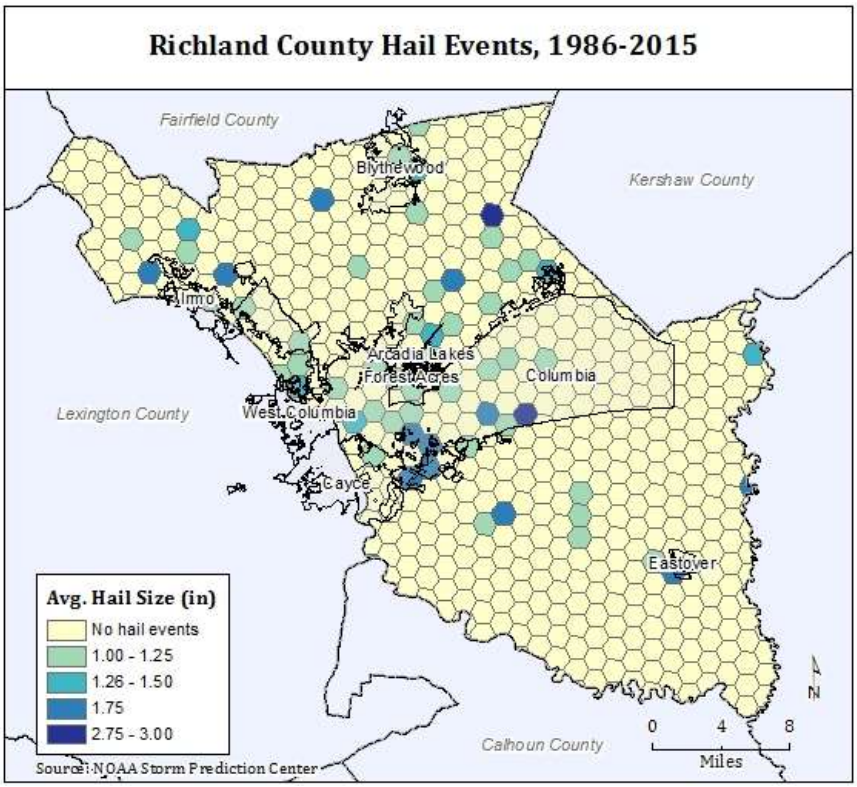


Figure 238 - Risk of large hail events in Richland County.

Table 113 - Record of loss-causing hail events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
2/18/1960	2/18/1960	0	0	$1,142	$0		Central and northern SC	Windstorms, hail
7/1/1960	7/1/1960	0	0	$199	$0		Columbia area	Wind and hail
4/12/1962	4/12/1962	0	0	$1,567	$0		Central South Carolina	Hail and wind
6/11/1963	6/11/1963	0	0	$0	$84,092		Statewide	Hailstorms
4/7/1965	4/7/1965	0	0	$4,175	$0		Owensville, Greenville County to St. Matthews, Calhoun County	Hail
7/1/1965	7/31/1965	0	0	$816	$0		Statewide	Wind, heavy rain, hail
7/19/1965	7/19/1965	0	0	$816	$81		Statewide	Hail, lightning, wind
4/13/1966	4/13/1966	0	0	$3,653	$365		Columbia, Eastover	Rain, hail, wind and electrical
7/29/1966	7/29/1966	1	0	$36,533	$0		Columbia	Wind, hail, electrical and heavy rains
3/12/1967	3/12/1967	0	0	$35,439	$0		Countywide	Hail, wind
5/29/1967	5/29/1967	3	0	$3,543	$3,543		Countywide	Small tornado, wind, hail
7/29/1967	7/29/1967	0	0	$35,439	$0		Countywide	Lightning, wind, rain, hail
6/21/1970	6/21/1970	0	0	$10,169	$10,169		Area from Richland county to Dillon and Marlboro Counties	Thunderstorms with hail, wind and rain
6/15/1971	6/15/1971	0	0	$24,355	$24,355		A 12 county area centered on Lee, Darlington, Sumter and Florence counties	Thunderstorms, wind, hail, rain
3/29/1974	3/29/1974	0	0	$5,716	$5,716		Northern, eastern, central SC	Wind, hail, electrical
7/16/1974	7/16/1974	0	0	$923	$923		Central and southern SC	Wind, hail
7/21/1974	7/21/1974	0	0	$48,019	$4,801		Charleston, Lexington, Richland, Georgetown, Horry Counties	Wind, hail, rain
3/7/1975	3/7/1975	0	0	$628	$0		Northwest, central and northeast SC	Wind, lightning, and hail
3/24/1975	3/24/1975	0	0	$4,782	$47		Statewide	Wind, lightning, hail
5/10/1975	5/10/1975	0	0	$12,223	$122,230		York to Bamberg and Spartanburg to Oconee and Anderson	Hail, wind, lightning
6/15/1975	6/15/1975	0	0	$647	$647		Northern and central SC	Lightning, wind, hail
6/18/1975	6/18/1975	0	0	$47	$4,782		Statewide	Wind, lightning, hail
7/4/1975	7/4/1975	0	0	$6,286	$62,861		Northern and central	Wind, hail, lightning
9/5/1975	9/5/1975	0	0	$2,000	$2,000		Northwest and	Thunderstorm, wind, hail

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
							central	
6/1/1976	6/1/1976	0	0	$208	$2,080		5 miles north of Columbia	Hail
6/6/1977	6/6/1977	0	0	$424	$4,246		Statewide	Wind, lightning, hail
4/26/1982	4/27/1982	0	0	$26	$26	1.75”	Statewide	Thunderstorm, wind, lightning, hail
5/17/1982	5/17/1982	0	0	$34	$340		North, central, southern SC	Thunderstorms, high winds, hail
6/10/1982	6/10/1982	0	0	$299,173	$299,173		Statewide	Hail, lightning, rain, wind
3/28/1984	3/28/1984	0	0	$1,139	$1,139	1”	5 miles east of Columbia	Hail
3/28/1984	3/28/1984	0	0	$56,962	$5,696	1.5”	Cayce, Irmo, and Columbia	Hail
4/14/1984	4/14/1984	0	0	$113	$1,139	1.75”	White Rock	Hail
4/14/1984	4/14/1984	0	0	$406	$406	1.75”	Northern and central SC	Hail, wind
5/2/1984	5/2/1984	0	0	$11,392	$1,139	2.75”	Irmo, Killian, Elgin	Hail
5/6/1984	5/6/1984	0	0	$0	$569	1.75”	Chapin and White Rock	Hail
6/20/1984	6/20/1984	0	0	$2,476	$247	1.75”	Statewide	Rain, hail, lighting, wind
7/25/1984	7/25/1984	3	0	$113,924	$1,139	1.75”	Central SC	Rain, hail, lighting, wind
2/11/1985	2/12/1985	0	0	$2,391	$2		Statewide	Wind, snow, hail, thunderstorms
6/4/1985	6/4/1985	0	0	$578	$578		North-central, central SC	Hail
6/7/1985	6/7/1985	0	0	$2,391	$239	2”	Statewide	Hail, wind
3/13/1986	3/13/1986	0	0	$10,800	$0	.75-1.75”	Columbia	Hail
6/2/1986	6/2/1986	0	0	$10,800	$0		Countywide	Hail
6/26/1986	6/26/1986	0	0	$10,800	$0	1.75”	Fort Jackson	Hail
7/16/1986	7/16/1986	0	0	$108	$0		Columbia	Hail
4/15/1987	4/15/1987	0	0	$1,041	$104		Countywide	Hail
4/16/1987	4/16/1987	0	0	$104	$104		Countywide	Hail
7/29/1987	7/29/1987	0	0	$1,041	$0	1.75”	Columbia	Hail
8/31/1987	8/31/1987	0	0	$104	$104		Horrell Hill Rd	Hail
4/6/1988	4/6/1988	0	0	$1,000	$0	.75”	Eastern Columbia	Hail
4/11/1988	4/11/1988	0	0	$3	$0		SCZ003-004-005-006 East and Lower Piedmont, North and South Midland	Small hail
4/12/1988	4/12/1988	0	0	$6	$0		SCZ004-006 Lower Piedmont and South Midlands	Small hail
5/4/1988	5/4/1988	0	0	$100	$0	1.75”	10m NW Columbia	Hail
5/16/1988	5/16/1988	0	0	$100	$100	1”	Eastern Columbia	Hail

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
5/17/1988	5/17/1988	0	0	$100	$1,000	1"	White Rock	Hail
5/23/1988	5/23/1988	0	0	$100	$1,000	.75-1.75"	6E of Columbia	Hail
6/26/1988	6/26/1988	0	0	$100	$1,000	1.5"	Pontiac	Hail
9/25/1988	9/25/1988	0	0	$100,057	$1,000	3"	Columbia	Severe storm, hail
4/24/1995	4/24/1995	0	0	$3,107	$0	1"	Rosewood Dr	Hail
5/15/1995	5/15/1995	0	0	$15,534	$0	1.75"	Irmo	Hail
7/6/1995	7/6/1995	0	0	$15,534	$0	1"	E Coumbia	Hail
4/16/2011	4/16/2011	0	0	$12,629	$0	1"	Weddell	WIS TV reported quarter size hail along with trees and powerlines down at the Village of Sandhills.
4/26/2011	4/26/2011	0	0	$0	$4,210	1"	Pontiac Airstrip Arp	Quarter size hail fell in NE Columbia in the Woodlands subdividsion in the vicinity of Two Notch road, Clemson Rd, and Sparkleberry Lane.
4/26/2011	4/26/2011	0	0	$0	$4,210	0.75"	Killian	Dime size hail reported be the public via WLTX TV in the NE Columbia and Spring Valley areas.
7/1/2012	7/1/2012	0	0	$5,156	$0	1"	Horrel Hill	Public reported 1 inch hail in Shandon at the intersection of Duncan and Bonham roads.
TOTAL		**7**	**0**	**$919,077**	**$657,602**			

*No magnitude information indicates hailstone sizes were unavailable.

H) Fog

What to expect: Fog does not cause direct property damage or injuries. But indirectly, the personal safety of boaters, motorists, and other travelers is at risk due to poor visibility during fog conditions. Fog is very common in Richland County and occurs most frequently during the fall and spring months. On average, the county experiences at least 29 days[101] with some periods of fog (or haze). The number of fogs days varies considerably ranging from an average of 29 days of fog per year in the northern part of the county up to 108 days in the southern portion of the country (Figure 239). There is no explicit record of property damage or fatalities associated with fog as reported by SHELDUS™ or NCDC's Storm Data. This is likely due to the fact that most damage from fog is indirect (e.g., traffic accidents).

Geographic Extent: Based on past occurrences, the entire county is susceptible to fog. Southern Richland County experiences significantly larger number of days with reduced visibility compared to the Irmo or Blythewood areas.

[101] "Fog days" have reduced visibility due to fog, haze, or smoke at any time of the day as indicated by NWS station data.

Fog statistics for Richland County are as following:

Number of Events:	29-108 days of fog per year
Number of Loss-Causing Events:	n/av (largely motorist accidents)
Daily Frequency of Occurrence:	>8%
Daily Recurrence Interval:	<12.6 days
Expected changes to frequency and recurrence interval in the future:	Not enough information available to make assumptions about future changes
Events on Record:	1986-2015
Total Losses:	n/av
Total Fatalities:	n/av
Deadliest Event:	n/av
Most Property Damage:	n/av
Most Crop Damage:	n/av

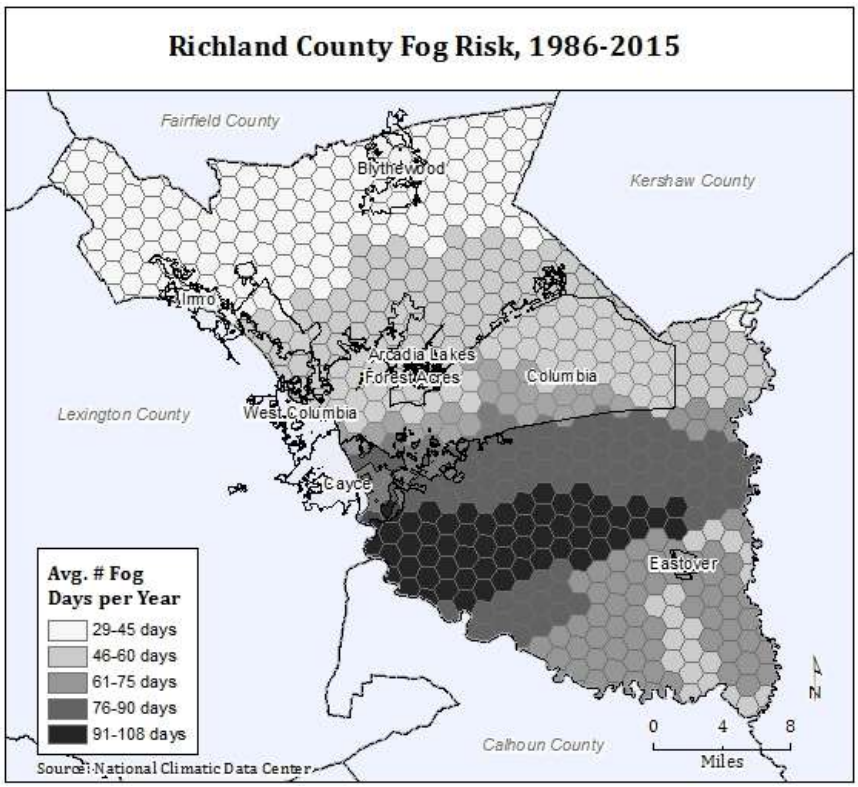


Figure 239 - Fog risk in Richland County.

I) Winter Weather & Ice Storms

What to expect: Every property and person is at risk from winter weather in Richland County. Ice storms and winter weather occur nearly every year in Richland County—on average at least once or twice per year (Figure 240). Snow accumulations of 2 inches and more are rare, though the area has seen significant snow accumulations in the past (Table 114). Record snowfall of 16 inches occurred in 1973, and in 2010 with 8.6 inches[102]. The highest daily snowfall amount was 12.3 inches (February 10, 1973)[103]. More damaging than snow events are ice storms, which tend to occur frequently in this area. Ice accumulations of ¾ of an inch or more are possible but even thin coatings of ice cause havoc. Falling trees lead to power outages, road closures, and damage to homes and other properties. In addition, winter weather tends to adversely affect agriculture more than any other hazard. It appears that crop damage from winter weather events is severely underreported.

Geographic Extent: The entire county is susceptible to damage from winter weather.

Winter weather statistics for Richland County are as following:

Number of Events:	>45
Number of Loss-Causing Events:	27
Frequency of Occurrence:	82%
Recurrence Interval:	1.2 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods though extreme events remain a possibility
Events on Record:	1960-2014
Winter weather-related Presidential Disaster Declarations:	DR-1313 (2000) DR-1509 (2004)
Total Losses:*	$10,093,420
Total Fatalities:	1
Deadliest Event:	1 fatality (February 17, 1979)
Most Property Damage:	$579,553 (February 9, 1973)
Most Crop Damage:	$6,862,310 (February 15, 1969)

*excludes estimates for the 2004 ice storm

January 22, 2000 (DR-1313): A severe winter storm resulted in widespread power outages. Thirty-eight counties in South Carolina were designated for federal assistance including Richland County.

January 26-30, 2004 (DR-1509): An ice storm began over the North Midlands of South Carolina on Sunday night and gradually spread south into the Central Midlands on Monday. The storm continued into Tuesday, but was mainly freezing drizzle during that time. Ice accumulations of 1/2 to 3/4 of an inch occurred which brought numerous trees and powerlines down. The heaviest ice accumulations occurred in Lancaster, Chesterfield, Fairfield, Newberry, Saluda, McCormick, Orangeburg, and Clarendon counties. Over 250,000 homes, businesses, and schools were without power for several days. Sleet also fell in Lancaster and Chesterfield counties and accumulated up to 2 inches. Six people were injured in traffic related accidents and there were no deaths. Damage estimates from SCEMD were $28.5 million.

[102] NWS Columbia Forecast Office, 2010. February snowfall and the record books. Available at http://www.weather.gov/cae/Snowfall_Total_Records_cor.html

[103] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

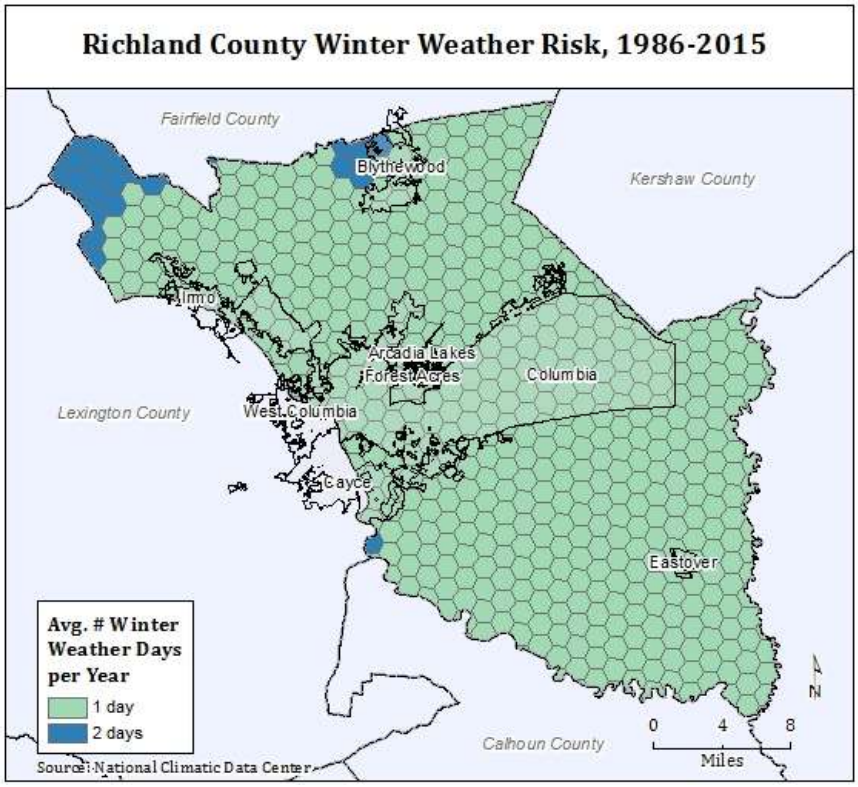


Figure 240 - Risk of winter weather in Richland County.

Table 114 - Record of loss-causing winter weather events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
3/9/1960	3/11/1960	0	0	$11,425	$0	3.2 in	Northern and central sections of SC	Snow, sleet, ice
1/25/1961	1/26/1961	0	0	$8,606	$860	1.4 in	Statewide	Ice storm
2/3/1961	2/4/1961	0	0	$860	$0	0.9 in	Statewide	Glaze
12/31/1963	1/1/1964	0	0	$84,092	$8,409	Trace	Statewide	Ice
1/26/1966	1/27/1966	0	0	$104,380	$0	1.0 in	Central and northern SC	Ice, snow
1/29/1966	1/30/1966	0	0	$0	$79,420	-	Statewide	Severe cold, ice and snow
2/15/1969	2/17/1969	0	0	$68,623	$6,862,310	0.8 in	Statewide	Snow, sleet and freezing rain
11/1/1969	11/1/1969	0	0	$12,901	$12	-	Central area	Wind, snow
1/7/1973	1/8/1973	0	0	$115,910	$1,159,106	2.2 in	Statewide	Snow, ice
2/9/1973	2/10/1973	0	0	$579,553	$579	16 in.	Statewide	Snowstorm
12/17/1973	12/17/1973	0	0	$3,332	$33	Trace	North, central SC	Heavy snow
2/6/1979	2/6/1979	0	0	$543,471	$543	Trace	Northwest and central	Snow, sleet, ice
2/17/1979	2/18/1979	0	1	$35,443	$354	5.5 in	Statewide	Snow, sleet, freezing rain
2/5/1980	2/6/1980	0	0	$31,228	$312	3.1 in	All of SC except south coastal	Snowstorm over most of state except ice storm near beaches north coastal area
3/1/1980	3/2/1980	0	0	$3,122	$3,122	4.1 in	Statewide	Snow, freezing rain, drizzle and sleet
12/23/1980	12/23/1980	0	0	$65	$0	0.46 in	Northwest and central	Freezing rain

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag. (in.)*	Location	Description
1/12/1982	1/12/1982	0	0	$4,381	$431	3.5 in	All but coastal plain	Snow, sleet, freezing rain
2/26/1982	2/27/1982	0	0	$2,666	$0	1.0 in	Statewide	Snow, sleet, glaze
1/21/1983	1/21/1983	0	0	$2,583	$25	0.1 in	Statewide	Freezing rain, sleet, snow
3/24/1983	3/24/1983	0	0	$258	$2	0.4 in	Statewide	Winter storm, wind, snow
1/13/1984	1/13/1984	0	0	$4,068	$406	0.02 in	Northern half of SC	Freezing rain, glaze
1/20/1985	1/24/1985	0	0	$23,914	$2,391	Trace	Statewide	Extreme cold, snow
4/1/1987	4/1/1987	0	0	$0	$2,604	-	SCZ001-002-003-004-005-006-007 All of SC except immediate Coast	Freeze
1/7/1988	1/11/1988	0	0	$21,751	$0	4.3 in	Statewide	Snow, ice, sleet
1/15/1988	1/15/1988	0	0	$357	$0	-	SCZ005-006-007-008 northeast SC	Heavy snow
3/21/1990	3/21/1990	0	0	$0	$196,879	-	Statewide	Freeze
3/13/1993	3/13/1993	0	0	$102,394	$10,239	1.2 in	SCZ006	High winds, cold
TOTAL		**0**	**1**	**$1,816,938**	**$8,328,037**			

*No magnitude information indicates snowfall amounts or ice thickness were unavailable.

J) Temperature Extremes

What to expect: Richland County experiences between 40 and 55 days per year when temperatures fall below freezing at any given time of the day, which is generally during nighttime hours in the winter months (Figure 241). Of these cold days, about 14 to 17 days have periods of time with extremely cold temperature (Figure 242). The record minimum temperature for Richland County was set on January 16, 1994 with -5 degrees[104]. Since 1994, no other minimum temperature records have been set anywhere in the state. Most record minimum temperatures date back to 1985 or 1899. Property damage tends to be restricted to busted water pipes and motor vehicle accidents. However, periods of frost and freeze cause significant damage to agricultural production.

Geographic Extent: Based on past occurrences, the entire county is susceptible to cold weather temperatures. The southern portion of the county spends more days in cold weather extremes (Figure 242)—meaning the number of days when cold temperatures are above the 95th percentile[105].

[104] SCDNR. South Carolina record minimum temperatures and date. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/data/min_temp_table.php

[105] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County

Cold weather statistics for Richland County are as following:

Number of Events:	31
Number of Loss-Causing Events:	31
Frequency of Occurrence:	56%
Recurrence Interval:	1.7 years
Expected changes to frequency and recurrence interval in the future:	Decreased likelihood of occurrence and lengthening of return periods
Events on Record:	1960-2014
Total Losses:	$16,925,275
Total Fatalities:	3
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$207,517.00 (December 22, 1989)
Most Crop Damage:	$6,862,310 (April 7, 1982)

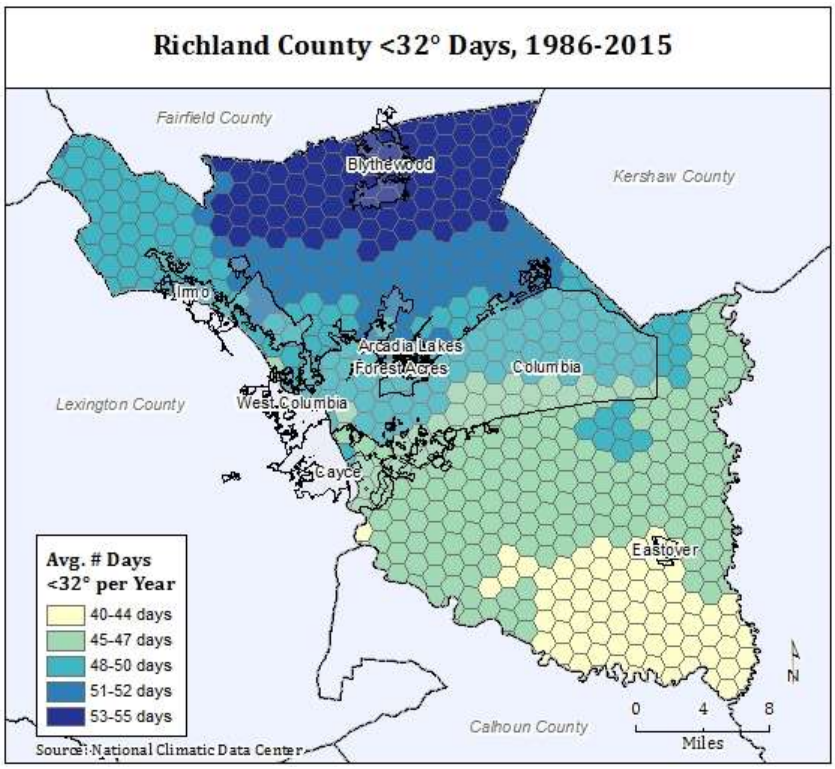


Figure 241 - Cold weather risk in Richland County.

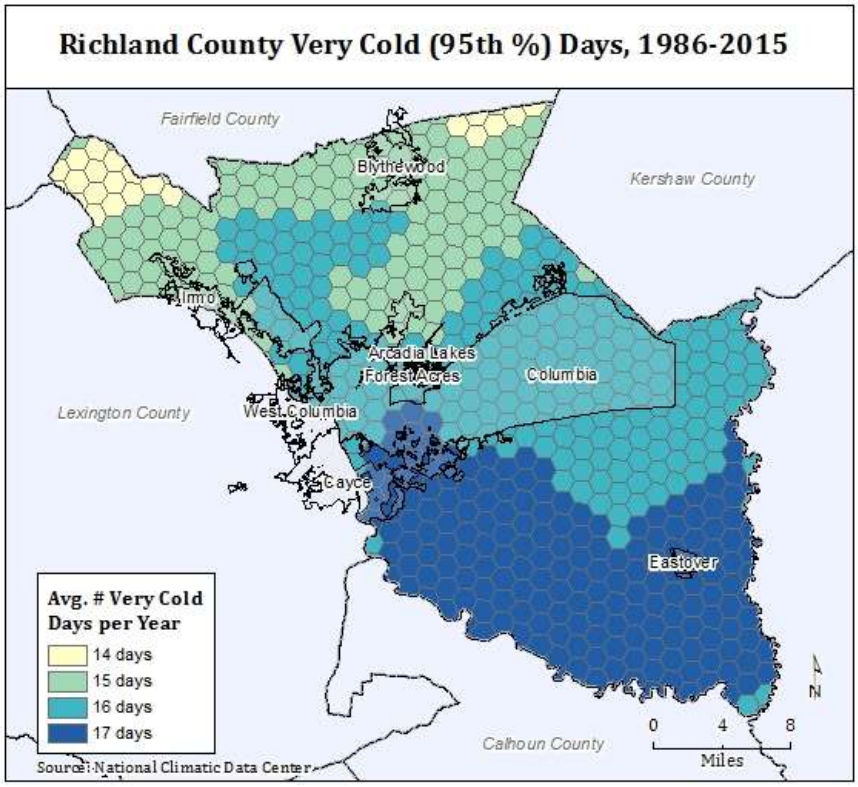


Figure 242 - Risk of cold temperature anomalies in Richland County.

Table 115 - Record of loss-causing cold weather events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/30/1964	3/31/1964	0	0	$0.00	$830,070.00	Statewide	Killing freeze
1/29/1966	1/30/1966	0	0	$0.00	$79,420.00	Statewide	Severe cold, ice and snow
3/29/1966	3/29/1966	0	0	$15,884.00	$0.00	Inland South Carolina	Frost
1/8/1970	1/9/1970	0	0	$663.00	$6.00	Statewide	Severe freeze
11/24/1970	11/25/1970	0	0	$6.00	$6.00	Statewide	Severe freeze
4/1/1972	4/30/1972	0	0	$0.00	$321,792.00	Statewide	Cold spell
10/3/1974	10/4/1974	0	0	$6,156.00	$0.00	Western, northern, central SC	Frost, freeze
3/2/1975	3/3/1975	0	0	$0.00	$4,782.00	Statewide	Low temperatures
1/1/1977	1/31/1977	0	0	$424.00	$424.00	Statewide	Unusual cold weather
1/1/1977	1/31/1977	0	0	$424.00	$424.00	Statewide	Unusual cold weather
1/11/1982	1/11/1982	0	1	$266.00	$266.00	Statewide	Hard freeze
3/27/1982	3/27/1982	0	0	$0.00	$266,655.00	statewide	Extreme cold
4/7/1982	4/7/1982	0	0	$0.00	$207,517.00	statewide except southern	Frost, freeze
4/23/1982	4/24/1982	0	0	$0.00	$26.00	Statewide	Frost freeze
4/17/1983	4/18/1983	0	0	$0.00	$2,583,551.00	Statewide	Extreme cold
12/25/1983	12/25/1983	0	0	$25,835.00	$25,835.00	Statewide	Extreme cold
12/30/1983	12/31/1983	0	0	$2,583.00	$258.00	Statewide	Extreme cold
1/20/1985	1/24/1985	0	0	$23,914.00	$2,391.00	Statewide	Extreme cold, snow

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
3/19/1985	3/19/1985	0	0	$0.00	$2,391.00	Statewide	Frost, freeze
12/26/1985	12/26/1985	0	0	$239.00	$23.00	Statewide	Cold
1/27/1986	1/28/1986	0	0	$2,347.00	$23.00	Statewide	Cold
3/22/1986	3/23/1986	0	0	$0.00	$2,347.00	Statewide	Cold
4/23/1986	4/24/1986	0	0	$0.00	$2,347.00	Statewide	Frost, freeze
10/1/1987	10/31/1987	0	0	$0.00	$226.00	Statewide	Cold weather
3/14/1988	3/17/1988	0	0	$217.00	$0.00	Statewide	Low temperature
12/22/1989	12/22/1989	0	0	$20,751.00	$0.00	Statewide	Extreme cold
12/22/1989	12/22/1989	0	0	$207,517.00	$0.00	Statewide	Extreme cold
12/22/1989	12/25/1989	0	0	$26,516.00	$0.00	SCZ001-002-003-004-005-006 Mountains, Foothills, Piedmont and Midlands	Extreme cold
1/24/1991	1/24/1991	0	1	$0.00	$0.00	Richland County	Hypothermia
11/4/1991	11/4/1991	0	1	$0.00	$0.00	Richland County	Hypothermia
3/13/1993	3/13/1993	0	0	$102,394.00	$10,239.00	SCZ006	High winds, cold
TOTAL		**0**	**4**	**$2,068,811.35**	**$14,856,464.00**		

What to expect: Hot weather is common in Richland County during the late spring, summer and early fall months. On average, there are 18 to 27 days of above 95 degrees in any given year (Figure 243). Richland County will experience periods of above 100 degree temperatures in the months of May, June, July, August, September, and October. The hottest temperature recorded in Richland County was 113°F (June 29, 2012), which broke a 58-year old record. Heat events are a high risk event to public health due to the possibility of heat exhaustion and heat stroke. The number of high temperature days and the duration of heat waves are expected to increase.

Geographic Extent: The entire county is susceptible to hot temperatures. While the central and southern parts of the county experience more days of above 95 degrees, it is the northeastern portions of the county that are at most risk from temperature anomalies meaning the northeastern region may experience one or two additional days of extreme temperatures compared to the rest of the county (Figure 244)[106].

New heat records have been set in South Carolina in recent years due to a warming climate. According to South Carolina's State Climatology Office, summer maximum temperatures in Richland County have increased by 2.7 degrees for the time period from 1901 through 2010. The City of Columbia has seen temperatures of above 100°F in the months of May, June, July, August, September, and October[107]. The hottest temperature on record for the state was set in Richland County with 113°F (June 29, 2012) breaking a 58-year old record. The previous hottest temperature on record was 111°F (June 1954).

[106] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

[107] Southeast Regional Climate Center, 2012. Record high temperatures for selected cities in the Southeast. Available at https://www.sercc.com/climateinfo/historical/recordhigh.html#SC

Top 10 warmest average June temperature records on record (Columbia, SC)[108]

1) 83.7 degrees set in 2010
2) 83.7 degrees set in 1952
3) 83.3 degrees set in 2011
4) 82.6 degrees set in 2015
5) 82.3 degrees set in 1998
6) 82.3 degrees set in 1943
7) 82.0 degrees set in 2014
8) 82.0 degrees set in 1986
9) 81.9 degrees set in 1944
10) 81.9 degrees set in 1939

June years with the most days of 100 degrees or higher (Columbia, SC)

1) June 1952 - 10 days
2) June 2015 - 6 days
3) June 1956 - 6 days
4) June 2010 - 5 days
5) June 1998 - 5 days
6) June 1954 - 5 days
7) June 1950 - 5 days
8) June 1899 - 5 days

Hot weather statistics for Richland County are as following:

Number of Events:	>13
Number of Loss-Causing Events:	13
Frequency of Occurrence:	24%
Recurrence Interval:	4.2 years
Expected changes to frequency and recurrence interval in the future:	Increased occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$21,263,066
Total Fatalities:	6
Deadliest Event:	1 fatality (several instances)
Most Property Damage:	$9,402,482 (July 1, 1993)
Most Crop Damage:	$9,402,482 (August 31, 1993)

[108] NWS Weather Forecast Office Columbia, SC, 2015. June 2015 climate summary. Available at http://www.weather.gov/cae/June2015Climate.html

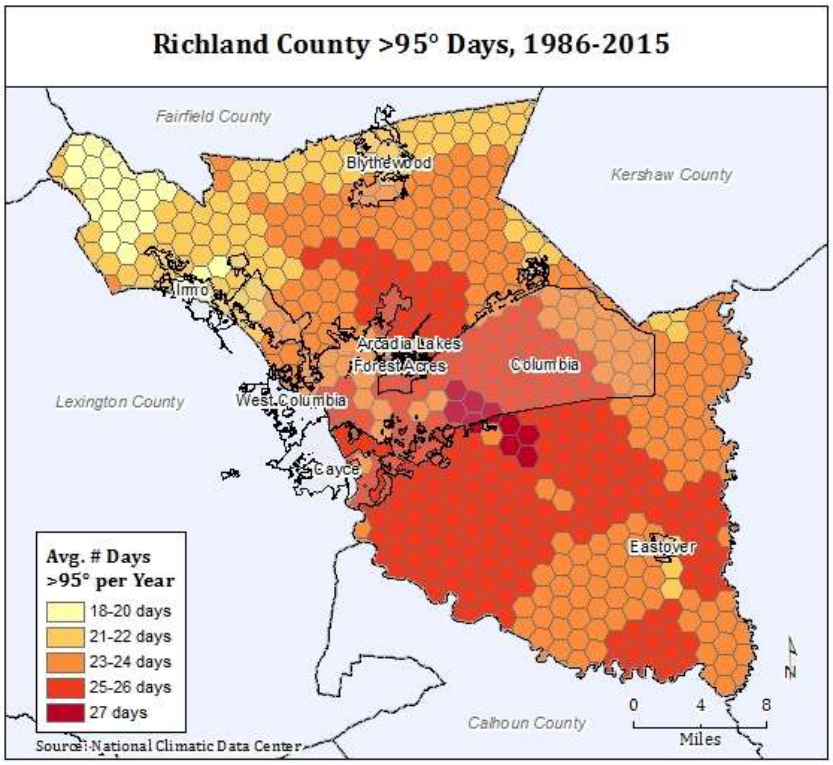


Figure 243 - Hot weather risk in Richland County.

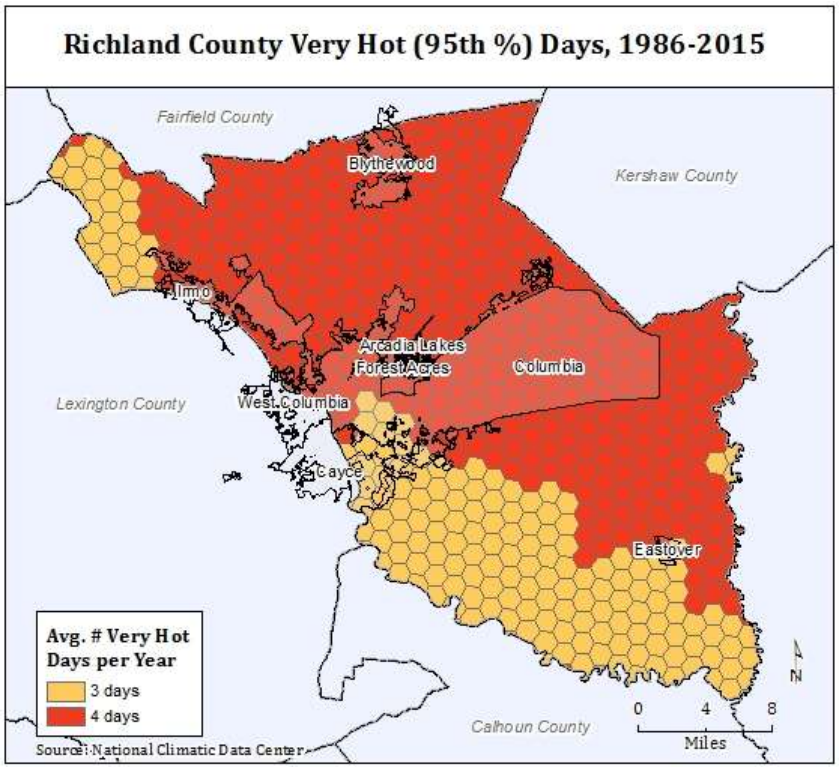


Figure 244 – Risk of hot temperature anomalies in Richland County.

Table 116 - Record of loss-causing hot weather events in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Location	Description
2/1/1976	2/29/1976	0	0	$452	$4,522	Statewide	Heat
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Statewide	Drought, Heat
10/1/1978	10/31/1978	0	0	$394	$3,946	Statewide	Drought, Heat
6/19/1981	6/19/1981	0	1	$0	$0	Columbia	Heat
6/1/1985	6/7/1985	0	0	$0	$239,146	Statewide	Heat
7/23/1986	7/23/1986	0	1	$0	$0	Richland County	Heat
7/10/1990	7/10/1990	0	1	$0	$0	Columbia	Heat
6/1/1993	6/30/1993	0	0	$0	$1,780,773	Statewide	Heat
7/1/1993	7/31/1993	0	0	$9,402,482	$0	SCZ001>007 Statewide	Drought, Heat
7/13/1993	7/13/1993	0	1	$0	$0	Richland county	Heat
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Statewide	Drought, Heat
8/6/2007	8/6/2007	0	1	$0	$0	SC028	Heat
10/7/2009	10/7/2009	0	1	$0	$0	SCZ028	Heat
TOTAL		**0**	**6**	**$9,407,574**	**$11,855,492**		

K) Wildfires

What to expect: In Richland County wildfires occur on average every 4 to 5 days, but damage to life and property is limited (Table 117). Most of the wildfires occur in southern Richland County and around the town of Eastover (Figure 245). The largest wildfire had a size of more than 1.5 square miles (1,005 acres). The number of wildfire events and the size of wildfires are expected to increase.

Geographic Extent: The entire county is susceptible to wildfire. The risk of wildfire including the propensity for large wildfires is highest in southern Richland County (Figure 246).

Wildfire statistics for Richland County are as following:

Number of Events:	2,113
Number of Loss-Causing Events:	3 (1960-2014)
Daily Frequency of Occurrence:	21%
Daily Recurrence Interval:	4.8 days
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1988-2015
Total Losses:	$366,633
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	$79,420 (March 15, 1966)
Most Crop Damage:	$239,146 (March 1, 1985)

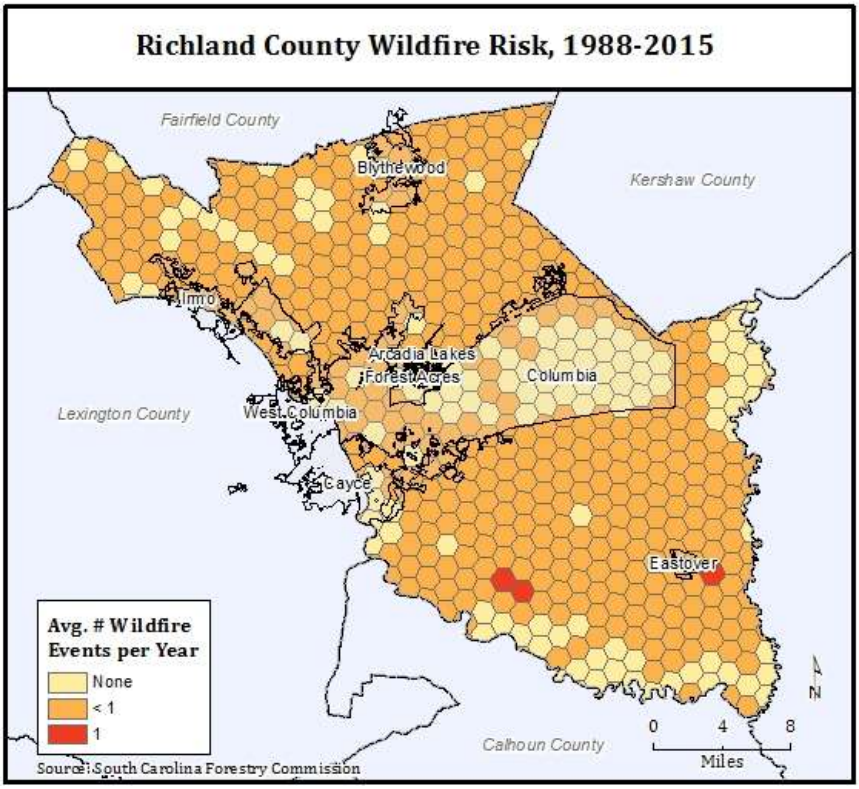


Figure 245 - Wildfire risk in Richland County based on average number of wildfires per year.

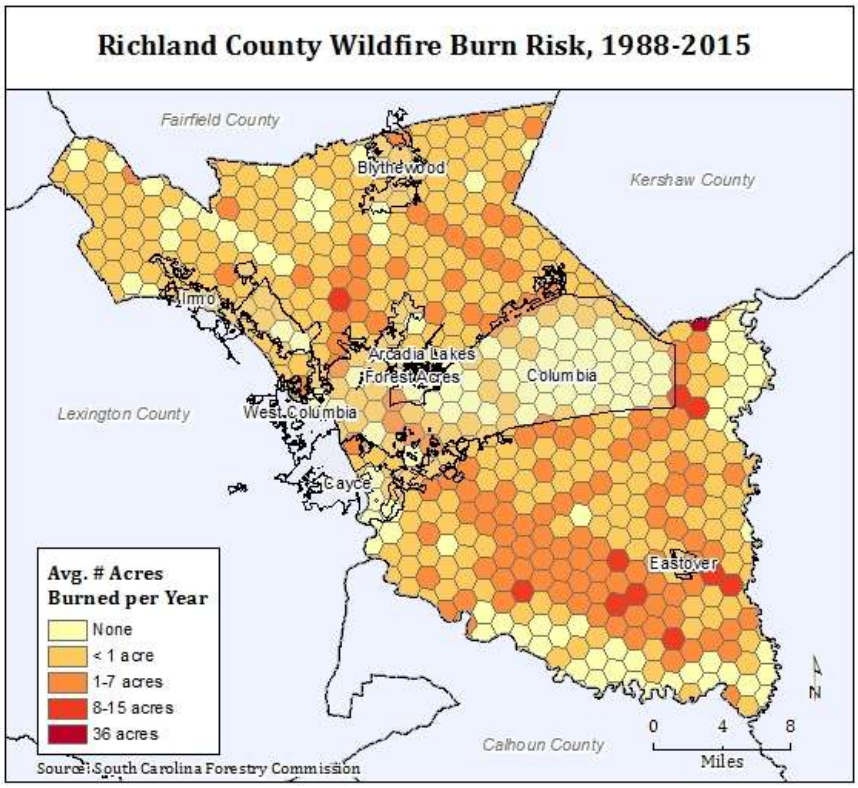


Figure 246 - Risk of large wildfires in Richland County.

Table 117 - Record of loss-causing wildfires in Richland County since 1960.

Start Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.	Location	Description
3/15/1966	3/31/1966	0	0	$79,420	$0		Statewide	Forest fires
3/1/1985	3/21/1985	0	0	$23,914	$239,146		Statewide	Fire
4/1/1985	4/30/1985	0	0	$239	$23,914		Statewide	Fire
TOTAL		**0**	**0**	**$103,573**	**$263,060**			

L) Droughts

What to expect: Richland County sees drought conditions, i.e. weeks of moderate to extreme drought according to the Palmer Drought Severity Index, on average for 4 to 6 months every year (Figure 247). Multi-year, severe droughts are possible in the County as seen from 1998 through 2002. In 2001, the County experienced its driest year with only 26.51 inches of rainfall (annual average: 47.53 inches)[109]. Droughts are detrimental to agricultural production (incl. forestry and water supply). Agricultural crops (especially corn, cotton, and soybean) are easily stressed by drought conditions and irrigation systems are not common in South Carolina. Severe droughts also affect tourism and fresh water fisheries. The number of droughts days and the duration of drought events are expected to increase.

Geographic Extent: The entire county is susceptible to drought but the northern part of Richland County has experienced more weeks in drought conditions. It is important to note that northern Richland County despite its elevated drought risk has generally speaking less hot weather than the rest of the county (Figure 243).

The most damaging droughts occurred in 1954, 1986, and 1998-2002 (Table 118). The latest severely impacted economic sectors such as agriculture, forestry, tourism, power generation, public water supplies, and fresh water fisheries[110]. Less severe droughts were reported in 1988, 1990, 1993, and 1995. Unfortunately, the record on losses, particularly agricultural losses is sparse—not because of a lack of losses but because of shortcomings in tracking drought losses. The current tally of more than $24 million in direct losses is most likely a vast underestimation and possibly exceeds $100 million.

Drought statistics for Richland County are as following:

Number of Events:	>17
Number of Loss-Causing Events:	17
Frequency of Occurrence:	31%
Recurrence Interval:	3.2 years
Expected changes to frequency and recurrence interval in the future:	Increased likelihood of occurrence and shortening of return periods
Events on Record:	1960-2014
Total Losses:	$24,345,640
Total Fatalities:	0
Deadliest Event:	n/a

[109] SCDNR, n/d. South Carolina County Weather Atlas. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_county_statistics.php
[110] SCDNR, n/d. South Carolina Climate. Available at http://www.dnr.sc.gov/climate/sco/ClimateData/cli_sc_climate.php

Most Property Damage:	$9,402,482 (June 1, 1993)
Most Crop Damage:	$9,402,482 (August 1, 1993)

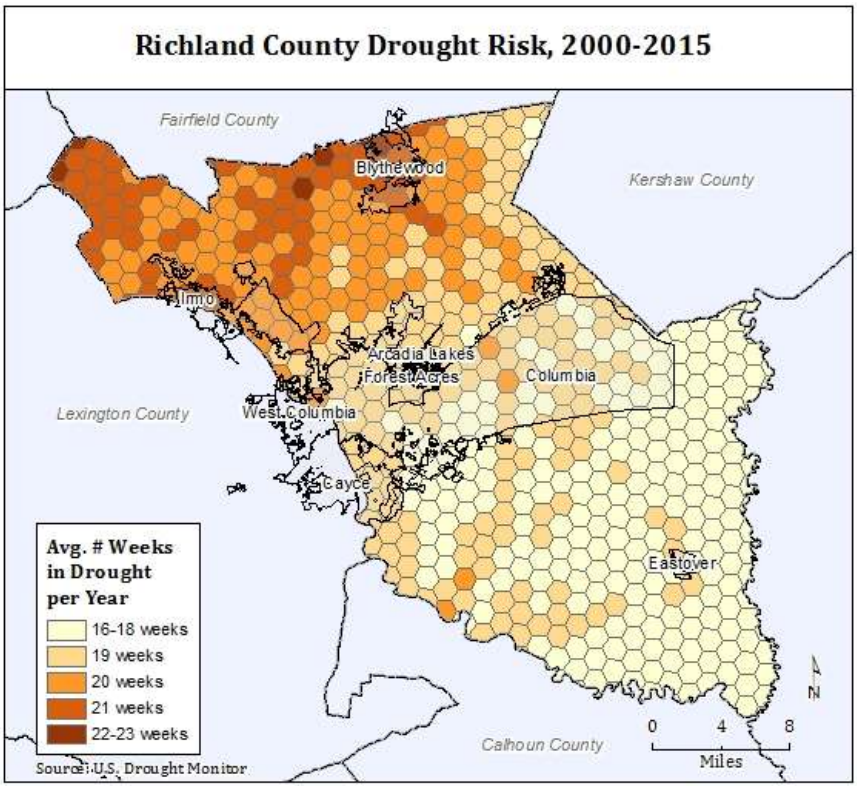


Figure 247 - Drought risk in Richland County.

Table 118 - Record of loss-causing drought in Richland County since 1960.

Begin Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location
7/1/1977	7/31/1977	0	0	$4,246	$424,623	Moderate	Statewide
4/1/1978	4/13/1978	0	0	$39	$3,946	Dry	Statewide
10/1/1978	10/31/1978	0	0	$394	$3,946	Moderate	Statewide
6/1/1984	6/20/1984	0	0	$0	$2,476	Moist	Statewide
4/1/1986	4/30/1986	0	0	$0	$276	Dry	SCZ001-002-003-004-005-006-007
5/1/1986	5/31/1986	0	0	$0	$23,478	Moderate	Statewide
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide
6/1/1986	6/30/1986	0	0	$2,347	$23,478	Severe	Statewide
7/1/1986	7/31/1986	0	0	$234,782	$2,347,826	Extreme	Statewide
2/1/1988	2/28/1988	0	0	$21	$2,175	Dry	Statewide
6/1/1988	6/30/1988	0	0	$2,175	$21,751	Dry	Statewide
7/1/1988	7/31/1988	0	0	$217	$2,175	Moderate	Statewide
8/1/1988	8/31/1988	0	0	$2	$2,779	Dry	SCZ001-002-003-004-006-008
7/1/1993	7/31/1993	0	0	$9,402,482	$0	Moderate	SCZ001>007 All of SC
8/1/1993	8/31/1993	0	0	$0	$9,402,482	Moderate	Statewide

Begin Date	End Date	Inj.	Fat.	Property Damage	Crop Damage	Mag.*	Location
5/1/1994	5/31/1994	0	0	$0	$1,736,314	Moderate	Statewide SC01>50
5/1/1995	5/31/1995	0	0	$0	$675,385	Dry	SCZ001>050
TOTAL		**0**	**0**	**$9,649,052**	**$14,696,588**		

*Based on historic Palmer Drought Severity Index categories.
Note: While droughts occurred since 1995, the NCEI (formerly NCDC) did not report any losses. The occurrence of drought is reflected in Figure 247.

M) Earthquakes

What to expect: Richland County has a much lower earthquake risk than coastal counties in South Carolina and experiences only low magnitude earthquakes. Since 1900, the strongest earthquake had a magnitude of 2.9 (Figure 248). There is only a 2% chance that Richland County could experience shaking of up to 2m/s with a slightly higher shaking potential in the southern parts of the county (Figure 249).

Geographic Extent: The entire county is susceptible to earthquakes.

Earthquake statistics for Richland County are as following:

Number of Events:	3
Number of Loss-Causing Events:	0 (1960-2014)
Frequency of Occurrence:	3%
Recurrence Interval:	39 years
Expected changes to frequency and recurrence interval in the future:	No changes
Events on Record:	1900-2015
Total Losses:	0
Total Fatalities:	0
Deadliest Event:	n/a
Most Property Damage:	n/a
Most Crop Damage:	n/a

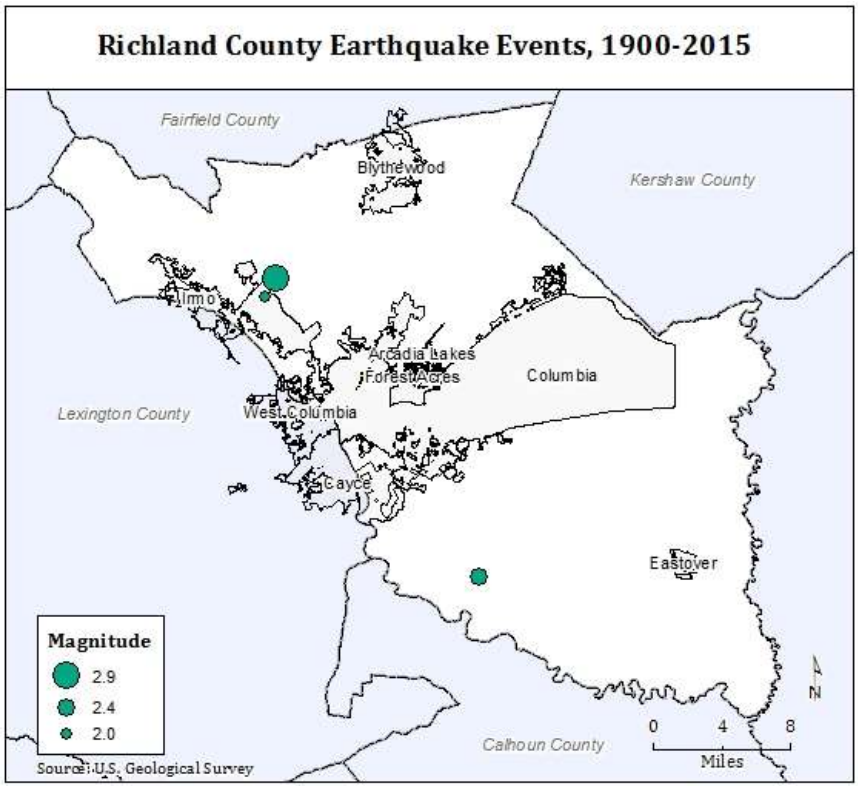


Figure 248 – Earthquake risk in Richland County.

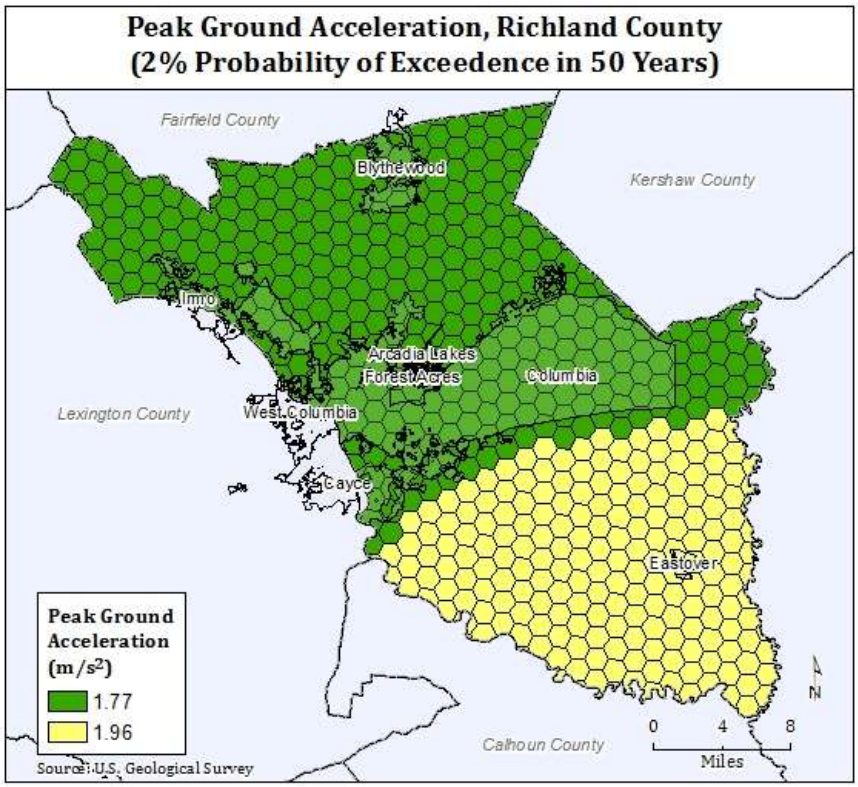


Figure 249 - Risk of shaking due to earthquakes in Richland County.

This section addresses FEMA HMP requirement 201.6(c)(2)(i)

8.2 Hazard Vulnerability Assessment for Richland County

Vulnerability is generally defined as the potential for loss. The vulnerability assessment identifies assets at risk (people, critical infrastructure, etc.) and estimates potential losses from the hazards identified previously in the hazard assessment. Vulnerability is best expressed in qualitative terms (high, medium, and low). To arrive at such a classification, the information generated in the hazard assessment is parsed into low, medium, and high categories and then overlaid with information on social vulnerability, critical infrastructure, population, and building stock.

Please note that the sections on floods, earthquakes, and hurricanes include probabilistic hazard and damage estimates alongside the historic risk information provided for all other hazards. Such probabilistic information is unavailable for any other hazard type.

When combining vulnerability information across all 15 hazard types, the vulnerability of Richland County looks as following: High vulnerability areas—both in terms of hazard occurrence and social vulnerability—are present in southern Richland County as well as in pockets in the larger metropolitan area (Figure 250). For a comparison of vulnerability statics for high risk zones only, see Table 119.

Summary of Richland County's Vulnerabilities	**Risk Zones**		
	Low	**Medium**	**High**
Critical Infrastructure	32 (17%)	99 (54%)	53 (29%)
Building Stock	$13 billion (16%)	$44.7 billion (55%)	$23.1 billion (29%)
Population	78,148 (20%)	208,209 (53%)	107,231 (27%)

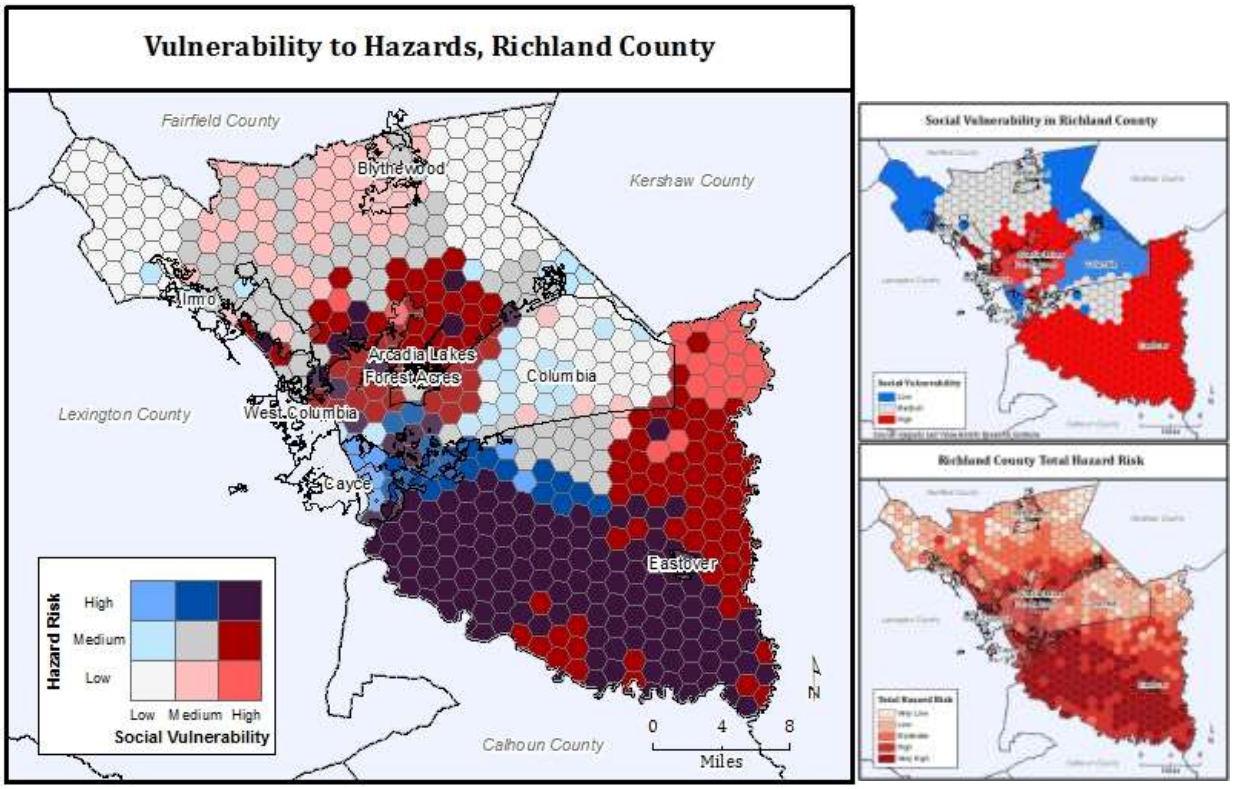


Figure 250 - Vulnerability to natural hazards in Richland County.

Note: The hazard risk map (bottom right) is identical to the comprehensive map developed in the hazard assessment section. Detail on the social vulnerability map (top right) are provided below

Table 119 - Vulnerability overview by hazard for high risk areas in Richland County.

	Critical Infrastructure	Building Stock	Population	Population with high social vulnerability
Flooding*	6 (3%)	$4.3 billion (5%)	42,047 (11%)	1,937 (1%)
Hurricane	0	$0.08 billion (<1%)	2,006 (1%)	2,006 (1%)
Tornadoes	30 (16%)	$13.4 billion (16%)	68,916 (18%)	5,858 (3%)
Thunderstorm	41 (22%)	$14.1 billion (17%)	74,925 (19%)	36,752 (20%)
Lightning	73 (40%)	$32.9 billion (41%)	136,411 (35%)	79,749 (42%)
Wind	17 (9%)	$1.7 billion (2%)	15,425 (4%)	14,456 (8%)
Hail	1 (<1%)	$4.9 billion (6%)	10,820 (3%)	9,322 (5%)
Fog	33 (18%)	$17 billion (21%)	85,347 (22%)	32,010 (17%)
Winter Storm	94 (51%)	$41.7 billion (52%)	189,373 (48%)	105,371 (56%)
Cold**	39 (21%)	$13.7 billion (17%)	67,324 (17%)	32,162 (17%)
Heat**	45 (25%)	$19.4 billion (24%)	109,076 (28%)	28,506 (15%)
Drought	63 (34%)	$24.7 billion (31%)	131,577 (33%)	31,701 (17%)
Wildfire	90 (49%)	$36.6 billion (45%)	188,508 (48%)	82,822 (44%)
Earthquake	22 (12%)	$2.7 billion (3%)	19,351 (5%)	15,887 (8%)
Overall Vulnerability	53 (29%)	$23.1 billion (29%)	107,231 (27%)	64,684 (34%)

* High risk defined as being inside the 100-yr flood zone
** Data shown here using the 95% percentile

A) Assets at Risk

Richland County is home to nearly 400,000 residents and has a building stock of approximately 130,000[111] buildings with a total replacement value of about $53.7 billion (in 2015) (Table 120). Since 2010, Richland County gained 2.3% more residents which has increased the exposure to natural hazards compared to the previous plan. See Section 3.4 for more information on development changes in the county.

Table 120 - Building stock values by occupancy type in Richland County. Source: HAZUS 2.2.

Building Type	Total Replacement Value (in Million)
Residential	$42,308.4
Commercial	$7,040.3
Industrial	$1,446.9
Agricultural	$70.5
Religious	$851.1
Government	$823.4
Education	$1,179.6
Total	**$53,720.2**

[111] Value based on HAZUS 2.2. general building stock.

Since the aforementioned values represent the total replacement cost by property type, they may greatly differ from county assessment and appraisal values. The following values provided by the county (Table 121) are capped based on the maximum taxable amount according to the county tax code.

Table 121 - Richland County Appraised and Assessed Values of Buildings Only as of 28/March/2016.

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Unincorporated Richland County			
Single Family	76,300	$410,509,434	$8,026,540,200
Mobile Homes	6,490	$2,819,250	$60,420,700
Multi Family	3,480	$56,262,072	$882,131,000
Commercial	1,622	$72,049,260	$819,098,600
Industrial	834	$23,123,540	$387,775,100
Agricultural	10	$31,410	$323,200
Institutional	53	$3,700,910	$90,687,100
Total	**88,789**	**$568,495,876**	**$10,266,975,900**
City of Columbia			
Single Family	28,059	$193,801,772	$3,440,506,500
Mobile Homes	33	$6,780	$130,000
Multi Family	6,507	$69,854,998	$1,156,408,800
Commercial	2,020	$96,453,632	$2,766,037,100
Industrial	395	$12,265,870	$201,585,900
Institutional	45	$2,528,520	$169,961,100
Total	**37,059**	**$374,911,572**	**$7,734,629,400**
City of Cayce			
Single Family	198	$1,857,340	$31,077,800
Multi Family	1	$270	$500
Commercial	1	$520	$500
Total	**200**	**$1,858,130**	**$31,078,800**
Town of Arcadia Lakes			
Single Family	406	$3,995,720	$69,197,300
Multi Family	1	$4,750	$66,800
Commercial	5	$288,890	$3,360,900
Total	**412**	**$4,289,360**	**$72,625,000**
Town of Forest Acres			
Single Family	3,610	$29,375,710	$515,500,200
Mobile Homes	3	$550	$10,600
Multi Family	933	$4,890,444	$87,574,200
Commercial	183	$8,338,310	$79,098,500
Industrial	9	$89,090	$1,049,300
Institutional	3	$192,240	$3,860,600
Total	**4,741**	**$42,886,344**	**$687,093,400**
Town of Eastover			
Single Family	236	$437,040	$8,181,600
Mobile Homes	53	$19,770	$407,900
Multi Family	1	$2,050	$28,900

Town / Type Of Use	Number of buildings	Assessed Value	Appraised Value
Commercial	25	$101,980	$1,525,500
Industrial	1	$0	$381,500
Institutional	4	$19,840	$1,214,600
Total	**320**	**$580,680**	**$11,740,000**
Town of Irmo			
Single Family	2,840	$12,337,070	$224,086,100
Mobile Homes	14	$11,100	$234,100
Multi Family	2	$8,340	$119,400
Commercial	80	$4,701,760	$49,144,700
Industrial	27	$792,580	$10,177,100
Institutional	2	$70,370	$1,004,300
Total	**2,965**	**$17,921,220**	**$284,765,700**
Town of Blythewood			
Single Family	951	$8,315,020	$176,801,700
Mobile Homes	4	$1,110	$26,500
Commercial	54	$2,309,832	$21,955,000
Industrial	1	$5,060	$58,400
Institutional	4	$113,030	$867,500
Total	**1,014**	**$10,744,052**	**$199,709,100**
County Total	**135,500**	**$1,021,598,144**	**$19,287,568,000**

There are nearly 200 critical facilities in Richland County such as an Emergency Operation Center, a 911 communications center, 8 major hospitals, Jim Hamilton-LB Owens Airport, several wastewater treatment plans, administrative buildings (e.g., Department of Social Services, Magistrate) as well as numerous law enforcement, fire/EMS and school facilities (Table 122). Most of the critical infrastructure is located in the City of Columbia and surrounding areas (Figure 251). More information on the vulnerability assessment for each critical facility can be found in Appendix II.

Table 122 - Critical facilities in Richland County.

	Count
County Facilities	24
Fire-EMS Facilities	26
Law Enforcement Facilities	18
Medical Facilities	8
Evacuation Shelters	30
Schools and School Administration	98
TOTAL	195

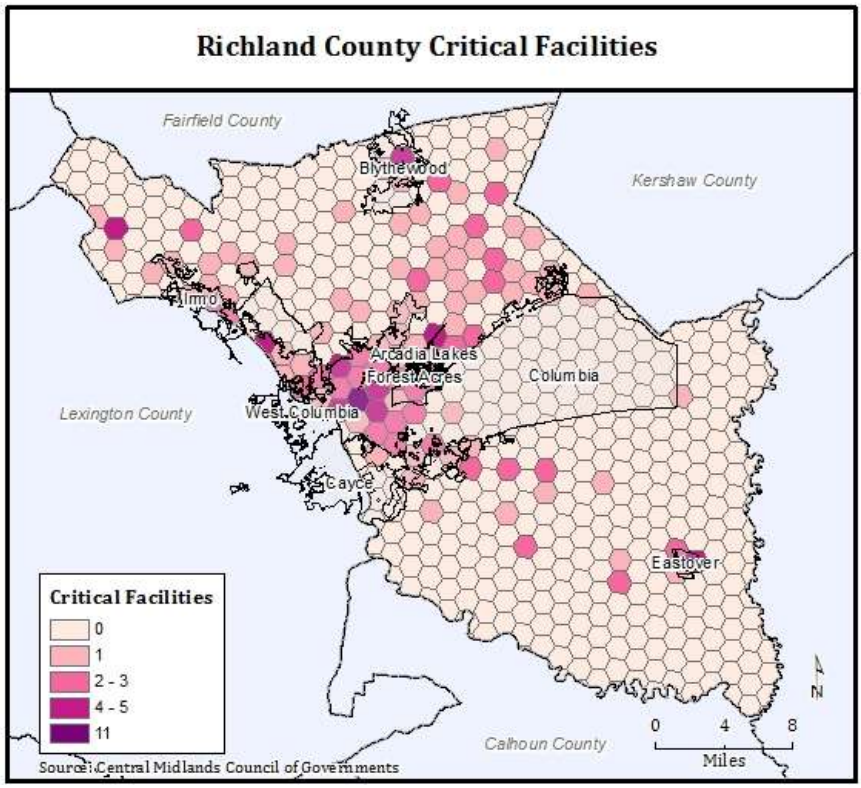


Figure 251 - Distribution of critical facilities in Richland County.

The following sections discuss hazard-specific vulnerabilities in Richland County. Vulnerability is assessed by overlaying the county's social vulnerability with the risk of being exposed to a hazard of either a certain magnitude (i.e. probabilistic scenarios) or historic occurrences/warnings. In addition, the location and number of critical infrastructure within an area (hexagon) are incorporated into the vulnerability maps by extruding or raising a hexagon relative to the number of critical infrastructure located in the hexagon area.

B) Social vulnerability

The SoVI® is a measure of the sociodemographic make-up of Richland County that influences how well populations within a census tract can prepare for, respond to, or recover from a hazard. About 90,000 of the county's residents of live in highly vulnerable census tracts (Table 123), mostly in the southern and north-central portions of the county (Figure 252).

Table 123 - Distribution of socially vulnerable census tracts in Richland County.

SoVI Category	Number of Tracts	Number of Housing Units	Population
Low	34	68,114	171,007
Medium	31	58,539	122,775
High	24	35,072	90,167

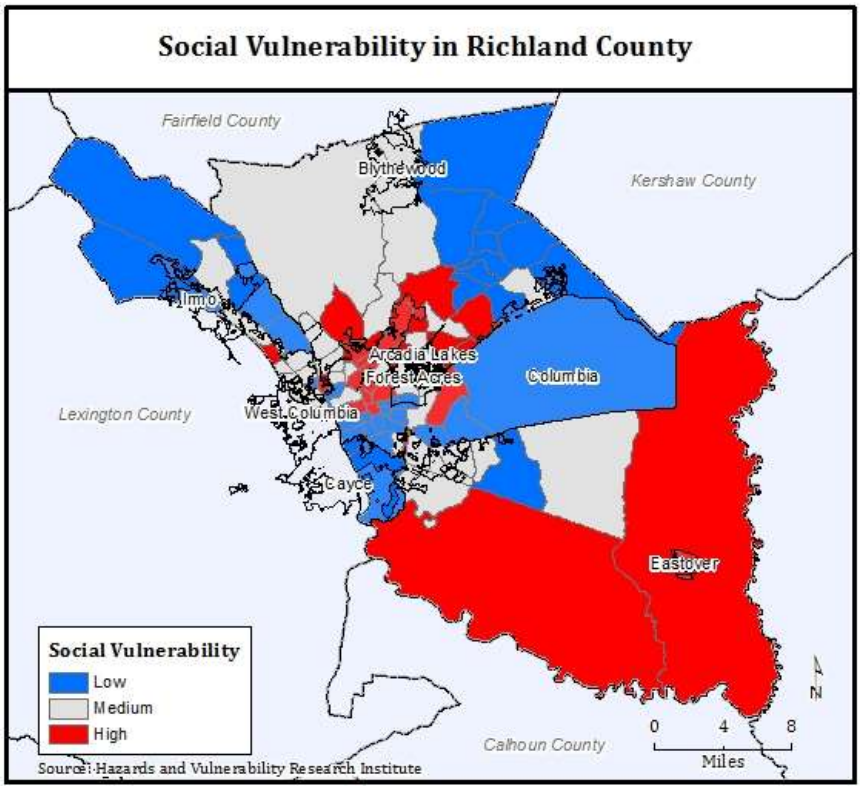


Figure 252 - Socially vulnerable tracts in Richland County.

Richland County's SoVI® is derived from a dynamic combination of eight main vulnerability components (Table 124). Overall, SoVI® scores range from -5.34 to 6.76 with about 1/3 of census tracts falling in the high SoVI® category (Table 123). It is important to note that what makes a census tract socially vulnerable varies from census tract to census tract within the county.

The SoVI® scores (Figure 252) are mapped using a three-class standard deviation[112] model:

- High social vulnerability (standard deviation greater than 0.5)
- Medium social vulnerability (standard deviations between 0.5 to -0.5)
- Low social vulnerability (standard deviation lower than -0.5)

[112] Standard deviation is a measure of variability within a data set. It measures the distance to the mean. A large standard deviation means that the observation is further away from the mean of the data set. For normally distributed data, 68.2% of observations fall within 1 and -1 standard deviations.

Table 124 - SoVI dimensions and importance of input variables for Richland County.

Component	*Cardinality*	*Name*	*% Variance Explained*	*Dominant Variables*	*Component Loading*
1	**+**	Lack of Wealth and Race (Black)	16.357	QBLACK	0.681
				QFHH	0.565
				QFAM	-0.626
				PERCAP	-0.868
				MHSVAL	-0.879
				QRICH200K	-0.935
2	**+**	Poverty and Class	14.077	QPOVTY	0.812
				QED12LES	0.769
				QSERV	0.672
				QQNOAUTO	0.595
3	**+**	Age (Old)	11.859	MEDAGE	0.768
				QMOHO	0.679
				QSSBEN	0.650
				QRENTER	-0.766
4	**+**	Female Headed Households	10.205	QFEMALE	0.811
				QAGEDEP	0.679
				QFHH	0.618
				QSSBEN	0.612
				QNOAUTO	0.505
5	**+**	Ethnicity (Hispanic) and Race (Asian)	8.344	QESL	0.938
				QHISP	0.861
				QASIAN	0.594
6	**+**	Special Needs	6.767	QNRRES	0.861
7	**+**	Rural and Primary Sector	5.834	QUNOCCHU	0.817
				QEXTRACT	0.624
8	**+**	Ethnicity (Native American)	4.377	QNATAM	0.942
				QNOAUTO	0.254
		Cumulative Variance Explained	**77.82**		

To investigate the relationship between social vulnerability and hazard risk, the SoVI® map for Richland County (Figure 252) is converted from administrative boundaries to hexagon units (Figure 253) identical to the hexagons maps developed in the preceding hazard assessment of the HMP. Furthermore, hazard risk maps are categorized into three risk classes: low, medium, and high risk. By overlaying social vulnerability and hazard risk, the intersection of both elements can be visualized and communicated through color using a bivariate color scheme: the bivariate color scheme consists of hazard risk (y-axis, bluish colors) and social vulnerability (x-axis, redish colors). For example, the color white represents areas of low social vulnerability and low hazard risk whereas purple hexagons have both high social vulnerability and high hazard risk.

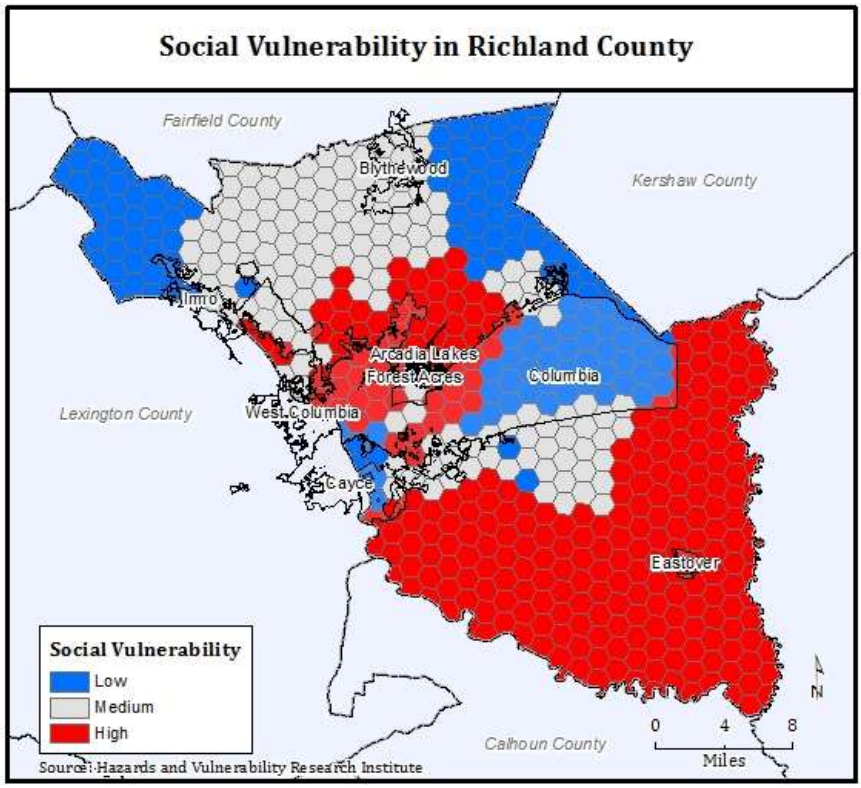


Figure 253 - Hexagon map of social vulnerability in Richland County.

C) Flooding

The vulnerability to riverine flooding is most pronounced in 100-year floodplains (1% annual chance of occurrence) in southern Richland County due to the presence of socially vulnerable populations (Figure 254). Exposure in the 100-year floodplain is largely limited to residential buildings with only six critical facilities located inside the 100-year floodplain (Figure 255). It is important to note that the determination of infrastructure inside or outside the 100-year floodplain was solely based on location and did not take elevation into account. Therefore being located inside the 100-year floodplain does not carry any implications regarding requirements for the National Flood Insurance Program.

Vulnerability statistics for 100-year floods in Richland County	**Risk Zones**	
	Outside of 100-year Floodplain	**Inside of 100-year Floodplain**
Critical Infrastructure	178 (97%)	6 (3%)
Building Stock	$76.5 billion (95%)	$4.3 billion (5%)
Population	351,540 (89%)	42,047 (11)
Population w/high social vulnerability	186,311 (99%)	1,937 (1%)
Scenario	1000-year Flood Event	

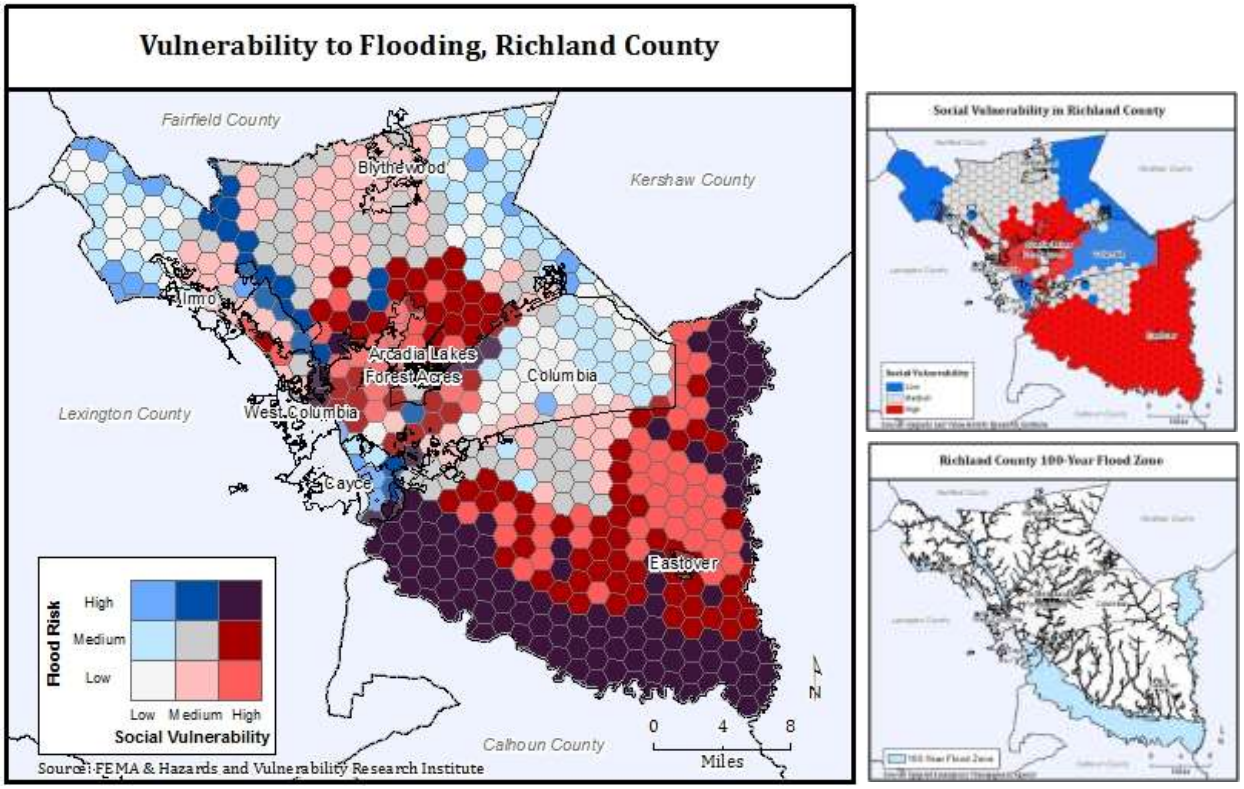


Figure 254 - Vulnerability to floods in Richland County.

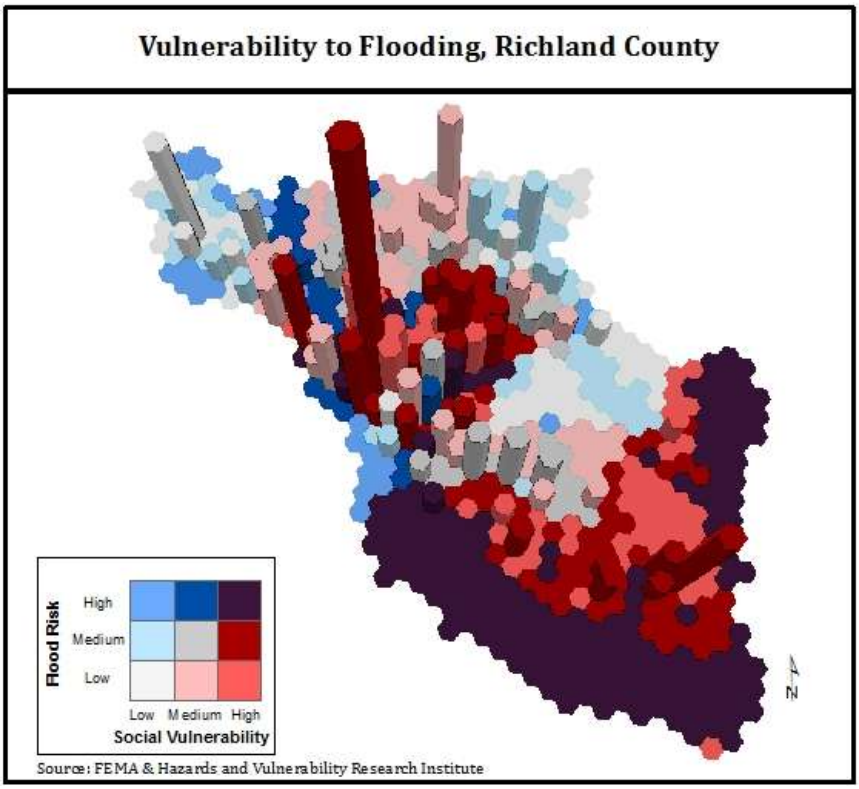


Figure 255 - Vulnerability of critical infrastructure to flooding in Richland County.

For a 1,000-year flood event (0.1% annual chance of occurrence) (Figure 256), about 517 buildings (more than 30 % of buildings within modelled 1000-year floodplain) would be at least moderately damaged with an estimated property damage of $300 million (nearly all of it residential) with most of the damage occurring in central and northwest Richland County (Figure 257). It is expected that one police station and one school would receive at least moderate damage. The modelled flood's impact area overlaps to some degree with the county's vulnerable populations. All estimates were derived using HAZUS-MH 2.2. Note that HAZUS-MH does not accurately model the outline of lakes incl. Lake Murray. In addition, stretches of the lower Congaree River, southwest of Eastover, had to be excluded due to computational issues with HAZUS.

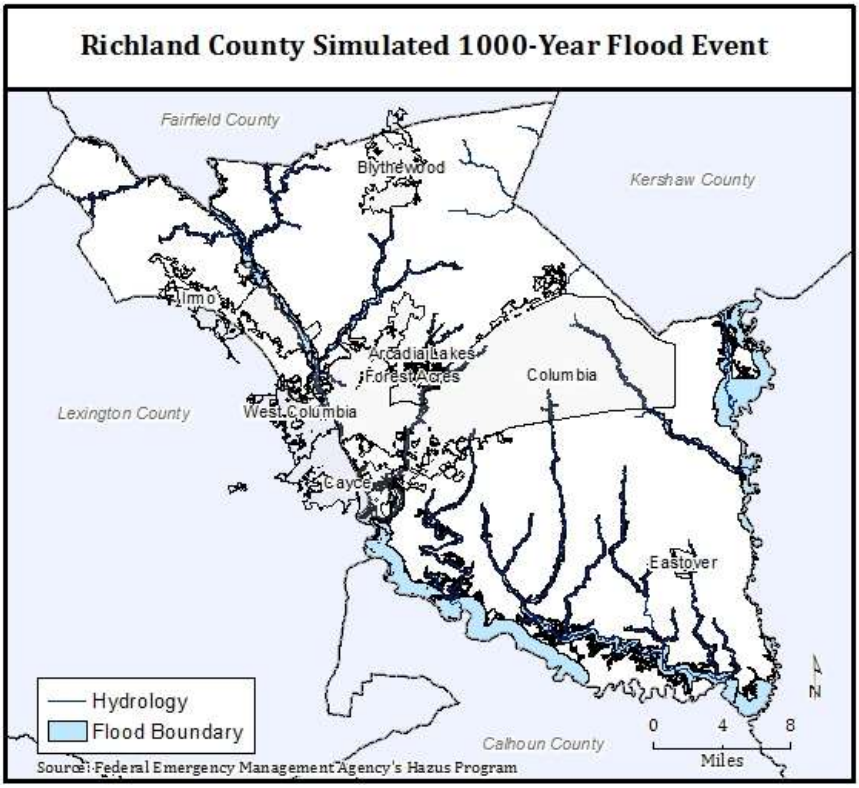


Figure 256 - Modelled 1,000-year flood event in Richland County.

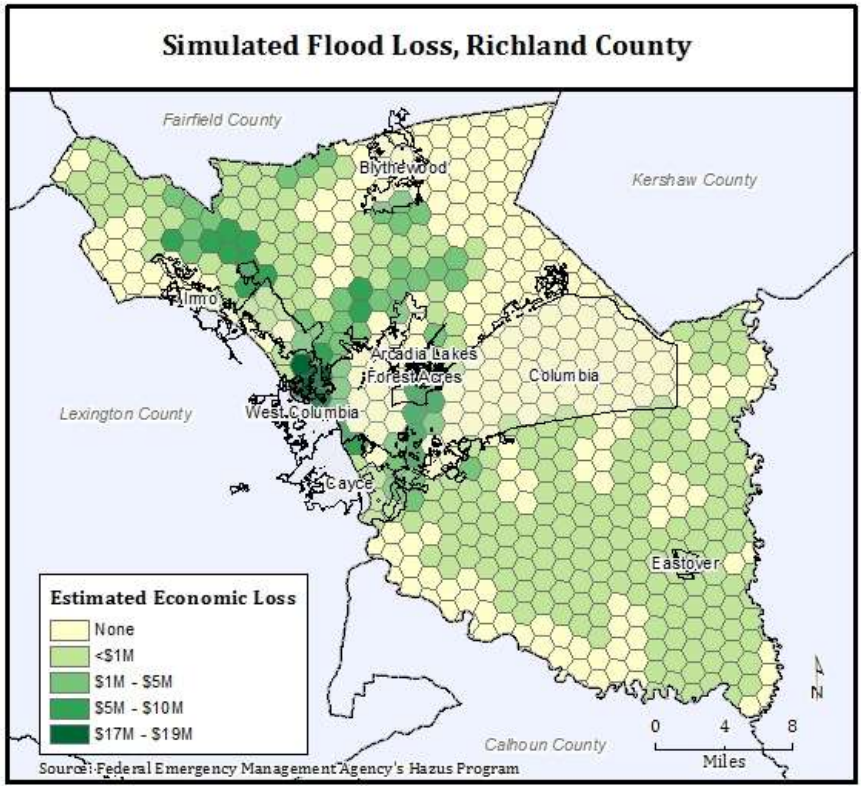


Figure 257 - Damage from a modelled 1,000-year flood event in Richland County.

D) Hurricanes & Tropical Storms

The southern part of Richland County exhibits a higher risk to tropical cyclones than the northern areas (Figure 258). Especially in southern Richland County, high social vulnerability overlaps with a higher tropical storm risk. None of the critical infrastructure is located in the highest risk areas (Figure 259).

Vulnerability statistics for tropical storms in Richland County	**Risk Zones**		
	Low	**Medium (0.111 tropical storms/year)**	**High (0.148 tropical storms/year)**
Critical Infrastructure	n/a	184 (100%)	0
Building Stock	n/a	$80.8 billion (100%)	$0.08 billion (<1%)
Population	n/a	391,581 (999%)	2,006 (1%)
Population w/high social vulnerability	n/a	186,241 (99%)	2,006 (1%)
Scenario	1000-year probabilistic storm		

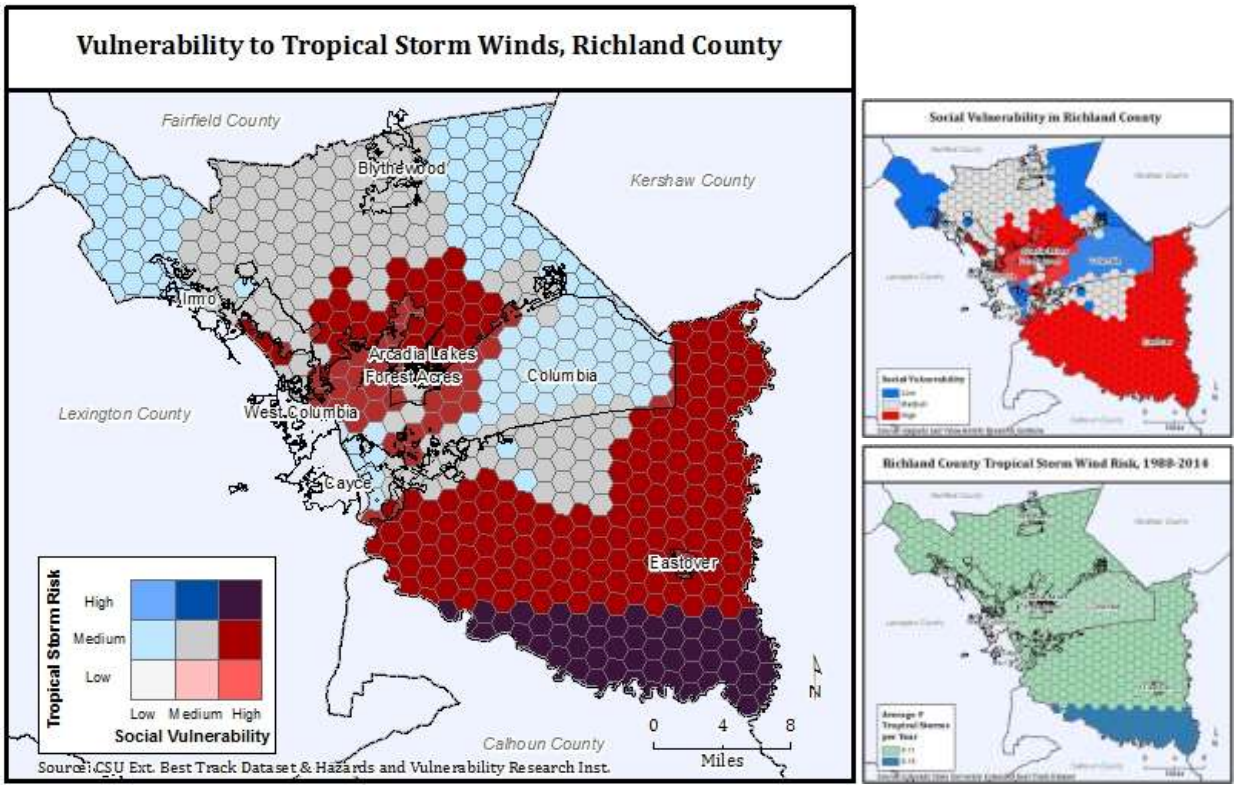


Figure 258 - Vulnerability to tropical storms in Richland County.

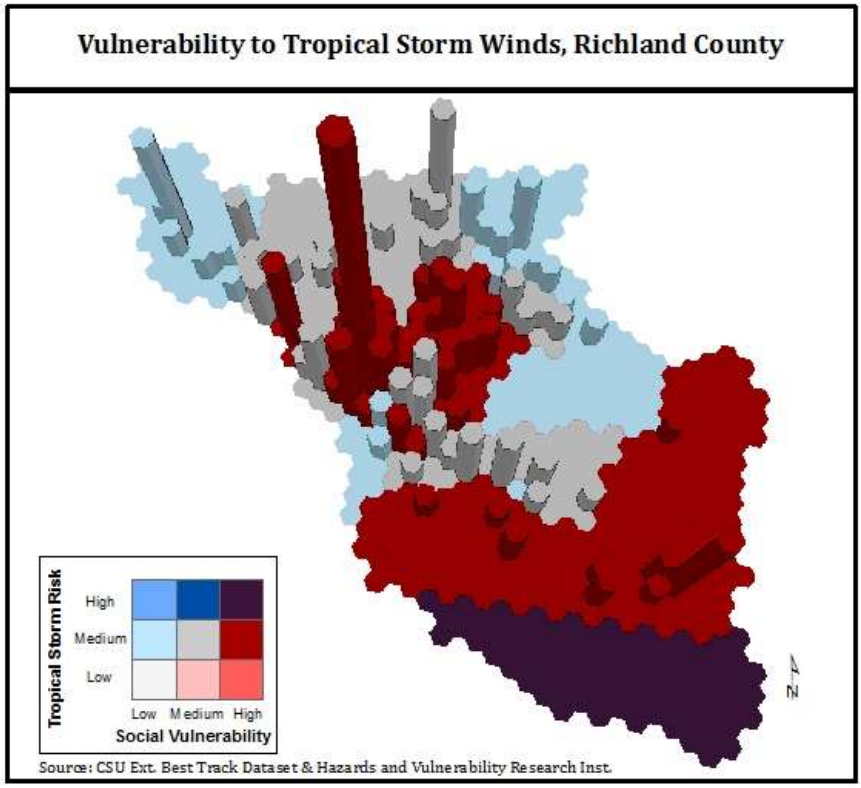


Figure 259 - Vulnerability of critical infrastructure to tropical storms in Richland County.

For a 1,000-year hurricane event, Richland County is expected to see wind speeds between 96 and 129 miles per hour (Category 3) (Figure 260). Such wind speeds are probable with a fast-moving, major hurricane that has a similar track to Hurricane Hugo. About 87% of the county's infrastructure would not experience any damage. Nearly 9,000 buildings (or 8% of the building stock) would be at least moderately damaged with an estimated property damage of close to $2 billion (nearly 85% of it residential) with most of the damage occurring in central and northeastern Richland County (Figure 261). It is expected that some of the hospitals and schools will experience moderate damage with many of the hospitals and schools unable to restore operations within a day. In central Richland County, the modelled storm's most catastrophic impact area overlaps with some of the county's most vulnerable populations. All estimates were derived using HAZUS-MH 2.2.

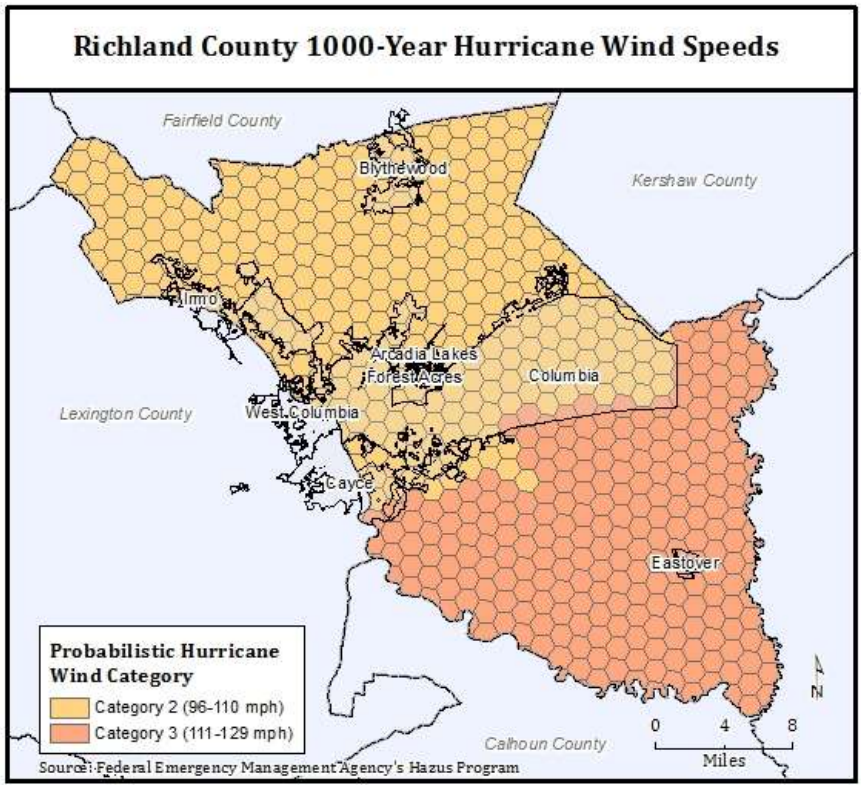


Figure 260 - Hurricane wind speeds using a 1,000-year storm event in Richland County.

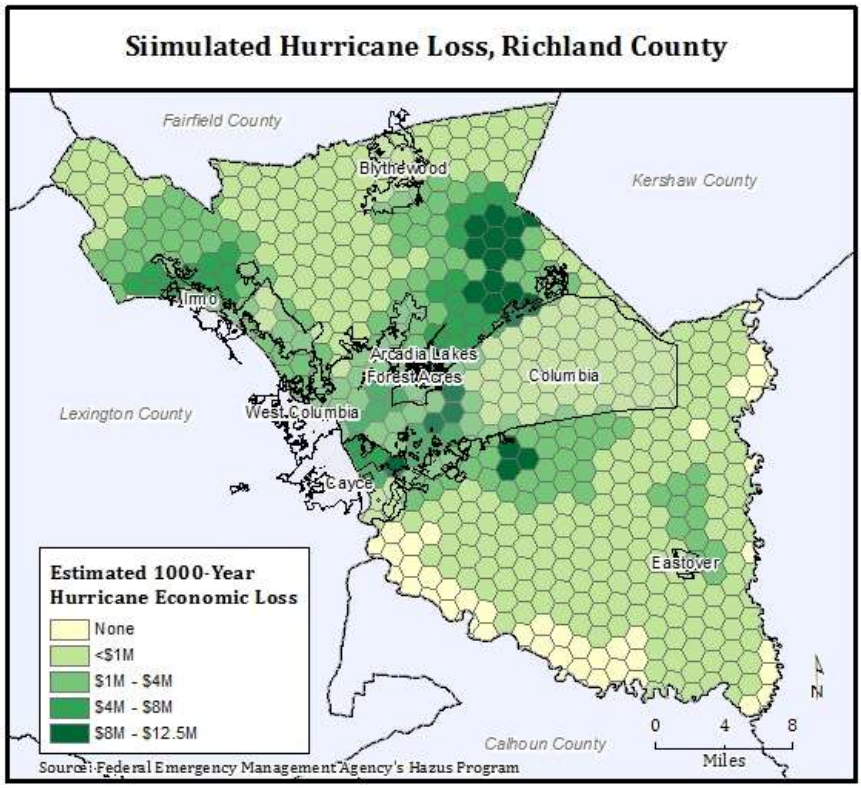


Figure 261 - Damage from a modelled 1,000-year hurricane event in Richland County.

E) Tornadoes

Areas of high vulnerability to tornadoes, i.e. a high frequency of past tornado warnings (more than 0.5 warning per year) along with high social vulnerability, occur in southernmost Richland County and in a small area near the Town of Irmo (Figure 262). About 16% of the county's critical infrastructure, building stock and population are located in this high vulnerability area (Figure 263).

Vulnerability statistics for tornadoes in Richland County	**Risk Zones**		
	Low (<0.25 warnings/year)	**Medium (0.25-0.5 warnings/year)**	**High (>0.5 warnings/year)**
Critical Infrastructure	95 (52%)	59 (62%)	30 (16%)
Building Stock	$44.3 billion (55%)	$23.2 billion (29%)	$13.4 billion (16%)
Population	194,302 (49%)	130,370 (33%)	68,916 (18%)
Population w/high social vulnerability	115,440 (61%)	66,949 (36%)	5,858 (3%)

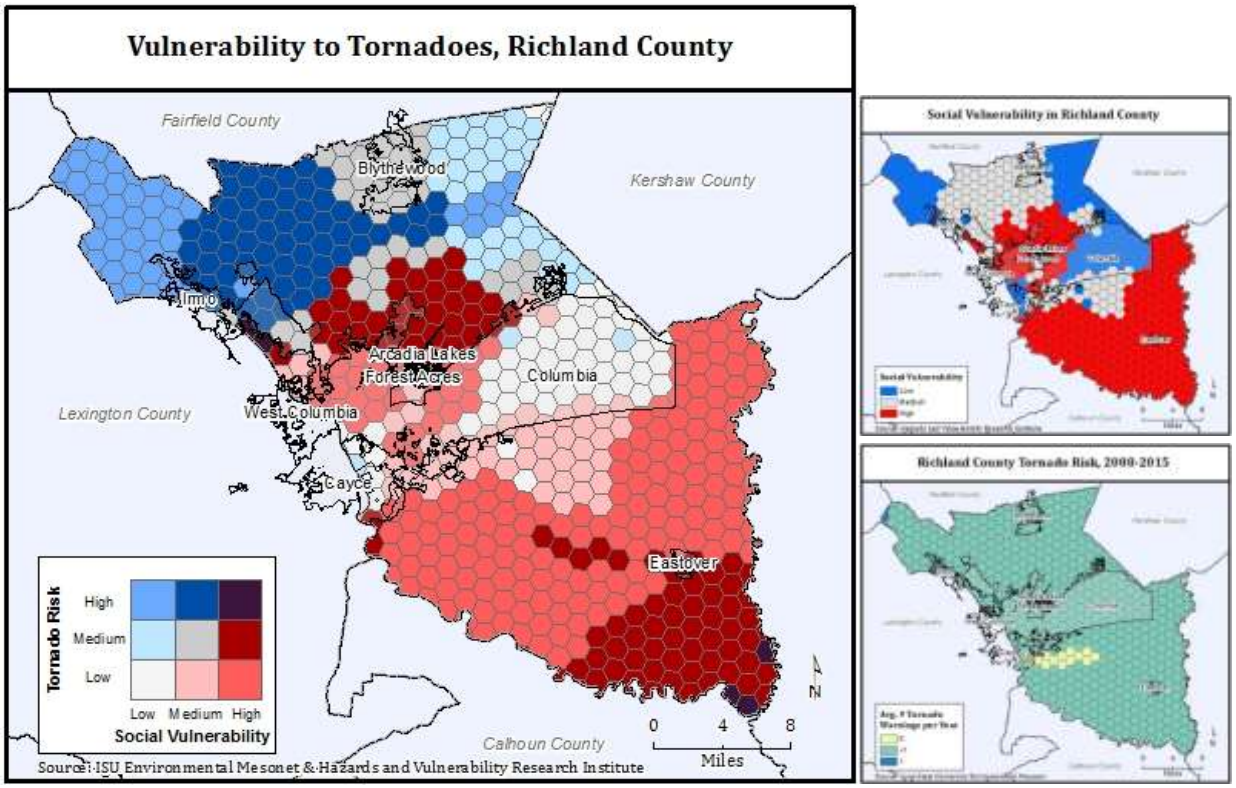


Figure 262 - Vulnerability to tornadoes in Richland County.

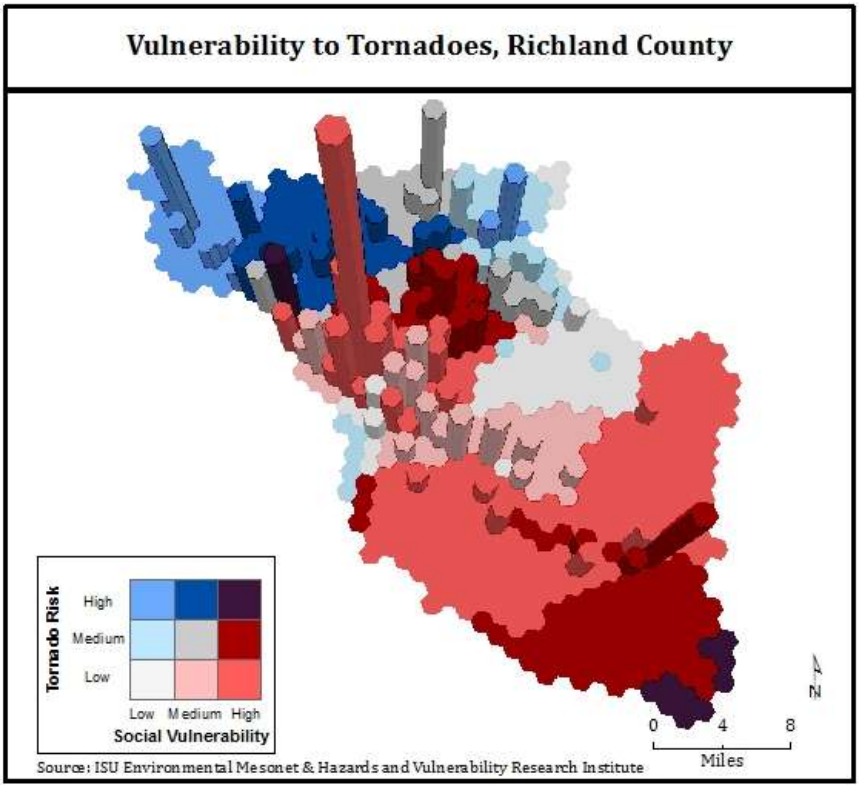


Figure 263 - Vulnerability of critical infrastructure to tornadoes in Richland County.

F) Thunderstorms

There are several areas in the county with high thunderstorm vulnerability particularly around the Town of Eastover (Figure 264). Areas that have experienced a higher number of thunderstorm warnings in the past tend to overlap with areas of high social vulnerability. About 20% of the county's critical infrastructure and other assets are located in the high risk area that experiences more than 16.6 severe thunderstorm warning per year (Figure 265).

Vulnerability statistics for severe thunderstorms in Richland County	**Risk Zones**		
	Low (<14.2 warnings/year)	**Medium (14.2-16.6 warnings/year)**	**High (>16.6 warnings/year)**
Critical Infrastructure	50 (27%)	93 (51%)	41 (22%)
Building Stock	$20.6 billion (25%)	$46.2 billion (57%)	$14.1 billion (17%)
Population	117,808 (30%)	200,854 (51%)	74,925 (19%)
Population w/high social vulnerability	8,008 (4%)	143,487 (76%)	36,752 (20%)

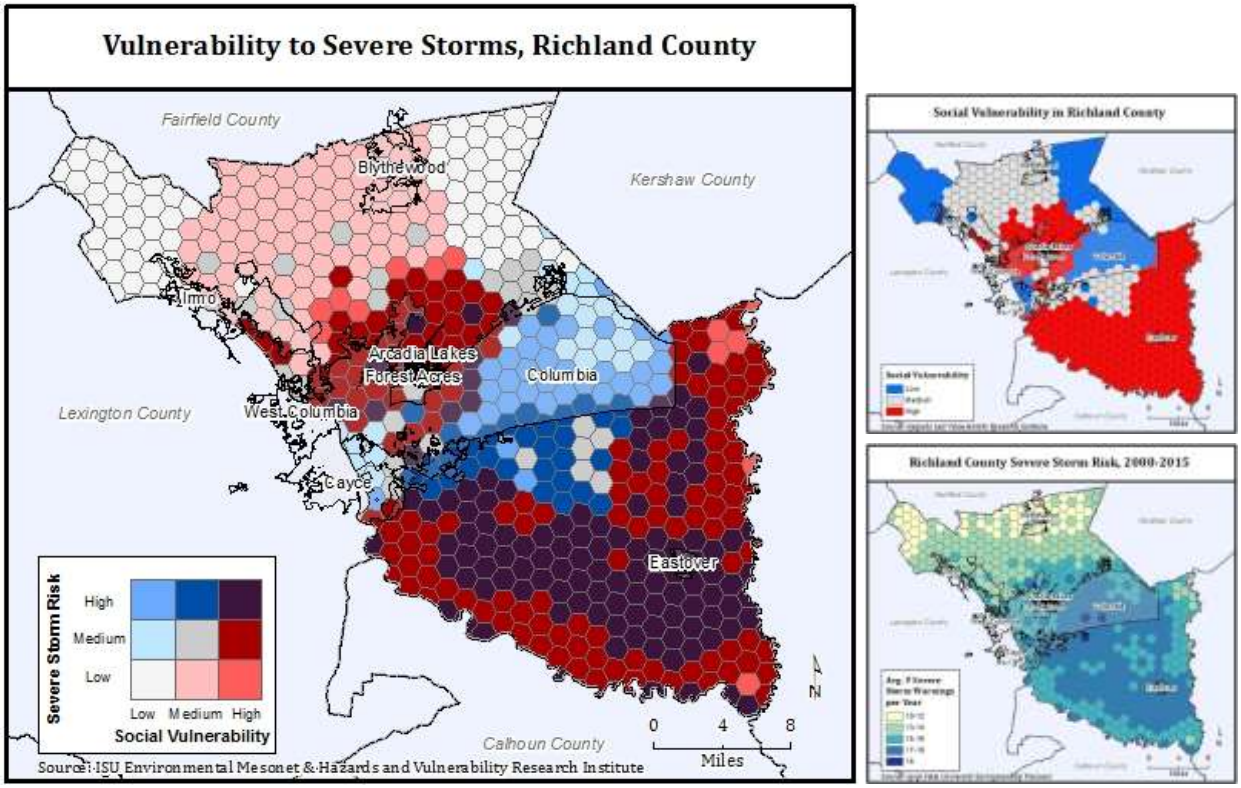


Figure 264 - Vulnerability to severe thunderstorms in Richland County.

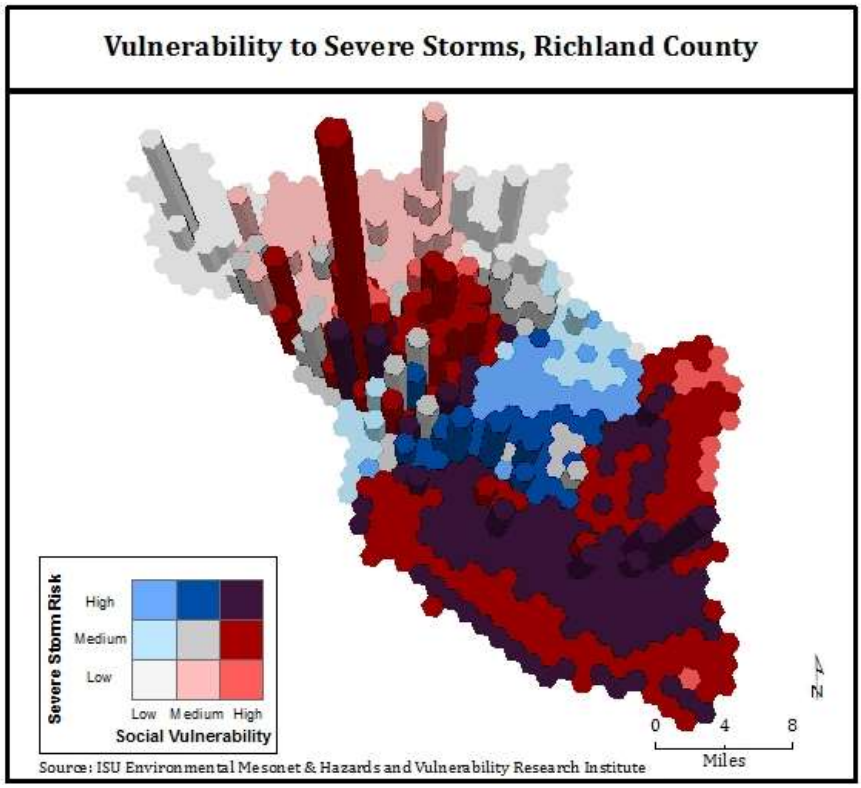


Figure 265 - Vulnerability of critical infrastructure to severe storms in Richland County.

G) Lightning

The highest vulnerability to lightning occurs in central and south-central part of Richland County with the most populous areas of the county being affected (Figure 266). More than a third of the county's critical infrastructure and other assets are located in the high risk area, i.e. more than 33,400 cloud-to-ground lighting strikes per year (Figure 267).

Vulnerability statistics for lighting in Richland County	***Risk Zones***		
	Low (<27,500 strikes/year)	***Medium (27,500-33,400 strikes/year)***	***High (>33,400 strikes/year)***
Critical Infrastructure	90 (32%)	51 (28%)	73 (40%)
Building Stock	$28.6 billion (35%)	$19.4 billion (24%)	$32.9 billion (41%)
Population	149,922 (38%)	107,263 (27%)	136,411 (35%)
Population w/high social vulnerability	26,151 (14%)	82,348 (44%)	79,749 (42%)

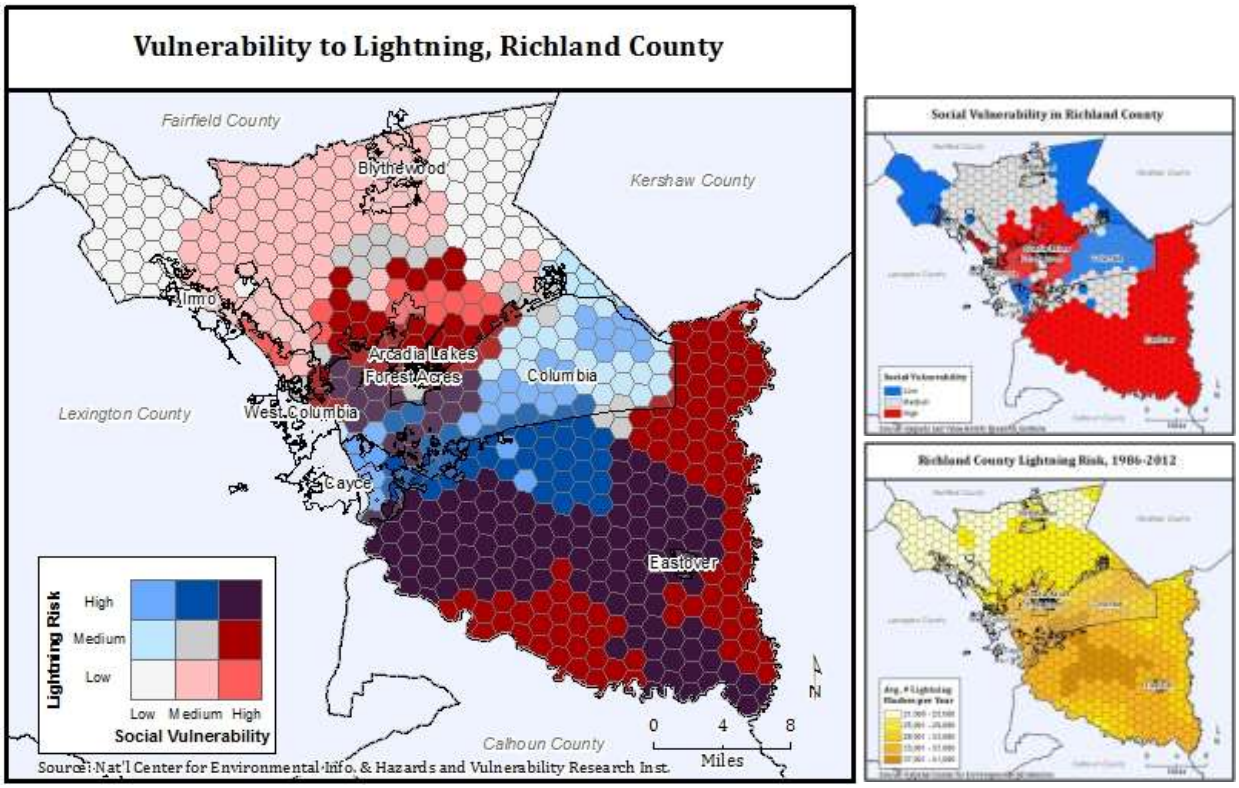


Figure 266 - Vulnerability to lighting in Richland County.

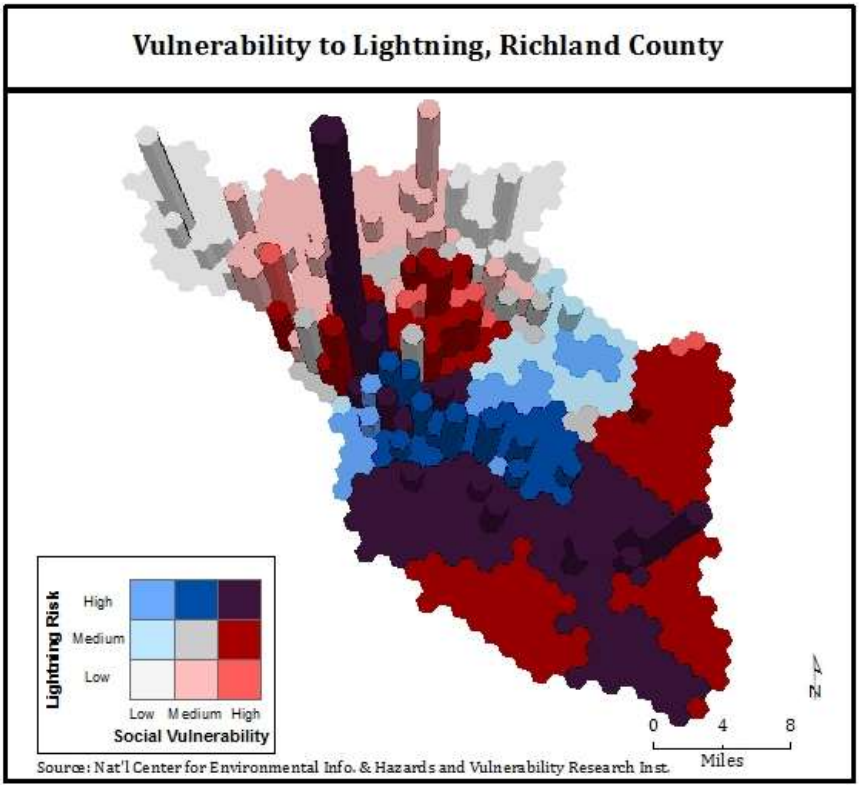


Figure 267 - Vulnerability of critical infrastructure to lightning in Richland County.

H) Wind

The highest vulnerability to wind occurs in the area southeast of the Town of Cayce and north-northeast of the Town of Eastover (Figure 268). Less than 10% of the county's assets are located in areas with more than 2 days of winds above 30 knots per year (Figure 269).

Vulnerability statistics for winds exceeding 30 knots in Richland County	**Risk Zones**		
	Low (1.9 days/year)	**Medium (1.9-2 days/year)**	**High (>2 days/year)**
Critical Infrastructure	53 (29%)	114 (62%)	17 (9%)
Building Stock	$23.5 billion (29%)	$55.7 billion (69%)	$1.7 billion (2%)
Population	127,539 (32%)	250,623 (64%)	15,425 (4%)
Population w/high social vulnerability	15,661 (8%)	158,131 (84%)	14,456 (8%)

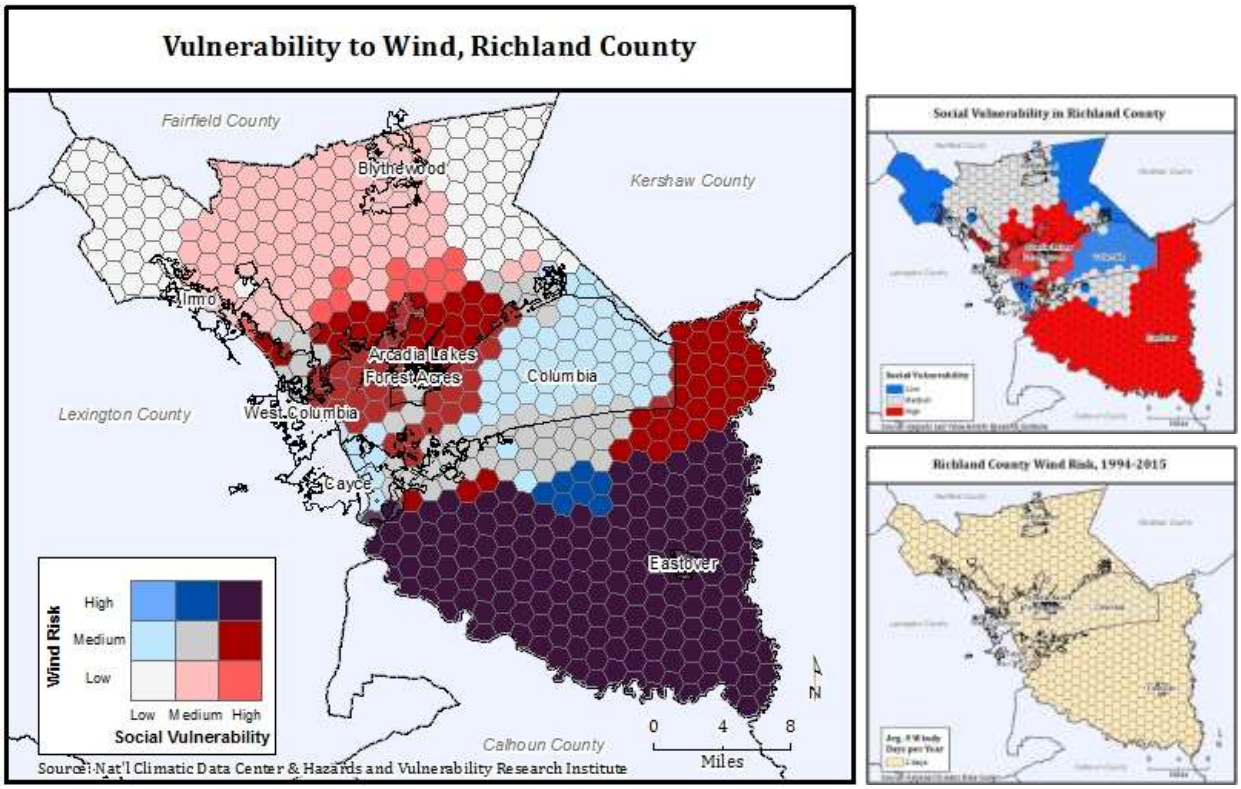


Figure 268 - Vulnerability to high winds in Richland County.

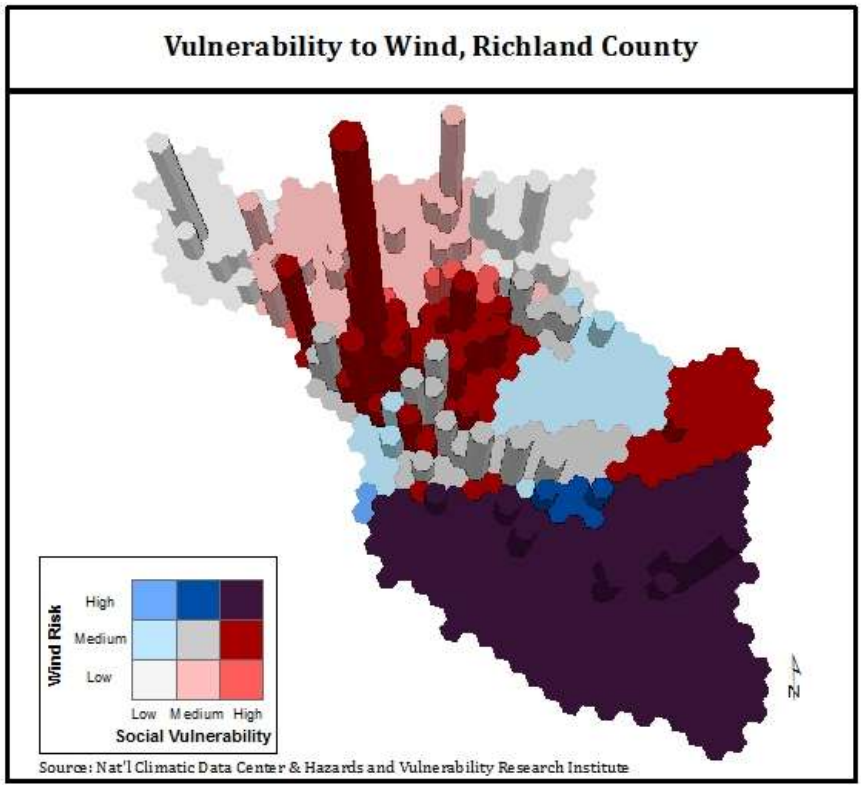


Figure 269 - Vulnerability of critical infrastructure to high winds in Richland County.

I) Hail

Areas of high vulnerability to hail are distributed across the entire county—with some areas having high vulnerability either due to underlying high levels social vulnerability (areas dark red) or a high number of past hail events (areas in dark blue) (Figure 270). Most critical infrastructure lies within areas of low hail vulnerability (Figure 271).

Vulnerability statistics for hail in Richland County	**Risk Zones**		
	Low (no hail events)	**Medium (0.033-0.1 events/year)**	**High (>0.1 events/year)**
Critical Infrastructure	134 (73%)	49 (27%)	1 (<1%)
Building Stock	$52.6 billion (65%)	$23.4 billion (29%)	$4.9 billion (6%)
Population	279,139 (71%)	103,628 (26%)	10,820 (3%)
Population w/high social vulnerability			

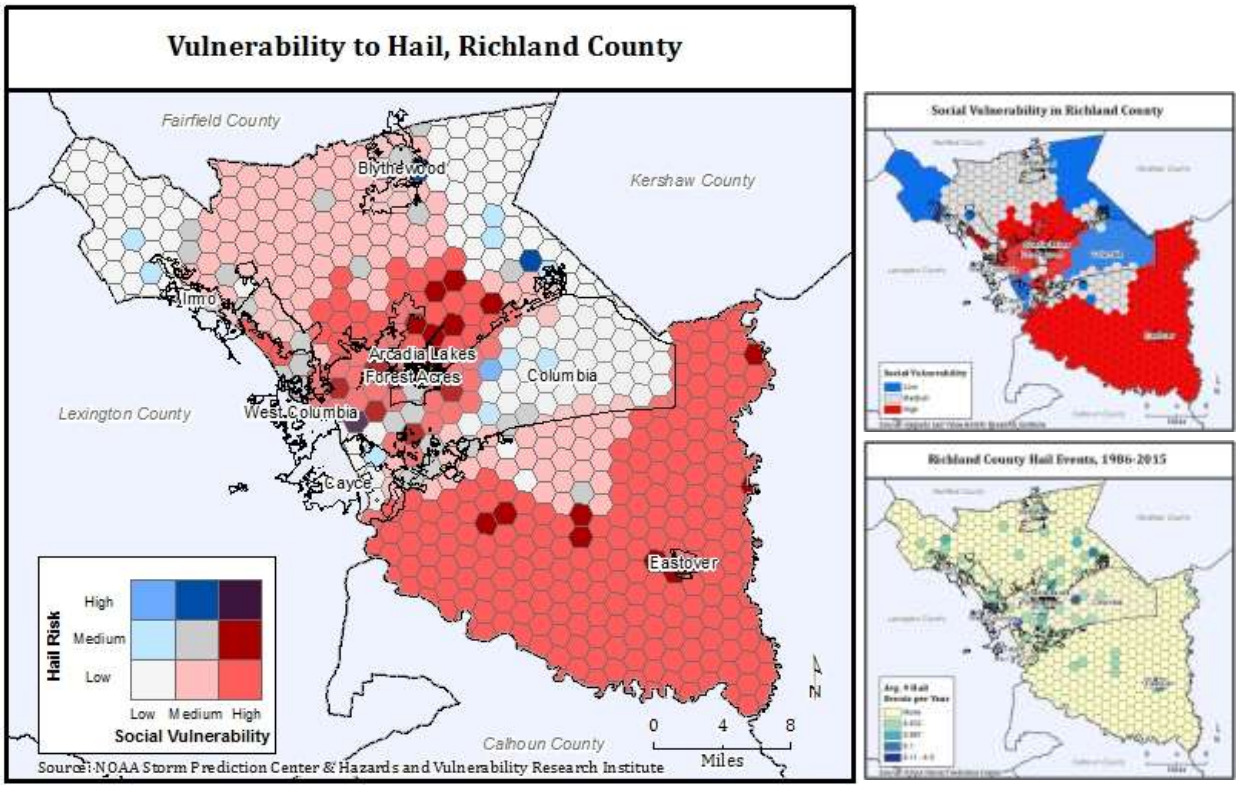


Figure 270 - Vulnerability to hail in Richland County.

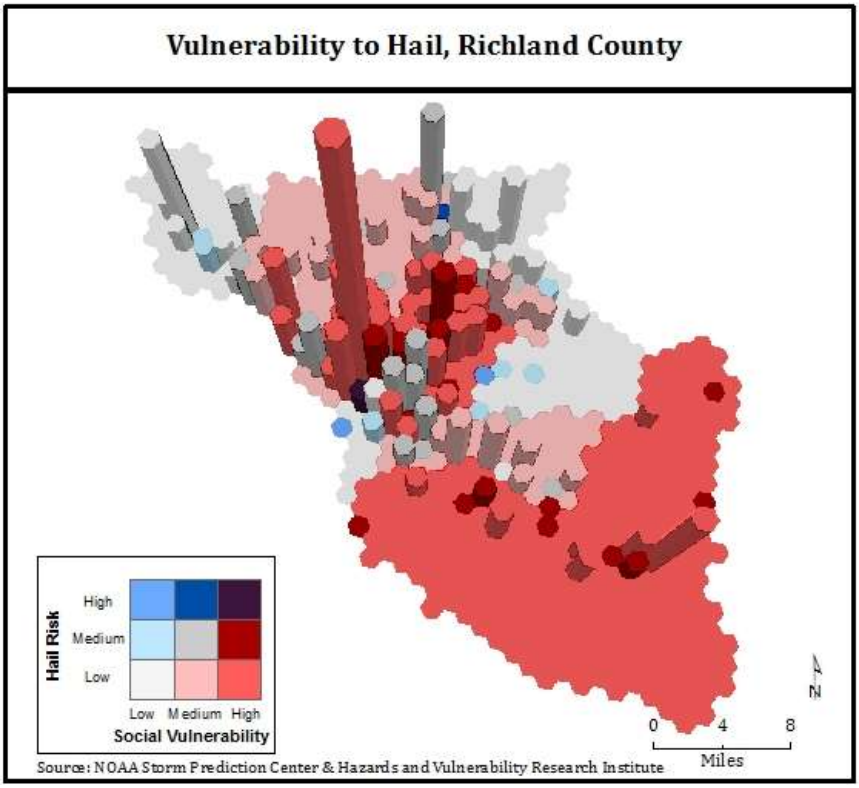


Figure 271 - Vulnerability of critical infrastructure to hail in Richland County.

J) Fog

The highest vulnerability to fog occurs in the area southeast of the Town of Cayce and north-northeast of the Town of Eastover (Figure 272). About 20% of the county's assets are located in areas with more than 65.9 days of fog per year (Figure 273).

Vulnerability statistics for fog in Richland County	**Risk Zones**		
	Low (<48.4 days/year)	**Medium (48.4-65.9 days/year)**	**High (>65.9 days/year)**
Critical Infrastructure	47 (25%)	105 (57%)	33 (18%)
Building Stock	$20.6 billion (25%)	$43.3 billion (54%)	$17 billion (21%)
Population	111,330 (28%)	196,910 (50%)	85,347 (22%)
Population w/high social vulnerability	6,243 (3%)	149,995 (80%)	32,010 (17%)

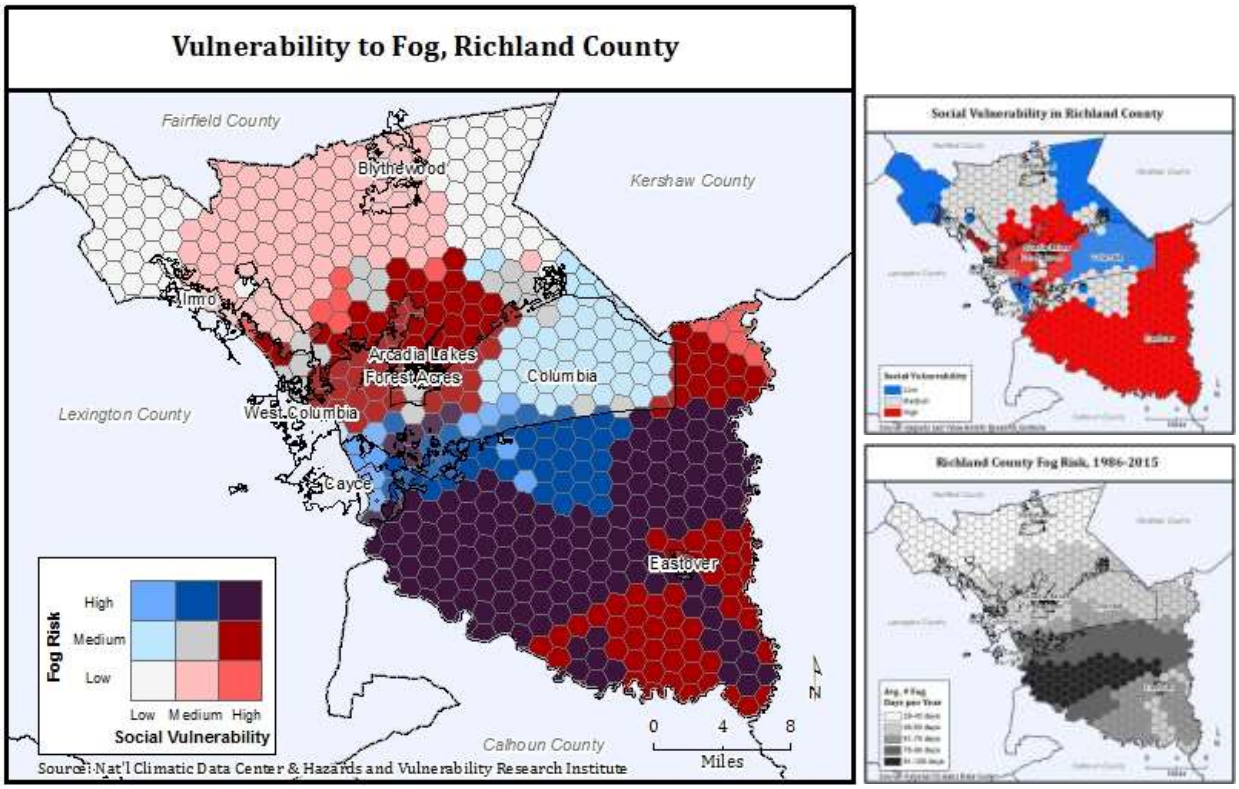


Figure 272 - Vulnerability to fog in Richland County.

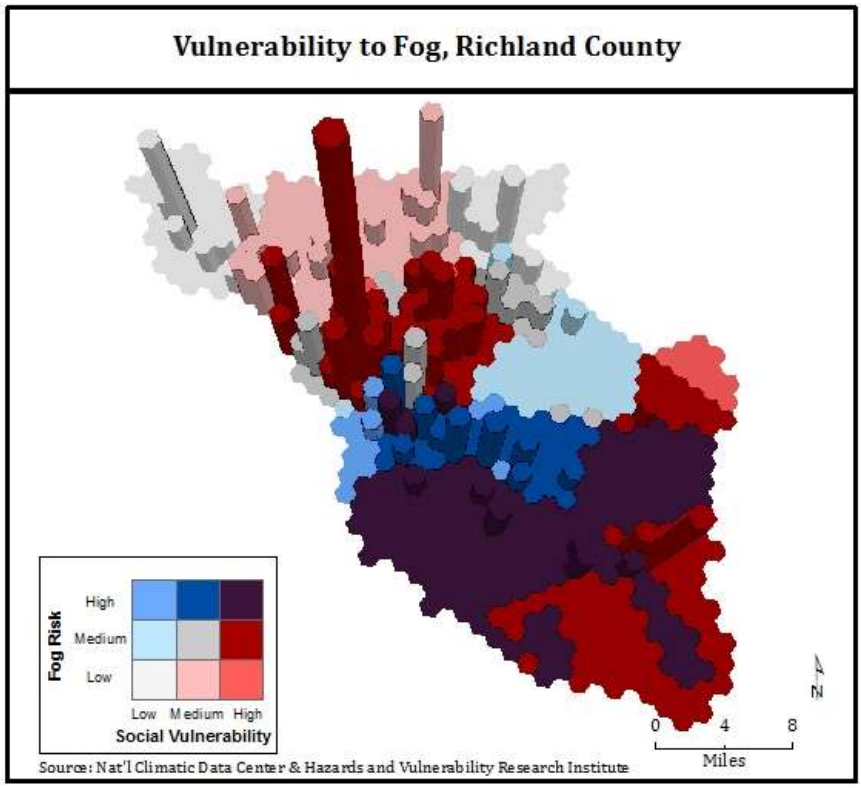


Figure 273 - Vulnerability of critical infrastructure fog in Richland County.

K) Winter Weather & Ice Storms

The highest vulnerability to winter weather occurs in the central and southern areas of the county (Figure 274). About half of the county's assets are located in areas that experience more than 1.3 days of winter weather per year (Figure 275).

Vulnerability statistics for winter weather in Richland County	**Risk Zones**		
	Low (<1.2 days/year)	**Medium (1.2-1.3 days/year)**	**High (>1.3 days/year)**
Critical Infrastructure	31 (17%)	59 (32%)	94 (51%)
Building Stock	$13 billion (16%)	$26.2 billion (32%)	$41.7 billion (52%)
Population	74,685 (19%)	129,530 (33%)	189,373 (48%)
Population w/high social vulnerability	11,846 (6%)	71,031 (38%)	105,371 (56%)

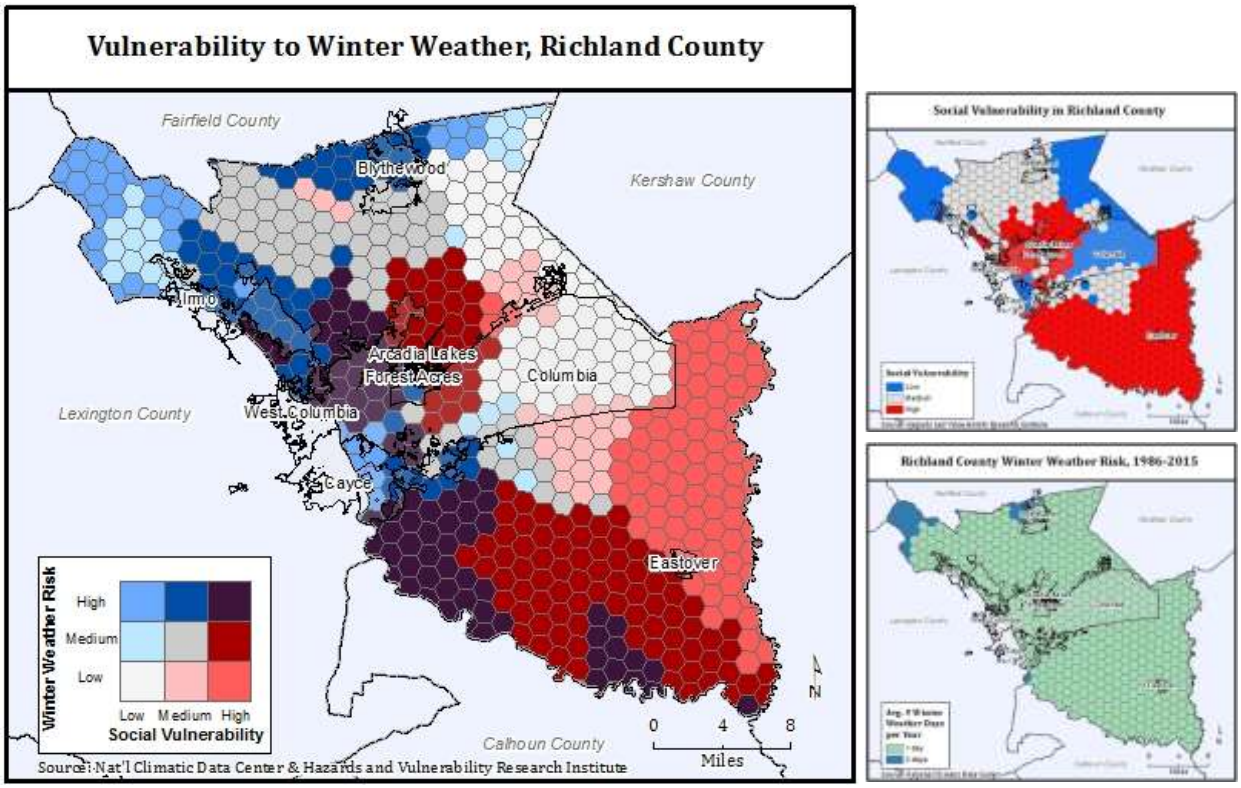


Figure 274 - Vulnerability to winter weather in Richland County.

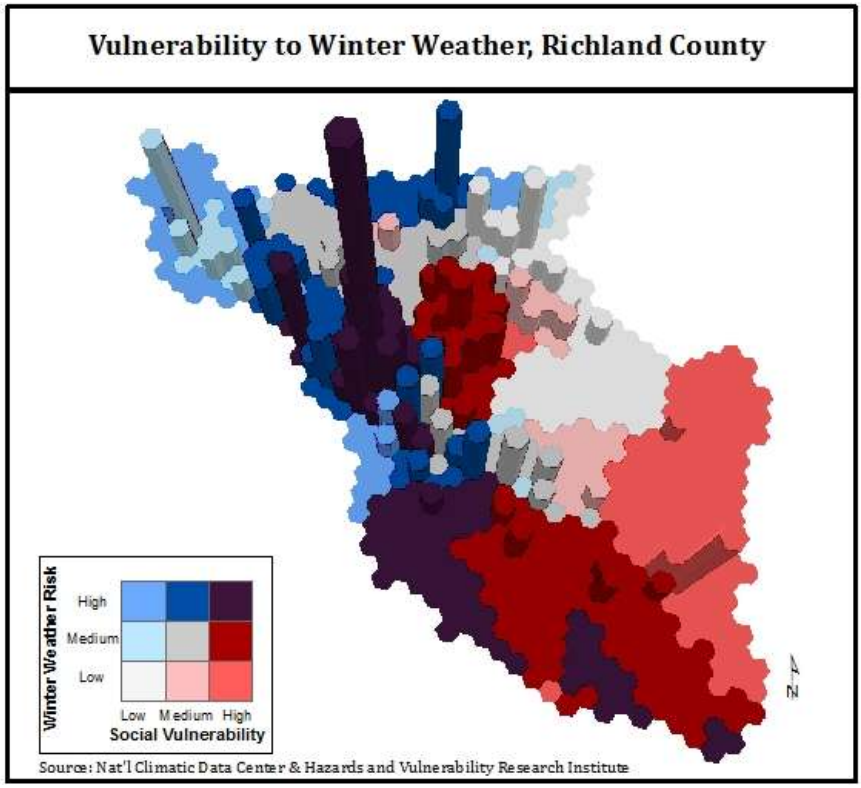


Figure 275 - Vulnerability of critical infrastructure to winter weather in Richland County.

L) Temperature Extremes

The highest vulnerability to cold weather occurs in central Richland County, where high cold weather risk and high social vulnerability coincide (Figure 276). Nearly half of the county's assets are located in areas with more than 49.8 days below freezing per year (Figure 277).

Vulnerability statistics for cold temperatures (<32°F) in Richland County	**Risk Zones**		
	Low (<46.6 days/year)	**Medium (46.6-49.8 days/year)**	**High (>49.8 days/year)**
Critical Infrastructure	25 (13%)	84 (46%)	75 (41%)
Building Stock	$5.7 billion (7%)	$40.4 billion (50%)	$34.8 billion (43%)
Population	33,672 (9%)	169,308 (43%)	190,607 (48%)
Population w/high social vulnerability	15,574 (8%)	84,057 (45%)	88,617 (47%)

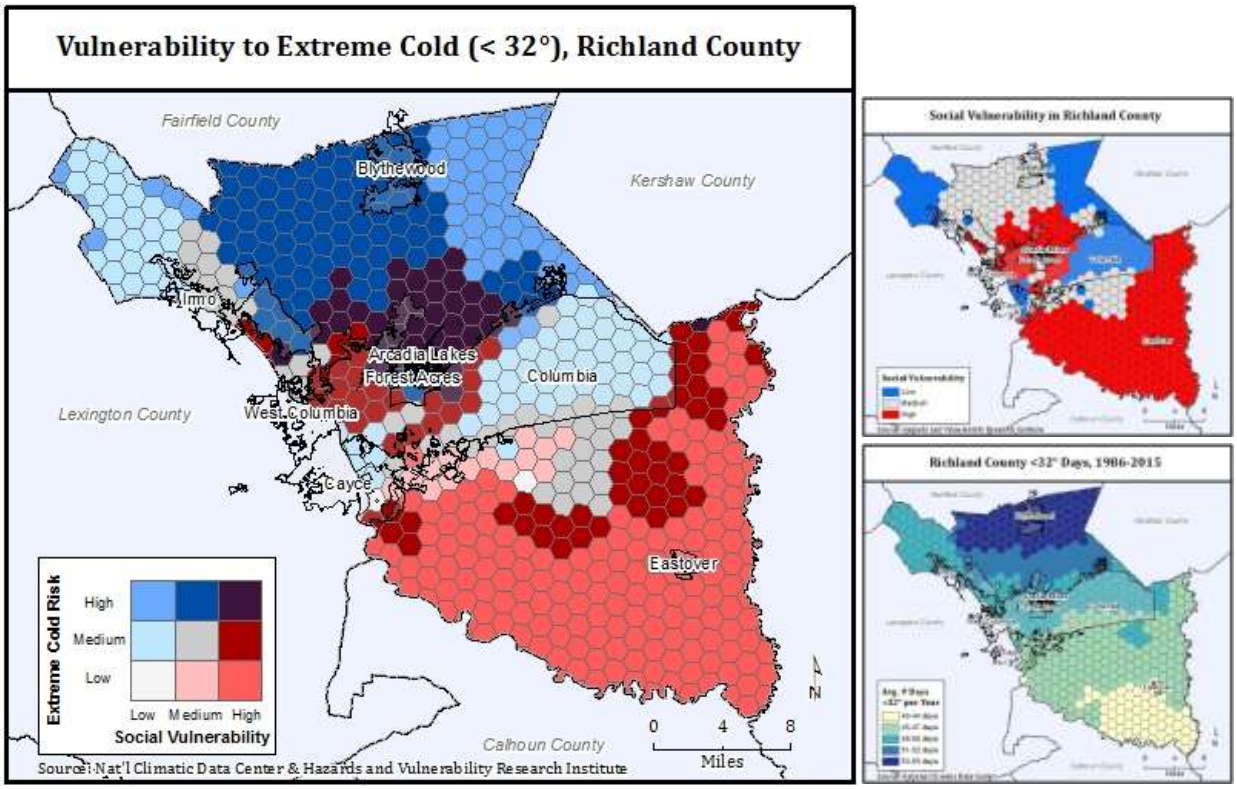


Figure 276 - Vulnerability to cold weather in Richland County.

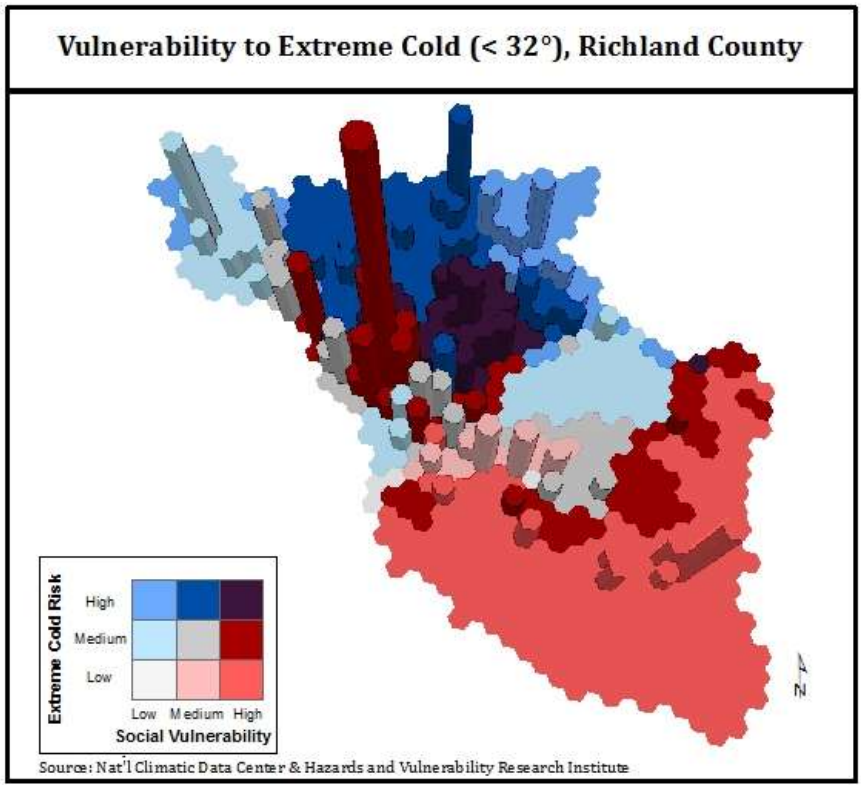


Figure 277 - Vulnerability of critical infrastructure to cold weather in Richland County.

The highest vulnerability to extreme cold temperature occurs in southern Richland County—here social vulnerability coincides with more than 16.5 days of extreme cold temperatures in the 95th percentile[113] (Figure 278). About 20% of the county's assets are located in areas with more than 49.8 days below freezing per year (Figure 279).

Vulnerability statistics for extreme cold temperatures in Richland County	**Risk Zones**		
	Low (<15.7 days/year)	**Medium (15.7-16.5 days/year)**	**High (>16.5 days/year)**
Critical Infrastructure	68 (37%)	77 (42%)	39 (21%)
Building Stock	$28.3 billion (35%)	$38.8 billion (48%)	$13.7 billion (17%)
Population	147,386 (37%)	178,877 (46%)	67,324 (17%)
Population w/high social vulnerability	40,938 (22%)	115,148 (61%)	32,162 (17%)

[113] The 95th percentile separates the time when temperatures are not extremely cold for a given location (i.e. 95% of the time, temperatures are at or above a certain degree point) and the time when temperatures are extremely cold for a given location (meaning the few times/5% of the time when temperatures are even colder). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

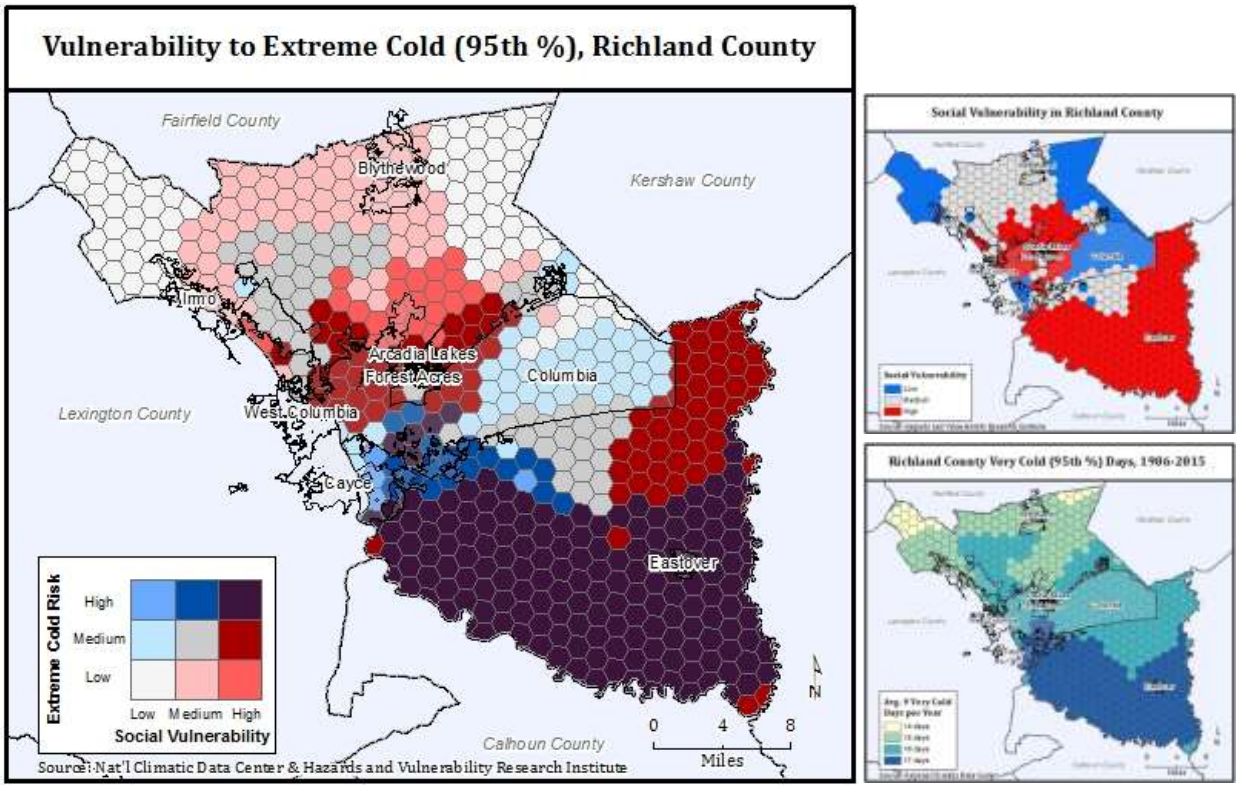


Figure 278 - Vulnerability to extreme cold temperatures in Richland County.

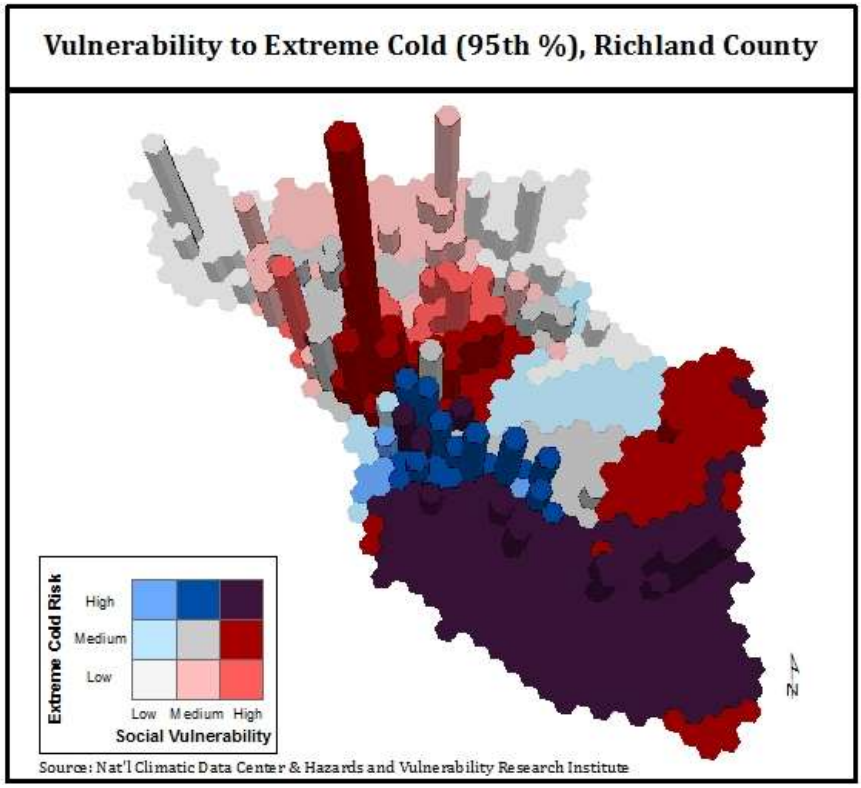


Figure 279 - Vulnerability of critical infrastructure to extreme cold temperatures in Richland County.

The highest vulnerability to extreme hot temperature occurs in central and south-central Richland County (Figure 280) where high social vulnerability overlaps with more than 24.6 days of above 95°F per year. About a third of the county's assets are located in the high risk area (Figure 281).

Vulnerability statistics for hot temperatures in Richland County	**Risk Zones**		
	Low (<23.3 days/year)	**Medium (23.3-24.6 days/year)**	**High (>24.6 days/year)**
Critical Infrastructure	53 (29%)	84 (46%)	47 (25%)
Building Stock	$19 billion (24%)	$31.8 billion (39%)	$30 billion (37%)
Population	103,825 (26%)	156,722 (40%)	133,041 (34%)
Population w/high social vulnerability	14,838 (8%)	92,868 (49%)	80,542 (43%)

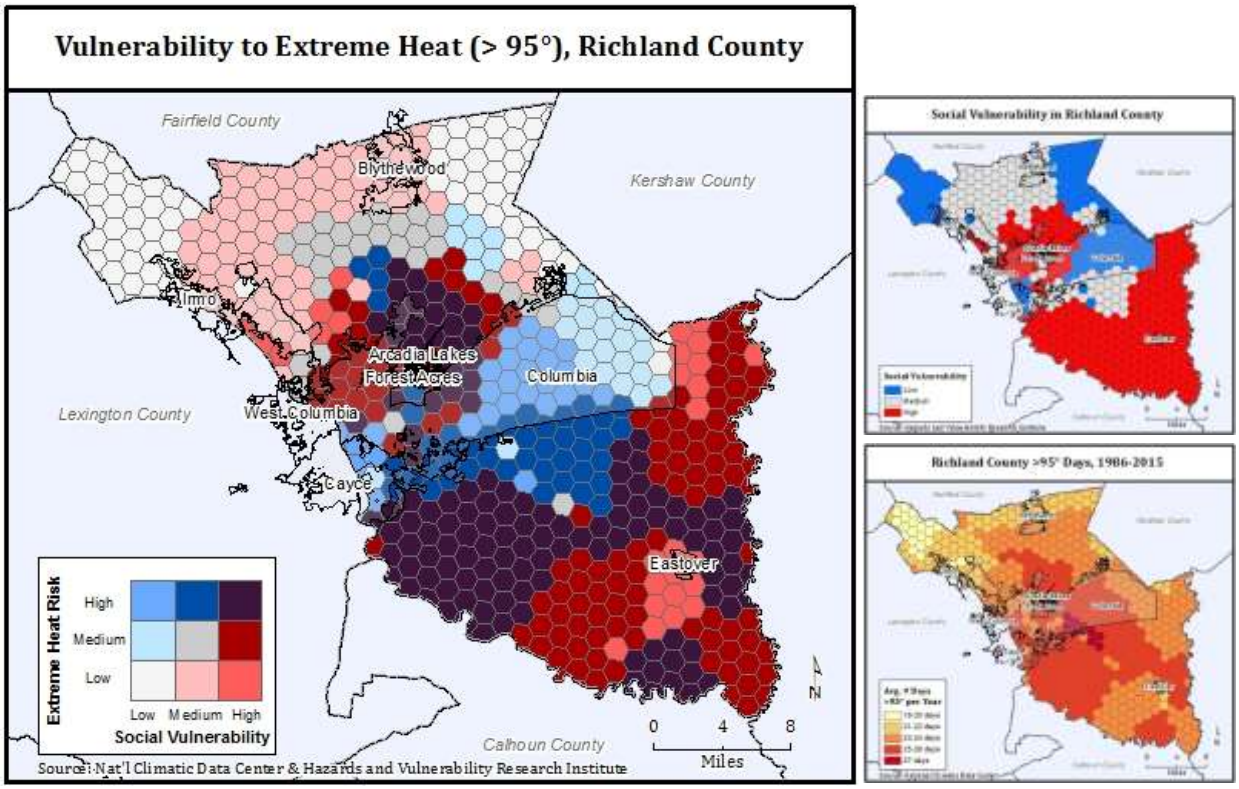


Figure 280 - Vulnerability to hot weather in Richland County.

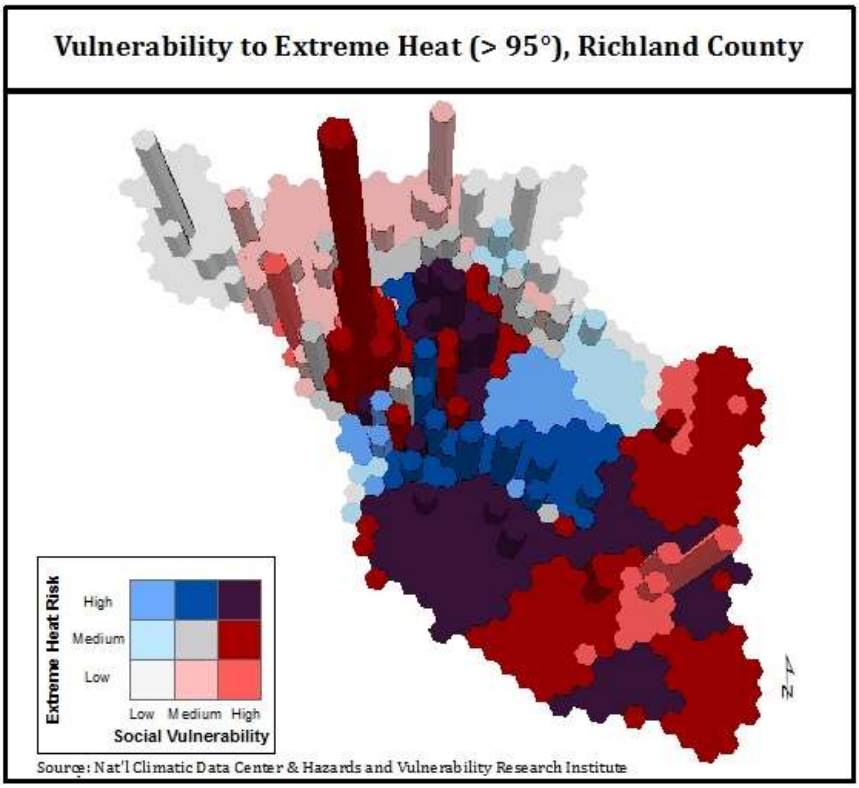


Figure 281 - Vulnerability of critical infrastructure to hot weather in Richland County.

The areas northeast of the metropolitan area, as well as an area east of Fort Jackson, are most vulnerable to hot temperature extremes, i.e. high social vulnerability coincides with more than 3.9 days per year of hot temperatures in the 95th percentile[114] (Figure 282). About a quarter of county's critical infrastructure and other assets are located in high risk areas (Figure 283).

Vulnerability statistics for extreme hot temperatures in Richland County	**Risk Zones**		
	Low (<3.5 days/year)	**Medium (3.5-3.9 days/year)**	**High (>3.9 days/year)**
Critical Infrastructure	37 (20%)	102 (55%)	45 (25%)
Building Stock	$14.7 billion (18%)	$46.7 billion (58%)	$19.4 billion (24%)
Population	74,047 (19%)	210,463 (53%)	109,076 (28%)
Population w/high social vulnerability	32,606 (17%)	127,136 (68%)	28,506 (15%)

[114] The 95th percentile separates the time when temperatures are not extremely hot for a given location (i.e. 95% of the time, temperatures are at or below a certain degree point) and the time when temperatures are extremely hot for a given location (meaning the few times/5% of the time when temperatures are even hotter). Since temperature and the range of temperatures varies from location to location, there is no general temperature given that could represent the 95th percentile for all of Richland County.

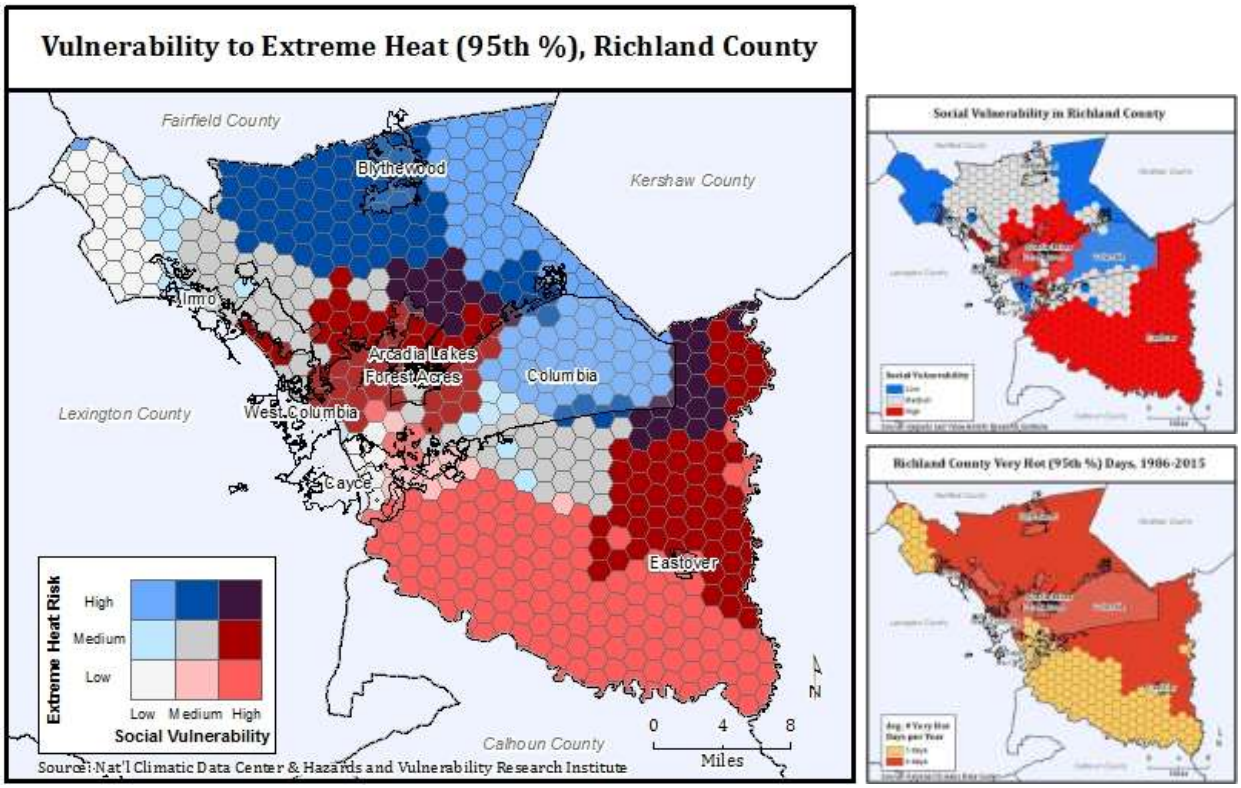


Figure 282 - Vulnerability to extreme hot temperatures in Richland County.

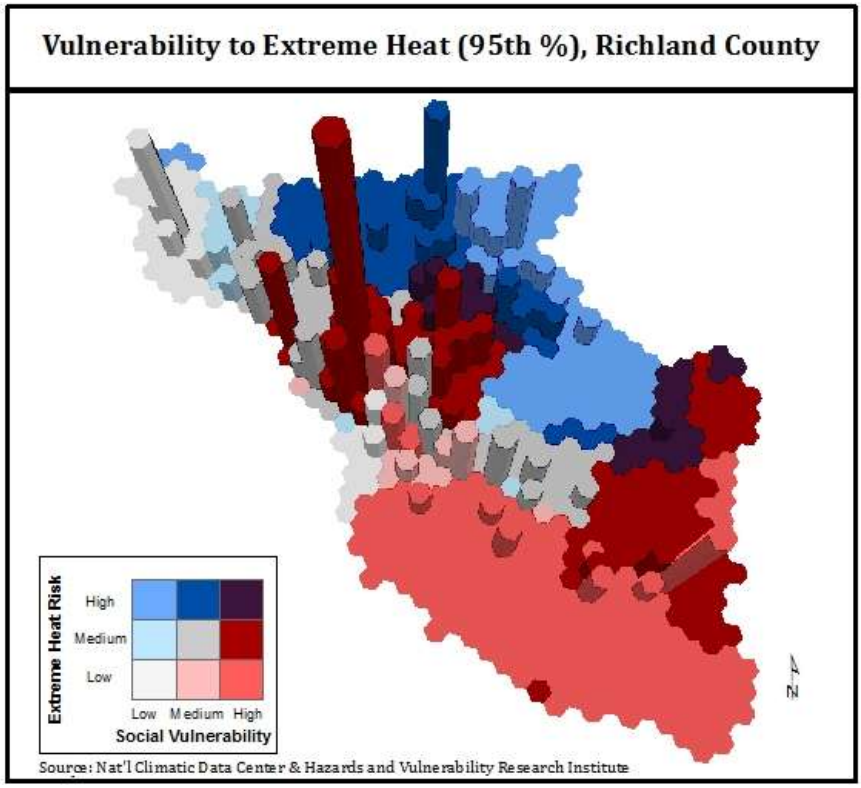


Figure 283 - Vulnerability of critical infrastructure to extreme hot temperatures in Richland County.

M) Wildfires

The highest vulnerability to wildfires occurs in the southern county, particularly in the area around Eastover—the result of high wildfire incidents and high social vulnerability (Figure 284). Nearly half of the county's assets are located in high wildfire risk areas (Figure 285).

Vulnerability statistics for wildfires in Richland County	**Risk Zones**		
	Low (no events)	**Medium (<0.1 counts/year)**	**High (>0.1 counts/year)**
Critical Infrastructure	19 (10%)	75 (41%)	90 (49%)
Building Stock	$12.6 billion (16%)	$31.6 billion (39%)	$36.6 billion (45%)
Population	60,804 (15%)	144,276 (37%)	188,508 (48%)
Population w/high social vulnerability	38,392 (20%)	67,034 (36%)	82,822 (44%)

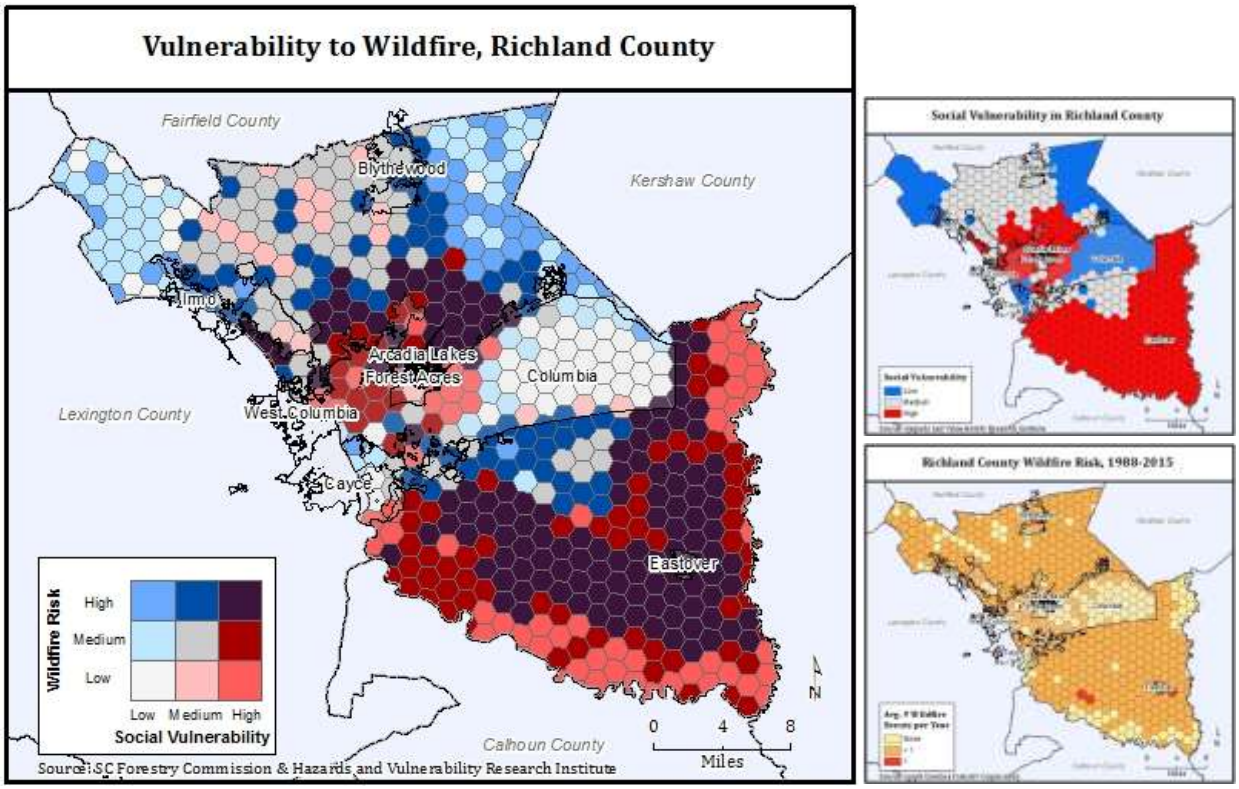


Figure 284 - Vulnerability to wildfires in Richland County.

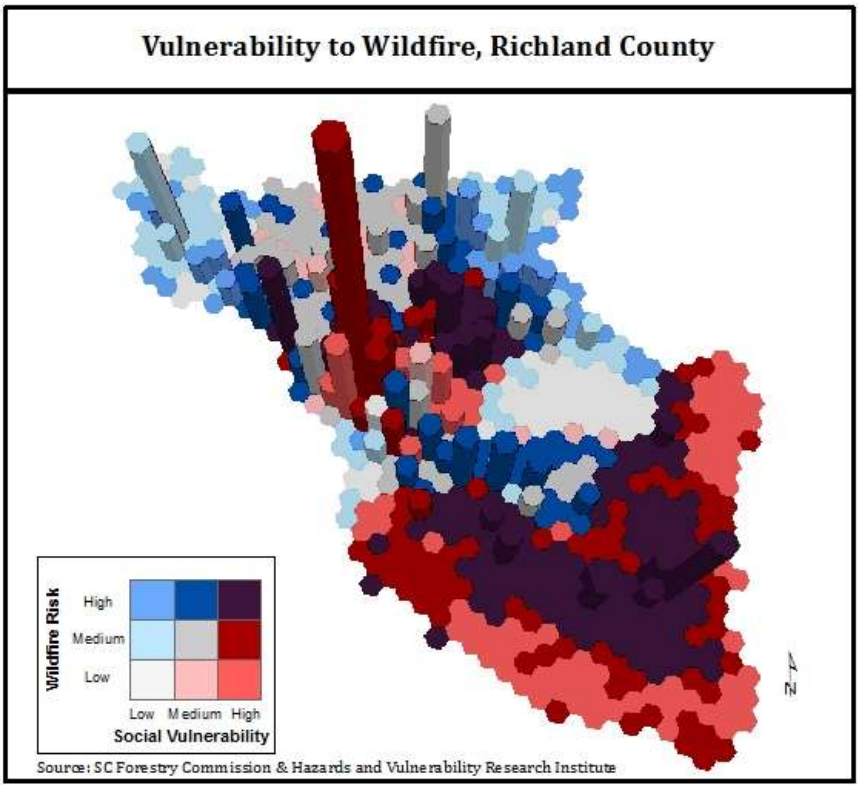


Figure 285 - Vulnerability of critical infrastructure to wildfire in Richland County.

N) Droughts

The north-central and central areas of Richland County are more at risk from droughts either because of increase drought risk (dark blue areas) or a mix of high social vulnerability and medium drought risk (Figure 286). About one third of the county's assets are located in an area susceptible to more than 19.3 weeks of drought per year (Figure 287).

Vulnerability statistics for droughts in Richland County	**Risk Zones**		
	Low (<18.4 weeks/year)	**Medium (18.4-19.3 weeks/year)**	**High (>19.3 weeks/year)**
Critical Infrastructure	22 (12%)	99 (54%)	63 (34%)
Building Stock	$6 billion (7%)	$50.1 billion (62%)	$24.7 billion (31%)
Population	37,968 (10%)	224,043 (57%)	131,577 (33%)
Population w/high social vulnerability	13,746 (7%)	142,800 (76%)	31,701 (17%)

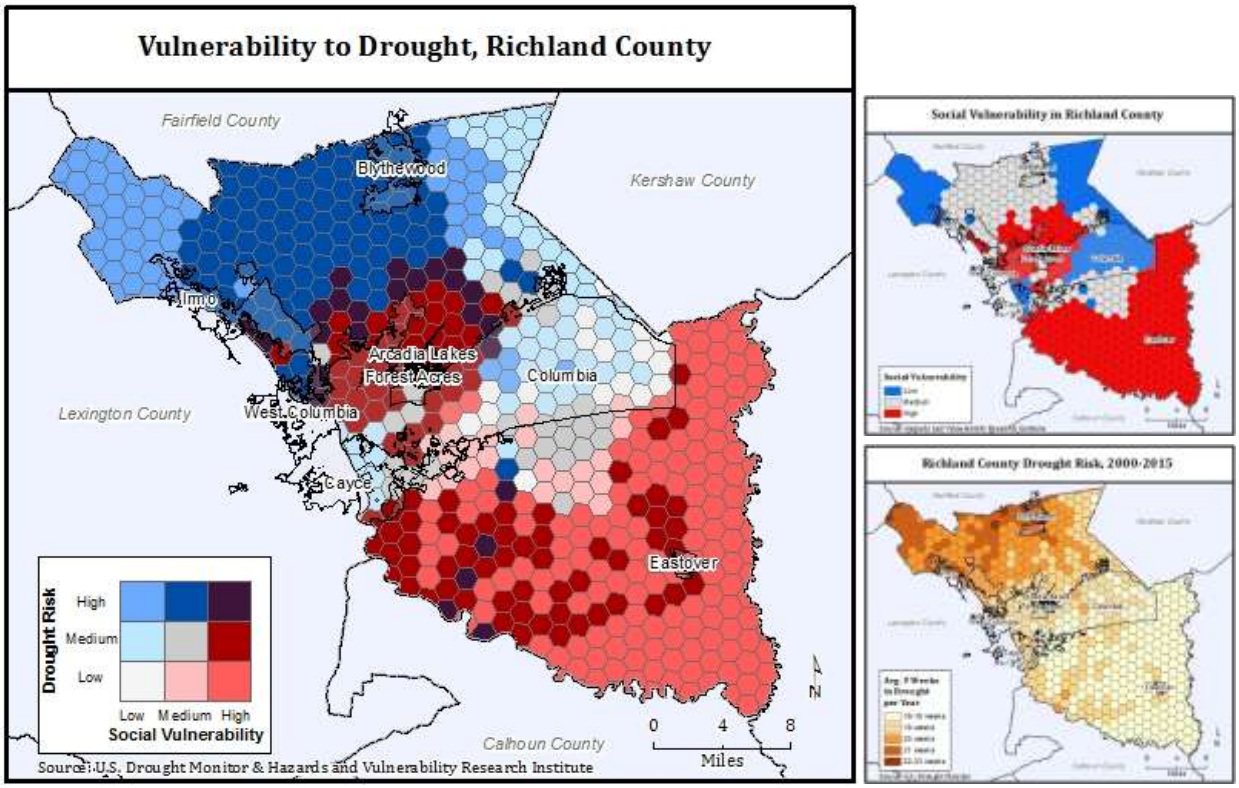


Figure 286 - Vulnerability to droughts in Richland County.

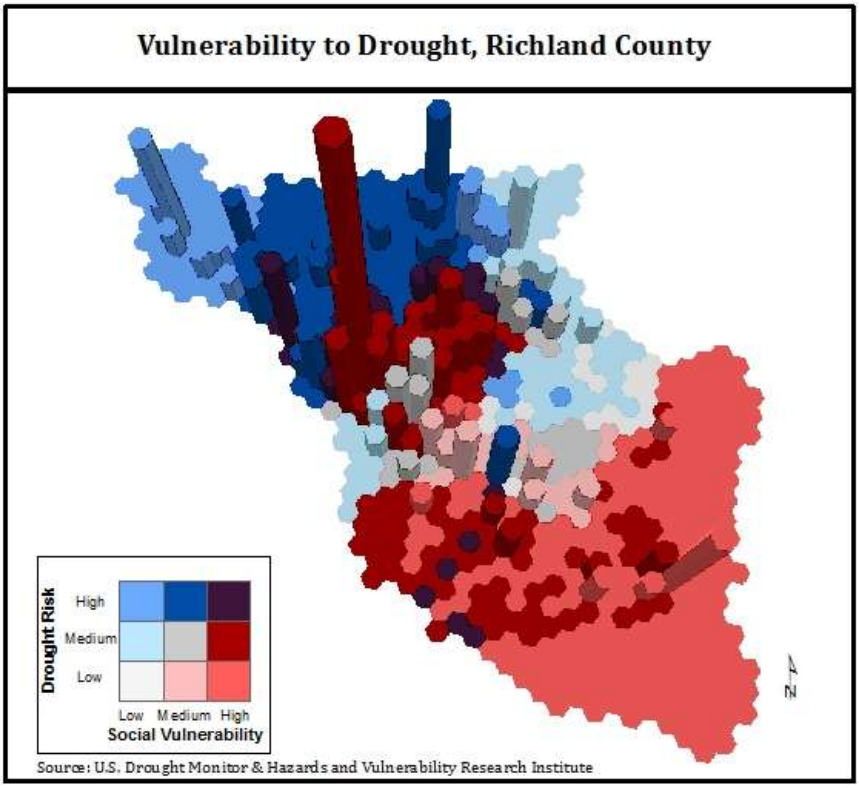


Figure 287 - Vulnerability of critical infrastructure to drought in Richland County.

O) Earthquakes

Southern Richland County is the most vulnerable to earthquakes since the region exhibits both high social vulnerability as well as high risk from earthquake shaking (Figure 288). About 12% of the county's critical infrastructure is located in the high risk area (Figure 289).

Vulnerability statistics for earthquakes in Richland County	**Risk Zones**		
	Low	**Medium ($1.77\ m/s^2$)**	**High ($1.96\ m/s^2$)**
Critical Infrastructure	n/a	162 (88%)	22 (12%)
Building Stock	n/a	$78.2 billion (97%)	$2.7 billion (3%)
Population	n/a	374,236 (95%)	19,351 (5%)
Population w/high social vulnerability	n/a	172,360 (92%)	15,887 (8%)
Scenario	1886 Charleston Earthquake (6.8)		

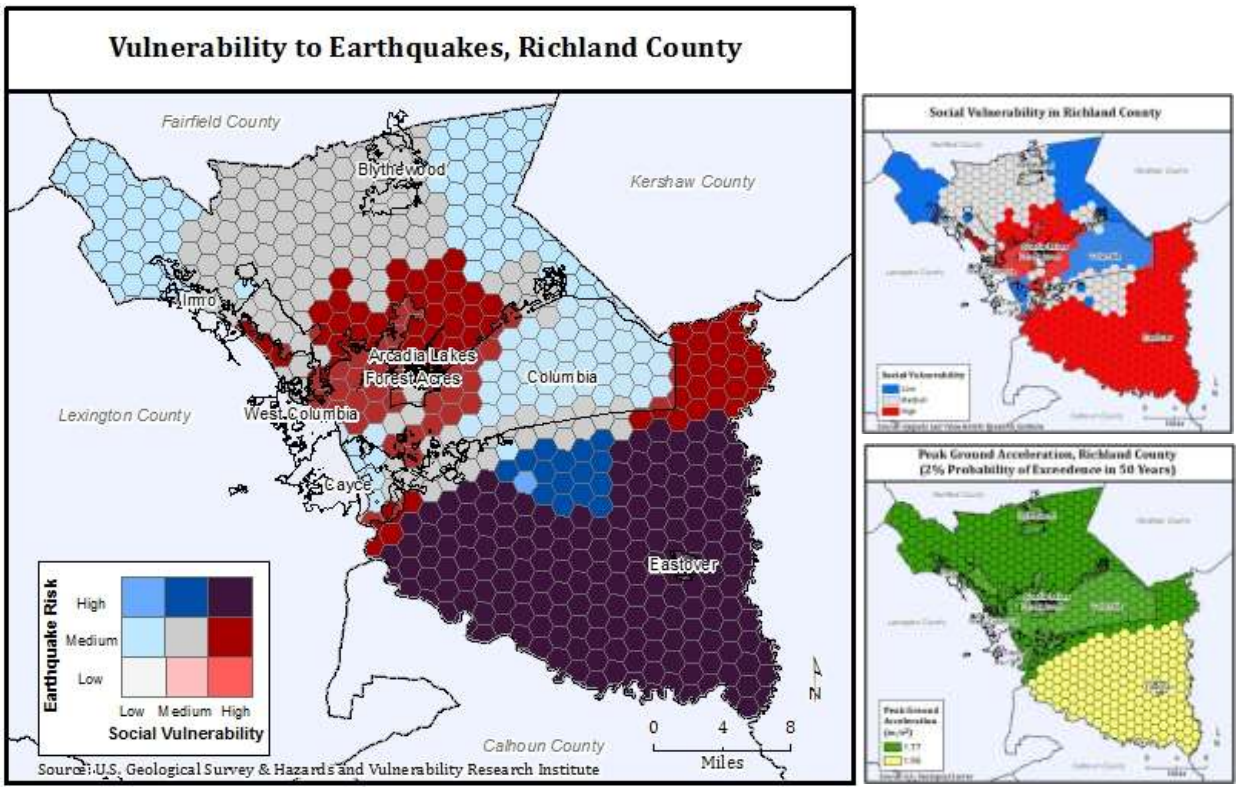


Figure 288 - Vulnerability to earthquakes in Richland County.

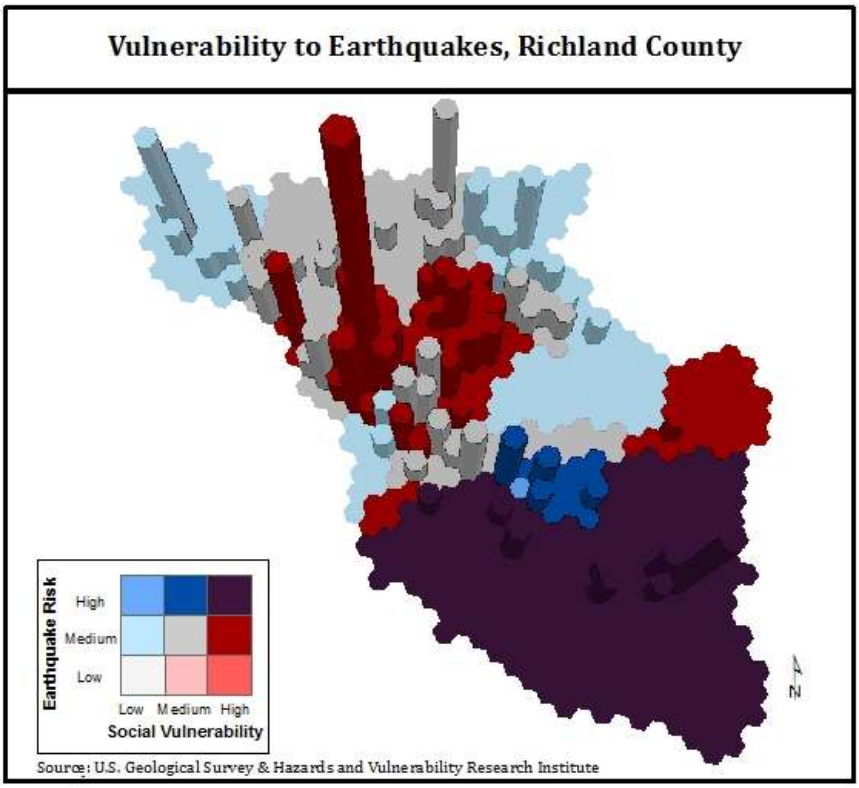


Figure 289 - Vulnerability of critical infrastructure to earthquakes in Richland County.

According to the South Carolina Geological Survey, the worst case scenario for Richland County is a combination of the 1886 Charleston and the 1913 Union earthquake, which would equate to an intensity category VIII (severe)[115]. If the 1886 Charleston earthquake were to occur today (Figure 290), more than 90% of buildings would survive undamaged in Richland County. About 3,000 buildings would be damaged moderately (2% of the county's building stock) with an estimated property damage of $450 million (nearly all of it residential). Most of the damage would occur in central Richland County (Figure 291). All of the critical infrastructure would be operable within a day. The modelled earthquake's most devastating impact area would encompass some of Richland County's most vulnerable population. All estimates were derived using HAZUS-MH 2.2.

[115] SCGS, Projected Earthquake Intensities for South Carolina, Educational Series #7a. Available at http://www.dnr.sc.gov/geology/images/Equake%20intens1-pg.pdf

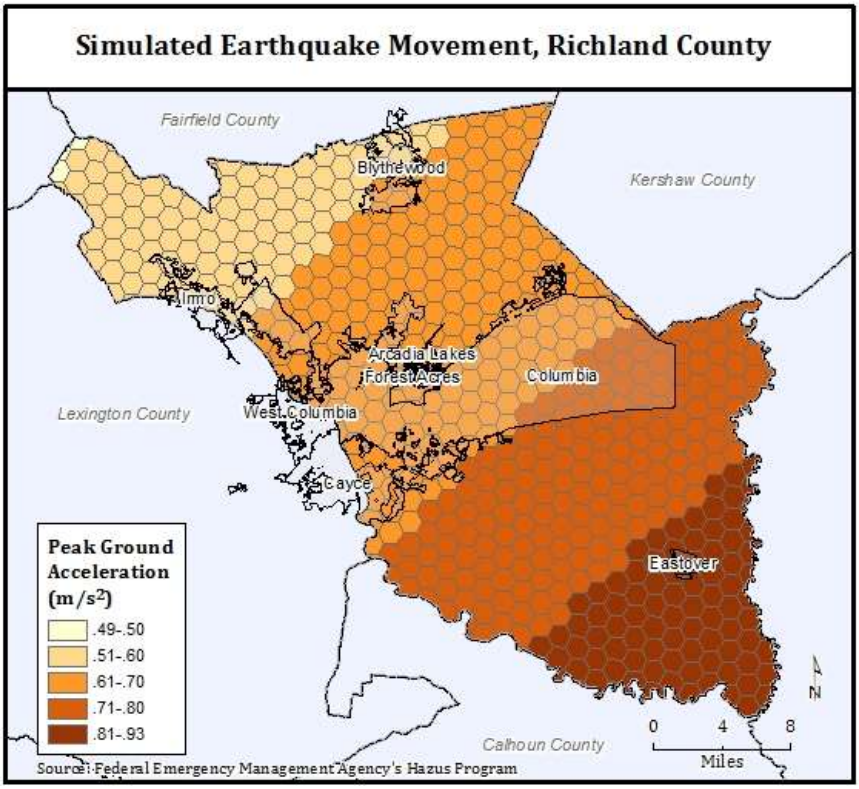


Figure 290 - Peak ground acceleration in Richland County from a modelled 6.8 earthquake.

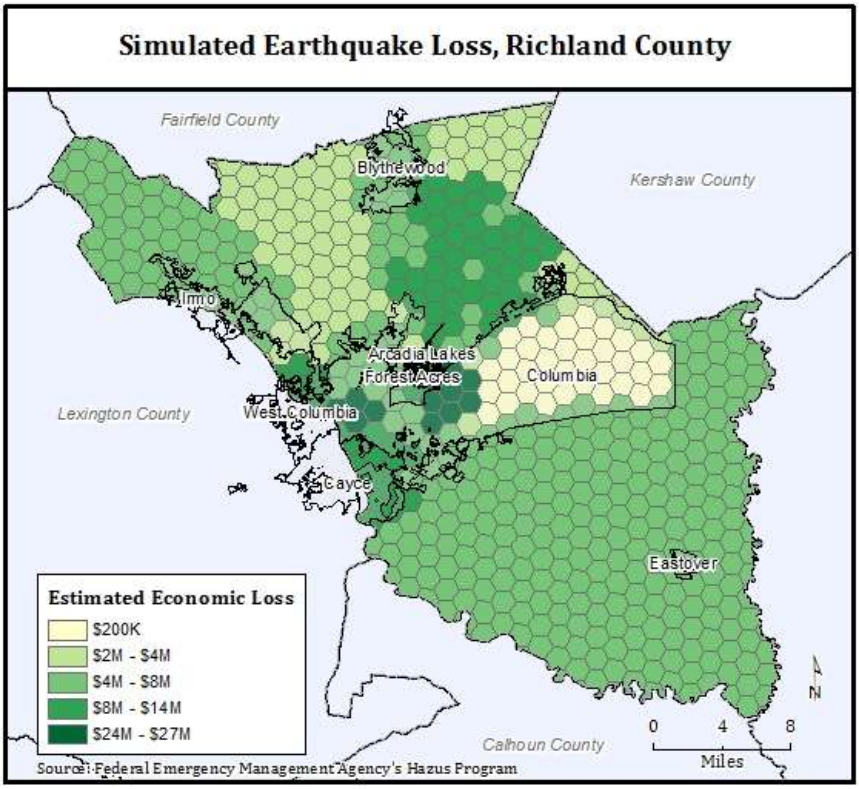


Figure 291 - Damage in Richland County from a modelled 6.8 earthquake.

8.3 Risk Assessment

This section addresses FEMA HMP requirement 201.6(c)(2)(ii)

The risk assessment is the final summary of hazard threat, vulnerabilities and potential consequences. The combined information of vulnerabilities, hazards, and consequences creates the risk potential for Richland County. The information generated by the vulnerability assessment and hazard assessment provide the input for the overall risk assessment. Table 125 shows the assessment criteria and rating values (in brackets).

Categories of Risk

Low: Minimal potential impact. The recurrence and potential cost of damage to life and property is minimal.

Medium: Moderate potential impact. The potential damage is more isolated and less costly than a more widespread disaster. There is a moderate threat level to people, critical infrastructure, and/or built environment.

High: Widespread potential impact. The potential for damage is widespread. Hazards have a high recurrence interval and/or pose a high threat to residents, critical infrastructure, and/or built environment.

Table 125 - Risk assessment criteria and values.

Geographical Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk Rating
Isolated	Infrequent	Limited	Low	Low
Limited	Occasional	Moderate	Medium	Medium
Widespread	Likely	Extensive	High	High

Table 126 shows the overall risk for each hazard assessed in this plan. The risk assessment forms the basis for the development of mitigation strategies and prioritization (see Richland County Mitigation Strategies in Section 8.5). The effectiveness and acceptance of hazard mitigation strategies depends on a community's risk awareness and risk perception. Therefore we are including the survey results conducted by the CMCOG in December 2015 revealing the perceived mitigation priorities by residents of the Central Midlands region.

The survey gauged hazard awareness, preparedness and impacts of residents in the Central Midlands region (see Appendix I for more information). The perceived risk highlights the overlaps and/or discrepancies between the objective risk (as developed in the hazard and vulnerability assessments) and subjective risk (as expressed by Central Midlands' residents).

Table 126 - Overall risk assessment for Richland County.

Perceived Risk	Hazard	Geographic Extent	Probability of Future Occurrence	Vulnerability Assessment	Magnitude and Severity	Overall Risk
Most Important	***Winter Weather***	Widespread	Likely	Extensive	High	High (3)
Somewhat Important	***Extreme Heat***	Widespread	Occasional	Extensive	High	High (2.75)
Somewhat Important	***Droughts***	Widespread	Occasional	Extensive	High	High (2.75)
Most Important	***Tropical Storms***	Widespread	Occasional	Moderate	High	High (2.5)
Very Important	***Tornadoes***	Isolated	Likely	Extensive	High	High (2.5)
Most Important	***Wind***	Limited	Likely	Moderate	Medium	Medium (2.25)
Somewhat Important	***Extreme Cold***	Widespread	Likely	Limited	Medium	Medium (2.25)
Very Important	***Flash Floods***	Isolated	Occasional	Extensive	Medium	Medium (2)
Least Important	***Earthquakes***	Widespread	Infrequent	Moderate	Medium	Medium (2)
Very Important	***Riverine Floods***	Limited	Occasional	Moderate	Low	Medium (1.75)
Very Important	***Lightning***	Isolated	Likely	Moderate	Low	Medium (1.75)
N/A	***Hail***	Isolated	Occasional	Moderate	Medium	Medium (1.75)
Most Important	***Thunderstorms***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Fog***	Isolated	Likely	Limited	Low	Medium (1.5)
Least Important	***Wildfires***	Isolated	Likely	Limited	Low	Medium (1.5)

Another important aspect of the risk assessment is identifying currently available resources that a jurisdiction has to respond to and mitigate natural hazard events. Table 127 identifies emergency services and adopted ordinances available to each municipality in Richland County.

This section addresses FEMA HMP requirement 201.6(c)(3)

Table 127 - Services and Development Related Ordinances in Richland County.

Name of Jurisdiction	Fire Service	Police Service	Emergency Response Service	Adopted Zoning Ordinance	Adopted Comprehen. Land Develop Regulations	Adopted Building Codes	Participates in National Flood Insurance Program
Richland County	Columbia provides to Richland County under contract	County Sheriff's Department	EMS provided by Rich. County countywide	Yes	Yes	Yes	Yes
Columbia	Provided by Columbia	Provides own police protection	"	Yes	Yes	Yes	Yes
Forest Acres	Provided by Columbia	Provides own police protection	"	Yes	Yes	Yes	Yes
Arcadia Lakes	Provided by Columbia	Provided by County Sheriff's Department	"	Yes	Yes	Yes	Yes
Eastover	Provided by Columbia	Provides own police protection	"	Yes	Yes	Yes	Yes
Blythewood	Provided by Columbia	Provided by County Sheriff's Department	"	Yes	Yes	Yes	No

The National Flood Insurance Program (NFIP) aims to reduce the impact of flooding on private and public structures (FEMA, 2016). Actions taken towards reducing flood hazard risk provide a compounding discount on flood insurance to residents in flood prone areas. The program tracks Repetitive Loss Properties (RLP) and Severe Repetitive Loss Properties (SRLP), which are properties that have made multiple flood insurance claims. This information is valuable to planners as it aids in allocating flood mitigation strategies.

Table 128 - Number of Richland County Repetitive Loss Properties.

Building Type	Number of Properties
Residential	10
Commercial	1

Table 128 shows the number and building type of RLP and SRLP in Richland County. The County participates in both the NFIP and Community Rating System (CRS). The County also has a designated Special Flood Hazard Area (SFHA), in which around 75% of all flood insurance claims are registered. Through public outreach efforts, flood mitigation planning and enforcing building codes, Richland County residents are provided with an automatic 10% discount on flood insurance premiums.

8.4 Richland County Mitigation Goals and Objectives

This section addresses FEMA HMP requirement 201.6(c)(3)(i)

The following are general hazard mitigation goals and objectives utilized by stakeholders. These serve as broad mission statements and help guide planners in making decisions that safeguard the life and property of Richland County citizens.

1. Develop better data for the community relating to type, impact, location and cost of the natural disaster mitigation strategies occurring in the area.
2. Increase the community's capacity to initiate and sustain emergency response operations during and after a natural disaster, thereby mitigating effects of hazardous events.
3. Enhance existing, or design new, policies and/or programs in the community to reduce the potential damaging effects of hazards without hindering other community goals or impeding hazard mitigation programming in the county.
4. Protect the most vulnerable populations, buildings and critical facilities in the town through the implementation of cost-effective, environmentally sound, and technically feasible mitigation projects.
5. Protect the public health, safety and welfare by increasing public awareness and understanding of hazards and by fostering both individual and public responsibility in the mitigation of risks through available techniques that minimize vulnerability to those hazards.
6. Increase understanding of all residents in the community about the natural hazards threatening local areas and techniques available to minimize vulnerability to those hazards.
7. Maintain the economic vitality of the community in the face of natural disasters.
8. Ensure the security of homes, institutions and places of employment throughout the community that are considered vulnerable to natural disasters.
9. Ensure that the availability and function of community infrastructure will not be significantly disrupted by a natural disaster.
10. Inventory, map and assess all flood plain structures and properties that are or may be repetitive loss properties.

This section addresses FEMA HMP requirements 201.6(c)(3)(ii), 201.6(c)(3)(iii), and 201.6(c)(3)(iv)

8.5 Richland County Mitigation Strategies

Table 129 - Unincorporated Richland County Mitigation Strategies.

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improved suppression response (tankers, dry chemicals)	Forest Fire/Wild Fires	Richland County	1	2 & 7	Capital Improvement Budget	$250,000 to $750,000	Ongoing	1-2 yrs.
Regulate open burning through enforcement and education	Forest Fire/Wild Fires	Richland County	2	3 & 8	Operating Budget	<$250,000	Ongoing	6 month
Maintain dry hydrant program in rural areas of county	Forest Fire/Wild Fires	Richland County/City of Columbia	1	2 & 7	Capital Improvement Budget	$250,000 to $750,000	Ongoing	Current
Use GIS capacity to map, record wild fires, all hazards events	Forest Fire/Wild Fires	Richland County	1	10	Operating Budget	<$250,000	Ongoing	1-2 yrs.
Power line easement clearance	Winter Snow & Ice Storms	Richland County /SCANA Elec Coops	1	2 & 7	Electric Utility Providers	<$250,000	Ongoing	1-2 yrs.
Debris removal and road clearance work	Winter Snow & Ice Storms	Richland County Public Works & SCDOT	1	2 & 7	Richland County Public Works & SCDOT Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Use bus & van transit for shelters, evacuation and comm. capacity	Winter Snow & Ice Storms	COMET, School Districts, Senior Resources	1	4 & 7	COMET, School Districts, Senior Resources Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Procure and use generators at critical facilities	Winter Snow & Ice Storms	Richland County/School District/City of Columbia/Rec. Commission	1	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2 yrs.
Install surge protectors in critical facilities	Thunderstorm , Hail, wind, lightning	Richland County/School District/City of Columbia/	1	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2yrs

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Adopt procedure to suspend operations during lightning storms	Thunderstorm , Hail, wind, lightning	Richland County	2	2,4 & 5	Operating Budget	<$250,000	Ongoing	1-2 yrs.
Clear power line and utility easements of debris	Thunderstorm , Hail, wind, lightning	SCANA Elec Coops	1	2 & 7	Public Works Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Remove taller trees near critical facilities	Thunderstorm , Hail, wind, lightning	Richland County /SCANA Elec Coops	2	2 & 7	Public Works Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Develop portable water treatment facilities	Hurricanes	Richland Utilities /City of Columbia	2	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2 yrs.
Replace water storage tanks and pumps as needed	Hurricanes	Richland Utilities /City of Columbia	2	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2yrs
Add capacity at solid waste disposal facilities to handle more debris	Hurricanes	Richland County and solid waste contractors	2	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2 yrs.
Strengthen utility services especially in highly vulnerable areas	Tornados	Richland Utilities /City of Columbia	1	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2 yrs.
Conduct engineering strength studies of critical facilities	Tornados	Richland County	1	2 & 4	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2 yrs.
Emergency response chain saw project/efforts to remove debris	Tornados	Richland County /SCANA Elec Coops	2	2 & 7	Capital Improvement Budgets	<$250,000	Ongoing	1-2 yrs.
Install safe rooms in critical facilities especially with vulnerable population	Tornados	Richland County	2	2 & 7	Capital Improvement Budgets	$250,000 to $750,000	Ongoing	1-2yrs
Establish GIS mapping of all hazard events by location, effect and time	Tornados	Richland County/ /City of Columbia/other municipalities	3	10	Capital Improvement Budgets	<$250,000	Ongoing	1-2 yrs.

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Conduct earthquake impact analysis on critical facilities	Earthquake	Richland County /City of Columbia	1	2 & 4	Public Works Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Develop and publicize water conservation practices to respond to drought declarations	Drought	Richland County	2	5	Operating Budget	<$250,000	Ongoing	1-2 yrs.
Amend state drought legislation to stiffen penalties and clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Ongoing	1-2yrs
Develop a county well water program in vulnerable fringe areas	Drought	Richland County/ /City of Columbia/	2	2,4 & 7	Public Works Operating Budgets	<$250,000	Ongoing	1-2 yrs.
Maintain Higher Regulatory Standards and continue to enforce current County Ordinance.	Flood	Floodplain/Legal/County Council	1	3, 4 & 9	Staff time	0.00	Ongoing	5 years
A Zone Detailed Flood Study	Flood	Floodplain/Consultant	1	1	Staff time; Public Works funds (budget)	$750,000	New	5 years
Improve the CRS Ranking	Flood	Floodplain/Building /PIO/Council	1	5 & 6	Staff time; Public Works funds (budget)	0.00	Ongoing	5 years
Enhance and improve Open Space Regulations	Flood	Floodplain/Planning/Zoning/Legal/Council	1	3, 4 & 9	Staff time	0.00	New	5 years
Continue public awareness program that informs all property owners that are located in the special flood hazard area.	Flood	Floodplain/PIO	1	5 & 6	Staff time; Public Works funds (budget)	$5000.00 annually	Ongoing	5 years
Provide advice and assistance to property owners concerning the protection of their properties from flooding	Flood	Floodplain	1	5 & 6	Staff time	0.00	Ongoing	5 years

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
and local drainage.								
Develop a program to identify and obtain funding for both pre- and post-disaster mitigation projects.	Flood	Floodplain/Council /Consultant/Public Works	1	1	Staff time; Public Works funds (budget)	Cost Unknown, scope unknown estimated $200,000.00	New	5 years
Prioritize capital projects that will mitigate flood impacts in those areas of the County that have experienced significant flooding problems.	Flood	Floodplain/Public Works/Council/Consultant/Emergency Management	1	1	Staff time; Public Works funds (budget)	Cost estimated $200,000.00	New	5 years
Develop a floodplain management plan that will guide and assist the County in reviewing all new requests for development and in establishing priority for hazard mitigation projects.	Flood	Floodplain/Council /Consultant	1	1	Staff time; Public Works funds (budget)	$200,000.00	New	5 years
Review the effects and locations of areas that experience flooding and determine what steps, if any, the County can take to alleviate future impacts.	Flood	Floodplain/Public Works/Council/Consultant	1	1, 3 & 4	Staff time; Public Works funds (budget)	0.00	New	5 years
Increase and improve outreach programs, brochures, and handouts.	Flood	Floodplain/PIO	1	5 & 6	Staff time; Public Works funds (budget)	$5,000.00 annually	Ongoing	5 years

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Implement a Program for Public Information as outlined in the Community Rating System guidance.	Flood	Floodplain/PIO	1	5 & 6	Staff time; Public Works funds (budget)	$10,000.00 annually	New	5 years
Provide annual notices to all property owners outlining the County's services regarding floodplain management, property protection, and insurance information.	Flood	Floodplain/PIO	1	5 & 6	Staff time; Public Works funds (budget)	$5,000.00 annually	Ongoing	5 years
Develop grant applications to mitigate current and potential flood vulnerable structure in the special flood hazard area.	Flood	Floodplain/Council /Consultant/Public Works/Emergency Management	1	1, 2 & 4	Staff time; Public Works funds (budget)	$150,000.00	New	5 years
Initiate a debriefing within ninety days of a declared disaster and utilize lessons learned to improve response capabilities.	Flood	Floodplain/Council /Consultant/Public Works/Emergency Management	1	1, 3 & 4	Staff time	0.00	New	5 years
Educate citizens about the dangers of driving through flooded roadways, maintain depth signs, and police presence at high water crossings.	Flood	Floodplain/Public Works/ Sherriff's Department/Emergency Management/Council	1	5 & 6	Staff time; Public Works funds (budget)	$5000.00 Annually	New	5 years
Develop a comprehensive program to deliver flood insurance information to property owners in the special flood hazard area.	Flood	Floodplain/PIO/Council	1	5 & 6	Staff time; Public Works funds (budget)	$10,000.00	New	5 years

Unincorporated Richland County								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Declare May (or October) of each year to be Flood Awareness Month	Flood	Floodplain/PIO/Council	1	5 & 6	Staff time; Public Works funds (budget)	$10,000.00	New	5 years
Continue to identify and contact all repetitive loss properties.	Flood	Floodplain	1	4, 5 & 6	Staff time; Public Works funds (budget)	0.00	Ongoing	5 years

Table 130 - City of Columbia Mitigation Strategies.

City of Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	City of Columbia/Rich. County/School Districts	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Procure and provide auxiliary power supply to critical facilities	Thunder-storms (Hail, Wind, Lightning)	City of Columbia	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Ongoing
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	City of Columbia/SCANA	1	2, 4 & 7	Public Works' Operating Budgets	<$250,000	As needed	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	City of Columbia/ SCANA	2	2, 4 & 7	Public Works' Operating Budget	<$250,000	As needed	Ongoing
Maintain & upgrade warning siren system for Lake Murray Dam	Flooding	SCANA	1	4 & 5	Capital Improve. Budget	<$250,000	As needed	Ongoing
Enforce county zoning to restrict development in flood-plains	Flooding	City of Columbia	1	4 & 5	Operating Budget	<$250,000	As needed	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Columbia City Council	2	5	Operating Budget	<$250,000	Ongoing	Ongoing
Use Columbia's GIS system to track all structures and demolition permits in flood	Flooding	City of Columbia	2	10	Operating Budget	<$250,000	As needed	Ongoing

City of Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
areas								
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	City of Columbia/Rich. County/ towns in county	3	2, 4 & 7	Capital Improve. Budgets	<$250,000	As needed	Ongoing
Identify & contact all repetitive loss properties	Flooding	City of Columbia	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	City of Columbia	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	City of Columbia	1	5	Operating Budgets	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	City of Columbia/SCDOT	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	City of Columbia	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Power line clearance with the Elec. Coop. & SCANA	Winter Snow & Ice Storms	Rich. County/ SCANA Elect. Coops.	1	2, 4 & 7	Electric utility providers	<$250,000	As needed	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	City of Columbia Public Works/ SCDOT	1	2, 4, 7, 8 & 9	City of Columbia/ County Public Works Operating Budget	<$250,000	As needed	Ongoing
Use bus and van transit system for emergency shelter, evacuation & communication capacity	Winter Snow & Ice Storms	Central Midlands Transit System/ DART system, etc.	1	4 & 7	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	City of Columbia/Richland County/ school dist. cities/ recreation comm.	1	2, 4 & 7	Capital budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Harden utility services to facilities especially serving vulnerable populations	Tornados	City of Columbia/Rich. County	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Conduct engineering	Tornados	City of Columbia	1	2 & 7	Capital Improve.	<$250,000	Deferred	Deferred

City of Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
strength studies of critical facilities					Budget		due to funding	
Emergency response chain saw project and other efforts to remove debris	Tornados	City of Columbia/SCANA	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities especially those serving vulnerable populations	Tornados	City of Columbia/School District1	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	City of Columbia/Rich. County	3	10	Operating Budgets of city and county	<$250,000	Ongoing	Ongoing
Increased generating capacity at water plants and key pump stations	Hurricanes	City of Columbia/other water providers	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred
Develop more raw and treated water impoundments offsite	Hurricanes	City of Columbia and other water providers in county	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred
Add capacity at solid waste disposal facilities serving the county to handle more debris	Hurricanes	City of Columbia and solid waste contractors	2	2, 4 & 7	Capital Improve. Budgets and Plans	$750,000>	Deferred due to funding	Deferred
Implement the terms and provisions of Columbia's Severe Weather Operation Plans	Hurricane	City of Columbia	2	2 & 4	Capital and Operating Budgets	<$250,000	Ongoing	Ongoing
Conduct earthquake impact analysis on critical facilities in the City of Columbia	Earthquake	City of Columbia/Rich. County	1	2 & 4	Public Works Depts. Capital Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Work with SCANA to ensure that the Lake Murray Dam withstands future earthquakes	Earthquake related dam failure	Rich. County and SCANA	1	2 & 4	Operating Budget	<$250,000	Ongoing	Ongoing
Ensure that warning signal system works for rapid evacuation from lands downstream of Lake Murray	Earthquake related dam failure	City of Columbia/SCANA	1	2 & 4	Operating Budget	<$250,000	Ongoing	Ongoing

City of Columbia								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Dam								
Develop clearly marked and explained evacuation routes for Lake Murray dam failure	Earthquake related dam failure	City of Columbia/Rich. County/ SCANA	1	2 & 4	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Develop speakers bureau about earthquake and other natural disaster threats to the county	Earthquake	City of Columbia/ Rich. County/ SCANA towns cities	1	4 & 5	Operating Budget	<$250,000	Deferred due to funding	Deferred
Develop and publicize water conservation practices to respond to drought declarations	Drought	City of Columbia	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Deferred	Deferred
Institute a drought water storage program for fire suppression	Drought	City of Columbia	1	2, 4 & 7	Capital Budgets of Public Works Programs	<$250,000	Ongoing	Ongoing

Table 131 - City of Forest Acres Mitigation Strategies.

City of Forest Acres								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Install surge protectors in critical facilities	Thunderstorm , Hail, Wind, Lightning	City of Forest Acres/ Rich. County/School Districts	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Clear power line and utility easements of debris	Thunderstorm , Hail, Wind, Lightning	City of Columbia/ E. Richland Publ. Serv. District/ SCANA City of Forest Acres	1	2, 4 & 7	Public Works Operating Budgets	<$250,000	Ongoing	Ongoing
Remove taller trees near critical facilities	Thunderstorm , Hail, Wind, Lightning	City of Forest Acres/SCANA	2	2, 4 & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing

City of Forest Acres								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Enforce city zoning to restrict development in flood-plains	Flooding	City of Forest Acres	1	4 & 7	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Forest Acres City Council	2	4 & 7	Operating Budget	<$250,000	Deferred due to funding	Ongoing
Coordinate with Rich. County's GIS system to track all structures and demolition permits in flood areas	Flooding	City of Forest Acres	2	10	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	City of Forest Acres/ Rich. County	3	2 & 10	Special millage agreement w/Richland County for stormwater management	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	Rich. County/SCDOT	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Ongoing	Ongoing
Identify & contact all repetitive loss properties	Flooding	City of Forest Acres	1	1, 2, 3 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	City of Forest Acres	1	4	Operating Budgets	<$250,000	Deferred due to funding	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	City of Forest Acres	1	4	Operating Budgets	<$250,000	Deferred due to funding	2015
Maintain status in the NFIP	Flooding	City of Forest Acres	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Power line & utility easement clearance	Winter Snow & Ice Storms	City of Columbia, Forest Acres/ SCANA/Columbia	1	2, 4 & 7	Electric & water and sewer utility providers	<$250,000	Ongoing	Ongoing

City of Forest Acres								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Debris removal and road clearance work	Winter Snow & Ice Storms	City of Forest Acres SCANA/ E. Rich. Co. Pub. Serv. District	1	2, 4 & 7	City of F. Acres/ County Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Use bus and van transit system for emergency shelter, evacuation & communication capacity	Winter Snow & Ice Storms	Central Midlands Transit System/ DART system, etc.	1	2 & 4	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators at critical facilities	Winter Snow & Ice Storms	Town A. Lakes/ Rich. County/ school district	1	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	2015
Harden utility services to facilities especially serving vulnerable populations	Tornados	E. Rich. Public Serv. Dist./ Rich. County/City of Columbia	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	2015
Emergency response chain saw project and other efforts to remove debris	Tornados	City of Forest Acres/ SCANA/ SCDOT	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	2015
Establish GIS mapping of all hazard events by location, effect, and occurrence	Tornados	City of Forest Acres/ Rich. County	3	10	Operating Budgets of city and county	<$250,000	Ongoing	Ongoing
Increased generating capacity at water plants and key pump stations	Hurricanes	City of Columbia	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Continue to enforce International Building and Fire Codes	Hurricanes	City of Forest Acres	2	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Cooperate with the County's Emergency Response Plans for Severe Weather	Hurricane	City of Forest Acres/ Rich. County	2	2, 4 & 7	Operating Budgets	<$250,000	Ongoing	Ongoing

City of Forest Acres								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Work with S.C. DHEC to ensure that the major lakes & ponds in F.A. may withstand future earthquakes	Earthquake	City of Forest Acres/ SC DHEC	1	2 & 4	Operating Budget	$750,000>	Ongoing	Ongoing
Develop speakers bureau about earthquake and other hazards to F. Acres	Earthquake	City of Forest Acres/ Richland County	1	2 & 4	Operating Budgets	<$250,000	Deferred due to funding	Deferred
Develop and publicize water conservation practices to respond to drought declarations	Drought	City of Forest Acres	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Deferred due to funding	Deferred

Table 132 - Town of Arcadia Lakes Mitigation Strategies.

Town of Arcadia Lakes								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	SCANA	1	2, 4 & 7	Public Works Operating Budgets	<$250,000	As needed	Ongoing
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Arcadia Lakes/ SCANA	2	2, 4 & 7	Public Works Operating Budget	<$250,000	As needed	Ongoing
Enforce town zoning to restrict development in flood-plains	Flooding	Town of Arcadia Lakes	1	3	Operating Budget	<$250,000	As needed	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Arcadia Lakes Town Council	2	6	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate with Rich.	Flooding	Town of Arcadia Lakes	2	10	Operating Budget	<$250,000	Ongoing	Ongoing

Town of Arcadia Lakes								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
County's GIS system to track all structures and demolition permits in flood area								
Coordinate with other local gov'ts in county to make stream channel improvement	Flooding	Town of Arcadia Lakes/ Rich. County	3	2, 4 & 7	Capital Improve. Budgets	<$250,000	As needed	Ongoing
Identify & contact all repetitive loss properties	Flooding	Town of Arcadia Lakes	1	10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Town of Arcadia Lakes	1	7 & 9	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Arcadia Lakes	1	3	Operating Budgets	<$250,000	Deferred due to funding	Ongoing
Replace structurally obsolete bridges	Flooding	Rich. County/SCDOT	2	2, 4 & 7	Capital Improve. Budgets	$750,000>	Ongoing	Ongoing
Maintain status in the NFIP	Flooding	Town of Arcadia Lakes	1	2, 4, 5, 7 & 10	Operating Budget	<$250,000	Ongoing	Ongoing
Power line and utility R-O-W easement clearance	Winter Snow & Ice Storms	SCANA/City of Columbia	1	2, 4 & 7	Electric utility providers	<$250,000	As needed	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	SCANA/ SC DOT/Rich County	1	2, 4 & 7	Town A. Lakes/ County Public Works Operating Budget	<$250,000	As needed	Ongoing
Use bus and van transit system for emergency shelter, evacuation & communication capacity	Winter Snow & Ice Storms	Central Midlands Transit System/ DART system, etc.	1	4	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and use elec. generators for vulnerable citizens of Arcadia Lakes	Winter Snow & Ice Storms	Town of Arcadia Lakes	1	2, 4 & 7	Capital Improve Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Increased generating capacity at water plants	Hurricanes	City of Columbia/other water	2	2, 4 & 7	Capital Improve. Budgets	$250,000 to	Deferred due to funding	Deferred

Town of Arcadia Lakes								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
and key pump stations		provider				$750,000		
Continue to enforce International Building and Fire Codes with Rich. County	Hurricanes	Town of Arcadia Lakes / Rich. County	2	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Cooperate with the County's Emergency Response Plans for Severe Weather	Hurricane	Town of Arcadia Lakes/ Rich. County	2	2 & 4	Operating Budgets	<$250,000	Ongoing	Ongoing
Harden utility services identified as critical	Tornados	Town of Arcadia Lakes/ Rich. County/City of Columbia	1	2, 4 & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Arcadia Lakes /SCANA	1	2, 4 & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Town of Arcadia Lakes/ Rich. County	3	10	Operating Budgets of town and county	$250,000 to $750,000	Ongoing	Ongoing
Work with S.C. DHEC to ensure that the major lakes & ponds in town may withstand future earthquakes	Earthquake	Town of Arcadia Lakes. / SC DHEC	1	4	Operating Budget	$250,000 to $750,000	Ongoing	Ongoing
Develop speakers bureau about earthquake and other natural disaster threats to the town	Earthquake	Town of Arcadia Lakes/ Rich. County	1	5	Operating Budgets	$250,000 to $750,000	Deferred due to funding	Ongoing
Develop and publicize water conservation practices to respond to drought declarations	Drought	Town of Arcadia Lakes	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Deferred	Deferred

Table 133 - Town of Blythewood Mitigation Strategies.

Town of Blythewood								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Improved suppression response (tankers, dry chemicals)	Forest Fire/Wild Fires	Rich. County	1	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Fire Code enforcement/inspections	Forest Fire/Wild Fires	Rich. County	1	2 & 5	Operating budgets	<$250,000	Ongoing	Ongoing
Construct dry hydrant program in rural areas of county	Forest Fire/Wild Fires	Rich. County/Columbia/Winnsboro	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Use GIS capacity to map, record wild fires, all hazard events	Forest Fire/Wild Fires	Rich. County	1	10	Operating Budget	<$250,000	Ongoing	Ongoing
Adopt development standards to restrict development in flood-plains	Flooding	Town of Blythewood	1	2 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Declare May of each year to be Flood Awareness Month	Flooding	Town of Blythewood	2	2 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Coordinate with county to make stream channel imp.	Flooding	Rich. County/ Town of Blythewood	3	2 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Replace structurally obsolete bridges	Flooding	Rich. County/ Town of Blythewood SCDOT	2	2 & 7	Capital Improve. Budgets	$750,000>	Deferred due to funding	Deferred
Identify & contact all repetitive loss properties	Flooding	Rich. County/ Town of Blythewood	1	5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Ensure that the FEMA Elevation Certificate is properly completed before issuance on property in flood areas	Flooding	Rich. County/ Town of Blythewood	1	2, 5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Undertake Planning to participate in Community Rating System	Flooding	Town of Blythewood	1	2, 5 & 10	Operating Budgets	<$250,000	Ongoing	Ongoing
Power line easement clearance	Winter Snow & Ice Storms	Rich. County/ SCANA Fairfield Elect. Coop.	1	2 & 7	Electric utility providers	<$250,000	Ongoing	Ongoing
Debris removal and road clearance work	Winter Snow & Ice Storms	Town of Blythewood/Rich.	1	2 & 7	Rich. County Public Works & SCDOT	<$250,000	Ongoing	Ongoing

Town of Blythewood								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
		County Public Works and SCDOT			Operating Budgets			
Use bus and van transit system for emergency shelters, evacuation & communication. capacity	Winter Snow & Ice Storms	Central Midlands Transit System/ DART system, etc.	1	4 & 7	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and Use elec. generators at critical facilities	Winter Snow & Ice Storms	Town of Blythewood/ school dist. cities/ recreation comm.	1	2 & 7	Capital Improve. budgets	$250,000 to $750,000	Ongoing	Ongoing
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Town of Blythewood/ Rich. County/ School Districts & cities	1	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Town of Blythewood/Rich. County	2	2, 4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Clear power line and utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	SCANA/ Fairfield Electric Coop	1	2 & 7	Public Works Operating Budgets	<$250,000	As needed	Ongoing
Remove taller trees near critical facilities	Thunderstorms (Hail, Wind, Lightning)	Town of Blythewood/ Rich. County/ Fairfield Electric Coop/ SCANA	2	2 & 7	Public Works Operating Budget	<$250,000	As needed	Ongoing
Develop Portable Water Treatment Facilities	Hurricanes	City of Columbia/Town of Winnsboro.	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Replace water storage tanks and pumps as needed	Hurricanes	City of Columbia/Town of Winnsboro	2	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	As needed	Ongoing
Add capacity at solid waste disposal facilities serving the county to handle more debris	Hurricanes	Rich. County and solid waste contractor	2	2 & 7	Capital Improve. Budgets	$250,000 to $750,000	Ongoing	Ongoing
"Harden" utility services especially in highly vulnerable areas	Tornados	Rich. County/utility providers	1	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Conduct engineering	Tornados	Town of	1	2 & 4	Capital Improve.	$250,000 to	Ongoing	Ongoing

Town of Blythewood								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
strength studies of critical facilities		Blythewood/Rich. County			Budget	$750,000		
Emergency response chain saw project and other efforts to remove debris	Tornados	Town of Blythewood/Rich. County/ SCANA/Fairfield Electric Coop	1	2 & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Town of Blythewood/Rich. County	2	2 & 7	Capital Improve. Budget	$250,000 to $750,000	Ongoing	Ongoing
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Town of Blythewood/Rich. County,	3	10	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Conduct earthquake impact analysis on critical facilities in Rich. County	Earthquake	Town of Blythewood/Rich. County.	1	2 & 4	Public Works Depts.' Capital Budgets	<$250,000	Ongoing	Ongoing
Develop speakers bureau about earthquake and other natural disaster threats to the county	Earthquake.	Town of Blythewood/Rich. County/ SCANA towns cities	1	2, 4 & 5	Operating Budget	<$250,000	Ongoing	Ongoing
Develop and publicize water conservation practices to respond to drought declarations	Drought	Town of Blythewood	1	5	Operating Budget	<$250,000	Ongoing	Ongoing
Amend state drought legislation to stiffen penalties & clarify laws	Drought	SC General Assembly	3	5	Operating Budget	<$250,000	Ongoing	Ongoing
Institute a drought water storage program for fire suppression	Drought	Rich. County/City of Columbia	1	2, 4 & 7	Capital Budgets of Public Works Programs	<$250,000	Ongoing	Ongoing

Table 134 - Town of Eastover Mitigation Strategies.

Town of Eastover								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Regulate open burning by ordinance (Red flag alerts)	Forest Fire/Wild Fires	Fire	3	4 & 5	Budget/Grant	$75,000.00	New	2016
Use GIS capacity to map, record wild fires, all hazard events	Forest Fire/Wild Fires	County/Admin	3	2 & 4	Budget/Grant	$100,000.00	New	2017
Implement warning siren system	Flooding	Admin	3	2, 4 & 8	Budget/Grant	$85,000.00	New	2017
Enforce zoning and building codes to restrict development in flood-plains	Flooding	Flood	1	2,4 & 5	Budget/Grant	$60,000.00	New	2016
Implement Flood Awareness incentives	Flooding	Admin	2	2 & 5	Budget/Grant	$35,000.00	New	2016
Coordinate with Rich. County's GIS system to track all structures and demolition permits in flood area	Flooding	Admin	2	2,5 & 10	Budget/Grant	$20,000.00	New	2016
Coordinate with other local gov'ts in county to make stream channel imp.	Flooding	Flood	2	5 &7	Budget/Grant	$15,000.00	New	2016
Increase drainage capabilities within flood prone areas of the Town.	Flooding	Flood	1	2,4 &7	Budget/Grant	$100,000.00	New	2018
Replace structurally obsolete bridges	Flooding	DOT/County	2	7	Budget/Grant	$75,000.00	New	2018
Identify & contact all repetitive loss properties	Flooding	Flood	1	4,7 & 10	Budget/Grant	$50,000.00	New	2016
Implement initiatives to improve structural integrity and safety of properties in flood prone areas through flood proofing, elevations or buyouts.	Flooding	Admin	1	2,4 & 5	Budget/Grant	$1,000,000.00	New	2017
Mitigation of homes and businesses located in special flood hazard area and were substantially damaged.	Flooding	Admin	1	2,4,5 & 7	Budget/Grant	$300,000.00	New	2017
Undertake Planning to participate in Community Rating System	Flooding	Admin	3	4, 5 & 7	Budget/Grant	$30,000.00	New	2017
Maintain status in the NFIP	Flooding	Flood	1	4, 5 & 7	Budget/Grant	$25,000.00	New	Ongoing

Town of Eastover								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Power line easement clearance	Winter Snow & Ice Storms	Maintenance	2	2 & 4	Budget/Grant	$55,000.00	New	2016
Debris removal and road clearance work	Winter Snow & Ice Storms	Maintenance	1	2 & 4	Budget/Grant	$55,000.00	New	2016
Use bus and van transit system for emergency shelters, evacuation & communication capacity	Winter Snow & Ice Storms	Admin	3	2 & 4	Budget/Grant	$250,000.00	New	2019
Procure and Use elec. generators at critical facilities	Winter Snow & Ice Storms	Maintenance	1	2 & 5	Budget/Grant	$150,000.00	New	2017
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Maintenance	2	2 & 7	Budget/Grant	$65,000.00	New	2017
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	Admin	3	2,4 & 5	Budget/Grant	$20,000.00	New	2016
Clear utility easements of debris	Thunder-storms (Hail, Wind, Lightning)	Maintenance	1	2,4,5 & 7	Budget/Grant	$55,000.00	New	2017
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Maintenance	2	2,4 &7	Budget/Grant	$55,000.00	New	2017
Fortify structural integrity of critical facilities	Thunder-storms (Hail, Wind, Lightning)	Admin	2	2,4 &7	Budget/Grant	$350,000.00	New	2017
Develop Portable Water Treatment Facilities	Hurricanes	Admin	2	2,4,5 & 7	Budget/Grant	$24,000.00	New	2017
Replace water storage tanks and pumps as needed	Hurricanes	Admin	1	2,4,5 & 7	Budget/Grant	$50,000.00	New	Ongoing
Add capacity to manage the handling and disposal of debris	Hurricanes	Admin	3	2,4 & 5	Budget/Grant	$75,000.00	New	2018

Town of Eastover								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Conduct engineering strength studies of critical facilities	Tornados	Admin	3	2,4,5 & 7	Budget/Grant	$150,000.00	New	2018
Emergency response chain saw project and other efforts to remove debris	Tornados	Maintenance	1	2 & 8	Budget/Grant	$200,000.00	New	2016
Install safe rooms in critical facilities especially those with vulnerable populations	Tornados	Admin	3	2,4 & 5	Budget/Grant	$45,000.00	New	2019
Establish GIS mapping of all hazard events by location, effect, and time	Tornados	Flood/County	2	1,5 & 10	Budget/Grant	$20,000.00	New	2016
"Harden" utility services especially in highly vulnerable areas	Tornados	Admin	3	2,4,5 & 7	Budget/Grant	$85,000.00	New	2019
Conduct earthquake impact analysis on critical facilities	Earthquake	Admin	3	2,4 & 5	Budget/Grant	$100,000.00	New	2017
Develop clearly marked and explained evacuation routes.	All	Admin	2	2,5 & 10	Budget/Grant	$7,000.00	New	2016
Develop speakers bureau about earthquake and other natural disaster threats to the county	Earthquake	Admin	3	2,4 & 5	Budget/Grant	$15,000.00	New	2018
Develop and publicize water conservation practices to respond to drought declarations	Drought	Admin	3	2,4 & 5	Budget/Grant	$200.00	New	2016
Amend state drought legislation to stiffen penalties & clarify laws	Drought	Admin	3	2 & 5	Budget/Grant	$30,000.00	New	2019
Develop a quality water consumption program in vulnerable fringe areas of the town	Drought	Admin	2	2,4 & 5	Budget/Grant	$1,500.00	New	2017
Institute a drought water storage program for fire suppression	Drought	Admin	3	2,4 & 5	Budget/Grant	$30,000.00	New	2016
Establish cooling stations for vulnerable population	Heat	Admin	1	2,4 & 5	Budget/Grant	$65,000.00	New	2017
Implement public awareness and outreach campaign	Heat	Police	1	2,4 & 5	Budget/Grant	$20,000.00	New	Ongoing

Table 135 - Richland County School District 1 Mitigation Strategies.

Richland County School District 1								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Conduct engineering strength studies of critical facilities	Tornados	RCSD1	1	2, 3, & 4	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding	Deferred
Install safe rooms in critical facilities especially those serv. vulnerable populations	Tornados	RCSD1	1	2, 3, 4, & 7	Capital Improve. Budget	$250,000 to $750,000	Deferred due to funding`	Deferred
Install surge protectors in critical facilities	Thunder-storms (Hail, Wind, Lightning)	Rich. County & RCSD1 & cities	1	2, 3, 4, & 5	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Adopt procedure to suspend operations during lightning storms	Thunder-storms (Hail, Wind, Lightning)	RCSC1	2	4, 5, & 7	Operating Budget	<$250,000	Deferred due to funding	Deferred
Remove taller trees near critical facilities	Thunder-storms (Hail, Wind, Lightning)	Rich. County/RCSD1, Coops, SCANA	2	2, 3, 4, & 7	Public Works Operating Budget	<$250,000	Ongoing	Ongoing
Identify all school structures in 100-year floodplains & work with local governments to lower flood insurance premiums	Flooding	RCSD1	2	2, 3, 4, & 7	Operating Budget	<$250,000	Deferred due to funding	Deferred
Flood proof school buildings and critical facilities where need.	Flooding	RCSD1	2	2, 3, 4, & 7	Capital Budget	<$250,000	Deferred due to funding	Deferred
Coordinate with local gov'ts in county to make critical stream channel improvement to lower flood levels	Flooding	RCSD1/City of Columbia/Rich. County/ municipalities in county	3	2, 3, 4, & 7	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Use identified school buildings as emergency shelters	Hurricanes	RCSD1	2	2, 3, 4, & 7	Operating. Budget	<$250,000	Ongoing	Ongoing
Rebuild school buildings damaged by hurricane event	Hurricanes	RCSD1	2	2, 3, 4, & 7	Capital Budget	$750,000>	Deferred due to funding	Ongoing
Conduct earthquake impact analysis on critical facilities in RCSD1	Earthquake	RCSD1/Rich. County/ municipalities in county	1	2, 3, 4, & 7	Public Works Depts.' Capital Budgets	<$250,000	Deferred due to funding	Deferred
Work with SCANA to ensure	Earthquake	Rich. County, SCANA	1	2, 3, 4, & 7	Operating Budgets	<$250,000	Ongoing	Ongoing

Richland County School District 1								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
that the Lake Murray Dam withstands future events		& RCSD1						
Ensure that warning signal system works for rapid evacuation from lands downstream of Lake Murray Dam	Earthquake causing dam failure	SCANA/RCSD1	1	2, 3, 4, 5, & 6	Operating Budget	<$250,000	Ongoing	Ongoing
Develop clearly marked and explained evacuation routes for dam failure	Earthquake causing dam failure	Rich. County/ City of Columbia/Town of Irmo/ SCANA/RCSD1	1	2, 3, 4, 5, & 6	Capital Improve. Budgets	<$250,000	Ongoing	Ongoing
Use bus and van transit system for emergency shelters, evacuation & communication capacity	Winter Snow & Ice Storms	RCSD1/ Central Midlands Transit System/ DART system, etc.	1	2, 3, & 5	CMRTA and DART budgets	<$250,000	Ongoing	Ongoing
Procure and Use elec. generators at critical facilities	Winter Snow & Ice Storms	Richland County/ RCSD1 cities	1	2, 3, 4, 5, & 6	Capital Improve. Budgets	$250,000 to $750,000	Deferred due to funding	Deferred
Create clear zones near critical facilities to lessen threat from forest/wild fires	Forest Fire/Wild Fires	RCSD1	1	2, 3, 4, & 7	Capital Improve. Budget	<$250,000	Deferred due to funding	Deferred
Use GIS capacity to map, record wild fires, all hazard events	Forest Fire/Wild Fires	RCSD1/Rich. County	1	1. 2, 3, 4, & 7	Operating Budgets	<$250,000	Ongoing	Ongoing

Table 136 - Richland County School District 2 Mitigation Strategies.

Richland County School District 2								
Activity	**Type of Hazard**	**Responsible Department**	**Priority (1 highest, 3 lowest)**	**Goals Addressed**	**Finance Source**	**Cost**	**Status**	**Timeframe**
Rebuild school buildings damaged by tornados	Tornados	RCSD2	2	2, 3, 4 & 7	Capital Budget	$750,000>	Deferred due to funding	Ongoing
Use identified school buildings as emergency shelters	Hurricanes	RCSD2	2	2, 3, 4 & 7	Operating. Budget	<$250,000	Ongoing	Ongoing
Rebuild school buildings damaged by hurricane event	Hurricanes	RCSD2	2	2, 3, 4 & 7	Capital Budget	$750,000>	Deferred due to funding	Ongoing
Procure and Use elec. generators at critical facilities	Winter Snow & Ice Storms	RCSC2 Richland County/ towns in county	1	2, 3, 4 & 7	Capital Improvement budgets	$750,000>	Deferred due to funding	Ongoing

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Appendices

I. Hazard and Mitigation Strategy Public Opinion Survey

On December 17th, 2015 the CMCOG posted on their web page an online public opinion survey for the HMP. In it, citizens were asked if they were directly impacted by any hazard, which hazards should be prioritized and to rank proposed mitigation goals. Results were divided by county, and then further subdivided by municipality. CMCOG staff shared the survey through social media and planning committee members were asked to share it though their own web pages and social media outlets. A total of 218 Central Midlands residents completed the survey. Following are a template for the survey along with a summary of results accumulated at the time the survey closed on February 26th, 2016.

I – A. Questions

1) County of Residence
2) Jurisdiction/Municipality of Residence
3) Have you experienced personal/economic loss from any of the following hazards?
   - Flooding
   - Wildfires
   - Hurricanes and Tropical Storms
   - Thunderstorms
   - Tornadoes
   - Earthquakes
   - Landslides
   - Sinkholes
   - Winter Storms
   - Hail
   - Extreme Heat
   - Drought

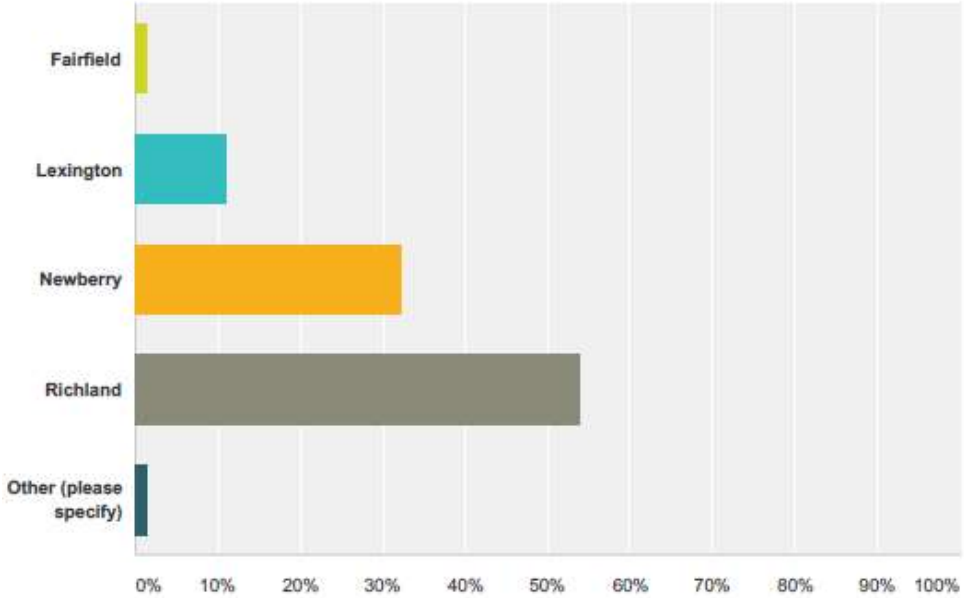
4) Rank the following hazards based on how much they impact your community (from Very Low to Very High Priority):
   - Flooding
   - Wildfires
   - Hurricanes and Tropical Storms
   - Thunderstorms
   - Tornadoes
   - Earthquakes
   - Landslides
   - Sinkholes
   - Winter Storms
   - Hail
   - Extreme Heat
   - Drought

5) Rank the following hazard mitigation strategies based on how important they would be to your community(from Very Low to Very High Importance):
   - Data acquisition and analysis of location and impact of different disasters to improve policy decisions
   - Encourage natural resource protection as a way of reducing the impact of hazards (e.g. wetland protection/mitigation, riparian buffers, low impact "green" developments)
   - Engineering/infrastructure projects (e.g. levees, stormwater, water and sewer upgrades)
   - Improve interagency coordination to respond to disasters more effectively
   - Improve zoning compliance laws to limit development in disaster prone areas (e.g. floodplains)
   - Installation of early warning systems, for appropriate disasters (e.g. sirens or cell phone messaging services)
   - More designated shelters and emergency preparedness infrastructure
   - Training, education & outreach efforts to prepare citizens for disasters

I – B. Summary of Results

Q1 County of residence

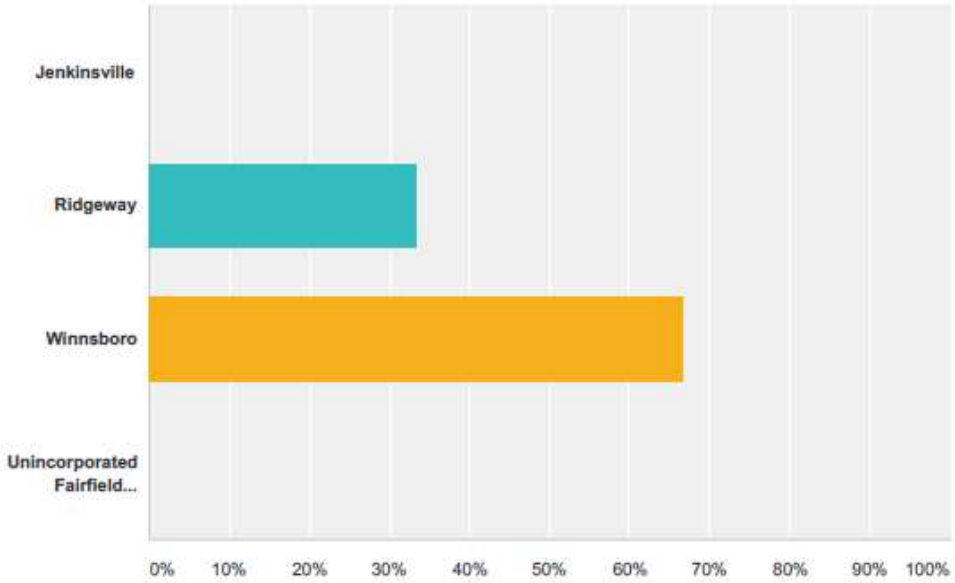
Answered: 217 Skipped: 0



Answer Choices	Responses	
Fairfield	**1.38%**	3
Lexington	**11.06%**	24
Newberry	**32.26%**	70
Richland	**53.92%**	117
Other (please specify)	**1.38%**	3
Total		**217**

Q2 Jurisdiction of residence

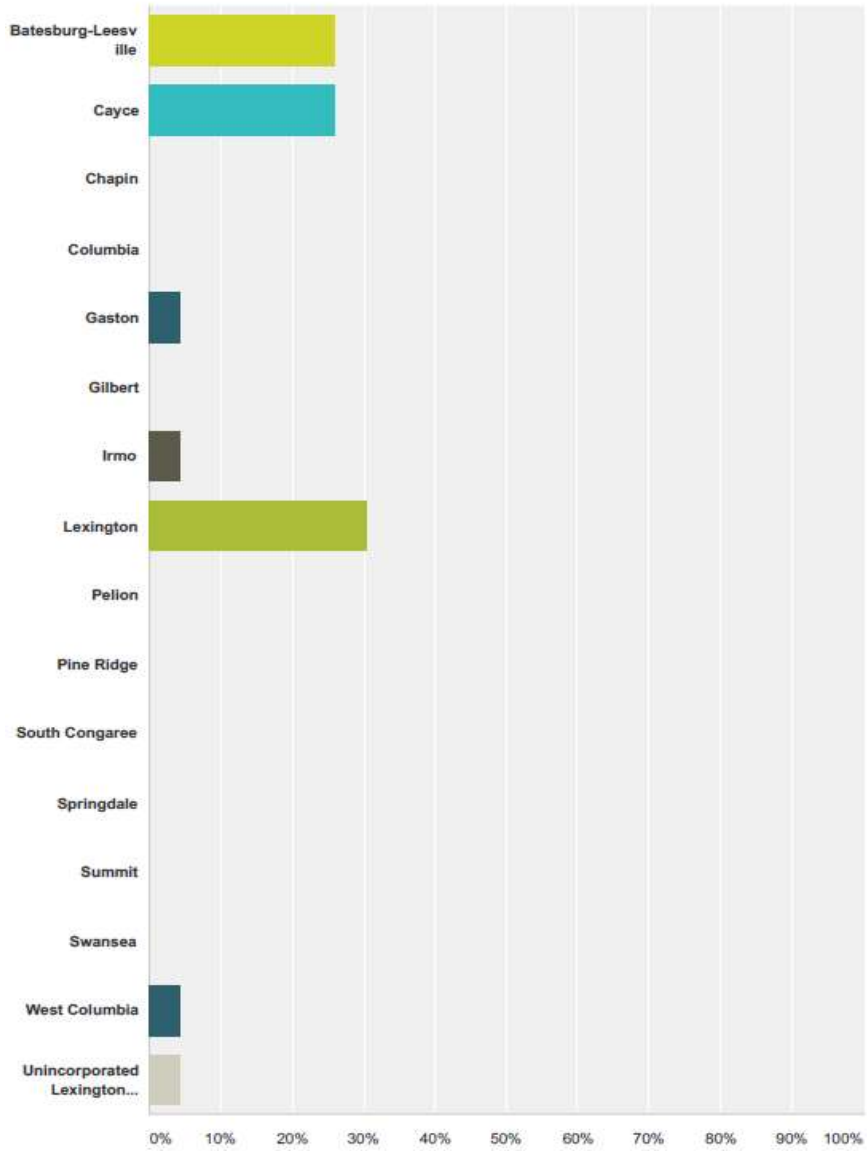
Answered: 3 Skipped: 214



Answer Choices	Responses	
Jenkinsville	0.00%	0
Ridgeway	33.33%	1
Winnsboro	66.67%	2
Unincorporated Fairfield Communities	0.00%	0
Total		**3**

Q3 Jurisdiction of residence

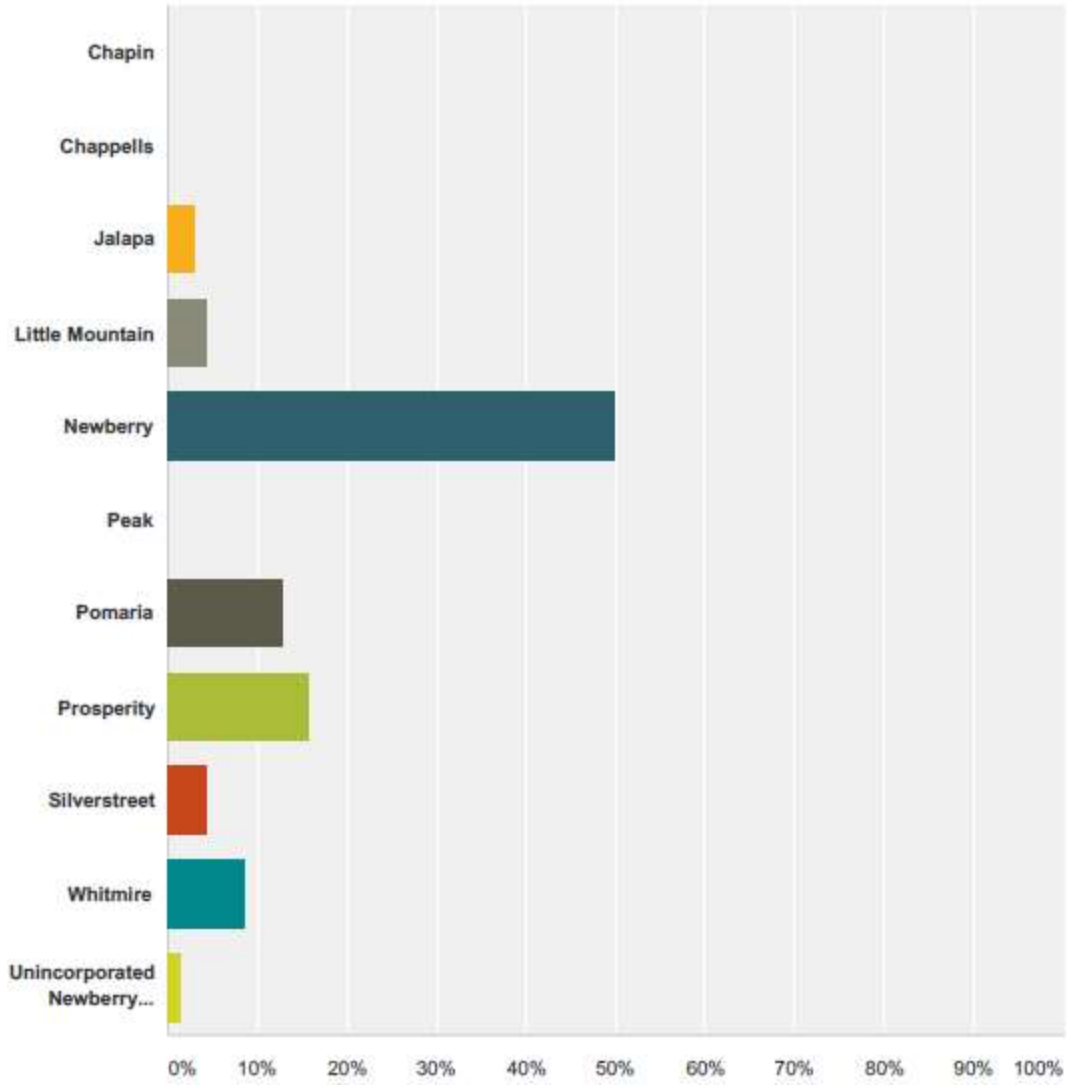
Answered: 23 Skipped: 194



Answer Choices	Responses	
Batesburg-Leesville	26.09%	6
Cayce	26.09%	6
Chapin	0.00%	0
Columbia	0.00%	0
Gaston	4.35%	1
Gilbert	0.00%	0
Irmo	4.35%	1
Lexington	30.43%	7
Pelion	0.00%	0
Pine Ridge	0.00%	0
South Congaree	0.00%	0
Springdale	0.00%	0
Summit	0.00%	0
Swansea	0.00%	0
West Columbia	4.35%	1
Unincorporated Lexington Communities	4.35%	1
Total		**23**

Q4 Jurisdiction of Residence

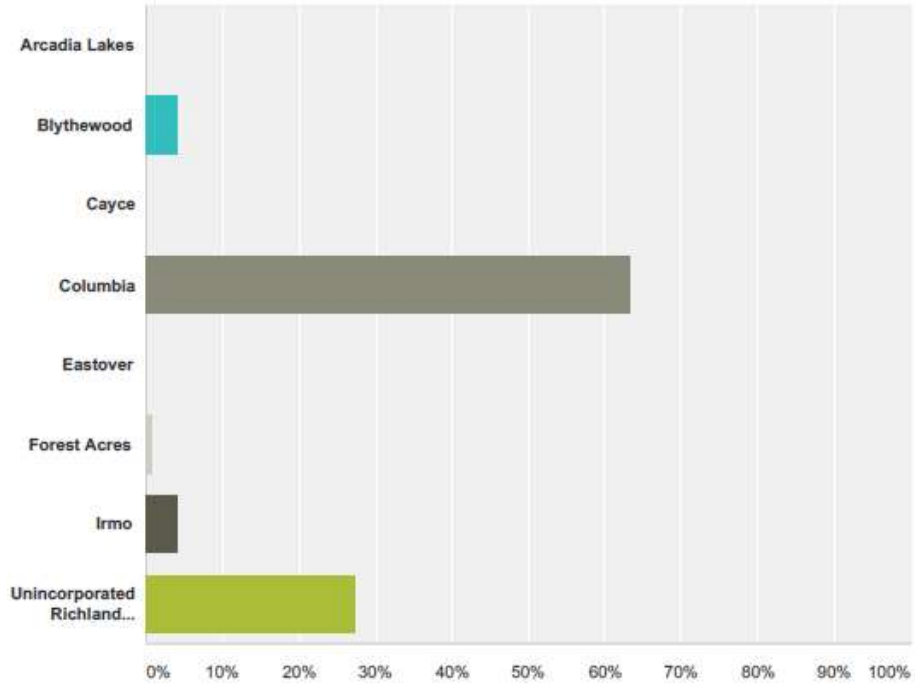
Answered: 70 Skipped: 147



Answer Choices	Responses	
Chapin	0.00%	0
Chappells	0.00%	0
Jalapa	2.86%	2
Little Mountain	4.29%	3
Newberry	50.00%	35
Peak	0.00%	0
Pomaria	12.86%	9
Prosperity	15.71%	11
Silverstreet	4.29%	3
Whitmire	8.57%	6
Unincorporated Newberry Communities	1.43%	1
Total		**70**

Q5 Jurisdiction of Residence

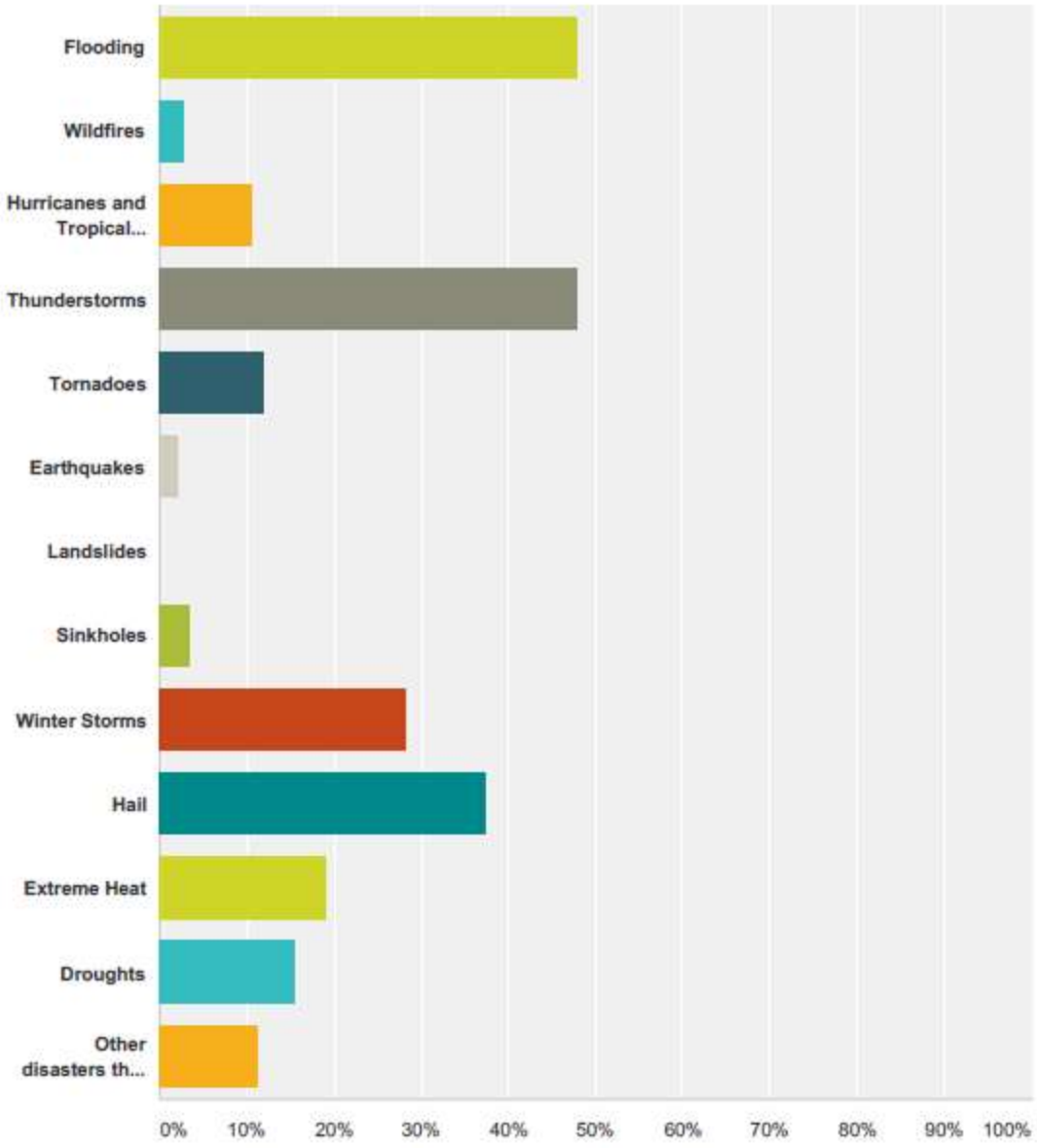
Answered: 117 Skipped: 100



Answer Choices	Responses	
Arcadia Lakes	0.00%	0
Blythewood	4.27%	5
Cayce	0.00%	0
Columbia	63.25%	74
Eastover	0.00%	0
Forest Acres	0.85%	1
Irmo	4.27%	5
Unincorporated Richland Communities	27.35%	32
Total		**117**

Q6 Have you experienced personal/economic loss from any of the following hazards? Mark all that apply

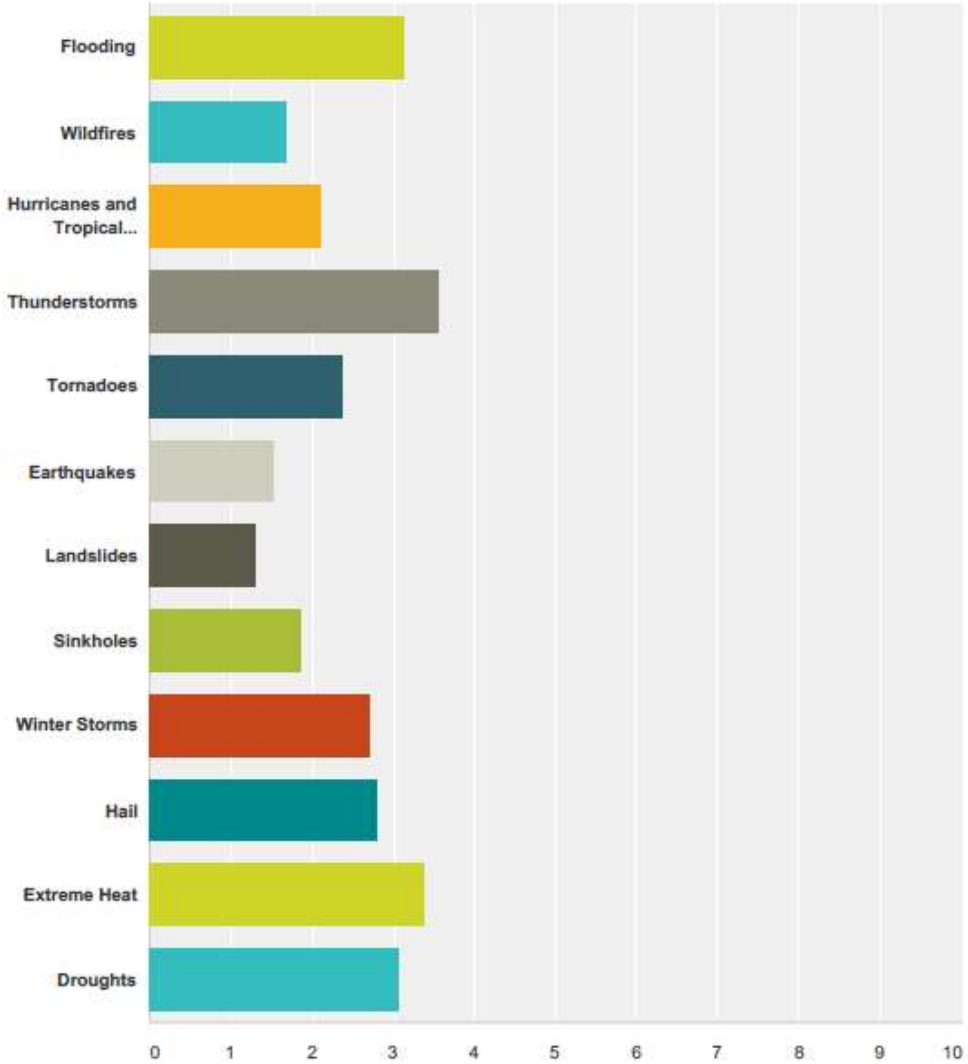
Answered: 142 Skipped: 75



Answer Choices	Responses	
Flooding	**47.89%**	68
Wildfires	**2.82%**	4
Hurricanes and Tropical Cyclones	**10.56%**	15
Thunderstorms	**47.89%**	68
Tornadoes	**11.97%**	17
Earthquakes	**2.11%**	3
Landslides	**0.00%**	0
Sinkholes	**3.52%**	5
Winter Storms	**28.17%**	40
Hail	**37.32%**	53
Extreme Heat	**19.01%**	27
Droughts	**15.49%**	22
Other disasters that caused loss (please specify)	**11.27%**	16
Total Respondents: 142		

Q7 Rank the following hazards based on how much they impact your community

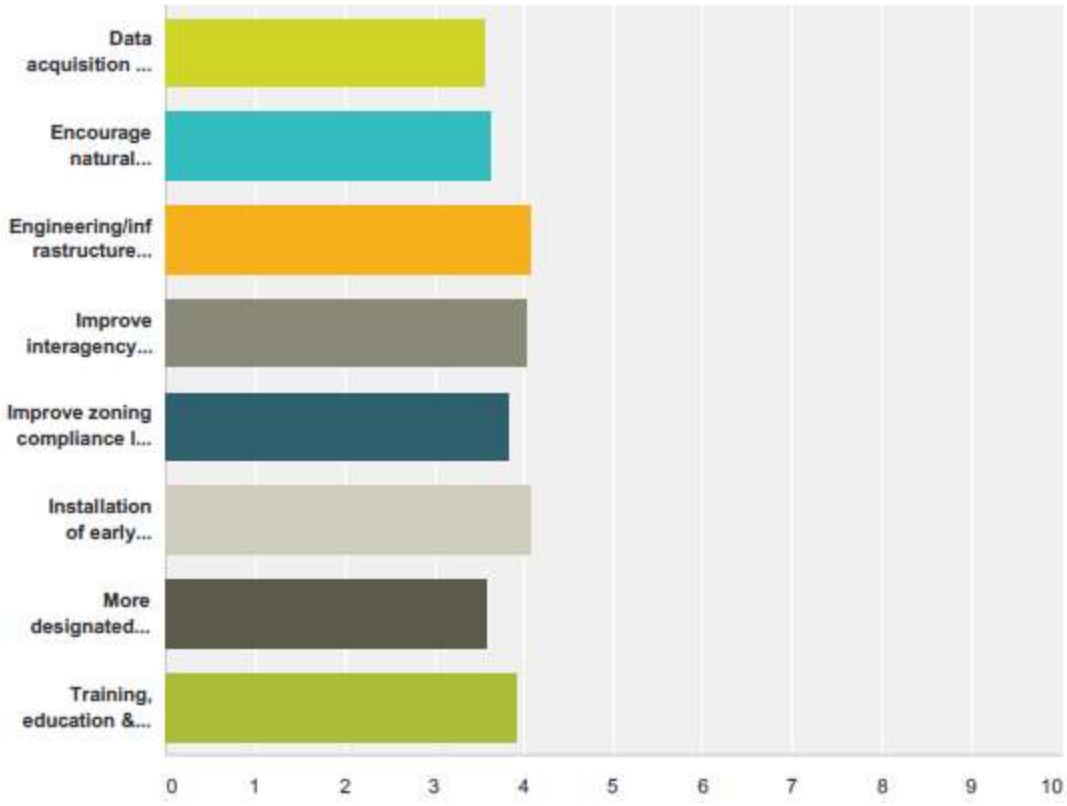
Answered: 192 Skipped: 25



	Very Low	Low	Medium	High	Very High	Total	Weighted Average
Flooding	**13.02%** 25	**20.83%** 40	**27.08%** 52	**17.19%** 33	**21.88%** 42	192	3.14
Wildfires	**50.00%** 96	**35.42%** 68	**10.94%** 21	**1.56%** 3	**2.08%** 4	192	1.70
Hurricanes and Tropical Cyclones	**35.94%** 69	**29.69%** 57	**25.00%** 48	**6.77%** 13	**2.60%** 5	192	2.10
Thunderstorms	**4.69%** 9	**7.81%** 15	**33.85%** 65	**34.38%** 66	**19.27%** 37	192	3.56
Tornadoes	**26.04%** 50	**31.25%** 60	**26.04%** 50	**11.46%** 22	**5.21%** 10	192	2.39
Earthquakes	**61.98%** 119	**26.56%** 51	**9.38%** 18	**1.04%** 2	**1.04%** 2	192	1.53
Landslides	**77.08%** 148	**17.71%** 34	**3.65%** 7	**0.00%** 0	**1.56%** 3	192	1.31
Sinkholes	**45.31%** 87	**32.81%** 63	**15.63%** 30	**3.65%** 7	**2.60%** 5	192	1.85
Winter Storms	**16.67%** 32	**23.96%** 46	**34.38%** 66	**21.88%** 42	**3.13%** 6	192	2.71
Hail	**13.54%** 26	**27.60%** 53	**29.69%** 57	**24.48%** 47	**4.69%** 9	192	2.79
Extreme Heat	**6.77%** 13	**12.50%** 24	**33.85%** 65	**29.69%** 57	**17.19%** 33	192	3.38
Droughts	**10.94%** 21	**15.63%** 30	**39.58%** 76	**23.96%** 46	**9.90%** 19	192	3.06

Q8 Rank the following hazard mitigation strategies based on how important they would be to your community

Answered: 179 Skipped: 38



	Very Low Importance	Low Importance	Moderate Importance	High Importance	Very High Importance	Total	Weighted Average
Data acquisition and analysis of location and impact of different disasters to improve policy decisions	**2.23%** 4	**6.15%** 11	**39.66%** 71	**35.20%** 63	**16.76%** 30	179	3.58
Encourage natural resource protection as a way of reducing the impact of hazards (e.g. wetland protection/mitigation, riparian buffers, low impact "green" developments)	**5.03%** 9	**12.85%** 23	**24.58%** 44	**29.61%** 53	**27.93%** 50	179	3.63
Engineering/infrastructure projects (e.g. levees, stormwater, water and sewer upgrades)	**3.35%** 6	**5.03%** 9	**16.20%** 29	**32.40%** 58	**43.02%** 77	179	4.07
Improve interagency coordination to respond to disasters more effectively	**1.12%** 2	**3.35%** 6	**22.35%** 40	**37.43%** 67	**35.75%** 64	179	4.03
Improve zoning compliance laws to limit development in disaster prone areas (e.g. floodplains)	**3.91%** 7	**7.82%** 14	**23.46%** 42	**31.28%** 56	**33.52%** 60	179	3.83
Installation of early warning systems, for appropriate disasters (e.g. sirens or cell phone messaging services)	**0.56%** 1	**7.82%** 14	**15.64%** 28	**35.20%** 63	**40.78%** 73	179	4.08
More designated shelters and emergency preparedness infrastructure	**2.79%** 5	**11.17%** 20	**33.52%** 60	**29.05%** 52	**23.46%** 42	179	3.59
Training, education & outreach efforts to prepare citizens for disasters	**2.23%** 4	**6.70%** 12	**24.58%** 44	**28.49%** 51	**37.99%** 68	179	3.93

II. Critical Facility Summary Tables

II – A. Fairfield County Critical Facility Summary

Table 137 - Fairfield County Critical Facility Vulnerability Summary Part 1.

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Dutchman Creek Volunteer Fire Department	6 Dutchman Lane	Winnsboro	29180	Low	Low	Low	Medium	Low	High	Medium	Medium	Medium
Town of Ridgeway Police Department	249 Palmer Street	Ridgeway	29130	Low	Medium	Low	Medium	Low	Low	Medium	Low	Medium
Alpha & Omega Christian Academy	183 St Luke Church Road	Winnsboro	29180	Medium	Medium	Low	Medium	High	Low	High	Low	Medium
Kelly Miller Elementary School	255 Kelly Miller Road	Winnsboro	29180	Medium	Medium	High	Medium	Medium	Low	Medium	Low	Medium
Fairfield Career & Technical Center	1451 US Highway 321 N	Winnsboro	29180	Medium	Medium	High	High	High	Low	Low	Low	Medium
Fairfield Memorial Hospital	102 US Highway 321 Bypass	Winnsboro	29180	Medium	Medium	High	Medium	High	Low	Medium	Low	Medium
Fairfield County EOC	350 Columbia Road	Winnsboro	29180	Medium	Medium	High	Medium	High	Low	Medium	Low	Medium
Christian Liberty Classical	PO Box 638	Winnsboro	29180	Medium	Medium	High	Medium	High	Low	Medium	Low	Medium
Richard Winn Academy	1796 Old Chester Road	Winnsboro	29180	Medium	Medium	High	High	Low	Low	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Palmetto Montessori School	1364 Cook Road	Ridgeway	29130	Low	Medium	Low	High	High	Medium	High	Low	Medium
Geiger Elementary School	300 Coleman Street	Ridgeway	29130	Low	Medium	Low	High	High	Low	High	Medium	Medium
Greenbrier-Bethel Volunteer Fire Department	3025 State Highway 269	Winnsboro	29180	Medium	Medium	High	Medium	High	Low	High	Low	Medium
Fairfield Intermediate School	1647 US Highway 321 Bypass N	Winnsboro	29180	Medium	Medium	High	High	High	Medium	Medium	Low	Medium
Fairfield Primary School	175 Medley Road	Winnsboro	29180	Medium	Medium	High	High	High	Medium	Medium	Low	Medium
Jenkinsville Volunteer Fire Department	12922 State Highway 213	Jenkinsville	29065	High	Medium	High	Medium	Low	High	High	Low	Medium
Fairfield Middle School	728 US Highway 321 Bypass S	Winnsboro	29180	High	Medium	High	Medium	High	Low	Medium	Low	Medium
Gordon Early Childhood Center	560 Fairfield Road	Winnsboro	29180	Medium	Medium	High	High	High	Low	Medium	Medium	Medium
Winnsboro Public Safety	117 W Washington Street	Winnsboro	29180	Medium	Medium	High	High	High	Low	Medium	Medium	Medium
Fairfield Central High School	836 US Highway 321 Bypass S	Winnsboro	29180	Medium	Medium	High	Medium	High	Medium	Medium	Low	Medium
Fairfield Community Volunteer Fire	110 Winter Street	Winnsboro	29180	Medium	Medium	High	Medium	High	Medium	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Department												
McCrorey-Liston Elementary School	1978 State Highway 215 S	Blair	29015	High	Medium	High	Medium	High	Low	High	Low	Medium

Table 138 - Fairfield County Critical Facility Vulnerability Summary Part 2.

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Dutchman Creek Volunteer Fire Department	6 Dutchman Lane	Winnsboro	29180	High	Medium	Low	Medium	Medium	Low	Medium	Low
Town of Ridgeway Police Department	249 Palmer Street	Ridgeway	29130	Medium	High	Medium	High	High	Low	Medium	Medium
Alpha & Omega Christian Academy	183 St Luke Church Road	Winnsboro	29180	Low	High	Medium	Medium	High	Medium	Medium	Medium
Kelly Miller Elementary School	255 Kelly Miller Road	Winnsboro	29180	Low	High	Low	High	High	High	Medium	Medium
Fairfield Career & Technical Center	1451 US Highway 321 N	Winnsboro	29180	Medium	Medium	Medium	Medium	Medium	High	High	Medium
Fairfield Memorial Hospital	102 US Highway 321 Bypass	Winnsboro	29180	Low	Medium	Medium	High	Medium	High	High	Medium
Fairfield County EOC	350 Columbia Road	Winnsboro	29180	Low	Medium	Medium	High	Medium	High	High	Medium
Christian Liberty Classical	PO Box 638	Winnsboro	29180	Low	Medium	Medium	High	Medium	High	High	Medium
Richard Winn Academy	1796 Old Chester Road	Winnsboro	29180	Medium	Medium	Medium	High	Medium	High	High	Medium
Palmetto Montessori School	1364 Cook Road	Ridgeway	29130	Medium	Medium	Medium	High	High	Medium	Medium	High

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Geiger Elementary School	300 Coleman Street	Ridgeway	29130	High	Medium	Medium	High	High	Medium	Medium	High
Greenbrier-Bethel Volunteer Fire Department	3025 State Highway 269	Winnsboro	29180	Low	High	Low	High	High	High	Medium	High
Fairfield Intermediate School	1647 US Highway 321 Bypass N	Winnsboro	29180	Medium	Medium	Medium	Medium	Medium	High	High	High
Fairfield Primary School	175 Medley Road	Winnsboro	29180	Medium	Medium	Medium	Medium	Medium	High	High	High
Jenkinsville Volunteer Fire Department	12922 State Highway 213	Jenkinsville	29065	Low	High	Low	High	Medium	High	High	High
Fairfield Middle School	728 US Highway 321 Bypass S	Winnsboro	29180	Medium	Medium	Medium	High	Medium	High	High	High
Gordon Early Childhood Center	560 Fairfield Road	Winnsboro	29180	Medium	Medium	Medium	High	Medium	High	High	High
Winnsboro Public Safety	117 W Washington Street	Winnsboro	29180	Medium	Medium	Medium	High	Medium	High	High	High
Fairfield Central High School	836 US Highway 321 Bypass S	Winnsboro	29180	Medium	High	Medium	High	Medium	High	High	High
Fairfield Community Volunteer Fire Department	110 Winter Street	Winnsboro	29180	Medium	High	Medium	High	Medium	High	High	High
McCrorey-Liston Elementary School	1978 State Highway 215 S	Blair	29015	Low	Medium	High	High	Medium	High	High	High

II – B. Lexington County Critical Facility Summary

Table 139 - Lexington County Critical Facility Vulnerability Summary Part 1.

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Abundant Life Outreach Ministry	1619 Middleton Street	Cayce	29033	Low	Medium	Medium	High	High	Medium	High	Medium	Medium
B C Grammar School No 1	114 Hook Avenue	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Batesburg-Leesville Middle School	101 West Cola Avenue	Batesburg	29006	High	Medium	Low	Medium	High	Medium	Low	Low	Medium
Batesburg-Leesville Elementary School	403 South Lee Street	Leesville	29070	High	Medium	Low	Low	High	Low	Low	Medium	Medium
Batesburg-Leesville Fire Department Station	431 E Church Street	Batesburg -Leesville	29070	High	Medium	Low	Low	High	Low	Low	Medium	Medium
Batesburg-Leesville High School	600 Summerland Avenue	Batesburg	29006	High	Medium	Low	Low	High	Medium	Low	Low	Medium
Batesburg-Leesville Primary School	800 Summerland Avenue	Batesburg	29006	High	Medium	Low	Low	High	Medium	Low	Low	Medium
Ben Lippen Elementary School	6952 St Andrews Road	Columbia	29212	Medium	Medium	Low	High	High	Medium	Low	High	Medium
Brookland Cayce High School	1300 State Street	Cayce	29033	Low	Medium	Medium	High	High	High	Medium	Low	Medium
Cayce Fire Department	2 Lavern Jumper Road	Cayce	29033	Low	Medium	Medium	High	High	Medium	High	Medium	Medium
Chapin Elementary School	940 Old Bush River Road	Chapin	29036	High	Medium	Low	High	High	Medium	Low	Low	Medium
Chapin High	300	Chapin	29036	High	Medium	Low	High	High	Medium	Low	High	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
School	Columbia Avenue											
Chapin Middle School	1130 Old Lexington Highway	Chapin	29036	High	Medium	Low	High	High	Medium	Low	Low	Medium
Chapin Police Department Office	103 Columbia Avenue	Chapin	29036	High	Medium	Low	High	High	Medium	Low	High	Medium
Charter Rivers Behavioral Health	2900 Sunset Blvd	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Claude A Taylor Elementary School	103 Ann Lane	Cayce	29033	Low	Medium	Medium	High	High	High	High	High	Medium
Colonial Christian Academy	1110 Meeting Street	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Columbia Adventist Academy	241 Riverchase Way	Lexington	29072	Low	Medium	Medium	High	High	Low	Medium	Low	Medium
Columbia Metropolitan Airport Fire/Rescue	2903 Aviation Way	West Columbia	29170	Low	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Columbia Police Department - Harbison	108 Harbison Blvd	Columbia	29212	Medium	Medium	Low	High	High	Medium	Medium	Medium	Medium
Community Christian Academy	1798 Utopia School Road	Leesville	29070	High	Medium	Low	Low	High	Medium	Medium	Low	Medium
Congaree Elementary School	1221 Ramblin Road	West Columbia	29169	Low	Medium	Medium	Medium	High	High	High	Low	Medium
Congaree/Wood Early Childhood Center	739 Pine Ridge Drive	West Columbia	29172	Low	Medium	Medium	Medium	High	High	High	Low	Medium
Covenant	3222 Platt	West	29170	Low	Medium	Medium	High	High	High	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Christian Academy	Springs Road	Columbia										
Cross Roads Middle School	6949 St Andrews Road	Columbia	29212	Medium	Medium	Low	High	High	Medium	Low	High	Medium
Cyril B Busbee Creative Arts Academy	1407 Dunbar Road	Cayce	29033	Low	Medium	Medium	High	High	Medium	High	Medium	Medium
Francis F Mack Elementary School	161 Gaston Street	Gaston	29053	Low	Medium	High	Medium	High	Low	High	High	High
Gaston Fire Station	1701 Busbee Road	Gaston	29053	Low	Medium	High	Low	Medium	Low	High	Low	Medium
George I Pair Jr Elementary School	2325 Platt Springs Road	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Gilbert Elementary School	314 Main Street	Gilbert	29054	Medium	Medium	Medium	Medium	Medium	Medium	Low	High	Medium
Gilbert High School	146 Main Street	Gilbert	29054	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Gilbert Middle School	120 RikaRoad Circle	Gilbert	29054	Medium	Medium	Medium	Medium	Medium	Medium	Low	High	Medium
Glenforest School	1041 Harbor Drive	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Grace Christian School	416 Dehnam Avenue	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	High	Medium
Harbison West Elementary School	257 Crossbow Drive	Columbia	29212	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Herbert A Wood Elementary School	737 Pine Ridge Drive	West Columbia	29172	Low	Medium	Medium	Medium	High	High	High	Low	Medium
Heritage Christian Academy	649 Bar Road	Lexington	29071	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Holy Trinity	2920 Pella	West	29170	Low	Medium	Medium	High	High	High	Medium	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Lutheran School	Avenue	Columbia										
Irmo Elementary School	7401 Gibbes Street	Irmo	29063	Medium	Medium	Low	High	High	Medium	Low	High	Medium
Irmo Fire District	6017 St Andrews Road	Columbia	29212	Medium	Medium	Low	High	High	High	Medium	Low	Medium
Irmo High School	6671 St Andrews Road	Columbia	29212	Medium	Medium	Low	High	High	Medium	Medium	Medium	Medium
Irmo Middle School	6051 Wescott Road	Columbia	29210	Medium	Medium	Low	High	High	Medium	Medium	Medium	Medium
Islamic Academy of Columbia	501 Lucas Street N	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Jumper Station Volunteer Fire Department	1603 Basil Road	Swansea	29160	High	High	High	High	High	Low	High	Low	High
Lake Murray Baptist Kindergarten	1001 Highway 378 West	Lexington	29072	Medium	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Lake Murray Elementary School	205 Wise Ferry Road	Lexington	29072	High	Medium	Medium	High	High	Medium	Medium	Low	Medium
Leaphart Elementary School	120 Piney Grove Road	Columbia	29210	Medium	Medium	Low	High	High	High	Medium	Low	Medium
Lexington Applied Technical Center	2421 Augusta Highway	Lexington	29072	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Lexington County Emergency Prep	212 S Lake Street	Lexington	29072	Low	Medium	Medium	Medium	Low	High	High	Low	Medium
Lexington Elementary School	116 Azalea Drive	Lexington	29072	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Lexington High School	2463 Augusta Highway	Lexington	29072	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Lexington Intermediate School	420 Hendrix Street	Lexington	29072	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Lexington Medical Center	2720 Sunset Blvd	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Lexington Middle School	702 N Lake Drive	Lexington	29072	High	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Mcgregor Presbyterian Preschool	6505 St Andrews Road	Columbia	29212	Medium	Medium	Low	High	High	Medium	Medium	Medium	Medium
Midway Elementary School	180 Midway Road	Lexington	29072	Low	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Northside Middle School	157 Cougar Crive	West Columbia	29169	Low	Medium	Medium	High	High	High	Medium	Low	Medium
Nursery Road Elementary School	6706 Nursery Road	Columbia	29212	Medium	Medium	Low	High	High	High	Medium	Low	Medium
Oak Grove Elementary School	479 Oak Drive	Lexington	29073	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Oak Grove Fire Station	447 Oak Drive	Lexington	29073	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
Pelion Elementary School	1202 Pine Street	Pelion	29123	Medium	Medium	High	Low	Low	Medium	Medium	Low	High
Pelion High School	600 Lydia Drive	Pelion	29123	Medium	Medium	High	Medium	High	Low	Medium	Medium	High
Pelion Middle School	758 Magnolia Street	Pelion	29123	Medium	Medium	High	Medium	High	Low	Medium	Medium	High
Pine Grove Fire Station	665 Old Barnwell Road	West Columbia	29170	Low	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Pine Ridge	735 Pine	West	29172	Low	Medium	Medium	Medium	High	High	High	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Middle School	Ridge Drive	Columbia										
Pine Ridge Police Dispatch	1015 Fish Hatchery Road	Lexington	29071	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Pineview Christian Academy	381 Shore Road	Gilbert	29054	Medium	Medium	Medium	High	High	Low	Low	Low	Medium
Pineview Elementary School	3035 Leaphart Road	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
R Earle Davis Elementary School	2305 Frink Street	Cayce	29033	Low	Medium	Medium	High	High	Medium	High	Medium	Medium
R H Fulmer Middle School	1614 Walterboro Street	West Columbia	29169	Low	Medium	Medium	Medium	High	Medium	High	Low	Medium
Red Bank Elementary School	246 Community Drive	Lexington	29073	High	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Riverland Hills CDC	500 Saint Andrews Road	Columbia	29210	Low	Medium	Low	High	High	Low	Medium	Low	Medium
Saluda River Elementary School	1520 Duke Avenue	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Medium	Medium
Sandhills Elementary School	130 Lewis Raft Road	Swansea	29160	High	High	High	High	High	Low	High	Low	High
Sandhills Intermediate School	140 Lewis Raft Road	Swansea	29160	High	High	High	High	High	Low	High	Low	High
Sandhills Middle School	582 Meadowfiel d Road	Gaston	29053	Low	Medium	High	Medium	Low	Medium	High	Low	High
Saxe Gotha Elementary School	100 Bill Williamson Ct	Lexington	29073	Medium	Medium	Medium	Medium	High	Medium	High	Low	Medium
Seven Oaks	2800	Columbia	29210	Low	Medium	Low	High	High	Low	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Elementary School	Ashland Road											
South Carolina Vocational Rehab	1400 Boston Avenue	West Columbia	29170	Low	Medium	Medium	High	High	High	High	Low	Medium
South Congaree Fire Station	300 Oak Street	West Columbia	29172	Low	Medium	Medium	Medium	High	High	High	Low	Medium
Springdale Elementary School	361 Wattling Road	West Columbia	29170	Low	Medium	Medium	High	High	High	Medium	Low	Medium
Springdale Police Department	2915 Platt Springs	Springdale	29170	Low	Medium	Medium	Medium	High	High	High	Medium	Medium
Swansea Elementary School	1195 I.W. Hutto Road	Swansea	29160	Medium	High	High	High	High	Medium	High	Low	High
Swansea High School	500 East First Street	Swansea	29160	Medium	High	High	High	High	Medium	High	Low	High
Union United Methodist Church Kindergaten	7582 Woodrow Street	Irmo	29063	High	Medium	Low	High	High	Low	Low	Medium	Medium
Voridian Fire & Rescue	US Highway 21 South @ I-26	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Low	Medium
West Columbia Fire Department	610 N Twelfth Street	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	Medium	Medium
West Columbia Police Department	1053 Center Street	West Columbia	29169	Low	Medium	Medium	High	High	Medium	Medium	High	Medium
White Knoll Elementary School	132 White Knoll Way	West Columbia	29170	Low	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
White Knoll High School	5643 Platt Springs Road	Lexington	29073	Low	Medium	Medium	Medium	High	Low	High	Low	Medium
White Knoll Middle School	116 White Knoll Way	W. Columbia	29170	Low	Medium	Medium	Medium	High	Medium	Medium	Low	Medium

Table 140 - Lexington County Critical Facility Vulnerability Summary Part 2.

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Abundant Life Outreach Ministry	1619 Middleton Street	Cayce	29033	High	Medium	Low	Low	Medium	Low	High	Medium
B C Grammar School No 1	114 Hook Avenue	West Columbia	29169	Medium	Medium	Low	Medium	Medium	Low	High	Medium
Batesburg-Leesville Middle School	101 West Cola Avenue	Batesburg	29006	Medium	Low	Low	Low	Medium	High	High	Low
Batesburg-Leesville Elementary School	403 South Lee Street	Leesville	29070	Low	Low	Low	Medium	Medium	High	High	Low
Batesburg-Leesville Fire Department Station	431 E Church Street	Batesburg-Leesville	29070	Low	Low	Low	Medium	Medium	High	High	Low
Batesburg-Leesville High School	600 Summerland Avenue	Batesburg	29006	Low	Low	Medium	Low	Low	High	High	Low
Batesburg-Leesville Primary School	800 Summerland Avenue	Batesburg	29006	Low	Low	Medium	Low	Low	High	High	Low
Ben Lippen Elementary School	6952 St Andrews Road	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Brookland Cayce High School	1300 State Street	Cayce	29033	High	High	Low	Low	Medium	Low	High	Medium
Cayce Fire Department	2 Lavern Jumper Road	Cayce	29033	High	Medium	Low	Low	Medium	Low	High	Medium
Chapin Elementary School	940 Old Bush River Road	Chapin	29036	Low	Low	High	Low	Low	Medium	Low	Low
Chapin High School	300 Columbia Avenue	Chapin	29036	Low	Low	High	Low	Low	Medium	Low	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Chapin Middle School	1130 Old Lexington Highway	Chapin	29036	Low	Low	High	Low	Low	Medium	Low	Low
Chapin Police Department Office	103 Columbia Avenue	Chapin	29036	Low	Low	High	Low	Low	Medium	Low	Medium
Charter Rivers Behavioral Health	2900 Sunset Blvd	West Columbia	29169	Medium	Medium	Low	High	Low	Low	High	Medium
Claude A Taylor Elementary School	103 Ann Lane	Cayce	29033	High	Medium	Low	Low	Medium	Low	High	High
Colonial Christian Academy	1110 Meeting Street	West Columbia	29169	High	High	Low	Low	Medium	Low	High	Medium
Columbia Adventist Academy	241 Riverchase Way	Lexington	29072	Medium	Medium	Low	Medium	Low	Low	High	Low
Columbia Metropolitan Airport Fire/Rescue	2903 Aviation Way	West Columbia	29170	Medium	High	Low	High	Medium	Medium	Medium	Medium
Columbia Police Department - Harbison	108 Harbison Blvd	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Community Christian Academy	1798 Utopia School Road	Leesville	29070	Low	Low	Medium	Low	Low	High	High	Low
Congaree Elementary School	1221 Ramblin Road	West Columbia	29169	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Congaree/Wood Early Childhood Center	739 Pine Ridge Drive	West Columbia	29172	Medium	High	Medium	High	Medium	Medium	Medium	High
Covenant Christian Academy	3222 Platt Springs Road	West Columbia	29170	High	Medium	Low	Medium	Medium	Low	Medium	Medium
Cross Roads Middle School	6949 St Andrews	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
	Road										
Cyril B Busbee Creative Arts Academy	1407 Dunbar Road	Cayce	29033	High	Medium	Low	Low	Medium	Low	High	Medium
Francis F Mack Elementary School	161 Gaston Street	Gaston	29053	High	High	Medium	High	High	Medium	High	High
Gaston Fire Station	1701 Busbee Road	Gaston	29053	High	High	Medium	High	High	Medium	High	High
George I Pair Jr Elementary School	2325 Platt Springs Road	West Columbia	29169	High	Medium	Low	Medium	Medium	Low	High	Medium
Gilbert Elementary School	314 Main Street	Gilbert	29054	Low	Medium	Low	Medium	Medium	High	Medium	Medium
Gilbert High School	146 Main Street	Gilbert	29054	Low	Medium	Low	High	Medium	High	Medium	Medium
Gilbert Middle School	120 RikaRoad Circle	Gilbert	29054	Low	Medium	Low	Medium	Medium	High	Medium	Medium
Glenforest School	1041 Harbor Drive	West Columbia	29169	Medium	Medium	Low	High	Low	Low	High	Medium
Grace Christian School	416 Dehnam Avenue	West Columbia	29169	High	Medium	Low	Medium	Medium	Low	High	Medium
Harbison West Elementary School	257 Crossbow Drive	Columbia	29212	Low	Medium	Medium	Medium	Low	Low	Medium	Low
Herbert A Wood Elementary School	737 Pine Ridge Drive	West Columbia	29172	Medium	High	Medium	High	Medium	Medium	Medium	High
Heritage Christian Academy	649 Bar Road	Lexington	29071	Medium	High	Low	High	Medium	Low	Medium	Medium
Holy Trinity Lutheran School	2920 Pella Avenue	West Columbia	29170	High	Medium	Low	High	Medium	Low	High	High
Irmo Elementary School	7401 Gibbes Street	Irmo	29063	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Irmo Fire	6017 St	Columbia	29212	Medium	Medium	Low	Low	Low	Low	Medium	Low

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
District	Andrews Road										
Irmo High School	6671 St Andrews Road	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Irmo Middle School	6051 Wescott Road	Columbia	29210	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Islamic Academy of Columbia	501 Lucas Street N	West Columbia	29169	High	High	Low	Low	Medium	Low	High	Medium
Jumper Station Volunteer Fire Department	1603 Basil Road	Swansea	29160	High	Medium	Low	High	High	Medium	High	High
Lake Murray Baptist Kindergarten	1001 Highway 378 West	Lexington	29072	Low	High	Low	Low	Low	High	Low	Low
Lake Murray Elementary School	205 Wise Ferry Road	Lexington	29072	Low	High	Low	High	Low	Low	Medium	Medium
Leaphart Elementary School	120 Piney Grove Road	Columbia	29210	Medium	Medium	Low	Low	Low	Low	Medium	Low
Lexington Applied Technical Center	2421 Augusta Highway	Lexington	29072	Low	High	Low	High	Low	High	Low	Medium
Lexington County Emergency Prep	212 S Lake Street	Lexington	29072	High	High	Low	Low	Medium	Medium	High	Medium
Lexington Elementary School	116 Azalea Drive	Lexington	29072	Medium	High	Low	Low	Low	Low	Medium	Medium
Lexington High School	2463 Augusta Highway	Lexington	29072	Low	High	Low	High	Low	High	Low	Medium
Lexington Intermediate School	420 Hendrix Street	Lexington	29072	Medium	High	Low	High	Low	Low	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Lexington Medical Center	2720 Sunset Blvd	West Columbia	29169	Medium	Medium	Low	High	Low	Low	High	Medium
Lexington Middle School	702 N Lake Drive	Lexington	29072	Medium	High	Low	Low	Low	Low	Medium	Medium
Mcgregor Presbyterian Preschool	6505 St Andrews Road	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Midway Elementary School	180 Midway Road	Lexington	29072	Medium	Medium	Low	High	Low	Low	Medium	Low
Northside Middle School	157 Cougar Crive	West Columbia	29169	Medium	High	Low	Medium	Low	Low	High	Medium
Nursery Road Elementary School	6706 Nursery Road	Columbia	29212	Medium	Medium	Low	Medium	Low	Low	Medium	Medium
Oak Grove Elementary School	479 Oak Drive	Lexington	29073	Medium	Medium	Low	High	Medium	Low	Medium	Medium
Oak Grove Fire Station	447 Oak Drive	Lexington	29073	Medium	Medium	Low	High	Medium	Low	Medium	Medium
Pelion Elementary School	1202 Pine Street	Pelion	29123	High	Medium	Medium	High	High	Low	High	Medium
Pelion High School	600 Lydia Drive	Pelion	29123	High	High	Medium	High	High	Low	High	High
Pelion Middle School	758 Magnolia Street	Pelion	29123	High	High	Medium	High	High	Low	High	High
Pine Grove Fire Station	665 Old Barnwell Road	West Columbia	29170	High	High	Low	High	Medium	Medium	Medium	Medium
Pine Ridge Middle School	735 Pine Ridge Drive	West Columbia	29172	Medium	High	Medium	High	Medium	Medium	Medium	High
Pine Ridge Police Dispatch	1015 Fish Hatchery Road	Lexington	29071	Medium	High	Low	High	Medium	Low	Medium	Medium
Pineview Christian Academy	381 Shore Road	Gilbert	29054	Low	Low	Low	Low	Low	High	Low	Low

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Pineview Elementary School	3035 Leaphart Road	West Columbia	29169	Medium	Medium	Low	High	Low	Low	High	Medium
R Earle Davis Elementary School	2305 Frink Street	Cayce	29033	High	Medium	Low	Low	Medium	Low	High	Medium
R H Fulmer Middle School	1614 Walterboro Street	West Columbia	29169	Medium	High	Low	High	Medium	Low	Medium	Medium
Red Bank Elementary School	246 Community Drive	Lexington	29073	Medium	High	Low	High	Medium	Low	Medium	Medium
Riverland Hills CDC	500 Saint Andrews Road	Columbia	29210	Medium	Medium	Low	Low	Low	Low	Medium	Low
Saluda River Elementary School	1520 Duke Avenue	West Columbia	29169	High	High	Low	Low	Medium	Low	High	Medium
Sandhills Elementary School	130 Lewis Raft Road	Swansea	29160	High	High	Medium	High	High	Low	High	High
Sandhills Intermediate School	140 Lewis Raft Road	Swansea	29160	High	High	Medium	High	High	Low	High	High
Sandhills Middle School	582 Meadowfield Road	Gaston	29053	High	High	Medium	High	High	Medium	High	High
Saxe Gotha Elementary School	100 Bill Williamson Ct	Lexington	29073	High	High	Low	High	Medium	Low	Medium	High
Seven Oaks Elementary School	2800 Ashland Road	Columbia	29210	Medium	Medium	Low	Low	Low	Low	Medium	Low
South Carolina Vocational Rehab	1400 Boston Avenue	West Columbia	29170	High	Medium	Low	Medium	Medium	Low	High	Medium
South Congaree Fire Station	300 Oak Street	West Columbia	29172	Medium	Medium	Medium	Medium	Medium	Medium	Medium	Medium
Springdale	361 Wattling	West	29170	High	Medium	Low	Medium	Medium	Low	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Elementary School	Road	Columbia									
Springdale Police Department	2915 Platt Springs	Springdale	29170	Medium	Medium	Medium	High	Medium	Medium	Medium	High
Swansea Elementary School	1195 I.W. Hutto Road	Swansea	29160	High	High	Medium	Medium	High	Low	High	High
Swansea High School	500 East First Street	Swansea	29160	High	High	Medium	Medium	High	Low	High	High
Union United Methodist Church Kindergaten	7582 Woodrow Street	Irmo	29063	Low	Medium	Medium	Medium	Low	Low	Medium	Low
Voridian Fire & Rescue	US Highway 21 South @ I-26	West Columbia	29169	Medium	Medium	Low	Medium	Medium	Low	High	Medium
West Columbia Fire Department	610 N Twelfth Street	West Columbia	29169	High	High	Low	Low	Medium	Low	High	Medium
West Columbia Police Department	1053 Center Street	West Columbia	29169	High	Medium	Low	Medium	Medium	Low	High	Medium
White Knoll Elementary School	132 White Knoll Way	West Columbia	29170	High	High	Low	High	Medium	Low	Low	Medium
White Knoll High School	5643 Platt Springs Road	Lexington	29073	Medium	High	Low	High	Medium	Low	Medium	Medium
White Knoll Middle School	116 White Knoll Way	W. Columbia	29170	High	High	Low	High	Medium	Low	Low	Medium

II – C. Newberry County Critical Facility Summary

Table 141 - Newberry County Critical Facility Vulnerability Summary Part 1.

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Boundary Street Elementary School	1406 Boundary Street	Newberry	29108	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Chappells Volunteer Fire Department Station	3218 Highway 39	Chappells	29037	Low	Low	Low	Low	Medium	Low	Medium	Low	Medium
City of Newberry Fire Department	1041 Wilson Road	Newberry	29108	High	Medium	Low	Medium	High	Low	Medium	Low	Medium
Fairview Volunteer Fire Department	149 Seibert Road	Prosperity	29127	Low	Medium	Medium	Low	High	Low	High	Low	Medium
Gallman Elementary School	540 Brantley Street	Newberry	29108	Medium	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Little Mountain Elementary School	692 Mill Street	Little Mountain	29075	Low	Medium	High	Medium	High	Low	High	Low	Medium
Mid-Carolina Middle School	6834 US Highway 76	Prosperity	29127	High	Medium	High	Medium	Medium	Low	High	Low	Medium
Mid-Carolina High School	6794 US Highway 76	Prosperity	29127	High	Medium	High	Medium	Medium	Low	High	Low	Medium
Newberry Academy	2055 Smith Road	Newberry	29108	Medium	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Newberry Christian Academy	2004 Colony Church Road	Newberry	29108	Medium	Medium	Low	Low	High	Low	High	Low	Medium
Newberry County EOC	3239 Louis Rich Road	Newberry	29108	Low	Medium	Medium	Medium	High	Low	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Newberry County Memorial Hospital	2669 Kinard Street	Newberry	29108	Medium	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Newberry Elementary	1121 Speers Street	Newberry	29108	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Newberry High School	3113 Main Street	Newberry	29108	High	Medium	Low	Medium	High	Low	Medium	Low	Medium
Newberry Middle School	1829 Nance Street	Newberry	29108	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Newberry Vocational Center	3413 Main Street	Newberry	29108	High	Medium	Low	Medium	High	Low	Medium	Low	Medium
Pomaria Consolidated Volunteer Fire Department	3464 SC Highway 34	Pomaria	29126	High	Medium	Medium	Medium	Medium	Low	Medium	Low	Medium
Pomaria Fire Department	241 Holloway Street	Pomaria	29126	Medium	Medium	High	High	High	Medium	High	Low	Medium
Pomaria/Garman y Elementary School	7288 US Highway 176	Pomaria	29126	High	Medium	Medium	Medium	Medium	High	High	Low	Medium
Prosperity Fire Department	118 Mcneary Street	Prosperity	29127	High	Medium	Low	Medium	High	Medium	High	Low	Medium
Prosperity Police Department	City Hall	Prosperity	29127	Medium	Medium	Medium	Low	High	Low	High	Medium	Medium
Prosperity-Rikard Elementary School	381 South Wheeler Avenue	Prosperity	29127	High	Medium	Low	Medium	High	Medium	High	Low	Medium
Reuben Elementary School	3605 Spearman Road	Newberry	29108	Medium	Medium	Low	Low	High	Medium	Low	Low	Medium
Silverstreet Volunteer Fire Department	3254 Island Ford Road	Silverstreet	29145	Low	Low	Low	Low	Medium	High	Medium	Low	Medium
Whitmire	2597	Whitmire	29178	High	Low	High	High	Medium	Low	Low	Low	Low

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Community Elementary School	Highway 66											
Whitmire Community High School	1400 Coleman Avenue	Whitmire	29178	Medium	Low	High	High	High	Medium	Low	Medium	Low
Whitmire Fire Department	201 Gilliam Street	Whitmire	29178	Medium	Low	High	High	High	Medium	Low	Medium	Low
Whitmire Police Department	Main Street	Whitmire	29178	Medium	Low	High	High	High	Medium	Low	Medium	Low

Table 142 - Newberry County Critical Facility Vulnerability Summary Part 2.

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Boundary Street Elementary School	1406 Boundary Street	Newberry	29108	Low	Medium	Medium	High	Medium	Low	High	High
Chappells Volunteer Fire Department Station	3218 Highway 39	Chappells	29037	Medium	Low	Medium	Medium	Medium	Medium	High	Low
City of Newberry Fire Department	1041 Wilson Road	Newberry	29108	Medium	Medium	Low	Low	Medium	Medium	High	Medium
Fairview Volunteer Fire Department	149 Seibert Road	Prosperity	29127	Low	High	Medium	Low	High	High	Medium	Medium
Gallman Elementary School	540 Brantley Street	Newberry	29108	Medium	Medium	Medium	High	Medium	Low	High	Medium
Little Mountain Elementary School	692 Mill Street	Little Mountain	29075	Low	High	Medium	High	High	Low	Medium	High
Mid-Carolina Middle School	6834 US Highway 76	Prosperity	29127	Low	High	High	High	High	Medium	Medium	High

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Mid-Carolina High School	6794 US Highway 76	Prosperity	29127	Low	High	High	High	High	Medium	Medium	High
Newberry Academy	2055 Smith Road	Newberry	29108	High	Medium	Medium	High	Medium	Low	High	Medium
Newberry Christian Academy	2004 Colony Church Road	Newberry	29108	Medium	Medium	Medium	High	High	Medium	Medium	Medium
Newberry County EOC	3239 Louis Rich Road	Newberry	29108	Low	Medium	Medium	High	Medium	Low	High	Medium
Newberry County Memorial Hospital	2669 Kinard Street	Newberry	29108	High	Medium	Medium	High	Medium	Low	High	Medium
Newberry Elementary	1121 Speers Street	Newberry	29108	Low	Medium	Medium	High	Medium	Low	High	High
Newberry High School	3113 Main Street	Newberry	29108	Medium	Medium	Low	Low	Medium	Medium	High	Medium
Newberry Middle School	1829 Nance Street	Newberry	29108	Low	Medium	Medium	High	Medium	Low	High	High
Newberry Vocational Center	3413 Main Street	Newberry	29108	Medium	Medium	Low	Low	Medium	Medium	High	Medium
Pomaria Consolidated Volunteer Fire Department	3464 SC Highway 34	Pomaria	29126	High	Medium	High	Medium	Medium	High	Medium	High
Pomaria Fire Department	241 Holloway Street	Pomaria	29126	Low	High	High	Low	Medium	High	Medium	High
Pomaria/Garmany Elementary School	7288 US Highway 176	Pomaria	29126	High	High	High	High	Medium	High	Medium	High
Prosperity Fire Department	118 Mcneary Street	Prosperity	29127	Medium	High	High	High	High	Medium	Medium	High
Prosperity Police Department	City Hall	Prosperity	29127	Medium	High	Medium	High	High	Medium	Medium	High

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Prosperity-Rikard Elementary School	381 South Wheeler Avenue	Prosperity	29127	Medium	High	High	High	High	Medium	Medium	High
Reuben Elementary School	3605 Spearman Road	Newberry	29108	Low	Medium	Medium	Low	Medium	High	High	Low
Silverstreet Volunteer Fire Department	3254 Island Ford Road	Silverstreet	29145	Medium	Low	Medium	Low	Medium	Low	High	Low
Whitmire Community Elementary School	2597 Highway 66	Whitmire	29178	Low	Low	Low	Medium	Low	Medium	Medium	Low
Whitmire Community High School	1400 Coleman Avenue	Whitmire	29178	Medium	Low	Low	High	Low	Medium	Medium	Medium
Whitmire Fire Department	201 Gilliam Street	Whitmire	29178	Medium	Low	Low	High	Low	Medium	Medium	Medium
Whitmire Police Department	Main Street	Whitmire	29178	Medium	Low	Low	High	Low	Medium	Medium	Medium

II – D. Richland County Critical Facility Summary

Table 143 - Richland County Critical Facility Vulnerability Summary Part 1.

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
A. C. Flora High School	1 Falcon Drive	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
A. C. Moore Elementary	333 Etiwan Avenue	Columbia	29205	Medium	Medium	Medium	Low	High	Low	High	Low	Medium
Academy for Success	11629 Broad River Road	Chapin	29036	High	Medium	Low	Low	High	Low	Low	Low	Medium
Administrative Building	2020 Hampton Street	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Alcorn Middle School	5125 Fairfield Road	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Alvin S. Glenn Detention Center	201 John Mark Dial Road	Columbia	29209	Low	High	High	Low	Medium	High	High	Low	Medium
Arden Elementary	1300 Ashley Street	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Ballentine Elementary	1040 Bickley Road	Irmo	29063	High	Medium	Low	Low	High	Medium	Low	Medium	Medium
Ballentine Fire Station	10727 Broad River Road	Irmo	29063	High	Medium	Low	Medium	High	Low	Low	Low	Medium
Bearcreek Fire Station	1613 Heins Road	Blythewood	29016	Medium	Medium	Low	High	Medium	Low	Low	Low	Medium
Bethel-Hanberry Elementary	125 Boney Road	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Medium	Medium
Bible Way Church of Atlas Road	2440 Atlas Road	Columbia	29290	Medium	Medium	High	Low	High	Medium	High	Medium	Medium
Blythewood Fire Station	435 Main Street	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Medium	Medium
Blythewood High School	10901 Wilson Boulevard	Blythewood	29016	High	Medium	Low	High	Medium	Low	Low	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Blythewood Magistrate	118 McNulty Street	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Medium	Medium
Blythewood Middle School	2351 Longtown Road East	Blythewood	29016	High	Medium	Low	High	Medium	Medium	Low	Low	Medium
Bookman Road Elementary	1245 Bookman Road	Elgin	29045	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Bradley Elementary	3032 Pine Belt Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Brennen Elementary	4438 Devereaux Road Columbia	Columbia	29205	Medium	Medium	High	Medium	High	High	Medium	Medium	Medium
Bridge Creek Elementary	121 Bombing Range Road	Elgin	29045	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Broad River Regional Wastewater Treatment Plant	1183 Shadywood Lane	Irmo	29063	High	Medium	Medium	Medium	High	High	Low	Low	Medium
Brockman Elementary	2245 Montclair Drive	Columbia	29206	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Bryan Dorn VA Medical Center	6439 Garners Ferry Road	Columbia	29209	Low	Medium	High	Medium	High	Low	High	Medium	Medium
Burnside Elementary	7300 Patterson Road	Columbia	29209	Low	Medium	High	Low	High	Low	High	Low	Medium
Burton-Pack Elementary	111 Garden Drive	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Medium	Medium
C. A. Johnson High School	2219 Barhamville Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Capital View Fire Station	8100 Burdell Drive	Columbia	29209	Low	Medium	High	Low	High	Medium	High	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Carver-Lyon Elementary	2100 Waverly Street	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Catawba Trail Elementary	1080 Old National Highway	Elgin	29045	Medium	Medium	Medium	High	Medium	Medium	Low	Medium	Medium
Caughman Road Elementary	7725 Caughman Road	Columbia	29209	Low	Medium	High	Medium	High	Medium	High	Medium	Medium
Cedar Creek Fire Station	8300 Winnsboro Road	Blythewood	29016	High	Medium	Low	High	Medium	Low	Low	Low	Medium
Center for Advanced Technical Studies	916 Mount Vernon Church Road	Chapin	29036	High	Medium	Low	Low	High	Low	Low	Low	Medium
Central Court	1400 Huger Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Central Main Garage	400 Powell Road	Columbia	29203	High	Medium	Low	High	Medium	Medium	Medium	Low	Medium
Chapin Middle School	11661 Broad River Road	Chapin	29036	High	Medium	Low	Low	High	Low	Low	Low	Medium
City of Forest Acres Police Department	5205 North Trenholm Road	Columbia	29206	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Columbia High School	1701 Westchester Drive	Columbia	29210	High	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Columbia Police Department	1 Justice Square	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Columbia/Richland 911 Communications Center	1800 Laurel Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Conder Elementary	8040 Hunt Club Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Congaree Run Fire	115 Old	Eastover	29044	Low	High	Medium	Medium	Low	Low	High	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Station	Congaree Road											
CPD East Region	446 Spears Creek Church Road	Elgin	29045	High	Medium	Medium	High	High	Medium	Medium	Low	Medium
CPD Metro Region	1600 Bull Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
CPD North Region	3905 Ensor Avenue	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
CPD South Region	2132 Devine Street	Columbia	29205	Medium	Medium	Medium	Low	High	Low	Medium	Medium	Medium
Crane Creek Fire Station	7401 Fairfield Road	Columbia	29203	High	Medium	Low	Medium	High	High	Medium	Low	Medium
Crayton Middle School	5000 Clemson Avenue	Columbia	29206	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Decker Center	2500 Decker Blvd.	Columbia	29206	High	Medium	Low	High	Medium	Medium	Medium	Low	Medium
Dent Middle School	2721 Decker Boulevard	Columbia	29206	Medium	Medium	Low	Medium	High	Medium	Medium	Medium	Medium
Dentsville Fire Station	7124 Fire Lane Drive	Columbia	29223	Medium	Medium	Low	Medium	High	Medium	Medium	Medium	Medium
Department of Social Services	3220 Two Notch Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Medium	Medium
Dreher High School	3319 Millwood Avenue	Columbia	29205	Medium	Medium	High	Low	High	Low	High	Medium	Medium
Dutch Fork Elementary	7900 Broad River Road	Irmo	29063	High	Medium	Low	Medium	High	Low	Low	Low	Medium
Dutch Fork High School	1400 Old Tamah Road	Irmo	29063	High	Medium	Low	Medium	High	Medium	Low	Medium	Medium
Dutch Fork Judicial Center	1019 Beatty Road	Columbia	29210	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Dutch Fork Middle School	1528 Old Tamah Road	Irmo	29063	High	Medium	Low	Medium	High	Medium	Low	Medium	Medium
E. L. Wright	2740 Alpine	Columbia	29223	Medium	Medium	Medium	High	High	Medium	Medium	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Middle School	Road											
Eastover Fire Station	504 Henry Street	Eastover	29044	Low	High	High	Low	High	Medium	Medium	Low	Medium
Eau Claire Baptist Church	4427 Main Street	Columbia	29203	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Eau Claire High School	4800 Monticello Road	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Edward E. Taylor Elementary	200 McRae Street	Columbia	29203	High	Medium	Medium	Medium	Medium	High	Medium	Low	Medium
Elders Pond Fire Station	325 Elders Pond Road	Columbia	29229	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Emergency Operations Center	1410 Laurens Street	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
EMS Headquarters Office	1410 Laurens Street	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
EMS Storage Gills Creek	5645 Old Forest Drive	Columbia	29201	Medium	Medium	Medium	Medium	High	High	Medium	Low	Medium
EMS Sub Station Eastover	200 Clarkson Street	Eastover	29044	Low	High	High	Low	High	Medium	Medium	Low	Medium
EMS Sub Station Horrell Hill	1002 Congaree Road	Hopkins	29061	Low	High	High	Medium	Medium	Medium	High	Low	Medium
EMS Sub Station St. Andrews	3216 Broad River Road	Columbia	29210	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Fair Lawn United Methodist Church	9203 Wilson Boulevard	Columbia	29203	High	Medium	Low	High	Medium	Medium	Medium	Low	Medium
First Baptist Church	1306 Hampton Street	Columbia	29202	Medium	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Forest Heights Elementary	2500 Blue Ridge Terrace	Columbia	29203	High	Medium	Low	Medium	Medium	Low	Low	Low	Medium
Forest Lake Elementary	6801 Brookfield	Columbia	29206	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
	Road											
Friendship Baptist Church	1237 House Street	Columbia	29204	Medium	Medium	Medium	Low	High	Low	Medium	Medium	Medium
Gadsden Elementary	1660 South Goodwin Circle	Gadsden	29052	Low	High	High	Low	High	Medium	High	Low	Medium
Gadsden Fire Station	122 Gadsden Community Center Road	Gadsden	29052	Low	High	High	Low	High	Medium	High	Low	Medium
Gills Creek Fire/EMS Station	5645 Old Forest Drive	Columbia	29201	Medium	Medium	Medium	Medium	High	High	Medium	Low	Medium
H. B. Rhame Elementary	1300 Arrowwood Road	Columbia	29210	High	Medium	Medium	Medium	High	Low	Medium	Medium	Medium
H. E. Corley Elementary	1500 Chadford Road	Irmo	29063	High	Medium	Low	Medium	High	Medium	Low	Low	Medium
Hand Middle School	2600 Wheat Street	Columbia	29205	Medium	Medium	Medium	Low	High	Low	High	Low	Medium
Health Department	2000 Hampton Street	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Heyward Gibbes Middle School	500 Summerlea Drive	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Hopkins Elementary	6120 Cabin Creek Road	Hopkins	29061	Medium	High	High	Low	High	Low	High	Medium	Medium
Hopkins Fire Station	1631 Clarkson Road	Hopkins	29061	Medium	High	High	Low	Medium	Medium	High	Low	Medium
Hopkins Middle School	1601 Clarkson Road	Hopkins	29061	Medium	High	High	Low	Medium	Medium	High	Low	Medium
Horrell Hill Elementary	517 Horrell Hill Road	Hopkins	29061	Low	High	High	Medium	Medium	Medium	High	Low	Medium
HP Troop One Headquarters	1626 Shop Road	Columbia	29201	Medium	Medium	High	Low	High	Medium	High	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Hyatt Park	950 Jackson Ave	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Hyatt Park Elementary	4200 Main Street	Columbia	29203	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Jackson Creek Fire Station	9213 Two Notch Road	Columbia	29229	High	Medium	Low	High	High	Low	Medium	Medium	Medium
Jim Hamilton L B Owens Airport	1400 Jim Hamilton Blvd.	Columbia	29205	Medium	Medium	High	Low	High	Medium	High	Low	Medium
John P. Thomas Elementary	6001 Weston Avenue	Columbia	29203	Medium	Medium	Low	Medium	High	Low	Medium	Low	Medium
Judicial Center	1701 Main Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Keels Elementary	7500 Springcrest Drive	Columbia	29223	Medium	Medium	Low	Medium	High	Medium	Medium	Medium	Medium
Kelly Mill Middle School	1141 Kelly Mill Road	Blythewood	29016	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Kilbourne Park Baptist Church	4205 Kilbourne Road	Columbia	29206	Medium	Medium	High	Medium	High	High	Medium	Medium	Medium
Killian Elementary	2621 Clemson Road	Columbia	29229	High	Medium	Low	High	High	Medium	Medium	Low	Medium
Killian Fire Station	9651 Farrow Road	Columbia	29203	High	Medium	Low	High	Medium	Medium	Low	Low	Medium
Lake Carolina Elementary-Lower	1151 Kelly Mill Road	Blythewood	29016	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Lake Carolina Elementary-Upper	1261 Kelly Mill Road	Blythewood	29016	Medium	Medium	Low	High	High	Medium	Low	Low	Medium
Lake Murray Elementary	1531 Three Dog Road	Chapin	29036	High	Medium	Low	Low	High	Low	Low	Low	Medium
Langford Elementary	480 Langford Road	Blythewood	29016	High	Medium	Low	High	Medium	Medium	Low	Low	Medium
Leesburg Fire Station	1901 McCords	Eastover	29044	Low	Medium	Medium	High	Medium	Low	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
	Ferry Road											
Lewis (A.J.) Greenview Elementary	726 Easter Street	Columbia	29203	Medium	Medium	Low	Medium	High	Low	Medium	Low	Medium
Lift Station I	Weston Street	Eastover	29044	Low	High	High	Low	High	Medium	High	Medium	Medium
Lift Station II	Sunny Acres	Eastover	29044	Low	High	High	Low	High	Medium	Medium	Low	Medium
Lift Station IV	Lewis Scott Ct	Eastover	29044	Low	High	High	Low	High	Medium	Medium	Low	Medium
Lift Station V	311 Main Street	Eastover	29044	Medium	High	High	Medium	High	Medium	Medium	Low	Medium
Logan Elementary	815 Elmwood Avenue	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Longleaf Middle School	1160 Longreen Parkway	Columbia	29229	High	Medium	Low	High	High	Medium	Low	Low	Medium
Lower Richland Fire Station	2612 Lower Richland Blvd	Hopkins	29061	High	High	High	Medium	High	Medium	High	Low	Medium
Lower Richland High School	2615 Lower Richland Blvd	Hopkins	29061	High	High	High	Medium	High	Medium	High	Low	Medium
Lower Richland Wastewater Treatment Plant	2612 Lower Richland Blvd	Eastover	29044	Medium	High	High	Medium	Medium	Medium	High	Low	Medium
Magistrate Columbia	3875 Lucius Road	Columbia	29201	High	Medium	Medium	Medium	Medium	High	Medium	Low	Medium
Magistrate Eastover	501 Main Street	Eastover	29044	Medium	High	High	Medium	High	Medium	Medium	Low	Medium
Martin Luther King Jr Park	2300 Greene Street	Columbia	29205	Medium	Medium	Medium	Low	High	Low	Medium	Medium	Medium
Meadowfield Elementary	525 Galway Lane	Columbia	29209	Medium	Medium	High	Low	High	High	High	Low	Medium
Mill Creek Elementary	925 Universal Drive	Columbia	29209	Low	Medium	High	Low	High	Medium	High	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Moncrief Army Community Hospital	4500 Stuart Avenue	Fort Jackson	29207	Low	Medium	High	Medium	High	Medium	High	Low	Medium
Muller Road Middle School	1031 Muller Road	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Low	Medium
Nelson Elementary	225 N. Brickyard Road	Columbia	29223	High	Medium	Low	High	High	Medium	Medium	Low	Medium
North Columbia Baptist Church	8140 Gray Fox Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
North Springs Elementary	1300 Clemson Road	Columbia	29229	Medium	Medium	Low	High	High	Low	Medium	Low	Medium
Oak Pointe Elementary	1 River Bottom Road	Irmo	29063	High	Medium	Medium	Medium	High	Low	Low	Low	Medium
Palmetto Health Baptist	1330 Taylor at Marion Street	Columbia	29220	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Palmetto Health Baptist Parkridge	400 Palmetto Health Parkway	Columbia	29212	High	Medium	Low	Medium	High	Low	Low	Low	Medium
Palmetto Health Children's Hospital	7 Richland Medical Park Drive	Columbia	29203	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Palmetto Health Richland	5 Richland Medical Park Drive	Columbia	29203	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Pine Grove Elementary	111 Huffstetler Drive	Columbia	29210	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Polo Road Elementary	1250 Polo Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Pontiac Elementary	500 Spears Creek Church Road	Elgin	29045	Medium	Medium	Medium	High	Medium	Low	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Providence Hospital	2435 Forest Drive	Columbia	29204	Medium	Medium	Medium	Low	High	Low	Medium	Medium	Medium
Providence Hospital Northeast	120 Gateway Corporate Blvd	Columbia	29203	Medium	Medium	Low	High	High	Medium	Medium	Low	Medium
Reformation Lutheran Church	1118 Union Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Region Four RCSD	1019 Beatty Road	Columbia	29210	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium
Region One RCSD	2615 Lower Richland Blvd	Columbia	29061	High	High	High	Medium	High	Medium	High	Low	Medium
Region Seven RCSD	1405 Screaming Eagle Road	Elgin	29045	Medium	Medium	Low	High	Low	Low	Medium	Low	Medium
Region Six RCSD	118 McNulty Street, Suite B	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Medium	Medium
Region Three RCSD	6429 Bishop Avenue	Columbia	29203	High	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Region Two RCSD	7201 Two Notch Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Rice Creek Elementary	4751 Hard Scrabble Road	Columbia	29229	High	Medium	Low	High	High	Low	Low	Low	Medium
Richland County Sheriff's Department	5623 Two Notch Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Richland Northeast High School	7500 Brookfield Road	Columbia	29223	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Richland School District One	1616 Richland Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Richland School District Two	6831 Brookfield	Columbia	29206	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
	Road											
Ridge View High School	4801 Hard Scrabble Road	Columbia	29229	High	Medium	Low	High	High	Low	Low	Low	Medium
River Springs Elementary	115 Connie Wright Road	Irmo	29063	High	Medium	Low	Medium	High	Low	Low	Low	Medium
Rosewood Elementary	3300 Rosewood Drive	Columbia	29205	Medium	Medium	High	Low	High	Low	High	Medium	Medium
Round Top Elementary	449 Rimer Pond Road	Blythewood	29016	High	Medium	Low	High	Medium	Medium	Low	Low	Medium
Saint Andrew's Baptist Church	230 Bush River Road	Columbia	29210	High	Medium	Medium	Medium	High	Low	Medium	Medium	Medium
Sandhill Fire Station	130 Sparkleberry Lane	Columbia	29223	Medium	Medium	Medium	High	High	Medium	Medium	Low	Medium
Sandhills Community Church	3513 Hard Scrabble Road	Columbia	29223	High	Medium	Low	High	High	Medium	Medium	Medium	Medium
Sandlapper Elementary	1001 Longtown Road	Columbia	29229	High	Medium	Low	High	High	Low	Low	Low	Medium
Satchel Ford Elementary	5901 Satchel Ford Road	Columbia	29206	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Scottish Rite Temple	7230 Garners Ferry Road	Columbia	29290	Low	Medium	High	Medium	High	Low	High	Medium	Medium
Solid Waste Main Office	1070 Caughman Road	Columbia	29203	High	Medium	Medium	Medium	Low	Medium	Low	Low	Medium
South Carolina Baptist Convention	190 Stoneridge Drive	Columbia	29210	High	Medium	Medium	Medium	High	High	Medium	Low	Medium
South Carolina Department of Public Safety	10311 Wilson Blvd	Blythewood	29016	High	Medium	Low	High	High	Low	Low	Medium	Medium
South Carolina	4400 Broad	Columbia	29210	High	Medium	Low	Medium	High	Medium	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
Law Enforcement Division	River Road											
South Kilbourne Elementary	1400 South Kilbourne Road	Columbia	29205	Medium	Medium	High	Low	High	Medium	High	Low	Medium
Southeast Middle School	731 Horrell Hill Road	Hopkins	29061	Low	High	High	Medium	High	Low	High	Low	Medium
Spring Hill High School	11629 Broad River Road	Chapin	29036	High	Medium	Low	Low	High	Low	Low	Low	Medium
Spring Hill Whiterock Fire Station	11809 Broad River Road	Chapin	29036	High	Medium	Low	Low	Medium	Medium	Low	Low	Medium
Spring Valley High School	120 Sparkleberry Lane	Columbia	29229	Medium	Medium	Low	High	High	Low	Medium	Low	Medium
Spring Valley Presbyterian Church	125 Sparkleberry Lane	Columbia	29229	Medium	Medium	Low	High	High	Low	Medium	Low	Medium
St. Andrews Middle School	1231 Bluefield Road	Columbia	29210	High	Medium	Medium	Medium	High	Low	Medium	Medium	Medium
St. Joseph Catholic Church	3600 Devine Street	Columbia	29205	Medium	Medium	High	Low	High	Low	High	Medium	Medium
St. Paul's Lutheran Church	1715 Bull Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Summit Parkway Middle School	200 Summit Parkway	Columbia	29229	Medium	Medium	Low	High	High	Low	Medium	Low	Medium
Temple Baptist Church	806 Universal Drive	Columbia	29209	Low	Medium	High	Low	High	Medium	High	Low	Medium
The Church of Christ	2701 Park Street	Columbia	29203	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
Township Auditorium	1703 Taylor Street	Columbia	29201	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium
Trinity Lutheran Church	7900 Nell Street	Columbia	29203	Medium	Medium	Low	Medium	High	Medium	Medium	Medium	Medium
University of	1415	Columbia	29208	Medium	Medium	Medium	Medium	High	Medium	Medium	Low	Medium

Name	Address	City	Zip	Drought Risk	Earthquake Risk	Extreme Cold Risk	Extreme Heat Risk	Flash Flood Risk	Flood Risk	Fog Risk	Hail Risk	Hurricane/Tropical Storm Risk
South Carolina Division of Law Enforcement and Safety	Henderson Street											
Upper Richland Fire Station	300 Camp Ground Road	Columbia	29203	High	Medium	Medium	High	Medium	Medium	Low	Low	Medium
Utilities Building	7525 Broad River Road	Irmo	29063	High	Medium	Low	Medium	High	Medium	Low	Low	Medium
W. A. Perry Middle School	2600 Barhamville Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
W. G. Sanders Middle School	3455 Pinebelt Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Medium	Medium	Medium	Medium
W. J. Keenan High School	361 Pisgah Church Road	Columbia	29203	Medium	Medium	Low	Medium	Medium	Low	Medium	Low	Medium
W. S. Sandel Elementary	2700 Seminole Road	Columbia	29210	High	Medium	Low	Medium	High	Low	Medium	Medium	Medium
Watkins-Nance Elementary	2525 Barhamville Road	Columbia	29204	Medium	Medium	Medium	Medium	High	Low	Medium	Low	Medium
Webber Elementary	140 Webber School Road	Eastover	29044	Low	High	High	Low	High	Medium	Medium	Low	Medium
Westwood High School	180 Turkey Farm Road	Blythewood	29016	High	Medium	Low	High	Medium	Medium	Low	Low	Medium
Windsor Elementary	9800 Dunbarton Drive	Columbia	29223	Medium	Medium	Low	High	High	Medium	Medium	Low	Medium

Table 144 - Richland County Critical Facility Vulnerability Summary Part 2.

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
A. C. Flora High School	1 Falcon Drive	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
A. C. Moore Elementary	333 Etiwan Avenue	Columbia	29205	High	Medium	Low	Low	Medium	High	Low	Medium
Academy for Success	11629 Broad River Road	Chapin	29036	Low	Low	High	Medium	Low	Medium	Low	Low
Administrative Building	2020 Hampton Street	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
Alcorn Middle School	5125 Fairfield Road	Columbia	29203	Medium	Medium	Low	Medium	Medium	High	High	Medium
Alvin S. Glenn Detention Center	201 John Mark Dial Road	Columbia	29209	High	High	Low	Medium	High	High	High	High
Arden Elementary	1300 Ashley Street	Columbia	29203	Medium	Medium	Low	Medium	Medium	High	High	Medium
Ballentine Elementary	1040 Bickley Road	Irmo	29063	Low	Low	High	High	Low	Medium	Low	Medium
Ballentine Fire Station	10727 Broad River Road	Irmo	29063	Low	Low	High	High	Low	Medium	Low	Low
Bearcreek Fire Station	1613 Heins Road	Blythewood	29016	Low	Low	Medium	High	Low	Medium	Low	Low
Bethel-Hanberry Elementary	125 Boney Road	Blythewood	29016	Low	Low	Medium	Medium	Low	High	Medium	Medium
Bible Way Church of Atlas Road	2440 Atlas Road	Columbia	29290	High	High	Low	High	Medium	High	Medium	High
Blythewood Fire Station	435 Main Street	Blythewood	29016	Low	Low	Medium	Medium	Low	High	Medium	Medium
Blythewood High School	10901 Wilson Boulevard	Blythewood	29016	Low	Low	Medium	High	Low	High	Medium	Low
Blythewood	118	Blythewood	29016	Low	Low	Medium	Medium	Low	High	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Magistrate	McNulty Street										
Blythewood Middle School	2351 Longtown Road East	Blythewood	29016	Low	Low	Medium	High	Low	Low	Low	Low
Bookman Road Elementary	1245 Bookman Road	Elgin	29045	Low	Low	Medium	High	Low	Low	Low	Low
Bradley Elementary	3032 Pine Belt Road	Columbia	29204	Medium	Medium	Low	Low	Medium	High	High	Medium
Brennen Elementary	4438 Devereaux Road Columbia	Columbia	29205	High	High	Low	Medium	Medium	Medium	Medium	High
Bridge Creek Elementary	121 Bombing Range Road	Elgin	29045	Low	Low	Medium	High	Low	Low	Low	Low
Broad River Regional Wastewater Treatment Plant	1183 Shadywood Lane	Irmo	29063	Low	Low	High	Medium	Low	High	Medium	Medium
Brockman Elementary	2245 Montclair Drive	Columbia	29206	Medium	Medium	Low	Low	Medium	High	Medium	Medium
Bryan Dorn VA Medical Center	6439 Garners Ferry Road	Columbia	29209	High	Medium	Low	High	Medium	Medium	Medium	High
Burnside Elementary	7300 Patterson Road	Columbia	29209	High	High	Low	High	Medium	High	Medium	High
Burton-Pack Elementary	111 Garden Drive	Columbia	29204	Medium	High	Low	High	Medium	High	High	High
C. A. Johnson High School	2219 Barhamville Road	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
Capital View Fire Station	8100 Burdell Drive	Columbia	29209	High	High	Low	High	Medium	High	Medium	High
Carver-Lyon	2100	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Elementary	Waverly Street										
Catawba Trail Elementary	1080 Old National Highway	Elgin	29045	Medium	Medium	Medium	Medium	Medium	Low	Low	Medium
Caughman Road Elementary	7725 Caughman Road	Columbia	29209	High	High	Low	Medium	Medium	High	Medium	High
Cedar Creek Fire Station	8300 Winnsboro Road	Blythewood	29016	Low	Low	High	Medium	Low	Low	Medium	Low
Center for Advanced Technical Studies	916 Mount Vernon Church Road	Chapin	29036	Low	Low	High	Medium	Low	Medium	Low	Low
Central Court	1400 Huger Street	Columbia	29201	Medium	High	Low	Low	Medium	High	High	Medium
Central Main Garage	400 Powell Road	Columbia	29203	Medium	Medium	Medium	High	Low	Medium	High	Medium
Chapin Middle School	11661 Broad River Road	Chapin	29036	Low	Low	High	Medium	Low	Medium	Low	Low
City of Forest Acres Police Department	5205 North Trenholm Road	Columbia	29206	Medium	Medium	Low	Low	Medium	High	Medium	Medium
Columbia High School	1701 Westchester Drive	Columbia	29210	Low	Low	Low	Medium	Medium	High	Medium	Medium
Columbia Police Department	1 Justice Square	Columbia	29201	Medium	High	Low	Low	Medium	High	High	Medium
Columbia/Richland 911 Communications Center	1800 Laurel Street	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	Medium
Conder Elementary	8040 Hunt Club Road	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Congaree Run Fire Station	115 Old Congaree Road	Eastover	29044	High	Medium	Low	High	High	Low	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
CPD East Region	446 Spears Creek Church Road	Elgin	29045	Low	Medium	Medium	High	Medium	Low	Medium	Medium
CPD Metro Region	1600 Bull Street	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	Medium
CPD North Region	3905 Ensor Avenue	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	Medium
CPD South Region	2132 Devine Street	Columbia	29205	High	High	Low	Medium	Medium	High	High	Medium
Crane Creek Fire Station	7401 Fairfield Road	Columbia	29203	Medium	Low	Medium	High	Medium	High	High	High
Crayton Middle School	5000 Clemson Avenue	Columbia	29206	Medium	Medium	Low	Low	Medium	High	Medium	Medium
Decker Center	2500 Decker Blvd.	Columbia	29206	Medium	Medium	Medium	High	Low	Medium	High	Medium
Dent Middle School	2721 Decker Boulevard	Columbia	29206	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Dentsville Fire Station	7124 Fire Lane Drive	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Department of Social Services	3220 Two Notch Road	Columbia	29204	Medium	High	Low	High	Medium	High	High	High
Dreher High School	3319 Millwood Avenue	Columbia	29205	High	Medium	Low	High	Medium	High	Medium	High
Dutch Fork Elementary	7900 Broad River Road	Irmo	29063	Low	Low	High	High	Low	High	Medium	Medium
Dutch Fork High School	1400 Old Tamah Road	Irmo	29063	Low	Low	High	High	Low	High	Medium	Medium
Dutch Fork Judicial Center	1019 Beatty Road	Columbia	29210	Low	Medium	High	High	Medium	High	High	High
Dutch Fork Middle School	1528 Old Tamah	Irmo	29063	Low	Low	High	High	Low	High	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
	Road										
E. L. Wright Middle School	2740 Alpine Road	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	High
Eastover Fire Station	504 Henry Street	Eastover	29044	High	High	Medium	High	High	Low	High	High
Eau Claire Baptist Church	4427 Main Street	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	High
Eau Claire High School	4800 Monticello Road	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	Medium
Edward E. Taylor Elementary	200 McRae Street	Columbia	29203	Medium	Medium	Low	High	Medium	High	High	High
Elders Pond Fire Station	325 Elders Pond Road	Columbia	29229	Low	Low	Medium	High	Low	Low	Low	Low
Emergency Operations Center	1410 Laurens Street	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
EMS Headquarters Office	1410 Laurens Street	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
EMS Storage Gills Creek	5645 Old Forest Drive	Columbia	29201	Medium	Medium	Low	Low	Medium	Medium	High	Medium
EMS Sub Station Eastover	200 Clarkson Street	Eastover	29044	High	High	Medium	High	High	Low	High	High
EMS Sub Station Horrell Hill	1002 Congaree Road	Hopkins	29061	High	High	Low	High	Medium	Medium	Medium	High
EMS Sub Station St. Andrews	3216 Broad River Road	Columbia	29210	Low	Medium	Medium	High	Medium	High	High	Medium
Fair Lawn United Methodist Church	9203 Wilson Boulevard	Columbia	29203	Medium	Low	Medium	High	Low	Medium	High	Medium
First Baptist Church	1306 Hampton Street	Columbia	29202	High	Medium	Low	Medium	Medium	High	High	High
Forest Heights Elementary	2500 Blue Ridge Terrace	Columbia	29203	Medium	Low	Medium	High	Low	High	High	Low

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Forest Lake Elementary	6801 Brookfield Road	Columbia	29206	Medium	Medium	Low	High	Medium	Medium	High	Medium
Friendship Baptist Church	1237 House Street	Columbia	29204	High	High	Low	Medium	Medium	High	High	Medium
Gadsden Elementary	1660 South Goodwin Circle	Gadsden	29052	High	High	Low	High	High	Medium	High	High
Gadsden Fire Station	122 Gadsden Community Center Road	Gadsden	29052	High	High	Low	High	High	Medium	High	High
Gills Creek Fire/EMS Station	5645 Old Forest Drive	Columbia	29201	Medium	Medium	Low	Low	Medium	Medium	High	Medium
H. B. Rhame Elementary	1300 Arrowwood Road	Columbia	29210	Medium	Medium	Low	Medium	Medium	High	Medium	Medium
H. E. Corley Elementary	1500 Chadford Road	Irmo	29063	Low	Low	High	High	Low	Medium	Low	Medium
Hand Middle School	2600 Wheat Street	Columbia	29205	High	Medium	Low	Low	Medium	High	Low	Medium
Health Department	2000 Hampton Street	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
Heyward Gibbes Middle School	500 Summerlea Drive	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	Medium
Hopkins Elementary	6120 Cabin Creek Road	Hopkins	29061	High	Medium	Low	High	High	Medium	High	High
Hopkins Fire Station	1631 Clarkson Road	Hopkins	29061	High	High	Low	High	High	Medium	High	High
Hopkins Middle School	1601 Clarkson Road	Hopkins	29061	High	High	Low	High	High	Medium	High	High
Horrell Hill	517 Horrell	Hopkins	29061	High	High	Low	High	Medium	Medium	Medium	High

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Elementary	Hill Road										
HP Troop One Headquarters	1626 Shop Road	Columbia	29201	High	Medium	Low	Medium	Medium	High	Low	High
Hyatt Park	950 Jackson Ave	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	Medium
Hyatt Park Elementary	4200 Main Street	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	Medium
Jackson Creek Fire Station	9213 Two Notch Road	Columbia	29229	Low	Medium	Medium	High	Low	Low	Medium	Medium
Jim Hamilton L B Owens Airport	1400 Jim Hamilton Blvd.	Columbia	29205	High	Medium	Low	Medium	Medium	High	High	High
John P. Thomas Elementary	6001 Weston Avenue	Columbia	29203	Medium	Medium	Medium	Medium	Medium	High	High	Medium
Judicial Center	1701 Main Street	Columbia	29201	Medium	High	Low	Low	Medium	High	High	Medium
Keels Elementary	7500 Springcrest Drive	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Kelly Mill Middle School	1141 Kelly Mill Road	Blythewood	29016	Low	Low	High	Medium	Low	Low	Low	Low
Kilbourne Park Baptist Church	4205 Kilbourne Road	Columbia	29206	High	High	Low	Medium	Medium	Medium	Medium	High
Killian Elementary	2621 Clemson Road	Columbia	29229	Medium	Low	Medium	Medium	Low	Medium	High	Medium
Killian Fire Station	9651 Farrow Road	Columbia	29203	Medium	Low	Medium	High	Low	Medium	High	Medium
Lake Carolina Elementary-Lower	1151 Kelly Mill Road	Blythewood	29016	Low	Low	High	Medium	Low	Low	Low	Low
Lake Carolina Elementary-Upper	1261 Kelly Mill Road	Blythewood	29016	Low	Low	High	Medium	Low	Low	Low	Low
Lake Murray Elementary	1531 Three Dog Road	Chapin	29036	Low	Low	High	Medium	Low	Medium	Low	Low

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Langford Elementary	480 Langford Road	Blythewood	29016	Low	Low	Medium	High	Low	Low	Low	Low
Leesburg Fire Station	1901 McCords Ferry Road	Eastover	29044	Medium	High	Low	High	Medium	Low	High	Medium
Lewis (A.J.) Greenview Elementary	726 Easter Street	Columbia	29203	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Lift Station I	Weston Street	Eastover	29044	High	High	Medium	High	High	Medium	High	High
Lift Station II	Sunny Acres	Eastover	29044	High	High	Medium	High	High	Low	High	High
Lift Station IV	Lewis Scott Ct	Eastover	29044	High	High	Medium	High	High	Low	High	High
Lift Station V	311 Main Street	Eastover	29044	High	High	Low	High	High	Low	High	High
Logan Elementary	815 Elmwood Avenue	Columbia	29201	Medium	High	Low	Low	Medium	High	High	Medium
Longleaf Middle School	1160 Longreen Parkway	Columbia	29229	Medium	Low	Medium	High	Low	Medium	Medium	Medium
Lower Richland Fire Station	2612 Lower Richland Blvd	Hopkins	29061	High	High	Low	High	Medium	Medium	Medium	High
Lower Richland High School	2615 Lower Richland Blvd	Hopkins	29061	High	High	Low	High	Medium	Medium	Medium	High
Lower Richland Wastewater Treatment Plant	2612 Lower Richland Blvd	Eastover	29044	High	Medium	Medium	High	High	Medium	High	High
Magistrate Columbia	3875 Lucius Road	Columbia	29201	Medium	Medium	Low	High	Medium	High	High	High
Magistrate Eastover	501 Main Street	Eastover	29044	High	High	Low	High	High	Low	High	High
Martin Luther King Jr Park	2300 Greene Street	Columbia	29205	High	High	Low	Medium	Medium	High	High	Medium
Meadowfield	525 Galway	Columbia	29209	High	High	Low	Low	Medium	High	High	High

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Elementary	Lane										
Mill Creek Elementary	925 Universal Drive	Columbia	29209	High	High	Low	High	Medium	High	Medium	High
Moncrief Army Community Hospital	4500 Stuart Avenue	Fort Jackson	29207	High	High	Low	Low	Medium	Medium	High	Medium
Muller Road Middle School	1031 Muller Road	Blythewood	29016	Low	Low	Medium	Medium	Low	High	Medium	Low
Nelson Elementary	225 N. Brickyard Road	Columbia	29223	Low	Medium	Medium	High	Medium	Medium	High	Medium
North Columbia Baptist Church	8140 Gray Fox Road	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
North Springs Elementary	1300 Clemson Road	Columbia	29229	Low	Low	Medium	High	Low	Low	Low	Low
Oak Pointe Elementary	1 River Bottom Road	Irmo	29063	Low	Low	High	Medium	Low	High	Medium	Medium
Palmetto Health Baptist	1330 Taylor at Marion Street	Columbia	29220	High	Medium	Low	Medium	Medium	High	High	Medium
Palmetto Health Baptist Parkridge	400 Palmetto Health Parkway	Columbia	29212	Low	Low	Medium	High	Low	High	Medium	Low
Palmetto Health Children's Hospital	7 Richland Medical Park Drive	Columbia	29203	High	Medium	Low	Low	Medium	High	High	Medium
Palmetto Health Richland	5 Richland Medical Park Drive	Columbia	29203	High	Medium	Low	Low	Medium	High	High	Medium
Pine Grove Elementary	111 Huffstetler Drive	Columbia	29210	Low	Medium	High	High	Medium	High	High	High
Polo Road Elementary	1250 Polo Road	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Pontiac	500 Spears	Elgin	29045	Medium	Medium	Medium	Medium	Medium	Low	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Elementary	Creek Church Road										
Providence Hospital	2435 Forest Drive	Columbia	29204	High	High	Low	Medium	Medium	High	High	Medium
Providence Hospital Northeast	120 Gateway Corporate Blvd	Columbia	29203	Low	Medium	Medium	Medium	Medium	Medium	High	Medium
Reformation Lutheran Church	1118 Union Street	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	High
Region Four RCSD	1019 Beatty Road	Columbia	29210	Low	Medium	High	High	Medium	High	High	High
Region One RCSD	2615 Lower Richland Blvd	Columbia	29061	High	High	Low	High	Medium	Medium	Medium	High
Region Seven RCSD	1405 Screaming Eagle Road	Elgin	29045	Medium	Medium	Low	Medium	Medium	Low	Low	Low
Region Six RCSD	118 McNulty Street, Suite B	Blythewood	29016	Low	Low	Medium	Medium	Low	High	Medium	Medium
Region Three RCSD	6429 Bishop Avenue	Columbia	29203	Low	Low	Medium	High	Medium	High	High	Medium
Region Two RCSD	7201 Two Notch Road	Columbia	29223	Medium	Medium	Medium	Medium	Medium	Medium	High	Medium
Rice Creek Elementary	4751 Hard Scrabble Road	Columbia	29229	Low	Low	High	Medium	Low	Low	Low	Low
Richland County Sheriff's Department	5623 Two Notch Road	Columbia	29223	Medium	Medium	Low	High	Medium	High	High	Medium
Richland Northeast High School	7500 Brookfield Road	Columbia	29223	Medium	Medium	Medium	High	Medium	Medium	High	Medium
Richland School District One	1616 Richland	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
	Street										
Richland School District Two	6831 Brookfield Road	Columbia	29206	Medium	Medium	Low	High	Medium	Medium	High	Medium
Ridge View High School	4801 Hard Scrabble Road	Columbia	29229	Low	Low	High	Medium	Low	Low	Low	Low
River Springs Elementary	115 Connie Wright Road	Irmo	29063	Low	Medium	High	Medium	Low	High	Medium	Medium
Rosewood Elementary	3300 Rosewood Drive	Columbia	29205	High	Medium	Low	High	Medium	High	Medium	High
Round Top Elementary	449 Rimer Pond Road	Blythewood	29016	Low	Low	Medium	High	Low	Low	Low	Low
Saint Andrew's Baptist Church	230 Bush River Road	Columbia	29210	Medium	Medium	Low	Medium	Medium	High	Medium	Medium
Sandhill Fire Station	130 Sparkleberry Lane	Columbia	29223	Medium	Medium	Medium	Medium	Medium	Low	Medium	Medium
Sandhills Community Church	3513 Hard Scrabble Road	Columbia	29223	Medium	Medium	Medium	High	Low	Medium	High	High
Sandlapper Elementary	1001 Longtown Road	Columbia	29229	Low	Low	Medium	High	Low	Medium	Low	Low
Satchel Ford Elementary	5901 Satchel Ford Road	Columbia	29206	Medium	High	Low	Medium	Medium	Medium	Medium	Medium
Scottish Rite Temple	7230 Garners Ferry Road	Columbia	29290	High	Medium	Low	High	Medium	Medium	Medium	High
Solid Waste Main Office	1070 Caughman Road	Columbia	29203	Low	Medium	High	Low	Low	Medium	Medium	Low
South Carolina Baptist Convention	190 Stoneridge Drive	Columbia	29210	Medium	Medium	Low	Low	Medium	High	High	Medium
South Carolina	10311	Blythewood	29016	Low	Low	High	High	Low	Medium	Medium	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Department of Public Safety	Wilson Blvd										
South Carolina Law Enforcement Division	4400 Broad River Road	Columbia	29210	Low	Medium	High	High	Medium	High	High	High
South Kilbourne Elementary	1400 South Kilbourne Road	Columbia	29205	High	Medium	Low	Medium	Medium	High	High	High
Southeast Middle School	731 Horrell Hill Road	Hopkins	29061	High	High	Low	Medium	High	Medium	Medium	High
Spring Hill High School	11629 Broad River Road	Chapin	29036	Low	Low	High	Medium	Low	Medium	Low	Low
Spring Hill Whiterock Fire Station	11809 Broad River Road	Chapin	29036	Low	Low	High	High	Low	High	Low	Low
Spring Valley High School	120 Sparkleberry Lane	Columbia	29229	Low	Medium	Medium	High	Medium	Low	Medium	Medium
Spring Valley Presbyterian Church	125 Sparkleberry Lane	Columbia	29229	Low	Medium	Medium	High	Medium	Low	Medium	Medium
St. Andrews Middle School	1231 Bluefield Road	Columbia	29210	Medium	Medium	Low	Medium	Medium	High	Medium	Medium
St. Joseph Catholic Church	3600 Devine Street	Columbia	29205	High	Medium	Low	High	Medium	High	Medium	High
St. Paul's Lutheran Church	1715 Bull Street	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	Medium
Summit Parkway Middle School	200 Summit Parkway	Columbia	29229	Low	Low	Medium	High	Low	Low	Low	Low
Temple Baptist Church	806 Universal Drive	Columbia	29209	High	High	Low	High	Medium	High	Medium	High
The Church of Christ	2701 Park Street	Columbia	29203	High	Medium	Low	Medium	Medium	High	High	High
Township	1703 Taylor	Columbia	29201	High	Medium	Low	Medium	Medium	High	High	Medium

Name	Address	City	Zip	Lightning Risk	Severe Storm Risk	Tornado Risk	Wildfire Risk	Wind Risk	Winter Weather Risk	Social Vulnerability	Overall Hazard Risk
Auditorium	Street										
Trinity Lutheran Church	7900 Nell Street	Columbia	29203	Medium	Medium	Medium	High	Medium	Medium	High	Medium
University of South Carolina Division of Law Enforcement and Safety	1415 Henderson Street	Columbia	29208	High	Medium	Low	Medium	Medium	High	High	Medium
Upper Richland Fire Station	300 Camp Ground Road	Columbia	29203	Low	Low	High	Medium	Low	Medium	Medium	Medium
Utilities Building	7525 Broad River Road	Irmo	29063	Low	Low	High	Medium	Low	High	Medium	Medium
W. A. Perry Middle School	2600 Barhamville Road	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
W. G. Sanders Middle School	3455 Pinebelt Road	Columbia	29204	Medium	Medium	Low	Low	Medium	High	High	Medium
W. J. Keenan High School	361 Pisgah Church Road	Columbia	29203	Low	Medium	Medium	Medium	Medium	Medium	High	Low
W. S. Sandel Elementary	2700 Seminole Road	Columbia	29210	Low	Medium	Low	High	Medium	High	Medium	Medium
Watkins-Nance Elementary	2525 Barhamville Road	Columbia	29204	High	Medium	Low	Medium	Medium	High	High	Medium
Webber Elementary	140 Webber School Road	Eastover	29044	High	High	Medium	High	High	Low	High	High
Westwood High School	180 Turkey Farm Road	Blythewood	29016	Low	Low	High	Medium	Low	Medium	Medium	Low
Windsor Elementary	9800 Dunbarton Drive	Columbia	29223	Low	Medium	Medium	High	Medium	Medium	High	Medium

III. Plan Adoption Letters for each Jurisdiction

III – A. Fairfield County Adoption Letters

A) Unincorporated Fairfield County

B) City of Winnsboro

C) Town of Ridgeway

III – B. Lexington County Adoption Letters

A) Unincorporated Lexington County

B) City of Cayce

C) City of West Columbia

D) Town of Lexington

E) Town of Springdale

F) Town of Chapin

G) Town of Batesburg – Leesville

H) Town of Gilbert

I) Irmo – Chapin Recreation

J) Gilbert – Summit Rural Water District

K) County Joint Municipal Water

L) Midlands Technical College

III – C. Newberry County Adoption Letters

A) Unincorporated Newberry County

B) City of Newberry

C) Town of Whitmire

III – D. Richland County Adoption Letters

A) Unincorporated Richland County

B) City of Columbia

C) Town of Arcadia Lakes

D) Town of Forest Acres

E) Town of Irmo

F) Town of Blythewood

G) Richland County School District Two

IV. NFIP Compliance Letters for each Jurisdiction

The following sections address FEMA HMP requirement 201.6(c)(3)(ii)

IV – A. Fairfield County NFIP Compliance Letters

A) Unincorporated Fairfield County

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Hughes
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that Fairfield County is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arlaj@dnr.sc.gov.

Sincerely,

Jessica A. Arly, CFM
Flood Mitigation Specialist

1000 Assembly Street • P.O. Box 167 • Columbia, SC 29202

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IV – B. Lexington County NFIP Compliance Letters

A) Unincorporated Lexington County

South Carolina Department of
Natural Resources

DNR

Alvin A. Taylor
Director

Kim Beaulieu
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that Lexington County is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

1000 Assembly Street • P.O. Box 167 • Columbia, SC 29202
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B) City of Cayce

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Kim Burdette
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the City of Cayce is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

C) City of West Columbia

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentlies
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the City of West Columbia is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4022 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

D) Town of Lexington

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Woodward
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Lexington is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

E) Town of Springdale

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentiers
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Springdale is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arizj@dnr.sc.gov.

Sincerely,

Jessica Arriz, CFM
Flood Mitigation Specialist

F) Town of Chapin

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentlin
Deputy Director
Land, Water and Conservation

February 5, 2016

Mr. Chris Clauson, Zoning Administrator
Town of Chapin
157 NW Columbia Ave.
Chapin, SC 29036

Dear Mr. Clauson,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Chapin is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4022 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

G) Town of Gilbert

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Kim Bryant
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Gilbert is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

IV – C. Newberry County NFIP Compliance Letters

A) Unincorporated Newberry County

South Carolina Department of
Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentz
Deputy Director
Land, Water and Conservation

February 5, 2016

Ms. Anne Peters, Planning and Zoning Director
Newberry County
P.O. Box 1014
Newberry, SC 29108

Dear Ms. Peters,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that Newberry County is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

B) City of Newberry

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Kim Stallings
Deputy Director for
Land, Water and Conservation

March 7, 2016

Mr. Matt DeWit
Assistant City Manager
P.O. Box 538
Newberry, SC 29108

Dear Mr. DeWit,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that City of Newberry is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arraj@dnr.sc.gov.

Sincerely,

Jessica Arra, CFM
Flood Mitigation Specialist

C) Town of Whitmire

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentiers
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Whitmire is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artz@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

IV – D. Richland County NFIP Compliance Letters

A) Unincorporated Richland County

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Land, Water and Conservation

March 1, 2016

Ms. Andrea Bolling, Floodplain Coordinator
Richland County
2020 Hampton Street
Columbia, SC 29204

Dear Ms. Bolling,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that Richland County is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arzj@dnr.sc.gov.

Sincerely,

Jessica Arz, CFM
Flood Mitigation Specialist

1000 Assembly Street • P.O. Box 167 • Columbia, SC 29202

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B) City of Columbia

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Kettles
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the City of Columbia is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arrzj@dnr.sc.gov.

Sincerely,

Jessica Arrz, CFM
Flood Mitigation Specialist

1000 Assembly Street • P.O. Box 167 • Columbia, SC 29202

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C) Town of Arcadia Lakes

South Carolina Department of
Natural Resources

DNR

Alvin A. Taylor
Director

Ken Ker Les
Deputy Director for
Land, Water and Conservation

March 1, 2016

Ms. Andrea Bolling, Floodplain Coordinator
Richland County
2020 Hampton Street
Columbia, SC 29204

Dear Ms. Bolling,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that Arcadia Lakes is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

D) Town of Forest Acres

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentiers
Deputy Director
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the City of Forest Acres is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

E) Town of Irmo

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Jim Rembert
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Irmo is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or artzj@dnr.sc.gov.

Sincerely,

Jessica Artz, CFM
Flood Mitigation Specialist

1000 Assembly Street • P.O. Box 167 • Columbia, SC 29202

F) Town of Blythewood

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Kelly Zamiska
Deputy Director for
Land, Water and Conservation

March 22, 2016

Mr. Michael Criss AICP, LEED AP, LLC
108 Gold Road
Lexington, SC
29072

Dear Mr. Criss,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Blythewood is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arutj@dnr.sc.gov.

Sincerely,

Jessica Arutz, CFM
Flood Mitigation Specialist

G) Town of Eastover

South Carolina Department of

Natural Resources

DNR

Alvin A. Taylor
Director

Ken Rentiers
Deputy Director for
Land, Water and Conservation

April 7, 2016

To Whom It May Concern,

The South Carolina Department of Natural Resources, Land, Water and Conservation Division, Flood Mitigation Program is charged with overseeing community implementation of the National Flood Insurance Program (NFIP) under contract with the Federal Emergency Management Agency (FEMA). SCDNR provides technical and compliance assistance to communities participating in the NFIP.

The purpose of this letter is to confirm that the Town of Eastover is currently an active participant of the National Flood Insurance Program.

Should you have any questions, please do not hesitate to contact me at (803) 734-4012 or arizj@dnr.sc.gov.

Sincerely,

Jessica Anz, CFM
Flood Mitigation Specialist

V. Advertisements and Notices

Notice of Availability for Review and Public Comment
Public meeting

An All Natural Hazards Risk Assessment and Hazard Mitigation Plan
for the Central Midlands Region of South Carolina

The staff of the Central Midlands Council of Governments seeks public comment and input on the update of the regional risk assessment and natural hazard mitigation plan. A public meeting will be held at the offices of Central Midlands Council of Governments on **August 30st 2016 from 6:00 PM to 7:30 PM.** The public may access the plan draft by visiting our website (www.cmcog.org) and searching for "*Press Releases*". A physical copy is also available for review at the offices of the Central Midlands Council of Governments on 236 Stoneridge Drive, Columbia, SC, 29210.

The purpose of this plan update is to meet the requirements of the Disaster Mitigation Act of 2000 by helping to make the local governments in the region more prepared and resistant to the effects of natural hazards. The plan details the nature of the most significant natural hazards threatening local governments in the region. It contains hazard mitigation goals and strategies that address the natural hazard priorities of many of the local governments in the region. After public comments are addressed, local governments may choose to pass a resolution to adopt the updated regional plan, making them eligible for hazard mitigation grants. It will also involve said local governments in more detailed record keeping on the occurrence and cost of natural hazard events as well as a process to update and revise the plan periodically.

For further information and comments on the draft plan update, individuals may attend the public meeting or contact Mr. Guillermo Espinosa at Central Midlands Council of Governments, by close of business hours on August 31st, utilizing the information below.

Guillermo Espinosa
Phone (803) 744-5126
Email gespinosa@cmcog.org

The State

www.thestate.com

classifie

803-77

THE PLACE TO SELL AND BUY, TO FIND JOBS, TRANSPORTAT

Place an ad:

Online: **www.thestate.com**

Phone: **803-771-SOLD** (7653)

E-mail:

stateclassified@thestate.com

In Person:

1401 Shop Road
Columbia, SC 29201

Monday - Friday 8:30 a.m. to 5 p.m.

Class Deadlines:

To place or cancel a classified advertisement, please note the following deadlines:

PUBLISHES	LINER ADS	DISPLAY
MONDAY	FRI, 5PM	THURS, 3PM
TUESDAY	MON, 3PM	FRI, 3PM
WEDNESDAY	TUES, 3PM	MON, 3PM
THURSDAY	WED, 3PM	TUES, 3PM
FRIDAY	THURS, 3PM	WED, 3PM
SATURDAY	FRI, 3PM	THURS, 3PM
SUNDAY	FRI, 5PM	THURS, 3PM

CLASSIFIED POLICY: By placing an advertisement in The State you agree that the advertisement as it appears will become the property of The State. You assign all ownership interest in the advertisement as it appears under the Copyright Act or otherwise to The State. You can still place a similar advertisement, different in form from the advertisement as it appears in The State, in any other media. For the best results, check your ad for accuracy the first day it appears. Call us as soon as possible should a change be needed. The State cannot make allowances for errors after the first day of publication. In the event of an error, a reimbursement will be given for the amount of space in which the error occurred. The State shall be under no liability for its failure for any cause to insert an advertisement.

ANNOUNCEMENTS

Misc

CENTRAL MIDLANDS

Central Midlands Hazard Mitigation Plan Call For Comments The staff of the Central Midlands Council of Governments seeks public comment and input on the update of the regional risk assessment and natural hazard mitigation plan. A public meeting will be held at the offices of Central Midlands Council of Governments on August 30st 2016 from 6:00 PM to 7:30 PM. The public may access the plan draft by visiting our website (www.cmcog.org) and searching for "Press Releases". A physical copy is also available for review at the offices of the Central Midlands Council of Governmts on 236 Stoneridge Drive, Columbia, SC 29210.

The purpose of this plan update is to meet the requirements of the Disaster Mitigation Act of 2000 by helping to make the local governments in the region more prepared and resistant to the effects of natural hazards. The plan details the nature of the most significant natural hazards threatening local governments in the region. It contains hazard mitigation goals and strategies that address the natural hazard priorities of many of the local governments in the region. After public comments are addressed, local governments may choose to pass a resolution to adopt the updated regional plan, making them eligible for hazard mitigation grants. It will also involve said local governments in more detailed record keeping on the occurrence and cost of natural hazard events as well as a process to update and revise the plan periodically.

For further information and comments on the draft plan update, individuals may attend the public meeting or contact Mr. Guillermo Espinosa at Central Midlands Council of Governments, by close of business hours on August 31st, utilizing the information below.

Guillermo Espinosa
Phone (803) 744-5126
Email gespinosa@cmcog.org

EMPLOYMENT

Automotive

New And Used Car Manager
The Sales Manager has the opportunity to lead a sales team to create an exceptional experience
for customers. This role is responsible for selecting, training, coaching, developing and retaining the
very best Sales Associates for the store and driving a high-level of performance among the sales team to increase market share, achieve targeted unit sales and profit margins while delighting every
Customer along the way. Ford experience a plus but not a must.
Who Would I Interact With?
This position interacts daily with Customers, Sales Associates, other Managers, Financial Services
Managers, professionals and support staff, just to name a few.
How will I know if I am successful?
The performance of a Sales Manager is measured by achieving:
- Targeted unit sales and gross profit
- Targeted Associate retention
- Targeted Customer Satisfaction Index
- What are the requirements for this job?
- High School diploma or equivalent
- Proven success in auto retail sales
- Proven leadership ability to mentor and train others
- Ability to set and achieve targeted goals
- Ability to drive an exceptional Customer experience
- Demonstrated communication and interpersonal skills
- Organization and follow-up skills
- Experience and desire to work with technology
- Valid in-state driver's license and have and maintain
an acceptable, safe driving record **Call 706-831-4016 Fax 706-654-0982 Email cmcombs620@gmail.com**

General Business

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Beaufort Camden Charleston
Columbia Florence Hampton
Hollywood Moncks Corner

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803-731-0656
info@wonderfulbeginnings.info

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1984 Dodge Ram 1500 windshield $45 465-7840

30 Amp Rv Cord 25' Detachable. $50 803-957-8903

Desk Chair mauve/burga
dcphillips1973@gmail.com

Dorm Sz Frig/Frzr Seam
cond. $95 803-359-8618

Dresses Square Dance
Ladies Sm-Med $25 803-81

VI. Meeting Documents

CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

March 10th, 2016

PLEASE SIGN IN

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

March 4th, 2016

PLEASE SIGN IN

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan
for the Central Midlands Region of South Carolina

March 2nd, 2016

PLEASE SIGN IN

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

March 1st, 2016

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

February 3rd, 2016

PLEASE SIGN IN

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan
for the Central Midlands Region of South Carolina

February 2, 2016

PLEASE SIGN IN

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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

January 5, 2016

PLEASE SIGN IN

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Donald Kunish	Richland County	Donald.Kunish@tetratech.com
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Guillermo Espinosa	CMCOG	gespinosa@cmcog.org

CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

February 5th, 2016

PLEASE SIGN IN

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Kevin McLaughlin	SCDOT	mclaughlkr@scdot.org
Don Hurst	City of Newberry	dhurst@cityofNewberry.com
Chris Monson	Assessor	cmonson@newberrycounty.net
Chad Teague	PTC	teague.c@ptc.edu
Tommy Long	MEM	
Guillermo Espinosa	CMCOG	gespinosa@cmcog.org

NEWBERRY COUNTY EMERGENCY SERVICES
SIGN IN ROSTER
EVENT: HAZARD MITIGATION PLAN UPDATE
FEBRUARY 5, 2016

	NAME	DEPARTMENT/AGENCY	TIME IN	EMAIL ADDRESS
1	Tommy Long	NCEM	8:50	
2	Kevin Malaughlin	SCDOT	8:55	malaughlkr@scdot.org
3	Matt DeWitt	City of Newberry	9:00	mdewitt@cityofnewberry.com
4	Roy McClurkin	City of Newberry	9:00	rmcclurkin@cityofnewberry.com
5	Don Hurst	City of Newberry	9:00	dhurst@cityofnewberry.com
6	CHRIS MONSON	ASSESSOR OFFICE	9:00	CMONSON@NEWBERRYCOUNTY.NET
7	Mac Bartley	City of Newberry	9:05	mbartley@cityofnewberry.com
8	Andrew Phillips	SCEMD	9:00	aphillips@emd.sc.gov
9	PAT PATTERSON	SCEMD		ppatterson@emd.sc.gov
10	Chad Teague	PTC	9:07	teagae.c@ptc.edu
11	Guillermo Espinosa	CMCOG	8:50	gespinosa@cmcog.org
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CENTRAL MIDLANDS
Council of Governments

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

February 18th, 2016

PLEASE SIGN IN

Name	Representing	Email
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Phyllis Watkins	FCEMD	phyllis.watkins@fairfield.sc.gov
Hubert M. Rentz	mid. County water	midcountywatercompany@gmail.com
Guillermo Espinosa	CMCOG	gespinosa@cmcog.org

All Hazard Risk Assessment and Hazard Mitigation Plan for the Central Midlands Region of South Carolina

August 30th, 2016

PLEASE SIGN IN

Name	Representing	Email
Guillermo Espinosa	CMCOG	

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VII. Templates

VII – A. Mitigation Strategy Template

Activity	***Type of Hazard***	***Responsible Department***	***Priority (1 highest, 3 lowest)***	***Goals Addressed***	***Finance Source***	***Cost***	***Status***	***Timeframe***

VII – B. Plan Adoption Letter Template

All Natural Hazards Mitigation Plan Adoption Resolution

Resolution # _____ Adopting the All Natural Hazards Risk Assessment and Mitigation Plan for the Central Midlands Region of South Carolina

Whereas, (_____) recognizes the threat that natural hazards pose to people and property; and
Name of local government

Whereas, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

Whereas, an adopted all hazards mitigation plan is required as a condition of future grant funding of mitigation projects; and

Whereas, (_____) participated jointly in the planning process with the other units of
Name of local government

government in the Central Midlands region of South Carolina to prepare an all hazards mitigation plan;

Whereas, (_____) is aware that revision and updating of the plan is critical for active and
Name of local government

effective hazard mitigation and that (_____) will monitor and record hazard related data
Name of local government

and events that can be used to update the all-natural hazards mitigation plan;

Now, therefore, be it resolved, that the (Name of governing council), hereby adopts the update to the All Natural Hazards Risk Assessment and Mitigation Plan for the Central Midlands Region in its entirety as an official plan and will undertake annual recording of hazard events, their impact duration and cost.

Be it further resolved, that the Central Midlands Council of Governments, accepting the All Natural Hazards Risk Assessment and Mitigation Plan from the Central Midlands Regional Risk Assessment and Hazard Mitigation Committee, will submit on behalf of the participating counties and municipalities the adopted All Natural Hazards Plan to the Federal Emergency Management Agency officials for final review and approval.

Passed: (_____)
Date

Certifying Official (_____)
Typed Name and Signature of Chief Administrative or Elected Official

VII – C. Plan Update Review Template

Questionnaire for Six-months and Annual Update of the _____ Action Plan:
(Insert Name of Local Government)

Type of Hazard Event	Date of Hazard Event	Estimate of Hazard Damages	Activities to Implement Plan	Date Activities Effected	Collaborative Activities to Implement Plan	New Obstacles to Implement Plan	Activities Undertaken to Resolve Obstacles to Plan Implementation

Name and title of person completing form_____

Date form completed_____

Signature of persons completing form_____