



Resiliency is a relatively new addition to local comprehensive planning requirements in South Carolina. Resiliency planning is intended to reduce the social, economic, and environmental risk to communities by requiring jurisdictions to consider the potential impacts of flooding and other natural hazards in context of all the other plan elements.

The South Carolina Office of Resiliency (SCOR) defines resilience as “the ability of communities, economies, and ecosystems within South Carolina to anticipate, absorb, recover, and thrive when presented with environmental change and natural hazards.” Added to the mandated list of comprehensive plan elements in 2020, cities and counties must include a resiliency element that considers the impacts of flooding, high water, and other natural hazards on residents, communities, institutions, businesses, economic development, public infrastructure and facilities, and public health, safety, and welfare. In addition to an inventory of existing resiliency conditions and risks, the element promotes resilient planning, design, and development through coordination with adjacent and relevant jurisdictions and agencies.

The Resiliency Element provides the context for understanding the existing risks and vulnerabilities of both natural and public systems to multiple disasters and disruptive events. This understanding informs the planning for coordinated efforts by the City of Camden to proactively prevent and mitigate loss, damage, and disruption.

11.1. Relationship to Other Plan Elements

Resiliency planning is closely linked to all other plan elements (Table 11-1). Integration of resiliency into the plan can create conditions that not only lessen the impact of disasters, but ease



and speed recovery after an event. Integration of resiliency into the comprehensive planning process also gives greater policy weight to mitigation and recovery in guiding local decisions on capital improvements and land use.

Table 11-1. Resiliency Connection to Other Plan Elements

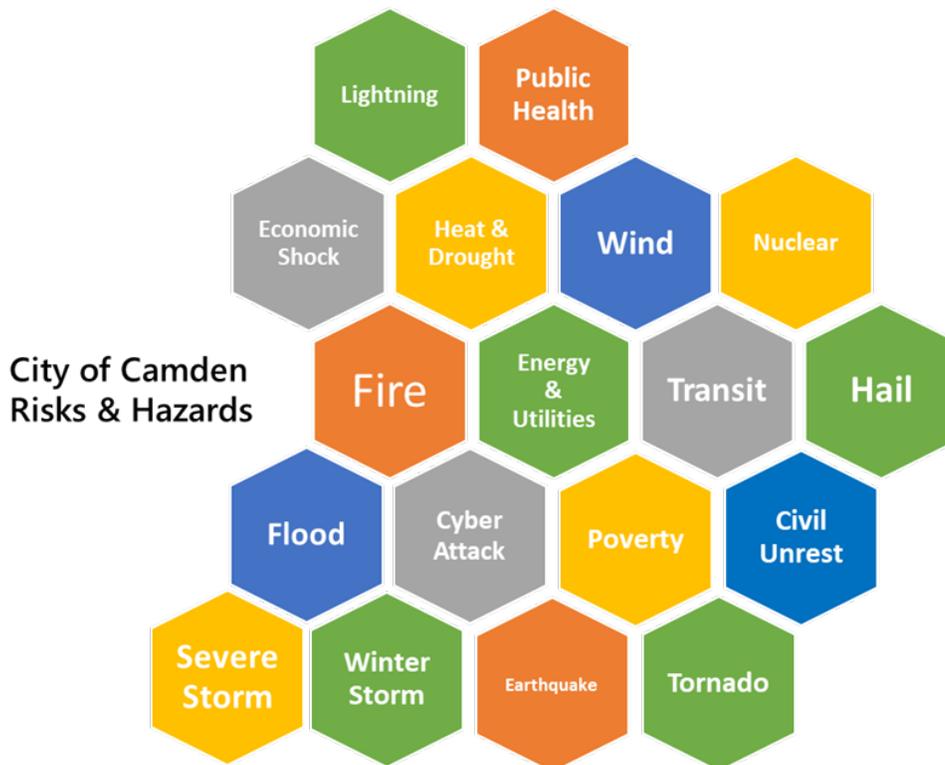
| PLAN ELEMENT | IMPACT ON RESILIENCY |
|----------------------|--|
| Population | <ul style="list-style-type: none"> • Identify number and location of vulnerable populations to anticipate preparation and recovery needs and target responses • Inform effective outreach to educate residents and businesses on risks, resilience, and recovery • Build neighbor connections and strong social networks to aid recovery |
| Housing | <ul style="list-style-type: none"> • Promote the provision of safe and sanitary housing • Monitor growth of housing development into the wildland-urban interface (WUI) |
| Cultural | <ul style="list-style-type: none"> • Inventory and protection of irreplaceable historic properties • Preserve role of historic and cultural resources in a diverse and stable local economy |
| Economic | <ul style="list-style-type: none"> • Direct new and expanded businesses to sites less vulnerable to hazards • Support economic diversification to help community weather economic downturns • Leverage workforce development assets to train residents for higher wage, high growth occupations and employment flexibility • Promote business continuity and preparedness |
| Natural Resources | <ul style="list-style-type: none"> • Identify, preserve, and enhance protective features of wetlands and flood plains • Identify forest management resources to mitigate the chance of wildfires • Identify and adopt flood plain management tools • Designate preservation and expansion of greenspace and greenways for hazard mitigation and energy conservation • Identify new green and blue infrastructure development opportunities |
| Community Facilities | <ul style="list-style-type: none"> • Locate critical facilities such as water and wastewater treatment facilities, stormwater management, and solid waste sites outside high-risk zones • Harden existing critical facilities and lifeline infrastructure • Integrate stormwater management and public greenspace expansion • Address post-disaster debris disposal • Ensure strategic and protected location of police/fire/EMS stations, healthcare facilities, and emergency operations centers to support response and relief efforts • Minimize service disruptions to utilities, energy, healthcare, and communication networks • Prioritize hazard mitigation projects and critical infrastructure repairs in capital project planning |
| Priority Investment | <ul style="list-style-type: none"> • Identify and strengthen readiness partnerships with surrounding jurisdictions • Steer development away from hazardous areas through capital facilities policies and investment • Include hazard mitigation and resiliency projects in capital improvements • Identify and mitigate flood hazards to adjacent properties due to publicly funded actions |
| Transportation | <ul style="list-style-type: none"> • Analyze existing and projected level of service for key roadways and ensure transportation system can withstand known hazards and function in disaster • Strengthen access to key services and facilities • Ensure roadway network will support evacuations and recovery response |



| PLAN ELEMENT | IMPACT ON RESILIENCY |
|--------------|---|
| Land Use | <ul style="list-style-type: none"> • Establish general pattern for location, distribution, density, and type of future development • Evaluate land development regulations to encourage and increase protection strategies for new development and redevelopment areas • Assess existing regulation processes for barriers to prompt recovery times • Consider development intensity and density in light of historic and future hazard risks • Guide growth and critical infrastructure away from high-risk, high-hazard locations • Preserve wildland-urban interface • Integrate disaster risk into land use and zoning decisions |

11.2. Conditions and Vulnerability Assessment

The Federal Emergency Management Agency (FEMA) defines community resilience as “the ability of a community to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions.” Hazards that can cause disruptions to local social, economic, and environmental health can be natural and man-made. Risks to the natural system of the community include weather events such as tornadoes, flooding, storms, and fire. However, public system shocks to a community can also have catastrophic impact. These hazards include disease outbreaks, cyber-attacks, toxic spills, terrorism, and energy outages.





11.2.1. Natural Systems Risks and Hazards

The City of Camden is more than 12 square miles in size, with a population of 7,788 residents. Camden is the county seat and the largest municipality in Kershaw County. The County has a population of 65,403 and a land area of 727 square miles that includes 16 square miles of water area. The population density of the City is 703 persons per square mile, while the County is more rural with a density of 90 persons per square mile. As discussed in the Housing and Population Elements, substantial residential growth in recent years, proximity to the fast growing Columbia Metro area, and easy access via Interstate 20, combined with the many cultural venues and abundant historic and natural resources make Camden an attractive alternative for individuals, families, businesses, and industries looking for an historic, small town setting.

The City of Camden lies within the Sand Hills Region just south of the Fall Line, a narrow transition zone between the Piedmont and the Upper Coastal Plain regions of the State. As part of the Upper Coastal Plain, Sand Hills topography ranges from fairly level to gently rolling hills with elevations ranging from 200 to 650 feet above sea level. Agriculture and forestry are important components of both the landscape and the economy of the Camden area. Large areas of prime agricultural lands and farmlands of statewide importance adjoin the City to the south along the Wateree River basin. These lands are home to many of the area's critical natural resources and provide valuable benefits including wildlife habitat, windbreaks, enhanced water quality, decreased ambient temperatures, groundwater recharge areas, mitigation of stormwater run-off and erosion, and open space.

Although rare, the City of Camden and Kershaw County experience a range of natural hazards including tornadoes, thunderstorms, flash flooding, drought, earthquakes, and wildfires. Natural hazards endanger the health and safety of community residents, jeopardize economic vitality, and imperil environmental quality. Overall County vulnerability to climate and natural disasters has been calculated across 11 hazard types (*Santee-Lynches Hazard Mitigation Plan, 2020*). Kershaw County is vulnerable to a number of natural hazards, ranking 14th highest statewide in overall natural hazard risk (*S.C. Hazard Mitigation Plan, 2023*).

Table 11-2. Summary of Natural Hazards Risk for Kershaw County

| HAZARD TYPE | S.C. HAZARD RISK SCORE | EVENTS | YEARS IN RECORD | RETURN PERIOD | ANNUAL CHANCE | STATE RANK |
|-----------------|------------------------|--------|-----------------|---------------|---------------|------------|
| Flooding | 0.11 | 22 | 58 | 2.68 | 37.29% | T-24 |
| Tropical Storms | 0.29 | 9 | 58 | 6.56 | 15.25% | 26 |
| Tornado | 0.25 | 12 | 58 | 4.92 | 20.34% | 24 |
| Winter Weather | 0.23 | 34 | 58 | 1.74 | 57.63% | 15 |
| Thunderstorm | 0.67 | 75 | 58 | 0.79 | 127.12% | 4 |
| Hail | 0.24 | 22 | 58 | 2.68 | 37.29% | 17 |
| Lightning | 0.07 | 21 | 58 | 2.81 | 35.59% | T-27 |
| Wildfire | 0.33 | 21 | 58 | 2.81 | 35.59% | T-12 |
| Earthquake | 0.45 | 1 | 58 | 59.0 | 1.69% | 1 |
| Drought | N/A | 8 | 58 | 7.38 | 13.56% | N/A |
| Extreme Heat | 0.40 | 0 | 58 | N/A | N/A | 28 |

Source: *Santee-Lynches Hazard Mitigation Plan, 2020; S.C. Hazard Mitigation Plan, 2023*



11.2.1.1. Flooding

Floods are potentially life threatening events that can inundate homes and businesses, damage roadways, and interrupt essential water, power, and sewer services. Flooding can also erode riverbeds, increase sediments and pollution in waterways, and clog water management systems. Floods are broadly classified into two categories. *General floods* are long-term events that may last for several days such as when the increase in water volume within a river channel causes an overflow onto the surrounding flood plain. *Flash floods* are caused by locally heavy rains in areas where water runs off quickly and moves at high speeds raising water levels by ten to 20 feet. Flash floods can cause severe damage, with the more forceful events capable of moving large debris, uprooting trees, rolling boulders, destroying buildings, and damaging bridges and roads. Flash floods can also be lethal, often rapidly flooding vehicles when bridges and roads are washed out. Recovery from floods can be a very costly and lengthy process. Increased development and surface runoff, use of impervious surfaces, and inadequate drainage systems can amplify flash flooding risk.

Average precipitation is lower in the Midlands than the rest of the State, with annual average rainfall only 39 inches at nearby Lake Wateree (*State Climate Summary, 2022*). The central region of the State experiences frequent thunderstorms that can also bring frequent heavy rains. These rains can contribute to multiple types of flooding – riverine and flash flooding, dam failures, and drainage problems – that can endanger life and property in the City of Camden and Kershaw County. As detailed in Table 11-2, there have been 22 loss-causing flooding events recorded in Kershaw County since 1960. The annual chance of flooding in the County is more than 37%. These floods caused bridge collapses, home evacuations, dam failures, and closed roads. Flooding events are projected to increase in coming years due to climate trends.

The County's topography, combined with its humid subtropical climate, makes it vulnerable to inland or riverine flooding. The Wateree River flows south from Lake Wateree, touching the westernmost border of the City of Camden as it bisects the western area of Kershaw County. Lake Wateree is located a few miles northwest of the City of Camden. A significant portion of the City of Camden could be impacted in the event of a failure at the Lake Wateree Dam, operated by Duke Energy, as well as many other smaller dams on tributary streams (*Santee-Lynches Hazard Mitigation Plan, 2020*).

Lake Wateree is the water source for the City of Camden and its residents and businesses. Covering 13,864 acres, the Lake is the largest water body in Kershaw County and a major recreational resource. The Lake was created by the damming of the Wateree River in 1920 for the operation of the Wateree Hydroelectric Station. Full pond elevation for Lake Wateree is more than 284 feet above sea level. Both the Lake and the Wateree Hydroelectric Station are owned and managed by Duke Energy. Duke Energy monitors and manages lake levels, water quality, and shoreline development to balance and protect fish habitat, public water systems, industrial and power generation intakes, recreation access, and scenic value. While Lake Wateree was constructed for the primary purpose of hydroelectric power generation, it also provides some flood control by reducing the severity of peak flood flows, along with recreational opportunities for area residents and visitors.



Wetlands and floodplains in the City of Camden and Kershaw County are protective natural features that can mitigate flooding loss to property owners when development is directed out of these areas. Riverine flooding occurs when an increase in water volume within a river channel causes an overflow onto the surrounding flood plain. Flooding along smaller creeks, tributaries, and the Wateree River, as well as flash flooding in low-lying areas due to ponding and inadequate drainage, are the most common causes of local damage. The areas of the County which are at the most risk to floods are the wetlands in the Wateree River Watershed just south of Camden and the area around Bethune, which is part of the Lynches River Water Shed. Public facilities most at risk in the County include the fire stations at Doby Mill, Antioch, Mt Pisgah, Beaver Creek, and Shepard. The emergency shelter at Lugoff-Elgin High School is also at risk. In terms of critical infrastructure, additional facilities at flooding risk include the electric power substation west of the Wateree River; the sewer treatment plant for Kershaw County on the Wateree River; and the Water Treatment Plant in the vicinity of Lake Wateree. The City of Camden is at a greater risk of flooding than most of the County due to its location next to the Wateree River and lower elevation in the western and southern portions of the City. Critical facilities in the City that are most at risk include: the Wateree River Wastewater Treatment Facility; the hospital, which is located near a tributary of the Wateree River; and the Emergency Shelter at Camden High School.

Flooding can also produce dangerous dam failures. There are more than 10,000 dams throughout South Carolina, including 2,500 federally and State regulated dams. The South Carolina Department of Health and Environmental Control (SCDHEC) has jurisdiction over dam safety. SCDHEC classifies dams based on safety hazards posed to people and property. A *Class I* dam failure will likely cause a loss of life or serious damage to homes, industrial and commercial facilities, important public utilities, and main highways or railroads. A *Class II* failure will not likely cause loss of life but may damage homes, industrial and commercial facilities, secondary highways or railroads, or cause interruption of use or service of relatively important public utilities. Although a *Class III* dam failure can cause minimal property damage, loss of life is not expected.

There are 173 dams within the Santee-Lynches Region, with Kershaw County having the highest number at 70 dams. Eight of the dams in Kershaw County are Class I (High Hazard) dams, 11 are Class II (Significant Hazard), and 53 are Class III (Low Hazard) dams. Most of the dams statewide and in the County are smaller, privately-owned earthen dams that are exempt from State regulation. It is estimated that there are more than 20,000 dams in this category (*SCDHEC State of the Dams Report, 2020*). Larger dams used for hydroelectric power generation are also exempt from State oversight, falling under the Federal Energy Regulatory Commission.

Most dams statewide were constructed prior to the creation of regulations. This also means that as many as 77% of dams statewide were built before 1980 and have exceeded their useful lifetimes (*SCDHEC State of the Dams Report, 2020*). There are fifteen "millpond" type dams throughout Kershaw County. These dams can be compromised by flash floods, earthquakes, and neglect, which can threaten safety and cause substantial water damage to property, as well as lead to additional failures to dams located downstream. A prior failure of the Kendall Mill Pond Dam in the City damaged businesses and caused four fatalities. Failures of these small pond dams have also been identified as a flash flooding risk in exceptionally heavy rains.



Statewide lake tests by the SCDHEC in 2018 revealed detectable levels of blue-green algae, or *microcystin*, in several lakes including Lake Wateree. Although recognized as a potent liver toxin and possible human carcinogen, the levels remained below public health thresholds. Tests have also found levels of *Lyngbya* in Lake Wateree. This algae produces a neurotoxin that is released when the plant is stressed or when the cell wall is broken. The neurotoxin poses a public health risk in higher amounts. This risk rises with changes in the pH levels of the Lake. These pH levels are lowered when water from dams further up the chain release water to ease flooding upstream or heavy rains raise the water levels in Lake Wateree. Scientists with the University of South Carolina continue to study and monitor this safety issue (*South Carolina Floodwater Commission Report, 2019*).

Although flooding can occur anywhere, flooding typically occurs in flood plains, also known as special flood hazard areas. A more detailed discussion of flood plains is found in the City's *Natural Resources Element*. Local governments plan for, determine, and supervise the use of land within their jurisdictions, making cities and counties the foundation of comprehensive flood plain management. The impetus for obtaining financial and technical assistance from the State and Federal government levels also originates with the local community. Planning is a crucial tool for minimizing future flood damage. Managing development can reduce losses by avoiding encroachment in flood-prone areas, protecting flood plain resources, and requiring building in ways that are resistant to flooding.

Kershaw County is a participant in the *Community Rating System (CRS)*. The primary goals of the CRS are to reduce flood losses, facilitate accurate insurance ratings, and promote the awareness of flood insurance. The County and the City of Camden also participate in the *National Flood Insurance Program (NIFP)* and carry out associated mitigation activities including continuing to control building in floodplains and maintaining flood ordinances. The City of Camden and Kershaw County both adopted *Flood Damage Prevention Ordinances* to protect human life, minimize property damage, and encourage appropriate construction practices to minimize losses due to flood conditions by requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction. These ordinances and additional flood mitigation measures are detailed in the *Natural Resources and Community Facilities Elements*.

11.2.1.2. Storms and Wind Events

The most frequent natural hazard experienced in Kershaw County is severe thunderstorms that can bring high winds, heavy rains, hail, and lightning. Thunderstorms, coupled with lightning and high winds, are common throughout South Carolina, particularly during the summer months. While frequent, they are typically low impact. The majority of the State experiences thunderstorm events at an estimated rate of 60 days per year. A thunderstorm is classified as severe when at least one of the following conditions occur: wind speeds exceed 58 miles per hour, tornadoes spawn, or hail exceeds 0.75 inches in diameter. Severe thunderstorms have the potential to cause injury or fatalities, damage residences and businesses, and interrupt utilities including power and communications. Key access routes can be blocked by downed trees and power lines, creating additional dangers.



These events are often the result of hurricanes and tropical cyclones that moved inland from the coast. Tropical storms can have broad inland impacts, with an average size of 300 miles in diameter (SCDNR, 2022). The annual hurricane season peaks in August and September in South Carolina as water temperatures and evaporation rates are highest. The National Hurricane Center notes that an average Atlantic hurricane season has 14 named storms, seven hurricanes, and three major hurricanes (NOAA, 2022).

While Camden's inland location generally provides a buffer from the direct force of hurricanes, the State's location on the Atlantic increases the probability of heavy rains and flooding generated by hurricanes and tropical storms that can impact inland communities. Between 1988 and 2020, one hurricane, three tropical depressions, and one tropical storm tracked through Kershaw County. Two of these tracked in close proximity to the City of Camden. In 1989, Hurricane Hugo took a direct path through southwestern Kershaw County, west of the City of Camden, creating severe flooding and winds in excess of 90 miles per hour, disrupted power, and blocked transportation routes due to downed trees. In 2004, Tropical Storm Francis spawned an F3 tornado in Kershaw County that destroyed several equestrian facilities and damaged other facilities. Annualized losses due to hurricanes and tropical cyclone activity in Kershaw County exceeded \$4.2 million between 1960 and 2020.

Under a HAZUS loss estimation model for another Hurricane Hugo-type event tracking along the same course, Kershaw County is estimated to experience a potential loss of \$5.9 billion in residential, commercial, and industrial buildings (S.C. Hazard Mitigation Plan, 2023). Most of these losses would occur in the City of Camden and the surrounding area. Based on recent event data, Kershaw County has a 30% future annual probability of a tropical cyclone at a frequency interval of 3.3 years (S.C. Hazard Mitigation Plan, 2023). This is the lowest probability of all four Santee-Lynches Counties and below the statewide probability of 38%. Such events exclude wind, lightning, and tornadoes that are reported separately.

All of Kershaw County is at risk from severe thunderstorms. The County ranks among the seven highest statewide in the number of annual severe thunderstorm warnings and the total warnings between 1986 and 2021 and more recently between 2015 and 2021. Kershaw County also ranks among the 15 counties in the State with the highest combined levels of social vulnerability and highest risk to severe thunderstorm events. The County ranks 4th highest among all 46 counties in thunderstorm risk, with a 127% annual chance for severe storms. According to the SHELUDS database, there were a total of 79 significant thunderstorm and wind events in Kershaw County during the period of 1960 to 2018. These storms caused \$19.2 million in damages, two deaths, and 33 injuries (Santee-Lynches Hazard Mitigation Plan, 2020).

Severe thunderstorms are complex weather events closely associated with other hazards such as lightning, wind, rain, and hail. The direct combined impact of these related hazards amplifies the full impact of severe thunderstorms on the City of Camden and Kershaw County. Lightning has a high frequency, which is attributed to the large number of strikes that can occur within a single thunderstorm event. As a product of thunderstorms, lightning can cause house fires, damage electrical systems, spark wildfires, and result in personal injury and death. There were 21 loss-causing lightning events recorded between 1960 and 2018 for Kershaw County that resulted in



one death and one injury. Additionally, \$1.2 million in property damage and over \$122,000 in crop damages were recorded.

Hail can accompany thunderstorms, tornados, and tropical systems and may occur year-round. Kershaw County ranks 17th highest among South Carolina counties for hail risk. Hail occurs primarily during spring thunderstorms from March through May. Hail events can be costly, especially for the agricultural sector. While most hail is generally the size of a pea, it can also be larger and capable of damaging property and killing livestock and people. The County's largest reported hailstone size of 2.75 inches occurred in Camden in 2011. There have been 22 damaging hail events recorded for Kershaw County that cumulatively resulted in nineteen injuries. These events caused \$4.75 million in property damage and nearly \$3 million in crop damage (*Santee-Lynches Hazard Mitigation Plan, 2020*).

Counted separately from tornadoes, wind is a leading loss-causing event in Kershaw County. High winds can cause widespread property damage and power outages due to falling trees and limbs. The County has experienced 226 total wind events with winds exceeding 58 miles per hour. All but three of these events were associated with thunderstorms. There were 14 injuries and one death associated with these events, along with more than \$1.27 million in property and crop damages (*S.C. State Climatology Office, 2022*).

11.2.1.3. Tornadoes

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes may form at any time of the year, but predominantly occur in the spring and early summer months. Tornado wind speeds range from 40 miles per hour to more than 300 miles per hour (*National Weather Service*). While tornado damage is generally the result of high winds and wind-blown debris, tornadoes are often accompanied by potentially damaging lightning or large hail. The destruction caused by tornadoes depends on the intensity, size, and duration of the storm. In addition to fatalities and injuries, tornadoes have the potential to damage homes and businesses, interrupt utility services and communication systems, and devastate a local economy. The most significant damage is typically to structures of light construction such as manufactured homes.

South Carolina ranks 23rd in the nation for annual tornado frequency, averaging 23 confirmed tornadoes each year between 2000 and 2019 (*State Climate Summary, 2022*). From 1990 to 2017 an annual average of 26 tornadoes were reported in South Carolina (*S.C. State Climatology Office, 2022*). The highest number of tornadoes typically occur in March through May, with a secondary peak in September due to tropical activity. In 2004, Tropical Storm Frances triggered a record 47 tornadoes statewide as it tracked through the Low Country, Midlands, and Pee Dee, causing over \$1.7 million in damage statewide, including Kershaw County.

Kershaw County ranks 24th among the State's 46 counties for tornado risk. Tornadoes have been responsible for 24 events and 35 injuries in the County since 1960. More than \$25.3 million in tornado damages have been reported countywide. Although more intense F3 and F4 events have hit the County, lower magnitude tornadoes are more frequent and occur in the spring. Of the 24 tornadoes on record in Kershaw County since 1960, nine were minor (F0), eight were moderate



(F1), five were classified as capable of *considerable damage* (F2), one had a *severe damage* magnitude (F3), and one caused potentially *devastating damage* (F4) as described in Table 11-3.

The most damaging tornado was recorded in the historic *Carolinas Outbreak* of 1984, one of the most destructive tornado outbreaks on record in North and South Carolina with 11 tornadoes touching down in each state. Kershaw County was hit by an F4 tornado in March 1984 that caused 31 injuries and approximately \$25 million in damage to property and timber. Two-inch hail was also reported with this event. In 1996, an F0 tornado briefly touched down north of Camden, taking down trees along its path. The following year, an F2 tornado passed through the City in a six-mile long path with winds up to 135 mph that destroyed one home, damaged others, and injured one person. Property damage for the event totaled \$225,000. The 2004 outbreak associated with Tropical Storm Francis spawned an F3 tornado in the City of Camden that caused one injury, demolished mobile homes, damaged equestrian facilities, and downed trees and powerlines. An F0 tornado with intermittent touchdowns over a three-mile path was also recorded east of the City during that storm event.

Table 11-3. Enhanced Fujita Scale for Tornadoes

| F-SCALE NUMBER | WIND SPEED | TYPE OF DAMAGE DONE |
|----------------|---------------|---|
| EF0 | 65 – 85 mph | 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 mph | Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken. |
| EF2 | 111 - 135 mph | 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 mph | 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 mph | Devastating damage. Well-constructed houses and whole frame houses completely leveled, cars thrown, and small missiles generated. |
| EF5 | >200 mph | 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. |

Source: S.C. Hazard Mitigation Plan, 2018

11.2.1.4. Fire

Although the term wildfire often has a negative connotation, it is a natural process that enables the environment to clear dead vegetation. A wildfire is defined by the South Carolina Forestry Commission (SCFC) as “any forest fire, brush fire, grass fire, or any other outdoor fire that is not controlled and supervised.” South Carolina averages 3,000 fires each year, one of the highest rates in the nation. These fires burn an estimated 18,000 acres annually. However, these numbers only reflect incidents handled by the Forestry Commission, which has the primary responsibility for



combatting wildfires in unincorporated areas of the State. Firefighting assistance is routinely provided by municipal and rural fire departments, the forest industry, and other agencies.

The height of South Carolina's wildfire season usually occurs from late winter through early spring, when vegetation is dead or dormant. Drought conditions increase the probability of wildfires by creating dry conditions, resulting in additional fuel loads. Other natural disasters such as tornadoes and hurricanes also produce additional fuel loads, in addition to blocking access and producing lightning and sparks from damaged electric and other utilities. The majority of wildfires in the State are the result of open burning of debris (47%), followed by incendiaries (23%). Debris burning includes any planned fire for burning trash, yard debris, construction waste, land clearing piles, or crop stubble, and from prescribed burning for forestry or wildlife management purposes. Other sources of wildfires include faulty equipment use (7%); careless smoking (3%); children playing with matches, lighters, and fireworks (5%); campfires (1%); carbon build-up on railroad tracks (1%); lightning (3%); and miscellaneous fires caused by negligence in using fireworks, structural fires ignited near wooded areas, or unattended warming fires (9%).

Kershaw ranks among the top 15 counties in the annual number of wildfires and is tied for 12th highest in wildfire hazard risk (*S.C. Hazard Mitigation Plan, 2023*). Wildfires occur an average of every 19 days in Kershaw County, but typically cause limited damage. Kershaw County experiences approximately 170 forest fires in a typical year (*Kershaw County Emergency Operations Plan, 2007*). Ninety percent of the fires were due to campfires, smoking, debris burning, arson, equipment, and children. Lightning caused 10% of the fires. The average loss in the county is less than ten acres, due in large part to effective observation coverage and prompt rural fire department response. The more rural and forested unincorporated area of Kershaw County is more vulnerable to wildfires than the City of Camden.

In the spring of 1966, Kershaw County experienced multiple wildfires as part of a statewide outbreak. The Bethune fire burned 8,340 acres over a period of four days. The West Wateree Fire started the following day, burning another 1,500 acres. The *Santee-Lynches Hazard Mitigation Plan* notes the County's more recent large fires burned approximately 1,000 acres in 1997 and 2,368 acres in 1985. The 1985 Red Fox Road Fire wildfire, started by a tree branch hitting a power line, was fueled by high winds and destroyed eight homes.

Wildfires not only destroy natural areas and wildlife habitat, but can destroy commercial timber, create structural fires that burn homes and businesses, interrupt utility service, and impact both water and air quality. As residential development pushes into previously undeveloped and forested areas, wildfires become a bigger threat to homes and lives. This area of *wildland-urban interface* is defined as any area where homes and other development meet what was previously "wild land." Suburban growth encroaches into more of these wildland interface areas each year statewide. Wildfires in these areas can quickly create structural fires that destroy homes and threaten lives. A structure fire is defined as any fire affecting any structure, commercial or residential, including residencies, businesses, outbuildings, or any other man-made structure.

Wildfires burn up to 30 homes in the State every year, with hundreds more directly threatened each fire season. The threat wildfires pose to homes and lives in South Carolina is increasing in tandem with population growth and residential development. To reduce the risk of wildfires, state law also requires that citizens notify the South Carolina Forestry Commission before burning



outdoors in unincorporated areas. This requirement applies to residential yard debris burns, burns for construction and land-clearing, and forestry, wildlife, and agricultural burns (also known as prescribed, or controlled, burns).

In an additional effort to address the growing risk of wildfires in these interface zones, the national Firewise USA® program was introduced by the USDA Forest Service and the National Association of State Foresters to assist communities in reducing wildfire risks at the local level. Neighborhoods near areas with higher wildfire risk can voluntarily complete a community wildfire risk assessment and improve the ignition resistance of homes following an action plan. Plans must be updated every five years to retain the designation. Of the 32 Firewise® Communities in South Carolina, 16 are located in the coastal Waccamaw region and 10 in the Appalachian region. Currently, Pine Creek in Kershaw County is the only Firewise® Community in the Santee-Lynches Region. Pine Creek joined the program in 2010.

11.2.1.5. Extreme Heat and Drought

Periods of high heat coupled with high humidity occur in South Carolina during the months of June through September. Hot weather is common during the late spring, summer, and early fall months. Statewide, there were 80 days of temperatures above 90°F and five days with maximum temperatures at or above 100°F in 2022. The entire County is susceptible to hot temperatures. The hottest recorded temperature in Kershaw County was 111°F in June of 1954. Extreme heat events pose a high public health risk for heat exhaustion and heat stroke. Vulnerable populations include seniors, individuals with chronic health conditions, lower income and homeless residents without access to adequate cooling, and those who are routinely exposed to outdoor working conditions. The number of high temperature days and the duration of heat waves are forecasted to increase statewide in the coming years.

Extreme heat is often linked to periods of drought. A drought is the lack of precipitation over an extended period of time that results in negative impacts upon hydrology, agriculture, biota, energy, and the economy. Drought conditions are determined and monitored by measuring precipitation, stream flow, soil moisture, and well levels. Unlike natural hazards such as storms and tornadoes, droughts are slow-onset disasters that can have lingering impacts for months or years. Drought can threaten supplies of food and water, as well as fuel wildfires, deplete fisheries, and impede energy production.

Drought is the second most costly weather and climate hazard affecting the United States, preceded only by tropical cyclones (*S.C. State Climate Office, 2022*). South Carolina experiences drought on an annual basis with conditions that range from *abnormally dry* to the more serious level of *exceptional drought* as measured by the U.S. Drought Monitor. Drought can begin in any season, with a number of factors such as extreme heat, wind, and evapotranspiration rates as influencing factors. The State receives adequate precipitation during normal years, but experiences high seasonal variability, with fall historically being the driest season. Periodic droughts are documented throughout South Carolina's climate history, with every decade since 1900 including three or more years of below normal rainfall.

Prolonged drought can pose a serious economic threat. This is a particular concern in Kershaw County, where agribusiness is one of three targeted economic sectors. The County ranks 7th



highest in the State for the total market value of agricultural products (*USDA, 2017*). The County's economic base is balanced by a significant agriculture, forestry, wood products, food processing, and outdoor recreation component that can be adversely impacted by drought conditions. Farmers and forestry operations are the most directly impacted by drought. Drought can amplify the spread of highly destructive diseases and pests such as the southern pine beetle, which increase the risk of wildfires.

The South Carolina Drought Response Committee has oversight responsibility for drought events. The State is divided into four water management areas for managing severe drought conditions. State and local responses are based on water levels or flow in river basins within the four management regions. Kershaw County is one of ten counties in the Northeast *Water Management Area*. The State's Drought Response Committee has developed a model ordinance to address water conservation needs for residential, public, commercial, and industrial uses in periods of drought (Table 11-4).

Table 11-4. South Carolina Model Drought Response Local Ordinance Measures

| DROUGHT INTENSITY | WATER CONSERVATION MEASURES | | |
|-------------------|--|--|---|
| | REDUCTION GOALS | DAILY CAPS | OTHER RESTRICTIONS |
| Incipient | Voluntary conservation | <ul style="list-style-type: none"> ▪ Identify/correct leaks | <ul style="list-style-type: none"> ▪ Halt new irrigation taps |
| Moderate | Overall (15%) Residential (20%) Commercial/industrial (15%) Institutional (15%) Irrigation (15%) | <ul style="list-style-type: none"> ▪ Individual - 65 gallons ▪ Household - 250 gallons | <ul style="list-style-type: none"> ▪ Limit serving of water in restaurants ▪ Maintain minimum water levels in scenic/recreational lakes, only to support aquatic life ▪ Cease water service to customers who fail to repair leaks |
| Severe | Overall (20%) Residential (25%) Commercial/industrial (20%) Institutional (20%) Irrigation (20%) | <ul style="list-style-type: none"> ▪ Individual - 55 gallons ▪ Household - 200 gallons | <ul style="list-style-type: none"> ▪ Stop serving water in restaurants ▪ Stop maintaining water levels in recreational lakes, except to support aquatic life ▪ Cease water service to customers who fail to repair leaks ▪ Limit golf course irrigation ▪ Limit commercial nurseries and new irrigated agricultural land ▪ Suspend planting or landscaping requirements in site design review |
| Extreme | Overall (25%) Residential (30%) Commercial/industrial (25%) Institutional (25%) Irrigation (25%) | <ul style="list-style-type: none"> ▪ Individual - 45 gallons ▪ Household - 150 gallons | <ul style="list-style-type: none"> ▪ Moratorium on new water service connections/water main extensions ▪ Reduce water system pressure ▪ Impose excessive water use rates and drought surcharge ▪ Enforcement with violations/fines |

Source: S.C. Drought Response Plan, 2023

The driest year on record for Kershaw County was 2001 with only 24 inches of total annual rainfall, well below the annual average of 47 inches (*S.C. State Climatology Office, 2023*). The most severe recent drought impacting the County occurred from 1998 to 2002. The three-year drought had severe statewide impacts on economic sectors in agriculture, forestry and tourism, as well as on



power generation, public water supplies, and freshwater fisheries. During this prolonged drought every county in the State reached extreme drought status, with economic losses surpassing \$1.3 billion. Shorter droughts with statewide impact occurred from 2007 to 2009 and again in 2011, with Kershaw County reaching sustained moderate drought status.

The number of drought days and the duration and frequency of drought events are expected to increase in the future. Water use restrictions prompted by prolonged drought can limit industrial and power production and irrigation of crops and livestock. The vulnerability of the City of Camden to a drought is amplified if conditions cause a drop in water levels in Lake Wateree, the City's primary source of water. Lower reservoir levels can lead not only to mandated water use restrictions, but can also impair water quality and create public health and safety risks for City residents.

11.2.1.6. Earthquakes

Earthquakes have the potential to damage homes and businesses, critical community facilities, transportation networks, utilities, and dams. Measured in terms of their magnitude and intensity, an earthquake is the motion or trembling of the ground caused by a sudden displacement of rock in the Earth's crust. Earthquakes can impact large geographic areas, causing devastating property damage, deaths, and injuries, and the disruption of the social and economic function of a community. Most property damage and earthquake related deaths are caused by the failure and collapse of structures due to the shaking of the ground. The level of damage depends on the amplitude and duration of the shaking, as well as any aftershocks that continue after the primary event.

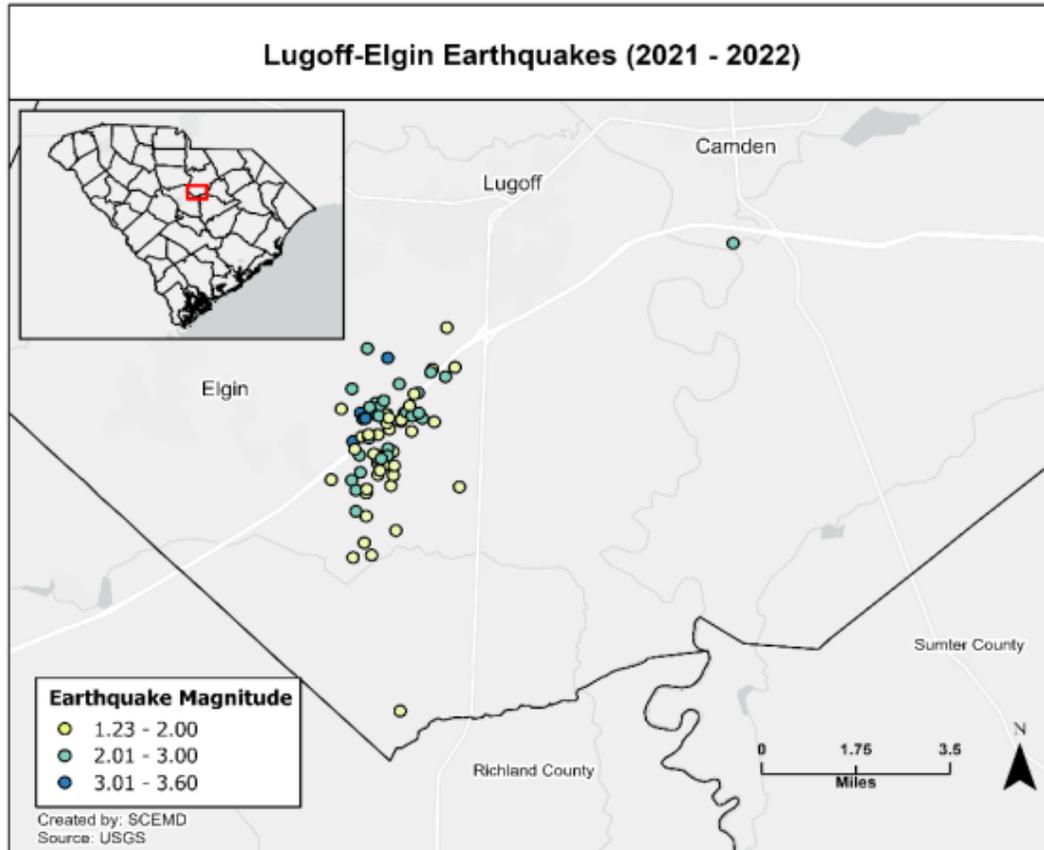
The State of South Carolina is extremely vulnerable to earthquake activity (*Comprehensive Seismic Risk and Vulnerability Study, 2001*). The S.C. Emergency Management Division (SCEMD) notes the entire State is considered to have a moderate to high risk for earthquakes. Earthquakes in South Carolina occur between ten to twenty times per year on average at a magnitude of 3 or less, with only two to five events actually felt (*SCEMD, 2022*). U.S. Geological Survey data reveals that 229 low-level events occurred in the State between 1974 and 2021. These earthquakes are generally less than a magnitude of 3.0 and cause little to no damage. Historically, most of the State's earthquake activity (60%) has been concentrated in the coastal plain region as part of the Middleton Place-Summerville Seismic Zone. The two most significant recorded earthquakes in South Carolina history were the 1886 Charleston earthquake, the most destructive earthquake of the century, and the 1913 earthquake in Union County.

The State's more recent earthquake activity since 2006 has been centered in Kershaw County with 56 events, Fairfield County with 20 events, and Richland County with 8 events (*S.C. Geological Survey, 2023*). The majority of Kershaw County earthquakes occurred in 2021 and 2022 and were concentrated along the Interstate 20 corridor between the Towns of Elgin and Lugoff (Map 11-1). Four of the 2022 events were over 3.0 magnitude, with the largest of these registering at 3.6 magnitude. In a 2022 *Report on Elgin-area Earthquakes*, State geologists classified this cluster of seismic activity as an "earthquake swarm." A swarm is a group of earthquakes located close to each other in time and space where the largest earthquake of the group is not significantly larger than the next largest. The recent swarm of earthquakes in near the City of Camden has increased attention to earthquake risk and preparedness in the State and elevated Kershaw County to a



county rank of second highest behind Dorchester County for annual earthquake activity. There have been more than 56 recorded earthquake events in the County between 1900 and 2022 (S.C. *Hazard Mitigation Plan, 2023*).

Map 11-1. Lugoff-Elgin Earthquake Swarm 2021-2022



Source: S.C. Emergency Management Division, 2023

Seismic modeling projects the worst case scenario for each county using the Modified Mercalli Intensity (MMI) Scale that ranges from I (Not Felt) to a high of X (Extreme) (Figure 11-1). Under the most adverse geologic conditions, Kershaw County has an MMI Scale of VIII (Severe). At this intensity level, “people have difficulty standing. Considerable damage to poorly built or badly designed buildings, old walls, spires, and other structures. Damage is slight to moderate in well-built buildings. Numerous windows are broken. Weak chimneys break at roof lines. Cornices from towers and high buildings fall. Loose bricks fall from buildings. Heavy furniture is overturned and damaged. Some sand and gravel stream banks cave in” (S.C. *Geological Survey*).



Figure 11-1. Modified Mercalli Intensity Scale

| Intensity | Shaking | Description/Damage |
|-----------|-------------|--|
| I | Not felt | Not felt except by a very few under especially favorable conditions. |
| II | Weak | Felt only by a few persons at rest, especially on upper floors of buildings. |
| III | Weak | Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated. |
| IV | Light | Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. |
| V | Moderate | Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop. |
| VI | Strong | Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. |
| VII | Very strong | Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken. |
| VIII | Severe | Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. |
| IX | Violent | Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations. |
| X | Extreme | Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. |

Source: USGS, <https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale>

11.2.1.7. Winter Weather

Winter weather can bring snow, ice, freezing rain, and extreme cold temperatures to any part of the State. These conditions can cause traffic accidents and power outages, close roads and bridges, ground flights, damage crops, freeze water lines, and close schools and businesses. Ice accumulations can create significant hazards on power lines, trees, sidewalks, and roads. These conditions can disrupt transportation, communications, and power for days. Most deaths associated with winter storms are indirect, such as fatalities from traffic accidents due to icy conditions or hypothermia from prolonged exposure to cold. Seniors, low income families, individuals with chronic health problems, and people experiencing homelessness are particularly vulnerable to cold temperatures. This exposure risk can be worsened as increased heating demand strains the power grid and results in temporary power losses through rolling blackouts. Agricultural production can be seriously impacted when temperatures remain below the freezing point for an extended period of time.

South Carolina averages at least one significant winter storm per year. The most expensive *Presidential Disaster Declarations* for South Carolina have been the result of winter storms in 2004, 2006, and 2014 (SCEMD, 2022). Kershaw County ranks 15th highest statewide in the risk of winter storms. Ice storms and winter weather occur nearly every year, with ice accumulations being the most frequent occurrence. The County's highest snowfall amount was 12 inches in 1914. A February 1973 snowfall in Camden set the County record for the highest 24-hour snowfall at nine inches. However, ice storms occur more frequently and bring more damage than snow.

The County experiences 1.04 winter weather days per year (S.C. Hazard Mitigation Plan, 2023). The record minimum temperature for Kershaw County was set on January 22, 1985, with a low of -3 degrees Fahrenheit. Property damage from extreme cold is generally from broken water pipes



and motor vehicle accidents, however periods of frost and freeze can cause significant damage to agricultural production. Twenty-five loss-causing winter weather events have been recorded in Kershaw County since 1960, including 12 winter storms, seven ice storms, and six other winter weather-related events (*S.C. State Climatology Office, 2023*). There were two injuries related to these events.

11.2.2. Public Systems Risks and Hazards

Disasters related to public systems and infrastructure can be accidental, such as chemical spills, or intentional, such as biological or cyber-attacks. Kershaw County could potentially experience diverse disruptions that range from mass vehicle accidents on Interstate 20 to nuclear emergencies associated with the V.C. Summer Nuclear Station in neighboring Fairfield County to the west or the H.B. Robinson Nuclear Station in Darlington County to the east. These events could pose many of the same threats to the lifelines and essential functions of everyday life in the City of Camden as the previously described natural hazards. Damage to public infrastructure, disruption in public services, and public health risks can also be caused by natural disasters. For these reasons it is important to include an assessment of these risks to public systems in resiliency planning.

11.2.2.1. Transportation

Transportation is an essential community function. Highways and roads, bridges, railways, and aviation provide critical links for commerce, support services, education, medical care, and emergency assistance. Seventy percent of all freight tonnage is transported on the nation's highways in trucks (*South Carolina Statewide Freight Plan, 2020*). In South Carolina, trucking accounts for an even larger modal share at 81%, or 375.1 million tons. Rail transport comprises the second largest modal share statewide at 14%, or 63.2 million tons. A structurally sound and operable transportation network is also essential to rapid disaster recovery after an event. Transportation corridors can also be the scene of disasters including mass vehicle crashes, plane crashes, train derailments, and hazardous waste spills. As noted in the State's *Hazardous Materials Plan*, growth in industry and the highly traveled network of interstate highways and railways in South Carolina have created new vulnerabilities to hazardous material releases from both stationary sites and transportation sources.

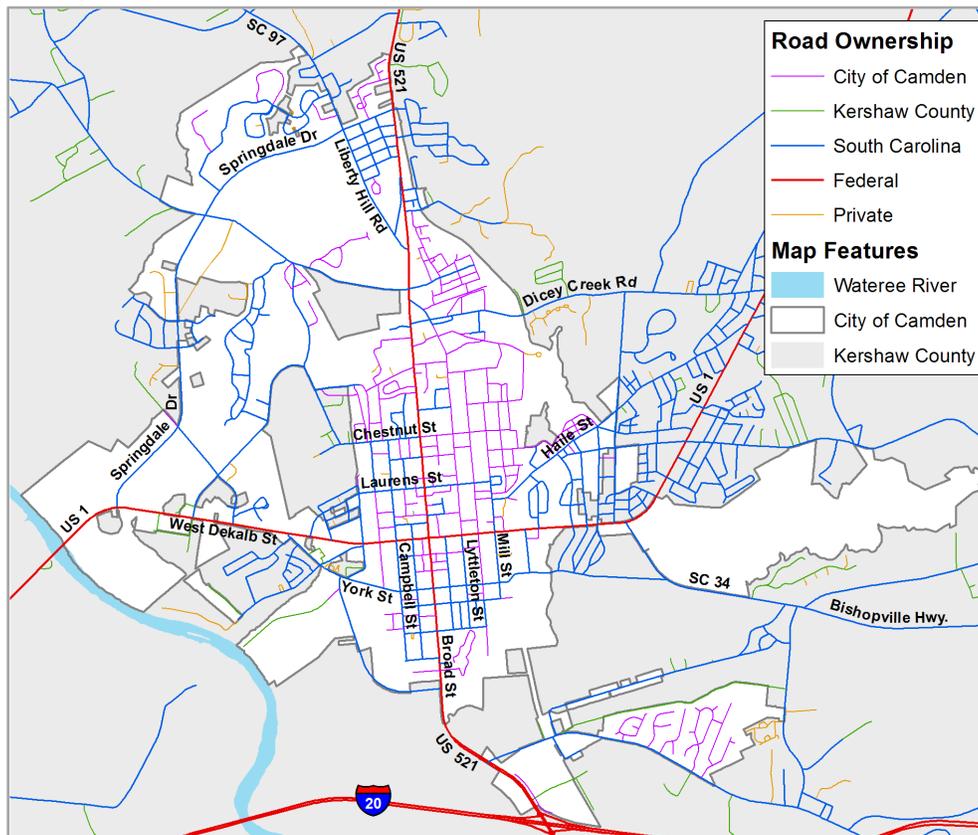
Kershaw County has a transportation network consisting of major highways, an airport, and cargo/passenger railroads. Of the nearly 1,678 miles of roads within Kershaw County, more than 100 miles are within the City of Camden. The City's strategic location along Interstate 20 has provided an attractive intermodal freight network access for existing and prospective industries. U.S. Highway 521 (Broad Street) provides access to areas north of Camden and to Interstate 20 to the south, while U.S. Highway 1 (Dekalb Street) provides east/west access to neighboring towns and counties. This network of Interstate, major highways, and primary rail lines also make Kershaw County and the City of Camden susceptible to hazardous materials incidents due to vehicle accidents and train derailments (Map 11-2).

Interstate 20 runs along the southernmost boundary of the City and is accessed through the U.S. Highway 521 (Sumter Highway) exchange. Interstate 20 is one of five primary interstate freight corridors through South Carolina that are part of the National Highway Freight Network. The



Kershaw County segment of I-20 is used to transport an estimated 25 million tons of freight annually (*South Carolina Statewide Freight Plan, 2020*). By 2040, the total annual tonnage transported on this segment is projected to reach between 25 and 50 million. The segment of I-20 in Kershaw County had an average daily 2018 truck count of nearly 6,000. The major Federal and State highways that traverse the County also accommodate freight flows. Multi-vehicle accidents involving the transport of hazardous materials are growing concerns along this heavily traveled route as development and associated traffic increases. U.S. Highway 521 and U.S. Highway 1 in Camden and Kershaw County were used to transport up to one million tons of freight (*South Carolina Statewide Freight Plan, 2020*).

Map 11-2. City of Camden Transportation Network



CSX Corporation operates one Class I railroad line that bisects Kershaw County. The CSX rail line runs east to west through the City and the towns of Bethune and Elgin. This CSX rail line is part of the “Hamlet Subdivision” of the larger Florence service lane that forms a strategic corridor for the southern freight market area. The route provides connections to Columbia and Florence in South Carolina; Raleigh, North Carolina; the S.C. Inland Port in Greer; and major port facilities in Wilmington, Charleston and Savannah. Kershaw County is also served by Amtrak passenger service on its Silver Service/Palmetto line.

Major South Carolina commodities for CSX include petroleum and coal products, lumber and wood products, chemicals and allied products, coal, and miscellaneous mixed shipments (intermodal). Chemicals comprise 23% of the shipped volume on CSX lines in South Carolina (CSX, 2021). The percentage of hazardous materials carloads moved through South Carolina in 2022



include Flammable Liquids (31%), Miscellaneous Hazardous Materials (26%), Corrosives (24%), and Explosives and Gases at 5% each (CSX, 2023). Oxidizing Substances and Organic Peroxides comprised 6% and Poisonous Toxic and Infectious Substances made up 4% of hazardous carloads. Radioactive Materials and Other Flammable Substances accounted for less than one percent.

State forecasts show the transport of chemicals and allied products via rail will increase from about 20% of rail freight tonnage to more than 25% of tonnage by 2040. A 1991 derailment near Camden of an Amtrak passenger train carrying approximately 400 passengers resulted in eight fatalities and 85 injuries. The major rail accident was described as one of the worst accidents in Amtrak history and challenged the response capabilities of local governments (*Kershaw County Emergency Operations Plan, 2007*). This accident was preceded by an Amtrak crash in 1984 caused by a collision with a truck near Elgin. In 2017, a derailment occurred near Lugoff when a train collided with a bulldozer that had been purposely placed on the tracks. Several cars containing hazardous materials and diesel fuel were among the twelve cars that derailed. Following high profile derailments such as Graniteville, S.C. in 2005 and East Palestine, Ohio in 2023, there has been increased scrutiny of rail safety and hazardous materials shipments nationwide.

11.2.2.2. Energy and Utilities

Electricity, water, wastewater, communication, and fuel are lifeline systems that are vital to the continued functioning and recovery of a community. Damage to these systems in a disaster or attack has a direct effect on the health and safety of residents. A growing reliance on electricity for energy increases this vulnerability and strain on the electrical grid. Extended power outages can cut off access to fuel supplies, limit medical care, hamper communications, damage equipment, close employers and schools, and endanger residents. The pace of community recovery following a major disaster is typically a function of the ability to restore these basic utility lifelines.

Electricity is the primary source of energy for City and County residents. In addition to natural disasters that can interrupt electrical power, the potential for other interruptions of the power grid on an even larger scale grows as corporate, government, and community services and systems become more interdependent. Known as *black sky hazards*, these outages can be caused by intentional electromagnetic interference (IEMI), an electromagnetic impulse (EMP), a geomagnetic disturbance (GMD) caused by the sun, and cyberterrorism. During a long-term power outage the South Carolina Office of Regulatory Staff serves as the lead state agency for energy, with individual utilities retaining a primary operational role in restoration efforts.

The U.S. Energy Information Administration (EIA) maintains a national database of major disturbances and unusual occurrences in electric systems by region. Through March of 2023, there were 17 such events reported nationwide, including one in neighboring Sumter County that was classified as “suspicious activity” that posed a “physical threat to its facility excluding weather or natural disaster related threats, which has the potential to degrade the normal operation of the facility.”

A 2022 study of the resiliency of the State’s electrical and natural gas infrastructure noted the interdependencies between electric power and other key infrastructure including water, wastewater, telecommunications, and transportation. These highly automated systems are



vulnerable to cyberattacks and power failures, as well as biological and chemical contamination. The study recommendations included the need to harden transmission and distribution systems with physical and structural improvements to lines, poles, towers, substations, and supporting facilities to make them less vulnerable to the damaging effects of storm and weather events. Long-term power outages can also be reduced with targeted undergrounding of distribution lines in appropriate circumstances areas based on the exposure.

11.2.2.3. Cybersecurity and Communications

Cyberattacks are identified as one of the primary threats to the nation's critical infrastructure (*U.S. Department of Homeland Security, 2022*). Automated control systems and the increased interconnectivity of computer and communication networks that support the efficient delivery of electrical power, natural gas, fuel, water, solid waste, financial services, medical care, education, public safety, telecommunications, and transportation systems also heighten the exposure and vulnerability of these systems. As a result, a significant cyber incident could substantially disrupt core services and cause economic loss statewide.

Cyberattacks have intensified in recent years, targeting essential infrastructure and services that range from municipal water treatment facilities to power grids and fuel pipelines. Attacks can be carried out by criminals holding system control and critical information hostage in a ransomware attack, domestic and international terrorist organizations seeking to cause disruptions, and by foreign governments. Whether intentional or accidental, FEMA classifies these events as "adversarial or human-caused." FEMA recommends elevating cyber risks as a category in local emergency preparedness planning. The SCEMD plan for cyber incident management outlines the entities involved and roles during a significant cyber event. The plan identifies thirteen priority areas for emergency support that can have physical impacts on lifeline sectors in a community. These include: transportation, communications, public works and engineering, firefighting, mass care, health and medical services, search and rescue, environmental and hazardous materials operations, energy, law enforcement, recovery and mitigation, agriculture and animals, and business and industry (*S.C. Emergency Operations Plan, 2022*).

Coordination with the private sector is also an important step. While utilities are a high visibility target, data shows the manufacturing sector receives double the number of cyberattacks as the construction, technology and retail sectors combined. The urgency and financial impact of shutdowns in this sector have led to a willingness to pay cybercriminals to quickly restore operations and reduce productivity losses. There is a need to build both public and private sector resilience against such attacks. This is especially important in Kershaw County where manufacturing is the second largest employment sector, employing nearly 3,000 residents (*S.C. Department of Employment and Workforce, 2023*).

Maintaining communications prior and during an event is a key lifeline for preventing and mitigating loss and in coordinating rescue and recovery efforts. Communications includes timely dissemination of alerts and warnings, collection and sharing of information and reports, uninterrupted surveillance of threatening conditions, fully functioning dispatch capability, and sustained 24-hour two-way radio, telephone/cellular, satellite and internet services (*S.C. Emergency Operations Plan, 2022*).



11.2.2.4. Hazardous Materials and Nuclear Radiation

Hazardous materials (HAZMAT) can be released through spills, explosions, leaks, and other incidents involving fixed facilities, roadway, rail, or nuclear facilities. They can also be used intentionally by terrorists or foreign adversaries. These events involving hazardous materials or radiation can prompt evacuations of homes and community facilities, force the closure of roadways and other infrastructure, and cause the contamination of water and food supplies. Releases can also harm ecosystems and contaminate air and water. Depending on the scope of the release and the toxicity of the materials, the cleanup can take days or years.

Facilities housing and using hazardous materials must report their inventories under the federal *Emergency Planning Community Right-to-Know Act* (EPCRA). This information is made available to states and local governments to help prepare and respond to potential releases. Nearly 4,500 facilities met this reporting requirement statewide, with more than a quarter of these (1,318 facilities) storing materials considered extremely hazardous substances. A majority (3,837) of these sites reported chemical inventories of more than 10,000 pounds. Although the majority of these facilities are clustered along the Interstate 85 corridor, reporting sites are also located in both rural and urbanized areas throughout South Carolina (*S.C. Emergency Operations Plan, 2022*). The primary risk is an accidental release during the transport of these hazardous materials, particularly along the State's interstates, highways, and rail lines.

In addition to potential transportation related incidents involving hazardous materials on Interstate 20, major highways, and railroads, Kershaw County has numerous sites where hazardous materials are stored, including facilities for both industrial and agricultural purposes. The national *Toxics Release Inventory* (TRI) tracks the management of toxic chemicals that can pose a threat to human health and the environment. Regulated industries must report how much of each toxic chemical is recycled, combusted for energy recovery, treated for destruction, and disposed of or otherwise released.

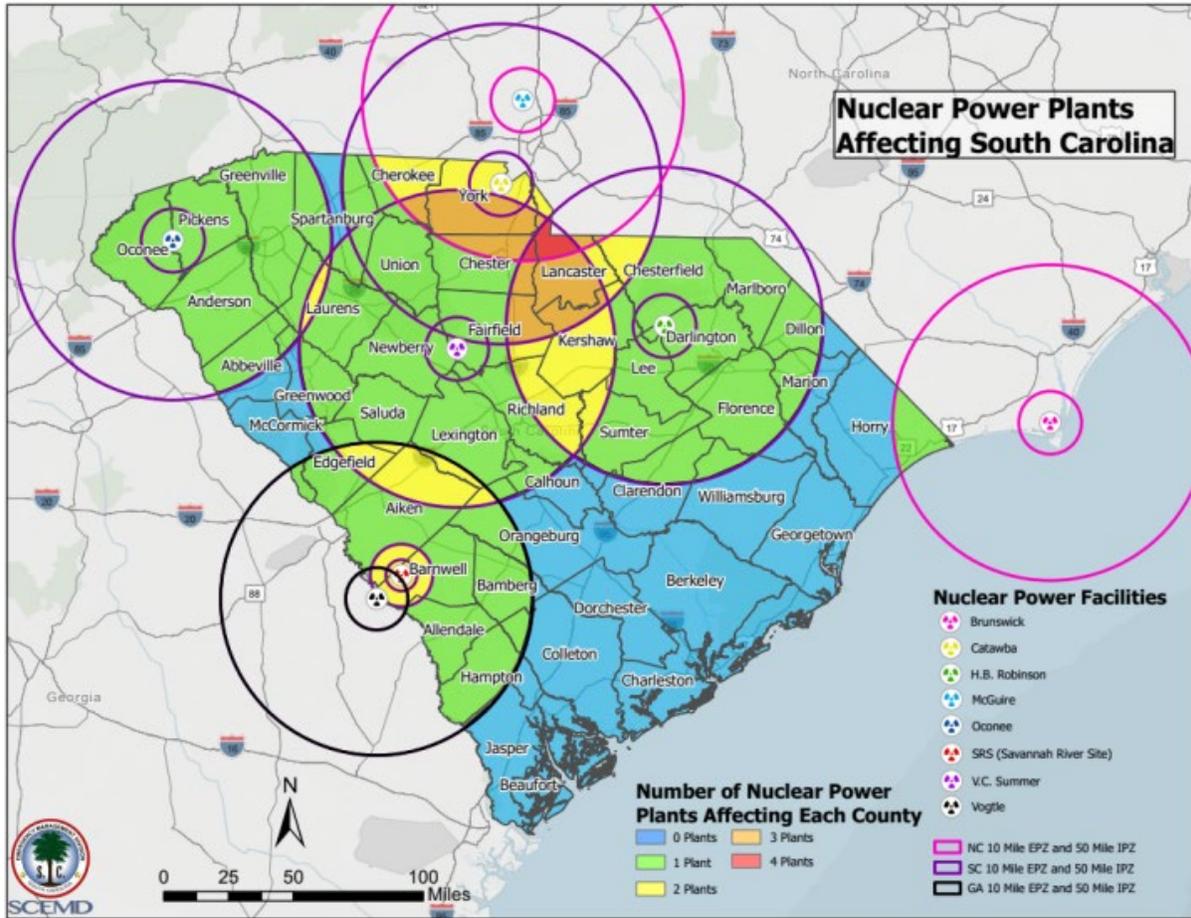
South Carolina ranks 10th highest out of 56 states and territories based on total releases per square mile. Countywide there are eight regulated industries in the TRI reporting system. Two regulated facilities are in the City of Camden, Denka America (metals fabrication) and GE Appliances/Haier Company (appliances manufacturing). Nearly 100% of toxic materials were handled through offsite and other disposal means. While no releases to land or water were reported, the top five chemicals released into the air consisted of 96% sulfuric acid, 2% copper compounds, 1% diisocyanates, and less than one percent lead compounds.

Radiological release from nuclear power plants and the transport of radiological waste poses an additional risk to Camden and Kershaw County. South Carolina is the nation's third largest producer of nuclear power. Nuclear power provides well over half (54%) of the State's electrical energy production. There are four nuclear plants and the Savannah River Site in South Carolina and three nearby plants in bordering states. According to the *State Emergency Management Plan*, 41 of the State's 46 counties fall within the ten-mile or 50-mile Emergency Planning Zones (EPZ) of at least one nuclear power plant. More than 50% (2.5 million) of the State's population lives within a 50-mile EPZ. These zones are used to prioritize the health and safety of communities and residents from direct exposure in a radiological plume or exposure in the ingestion pathway that can contaminate air, water, and food supplies. The City of Camden falls within the fifty-mile



Emergency Planning Zones of the V.C. Summer Nuclear Station in neighboring Fairfield County and the H.B. Robinson Nuclear Station in Darlington County (Figure 11-2).

Figure 11-2. Nuclear Power Plant Emergency Planning Zones



Source: S.C. Emergency Management Division

There is approximately a one in 20,000 chance per year that a nuclear power plant will experience a serious accident (*S.C. Hazard Mitigation Plan, 2023*). Emergencies at nuclear power plants are classified at one of four levels based on the risk and nature of the incident. Classifications range from the lowest risk of an “Unusual Event” to the highest public risk of a “General Emergency” as described in Table 11-5. Evacuations and shelter-in-place orders for the City would be generally warranted only in a General Emergency situation.



Table 11-5. Nuclear Facility Emergency Classifications

| CLASS | EVENT DESCRIPTION |
|---------------------|--|
| Unusual Event | A situation is in progress or has occurred that could potentially degrade the plant's level of safety or indicate a security threat to the facility, but is considered a minor event not serious enough to cause a release of radioactivity outside the plant. The first response steps are being carried out with operations staff at the ready. State and local officials are notified. |
| Alert | Conditions that are affecting or could affect plant safety or a security event that could threaten site personnel or damage to site equipment is in progress. Release of radioactivity is anticipated to be small and well below levels that could pose a danger to the public. Emergency personnel and support groups are placed on "standby" and offsite authorities are notified of plant status. |
| Site Area Emergency | Events are in progress or have occurred that cause actual or likely major failures of plant functions that protect the public. There may be a radioactive release at or around the plant area, but below EPA protective action guides (PAG) exposure levels. Monitoring teams are dispatched and emergency response centers/evacuation sites are readied. Area residents will be notified through IPAWS-WEA text messages to tune in to Emergency Alert System (EAS) stations. Public safety officials may direct citizens to take protective actions. |
| General Emergency | An uncontrolled release of radioactivity is occurring or is likely to occur with substantial reactor core damage or loss of facility control. Offsite releases can be reasonably expected to exceed EPA PAG exposure levels. Citizens will be alerted by EAS stations with actions to be taken. |

Sources: Dominion Energy, 2022; Nuclear Regulatory Commission, 2021

11.2.2.5. Public Health and Social Vulnerability

Disasters can also have short and long-term health impacts on the population. Loss of power to medical facilities, medical supply chain and personnel shortages, inability to access medical records, contamination of water supplies, exposure to toxins or radiation, longer term mental health issues, and disease outbreaks are just some of the potential public health risks and impacts of a disaster. Disasters and accidents can have an even greater impact on vulnerable populations including the elderly; persons with low income, are chronically ill, or homeless; and those with disabilities. The Centers for Disease Control defines social vulnerability as "the potential negative effects on communities caused by external stresses on human health. Such stresses include natural or human-caused disasters, or disease outbreaks."

A mass casualty incident is of a significant magnitude that can overwhelm hospitals and other health care services and deplete supplies, equipment, and pharmaceuticals. Mass casualty events can be immediate or sudden, such as a crash or explosion, or can develop over a sustained period as with a pandemic. The COVID-19 pandemic elevated the risk of an infectious disease outbreak in emergency response planning. As experienced with COVID, public health emergencies can occur with little or no notice and interrupt essential community functions. Diseases can cause hospitalization and death to humans, disrupt community services and businesses through widespread absenteeism, and strain medical resources. This can adversely impact the economy, shuttering businesses and creating shortages of food and basic products. The global reach of South Carolina's business, tourism, energy, and other economic sectors contribute to high levels of risk for infectious disease and other public health emergencies (S.C. *Emergency Operations Plan*, 2022).



Natural and man-made hazard events can quickly overwhelm communities with limited health care workforce and facility capacity. Kershaw County is a federally designated *Medically Underserved Area* (MUA) for portions of the County, including the City of Camden. Kershaw is also a *Health Professional Shortage Area* (HPSA) for primary medical care and dental care among low income residents and for mental health care among all County residents (SCDHEC, 2023). This designation applies to the entire County including the City of Camden. Shortage areas are designated geographic areas, special populations, or facilities that have shortages of primary medical care, dental, or mental health providers. Low income, disabled, elderly, homeless, and chronically ill populations with health issues can be particularly vulnerable and disproportionately affected in disaster situations.

The FEMA *National Risk Index* defines risk as “the potential for negative impacts, because of natural hazard.” The index also notes that “community resilience is the consequence reduction component and uses demographic characteristics to measure a community's ability to prepare for, adapt to, withstand, and recover from the effects of natural hazards.” Social vulnerability ratings refer to the ability of a community to prepare for, respond and recover from the stresses of hazardous events.

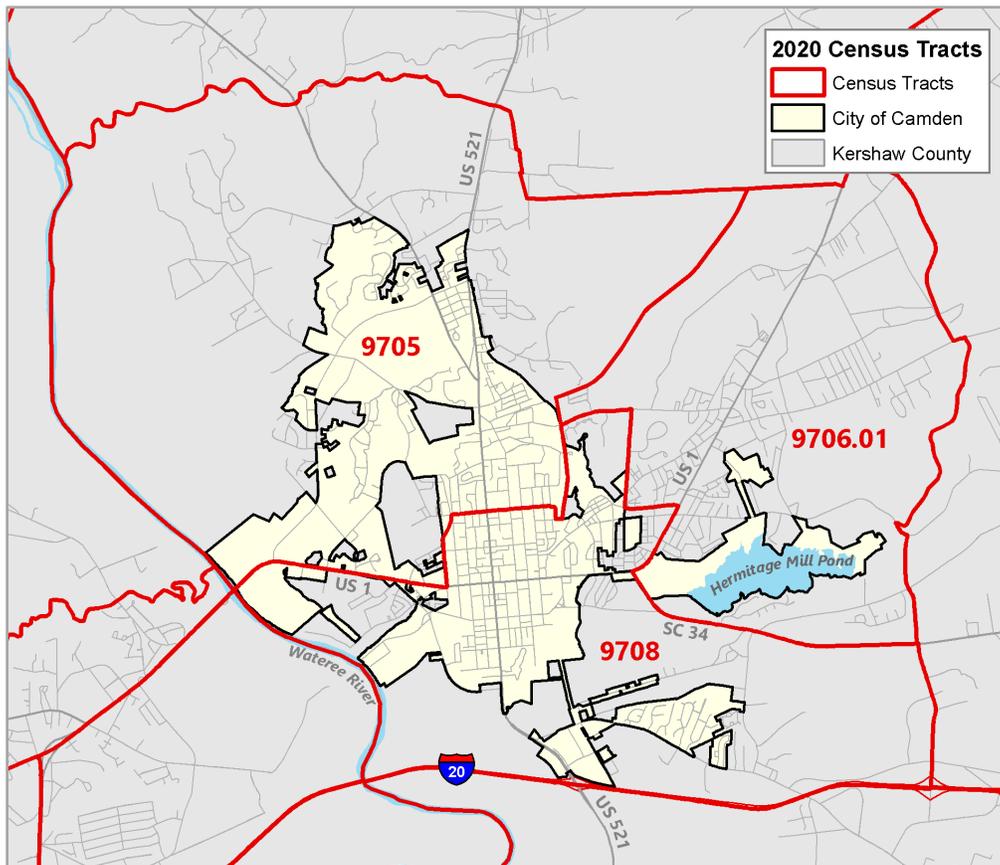
As detailed in Table 11-6, Kershaw County has a lower overall *Weather and Climate Combined Risk Score* of 13.74, lower than the State at 15.35, but higher than the national score of 13.30 (*National Centers for Environmental Information, 2023*). The FEMA *National Risk Index* Social Vulnerability ranking of 48.8 indicates that special populations in Kershaw County have a *Relatively Moderate* susceptibility to the adverse impacts of natural hazards when compared to the rest of the United States. The County population is more vulnerable than 49% of counties nationwide and no South Carolina counties have a lower social vulnerability.

Although the FEMA Index does not include municipalities, detailed data by Census tract is available. Using the three Census tracts that cover the City of Camden provides a reference for assessing the overall hazards risk and vulnerability of the City (Map 11-3). Census Tract 9705 has a population of 6,087 and encompasses the northern portion of the City, bounded by the Wateree River to the west, and West DeKalb and Chesnut Streets to the south. Tract 9706.01 has a population of 2,071 and includes a smaller eastern portion of the City. The tract is bounded by the CSX rail line to the northwest, Park Road on the north, U.S. Highway 34 to the south, and Hasty Road and U.S. Highway 1 to the west. With a population of 6,303, Census tract 9708 covers the southern portion of the City and is bounded by DeKalb and Chestnut Streets to the north, I-20 to the south, the Wateree River to the west and Dr. Humphries Road to the east. All three tracts include unincorporated areas of the greater Camden area.

As shown in Table 11-6, the *Weather and Climate Combined Risk Scores* for the three tracts are significantly higher than the State score, ranging from 17.92 (Tract 9706.01) to 22.15 (Tract 9708). Census tract 9708 has the County's highest Social Vulnerability score in the FEMA Index at 93.94. Residents of this tract are more socially vulnerable to hazard events than those in 94% of U.S. Census tracts. Tracts 9706.01 and 9705 have social vulnerability scores of 74.21 (*Relatively High*) and 59.35 (*Relatively Moderate*), respectively.



Map 11-3. City of Camden 2020 Census Tracts



Source: U.S. Census Bureau, 2020 Census

The *Social Vulnerability Index* (SoVI®) developed by the University of South Carolina uses 29 socioeconomic variables to assess “social vulnerability that deemed to contribute to a community's reduced ability to prepare for, respond to, and recover from hazards.” Using this range of federal environmental and economic criteria, the County and the three Census tracts that cover the City are less vulnerable. The County's overall Social Vulnerability Index (SoVI®) Score of nearly 36 is also lower than both the national score of 38.35 and the State score of 40.14. Tract 9708 had the highest SoVI® score among the City's census tracts with a score of nearly 35.

Tract 9706.01, located in the eastern portion of the City, is designated as one of only two *Disadvantaged Community* (DAC) Census tracts in Kershaw County by the U.S. Department of Energy. The second DAC tract is in Bethune (Tract 9701.00). The Department uses thirty-six (36) indicators that reflect fossil fuel dependence, energy burden, local environmental and climate hazards, and socio-economic vulnerabilities to calculate a cumulative burden score. To be eligible for the designation, a Census tract must have at least 30% of households classified as low-income and rank in the 80th percentile of the cumulative sum of the 36 indicators. These scores are increasingly used to prioritize federal investments in energy and other infrastructure resilience projects.



Table 11-6. Risk and Social Vulnerability Index Comparison for Kershaw County Census Tracts

| AREA/CENSUS TRACT | FEMA NATIONAL RISK INDEX SOCIAL VULNERABILITY | WEATHER & CLIMATE COMBINED RISKE (NCEI) | SOCIAL VULNERABILITY INDEX SCORE (SoVI®) | JUSTICE 40 DIS-ADVANTAGED COMMUNITY (DOE DAC) | LEADING POPULATION RISK FACTORS (DOE DAC) |
|------------------------------|---|---|--|---|--|
| City of Camden Tract 9705.00 | 59.35 | 21.73 | 34.45 | NO | Elderly, mobile homes, cancer risk, no internet, transportation cost, job access |
| City of Camden Tract 9706.01 | 74.21 | 17.92 | 32.37 | YES | Energy burden, mobile homes, no internet, low income, single parent, disabled population, low education, housing costs, uninsured, unemployed, cancer risk |
| City of Camden Tract 9708.00 | 93.94 | 22.15 | 34.70 | NO | Energy burden, cancer risk, no internet, mobile homes, elderly, low income, no vehicle, single parent, uninsured |
| Kershaw County | 48.80 | 13.74 | 36.54 | N/A | -- |
| South Carolina | -- | 15.35 | 40.14 | N/A | -- |
| United States | -- | 13.30 | 38.35 | N/A | -- |

Sources: FEMA Hazard Risk Index, 2023; NOAA National Centers for Environmental Information, 2023

Communities must take steps to ensure that vulnerable individuals have the appropriate means to prepare for and respond to hazards. Furthermore, community officials can use data on special populations to ensure these individuals are reached after a disaster during recovery. Other social risk factors associated with hazards vulnerability include food insecurity, a high housing cost burden, an older population, persons with disabilities, and lack of vehicle access.

- Food insecurity is defined by the USDA as “the lack of access, at times, to enough food for an active, healthy life.” An estimated 9.1% of Kershaw County residents, or 5,890 residents, are food insecure (*Feeding America, 2021*).
- Vehicle access can also play an important role in disaster preparedness and recovery. Nearly 8% of occupied housing units in Camden have no vehicle available. This is much



higher than the 3.7% of housing units countywide and 5.8% of housing units in South Carolina without vehicle access.

- More than one in five City residents are aged 65 or older. Seniors aged 85 and older comprise nearly 4% of the City's population, more than twice the percentage in the County and the State.
- Nearly one in six City of Camden residents live in poverty, with seniors aged 65 and older comprising nearly one-third of the impoverished population. Forty percent of Camden residents are in low and moderate income (LMI) households.
- More than 18% of the City's population has at least one type of disability. Nearly 43% of all disabled persons in Camden are 65 years or older.
- The local housing shortage can make recovery a daunting challenge for cost-burdened residents seeking new housing or requiring housing repairs following a disaster. Nearly 65% of renters in the City are cost-burdened, while 34% of City homeowners spend more than 30% of their income on housing.

11.2.2.6. Economic Stability and Resilience

Hazard mitigation planning is incomplete without addressing economic resilience and recovery. The ability of the City and County to leverage public and private resources to help restore affected employers and business operations quickly is essential to mitigating an economic disruption. In larger scale disasters, the timing and effectiveness of physical recovery efforts can rely on the resilience of critical facilities that support the manufacture of primary metals, machinery, electrical equipment, appliances, components, and transportation equipment. Food and pharmaceutical production are also important to economic stability and in large-scale disaster recovery efforts.

Economic disruptions can occur when there are large employer closures, industry-specific shocks, or more general economic conditions such as a national recession, natural disasters, and public health hazards such as the recent pandemic. The *National Economic Resilience Data Explorer* (NERDE) is a joint project of the Argonne Laboratory and the Economic Development Administration to assess and assist with local economic recovery and resilience. In addition to generating county-level economic distress indicators based on unemployment and wage trends, the analysis tool also assesses indicators of overall economic risk and resilience and COVID-19 pandemic recovery status.

NERDE data shows that although the current (2.4%) and 24-month (3.35%) unemployment rates for Kershaw County are better than the national averages of 3.1% and 4.05%, per capita income measures signal economic distress. Both the Census per capita income for Kershaw County at \$27,730 and the BEA per capita income of \$50,635 are well below 80% of the national per capita. The County's poverty rate of 14.7% exceeds the national rate of 12.6%. Additional NERDE data reveals that Kershaw County has a lower percentage of population within the working ages of 18 and 64 years at only 58%. This is below the State and national percentages of working age population at 60% and 62%. The County also has a higher proportion of residents below the age of 18 years (23.3%) and above the age of 65 (18.4%) compared to the State and nation. The 24-month labor participation rate in Kershaw County is 56.3%.



Communities depend on a strong economy for jobs, essential goods and services, and tax revenues that enable rebuilding after a disaster. Economic diversification, combined with high-demand and higher wage employment opportunities, can lessen the impact of future economic downturns. Kershaw County has a strong presence in manufacturing, agriculture and forestry, retail trade, and utilities. The location quotients for these industries exceed national averages (NERDE, 2023). The industries represented in the County's top eleven private employers include health care, distribution, wood products, and advanced manufacturing. Six of the leading employers are international firms. Collectively these employers provide more than 3,700 jobs (Table 11-7).

Table 11-7. Kershaw County Top Private Employers

| EMPLOYER | SECTOR | EMPLOYEES | PRODUCT/SERVICE |
|-------------------------------|---------------|-----------|-------------------------------|
| Target | Distribution | 1,200 | Distribution Center |
| MUSC Health Kershaw | Health Care | 746 | Medical Care |
| INVISTA | Manufacturing | 500 | Noncellulosic Organic Fiber |
| Hengst (Germany) | Manufacturing | 250 | Motor Vehicle Parts |
| Canfor Southern Pine (Canada) | Wood Products | 177 | Dressed & Treated Lumber |
| Cardinal Health | Manufacturing | 172 | Surgical Gauze |
| Mancor Carolina (Canada) | Manufacturing | 154 | Fabricated Structural Metal |
| Suominen Nonwovens | Manufacturing | 146 | Nonwoven Textiles (Finland) |
| GE Appliances/Haier (China) | Manufacturing | 140 | Home Refrigerators & Freezers |
| WeylChem (Germany) | Manufacturing | 125 | Organic Chemicals |
| Sterlite Technologies (India) | Manufacturing | 120 | Fiber Optic Cable |

Source: Central SC Alliance, 2023; Kershaw County Economic Development, 2023

The diversity of industry in Kershaw County helps to stabilize the local economy and speed rebounds after external shocks such as the COVID-19 pandemic. Opportunities to strengthen the economic resilience of the City and County include small business development and entrepreneurial support, workforce development and training, infrastructure upgrades, broadband expansion, recruitment of higher wage/higher tech jobs, and support for business continuity planning for disasters. These issues are examined in detail in the City's *Economic Element*.

11.2.3. City/County Composite Risk Summary

As outlined in the prior sections, multiple natural and man-made hazards have the potential to disrupt day-to-day activities, cause extensive property damage, and create mass casualties in the State and locally. The *National Risk Index* is a mapping tool from FEMA that identifies communities most at risk of 18 natural hazards. This application visualizes natural hazard risk metrics at the County and Census tract levels and includes data on expected annual losses from natural hazards, social vulnerability, and community resilience (Table 11-8). Although the tool does not provide a risk mapping option for municipalities, it does have a Census tract option. The overall *Risk Index* rating for Kershaw County is *Relatively Low*. According to the Index, nearly three-quarters (72%) of U.S. counties have a lower Risk Index and 41% of South Carolina counties have a lower Risk Index than Kershaw County. The *Expected Annual Losses* due to disasters in Kershaw County is also



Relatively Low when compared nationally. Seventy percent of U.S. counties and 43% of South Carolina counties have a lower Expected Annual Loss. Kershaw County residents have a *Relatively Moderate* susceptibility to the adverse impacts of natural hazards. More than 49% of counties have a lower *Social Vulnerability* score than Kershaw and no counties statewide are less vulnerable.

The County has an overall *Relatively Moderate* ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Well over half (58%) of U.S. counties and 100% of counties in South Carolina have a stronger *Community Resilience* score than Kershaw County. Of the three Census tracts that include the City, two (9705.00 and 9706.01) have an overall *Relatively Moderate* risk index and one (9708.00) has a *Relatively High* risk. All three tracts have a *Relatively Low* to *Relatively Moderate* Expected Annual Loss rating community resilience score when compared to the rest of the nation. However, the social vulnerability of special populations and the lower ability of these areas to recover after a disaster indicate a greater risk, especially in Tracts 9706.01 and 9708.00.

Table 11-8. National Risk Index Comparison for Kershaw County and Camden Census Tracts

| LOCATION/ CENSUS TRACT | RISK INDEX | EXPECTED ANNUAL LOSS | SOCIAL VULNERABILITY ¹ | COMMUNITY RESILIENCE |
|---------------------------|-----------------------------|-----------------------------|--------------------------------------|-----------------------------|
| Kershaw County | Relatively Low 71.9 | Relatively Low 69.6 | Relatively Moderate 48.8 | Relatively Moderate 42.1 |
| 9705.00 | Relatively Moderate 75.9 | Relatively Moderate 74.0 | Relatively Moderate 59.3 | Relatively Low 31.4 |
| 9706.01 | Relatively Moderate 66.6 | Relatively Low 59.2 | Relatively High 74.2 | Relatively Low 31.4 |
| 9708.00 | Relatively High 90.1 | Relatively Moderate 83.1 | Very High 93.9 | Relatively Low 31.4 |

¹Based on Centers for Disease Control (CDC) ATSDR Social Vulnerability Index
Source: FEMA National Risk Index, 2023, <https://hazards.fema.gov/nri/>

11.3. Existing Plans, Partnerships and Coordination

Advance hazard mitigation planning and preparation is essential in equipping community leaders, response staff, and the general public to make rapid and informed decisions that can save lives and quickly restore infrastructure and services when disaster strikes. Coordination of local resilience planning and mitigation measures with Kershaw County and neighboring jurisdictions and with State and regional hazard mitigation planning and response entities is an essential step in this process.

11.3.1. Existing Plans and Resources

Existing hazard mitigation, emergency response, and resiliency plans for the City, Kershaw County, South Carolina, and neighboring jurisdictions were identified and inventoried as part of the resiliency planning process as listed in Table 11-9.



Table 11-9. Inventory of Key Plans Impacting City of Camden Resiliency and Recovery

| PLAN (DATE) | ENTITY | COVERAGE | SUMMARY |
|--|----------------------|---------------------------------------|--|
| Santee-Lynches Hazard Mitigation Plan (2020) | SLRCOG | Clarendon Kershaw Lee Sumter | Details the historical extent and impact of natural and human-made hazards in the Region and the county level with strategies to prevent, reduce, or eliminate the impact of these events |
| Comprehensive Economic Development Strategy (2022-2027) | SLRCOG | Clarendon Kershaw Lee Sumter | Defines the regional vision for economic growth and resilience and identifies local priorities for future investment |
| Comprehensive Seismic Risk and Vulnerability Study (2001) | SCEMD | Statewide | Assesses vulnerability of South Carolina's built environment to earthquakes of various magnitudes and provides emergency managers at all levels with detailed estimates of damages and losses |
| Emergency Planning Guide (2022) | Dominion Energy | V.C. Summer Nuclear Zone | Describes public protective measures, alert systems, and locations for reception centers and evacuation routes for residents in case of radiological incident emergencies within the ten-mile emergency management zone (EMZ) of the plant |
| Kershaw County Emergency Operations Plan (2007) | Kershaw County | Kershaw County | Outlines delegation of responsibility for County and municipal agencies in the event of a major disaster and coordinates mitigation, preparedness, response, and recovery efforts for all hazards that may affect the County |
| Robinson Nuclear Plant Emergency Plan (2023) | Duke Energy Progress | Robinson Nuclear Zone | Details emergency response activities and roles among organizations, early warning and instructions to at-risk population, and implementation of emergency measures |
| S.C. Catastrophic Incident Response Plan (2018) | SCEMD | Statewide | Specifies coordination of local, State, and Federal resources in catastrophic events that exceed county and State resources and interrupt government operations and services within and beyond the impacted area |
| S.C. Drought Response Plan ¹ (2016) | SCEMD | Statewide | Provides statewide planning and response strategies for State and County officials to plan and coordinate resources in response to a severe or extreme drought event to prevent loss of life, minimize damage, lessen the economic impact, and protect the environment |
| S.C. Earthquake Plan ¹ (2021) | SCEMD | Statewide | Provides framework of necessary emergency operations actions in response to large earthquakes |
| S.C. Operational Radiological Emergency Response Plan (2022) | SCEMD | Nuclear Power Plants | Provides guidance and coordination of State and other resources in radiological emergencies to support affected counties at the Catawba, Oconee, Robinson, Savannah River Site, V.C. Summer (SC), Vogtle (GA), and Brunswick and McGuire (NC) nuclear plants |



| PLAN (DATE) | ENTITY | COVERAGE | SUMMARY |
|---|----------------------------------|-----------|--|
| S.C. Opioid Emergency Response Plan (2022) | DAODAS SLED | Statewide | Provides guidance and a detailed strategy of State and local efforts to combat the opioid epidemic |
| S.C. Recovery Plan (2023) | SCEMD | Statewide | Coordinates resources to support short-term, intermediate, and long-term local recovery goals |
| S.C. Emergency Operations Plan (2022) | SCEMD | Statewide | All-hazard plan for State government departments and agencies to ensure a coordinated and effective response to natural, technological, or man-made disasters in South Carolina covering emergency management: mitigation, preparedness, response, logistics, and recovery |
| South Carolina Floodwater Commission Report (2019) | S.C. General Assembly | Statewide | Offers short and long-term recommendations to alleviate and mitigate flood impacts and manage stormwater in cities, communities, and enterprises located on or near the coast and rivers |
| S.C. Hazard Mitigation Plan (2018) | SCEMD | Statewide | Outlines State strategy for all natural hazard mitigation goals, actions, and initiatives based on the systematic evaluation of the nature and extent of vulnerability to natural hazards and actions needed to minimize future hazards vulnerability |
| S.C. Mass Casualty Plan ¹ (2018) | SCDHEC | Statewide | Assigns responsibilities to State agencies and coordinates response efforts to meet the needs of local governments following a mass casualty-producing incident |
| Strategic Statewide Resilience and Risk Reduction Plan (2023 Draft) | S.C. Office of Resilience (SCOR) | Statewide | Coordinates statewide resilience efforts including coordination with federal, state, and local governmental agencies, stakeholders, and nongovernmental entities and serves as a framework to guide state investment in flood mitigation projects |

¹Plan published separately as a standalone component of the *S.C. Emergency Operations Plan*

Additional State emergency planning documents that are published separately with relevance for Kershaw County include statewide plans for Dam Failure Emergency Response, Civil Disturbance, Terrorism Operations, Emergency Refuel, Repatriation, Active Shooter/Hostile Action Consequence Management, Infectious Disease, State Long-Term Power Outage, State Cyber Consequence Management, Medical Countermeasures, Winter Weather, and Flood Response. The COVID-19 pandemic heightened increased consideration of non-natural hazard data to assist in State and local hazard mitigation and emergency management planning.

Multiple Federal, State, and institutional mapping tools are now available to assist local communities in identifying areas and populations that have heightened vulnerability. These tools integrate population, housing, and economic data with historic and projected natural hazards events and environmental and public health data to provide a more comprehensive view of risk and resiliency at the local level. The FEMA *National Risk Index* (<https://hazards.fema.gov/nri/map>), the FEMA *Resilience Analysis and Planning Tool* (RAPT) (<https://www.fema.gov/emergency-managers/practitioners/resilience-analysis-and-planning-tool>), and the NOAA *Risk and Vulnerability* (<https://www.ncdc.noaa.gov/billions/mapping>) are among multiple platforms that



map and rank vulnerability to natural hazards. The interrelated nature of natural hazards, health and environmental factors, and socio-economic conditions and their combined influence on disaster recovery and adaptability are revealed when social vulnerability is integrated in web-based tools. Integrated platforms include the Economic Development Administration's *National Economic Resilience Data Explorer* (NERDE) (<https://www.anl.gov/dis/nerde-county-dashboard>), the Environmental Protection Agency's *Environmental Justice Screening and Mapping Tool* (<https://ejscreen.epa.gov/mapper/>), the U.S. Department of Energy's *Disadvantaged Communities Reporter* (<https://energyjustice.egs.anl.gov/>) and the Center for Disease Control's *Social Vulnerability Index* (SVI) (https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html). These mapping resources are increasingly used in regional and county hazard mitigation planning, as well as in Federal and State grant applications, to help optimize local resiliency and mitigation investments.

11.3.1.1. Santee-Lynches Hazard Mitigation Plan

Per the *Disaster Mitigation Act of 2000*, the Federal Emergency Management Agency (FEMA) requires all cities and counties to create and maintain a *Hazard Mitigation Plan* (HMP). An HMP assesses historical impacts of natural hazards to determine high risk areas and identify vulnerabilities. When analyzed along with demographic and economic information, the assessment is used to identify and prioritize mitigation actions for reducing risk and protecting residents and visitors from the impacts of natural hazards. A FEMA and SCEMD approved and locally adopted HMP is also a requirement to solicit federal grant funds under the Hazard Mitigation Grant Program.

The *Santee-Lynches Hazard Mitigation Plan* (SLMP) was most recently updated and subsequently adopted by Kershaw County and the City of Camden in 2019. The Plan provides detailed vulnerability and mitigation information for the four counties in the Santee-Lynches Council of Governments region (Clarendon, Kershaw, Lee, and Sumter) and participating municipalities, including the City of Camden. The Plan identifies the historical and projected hazards that threaten each county along with an estimate of the relative risks posed to each community by these hazards. This is supported by recommended goals, actions, and projects that guide mitigation activities, with a plan for prioritizing, implementing, evaluating, and monitoring such activities.

In developing the Plan, SLRCOG assembled and worked closely with planning committees for each county that included jurisdictional representatives, county emergency managers, and other organizations that participate in emergency management activities. These committees in turn coordinated and communicated with local stakeholders throughout the planning process. The resulting regional plan meets the federal and state requirements for a local hazard mitigation plan for all four counties. SLRCOG monitors and updates the *Hazard Mitigation Plan* every five years, with the next update planned for 2025. Participating local governments provide recordkeeping on the occurrence and cost of natural hazard events that are used to update and revise the plan.

Using hazard incident data from the five-year period of 2010 to 2014, the regional Plan rated severe storms and wildfires as *Highly Likely* hazards affecting all four counties, followed by hail and flooding as *Likely* threats in Kershaw County. Tornadoes, winter storms, hurricanes/tropical storms, and lightning are classified as *Moderately Likely* in the region. The projected risk for events



including earthquakes, dam failures, heat, and drought were considered as *Not Likely*. It is noted that the historical data period did not include the recent earthquake activity in Kershaw County.

The multi-jurisdictional goals for the Santee-Lynches region focus on protecting critical facilities, increasing public education and awareness of hazards, preserving communications and infrastructure operations, ensuring emergency shelters are adequate, facilitating emergency preparedness, and reducing the impacts of wildfires, flooding, and severe winds. The Plan includes action plans for both Kershaw County and the City of Camden. The City of Camden action plan is anchored by nine goals with 19 objectives for hazard mitigation. These detailed action plans are presented in the *Santee Lynches Hazard Mitigation Plan* and summarized in Table 11-10 below.

Table 11-10. Summary of the City of Camden Action Plan

| GOAL | ACTIONS |
|---|---|
| Goal #1: Ensure the protection of critical facilities in the City | <ul style="list-style-type: none"> ▪ Conduct facility evaluation and audits to determine hazard exposure ▪ Repair and upgrade facilities based on audits ▪ Backup power/generators for critical facilities |
| Goal #2: Increase public education and awareness of natural hazards | <ul style="list-style-type: none"> ▪ Increase public education and awareness through information materials using in-person and media outreach |
| Goal #3: Ensure that the City's infrastructure will not be significantly disrupted by a natural disaster | <ul style="list-style-type: none"> ▪ Inspect utility lines to ensure they can withstand hazards ▪ Replace or retrofit outdated or vulnerable structures ▪ Develop accurate models and databases of infrastructure |
| Goal #4: Reduce the impact of natural disasters on new and existing developments | <ul style="list-style-type: none"> ▪ Update plans, codes, and ordinances to include mitigation ▪ Provide incentives and technical assistance for property protection measures ▪ Implement flood control projects including clearing drainage ditches and canals and repairing dams |
| Goal #5: Reduce the impact of wildfires on homes, buildings, critical facilities, and infrastructure | <ul style="list-style-type: none"> ▪ Inventory and map areas vulnerable to wildfires in GIS ▪ Evaluate areas and structures susceptible to wildfires using GIS ▪ Manage vegetation in areas at risk for wildfires |
| Goal #6: Reduce the impact of severe winds on homes, buildings, critical facilities, and infrastructure | <ul style="list-style-type: none"> ▪ Manage vegetation near critical facilities to reduce wind and tree damage |
| Goal #7: Reduce the impact of floods on homes, buildings, critical facilities, and infrastructure due to flood | <ul style="list-style-type: none"> ▪ Conduct drainage ditch maintenance to improve stormwater management ▪ Implement flood threat recognition system with rain and stream gages ▪ Work with FEMA to update flood maps ▪ Install back-flow prevention valve in sewer lines |
| Goal #8: Ensure the protection and function of communications | <ul style="list-style-type: none"> ▪ Inspect communication lines to prevent damage or disruption ▪ Create mobile dispatch unit to maintain emergency communications (Completed) ▪ Retrofit and relocate communications system to withstand disasters (Completed) |
| Goal #9: Facilitate the preparedness of Emergency Response | <ul style="list-style-type: none"> ▪ Evaluate emergency response preparation and plans ▪ Purchase critical equipment and conduct needed training for emergency response preparation |

Source: *Santee-Lynches Hazard Mitigation Plan, 2020*



11.3.1.2. Kershaw County Emergency Operations Plan

Kershaw County Emergency Management is a division of the Department of Safety and Emergency Services. Emergency Management works with the South Carolina Emergency Management Division, the Kershaw County Local Emergency Planning Committee, National Weather Service, and other public safety agencies to plan for and respond to disasters. In addition to maintaining the *Kershaw County Emergency Operations Plan* and the *Hazard Mitigation Plan*, Emergency Management is responsible for opening the Emergency Operations Center during hazard events. After a declared disaster, Emergency Management works closely with FEMA and other agencies through natural disaster reimbursement processes to leverage needed resources and maximize recovery.

The division works closely with the Kershaw County Local Emergency Preparedness Committee (KCLEPC). The Committee serves as the primary advisory body to the County Council to ensure that the maximum capable and responsible leadership is available to plan and implement comprehensive emergency management. Appointed by the County Council, the Committee membership includes State, County, and municipal officials, and industry representatives. The Committee monitors and supports operations of Kershaw County, the Incident Command System, and municipal departments and agencies during all phases of an emergency, including implementation of the Kershaw County Emergency Operations Plan and mutual aid agreements. The Committee issues public proclamations on emergency matters such as evacuation and movement to shelters. The body also implements policy for emergency funding, control of expenditures, and allocation of resources.

Kershaw County has prepared an *Emergency Operations Plan* (EOP) that is coordinated with the South Carolina *Comprehensive Emergency Preparedness Plan* and provides the specific delegation of County and municipal responsibilities in the event of major disasters. The Plan provides an overview of the County's approach to emergency operations and describes its response organization and assigned responsibilities. The EOP details activities in all four phases of emergency management – mitigation, preparedness, response, and recovery. Hazard specific operations guides have been adopted that focus on the special needs and unique details that apply to the subject hazard. The EOP is reviewed and updated annually by the County Emergency Management Division and the Local Emergency Preparedness Committee.

The County Emergency Operations Center (EOC) is the focal point of activity during an emergency – coordinating public safety, law enforcement, and recovery efforts with other key areas of County, municipal, and State government. The Kershaw County EOC is located at 515 Walnut Street in Camden. The City of Camden also has a *Civil Emergencies Ordinance* for a issuing a state of public emergency "during times, existing or threatening, of great public crisis, rioting, civil disturbance, or disorder, or for any reason of natural or manmade disaster or catastrophe, municipal public safety authorities are unable to maintain public order or afford adequate protection for lives, safety, health, welfare, or property." Under the ordinance, the Mayor and City Council can impose curfews and take other actions during emergencies. The Ordinance also officially establishes the *National Incident Management System* (NIMS) as the City's standard for local emergency management and incident response.



11.3.2. Local Capacity, Partnerships, and Coordination

Community resilience measures a community's ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions. Locally adopted policies and programs can be effective in incorporating resiliency solutions and expediting implementation. As described in the *Santee-Lynches Hazard Mitigation Plan*, Kershaw County and the City of Camden leverage a combination of comprehensive and capital improvements planning, zoning and land use regulations, and building codes to ensure public safety, promote environmental standards, protect the built environment, preserve protective natural resources, and guide development to areas of lower risk. Kershaw County and the City of Camden have enacted zoning and land use ordinances and adopted ordinances regulating stormwater and flood damage prevention. The participation of the City and County in the National Flood Insurance program (NFIP) and the Community Rating System (CRS) to reduce the impact of flooding on private and public structures lowers flood insurance premiums for residents. The City has also adopted the 2015 *International Building Code* that contains provisions to reduce the impact of disasters on new buildings.

The City of Camden Fire Department covers a 45 square mile service area and is staffed by 28 career firefighters and 18 volunteer firefighters. The City operates two stations, one downtown and one on the north end, to reduce response times for an average volume of 600 calls each year. The Department maintains an Insurance Services Office (ISO) rating as a Class 4 agency, saving citizens money on residential and commercial insurance premiums. The Department employs a full-time Code Enforcement Officer/Fire Marshal who performs routine fire safety inspections of public buildings and blueprint reviews for fire safety issues. Personnel also provide and install smoke detectors and smoke detector batteries free of charge upon request. To reduce fire hazards, the Public Education Division of the Department offers outreach programs to area residents such as *Fire and Life Safety* presentations, home safety inspections, a Smoke Detector Installation Program, child safety seat installations, and annual presentations to approximately 1,500 to 2,000 students during Fire Prevention Month each fall.

Kershaw County is a *StormReady*® community. South Carolina is one of only four states with all counties participating in the program. This National Weather Service program is designed to support local communities with the basic communication and safety skills that can save lives and property during severe weather events. *StormReady*® communities must take several actions to improve readiness and reduce vulnerability to include establishing a 24-hour warning point and emergency operations center and providing multiple ways to receive and send severe weather warnings, forecasts, and alerts to the public. Counties must also create a system to monitor local weather conditions, promote public readiness and education through community outreach, and develop a formal hazardous weather plan that includes holding emergency exercises and training severe weather spotters.

As the local focal point of activity during an emergency, the Kershaw County Emergency Operations Center (EOC) is the hub for coordinating public safety, law enforcement, and recovery efforts with other key areas of County, municipal, and State government. As noted in the EOP, Kershaw County relies on mutual aid agreements for certain critical events. Prior to seeking aid



from State or Federal partners, Kershaw County and the City utilize preexisting agreements with neighboring jurisdictions and the private sector (Table 11-11).

The City is the county seat of Kershaw County, which is bordered on the north by Lancaster Counties, to the west by Fairfield County, to the southeast by Richland County, on the south by Sumter County, and on the east by Darlington, Chesterfield and Lee Counties. The County has three incorporated municipalities that include the City of Camden and the towns of Bethune and Elgin. Unincorporated communities include Lugoff, Cassatt, Liberty Hill, Westville, Boykin, and DeKalb.

Table 11-11. Neighboring Jurisdiction Participation in Mutual Aid Agreement

| JURISDICTION | PARTICIPATING ENTITIES | |
|---------------------|--|---|
| Chesterfield County | <ul style="list-style-type: none"> ▪ Chesterfield County ▪ Town of Pageland ▪ Town of Chesterfield ▪ Town of Cheraw | <ul style="list-style-type: none"> ▪ Teals Mill Fire Department ▪ Brocks Mill Fire Department ▪ Patrick Rural Volunteer Fire Department ▪ Bay Springs Volunteer Fire Department |
| Darlington County | <ul style="list-style-type: none"> ▪ Darlington County ▪ City of Hartsville ▪ City of Darlington | <ul style="list-style-type: none"> ▪ Town of Lamar ▪ Palmetto Rural Fire Department ▪ Alligator Fire District |
| Fairfield County | <ul style="list-style-type: none"> ▪ Town of Ridgeway ▪ Town of Winnsboro ▪ Fairfield County Sheriff's Office | <ul style="list-style-type: none"> ▪ Fairfield Rural Fire Board and Community Volunteer Fire Departments: Greenbrier-Bethel, Mitford, Southeastern, Jenkinsville, Ridgeway, Dutchman Creek, Feasterville, Lebanon, Blackstock-Woodard, and Blair |
| Kershaw County | <ul style="list-style-type: none"> ▪ Kershaw County ▪ City of Camden ▪ Town of Bethune ▪ Town of Elgin ▪ Lugoff Fire Department | <ul style="list-style-type: none"> ▪ Fire Departments and Sub Stations: Beaver Creek, Blaney, Cassatt, Charlotte Thompson, Pine Grove, Shepard, Westville, Doby's Mill, Bethune, and Baron DeKalb |
| Lancaster County | <ul style="list-style-type: none"> ▪ Lancaster County Water and Sewer District ▪ Town of Heath Springs ▪ Lancaster County Emergency Management ▪ Lancaster County Coroner ▪ City of Lancaster ▪ Town of Kershaw ▪ Town of Van Wyck ▪ Lancaster County Sheriff's Office | <ul style="list-style-type: none"> ▪ Lancaster County Fire Rescue ▪ Lancaster County EMS ▪ Fire Departments: Antioch Volunteer, Pleasant Valley, Indian Land, Bell Town, Buford, Charlotte Road/Van Wyck, Kershaw, Riverside Volunteer, Camp Creek Volunteer, McDonald Green, Shiloh Zion, Gooch's, Rich Hill, Tradesville, Elgin, Flat Creek Volunteer, Unity, Lancaster, Heath Springs, and Coronaca Volunteer |
| Lee County | <ul style="list-style-type: none"> ▪ Lee County ▪ City of Bishopville | <ul style="list-style-type: none"> ▪ Lee County Fire and Rescue |
| Richland County | <ul style="list-style-type: none"> ▪ Richland County ▪ City of Columbia ▪ City of Forest Acres | <ul style="list-style-type: none"> ▪ Town of Arcadia Lakes ▪ Town of Blythewood ▪ Town of Eastover |
| Sumter County | <ul style="list-style-type: none"> ▪ Sumter County | <ul style="list-style-type: none"> ▪ City of Sumter |

Source: Statewide Mutual Aid Signatories, SCEMD, 2023



In events where local recovery needs exceed the capacity of these local resources, Kershaw County will turn to the State of South Carolina and Federal agencies to obtain additional resources. The South Carolina Emergency Management Division (SCEMD) has a statewide mutual aid process and agreement in place for emergency and disaster response and recovery. State, county, and municipal governments are required by the State code to cooperate in developing and maintaining a plan for mutual assistance in emergencies. The State process provides that any municipality, fire district, fire protection agency, or other emergency service entity may provide mutual aid assistance, upon request, from any other municipality, fire district, fire protection agency, or other emergency service delivery system at the time of a significant incident such as fire, earthquake, hurricane, flood, tornado, hazardous material event, or other disaster. SCEMD is the central repository for Mutual Aid Agreements among participating governments and emergency services agencies.

Disaster response at the State and Federal levels is further supported by an *Emergency Support Function* (ESF) system. Each function is focused on a specific aspect of disaster response and recovery based on the type of incident and the affected critical infrastructure. The SCEMD has currently designated two dozen ESF cross-functional response teams that range from ESF-1 (Transportation) and ESF-12 (Energy and Utilities) to ESF-8 (Health and Medical Services) and ESF-24 (Business and Industry). In addition to coordination among State and Federal agencies, the SCEMD maintains official agreements with nonprofit and faith-based relief groups such as the Salvation Army, the American Red Cross, animal rescue groups, food banks, and others to assist with emergency support functions. Table 11-12 lists the primary State and regional agencies that have direct oversight for planning and response for each type of event.

Table 11-12. State Authorities Impacting City of Camden Resiliency and Recovery

| ENTITY/AGENCY | FOCUS | ROLE |
|---|---|--|
| Clemson University Livestock - Poultry and Cooperative Extension | Drought, Animal Diseases, Animal Sheltering | Coordination of resources to minimize losses for livestock animals and agriculture-related issues in a disaster (ESF-17) |
| Santee-Lynches Regional Council of Governments | Economic Stress | Prepares and updates the Santee-Lynches Comprehensive Economic Development Strategy (CEDS) |
| Santee-Lynches Regional Council of Governments | Hazards Planning | Prepares and updates the Hazard Mitigation Plan for the region |
| S.C. Department of Agriculture ¹ | Drought, Animal Diseases, Economic Stress | Coordination of resources to minimize losses for livestock animals and agriculture-related issues in disasters |
| S.C. Department of Commerce ¹ | Economic Stress, Recovery | Leads Business and Industry recovery (ESF 24) and assists businesses resuming operations and residents returning to work as quickly as possible post-disaster |
| S.C. Department of Health and Environmental Control (SCDHEC) ¹ | Drought, Public Health, Hazardous Materials, Weapons of Mass Destruction (WMD), Dam Safety, Air and Water Quality | Leads on hazardous substances releases, spills, and accident response; bioterrorism or disease outbreaks; incidents involving radiological materials and fixed nuclear facilities (ESF-10); dam safety and infrastructure; medical countermeasures (ESF-8); and Special Medical Needs Sheltering |



| ENTITY/AGENCY | FOCUS | ROLE |
|---|--|--|
| S.C. Department of Administration ¹ | Communications | Coordinates response and recovery communications (ESF-2) and donated goods and volunteers (ESF-18) |
| S.C. Department of Natural Resources ¹ | Drought, Dam Failures, Flooding | Controls waterway and lake access, hydrology resources, drought management and response; flood mitigation grants; flood mapping; updates and maintains statewide Digital Flood Insurance Rate Maps |
| S.C. Department of Social Services ¹ | Mass Care, Repatriation, Food Services | Identifies shelter sites; coordinates additional providers to meet basic human needs before, during, and after a disaster (ESF-6); coordinates mass feeding and food distribution (ESF-11) |
| S.C. Department of Transportation ¹ | Highways, Hazardous Materials, Emergency Refuel, Winter Weather | Stabilizes critical infrastructure functions, minimizes health and safety threats, and restores and revitalizes transportation networks to support recovery (ESF-1) |
| S.C. Drought Response Committee | Drought | Oversight responsibility for drought events and conditions in water management areas |
| S.C. Emergency Management Division (SCEMD) ¹ | All Hazards | Responsible for statewide emergency management program and South Carolina Hazard Mitigation Plan; enables effective preparation, response, and recovery from emergencies and disasters to save lives, reduce human suffering, and minimize property loss |
| S.C. Emergency Response Commission (SERC) | Hazardous and Toxic Waste Spills/Releases | Appoints Local Emergency Planning Committee (LEPC) to implement the Federal <i>Emergency Planning and Community Right-to-Know Act</i> at the county level |
| S.C. Forestry Commission ¹ | Wildfires, Firefighting | Suppression of wildland fires (ESF-4) |
| S.C. National Guard | Terrorism, Civil Unrest, Wildfires, Evacuation | Leads Public Works and Engineering response (ESF-3), military support (ESF-19) to civil authorities in major or catastrophic disasters or civil unrest |
| S.C. Office of Regulatory Services ¹ | Utility Disruption, Railroads and Transportation, Energy Outages | Coordinates with energy providers to prioritize repair of energy generation and distribution systems and provide temporary, alternate, or interim sources of natural gas and electric power (ESF-12), along with support on railroad and transportation issues |
| S.C. Office of Resiliency (SCOR) ¹ | Statewide Resiliency Planning | Provides HUD CDBG Disaster Recovery funds to homeowners in Federal disaster declaration areas, serves as Governor's Office representative |
| State Law Enforcement Division (SLED) ¹ | Terrorism, Civil Unrest, Active Shooter, Hazardous Materials, WMD, Cyberattack | Responds to threats emanating from chemical, biological, radiological, nuclear, and explosive categories; provides WMD Response Team comprised of SLED SWAT Team, Bomb Squad, SLED Clandestine Laboratory Team, and Hazardous Material Technicians |

¹Agency on South Carolina Resilience Plan Advisory Committee



11.3.3. Funding and Technical Resources for Resiliency Planning, Mitigation, and Recovery

Resiliency efforts increase the ability of the community to bounce back from the effects of diverse natural, biological, technological, and climate hazards. Such projects range from plans and studies, land acquisition, natural resources protection, special ordinances, flood management, and energy conservation to infrastructure hardening. Funding for proactive resiliency projects is in addition to the typical costs for disaster response and recovery that include emergency response teams, emergency shelters, emergency evacuations, relief food and water supplies, debris clean up and removal, and infrastructure repair.

According to a recent report by the National Institute of Building Sciences, every \$1 invested in federal hazard mitigation grants provides an estimated return on investment of \$6 (*Natural Hazard Mitigation Saves, 2019*). Table 11-13 profiles some of the current external resources that are available to local governments to help fund planning and implementation of resilience solutions and recovery efforts. Many of these are allocated from Federal agencies to the State for distribution to local governments, while counties and municipalities are eligible to apply directly to others.

Table 11-13. Preparedness, Mitigation, Recovery, and Resilience Funding for Local Governments

| PROGRAM/SOURCE | DESCRIPTION |
|---|---|
| HAZARD MITIGATION AND RESILIENCE | |
| Hazard Mitigation Grant Program (HMGP)/ SCEMD | Implement long-term hazard mitigation measures after a Presidential disaster declaration for long-term solutions that conform to the State Hazard Mitigation Plan and local mitigation plans |
| Building Resilient Infrastructure and Communities (BRIC)/ SCEMD | Build local capabilities and capacity to implement natural hazard mitigation; support innovation; promote partnerships and encourage high-impact investments to reduce natural hazard risk; minimize future losses and impacts on the Disaster Relief Fund; and support community risk reduction with adoption and enforcement of building codes, standards, and policies |
| Flood Mitigation Assistance Program/FEMA and SCDNR | Reduce flooding of National Flood Insurance Program (NFIP) insured properties through mitigation, with the goal to reduce flood insurance claims through the four program areas - Plans and Studies, Infrastructure, Buyouts, and Funds Match |
| High Hazard Potential Dam Rehabilitation Program (HHPD)/FEMA and SCDHEC | Reimbursement-based grant program for planning, design, and construction of dams by State, county, and municipal governments, special purpose districts, and non-profits with an emphasis on supporting mitigation and rehabilitation conducted on dams that fail to meet minimum state dam safety standards and pose a high hazard risk to life and property |
| ARPA State & Local Fiscal Recovery Funds (SLFRF)/ SCOR | American Rescue Plan Act funds used to complete stormwater infrastructure projects and acquisitions of property in the flood plain throughout the State to lessen the impacts of future flood events |
| Community Development Block Grant-Mitigation (CDBG-MIT)/ HUD and SCDRO | Increase resilience to disasters and reduce or eliminate the long-term risk of loss of life, injury, damage to and loss of property, and suffering and hardship, by lessening the impact of future disasters |



| PROGRAM/SOURCE | DESCRIPTION |
|---|---|
| Disaster Relief and Resilience Reserve Fund (DRRRF)/SCOR | Used to develop, implement, and maintain the <i>Strategic Statewide Resilience and Risk Reduction Plan</i> , to provide disaster relief assistance, hazard mitigation, and infrastructure improvements |
| South Carolina Resilience Revolving Fund (RRF)/SCOR | Used for loans and grants to eligible recipients (State, local governments, agencies, commissions, and accredited land trusts) to purchase flooded properties and land to complete flood plain restorations |
| Water Infrastructure Finance and Innovation Act (WIFIA) Program/EPA | Funds development and implementation activities for eligible water and wastewater infrastructure projects, including enhanced energy efficiency projects for water facilities. |
| Emergency Food and Shelter Program (EFSP)/FEMA | Supports local social service organizations dedicated to feeding, sheltering, and providing critical resources and supportive services to individuals and families with economic emergencies. |
| Assistance to Firefighters Grants Program (AFGP)/FEMA | Funds critically needed resources to equip and train emergency personnel, enhance efficiencies, and support community resilience to include Assistance to Firefighters Grants (AFG), Fire Prevention & Safety (FP&S) grants and Staffing for Adequate Fire and Emergency Response (SAFER) grants |
| ENERGY RESILIENCE AND CONSERVATION | |
| Energy Efficiency and Conservation Block Grant (EECBG)/USDOE | Implements high-impact, self-sustaining clean energy projects that benefit low-income and disadvantaged communities by cutting carbon emissions, improving energy efficiency, and reducing energy use through flexible solutions that include energy audits; energy efficiency retrofits to residential, government and community buildings; and fleet electrification |
| Greenhouse Gas Reduction Fund/EPA | Mobilizes financing and private capital for clean energy/climate projects that reduce greenhouse gas emissions, with an emphasis on projects that benefit low-income and disadvantaged communities |
| Charging and Fueling Infrastructure (CFI) Grant/FTA and DOT | Strategically deploys electric vehicle (EV) charging infrastructure and other fueling infrastructure projects in urban and rural communities in publicly accessible locations, including downtown areas and local neighborhoods, particularly in underserved and disadvantaged communities |
| Promoting Resilient Operations for Transformative, Efficient & Cost-Saving Transportation (PROTECT)/FTA and DOT | Improves resilience of surface and public transportation systems for projects that reduce damage and disruption to the transportation system, improves the safety of the traveling public, and improves equity by addressing the needs of disadvantaged, vulnerable populations and employs nature-based solutions to include conservation, restoration, or construction of riparian and streambed treatments, wetlands, native vegetation, stormwater bioswales, and shade trees |
| RECOVERY | |
| CDBG-Disaster Recovery (CDBG-DR)/SCOR | Assists with necessary expenses related to disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in most impacted and distressed areas |
| Economic Injury Disaster Loan (EIDL)/SBA | Provides loans to assist in disaster recovery to small businesses located in declared disaster areas with working capital until normal operations can resume |
| Business Physical Disaster Loans/SBA | Provides loans for the repair or replacement of real property, machinery, equipment, fixtures, inventory, and leasehold improvements due to physical damage in a declared disaster area |



| PROGRAM/SOURCE | DESCRIPTION |
|---|---|
| Palmetto Disaster Recovery (PDR)/SCOR | Disaster case-management that identifies applicants and monitors cases as they progress through the residential recovery (CDBG-DR) program using an Individualized Recovery Plan that assists eligible citizens with disaster-caused needs. |
| Disaster Recovery Reserve Corps (DRRC)/SCOR | Increase statewide readiness and greatly reduce the time it takes to provide post-disaster assistance to residents impacted by disasters through a trained Reserve Corps Disaster Case Management team in each county |

11.4. Goals, Objectives and Implementation Strategies

The following table summarizes actions to be undertaken in the coming decade to achieve the goals and objectives identified in the *Resiliency Element*. Element goals are broad-based ideals intended to guide the future of the City, while objectives elaborate the goals to outline the framework and provide the basis for the more detailed and measurable plan strategies. Each supporting implementation strategy includes a listing of the agencies that are accountable for implementation, as well as a timeframe for completion. Additional strategies that impact overall resiliency are found in each plan element.

| GOALS/OBJECTIVES/STRATEGIES | ACCOUNTABLE AGENCY | TIMEFRAME |
|---|---|-----------|
| GOAL 11.1. Create a disaster resistant City. | | |
| OBJECTIVE 11.1.1. Incorporate resiliency and mitigation priorities into the City's comprehensive and land use planning and regulation. | | |
| STRATEGY 11.1.1.1. Guide growth away from high-risk locations. | City of Camden | On-going |
| STRATEGY 11.1.1.2. Monitor and update mitigation actions specific to the City in the Santee-Lynches Hazard Mitigation Plan. | City of Camden, Kershaw County | On-going |
| STRATEGY 11.1.1.3. Incorporate consideration of critical infrastructure resilience into long-term comprehensive planning and economic development planning as plans are updated or modified. | City of Camden, Kershaw County | On-going |
| STRATEGY 11.1.1.4. Identify funding opportunities for mitigation and readiness projects that address the City's resilience needs. | City of Camden, Kershaw County, Santee-Lynches Regional Council of Governments (SLRCOG) | On-going |
| STRATEGY 11.1.1.5. Monitor wildland urban interface (WUI) areas and incentivize fire assessments for new developments in such areas. | City of Camden, Kershaw County, Residential Developers, S.C. Forestry Commission | On-going |
| STRATEGY 11.1.1.6. Monitor changing hazard exposures in the City and surrounding area. | City of Camden, Kershaw County, SLRCOG, SCEMD | On-going |
| OBJECTIVE 11.1.2. Examine capital improvement projects using a resilience lens. | | |
| STRATEGY 11.1.2.1. Incorporate resilience as a factor in short- and long-term maintenance processes and prioritization in capital improvement planning and decision-making. | City of Camden | 2026 |



| GOALS/OBJECTIVES/STRATEGIES | ACCOUNTABLE AGENCY | TIMEFRAME |
|---|--|-----------|
| STRATEGY 11.1.2.2. Conduct a risk assessment of critical infrastructure in the City and municipal utilities to include evaluating vulnerabilities to threats and hazards and consequences that may result. | City of Camden | 2026 |
| STRATEGY 11.1.2.3. Reduce hazard exposure and deterioration of critical facilities and City utilities and evaluate the need for additional hardening to include upgrades at potential failure points. | City of Camden, Kershaw County, Schools, Medical Providers | On-going |
| STRATEGY 11.1.2.4. Retrofit buildings and facilities at risk in redeveloping areas. | City of Camden | On-going |
| STRATEGY 11.1.2.5. Provide energy audits, weatherization assistance, and energy retrofits for commercial, residential, institutional, and government facilities to reduce energy usage. | City of Camden | On-going |
| OBJECTIVE 11.1.3. Preserve protective features of the natural environment to reduce the impacts of hazards on people and property. | | |
| STRATEGY 11.1.3.1. Incorporate nature-based solutions in the design of flood control projects whenever possible in order to increase resilience and cost-effectiveness. | City of Camden | On-going |
| STRATEGY 11.1.3.2. Evaluate zoning requirements and measures to allow for less impervious surface and more space for trees and other green infrastructure and assets. | City of Camden | 2025 |
| STRATEGY 11.1.3.3. Continue to minimize flooding through the protection of flood plains and floodways. | City of Camden | On-going |
| OBJECTIVE 11.1.4. Encourage private sector involvement in resiliency, disaster preparedness, and response planning to include neighborhoods and businesses. | | |
| STRATEGY 11.1.4.1. Inform and involve the business community, including small businesses, in local emergency response planning and economic recovery strategies. | City of Camden, Chamber, Main Street Program, Businesses and Industries | On-going |
| STRATEGY 11.1.4.2. Examine the degree of vulnerability of businesses that are important to the City's economy. | City of Camden | |
| STRATEGY 11.1.4.3. Encourage the preparation of business recovery and continuity of operations plans by area employers, especially small businesses. | City of Camden, Chamber, Main Street Program, Businesses and Industries | On-going |
| STRATEGY 11.1.4.4. Promote economic diversification with employers that offer quality, higher-wage jobs and strengthen the tax base of the City and County. | City of Camden, Kershaw County, Chamber, Central SC Alliance, S.C. Dept. of Commerce | On-going |
| STRATEGY 11.1.4.5. Educate the business community on the business case for private-sector resiliency efforts. | City of Camden, Chamber, Main Street Program | On-going |



| GOALS/OBJECTIVES/STRATEGIES | ACCOUNTABLE AGENCY | TIMEFRAME |
|---|---|-----------|
| OBJECTIVE 11.1.5. Proactively plan for rapid restoration of lifeline services and community recovery for City residents and employers. | | |
| STRATEGY 11.1.5.1. Identify local public and private cyber infrastructure assets, systems, and cybersecurity networks that support and ensure the continued operations of critical lifeline infrastructures. | City of Camden, Kershaw County, Medical Providers | 2027 |
| STRATEGY 11.1.5.2. Assess land use regulations and processes for barriers to recovery to include permitting, inspections, variances, and treatment of nonconforming uses. | City of Camden | 2025 |
| STRATEGY 11.1.5.3. Maintain a reliable and secure intergovernmental and public communications system essential to a coordinated multi-jurisdictional and agency response to disasters. | City of Camden, Kershaw County, Service Providers, Emergency Response Partners | On-going |
| STRATEGY 11.1.5.4. Educate, inform, and disclose flood and other hazards to the public through various mechanisms such as real estate disclosures, public mapping resources, permitting, and community public information campaigns. | City of Camden, Kershaw County, Realtors | On-going |
| STRATEGY 11.1.5.5. Seek partnerships to address chronic stressors that can impede recovery such as lower incomes, shortages of affordable housing, food insecurity, lack of healthcare, and limited access to transportation for City residents. | City of Camden, Kershaw County, SLRCOG, Public and Private Service Providers, Nonprofits, Civic Organizations, Faith-based Institutions | On-going |
| STRATEGY 11.1.5.6. Strengthen neighbor-to-neighbor connections in the City and foster strong social networks that can raise prevention, reduce social vulnerability, and speed recovery. | City of Camden, Neighborhood Associations, Schools, Service Providers, Civic Organizations, Faith-based Institutions | On-going |